2024 WORK PLAN
for the
COMMUNITY ENVIRONMENTAL MONITORING PROGRAM
of the
EAGLE MINE

SUBMITTED BY

SUPERIOR WATERSHED PARTNERSHIP
in cooperation with the
KEWEENAW BAY INDIAN COMMUNITY

December 15, 2023

www.superiorwatersheds.org
www.swpcemp.org

Commonly Used Acronyms and Abbreviations

CEMP	Community Environmental Monitoring Program
CWB	Contact Water Basins
Eagle	Eagle Mine
EPA	U.S. Environmental Protection Agency
GW	Groundwater
GWDP	Groundwater Discharge Permit
HTDF	Humboldt Tailings Disposal Facility
Foundation	Community Foundation of Marquette County
MP	Mine Permit
PM	Particulate Matter (dust) measured in microns
SWP	Superior Watershed Partnership
TBD	To Be Determined
TDRSA	Temporary Development Rock Storage Area
TWIS	Treated Water Infiltration System
WTP	Water Treatment Plant

Diagram of Eagle Mine Facilities

Diagram of Humboldt Mill Facilities

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Introduction

The Community Environmental Monitoring Program (CEMP) of the Eagle Mine began during 2012 and is implemented by three community-based organizations; the Superior Watershed Partnership (SWP), the Keweenaw Bay Indian Community (KBIC), and the Community Foundation of Marquette County (Foundation). The CEMP is defined and governed by formal agreements between the SWP, Foundation, and Lundin Mining, who purchased the Eagle Mine from Rio Tinto during 2013. The CEMP is designed to build a comprehensive and accurate picture of any environmental impacts that may be a result of Eagle Mine's operations at the mine site, the Humboldt Mill, and along the designated Transportation Route. The CEMP is independent, transparent, and based on the highest scientific standards.

The CEMP consists of four main components: 1) Verification Monitoring, which includes verifying the environmental monitoring done by Eagle Mine as required by its permits 2) Additional monitoring, which includes environmental monitoring done by SWP over and above the monitoring that Eagle Mine is required to do under its permits; and 3) Publication of results and ratings of Eagle Mine's environmental performance; and 4) Community Outreach, to inform the public and provide opportunities for the community to provide input regarding CEMP activities.

In December 2019, the SWP in cooperation with KBIC, and the Foundation negotiated renewal of the CEMP Agreement with Eagle Mine to allow for continued environmental monitoring of operations at the Mine and the Humboldt Mill through 2025. The 2024 Work Plan marks the 13th year of CEMP monitoring and the 11th year of monitoring under the "operational" phase of production. It also marks the 6th year of CEMP monitoring in cooperation with the KBIC.

The Work Plan is organized into three sections that describe CEMP activities 1) Annual Monitoring Objectives, 2) Monitoring Results and Performance Ratings, and 3) Community Input and Public Outreach. A summary of the annual monitoring objectives including work plan tasks, standards and frequency of activities is provided in Table 1. Community Environmental

Monitoring Program monitoring locations and parameters for laboratory analyses are provided in Figures 1-9 and Tables 2-14 respectively.

1. Annual Monitoring Objectives

1.1. Verification Monitoring and Data Review

1.1.1. Baseline Data Review

The SWP and KBIC will continue to review and evaluate pre-mining (baseline) environmental data as it relates to data generated during monitoring of mining operations. The SWP recognizes that baseline data in and around the Eagle Mine includes data collected prior to September 2011. Data collected from the Humboldt Mill, Powell Township Air Station, and along the transportation route will be considered baseline through September 2014.

1.1.2. Procedures Review/Observations

SWP and KBIC will continue to review and observe data collection at Eagle Mine and the Humboldt Mill during 2024. The objective is to verify that the procedures used are appropriate and will result in the generation of data sets that are representative of environmental conditions.

1.1.3 Split Sampling

SWP and KBIC will carry out split sampling at permit required monitoring sites at the Eagle Mine site and the Humboldt Mill (groundwater, surface water, and facilities) in conjunction with Eagle Mine's scheduled monitoring. Split sampling is when a sample taken from a single source (e.g. a groundwater well) is divided in two, with each sample analyzed by a different certified laboratory. The objective of the split sampling is to verify that the laboratories used are appropriate and the results are representative of environmental conditions. Split samples will be conducted at Eagle Mine and the Humboldt Mill at the locations shown in Figures 1-6. The frequency and number of samples collected at each site are described in Table 2. Samples will be submitted to an independent laboratory for analyses. Analytical parameters, methods and reporting limits for split sampling are presented in Tables 3-10. The samples may be analyzed for the full parameter

list or a subset of the parameters specified for that monitoring point. Results will be compared to Eagle Mine baseline data and applicable permit benchmarks and limits.

1.1.4 Interpretations Review

SWP and KBIC will continue to interpret results of Eagle Mine's permit required environmental monitoring data. The interpretations review will focus primarily on assigning likely root cause (mine impacts, data quality issues or unrelated impacts) to monitoring point values that exceed permit specified benchmarks or thresholds. The SWP and KBIC will utilize relevant baseline and secondary data (data from other sources) where appropriate to document interpretations of results and/or make comparisons to other local or regional environmental data.

1.2 Additional Monitoring

The CEMP Agreement and CEMP Annual Work Plan (this plan) summarize the objectives and procedures for additional (non-permit required) environmental monitoring of Eagle Mine's operations. Ongoing additional monitoring proposed for 2024 is summarized below.

1.2.1 Powell Township Air Quality Monitoring

During November of 2012, an air quality and meteorological station was installed in Powell Township per the *CEMP Agreement*. The station is located in the community of Big Bay behind Crams General Store. The objective of the Powell Township air quality monitoring station is to generate data that can be used to identify potential air quality impacts in the community that may be a result of mining operations. Air quality data are compared to National Ambient Air Quality Standards and Michigan Air Toxic Screening Levels. The meteorological station measures wind speed and direction, temperature, barometric pressure, precipitation, solar radiation, and relative humidity on a continuous basis. During 2024, the station will monitor particulate matter (dust) in the 10 micron size range (PM10) on a continuous basis. Particulate matter filters will also be sent to a laboratory for analysis of metal concentrations (Table 11) on a quarterly basis. Modems installed at the station provide real-time meteorological and air quality data (PM10) via the CEMP website.

1.2.2 Eagle Mine Air Quality Monitoring

Air quality will be monitored in and around the Eagle Mine site during 2024 using portable air quality monitoring devices. The objective of the air quality monitoring at the mine site is to provide data for evaluation of potential air quality impacts from mining operations. Data collected using portable air monitoring equipment will be compared to data collected at the Powell Township air quality monitoring station and National Air Quality. Potential locations for the air quality monitoring are included in Figure 7. Details of the 2024 air quality monitoring plan will be provided to Eagle Mine staff for review prior to commencing with monitoring activities.

1.2.3 Edible/Traditional Plant Tissue Monitoring

Edible/traditional plant tissue monitoring began in 2015 to evaluate concerns voiced by the KBIC and other community members regarding potential impacts from mining activities on native plant species of high cultural value. The monitoring includes collection and analysis of blueberries (as an indicator species), but may also include other important species such as Juneberry, chokecherry, pin cherry, raspberry, blackberry, strawberry, thimbleberry, cranberry, juniper berry, wintergreen, and wild rice. A list of parameters for analysis are provided in Table 12. Collection sites are located within a two-mile radius of the Eagle Mine and Humboldt Mill as well as a control location (Figure 8). Berry samples will be collected and sent out for analysis at a certified laboratory and compared to guidelines and daily intake recommendations including the US Environmental Protection Agency's oral Tolerable Intake Values (TDI) and the Food and Drug Administration's recommended Daily Values (DV). A report summarizing results will be posted to the CEMP website.

1.2.4 CEMP Groundwater Monitoring Well

On August 28-30, 2017, a CEMP groundwater monitoring well was installed near Eagle Mine to expand the existing monitoring infrastructure and further evaluate potential groundwater impacts as a result of mining activities. The CEMP well is located outside of the mine perimeter (fence) between the Treated Water Infiltration System (TWIS) and the headwaters of the East Branch of the Salmon Trout River, with a groundwater depth of

166-176 feet. Access to the site is made possible through an agreement with Lyme Great Lakes Holding LLC (formerly Weyerhaeuser Company). During 2024, groundwater data will be collected on a quarterly basis from the CEMP well (Figure 9). A list of parameters for analysis are provided in Table 13. Results of the monitoring will be compared to results from Eagle Mine's groundwater discharge permit groundwater monitoring sites.

1.2.5 Salmon Trout River Headwaters Monitoring

During 2017, CEMP in cooperation with the KBIC began water quality monitoring at 8 sites in the headwaters of the Salmon Trout River. The headwaters of the Salmon Trout River begin as natural springs at locations where groundwater daylights and becomes surface water (Figure 10). A list of parameters for analysis on a quarterly basis are provided in Table 14. The objective of additional monitoring of the headwaters of the Salmon Trout River is to monitor potential water quality impacts from Eagle Mine's operations at sites previously monitored by the U.S. Geological Survey (USGS) and the KBIC. Results of the monitoring will be compared to Michigan surface water quality standards and used to assess potential impacts from mining activities to the Salmon Trout River.

1.2.6 Other Based on Results or New Activities

The SWP and KBIC may also collect additional data related to mining activities during 2024 based on results or new information, community input, and/or new activities including development of Eagle Mine closure plans. The SWP and KBIC will provide Eagle Mine with a plan (including locations, procedures, methodologies and standards) for any additional monitoring prior to commencing with monitoring activities. The CEMP Budget may be amended for additional monitoring needs as they are identified.

2 Monitoring Results and Performance Ratings

2.1 Data Processing/Publication

2.1.1 Data Processing

CEMP's laboratory(s) will deliver monitoring results in electronic format to SWP no later than 45 days of receipt of samples and the data will be processed by SWP within 5 working

days of receipt from the laboratory. Data processing procedures will be conducted in a manner consistent with the *CEMP Agreement* and other agreed upon standards/operating procedures. Primary processing consists of verification that samples, parameters, analytical methods, and detection limits were completed as requested. Secondary processing will consist of the evaluation of laboratory quality control data and duplicate data for evidence of quality control issues. Tertiary processing consists of comparison of data to appropriate baseline data, permit specified criteria/benchmarks, or other agreed upon state or federal criteria. The final data processing step follows receipt of Eagle data and consists of the comparison of Eagle's laboratory derived values with values produced by CEMP's laboratory(s).

2.1 Performance Ratings

2.2.1 CEMP Report Card

The CEMP Report Card is located on the CEMP website and includes a red light, yellow light, and green light system used by SWP to rate Eagle Mine on its environmental performance on a quarterly basis by location (Mine or Mill) and type of monitoring. The CEMP website and Report Card will be updated to communicate results of environmental monitoring at specific locations on a quarterly basis. In addition, the SWP will work with KBIC, Eagle Mine and additional partners to improve data interpretation and risk communication to the public, including, but not limited to, third party analysis and interpretation of data and risk communication as needed.

2.2.2 CEMP Monitoring Reports

In addition to the website and Report Card updates, CEMP will continue to periodically publish summary reports of monitoring activities and results to the CEMP website.

3. Community Outreach

The CEMP Community Outreach Plan (Figure 11) describes activities of SWP, KBIC, and the CFMC related to community outreach. The objectives of the Outreach Plan are to inform the public about Eagle Mine's environmental performance and to obtain input from community members

regarding CEMP. Outreach Plan activities are tracked quarterly and include, but are not limited to:

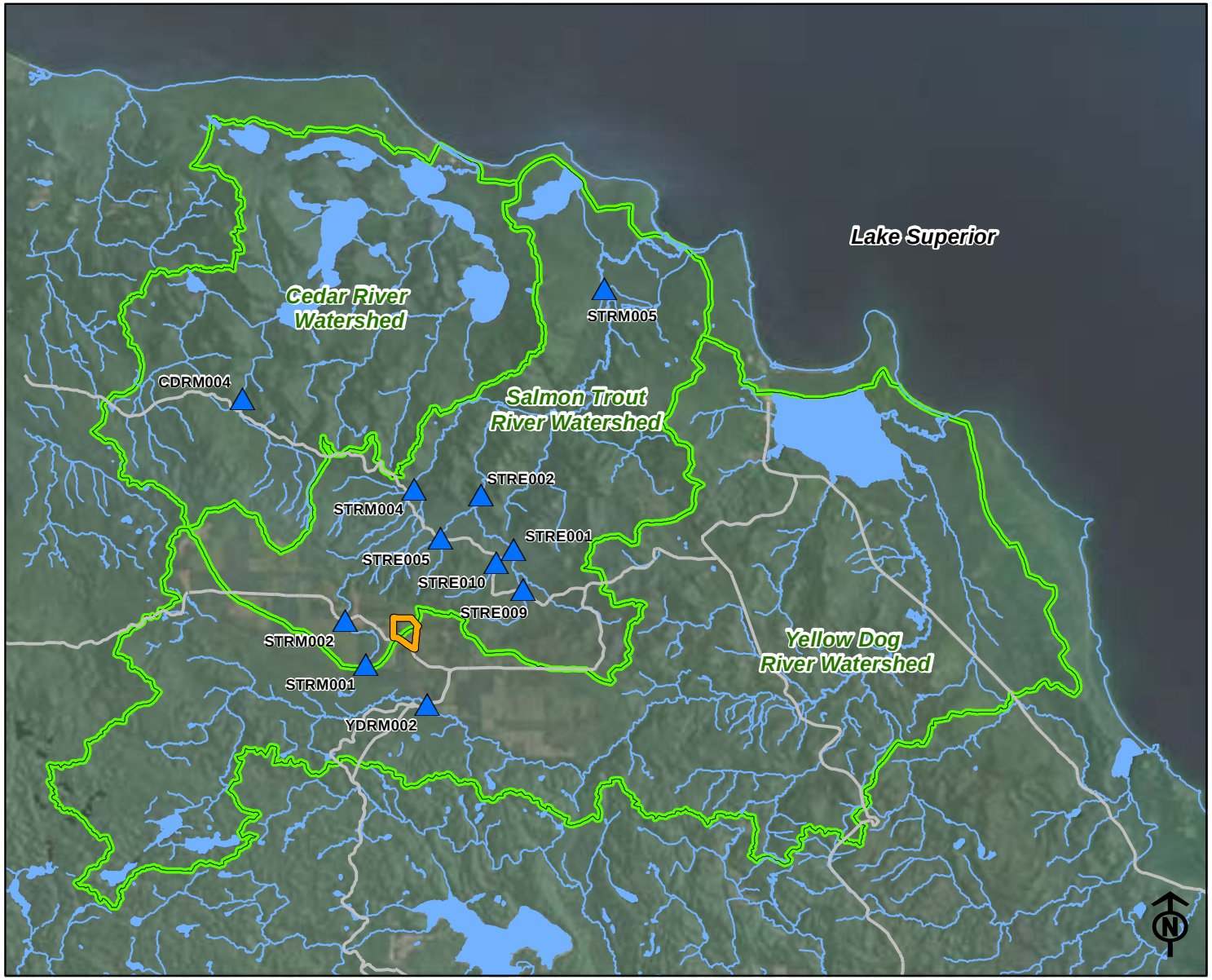
- Direct contacts/meetings with community members and interested groups.
- Presentations to schools/universities and local, regional and Great Lakes groups.
- Data/information sharing via the CEMP website (swpcemp.org), local news/media outlets, social media, printed materials, and publications.
- Distribution of CEMP program information and findings to other communities and interested parties.

During 2024, the CEMP Technical Committee members and SWP outreach staff will continue to work with Powell Township schools to implement an education program for 8th grade students around CEMP monitoring of Eagle Mine operations in and around the Eagle Mine site. The education program will include in-classroom lessons, curriculum development aligned with state standards (based on subjects of participating teachers), Eagle Mine site visit(s) hosted by Eagle Mine staff, and participation in CEMP field sampling events with SWP and KBIC staff. The SWP and KBIC will provide Eagle Mine with a plan (including locations, procedures, methodologies and standards) for the Powell Township Educational program prior to commencing with activities. The 2024 CEMP Budget (below) includes funding to support these additional outreach efforts.

4. CEMP 2024 Budget

PROJECT MANAGEMENT, OVERSIGHT and OUTREACH		Rate	Hours	Total
*NOTE: Fee for Service Rates for SWP staff include 10-40% in fringe benefits (health insurance, social security, workers compensation, retirement, etc.) and approximately 35% in overhead costs (lease, utilities, office equipment, liability insurance, etc.)				
KBIC Natural Resources Department (outreach, monitoring, stream gages, and program review/development)				$ 65,000
SWP Senior Planner	*Fee for Service Rate	91.15	500	$ 45,580
SWP Field Technician	*Fee for Service Rate	50.00	690	$ 34,500
SWP Field Technician	*Fee for Service Rate	35.00	150	$ 5,250
SWP Field Technician	*Fee for Service Rate	30.00	150	$ 4,500
SWP Executive Director	*Fee for Service Rate	120.00	300	$ 36,000
SWP Data Management/Outreach Specialist	*Fee for Service Rate	45.00	450	$ 20,250
SWP Administrator	*Fee for Service Rate	50.00	355	$ 17,750
			TOTAL PROJECT MANAGEMENT, OVERSIGHT AND OUTREACH	**$ 228,830**
CONTRACTUAL SERVICES		**# Samples**	**Cost/Sample**	**Total**
Verification Monitoring and Data Review				
Northern Lake Service Inc. - Eagle Mine Water Treatment Plant		4	$ 569	$ 2,276
Northern Lake Service Inc. - Eagle Mine GWDP Groundwater		8	$ 573	$ 4,584
Northern Lake Service Inc. - Eagle Mine Mine Permit Groundwater		8	$ 489	$ 3,912
Northern Lake Service Inc. - Eagle Mine Mine Permit Surface Water		4	$ 477	$ 1,908
Northern Lake Service Inc. - Eagle Mine Temp Development Rock Storage Area		4	$ 526	$ 2,104
Whitewater Associates - Humboldt Mill Water Treatment Plant		4	$ 991	$ 3,964
Whitewater Associates - Humboldt Mill Mine Permit Groundwater		8	$ 514	$ 4,112
Whitewater Associates. - Humboldt Mill Mine Permit Surface Water		8	$ 578	$ 4,624
			Total Verification Monitoring and Data Review	*$ 27,484*
Additional Monitoring				
Whitewater Associates - CEMP/KBIC Edible/Traditional Plant Study		8	$ 610	$ 4,880
Northern Lake Service Inc. - CEMP Monitoring Well near Eagle Mine		3	$ 573	$ 1,719
Northern Lake Service Inc. - CEMP/KBIC Salmon Trout River Headwaters		16	$ 333	$ 5,328
Eastern Research Group - Air Station Metals		4	$ 286	$ 1,144
			Total Additional Monitoring	*$ 13,071*
			TOTAL CONTRACTUAL	**$ 40,555**
OUTREACH, TRAINING & OTHER SERVICES				
Training/Certifications				$ 400
Cram's Store - Air Station Site Lease Fee				$ 900
Equipment Purcahse/Rentals/Repairs				$ 1,000
Website Maintenance/Updates				$ 500
Powell Township School Program		1	$5,500	$ 5,500
Additional Monitoring (TBD)		1	$7,000	$ 7,000
			TOTAL OTHER	**$ 15,300**
SUPPLIES AND MATERIALS				
Printing (educational materials, reports, etc.)				$ 200
Shipping - Fed Ex				$ 4,200
Field and Office Supplies				$ 3,777
			TOTAL OUTREACH & SUPPLIES	**$ 8,177**
TRAVEL				
Travel for sampling events/meetings	5,500	Miles	$ 0.625	$ 3,438
			TOTAL TRAVEL	**$ 3,438**
			TOTAL CEMP 2024 BUDGET	**$ 296,300**
			CFMC MANAGEMENT FEE	**$ 20,000**
			2024 FUNDING REQUEST	**$ 316,300**

Note: Modifications to the CEMP Annual Budget can be made cooperatively by SWP, KBIC and the CFMC as needed to accomplish the objectives of this work plan including, but not limited to; any new/additional monitoring, additional education/outreach or cost of living adjustments.



Mine Permit Surface Water Monitoring Locations

Legend

- SW Monitoring Station
- Mine Facilities
- Road
- Hydrography
- Watershed Boundary

Reference

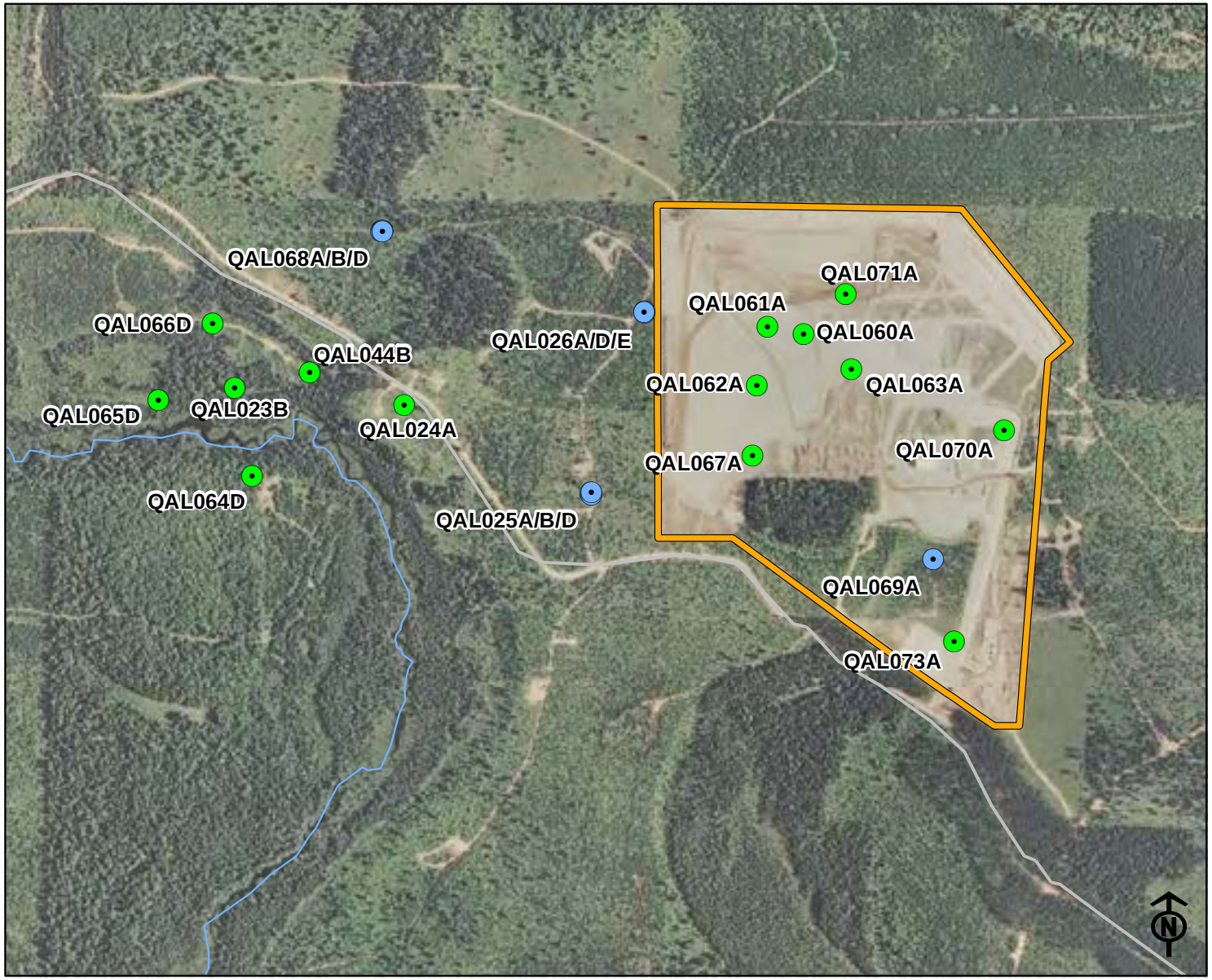
Projection & Datum: UTM NAD 83 Zone 16N

0 1.25 2.5 5 Miles

1:200,000

Community Environmental Monitoring Program

Figure: 1



Mine Permit Groundwater Monitoring Locations

Legend

- Background Well
- Compliance Well
- Mine Facilities
- Road
- Hydrography

Reference

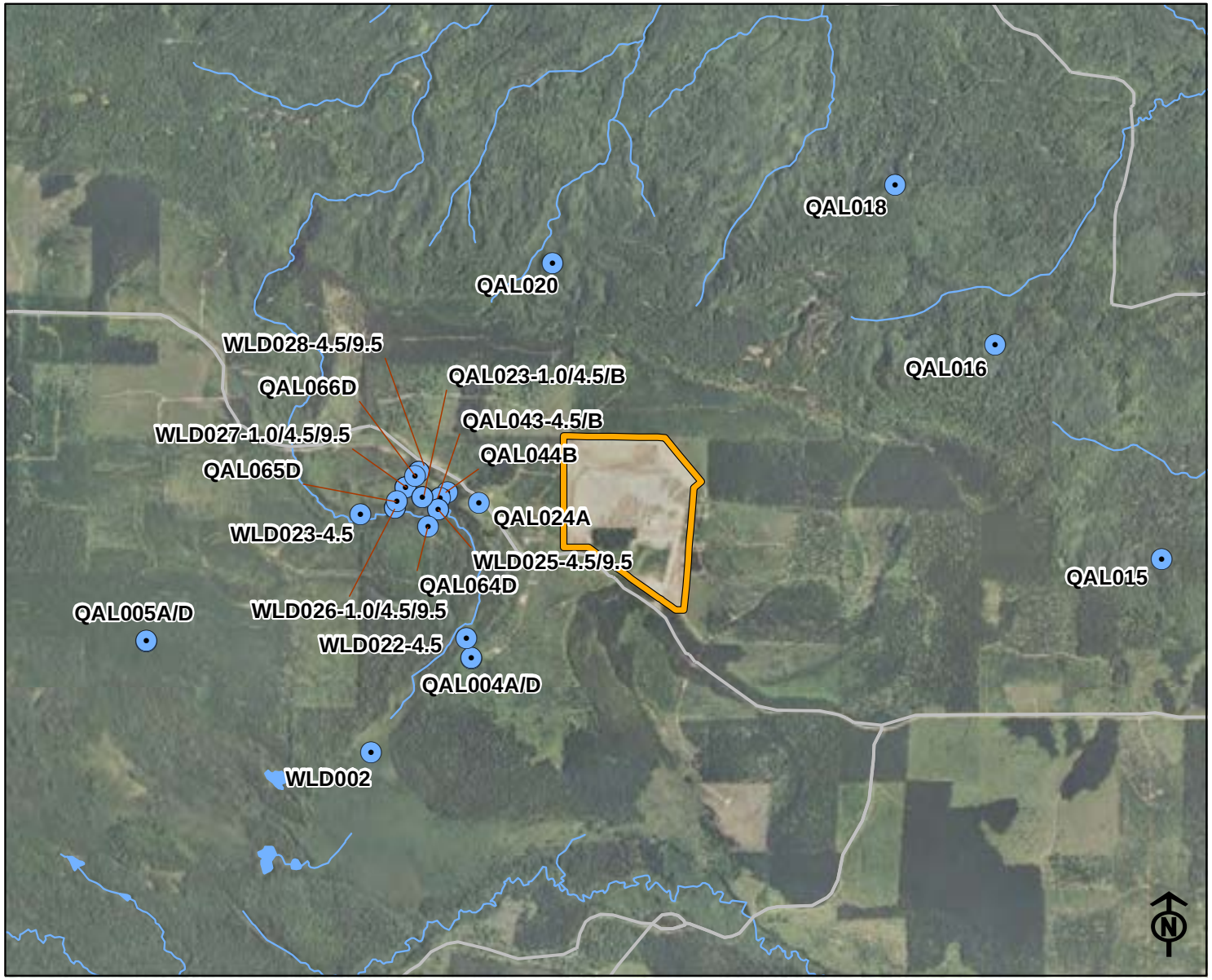
Projection & Datum: UTM NAD 83 Zone 16N

0 0.05 0.1 0.2 Miles

1:12,000

Community Environmental Monitoring Program

Figure: 2



Mine Permit Groundwater Elevation Monitoring Locations

Legend

- GW Elevation Monitoring Well
- Mine Facilities
- Road
- Hydrography

Reference

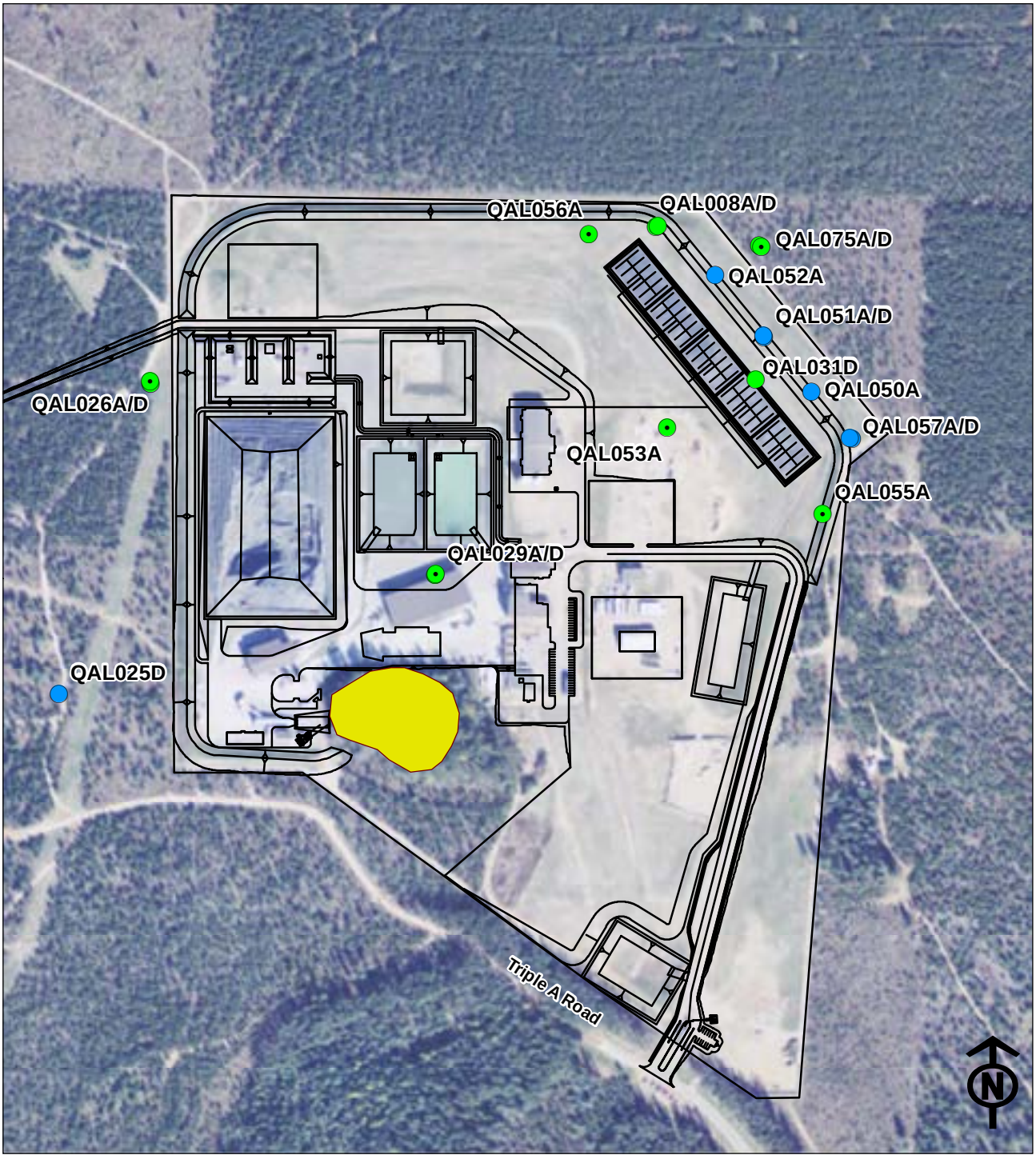
Projection & Datum: UTM NAD 83 Zone 16N

0 0.2 0.4 0.8 Miles

1:36,000

Community Environmental Monitoring Program

Figure: 3



GROUNDWATER DISCHARGE PERMIT
GROUNDWATER MONITORING LOCATIONS

- COMPLIANCE WATER QUALITY
- BACKGROUND WATER QUALITY
- ELEVATION
- *Instrumented for continuous monitoring*
- MINE FACILITIES
- OUTCROP

0 400 800 Feet

Scale: 1:6,800

Reference

Data provided by Eagle Mine and North Jackson Company
Projection & Datum: UTM NAD 83 Zone 16N

Eagle Mine
a subsidiary of Lundin Mining

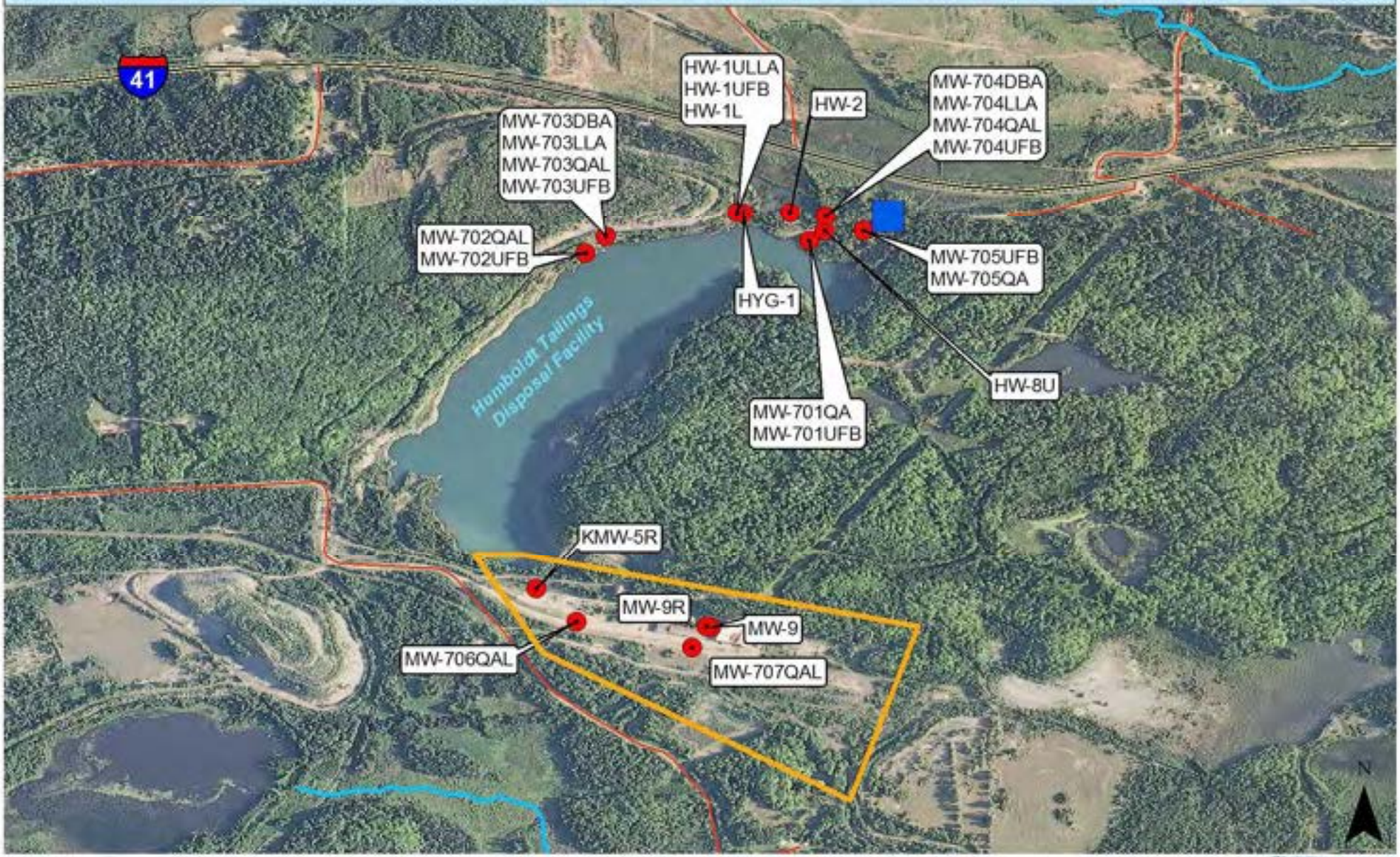
Eagle Mine
Groundwater Discharge Permit
GW1810162

North Jackson Company
ENVIRONMENTAL SCIENCE & ENGINEERING

Figure: 4

Figure: 5

Humboldt Mill
Mine Permit Groundwater
Monitoring Locations



0 0.25 0.5 Miles

1:15,000

All Roads

River

State Roads

Groundwater Monitoring Sites

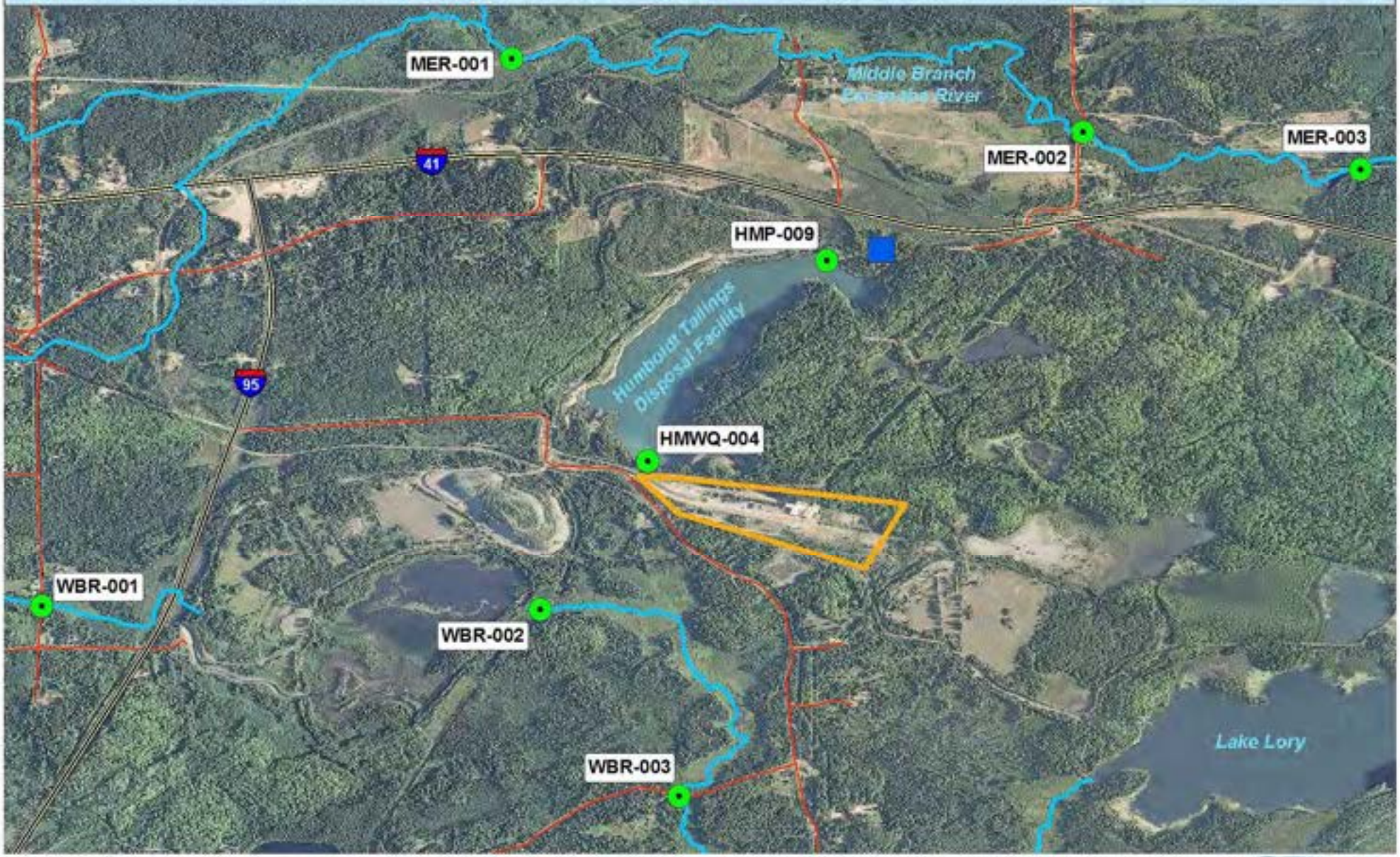
Humboldt Mill Water Treatment Plant

Humboldt Mill

SUPERIOR WATERSHED PARTNERSHIP AND LAND TRUST

Figure: 6

Humboldt Mill
Mine Permit Surface Water/Sediment Monitoring Locations



N

0 0.25 0.5 Miles

1:24,000

All Roads

River

State Roads

Surface Water/Sediment Sites

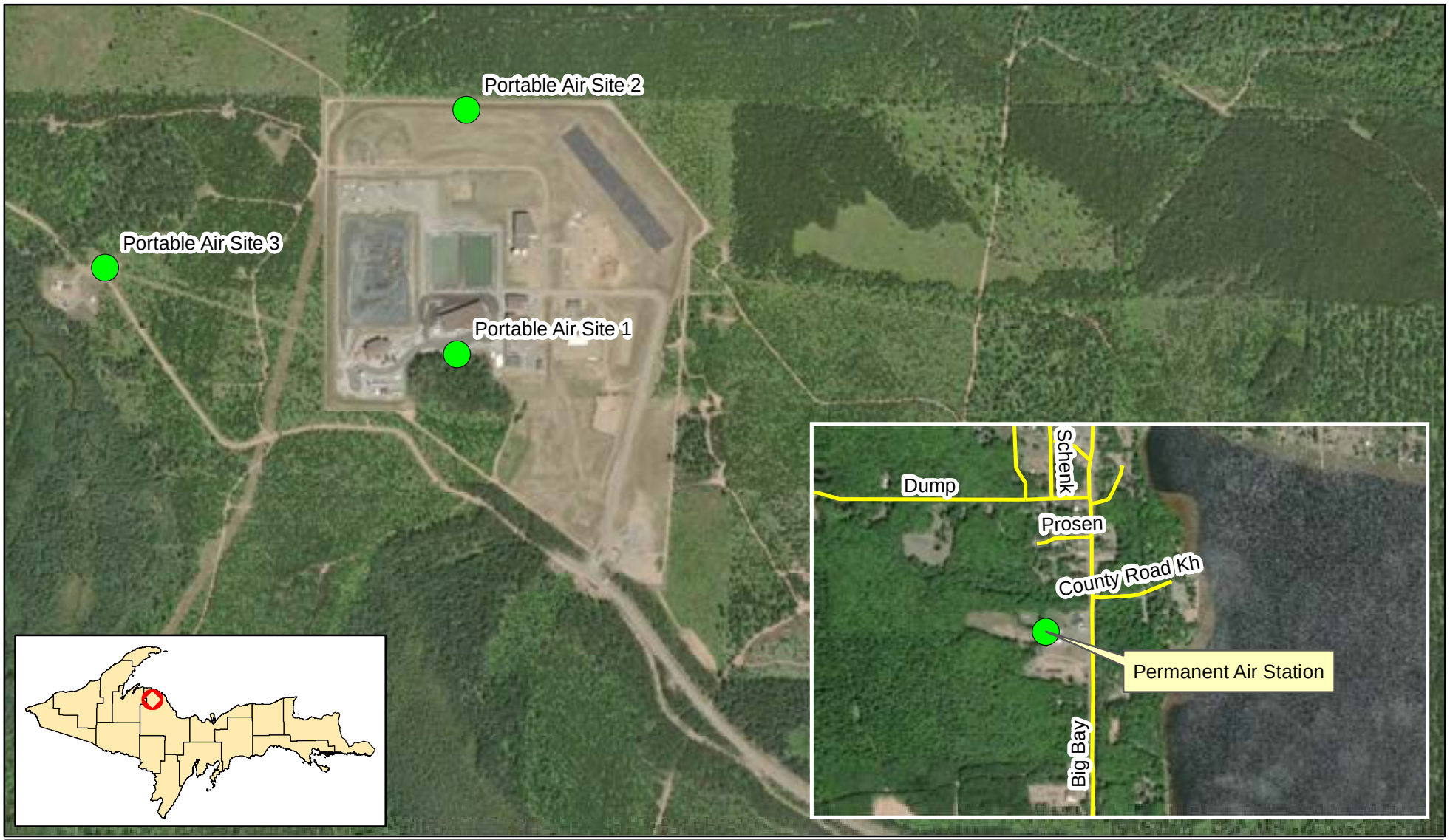
Humboldt Mill Water Treatment Plant

Humboldt Mill

SUPERIOR WATERSHED PARTNERSHIP AND LAND TRUST

Figure 7

CEMP Air Monitoring Locations



Air Monitoring Sites

0 0.25 0.5 1 Miles

N

SUPERIOR WATERSHED PARTNERSHIP AND LAND TRUST

Figure 8

Plant Tissue Analysis

Community Environmental Monitoring Program

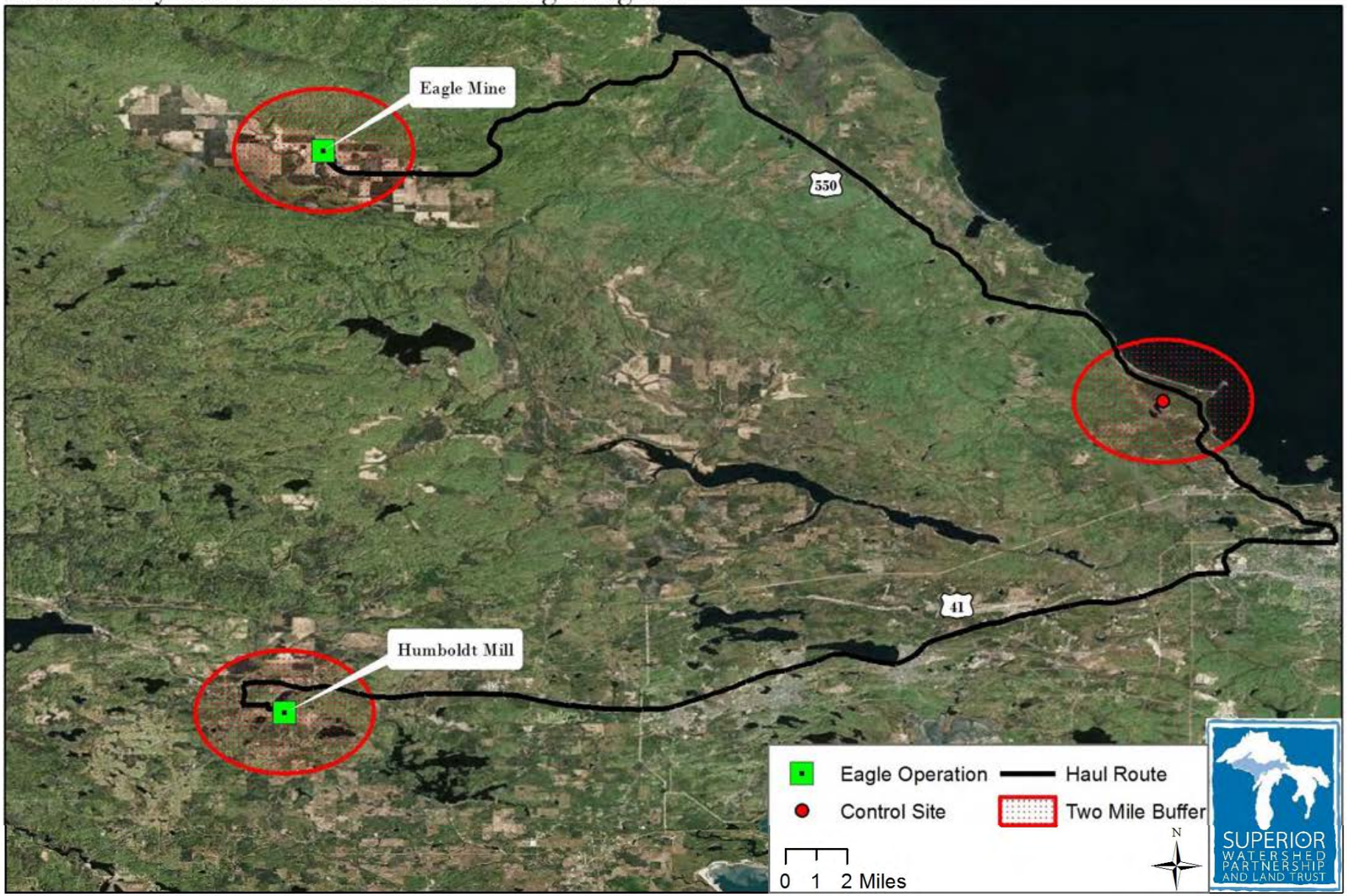


Figure 9

CEMP New Groundwater Well Location

CEMP New Groundwater Well Location

River

Quarter section lines

0 0.125 0.25 0.5 Miles

N

SUPERIOR WATERSHED PARTNERSHIP

Figure 10

CEMP Seep Monitoring Locations

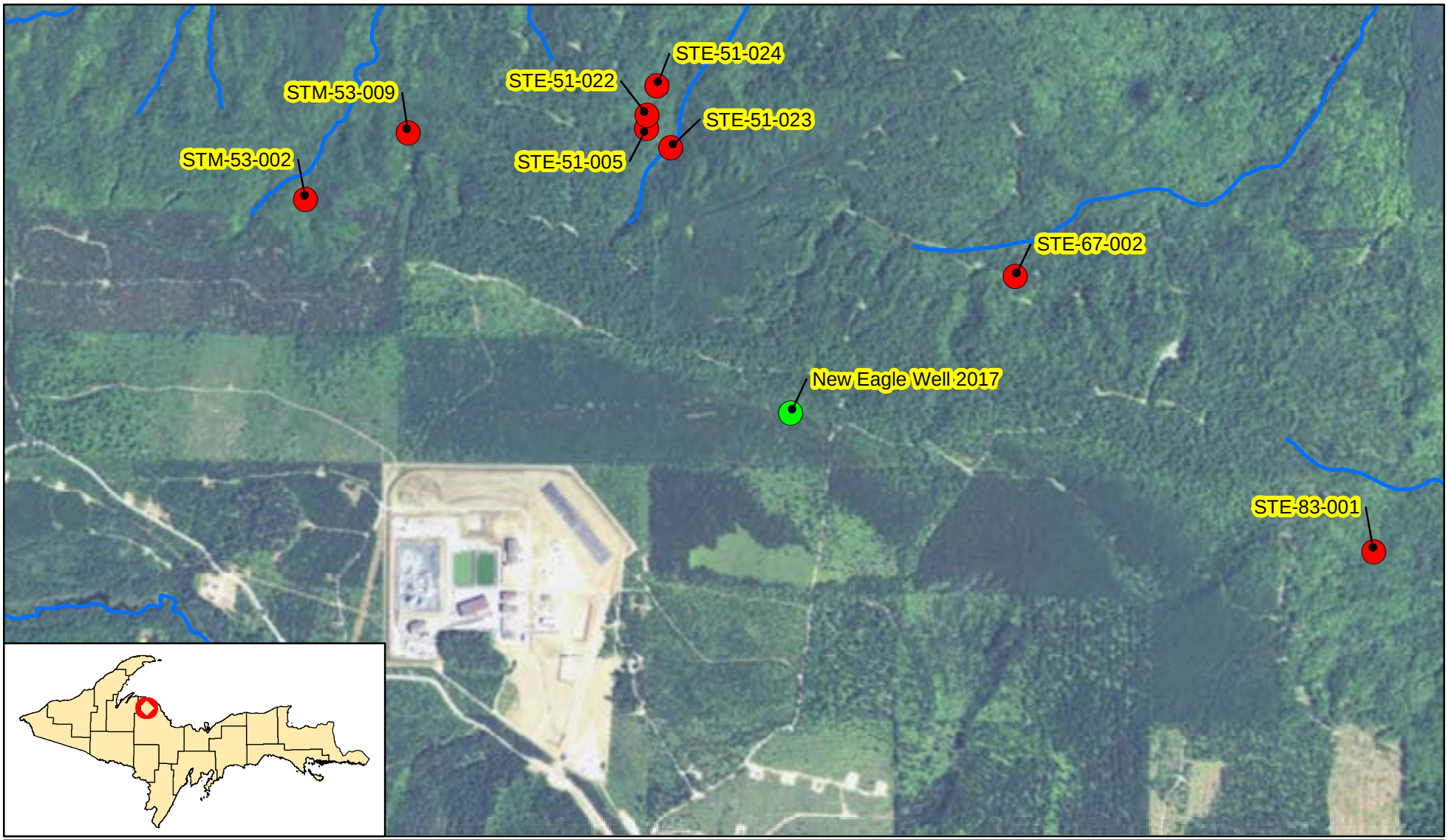


Table 1.
Summary of 2024 Annual Monitoring Objectives

WORK PLAN TASK	SITE(S)	PARMETERS	STANDARDS	PERIOD	FREQUENCY
Verification Monitoring and Data Review					
Baseline Data Review	Permit compliance and background monitoring sites (Mine and Mill)	Review of pre-mining data (groundwater, surface water, air, aquatics, and flora and fauna)	Part 632 Rule and Applicable Permits (Mining, Groundwater Discharge, Inland Lakes and Streams, and NPDES)	Mine data collected prior to September 2011, Mill data through September 2014	Ongoing
Operations Data Review	Permit compliance and background monitoring sites (Mine and Mill)	Review of operations data (groundwater, surface water, and wastewater, solid waste, air, aquatics, flora and fauna)	Part 632 Rule and Applicable Permits (Mining, Groundwater Discharge, Inland Lakes and Streams, and NPDES)	Mine data collected after September 2011, Mill data collected after September 2014	Ongoing, based on Eagle Mine scheduled monitoring
Procedures Review/Observations	Permit compliance and background monitoring sites (Mine and Mill)	Review of procedures and field data collection (groundwater, surface water, and wastewater, solid waste, air, aquatics, flora and fauna)	Part 632 Rule and Applicable Permits (Mining, Groundwater Discharge, Inland Lakes and Streams, and NPDES)	2024	Ongoing, based on Eagle Mine scheduled monitoring
Interpretation Review	Permit compliance and background monitoring sites (Mine and Mill)	Interpretation of results: groundwater, surface water, and facilities wastewater (quantity, elevation, flow, and quality)	Part 632 Rule and Applicable Permits (Mining, Groundwater Discharge, Inland Lakes and Streams, and NPDES)	2024	Ongoing, based on Eagle Mine scheduled monitoring
Split Sampling	Permit compliance and background monitoring sites (Mine and Mill)	Groundwater, surface water, and facilities wastewater quality	Part 632 Rule and Applicable Permits (Mining, Groundwater Discharge, Inland Lakes and Streams, and NPDES)	2024	Ongoing, based on Eagle Mine scheduled monitoring
Additional Monitoring					
Powell Township Air Quality	Stationary Air/Meterological Station in Big Bay	PM10, metals analysis; wind speed and direction, air temperature, relative humidity, and solar radiation	National Ambient Air Quality Standards and Michigan Air Toxic Screening Levels	2012-2024	Continuous (PM10 and meterological data) and Quarterly (Metals)
Eagle Mine Air Quality	Portable Air Monitoring in and around Eagle Mine	PM10	National Ambient Air Quality and Powell Township Air Quality (PM10)	2024	Quarterly
Edible/Traditional Plant Study	Eagle Mine, Humbodlt Mill, and Control Area	Metals analysis plant tissue and fruit	US Environmental Protection Agency's (US EPA) oral tolerable intake values (TDI) and the Food and Drug Administration's (FDA) recommended Daily Values (DV)	2015-2024	Annually

Table 2
Summary of Permit Required "Split Sampling" Monitoring Sites at Eagle Mine and the Humboldt Mill

Monitoring Location/Type	Data Range (years)	Permit	Frequency	Number of Monitoring Sites	2024 CEMP Samples/Year
EAGLE MINE					
Surface Water	2002-2024	Mine Permit	Quarterly	11	4
Groundwater	2011-2024	Mine Permit	Quarterly	24 (10 background and 14 compliance)	8
Facilities: Temporary Development Rock Storage Area (TDRSA) Contact Water Sump and Leak Detection Sump, Contact Water Basins/WTP Influent	2012-2024	Mine Permit	Quarterly (Varies)	4	4
Facilities: Water Treatment Facility Effluent	2012-2024	Groundwater Discharge Permit	Weekly	2	4
Groundwater	2008-2024	Groundwater Discharge Permit	Quarterly	15 (7 background and 8 compliance)	8
Total Eagle Mine				**55**	**28**

Monitoring Location/Type	Data Range (years)	Permit	Frequency	Number of Monitoring Sites	2024 CEMP Samples/Year
HUMBOLDT MILL					
Groundwater	2014-2024	Mine Permit	Quarterly	23	8
Surface Water	2014-2024	Mine Permit	Quarterly	8	8
Facilities: Water Treatment Facility	2014-2024	Surface Water Discharge Permit	Monthly	2	4
Total Humboldt Mill				**35**	**20**

2024 Additional Monitoring

- Powell Township Air Station Metals: 1 sample/quarter = 4 samples/year.
- Berry Study: Mine, Mill, Control = 8 berry samples/year. Note: additional sites may be added.
- CEMP Groundwater Well at Eagle Mine: 1 sample per quarter for three quarters = 3 water samples/year.
- Salmon Trout River Headwaters Monitoring: 8 samples two times per year = 16 samples/year.
- USGS Stream Monitoring Gages: Continuous data
- Additional monitoring TDB

Total Additional Monitoring: 31 samples/year

Table 3
Eagle Mine - Mine Permit Surface Water Monitoring
Parameters, Frequency, Analytical Method and Laboratory Reporting Limits

Parameters	Eagle Frequency of Analysis	Analytical Method[1]	Limit of Detection (LOD)	Units	Unit Price
Field					
Temperature	Quarterly	Field	na	^{o}C	-
Dissolved Oxygen	Quarterly	Field	na	mg/L	-
Flow	Quarterly	Field	na	cfs	-
pH	Quarterly	Field	na	SU	-
Specific Conductance	Quarterly	Field	na	umhos/cm	-
Anions					
Alkalinity, Bicarbonate	Annual	2320 B-1997	1 mg/L	mg/L	$12.00
Alkalinity Carbonate	Annual	2320 B-1997	1 mg/L	mg/L	$12.00
Chloride	Annual	EPA 300.0, Rev 2.1	0.32 mg/L	mg/L	$14.80
Flouride	Annual	EPA 300.0, Rev 2.1	0.027 mg/L	mg/L	$14.80
Nitrate Nitrogen	Annual	EPA 300.0, Rev 2.1	0.033 mg/L	mg/L	$14.80
Sulfate	Quarterly	EPA 300.0, Rev 2.1	0.28 mg/L	mg/L	$14.80
Cations					
Calcium	Annual	EPA Method 200.7, REV 4.4	0.19 mg/L	mg/L	$8.00
Magnesium	Annual	EPA Method 200.7, REV 4.4	0.048 mg/L	mg/L	$8.00
Potassium	Annual	EPA Method 200.7, REV 4.4	0.022 mg/L	mg/L	$8.00
Sodium	Annual	EPA Method 200.7, REV 4.4	0.12 mg/L	mg/L	$8.00
General					
Total Dissolved Solids	Quarterly	2540 C-1997	2 mg/L	mg/L	$20.00
Metals					
Aluminum	Annual	EPA Method 200.8, REV 5.4	0.009 mg/L	0.009 mg/L	$8.00
Antimony	Annual	EPA Method 200.8, REV 5.4	0.32 ug/L	ug/L	$8.00
Arsenic	Quarterly	EPA Method 200.8, REV 5.4	0.85 ug/L	ug/L	$8.00
Barium	Annual	EPA Method 200.8, REV 5.4	0.2 ug/L	ug/L	$8.00
Beryllium	Annual	EPA Method 200.8, REV 5.4	0.06 ug/L	ug/L	$8.00
Boron	Quarterly	EPA Method 200.7, REV 4.4	18 ug/L	ug/L	$8.00
Cadmium	Annual	EPA Method 200.8, REV 5.4	0.12 ug/L	ug/L	$8.00
Chromium	Annual	EPA Method 200.8, REV 5.4	2.6 ug/L	ug/L	$8.00
Cobalt	Quarterly	EPA Method 200.8, REV 5.4	0.03 ug/L	ug/L	$8.00
Copper	Quarterly	EPA Method 200.8, REV 5.4	1.7 ug/L	ug/L	$8.00
Iron	Quarterly	EPA Method 200.7, REV 4.4	0.063 mg/L	mg/L	$8.00
Lead	Annual	EPA Method 200.8, REV 5.4	0.25 ug/L	ug/L	$8.00
Lithium	Annual	EPA Method 200.7, REV 4.4	0.44 ug/L	ug/L	$8.00
Manganese	Quarterly	EPA Method 200.8, REV 5.4	1.9 ug/L	ug/L	$8.00
Mercury (Low Level)	Quarterly	EPA 245.7, Rev 2.0	0.86 ng/L	ng/L	$108.00
Molybdenum	Annual	EPA Method 200.8, REV 5.4	0.33 ug/L	ug/L	$8.00
Nickel	Quarterly	EPA Method 200.8, REV 5.4	1 ug/L	ug/L	$8.00
Selenium	Quarterly	EPA Method 200.8, REV 5.4	1 ug/L	ug/L	$8.00
Silver	Annual	EPA Method 200.8, REV 5.4	0.26 ug/L	ug/L	$8.00
Zinc	Quarterly	EPA Method 200.8, REV 5.4	5.4 ug/L	ug/L	$8.00

Table 4
Eagle Mine - Mine Permit Groundwater Monitoring
Parameters, Frequency, Analytical Methods, and Laboratory Reporting Limits

Parameters	Eagle Frequency of Analysis	Analytical Method	Limit of Detection (LOD)	Units	Unit Price
Field					
Static Water Elevation	Quarterly	Field	--	ft/msl	-
Redox	Quarterly	Field	--	meV	-
Temperature	Quarterly	Field	--	^{o}C	-
Dissolved Oxygen	Quarterly	Field	--	mg/L	-
pH	Quarterly	Field	--	su	-
Specific Conductance	Quarterly	Field	--	umhos/cm	-
Anions					
Alkalinity, Bicarbonate	Quarterly	2320 B-1997	1 mg/L	mg/L	$12.00
Alkalinity, Carbonate	Quarterly	2320 B-1997	1 mg/L	mg/L	$12.00
Chloride	Quarterly	EPA 300.0, Rev 2.1	0.32 mg/L	mg/L	$14.80
Flouride	Annual	EPA 300.0, Rev 2.1	0.027 mg/L	mg/L	$14.80
Nitrate Nitrogen	Quarterly	EPA 300.0, Rev 2.1	0.033 mg/L	mg/L	$14.80
Sulfate	Quarterly	EPA 300.0, Rev 2.1	0.28 mg/L	mg/L	$14.80
Cations					
Calcium	Annual	EPA Method 200.7, REV 4.4	0.19 mg/L	mg/L	$8.00
Magnesium	Annual	EPA Method 200.7, REV 4.4	0.048 mg/L	mg/L	$8.00
Potassium	Annual	EPA Method 200.7, REV 4.4	0.022 mg/L	mg/L	$8.00
Sodium	Quarterly	EPA Method 200.7, REV 4.4	0.12 mg/L	mg/L	$8.00
Metals					
Aluminum	Annual	EPA Method 200.8, REV 5.4	0.009 mg/L	ug/L	$8.00
Antimony	Annual	EPA Method 200.8, REV 5.4	0.32 ug/L	ug/L	$8.00
Arsenic	Quarterly	EPA Method 200.8, REV 5.4	0.85 ug/L	ug/L	$8.00
Barium	Annual	EPA Method 200.8, REV 5.4	0.2 ug/L	ug/L	$8.00
Beryllium	Annual	EPA Method 200.8, REV 5.4	0.06 ug/L	ug/L	$8.00
Boron	Quarterly	EPA Method 200.7, REV 4.4	18 ug/L	ug/L	$8.00
Cadmium	Annual	EPA Method 200.8, REV 5.4	0.12 ug/L	ug/L	$8.00
Chromium	Annual	EPA Method 200.8, REV 5.4	2.6 ug/L	ug/L	$8.00
Cobalt	Annual	EPA Method 200.8, REV 5.4	0.03 ug/L	ug/L	$8.00
Copper	Quarterly	EPA Method 200.8, REV 5.4	1.7 ug/L	ug/L	$8.00
Iron	Quarterly	EPA Method 200.7, REV 4.4	0.063 mg/L	ug/L	$8.00
Lead	Annual	EPA Method 200.8, REV 5.4	0.25 ug/L	ug/L	$8.00
Lithium	Annual	EPA Method 200.7, REV 4.4	0.44 ug/L	ug/L	$8.00
Manganese	200.7	EPA Method 200.8, REV 5.4	1.9 ug/L	ug/L	$8.00
Mercury (Low Level)	Quarterly	EPA 245.7, Rev 2.0	0.86 ng/L	ng/L	$108.00
Molybdenum	Annual	EPA Method 200.8, REV 5.4	0.33 ug/L	ug/L	$8.00
Nickel	Quarterly	EPA Method 200.8, REV 5.4	1 ug/L	ug/L	$8.00
Selenium	Quarterly	EPA Method 200.8, REV 5.4	1 ug/L	ug/L	$8.00
Silver	Annual	EPA Method 200.8, REV 5.4	0.26 ug/L	ug/L	$8.00
Strontium	Annual	EPA Method 200.8, REV 5.4	0.59 ug/L	ug/L	$8.00
Thallium	Annual	EPA Method 200.8, REV 5.4	0.54 ug/L	ug/L	$8.00
Vanadium	Annual	EPA Method 200.8, REV 5.4	6.1 ug/L	ug/L	$8.00
Zinc	Quarterly	EPA Method 200.8, REV 5.4	5.4 ug/L	ug/L	$8.00

Table 5
Eagle Mine - Mine Permit Facilities (TDRSA and CWB) Monitoring
Parameters, Frequency, Analytical Methods, and Laboratory Reporting Limits

Parameters	Eagle Frequency of Analysis	Analytical Method[1]	Limit of Detection (LOD)	Units	Unit Price
Field					
pH	Quarterly	Field	--	su	-
Specific Conductance	Quarterly	Field	--	umhos/cm	-
Major Anions					
Alkalinity, Bicarbonate	Quarterly	2320 B-1997	1 mg/L	mg/L	$12.00
Alkalinity Carbonate	Quarterly	2320 B-1997	1 mg/L	mg/L	$12.00
Chloride	Quarterly	EPA 300.0, Rev 2.1	0.32 mg/L	mg/L	$14.80
Flouride	Annual	EPA 300.0, Rev 2.1	0.027 mg/L	mg/L	$14.80
Nitrogen, Ammonia	Quarterly	4500-NH3 G-1997	0.027 mg/L	mg/L	$18.50
Nitrogen, Nitrate	Quarterly	EPA 300.0, Rev 2.1	0.014 mg/L	mg/L	$14.80
Nitrogen, Nitrite	Quarterly	EPA 300.0, Rev 2.1	0.014 mg/L	mg/L	$14.80
Sulfate	Quarterly	EPA 300.0, Rev 2.1	0.28 mg/L	mg/L	$14.80
Major Cations					
Calcium	Annual	EPA Method 200.7, REV 4.4	0.19 mg/L	mg/L	$8.00
Magnesium	Annual	EPA Method 200.7, REV 4.4	0.048 mg/L	mg/L	$8.00
Potassium	Annual	EPA Method 200.7, REV 4.4	0.022 mg/L	mg/L	$8.00
Sodium	Annual	EPA Method 200.7, REV 4.4	0.12 mg/L	mg/L	$8.00
Metals					
Aluminum	Annual	EPA Method 200.8, REV 5.4	0.009 mg/L	mg/L	$8.00
Antimony	Annual	EPA Method 200.8, REV 5.4	0.32 ug/L	ug/L	$8.00
Arsenic	Quarterly	EPA Method 200.8, REV 5.4	0.85 ug/L	ug/L	$8.00
Barium	Annual	EPA Method 200.8, REV 5.4	0.2 ug/L	ug/L	$8.00
Beryllium	Annual	EPA Method 200.8, REV 5.4	0.06 ug/L	ug/L	$8.00
Boron	Quarterly	EPA Method 200.7, REV 4.4	18 ug/L	ug/L	$8.00
Cadium	Annual	EPA Method 200.8, REV 5.4	0.12 ug/L	ug/L	$8.00
Chromium	Annual	EPA Method 200.8, REV 5.4	2.6 ug/L	ug/L	$8.00
Cobalt	Annual	EPA Method 200.8, REV 5.4	0.03 ug/L	ug/L	$8.00
Copper	Quarterly	EPA Method 200.8, REV 5.4	1.7 ug/L	ug/L	$8.00
Iron	Quarterly	EPA Method 200.7, REV 4.4	0.063 mg/L	ug/L	$8.00
Lead	Annual	EPA Method 200.8, REV 5.4	0.25 ug/L	ug/L	$8.00
Lithium	Annual	EPA Method 200.7, REV 4.4	0.44 ug/L	ug/L	$8.00
Manganese	Quarterly	EPA Method 200.8, REV 5.4	1.9 ug/L	ug/L	$8.00
Mercury (Low Level)	Quarterly	EPA 245.7, Rev 2.0	0.86 ng/L	ng/L	$108.00
Molybdenum	Annual	EPA Method 200.8, REV 5.4	0.33 ug/L	ug/L	$8.00
Nickel	Quarterly	EPA Method 200.8, REV 5.4	1 ug/L	ug/L	$8.00
Selenium	Quarterly	EPA Method 200.8, REV 5.4	1 ug/L	ug/L	$8.00
Silver	Annual	EPA Method 200.8, REV 5.4	0.26 ug/L	ug/L	$8.00
Strontium	Annual	EPA Method 200.8, REV 5.4	0.59 ug/L	ug/L	$8.00
Thallium	Annual	EPA Method 200.8, REV 5.4	0.54 ug/L	ug/L	$8.00
Vanadium	Annual	EPA Method 200.8, REV 5.4	6.1 ug/L	ug/L	$8.00
Zinc	Quarterly	EPA Method 200.8, REV 5.4	5.4 ug/L	ug/L	$8.00

Table 6
Eagle Mine - Groundwater Discharge Permit WTP Effluent Monitoring
Parameters, Frequency, Analytical Methods, and Laboratory Reporting Limits

Parameters	Eagle Frequency of Analysis	Analytical Method[1]	Limit of Detection (LOD)	Units	Unit Price
pH (Minimum)	Continuous Measurement	Field	-	SU	-
pH (Maximum)	Continuous Measurement	Field	-	SU	-
Dissolved Oxygen	Weekly	Field	-	mg/L	-
Specific Conductance	Continuous Measurement	Field	-	umhos/cm	
Inffluent Flow	Daily	Field	-	GPD	-
Effluent Flow	Daily	Field	-	GPD	-
General Chemistry					
Biochemical Oxygen	Weekly	5210 B-2001			$24.70
Ammonia Nitrogen		4500-NH3 G-1997	0.027 mg/L	mg/L	$18.50
Nitrate Nitrogen		EPA 300.0, Rev 2.1	0.033 mg/L	mg/L	$14.80
Nitriite Nitrogen		EPA 300.0, Rev 2.1	0.014 mg/L	mg/L	$14.80
Total Phosphorus		Surface Water - 4500-P E-1999 Groundwater - 4500-P F-1999	SW - 0.006 mg/L GW - 0.022 mg/L	mg/L	$22.70
Total Chloride		EPA 300.0, Rev 2.1	0.32 mg/L	mg/L	$18.50
Total Fluoride		EPA 300.0, Rev 2.1	0.027 mg/L	mg/L	$14.80
Metals (Total)					
Aluminum	Weekly	EPA Method 200.8, REV 5.4	0.009 mg/L	mg/L	$8.00
Antimony	Weekly	EPA Method 200.8, REV 5.4	0.32 ug/L	ug/L	$8.00
Arsenic	Weekly	EPA Method 200.8, REV 5.4	0.85 ug/L	ug/L	$8.00
Barium	Weekly	EPA Method 200.8, REV 5.4	0.2 ug/L	ug/L	$8.00
Beryllium	Weekly	EPA Method 200.8, REV 5.4	0.06 ug/L	ug/L	$8.00
Boron	Weekly	EPA Method 200.7, REV 4.4	18 ug/L	ug/L	$8.00
Cadmium	Weekly	EPA Method 200.8, REV 5.4	0.12 ug/L	ug/L	$8.00
Chromium	Weekly	EPA Method 200.8, REV 5.4	2.6 ug/L	ug/L	$8.00
Cobalt	Weekly	EPA Method 200.8, REV 5.4	0.03 ug/L	ug/L	$8.00
Copper	Weekly	EPA Method 200.8, REV 5.4	1.7 ug/L	ug/L	$8.00
Iron	Weekly	EPA Method 200.7, REV 4.4	0.063 mg/L	mg/L	$8.00
Lead	Weekly	EPA Method 200.8, REV 5.4	0.25 ug/L	ug/L	$8.00
Lithium	Weekly	EPA Method 200.7, REV 4.4	0.44 ug/L	ug/L	$8.00
Manganese	Weekly	EPA Method 200.8, REV 5.4	1.9 ug/L	ug/L	$8.00
Mercury (Low Level)	Weekly	EPA 245.7, Rev 2.0	0.86 ng/L	ng/L	$108.00
Molybdenum	Weekly	EPA Method 200.8, REV 5.4	0.33 ug/L	ug/L	$8.00
Nickel	Weekly	EPA Method 200.8, REV 5.4	1 ug/L	ug/L	$8.00
Potassium	Weekly	EPA Method 200.7, REV 4.4	0.022 mg/L	mg/l	$8.00
Selenium	Weekly	EPA Method 200.8, REV 5.4	1 ug/L	ug/L	$8.00
Silver	Weekly	EPA Method 200.8, REV 5.4	0.26 ug/L	ug/L	$8.00
Sodium	Weekly	EPA Method 200.7, REV 4.4	0.12 mg/L	mg/L	$8.00
Strontium	Weekly	EPA Method 200.8, REV 5.4	0.59 ug/L	ug/L	$8.00
Sulfate	Weekly	EPA 300.0, Rev 2.1	0.28 mg/L	mg/L	$14.80
Thallium	Weekly	EPA Method 200.8, REV 5.4	0.54 ug/L	ug/L	$8.00
Uranium	Weekly	ASTM D5174.97	1 ug/L	ug/L	$8.00
Vanadium	Weekly	EPA Method 200.8, REV 5.4	6.1 ug/L	ug/L	$8.00
Zinc	Weekly	EPA Method 200.8, REV 5.4	5.4 ug/L	ug/L	$8.00

Table 7
Eagle Mine - Groundwater Discharge Permit Groundwater Monitoring Parameters, Analytical Methods, and Laboratory Reporting Limits

Parameters	Eagle Frequency of Analysis	Analytical Method	Limit of Detection (LOD)	Units	Unit Price
Field					
Static Water Elevation	Quarterly	Field		USGS-Ft	-
Dissolved Oxygen	Quarterly	Field		mg/L	-
pH (Minimum)	Quarterly	Field		S.U.	-
pH (Maximum)	Quarterly	Field		S.U.	-
Specific Conductance	Quarterly	Field		umhos/cm	-
Anions					
Bicarbonate Alkalinity	Quarterly	2320 B-1997	1 mg/L	mg/L	$12.00
Chloride	Quarterly	EPA 300.0, Rev 2.1	0.32 mg/L	mg/L	$18.50
Fluoride, Total	Quarterly	EPA 300.0, Rev 2.1	0.027 mg/L	mg/L	$14.80
Ammonia Nitrogen	Quarterly	4500-NH3 G-1997	0.027 mg/L	mg/L	$18.50
Nitrate Nitrogen	Quarterly	0.033 mg/L	0.014 mg/L	mg/L	$14.80
Nitrite Nitrogen	Quarterly	EPA 300.0, Rev 2.1	0.014 mg/L	mg/L	$14.80
Total Phosphorus	Quarterly	Surface Water - 4500-P E-1999 Groundwater - 4500-P F-1999	SW - 0.006 mg/L GW - 0.022 mg/L	mg/L	$22.70
Sulfate	Quarterly	EPA 300.0, Rev 2.1	0.28 mg/L	mg/L	$14.80
Cations					
Calcium	Quarterly	EPA Method 200.7, REV 4.4	0.19 mg/L	mg/L	$8.00
Magnesium	Quarterly	EPA Method 200.7, REV 4.4	0.048 mg/L	mg/L	$8.00
Potassium	Quarterly	EPA Method 200.7, REV 4.4	0.022 mg/L	mg/L	$8.00
Sodium	Quarterly	EPA Method 200.7, REV 4.4	0.12 mg/L	mg/L	$8.00
Metals					
Aluminum	Quarterly	EPA Method 200.8, REV 5.4	0.009 mg/L	mg/L	$8.00
Antimony	Quarterly	EPA Method 200.8, REV 5.4	0.32 ug/L	ug/L	$8.00
Arsenic	Quarterly	EPA Method 200.8, REV 5.4	0.85 ug/L	ug/L	$8.00
Barium	Quarterly	EPA Method 200.8, REV 5.4	0.2 ug/L	ug/L	$8.00
Beryllium	Quarterly	EPA Method 200.8, REV 5.4	0.06 ug/L	ug/L	$8.00
Boron	Quarterly	EPA Method 200.7, REV 4.4	18 ug/L	ug/L	$8.00
Cadium	Quarterly	EPA Method 200.8, REV 5.4	0.12 ug/L	ug/L	$8.00
Chromium	Quarterly	EPA Method 200.8, REV 5.4	2.6 ug/L	ug/L	$8.00
Cobalt	Quarterly	EPA Method 200.8, REV 5.4	0.03 ug/L	ug/L	$8.00
Copper	Quarterly	EPA Method 200.8, REV 5.4	1.7 ug/L	ug/L	$8.00
Iron	Quarterly	EPA Method 200.7, REV 4.4	0.063 mg/L	mg/L	$8.00
Lead	Quarterly	EPA Method 200.8, REV 5.4	0.25 ug/L	ug/L	$8.00
Lithium	Quarterly	EPA Method 200.7, REV 4.4	0.44 ug/L	ug/L	$8.00
Manganese	Quarterly	EPA Method 200.8, REV 5.4	1.9 ug/L	ug/L	$8.00
Mercury (Low Level)	Quarterly	EPA 245.7, Rev 2.0	0.86 ng/L	ng/L	$108.00
Molybdenum	Quarterly	EPA Method 200.8, REV 5.4	0.33 ug/L	ug/L	$8.00
Nickel	Quarterly	EPA Method 200.8, REV 5.4	1 ug/L	ug/L	$8.00
Selenium	Quarterly	EPA Method 200.8, REV 5.4	1 ug/L	ug/L	$8.00
Silver	Quarterly	EPA Method 200.8, REV 5.4	0.26 ug/L	ug/L	$8.00
Strontium	Quarterly	EPA Method 200.8, REV 5.4	0.59 ug/L	ug/L	$8.00
Thallium	Quarterly	EPA Method 200.8, REV 5.4	0.54 ug/L	ug/L	$8.00
Uranium	Quarterly	ASTM D5174.97	1 ug/L	ug/L	$8.00
Vanadium	Quarterly	EPA Method 200.8, REV 5.4	6.1 ug/L	ug/L	$8.00
Zinc	Quarterly	EPA Method 200.8, REV 5.4	5.4 ug/L	ug/L	$8.00
* MWs QAL008A, QAl051A are report only for vanadium					

Table 8
Humboldt Mill - Mine Permit Groundwater Monitoring
Parameters, Frequency of Analysis, Analytical Methods, and Laboratory Reporting Limits

Parameters	Eagle Frequency of Analysis	Analytical Method	Limit of Detection (LOD)	Units	Unit price
Field					
Static Water Elevation	Quarterly	Field	NA	ft/msl	-
ORP	Quarterly	Field	NA	mV	-
Temperature	Quarterly	Field	NA	^{o}C	-
Dissolved Oxygen	Quarterly	Field	NA	ppm	-
pH	Quarterly	Field	NA	SU	-
Turbidity	Quarterly	Field	NA	NTU	-
Specific Conductance	Quarterly	Field	--	umhos/cm	-
Anions					
Alkalinity, Bicarbonate	Quarterly	2320 B-1997	1 mg/L	mg/L	$12.00
Alkalinity Carbonate	Quarterly	2320 B-1997	1 mg/L	mg/L	$12.00
Chloride	Quarterly	EPA 300.0, Rev 2.1	0.32 mg/L	mg/L	$18.50
Fluoride	Quarterly	EPA 300.0, Rev 2.1	0.027 mg/L	mg/L	$14.80
Nitrogen, Ammonia	Quarterly	4500-NH3 G-1997	0.027 mg/L	mg/L	$18.50
Nitrate Nitrogen	Quarterly	0.033 mg/L	0.014 mg/L	mg/L	$14.80
Nitrite Nitrogen	Quarterly	EPA 300.0, Rev 2.1	0.014 mg/L	mg/L	$14.80
Sulfate	Quarterly	EPA 300.0, Rev 2.1	0.28 mg/L	mg/L	$14.80
Sulfide	Quarterly	EPA 300.0, Rev 2.1	0.28 mg/L	mg/L	$77.30
Cations					
Calcium	Quarterly	EPA Method 200.7, REV 4.4	0.19 mg/L	mg/L	$8.00
Magnesium	Quarterly	EPA Method 200.7, REV 4.4	0.048 mg/L	mg/L	$8.00
Potassium	Quarterly	EPA Method 200.7, REV 4.4	0.022 mg/L	mg/L	$8.00
Sodium	Quarterly	EPA Method 200.7, REV 4.4	0.12 mg/L	mg/L	$8.00
General					
Hardness	Quarterly	EPA Method 200.7		mg/L	$8.00
Metals					
Aluminum	Annual	EPA Method 200.8, REV 5.4	0.009 mg/L	mg/L	$8.00
Antimony	Annual	EPA Method 200.8, REV 5.4	0.32 ug/L	ug/L	$8.00
Arsenic	Quarterly	EPA Method 200.8, REV 5.4	0.85 ug/L	ug/L	$8.00
Barium	Annual	EPA Method 200.8, REV 5.4	0.2 ug/L	ug/L	$8.00
Beryllium	Annual	EPA Method 200.8, REV 5.4	0.06 ug/L	ug/L	$8.00
Boron	Annual	EPA Method 200.7, REV 4.4	18 ug/L	ug/L	$8.00
Cadium	Annual	EPA Method 200.8, REV 5.4	0.12 ug/L	ug/L	$8.00
Chromium	Annual	EPA Method 200.8, REV 5.4	2.6 ug/L	ug/L	$8.00
Cobalt	Annual	EPA Method 200.8, REV 5.4	0.03 ug/L	ug/L	$8.00
Copper	Quarterly	EPA Method 200.8, REV 5.4	1.7 ug/L	ug/L	$8.00
Iron	Quarterly	EPA Method 200.7, REV 4.4	0.063 mg/L	mg/L	$8.00
Lead	Quarterly	EPA Method 200.8, REV 5.4	0.25 ug/L	ug/L	$8.00
Lithium	Annual	EPA Method 200.7, REV 4.4	0.44 ug/L	ug/L	$8.00
Manganese	Quarterly	EPA Method 200.8, REV 5.4	1.9 ug/L	ug/L	$8.00
Mercury (Low Level)	Quarterly	EPA 245.7, Rev 2.0	0.86 ng/L	ng/L	$108.00
Molybdenum	Annual	EPA Method 200.8, REV 5.4	0.33 ug/L	ug/L	$8.00
Nickel	Quarterly	EPA Method 200.8, REV 5.4	1 ug/L	ug/L	$8.00
Selenium	Annual	EPA Method 200.8, REV 5.4	1 ug/L	ug/L	$8.00
Silver	Annual	EPA Method 200.8, REV 5.4	0.26 ug/L	ug/L	$8.00
Thallium	Annual	EPA Method 200.8, REV 5.4	0.54 ug/L	ug/L	$8.00
Vanadium	Annual	EPA Method 200.8, REV 5.4	6.1 ug/L	ug/L	$8.00
Zinc	Quarterly	EPA Method 200.8, REV 5.4	5.4 ug/L	ug/L	$8.00

Table 9
Humboldt Mill - Mine Permit Surface Water Monitoring
Parameters, Frequency of Analysis, Analytical Methods, and Laboratory Reporting Limits

Parameters	Eagle Frequency of Analysis	Sample Type	Analytical Method	Limit of Detection (LOD)	Units	Unit Price
Field						
Flow	Quarterly	Grab	Field	NA	cfs	-
Temperature	Quarterly	Grab	Field	NA	°C	-
Dissolved Oxygen	Quarterly	Grab	Field	NA	mg/L	-
Specific Conductance	Quarterly	Grab	Field	NA	µmhos/cm	-
pH	Quarterly	Grab	Field	NA	S.U.	-
ORP	Quarterly	Grab	Field	NA	mV	-
Turbidity	Quarterly	Grab	Field	NA	NTU	-
Anions						
Alkalinity, Bicarbonate	Quarterly	Grab	2320 B-1997	1 mg/L	mg/L	$12.00
Alkalinity, Carbonate	Quarterly	Grab	2320 B-1997	1 mg/L	mg/L	$12.00
Chloride	Quarterly	Grab	EPA 300.0, Rev 2.1	0.32 mg/L	mg/L	$18.50
Fluoride	Quarterly	Grab	EPA 300.0, Rev 2.1	0.027 mg/L	mg/L	$14.80
Nitrogen, Ammonia	Quarterly	Grab	4500-NH3 G-1997	0.027 mg/L	mg/L	$18.50
Nitrate Nitrogen	Quarterly	Grab	0.033 mg/L	0.014 mg/L	mg/L	$14.80
Nitrite Nitrogen	Quarterly	Grab	EPA 300.0, Rev 2.1	0.014 mg/L	mg/L	$14.80
Sulfate	Quarterly	Grab	EPA 300.0, Rev 2.1	0.28 mg/L	mg/L	$14.80
Sulfide	Quarterly	Grab	EPA 300.0, Rev 2.1	0.28 mg/L	mg/L	$77.30
Cations						
Calcium (Total)	Quarterly	Grab	EPA Method 200.7, REV 4.4	0.19 mg/L	mg/L	$8.00
Magnesium (Total)	Quarterly	Grab	EPA Method 200.7, REV 4.4	0.048 mg/L	mg/L	$8.00
Potassium	Quarterly	Grab	EPA Method 200.7, REV 4.4	0.022 mg/L	mg/L	$8.00
Sodium (Total)	Quarterly	Grab	EPA Method 200.7, REV 4.4	0.12 mg/L	mg/L	$8.00
General Chemistry						
Hardness	Quarterly	Grab	EPA Method 200.7	0.47 mg/L	mg/L	$8.00
Total Dissolved Solids	Quarterly	Grab	2540 C-1997	2 mg/L	mg/L	$20.00
Total Suspended Solids	Quarterly	Grab	2540 D-1997	2 mg/L	mg/L	$13.00
Metals						
Aluminum	Annually	Grab	EPA Method 200.8, REV 5.4	0.009 mg/L	mg/L	$8.00
Antimony	Annually	Grab	EPA Method 200.8, REV 5.4	0.32 ug/L	ug/L	$8.00
Arsenic	Quarterly	Grab	EPA Method 200.8, REV 5.4	0.85 ug/L	ug/L	$8.00
Barium	Annually	Grab	EPA Method 200.8, REV 5.4	0.2 ug/L	ug/L	$8.00
Beryllium	Annually	Grab	EPA Method 200.8, REV 5.4	0.06 ug/L	ug/L	$8.00
Boron	Annually	Grab	EPA Method 200.7, REV 4.4	18 ug/L	ug/L	$8.00
Cadmium	Annually	Grab	EPA Method 200.8, REV 5.4	0.12 ug/L	ug/L	$8.00
Chromium	Annually	Grab	EPA Method 200.8, REV 5.4	2.6 ug/L	ug/L	$8.00
Cobalt	Annually	Grab	EPA Method 200.8, REV 5.4	0.03 ug/L	ug/L	$8.00
Copper	Quarterly	Grab	EPA Method 200.8, REV 5.4	1.7 ug/L	ug/L	$8.00
Iron	Quarterly	Grab	EPA Method 200.7, REV 4.4	0.063 mg/L	mg/L	$8.00
Lead	Quarterly	Grab	EPA Method 200.8, REV 5.4	0.25 ug/L	ug/L	$8.00
Lithium	Annually	Grab	EPA Method 200.7, REV 4.4	0.44 ug/L	ug/L	$8.00
Manganese	Quarterly	Grab	EPA Method 200.8, REV 5.4	1.9 ug/L	ug/L	$8.00
Mercury (low level)	Quarterly	Grab	EPA 245.7, Rev 2.0	0.86 ng/L	ng/L	$108.00
Molybdenum	Annually	Grab	EPA Method 200.8, REV 5.4	0.33 ug/L	ug/L	$8.00
Nickel	Quarterly	Grab	EPA Method 200.8, REV 5.4	1 ug/L	ug/L	$8.00
Selenium	Annually	Grab	EPA Method 200.8, REV 5.4	1 ug/L	ug/L	$8.00
Silver	Annually	Grab	EPA Method 200.8, REV 5.4	0.26 ug/L	ug/L	$8.00
Thallium	Annually	Grab	EPA Method 200.8, REV 5.4	0.54 ug/L	ug/L	$8.00
Uranium			ASTM D5174.97	1 ug/L	ug/L	$8.00
Vanadium	Annually	Grab	EPA Method 200.8, REV 5.4	6.1 ug/L	ug/L	$8.00
Zinc	Quarterly	Grab	EPA Method 200.8, REV 5.4	5.4 ug/L	ug/L	$8.00

Table 10
Humboldt Mill - NPDES Permit Water Treatment Plant Effluent Monitoring
Parameters, Frequency of Analysis, Analytical Methods, and Laboratory Reporting Limits

Parameters	Eagle Frequency of Analysis	Sample Type	Analytical Methods	Limit of Detection (LOD)	Units	Unit Price
Field						
Dissolved Oxygen	Daily	Grab	Field	NA	mg/L	-
Outfall Observation	Daily	Grab	Field	-	-	-
pH	Daily	Grab	Field	NA	SU	-
Temperature	Continuous	Grab	Field	NA	°C	-
Other						
Biochemical Oxygen Demand (BOD)	2 x Month	Grab	5210 B-2001	none available		$24.70
Total Dissolved Solids	Weekly	Grab	2540 C-1997	2 mg/L	mg/L	$20.00
Total Hardness	Monthly	Grab	EPA Method 200.7	0.47 mg/L	mg/L	$8
Total Suspended Solids	Weekly	Grab	2540 D-1997	2 mg/L	mg/L	$13.00
Anions						
Alkalinity, Bicarbonate		Grab	2320 B-1997	1 mg/L	mg/L	$12.00
Alkalinity, Carbonate			2320 B-1997	1 mg/L	mg/L	$12.00
Ammonia Nitrogen	2 x Month	Grab	4500-NH3 G-1997	0.027 mg/L	mg/L	$18.50
Available Cyanide	Weekly	Grab			-	$108.20
Chloride		Grab	EPA 300.0, Rev 2.1	0.32 mg/L	mg/L	$18.50
Fluoride	2 x Month	Grab	EPA 300.0, Rev 2.1	0.027 mg/L	mg/L	$14.80
Nitrate		Grab	0.033 mg/L	0.014 mg/L	mg/L	$14.80
Sulfate	Weekly	Grab	EPA 300.0, Rev 2.1	0.28 mg/L	mg/L	$14.80
Total Phosphorus	Weekly	Grab	Surface Water - 4500-P E-1999 Groundwater - 4500-P F-1999	SW - 0.006 mg/L GW - 0.022 mg/L	mg/L	$22.70
Metals (Total)						
Aluminum		Grab	EPA Method 200.8, REV 5.4	0.009 mg/L	mg/L	$8.00
Antimony	2 x Month	Grab	EPA Method 200.8, REV 5.4	0.32 ug/L	ug/L	$8.00
Arsenic	Weekly	Grab	EPA Method 200.8, REV 5.4	0.85 ug/L	ug/L	$8.00
Barium	2 x Month	Grab	EPA Method 200.8, REV 5.4	0.2 ug/L	ug/L	$8.00
Beryllium		Grab	EPA Method 200.8, REV 5.4	0.06 ug/L	ug/L	$8.00
Boron	2 x Month	Grab	EPA Method 200.7, REV 4.4	18 ug/L	ug/L	$8.00
Cadmium	Weekly	Grab	EPA Method 200.8, REV 5.4	0.12 ug/L	ug/L	$8.00
Chromium	2 x Month	Grab	EPA Method 200.8, REV 5.4	2.6 ug/L	ug/L	$8.00
Cobalt	Weekly	Grab	EPA Method 200.8, REV 5.4	0.03 ug/L	ug/L	$8.00
Copper	Weekly	Grab	EPA Method 200.8, REV 5.4	1.7 ug/L	ug/L	$8.00
Iron		Grab	EPA Method 200.7, REV 4.4	0.063 mg/L	mg/L	$8.00
Lead	Weekly	Grab	EPA Method 200.8, REV 5.4	0.25 ug/L	ug/L	$8.00
Lithium	2 x Month	Grab	EPA Method 200.7, REV 4.4	0.44 ug/L	ug/L	$8.00
Manganese	Weekly	Grab	EPA Method 200.8, REV 5.4	1.9 ug/L	ug/L	$8.00
Mercury (low level)	Weekly	Grab	EPA 245.7, Rev 2.0	0.86 ng/L	ng/L	$108.00
Molybdenum	2 x Month	Grab	EPA Method 200.8, REV 5.4	0.33 ug/L	ug/L	$8.00
Nickel	Weekly	Grab	EPA Method 200.8, REV 5.4	1 ug/L	ug/L	$8.00
Selenium	Weekly	Grab	EPA Method 200.8, REV 5.4	1 ug/L	ug/L	$8.00
Silver		Grab	EPA Method 200.8, REV 5.4	0.26 ug/L	ug/L	$8.00
Strontium	2 x Month	Grab	EPA Method 200.8, REV 5.4	0.59 ug/L	ug/L	$8.00
Thallium		Grab	EPA Method 200.8, REV 5.4	0.54 ug/L	ug/L	$8.00
Vanadium		Grab	EPA Method 200.8, REV 5.4	6.1 ug/L	ug/L	$8.00
Zinc	Weekly	Grab	EPA Method 200.8, REV 5.4	5.4 ug/L	ug/L	$8.00

Orange shading indicates additional parameters added by CEMP

Table 11
Powell Township Air Station – Air Metals Monitoring
Parameters, Analytical Methods, and Laboratory Reporting Limits

Eastern Research Group
601 Keystone Park Drive
Suite 700
Morrisville, NC 27560

ERG

2013 Metals MDL - Compendium Method IO-3.5

Element	47 mm Teflon		8x10" Quartz	
	ng/filter	ng/m3 (assuming 24.04m3)	ng/filter	ng/m3 (assuming 2000 m3)
Aluminum	1481	61.6	41816	20.9
Antimony	1.14	0.048	30.0	0.015
Arsenic	4.77	0.198	140	0.070
Barium	3.14	0.130	5839	2.92
Beryllium	0.374	0.016	5.17	0.003
Cadmium	0.340	0.014	19.4	0.010
Calcium	2539	106	394287	197
Chromium	408	17.0	4912	2.46
Cobalt	0.560	0.023	31.4	0.016
Copper	10.2	0.424	2866	1.43
Iron	376	15.6	33496	16.7
Lead	2.44	0.102	241	0.121
Magnesium	193	8.05	79243	39.6
Manganese	3.25	0.135	260	0.130
Mercury	0.60	0.025	8.91	0.004
Molybdenum	2.44	0.102	278	0.139
Nickel	6.01	0.250	2481	1.24
Rubidium	0.241	0.010	22.4	0.011
Selenium	7.27	0.302	54.9	0.027
Strontium	2.02	0.084	475	0.238
Thallium	0.036	0.001	0.867	0.0004
Thorium	0.354	0.015	3.79	0.002
Uranium	0.020	0.001	11.6	0.006
Zinc	222	9.25	14372	7.19

Table 12
Parameters and Analytical Methods for Edible/Traditional Plant Tissue Monitoring

Parameters	Method
Aluminum	ICP
Antimony	ICP
Arsenic	ICP
Barium	ICP
Beryllium	ICP
Boron	ICP
Cadmium	ICP
Calcium	ICP
Chromium	ICP
Cobalt	ICP
Copper	ICP
Iron	ICP
Lead	ICP
Lithium	ICP
Magnesium	ICP
Manganese	ICP
Mercury	total as Hg on solids
Molybdenum	ICP
Nickel	ICP
Potassium	ICP
Selenium	ICP
Sodium	ICP
Strontium	ICP
Thallium	ICP
Vanadium	ICP
Zinc	ICP
Ammonia	ammonia as N on solids
Nitrate/Nitrite Nitrogen	nitrate/nitrite as N on solids
Total Organic Nitrogen - TKN	
Sulfate	as SO4 on solids
Sulfur	
Total Phosphorus	ICP
Uranium	

Table 13
CEMP Groundwater Monitoring Well near Eagle Mine
Parameters, Analytical Methods, and Laboratory Reporting Limits

Parameters	Eagle Frequency of Analysis	Analytical Method	Limit of Detection (LOD)	Units	Unit Price
Field					
Static Water Elevation	Quarterly	Field	-	USGS-Ft	-
Dissolved Oxygen	Quarterly	Field	-	mg/L	-
pH (Minimum)	Quarterly	Field	-	S.U.	-
pH (Maximum)	Quarterly	Field	-	S.U.	-
Specific Conductance	Quarterly	Field	-	umhos/cm	-
Anions					
Bicarbonate	Quarterly	2320 B-1997	1 mg/L	mg/L	$12.00
Chloride	Quarterly	EPA 300.0, Rev 2.1	0.32 mg/L	mg/L	$18.50
Fluoride, Total	Quarterly	EPA 300.0, Rev 2.1	0.027 mg/L	mg/L	$14.80
Ammonia Nitrogen	Quarterly	4500-NH3 G-1997	0.027 mg/L	mg/L	$18.50
Nitrate Nitrogen	Quarterly	0.033 mg/L	0.014 mg/L	mg/L	$14.80
Nitrite Nitrogen	Quarterly	EPA 300.0, Rev 2.1	0.014 mg/L	mg/L	$14.80
Total Phosphorus	Quarterly	Surface Water - 4500-P E-1999 Groundwater - 4500-P F-1999	SW - 0.006 mg/L GW - 0.022 mg/L	mg/L	$22.70
Sulfate	Quarterly	EPA 300.0, Rev 2.1	0.28 mg/L	mg/L	$14.80
Cations					
Calcium	Quarterly	EPA Method 200.7, REV 4.4	0.19 mg/L	mg/L	$8.00
Magnesium	Quarterly	EPA Method 200.7, REV 4.4	0.048 mg/L	mg/L	$8.00
Potassium	Quarterly	EPA Method 200.7, REV 4.4	0.022 mg/L	mg/L	$8.00
Sodium	Quarterly	EPA Method 200.7, REV 4.4	0.12 mg/L	mg/L	$8.00
Metals					
Aluminum	Quarterly	EPA Method 200.8, REV 5.4	0.009 mg/L	mg/L	$8.00
Antimony	Quarterly	EPA Method 200.8, REV 5.4	0.32 ug/L	ug/L	$8.00
Arsenic	Quarterly	EPA Method 200.8, REV 5.4	0.85 ug/L	ug/L	$8.00
Barium	Quarterly	EPA Method 200.8, REV 5.4	0.2 ug/L	ug/L	$8.00
Beryllium	Quarterly	EPA Method 200.8, REV 5.4	0.06 ug/L	ug/L	$8.00
Boron	Quarterly	EPA Method 200.7, REV 4.4	18 ug/L	ug/L	$8.00
Cadium	Quarterly	EPA Method 200.8, REV 5.4	0.12 ug/L	ug/L	$8.00
Chromium	Quarterly	EPA Method 200.8, REV 5.4	2.6 ug/L	ug/L	$8.00
Cobalt	Quarterly	EPA Method 200.8, REV 5.4	0.03 ug/L	ug/L	$8.00
Copper	Quarterly	EPA Method 200.8, REV 5.4	1.7 ug/L	ug/L	$8.00
Iron	Quarterly	EPA Method 200.7, REV 4.4	0.063 mg/L	mg/L	$8.00
Lead	Quarterly	EPA Method 200.8, REV 5.4	0.25 ug/L	ug/L	$8.00
Lithium	Quarterly	EPA Method 200.7, REV 4.4	0.44 ug/L	ug/L	$8.00
Manganese	Quarterly	EPA Method 200.8, REV 5.4	1.9 ug/L	ug/L	$8.00
Mercury (low level)	Quarterly	EPA 245.7, Rev 2.0	0.86 ng/L	ng/L	$108.00
Molybdenum	Quarterly	EPA Method 200.8, REV 5.4	0.33 ug/L	ug/L	$8.00
Nickel	Quarterly	EPA Method 200.8, REV 5.4	1 ug/L	ug/L	$8.00
Selenium	Quarterly	EPA Method 200.8, REV 5.4	1 ug/L	ug/L	$8.00
Silver	Quarterly	EPA Method 200.8, REV 5.4	0.26 ug/L	ug/L	$8.00
Strontium	Quarterly	EPA Method 200.8, REV 5.4	0.59 ug/L	ug/L	$8.00
Thallium	Quarterly	EPA Method 200.8, REV 5.4	0.54 ug/L	ug/L	$8.00
Uranium	Quarterly	ASTM D5174.97	1 ug/L	ug/L	$8.00
Vanadium	Quarterly	EPA Method 200.8, REV 5.4	6.1 ug/L	ug/L	$8.00
Zinc	Quarterly	EPA Method 200.8, REV 5.4	5.4 ug/L	ug/L	$8.00

Table 14
CEMP Seeps
Parameters and Analytical Methods

Parameters	Eagle Frequency of Analysis	Analytical Method	Limit of Detection (LOD)	Units	Unit Price
Field					
Dissolved Oxygen	Quarterly	Field	-	mg/L	-
pH	Quarterly	Field	-	S.U.	-
Specific Conductance	Quarterly	Field	-	umhos/cm	-
Anions					
Bicarbonate	Quarterly	2320 B-1997	1 mg/L	mg/L	$12.00
Chloride	Quarterly	EPA 300.0, Rev 2.1	0.32 mg/L	mg/L	$18.50
Nitrate Nitrogen	Quarterly	0.033 mg/L	0.014 mg/L	mg/L	$14.80
Sulfate	Quarterly	EPA 300.0, Rev 2.1	0.28 mg/L	mg/L	$14.80
Cations					
Sodium	Quarterly	EPA Method 200.7, REV 4.4	0.12 mg/L	mg/L	$8.00
Metals (Dissolved)					
Arsenic	Quarterly	EPA Method 200.8, REV 5.4	0.85 ug/L	ug/L	$8.00
Copper	Quarterly	EPA Method 200.8, REV 5.4	1.7 ug/L	ug/L	$8.00
Iron	Quarterly	EPA Method 200.7, REV 4.4	0.063 mg/L	mg/L	$8.00
Mercury (low level)	Quarterly	EPA 245.7, Rev 2.0	0.86 ng/L	ng/L	$108.00
Nickel	Quarterly	EPA Method 200.8, REV 5.4	1 ug/L	ug/L	$8.00
Uranium	Quarterly	ASTM D5174.97	1 ug/L	ug/L	$8.00
Vanadium	Quarterly	EPA Method 200.8, REV 5.4	6.1 ug/L	ug/L	$8.00
Organic Carbon	Quarterly	5310 C-2000	0.39 mg/L	mg/L	$39.10

Table 15
Humboldt Mill - NPDES Permit Water Treatment Plant Influent Monitoring

Parameters	Sample Type	Analytical Methods	Limit of Detection (LOD)	Units	Unit Price
Other					
Total Dissolved Solids	Grab	2540 C-1997	2 mg/L	mg/L	$20.00
Total Suspended Solids	Grab	2540 D-1997	2 mg/L	mg/L	$13.00
Anions					
Sulfate	Grab	EPA 300.0, Rev 2.1	0.28 mg/L	mg/L	$14.80
Metals (total)					
Cobalt	Grab	EPA Method 200.8, REV 5.4	0.03 ug/L	ug/L	$8.00
Copper	Grab	EPA Method 200.8, REV 5.4	1.7 ug/L	ug/L	$8.00
Manganese	Grab	EPA Method 200.8, REV 5.4	1.9 ug/L	ug/L	$8.00
Mercury (low level)	Grab	EPA 245.7, Rev 2.0	0.86 ng/L	ng/L	$108.00
Nickel	Grab	EPA Method 200.8, REV 5.4	1 ug/L	ug/L	$8.00
Selenium	Grab	EPA Method 200.8, REV 5.4	1 ug/L	ug/L	$8.00

Orange shading indicates additional parameters added by CEMP