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LUNDIN MINING CORPORATION

TECHNICAL REPORT ON THE EAGLE MINE, MICHIGAN, U.S.A.

NI 43-101 Report

Qualified Persons:
Graham G. Clow, P.Eng.
Normand L. Lecuyer, P.Eng.
David W. Rennie, P. Eng.
Brenna J.Y. Scholey, P.Eng.

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RPA 55 University Ave. Suite 501 I Toronto, ON, Canada M5J 2H7 I **T** + 1 (416) 947 0907 **www.rpacan.com**

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Lead Author	Graham G. Clow, P.Eng. Normand L. Lecuyer, P.Eng. David W. Rennie, P.Eng. Brenna J.Y. Scholey, P.Eng.	(Signed) (Signed) (Signed) (Signed)	
Peer Reviewer	Jason J. Cox, P.Eng.	(Signed)	
Project Manager Approval	Ian T. Blakley, P.Geo.	(Signed)	
Project Director Approval	Graham G. Clow, P.Eng.	(Signed)	

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Roscoe Postle Associates Inc.
55 University Avenue, Suite 501
Toronto, ON M5J 2H7
Canada
Tel: +1 416 947 0907
Fax: +1 416 947 0395
mining@rpacan.com

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1 SUMMARY

EXECUTIVE SUMMARY

Roscoe Postle Associates Inc. (RPA) was retained by Lundin Mining Corporation (LMC) to complete a review of a Mineral Resource estimate and Feasibility Study (FS) by LMC on the Eagle East Project (Eagle East) and to prepare an independent Technical Report on the Eagle Mine (Eagle) property, located in the Upper Peninsula of Michigan, USA. The Eagle Mine, including Eagle East, is 100% owned and operated by Eagle Mine LLC, an indirect wholly owned subsidiary of LMC. The purpose of this report is to support the public disclosure of the Mineral Resource and Mineral Reserve estimates. This Technical Report conforms to NI 43-101 Standards of Disclosure for Mineral Projects. RPA last visited the property on June 7 and 8, 2016.

The Eagle Mine is an operating 2,000 tonnes per day (tpd) underground nickel-copper mine. Ore from the Eagle Mine is trucked approximately 105 km to the Humboldt Mill, a former iron ore processing facility which was refurbished by LMC. The Eagle deposit is covered by both state and private mineral leases with the Mineral Resource estimates split approximately equally between them. The Eagle Mine has obligations under state and private royalty agreements ranging from 1.0% to 7.0%.

The Eagle deposit was first drilled in 2002 by Rio Tinto. Following further drilling, an initial Mineral Resource was estimated in early 2004. Construction of the Eagle Mine began in 2010. LMC acquired the project in 2013 and commercial production of nickel and copper concentrates was achieved in November 2014.

During 2015, exploration drilling discovered high grade massive and semi-massive nickel-copper sulphide mineralization approximately 600 m beneath and two kilometres east of the Eagle deposit. Referred to as Eagle East, this is a separate intrusion from the Eagle deposit. LMC and the Eagle Mine personnel have completed additional drilling to delineate the Eagle East Mineral Resource estimate and prepared an FS for the Eagle East deposit to support the declaration of the Eagle East Mineral Reserve estimates. The FS assumes that current assets of the Eagle Mine such as the existing decline, ventilation, and pumping systems will be used for mining.

Table 1-1 summarizes the Mineral Resource estimate for the Eagle and Eagle East deposits, effective December 31, 2016. The Eagle East Mineral Resource estimate was first disclosed publicly with an effective date of June 30, 2016.

The Eagle Mine and Eagle East Mineral Reserve estimates as of December 31, 2016, are summarized in Table 1-2. This is the first public disclosure of the Eagle East Mineral Reserve estimate.

RPA considers that the Mineral Resource and Mineral Reserve estimates are classified and reported in accordance with Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Definition Standards for Mineral Resources and Mineral Reserves dated May 10, 2014 (CIM definitions).

RPA is not aware of any environmental, permitting, legal, title, taxation, socio-economic, marketing, political, or other relevant factors that could materially affect the Mineral Resource and Mineral Reserve estimates.

TABLE 1-1 SUMMARY OF MINERAL RESOURCES AS OF DECEMBER 31, 2016 – INCLUSIVE OF MINERAL RESERVES
Eagle Mine

			Grades							Contained Metal						
Zone	**Category**	**Tonnes (Kt)**	**Ni (%)**	**Cu (%)**	**Co (%)**	**Au (g/t)**	**Ag (g/t)**	**Pt (g/t)**	**Pd (g/t)**	**Ni (000 t)**	**Cu (000 t)**	**Co (000 t)**	**Au (Moz)**	**Ag (Moz)**	**Pt (Moz)**	**Pd (Moz)**
Eagle	Measured	1,198	4.2	3.4	0.1	0.3	-	0.9	0.6	50.3	40.3	1.4	0.01	-	0.03	0.02
Eagle	Indicated	2,146	2.6	2.2	0.1	0.2	-	0.5	0.3	54.9	47.4	1.5	0.02	-	0.03	0.02
Eagle East	Indicated	1,293	5.2	4.2	0.1	0.5	15.3	1.7	1.3	67.2	54.3	1.3	0.02	0.64	0.07	0.05
	Total M + I	**4,637**	**3.7**	**3.1**	**0.1**	**0.3**	**4.3**	**0.9**	**0.7**	**172.5**	**142.0**	**4.2**	**0.05**	**0.64**	**0.14**	**0.10**
Eagle	Inferred	44	1.1	1.1	0.03	0.1	-	0.3	0.2	0.5	0.5	0.01	-	-	-	-
Eagle East	Inferred	290	1.7	1.4	-	0.2	6.0	0.5	0.3	4.9	4.1	0.00	-	0.06	-	-
	Total Inferred	**334**	**1.6**	**1.4**	**-**	**0.2**	**5.2**	**0.5**	**0.3**	**5.4**	**4.6**	**0.01**	**-**	**0.06**	**0.01**	-

Notes:
1. CIM definitions were followed for Mineral Resources.
2. Mineral Resources are estimated at an NSR cut-off grade of US$142/t.
3. Mineral Resources are estimated using long-term metal prices of US$8.50/lb Ni, US$2.75/lb Cu, US$13.00/lb Co, US$1,000/oz Au, US$16.50/oz Ag, US$1,500/oz Pt, and US$550/oz Pd.
4. Bulk density is interpolated for each block and ranges from 2.82 t/m^3 to 4.51 t/m^3 for Eagle and 3.01 t/m^3 to 4.54 t/m^3 for Eagle East.
5. Mineral Resources are inclusive of Mineral Reserves.
6. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
7. Numbers may not add due to rounding.

TABLE 1-2 SUMMARY OF MINERAL RESERVES AS OF DECEMBER 31, 2016
Eagle Mine

		Grades							Contained Metal						
	Tonnes	Ni	Cu	Co	Au	Ag	Pt	Pd	Ni	Cu	Co	Pt	Pd	Au	Ag
Category	**(000)**	**(%)**	**(%)**	**(%)**	**(g/t)**	**(g/t)**	**(g/t)**	**(g/t)**	**(000 t)**	**(000 t)**	**(000 t)**	**(M oz)**	**(M oz)**	**(M oz)**	**(M oz)**
Eagle Proven	1,129	3.3	2.8	0.1	0.3	-	0.7	0.5	37.3	31.3	1.0	0.03	0.02	0.01	-
Eagle Probable	2,148	2.0	1.8	0.1	0.2	-	0.4	0.2	42.5	38.9	1.2	0.03	0.02	0.01	-
Eagle East Probable	1,544	3.7	3.0	0.1	0.4	10.6	1.2	0.9	57.1	46.3	1.5	0.06	0.04	0.02	0.53
Proven + Probable	**4,821**	**2.8**	**2.4**	**0.1**	**0.3**	**3.4**	**0.7**	**0.5**	**137.0**	**116.5**	**3.7**	**0.11**	**0.08**	**0.04**	**0.53**

Notes:
1. CIM definitions were followed for Mineral Reserves.
2. Mineral Reserves are estimated at an NSR cut-off of US$142.00/t for Eagle and US$160.00/t for Eagle East.
3. Mineral Reserves are estimated using average long-term prices of US$8.50/lb Ni, US$2.75/lb Cu, US$13.00/lb Co, US$1,000/oz Au, US$16.50/oz Ag, US$1,500/oz Pt, and US$550/oz Pd.
4. Silver was not reported for Eagle Mineral Reserves.
5. Bulk density interpolated in block model ranges from 2.91 t/m^3 to 4.50 t/m^3 and averaging 3.44 t/m^3.
6. Numbers may not add due to rounding.

CONCLUSIONS

Based on the site visit and subsequent review, RPA offers the following conclusions:

MINERAL RESOURCE ESTIMATION

- The drilling at Eagle and Eagle East has been conducted in a competent manner using appropriate equipment and techniques.
- Core handling, logging, and sampling have been carried out to a standard that meets or exceeds common industry practice.
- Drill core and samples are stored and transported in a secure fashion.
- Assaying has been performed by accredited commercial laboratories using conventional methods commonly used in the industry.
- An adequate level of assay quality assurance/quality control (QA/QC) sampling has been carried out, and the results of this sampling have been used appropriately to ensure that the accuracy and precision of the analyses are within acceptable limits.
- The frequency of QA/QC sampling is somewhat high for an operating mine and can probably be reduced.
- The database is properly managed and validated, in a secure manner.
- The geological models used for the resource estimate are reasonable and consistent with the deposit type and mineralization style.
- Top cuts should be applied to silver assays for the purpose of Mineral Resource estimation.
- The grade interpolations have been carried out using reasonable methods, parameters, and assumptions.
- Mineral Resource classification has been done in a reasonable manner, consistent with the CIM definitions.
- Cut-off criteria used are appropriate.
- The block model validation has been reasonable and appropriate.
- The reconciliation of mill production with the Eagle block model has shown a satisfactory level of agreement which has largely confirmed that the model parameters and assumptions are reasonable and that the database is sound.
- Measured Mineral Resource estimates have decreased since June 2016 owing to depletion. Indicated Mineral Resource estimates have increased overall due to upgrading of Inferred category at Eagle East. The Inferred Mineral Resource estimate have decreased in size due to the upgrade of the Eagle East material.

MINING AND MINERAL RESERVES

- The Eagle and Eagle East Mineral Reserves have been estimated in a manner consistent with CIM definitions.

- The total estimated Proven plus Probable Mineral Reserves are estimated to be 4.8 million tonnes grading 2.8% Ni and 2.4% Cu.

- In addition to the nickel and copper, there are minor amounts of platinum, palladium, cobalt, gold, and silver.

- The Eagle East deposit has been the subject of an FS and the Probable Mineral Reserves, included in the above noted total, are estimated to be 1.5 million tonnes grading 3.7% Ni and 3.0% Cu plus minor amounts of platinum, palladium, cobalt, gold, and silver. This is the first Mineral Reserve estimate for Eagle East.

- The Mineral Reserve estimates include appropriate allowances for dilution and extraction.

- All of the Mineral Reserve estimates are based upon underground mechanized longhole stoping with backfill.

- A portion of the Eagle Mineral Reserve estimate included in the mine plan is located above the 327.5 m above sea level (MASL) elevation specified in the original mining permit. Subsequently, development to the highest elevation of the mine (381 MASL) and mining up to the 353 MASL elevation have been approved. Further studies are required before approval for mining up to the 381 MASL elevation is given by the Michigan Department of Environmental Quality (MDEQ). RPA is of the opinion that this approval will be received in advance of reaching this area.

- Eagle East would be mined by extending a decline from the bottom of the Eagle workings. The decline for Eagle East commenced in mid-2016.

- Eagle East can extend the estimated mine life of the Eagle Mine by two years to 2023.

- The project schedule for Eagle East depends upon a continuous high rate of advance for the duration of the Eagle East development. RPA is of the opinion that the development rates are aggressive and will require constant monitoring of progress and changes to methods and/or equipment as required to maintain the performance.

- The failure to attain the planned development advance will delay the commencement of production from Eagle East and extend the period at the end of the mine life when production will only be available from Eagle East.

- Eagle East mining would utilize the existing mine and surface infrastructure in the development and production phases.

- The Eagle East geotechnical testing and evaluation has provided a more robust assessment of the geotechnical characteristics and conditions. This work has improved the confidence in the mine design and further supports the feasibility for safe and effective mining.

- RPA considers the mining plans and methods to be appropriate for the deposits. RPA finds the mining method, mine design, ground support, and geotechnical assessment to be consistent with industry best practices.

PROCESS

- RPA confirmed that the procedures used to estimate nickel and copper recoveries meet industry standards.

- Detailed grinding and metallurgical testwork has demonstrated that Eagle East ore is similar in performance to Eagle ore. The current flowsheet is suitable for treatment of Eagle East ore provided plant feed grades remain similar.

- Eagle East samples were found to be mineralogically similar to Eagle samples, although higher in grade, therefore, no changes to the process plant are expected.

- The Eagle East Project assumes that the existing Eagle Mine surface facilities would continue to be used to support the combined Eagle and Eagle East mining operation. The Humboldt Mill site will be unaffected by the Eagle East Project, as modifications to the mill are not expected at the projected feed grades.

INFRASTRUCTURE

- The existing infrastructure is suitable for the Eagle mining and will support the Eagle East development and mining.

- The method for depositing tailings in the pit should be optimized to better utilize the available storage volume for both Eagle and Eagle East tailings. The original method of tailings disposal at the bottom of the pit has resulted in unfavorably steep deposition cones.

- Based on assessment and modelling conducted by Hatch Ltd. (Hatch), sufficient capacity exists within the Humboldt Tailings Disposal Facility (HTDF) for containment of all tailings from processing Eagle and Eagle East ore.

- Hatch has reviewed the tailings deposition and facility capacity and provided the design for an alternative deposition method that will use the facility volume more efficiently and allow storage of the Life of Mine (LOM) plan tailings in the facility as implemented in October 2016.

- Based on assessment and modelling conducted by Hatch, sufficient capacity exists within the HTDF for containment of all tailings from processing Eagle and Eagle East ore.

- A revision to the tailings storage permits will be required in 2017, to discharge tailings up to a depth of 452 MASL.

ENVIRONMENTAL CONSIDERATIONS

- The environmental and social practices at Eagle are very effective and enable Eagle to have a strong social licence to operate.

- To mine and process the Eagle East material, a modification to the Mine Site Mining Permit will be required as well as amendments to the two permits limiting tailings storage at the mill site. Updates to the Environmental Impact Assessment (EIA) have been identified, as these will be required in conjunction with modifications to the Mine Site Mining Permit.

- The decline for the Eagle East Project can be developed under the current air permit, which covers exhaust ventilation air, since Eagle East will use the same ventilation system as the Eagle Mine.

- Based on initial predictions, the current treatment system can treat the water quality and quantity from Eagle East to meet all discharge limitations. However, the removal of waste solids through crystallization will likely exceed the current Water Treatment Plant (WTP) capacity. Therefore, an additional crystallizer will be required to effectively manage Total Dissolved Solids (TDS) during all phases of the operation.

CAPITAL AND OPERATING COSTS

- The Eagle Mine capital and operating costs are based on the mine plans and current operating experience.

- The Eagle East capital and operating costs are based upon feasibility level studies coupled with the mine operating experience.

- RPA considers the Eagle and Eagle East estimates to be appropriate.

- The capital cost estimate for Eagle East is US$102 million for preproduction work plus US$27.6 million in sustaining capital.

- The LOM operating cost for the Eagle East Project is US$135.07 per tonne milled.

- The use of the Eagle East ramp development waste rock for backfilling the Eagle Mine secondary stopes can aid in reducing operating costs.

ECONOMICS

- Robust economics were demonstrated based upon the development of Eagle East and processing by comingling with the Eagle ore using the current infrastructure.

RECOMMENDATIONS

RPA makes the following recommendations:

MINERAL RESOURCE ESTIMATION

- Continue exploration drilling to find extensions of the Eagle East mineralization.

- Continue to explore for other deep targets.

MINERAL RESERVE ESTIMATION AND MINING

- Continue the reconciliation of mill production back to the Mineral Reserve estimate.

- Continue the analysis of the cavity monitor surveys (CMS) and use the analysis of that data for future Mineral Reserve estimate updates. RPA recommends that the analysis include a breakdown of the overbreak and underbreak to assist in optimization of the mining process. This is now more important as the mining of secondary stopes has commenced and the backfill dilution can be assessed.

- Confirm mine design and permitting of the upper portion of the Eagle orebody in the area of the Crown Pillar.

- Monitor the development advance on the Eagle East decline on a daily basis and act quickly to mitigate any matters that slow the rate of advance of the decline.

- Complete the numerical rock stress modelling to assess the impact of development and stoping on the rock stresses for Eagle East.

- Continue geotechnical work including:
    - Ongoing mapping of the advancing face to provide feedback to the ground support design.
    - Investigation of switching to grouted rebar as the primary ground support.
    - Development of an action/response plan for developing through the deformation zone.
    - Additional in-situ stress measurements at greater depths to further validate the vertical magnitudes.
    - Additional numerical modelling of various stope extraction sequences to optimize the mine design and extraction sequence.

- Use the East Eagle flow rate predictions of 216 L/min peak, 125 L/min end of mining for the base case design for underground pumping requirements.

- Continue to improve the hydrological database by updating the database through data collection as development continues.

- In parallel with the development and construction activities, carry out ongoing design optimization including:
    - Stope design optimization.
    - Mining method review.
    - Stope sequence optimisation, including numerical stress modelling.
    - Definition diamond drilling scheduling.
    - Cemented rock fill (CRF) retarders to allow transportation to Eagle East.
    - Salt effect on CRF.
    - Ventilation model refinements, updates, and verification.
    - Truck studies and optimization.

PROCESS

- Optimize the combined Eagle/Eagle East production schedule to ensure plant feed grades remain similar. Blending of the high grade Eagle East ore with the lower grade Eagle ore is recommended, however, should feed grades should substantially increase, further testwork and engineering would need to be undertaken to better estimate the cost of plant modifications.

- Conduct routine metallurgical tests to improve the accuracy of the calculations used to estimate the recovery of all metals. Assays for gold, cobalt, platinum, and palladium should be collected during operation.

- Undertake metallurgical analysis and testing to better understand silver deportment and potential recovery from ore.

- The relationships between head grade and recovery for nickel and copper for the Eagle East mineralization appear to have been updated in 2017 based on metallurgical evaluations during the FS. Therefore, it is recommended that the application of 2016 grade-recovery relationships established for Eagle ores be reviewed and similarly updated.

INFRASTRUCTURE

- Implement the revised tailings deposition method to increase the utilization of the available volume in the HTDF.

- Monitor the tailings deposition results with biannual or annual bathymetric surveys to assess the deposition and the capacity of the HTDF.

- Use the Monte Carlo simulation for the range of possible daily dissolved loading for the purposes of planning upgrades to the WTP.

- Consider the impact of the higher TDS on the WTP operation in the closure phase.

ENVIRONMENTAL CONSIDERATIONS

- Update specific considerations in the existing Environmental Management System to reflect appropriate changes due to the addition of the Eagle East Project.

- Complete engineering studies in a reasonable time frame to support the required changes in permitting.

- Conduct water sampling during development advance to calibrate the TDS increase with depth, along with water quantity measurements to further calibrate the groundwater model.

- Investigate the limitations regarding the type of flocculent that can be used, with respect to treatment of the discharge water.

ECONOMICS

- Prepare a new bottom up capital cost estimate in late 2017.

ECONOMIC ANALYSIS

EAGLE MINE

Under NI 43-101 rules, producing issuers may exclude the information required in Section 22 – Economic Analysis on properties currently in production, unless the Technical Report includes a material expansion of current production. RPA notes that LMC is a producing issuer, the Eagle Mine is currently in production, and a material expansion is not being planned. RPA has performed an economic analysis of the mine using the estimates presented in this report and confirms that the outcome is a positive cash flow that supports the statement of Mineral Reserve estimates.

EAGLE EAST PROJECT

The economic analysis of the Eagle East Project prepared by LMC and reviewed by RPA is presented in support of the declaration of the Eagle East Mineral Reserve estimate.

The FS and Eagle East development and production estimates are based on the assumption that the development will be concurrent with continued production from the Eagle Mine as presented in the LOM set out in this report.

An incremental cash flow projection has been generated from the Eagle East LOM production schedule and capital and operating cost estimates. A summary of the key criteria is provided below.

All costs are in US dollars (US$ or $).

REVENUE

- 1.5 million tonnes incremental of Eagle East feed comingled with Eagle material.
- Incremental LOM head grades: 3.7% Ni, 3.0% Cu plus cobalt and platinum group metals (PGM).
- Eagle East Project recovery averaging 84.7% for nickel and 97.5% for copper.
- Transportation and refining as per existing agreements.
- Metal prices of $7.50/lb Ni in 2020 and $8.00/lb Ni thereafter and $3.00/lb Cu.
- Revenue is recognized at the time of production.
- Eagle East attributable production: 47,100 t Ni and 46,000 t Cu plus minor cobalt and precious metals.

COSTS

- Pre-production period: 3.5 years.
- Eagle East total capital of $129.6 million, including pre-production capital of $102.0 million, sustaining capital of $27.6 million. Additional closure costs of $5.4 million are forecast for Eagle East.
- Average Eagle East operating cost is $135.07 per tonne milled.

TAXATION AND ROYALTIES

RPA has relied upon LMC for the calculation of royalties and taxes including:

- Various Net Smelter Return (NSR) royalty rates to private landowners based upon production.
- Severance tax of 2.75%.
- A regular income tax rate of 35% and an alternative minimum tax rate of 20%.
- Tax pools from the existing mine.

CASH FLOW ANALYSIS

The Eagle East Project has an incremental undiscounted after-tax cash flow of $337 million and simple payback occurs approximately 1.5 years after the start of production from Eagle East. The incremental cash cost per pound of nickel is $3.68 less $3.87 per pound of nickel in by-product credits for copper, cobalt and PGMs, giving an incremental C1 cost per pound of nickel of ($0.19).

The average cash cost per pound of nickel for the combined Eagle Mine and Eagle East Project for the period 2020 to 2023 is $4.39 less $3.90 per pound of nickel in by-product credits for copper, cobalt and PGMs, giving an incremental C1 cost per pound of nickel of $0.49.

The incremental after-tax Net Present Value (NPV) at an 8% discount rate is $205 million, and the after-tax Internal Rate of Return (IRR) is 47%.

The Eagle East incremental cash flow projection is shown in Table 1-3.

TABLE 1-3 EAGLE EAST INCREMENTAL CASH FLOW SUMMARY

Eagle Mine

Date:	UNITS	TOTAL	2017 Year 1	2018 Year 2	2019 Year 3	2020 Year 4	2021 Year 5	2022 Year 6	2023 Year 7	2024 - 44
MINING										
Underground										
Operating Days	days	700				0	191	350	187	
Tonnes milled per day	tonnes / day	1,615				23	10	2,110	2,100	
Production	'000 tonnes	1,544				8	405	739	392	
Ni Grade	%	3.7%				52.6%	3.6%	3.2%	3.6%	
Cu Grade	%	3.1%				39.2%	3.1%	2.8%	2.8%	
Waste	'000 tonnes	1,008	224	244	227	141	99	64	10	
PROCESSING										
Mill Feed	'000 tonnes	1,544	-	-	-	8	405	739	392	
Ni Grade	%	3.7%	0.0%	0.0%	0.0%	52.6%	3.6%	3.2%	3.6%	
Cu Grade	%	3.0%	0.0%	0.0%	0.0%	39.2%	3.1%	2.8%	2.8%	
Contained Ni	tonnes	56,784	-	-	-	4,265	14,708	23,547	14,264	
Contained Cu	tonnes	47,233	-	-	-	3,177	12,627	20,417	11,012	
Production										
Ni	tonnes	48,117	-			3,726	12,445	19,833	12,113	
Cu	tonnes	46,030	-			3,134	12,306	19,870	10,720	
Recovery										
Ni	%	84.7%	0.0%	0.0%	0.0%	87.4%	84.6%	84.2%	84.9%	
Cu	%	97.5%	0.0%	0.0%	0.0%	98.6%	97.5%	97.3%	97.4%	
INCREMENTAL CASH FLOW										
Net Revenue	US$ M	$734	$0	$0	($0)	$54	$194	$307	$180	
Operating Costs	US$ M	$209	$0	$0	$0	$5	$63	$94	$46	
Capital Costs (incl. Closure)	US$ M	$135	$39	$32	$31	$12	($3)	$1	$8	$15
Pre-tax Cash Flow	US$ M	$390	($39)	($33)	($31)	$37	$133	$212	$126	($15)
Taxes	US$ M	$53	($0)	$0	($0)	($0)	$0	$29	$25	$0
PROJECT ECONOMICS										
Pre-Tax IRR	%	51%								
Pre-tax NPV 5%	US$ M	$287								
Pre-tax NPV 8%	US$ M	$238								
Pre-tax NPV 10%	US$ M	$211								
After Tax IRR	%	47%								
After tax NPV 5%	US$ M	$247								
After tax NPV 8%	US$ M	$205								
After tax NPV 10%	US$ M	$181								
COST PER POUND										
Cost/lb Ni	US$/lb Ni	$3.68								
Credits	US$/lb Ni	($3.87)								
C1 cost per pound	US$/lb Ni	($0.19)								

Note. This table is an incremental calculation. The nickel and copper grades in year 4 are calculated arithmetically as the difference between the estimated grades and feed tonnages in two plans and do not represent actual feed grades for year 4.

SENSITIVITY ANALYSIS

After-tax sensitivity analyses for the incremental cash flow were prepared considering changes in the head grade, metallurgical recovery, metal price, operating costs, and capital costs. The Eagle East Project cash flow is most sensitive to changes in metal price. The sensitivities are shown in Table 1-4 and Figures 1-1 and 1-2.

TABLE 1-4 INCREMENTAL AFTER-TAX SENSITIVITY ANALYSIS
Eagle Mine

Head Grade Factor	NPV at 8% ($ M)	IRR (%)
80%	90	30.2
90%	147	39.6
100%	**205**	**47.4**
110%	262	54.1
120%	320	60.0

Recovery Factor	NPV at 8% ($ M)	IRR (%)
80.0%	90	30.2
90.0%	147	39.6
100.0%	**205**	**47.4**
102.5%	219	49.2
105.0%	234	50.9

Metal Price Factor1	NPV at 8% ($ M)	IRR (%)
80%	87	29.3
90%	146	39.2
100%	**205**	**47.4**
110%	264	54.5
120%	323	60.8

Operating Cost Factor	NPV at 8% ($ M)	IRR (%)
80%	233	50.8
90%	219	49.2
100%	**205**	**47.4**
110%	191	45.7
120%	177	43.8

Capital Cost Factor	NPV at 8% ($ M)	IRR (%)
80%	227	57.0
90%	216	51.9
100%	**205**	**47.4**
110%	194	43.5
120%	183	40.0

FIGURE 1-1 AFTER-TAX 8% NPV SENSITIVITY

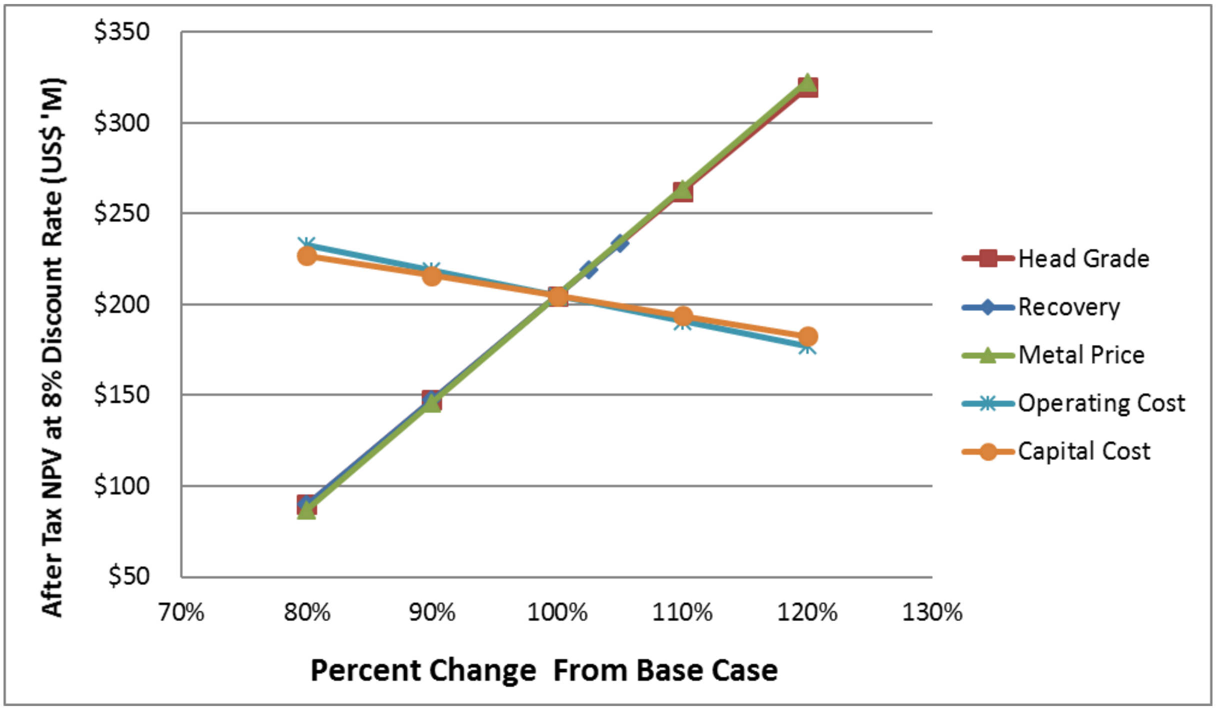
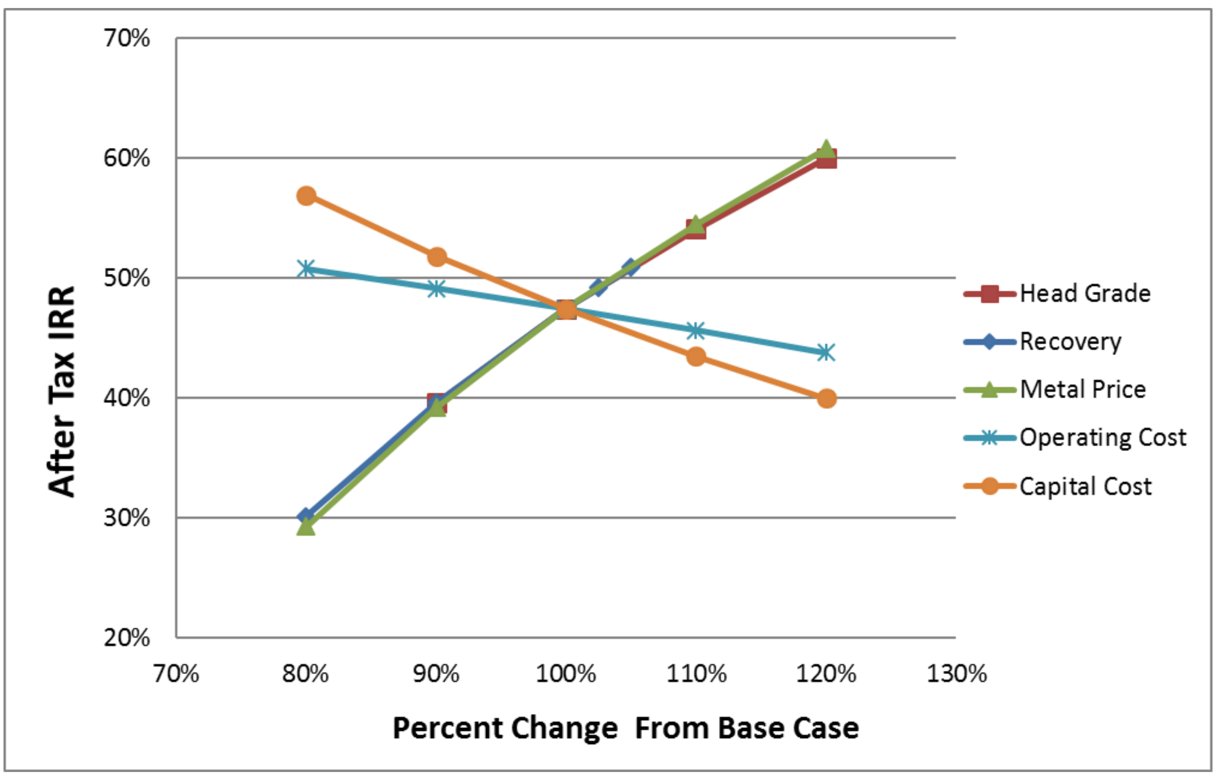


FIGURE 1-2 AFTER-TAX IRR SENSITIVITY



TECHNICAL SUMMARY

PROPERTY DESCRIPTION AND LOCATION

The Eagle Mine property, measuring approximately 0.63 km^2, is located in the Upper Peninsula of Michigan, USA, at geographic co-ordinates 46° 45' north latitude by 87° 54' west longitude (UTM Zone 16N coordinates 5177557 m N, 432639 m E), in Michigamme Township, Marquette County. The Humboldt Mill property, measuring approximately 1.42 km^2, is located 61 km west of Marquette and approximately 105 km by road from the mine site. The centre point of the Humboldt Mill area (including all ownership of land) is 46º 29' north latitude, 87º 54' west longitude (UTM Zone 16N Zone coordinates 5148824 m N, 430843 m E). Eagle has a geological field office located in Negaunee, 15 km west of Marquette as well as an information center in Marquette.

The Eagle Mine, including Eagle East, is 100% owned and operated by Eagle Mine LLC, an indirect wholly owned subsidiary of LMC.

LAND TENURE

Eagle Mine LLC holds surface and mineral rights over a wide district encompassing portions of Sections 4-9 and 16-18, Township 50N, Range 28W, and Sections 1-5 and 8-17, Township 50N, Range 29W. The overall footprint of land controlled by Eagle Mine LLC comprises leases, agreements, or ownership totalling approximately 4,565 ha of mineral rights and approximately 3,080 ha of surface rights.

While the surface of the Eagle Mine is on Eagle Mine LLC property or leased from the State of Michigan, the minerals comprising the Eagle Mine are either owned by Eagle Mine LLC or leased from private owners or the State of Michigan. The state leases expire in July 2022, however, they can be extended if economic production continues according to the terms of the leases after that date. The private leases have various expiry dates that are extendable by continued payments or production. An annual lease payment is currently made, in addition to a royalty payment based on a percentage of the NSR, to the owners upon production. Any production at Eagle East would fall within the same range of royalty rates.

Lease payments would remain for the duration of mining at Eagle East, although royalty payments related to Eagle would cease when production from Eagle ends.

HISTORY

The first Eagle Mine leases were held by Kennecott Exploration Company (KEX) which were later assigned to Kennecott Eagle Minerals Company (KEMC). On October 4, 2012, the company's legal name was changed from KEMC to Rio Tinto Eagle Mine (RTEM). On July 17, 2013, LMC, through its indirect U.S. subsidiary Lundin Mining Delaware Ltd., acquired all of the membership interests of RTEM. Subsequently, on July 17, 2013, the name of RTEM was changed to Eagle Mine LLC.

KEX started working in the region in 1991. Nickel exploration in the vicinity of Eagle was started in 1995, and, in 2002, economic grade mineralization was intersected by drilling. By the end of 2003, two separate high grade sulphide zones were identified at Eagle. The lower zone was defined by 15 drill intercepts and the upper zone was defined by six drill intercepts. This formed the basis of an order of magnitude study that was completed in early 2004.

Following the order of magnitude study, an extensive resource and geotechnical drill program was completed in 2004 supplying the data to connect the former upper and lower zones and better establish the geometries of the massive sulphide, semi-massive sulphide, and host intrusive bodies. The result of this work was a pre-feasibility study.

Construction of the Eagle Mine commenced in April 2010 and underground development began in September 2011. The Humboldt Mill was refurbished and the Eagle Mine achieved commercial production in November 2014. A total of approximately 55,000 t of nickel and 52,000 t of copper have been produced since the start of the operation. The nickel and copper concentrates are sold under long term contracts directly to smelters or to traders in North America, Europe, and Asia.

In July 2015, the discovery of high-grade Ni-Cu mineralization at Eagle East was announced by LMC. In June 2016, the Mineral Resource estimate for Eagle East was disclosed together with a positive Preliminary Economic Assessment (PEA) supporting further work on Eagle East.

GEOLOGY AND MINERALIZATION

Eagle and Eagle East are part of the same ultramafic intrusive system and both host high grade primary magmatic Ni/Cu sulphide mineralization. These intrusions are related to the feeder system for the Keweenawan flood basalts, a Large Igneous Provence (LIP) resulting from mantle-tapping extension during the Midcontinent Rift. Mineralization styles are similar at Eagle and Eagle East, consisting of intrusions of mineralized peridotite with concentrations of sulphide mineralization mostly within the intrusion resulting in the accumulation of semi-massive sulphide, and a central core zone of massive sulphide.

The Eagle and Eagle East peridotite intrusives are hosted in Paleoproterozoic meta-sediments of the Baraga Basin which rest unconformably on the Archean basement rocks. These sediments are assigned to the Upper Fossum Creek Unit and are mainly composed of an upper siltstone sequence with fine grained turbiditic greywacke sandstone interbeds which comprises the main sedimentary lithology found in Eagle Mine. The principal host rocks are near-vertical dykes of pyroxene to peridotite composition, which strike in an east-west direction.

Eagle East is located deeper than the Eagle deposit approximately 840 m to 990 m below surface. The host sediments encountered in the surroundings of the Eagle East mineralized zone are mainly siltstones with low proportions of sandstone interbeds. Bedding and foliation are the main structural features present in the sediments and represent the weakest planar orientation found. All these features are seen both in the Eagle Mine and Eagle East drill core.

Two types of potentially economic mineralization are found in the Eagle and Eagle East deposits: semi-massive sulphides and massive sulphides. The sulphide bodies are tabular, pipe-like, or irregular in shape and, although complexly interrelated, are broadly concordant with the host ultramafics. Contacts between the massive and semi-massive sulphides are relatively sharp. Massive sulphides are observed to extend outward of the host dykes, into the sedimentary country rock where they form flat-lying sills.

Most of the nickel is in pentlandite with a small portion in millerite group minerals and secondary violarite. The majority of pentlandite occurs in granular form with less than 1% to 2% as flame or exsolution lamellae. Copper is primarily in chalcopyrite with lesser secondary cubanite. The distribution of PGMs, gold, and cobalt is still poorly understood, however, assay and metallurgical test correlations indicate that the cobalt is associated with the pyrrhotite/pentlandite. PGMs and gold appear to be related to late stage veining/intrusion and tend to be most abundant in areas with chalcopyrite enrichment. With the exception of cobalt, Eagle East is significantly higher in grade for both precious and base metals than Eagle. Average nickel and copper grades are in the order of 60% higher at Eagle East compared to Eagle. Gold averages approximately 87% higher, while platinum and palladium are well over double.

EXPLORATION STATUS

Exploration activities at Eagle and Eagle East have included dyke lithogeochemistry, sulphur isotype studies, and geophysics (airborne, surface borehole resistivity and gravity, and 3D seismic survey). The main and most successful exploration tool has been diamond drilling in combination with a very robust and predictive deposit model.

Limited Eagle East Mineral Resource drilling from surface will continue, and the potential exists to intersect additional massive sulphide mineralization in the form of sills or at the base of the eastern portion of the conduit zone. Drilling has also identified another deeper seated target down dip in a vertical gabbro complex below basements rocks. Further drilling is proposed in these areas.

MINERAL RESOURCES

LMC personnel updated the Mineral Resource estimates for the Eagle deposit, effective December 31, 2016. The estimate is based on the most current block model, dated June 30, 2015 and depleted by subtracting the mined volumes as of year-end 2016. Eagle East was updated as of August 31, 2016 and represents a basis for the FS. RPA audited the June 30, 2016 estimates for both Eagle and Eagle East and the results were documented in the Technical Report dated August 12, 2016. For this Technical Report, RPA has reviewed the current estimate for Eagle East. Estimation parameters for the current Eagle East model are very similar to the previous model audited by RPA. The principal changes are due to additional drilling carried out for definition purposes.

The estimate for Eagle was carried out using a block model constrained by 3D wireframe models of the mineralized bodies as well as the host peridotite. Grades for Ni, Cu, Co, S, Ag, Au, Pd, Pt, Fe_2O_3, MgO, and SG were interpolated into the blocks using Ordinary Kriging (OK). The block model consisted of an array of blocks with parent size of 5 m by 5 m by 5 m, sub-blocked down to a minimum size of 1 m by 1 m by 1 m. The model is oriented parallel to the property survey grid (i.e. no rotation). The wireframe models and block were constructed in Maptek Vulcan by mine personnel.

The estimate for Eagle East was carried out using a block model constrained by 3D wireframe models of the mineralized bodies (MSU and SMSU) as well as the host peridotite (PER). The wireframes were constructed from a series of cross-sectional interpretations generated at a maximum spacing of 25 m. Grades for Ni, Cu, Co, S, MgO, Fe_2O_3, Ag, Au, Pd, Pt, and SG were interpolated into the blocks using Inverse Distance Squared (ID^2) weighting. The block model consisted of an array of blocks measuring 5 m by 5 m by 5 m, oriented parallel to the property survey grid (i.e., no rotation). The wireframe models were constructed in Vulcan by mine exploration personnel. The block model was generated in Datamine by Graham Greenway, of the United Kingdom office of LMC.

MINERAL RESERVES

The Mineral Reserves were estimated based upon stope wireframe shapes applied to the depleted Mineral Resource block model using Deswik mine design software. Planned dilution, unplanned dilution, backfill dilution, and production losses have been applied as appropriate, using longhole open stoping as the mining method with cemented and uncemented rock backfill.

RPA considers that the Mineral Reserves are classified and reported in accordance with guidelines and definitions of Proven and Probable Mineral Reserves under CIM definitions.

RPA is not aware of any mining, metallurgical, infrastructure, permitting, or other relevant factors that could materially affect the Mineral Reserve estimate.

RPA considers the dilution and loss factors appropriate for the mining methods and the geometry and geotechnical characteristics of the Eagle and Eagle East orebodies.

MINING METHOD

Mine production is made up of a combination of ore development through sill drifts or cuts and stope production. The mining method selected for Eagle and Eagle East is the Transverse Sub-Level Open Stoping (SLOS) method using a combination of CRF and non-consolidated waste rock backfill. This method provides the cost advantages of bulk mining, while maintaining a degree of selectivity and operational flexibility. The majority of the stopes will be mined as transverse bench and fill stopes, with some narrower zones of the orebody mined as longitudinal retreat stopes.

The Eagle orebody is accessed by the sub-level footwall drives driven off the main decline at 20 m to 25 m vertical intervals. Stopes are designed at 10 m wide and approximately 25 m high (corresponding to the top and bottom sub-levels). Stope lengths will vary depending on the width of the orebody, however, due to geotechnical constraints, individual stope panels are limited to a maximum length of 20 m. The same general dimensions will be used for the Eagle East development.

Stopes are extracted in a primary/secondary sequence. Primary stopes are mined initially for several levels after which the secondary stopes are mined. The primary stopes require CRF to be placed in them once the ore is removed, to allow for mining of the adjacent secondary stope. The secondary stopes may be filled with unconsolidated rock fill, with the exception of stopes on the upper two levels of the mine which are to be filled with CRF due to permit requirement (area of crown pillar).

Geotechnical assessments have been completed to support the Eagle East design and the plan would be to mine the Eagle East in a series of primary and secondary stopes in a manner similar to the current mining in the Eagle deposit.

Eagle East is planned to be accessed by a decline which will switch back beneath the Eagle Mine, so that underground ventilation raises can be developed as the ramp is driven to provide a second access and better ventilation. Two declines will be driven to a location above the Eagle East followed by a switchback decline to access the orebody. This configuration provides an exploration platform above the Eagle East deposit.

Eagle East would use much of the current mine and surface infrastructure. The Eagle East Project is expected to increase total power usage at the site by 3.2 MW (due to additional ventilation and dewatering demands). Additional haul trucks, load-haul-dump units (LHD), and jumbos will be added to the current fleet to service the combined Eagle and Eagle East deposits.

MINERAL PROCESSING

The Humboldt Mill is a former iron ore processing plant that was converted for processing Eagle ore. The ore is transferred from a covered coarse ore storage facility, processed using a conventional three-stage crushing and single-stage ball milling process, and processed through bulk flotation and copper-nickel separation stages to produce separate nickel and copper concentrates. Metallurgical recoveries of nickel and copper average 84% and 97% respectively for Eagle Mine ore. Tailings from the plant are deposited sub-aqueously in the adjacent former Humboldt iron ore open pit, now referred to as the HTDF.

Material from Eagle East would be comingled with Eagle ore and hauled to the Humboldt Mill. Metallurgical testing has indicated that the Eagle East mineralization will respond to treatment in a manner similar to the Eagle ore.

Nickel and copper concentrates are stored in a covered concentrate building on site prior to being transported via rail car direct to smelter facilities within North America or to ports for shipment overseas.

PROJECT INFRASTRUCTURE

There is adequate infrastructure in place to support the current Eagle operations. The area is served by an extensive network of paved roads, rail service, excellent telecommunications facilities, national grid electricity, and an ample supply of water.

There is no additional infrastructure required for the Eagle East deposit. The Eagle Mine infrastructure will be used for the Eagle East Project.

The Humboldt Mill will be used to process Eagle East material and it is anticipated that the existing unit operations of the process plant would remain largely unchanged.

MARKET STUDIES

All Eagle concentrates, both nickel and copper, are sold under long term contracts directly to smelters or to traders in North America, Europe, and Asia. Both the nickel and the copper concentrates are of clean quality with low levels of impurities and good by-product credits.

ENVIRONMENTAL, PERMITTING, AND SOCIAL CONSIDERATIONS

Environmental studies and monitoring are ongoing and conducted as required to support the operation and any projects.

Eagle's sites operate under a number of local, state, and federal permits. All permits are in place for the operation and Eagle has maintained full compliance with the corresponding requirements.

An amendment to the permit for the HTDF will be required to incorporate the total Eagle Mine tailings from the current Mineral Reserves.

The Eagle Mine operates under the LMC corporate Health, Safety and Environmental (HSE) management system and corresponding health, safety and environmental standards. Site conformance with HSE standards is audited annually utilizing an independent third party. RPA is not aware of any major non-conformances.

The Eagle operation undertakes regular environmental monitoring, including:

- Air quality monitoring.
- Groundwater quality monitoring.
- Surface water quality monitoring.
- Biological monitoring.
- HTDF geochemistry monitoring.
- Water quality monitoring at contact water basins (CWB).
- Sediment accumulation and measurement at both the contact and non-contact water basins.
- Water quality monitoring at the Temporary Development Rock Storage Area (TDRSA) sump.
- Monitoring a leak detection system beneath the TDRSA.
- Monitoring the head levels on the TDRSA liner.
- HTDF Bathymetric surveys.
- HTDF geochemistry monitoring.
- Inspection of berms and embankments.
- Water treatment plant effluent sampling.

Initial development of the Eagle East decline commenced in 2016 without modification to the Mining Permit as the existing surface infrastructure will be utilized and is protective of the environment. If the decision is made to mine Eagle East, an application for modification to the mining permit will be submitted for approval. The Eagle Mine may utilize the current air permit to develop the decline, as emissions are predicted to remain within the permit limitations.

If the decision is made to mine Eagle East, the operation would need to evaluate the following permits to determine the changes required:

- **Mine Permit/Mine Site.** Required change.
  An amendment will be required to the mining permit which includes an evaluation of and appropriate updates to the EIA. These updates will address water use, discharge, air emissions, and other potential environmental impacts.

- **Air Permit/Mine Site**. No change.
  An evaluation of emissions at the mine site, inclusive of Eagle East, determined that they remain within the current air permit constraints, consequently no new permit will be required.

- **Air Permit/Mill Site**. No change.
  Based on the anticipated grades for the Humboldt Mill with Eagle East, the air permit will not require revision.

- **Mine Permit/Mill Site**. Required change.
  The mining permit will need to be modified for the additional placement of tailings. The studies and work required have been initiated.

- **Inland Lakes and Streams Act Permit/Mill Site.** Required change.
  Additional permit for tailings disposal need to be modified for the additional placement of tailings. The studies and work required have been initiated.

LMC, through its subsidiaries, invests in the communities in which it operates by providing social investments and participation in partnerships – business connected programs, and these items are included in the Eagle annual budget.

Eagle Mine LLC is also committed to hiring 75% of its employees locally. Local is defined as the Upper Peninsula of Michigan and the two northernmost Wisconsin counties.

As part of the EIA process, Mine Reclamation Plans were separately produced for Eagle Mine and Humboldt Mill sites. The total closure cost estimate for the mine and the mill is approximately US$50 million, including post closure monitoring.

Reclamation of the Eagle Mine will consist of restoring approximately 0.4 km^2 of surface area and the underground mine workings. It is proposed that the closure/reclamation process for the Eagle Mine will start in 2024. The post closure period will depend entirely on meeting permit requirements for post closure environmental monitoring.

Reclamation of the Humboldt Mill site will consist of decommissioning plant equipment and establishing a property end use that is consistent with local development plans. Closure/reclamation of the mill will start when Eagle Mine ore processing is complete. The closure period is expected to last for four to five years, while the post closure monitoring period is anticipated to last for a further 20 years.

EAGLE LIFE OF MINE PLAN

The Eagle LOM plan is a combination of the Eagle and Eagle East production. The two zones are mined simultaneously commencing in 2020. The LOM plan is based upon the production of 2,000 tpd of ore. The Eagle East production commences at an average of approximately 600 tpd in 2020 and increases to 1,670 tpd in 2022. Over the same period, the Eagle production decreases to maintain the total mine production of 2,000 tpd of ore. The LOM plans with the Eagle East include revisions to the development and production schedules at Eagle as the final Eagle mining is spread over an additional two years.

The Eagle East Project cash flow reflects the mining and processing of an incremental 1.5 million tonnes of mineralized material grading 3.7% Ni and 3.0% Cu. After processing, the estimated recoverable metal is 47,100 tonnes of nickel and 46,000 tonnes of copper in concentrates. The Eagle East Project is scheduled to complement the Eagle production and the operation of the two deposits will maintain a stable production profile for an additional two years compared to the previous LOM plan.

CAPITAL AND OPERATING COST ESTIMATES

The capital cost estimate for the Eagle Mine and the Eagle East Project totals $161 million including $102.0 million, pre-production, for the Eagle East Project, $31.4 million for Eagle Mine sustaining capital, and $27.6 million for Eagle East sustaining capital.

The Eagle East Project capital estimate is summarized in Table 1-5. The capital cost estimate is current as of late 2016 and is in constant Q4 2016 dollars. A 9.4% contingency has been included in the Eagle East capital estimates.

TABLE 1-5 EAGLE EAST CAPITAL COSTS
Eagle Mine

Mine Development		2017	2018	2019	2020	2021	2022	Total
Ramp	M$	12.4	15.5	11.9	2.5	-	-	**42.3**
Level	M$	-	-	1.2	5.8	7.6	-	**14.5**
Raises	M$	2.1	-	2.4	0.6	0.1	-	**5.2**
Other	M$	1.2	1.1	1.4	0.5	-	-	**4.1**
Indirects	M$	6.2	6.5	4.6	1.2	-	-	**18.5**
Mobile Equipment	M$	7.4	1.6	2.8	3.0	0.2	0.6	**15.6**
Dewatering	M$	0.7	0.6	0.5	0.3	-	-	**2.1**
Ventilation	M$	1.0	0.1	0.0	0.1	0.0	-	**1.2**
UG Electrical	M$	2.5	0.9	1.0	0.7	0.1	-	**5.2**
Communications	M$	0.2	0.1	0.2	0.2	-	-	**0.7**
UG Infrastructure	M$	-	-	0.1	0.1	-	-	**0.3**
H&S	M$	0.3	0.1	0.3	0.4	0.1	-	**1.2**
Surface Infrastructure	M$	-	1.1	-	-	-	-	**1.1**
Electrical Power	M$	0.9	0.9	1.3	0.8	0.4	0.0	**4.3**
Owners Costs	M$	0.5	0.5	0.5	0.5	0.4	-	**2.5**
Contingency	M$	3.5	3.2	2.9	1.2	0.2	0.0	**11.1**
Total Capex	**k$**	**39.0**	**32.2**	**30.9**	**18.1**	**8.9**	**0.7**	**129.6**

The Eagle Mine operating costs for 2015 and 2016 were $138.25/t and $115.97/t, respectively. The operating costs for those periods have been lower than the budget. The LOM operating cost for Eagle and Eagle East is estimated to be $131.32/t milled and the Eagle East operating cost per tonne is estimated to be $135.07.

2 INTRODUCTION

Roscoe Postle Associates Inc. (RPA) was retained by Lundin Mining Corporation (LMC) to complete a review of a Mineral Resource estimate and internal Feasibility Study (FS) by LMC on the Eagle East Project (Eagle East) and to prepare an independent Technical Report on the Eagle Mine (Eagle) property, located in the Upper Peninsula of Michigan, USA. The Eagle Mine, including Eagle East, is 100% owned and operated by Eagle Mine LLC, an indirect wholly owned subsidiary of LMC. The purpose of this report is to support the public disclosure of the updated Mineral Resource and Mineral Reserve estimates for the Eagle Mine. This report provides the initial public disclosure of the Eagle East Mineral Reserve estimates. This Technical Report conforms to NI 43-101 Standards of Disclosure for Mineral Projects.

LMC is a diversified Canadian base metals mining company with operations in Chile, the USA, Portugal, and Sweden, primarily producing copper, nickel and zinc. In addition, LMC holds a 24% equity stake in the Freeport Cobalt Oy business, which includes a cobalt refinery located in Finland. LMC's principal products and sources of sales are copper, nickel, zinc and lead concentrates from its Candelaria, Eagle, Neves-Corvo, and Zinkgruvan mines.

The Eagle Mine is an operating 2,000 tonnes per day (tpd) underground nickel copper mine. Ore from the Eagle Mine is trucked approximately 105 km to the Humboldt Mill, a former iron ore processing facility which was refurbished by LMC. The Eagle deposit is covered by both state and private mineral leases with the Mineral Resource estimates split approximately equally between them. The Eagle Mine has obligations under state and private royalty agreements ranging from 1.0% to 7.0%.

The Eagle deposit was first drilled in 2001 by Rio Tinto. Following further drilling an initial Mineral Resource was estimated in early 2004. Construction of the Eagle Mine site began in 2010. LMC acquired the project in 2013 and commercial production of nickel and copper concentrates was achieved in November of 2014.

During 2015, exploration drilling discovered high grade massive and semi-massive nickel-copper sulphide mineralization approximately 600 m beneath and two kilometres east of the Eagle deposit. Eagle East is a separate intrusion from the Eagle deposit. LMC and Eagle

Mine personnel prepared an Inferred Mineral Resource estimate and an internal Preliminary Economic Assessment (PEA) for the Eagle East deposit and, following additional drilling and studies, the FS described in this report. The Eagle East FS is based upon the assumption that current assets of the Eagle Mine such as the existing decline, ventilation, and pumping systems will be used for mining Eagle East.

The internal FS by LMC is considered by RPA to meet the requirements of Canadian NI 43-101 regulations related to the declaration of Mineral Reserves. The economic analysis related to Eagle East does not include Inferred Mineral Resource estimates.

SOURCES OF INFORMATION

A site visit was carried out by David W. Rennie, P.Eng., RPA Associate Principal Geologist, and Normand L. Lecuyer, P.Eng., RPA Principal Mining Engineer, on June 7 and 8, 2016 to support the August 12, 2016 Technical Report. RPA did not visit the site for this technical report.

Discussions were held with personnel from LMC and Eagle Mine Staff:

- Mr. Stephen Gatley, Vice President, Technical Services, LMC.
- Mr. Graham Greenway, Group Resource Geologist, LMC.
- Dr. David Allison, Group Mining Engineer, LMC.
- Ms. Mariana Magalhaes, Mining Analyst, LMC.
- Mr. Peter Richardson, General Manager, Eagle Mine LLC.
- Mr. John McGonigle, Chief Financial Officer, Eagle Mine LLC.
- Mr. John Mason, Mine Superintendent, Eagle Mine LLC.
- Mr. Darby Stacey, Mill Site Manager, Eagle Mine LLC.
- Mr. Bob Mahin, Exploration Manager, Eagle Mine LLC.
- Mr. Steve Beach, Principal Geologist, Eagle Mine LLC.
- Ms. Joanne Scott, Geology Database Manager, Eagle Mine LLC.
- Ms. Margaret Longo, Senior Mine Geologist, Eagle Mine LLC.
- Ms. Mónica Barrero Bouza, Senior Geologist, LMC.
- Mr. Colin Connors, Eagle East Project Mining Lead, Eagle Mine LLC.
- Mr. Josh Lam, Senior Mining Engineer, Eagle Mine LLC.
- Mr. Mathew Arnold, Mining Engineer, Eagle Mine LLC.
- Mr. Tucker Jensen, Mining Engineer, Eagle Mine LLC.

- Mr. Chris Mumford, Graduate Mining Engineer, LMC
- Ms. Kristen Mariuzza, H.S.E. & Permitting Manager, Eagle Mine LLC.
- Ms. Jennifer Nutini, Environmental Engineer, Eagle Mine LLC.

Graham G. Clow, P.Eng., RPA Chairman and Principal Mining Engineer, has overall responsibility for this report. Mr. Rennie reviewed the geology, sampling, assaying, and resource estimate work and is responsible for Sections 2 to 5, 7 to 12, 14, and 23. Mr. Lecuyer reviewed the mining, reserve estimate, and economics and is responsible for Sections 15, 16, 19, 21, and 22. Ms. Scholey reviewed the metallurgical, environmental, and permitting aspects and is responsible for Sections 13, 17, and 20. The authors share responsibility for Sections 1, 6, 18, 24, 25, 26, and 27 of this Technical Report.

The documentation reviewed, and other sources of information, are listed at the end of this report in Section 27 References.

LIST OF ABBREVIATIONS

Units of measurement used in this report conform to the metric system. All currency in this report is US dollars (US$) unless otherwise noted.

a	annum
A	ampere
bbl	barrels
btu	British thermal units
°C	degree Celsius
C$	Canadian dollars
cal	calorie
cfm	cubic feet per minute
cm	centimetre
cm^2	square centimetre
d	day
dia	diameter
dmt	dry metric tonne
dwt	dead-weight ton
°F	degree Fahrenheit
ft	foot
ft^2	square foot
ft^3	cubic foot
ft/s	foot per second
g	gram
G	giga (billion)
Gal	Imperial gallon
g/L	gram per litre
Gpm	Imperial gallons per minute
g/t	gram per tonne
gr/ft^3	grain per cubic foot
gr/m^3	grain per cubic metre
ha	hectare
hp	horsepower
hr	hour
Hz	hertz
in.	inch
in^2	square inch
J	joule
k	kilo (thousand)
kcal	kilocalorie
kg	kilogram
km	kilometre
km^2	square kilometre
km/h	kilometre per hour
kPa	kilopascal
kVA	kilovolt-amperes
kW	kilowatt
kWh	kilowatt-hour
L	litre
lb	pound
L/s	litres per second
m	metre
M	mega (million); molar
m^2	square metre
m^3	cubic metre
µ	micron
MASL	metres above sea level
µg	microgram
m^3/h	cubic metres per hour
mi	mile
min	minute
µm	micrometre
mm	millimetre
mph	miles per hour
MVA	megavolt-amperes
MW	megawatt
MWh	megawatt-hour
oz	Troy ounce (31.1035g)
oz/st, opt	ounce per short ton
ppb	part per billion
ppm	part per million
psia	pound per square inch absolute
psig	pound per square inch gauge
RL	relative elevation
s	second
st	short ton
stpa	short ton per year
stpd	short ton per day
t	metric tonne
tpa	metric tonne per year
tpd	metric tonne per day
US$	United States dollar
USg	United States gallon
USgpm	US gallon per minute
V	volt
W	watt
wmt	wet metric tonne
wt%	weight percent
yd^3	cubic yard
yr	year

3 RELIANCE ON OTHER EXPERTS

This report has been prepared by RPA for LMC. The information, conclusions, opinions, and estimates contained herein are based on:

- Information available to RPA at the time of preparation of this report,
- Assumptions, conditions, and qualifications as set forth in this report, and
- Data, reports, and other information supplied by Eagle Mine LLC, LMC and other third party sources.

For the purpose of this report, RPA has relied on ownership information provided by Eagle Mine LLC and LMC. RPA has not researched property title or mineral rights for the Eagle Mine and expresses no opinion as to the ownership status of the property.

RPA has relied on Eagle Mine LLC and LMC for guidance on applicable taxes, royalties, and other government levies or interests, applicable to revenue or income from the Eagle Mine.

Except for the purposes legislated under provincial securities laws, any use of this report by any third party is at that party's sole risk.

4 PROPERTY DESCRIPTION AND LOCATION

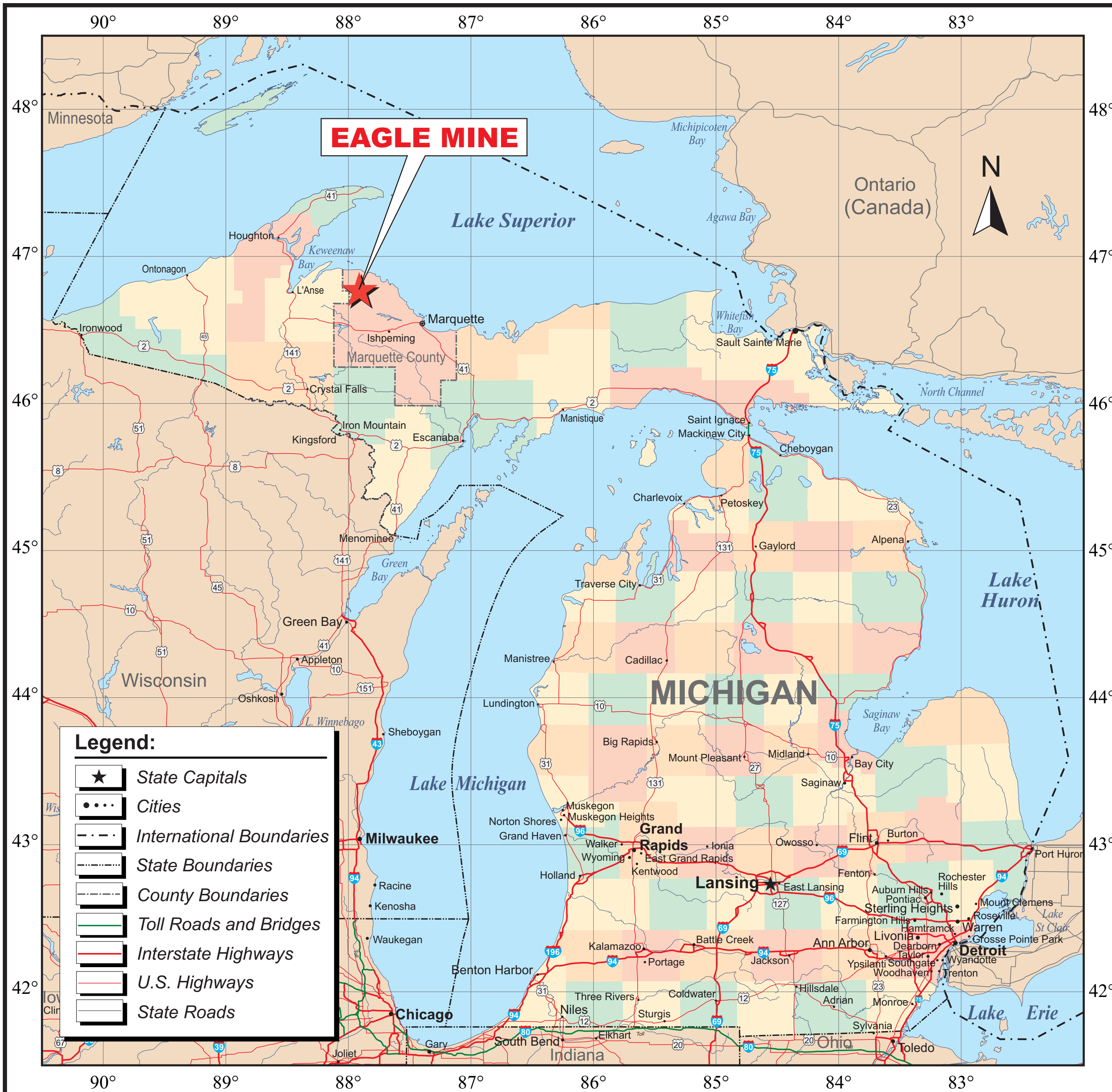
The Eagle Mine property, measuring approximately 0.63 km^2, is located in the Upper Peninsula of Michigan, USA, at geographic co-ordinates 46° 45' north latitude by 87° 54' west longitude (UTM Zone 16N coordinates 5177557 m N, 432639 m E), in Michigamme Township, Marquette County. The Humboldt Mill property, measuring approximately 1.42 km^2, is located 61 km west of Marquette and approximately 105 km by road from the mine site. The centre point of the Humboldt Mill area (including all ownership of land) is 46º 29' north latitude, 87º 54' west longitude (UTM Zone 16N Zone coordinates 5148824 m N, 430843 m E).

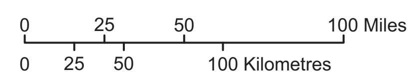
Eagle has a geological field office located in Negaunee, 15 km (9.5 mi) west of Marquette. The property location is shown in Figure 4-1 and the locations within the Upper Peninsula are shown in Figure 4-2.

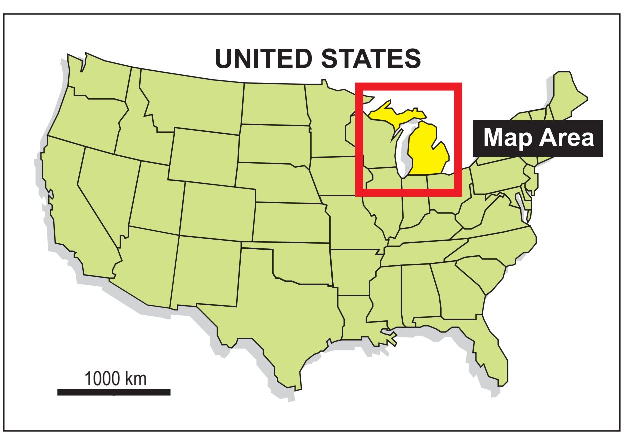
The first Eagle Mine leases were held by Kennecott Exploration Company (KEX) and were later assigned to Kennecott Eagle Minerals Company (KEMC). On October 4, 2012, the company's legal name was changed from KEMC to Rio Tinto Eagle Mine, LLC (RTEM). On July 17, 2013, LMC, through its indirect U.S. subsidiary Lundin Mining Delaware Ltd., acquired all of the membership interests of RTEM. Subsequently, on July 17, 2013, the name of RTEM was changed to Eagle Mine LLC.

MINERAL RIGHTS AND LAND OWNERSHIP

Land ownership in Michigan allows for severed ownership, i.e., the owner of the surface rights may be different than the owner of the minerals beneath that same surface parcel. Where multiple people own minerals, they typically share an undivided interest for the entire parcel versus subsections of the property.







April 2017

Figure 4-1

Lundin Mining Corporation

Eagle Mine

Marquette County, Michigan, U.S.A.

Location Map

Figure 4-2

Lundin Mining Corporation

Eagle Mine

Marquette County, Michigan, U.S.A.

Location of Eagle Mine in Marquette County

April 2017

Source: Lundin Mining Corp., 2016.

Lease payments are required for all parcels impacted by any decline, surface facility, or underground development, unless the parcel is wholly owned by Eagle Mine LLC. Agreements in place with private landowners related to the Eagle Mine and the Eagle East resource do not require an annual lease payment if production has begun on their property and the royalty payment is greater than their annual lease payment. The State of Michigan mineral properties, however, require an annual payment for mineral lease areas not included in a "mining operation area" (in 40 acre increments), i.e. the area without active production.

Surface and mineral rights in Michigan are held in units based on the Public Land Survey System. Townships comprise 6 by 6 arrays of 36 Sections, named according to distance and direction from a Principal Meridian and Baseline. Sections are generally one mile squares, and can be divided into quarters, labelled NE, NW, SE, and SW. Each quarter may also be split into halves or quarters, which are labelled according to the side or corner of the quarter-section they encompass (e.g., NE quarter of the NW quarter).

LAND TENURE

Eagle Mine LLC holds surface and mineral rights over the Eagle Mine, Eagle East, and Humboldt Mill properties via a number of leases and agreements with the State of Michigan and private owners. In addition, Eagle Mine LLC owns some surface and mineral rights through previous purchases via various types of deeds. There are separate agreements in place with the owners of both the surface and mineral rights, as required.

SURFACE AND MINERAL RIGHTS

Eagle Mine LLC holds surface and mineral rights over a wide district encompassing portions of Sections 4-9 and 16-18, Township 50N, Range 28W, and Sections 1-5 and 8-17, Township 50N, Range 29W. The overall footprint of land controlled by Eagle Mine LLC comprises of leases, agreements, or ownership totalling approximately 4,565 ha of mineral rights and approximately 3,080 ha of surface rights.

Land impacted by operations of the Eagle Mine and potential development for Eagle East is listed in Table 4-1 and shown in Figure 4-3. Vertices, in UTM Zone 16N coordinates, are listed in Table 4-2. Figure 4-3 also shows the overall footprint of land controlled by Eagle Mine LLC (both mineral and surface rights).

TABLE 4-1 SURFACE AND MINERAL RIGHTS
Eagle Mine

Block	Description	Depicted Acres/km²	Mineral Owner	Lease Origin Date	Primary Term Expiration	Surface Owner
A	Township 50 North, Range 29 West, W ½ Section 11 (Block A on map)	320/1.29	State of Michigan, leased to Eagle Mine LLC under M-00602	July 8, 1992	July 7, 2022, extendable by production	100% Eagle Mine LLC
B	Township 50 North, Range 29 West, E ½ Section 11 (Block B on map)	320/1.29 (56.25%)	3 Private owners with 56.25% ownership leased to Eagle Mine LLC	November 15, 1995	November 14, 2015, but are extendable by continuation of payments and production	100% Eagle Mine LLC
B	Township 50 North, Range 29 West, E ½ Section 11 (Block B on map)	320/1.29 (25%)	1 Private owner with 25% ownership leased to Eagle Mine LLC	May 15, 2002	May 14, 2037 and extendable to May 14, 2054 by continuing payments	100% Eagle Mine LLC
B	Township 50 North, Range 29 West, E ½ Section 11 (Block B on map)	320/1.29 (18.75%)	18.75% Eagle Mine LLC			100% Eagle Mine LLC
C	Township 50 North, Range 29 West, N ½ of NW ¼ and SW ¼ of NW ¼, Section 12 (Block C on map)	120/0.49	State of Michigan, leased to Eagle Mine LLC under M-00603	July 8, 1992	July 8, 2022, extendable by production	100% State of Michigan (see Table 4-3 below)
D	Township 50 North, Range 29 West, SE ¼ of the NW ¼ and the N ½ of the SW ¼ , Section 12 (Block D on map)	120/0.49	100% ownership via 12 Private owners under lease with Eagle Mine LLC or owned Eagle Mine LLC	Multiple	Multiple - extendable by cross-mining and production from other properties.	100% Eagle Mine LLC
E	Township 50 North, Range 29 West, N ½ of the NE ¼, Section 12 (Block E on map)	80/0.32	State of Michigan, leased to Eagle Mine LLC under M-00603	July 8, 1992	July 7, 2022, extendable by production	100% State of Michigan

Block	Description	Depicted Acres/km^2	Mineral Owner	Lease Origin Date	Primary Term Expiration	Surface Owner
F	Township 50 North, Range 29 West, S ½ of the NE ¼, Section 12 (Block F on map)	80/0.32	1 Private owner with 100% mineral ownership leased to Eagle Mine LLC	May 25, 2005	May 25, 2055	100% State of Michigan

TABLE 4-2 EAGLE LAND BLOCK VERTICES
Eagle Mine

Vertex ID	Easting	Northing	Vertex ID	Easting	Northing
A1	430695.78	5177968.02	C7	432292.15	5177149.41
A2	431098.59	5177964.85	C8	432300.28	5177552.23
A3	431501.41	5177961.68	D1	432700.63	5177546.77
A4	431494.05	5177559.25	D2	433101.10	5177541.30
A5	431486.74	5177156.80	D3	433093.28	5177138.35
A6	431083.58	5177160.48	D4	433085.48	5176735.65
A7	430680.47	5177164.18	D5	432684.65	5176741.22
A8	430687.97	5177567.93	D6	432283.82	5176746.79
B1	431501.41	5177961.68	D7	432292.15	5177149.41
B2	431904.91	5177958.35	D8	432692.59	5177143.80
B3	432308.41	5177955.03	E1	433108.95	5177944.22
B4	432300.28	5177552.23	E2	433509.33	5177938.43
B5	432292.15	5177149.41	E3	433909.75	5177932.70
B6	431889.45	5177153.10	E4	433902.28	5177529.97
B7	431486.74	5177156.80	E5	433501.69	5177535.61
B8	431494.05	5177559.25	E6	433101.10	5177541.30
C1	432308.43	5177955.04	F1	433101.10	5177541.30
C2	432708.66	5177949.64	F2	433501.69	5177535.61
C3	433108.95	5177944.22	F3	433902.28	5177529.97
C4	433101.10	5177541.30	F4	433894.80	5177127.24
C5	432700.63	5177546.77	F5	433494.04	5177132.78
C6	432692.59	5177143.80	F6	433093.28	5177138.35

While the surface of the Eagle Mine is on Eagle Mine LLC property or property leased from the State of Michigan, the minerals comprising the Eagle Mine are either owned or leased from private owners or the State of Michigan. The state leases expire in July 2022, however, they can be extended if economic production continues according to the terms of the leases after that date. The private leases have various expiry dates that are extendable by continued payments or production. An annual lease payment is currently made, in addition to a royalty payment based on a percentage of the Net Smelter Return (NSR), to the owners upon production.

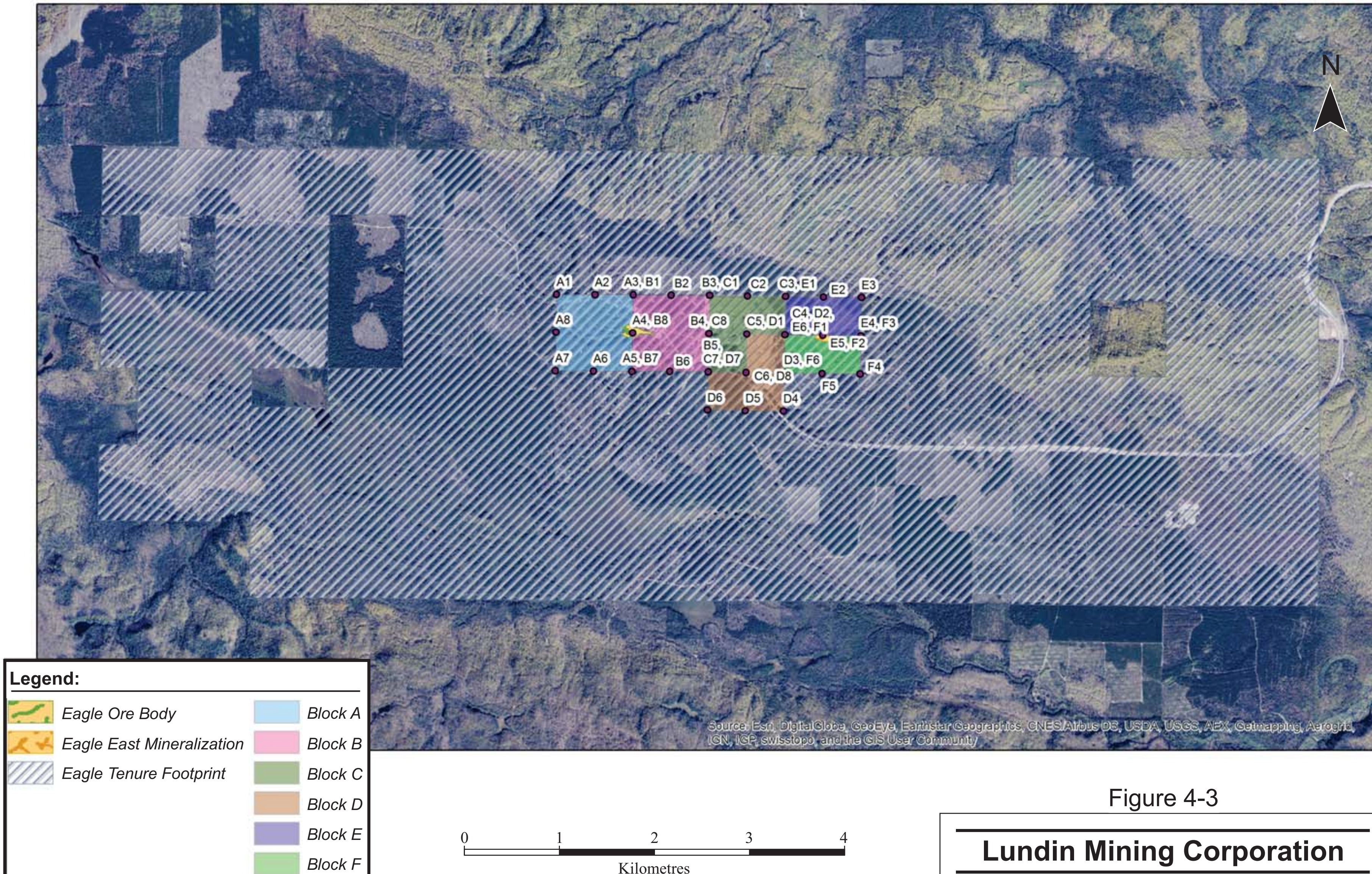


Figure 4-3

Lundin Mining Corporation

Eagle Mine

Marquette County, Michigan, U.S.A.

Eagle Mine and Eagle East Land Blocks

April 2017

Source: Lundin Mining Corp., 2016.

Lease payments would remain for the duration of mining at Eagle East, although royalty payments related to Eagle would cease when production from Eagle ends.

The Eagle deposit lies within the NW and NE quarters of Section 11, Township 50 North, Range 29 West. In the NW quarter (Block A), the deposit straddles the boundary between quarter-quarter NENW and SENW. Mineral rights for this area are leased from the State of Michigan. In the NE quarter of Section 11 (Block B), the surface is owned by Eagle Mine LLC and the mineral rights are held through lease agreements with individuals (81.25%) and ownership by Eagle Mine LLC (18.75%).

The Eagle East deposit lies against the northern border of the southern half of the northeastern quarter of Section 12 (Block F).

SURFACE RIGHTS

Surface rights are owned by Eagle Mine LLC in Blocks A, B, and D. Block C is controlled by Eagle Mine LLC through a Surface Use Lease with the State of Michigan, while Blocks E and F are available for lease through the State of Michigan if required.

The Eagle Mine surface rights are summarized in Table 4-3.

TABLE 4-3 SURFACE LAND TENURE (PRODUCTION RELATED)
Eagle Mine

Description	Depicted Acres/km^2	Surface Owner	Lease Origin Date	Expiration Date
Township 50 North, Range 29 West, NE ¼, Section 11 (Block B on map)	160/0.65	Eagle Mine LLC		None
Township 50 North, Range 29 West, N ½ of NW ¼ and SW ¼ of NW ¼, Section 12 (Block C on map)	120/0.49	State of Michigan and leased to Eagle Mine LLC under Surface Use Lease L-9742 (a/k/a SUL No. 11)	July 8, 1992	July 8, 2022, extendable by production and reclamation/post closure monitoring requirements
Township 50 North, Range 29 West, SE ¼ of the NW ¼ and the N ½ of the SW ¼ , Section 12 (Block D on map)	40/0.16	Eagle Mine LLC		None

Note: areas given in this table are only reflective of the areas depicted in Figure 4-3 and may not be indicative of the fully leased area.

A detailed description of blocks impacted by production at Eagle and potential production at Eagle East, as shown in Figure 4-3, is given below. Note that areas given in the descriptions below may not be representative of the entirety of ownership associated with the involved leases.

Block A

Eagle Mine LLC owns the surface with mineral rights from State of Michigan Metallic Minerals Lease M-00602 dated July 8, 1992 from the State of Michigan in favour of Terence W. Quigley, as lessee, as assigned to KEX pursuant to the Assignment of Metallic Minerals Leases dated August 27, 1993, and assigned to KEMC pursuant to the Assignment of Metallic Minerals Leases dated August 24, 2006. The primary term of this lease was extended to July 7, 2022 pursuant to the Extension of State of Michigan Metallic Minerals Lease M-00602 dated July 7, 2012, and is extendable by production. The area of interest for the purpose of this report is the 160 acres (64.7 ha) comprising the northwest ¼ of Section 11, Township 50 North, Range 29 West as defined by the following coordinates (UTM Zone 16N) given in Table 4-3.

A sliding scale production royalty of based on the Adjusted Sales Value per tonne of ore applies to this parcel.

Block B

Eagle Mine LLC has surface ownership with mineral rights leased from a total of four owners, three of which own a 3/16th undivided interest (18.75%) each and a fourth owns the remaining 25%. Eagle Mine LLC owns 18.75%. Various NSR royalties are payable on each of the leased mineral estates.

Three owners own 56.25% of the gross mineral estate of, for the purpose of this report, 160 acres (64.7 ha), situated in the northeast ¼ of Section 11, Township 50 North, Range 29 West, as defined in Table 4-3. These three Mineral Lease Agreements, dated November 15, 1995, were executed in favour of KEX, as amended by the First Amendment to Mineral Lease dated June 25, 2001 by and between KEX, as assigned to KEMC pursuant to an unrecorded Assignment Agreement dated April 1, 2004. These leases are also subject to the Second Amendment to Mineral Lease dated March 1, 2014. The aforementioned leases each expired on November 14, 2015, but are extendable by continuation of payments.

The additional 25% ownership is held by a single owner in a Mineral Lease Agreement dated May 1, 2002, in favour of KEX, as assigned to KEMC pursuant to an unrecorded Assignment Agreement dated April 1, 2004, expiring May 15, 2037 and extendable to May 15, 2054 by continuing payments, after which active mining must occur.

Block C

Surface ownership is by the State of Michigan through Surface Use Lease L-9742 (a/k/a SUL No. 11) dated July 8, 2008. Mineral rights, for the purpose of this report, comprise 120 acres (48.6 ha), being the north ½ of the northwest ¼ and the southwest ¼ of the northwest ¼ of Township 50 North, Range 29 West, Section 12 (as defined in Table 4-3), from State of Michigan Metallic Minerals Lease M-00603 dated July 8, 1992 from the State of Michigan in favour of Terence W. Quigley, as lessee, as assigned to KEX pursuant to the Assignment of Metallic Minerals Leases dated August 27, 1993, as assigned to KEMC pursuant to the Assignment of Metallic Mineral Leases dated August 24, 2006. The primary term of M-00603 was extended to July 7, 2022 pursuant to the Extension of State of Michigan Metallic Minerals Lease M-00603 dated July 7, 2012, and is extendable by production. The Surface Use Lease's expiration date coincides with the expiration dates of M-00602 and M-00603, July 8, 2022, and is extendable by production or reclamation and closure activities.

Block D

Eagle Mine LLC owns the surface with 100% of mineral rights shared among 12 people and undivided ownership by Eagle Mine LLC. These leases have variable extents, expiration dates, proportional interests, execution dates, and extension provisions, as well as various amendments with variable dates. The area of interest for the purpose of this report is 120 acres (48.6 ha) composed of the Southeast ¼ of the Northwest ¼ and the North ½ of the Southwest ¼ of Section 12, Township 50 North, Range 29 West as defined in Table 4-3.

Block E

Surface is owned by the State of Michigan with mineral rights from State of Michigan Metallic Minerals Lease M-00603 for lands in Township 50 North, Range 29 West, N ½ of the NE ¼, Section 12, dated July 8, 1992 from the State of Michigan in favour of Terence W. Quigley, as lessee, as assigned to KEX pursuant to the Assignment of Metallic Minerals Leases dated August 27, 1993, as assigned to KEMC pursuant to the Assignment of Metallic Mineral Leases dated August 24, 2006. The primary term of M-00603 was extended to July 7, 2022 pursuant to the Extension of State of Michigan Metallic Minerals Lease M-00603 dated July

7, 2012, and is extendable by production. The block is defined as listed in Table 4-3, containing 80 acres (32.4 ha) for the purpose of this report.

Block F

Surface is owned by the State of Michigan with mineral rights held by a single owner and leased to Eagle Mine LLC for lands in Township 50 North, Range 29 West, S ½ of the NE ¼, Section 12, dated May 25, 2005 for a period of 30 years. The block is defined as listed in Table 4-3 and is subject to a sliding scale NSR royalty. The area of interest for the purpose of this report is 80 acres (32.4 ha).

HUMBOLDT MILL

The Humboldt Mill property, measuring approximately 1.42 km^2, is located 61 km west of Marquette in Sections 2 and 11, Township 47 North-Range 29 West, Township of Humboldt, Marquette County, Michigan. The centre point of the Humboldt Mill area (including all ownership of land) is 46º 29’ north latitude, 87º 54’ west longitude (UTM Zone 16N Zone coordinates 5148824 m N, 430843 m E). The land is held by both Humboldt Land LLC and Eagle Mine LLC through a series of deeds.

ROYALTIES AND LEASE OBLIGATIONS

EAGLE MINE

Eagle Mine LLC is 100% owned by LMC.

While the surface of the Eagle Mine is on Eagle Mine LLC property or leased from the State of Michigan, the minerals comprising the Eagle Mine are either owned or leased from private owners or the State of Michigan. Private interests and the 18.75% undivided interest owned by Eagle Mine LLC are located in the northeast quarter of Section 11, Township 50 North, Range 29 West, while the State of Michigan owns minerals in the northwest quarter of the same section. The distribution of the Eagle Mine Mineral Resources is approximately 50:50 between the two quarters of the section. The leases have various expiry dates that are extendable by continued payments or production.

An annual lease payment is currently made, in addition to a payment based on a percentage of the NSR to the owners upon production. Any production at Eagle East would fall within the same range of royalty rates. RPA has reviewed the confidential NSR rates and, in RPA's opinion, they are within industry norms.

Lease payments will remain for the duration of mining at Eagle East, while royalty payments related to the Eagle Mine will cease when production from the Eagle Mine finishes.

EAGLE EAST

Nominal lease payments would be required annually for any development related to Eagle East with a sliding scale NSR royalty required upon production.

Eagle Mine LLC has all required land access approvals to conduct the proposed work on the property. RPA is not aware of any other significant factors and risks that may affect access, title, or the right or ability to perform the proposed work program on the property.

RPA is not aware of any environmental liabilities on the property.

5 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE, AND PHYSIOGRAPHY

ACCESSIBILITY

The closest full service community to the Eagle Mine and Eagle East is Marquette, Michigan, 53 km from the mine, a city with a population of approximately 21,000; shipping and rail facilities; and daily air service to Detroit, Minneapolis, and Chicago from the Sawyer International Airport, which is located approximately 16 km to the south. Road access to the Eagle Mine property, occupying approximately 63 ha, is excellent, with maintained loose surface and paved roads from the communities of Big Bay to the east, L'Anse to the west, and Marquette to the south. The closest community is Big Bay, 24 km from the property by road. Big Bay is primarily a cottage community with limited services.

The Humboldt Mill property, a former iron ore processing facility, occupying approximately 142 ha, is located approximately 61 km west of Marquette, close to the main US Highway 41. Ore from the Eagle Mine is trucked approximately 105 km to the Humboldt Mill for processing, starting from the mine, east on Triple A Road, north on County Road (CR) 510, south on CR 550, through the city of Marquette and west on US Route 41.

There is no rail access at the Eagle Mine, but the Humboldt Mill is connected by rail to the CN Rail system at Ishpeming.

CLIMATE

The climate of northern Michigan is typical for the Great Lakes region, with warm summers and long, cold winters. The Eagle Mine and Humboldt Mill sites are located in a temperate region. The area's weather is characterized by variable weather patterns and large seasonal temperature variations. Summers are often warm and humid and winters can be very cold with frequent snow showers and snow cover.

Mean high and low temperatures in Marquette range from -11.6ºC (11ºF) in January to a maximum of 24.2ºC (75.6ºF) in July. Mean daily temperatures vary from -7.7ºC (18ºF) in

January to 19.1ºC (66.4ºF) in July. Snowfall in the region can be high, from 1971 to 2000 average annual snowfall was 307 cm (120.9 in.). Mean annual precipitation for the same period was 763 mm (30 in.).

Lake Superior causes an identifiable lake effect on the area's climate during much of the year, increasing cloudiness and snowfall during the autumn and winter. This aspect, combined with the higher surface elevation, yields much higher snowfall amounts at the Eagle Mine and Humboldt Mill than recorded at the city of Marquette.

Exploration and mining activity can be carried on throughout the year.

LOCAL RESOURCES

The region is served by an extensive network of paved roads, rail service, excellent telecommunications facilities, national grid electricity, and an ample supply of water. The property benefits by having access to an educated workforce.

Logging and mining have been a major part of land use activities for over 150 years. Copper and iron mining in the Marquette Range created many large open-pit mines and associated land forms. Logging is ongoing throughout the region. Agriculture is relatively limited and there is minor commercial fishing of white fish and lake trout on Lake Superior. Urban development is concentrated around Marquette.

Recreation is an important land use, both along the shoreline and inland. The forested hilly land with lakes and streams attracts hunters, fishermen, hikers, and other recreational users. The region is also very popular for snowmobiling in the winter. The mine is located five kilometres east-northeast of the McCormack Tract, a Federal wilderness reserve.

Extensive third party archeological studies revealed no Native American artifacts or evidence of areas of cultural significance. The project is located in the Ceded Territories and the Keweenaw Bay Indian Community (KBIC) has claimed that the main outcrop of peridotite on State Mineral Lease M-00603 is of cultural significance. While there is no entry in the State historical records of any feature of Native American cultural significance, Eagle Mine LLC has committed to protect the rock outcrop from mining and offered access to the rock for cultural ceremonies.

INFRASTRUCTURE

The area is served by an extensive network of paved roads, rail service, excellent telecommunications facilities, national grid electricity, and an ample supply of water. The surface and underground infrastructure at the Eagle Mine includes the following:

- Treated Water Infiltration System.
- Power House.
- Supply Storage Facility.
- Water Treatment Plant.
- Truck Wash.
- Mine Services Building.
- Mine Dry Facilities (expanded for the Eagle East development crews).
- Workshop.
- Contact Water Basins (CWB).
- Non-Contact Water Infiltration Basins (NCWIB).
- Coarse Ore Storage Area (COSA).
- Temporary Development Rock Storage Area (TDRSA).
- Crushed Aggregate Storage.
- Concrete Backfill Batch Plant.
- Mine portal connected by decline and levels to the Eagle deposit.
- Mine air heater and fresh air intake fan.
- Surface Raise Site with exhaust fans.
- Mine Security Gatehouse.

There is no additional infrastructure required for the Eagle East deposit as the existing Eagle Mine infrastructure would be used for the Eagle East Project.

At the time of RPA's site visit, the infrastructure at the Humboldt Mill included the following:

- A 2,000 tpd flotation mill.
- Primary, secondary, and tertiary crushing circuit.
- Concentrate storage shed.
- Rail yard for rail car storage.
- Rail siding.
- Reclaim water system from tailings area.
- Tailings disposal to the Humboldt Tailings Disposal Facility (HTDF).

- Water Treatment Plant
- Mill Administration Building.
- Mill Services Building.
- Electrical power supply and distribution.
- SGS contract laboratory for mill and underground sample preparation and assaying.
- Coarse Ore Storage Area (COSA).
- Mill Security Gatehouse.

Eagle Exploration also has an office at the core handling/logging facility in Negaunee. Eagle Mine has an Information Centre for visitors in Marquette.

POWER

The mine site is serviced by grid power provided by the Alger Delta Electric Co-operative (ADEC). An agreement was signed between ADEC and KEMC on January 15, 2008 to provide power to the mine site. ADEC provides power from the city of Marquette to the town of Big Bay and the overhead lines and associated substation were upgraded to provide 24.9/14.4 kVA service to the mine site. The new line from the Big Bay line tap to the mine site is an underground line which supports the estimated 6.3 MVA requirement of the site. A power house with step-down transformer has been constructed at the mine site. Emergency backup power is provided by a 1,850 kVA diesel generator.

The Humboldt Mill site is predominantly serviced by the Upper Peninsula Power Company, with some supply from We Energies. A New 7.5 MVA transformer allowed an increase in distribution voltage from 2.4 kVA to 4.16 kVA.

WATER

An existing non-potable well, in conjunction with a potable well, provides service and drinking water to the mine site. Each is capable of delivering 100 USgpm. There are two wells at the mill: a potable well and a non-potable industrial well. Each is capable of delivering 100 USgpm. Currently, mill operations are supplied by recycled water from the HTDF but can utilize the industrial well as needed. Hydrology studies at both sites indicate viable long term aquifers. Both the mine and mill sites utilize septic systems.

PHYSIOGRAPHY

The property is on the watershed divide of the Yellow Dog River and Salmon Trout River. Eagle Mine is located on the Yellow Dog Plains, where two erosionally resistant hillocks of peridotite protrude through the sandy glacial outwash till. The area is covered principally by boreal forest and wetlands with limited outcrop exposure. Lakes, rivers, and smaller streams are numerous in the area. Most of the streams have steep gradients, and many have waterfalls near Lake Superior. The Eagle Mine is at approximately 440 MASL and there is little relief in the surrounding area. Elevations drop to 200 MASL at Marquette and rise again to approximately 500 MASL at the Humboldt Mill.

Primary land use in the area of the Eagle Mine is logging, and much of the timber in the area has been logged and replanted. There are no operating metal mines in the immediate vicinity of the Eagle deposit. No permanent residences exist in the immediate area, although a handful of seasonal recreational cabins are within a few kilometres of the mine site.

RPA is of the opinion that there is sufficient land, water, and power for the planned mining and processing operations and that Eagle has sufficient mineral and surface rights for the planned work to develop and mine the Eagle East Project.

6 HISTORY

PRIOR OWNERSHIP

Kennecott Exploration (KEX) started working in the region in 1991. In 2004, the project was transferred to Kennecott Minerals (Rio Tinto Copper Group) under the name Kennecott Eagle Minerals Company (KEMC). KEMC began construction of the Eagle Mine in April 2010 and began underground development in September 2011. On October 4, 2012, the company's legal name was changed from KEMC to Rio Tinto Eagle Mine LLC (RTEM).

On July 17, 2013, LMC, through its indirect US subsidiary Lundin Mining Delaware Ltd. (LMDL), acquired all of the membership interests of RTEM. Subsequently, the name of RTEM was changed to Eagle Mine LLC.

EXPLORATION AND DEVELOPMENT HISTORY

The Baraga Basin region has until recently been subject to only sporadic exploration efforts. The earliest historical accounts of exploration in the basin date back to the mid-1800s when a group of investors tried to develop slate quarries along the Slate River.

Little documented exploration work took place in the Baraga basin between 1910 and 1950. During the 1950s, Jones and Laughlin conducted an exploration program along the northern portion of the east branch of the Huron River, investigating uranium-silver-mercury mineralization associated with a graphitic shear exposed in the river.

During the 1960s and 1970s, various interests conducted exploration programs on Ford Motor Company mineral lands in the Baraga Basin and the western portion of the Marquette Trough. The programs were primarily focused on uranium and zinc. The U.S. Department of Energy provided funding to drill a number of deep holes in the Baraga Basin during the 1970s presumably to provide stratigraphic information for the uranium exploration effort. Concurrently, the U.S. Geological Survey (USGS) began a bedrock-mapping program of the basin, focusing primarily on exposures in rivers, which produced an open file outcrop map with little interpretation and no report.

In 1976, Michigan Technological University drilled a 31 m hole on the east end of the Yellow Dog (Eagle East) outcrop. The hole bottomed in coarse-grained peridotite with only traces of sulphides. In 1979, the Michigan Department of Natural Resources (DNR), in conjunction with the USGS, published a report on the Yellow Dog peridotite describing the results of geochemical, petrographic, and geophysical studies of the peridotite (Klasner et al., 1979). The authors concluded that the anomalous sulphur and copper contents of the outcropping peridotite indicated a potential for a copper-nickel ore deposit.

KEX started working in the region in 1991 and actively explored for Sedex zinc deposits through 1994. During the course of mapping, float boulders of peridotite with sulphides were discovered that indicated the potential for magmatic sulphide mineralization. KEX partially shifted to magmatic nickel exploration in 1995 and drilled four holes to test the Yellow Dog peridotite (Eagle East). One hole (YD95-2) intersected 10 m of moderate to heavy disseminated sulphide mineralization along the southern contact. Two more angle holes (YD95-3 and YD95-4) collared on the east end of the Yellow Dog East outcrop demonstrated that the peridotite widened to the east but only intersected a metre or two of weak sulphide mineralization along the north and south contacts.

The more recent nickel exploration program was started late in 2000. Drilling at the neighbouring Eagle East target in July 2001 intersected 30 m of disseminated, semi-massive, and massive sulphides averaging 1.03% Ni and 0.75% Cu (YD01-01) and one of three holes on the east end of Eagle intersected 85 m of disseminated sulphides averaging 0.6% Ni and 0.5% Cu (YD01-06).

In 2002, drilling at Eagle targeted the centre of a magnetic anomaly defined by ground surveys in 2001. The first hole, YD02-02, intersected 84.2 m of massive pyrrhotite-pentlandite-chalcopyrite averaging 6.3% Ni and 4.0% Cu, firmly establishing the presence of economic grade and width mineralization at Eagle. Subsequent definition drilling continued through the summer and autumn of 2002 and resumed in 2003.

By the end of 2003, two separate high grade sulphide zones were identified at Eagle. The lower zone was defined by 15 drill intercepts and the upper zone by six drill intercepts. This formed the basis of an order of magnitude study that was completed in early 2004.

Upon Rio Tinto's acceptance of the order of magnitude study in early 2004, ownership of the Eagle project was transferred from KEX to KEMC for additional evaluation. KEMC conducted an extensive resource and geotechnical drill program in 2004 supplying the data to connect the former upper and lower zones and better establish the geometries of the massive sulphide, semi-massive sulphide, and host intrusive bodies. The result of this work was the completion of a pre-feasibility study.

Construction of the Eagle Mine, an underground nickel and copper mine, commenced in April 2010 and underground development began in September 2011. The Humboldt Mill was refurbished and the Eagle Mine achieved commercial production in November 2014.

From 2002 to 2008, Rio Tinto drilled more than 50 holes in the Eagle East intrusion, identifying uneconomic, largely disseminated, mineralization.

In June 2015, LMC announced the discovery of very high grade magmatic nickel-copper mineralization similar in style to the Eagle deposit, located approximately two kilometres east of the Eagle Mine. The Eagle East deposit was discovered in an undrilled area approximately 960 m deep.

The Eagle deposit was likely formed by a series of magma pulses that employed a single magma conduit, or chonolith, allowing sulphides to settle out more or less continually while the conduit remained dynamic (as opposed to a closed, differentiated intrusion system). Eagle East is a separate intrusion from the Eagle deposit that was previously known to contain uneconomic levels of nickel and copper in the upper portions. Previous drilling at Eagle East determined that at depth, the intrusion necks down to a narrow, barren dyke. Eagle geologists postulated that the narrow dyke should be sourced in a larger magma chamber and used directional drilling to trace the dyke, eventually resulting in the discovery.

The Eagle East deposit had no geophysical support and the discovery was the result of exploration based purely on the open-system chonolith model of magmatic sulphide deposits.

In 2016, LMC reported the initial Mineral Resource estimate for the Eagle East deposit together with a positive PEA supporting further work on the deposit. Eagle Mine continued drilling from surface to delineate the deposit and undertook technical studies in support of the Eagle East FS described in this report.

PAST PRODUCTION

The production from the Eagle Mine is shown in Table 6-1.

TABLE 6-1 EAGLE MINE PRODUCTION
Eagle Mine

	Mill Feed	Feed Grade		Metal in Concentrates	
Year	(t)	Ni (%)	Cu (%)	Ni (t)	Cu (t)
2014	173,648	3.16	2.40	4,178	3,877
2015	746,466	4.31	3.36	27,167	24,331
2016	748,485	3.82	3.21	24,114	23,417
Total	**1,668,599**	**3.97**	**3.19**	**55,459**	**51,625**

Copper in concentrates includes copper contained in copper and nickel concentrates.

HISTORICAL AND PREVIOUS RESOURCE ESTIMATES

In 2005, RPA was retained by Rio Tinto Technical Services (RTTS) to provide an independent audit of a Mineral Resource estimate for the Eagle Ni-Cu deposit. In a technical report dated March 15, 2005, the Mineral Resource estimate was based on a total of 79 holes drilled on the Eagle deposit and a $25/t NSR cut-off value.

A number of internal and independent Mineral Resource estimates were prepared by and for RTEM (KMEC) between 2006 and 2012. These are relevant and reliable and have been superseded by the Mineral Resource and Mineral Reserve estimates in this more recent Technical Report.

To support LMC's purchase of Eagle in July 2013, an independent technical report was prepared by Wardell Armstrong International (WAI) (WAI, 2013).

The historical estimates are summarized in Table 6-2.

TABLE 6-2 HISTORICAL MINERAL RESOURCE ESTIMATES – INCLUSIVE OF MINERAL RESERVES
Eagle Mine

Year – Company	Tonnes (Mt)	Cu (%)	Ni (%)	Co (%)	Au (g/t)	Pt (g/t)	Pd (g/t)
2004 – RTEM							
Indicated	3.53	3.02	3.77	0.10	0.30	0.79	0.51
Inferred	0.4	2.2	2.2	0.1	0.2	0.4	0.3
2006 – RTEM							
Indicated	3.56	2.97	3.76	0.10	0.29	0.76	0.49
Inferred	0.5	2.3	2.4	0.1	0.2	0.4	0.3
2007 – RTEM							
Indicated	3.10	3.20	4.12	0.11	0.31	0.83	0.54
Inferred	0.4	2.5	2.6	0.1	0.2	0.5	0.3
2009 – RTEM							
Indicated	3.73	3.15	3.83	0.11	0.30	0.79	0.52
Inferred	0.5	2.1	2.3	0.1	0.2	0.4	0.2
2010 – RTEM							
Indicated	3.95	2.85	3.37	0.09	0.28	0.72	0.47
Inferred	0.3	1.6	1.5	0.04	0.2	0.3	0.2
2013 – LMC							
Indicated	4.83	2.94	3.52	0.10	0.29	0.75	0.51
Inferred	0.2	1.0	1.0	0.1	0.1	0.3	0.2

LMC personnel updated the Mineral Resource estimates for the Eagle and Eagle East deposits, effective June 30, 2016.

For Eagle East, this estimate was the first public disclosure of Mineral Resources for this deposit, and in RPA's opinion, the Mineral Resource estimates were classified and reported in accordance with the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Definition Standards for Mineral Resources and Mineral Reserves dated May 10, 2014 (CIM definitions). The June 30, 2016 Mineral Resource estimate is superseded by the current Mineral Resource estimate in this Technical Report.

The June 30, 2016 Mineral Resource estimates, inclusive of Mineral Reserve estimates, are summarized in Table 6-3.

TABLE 6-3 SUMMARY OF MINERAL RESOURCES AS OF JUNE 30, 2016 – INCLUSIVE OF MINERAL RESERVES
Eagle Mine

			Grades								Contained Metal						
Zone	Category	Tonnes (000)	Ni (%)	Cu (%)	Co (%)	Au (g/t)	Ag (g/t)	Pt (g/t)	Pd (g/t)	Ni (000 t)	Cu (000 t)	Co (000 t)	Au (Moz)	Ag (Moz)	Pt (Moz)	Pd (Moz)
Eagle	Measured	1,445	4.2	3.4	0.1	0.3	-	0.9	0.6	61.3	49.4	1.6	0.02	-	0.04	0.03
	Indicated	2,226	2.6	2.2	0.1	0.2	-	0.5	0.3	58.1	49.6	1.6	0.02	-	0.03	0.02
	Total M + I	**3,671**	**3.3**	**2.7**	**0.1**	**0.3**	**-**	**0.6**	**0.4**	**119.4**	**99.1**	**3.1**	**0.03**	**-**	**0.07**	**0.05**
Eagle	Inferred	44	1.1	1.1	-	0.1	-	0.3	0.2	0.5	0.5	-	-	-	-	-
Eagle East	Inferred	1,180	5.2	4.3	0.1	0.5	15.8	1.7	1.3	60.7	50.8	1.3	0.02	1.00	0.07	0.05
	Total Inferred	**1,224**	**5.0**	**4.2**	**0.1**	**0.5**	**15.3**	**1.7**	**1.3**	**61.2**	**51.3**	**1.3**	**0.02**	**1.00**	**0.07**	**0.05**

Notes:
1. CIM definitions were followed for Mineral Resources.
2. Mineral Resources are estimated at a NSR cut-off grade of US$142/t.
3. Mineral Resources are estimated using long-term metal prices of US$8.50/lb Ni, US$2.75/lb Cu, US$13.00/lb Co, US$1,000/oz Au, US$1,500/oz Pt, US$550.00/oz Pd.
4. Bulk density is interpolated for each block and ranges from 2.82 t/m^3 to 4.51 t/m^3 for Eagle and 3.01 t/m^3 to 4.54 t/m^3 for Eagle East.
5. Mineral Resources are inclusive of Mineral Reserves.
6. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
7. Numbers may not add due to rounding.

7 GEOLOGICAL SETTING AND MINERALIZATION

Eagle and Eagle East are part of the same ultramafic intrusive system and both host high grade primary magmatic Ni/Cu sulphide mineralization. These intrusions are related to the feeder system for the Keweenawan flood basalts, a Large Igneous Provence (LIP) resulting from mantle-tapping extension during the Midcontinent Rift.

Mineralization styles are similar at Eagle and Eagle East, consisting of intrusions of mineralized peridotite with concentrations of sulphide mineralization mostly within the intrusion resulting in the accumulation of semi-massive sulphide, and a central core zone of massive sulphide. Massive sulphides have been observed in several instances to extend for short distances outwards beyond the contact of the peridotite, into the surrounding sedimentary country rocks.

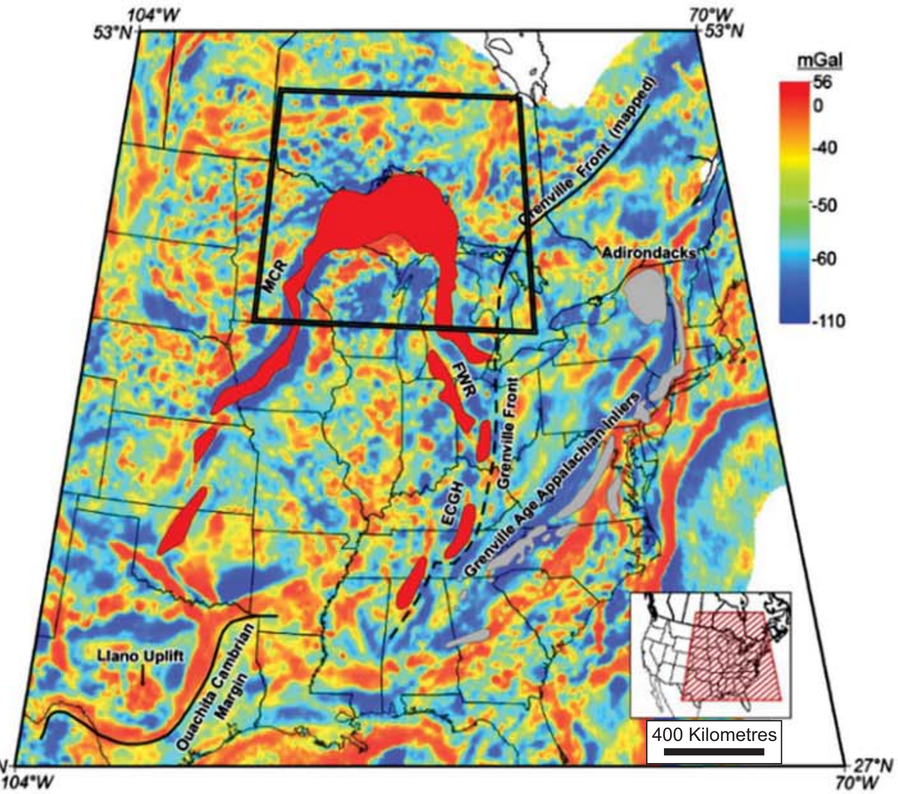
GEOLOGICAL SETTING

The Midcontinent Rift formed when the North American continent began to split apart 1.1 billion years ago, resulting from the upward impact of a mantle plume. Rifting continued for 15 to 22 million years, at which point the rift failed.

The rifting process consists of three main stages: mantle plume impact and upwelling, initial extension and flood basalt volcanism, and ongoing passive extension resulting in ocean basin formation.

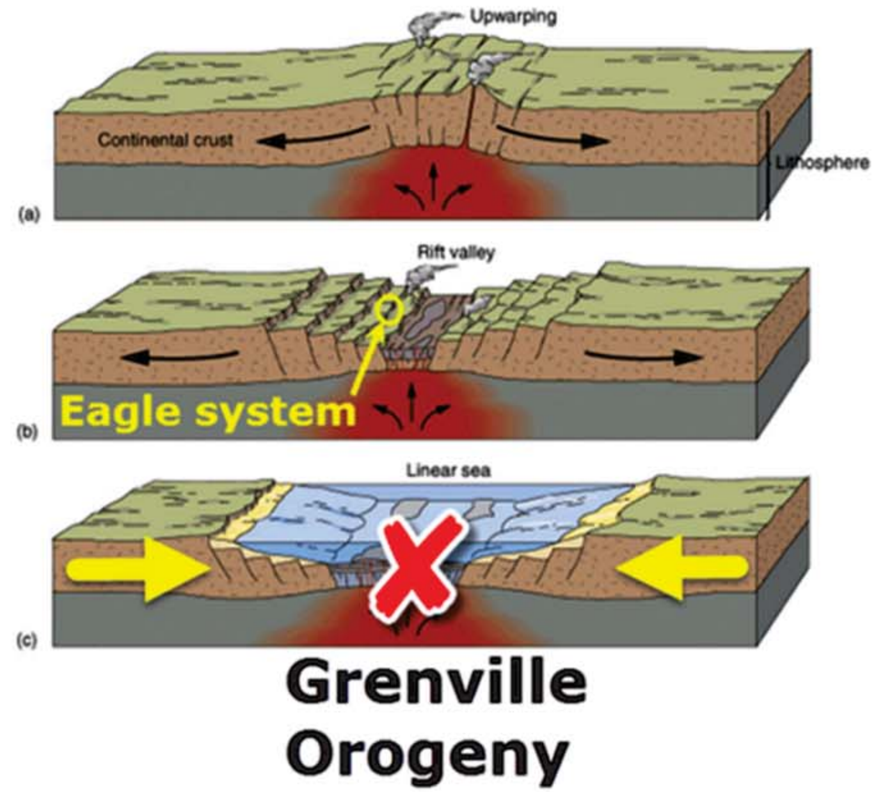
In the first stage, upwelling occurs from the buoyant mantle plume under-plating the crust. This results in the formation of tension cracks above the upwelling zone which are often injected by magma, resulting in dyke swarms. At the onset of rift extension, the crust thins as the crust on either side of the mantle plume begin to move apart, and the blocks bounded by tension cracks begin to subside into the rift depression. This results in normal fault movement which accommodates the extension (Figure 7-1).

Midcontinent Rift Gavity Anomaly



Stein et al., 2014

Midcontinent Rift Gavity Anomaly and History



Kusnick, 2015

Figure 7-1

Lundin Mining Corporation

Eagle Mine

Marquette County, Michigan, U.S.A.

Midcontinent Rift Gavity Anomaly, and Midcontinent Rift Process and History

Source: Lundin Mining Corp., 2016

During the second phase, significant partial melting of underlying mantle and lower crust occurs, resulting in volcanic eruptions and the formation of a flood basalt province. These large eruptions are often associated with extinction events and the venting of large quantities of gas including SO_2, which is also important in the ore forming process as magmas must be driven to sulphur saturation before sulphide droplets can form. Eagle and Eagle East are more mafic than the flood basalts, and are likely related to partial melting of the mantle in the feeder zone to the flood basalts.

These magmas migrate from deep staging chambers upward to episodic small volcanic vents along the edge of the main flood basalt province. These small, hot, low viscosity magmas exploit small dilated spaces resulting from movement along faults, and can erupt vertically if the magma pressure overcomes the lithostatic pressure. This results in a structurally controlled but unpredictable magma conduit path to surface. In conduit style systems such as Eagle, Eagle East, and Voisey's Bay, sulphide droplets settle out from sulphur-saturated magma wherever the velocity of the magma slows down due to a significant change in direction or change in conduit size such as a small conduit entering a larger chamber or a conduit turning horizontal.

In the third stage of rifting, the rift is fully formed and a passive crustal spreading centre is formed on the ocean floor, similar to the mid-Atlantic ridge. Ongoing volcanism at the spreading centre can form other types of ore deposits such as VMS style mineralization. Further active volcanism can build islands such as Iceland, which continues to be a well-studied analogue for Eagle-like volcanism. In the case of the Midcontinent, rifting halted prior to the influx of seawater to the basin.

REGIONAL GEOLOGY

The Eagle property is located in the Baraga Basin on the south side of Lake Superior (Figure 7-2). Three depositional periods are well represented in the region. These occurred in the Archean, Early Proterozoic, and Middle Proterozoic and are separated by pronounced unconformities related to major regional tectonic events.

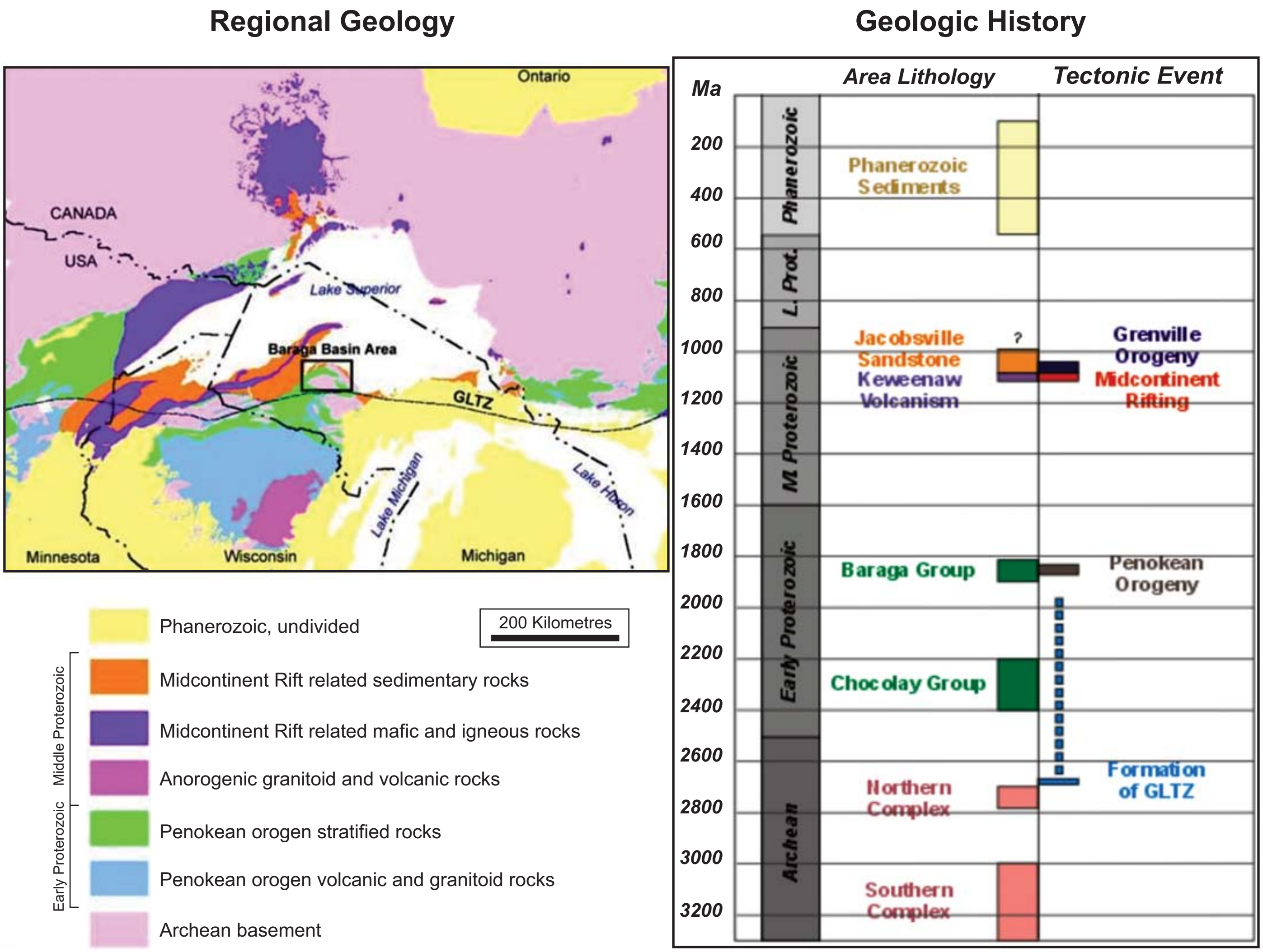


Figure 7-2

Lundin Mining Corporation

Eagle Mine

Marquette County, Michigan, U.S.A.

Regional Geology and Geologic History

April 2017

Source: Lundin Mining Corp., 2016

ARCHEAN

The Archean basement rocks consist of two terranes separated by an ancient crustal suture zone known as the Great Lakes Tectonic Zone (GLTZ). The terranes consist of gneiss and granitoid to the north and migmatite to the south.

PALEOPROTEROZOIC

The Marquette Range Supergroup (MRS) consists of a package of sediments that unconformably overlie the Archean basement. The base of the MRS is a package of quartzite and chert carbonate (Goodrich Quartzite) which forms a distinct marker bed and strong seismic reflector. This is overlain by a package of barren sulphide-bearing black slates and greywackes which comprise the Baraga Basin. The Baraga Basin sediments are the country rock in which the Eagle and Eagle East intrusions reside.

MESOPROTEROZOIC

The Keweenaw Flood Basalt province represents the exposed portion of the Midcontinent Rift system in the Lake Superior region. The Midcontinent Rift forms a prominent gravity anomaly (Midcontinent gravity high) that can be traced southwest from the Lake Superior region into central Kansas and southeastward into southern Michigan (Figure 7-2, left). The total length of the geophysical feature is in excess of 2,000 km (Hinze et al, 1997). Seismic data indicate the rift below Lake Superior is filled with more than 25 km of volcanics buried beneath a total thickness of up to eight km of rift filling sediments (Bornhorst et al., 1994). The estimated volume of magmatic rocks associated with the rift is greater than two million km^3 (Cannon, 1992).

The Midcontinent Rift was previously thought to have failed because of regional compression associated with the Grenville Orogeny. New age dating suggests that the compressional event which inverted the basin postdates the Grenville Orogeny (Malone et al., 2016).

The Eagle deposit is located in the northern portion of the Mesoproterozoic Baraga-Marquette dyke swarm. The Baraga-Marquette dyke swarm comprises more than 150 primarily east-west trending dykes (Green et al., 1987). Although most dykes in the swarm are less than 30 m thick, individual dykes are up to 185 m thick and can be traced on magnetic maps for up to 59 km (Green et al., 1987). Compositionally the dykes and associated intrusions of the Baraga-Marquette dyke swarm can be broadly categorized into two groups, gabbroic and picritic. Gabbroic dykes are generally quartz normative tholeiites with relatively low Al_2O_3 contents, similar to early phase basalts of the Midcontinent rift. The picritic intrusions comprise elongate plugs, with maximum dimensions of a few hundred metres, and discontinuous dykes that range in thickness from less than a metre to over 70 m. The picritic intrusions are typically more altered than the gabbroic intrusions. In some places the picritic intrusions have been incorporated into later breccia dykes.

Age dating of the dykes of the Eagle intrusive yielded an age of 1,108 million years (Ma). A gabbroic dyke north of Eagle was dated at 1,120 Ma, which represents the start of rift-related intrusive activity.

PALEOZOIC

Paleozoic sediments in the eastern half of the Upper Peninsula cover the Precambrian basement. These gently south-southeast dipping sediments form the northern edge of the large Michigan Sedimentary Basin.

The entire Yellow Dog Plains area is covered by sandy till deposited in an outwash plain. Till thickness ranges from nil at the peridotite outcrop; to greater than 100 m. Drilling in the wetland area directly above the Eagle peridotite indicates a till thickness of 10 m to 12 m. Till thickness increases to the east, and is up to 100 m over the Eagle East conduit zone. The till was locally reworked by later fluvial action into broad meandering stream channels.

LOCAL AND PROJECT GEOLOGY

The Eagle deposit, the Eagle East intrusion, and conduit zone are located at the east end of the Baraga Basin, the northernmost basin of Paleoproterozoic sediments in Michigan (Figure 7-3). The host intrusions are part of the Mesoproterozoic Baraga-Marquette dyke swarm.

The Eagle and Eagle East conduit zones are hosted in two peridotite intrusions historically known as the Yellow Dog Peridotites. The eastern intrusion forms a prominent outcrop that rises above the Yellow Dog Plains and is the site of the Eagle Mine portal. The western intrusion, 650 m to the west and host to Eagle, is only poorly exposed in a small outcrop on the north side of Salmon Trout River, and is the site of the Eagle Mine ventilation raise. The intrusions are characterized by very prominent magnetic highs relative to the surrounding sedimentary rocks.

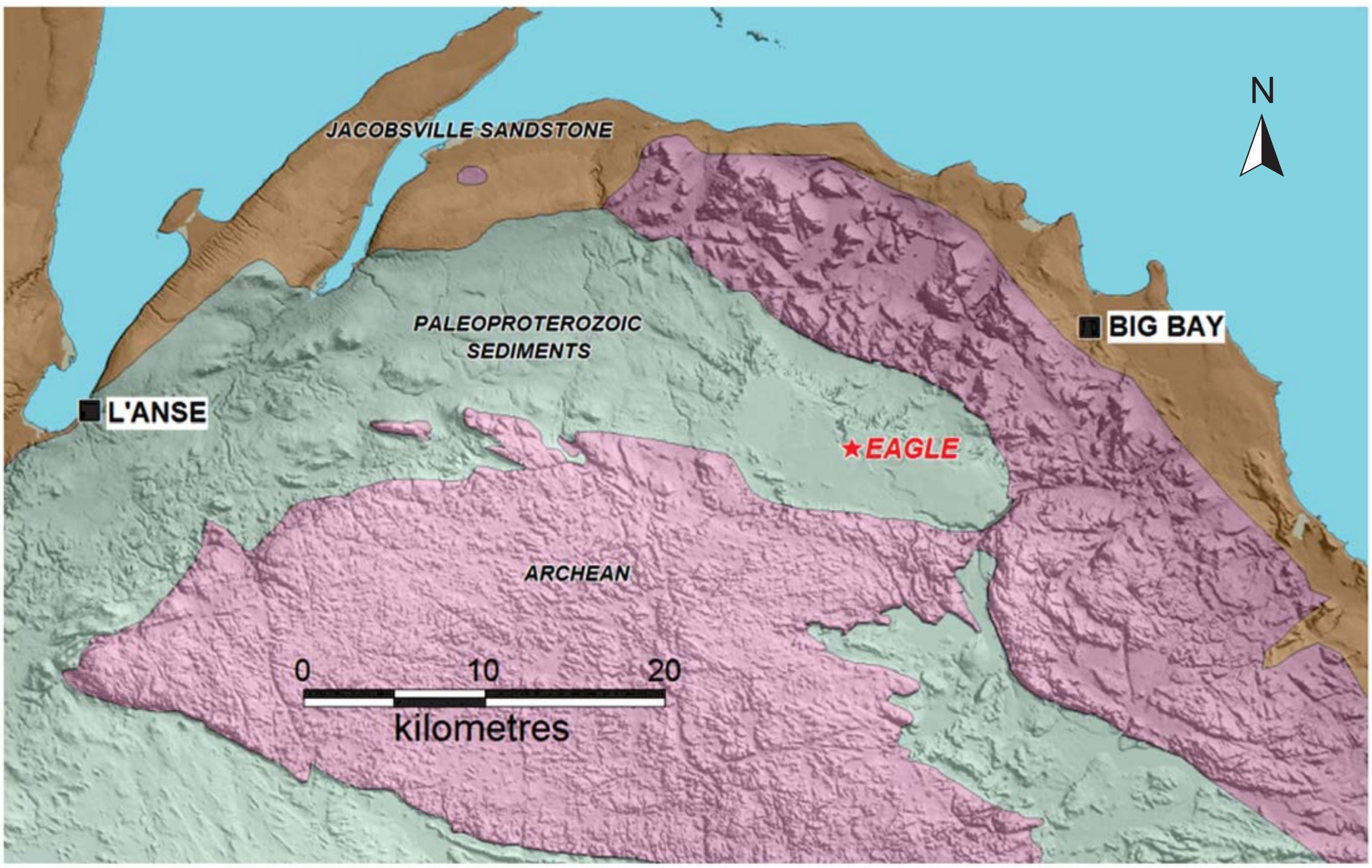


Figure 7-3

Lundin Mining Corporation

Eagle Mine

Marquette County, Michigan, U.S.A.

Local Geological Map of the Baraga Basin Area

April 2017

Source: Lundin Mining Corp., 2016

The Eagle and Eagle East peridotite intrusives are hosted in Paleoproterozoic meta-sediments of the Baraga Basin which rest unconformably on the Archean basement rocks. These sediments are assigned to the Upper Fossum Creek Unit and are mainly composed of an upper siltstone sequence with fine grained turbiditic greywacke sandstone interbeds which comprises the main sedimentary lithology found in Eagle Mine. A lower sequence of dark grey to black thin laminated slates and shales, medium grey thin bedded siltstone and rare fine grained turbiditic sandstone is seen deeper and lateral to the intrusives.

The Eagle East deposit is located deeper than the Eagle deposit, between -395 m and -550 m elevations (840 m to 990 m below surface). The host sediments encountered in the surroundings of the Eagle East mineralized zone are mainly siltstones with low proportions of sandstone interbeds. The assignation of these deeper sediments to the Lower Fossum Formation is not yet evaluated. Bedding and foliation are the main structural features present in the sediments and represent the weakest planar orientation found. All these features are seen both in the Eagle Mine and Eagle East drill core. Generally, the sediments exhibit hornfels within 10 cm to 20 m of the contact with the intrusive as a result of metasomatism. The presence of these can be confirmed around the Eagle intrusive, though the hornfels unit rarely exceeds 10 m in width.

The main intrusive types encountered in Eagle East belong to the groups of peridotites and pyroxenites, similar to those encountered in the Eagle Mine, with minor intrusives/dykes of mafic composition, mainly gabbroic. All these mafic dykes are grouped together as they are not related to the mineralization.

LITHOLOGY

A summary of lithological, mineralization, and zone abbreviations is shown in Table 7-1 below. A brief summary of the major lithological units is also presented.

TABLE 7-1 SUMMARY OF LITHOLOGICAL, MINERALIZATION AND ZONE ABBREVIATIONS
Eagle Mine

Lithological Type	Abbreviation
Overburden/Alluvium	OVB/TILL
Siltstone, shales, greywackes	SED
Peridotite	PER
Intrusive	INT

Mineralization Type	% Sulphide
Disseminated (mineralized peridotite)	3-25
Semi-massive Sulphide	25-80
Massive Sulphide	>80

Zone (triangulation domain)	Abbreviation
Massive Sulphide Main	MSU
Massive Sulphide Lower Cu-rich	MSUL_CU
Upper Cu-rich	MSUU_CU
Sulphide Western	SMSW
Semi-massive Sulphide Eastern	SMSE

SEDIMENTARY UNITS

The peridotites intrude siltstone assigned to the Upper Fossum Creek unit. The upper parts of the siltstone sequence are competent, light to medium grey and mostly thick bedded, with minor fine grained turbiditic greywacke sandstone interbeds (up to a few metres thick). Minor soft-sediment deformation features such as flame structures, slumping, and rip-ups are common. There are infrequent thin laminated horizons or interbeds. Syngenetic sulphide is typically pyrite with minor pyrrhotite as thin laminae. Foliation in the sedimentary sequence is a dominant feature that forms the weakest planar orientation. Near the hangingwall contact to the Eagle peridotite (within 10 m to 20 m) foliation in the rock is not visible and the rock becomes weakly hornfels altered. More proximal to the contact (0 m to 5 m) hornfels alteration is fairly strong, although the protolith can usually still be identified. Small-scale folds are both post-foliation (though possibly pre-mineral) and syn-foliation. Other notable features in the upper siltstone are one to two thin 10 cm to 20 cm banded quartz-silica beds that may be useful as markers within the Eagle deposit area. The sediments are upright and slightly tilted dipping 10° to 25° to the east-northeast.

A lower sequence (seen deeper and lateral to the intrusions) is defined by a dominance of dark grey to nearly black thin laminated slates/shales, syngenetic sulphide laminae (pyrite giving way to pyrrhotite+/-pyrite- chalcopyrite), medium grey thin bedded siltstone, and rare fine grained turbiditic sandstone. Subtle soft sediment structures are present in the lower sequence. Foliation, absent within 5-10 m of the peridotite contacts, is less obvious in the dark shales than in the upper grey siltstone, though visibly present. This sequence has been tentatively assigned to the Lower Fossum Creek unit in some Eagle drill logs but is more likely a portion of the Upper Fossum Creek unit. The closest outcrop of sedimentary rocks is 10 km to the west of Eagle at the Huron River.

PERIDOTITE

Medium to coarse-grained massive peridotite and feldspathic peridotite are the most common rock types and form the cores of both intrusions. The peridotite in the cores of the intrusions lacks obvious layering, banding, or foliation. The lack of penetrative, tectonic foliation is an important indication that the intrusions are not Paleoproterozoic in age. In hand sample, the peridotite is dark greenish grey on fresh surfaces. In core, feldspathic peridotite can have a mottled white and dark grey colour (salt and pepper).

In thin section, the peridotite comprises approximately 30% to 60% olivine. The olivine typically occurs as two to five millimetre round to ovoid grains. Textural evidence suggests that olivine is an early cumulate phase (Klasner et al., 1979). Chrome spinel occurs as inclusions in olivine suggesting that it is also an early cumulus phase. Megacrystic and glomeroporphyritic olivine have also been noted, indicating that there might be multiple generations of olivine (Klasner et al., 1979).

Pyroxene makes up 25% to 45% of the peridotite. Clinopyroxene is slightly more abundant than orthopyroxene in most samples. Both clinopyroxene and orthopyroxene are typically poikilitic or sub-poikilitic to olivine with pyroxene oikocrysts up to a centimetre across. USGS geologists in an early study (Klasner et al., 1979) described euhedral orthopyroxenes that could have also formed as an early cumulate phase.

Anhedral plagioclase forms an intermediate to late intercumulus phase. In many places the plagioclase is patchy, but over some significant intervals it can average 25% to 30% (feldspathic peridotite). Other probable late intercumulus minerals include biotite, which can average up to a few percent, some possibly minor primary amphibole, Fe-Ti oxides, and sulphides.

Early microprobe work on samples of unmineralized peridotite showed that olivine compositions ranged from Fo79 to Fo82 with NiO contents from 0.24% to 0.49% (Morris, 1977). A negative correlation between MgO and NiO contents in olivines could be an indication of subsolidus re-equilibration with co-existing sulphides.

Clinopyroxenes have the compositions of low chrome diopside, with Cr_2O_3 contents ranging from 0.46% to 1.02%. Orthopyroxenes are compositionally enstatites. Plagioclase compositions range from An57-65 (Klasner et al., 1979).

PYROXENITE

In drill hole YD01-01 (Eagle East), near the lower contact, the core alternates rapidly between intervals of coarse-grained peridotite and a much finer-grained, less magnetic rock. Similar patterns of alternating intervals of coarse-grained peridotite and fine-grained rock were observed near the contacts in mineralized portions of Eagle. Subsequent drilling indicates that some, or possibly all, of the fine-grained intervals may be xenoliths of an earlier phase(s) of the intrusion that have been mechanically incorporated into the peridotite. A similar fine-grained rock has also been noted along the contacts with the surrounding sediments in both intrusions.

Primary mineralogy is difficult to infer in these fine-grained intervals. Magnetic susceptibility was often used as an aid in estimating original primary olivine content. This assumes that the bulk of the magnetite formed during the serpentinization of primary olivine. When the primary mineralogy is not obvious, core with relatively low magnetic susceptibility is often assumed to be pyroxenite.

In thin section, most primary silicates have been altered to secondary assemblages. Based on relict textures, estimated original olivine contents ranged from 3% to 10% (Jago, 2002). This is significantly less than the peridotites, and consistent with their low magnetic susceptibility. Pyroxenes were the predominant primary mineral phase in these sections. In one sample, however, feldspar was estimated at 35% to 40% indicating that possible compositions for pyroxenite might range from pyroxenite to olivine metagabbro.

A number of thin dykes, ranging from less than a metre to a few metres in width, have been noted in drilling in close proximity to the Eagle intrusions. Little is known about the extent, orientation, or composition of these predominantly fine grained dykes. One thin section, taken from a thin dyke along the margin of the massive sulphide intersection in YD02-02, was described as being re-crystallized (hornfelsed) and comprises secondary minerals with no obvious primary mineralogy preserved (Jago, 2002). This suggests that at least some dykes predate the main stages of intrusion of the peridotite and massive sulphides. High chrome values (>500 ppm) for some of these dykes suggest that they are related to the other picritic dykes in the Baraga Basin. Thin dykes have been noted at the contacts of massive sulphide horizons peripheral to both Eagle intrusions. These dykes may have formed barriers, or zones of weakness, that played a role in localizing later massive sulphide mineralization external to the main intrusions.

Drilling identified two larger gabbroic dykes to the immediate south of the Eagle intrusion. The dykes correspond with a paired, linear magnetic low and magnetic high that can be traced for several kilometres. The dykes have traces of pyrite and chalcopyrite, but very low values of chrome and nickel. They resemble other gabbroic dykes of the Baraga-Marquette dyke swarm.

STRUCTURE

In general, there is no significant post-mineralization structural deformation affecting the Eagle and Eagle East systems. This is significant in that it allows the exploration team to drill target locations identified by the conceptual model, rather than relying exclusively on geophysics.

One post-mineralization fault has been identified at the west end of the Eagle East mineralized zone, and has been intruded by a gabbro dyke. This dyke/fault offsets the east side of the conduit approximately 20 m north and appears to spatially coincide with the western terminus of the massive sulphide zone.

The structural deformation prior to the emplacement of the Eagle and Eagle East intrusions is relatively complex, resulting from multiple island arc accretion episodes during the Penokean Orogeny. This results in the sedimentary basin being folded into a gently eastward plunging syncline. The sediments have a strong foliation and local isoclinal folding, which results in significant deviation in drill holes.

In general, the sedimentary rocks immediately adjacent to Eagle show a fairly consistent bedding orientation with an average strike of 340° dipping 15° to the east. Foliation, like bedding, is fairly consistent with an average orientation striking 100° and dipping 40° to 45° to the south, similar to the measurements from the rest of the Baraga Basin.

Both open and closed joints show a broad range of orientations with no dominant set. Most open joints strike east-southeast parallel to the trend of the Eagle peridotite and have flat to moderate dips both north and south. A second preferred orientation strikes north-northeast; with very steep to vertical dips both east and west. Cemented joints are dominantly flat lying but show a similar very broad range of orientations. Cemented joints (typically serpentinite) within massive sulphides preferentially strike at 065° and dip from 0° to 60° to the southeast. Within peridotite, they preferentially strike at approximately 280° and dip from 0° to 70° to the north.

DEFORMATION ZONE

A regionally consistent one metre thick horizontal zone of mottled quartz veining is present throughout the drilled area of the Baraga Basin. This zone is not conformable with bedding and is likely related to ancient thrust faulting, although this interpretation is speculative.

ALTERATION

All samples of the two intrusions show evidence of significant, but variable degrees of alteration. Alteration includes serpentinization of olivine and to a lesser degree pyroxene; alteration of pyroxene to secondary amphibole; chloritization of amphibole; chloritization and saussuritization of plagioclase; and minor talc-carbonate alteration (Klasner et al., 1979).

There is no hydrothermal alteration halo around the peridotite, however, there is a large bleaching zone above and lateral to the deep gabbro intrusive. Thermal alteration in the form of hornfelsed sediments occurs within ten metres of the intrusive units.

MINERALIZATION

Eagle and Eagle East are part of the same ultramafic intrusive complex and both host high grade primary magmatic nickel copper sulphide mineralization. Mineralization styles are similar at Eagle and Eagle East, consisting of ovoid to pipe-like bodies of mineralized peridotite with concentrations of sulphide mineralization along the base of the intrusion resulting in the accumulation of semi-massive sulphide, and a central core zone of massive sulphide.

Two types of potentially economic mineralization are found in Eagle and Eagle East: semi-massive sulphides and massive sulphides. Disseminated mineralization is also encountered in the peridotite intrusive, however, because it is not economic, the mineralized peridotite with disseminated sulphides has been considered as an intrusive and not a mineralized unit.

EAGLE

The intrusion hosting Eagle is elongated east-west with a maximum length of 480 m and maximum width of approximately 100 m near surface. The intrusion narrows to approximately 10 m wide at the limit of drilling 290 m below surface (145 m RL). The sulphide bodies within the intrusion comprise an irregular mass broadly aligned with the strike and dip of an ovoid dilatant zone occupied by the peridotite. They subtend a volume measuring 330 m in strike length by 270 m vertically, abruptly terminating on the west and tapering to the east with a maximum thickness in the middle of approximately 135 m.

At the east and west ends of this volume are two bodies of semi-massive sulphides (SMSU), termed SMSUE and SMSUW, respectively. The SMSUW is somewhat pipe-like in shape, oriented vertically within the peridotite. The SMSUE is more tabular in aspect, extending eastwards from the central core of the deposit, again, at roughly the same orientation as the host intrusion. RPA notes that although they are distinguished from one another for the purposes of geological interpretation and Mineral Resource estimation, the SMSU bodies do appear to be a single contiguous mass.

A single irregular body of massive sulphide (MSU) occupies the central portion of the deposit, more or less between the SMSUE and SMSUW. The MSU extends outside of the semi-massive bodies, and in many cases has intruded the sedimentary rocks adjacent to the peridotite. This has resulted in several flat sill-like protuberances at the margin of the deposit.

EAGLE EAST

Drilling at Eagle East has identified nickel and copper rich massive and semi-massive sulphide mineralization concentrated along a horizontal conduit at the bottom of the main

Eagle East intrusion. Prior to the exploration program initiated in 2013, no semi-massive sulphide had been found at Eagle East and only one to two metre MSU lenses had been found along the 45° plunging keel of the intrusion. The Eagle East intrusion can be categorized into two components: the funnel shaped upper peridotite intrusion outlined prior to 2013 and the sub-horizontal conduit zone defined since 2013.

The conduit zone contains massive sulphide and semi-massive sulphide similar to Eagle, whereas the main intrusion consists of barren peridotite with low grade disseminated and thin massive sulphides along the keel. The conduit exploration program has identified a 500 m long horizontal section of the Eagle East feeder conduit, where the peridotite conduit is cored by semi-massive sulphide with massive sulphide accumulations at its base, as well as massive sulphide sills into the sediments. The conduit is up to 30 m thick, and its vertical extent is in the order of 75 m.

MINERALIZING SYSTEM

Sulphides are deposited as dense droplets in the primary magma due to decreased flow rate in the magma, or a change from laminar to turbulent flow due to changes in the conduit geometry. Multiple pulses occur in the same plumbing system, resulting in three discrete mineralization types which typically have hard contacts. The mineralizing intrusion is Mineralized Peridotite (MPER), which transports sulphides within large volumes of magma, and in this way is able to transport significant quantities of dense sulphides upward through the crust in a diluted form. This results in the conduits between mineralized zones consisting of barren peridotite or weakly mineralized peridotite, such as the upper zone of Eagle East.

Typical mineralization zoning at both Eagle and Eagle East consists of a mineralized peridotite conduit with a core of SMSU and a base of crosscutting MSU that also sills out into the surrounding sediments (Figure 7-4). The massive sulphide remains liquid for a significant time, so it is able to crosscut other units after emplacement is complete.

METAL DISTRIBUTION

Limited petrography and Quantitative Evaluation of Materials by Scanning Electron Microscopy (QEMSCAN) work indicates that most of the nickel is in pentlandite with a small portion in millerite group minerals and secondary violarite. The majority of pentlandite occurs in granular form with less than 1% to 2% as flame or exsolution lamellae.

Copper is primarily in chalcopyrite with lesser secondary cubanite. Chalcopyrite occurs as anhedral inclusions in pyrrhotite and as coarse patches with granular pentlandite around pyrrhotite grains. Chalcopyrite also occurs as veins that locally crosscut SMSU and sedimentary units, however, these are volumetrically minor.

The distribution of platinum group metals (PGM), gold, and cobalt is still poorly understood but assay and metallurgical test correlations indicate the cobalt is associated with the pyrrhotite/pentlandite. PGMs and gold appear to be related to late stage veining/intrusion and tend to be most abundant in areas with chalcopyrite enrichment.

Eagle East is observed to be, with the exception of cobalt, significantly higher in grade for both precious and base metals than Eagle (see Table 14-1). Average nickel and copper grades are in the order of 60% higher at Eagle East compared to Eagle. Gold averages approximately 87% higher, while platinum and palladium are well over double. RPA further notes that, while silver is not reported in the Mineral Resource estimate for Eagle, silver is present at Eagle in roughly the same abundance as at Eagle East (see Tables 14-3, 14-4, and 14-5).

PERIDOTITE (PER) AND MINERALIZED PERIDOTITE (MPER)

The mineralized intrusion is sulphur saturated PER which carries disseminated sulphide blebs in abundances ranging from trace to 25%. MPER (Figure 7-5) as a discrete lithological unit has never been ore grade at Eagle or Eagle East, however, the disseminated sulphide blebs are very high metal tenor, which was an important factor in the decision to follow Eagle East to depth. The accumulation of high tenor droplets results in high grade massive sulphide zones.

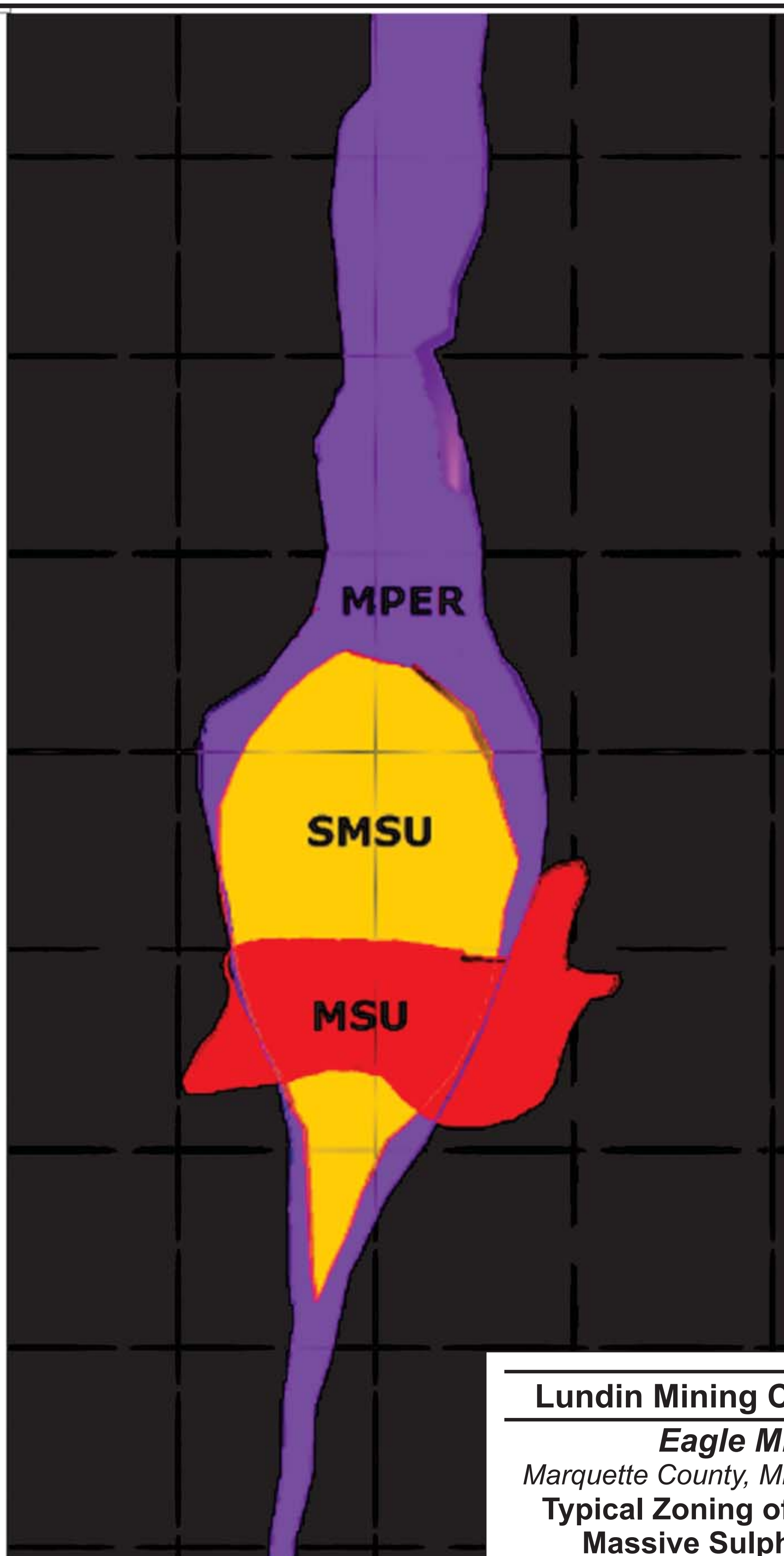


Figure 7-4

Lundin Mining Corporation

Eagle Mine

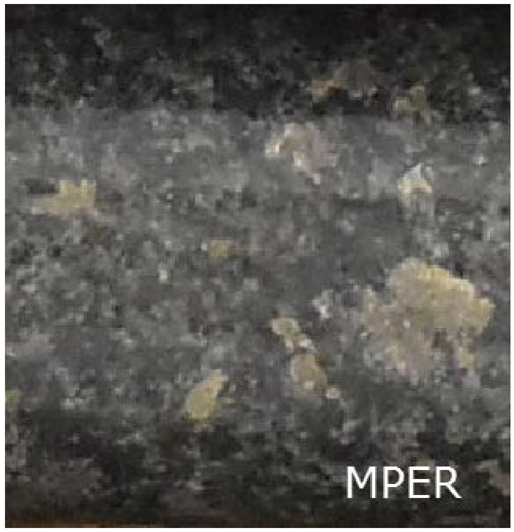
Marquette County, Michigan, U.S.A.

Typical Zoning of Peridotite, Massive Sulphide, and Semi-Massive Sulphide

April 2017

Source: Lundin Mining Corp., 2016

FIGURE 7-5 MINERALIZED PERIDOTITE



Scattered blebs of sulphide are found throughout the peridotite sections of both of the Eagle intrusions. At Eagle, zones of abundant disseminated sulphide (3% to 15%) are localized along the margins of the intrusions, above and below the Upper Sulphide Zone and above the Lower Sulphide Zone. Cloud-like zones of low-grade, disseminated sulphides occur throughout the eastern portion of Eagle, concentrated on intrusion margins and commonly bordering possible rafts of fine-grained pyroxenite.

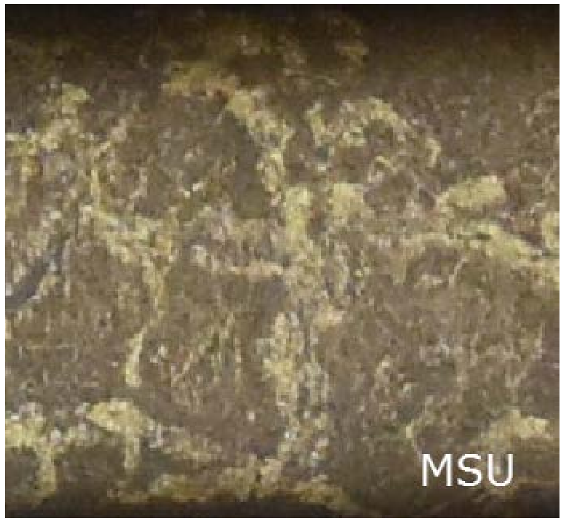
The transition from peridotite with only rare blebs of sulphide, to peridotite with several percent sulphides, typically happens over less than one metre. The geological control for this boundary is not obvious. The boundary of the disseminated mineralization, for modelling purposes, is based on metal value, not sulphide content.

MASSIVE SULPHIDE (MSU)

MSU shows considerable variation in composition. Chalcopyrite content can vary from less than 10% to more than 50%. In most of the MSU (Figure 7-6), pyrrhotite is the dominant sulphide. Pyrrhotite occurs as coarse, anhedral grains with minor pentlandite and chalcopyrite.

Pentlandite typically occurs as discrete crystals up to five millimetres in diameter. Chalcopyrite typically forms rings around the pyrrhotite crystals, except in the high copper massive sulphide zones where chalcopyrite is volumetrically dominant.

FIGURE 7-6 MASSIVE SULPHIDE

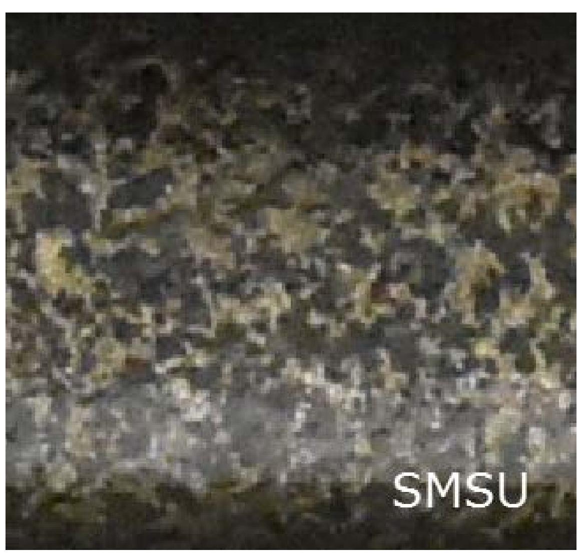


SEMI-MASSIVE SULPHIDE (SMSU)

SMSU occurs throughout the core of the Eagle East conduit zone. The SMSU comprises zones of 30% to 50% sulphide that forms a net textured matrix enclosing altered olivine and pyroxene.

Disseminated mineralization generally increases toward zones of SMSU (Figure 7-7). However, the transition between the disseminated mineralization and SMSU is typically abrupt, with sulphide contents increasing from 5% to 10% to over 40% over a distance of less than one metre.

FIGURE 7-7 SEMI-MASSIVE SULPHIDE



8 DEPOSIT TYPES

Magmatic sulphide deposits containing nickel and copper, with or without PGMs, account for approximately 60% of the world's nickel production and are active exploration targets in the United States and elsewhere. On the basis of their principal metal production, magmatic sulphide deposits in mafic rocks can be divided into two major types: those that are sulphide-rich, typically with 10% to 90% sulphide minerals, and have economic value primarily because of their nickel and copper contents; and those that are sulphide-poor, typically with 0.5% to 5% sulphide minerals, and are exploited principally for PGM.

The Eagle deposit and the Eagle East conduit zone are high-grade magmatic sulphide accumulations containing nickel-copper mineralization and minor amounts of cobalt and PGMs. The economic minerals associated with this deposit are predominately pentlandite and chalcopyrite.

The mineralization process common to all primary magmatic sulphide deposits consists of:

1) Metal-rich ultramafic magma intruding into the crust, typically in an extensional environment;
2) Sulphur saturation through geochemical contamination by crustal rocks resulting in primary sulphide droplets forming;
3) Metal enrichment of sulphides by interaction with large volumes of subsequent magma flow; and
4) Deposition of sulphides by density settling where magma flow slows due to structural traps or major changes in the geometry of the plumbing system (going from a small conduit to a large chamber, etc.).

In essence, these are placer deposits with magma as the fluid and sulphides as the dense particles in transport.

Several varieties of this deposit type occur within the primary magmatic sulphide model, ranging from komatiite lava flow deposits like Raglan, to meteor impact triggered partial melting like Sudbury, to conduit style mineralization like Eagle and Voisey's Bay, and layered mafic complex mineralization like the Duluth complex. Figure 8-1 shows idealized representations of these deposit types.

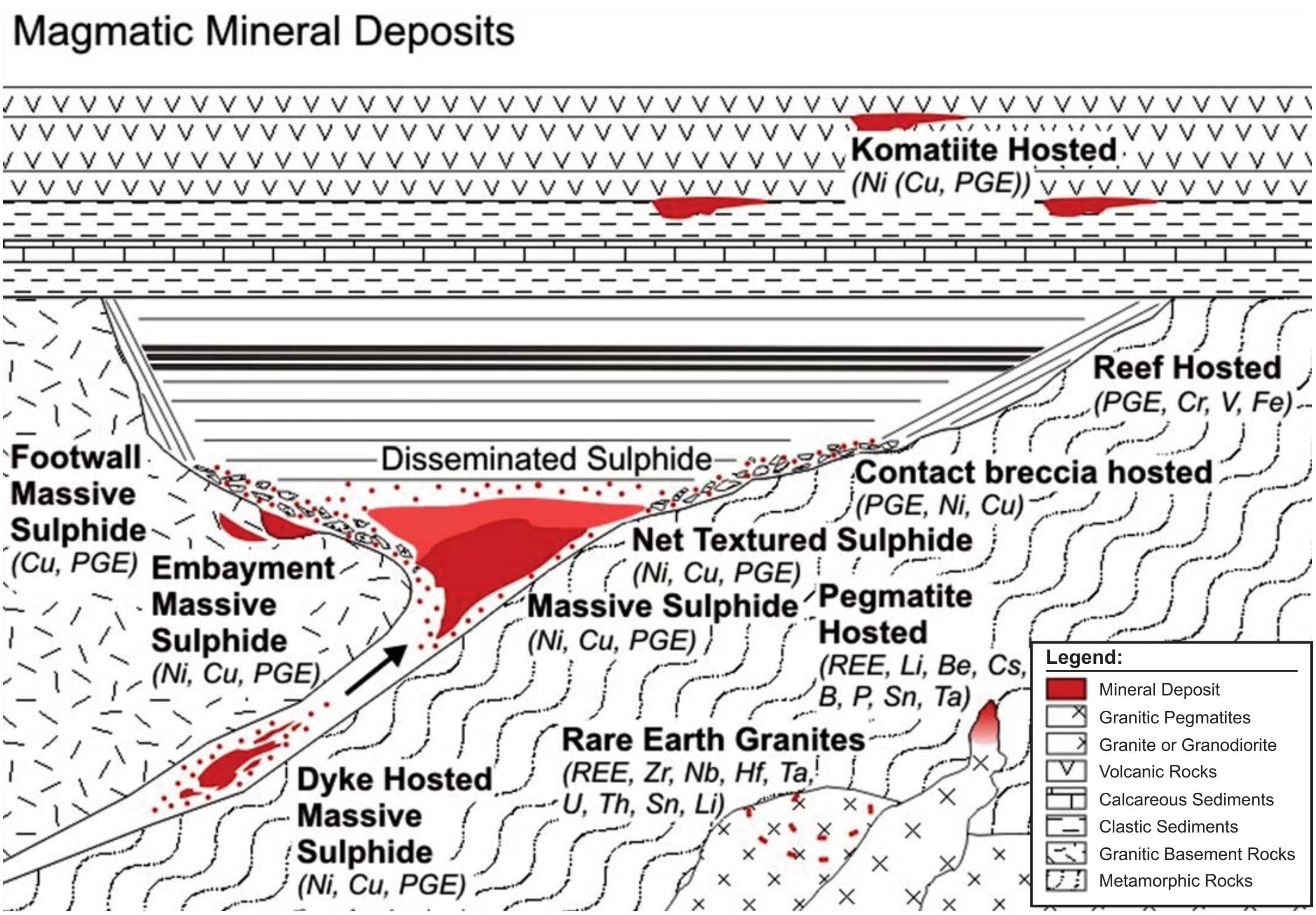


Figure 8-1

Lundin Mining Corporation

Eagle Mine

Marquette County, Michigan, U.S.A.

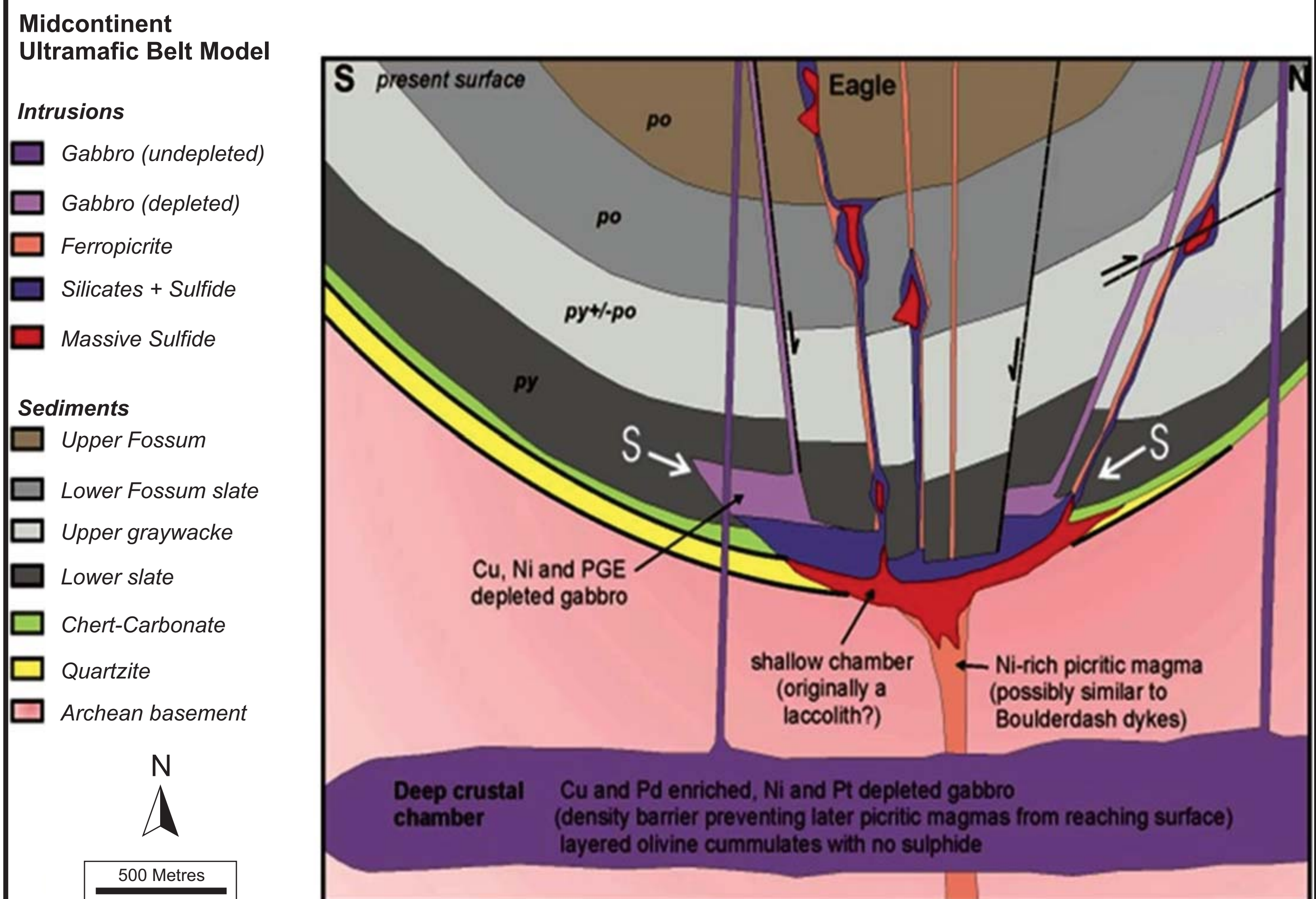
Types of Primary Magmatic Sulphide Deposits

April 2017 **Source: Lundin Mining Corp., 2016**

The magmatic sulphide model focuses on deposits hosted by small to medium-sized mafic and (or) ultramafic dykes, sills, and conduit shaped "chonoliths" that are related to picrite and tholeiitic basalt magmatic systems generally emplaced in continental settings as a component of Large Igneous Provinces (LIPs). World-class examples (those containing greater than one million tonnes Ni) of this deposit type include deposits at Noril'sk-Talnakh (Russia), Jinchuan (China), Pechenga (Russia), Voisey's Bay (Canada), and Kabanga (Tanzania).

At Eagle, the conceptual model is that a series of magma conduits connect several larger magma chambers, and exploring for high grade orebodies is reliant on tracing the conduits from one chamber to the next. The model has proven successful with the discovery of the Eagle East mineralization which was discovered as the result of directional drilling to follow the conduit from the much larger and lower grade Eagle East peridotite. New intercepts at the East end of the Eagle East conduit indicate that the system is entering another large diameter chamber. The base of this chamber is an encouraging target for ponded massive sulphides, because it is possible that the chamber sills out to a large flat footprint at the bottom of the sedimentary basin, 500 m below. This is consistent with the conceptual exploration model shown in Figure 8-2.

Structure plays a key role in the mineralization process at Eagle East. The horizontal conduit that facilitated the deposition of high metal tenor sulphide droplets which coalesced into high grade massive sulphides was likely the direct result of normal movement on a rift bounding fault with an undulating dip angle (Figure 8-3). The dilation from the steepening dip section experiencing normal movement resulting in the opening of a horizontal conduit shaped void which was promptly intruded by mineralized peridotite magma. This was likely remobilized by later pulses contributing to the formation of semi-massive sulphide.



Note potential for large accumulation of sulphides at the base of the sedimentary basin.

Figure 8-2

Lundin Mining Corporation

Eagle Mine

Marquette County, Michigan, U.S.A.

Genetic Model for
Eagle Type Deposit Formation

April 2017 ***Source: Lundin Mining Corp., 2016***

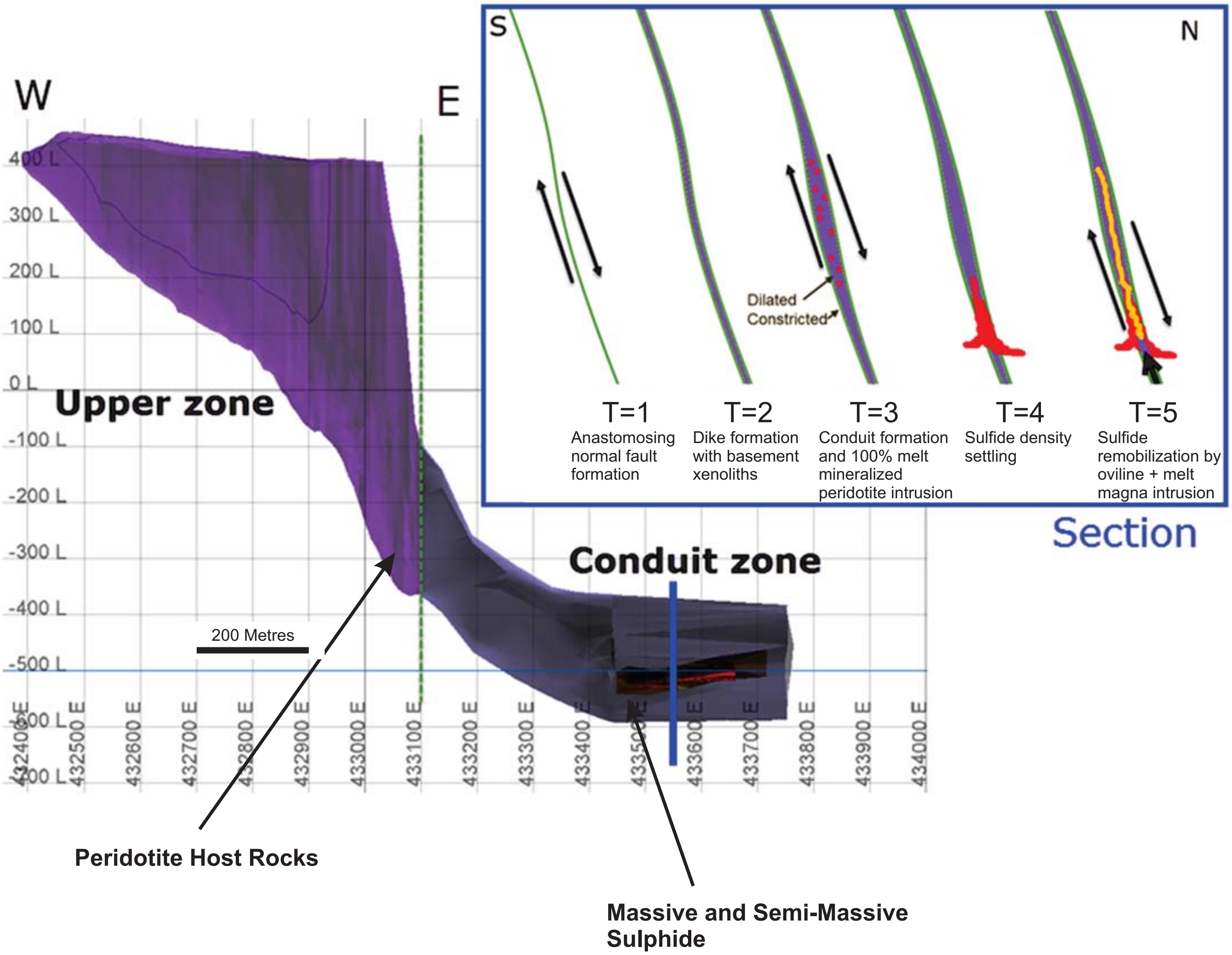


Figure 8-3

Lundin Mining Corporation

Eagle Mine

Marquette County, Michigan, U.S.A.

Eagle East Deposit Model

April 2017

Source: Lundin Mining Corp., 2016

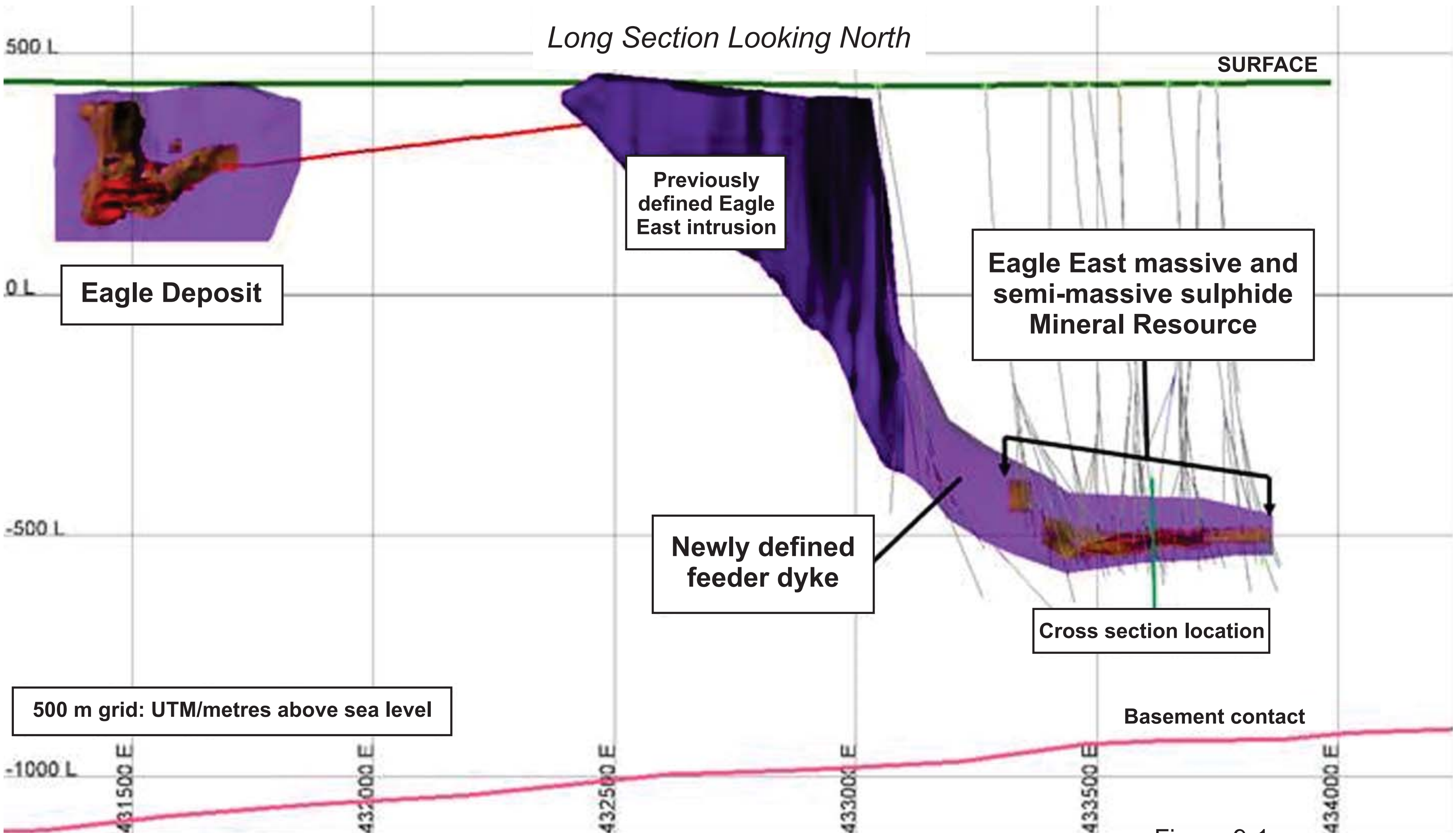
9 EXPLORATION

Exploration activities at Eagle have included geological mapping, geochemistry (indicator mineral sampling and Mobile Metal Ion (MMI) studies from basal tills, dyke geochemistry, sulphur isotype studies, QEMSCAN studies), and geophysics (airborne, surface, and underground borehole resistivity and gravity). The main and most successful exploration tool has been diamond drilling in combination with a very robust and predictive deposit model (Figure 9-1).

Historical exploration conducted by KEX and KEMC is described in Section 6, History.

LMC acquired Eagle in 2013, completed construction, and brought Eagle into production in 2014. Eagle Mine LLC continued with near mine exploration with a focus on extending mine life. Using the conduit model, the most direct and expedient exploration target was to follow the mineralized peridotite conduit at Eagle East to depth with directional drilling. With Eagle as a model, the Eagle East conduit was traced downward to a location where the conduit flattened to horizontal and high metal tenor sulphide droplets had settled to the base of the conduit.

Directional drilling was used to drill a fan pattern horizontally, adjusting subsequent holes up or down based on the location within the conduit as determined by the zoning patterns identified at Eagle. The conduit has currently been traced eastward for approximately 500 m, at which point a new intrusion, the eastern deep intrusion, was discovered.



0 100 200 300 400 500
Metres

Figure 9-1

Lundin Mining Corporation

Eagle Mine

Marquette County, Michigan, U.S.A.

Eagle and Eagle East Long Section

April 2017

Source: Lundin Mining Corp., 2016.

RPA

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EAGLE EAST

PRELIMINARY DEVELOPMENT DRILLING

The Eagle East FS incorporates a 5.2 km extension of the decline from the base of the current Eagle Mine in order to provide drill platform access to the Eagle East area (Figure 9-2). Underground drilling will be completed to define Indicated and Measured Mineral Resources as well as to provide information for mine development, however, it will not commence until 2019 when the proposed ramp reaches the Eagle East zone.

2016 EXPLORATION SUMMARY

In the first half of 2016, seven drill rigs were used to delineate the Eagle East discovery to allow an initial Inferred Mineral Resource estimate to be completed. In the second half of the year, the drill rig contingent was reduced to four. Drilling targeted possible controlling structures of Eagle East and probing for extensions of the Eagle East conduit.

2017 PROPOSED EXPLORATION PROGRAM

In 2017, near-mine surface exploration will target potential extensions of the Eagle East conduit both laterally and at depth. A total of 29,200 m of drilling from surface are projected. Exploration on regional targets is also being contemplated. Underground delineation drilling of Eagle during 2017 will focus on improving the definition of the mineralization above the 265 level. The program will focus on longer holes than previously drilled, in an effort to remain ahead of the rapidly advancing mine plan. A total of 5,400 m is planned in 55 holes.

The surface exploration drill program to both probe for massive sulphide extensions and test new targets, planned for 2017, is discussed below.

NORTH MSU SILLS

The Eagle East FS Mineral Resource drilling program is now 100% complete, however, the potential exists to add massive sulphide in the form of sills at both the eastern and western extensions of the conduit zone. Due to hole deviation, all holes are drilled from the south. Hitting targets at this depth is extremely difficult even with directional drilling. Between the geometry and the difficulty in reliably hitting exact targets, there is potential for untested massive sulphide sills to extend outward into the sediments (Figure 9-3). Two main prospective extension zones have not yet been drill tested.

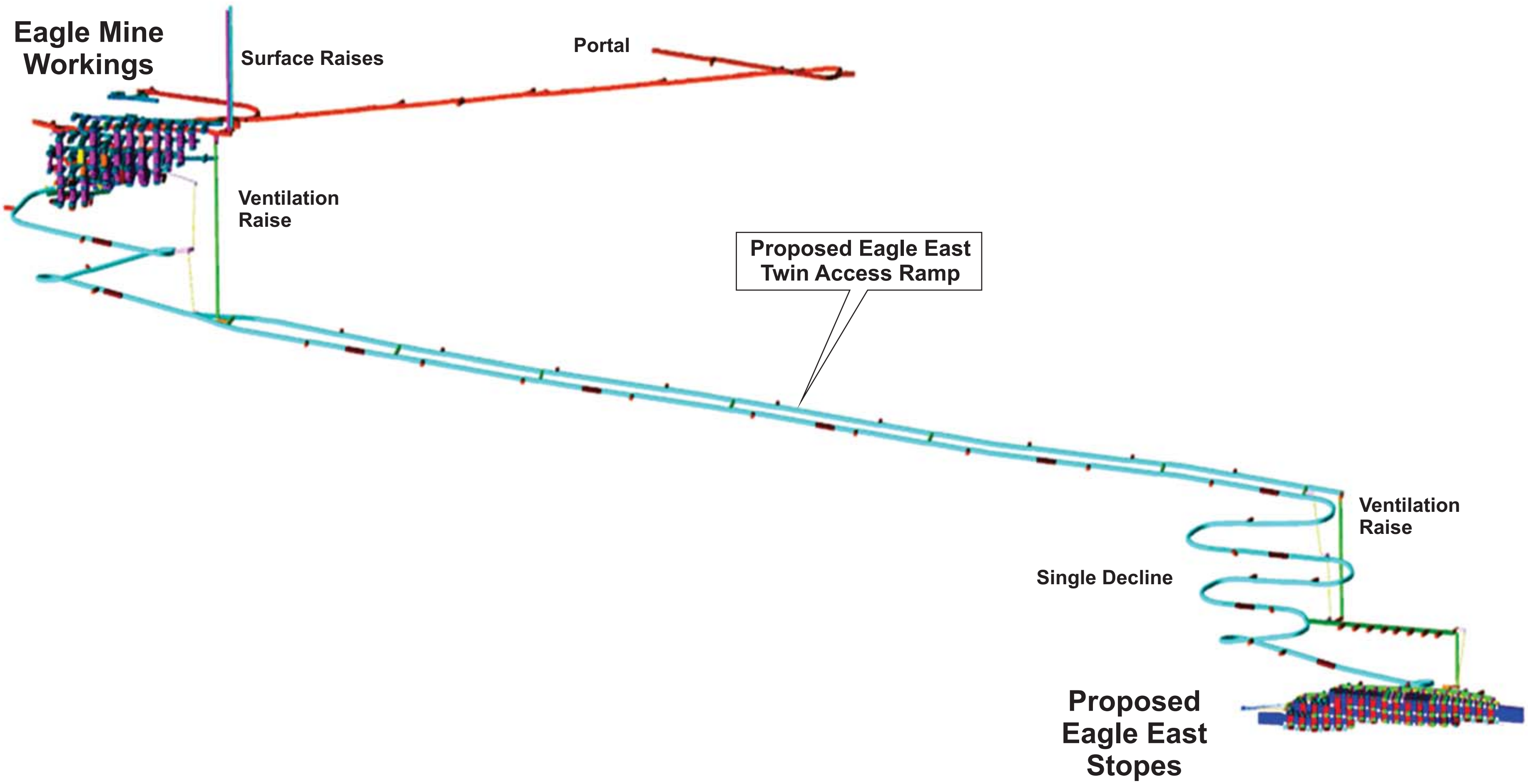


Figure 9-2

Lundin Mining Corporation

Eagle Mine

Marquette County, Michigan, U.S.A.

Proposed Eagle East
Preliminary Development Drilling

Source: Lundin Mining Corp., 2016.

EASTERN DEEP INTRUSION

The drilling has also identified another deeper-seated target down dip in a vertical gabbro complex below basements rocks and further drilling of this new target is also planned (Figure 9-4). The eastern deep intrusion appears to be a depleted gabbro, which is significant in that it is common for overlying intrusions to be depleted in metal due to the accumulation of those metals as massive sulphide at the base of the intrusion. In addition, a peridotite with disseminated nickel-copper mineralization was intersected on the margin of the gabbro complex approximately 300 m below the Eagle East conduit. Drill testing around this potential new conduit is planned.

Testing of a seismic reflector and the eastern deep intrusion to the eastern end of Eagle East (Figure 9-5) are underway. This zone has potential for sulphides to accumulate in a flat sheet rather than a vertical conduit, which could result in a much larger massive sulphide deposit composed of the same high metal tenor sulphides. The large size of the intrusion and the depleted chemistry of the new eastern deep intrusion are very promising and indicate that they may be above the staging chamber postulated in the genetic model.

REGIONAL TARGETS

Several regional properties have drilled conduit shaped mineralized peridotites and further exploration will be considered.

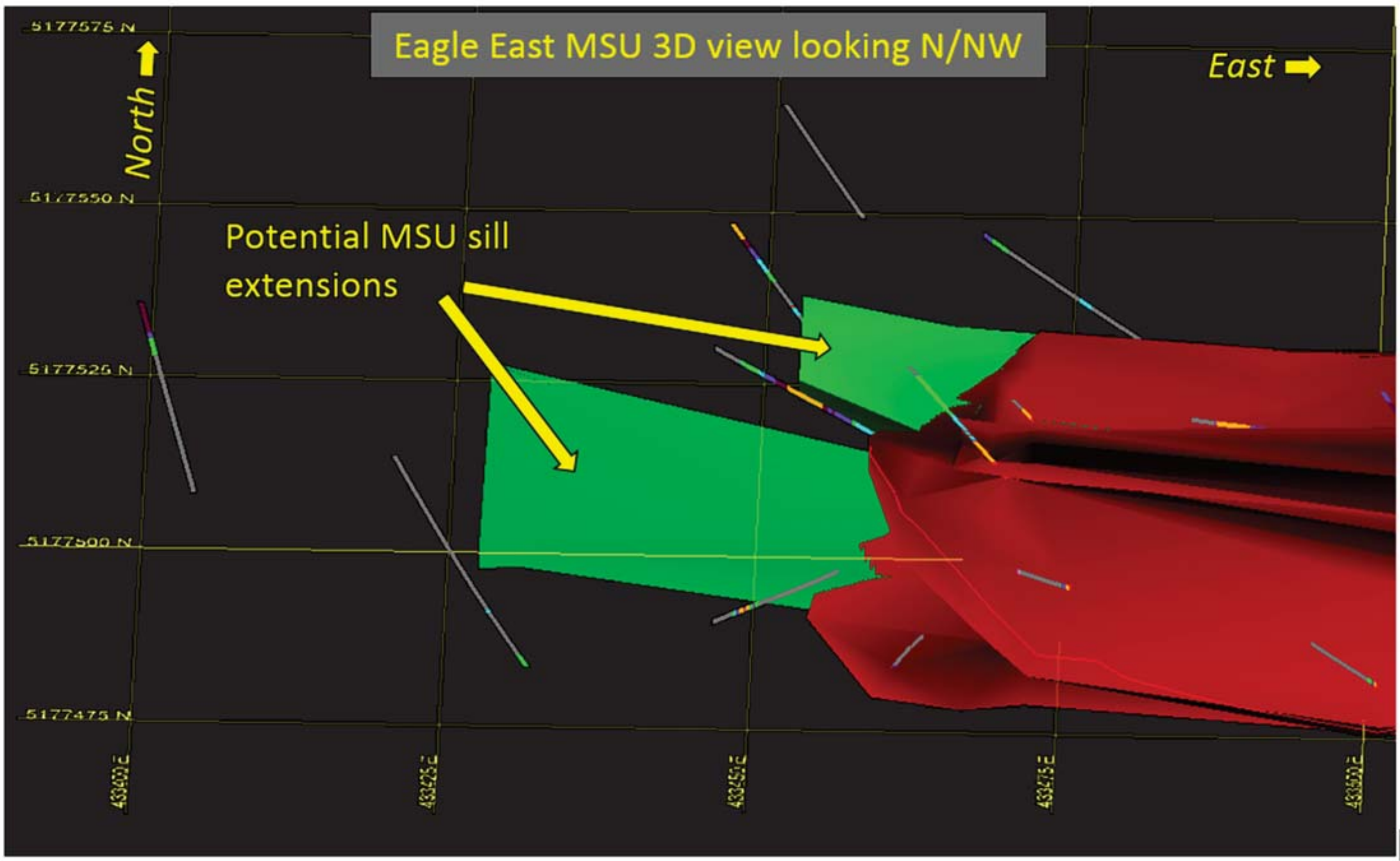


Figure 9-3

Lundin Mining Corporation

Eagle Mine

Marquette County, Michigan, U.S.A.

3D View Showing Potential MSU Sills at the West of the Eagle East Conduit

April 2017

Source: Lundin Mining Corp., 2016.

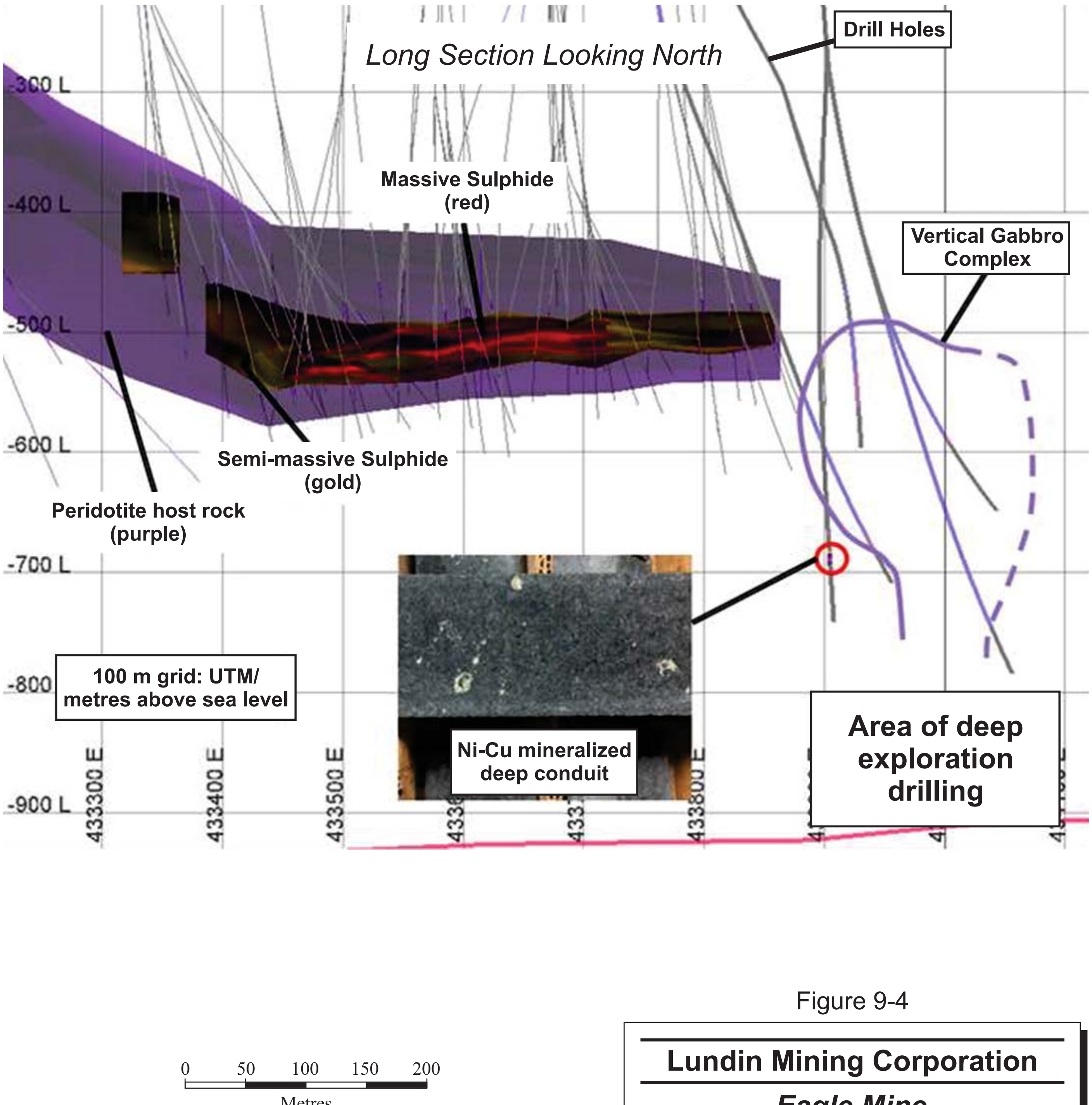


Figure 9-4

Lundin Mining Corporation

Eagle Mine

Marquette County, Michigan, U.S.A.

Eagle East Long Section Showing the Outline of Mineralization and the Deep Target Area of Continued Drilling

April 2017

Source: Lundin Mining Corp., 2016.

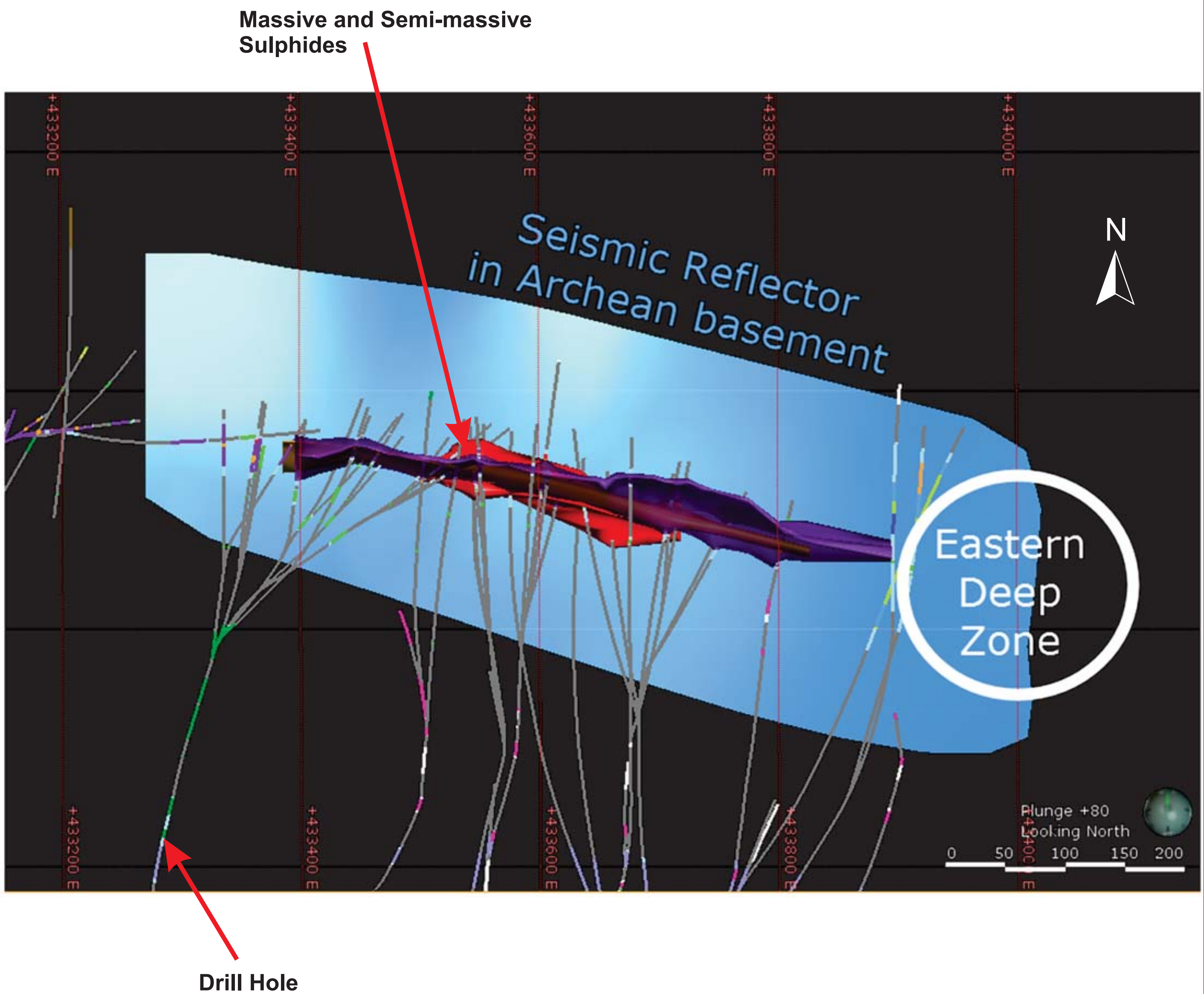


Figure 9-5

Lundin Mining Corporation

Eagle Mine

Marquette County, Michigan, U.S.A.

Plan View Showing the Potential Eastern Deep Gabbro Zone at the End of the Horizontal Peridotite Conduit

April 2017

Source: Lundin Mining Corp., 2016.

10 DRILLING

All exploration and Mineral Resource definition at Eagle and Eagle East have been conducted by diamond core drilling. Historical minor sonic drilling was conducted to test depth to bedrock and define lithologies at the paleo-bedrock surface.

Since its acquisition by LMC in 2013, Eagle Mine LLC has carried out drilling on Eagle and Eagle East.

Drilling at Eagle and Eagle East is restricted to diamond core using various size tools. As stated above, seven rigs were employed for the first half of 2016 and reduced to four for the second half of the year. The drilling was primarily to investigate controlling structures for the Eagle East mineralization and to look for extensions of the Eagle East conduit. During 2016, 52,868 m of surface drilling was completed on both deposits with 95 holes and wedges. An additional 5,287 m of underground definition drilling was completed at Eagle in 89 holes.

Total drilling at Eagle comprises 109,089 m in 243 surface holes drilled between 2001 and 2016. In addition, since 2012, 23,304 m in 306 holes have been drilled from underground (Table 10-1). At Eagle East, the surface drilling encompasses 260 holes, for a total of 125,972 m. Nine holes, totalling 3,237 m, were drilled in 2014 from underground (Table 10-2).

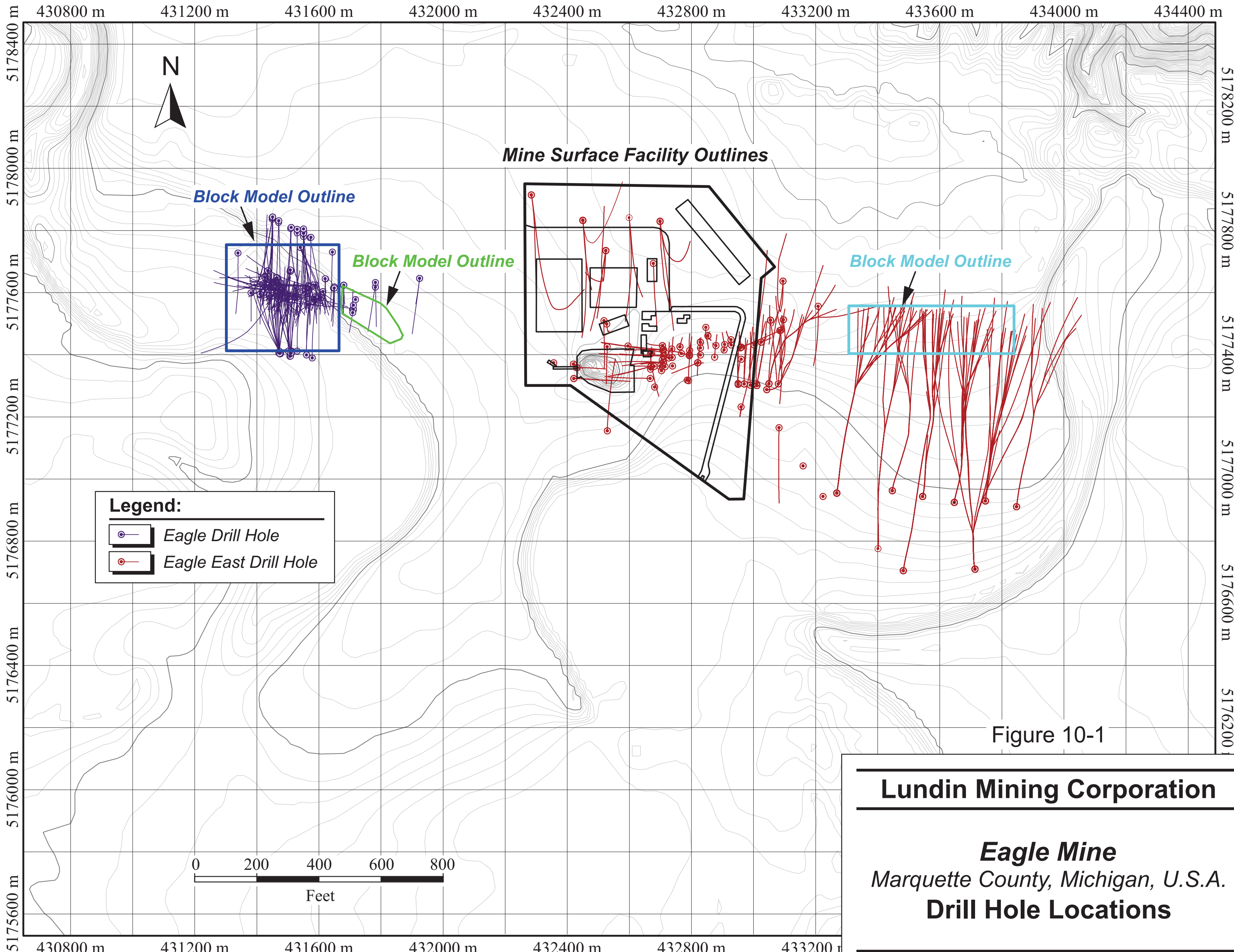
Note that not all holes listed in Tables 10-1 and 10-2 were included in the Mineral Resource estimates. A plan view in Figure 10-1 shows the locations of those holes that were used for modelling and resource estimation.

TABLE 10-1 DRILLING SUMMARY – EAGLE MINE
Eagle Mine

	Surface		Underground		Total	
Year	**Holes**	**Metres**	**Holes**	**Metres**	**Holes**	**Metres**
2001	4	667	-	-	4	667
2002	22	6,002	-	-	22	6,002
2003	14	3,781	-	-	14	3,781
2004	45	11,829	-	-	45	11,829
2005	17	4,262	-	-	17	4,262
2006	7	3,083	-	-	7	3,083
2007	21	9,320	-	-	21	9,320
2008	5	6,688	-	-	5	6,688
2010	4	2,595	-	-	4	2,595
2011	12	8,267	-	-	12	8,267
2012	77	45,219	7	1,337	84	46,556
2013	6	2,925	46	8,081	52	11,006
2014	1	317	56	5,269	57	5,586
2015	1	1,006	108	3,330	109	4,336
2016	7	3,128	89	5,287	96	8,415
Total	**243**	**109,089**	**306**	**23,304**	**549**	**132,393**

TABLE 10-2 DRILLING SUMMARY – EAGLE EAST PROJECT
Eagle Mine

	Surface		Underground		Total	
Year	**Holes**	**Metres**	**Holes**	**Metres**	**Holes**	**Metres**
1995	4	894	-	-	4	894
2001	3	594	-	-	3	594
2002	13	3,688	-	-	13	3,688
2003	2	617	-	-	2	617
2004	3	1,598	-	-	3	1,598
2005	3	3,492	-	-	3	3,492
2006	30	9,337	-	-	30	9,337
2007	18	5,967	-	-	18	5,967
2008	33	19,256	-	-	33	19,256
2010	7	2,104	-	-	7	2,104
2011	14	9,486	-	-	14	9,486
2013	2	792	-	-	2	792
2014	10	4,317	9	3,237	19	7,554
2015	30	14,090	-	-	30	14,090
2016	88	49,740	-	-	88	49,740
Total	**260**	**125,972**	**9**	**3,237**	**269**	**129,209**



April 2017

Source: RPA, 2017.

Figure 10-1

Lundin Mining Corporation

Eagle Mine

Marquette County, Michigan, U.S.A.

Drill Hole Locations

www.rpacan.com

DIAMOND DRILLING

At Eagle, the surface drilling was initially conducted on 25 m intervals with pierce-points at approximately 20 m to 25 m spacing along with drill hole fans on 25 m and 12 m centres. The overall drill hole spacing is not uniform owing to the orientation of the mineralized body and the environmental constraints on collar placement.

Underground preliminary development drilling, which began in 2012, is generally completed at a nominal 20 m spacing for achieving a Measured category for the resource model. Holes are not typically aligned along cross section planes owing to the necessity to fan holes from a relatively few stations. RPA notes that the style of mineralization is such that it is not necessary for the drill holes to be rigorously oriented perpendicular to the overall trend of the mineralization. The deposit is traversed in a wide range of directions in such a fashion that the samples, taken as a whole, should be representative of the grades of the mineralization.

Both surface and underground drilling has been carried out by contract drillers. The most recent contractors have been Boart Longyear (surface and underground) and TonaTec (surface), both based in Salt Lake City, Utah. Surface drilling programs employ truck-mounted LF90 rigs (Boart Longyear) and Discovery Drill Manufacturer (DDM) EF-75 (Tonatec). Underground drilling is conducted using skid mounted LM90 rigs. RPA inspected both the surface and underground rigs and they appeared to be operated in a professional and workmanlike manner.

Drilling includes HQ (6.35 cm diameter), NQ (4.76 cm), NQ2 (5.06 cm), and NTW (5.61 cm) size core. Initially, limited wedge work and directional drilling was undertaken at Eagle to obtain twinned hole data and steer holes to desired target points. More recently, extensive use of directional drilling and wedging have been applied at Eagle East owing to the greater depth requirements.

Directional drilling (using DeviDrill) has been utilized by a Norwegian contractor Devico (who were permanently based on site) to drill deflection holes for multiple intersections out of a single hole. The Devico directional drilling tool was used to guide surface drilled holes to targets and maintain an even grid spacing. During the directional drilling process, parts of the hole are surveyed independently by the Devico sub-contractors, providing an additional verification on the FLEXIT MultiSmart multi-shot tool survey data. All holes are gyro surveyed upon completion.

CORE RECOVERY

Core recovery is recorded in the geotechnical logs. Generally, recovery is considered excellent at Eagle when advancing in bedrock. Recovery is poor to zero in the glacial tills while core drilling. Where till geology is required, drilling was completed using a sonic rig with a resulting recovery of close to 100%.

SURVEYS

SURVEY GRIDS

UTM coordinates based on the NAD83 (Zone 16N) datum are used at Eagle. The 0 RL elevation is based on mean sea level (MSL).

DIAMOND DRILLING

Diamond drilling is planned by the exploration department using Vulcan 3D geological modelling software.

Surface collars were located initially by handheld GPS and oriented by Brunton compass, then picked up by contract surveyors. For 2003 to 2016, the collars were surveyed by a local registered land surveyor, who also established a number of control points on the property. KEMC reported that some of the 2002 collars were lost at the time of this survey. The onsite staff made their best estimate as to the locations of these collars. Accuracy for the surveyed locations of these collars is reported to be within two metres.

Underground diamond drill collars are initially marked up by the Eagle Mine LLC Surveyors or Eagle Mine LLC geology personnel utilizing a Leica TS-14 total station. Foresight and backsight survey plugs are installed in the drift walls and marked with yellow paint or the drill rig is directly sighted in with the total station. After completion of drilling, the hole collar location is surveyed.

Downhole surveys were carried out by a variety of instruments throughout the property exploration history. The survey methods and dates are listed below:

- 2001: Sperry Sun single-shot camera.
- 2001 and 2002: Sperry-Sun gyroscopic survey tool.
- 2002: Flexit MultiSmart multi-shot tool.
- 2003 to 2013: IDS gyroscopic survey tool and rate gyros plus Flexit surveys.
- 2014 to 2016: Reflex gyroscopic tool.

Currently, downhole surveys are taken at three metre intervals for underground drilling and three metre intervals on average for surface drilling.

In RPA's opinion, the collar and downhole surveys, as reported, have been carried out in a manner that is consistent with industry-standard methods.

CORE HANDLING PROTOCOLS

Core boxes are labelled by the drillers with box and hole number. The core is removed from the tube, washed, and placed in the box. Core boxes are waxed cardboard. Footage blocks are placed at the end of the run. Breaks are marked with an X with a red pencil. For oriented core, the driller is responsible for orienting the core to the EzyMark pins, recording the oriented core survey information, and marking a line on the pin block and the core. The pin block is placed in the core box. Alternatively, the ACT tool is used. In the case of the ACT tool, the driller is responsible for marking the ACT core orientation mark on the core and recording associated information.

Drill core is collected by Eagle Mine LLC personnel and delivered to the logging and sampling facility located at the Exploration Office in Negaunee. Core is stacked on pallets up to a maximum of 60 boxes per pallet. At the time of the site visit, a new geotechnical logging facility had just been established near the drill rigs. Oriented core is now delivered to that location. The drill core is in the custody of Eagle Mine LLC personnel or the company's designates at all times. The drill sites and core storage areas are generally secure and supervised continuously.

LOGGING

For logging, the core is transferred to the logging tables. All data is captured via laptop computers and stored in an acQuire database. Footage blocks are converted to metres, and the core is inspected and re-oriented to fit together. Open and cemented joint data is recorded, and large-scale structures are logged. The core is photographed, both wet and dry, with a digital camera. Sample locations are marked for point load tests and density measurements. Point load tests are taken every five metres down the hole for the first 130 m, and every 15 m thereafter. Bulk density measurements are made every 15 m for the first 130 m, and every 20 m from there on. These specimens consist of a 15 cm length of whole core. The measurements are made by taking the ratio of the weight of a core specimen in air to the difference between the dry and submerged weights.

Geotechnical data, comprising recovery, intact rock strength, number of joints (open and cemented) and number of joint sets, are logged for all intervals and entered into acQuire. Other features, deemed as “Not Required” in the protocol documentation, may also be logged, and include magnetic susceptibility, micro-defects, open fractures/joints and cemented joints. Breaks in the core made by the drillers, and marked as such, are ignored. Joint angles to the core axis are recorded as are the roughness, alteration, and infill material. Cemented joints must be at least one millimetre thick and cross the entire core axis to be included.

Major structures are defined as those encompassing a core length of at least 50 cm. The depth, interval length, and character (e.g., gouged, sheared, broken, or jointed) are recorded.

Domain intervals for the geotechnical data are the run lengths, or major lithological or structural breaks.

Oriented core is placed in a v-rail, aligned to the marks, and a reference line is drawn longitudinally along the core. Angles of structural features to both the core axis and the reference line are then measured and recorded in the database.

Historically, the geotechnical data was validated by plotting on strip logs and visually inspecting for missing intervals or unusual data. Errors were corrected by referring to the core photographs.

Geology logging includes the principal rock type, formation, texture, colour, gross mineralogy, structures, and alteration. The data entry fields in the acQuire software are configured to restrict the entries to a specific set of codes for consistency in the logs. Alteration is logged for both type and intensity, which is denoted by a scale from one (weak) to four (pervasive). Mineralization type is recorded, as are visual estimates of the average and maximum percent abundance. Since the structural information is captured in some detail during the geotechnical logging, the structural logging for the lithological table tends to be less rigorous.

Validation of the geological logging includes the following:

- Running acQuire validation scripts and reports on the data to check for missing and/or overlapping intervals.
- Load the data into Vulcan or Oasis and run the validation utilities in those packages.
- Visual validation of the data in spreadsheets and strip logs to check for typographical errors
- Compare to the geotechnical logs.

After logging and sampling, the core is stored at either the Exploration Office, or in a warehouse in Sawyer, Michigan.

Figure 10-2 depicts a core handling and logging flow-sheet, as designed in 2012, and which are virtually identical to the protocols employed at present. In RPA's opinion, the core logging protocols used at Eagle meet or exceed common industry standards.

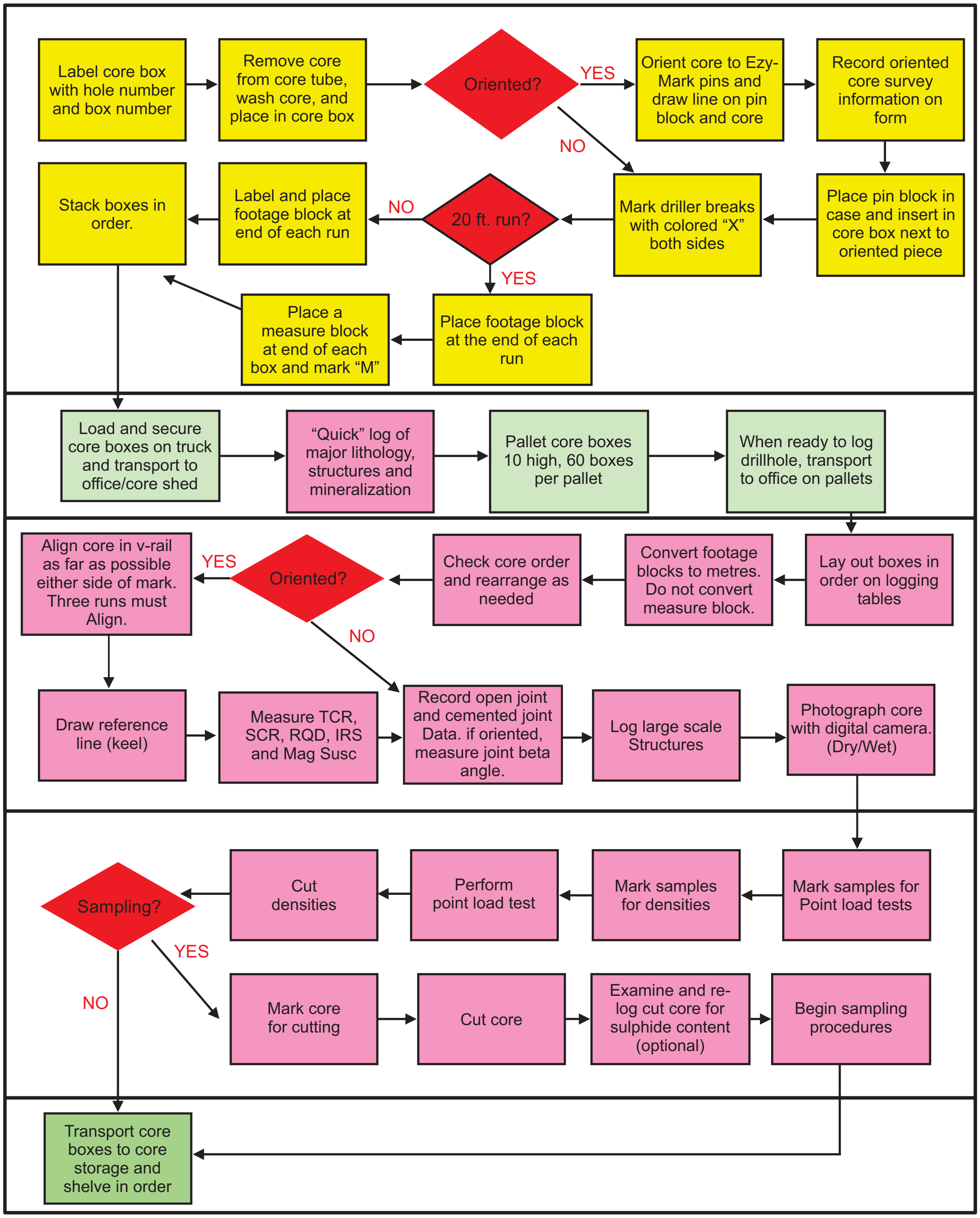


Figure 10-2

Lundin Mining Corporation

Eagle Mine

Marquette County, Michigan, U.S.A.

Eagle Core Handling Flowchart

April 2017 **Source: *Lundin Mining Corp., 2016.***

11 SAMPLE PREPARATION, ANALYSES AND SECURITY

HISTORICAL DIAMOND DRILL SAMPLE PREPARATION AND ANALYSIS

SAMPLING

Between 2004 and 2010 the core samples comprised half-cores cut longitudinally using a diamond saw. Sampling was carried out with breaks for lithology or changes in mineralization type. Minimum sample size was 0.5 m and most samples were 1.5 m or less.

All sampled intervals were selected, marked up, and inspected after sawing by the logging geologist prior to sampling. Intervals were tagged by the geologist by stapling a duplicate of the paper ID tag and the placement of a metal tag in the box for future reference. The core was also marked with indelible pen or lumber crayon.

SAMPLE TRANSPORT

Samples were placed in bags along with an identification tag, the bags were tied, labelled, and placed in plastic pails for shipment to ALS Chemex (ALS) in Thunder Bay, Ontario or Reno, Nevada. Shipment descriptions, including sample numbers, were recorded on tracking sheets, which were faxed to the laboratory and to the Vancouver office at the time of shipping. Prior to 2004, samples were transported by KEMC personnel to Duluth, Minnesota, and placed in storage for pick-up by ALS. Subsequent to 2004, samples were transported by commercial carrier directly to Thunder Bay. Sample pick-up was confirmed by telephone, and ALS was required to inspect the samples, note discrepancies, and fax back the tracking sheet as a confirmation receipt of the samples.

SAMPLE PREPARATION

Prior to 2003, drill core samples were shipped to ALS in Reno, Nevada, for crushing, splitting, and pulverization. From 2004 to 2015, samples were prepped for analysis at ALS in Thunder Bay, and from 2015 onwards, some of the samples have been sent to Minerals Processing Corporation (MPC), located in Carney, Michigan.

Prior to 2004, the entire sample was crushed to 70% minus 2 mm. Subsequently, the standard was set at ALS for the sample to be crushed to 90% minus 2 mm. A 1,000 g subsample was then split out with a riffle and pulverized using a ring mill to 85% passing a 75 µm screen. The entire pulp was then sent to ALS in Vancouver for analysis.

The sample crushing and pulverizer protocols are somewhat different at MPC, and are described in more detail below, in the discussion on current practice.

CURRENT DIAMOND DRILL SAMPLE PREPARATION AND ANALYSIS

SAMPLING

Eagle follows documented protocols for core handling and sample preparation. The sampling takes place at the Exploration facility in Negaunee. Surface drill holes are split using a diamond saw, while for underground holes the entire core is sampled. In strongly mineralized or ore grade intervals, quarter-core metallurgical samples are taken. The metallurgical samples are not used in resource estimation.

Once the geotechnical and lithological logging is completed, the core is marked for sampling. A spreadsheet is prepared with the sample intervals and IDs. The samples are normally 1.5 m long with breaks for lithological contacts or changes in mineralization, such as a transition from SMSU to MSU. The minimum sample length is 0.5 m and the maximum is 2.0 m, although RPA notes that instances of samples longer than 1.5 m are quite rare.

Sample numbers are entered for quality assurance/quality control (QA/QC) samples, which include standards, blanks, and duplicates. Standards are inserted every tenth sample, blanks also every tenth sample as well as after noticeably high-grade samples. Duplicates are taken every tenth sample, offset by four or five from the nearest standard.

For surface samples, the core is reassembled and then marked with a reference line using a black felt marker. The reference line is chosen to cut dominant foliation and vein intervals at as high an angle as possible. The marked core is cut along the reference line with a diamond saw and both halves of the core are placed back in the box. As stated above, underground core is not split, unless it is to be used for Mineral Resource estimates.

Duplicate sample tags are generated for each sample. The interval breaks are marked with pencil or felt marker on both the core and the box, a duplicate sample tag is stapled to the side of the core box, and aluminum tags etched with the sample IDs, “From”, and “To” are placed at the start and end of each sample.

Where duplicates are required, the one half core is split again such that the original and duplicate samples are quarter-cores.

SAMPLE TRANSPORT

The samples are placed in bags which have been labelled on both sides with the sample ID. The same half of the sawn core is selected for the entire sample run. One sample tag is placed in the bag, while the other is stapled to the core box at the start of the sampled interval. The bags are tied shut and laid out in order, where they are checked against the sample spreadsheet.

The sample bags are placed in plastic buckets for shipment. Bucket weights are limited to 40 lb maximum. Shipping labels are generated electronically and placed on the buckets. These labels contain the company name, shipment destination, sample sequence in the pail, bucket number, and total number of buckets. Security tags are fixed to each bucket to warn against possible tampering or accidental opening of the buckets.

Sample shipments include a manifest listing the samples, sample tracking sheet, customs documentation, bill of lading, and laboratory sample submission form. Copies of these documents are retained in the files for follow-up. Shipments are picked up and transported by XPO Logistics, a global commercial transportation firm.

Figure 11-1 presents a flowchart for the Eagle diamond drill core sampling process.

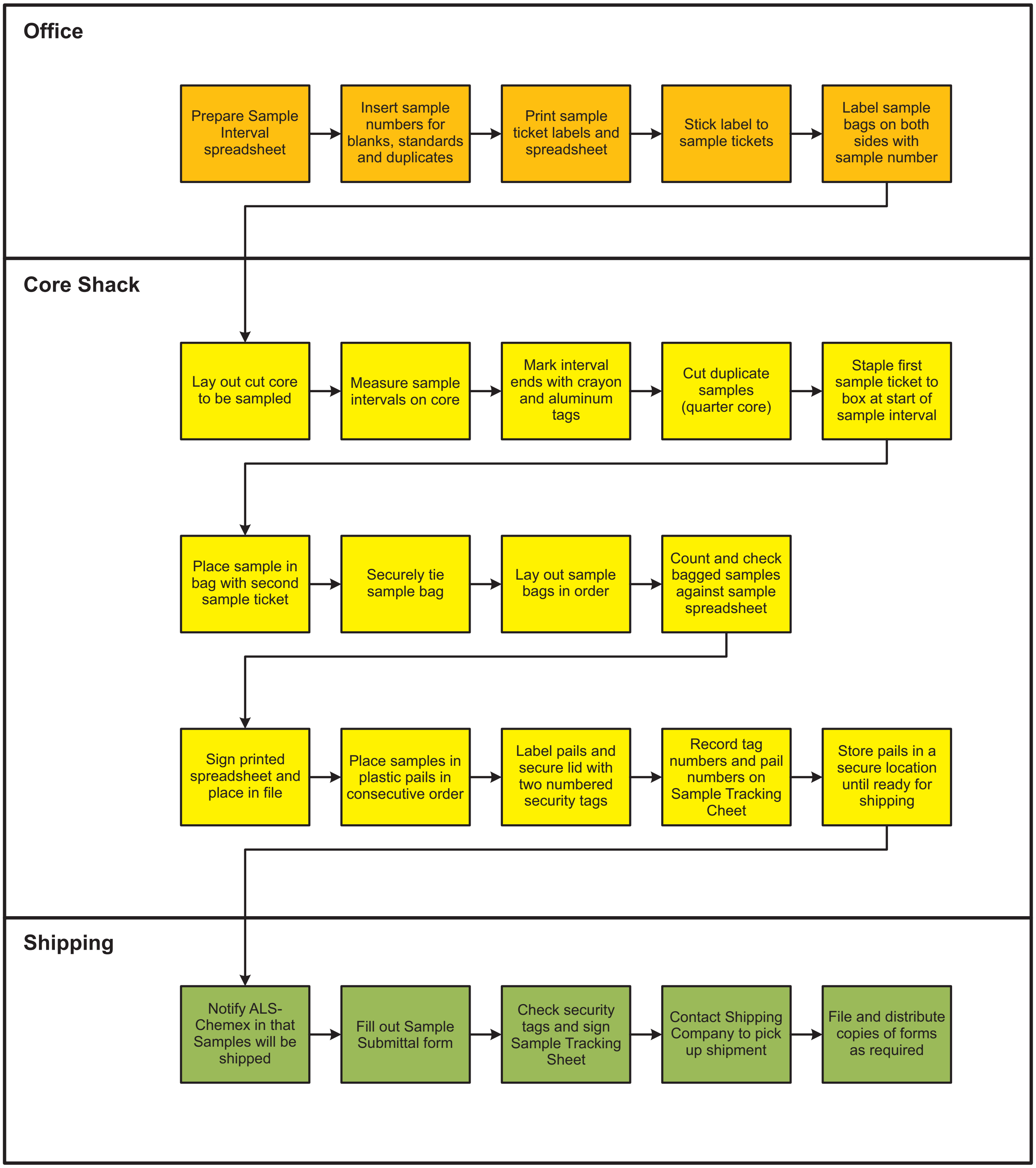


Figure 11-1

Lundin Mining Corporation

Eagle Mine

Marquette County, Michigan, U.S.A.

Eagle Core Sampling Flowchart

April 2017 ***Source: Lundin Mining Corp., 2016.***

SAMPLE PREPARATION

Samples preparation takes place at either the ALS laboratory in Thunder Bay, Ontario, or at MPC.

Both facilities have standard procedures and quality controls for sample preparation to ensure compliance with industry and client standards. ALS also has a digital Laboratory Information Management System (LIMS) and a web-based data retrieval system for customers to obtain assay results. The sample preparation procedures carried out on Eagle's diamond drill core samples at the Thunder Bay facility consisted of the following:

- Upon arrival, each sample is logged in the LIMS system and a bar code label is attached.
- Drying of excessively wet samples in drying ovens.
- Fine crushing of samples to better than 90% of the sample passing two millimetres.
- Split sample using riffle splitter.
- A sample split of up to 1,500 g is pulverized to better than 85% of the sample passing 75 µm.

Procedures for sample preparation at MPC is as follows:

- Samples are recorded in spreadsheets.
- Wet samples are oven-dried at 110° C for one and a half hours.
- The entire sample is crushed in a jaw crusher to 85% passing a #10 sieve.
- Sample material split down to a 250 g sub-sample, with the rejects place in a bag for long term storage.
- The sub-sample is pulverized to >90% passing a 200 mesh screen.

Samples processed at MPC are then forwarded to ALS for analysis.

ANALYSIS

Pulps are sent to the ALS laboratory in Vancouver for analysis. ALS Vancouver is an accredited laboratory in accordance with the International Standard ISO/IEC 17025:2005. Samples are analyzed by a variety of methods for specific elements and ore types.

The ALS assay codes and methods used include:

OA-GRA08 – Bulk density on whole core by water immersion method. Used as a check on the density measurements made by LMC personnel.

ME-XRF06 – Lithium borate fusion and x-ray fluorescence (XRF) for the following:

Al_2O_3	MnO
BaO	SrO
CaO	TiO_2
Cr_2O_3	SO_3
Fe_2O_3	$Si0_2$
K_2O	Loss on Ignition (LOI)
MgO	(note: may include S)

ME-MS81 – Sodium peroxide fusion with inductively-coupled mass spectrometry (ICP-MS) for 30 elements.

ME-ICP81 – Sodium peroxide fusion with inductively-coupled atomic emission spectroscopy (ICP-AES). This and ME-MS81 are the methods used for Cu, Ni, Co, S, Cr, Ti, and Zn.

Ag-OG46 – Ag by aqua regia digestion with ICP-AES or atomic absorption spectroscopy (AAS).

PGM-ICP23 – Pt, Pd, and Au by fire assay with ICP-AES finish.

In RPA's opinion, the assaying at Eagle is conducted using conventional methods that are accepted practices in the industry, at an accredited commercial laboratory.

QUALITY ASSURANCE/QUALITY CONTROL

Quality Assurance (QA) consists of evidence to demonstrate that the assay data has precision and accuracy within generally accepted limits for the sampling and analytical method(s) used in order to have confidence in the Mineral Resource estimation. Quality control (QC) consists of procedures used to ensure that an adequate level of quality is maintained in the process of sampling, preparing, and assaying the exploration drilling samples. In general, QA/QC programs are designed to prevent or detect contamination and allow analytical precision and accuracy to be quantified. In addition, a QA/QC program can disclose the overall sampling – assaying variability of the sampling method itself.

Accuracy is assessed by a review of assays of certified reference materials (CRMs), and by check assaying at outside accredited laboratories. Assay precision is assessed by reprocessing duplicate samples from each stage of the analytical process from the primary stage of sample splitting, through sample preparation stages of crushing/splitting, pulverizing/splitting, and assaying.

Standardized protocols of QA/QC sample insertion using certified reference material, blanks, and duplicates have been used throughout the history of the Eagle project to monitor the quality of the sampling process and assay results. KEX initiated assay QA/QC protocols for the early exploration drilling at Eagle beginning in 2001. Initially, standards, blanks and duplicates were inserted into the sample stream at an interval of one every ten samples. Blanks were also inserted following obvious high-grade samples. Over time, the QA/QC protocols have been modified to address specific concerns, however, the procedures used today are very similar to those used in past programs.

BLANKS

The regular submission of blank material is used to assess contamination during sample preparation and to identify sample numbering errors. Blank material initially was derived from "barren" rocks from the area, but these were found to contain traces of mineralization and therefore deemed unsuitable. Since that time, silica sand, purchased from a local source, has been used. Blanks are now inserted into the sample stream at a rate of one in ten samples, or just after an obviously high-grade sample. The blanks are assayed for Au, Co, Cu, Ni, Pd, Pt, and S.

DUPLICATES

Duplicate samples are used to test for contamination in the laboratory and for overall consistency in performance. These duplicates can be made of the original sample material (termed field duplicates), the crushed reject material (reject), or the pulverized sample material (pulp). Each type of duplicate tests for inaccuracy at different stages in the sample preparation and assay.

Field duplicates at Eagle are quarter-core splits taken from the original half-core samples. These are also taken at a rate of one in ten, but are offset from the standards and blanks by four or five samples. Splits of the rejects are made by ALS every 20th sample, and a pulp duplicate is taken approximately every 30th sample. The acQuire database system produces scatter diagrams which compare the duplicate value with the original. Also plotted on these diagrams were regression lines to check for bias, as well as error limits.

RPA inspected the scatter diagrams for 2015 field duplicates and noted that, while there were several instances of significant differences between duplicate pairs, particularly for Au, the results did not appear to show much bias. RPA further notes that the high scatter for Au is a characteristic of the assaying at Eagle that has been known for many years. Insofar as the mill grade reconciliation with the block model is observed to be very good, it does not appear to be an issue at this time.

The duplicates are assayed for Au, Co, Cu, Ni, Pd, Pt, and S.

CERTIFIED REFERENCE MATERIAL (STANDARDS)

Results of the regular submission of CRMs are used to monitor analytical accuracy and to identify potential problems with specific batches. Specific pass/fail criteria are determined from the standard deviation (SD) provided for each CRM. The conventional approach for setting standard acceptance limits is to use the mean assay ± two standard deviations (SD) as a warning limit and ± three SD as a failure limit. Results falling outside of the ± three SD failure limit must be investigated to determine the source of the erratic result, either analytical or clerical. At Eagle, the failure criterion is two consecutive standards outside the two SD limit.

Standards, consisting of 60 g packets of material, are inserted every tenth sample in the same fashion as blanks. Both commercial and custom made standards are used, at a range of grades. The standards are assayed for Au, Co, Cu, Ni, Pd, Pt, and S. Details of the standards as denoted in the 2015 QA/QC report are provided in Table 11-1. RPA notes that standard EA-M, in use throughout 2015, has been removed from the list of CRMs as it was not used in 2016.

TABLE 11-1 2016 CRMS USED
Eagle Mine

CRM	Grade Range	Approximate Expected Grades Au (g/t)	Co (%)	Cu (%)	Ni (%)	Pd (g/t)	Pt (g/t)	S (%)
CDN-1208	High	0.248	0.103	1.63	4.77	3.375	0.807	8.98
EA-01	Low	0.047	0.020	0.43	0.52	0.054	0.073	2.75
EA-02	Medium	0.100	0.033	0.95	1.10	0.119	0.188	5.93
EA-03	Medium/High S	0.102	0.062	1.66	2.38	0.196	0.318	12.22
EA-S	Medium/High S	0.178	0.070	1.74	2.31	0.298	0.513	12.38

Notes: Expected grades were read from control plots and may not be completely accurate.

DISCUSSION AND RECOMMENDATIONS

Independent reviews of QA/QC procedures and results have been conducted several times in the past by RPA and others.

RPA conducted reviews of QA/QC results in 2004, 2006, and 2009. In each case, there were no serious concerns found that would preclude the use of the drill data in resource estimation. WAI (WAI, 2012) reviewed the QA/QC data in 2012 and found no issues. WAI did note that the insertion rate for blanks had been decreased to one in 12 samples, which has since been increased back to one in ten.

RPA reviewed the assay QA/QC results for 2015 and 2016 and found no concerns. Failures are considered to be two consecutive samples outside of the confidence limits in the case of a standard, or above the designated upper limit for blanks. Control diagrams are generated from acQuire depicting the QA/QC results plotted in chronological order with lines to show the expected values along with the failure limits. Where failures occur, and they do, the Database Manager informs the laboratory and the affected batches are rerun. In RPA's opinion, this demonstrates that the assay QA/QC data is being properly managed and reviewed, and that appropriate steps are taken in the event of failures.

In RPA's opinion, the QA/QC program as designed and implemented by Eagle Mine LLC meets or exceeds common industry practice and the assay results within the database are acceptable for use in a Mineral Resource estimate. RPA notes that the present QA/QC sample insertion rate is somewhat high for an operating mine, and is perhaps more appropriate for an early stage exploration project. The success of the mining operations and the satisfactory reconciliation results indicate that the drill hole samples are adequately predicting ore grades. RPA recommends that the control sample insertion rate be decreased to lower sampling and assay costs.

UNDERGROUND SAMPLING

Muck samples are collected from underground sills and stopes for grade control, reporting, and monitoring purposes. They are not used for estimation of Mineral Resources. Underground sampling procedures aim to collect one sample per 150 to 200 tonnes of ore produced per month. Sampling protocols employed depend on the source of the ore.

STOPE SAMPLING

Four samples are collected for each mucking event (by shift). The material is either collected from re-muck, from the loader actively mucking the stope, or from a haul truck as it is dumped in the COSA. Care is taken to ensure that all material types present in the muckpile are representatively added to the sample bag. Sample bags are filled to approximately half capacity (10 in x 17 in sample bag). Sample weights range from 10 lb to 30 lb depending on ore type.

SILL SAMPLING

The number of samples collected is dependent on the width of the round shot. For six metre primary and five metre secondary rounds, four samples are collected. For four metre primary rounds, two samples are collected. The sample is collected from either fresh muckpile or re-muck. Sill samples can also be collected from a haul truck as it is dumped in the COSA. If a round was not sampled from these methods, rib samples may take the place of muck samples. Face samples are taken occasionally, however, the primary form of sample for reporting is from muckpile. Due care is taken that all material types in the muckpile are representatively added to the sample bag. Sample weights range from 10 lb to 30 lb dependent on ore type.

UNDERGROUND SAMPLING QA/QC

Muck samples are submitted to the assay laboratory at the Humboldt Mill on a daily basis. Each submittal includes two samples for QA/QC: one silica sand blank and one of two standards purchased from CDN Resource Laboratories, Canada. The standards are certified reference material in 60 g packets which are sealed until submission to the mill laboratory.

SECURITY

RPA is not aware of any major security issues at the Eagle Mine or the Negaunee Exploration Office. Access to these sites is restricted to authorized personnel and they are staffed continuously. Drill and mine samples are handled and transported only by LMC personnel or contractors. Samples are picked up and transported to the laboratory by commercial carrier.

Logging, sampling, and analytical data are captured in an acQuire database, which resides on the company servers, and is backed up daily. The integrity of this database is the responsibility of a Database Manager, who has exclusive access.

DISCUSSION

In RPA's opinion, the sample preparation, analysis, and security procedures at Eagle and Eagle East are acceptable for use in the estimation of Mineral Resources.

12 DATA VERIFICATION

SITE VISITS

During the June 2016 site visit RPA toured the core logging and the underground operations to review geology and mineralization in a number of exposures. Observations were made of surface and underground diamond drills and Eagle sample preparation. RPA also toured the Humboldt Mill and the Exploration Office in Negaunee.

RPA also conducted site visits in 2006, 2007, 2008, and 2013.

DATABASE MANAGEMENT

As described in the section of this report entitled Drilling, all logging and sampling data is captured and stored in an acQuire database. The database manager is responsible for importing the assay data via the internet directly from the laboratory, validating the data, compiling the QA/QC results, and resolving QA/QC failures. Much of the validation work is done using scripts and utilities run from within acQuire. The database manager also provides export files to downstream users for import into other software packages such as Vulcan or Datamine.

DATABASE REVIEW

The samples used in the Mineral Resource estimate were all taken from drill core. Assays in the database supplied to RPA included Ag, Au, Co, Cu, Fe_2O_3, MgO, Ni, Pd, Pt, S, and bulk density (SG).

During previous reviews RPA conducted numerous spot checks of the historical database and did not find any significant errors. The drill database was imported into Geovia GEMS modelling software, and checked using the validation utilities contained within that package. A few minor errors were detected which were corrected and reported back to Eagle Mine LLC and LMC personnel. RPA inspected the drill holes in section and plan view to look for obvious errors or inconsistencies and none were found.

RPA is of the opinion that database verification procedures for the Eagle and Eagle East projects comply with industry standards and are adequate for the purposes of Mineral Resource estimation.

13 MINERAL PROCESSING AND METALLURGICAL TESTING

Metallurgical testing of the Eagle East ores (MSU and SMSU ore types and a composite of combined sulphide ores, or CSU) was undertaken to support the LMC FS in 2016. Some batch grinding testwork on Eagle and Eagle East ore samples was conducted at Eagle Mine's Humboldt Mill facility. Metallurgical evaluation of the Eagle East ore samples consisted of mineralogical analysis, Bond Ball Mill Work Index testing, batch grinding and flotation testing, and locked cycle tests of the CSU composite. The work was conducted by XPS Consulting & Testwork Services (XPS) in Falconbridge, Ontario, Canada. In addition, trace precious metal analyses of pentlandite in Eagle concentrate using laser ablation (LA) ICP-MS was reported by Cabri Consulting Inc. (Cabri) of Ottawa, Ontario, Canada.

MINERALOGY

This description of mineralogy for Eagle Mine ore is largely taken from the 2016 Technical Report (RPA, 2016).

Two styles of mineralization have been identified for Eagle Mine, namely MSU ore grading approximately 6% Ni and SMSU ore grading approximately 2% Ni.

Mineralogical analyses conducted by SGS in 2002 indicated that the MSU ore consisted mostly of pentlandite (FeNi)S, chalcopyrite ($CuFeS_2$) and pyrrhotite (Fe_7S_8). The pentlandite occurred as fine lamellae within pyrrhotite, as massive liberated particles and as simple binaries and attachments to pyrrhotite and chalcopyrite. The average size of pentlandite was 54 µm. Electron microprobe analysis showed pyrrhotite containing 0.66% Ni. The average grain size of chalcopyrite was 80 µm.

The SMSU ores contain the same sulphide species and are hosted by peridotites and olivine pyroxenites, with a high overall magnesia content of about 15% to 20% MgO. Mineralogical examination undertaken by SGS in 2010 on the SMSU ore showed that the grain sizes of chalcopyrite, pentlandite, and violarite were 25 µm, 15 µm, and 7 µm, respectively. Thus, the fineness of these minerals in SMSU ore necessitates regrinding for treatment. The presence of fine inclusions of pentlandite in the pyrrhotite lattice (flame pentlandite), averaging approximately 0.7% Ni, limits the overall recovery of nickel into a concentrate suitable for smelting.

METALLURGICAL TESTING

Metallurgical testwork was conducted on the Eagle East sulphide material to confirm the applicability of the Humboldt Mill process flowsheet for grinding, flotation, and metal recovery (LMC, 2017a, XPS, 2016a, 2016b, and 2016c, and Cabri, 2016). A variety of testwork was conducted on site at the Humboldt Mill and off-site at XPS. The XPS testwork consisted of mineralogical analyses, batch grinding and flotation testing, and locked cycle testing.

SAMPLING AND MINERALOGICAL ANALYSIS

Samples of Eagle East drill core were selected to prepare composite samples for metallurgical testwork (LMC, 2017a and 2017c). Figure 13-1 illustrates the location of the drill holes for the samples used in metallurgical testing and confirms the spatial representativeness of these drill holes in the Eagle East deposit.

Table 13-1 lists the Eagle East composite samples and assays. Four representative composite samples of Eagle East drill core were selected from four material types consisting of MSU, SMSU, High Copper Massive Sulphide (CMSU), and waste. Composites were selected to be representative of the average grade of all available core from each composite zone. The waste rock composite was selected from drill samples adjacent to potential ore to best represent potential dilution in the mining process.

TABLE 13-1 EAGLE EAST COMPOSITE SAMPLES AND ASSAYS
Eagle Mine

Composite Sample	f_{80} (µm)	%Ni	%Cu	%S	%Fe	%MgO
MSU	1,166	8.01	5.03	33.2	48.7	0.45
SMSU	1,230	2.65	2.17	13.1	25.7	17.7
CMSU	951	6.49	14.2	31.1	42.5	0.24
Waste	1,303	0.68	0.86	3.56	14.0	13.0

Note. f_{80} – passing size before grinding

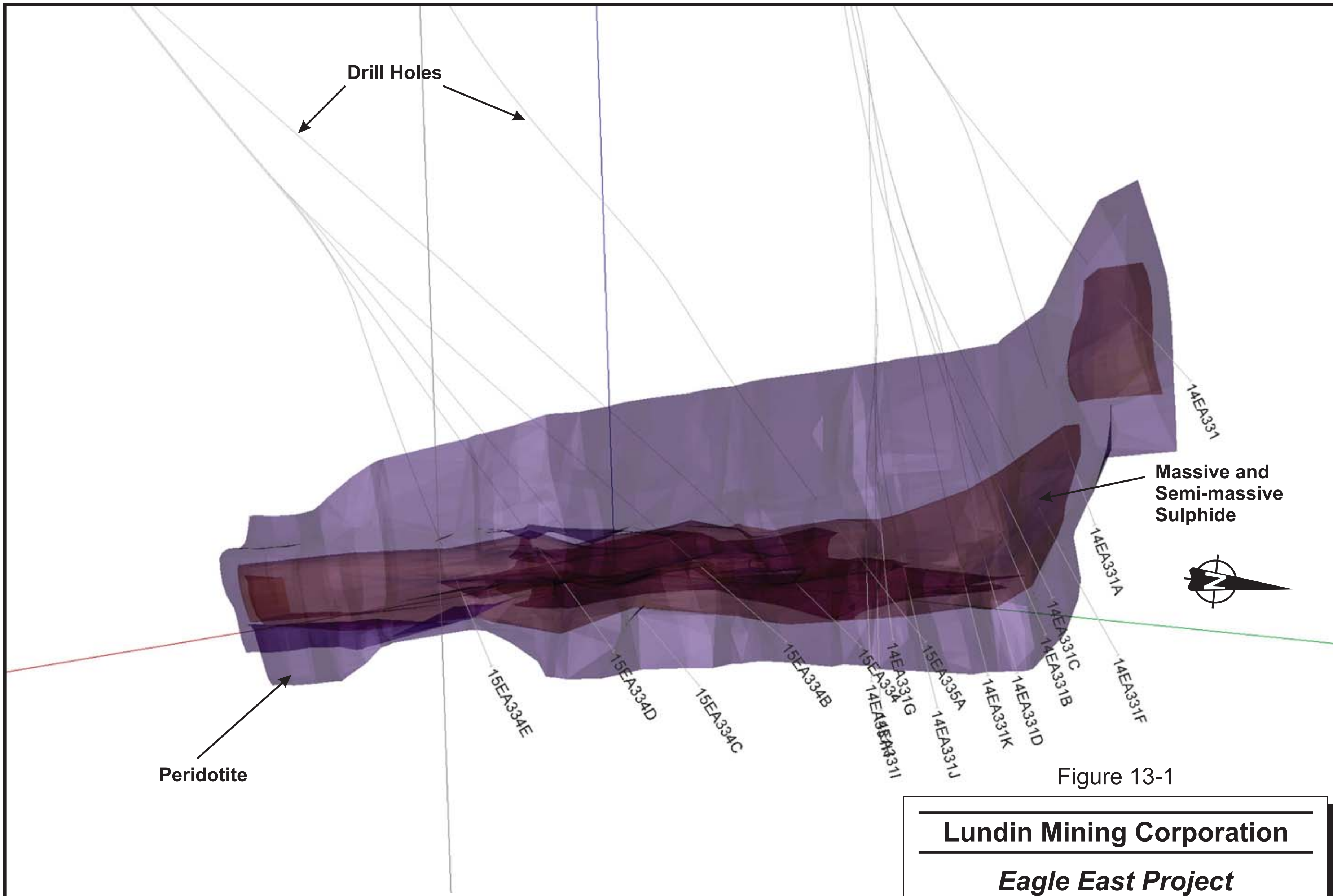


Figure 13-1

Lundin Mining Corporation

Eagle East Project

Marquette County, Michigan, U.S.A.

Location of Metallurgical Drill Holes and Samples

April 2017

Source: RPA, 2017.

Nickel and copper mineralization in Eagle East samples are comprised of pentlandite (Pn) and chalcopyrite, respectively (XPS, 2017a). Pyrrhotite (Po), serpentine, pyroxene, plagioclase, olivine, amphibole, and iron oxides are considered gangue minerals. There were no minerals found in the Eagle East samples that are not known in the Eagle ore.

The Po/Pn ratio for Eagle East material is lower than that for Eagle MSU and SMSU samples due to the higher Pn grades and equivalent or lower Po grades (Table 13-2). Higher sulphide content was observed in the Eagle East samples. Higher grades and lower Po/Pn ratios are favourable and may present opportunities to achieve higher concentrate grades at equivalent recoveries.

TABLE 13-2 PYRRHOTITE/PENTLANDITE RATIOS IN EAGLE AND EAGLE EAST SAMPLES
Eagle Mine

Sample	Eagle	Eagle East
MSU	3.9	2.2
SMSU	3.4	2.8
CMSU	n/a	2.0

X-ray Diffraction (XRD) analysis of MSU, SMSU, and CMSU samples indicated a range of proportions of monoclinic and hexagonal pyrrhotite are present in the ores, which may impact the flotation performance of the mineral.

Waste rock adjacent to Eagle East mineralization is similar in mineralogy to the non-sulphide gangue (NSG) found currently in Humboldt Mill feed and may be classified as a pyroxenite, as opposed to the peridotite found around the Eagle deposit.

PGM grades are higher in Eagle East material in comparison to Eagle ore. Preliminary mineralogical analysis shows inclusions of several PGM minerals within other sulphides present in the material. The size of the inclusions range from 10 µm to 100 µm. The following minerals were identified as being present in Eagle East material: maslovite (Pt-Bi-Te), michenerite (Pd-Bi-Te), sperrylite ($PtAs_2$), silver telluride (Ag-Te), volynskite (Ag-Bi-Te), and electrum (Au-Ag). The platinum and palladium minerals would be recoverable through conventional flotation and may benefit from the use of co-collectors along with xanthate to increase recoveries. The presence of silver requires further metallurgical analysis and testing to assess the potential for recovery.

GRINDING TESTWORK

Grinding testwork was completed on Eagle East ore samples to determine if the mineralization could be processed through the Humboldt Mill grinding circuit without circuit modification. For onsite testing, samples of Eagle and Eagle East ores were subjected to batch grinding tests under identical conditions and the particle size distribution of the products were analyzed. At XPS, Eagle East core samples were submitted for Bond Ball Mill Work Index testing to confirm the onsite test results.

Core samples were crushed to 100% passing 10 mesh (2 mm) in stages in a laboratory jaw crusher. The samples were then mixed and split into 1 kg charges using a rotary splitter.

Eagle core samples that had been previously crushed to 100% passing 2 mm were used as baseline samples for comparison to Eagle East samples. The size distribution of each crushed composite sample was determined and the material assayed (refer to Table 13-1) and the 80% passing size (p_{80}) was determined.

The 80% passing size of samples was determined before grinding (f_{80}) and after grinding (p_{80}) and the reduction ratio, f_{80}/p_{80}, was calculated for different material types and blends of MSU to SMSU samples. The grinding tests results can be summarized as follows:

- Reduction ratios for the Eagle East SMSU composite and 2:1 (MSU:SMSU) blend were both within 20% of the reduction ratios obtained for Eagle ores.
- Eagle East MSU sample showed higher reduction ratios than Eagle MSU ore, indicating that the Eagle East MSU sample was less competent. Therefore, it will be possible to treat Eagle East mineralization in the Humboldt Mill grinding circuit and achieve equivalent product size with potential upside when processing MSU.
- Rosin-Rammler modelling of size distributions and comparison showed similar grinding performance for Eagle and Eagle East samples.
- Batch grinding tests showed that the grindability for the Eagle East mineralization is similar to or higher than that of Eagle samples.
- Bond Ball Mill Work Index results for Eagle East samples were comparable to historic Eagle results.
- Problems are not anticipated when processing Eagle East material in the current grinding circuit at processing rates similar to current operations.

FLOTATION TESTWORK

A series of samples from Eagle and Eagle East were subjected to batch flotation tests in the metallurgical laboratory at the Humboldt Mill to determine if Eagle East samples have comparable overall recoveries and kinetics to Eagle ore. For onsite testing, batch flotation tests on both Eagle and Eagle East composite samples were completed. At XPS, a comprehensive program of flotation testing (batch tests, locked cycle tests, copper/nickel separation, and mineralogy) on Eagle East composite samples was completed.

Coarse rejects from drill core samples were used for Eagle East flotation testwork. These samples were not used in the grinding testwork, because the size distribution of the samples was considered questionable due to the presence of a large proportion of fines. A larger proportion of fines could also bias the flotation tests and provide less than optimal results. RPA recommends that new Eagle East core samples be obtained for sequential grinding and flotation testing, rather than relying on reject samples for conducting flotation testwork.

Batch rougher flotation tests were conducted on all material types in addition to the 2:1 (MSU:SMSU) blends from Eagle and Eagle East samples. Cleaner flotation tests were also carried out on 2:1 blends from Eagle and Eagle East samples.

Eagle samples were collected from core samples representing the first year of Eagle's mine life. The following material types and blends were tested: MSU, SMSU, CMSU (from Eagle East), and 2:1 (MSU:SMSU) and the head grades of the samples are shown in Table 13-3.

TABLE 13-3 HEAD GRADES FOR FLOTATION TESTWORK
Eagle Mine

Composite Sample	%Ni	%Cu	%S	%Fe	%MgO
Eagle East					
MSU	8.01	5.03	33.2	48.7	0.45
SMSU	2.65	2.17	13.1	25.7	17.7
CMSU	6.49	14.2	31.1	42.5	0.24
2:1 (MSU:SMSU)	5.97	3.44	25.2	39.5	6.92
Eagle					
MSU	6.39	5.39	33.42	51.5	0.12
SMSU	2.19	1.90	12.31	25.8	15.87
2:1 (MSU:SMSU)	4.78	4.39	27.55	42.4	5.03

Flotation testing was carried out using reclaim water from the Humboldt Tailings Disposal Facility (HTDF), rather than plant process water, to avoid any variation that would be introduced by changes in process water chemistry.

Table 13-4 shows the grades and recoveries for the batch rougher flotation tests conducted on the Eagle and Eagle East samples. Mass pulls and metal recoveries were comparable for each sample pair and metal recoveries were similar to that observed for Eagle ores. As expected, the nickel recovery varies with material type and the copper recovery achieved was greater than 97%. Eagle East CMSU material would require significant blending with other ore types to lower copper grades in the mill feed to meet plant capabilities.

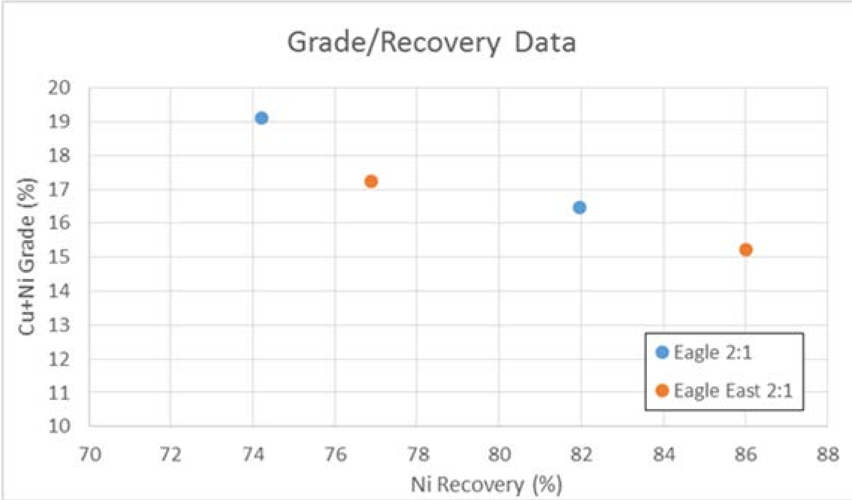
TABLE 13-4 BATCH ROUGHER FLOTATION TEST RESULTS
Eagle Mine

Sample	Mass Recovery (%)	Concentrate Grade (%)		Recovery (%)	
		Ni	Cu	Ni	Cu
MSU					
Eagle	91.3	6.8	5.8	97.1	98.2
Eagle East	92.6	8.4	5.4	97.8	98.5
SMSU					
Eagle	31.7	6.0	5.8	86.2	97.5
Eagle East	28.4	8.4	6.6	87.8	97.4
2:1 (MSU:SMSU)					
Eagle	65.6	6.6	6.5	92.7	98.1
Eagle East	69.4	8.0	5.0	92.0	97.7
CMSU					
Eagle East	90.0	6.7	15.0	91.1	98.4

Flotation kinetic curves showing the recovery of nickel over time for each test sample indicated that Eagle East mineralization is similar to Eagle ore and can be processed in the Humboldt Mill.

In Figure 13-2, the grade-recovery data for rougher and cleaner concentrates from flotation tests on 2:1 (MSU:SMSU) blends is shown graphically and indicate similar flotation performance. Final recoveries in the cleaner stage were below typical plant recoveries for both Eagle and Eagle East, suggesting that flotation test conditions need to be further optimized in order to achieve typical Humboldt Mill performance.

FIGURE 13-2 GRADE-RECOVERY DATA FOR CLEANER FLOTATION OF 2:1 (MSU:SMSU) BLENDS



GRADE-RECOVERY RELATIONS

The Eagle East FS referenced metallurgical recovery models for nickel and copper which are slightly different than the August 2016 Eagle Mineral Resources and Reserves. Table 13-5 shows the metal recovery formulas from the Eagle East FS and LMC reported that testwork to date on the Eagle East mineralization indicated that these formulas for nickel and copper recovery were valid (LMC, 2017a). The metallurgical recovery formulas from 2017 are slightly different than the 2016 metallurgical recovery formulas (Staton, 2016), as described below under Metallurgical Performance, but the differences in the formulas are not significant.

TABLE 13-5 EAGLE EAST PROJECT RECOVERY FORMULAS
Eagle Mine

Metallurgical Recovery Formulas (2017)	
Nickel	
If Ni head grade > 4.92%, then Ni recovery in bulk flotation	= 87.5%
If Ni head grade ≤ 4.92%, then Ni recovery in bulk flotation	= 5.2479 x ln(Ni head grade) + 78.9
Copper	
If Cu head grade > 4.8%, then Cu recovery in bulk flotation	= 98.5%
If Cu head grade ≤ 4.8%, then Cu recovery in bulk flotation	= 2.0716 x ln(Cu head grade) + 95.213

Updated recovery formulas for cobalt and precious metals were not presented in the Eagle East FS, however, it is noted that there is reduced Pt and Pd recovery to the nickel concentrate and increased Pt and Pd recovery to the copper concentrate reflected in the life of mine (LOM) model.

Locked cycle tests conducted by XPS on the CSU composite were supported by data obtained from batch rougher and cleaner flotation tests and copper-nickel separation testing. The locked cycle test results showed that Eagle East samples showed equivalent or better performance in comparison to mini-pilot plant test results on Eagle ore in 2013.

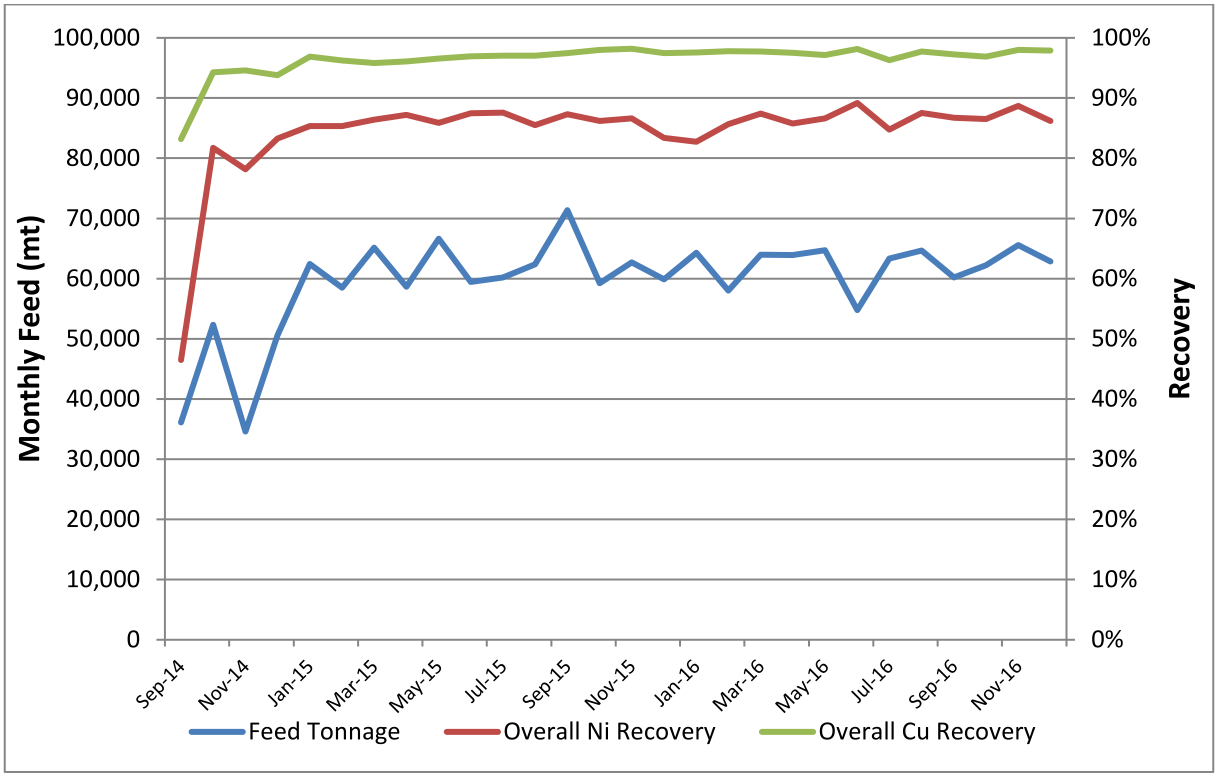
Mineralogical comparison of Eagle East MSU and SMSU composite samples with 2014 Eagle samples showed very similar modal distribution (pentlandite, chalcopyrite, pyrrhotite, magnetite, non-sulphide gangue, and ultramafics), thus suggesting similar projected metallurgical performance. Platinum Group Metal (PGM) grades are higher in Eagle East ores than in Eagle ores. Several distinct PGM minerals were detected via QEMSCAN and are found as inclusions within other sulphide minerals. The PGM grain sizes range from ten microns to 100 microns.

RPA recommends that additional work be carried out to collect precious metal assays during operation to better understand precious metal recoveries at the Humboldt Mill and to improve the recovery model formulas for all metals.

METALLURGICAL PERFORMANCE

Information on the metallurgical models used to predict the metal recoveries and concentrate grades for a range of plant head grades was previously reported (Staton, 2016). The Humboldt Mill has been operating since September 2014. The mill tonnage varied over the first four months of operation, but stabilized at approximately 62,000 tonnes per month from January 2015 onwards (Figure 13-3). During the period of stable production from 2015 onwards, nickel recoveries ranged between 83% and 89% and copper recoveries ranged between 96% and 98%.

FIGURE 13-3 HISTORICAL PLANT PERFORMANCE



The metallurgical recovery formulas are periodically updated based on actual plant performance (Staton, 2016) and this information is summarized below.

COPPER AND NICKEL RECOVERY

In order to predict the recovery of copper and nickel to their respective concentrates, the model initially estimates the recovery of both copper and nickel to the bulk flotation stage. A bulk concentrate grade of 18% - 23% (Cu+Ni) is targeted in order to provide a final nickel concentrate grade of 12% - 15% Ni.

Based on a review of historical plant data, a relationship was developed between nickel recovery and the nickel head grade. The model used for predicting nickel recovery to the bulk concentrate is as follows (where Ni_K refers to the nickel head grade):

- If Ni_K > 5.5%, Ni recovery to the bulk concentrate = 87.5%; and
- If Ni_K $\leq$ 5.5%, Ni recovery to the bulk concentrate = 5.2479 x ln(Ni_K) + 78.886 + ((14 – Ni grade of the nickel concentrate) x 0.6) + ((3 – Cu grade of the nickel concentrate) x 0.3).

The correlation describing head grades with less than 5.5% Ni is more characteristic of the SMSU mineralization.

The recovery of copper to the bulk concentrate is also estimated from the nickel head grade. The nickel head grade was used as the bulk flotation stage is controlled by the need to control MgO levels in the final nickel concentrate. The model used for predicting copper recovery to the bulk concentrate is as follows (where Cu_K refers to the copper head grade):

- If Cu_K > 4.8%, Cu recovery to the bulk concentrate = 98.5%; and
- If Cu_K $\leq$ 4.8%, Cu recovery to the bulk concentrate = 2.0716 x ln(Cu_K) + 95.213.

The predicted plant's nickel head grades vary from 3.16% Ni in the second half of 2016 to 5.72% Ni in 2023. Using the model, the recovery of nickel predicted to the bulk concentrate will vary between 85.2% and 87.5% (averaging 86.5%). At these head grades, the copper model predicts a copper recovery (to the bulk concentrate) of between 97.2% and 97.9% (averaging 97.6%).

The bulk concentrate is separated into copper and nickel products.

Copper concentrates should generally contain less than about 1% Ni. Nickel is not paid for in copper concentrates and may incur penalties and/or rejection above these levels. Target grades for Eagle copper concentrate are 31% Cu and 1% Ni.

Copper is accountable in nickel concentrates, but at a lower amount in comparison to the copper concentrate. The target levels for Eagle nickel concentrate are 14% Ni and an average of 3% Cu.

The model assumes the following performance in Cu/Ni separation:

- 31% Cu (assay) in the copper concentrate;
- A fixed stage recovery of 75% of the copper in the bulk feed to the copper concentrate; and
- A maximum of 1% Ni (assay) in the copper concentrate.

The model then calculates the nickel and copper reporting to the nickel concentrate by difference.

Based on the nickel head grades used in LMC's financial model (varying from 2.11% Ni in 2019 to 3.64% Ni in 2023) and by applying the model, the average LOM final recoveries are estimated to be:

- Copper recovery = 82.2% to the copper concentrate
- Copper recovery = 14.9% to the nickel concentrate
- Copper recovery = 97.0% total
- Nickel recovery = 81.8%

These correspond with LMC's LOM averages for copper and nickel respectively (which assumes a nickel concentrate grade of 14% Ni).

COBALT AND PRECIOUS METAL RECOVERY

Information on the recovery of cobalt and precious metals was updated by LMC (Staton, 2016 and 2017). In general, gold tends to follow copper in the copper concentrate whereas cobalt, platinum, and palladium follow the nickel concentrate, however, platinum and palladium can also report to the copper concentrate.

The Eagle model assumes the following with respect to cobalt and precious metal recoveries:

- Cobalt recovery = Nickel recovery in bulk flotation + 1.2
- Gold recovery = 0.75 x Copper recovery in bulk flotation
- Pt recovery to nickel concentrate = 0.90 x Nickel recovery in bulk flotation
- Pd recovery to nickel concentrate = Nickel recovery in bulk flotation.
- Pt recovery to copper concentrate = 20% of Pt in feed
- Pd recovery to copper concentrate = 30% of Pd in feed

The credits for these metals in concentrates are relatively minor after accounting for the minimum deductions in the smelter contracts.

LMC has assumed in the LOM cash flow model average cobalt, gold, platinum, and palladium recoveries of 84.9%, 72.8%, 75.3%, and 83.7%, respectively, and these figures appear reasonable.

Based on a review of available metallurgical data, RPA is of the opinion that there are no processing factors or deleterious elements that could have a significant effect on potential economic extraction.

CONCENTRATE QUALITY

It was previously reported that testwork showed that the recovery of nickel decreases sharply as the nickel concentrate grade increases and this was attributed to the loss of nickel in pyrrhotite (WAI, 2013). NSR calculations undertaken by LMC indicated that a nickel concentrate grade of 14% Ni is realistic.

No smelters have, as yet, indicated the maximum level of MgO that will be accepted in nickel concentrates, other than “preferred” levels are approximately 4% MgO.

Eagle developed a model to predict the concentration of MgO in the nickel concentrate as follows (where MgO_K refers to the MgO head grade):

- MgO grade in the nickel concentrate = MgO_K x 0.5

The higher MgO head grades are characteristic of the SMSU mineralization.

ACCURACY OF RECOVERY ESTIMATES

RPA has reviewed the budgeted recovery, based on the recovery calculations, and the actual recovery for the past three years. The data are shown in Table 13-6. There have been improvements in the recovery calculations since 2014 and there is less variance in the 2016 figures.

TABLE 13-6 EVALUATION OF METAL RECOVERY
Eagle Mine

	2014	2015	2016
Ni Estimated Recovery (%)	77.4	84.3	85.2
Ni Actual Recovery (%)	78.5	86.2	86.5
Variance (%)	1.4	2.3	1.5
Cu Estimated Recovery (%)	84.9	95.1	97.1
Cu Actual Recovery (%)	93.2	97.0	97.5
Variance (%)	8.9	2.0	0.4

Figures 13-4 and 13-5 compare actual vs. budgeted data for metal recoveries and head grades, respectively. Actual metal recoveries and feed grades have exceeded budgeted figures.

FIGURE 13-4 NICKEL RECOVERY AND NI HEAD GRADE (ACTUAL VS. BUDGET)

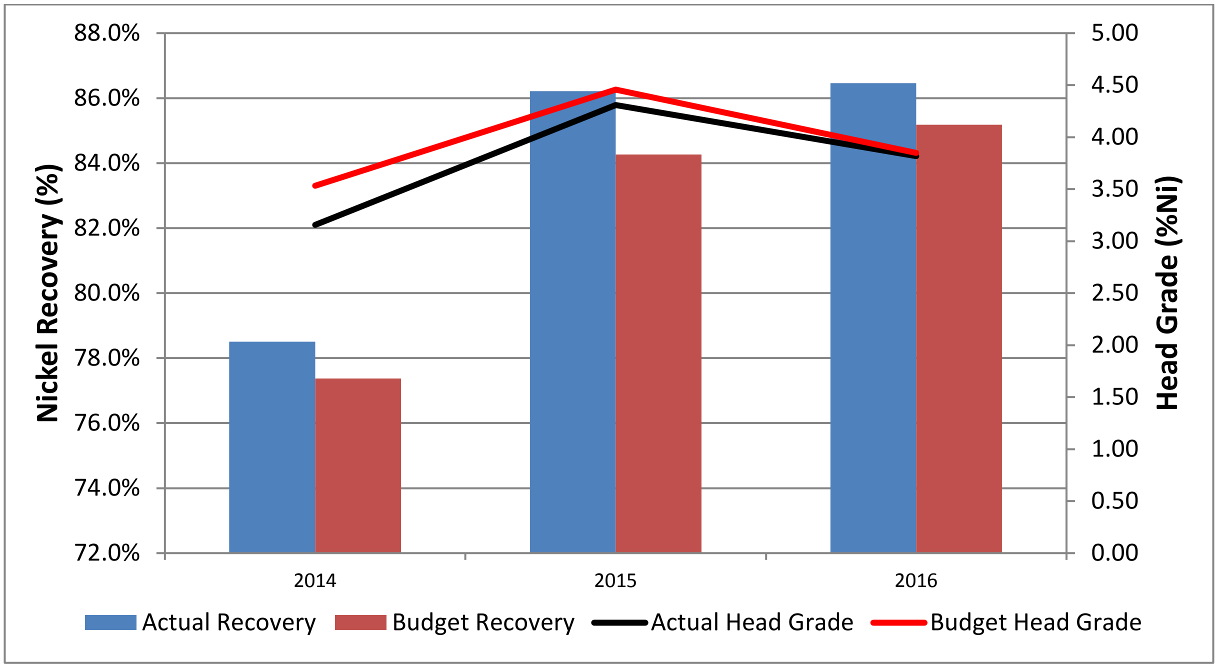
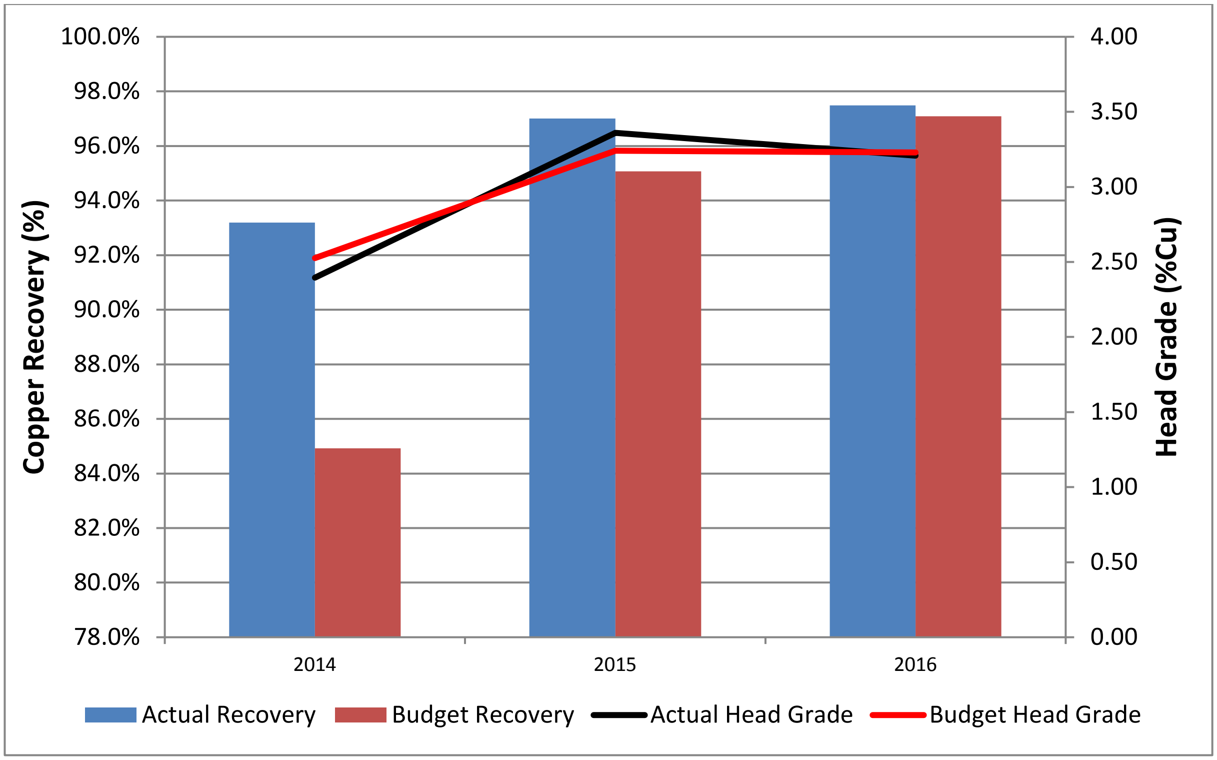


FIGURE 13-5 COPPER RECOVERY AND CU HEAD GRADE (ACTUAL VS. BUDGET)



Figures 13-6 and 13-7 illustrate the relationship between Ni recovery and Ni concentrate grade and overall Ni recovery and Ni feed grade, respectively. There appears to be a significant shift in %Ni recovery to Ni concentrate in 2016, which is likely due to ongoing process improvements and a steadier operation (see Figure 13-4). The arrow and dashed line drawn in Figure 13-6 is simply to illustrate the potential for improvements in Ni recovery. Figure 13-7 shows improved recoveries with higher feed grades.

Figures 13-8 and 13-9 illustrate the relationship between Cu recovery and Cu concentrate grade and overall Cu recovery and Cu feed grade, respectively. RPA's observations on the 2016 Cu recovery-grade relationship (Figure 13-8) are similar to the observations on the Ni recovery-grade relationship (Figure 13-6) discussed previously.

No data on cobalt and precious metals was provided to RPA to confirm the accuracy of recovery model calculations.

FIGURE 13-6 RELATIONSHIP BETWEEN NI RECOVERY AND NI CONCENTRATE GRADE

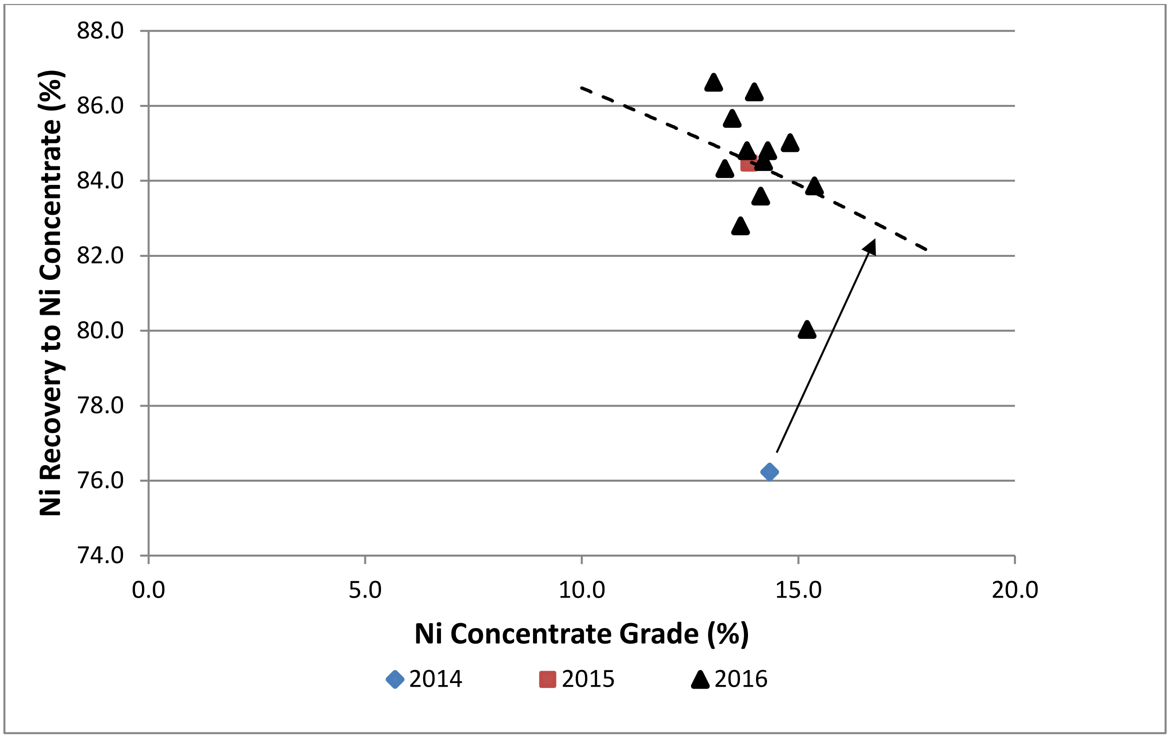


FIGURE 13-7 OVERALL NI RECOVERY AND NI FEED GRADE

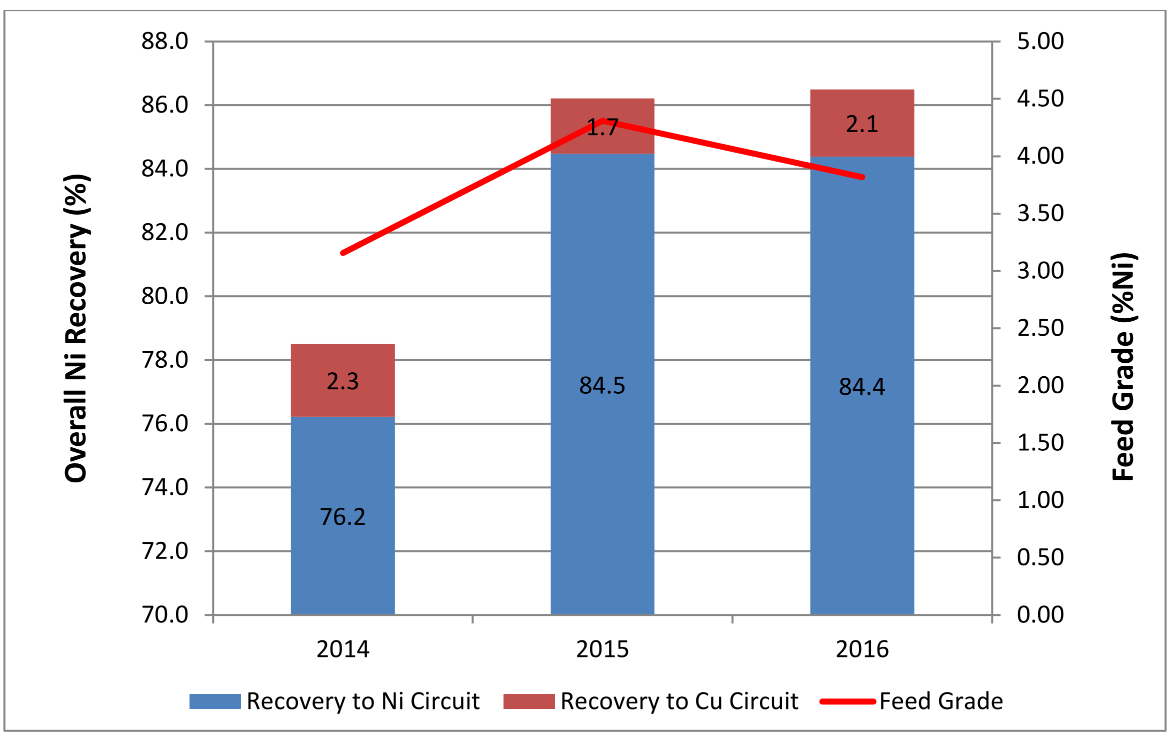


FIGURE 13-8 RELATIONSHIP BETWEEN CU RECOVERY AND CU CONCENTRATE GRADE

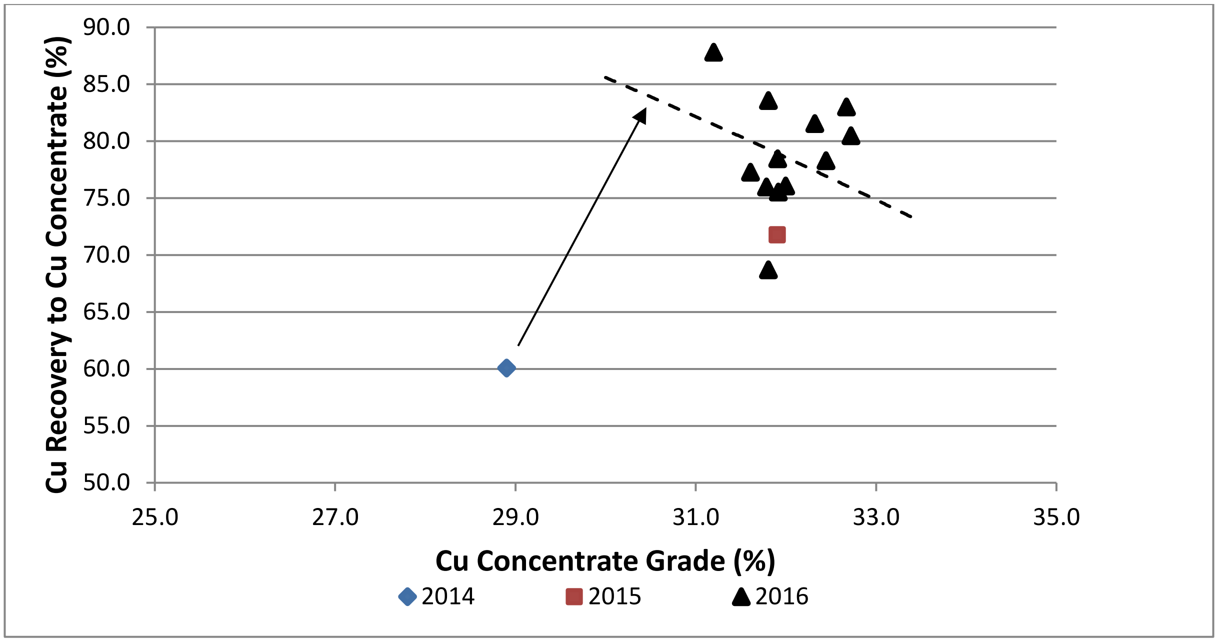
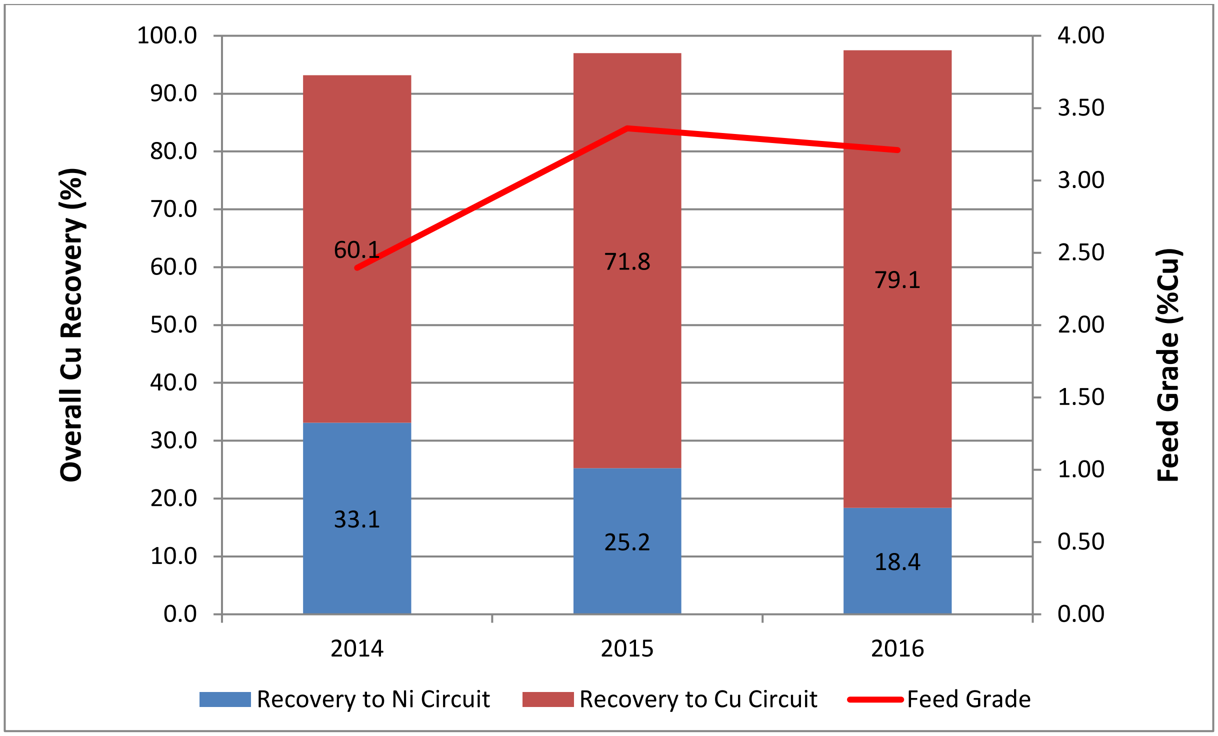


FIGURE 13-9 DISTRIBUTION OF COPPER RECOVERY AND COPPER FEED GRADE



CONCLUSIONS AND RECOMMENDATIONS

Historical plant data has been analyzed and the information was used to update the recovery models. These equations have been used in the cut-off grade calculations and in the Mineral Resource and Mineral Reserves estimates. RPA confirms that the formulae used to estimate nickel and copper recovery meet industry standards.

Although the equations used to estimate metal recoveries appear to be accurate, RPA recommends that Eagle Mine LLC continue to conduct routine mineralogical and metallurgical tests as required on the different Eagle and Eagle East ore types in order to improve the accuracy of the calculations for all recoverable metals. On-going review of the recovery models should continue to further improve the calculations and provide a working model over the range of ore grades expected in the Eagle and Eagle East deposits.

14 MINERAL RESOURCE ESTIMATE

SUMMARY

LMC personnel updated the Mineral Resource estimates for the Eagle deposit, effective December 31, 2016. The estimate is based on the most current block model, dated June 30, 2015 and depleted by subtracting the mined volumes as of year-end 2016.

Eagle East Mineral Resource estimate was updated as of August 31, 2016 and provides the basis for the FS. RPA audited the June 30, 2016 estimates for both Eagle and Eagle East and the results were documented in the Technical Report dated August 12, 2016. For this Technical Report, RPA has reviewed the current estimate for Eagle East. Estimation parameters for the current Eagle East model are very similar to the previous model audited by RPA. The principal changes are due to additional drilling carried out for definition purposes.

Mineral Resource estimates, inclusive of Mineral Reserve estimates, to December 31, 2016 are summarized in Table 14-1.

TABLE 14-1 SUMMARY OF MINERAL RESOURCES AS OF DECEMBER 31, 2016 – INCLUSIVE OF MINERAL RESERVES
Eagle Mine

			Grades							Contained Metal						
Zone	**Category**	**Tonnes (Kt)**	**Ni (%)**	**Cu (%)**	**Co (%)**	**Au (g/t)**	**Ag (g/t)**	**Pt (g/t)**	**Pd (g/t)**	**Ni (000 t)**	**Cu (000 t)**	**Co (000 t)**	**Au (Moz)**	**Ag (Moz)**	**Pt (Moz)**	**Pd (Moz)**
Eagle	Measured	1,198	4.2	3.4	0.1	0.3	-	0.9	0.6	50.3	40.3	1.4	0.01	-	0.03	0.02
Eagle	Indicated	2,146	2.6	2.2	0.1	0.2	-	0.5	0.3	54.9	47.4	1.5	0.02	-	0.03	0.02
Eagle East	Indicated	1,293	5.2	4.2	0.1	0.5	15.3	1.7	1.3	67.2	54.3	1.3	0.02	0.64	0.07	0.05
	Total M + I	**4,637**	**3.7**	**3.1**	**0.1**	**0.3**	**4.3**	**0.9**	**0.7**	**172.5**	**142.0**	**4.2**	**0.05**	**0.64**	**0.14**	**0.10**
Eagle	Inferred	44	1.1	1.1	0.03	0.1	-	0.3	0.2	0.5	0.5	0.01	-	-	-	-
Eagle East	Inferred	290	1.7	1.4	-	0.2	6.0	0.5	0.3	4.9	4.1	0.00	-	0.06	-	-
	Total Inferred	**334**	**1.6**	**1.4**	**-**	**0.2**	**5.2**	**0.5**	**0.3**	**5.4**	**4.6**	**0.01**	**-**	**0.06**	**0.01**	-

Notes:

1. CIM definitions were followed for Mineral Resources.
2. Mineral Resources are estimated at an NSR cut-off grade of US$142/t.
3. Mineral Resources are estimated using long-term metal prices of US$8.50/lb Ni, US$2.75/lb Cu, US$13.00/lb Co, US$1,000/oz Au, US$16.50/oz Ag, US$1,500/oz Pt, and US$550/oz Pd.
4. Bulk density is interpolated for each block and ranges from 2.82 t/m^3 to 4.51 t/m^3 for Eagle and 3.01 t/m^3 to 4.54 t/m^3 for Eagle East.
5. Mineral Resources are inclusive of Mineral Reserves.
6. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
7. Numbers may not add due to rounding.

EAGLE

The estimate for Eagle was carried out using a block model constrained by 3D wireframe models of the mineralized bodies as well as the host peridotite. Grades for Ni, Cu, Co, S, Ag, Au, Pd, Pt, Fe_2O_3, MgO, and SG were interpolated into the blocks using Ordinary Kriging (OK). The block model consisted of an array of blocks with parent size of 5 m by 5 m by 5 m, sub-blocked down to a minimum size of 1 m by 1 m by 1 m. The model is oriented parallel to the property survey grid (i.e., no rotation). The wireframe models were constructed in Maptek Vulcan by mine personnel. The block model was also generated in Vulcan by Robert Mahin, Exploration Manager for Eagle Mine. Vulcan is a commercial software package commonly used in the industry.

The Eagle deposit occurs within a mafic-ultramafic intrusive complex that has intruded into siltstones of the Upper Fossum Creek Group. The host intrusive rocks are dominantly peridotite, and have a strike length of approximately 530 m in a roughly east-west direction and dip steeply to the north. The intrusive complex averages approximately 75 m wide in sub-crop and thins to about 5 m wide at a depth of 300 m.

Sulphide mineralization in and adjacent to the intrusive complex consists of disseminated, SMSU, and MSU, containing pyrrhotite, pentlandite, and chalcopyrite. Two SMSU zones have been defined by drilling within the intrusive complex, one near the surface (western zone) and one at depth (eastern zone). A zone of MSU mineralization occurs between the two SMSU zones and extends out into the host sediments. Two Cu-rich MSU zones occur within the SMSU and MSU zones. However, since 2013 these are no longer treated as separate domains.

The western SMSU zone most likely sub-crops in the western part of the intrusive complex and extends to a depth of about 225 m below the surface. The intermediate MSU zone forms an irregular shape that extends from about 60 m below the surface to a depth of about 285 m below the surface as presently defined by drilling. The eastern SMSU zone occurs as a small cylindrical body at a depth of about 125 m below the surface that gently plunges and widens to the west to a depth of about 260 m below the surface below the MSU zone.

The mineralized peridotite has been partially eroded and is covered by a thin veneer of glacial till ranging in thickness from nil at a single outcrop to about 25 m over the eastern edge of the peridotite.

Wireframe solids of the major lithologies were generated by construction of a series of north-south cross sectional polylines at a maximum spacing of 25 m. Polyline vertices were snapped directly to drill holes. Starting in 2013, surveyed underground mapping was used to refine the wireframes. In addition, EM probing of long-hole blast holes was used to a limited extent to identify the extent of massive sulphide.

Wireframes depicting the five main lithological units were defined and comprised:

- Peridotite (PER),
- Semi-massive sulphide. This unit was also subdivided into east (SMSE) and west units (SMSW),
- Massive sulphide (MSU),
- Surrounding metasediments (SED), and
- Overlying Alluvium (ALLUV).

Discrimination between SMSU and MSU is based on visual sulphide content from core logging. MSU is classified as >80% sulphides and SMSU >25% and <80% sulphides. MSU contacts are typically sharp contacts. SMSU contacts with peridotite, although not as sharp as MSU, generally occur over less than one metre.

RPA inspected the wireframe models, as well as the composite and block domain assignments, and considers them to be reasonable. RPA notes that the two SMSU wireframes overlap one another. The volume encompassed by this overlap is fairly small, and it does not appear to have affected the grade interpolations.

The PER, MSU, and SMSU wireframes are shown in Figure 14-1.

DATABASE

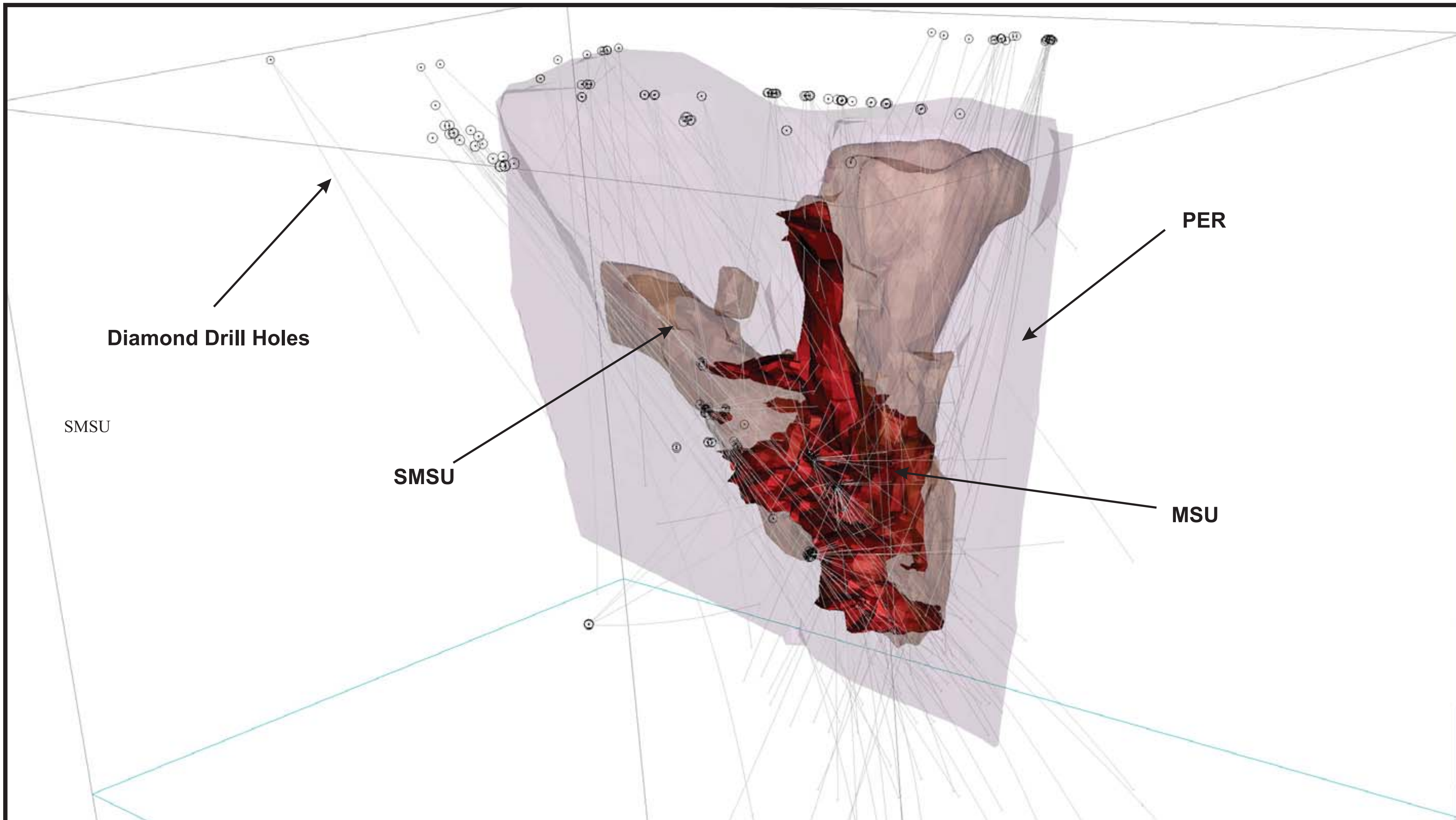
The sample database submitted to RPA for review comprised surface and underground diamond drilling results organized in comma-delimited files containing collar, survey, assay, lithology, and composite data. There were complete records, including collar locations and downhole surveys for 242 drill holes, totaling 55,473 m. Of the total number of holes, 111 were from underground and 131 drilled from surface, some from wedges.

The assay table contained records for 11,197 sampled intervals, with the analytical data for Ag, Au, Co, Cu, Fe_2O_3, MgO, Ni, Pd, Pt, S, and SG. Not all fields were populated, and actual numbers of assays for each component in the database are listed in Table 14-2.

TABLE 14-2 SUMMARY OF ASSAYS – EAGLE
Eagle Mine

Component	Number of Assays	% Filled
Ag	5,263	47.0%
Au	11,127	99.4%
Co	11,153	99.6%
Cu	11,156	99.6%
Fe_2O_3	9,048	80.8%
MgO	9,100	81.3%
Ni	11,091	99.1%
Pd	11,138	99.5%
Pt	11,170	99.8%
S	11,175	99.8%
SG	10,624	94.9%

RPA imported the comma-delimited files into a database in GEMS for review, validation, and analysis. No validation errors were encountered.



View Looking Northwest

Figure 14-1

Lundin Mining Corporation

Eagle Mine

Marquette County, Michigan, U.S.A.

Eagle Wireframe Models

April 2017

Source: RPA, 2016.

EXPLORATORY DATA ANALYSIS

RPA reviewed the statistical analyses for the sample data conducted by Eagle Mine LLC and LMC personnel and carried out confirmation checks of these analyses. The statistics for the samples, by domain are shown in Tables 14-3 to 14-5. The statistics were carried out on a non-weighted basis, using non-declustered samples.

TABLE 14-3 EAGLE SAMPLE STATISTICS – MSU
Eagle Mine

MSU	Cu (%)	Ni (%)	Au (g/t)	Pt (g/t)	Pd (g/t)	Co (%)	MgO (%)	Ag (g/t)	SG (t/m^3)
Mean	4.809	5.861	0.487	1.417	1.035	0.158	0.548	19.579	4.485
Std Error	0.06	0.02	0.021	0.031	0.025	0.001	0.044	0.516	0.006
Mode	3.47	6.17	0.128	1.185	0.309	0.19	0.02	7	4.6
Median	4.085	6.1	0.196	1.05	0.622	0.166	0.07	14	4.58
Variance	9.688	1.039	1.185	2.64	1.704	0.001	4.636	403.901	0.089
Std Dev	3.113	1.019	1.089	1.625	1.305	0.037	2.153	20.097	0.298
Kurtosis	9.716	7.67	69.547	54.522	18.758	1.353	35.048	17.77	10.887
Skewness	2.878	-2.419	6.911	5.549	3.634	-1.139	5.879	3.588	-3.115
Range	24.172	8.051	18.793	26.994	14.696	0.233	20.295	212.5	2.46
Minimum	0.128	0.019	0.007	0.006	0.004	0.002	0.005	0.5	2.53
Maximum	24.3	8.07	18.8	27	14.7	0.235	20.3	213	4.99
Sum	12,898.44	15,718.38	1,307.46	3,800.60	2,774.58	425.054	1,302.57	29,662.72	11,473.18
Count	2,682	2,682	2,682	2,682	2,682	2,682	2,378	1,515	2,558

Note. Std Dev – standard deviation

TABLE 14-4 EAGLE SAMPLE STATISTICS – SMSU
Eagle Mine

SMSU	Cu (%)	Ni (%)	Au (g/t)	Pt (g/t)	Pd (g/t)	Co (%)	MgO (%)	Ag (g/t)	SG (t/m^3)
Mean	2.074	2.185	0.296	0.643	0.409	0.060	15.942	9.634	3.343
Std Error	0.030	0.016	0.013	0.017	0.012	0.000	0.067	0.300	0.005
Mode	1.380	2.470	0.056	0.146	0.102	0.060	17.100	6.000	3.300
Median	1.720	2.170	0.154	0.466	0.274	0.059	16.450	7.000	3.310
Variance	2.682	0.819	0.518	0.903	0.430	0.000	11.667	131.832	0.064
Std Dev	1.638	0.905	0.720	0.950	0.656	0.022	3.416	11.482	0.254
Kurtosis	45.450	12.072	202.390	172.534	115.543	5.213	4.724	192.115	6.946
Skewness	5.314	2.056	12.159	10.311	9.243	1.314	-1.632	10.457	1.376
Range	22.813	11.580	16.050	23.598	11.300	0.203	23.970	268.500	3.270
Minimum	0.087	0.170	0.001	0.003	0.001	0.010	0.030	0.500	1.640
Maximum	22.900	11.750	16.050	23.600	11.300	0.213	24.000	269.000	4.910
Sum	6,284.470	6,621.128	896.008	1,949.604	1,239.753	181.790	41,895.130	14,132.470	9,853.170
Count	3,030	3,030	3,030	3,030	3,030	3,030	2,628	1,467	2,947

Note. Std Dev – standard deviation

TABLE 14-5 EAGLE SAMPLE STATISTICS – PER
Eagle Mine

PER	Cu (%)	Ni (%)	Au (g/t)	Pt (g/t)	Pd (g/t)	Co (%)	MgO (%)	Ag (g/t)	SG (t/m^3)
Mean	0.546	0.568	0.110	0.236	0.101	0.022	16.167	9.518	3.050
Std Error	0.017	0.010	0.015	0.044	0.007	0.000	0.089	5.666	0.004
Mode	0.014	0.050	0.002	0.003	0.002	0.020	17.450	0.500	3.100
Median	0.368	0.458	0.033	0.059	0.039	0.020	16.650	2.000	3.060
Variance	1.027	0.340	0.813	7.012	0.160	0.000	18.915	38,560.930	0.043
Std Dev	1.013	0.583	0.902	2.648	0.400	0.015	4.349	196.369	0.207
Kurtosis	170.759	98.586	1,202.818	2,375.714	804.172	35.867	1.751	1,194.554	13.199
Skewness	11.283	6.843	31.782	45.716	24.639	4.492	-0.928	34.518	0.857
Range	19.698	13.398	39.400	142.498	15.450	0.189	27.290	6,799.500	3.730
Minimum	0.003	0.003	0.001	0.003	0.001	0.001	0.110	0.500	1.070
Maximum	19.700	13.400	39.400	142.500	15.450	0.190	27.400	6,800.000	4.800
Sum	1,934.667	2,013.105	389.002	838.484	356.250	78.481	38,801.060	11,431.500	9,942.750
Count	3,545	3,543	3,526	3,549	3,536	3,539	2,400	1,201	3,260

Note. Std Dev – standard deviation

TREATMENT OF HIGH GRADE ASSAYS

Top cuts (grade capping) were applied at 3.0 g/t Au, 3.5 g/t Pt, and 2.5 g/t Pd in all estimation domains. In addition to these top cuts, limits were placed on the radii of influence of high-grade samples as follows:

- In the MSU and SMSU domains, samples assaying greater than 10% Cu were constrained to a 7.5 m radius.
- In the SED domain, samples greater than 1.0 g/t Au, Pt, or Pd; 0.5% Ni, or 1% Cu were limited to a 10 m radius.
- In the PER domain, a 10 m limit was placed on samples greater than 0.25 g/t Au, 0.25 g/t Pd, 3 g/t Pt, 3% Ni, or 3% Cu.

In RPA's opinion, the application of top cuts and distance constraints is a reasonable and appropriate practice, which is supported by the reconciliation results obtained between production and the resource model. This is explained in more detail in the section of this report entitled Reconciliation. RPA notes, however, that the strategy should be expanded to include silver, which is observed to have some very extreme high values. There are far fewer silver assays in the database compared to the other elements, and therefore a lower confidence level in the silver grade estimate. For this reason, LMC has elected not to report the silver in the Mineral Resource estimate. As such, not constraining high silver values in the grade interpolation will not impact the Mineral Resource estimate, nor will it affect the Eagle East Project economics. RPA recommends, however, that in the interest of observing best practice guidelines, that top cuts and/or distance constraints be applied to silver.

COMPOSITING

The dominant sample interval is 1.5 m, and this interval was used for compositing the data. The compositing was configured to break at domain boundaries, and remnant composites of less than 1.5 m in length created at these boundaries were discarded. Non-sampled intervals within the PER and SED were assigned a value of -9 and ignored in the compositing.

In RPA's opinion, the 1.5 m composite length is appropriate. Ignoring the un-sampled intervals, as opposed to assigning zero grade to them, may not be the best practice. At Eagle, when drill core is not sampled it is generally because it is not mineralized, and as such, is very low grade. Ignoring these intervals means that this low-grade information is not allowed to influence the grade interpolation, and may, in certain circumstances, result in grade bias. If there are nearby higher grade composites, block grades in the vicinity will only be influenced by those higher grades, which results in smearing.

RPA notes that the SED domain is not included in the estimates of Mineral Resources and Mineral Reserves and any grade biases there will be immaterial to the project economics. Some of the PER domain is included in the Mineral Resource estimates, however, and may be at risk of grade bias. RPA inspected the composites in the PER domain to look for areas that appeared to be at risk due to grade smearing. No obvious examples of grade smearing of any kind was observed, and virtually no instances of zones of high grade blocks in the PER traversed by unsampled drill holes. In RPA's opinion, this does not appear to be a problem at Eagle, however, the practice of ignoring unsampled intervals should still be discontinued.

Composite statistics are provided in Tables 14-6 to 14-8. The statistics are not particularly vulnerable to clustering effects, and so the data were not declustered for the purposes of conducting statistical analyses.

TABLE 14-6 EAGLE COMPOSITE STATISTICS – MSU
Eagle Mine

MSU	Cu (%)	Ni (%)	Au (g/t)	Pt (g/t)	Pd (g/t)	Co (%)	MgO (%)	Ag (g/t)	SG (t/m³)
Mean	5.857	4.786	0.479	1.408	1.024	0.159	0.404	19.268	4.272
Std Error	0.018	0.058	0.018	0.029	0.023	0.001	0.041	0.497	0.018
Mode	6.170	2.810	0.118	1.265	0.543	0.188	0.000	7.000	4.600
Median	6.081	4.096	0.203	1.060	0.641	0.166	0.000	13.334	4.570
Variance	0.942	9.262	0.929	2.364	1.488	0.001	4.081	384.181	0.947
Std Dev	0.970	3.043	0.964	1.538	1.220	0.036	2.020	19.601	0.973
CV	0.166	0.636	2.013	1.092	1.191	0.224	4.998	1.017	0.228
Kurtosis	7.778	9.815	52.764	40.864	15.403	1.238	38.078	18.637	13.443
Skewness	-2.397	2.890	6.008	4.886	3.348	-1.091	6.109	3.660	-3.783
Range	7.892	24.076	16.238	23.308	13.046	0.233	18.670	211.357	4.960
Minimum	0.058	0.134	0.014	0.005	0.004	0.002	0.000	0.850	0.000
Maximum	7.950	24.210	16.252	23.313	13.050	0.235	18.670	212.207	4.960
Sum	16,211.928	13,248.977	1,325.568	3,896.359	2,835.668	438.871	990.196	30,000.820	11,825.896
Count	2,768	2,768	2,768	2,768	2,768	2,768	2,450	1,557	2,768

Note. Std Dev – standard deviation; CV – coefficient of variation

TABLE 14-7 EAGLE COMPOSITE STATISTICS – SMSE
Eagle Mine

SMSE	Cu (%)	Ni (%)	Au (g/t)	Pt (g/t)	Pd (g/t)	Co (%)	MgO (%)	Ag (g/t)	SG (t/m³)
Mean	2.276	1.786	0.218	0.534	0.341	0.065	15.603	7.397	3.177
Std Error	0.022	0.021	0.009	0.010	0.007	0.001	0.097	0.147	0.024
Mode	2.470	1.630	0.106	0.454	0.161	0.069	15.000	6.000	0.000
Median	2.329	1.746	0.148	0.472	0.267	0.066	16.000	6.705	3.360
Variance	0.628	0.550	0.096	0.118	0.070	0.000	10.228	16.766	0.715
Std Dev	0.792	0.742	0.309	0.343	0.264	0.019	3.198	4.095	0.846
CV	0.348	0.415	1.421	0.642	0.776	0.292	0.205	0.554	0.266
Kurtosis	4.528	7.491	140.904	26.174	7.449	2.919	4.253	10.163	9.487
Skewness	0.768	1.713	9.673	3.410	2.177	0.491	-1.374	2.669	-3.218
Range	7.578	7.409	5.922	4.586	2.350	0.179	22.000	35.167	4.867
Minimum	0.130	0.047	0.005	0.027	0.011	0.010	0.000	1.000	0.000
Maximum	7.708	7.456	5.927	4.613	2.361	0.189	22.000	36.167	4.867
Sum	2,831.820	2,221.171	270.674	664.002	423.811	80.831	17,022.467	5,725.537	3,952.339
Count	1,244	1,244	1,244	1,244	1,244	1,244	1,091	774	1,244

Note. Std Dev – standard deviation; CV – coefficient of variation

TABLE 14-8 EAGLE COMPOSITE STATISTICS – SMSW
Eagle Mine

SMSW	Cu (%)	Ni (%)	Au (g/t)	Pt (g/t)	Pd (g/t)	Co (%)	MgO (%)	Ag (g/t)	SG (t/m^3)
Mean	2.073	2.177	0.331	0.669	0.397	0.056	15.636	11.091	3.287
Std Error	0.019	0.041	0.018	0.025	0.012	0.000	0.076	0.414	0.007
Mode	2.420	1.185	0.040	0.146	0.102	0.052	17.000	5.000	3.240
Median	2.036	1.700	0.167	0.451	0.278	0.053	16.000	8.000	3.278
Variance	0.627	2.858	0.577	1.105	0.238	0.000	8.715	116.397	0.089
Std Dev	0.792	1.691	0.760	1.051	0.488	0.020	2.952	10.789	0.298
CV	0.382	0.777	2.296	1.571	1.230	0.360	0.189	0.973	0.091
Kurtosis	7.496	25.922	118.510	122.174	54.941	4.069	2.262	22.613	44.696
Skewness	1.594	4.073	9.551	9.063	5.688	1.210	-0.959	3.969	-3.740
Range	7.113	19.512	12.174	18.385	7.641	0.181	23.130	99.998	4.580
Minimum	0.170	0.087	0.001	0.003	0.001	0.011	0.000	0.002	0.000
Maximum	7.283	19.599	12.175	18.388	7.642	0.192	23.130	100.000	4.580
Sum	3,605.046	3,786.062	575.497	1,163.276	690.416	96.627	23,298.062	7,530.451	5,715.972
Count	1,739	1,739	1,739	1,739	1,739	1,739	1,490	679	1,739

Note. Std Dev – standard deviation; CV – coefficient of variation

GEOSTATISTICS

Geostatistical analyses were conducted for Ni, Cu, Au, Pt, Pd, MgO, Fe_2O_3, and SG in all five domains using Snowden Supervisor software. Variograms were fitted to experimental variograms of normal-scores transformed values. The variogram models were back-transformed to real grade space prior to use in the kriging. The final variogram parameters for the MSU, SMSU, and PER domains are shown in Appendix A. Variograms for all metals in all domains are generally characterized by a relatively small nugget effect, combined with short range, high variance directional structures and longer range, low to medium variance structures. Most are quite strongly anisotropic with long ranges in the vertical direction and/or along strike of the domain. Across-strike ranges are normally the shortest.

RPA reviewed the results of the variogram analyses and considers them to be reasonable.

BULK DENSITY

Bulk density was composited and interpolated into the blocks by OK using the results of specific gravity (SG) measurements taken from drill core. SG measurements are routinely made by weighing specimens of core in air and water and deriving the ratio between the dry weight and the difference between the dry and submerged weights. These measurements are reviewed, and obvious outliers are removed. A linear regression of Sulphur vs. SG for all data through 2012 with outliers removed is shown in Figure 14-2. The regression formula is used for intervals where SG measurements are missing or have been discarded. In RPA's opinion, this is an appropriate practice for SG estimates.

A total of 10,624 SG determinations were contained in the database provided to RPA for this review. The average bulk densities by domain are shown in Table 14-9. RPA reviewed the SG measurements and they appear to be reasonable except for some outliers, which as explained above, have been discarded and not used in the interpolations.

FIGURE 14-2 SCATTER PLOT OF SULPHUR VS. SPECIFIC GRAVITY

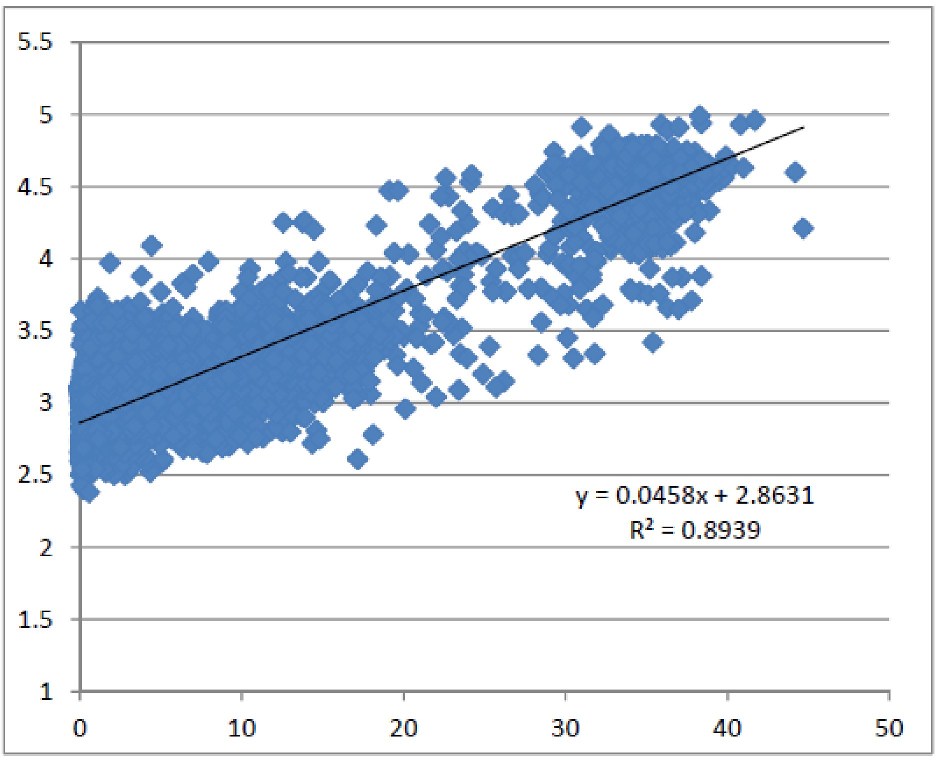


TABLE 14-9 AVERAGE BULK DENSITY
Eagle Mine

Zone	Bulk Density (g/cm^3)
MSU	4.51
SMSUE	3.39
SMSUW	3.25
PER	3.03
SED	2.82

BLOCK MODEL GEOMETRY

The block model comprised an array of 5 m by 5 m by 5 m parent cells, sub-blocked to a minimum size of one-metre cubes to allow the model to honour the wireframes. The model was not rotated relative to the mine survey grid. Block model geometry in summarized in Table 14-10.

TABLE 14-10 BLOCK MODEL GEOMETRY
Eagle Mine

Origin		Extents (offset)	
X	Easting: 431,325	X	550 m
Y	Northing: 5177450	Y	200 m
Z	Elev: 450 m	Z	350 m

Parent Cell Size		Blocks	
X	5 m	Columns	110
Y	5 m	Rows	40
Z	5 m	Levels	70

A list of all the variables stored within the blocks in the model supplied to RPA is provided in Table 14-11.

TABLE 14-11 BLOCK MODEL VARIABLES
Eagle Mine

Variable	Description
zone	Code: 2=alluv, 0=sed, 3=per, 4=smsw, 5=smse, 6=msu
type	Ore type: 1=MS (>26.5% S), 2=SMS, 3=Per (<6.5% S)
cuids	IDS copper value in percent
niids	IDS nickel value in percent
auids	IDS gold value in g/t
ptids	IDS platinum value in g/t

Variable	Description
pdids	IDS palladium value in g/t
coids	IDS cobalt value in percent
agids	IDS silver value in g/t
sids	IDS sulphur value in percent
mgo_ids	IDS MgO value in percent
fe2o3_ids	IDS Fe_2O_3 value in percent
cu_k	Kriged copper value in percent
ni_k	Kriged nickel value in percent
au_k	Kriged gold value in g/t
pt_k	Kriged platinum value in g/t
pd_k	Kriged palladium value in g/t
co_k	Kriged cobalt value in percent
mgo_k	Kriged MgO value in percent
fe2o3_k	Kriged Fe_2O_3 value in percent
cu_nn	Nearest neighbour copper value in percent
ni_nn	Nearest neighbour nickel value in percent
au_nn	Nearest neighbour gold value in g/t
pt_nn	Nearest neighbour platinum value in g/t
pd_nn	Nearest neighbour palladium value in g/t
co_nn	Nearest neighbour cobalt value in percent
denids	Density - IDS
den_k	Density - Kriging
den_nn	Density - Nearest neighbour
holes	Number of holes used to estimate a block
comp	Number of composites used to estimate a block
dist	Average distance to composites used to estimate a block
near	Distance to nearest composite used to estimate a block
class	Classification: 1=measured, 2=indicated, 3=inferred
kvar_ni	Kriging variance - Ni/Co/S
kvar_cu	Kriging variance - Cu/Pt/Pd/Au
hole_k	Number of holes - Kriging
comp_k	Number of composites - Kriging
dist_k	Average distance - Kriging
royalty	Royalty: 1=State, 2=Private (block centroid)
state	Percent block on State land
private	Percent block on Private land
nsr_scpt	Calculated block NSR
ni_t	Contained tonnes Ni
cu_t	Contained tonnes Cu
co_t	Contained tonnes Co
au_g	Contained grams Au
pt_g	Contained grams Pt
pd_g	Contained grams Pd
mgo_t	Contained tonnes MgO

GRADE INTERPOLATIONS

The block grade interpolations were generated in a single pass using search parameters developed for each domain based on the variogram results and observations of the data distribution. The interpolations employed an octant search with a minimum of six composites required to generate an estimate for all except nickel in the SMSUE domain, where a minimum of four was allowed. The maximum number of composites was ten, with a maximum of three composites allowed from any one drill hole. The interpolations used a discretization level of 5 by 5 by 5, meaning that each block grade estimate was generated from the average of 125 point estimates made within the block.

The search ellipsoids tended to be oblate spheroids with X and Y axes of equal length, and a somewhat shorter Z axis. The short axes of the search ellipsoids were uniformly oriented across the strike of the host peridotite body. The Vulcan rotation parameters for all search ellipsoids were as follows:

- Z 10°
- Y -80°
- X 0°

As previously explained in the section of this report entitled Treatment of High Grade Assays, restrictions were placed on the radius of influence of high grades of some components.

Search radii are listed in Table 14-12.

In RPA's opinion, the search parameters are reasonable.

TABLE 14-12 INTERPOLATION PARAMETERS
Eagle Mine

MSU

	Au	Co	Cu	Fe_2O_3	MgO	Ni	Pd	Pt	SG
X-Radius (m)	77.0	77.0	77.0	77.0	77.0	77.0	77.0	77.0	80.0
Y-Radius (m)	77.0	77.0	77.0	77.0	77.0	77.0	77.0	77.0	80.0
Z-Radius (m)	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	30.0

SMSUE

	Au	Co	Cu	Fe_2O_3	MgO	Ni	Pd	Pt	SG
X-Radius (m)	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0
Y-Radius (m)	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0
Z-Radius (m)	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0

SMSUW

	Au	Co	Cu	Fe_2O_3	MgO	Ni	Pd	Pt	SG
X-Radius (m)	110.0	79.0	75.0	83.0	83.0	60.0	121.0	143.0	80.0
Y-Radius (m)	110.0	79.0	75.0	83.0	83.0	60.0	121.0	143.0	80.0
Z-Radius (m)	25.0	22.0	39.0	22.0	22.0	45.0	25.0	40.0	30.0

PER

	Au	Co	Cu	Fe_2O_3	MgO	Ni	Pd	Pt	SG
X-Radius (m)	121.0	81.0	108.0	80.0	110.0	100.0	143.0	143.0	80.0
Y-Radius (m)	121.0	81.0	108.0	80.0	110.0	100.0	143.0	143.0	80.0
Z-Radius (m)	44.0	14.0	31.0	60.0	50.0	30.0	50.0	55.0	30.0
High Grade Threshold	1.0	0.1	3.0			3.0	1.0	3.0	
Radius; X=Y=Z (m)	10.0	10.0	10.0			10.0	10.0	10.0	

MODEL VALIDATION

The block model was validated by Eagle Mine LLC and LMC personnel by the following methods:

- Visual inspection of the block grades
- Global comparison of block and composite grades.

The block grades were observed to agree with the drill hole grades, and there were no instances of significant variances between global block and composite grades.

RPA carried out a visual inspection also, and confirms that the block grades honour the drill hole grades very well. In addition, RPA re-estimated the block grades using Inverse Distance to the Third Power (ID^3) and compared the global results to the present block model. The interpolation parameters were broadly based on those used by LMC, with some modifications for simplicity. The RPA block model results agreed with the LMC model to within 10% on global tonnage and less than or equal to 3% on the grades.

RPA checked and confirmed that the volumetrics reporting of the depleted block model has been done correctly.

RECONCILIATION

Eagle Mine personnel have reconciled mill and mine production with the resource block model. The surveyed mined volumes were rendered into 3D wireframes and used to capture the actual broken material from the block model. This was compared to the mill production records and to production as recorded by the mine grade control personnel. The reconciliation results for copper and nickel in 2015 are provided in Table 14-13. The same reconciliation for the first five months of 2016 are provided in Table 14-14.

In 2015, the block model appears to have somewhat overestimated nickel grade and very slightly overestimated tonnage relative to the mill. In RPA's opinion, this is within an acceptable margin, particularly for a new mine. For 2016, there is no significant discrepancy between the resource model and the mill production results.

In RPA's opinion, the reconciliation provides a significant validation of the block model as a whole and the estimation assumptions and parameters that have been used in generating this model.

TABLE 14-13 RECONCILIATION RESULTS FOR 2015
Eagle Mine

2015 Production Results

	Tonnes	Ni (%)	Cu (%)	Ni (t)	Cu (t)
Resource Model	750,726	4.48	3.38	33,245	25,378
Grade Control	749,427	4.30	3.53	32,253	26,455
Mill	735,184	4.29	3.37	31,512	24,760

Percent Difference From Mill

	Tonnes	Ni (%)	Cu (%)	Ni (t)	Cu (t)
Resource Model	2.1%	4.4%	0.3%	5.5%	2.5%
Grade Control	1.9%	0.2%	4.7%	2.4%	6.8%

TABLE 14-14 2016 RECONCILIATION RESULTS
Eagle Mine

2016 Production Results

	Tonnes	Ni (%)	Cu (%)	Ni (t)	Cu (t)
Resource Model	736,223	3.90	3.17	28,713	23,334
Grade Control	766,280	3.72	3.10	28,511	23,728
Mill	748,485	3.82	3.21	28,579	24,015

Percent Difference From Mill

	Tonnes	Ni (%)	Cu (%)	Ni (t)	Cu (t)
Resource Model	-1.6%	2.1%	-1.2%	0.5%	-2.8%
Grade Control	2.4%	-2.6%	-3.4%	-0.2%	-1.2%

CLASSIFICATION

Assignment of Measured, Indicated, or Inferred categories are largely based upon both minimum and average distance to the nearest sample. Blocks were assigned a Class code of 1, 2, or 3 depending on the distance criteria outlined in Table 14-15.

TABLE 14-15 DISTANCE LIMITS FOR RESOURCE CLASSIFICATION
Eagle Mine

Class	Minimum Distance (m)	Average Distance (m)
1	10	<10
2	20	10 - 20
3	35	20 - 30

Blocks were assigned a provisional classification based on the Class number: 1 for Measured, 2 for Indicated, and 3 for Inferred. The classification was then manually adjusted based upon a qualitative assessment of the continuity of mineralization, which resulted in an upgrade of some blocks in the MSU and SMSU domains from Inferred to Indicated.

In RPA's opinion, the Mineral Resource classification was completed in a reasonable manner consistent with the CIM Definition Standards for Mineral Resources and Mineral Reserves (2014).

DEMONSTRATION OF POTENTIAL FOR ECONOMIC EXTRACTION

An NSR value was estimated for each block based on the interpolated grades, projected metal prices, metallurgical recoveries, smelter terms, royalties, and transportation costs. Metal prices used for reserves are based on consensus, long term forecasts from banks, financial institutions, and other sources. For Mineral Resources, metal prices used are the same as for Mineral Reserves. The metal price inputs are as follows:

- $8.50/lb Ni
- $2.75/lb Cu
- $13.00/lb Co
- $1,000/oz Au
- $1,500/oz Pt
- $550/oz Pd.

Metallurgical recoveries were calculated using the recovery curves derived from mill performance, and reflect variations depending on head grade and type of concentrate produced. Smelter payables, treatment charges, penalties, freight, and royalties were derived from current contracts, permits, and tenure agreements.

The calculation was applied to the blocks by means of a script file. RPA reviewed the script and checked the block calculations and considers them to be reasonable.

An NSR cut-off of $142/t was applied for estimation of Mineral Resources. LMC created a wireframe model to further constrain the blocks for reporting purposes. The wireframe was configured to encompass only MSU, SMSUE, SMSUW, and PER blocks. Blocks above an elevation of 386 MASL were excluded due to the permitted crown pillar limitation. Similarly, blocks east of UTM 431,690 E are considered to be sterilized by ventilation raises, and so were also excluded, as were some isolated blocks distant from the main resource body. The surveyed volumes of stopes and development were used to deplete the model and account for material mined to date.

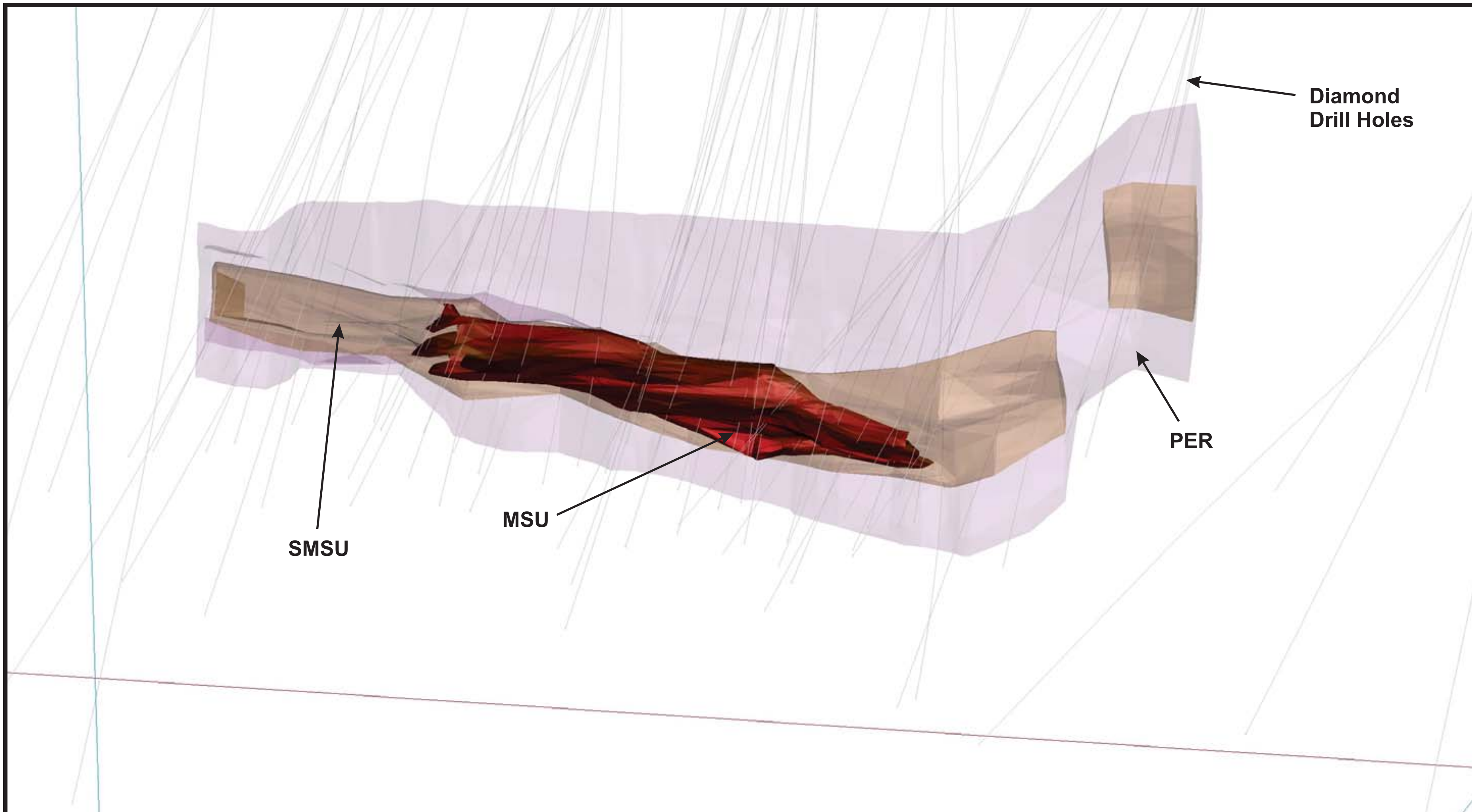
In RPA's opinion, the NSR cut-off grade is reasonable, as are the additional constraints applied to the block model. The application of these parameters adequately demonstrates that the Mineral Resources, as reported, have a reasonable prospect of economic extraction, as dictated by NI 43-101. RPA further notes that the resource model is quite insensitive to variations in the NSR cut-off grade.

RPA is not aware of any environmental, permitting, legal, title, taxation, socio-economic, marketing, political, or other relevant factors that could materially affect the Eagle Mineral Resource estimate.

EAGLE EAST

The estimate for Eagle East was carried out using a block model constrained by 3D wireframe models of the mineralized bodies (MSU and SMSU) as well as the host peridotite (PER). Grades for Ni, Cu, Co, S, MgO, Fe_2O_3, Ag, Au, Pd, Pt, and SG were interpolated into the blocks using Inverse Distance Squared (ID^2) weighting. The block model consisted of an array of blocks measuring 5 m by 5 m by 5 m, oriented parallel to the property survey grid (i.e., no rotation). The wireframe models were constructed in Vulcan Version 10 by mine exploration personnel. The block model was generated in Datamine Studio RM by Graham Greenway, of the United Kingdom office of LMC. Both Vulcan and Datamine are commercial software packages commonly used in the industry.

The wireframes (Figure 14-3) were constructed from a series of cross-sectional interpretations generated at a maximum spacing of 25 m. Four domains were defined for analyses and grade interpolation: MSU, SMSU, PER, and SED. Definition of MSU and SMSU mineralization is based on visual estimates of sulphide content in the core logs. Material with greater than 80% sulphides is classed as MSU, while SMSU defined as having 25% to 80% sulphide content. The PER contacts with the SED are defined by lithological logging. The SED domain is essentially unconstrained outside of the MSU, SMSU, and PER wireframes.



View Looking South-Southeast

Figure 14-3

Lundin Mining Corporation

Eagle Mine

Marquette County, Michigan, U.S.A.

Eagle East Wireframe Models

April 2017

Source: RPA, 2016.

The MSU and SMSU mineralization is complexly interrelated in a manner that is very difficult to resolve in drill hole intercepts. In order create topologically valid solid models it was necessary to build the wireframes such that they overlapped one another. A priority was assigned to each to allow the computer to properly assign domains to both the drill holes and the blocks. The MSU was given the highest priority followed by SMSU, and the peridotite. So for example, in areas where the MSU and SMSU bodies intersected, the blocks (or composites) within that area would be assigned to the MSU domain. RPA inspected the wireframe models, as well as the composite and block domain assignments, and considers them to be reasonable.

DATABASE

The sample database submitted to RPA for review comprised surface diamond drilling results organized in comma-delimited files containing collar, survey, assay, lithology, and composite data. There were complete records, including collar locations and downhole surveys for 218 surface drill holes totaling 162,619 m. Partial collar data were provided for an additional three holes but without accompanying survey, lithology, assay, or composite data. Many holes in the Eagle East area were wedged and directional drilling has often been used.

The assay table contained records for 5,210 sampled intervals, with the analytical data for Ag, Al_2O_3, Au, CaO, Co, Cr, Cu, Fe_2O_3, MgO, MnO, Ni, Pd, Pt, S, SG, SiO_2, TiO_2, and Zn. Not all fields were populated, and actual numbers of assays for each component in the database are listed in Table 14-16.

TABLE 14-16 NUMBER OF ASSAYS AT EAGLE EAST
Eagle Mine

Component	Number of Assays	% Filled
Ag	2,554	45.73%
Al_2O_3	5,158	92.35%
Au	5,329	95.42%
CaO	5,158	92.35%
Co	5,410	96.87%
Cr	5,392	96.54%
Cu	5,462	97.80%
Fe_2O_3	5,128	91.82%
MgO	5,159	92.37%

Component	Number of Assays	% Filled
MnO	5,158	92.35%
Ni	5,491	98.32%
Pd	5,457	97.71%
Pt	5,120	91.67%
S	5,488	98.26%
SG	5,429	97.21%
SiO_2	5,158	92.35%
TiO_2	5,441	97.42%
Zn	5,432	97.26%

RPA imported the comma-delimited files into a database in GEMS for review, validation, and analysis.

EXPLORATORY DATA ANALYSIS

RPA reviewed the statistical analyses for the sample data conducted by LMC personnel and carried out confirmation checks of these analyses. The statistics for the samples, by domain are shown in Table 14-17 to 14-19. The statistics were carried out on a non-weighted basis, using non-declustered samples.

TABLE 14-17 EAGLE EAST SAMPLE STATISTICS – MSU
Eagle Mine

MSU	Ni (%)	Cu (%)	Au (g/t)	Pt (g/t)	Pd (g/t)	Co (%)	Ag (g/t)	S (%)	Zn (%)	Al_2O_3 (%)	CaO (%)	Cr (%)	Fe_2O_3 (%)	MgO (%)	MnO (%)	SiO_2 (%)	TiO_2 (%)	SG (t/m^3)
Number	229	229	208	229	229	229	229	229	229	229	229	229	229	229	229	229	229	223
Minimum	0.266	0.173	0.005	0.146	0.110	0.007	1.000	1.300	0.001	0.005	0.025	0.005	10.300	0.005	0.005	0.070	0.005	2.760
Maximum	9.130	18.350	11.700	11.800	15.150	0.212	91.000	38.200	0.079	14.450	12.900	0.170	75.500	15.300	0.240	60.580	0.800	5.100
Range	8.864	18.177	11.695	11.654	15.040	0.205	90.000	36.900	0.078	14.445	12.875	0.165	65.200	15.295	0.235	60.510	0.795	2.340
Mean	7.326	6.336	0.796	2.441	2.006	0.158	22.216	33.777	0.016	0.470	0.501	0.020	66.567	0.395	0.050	1.969	0.063	4.527
Variance	1.533	16.436	2.685	5.868	8.081	0.001	374.707	18.446	0.000	2.346	0.535	0.001	61.816	2.314	0.001	38.033	0.008	0.084
Standard Dev	1.238	4.054	1.639	2.422	2.843	0.038	19.357	4.295	0.015	1.532	0.732	0.025	7.862	1.521	0.026	6.167	0.090	0.290
CV	0.169	0.640	2.059	0.992	1.417	0.241	0.871	0.127	0.938	3.260	1.461	1.250	0.118	3.851	0.520	3.132	1.429	0.064
Skewness	-2.215	1.804	3.506	2.160	2.309	-1.257	2.020	-4.618	2.545	6.480	13.020	3.319	-3.705	8.963	2.575	5.680	4.860	-3.183
Kurtosis	8.029	2.302	14.225	4.000	4.682	1.332	3.257	25.557	5.827	49.410	210.934	12.897	18.723	83.798	11.731	36.955	28.264	12.306

Note. CV –coefficient of variation

TABLE 14-18 EAGLE EAST SAMPLE STATISTICS – SMSU
Eagle Mine

SMSU	Ni (%)	Cu (%)	Au (g/t)	Pt (g/t)	Pd (g/t)	Co (%)	Ag (g/t)	S (%)	Zn (%)	Al_2O_3 (%)	CaO (%)	Cr (%)	Fe_2O_3 (%)	MgO (%)	MnO (%)	SiO_2 (%)	TiO_2 (%)	SG (t/m^3)
Number	323	323	311	323	323	323	323	323	323	323	323	323	323	323	323	323	323	321
Minimum	0.058	0.139	0.001	0.003	0.004	0.004	0.500	0.600	0.001	0.020	0.200	0.010	7.130	0.810	0.030	0.900	0.010	2.740
Maximum	9.490	8.850	5.170	9.430	6.840	0.179	33.000	36.100	0.036	16.280	6.810	0.920	71.500	22.610	0.230	59.160	2.900	5.420
Range	9.432	8.711	5.170	9.428	6.836	0.175	32.500	35.500	0.035	16.260	6.610	0.910	64.370	21.800	0.200	58.260	2.890	2.680
Mean	3.019	2.279	0.318	0.923	0.648	0.071	8.827	13.283	0.014	2.377	2.251	0.162	37.196	16.337	0.157	24.659	0.534	3.477
Variance	1.241	1.199	0.274	0.735	0.548	0.000	22.147	17.908	0.000	2.271	1.474	0.005	55.186	7.791	0.000	43.597	0.127	0.045
Standard Dev	1.114	1.095	0.523	0.857	0.740	0.021	4.706	4.232	0.004	1.507	1.214	0.071	7.429	2.791	0.021	6.603	0.356	0.212
CV	0.369	0.480	1.645	0.928	1.142	0.296	0.533	0.319	0.286	0.634	0.539	0.438	0.200	0.171	0.134	0.268	0.667	0.061
Skewness	0.072	1.200	6.108	4.597	3.586	-0.132	1.524	-0.277	1.374	4.323	1.030	3.890	-0.542	-0.925	0.127	1.060	2.441	0.431
Kurtosis	1.465	2.697	46.651	36.491	17.946	1.167	3.750	1.291	3.371	33.378	1.082	36.059	1.253	4.050	1.364	3.127	8.906	3.699

Note. CV –coefficient of variation

TABLE 14-19 EAGLE EAST SAMPLE STATISTICS – PER
Eagle Mine

PER	Ni (%)	Cu (%)	Au (g/t)	Pt (g/t)	Pd (g/t)	Co (%)	Ag (g/t)	S (%)	Zn (%)	Al_2O_3 (%)	CaO (%)	Cr (%)	Fe_2O_3 (%)	MgO (%)	MnO (%)	SiO_2 (%)	TiO_2 (%)	SG (t/m^3)
Number	716	716	686	716	716	716	716	716	716	716	716	716	716	716	716	716	716	715
Minimum	0.001	0.001	0.001	0.003	0.001	0.001	0.500	0.070	0.001	0.040	0.150	0.005	2.370	0.040	70.020	0.100	0.020	2.660
Maximum	8.210	21.000	24.300	7.970	10.050	0.162	69.000	33.300	0.070	17.120	32.200	0.890	71.100	24.500	0.400	91.110	3.440	4.640
Range	8.209	20.999	24.300	7.968	10.050	0.161	68.500	33.230	0.069	17.080	32.050	0.885	68.730	24.460	0.380	91.010	3.420	1.980
Mean	0.606	0.556	0.128	0.251	0.192	0.021	2.807	2.826	0.012	6.163	5.234	0.165	18.976	18.561	0.167	41.519	1.297	3.145
Variance	0.503	0.595	0.987	0.106	0.159	0.000	10.924	12.190	0.000	4.444	2.635	0.004	38.535	18.989	0.001	48.661	0.397	0.039
Standard Dev	0.709	0.772	0.993	0.326	0.399	0.016	3.305	3.491	0.004	2.108	1.623	0.067	6.208	4.358	0.028	6.976	0.630	0.198
CV	1.170	1.388	7.758	1.299	2.078	0.762	1.177	1.235	0.333	0.342	0.310	0.406	0.327	0.235	0.168	0.168	0.486	0.063
Skewness	3.690	8.050	23.924	4.838	12.339	3.815	6.086	4.203	3.711	1.453	1.742	0.381	3.329	-1.958	-2.312	0.204	1.423	2.667
Kurtosis	22.271	161.258	578.979	52.262	224.354	24.585	81.773	27.907	26.733	6.562	29.191	4.833	20.971	4.578	15.094	12.931	1.857	15.742

Note. CV –coefficient of variation

TREATMENT OF HIGH ASSAYS

From review of histograms, probability plots, and mean and variance diagrams, it is apparent that the sample distributions in some domains are skewed and that some of the highest assays in those distributions may cause the grade interpolations to be biased. High grade caps have been applied based on this analysis. Top-cuts were reportedly applied by capping the data where the data distribution starts to disintegrate when viewed on a log-probability plot, usually close to the 99th percentile or 99.8th percentile. A summary of the top-cuts is provided in Table 14-20. No cutting was applied in the SED domain because the confidence level in the continuity of mineralization is low and so it was excluded from the Mineral Resources.

RPA notes that some minor revisions have been made to the top-cuts since the last estimate. RPA reviewed the revisions and considers them to be reasonable. The review for the August 31, 2016 model included a re-estimation of portions of the block model to investigate the sensitivity of the grade interpolations to restrictions on the influence of the highest assays. Interpolations were run with progressively more conservative constraints placed on the radii of influence of the high assays. Almost no impact was observed on the global block grades by varying these parameters. In RPA's opinion, the block model does not appear to be vulnerable to bias from smearing of grades from high assays.

TABLE 14-20 EAGLE EAST TOP CUTS
Eagle Mine

Domain	Ag (g/t)	Au (g/t)	Co (%)	Cu (%)	MgO (%)	Ni (%)	Pd (g/t)	Pt (g/t)	S (%)
PER	15	0.8	0.09	5.0	None	3.1	1.2	1.7	11
SMSU	27	3.0	None	None	None	None	4.3	4.2	None
MSU	None	7.7	None	None	2.4	None	12.7	None	None

COMPOSITES

The sampling at Eagle is typically carried out in 1.5 m intervals, and inspection of the sample database indicates that this is by far the most common sample length. As a result, a composite interval of 1.5 m was applied to the capped sample data prior to geostatistical analyses and grade interpolation. Due to a relative lack of sampling in the SED domain, unsampled intervals were assigned a low value (0.001) to help constrain high grades from being unduly extrapolated into areas with little or no sample information. RPA considers this to be a reasonable approach, although it is noted that the SED contributes no material to the resource estimate.

The results of a statistical analysis on the composited sample data are provided in Tables 14-21 to 14-23.

GEOSTATISTICAL ANALYSES

Eagle Mine LLC and LMC personnel conducted geostatistical analyses to generate variograms for Ni, Cu, Ag, Au, Pt, Pd, MgO, Fe_2O_3, and SG in the PER, SMSU and PER domains. It was not possible to derive coherent and geologically relevant variogram models. Reasonable structures were present in the horizontal, along-strike direction, however, the structures of the experimental variograms in the across strike and dip directions were poor or non-existent. Coherent omni-directional variograms were obtained but, in the opinion of Eagle Mine LLC and LMC personnel, their structures were dominated by the down-hole and strike direction co-variance relationships. Eagle Mine LLC and LMC personnel are of the opinion that the weak variograms in the across-strike and dip directions is likely to be a result of the lack of data in these directions.

Due to the poor anisotropic variography, it was decided to use ID rather than OK for the primary grade estimations. Variogram models were derived, however, and OK interpolations were run as a check on the ID estimates, and were found to agree reasonably well.

RPA reviewed the variography for Eagle East and generally concurs with Eagle Mine LLC and LMC personnel's opinion. It is noted that interpretable experimental variograms can be derived from the data, and that with additional work it may be possible to derive reasonable variogram models. However, RPA concurs that often the variogram results are significantly impacted as much or more by the distribution and orientation of the drill holes as they are by any co-variance relationships resulting from specific characteristics of the mineralization. As such, the choice of ID over OK is reasonable and appropriate.

TABLE 14-21 EAGLE EAST COMPOSITE STATISTICS – MSU
Eagle Mine

MSU	Ni (%)	Cu (%)	Au (g/t)	Pt (g/t)	Pd (g/t)	Co (%)	Ag (g/t)	S (%)	Zn (%)	Al_2O_3 (%)	CaO (%)	Cr (%)	Fe_2O_3 (%)	MgO (%)	MnO (%)	SiO_2 (%)	TiO_2 (%)	SG (t/m^3)
Number	207	207	188	207	207	207	207	207	207	207	207	207	207	207	207	207	207	207
Minimum	2.714	0.587	0.012	0.360	0.110	0.062	4.333	12.843	0.001	0.005	0.025	0.005	32.599	0.005	0.005	0.070	0.005	3.365
Maximum	9.130	18.350	7.700	11.800	12.700	0.212	88.500	38.200	0.079	10.073	5.325	0.157	75.500	3.500	0.184	36.599	0.572	5.100
Range	6.416	17.763	7.688	11.440	12.590	0.150	84.167	25.357	0.078	10.068	5.300	0.152	42.901	3.495	0.179	36.529	0.567	1.735
Mean	7.344	6.339	0.789	2.463	2.007	0.158	22.270	33.793	0.016	0.466	0.495	0.020	66.563	0.283	0.050	1.958	0.063	4.527
Variance	1.234	16.502	2.320	5.949	7.866	0.001	376.313	13.655	0.000	1.581	0.251	0.001	45.575	0.261	0.001	26.084	0.006	0.065
Standard Dev	1.111	4.062	1.523	2.439	2.805	0.036	19.399	3.695	0.015	1.257	0.501	0.023	6.751	0.511	0.025	5.107	0.078	0.256
CV	0.151	0.641	1.930	0.990	1.398	0.228	0.871	0.109	0.938	2.697	1.012	1.150	0.101	1.806	0.500	2.608	1.238	0.057
Skewness	-1.368	1.815	2.912	2.148	2.213	-1.006	2.000	-3.355	2.531	4.614	5.731	3.301	-2.277	4.497	1.937	4.078	3.639	-2.532
Kurtosis	2.583	2.273	8.147	3.893	3.902	0.275	3.113	13.437	5.717	24.984	46.143	12.667	6.507	22.179	6.417	18.170	16.124	7.539

Note. CV – coefficient of variation

TABLE 14-22 EAGLE EAST COMPOSITE STATISTICS – SMSE
Eagle Mine

SMSU	Ni (%)	Cu (%)	Au (g/t)	Pt (g/t)	Pd (g/t)	Co (%)	Ag (g/t)	S (%)	Zn (%)	Al_2O_3 (%)	CaO (%)	Cr (%)	Fe_2O_3 (%)	MgO (%)	MnO (%)	SiO_2 (%)	TiO_2 (%)	SG (t/m^3)
Number	276	276	265	276	276	276	276	276	276	276	276	276	276	276	276	276	276	276
Minimum	0.126	0.139	0.001	0.003	0.004	0.005	0.500	0.600	0.007	0.680	0.539	0.010	7.130	2.820	0.090	12.600	0.090	2.750
Maximum	5.890	6.780	3.000	4.200	4.300	0.133	27.000	23.460	0.031	16.280	6.601	0.745	55.300	22.600	0.230	59.160	2.473	4.130
Range	5.764	6.641	3.000	4.198	4.296	0.128	26.500	22.860	0.024	15.600	6.063	0.735	48.170	19.780	0.140	46.560	2.383	1.380
Mean	3.030	2.286	0.298	0.898	0.632	0.071	8.836	13.323	0.014	2.352	2.245	0.162	37.248	16.367	0.156	24.578	0.532	3.479
Variance	1.073	1.060	0.138	0.470	0.422	0.000	19.770	15.258	0.000	1.918	1.356	0.004	47.495	6.491	0.000	37.491	0.121	0.039
Standard Dev	1.036	1.029	0.372	0.686	0.650	0.019	4.446	3.906	0.004	1.385	1.164	0.066	6.892	2.548	0.020	6.123	0.348	0.197
CV	0.342	0.450	1.248	0.764	1.028	0.268	0.503	0.293	0.286	0.589	0.518	0.407	0.185	0.156	0.128	0.249	0.654	0.057
Skewness	-0.227	1.068	4.018	2.145	2.882	-0.324	1.352	-0.488	1.378	4.378	0.952	2.940	-0.604	-0.473	0.393	1.117	2.351	0.109
Kurtosis	-0.119	1.791	21.165	6.604	10.807	0.298	2.483	0.106	3.114	37.287	0.961	22.382	0.941	2.394	0.308	3.188	7.846	0.692

Note. CV – coefficient of variation

TABLE 14-23 EAGLE EAST COMPOSITE STATISTICS – PER
Eagle Mine

PER	Ni (%)	Cu (%)	Au (g/t)	Pt (g/t)	Pd (g/t)	Co (%)	Ag (g/t)	S (%)	Zn (%)	Al_2O_3 (%)	CaO (%)	Cr (%)	Fe_2O_3 (%)	MgO (%)	MnO (%)	SiO_2 (%)	TiO_2 (%)	SG (t/m^3)
Number	629	629	603	629	629	629	629	629	629	629	629	629	629	629	629	629	629	638
Minimum	0.007	0.005	0.001	0.003	0.001	0.001	0.500	0.070	0.005	0.057	0.422	0.005	2.999	0.052	0.020	0.139	0.022	2.706
Maximum	3.100	5.000	0.800	1.700	1.200	0.090	15.000	11.000	0.040	16.830	12.840	0.493	70.172	24.443	0.264	88.602	3.390	4.622
Range	3.093	4.995	0.800	1.698	1.200	0.089	14.500	10.930	0.035	16.772	12.418	0.488	67.173	24.391	0.244	88.463	3.368	1.916
Mean	0.584	0.545	0.088	0.244	0.173	0.021	2.724	2.637	0.012	6.163	5.233	0.165	18.935	18.592	0.167	41.554	1.292	3.145
Variance	0.320	0.390	0.012	0.069	0.038	0.000	6.263	5.872	0.000	4.094	2.121	0.004	33.611	17.611	0.001	42.306	0.379	0.030
Standard Dev	0.566	0.625	0.110	0.264	0.196	0.013	2.503	2.423	0.004	2.023	1.456	0.065	5.797	4.197	0.025	6.504	0.615	0.174
CV	0.969	1.147	1.250	1.082	1.133	0.619	0.919	0.919	0.333	0.328	0.278	0.394	0.306	0.226	0.150	0.157	0.476	0.055
Skewness	1.821	2.664	2.834	1.771	2.011	2.009	1.530	1.404	2.885	1.349	0.067	-0.042	3.078	-1.823	-2.724	0.211	1.476	2.170
Kurtosis	3.873	11.731	11.367	4.240	5.330	6.009	2.995	1.780	13.313	5.651	2.178	0.391	19.135	3.973	12.411	11.334	2.002	12.863

Note. CV – coefficient of variation

EAGLE EAST BULK DENSITY

The bulk density measurements contained within the drill hole database were composited and interpolated into the blocks along with grade information. Where density values were missing, the average for the domain was assigned. Bulk density was based on the results of 4,704 determinations made on whole core by exploration personnel. The average densities for each domain are listed in Table 14-24.

TABLE 14-24 AVERAGE BULK DENSITY BY DOMAIN FOR EAGLE EAST
Eagle Mine

Domain	Bulk Density (g/cm^3)
MSU	4.54
SMS	3.50
PER	3.15
SED	3.01

In RPA's opinion, the application of bulk density in the block model has been carried out in an appropriate manner, and the averaged values obtained for the domains appears to be reasonable.

BLOCK MODEL

The block model consists of an array of block measuring 5 m by 5 m by 5 m, oriented parallel to the property survey grid (i.e. no rotation). Sub-blocking was allowed down to a minimum of 2.5 m in the X and Y directions, and 0.025 in the Z. The block size was selected in order to suit mine planning functions, and to allow the model to honour the complex wireframe shapes. RPA notes that the block size is somewhat small relative to the data density, but is acceptable.

Block domain assignments were made base upon centroid locations.

A summary of block model geometry is provided in Table 14-25, and a list of the model variables is shown in Table 14-26.

TABLE 14-25 EAGLE EAST BLOCK MODEL GEOMETRY
Eagle Mine

Origin		Extents (offset)	
X	Easting: 431,325	X	2,690 m
Y	Northing: 5,177,200	Y	505 m
Z	Elevation: -650 m	Z	350 m

Parent Cell Size		Blocks	
X	5 m	Columns	538
Y	5 m	Rows	101
Z	5 m	Levels	70

Notes:
1. The parameters in this table are configured for Datamine software.

TABLE 14-26 EAGLE EAST BLOCK MODEL VARIABLES
Eagle Mine

Variable	Description
ZONE	Code: 1=SED, 2=PER, 3=SMS, 4= MSU
DOMAIN	sed, per, smsu, msu
CU_PCT	Interpolated copper value in %
NI_PCT	Interpolated nickel value in %
AU_PPM	Interpolated gold value in g/t
PT_PPM	Interpolated platinum value in g/t
PD_PPM	Interpolated palladium value in g/t
CO_PCT	Interpolated cobalt value in %
AG_PPM	Interpolated silver value in g/t
S_PCT	Interpolated sulphur value in %
MGO_PCT	Interpolated MgO value in %
FE2O3	Interpolated Fe_2O_3 in %
DENSITY	Interpolated density in t/m^3
STATE	Percent block on state land
NSR_16	NSR based on 2016 metal prices

GRADE INTERPOLATIONS

SEARCH PARAMETERS

A search ellipsoid was derived based on the overall orientation of the mineralization (see Figure 14-2). The major axis of the search was directed along an azimuth of 105° with zero dip. The anisotropy ratio for the search ellipsoids in the SED, MSU, and SMSU domains was 2.5:1:1, while for the PER it was 2.5:1:0.9. The major axis search radius for the first pass of the grade interpolations was 50 m.

Grade interpolations were carried out in two passes for all but the SED domain, where a three-pass strategy was used. For the second pass, the search ellipsoid was increased in size by a factor of two from the first pass. In the third pass, the search radii were three times longer than in the first pass. Search parameters are shown in Table 14-27.

TABLE 14-27 EAGLE EAST SEARCH PARAMETERS
Eagle Mine

	Primary Search Pass					Second Search Pass			Third Search Pass		
	Search Distance (m)			Number of Composites			Number of Composites			Number of Composites	
Domain	X	Y	Z	Min	Max	Volume factor	Min	Max	Volume factor	Min	Max
SED	50	20	20	4	15	2	3	10	3	3	8
PER	50	20	18	4	15	2	3	8	0		
SMSU	50	20	20	4	15	2	3	10	0		
MSU	50	20	20	4	15	2	3	10	0		

INTERPOLATION STRATEGY

The grades were interpolated using Inverse Distance weighting. A distance weighting exponent of two (i.e., ID^2) was used for Ni, Cu, Ag, Au, Pt, Pd, MgO, Fe_2O_3, and SG in the PER, SMSU, and MSU domains. A power of three (ID^3) was used for Ni, Cu, Ag, Au, Pt, Pd, MgO, Fe_2O_3, and SG in the SED domain. The interpolations were performed in two passes for most domains, with three passes in the SED domain. Where no blocks were captured by the search within the SED domain, a very low default value was assigned.

A discretization level of 4 m by 4 m by 3 m was used such that each block was estimated using a matrix of 48 points. The grade of the parent cell was assigned as the mean estimated grade of these points.

Contacts between the domains were regarded as "hard" boundaries for the searches, and as such, the grades for a block within a domain were not estimated using composites outside that domain.

For all domains, the interpolations were constrained to a minimum of four composites and a maximum of 15 for the first pass and eight for subsequent passes with the exception of the PER, where the maximum was set to ten. A maximum of three composites were allowed from a single drill hole.

In RPA's opinion, the search parameters and grade interpolation methods used for Eagle East are reasonable and appropriate.

BLOCK MODEL VALIDATION

The grade interpolations were validated by LMC personnel using the following techniques:

- Visual validation by comparison of the drill hole composite grades with the block model grades on vertical sections and plans.
- Sectional swath plots, using Snowden Supervisor, of metal grades were used in order to compare the average grades of the drill hole composites with the block model in east-west, north-south and vertical slices through the deposit.
- The global de-clustered mean grades of the input data were compared with the global mean grades of the output block model.

LMC reports that the model validation techniques applied yielded satisfactory results. Visual inspection of block grades versus composite grades showed good correlation with one another. The sectional swath plots indicated that the trend of the estimated block grades generally honoured the trend of input grades, and is smoother as expected from the effects of the Inverse Distance interpolation. There were no indications of significant differences between the global block and composite grades.

Block grades for copper and nickel are shown in cross section views in Appendices B and C.

RPA carried out a visual inspection of the block model, comparing block grades to the drill hole composites and confirmed that there was good agreement.

In RPA's opinion, the grade interpolations were carried out in a reasonable manner, using appropriate methodologies, parameters, and assumptions.

RESOURCE CLASSIFICATION

Definitions for resource categories used in this report are consistent CIM definitions.

In the CIM classification, a Mineral Resource is defined as "a concentration or occurrence of solid material of economic interest in or on the Earth's crust in such form, grade or quality and quantity that there are reasonable prospects for eventual economic extraction." Mineral Resources are classified into Measured, Indicated, and Inferred categories.

A Mineral Reserve is defined as the "economically mineable part of a Measured and/or Indicated Mineral Resource" demonstrated by studies at Pre-Feasibility or Feasibility level as appropriate. Mineral Reserves are classified into Proven and Probable categories.

LMC has classified the Eagle East Mineral Resource estimate on the basis of the confidence in the drill hole data, the geological interpretation, data distribution, and the overall confidence in the grade interpolation. Blocks within a minimum of 20 m to the nearest sample were generally classed as Indicated. The balance of the interpolated blocks were assigned to the Inferred category. The classification was reviewed for reasonable continuity of geology and grade, and a wireframe model was created to define and code the classification into the block model. Mineral Resource estimates have only been classified for the PER, SMSU, and MSU domains.

In RPA's opinion, the classification for the Eagle East Mineral Resource estimates are reasonable. RPA further notes that the classification criteria are similar to those used for the Eagle resources, which have been demonstrated to be generally reliable from reconciliation with production data.

DEMONSTRATION OF POTENTIAL FOR ECONOMIC EXTRACTION

LMC used an estimated block NSR value to apply a cut-off to the Mineral Resource model. The calculation was applied by means of a script that was run from within Datamine. This script included provisions for metal prices, metallurgical recoveries, smelter terms, transportation costs, and royalties.

Metallurgical recoveries were derived from the performance characteristics of mill, and include formulae for the estimated deportments of all components to the various concentrates. Smelter terms include payables, treatment and recovery charges, and penalties for the estimated production of both nickel and copper concentrates. Transport costs also reflect the present costs for the operation. Royalties are based upon the agreements in place if production commences at Eagle East.

RPA reviewed the script and the inputs and considers them to be a reasonable and well within the level of detail generally acceptable for estimation of Mineral Resources.

Metal prices used for Mineral Reserve estimates are based on consensus, long term forecasts from banks, financial institutions, and other sources. For Mineral Resource estimates, metal prices used are the same as those for Mineral Reserve estimates. The metal price inputs to this script are as follows:

- $8.50/lb Ni
- $2.75/lb Cu
- $13.00/lb Co
- $1,000/oz Au
- $1,500/oz Pt
- $550/oz Pd

The NSR cut-off applied to the block model for the Mineral Resource estimate was $142/t, which LMC personnel consider to be a reasonable cost cut-off based on experience to date. RPA also considers this to be a reasonable cut-off criterion for the Eagle East deposit. RPA further notes that the Mineral Resource estimate is very insensitive to fluctuations in NSR cut-off, as the tonnage above cut-off does not change significantly up to an NSR of $200/t. Virtually all of the material contained within the MSU and SMSU domains is included as Mineral Resources at the $142/t cut-off grade.

RPA is not aware of any environmental, permitting, legal, title, taxation, socio-economic, marketing, political, or other relevant factors that could materially affect the Mineral Resource estimate.

CHANGE FROM PREVIOUS ESTIMATE

Table 14-28 compares the current Mineral Resource estimate with the previous one, which was dated June 30, 2016.

In RPA's opinion, the decrease in Measured and Indicated categories at Eagle is due primarily to depletion. The depletion of Indicated material is more than offset by the introduction of Indicated Mineral Resource estimate at Eagle East, resulting in an overall substantial increase in this category. The Inferred Mineral Resource estimate at Eagle East has reduced in tonnage due to conversion to the Indicated category.

TABLE 14-28 CHANGES TO THE MINERAL RESOURCE ESTIMATE
Eagle Mine

December 2016

Zone	Category	Tonnage (Kt)	Ni (%)	Cu (%)	Co (%)	Au (g/t)	Ag (g/t)	Pt (g/t)	Pd (g/t)	Kt Ni	Kt Cu	Kt Co	Contained Metal oz Au	oz Ag	oz Pt	oz Pd
Eagle	Measured	1,198	4.20	3.37	0.11	0.33		0.89	0.58	50.3	40.4	1.32	12,700	0	34,300	22,300
	Indicated	2,146	2.56	2.21	0.07	0.23		0.46	0.30	54.9	47.4	1.50	15,900	0	31,700	20,700
Eagle E	Indicated	1,293	5.20	4.20	0.10	0.50	15.3	1.70	1.30	67.2	54.3	1.29	20,800	636,000	70,700	54,000
	Total M+I	**4,637**	**3.72**	**3.06**	**0.09**	**0.33**	**4.27**	**0.92**	**0.65**	**172.5**	**142.1**	**4.11**	**49,400**	**636,000**	**136,700**	**97,000**
Eagle	Inferred	44	1.09	1.13	0.03	0.14		0.30	0.18	0.48	0.50	0.01	200	0	420	250
Eagle E	Inferred	290	1.70	1.40	0.00	0.20	6.0	0.50	0.30	4.93	4.06	0.00	1,860	55,900	4,660	2,800
	Total Inf.	**334**	**1.62**	**4.19**	**0.11**	**0.19**	**5.21**	**0.47**	**0.28**	**5.41**	**4.56**	**0.01**	**2,060**	**55,900**	**5,080**	**3,050**

June 2016

Zone	Category	Tonnage (Kt)	Ni (%)	Cu (%)	Co (%)	Au (g/t)	Ag (g/t)	Pt (g/t)	Pd (g/t)	Kt Ni	Kt Cu	Kt Co	Contained Metal oz Au	oz Ag	oz Pt	oz Pd
Eagle	Measured	1,445	4.24	3.42	0.11	0.33		0.89	0.6	61.3	49.4	1.59	15,300	0	41,300	27,900
	Indicated	2,226	2.61	2.23	0.07	0.23		0.47	0.31	58.1	49.6	1.56	16,500	0	33,600	22,200
	Total M+I	**3,671**	**3.25**	**2.7**	**0.09**	**0.27**	**0.00**	**0.63**	**0.42**	**119.4**	**99.1**	**3.15**	**31,800**	**0**	**74,900**	**50,100**
Eagle	Inferred	44	1.09	1.13	0.03	0.14		0.30	0.18	0.48	0.50	0.01	200	0	400	300
Eagle E	Inferred	1,180	5.15	4.31	0.11	0.50	15.8	1.70	1.30	60.8	50.9	1.30	19,000	599,000	64,500	49,300
	Total Inf.	**1,224**	**5.00**	**4.19**	**0.11**	**0.49**	**15.2**	**1.65**	**1.26**	**61.2**	**51.4**	**1.31**	**19,200**	**599,000**	**64,900**	**49,600**

Difference

Zone	Category	Tonnage (Kt)	Ni (%)	Cu (%)	Co (%)	Au (g/t)	Ag (g/t)	Pt (g/t)	Pd (g/t)	Kt Ni	Kt Cu	Kt Co	Contained Metal oz Au	oz Ag	oz Pt	oz Pd
All	Measured	247	0.04	0.05	0.00	0.00	0.0	0.00	0.02	11.0	9.0	0.27	2,600	0	7,000	5,600
	Indicated	1,213	0.94	0.73	0.01	0.10	5.8	0.46	0.37	64.1	52.1	1.24	20,200	636,000	68,800	52,500
	Inferred	-890	-3.38	0.00	0.00	-0.30	-10.0	-1.18	-0.98	-55.8	-46.8	-1.30	-17,140	-543,100	-59,820	-46,550

Percent Difference

Zone	Category	Tonnage (Kt)	Ni (%)	Cu (%)	Co (%)	Au (g/t)	Ag (g/t)	Pt (g/t)	Pd (g/t)	Kt Ni	Kt Cu	Kt Co	Contained Metal oz Au	oz Ag	oz Pt	oz Pd
All	Measured	-17.1%	-0.9%	-1.5%	0.0%	0.0%	0.0%	0.0%	-3.3%	-17.9%	-18.3%	-17.1%	-17.0%	0.0%	-16.9%	-20.1%
	Indicated	54.5%	36.1%	32.7%	16.1%	44.3%	100.0%	97.0%	117.9%	-3.2	-2.2	-0.1	122.4%	100.0%	204.8%	236.5%
	Inferred	-72.7%	-67.6%	0.0%	0.0%	-60.7%	-65.8%	-71.3%	-77.5%	-91.2%	-91.1%	-99.0%	-89.3%	-90.7%	-92.2%	-93.9%

15 MINERAL RESERVE ESTIMATE

SUMMARY

The Eagle Mine Mineral Reserve estimate as of December 31, 2016 is summarized in Table 15-1. The Mineral Reserves were estimated based upon stope wireframe shapes applied to the depleted Mineral Resource block model using Deswik mine design software.

Planned dilution, unplanned dilution, backfill dilution, and production losses have been applied as appropriate, using longhole open stoping as the mining method with cemented and uncemented rock backfill.

RPA considers that the Mineral Reserve estimates are classified and reported in accordance with CIM definitions.

RPA is not aware of any mining, metallurgical, infrastructure, permitting, or other relevant factors that could materially affect the Mineral Reserve estimate.

TABLE 15-1 SUMMARY OF MINERAL RESERVES AS OF DECEMBER 31, 2016
Eagle Mine

		Grades							Contained Metal						
	Tonnes	Ni	Cu	Co	Au	Ag	Pt	Pd	Ni	Cu	Co	Pt	Pd	Au	Ag
Category	**(000)**	**(%)**	**(%)**	**(%)**	**(g/t)**	**(g/t)**	**(g/t)**	**(g/t)**	**(000 t)**	**(000 t)**	**(000 t)**	**(M oz)**	**(M oz)**	**(M oz)**	**(M oz)**
Eagle Proven	1,129	3.3	2.8	0.1	0.3	-	0.7	0.5	37.3	31.3	1.0	0.03	0.02	0.01	-
Eagle Probable	2,148	2.0	1.8	0.1	0.2	-	0.4	0.2	42.5	38.9	1.2	0.03	0.02	0.01	-
Eagle East Probable	1,544	3.7	3.0	0.1	0.4	10.6	1.2	0.9	57.1	46.3	1.5	0.06	0.04	0.02	0.53
Proven + Probable	**4,821**	**2.8**	**2.4**	**0.1**	**0.3**	**3.4**	**0.7**	**0.5**	**137.0**	**116.5**	**3.7**	**0.11**	**0.08**	**0.04**	**0.53**

Notes:
1. CIM definitions were followed for Mineral Reserves.
2. Mineral Reserves are estimated at an NSR cut-off of US$142.00/t for Eagle and US$160.00/t for Eagle East.
3. Mineral Reserves are estimated using average long-term prices of US$8.50/lb Ni, US$2.75/lb Cu, US$13.00/lb Co, US$1,000/oz Au, US$16.50/oz Ag, US$1,500/oz Pt, and US$550/oz Pd.
4. Silver was not reported for Eagle Mineral Reserves.
5. Bulk density interpolated in block model ranges from 2.91 t/m^3 to 4.50 t/m^3 and averaging 3.44 t/m^3.
6. Numbers may not add due to rounding.

DILUTION AND EXTRACTION

Planned and unplanned dilution are included in the Mineral Resource to Mineral Reserve estimate conversion. Plan stope shapes, which include internal dilution, are developed to maximize Mineral Resource extraction. A further 8% allowance for unplanned dilution at zero grade is added to the stope designs. The 8% allowance was included in previous studies and has been carried forward. RPA recommends a review of this factor as experience is gained in the secondary stoping and based upon analyses of the cavity monitoring surveys (CMS).

Total dilution is from planned and unplanned sources. Planned (internal) dilution is considered to be low grade material or non-Measured and Indicated blocks inside the designed stope or sill volumes. Unplanned (external) dilution is considered to be waste or backfill material that is extracted due to overbreak beyond the design shape. The total dilution is estimated to be 15%.

A breakdown of the conversion of Mineral Resource estimates to Mineral Reserve estimates for the Eagle Mine is shown in Table 15-2.

Production losses of 5% of the diluted combined estimated Mineral Reserve shape were subtracted from the total before extraction to account for material not loaded from the stopes and other losses in the system.

Summary data from CMS of 47 stopes over the period from August 2014 to May 2016 is shown in Table 15-3. In a simple analysis, the overbreak would amount to 7% dilution of the stope ore and the underbreak indicates 90% extraction. The data supports the dilution estimate in the Mineral Reserves, although the overbreak may include material from adjacent secondary stopes. As these are all primary stopes, there would be no backfill dilution, which is to be expected in the secondary stopes.

While the extraction is less than that in the Mineral Reserve estimate, "underbreak" from the primary stopes has the potential to be recovered in the mining of the secondary stopes.

TABLE 15-2 CONVERSION TO MINERAL RESERVES – EAGLE MINE
Eagle Mine

Material		Tonnes (000)	Ni (%)	Cu (%)	Dilution (%)
Proven Mineral Reserves (before extraction)					
Measured Resource	>=NSR $142/t	1,346	3.8	3.2	
Measured Resource	<NSR $142/t	165	0.36	0.3	11%
Inferred Resource		43			3%
Unclassified Resource		3			0%
Total Proven Reserves		1,557	3.3	2.8	14%
Probable Mineral Reserves (before extraction)					
Indicated Resource	>=NSR $142/t	1,995	2.3	2.1	
Indicated Resource	<NSR $142/t	290	0.5	0.4	12%
Inferred Resource		65			3%
Unclassified Resource		5			0%
Total Probable Reserves		2,355	2.0	1.8	15%
Proven (before extraction)		1,557	3.3	2.8	14%
Probable (before extraction)		2,355	2.0	1.8	15%
P&P (before extraction)		3,913	2.6	2.2	15%
Mining Extraction 95%					
Proven Mineral Reserves		**1,479**	**3.3**	**2.8**	**14%**
Probable Mineral Reserves		**2,238**	**2.0**	**1.8**	**15%**
Proven & Probable Mineral Reserves		**3,717**	**2.6**	**2.2**	**15%**

TABLE 15-3 CMS SUMMARY RESULTS
Eagle Mine

Material Category	Tonnes	Rate	Comment
Design Shapes	731,111		
Overbreak	58,000	7%	Dilution
Underbreak	78,731	90%	Extraction
As Built	713,444		

RPA recommends that Eagle continue to carry out CMS and use the analysis of that data for future Mineral Reserve estimate updates. RPA also recommends that the analysis include a breakdown of the overbreak and underbreak to assist in optimization of the mining process. This may be more important as the mining of secondary stopes commences and backfill dilution can be assessed.

A breakdown of the conversion of Mineral Resource estimates to Mineral Reserve estimates for the Eagle East is shown in Table 15-4. Planned and unplanned dilution are included in the Mineral Resource to Mineral Reserve conversion. Planned stope shapes, which include internal dilution, are developed to maximize extraction of the high grade Mineral Resources. Based upon the experience at the Eagle Mine, a further 9% allowance for unplanned dilution at zero grade is added to the stope designs. The total dilution is estimated to be 53% of the Mineral Resource estimates converted to Mineral Reserves.

Production losses of 6% of the diluted combined Mineral Reserve shape were subtracted from the total before extraction to account for material not loaded from the stopes and other losses in the system.

TABLE 15-4 CONVERSION TO MINERAL RESERVES – EAGLE EAST
Eagle Mine

Material	Tonnes (000)	Ni (%)	Cu (%)	Dilution (%)
Design Stopes Indicated Resources ≥NSR	1,070	5.5	4.6	
Planned Dilution	436	0.3	0.3	41%
Unplanned Dilution	136	-	-	9%
Sub Total	1,642	3.7	3.0	53%
Production Losses	(99)	3.7	3.0	
Probable Mineral Reserves Eagle East	**1,543**	**3.7**	**3.0**	

CONVERSION RATE OF MINERAL RESOURCES TO MINERAL RESERVES

The conversion of Mineral Resource estimates to Mineral Reserve estimates is summarized in Table 15-5 for tonnes and contained nickel and copper using a cut-off value of $142/t for Eagle and $160/t for Eagle East.

TABLE 15-5 CONVERSION OF MINERAL RESOURCES
Eagle Mine

Material		Tonnage	Contained Ni	Contained Cu
Measured Resources	Eagle	93%	84%	87%
Indicated Resources	Eagle	90%	80%	85%
Indicated Resources	Eagle East	83%	88%	91%

CUT-OFF GRADE

The cut-off grade for the Eagle Mine is based upon the calculation of an NSR value per tonne. The $142/t NSR value used for the Eagle Mine Mineral Reserve estimate cut-off grade is consistent with the current cost per tonne plus a margin.

The cut-off grade is applied using the NSR variable in the block model. The NSR value per tonne is expressed in dollars per tonne ($/t) and is calculated based on block grades, pricing, metallurgical recoveries, smelter terms, and royalties. For the Eagle deposit, there is a sharp boundary between blocks that are above or below the cut-off grade NSR value and the Mineral Reserve estimate is not sensitive to changes in the NSR value cut-off grade.

For Eagle East the NSR value cut-off grade was $160/t based upon the operating cost estimates compiled for the area.

Metal prices used for Mineral Reserve estimates are based on consensus, long term forecasts from banks, financial institutions, and other sources.

RPA OPINION

RPA considers the cut-off grade, dilution and loss factors to be appropriate for the mining methods and the geometry and geotechnical characteristics of the Eagle and Eagle East orebodies.

16 MINING METHODS

The Eagle Mine is accessed via a main ramp, measuring 5.35 m high by 5.65 m wide and driven at a grade of -13%. The main ramp was driven to the 145 level, the lowest level and bottom of the Eagle Mine. The ramp is also connected to the base of the two ventilation shafts at the 265 level as shown in Figure 16-1, which is an isometric view of the mine workings. These raises are then further connected between the five lower levels terminating on the 145 level.

The Eagle East mine will be accessed by ramp starting from the bottom of the Eagle Mine. Development of the Eagle East ramp commenced in August 2016.

The development completed (as built drawings) on the levels at Eagle Mine is shown in Figures 16-2 to 16-6 and the as built stope excavations are shown in Figure 16-7. The main ramp was driven from September 2011 to May 2013 and from the beginning of 2014 until the start of commercial production at the end of November 2014. During 2015, approximately 1,500 m of waste development in ramps and levels was completed and during 2016 there was approximately 1,465 m of waste development including 613 m on the Eagle East Project.

A schematic view of the Eagle East development is shown in Figure 16-8.

Mine production is made up of a combination of ore development through sill drifts or cuts (approximately 19%) and stope production (81%). The mining method selected for Eagle and Eagle East is the Transverse Sub-level Open Stoping (SLOS) method using a combination of cemented rock fill (CRF) and non-consolidated waste rock backfill. SLOS would also be used for any potential mining at Eagle East. This method provides the cost advantages of bulk mining, while maintaining a degree of selectivity and operational flexibility. The majority of the stopes will be mined as transverse bench and fill stopes, with some narrower zones of the orebody mined as longitudinal retreat stopes.

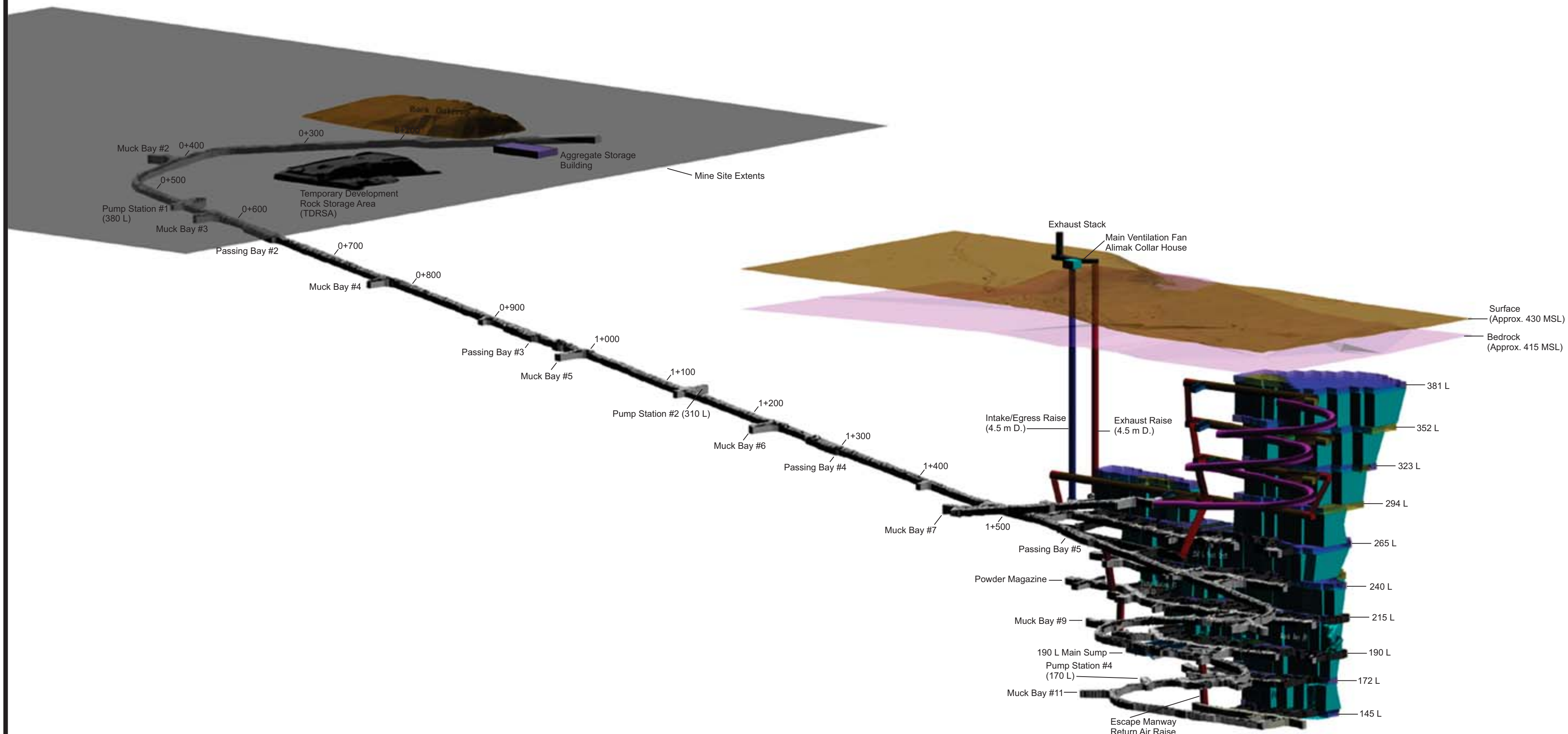


Figure 16-1

Lundin Mining Corporation

Eagle Mine

Marquette County, Michigan, U.S.A.

Isometric View of Eagle Mine Showing Existing Development

April 2017

Source: Lundin Mining Corp., 2016.

RPA

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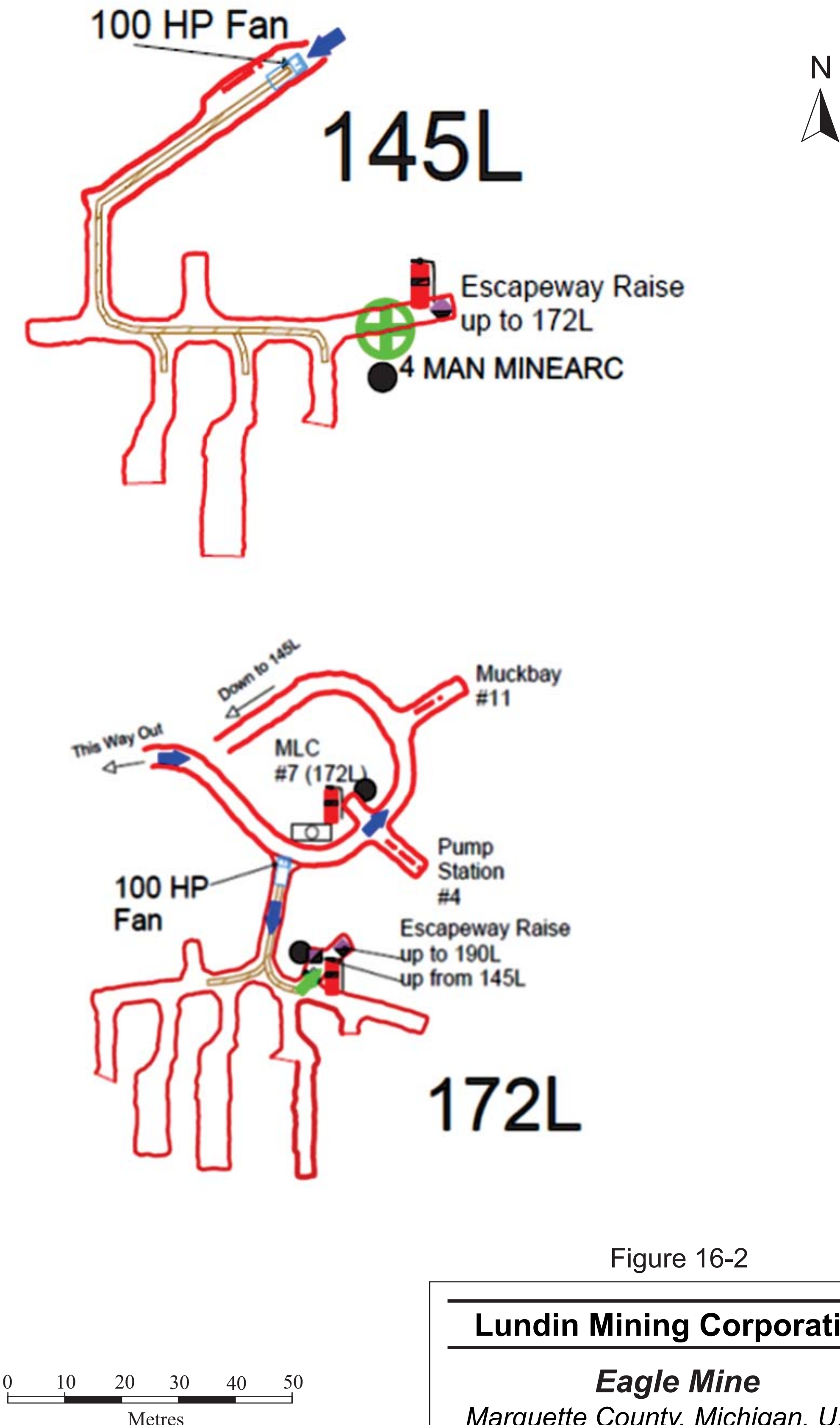


Figure 16-2

Lundin Mining Corporation

Eagle Mine

Marquette County, Michigan, U.S.A.

Levels 145 m and 172 m As Built and Ventilation

April 2017

Source: Lundin Mining Corp., 2016.

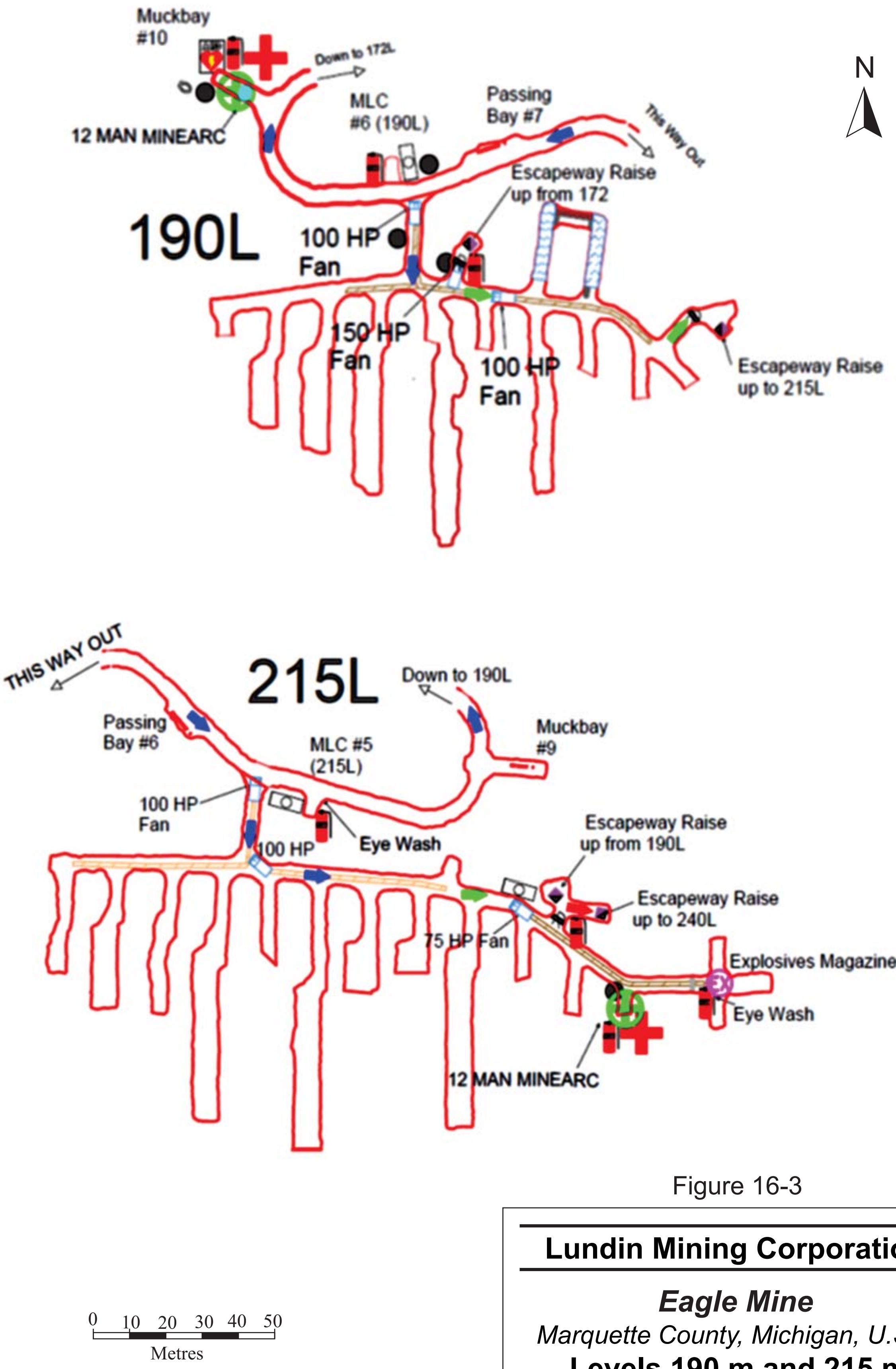


Figure 16-3

Lundin Mining Corporation

Eagle Mine

Marquette County, Michigan, U.S.A.

Levels 190 m and 215 m
As Built and Ventilation

April 2017

Source: Lundin Mining Corp., 2016.

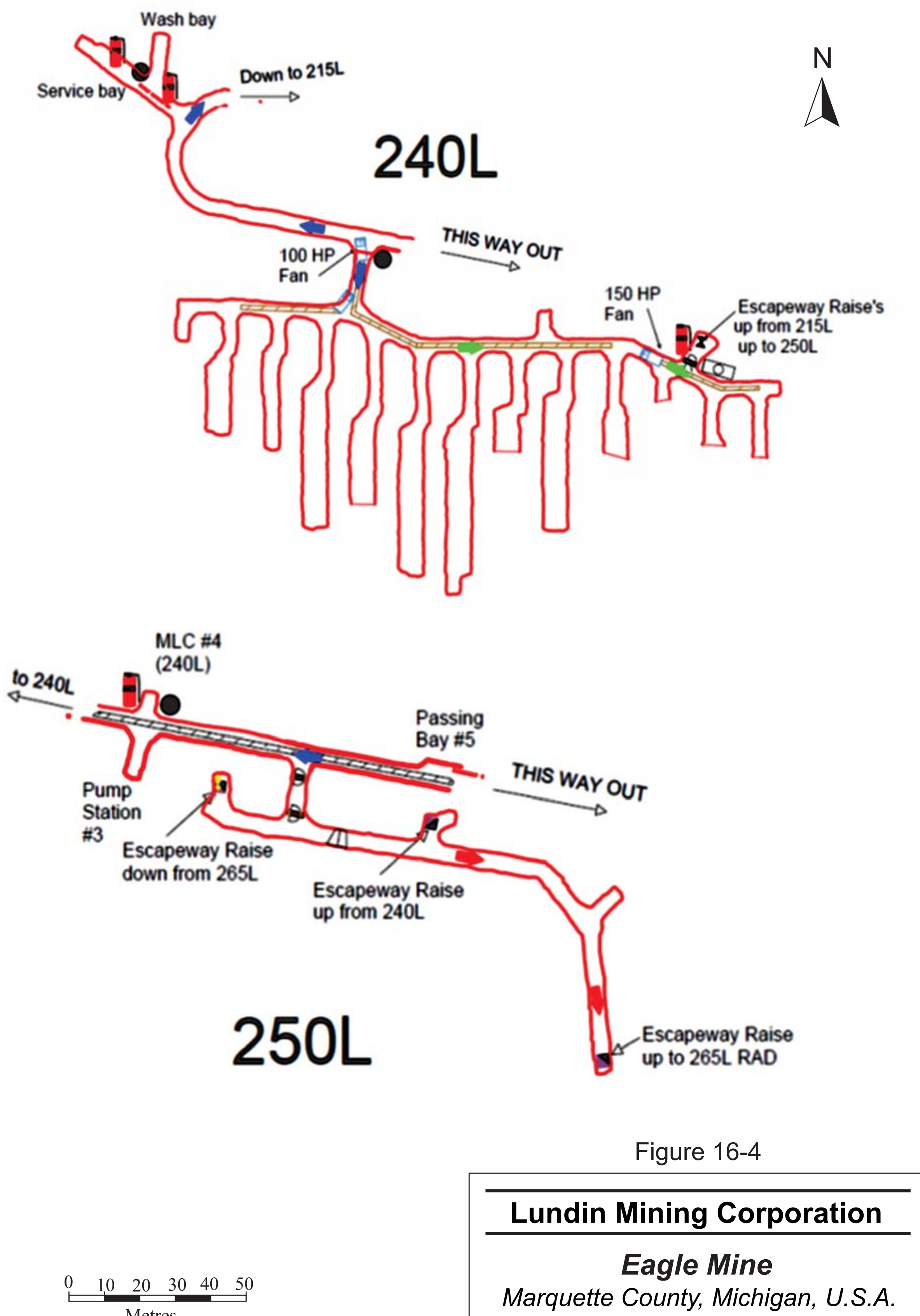


Figure 16-4

Lundin Mining Corporation

Eagle Mine

Marquette County, Michigan, U.S.A.

Levels 240 m and 250 m
As Built and Ventilation

April 2017 ***Source: Lundin Mining Corp., 2016.***

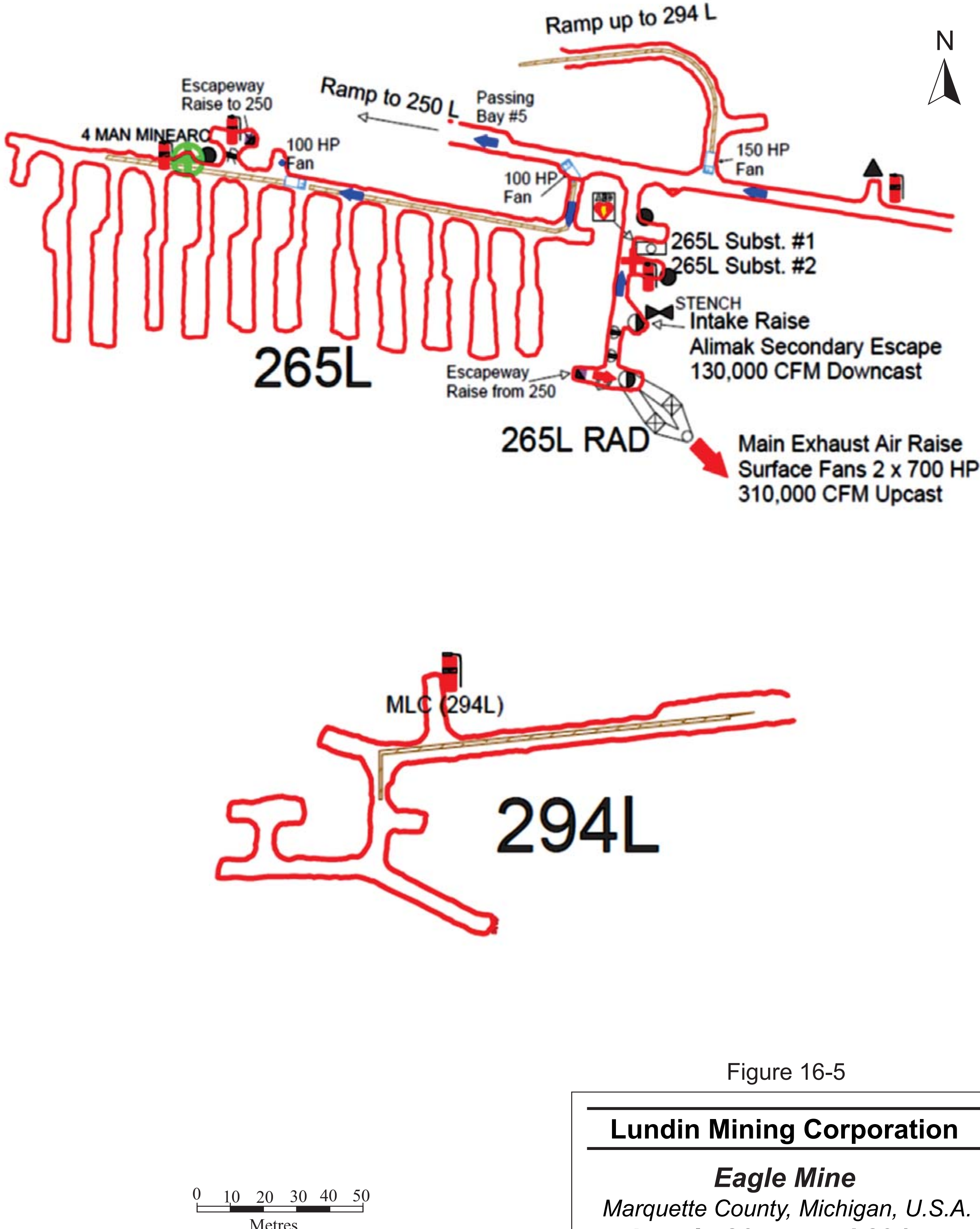


Figure 16-5

Lundin Mining Corporation

Eagle Mine

Marquette County, Michigan, U.S.A.

Levels 265 m and 294 m
As Built and Ventilation

April 2017

Source: Lundin Mining Corp., 2016.

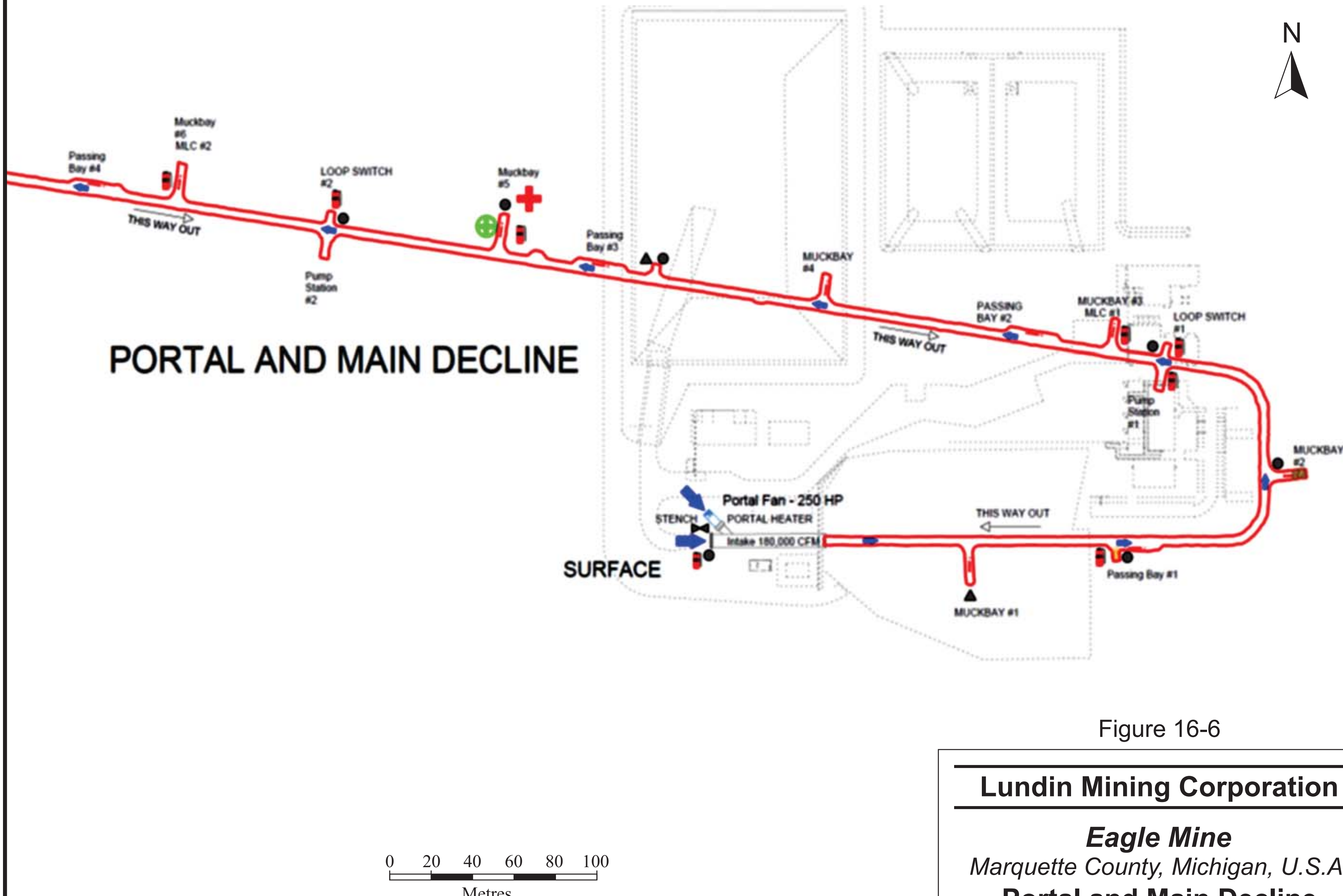


Figure 16-6

Lundin Mining Corporation

Eagle Mine

Marquette County, Michigan, U.S.A.

Portal and Main Decline As Built and Ventilation

April 2017

Source: Lundin Mining Corp., 2016.

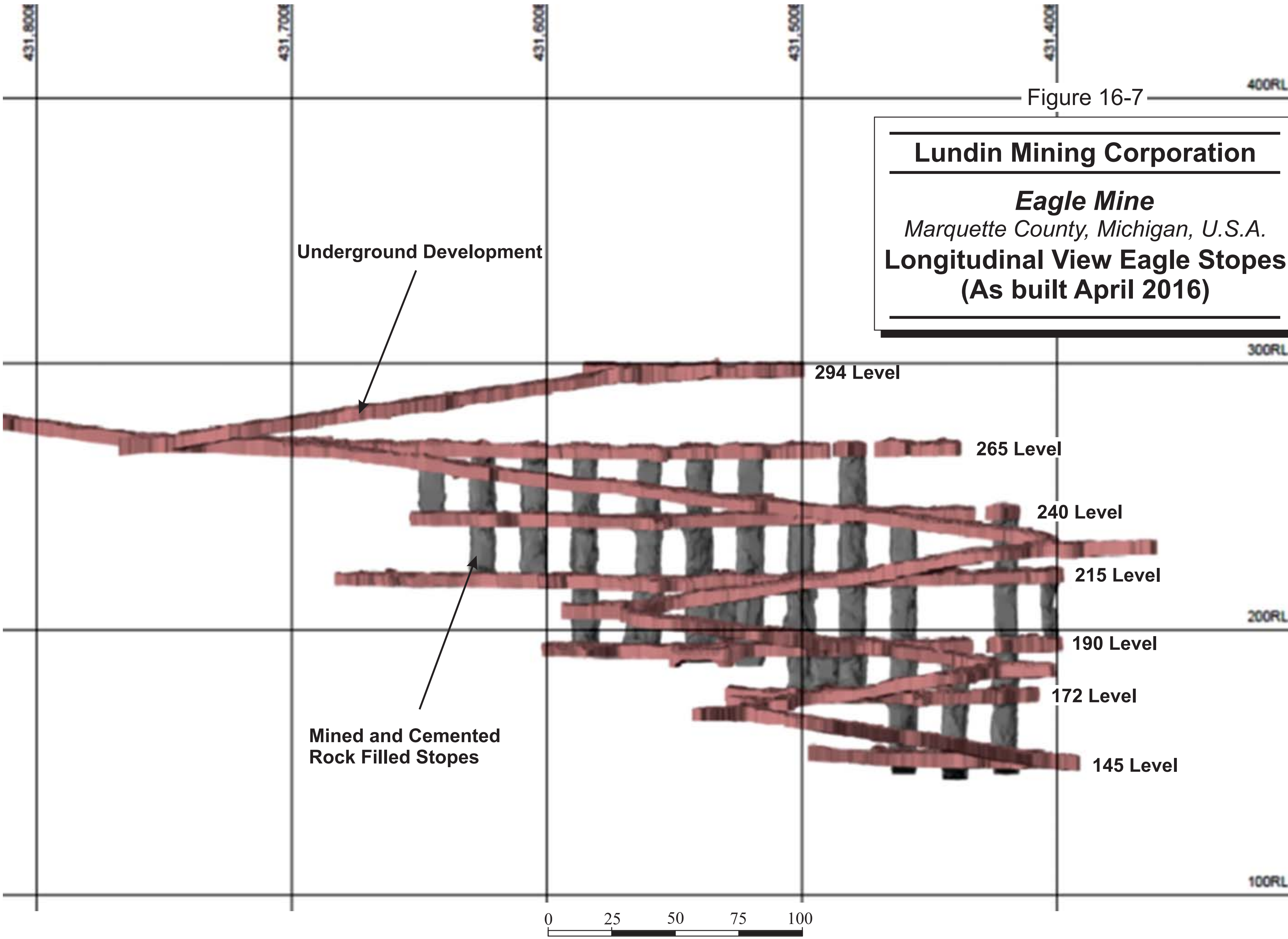
Figure 16-7

Lundin Mining Corporation

Eagle Mine

Marquette County, Michigan, U.S.A.

Longitudinal View Eagle Stopes (As built April 2016)



April 2017

Source: Lundin Mining Corp., 2016.

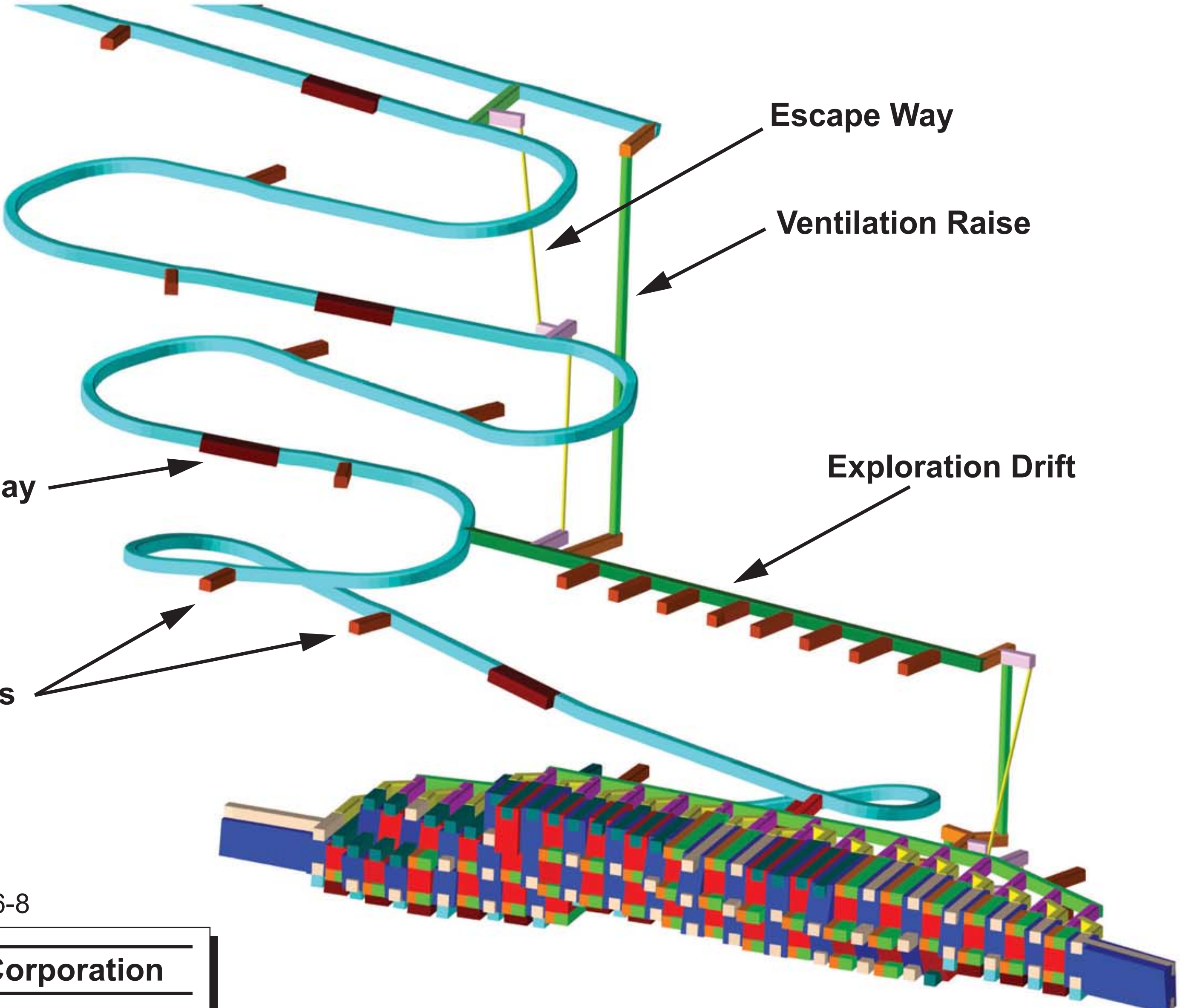


Figure 16-8

Lundin Mining Corporation

Eagle Mine

Marquette County, Michigan, U.S.A.

Schematic View of Planned Eagle East Planned Development

April 2017

Source: Lundin Mining Corp., 2016.

The Eagle orebody is accessed by the sub-level footwall drives driven off the main decline at 20 m to 25 m vertical intervals.

Stopes are designed to be 10 m wide and approximately 25 m high (corresponding to the top and bottom sub-levels). Stope lengths vary depending on the width of the orebody, however, due to geotechnical constraints, individual stope panels are limited to a maximum length of 20 m. The height and length of each stope panel is designed based on the hydraulic radius (HR) of the stope to limit sloughing from the walls and caving from the backs of the stopes. Initially, the stope or sill drives are developed across the orebody at both the top and bottom elevation. Once sill development is completed, the stope is drilled and blasted and the ore is loaded onto underground haul trucks, and then transported to surface. The same design approach has been applied to Eagle East.

Figure 16-9 illustrates the SLOS mining method. Where the ore is thinner on the end of the stope or below the sill, benching using the jumbo drill is utilized to mine these portions of the orebody.

The typical stope will have a slot raise to create an initial opening to which the production drill holes (3.5 in. diameter) can break into. The slot raise can be positioned as required to best suit the stope geometry and production approach. The stope panels are advanced the required distance and then, once mucked out, are backfilled with CRF in the primary stopes and with unconsolidated rock fill in the secondary stopes.

Stopes are extracted in a primary/secondary sequence. Primary stopes are mined initially for several levels after which the secondary stopes are mined. The primary stopes require CRF to be placed in them once the ore is removed to allow for mining of the adjacent secondary stope. The secondary stopes will be filled with unconsolidated rock fill, with the exception of stopes on the upper two levels of the mine which are to be filled with CRF due to permit requirement (area of crown pillar). Figure 16-10 illustrates the primary/secondary mining sequence.

The Eagle East deposit has dimensions of approximately 550 m in strike length, ranging in vertical height from 25 m to 45 m, typically 30 m wide, and can extend locally out to 40 m in width. The Eagle East plans will use the same stoping method as the Eagle Mine, with some adaptation required where the mineralized zone is wider.

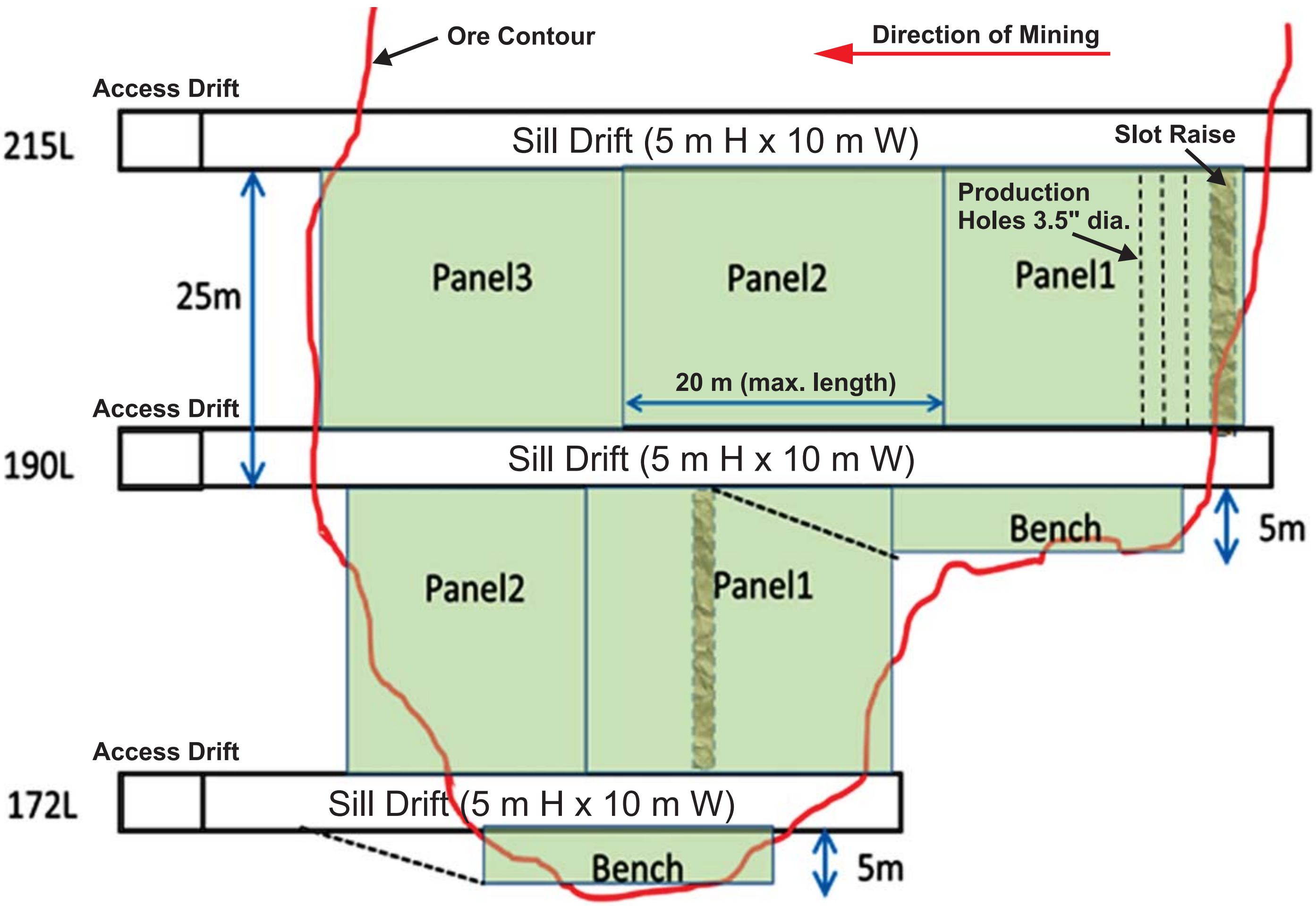


Figure 16-9

Lundin Mining Corporation

Eagle Mine

Marquette County, Michigan, U.S.A.

Sub-Level Open Stopes (Cross Section Looking East)

April 2017

Source: Lundin Mining Corp., 2016.

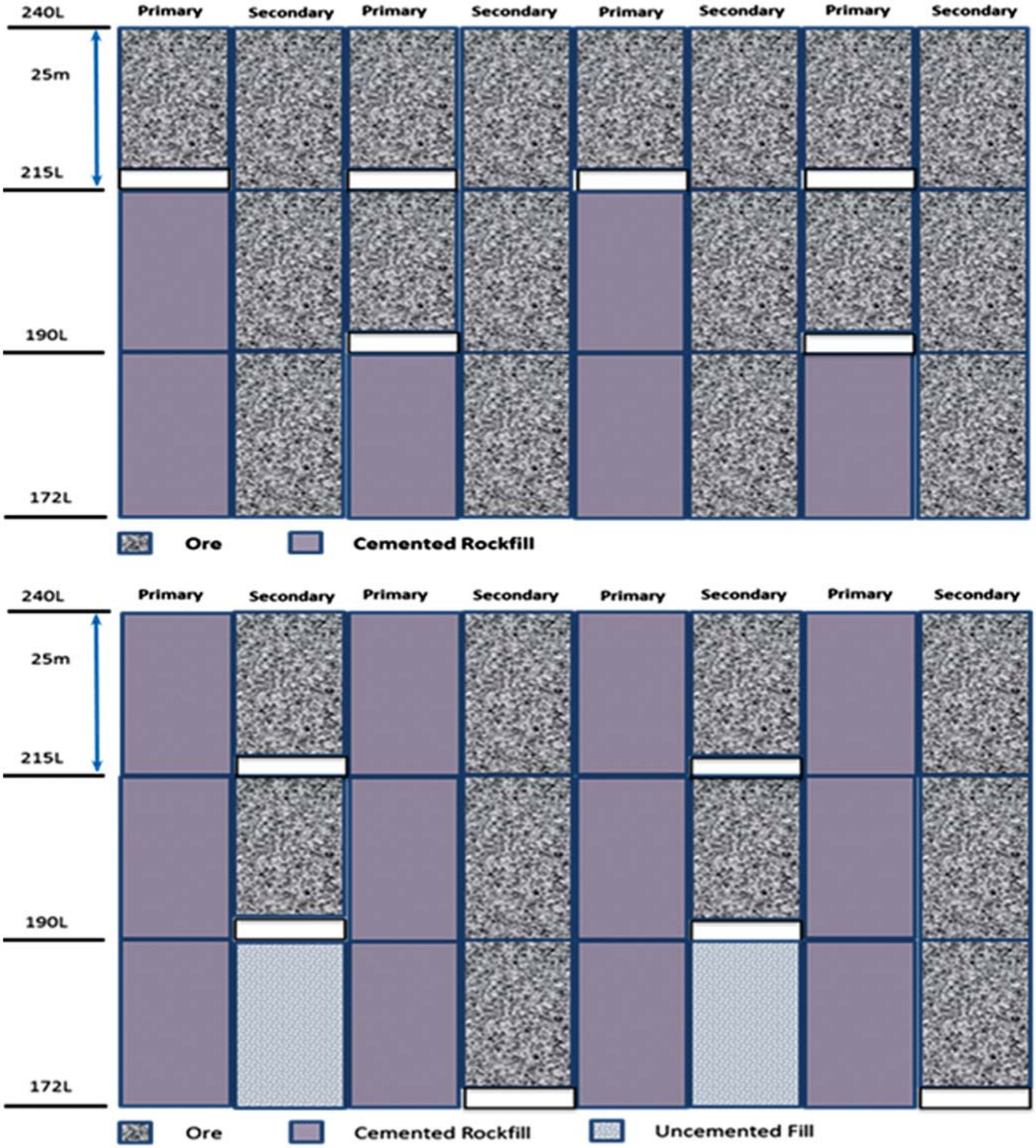


Figure 16-10

Lundin Mining Corporation

Eagle Mine

Marquette County, Michigan, U.S.A.

Longitudinal Section of Primary / Secondary Stope Mining Sequence

April 2017

Source: Lundin Mining Corp., 2016.

The Eagle Mine has been in commercial production since the end of November 2014 and the production history is shown in Table 16-1.

TABLE 16-1 EAGLE MINE PRODUCTION HISTORY
Eagle Mine

	Mill Feed	Feed Grade		Metal in Concentrates	
Year	**(t)**	**Ni (%)**	**Cu (%)**	**Ni (t)**	**Cu (t)**
2014	173,648	3.16	2.40	4,178	3,877
2015	746,466	4.31	3.36	27,167	24,331
2016	748,485	3.82	3.21	24,114	23,417
Total	**1,668,599**	**3.97**	**3.19**	**55,459**	**51,625**

Copper in concentrates includes copper contained in both the copper and nickel concentrates.

EAGLE EAST MINE DESIGN

EAGLE EAST ACCESS

A Ramp Trade-off Study was completed as part of the Eagle East FS. The study considered five alternative designs. Each design was completed using mine design software and scheduled to allow annualized development metres, production tonnes, and grade profiles to be produced.

One alternative considered included only two switchbacks below Eagle with a dual decline to Eagle East and further switchbacks above Eagle East that follow the known peridotite intrusion downwards. This potentially allows easier access to explore and exploit the mineralization at Eagle East. This dual decline option was adopted and provides the basis of the Eagle East FS. The new decline will be driven to the same dimensions as the existing Eagle decline but at an increased downgrade of 1:7 (approximately 14.3%).

Figure 16-11 shows the dual decline option that will be used to access Eagle East. The development incorporates two switchbacks of the decline directly below Eagle, combined with the effective use of the raise bore for a single ventilation connection to the 250 level in Eagle before developing across to Eagle East with dual declines.

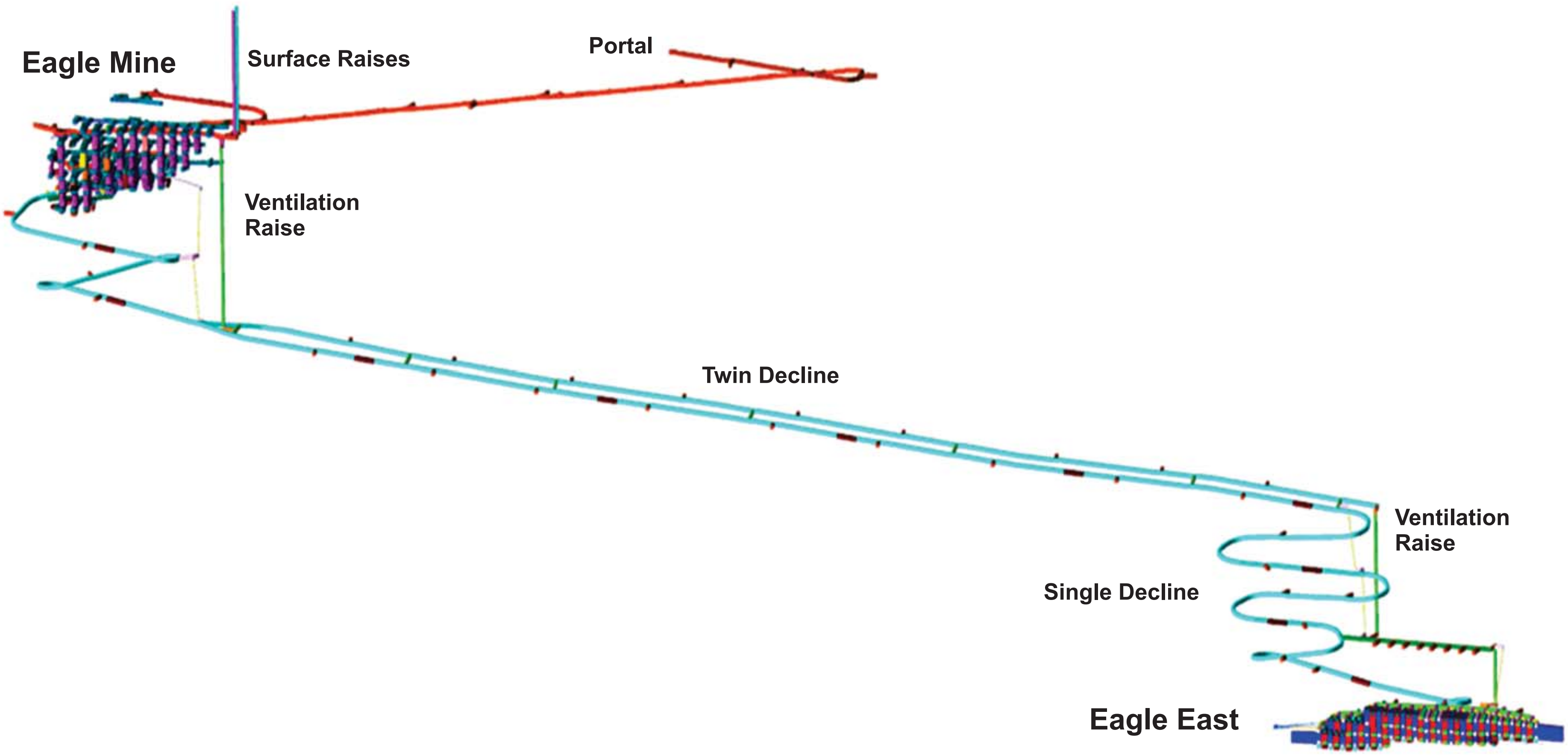


Figure 16-11

Lundin Mining Corporation

Eagle Mine

Marquette County, Michigan, U.S.A.

Eagle East Mine Access Design

April 2017

Source: Lundin Mining Corp., 2016.

At Eagle East, the ramp reverts to a single heading with another main ventilation raise continuing down to the exploration drive. The exploration drive will be used for drilling out the deposit from the north with the intent of upgrading it to a Measured Mineral Resource estimate. This will also become part of the ventilation circuit, injecting fresh air into the far end of the footwall access on all levels.

STOPE AND LEVEL DESIGN

The Eagle East stopes have been designed around material above the NSR of $160/t cut-off grade, and the MSU and SMSU geological wireframes. The stope geometries have been constrained to the parameters outlined in the geotechnical analysis with stope widths of ten metres. However, in many cases the lengths and height are considerably less than the geotechnical recommendations.

RPA considers the mining method used at Eagle is suitable to exploit the material at Eagle East, namely a primary/secondary sequence of transverse open stopes with cemented backfill or rockfill. Some longitudinal stopes are used to exploit the narrower sections or the orebody at the extremities.

Based on the orebody dimensions, four levels have been identified, the -490L, -505L, -520L and -535L. Figure 16-12 shows a long section of the Eagle East mine design with the production levels. The levels are positioned to allow the sills to be located where the MSU has spread laterally into the hanging wall and footwall to maximize orebody recovery.

Footwall drives are located to the north of the mineralization accessed from the decline. Crosscuts from the footwall drives will access the stopes. The crosscuts are centrally located between the primary and secondary stopes as is current practice at Eagle.

At the eastern end of the footwall drives, a ventilation access is located to connect to the fresh air intake to complete the ventilation circuit. Sumps are located on each level and will drain via boreholes to a main sump and pump station on the lowest level. Cubbies for MLCs are located on each level along with re-mucking bays for stope production. A typical level layout is shown in Figure 16-13. A small underground workshop at Eagle East has been allowed for to maintain equipment along with a permanent refuge chamber/lunch room. Re-fuelling will be by a mobile lube/fuel truck.

Looking North

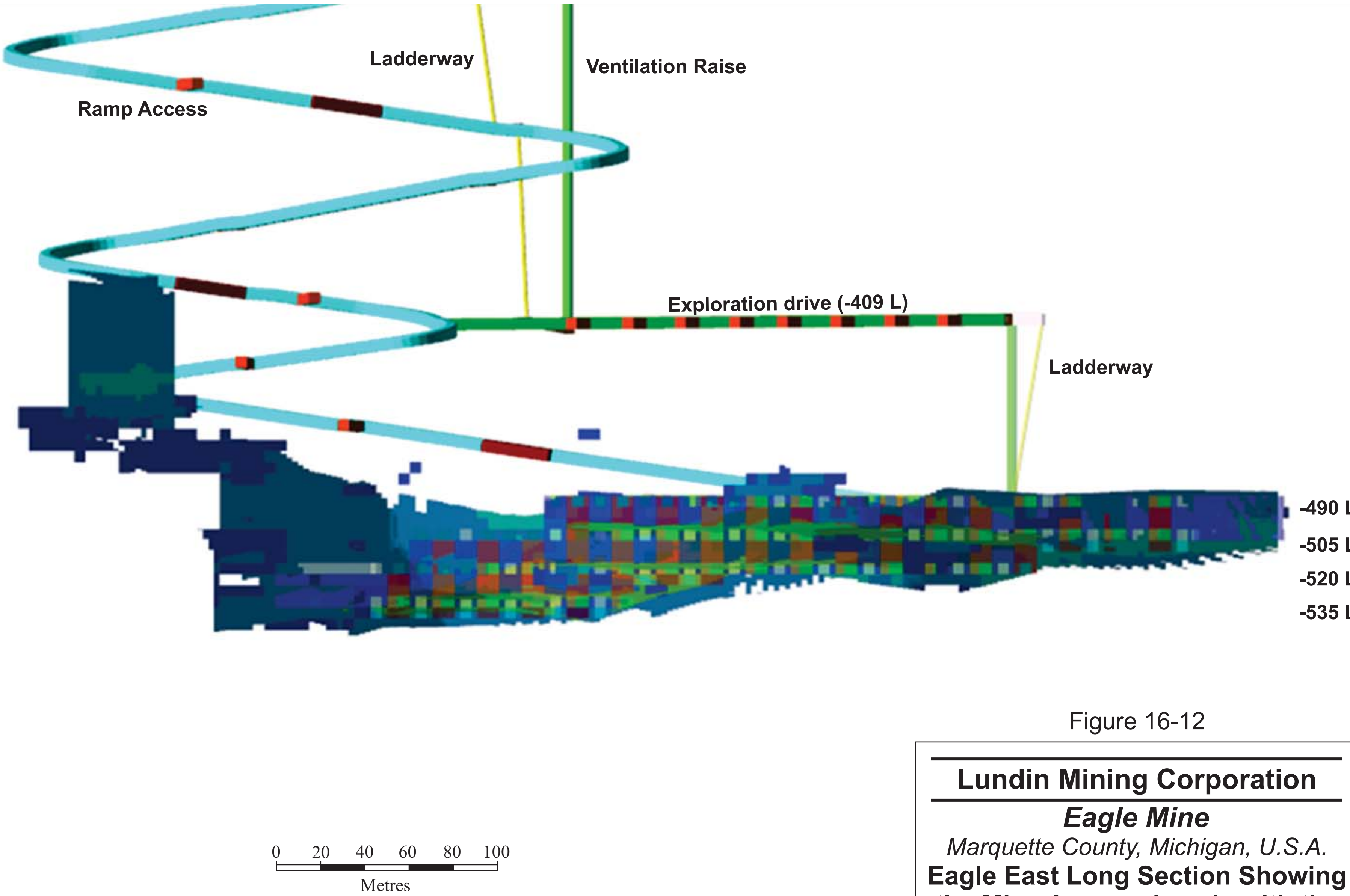


Figure 16-12

Lundin Mining Corporation

Eagle Mine

Marquette County, Michigan, U.S.A.

Eagle East Long Section Showing the Mine Access, Levels with the Stopes, Sills and Ore Blocks

April 2017

Source: Lundin Mining Corp., 2016.

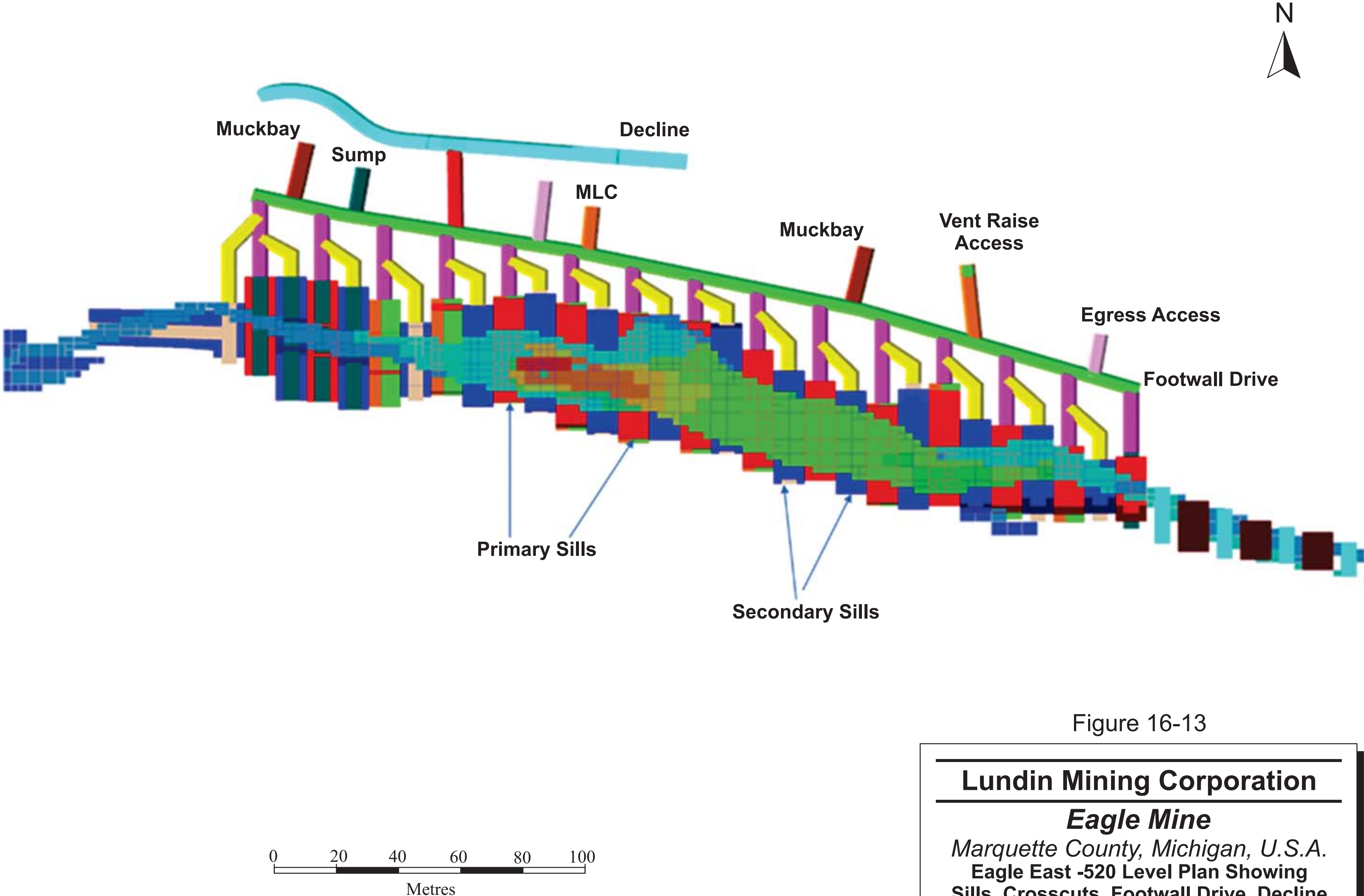


Figure 16-13

Lundin Mining Corporation

Eagle Mine

Marquette County, Michigan, U.S.A.

Eagle East -520 Level Plan Showing Sills, Crosscuts, Footwall Drive, Decline and Other Infrastructure with Ore Block Superimposed

April 2017

Source: Lundin Mining Corp., 2016.

GEOMECHANICS, GROUND SUPPORT

Golder Associates Ltd. (Golder) completed geotechnical studies for the Eagle deposit from 2005 to 2016 in support of the mining operations. The studies included:

- A data review of the geotechnical borehole databases;
- Construction of a GoCAD geotechnical block model (rock mass quality, rock strength, and major discontinuities).
- Rock support requirements with kinematic wedge analysis.
- Stope sizing, stability, and dilution.
- Crown Pillar Stability Assessment with scaled span and CPillar methods of analysis.
- Backfill design.

The information from these studies was coupled with additional geotechnical work by LMC focused on the Eagle East to support the PEA and further studies as recommended in the PEA to support the Eagle East FS. These additional geotechnical studies were undertaken in 2016 including:

- Oriented core study by LMC.
- Acoustic televiewer study by LMC.
- In situ stress measurement by CSIRO Hollow Inclusion overcoring by Golder.
- Deformation zone review.
- Uniaxial Compressive Strength (UCS) testing.

The results have provided updated geotechnical conditions as described below. Golder has been contracted to carry out numerical stress modelling of the proposed Eagle East stope extraction to assess the impact of mining induced stress changes on the rock mass. The analysis will investigate the stress conditions at various stages of the mine development and stope extraction.

LITHOLOGY

The current lithological logging of the drill core is detailed and thorough. During the review of drill core from Eagle East, with the aim of simplifying the rock type codes, the lithologies have been grouped and labelled with a number identified as “Nlith” (Table 16-2). A total of ten main geotechnical units or domains were identified from the existing data, however, units 6, 9, 600, and 1000 were not considered relevant as they are too far from the Eagle East mineralized area to have an impact on the excavations.

In general, there is no significant post-mineralization structural deformation affecting the Eagle and Eagle East systems. During the preliminary structural evaluation of the drill core for Eagle East, no faulted zones were found affecting the mineralized zone or the surrounding sedimentary rocks. Although some low rock quality zones are present in the vicinity and within the mineralized zone, these are of a limited continuity as no clear correlation can be determined from the data. The contacts of the mineralized zone (both hangingwall and footwall) do not show evidence of preferred fracturing in the core intervals checked.

The deformation zone is a sub-horizontal zone within the sediments located around -100 mRL elevation (540 m below surface). This zone appears continuous in strike and is approximately two metres to four metres thick. It is composed mainly of carbonate, disseminated pyrite, and clays (possibly graphitic). This zone will need to be traversed by the decline to Eagle East but will not have any impact on the stopes at Eagle East.

TABLE 16-2 EAGLE MINE GEOTECHNICAL UNITS
Eagle Mine

Nlith	Description of Unit
5	Hornfels
6	Pyroxenite
100+101	Peridotite & Mineralized Peridotite
300	Massive Sulphides
400	Semi-massive sulphides & igneous breccia
500	Sediments
6	Mafic Intrusives (mainly gabbro)
9	Quartz
600	Deformation zone
1000	Basement

ORIENTED CORE EVALUATION

Oriented core was extracted and analyzed from seven drill holes within the Eagle East mineralized zone. Table 16-3 shows the updated joint sets within each respective unit. Based on the evaluation of the oriented core information, the following observations can be made:

- More joint sets, then previously identified, were observed during the exercise across all five main lithologies.
- There were sub-horizontal joints observed in both the hornfels and the peridotite units that were previously not recorded.
- Joint Set #1 was observed across all lithologies – seen as an east-west structure dipping to the south.
- For the sediments, further evaluation between the north (footwall) and south (hanging wall) showed no significant difference.
- A north-south joint set (J5/J6) is present in the hornfels and Peridotite but was not observed in the sediments or the MSU/SMSU units. North-south jointing is shown to be present in the Eagle Mine and was assumed as a main joint set for Eagle East in March 2016.

TABLE 16-3 JOINT SETS BY LITHOLOGY
Eagle Mine

Description	Nlith	J1 (Dip/ Dip Dir.)	J2 (Dip/ Dip Dir.)	J3 (Dip/ Dip Dir.)	J4 (Dip/ Dip Dir.)	J5/6 (Dip/ Dir Dir	H1 Dip/ Dir Dir	H2 Dip/ Dip Dir
Hornfels	5	192/52	165/86			237/80	236/33	165/33
Peridotite	100+101	195/81	345/78	173/67		217/52		184/25
MSU	300	201/63						
SMSU	400	206/63		173/66	33/88			
Sediments	500	192/54		159/53		236/62		

ACOUSTIC TELEVIEWER OBSERVATIONS (ATV)

To augment and confirm the oriented drill core information, four of the seven holes were geophysically logged using an acoustic televiewer. In an ATV survey, a "sonar image" of the borehole wall to trace the features within the hole is created. This imaging is then processed in order to obtain the proper dip and dip directions of the structural features analyzed. The data obtained from the ATV survey was of a quality that was poorer than anticipated due to poor instrument centralization in the hole.

The results of the investigation are summarized below:

- When comparing both sets of data, the televiewer detected between 75% and 90% less features than the oriented core.
- There is a good correlation of the location of the ATV magnetic field anomaly and the mineralized interval.

- Good correlation of the structural features associated with the deformation zone was observed when compared with logged core intervals.

- Due to the low quality of the televiewer data, fracture counts obtained from the acoustic televiewer are not considered reliable.

ROCK STRENGTH TESTING

POINT LOAD TESTING

Point Load Strength testing is used as an indirect measure of the UCS for the strength classification of rocks. Diametral and Axial Point Load Strength tests are performed on drill cores every 15 m, except in the mineralized sections where the test is performed every five metres.

For Eagle East, only the diametral tests are considered in the calculation of the Point Load Strength index, due to deviations from ISRM procedures in the axial test. Recent point load data was compared to the previous results from the Kennecott (2006) testing. Overall the recent testing has lower Point Load Strength values for all lithologies; this is likely to be a result of the greater number of tests (except for MSU and SMSU units where there were less test points) and improved procedures. Table 16-4 summarizes the results of the recent test work and comparison to the previous work.

TABLE 16-4 POINT LOAD TEST DATA
Eagle Mine

Description	Mean (MPa)	St. Dev (MPa)	Count	Mean (MPa)	St. Dev (MPa)	Count
Hornfels	4.4	2.46	313	9.2	3.87	27
Peridotite	7.5	2.40	1,558	7.6	2.66	1,129
MSU	3.9	1.58	62	3.9	1.86	290
SMSU	6.5	1.97	75	7.3	2.40	418
Sediments	4.4	2.10	1,394	5.9	3.99	220

UNIAXIAL COMPRESSIVE STRENGTH TESTING

Uniaxial Compressive Strength (UCS) testing of drill core for the main lithological units at Eagle East (peridotite, sediments, massive, and semi-massive sulphides) was undertaken to verify the intact rock strength. Ten samples were collected for each of the four lithological groups. The laboratory tests were conducted by Golder. Testing was performed on 24 of the 40 samples for UCS and elastic properties (Young's Modulus "E" and the Poisson Ratio).

When the 2016 testwork is compared with this previous data, the following observations are made:

- There is a reasonable correlation between all the data sources across most of the lithologies except for sediments.
- Average UCS values for the 2016 testwork are considerably higher and show less variability than the historical UCS values.

The results indicate that the intact rock strength properties of the Eagle East rock are higher than those estimated from Eagle. Table 16-5 summaries the result of recent testwork and the comparison to the Kennecott (2006) data.

TABLE 16-5 UCS DATA
Eagle Mine

	July 2016 Testing			Kennecott (2006)		
	Mean (MPa)	St. Dev (MPa)	Count (#)	Mean (MPa)	St. Dev (MPa)	Count (#)
Peridotite	170	33	7	117	59	14
MSU	106	15	6	52	21	11
SMSU	187	32	5	113	34	10
Sediments	154	26	5	93	60	10

IN-SITU STRESS MEASUREMENT

For the PEA, the stress conditions for Eagle East were estimated from the in-situ stress tests carried out in 2013 on the 265 level at Eagle. However, these results had a very high vertical stress gradient, which, when extrapolated to the depth of Eagle East, indicated extremely high stress conditions. Based on observations of the drill core, downhole conditions and the mining experiences at Eagle, this high vertical stress gradient did not appear to be valid. The PEA assumed a more moderate stress regime (based on a lower vertical stress gradient) to evaluate the mine design. In-situ stress testing was carried out a lower level of the Eagle Mine to better determine the stress gradient. In August 2016, Golder carried out a testing program on the 172 L.

The main conclusions of the 2016 study are:

- The principal stress orientations obtained from the 2016 measurements are in agreement with 2013 results. The major principal stress orientation is approximately North-South (perpendicular to the strike of the orebody), the intermediate principal stress orientation is East-West (parallel to the strike of the orebody), and the minor principal stress is sub-vertical.

- The principal stress magnitudes measured in 2016 are lower than the magnitudes measured in 2013: horizontal stress ratios are consistent while the vertical stress constant is much lower than that in 2013.
- The high vertical stress at the 2013 test sites is not representative of the general in-situ stress state. The high value obtained in 2013 is considered to be a result of a stress concentration in the area of testing probably related locally to the peridotite intrusion.

Table 16-6 summarizes the stress field conditions that are recommended for Eagle East based upon the recent test work.

TABLE 16-6 STRESS FIELD ASSUMPTIONS
Eagle Mine

		Dip	Dip Dir	Stress Constants (2016)		Principal Stress Gradient (MPa/m)	Predicted In Situ Stress (MPA)[1]
Major	σ_H	05°	276°	k_H	2.76	0.0745	71.5
Intermediate	σ_h	01°	006°	k_h	1.38	0.0373	35.8
Minor	σ_v	85°	093°	k_v	0.027	0.027	25.9

Notes:

kH=σH/σv
kh=σh/σv
kv=σv/depth
[1] at 960m depth

ROCK MASS CLASSIFICATION

For the geotechnical characterization of the rock mass at Eagle East, the Rock Mass Classification (RMR) system from Bieniawski in 1976 and the Q System developed by Barton in 1974 were used to determine stope dimensions and ground support requirements.

The RMR value is calculated for each of the intervals in the geotechnical logging database based on factors that account for intact rock strength, Rock Quality Designation (RQD), joint spacing and condition, and the influence of groundwater.

The Q System is a classification of rock masses with respect to stability of underground openings. This system is based on the estimation of six rock mass parameters to obtain a Q value that gives a description of the rock mass quality. The Q System can be used as a guideline in rock support design and as an input for empirical estimation of mine design parameters.

The RMR parameters for Eagle East were updated based upon the recent testing and are shown in Table 16-7. In all cases, the classifications are the same or better than the estimates used for the PEA. This indicates that better quality rock is expected when mining reaches the Eagle East zone than was assumed at the PEA.

TABLE 16-7 ROCK MASS CLASSIFICATION PARAMETERS
Eagle Mine

Description	Hornfels	Peridotite	MSU	SMSU	Sediments
RQD	94	98	97	97	97
RMR value	81	82-85	81	85	84
Class	Very Good	Very Good	Very Good	Very Good	Very Good
Q' value	11	9	105	52	30
Class	Good	Fair	Ext. Good	Very Good	Good

NUMERICAL STRESS MODELLING

Golder has been contracted to carry out numerical stress modelling of the proposed Eagle East stope extraction to assess the impact of mining induced stress changes on the rock mass to determine if potentially unstable and/or hazardous conditions could result. The analysis will investigate the stress conditions at various stages of the mine development and stope extraction.

Based on the current mining experiences at Eagle, the magnitude of the in-situ stresses, the slightly smaller stopes, and the higher rock quality, high stress concentrations that would necessitate a change in mining sequence are not anticipated. RPA recommends that LMC incorporate the stress model results in the mine planning.

GROUND SUPPORT DESIGNS

The existing ground support designs are based upon the rock mass characteristics and the experience gained to date in the mine. The designs are described in the LOM Ground Control Management Plan which is revised as required.

There are two basic support patterns for development up to 5.5 m wide which include coated rockbolts and mesh. For wider spans, the support is designed on a case by case basis. Stope area ground support includes tensioned cable bolts in addition to the coated rock bolts and mesh.

DECLINE TO EAGLE EAST

The proposed decline will be developed entirely within a sedimentary sequence of siltstones (siltstone, greywackes and slates/chert/carbonates). Between the -50 mRL and -150 mRL elevations, it will cross the deformation zone.

Overall, the rock quality is considered good to very good based on the geotechnical logging. Using Barton's support chart and considering a span of 5 m and an Excavation Support Ratio (ESR) of 1.6 (recommended for permanent mine openings), the following ground support system has been recommended:

- Systematic bolting throughout the decline length.
- Fibre-reinforced shotcrete in much of the lower portion of the decline.
- In the decline segment passing through the deformation zone, resin bolts are recommended. Additional ground support installation may be required in this segment as a function of the resulting geometry of intersection.

Currently, Swellex friction bolts are used for ground support in main development headings. Consideration should be given to the use of resin rebar bolts, instead of Swellex or other friction or inflatable type of bolt.

GEOTECHNICAL CONCLUSIONS/RECOMMENDATIONS

The geotechnical testing and evaluation has provided a more robust assessment of the geotechnical characteristics and conditions that would be experienced in the extraction of the Eagle East deposit. This work has improved the confidence in the mine design and further supports the feasibility for safe and effective mining.

The following geotechnical work is recommended during the detailed engineering and construction phase of Eagle East:

- Ongoing mapping of the advancing face to provide feedback to the ground support design.

- Investigate the potential for having to switch to grouted rebar as the primary ground support.

- Develop an action/response plan for developing through the deformation zone in the event poorer ground conditions are experienced.

- Additional in-situ stress measurement should be carried out at greater depths to further validate the vertical magnitudes.

- Additional numerical modelling of various stope extraction sequences to optimize the mine design and extraction sequence.

HYDROLOGY

Hydrogeological testing in the vicinity of Eagle East was carried out to verify the assumptions made in the PEA. A series of hydrogeological tests were conducted in the unconsolidated, quaternary alluvium, shallow bedrock, and deep bedrock during June and July 2016.

QUATERNARY ALLUVIUM AND SHALLOW BEDROCK TESTING

During June 2016, North Jackson Company (NJC) conducted hydraulic testing of the unconsolidated (quaternary) alluvium and upper bedrock in the Eagle East area to confirm the hydraulic characteristics of the geological units and to assess potential hydraulic connections between the surface aquifer(s) and the proposed mine workings.

The main findings of the test program are as follows:

- The hydraulic conductivity of geological formations and alluvial hydrogeological model for Eagle East is consistent with findings at the Eagle Mine.

- Significantly transmissive formations exist only in the upper portion of the quaternary aquifer and are in the order of 10^{-5} m/s.

- There is a significant (30 m/100 ft) basal glacial till layer that retards vertical seepage from the upper alluvial formation. The till layer has a hydraulic conductivity of 10^{-8} m/s to 10^{-9} m/s.

- The upper bedrock above the Eagle East mineralization has a very low hydraulic conductivity of 10^{-10} m/s to 10^{-11} m/s and hydraulic tests resulted in no measurable response in shallower co-located test wells.

- Hydrostatic conditions exist between basal till and upper bedrock. There is poor hydraulic communication and little seepage between these formations.

- The Eagle East mineralized zone is well isolated from surficial water resources and watershed.

BEDROCK HYDRAULIC TESTING

In June 2016, Golder characterized the bedrock groundwater conditions at Eagle East in conjunction with the shallow aquifer testing by NJC. The purpose of the testing was to identify any water conductive features that might contribute to inflows in the proposed workings and to provide parameters to be used for bedrock groundwater modelling. Bedrock water quality data was also collected for the purpose of assessing potential impacts to water treatment plant operations.

Water at depth is significantly higher in Total Dissolved Solids (TDS) compared to shallow groundwater and inflow within the Eagle Mine workings (TDS = 2,500 mg/L to 3,000 mg/L). After the initial 58 hours of pumping, the TDS was considered representative of in-situ conditions at a final lab-determined value of 71,000 mg/L. As pumping continued past 74 hours, there was another increasing trend which may indicate that groundwater is upwelling from greater depths.

Water quality reports were used to evaluate the impacts on the mine and mill facilities. There are no foreseen impacts to infrastructure, pumping systems, or equipment at either site due to water quality. However, there are impacts to the water treatment plants due to the higher TDS. The dissolved solids loading to the mine water treatment will potentially exceed the evaporation and crystallization plant capability, and the mill water treatment plant requires upgrades to meet current discharge limits, which will be designed to match higher TDS conditions at Eagle East. Depending on the final mill water treatment design, there may be additional years of treatment in closure.

BEDROCK GROUNDWATER MODELLING

Golder produced the preliminary iteration of the bedrock groundwater model for Eagle which has been expanded to include the new decline and East Eagle mine workings. The primary purpose of the groundwater model is to predict the groundwater inflow quality and quantity to assess the dissolved solids load on the water treatment plant and to design the underground pump system.

INFLOW QUANTITY

Golder based the bedrock groundwater model on the previously developed model to support permitting and planning the Eagle Mine. The new model included conservative assumptions:

- Although the geometric mean hydraulic conductivity from Eagle East testing is an order of magnitude lower than the Eagle Mine lower bedrock hydraulic conductivity, Golder conservatively assumed that the Eagle East hydraulic conductivity was equal to the Eagle Mine lower bedrock hydro-stratigraphic unit.

- The summer 2016 testing program intercepted a water conductive feature that was subjected to pump testing. The feature extended a few meters from the borehole and was not highly transmissive. No other water conductive feature networks were located. Therefore, modellers conservatively assumed that this single water conductive feature found at Eagle East projected 200 m in two directions. One reason for this conservative assumption is that the model is over-predicting groundwater inflow at Eagle due to the representation of water conductive zones in the model.

Previous groundwater modelling for Eagle overpredicted water inflows by two to six times the actual conditions currently experienced. Since mining in the crown pillar has not yet commenced, the higher flow prediction may still be experienced, however, it is unlikely that flow rates at the upper bound of the modelling (100 gpm) will be experienced. Golder's first iteration of the groundwater model for Eagle East, which predicts 216 L/min peak, 125 L/min at the end of mining (57 gpm peak, 33 gpm end of mining), is deemed appropriate and has been used as the base case for designing underground pumping requirements.

As long term flow rates at the observed high dissolved solids concentrations would have consequences on the Water Treatment Plant (WTP), an additional scenario was modelled and this sensitivity case inflow was used to calculate the 10th, 50th, and 90th percentile of inflow for which a probabilistic Monte Carlo simulation of TDS and total mass loading was estimated. This analysis determined a range of possible daily dissolved loading for the purposes of planning upgrades to the WTP.

The recommendations based upon the hydrology work are:

- East Eagle flow rate predictions of 216 L/min peak, 125 L/min at the end of mining (57 gpm peak, 33 gpm end of mining) are deemed appropriate for the base case design for underground pumping requirements.

- Use the Monte Carlo simulation for the range of possible daily dissolved loading for the purposes of planning upgrades to the WTP.

- Include the groundwater quality data in the considerations for revisions to the WTP and modifications to the WTP operation based upon the higher level of TDS.

- Consider the impact of the higher TDS on the WTP operation in the closure phase.

- Update the database of hydraulic information as development continues.

- Additional data along the route connecting Eagle and Eagle East will fill a data gap in the hydrology information.

STOPE DESIGN

Stope design for Eagle East is based on the Modified Stability Graph method. The method uses the Q' rock mass classification parameter along with three other factors accounting for stress, structural orientation and gravity effects to assess the stability (N) of the stope surface (back, side, and end wall) against the design shape (as defined by the HR) – a factor which accounts for the combined influence of size and shape on excavation stability).

The stope design factors have been updated based on the new rock mass classification parameters.

STOPE DIMENSIONS AND GROUND SUPPORT DESIGN

The recommendation for stope back support is based on a semi-empirical cable bolt support layout overlay for the Modified Stability Graph. This overlay provides spacing and length guidelines which account for multiple failure modes, such as unravelling, slabbing and caving. The method provides for a graphical representation of the recommended cable bolt spacing and length.

The same stability graph has been used to assess the performance of stopes in Eagle where stability and levels of dilution in the primary stopes has been very low; some cases of roof failure in the secondary stopes has occurred but there are limited number of cases in the database and alternative sill configurations are being investigated. The stope design recommendations are shown in Table 16-8.

TABLE 16-8 STOPE DESIGN RECOMMENDATIONS FOR THE MEAN ROCK MASS QUALITY
Eagle Mine

Updated Stress Conditions (Golder 2016)	
Principal Stress (MPa)*	
σ H	68
σ h	34
σ v	25

Design Parameters Stope Back		
	MSU	**SMSU**
N'	10.1	9.7
HR_{allow}	8.2	8.1

Design Parameters Stope Face/Wall		
	MSU	**SMSU**
N'	32.6	27.2
HR_{allow}	12.1	11.4

The support recommendations are for single strand 15.7 mm diameter, 25 t cable bolts placed in a regular array with a constant distribution of bolts across the back of the stope back spaced as close to square as possible. Cable bolts of 9 m to 10 m length are to be installed at a 1.5 m to 2.0 m spacing. Table 16-9 summarizes the recommended ground support design. Cable bolts are currently effectively used to support the sill roofs in the existing mine in a similar pattern.

TABLE 16-9 STOPE DIMENSIONS AND GROUND SUPPORT RECOMMENDATIONS
Eagle Mine

	MSU	SMSU
Recommended Stope Dimensions		
Width (m)	10	10
Length (m)	40	40
Height (m)	25	25-30
Support Recommendations (Backs)		
Cable bolt spacing (m)	1.5	
Cable bolt density (bolts/m^2)	0.25	
Cable bolt Length (m)	9 - 10	

RPA finds the mine method, mine design, ground support, and geotechnical assessment to be consistent with industry best practices.

EAGLE CROWN PILLAR

Due to the location of the mine under a significant wetlands area and overburden cover, a crown pillar is necessary for the Eagle Mine to prevent surface subsidence and/or large-scale collapse.

The LOM design includes mining up to 381 level with a roof elevation of 386 MASL allowing for a crown pillar thickness of 29 m (Figure 16-14).

The 2007 mining permit approved mining up to the 327.5 MASL elevation, however, in order to advance mining above this elevation, additional geotechnical and hydrogeological investigations would be required to provide confirmation of rock stability conditions and a report submitted to the Michigan Department of Environmental Quality (MDEQ). This report was submitted to the MDEQ in late 2015, and in July 2016, approval was received to carry out development up to the top level of the mine (381 MASL) and mining (stoping) to the 353 level.

In order to obtain approval to carry out mining up to the 381 level, further geotechnical data will be collected as development reaches these elevations and the rock stability conditions are re-evaluated with further underground geotechnical data gathering.

Golder and LMC are of the opinion that they will be able to demonstrate to the MDEQ that this area can be safely mined by Eagle Mine LLC and LMC has therefore included this tonnage in the Mineral Reserve estimate.

RPA is of the opinion that it is possible to provide for an adequately engineered crown pillar of 29 m but that adequate instrumentation and monitoring of the crown pillar will be essential. RPA is of the opinion that the approval to mine this area will be obtained in advance of reaching this area. It is therefore reasonable to include this material in the Mineral Reserve estimate.

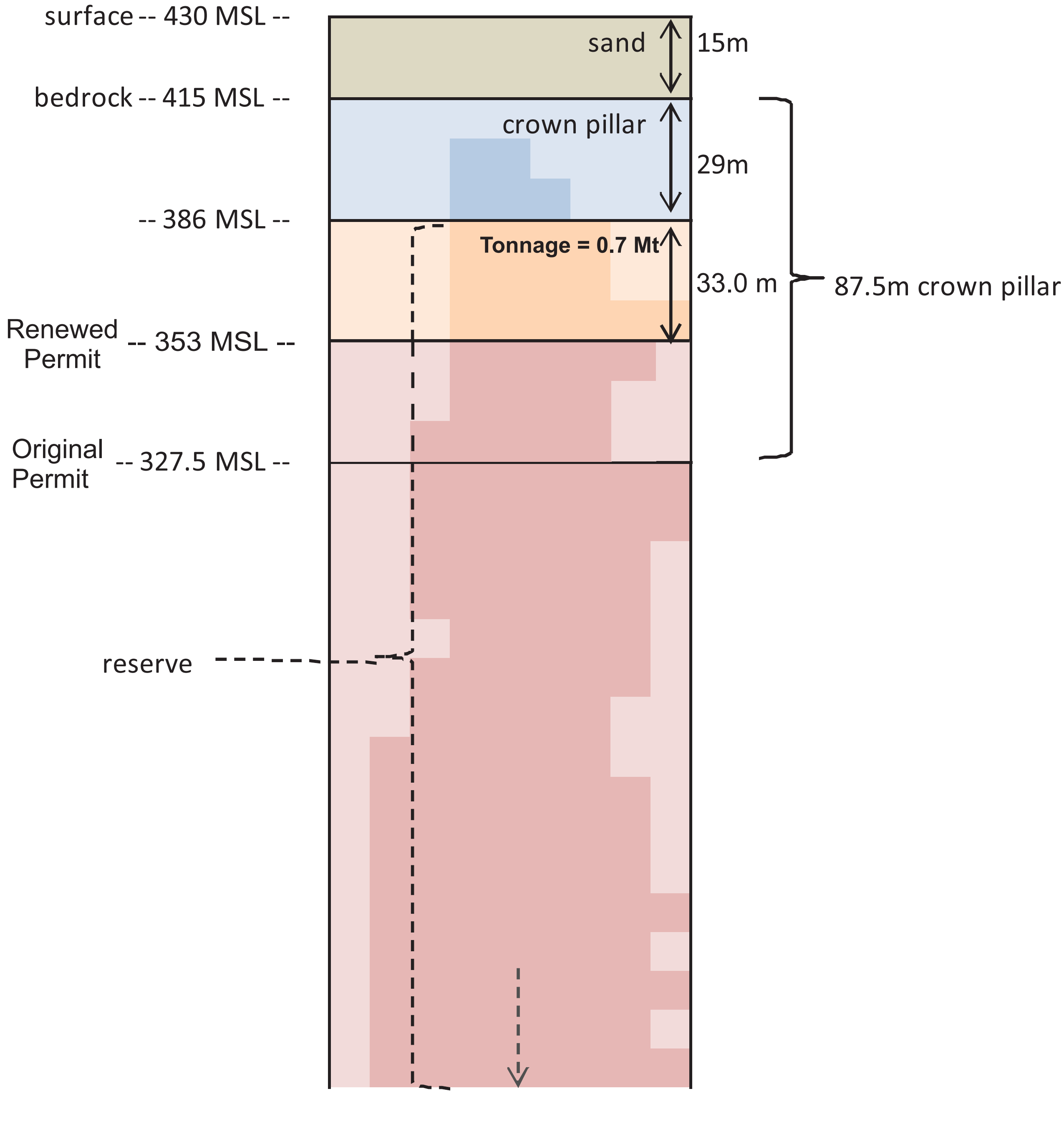


Figure 16-14

Lundin Mining Corporation

Eagle Mine

Marquette County, Michigan, U.S.A.

Crown Pillar

April 2017

Source: Lundin Mining Corp., 2016.

INFRASTRUCTURE

The mine infrastructure for Eagle is in place and in service supporting the mine operations. The existing surface infrastructure in place for Eagle Mine has the available capacity to provide adequate environmental protection for both Eagle and Eagle East. Therefore, minimal permitting will be required to maintain current levels of environmental performance.

POWER, COMPRESSED AIR, COMMUNICATIONS AND CONTROL

MINE POWER

Underground electrical power at Eagle is fed by two separate 13.8 kV distribution systems, one from the portal and the second down the Fresh Air Raise (FAR) to a separate switchgear located on the 265 level Fresh Air Drive. Both systems are fed from the site powerhouse.

The portal switchgear feed supplies power down the decline to Switchgear B and transformers along the main decline to provide 480 V power to the pump stations as well as to a transformer located at the portal for the portal fan and heater. From the main switchgear (B) at the 265 level, the power is fed down the main decline to the lower portion of the mine (265 to 145 levels) to provide power for pumps, ventilation fans, and mining equipment.

A 13.8 kV substation is installed at the ventilation raise collar to provide power to the main ventilation fans, heating units, Alimak elevator, and general surface facilities. The ventilation raise power supply is fed from the Vent Raise substation down the FAR to Switchgear A located at the 265 level. From the main switchgear (A), the power will be fed up the main decline to the upper portion of the mine (294 to 381 levels) to provide power for pumps, ventilation fans, and mining equipment.

Each production level has a 750 kVA Mine Load Centre (MLC) to feed ventilation and electro-hydraulic loads. Levels are equipped with breakers that allow for isolation from the main system. The underground feeds from the surface to the main underground substations on both systems are sized for full mine loads for redundancy in case of failure of the other system. A tie-in breaker is installed between the two substations on the 265 level.

EAGLE EAST ELECTRICAL DISTRIBUTION

Electrical distribution for Eagle East will expand on the existing infrastructure and tie in at the 265 level substation. The existing 265 level substation level switchgears (A and B) have two spare breakers that are allocated for new mine loads and will be used for the Eagle East expansion. At 13.8 kV, the rating of these breakers is well above the project's electrical demands and poses no risk for being undersized based on equipment selected to date.

To support the electrical requirements of the Eagle East ventilation and upper dewatering system, the design will require the installation of a main switchgear at the 010 elevation (bottom of the ventilation Raise #1). This switchgear will be comprised of an A and B unit – similar to the 265 level installation.

Two power cables will be run from the 265 level to the new switchgear on the 010 elevation. One cable will be run down the decline to feed side A while the second power cable will be run down the exhaust raise to feed side B. For the purpose of system redundancy, the two sides of the switchgear will be equipped with a tie-in breaker, such that in the event of failure of one side of the system, the other side can be used to maintain operational continuity. In addition, the power cables and horizontal buses will be of sufficient size such that each section can carry the full load requirements.

An additional switchgear is to be installed at the -470 elevation. The switchgear will be of similar configuration as the 010 elevation equipment. For the purpose of redundancy, separate cables will be run from the 010 elevation switchgear to the -470 elevation switchgear. A similar tie in switch connection side A and side B is also incorporated.

MINE LOAD CENTRES

In order to meet the electrical requirement during the development of the decline, temporary Mine Load Centres (MLC(s)) will be installed in a "leap frog" configuration as the decline advances. This system will be comprised of two 750 kVA MLC units to provide power to support the advancing face (mining equipment, pumping, ventilation, utilities and lighting, etc.). The first MLC will be located close to the work face while the second is held "in reserve" at a previously installed location. When the distance from the face to the active MLC exceeds the maximum allowable distance (approximately 400 m), the reserve MLC is moved into the closest available muckbay and connected to support ongoing development. The other MLC will be disconnected and held in place. Once development has been completed, these units will be utilized for one of the four production level MLCs

COMPRESSED AIR

The Eagle Mine operates a compressor plant comprised of three Ingersoll Rand compressors which provides a total of 150 L/s at 120 psi to support the underground operations. Normally two units are in operation with the third on standby. Based on current and planned consumption, the installation would have the capacity to support the Eagle East development and production. No additional upgrades to the system are planned as part of this study.

COMMUNICATION AND CONTROL

The primary underground communications system will be a continuation of the leaky feeder system, which allows for two-way radio communication in the underground and between surface and underground. All underground mine equipment is equipped with radios, in addition hand-held units are provided to mine site personnel.

As a secondary communications system, a self-contained battery operated emergency mine phone system will be extended from the existing Eagle system.

BUSINESS AND CONTROL NETWORKS

A fibre-optic network has been installed throughout the mine which is used to support the mine control and monitoring system (such as mine environment monitoring, ventilation-on-demand). The potential exists for this network to support a Wi-Fi network which can be used to support two-way communication, real-time video monitoring, and personnel/equipment tracking.

The design philosophy of the existing Eagle Mine network will be followed for the Eagle East expansion. Main connections at the 172 and 265 levels will serve as the tie-in points for the Eagle East network infrastructure. The main aggregation switches on the 265 level have sufficient spare ports to handle all expected requirements and will not require expansion.

Business Development Network (BDN) access will be provided at the refuge station, shop, and 010 level substation. Process Monitoring Network (PMN) access will be provided at pump stations, main ventilation fans, air quality stations, and ventilation louvers. Network panel designs and switch models will be consistent as the existing Eagle network. As with the electrical distribution system, system redundancy will be built-in to ensure continuity of operations. The Eagle East network infrastructure is able to support additional future traffic for mobile equipment telemetry, tracking, VoIP phones and video cameras.

CONTROL SYSTEM

The Eagle East control system is an expansion of the existing Allen Bradley system. Modes of operation and the overall control philosophy are the same as the existing mine. Existing HMI screens located on surface are used for visualization and the existing redundant ControlLogix processors located at the 265 level will perform control and monitoring functions for Eagle East, through Flex I/O panels that are installed to support pump stations, air quality stations (AQS) and ventilation louvers. The control system will communicate using Ethernet/IP over the PMN.

A dedicated processor will be located at the new 010 level substation to control the new Fresh Air Booster fans. Airflow flow through Eagle East can be managed through speed control capabilities on the Fresh Air Booster fans and can be monitored and controlled based on Mine demand requirements.

To support Ventilation on Demand (VOD), the air flow on each level can be monitored by an AQS. A proportional-integral-derivative (PID) control loop will control the positioning of the regulator to maintain the air flow set point for the level. Regulators on each level will be controlled to support VOD at Eagle East. This system will interface with the existing VOD system at Eagle.

Pump stations are connected to the control system for monitoring only; no control functions are available from the system. The dewatering pumps will be controlled by local level controllers.

ROCK HANDLING AND BACKFILL

Development waste will be hauled from Eagle East by truck to stopes in the Eagle Mine or to the surface TDRSA. Waste stored on surface will be used for backfilling stopes at Eagle Mine or Eagle East. Mineralized material will be hauled by underground trucks to the surface COSA from where it is then hauled by contracted highway trucks to the Humboldt Mill.

The Eagle East backfill CRF would be the same as currently used for Eagle and will come from the same plant on surface.

SECONDARY EGRESS AND REFUGE STATIONS

SECONDARY EGRESS

Entrance to the Eagle Mine is via the decline portal. The primary egress for the mine is via the main decline to the portal entrance. The secondary means of egress from underground is via an Alimak elevator located at the 265 level FAR which will transport personnel to the collar of the raise. This unit can accommodate up to 20 individuals with a total weight capacity of 2,000 kg. Secondary egress from the mine levels to the 265 L FAR is via ladderways.

Primary egress from Eagle East shall be through the main decline to the Eagle 265 level, and depending on the situation, individuals can exit the mine either through the main decline to surface or through the Alimak elevator installed in the FAR. Should the primary route be un-passable at any location, individuals can travel along the north decline or climb one segment of the secondary egress raises and re-join the primary egress.

The secondary egress route is maintained in fresh air throughout Eagle East to the extent possible. Escape raises will be raisebored at a diameter of 1.5 m to 1.8 m and have been designed to not exceed 92 m in length. Raises are angled at approximately 80° as this is considered optimal for both installation and functionality.

MINE REFUGE STATIONS

Currently there are three 12-person MineARC refuge chambers and two four-person MineARC refuge chambers located within the existing Eagle Mine. MineARC refuge chambers are self-contained chambers that are capable of supporting life for up to 36 hours (based on stand-alone operation). As the mine advances, existing refuge chambers will be moved or additional refuge chambers will be added to maintain the minimum standard.

The two four-person MineARC refuge chambers will be required to be advanced with the mining crew. They will be maintained at a maximum of 750 m from the face.

In addition to the MineARC refuge chambers that are to be installed along the decline, a larger, permanent chamber is to be installed close to the Eagle East production area. During periods of high activity in Eagle East, there may be a significant workforce presence which would require the installation of several 12-person units.

MINE DEWATERING

EAGLE MINE

Based on the Eagle Mine FS, the dewatering system at Eagle is designed to support a pump rate of 38 L/s (600 USgpm) at peak production, with the hydrological study conducted by Golder reporting a maximum expected mine inflow of 16 L/s (250 USgpm). The maximum instantaneous pump rate for a 70 m vertical lift between the pump skids is stated at 38 L/s.

The dewatering system currently pumps 180,000 to 280,000 L (40,000 to 60,000 gal) per day from six operating levels. This equates to 2 L/s to 3 L/s, well below the system capacity of 38 L/s. Operating records of the pumping times for the skid mounted pumps indicates that the system utilization was less than 10% for a 12 hour period when average water quantities were being pumped.

The current Eagle Mine dewatering system comprises a single circuit delivering water from the active mining areas to the Surface Contact Water Basin. Mine water flows via a series of sumps and boreholes to collect in one of two larger collection sumps on the 190 level (main sump) and 145 level. Overflow from the sumps goes to the pumps while the settled solids in the sumps are removed by LHD. From the main sump, overflow water is gravity fed via boreholes into a skid mounted agitator tank on the 172 level. From the 145 level sump, clean water is pumped to this tank via two 15 hp (11 kW) submersible pumps (one active and one on standby). The clean water is pumped to surface from the 172 level tank via a series of pump skids on the 233, 310, and 380 levels. The pump skids comprise a 28,400 L tank, tank agitator, two 100 hp (75 kW) Metso HM100 slurry pumps (one pump is operational while one is on standby), V-belt drives, pulsar ultrasonic level control, and starters.

Further development of the upper portion of the Eagle Mine is expected to increase the water inflows (as mining approaches surface). The groundwater model predicts that inflows to the mine will increase up to 6.3 L (100 USgpm) by 2021 and stay constant until completion of mining. Based on this information, assuming that current production is steady state and mine service water intake is constant at approximately 189,200 L (50,000 gal) per day, the current dewatering system will need to handle 283,905 L (75,000 gal) per day. This corresponds to approximately 3.3 L/s, or 52 USgpm, well below the design capacity. Additional studies are recommended to confirm these hydrogeological assumptions.

EAGLE EAST

For the dewatering design, average and maximum discharge volumes were calculated. The design was based on meeting the maximum potential water inflow. Table 16-10 summarizes the average and peak/maximum water discharge volume expected to be pumped from Eagle East.

TABLE 16-10 EAGLE EAST MINE WATER DISCHARGE QUANTITIES
Eagle Mine

	Average (US gpm)	Maximum (US gpm)
Groundwater Inflow	33	57
Mine Service Water Inflow	32	63
Water in Ore/Waste Stream	10	15
Mine Discharge (Pump System Design)	**55**	**105**

A design pumping rate of 12.6 L/s (200 USgpm) was chosen as this provides:

- Optimum flow rate for single-stage slurry pumps while providing sufficient head to minimize the number of pump installations.
- Twice the maximum projected water inflow.

The Eagle East dewatering system will be configured to tie into the existing Eagle Mine dewatering system at the 190 level. This tie-in is not expected to exceed the capacity of the existing main settling sump located at the 190 level, or existing pump skids located at the 233, 310, and 380 levels. Clarified water overflow from the 190 L settling sump is fed to the existing dirty water pumping system, and the solids that have settled in the sumps are removed from the sumps by LHDs.

PUMPING SYSTEM

The Eagle East dewatering system will utilize pump skids similar to those at Eagle which will be installed as the decline is developed. This system is considered a “dirty water/clean water” system. “Dirty water” has not yet reached a sump underground where the sediment has settled out. The “clean water” has had much of the sediment removed and is pumped to the contact water basins for treatment in the WTP. The discharge water from the Eagle East development and production activities will be dirty water, which will be pumped by multiple single stage slurry pump installations located between the existing Eagle Mine and the Eagle East zone.

The pump installations consist of eight pump skids with 3 in x 2 in slurry pumps (Cornell 2315 MP) at a rate of 12.6 L/s (200 USgpm). Each pump skid consists of two pumps with 56 kW (75 hp) motors (one running and one standby), and a tank with a usable capacity of 12,700 L (3,350 gal). The tank is sized to limit the number of pump starts to one per hour, at the maximum anticipated mine inflow rates. The tank will be kept agitated to minimize the settling of solids in the tank.

The pump skids will be installed in series along the decline, starting from the 106 level to the bottom of the decline at -535 m elevation at Eagle East. The first pump station for Eagle East (106 m elevation) will pump directly to the existing dirty water sump on the 190 level. In the dual decline section, the pump skids and pipelines will be installed in the south (haulage) decline.

A schematic drawing is provided in Figure 16-15.

DEVELOPMENT PUMPING AND SECONDARY DEWATERING

In the event that point-sources of water are encountered in the decline (unknown at this time), concentrated water inflows need to be captured and discharged into the closest pump skid installation. Capturing of these inflows can be done by drain holes to intercept the water or collection in local sumps.

It is assumed that five such locations will be encountered during decline development, and each location will have a small 2 kW (3 hp) submersible pump installed in either an available muckbay or a dedicated sump cut-out to direct the local contact water to the nearest pump skid. In addition to the dirty water from the pump skid below, each pump skid will also handle any contact water from nearby water sources, and drainage water from drain holes directed to the respective pump skid.

During development for Eagle East, the contractor will supply a temporary pumping system capable of handling the anticipated water inflows at the face up to a vertical of 93 meters from the secondary pump skid and 30 m from the face for a total of approximately 120 m. At the 14.3% ramp grade, this corresponds to a decline distance of approximately 800 m.

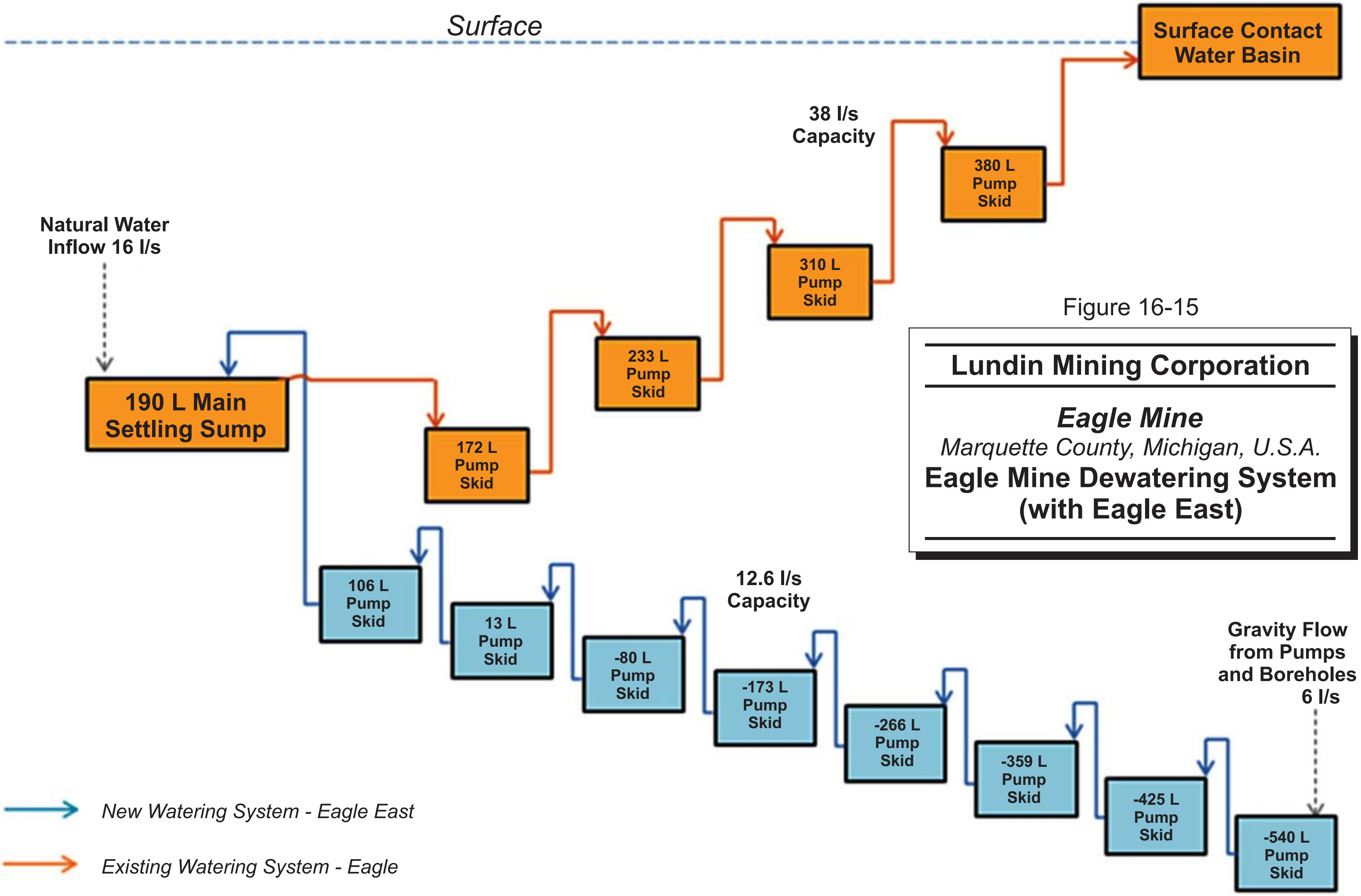


Figure 16-15

Lundin Mining Corporation

Eagle Mine

Marquette County, Michigan, U.S.A.

Eagle Mine Dewatering System (with Eagle East)

April 2017

Source: Lundin Mining Corp., 2016.

The development pump system will be carried with the advancing face(s). Initially a single pump skid will be required, however, it will be necessary to have a second unit when the twin declines are being advanced (one for each face). During the twin decline development phase, both pump skids will feed into the lowest permanent station.

SOLIDS HANDLING

The existing Eagle Mine pumping system is considered a clean-water system – with the solids being removed in the 190 level sump. The Eagle East system will remain as a dirty-water system. With the tie-in of the Eagle East, an increase in the amount of suspended solids to be handled in the 190 level sump is anticipated and the settling of fine solids at the 190 level sump must be enhanced.

A flocculant system is recommended at the Eagle East pumping system discharge. Preliminarily investigations indicate that the introduction of a flocculant into the mine discharge would not adversely impact the water treatment plant. It will, however, be necessary to have approval from the MDEQ prior to implementation. The Eagle Mine LLC team should further investigate the limitations regarding the type of flocculent that can be used, with respect to treatment of the discharge water.

MINE EQUIPMENT

Eagle operates a fleet of conventional rubber tired mobile equipment for mining operations. All major fleet units are owned by Eagle and provided to the contractor. Table 16-11 summarizes the major mining equipment currently in use at Eagle and the additional equipment necessary for Eagle East. The support equipment shotcrete mixer and sprayer, powder trucks, lift trucks, etc., will be shared between Eagle and Eagle East.

The existing mine contractor has noted the requirement for additional rental equipment (jumbo and bolter) for the development work. Where additional units are listed in Table 16-11, the manufacturer and model would be determined at the time of procurement. The manufacturers and models in the table represent the existing units.

MINE MAINTENANCE FACILITIES

Starting in 2020, Eagle East will host a significant portion of the primary mining equipment including jumbos, bolters, and longhole drills along with miscellaneous support equipment. An underground maintenance workshop will be constructed close to the Eagle East production areas and will be equipped to perform routine maintenance and breakdown repairs on the mining fleet.

TABLE 16-11 UNDERGROUND MINE EQUIPMENT
Eagle Mine

Fleet	No. of Existing Units	No. of Additional Units	Equipment	Make	Model
Loaders	3		LHD	Caterpillar	R1700G
	1	1	LHD	Caterpillar	R2900G
Trucks	5	4	UG Hauling	Caterpillar	AD45B
Drills	1		Longhole	Atlas Copco	Simba M7C
	1		Longhole	Atlas Copco	Simba E7C
	1		Longhole	Atlas Copco	Cabletec LC
	2	1	Jumbo-2B	Sandvik	DD420-40C
	2	1	Jumbo-Bolter	Sandvik	DD410-C
Explosives	1	1	Development	Getman	AD64-2/500S
	1		Production	Getman	AD64 Ex C 2/500
Utilities	1		Fan Hanger	Getman	AD64
	1		Pallet Handler	Getman	AD64
	1		Scissor Truck	Getman	AD64
Shotcrete	2		Trans Mixer	Normet	Utimec LF500
	1		Shotcrete Sprayer	Normet	Spraymec 1050 WP
Miscellaneous	1	1	Grader	Caterpillar	M135H
	2	1	Telehandler	Caterpillar	Tl1050
	2		Skid Steer Loader	Caterpillar	259B3
	1		EMT/Ambulance	Polaris	EMTV
Tractors	7		Tractors/Service	Kubota	RTV1140
	1		Survey Tractor	Kubota	M7040
	1		Mancarrier	MineCat	UT99
	1		Mechanic Tractor	MineCat	UT99
	1		Boart Tractor	John Deere	210K
UG Pickups	2		LMC	Chevrolet	Silverado 3500HD
	3		LMC	Chevrolet	Silverado 2500HD
	2		Contractor	Chevrolet	Silverado 2500HD

MINE VENTILATION

EAGLE MINE VENTILATION

The ventilation system is a "pull" system such that the majority of the pressure to pull air through Eagle is developed by large surface mounted exhaust fans. In addition, an intake fan at the portal is installed to push air through the heaters and down the decline. The system was designed for a total airflow volume of 207 m^3/s with a maximum of 290 m^3/s (Figure 16-16).

The existing primary Eagle Mine ventilation system is comprised of two parallel 4.4 m circular shafts from surface to the 265 elevation. The FAR pulls air from surface to the 265 level where it is directed up and down the main decline to accesses to the individual mining levels. Fresh air is pulled across the levels to the exhaust raises which connect the main levels to the 250 Return Air Drive (RAD). Exhaust air is then fed up to the exhaust raise and Return Air Raise (RAR). The RAR is equipped with two 522 kW (700 hp) (52 in. diameter) Alphair Axial Vane fans operating in parallel. In addition, air also enters through the portal down the main decline to the 265 level. The portal is equipped with a single 250 hp (92.5 in. diameter) Alphair Axial Vane fan. Both the portal and the FAR are equipped with propane air heaters.

The ventilation system will continue to support mining in the existing and new levels of the Eagle Mine. Fresh air is fed from the ramp across the levels into the series of 4 m x 4 m exhaust raises. Airflow is controlled with bulkheads and louvers installed at the exhaust raise cross-cuts. No booster fans are required for individual level ventilation, however, auxiliary fans are installed to supply air to various crosscut headings on each level. In order to maintain the total system airflow demand within the capability of the surface exhaust fans, airflow will be reduced when levels are mined out. This will be accomplished by closing the regulators or building bulkheads, allowing some leakage for ventilation of the escapeways at all times.

A ventilation demand analysis was carried out for the various stages of the construction and development sequence of the project to estimate the total system requirements and design criteria. The analysis incorporated the requirements of both Eagle Mine and Eagle East, including the time when levels in the existing Eagle Mine were mined out and could be sealed off. These stages were modelled using VentSim 3D mine ventilation simulation software to determine fan requirements and identify significant ventilation step changes.

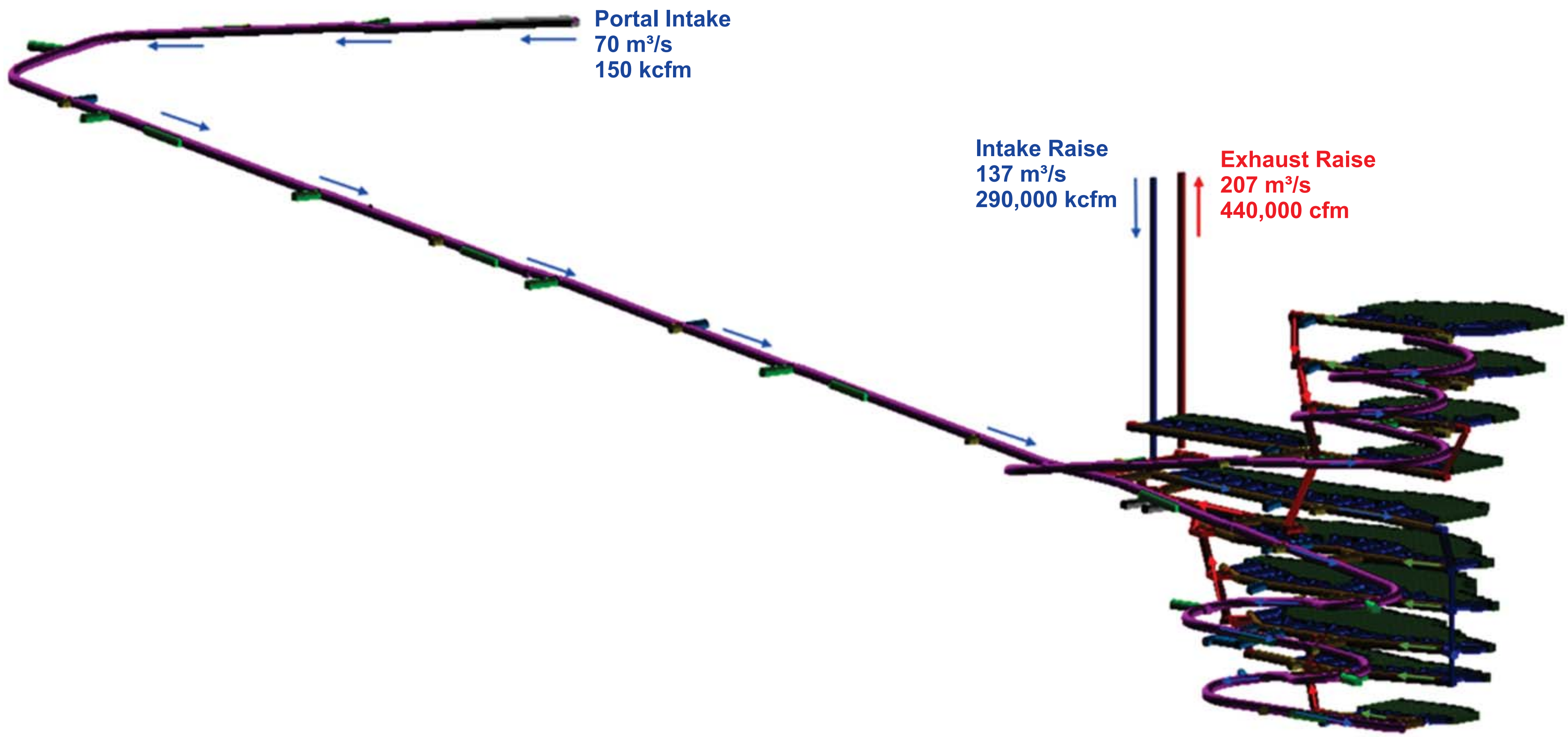


Figure 16-16

Lundin Mining Corporation

Eagle Mine

Marquette County, Michigan, U.S.A.

Eagle Mine Ventilation System

Source: Lundin Mining Corp., 2016.

EAGLE EAST VENTILATION

The Eagle East ventilation network is essentially an extension of the existing Eagle Mine ventilation circuit. No additional surface connections or surface infrastructure are required to support the Eagle East development. The Eagle and Eagle East workings will be ventilated in parallel such that there is no contamination of either zone by exhaust from the other under normal operating conditions.

Fresh air for Eagle East will proceed down the ramp below the 145 level. At the 010 level, where the twin decline configuration commences, fresh air will be redirected into the non-haulage (north) ramp by a set of two fresh air booster fans and across to the point where the twin decline configuration stops.

Fresh air is delivered to the Eagle East workings via two 3.05 m (10 ft) diameter bored ventilation raises (VR#2 and VR#3), and a subsequent series of 4 m x 4 m drop raises between the working levels where it is fed across the production levels and exhausts into the haulage ramp. The exhaust air travels up the decline to the 010 level where it is directed into the base of VR#1 (3.05 m diameter) in an arrangement called a ventilation crossover. This raise ties directly into the existing Eagle Mine exhaust air collection system at the 250 level. All exhaust from Eagle and Eagle East is collected at the 250 level and travels up the RAR to exhaust through the existing stack.

The redirection of air at the 010 level allows the fresh air to be directed to Eagle East mining areas without being further contaminated by the emissions of any haulage equipment.

Power for the overall ventilation circuit is provided by two permanent fan installations:

- 2 x 522 kW (700 hp) surface exhaust fans (existing)
- 2 x 522 kW (700 hp) fresh air underground booster fan (new)[1]

SECONDARY VENTILATION SYSTEM

Airflow across the mining levels in Eagle East will be reversed in comparison to the Eagle Mine due to vent raises being fresh air instead of exhaust air. Air will travel across the levels and be exhausted through to the ramp. Flow control for upper levels will be provided by electrically actuated louvers, located at the FAR connection. Small 15 kW (20 hp) booster

[1] Based on assumed efficiency of 75%. If more efficient fans are selected at final procurement, 373 kW (500 hp) fans and motors could be substituted without requiring change to the electrical system.

fans at the raise connection will be required to send air across the two lowest levels of Eagle East. Note that a typical 56 kW (75 hp) mining fan could be used in these booster locations and direct fresh air from the raise directly into the ore sill drive to provide ventilation to the face during development and stope production.

For both Eagle and Eagle East, the airflow requirement across all production levels has been set to a minimum of 23.5 m^3/s (50 kcfm), sufficient to support the highest airflow-demand mining activity (CAT 2900 series LHD and two CAT AB45D haul trucks working on the level).

VENTILATION ON DEMAND

The capability to control and manage ventilation airflow is critical to the Eagle East ventilation design. It will be necessary to have the capability to manage airflow quantity to the various levels based on the level of production occurring on that level. This method of ventilation control, sometimes referred to as VOD system, offers a significant reduction in operating costs by optimizing the total mine airflow (fan power) and represents an overall increase in ventilation efficiency.

The airflow can either be managed through the electrically-actuated louver regulators or through the use of manual regulators. For the electrically actuated louvers, each regulator will be networked with the ability to be controlled remotely from surface. Most (but not all) of the existing mining levels in the Eagle Mine are currently equipped with such infrastructure – for consistency, it is recommended that Eagle East use the same systems.

Mine operating procedures will need to be implemented whereby operations and planning will determine the locations and quantity of the airflow requirements based on the mine plan. Ventilation monitoring will be incorporated with the VOD system and tied into the Mine Distributed Control System (DCS) to provide effective monitoring and management of the system.

VENTILATION CROSSOVER

The ventilation crossover proposed in the PEA was reconsidered in the FS work.

Based on this assessment, the ventilation crossover remained the preferred option, as it minimizes the amount of haulage in the fresh air route while maintaining the existing Eagle Mine ventilation network as originally designed. The re-design of the twin declines resulted in a more effective crossover configuration. Figure 16-17 is a schematic illustration of the ventilation crossover.

The design of the crossover location allows both fresh air from above and return air from below to come to the same location in the haulage ramp without mixing. Fresh air is directed out of the haul ramp by the new fresh air booster fan station, while exhaust air is directed to the base of the new VR#1, induced by the surface exhaust fans.

DECLINE DEVELOPMENT VENTILATION

Ventilation design for the Eagle East decline was proposed by the operations contractor to achieve a “blast at will” or “multi-blast” operation without impacting mining activities in the Eagle Mine. The system is described below:

- Positive pressure system: designed to deliver fresh air to the working face. Comprised of two 150 kW (200 hp) fans installed in series above the intersection of the 145 level and the Eagle East ramp. Air is ducted through 1.37 m (54 in.) steel ducts down the ramp.

- Negative pressure (Suction) system: designed to exhaust blast fumes from below the 145 level access directly to the base of the RAR on the 265 level. Comprised of one 150 kW (200 hp) fan installed below the intersection of the 145 level and the Eagle East ramp and two 150 kW (200 hp) fans installed in series between the air doors accessing the bottom of the RAR on the 265 level.

The ducting configuration has been reviewed and validated. It is possible that one additional 200 hp axial fan may be required to deliver the required flow when the ducting has reached its maximum length, pending actual quality of installation.

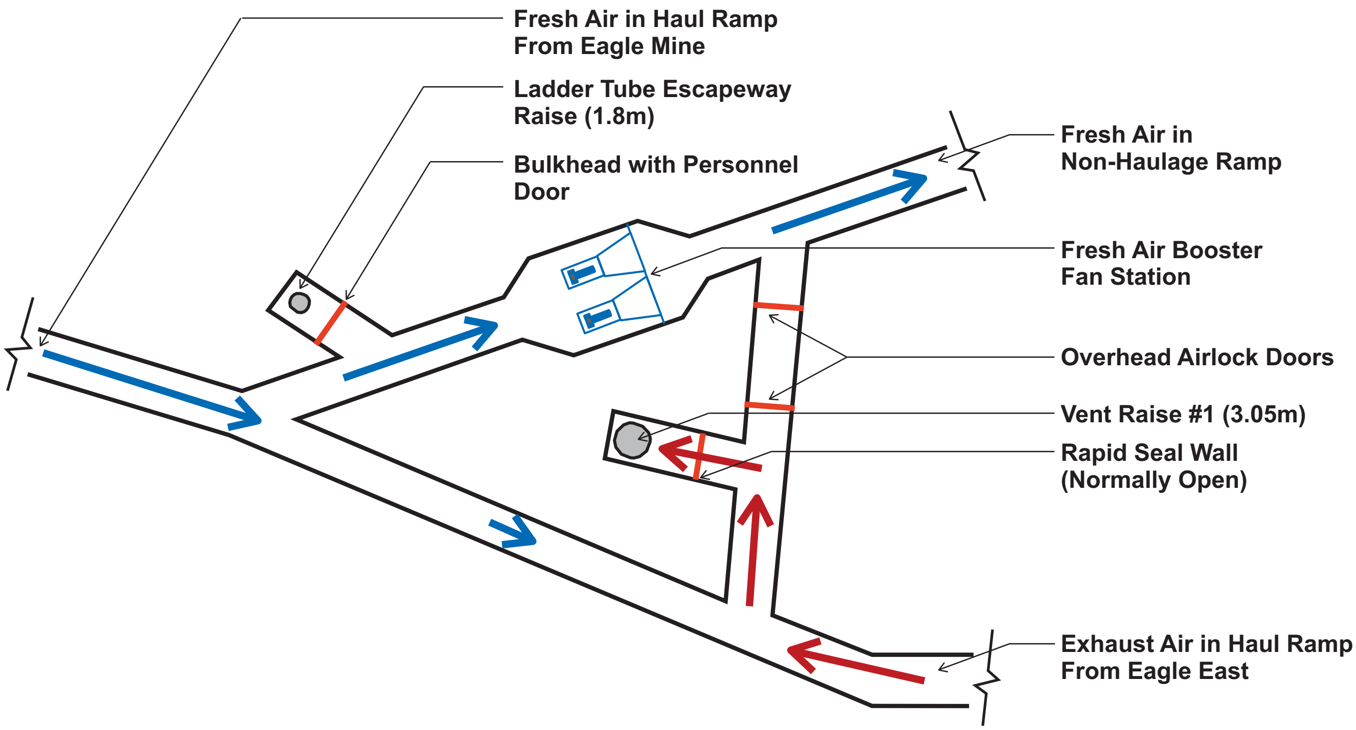


Figure 16-17

Lundin Mining Corporation

Eagle East Project

Marquette County, Michigan, U.S.A.

Ventilation Crossover Schematic (Plan View)

April 2017

Source: Lundin Mining Corp., 2016.

PROJECT EXECUTION PLAN

LMC has developed a Project Execution Plan as part of the FS.

PROJECT CONTROLS

A change management system that includes a register of potential changes and formal approval of changes will be set up for the Project. Technical decision memorandums will be written to explain and formally approve material changes to the FS baseline.

A new bottom up capital cost estimate should be available in about one year's time.

A project charter is to be prepared in accordance with company requirements. The project manager will also be responsible for issuing of weekly and monthly reports, preparation of an approval authority matrix, management of the project risk register, etc.

PROJECT TEAM

As Eagle East is classified as a Major Capital Project, the project manager will report to an Eagle Mine LLC Steering Committee (monthly) and an LMC Steering Committee. Personnel working on the project will be recruited or seconded from current operations and work on the project on a full or part time basis. Full time personnel will report to the project superintendent while functionally reporting to operations management.

The decline development will have its own dedicated contractor crews to ensure that daily Eagle production pressures do not interfere with the decline advance. The Eagle East Project will be allocated dedicated resources for engineering, tracking, surveying, and quality control. LOM and annual planning of Eagle and Eagle East activities should be combined, with short term planning managed separately but with good interaction and communication.

The ongoing design optimization will be completed by the dedicated Eagle East Project team with support from specialist consultants for areas such as ventilation, geotechnical, and hydrogeological work. Health and safety, technical support (mechanical and electrical), environmental and permitting, procurement and finance will be provided through the current Eagle Mine structure.

ONGOING DECLINE DEVELOPMENT

Development of the decline to Eagle East will continue utilizing contracts already established.

The Eagle owner's team will be responsible for:

- Completing and issuing decline construction drawings;
- Advance/overbreak tracking;
- Completion of as built drawings/triangulations;
- Tracking of performance metrics such as face utilization or round advance;
- Conducting geological, geotechnical mapping and updating the interpretation;
- Sampling waste rock and TDRSA chemical testing;
- Pull tests and other ground support QA/QC;
- Ventilation surveys and updating of the ventilation model;
- Collection of additional ground water samples for testing;
- Delineation diamond drilling and updating of the Mineral Resource estimate.

In addition, there will be numerous contracts and purchases to be managed along with construction supervision. Support for these functions will be provided through the Eagle Finance and Procurement teams.

ONGOING DESIGN OPTIMIZATION

In parallel with the development and construction activities there should be ongoing design optimization; this will include such items as:

- Stope design optimization;
- Mining method review (the use of drift and fill in narrower areas of high grade mineralization);
- Stope sequence optimization, including numerical stress modelling;
- Definition diamond drilling scheduling;
- Stress measurement at depth;
- Water TDS measurements;
- CRF retarders to allow transportation to Eagle East;
- Salt effect;
- Ventilation model refinements, updates and verification;
- Ongoing Eagle/Eagle East LOM refinements and updates;
- Truck studies, optimization, and purchase schedule.

PROJECT SCHEDULE

A high level project schedule is shown in Figure 16-18. Achieving the planned development advance is key to the success of this project. The critical path is the decline development toward Eagle East and to the lowest mine level, followed by the raises to establish the ventilation network. During the decline development work progress can be maximized through the timely establishment of the ventilation raises and leapfrogging forward of the forced air ducting to provide ventilation to the advancing face.

RPA concurs with the LMC FS comment that the development advance is key to the success. RPA notes that the advance rate exceeds the average advance rate on the initial Eagle decline and RPA is of the opinion that achieving the planned average advance of 150 m/month will require ongoing planning and dedicated effort. This is especially true where resources are shared with the ongoing mine operations.

The existing mining contractor provided a detailed execution plan for the FS which included:

- Manpower allocated to the decline project.
- Equipment and standby equipment (size, type, and number) dedicated to the decline project.

Once underway, the face cycling will be critical and, if necessary, rounds should be shortened to cycle the face in a shift.

RPA recommends close monitoring of the development progress and immediate implementation of changes to address issues which are found to be hindering the advance. RPA does not consider simple monthly progress monitoring to be sufficient and recommends more frequent analysis of the advance.

Delays in the Eagle East development will result in a shorter overlap period with production from both Eagle and Eagle East, increase the annual tonnage required from Eagle East and ultimately extend the mine life with a period of production at the end of the mine life at less than 2,000 tpd. If the planned development rates are not being met, RPA recommends that Eagle reassess the rates and consider alternative mine production schedules.

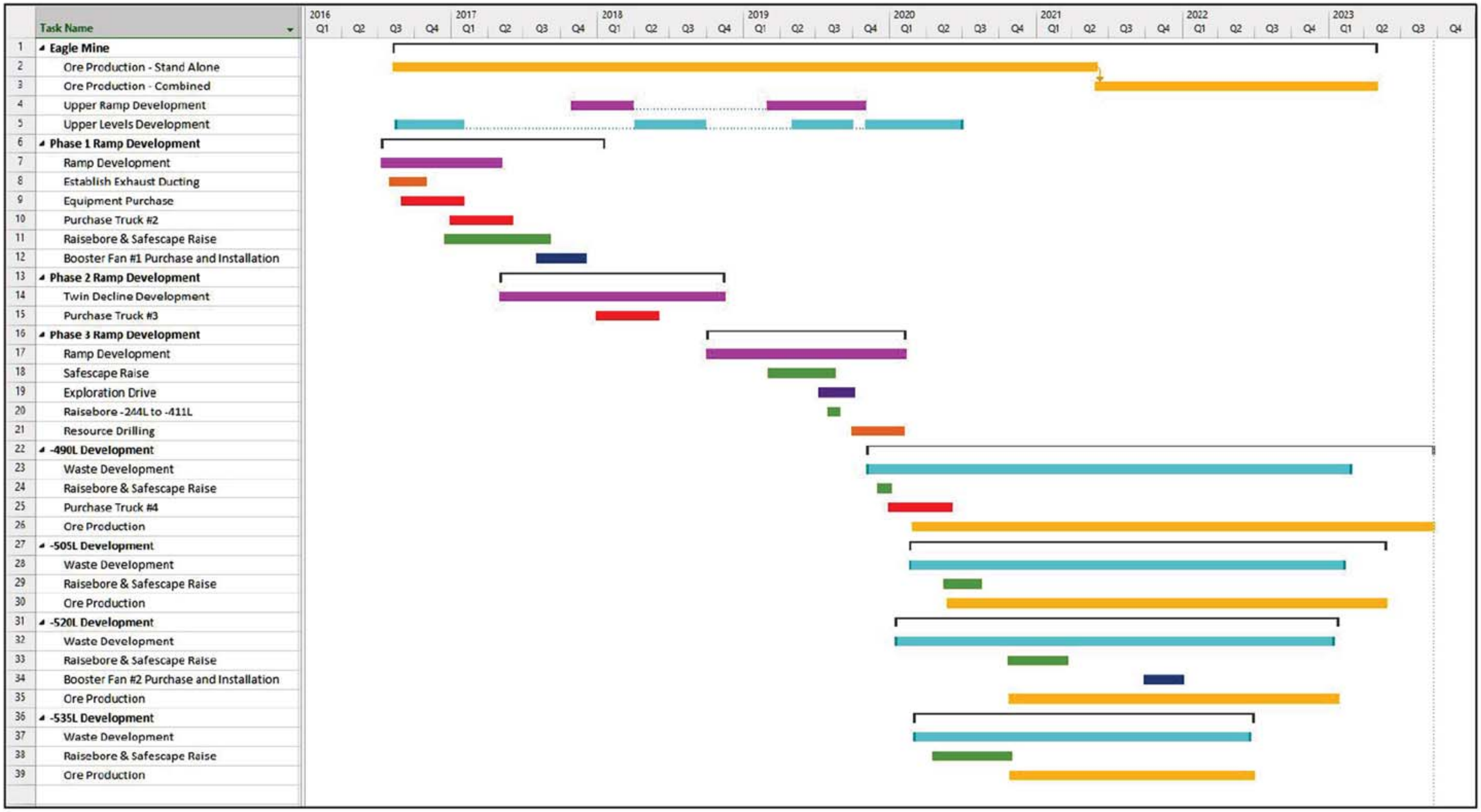


Figure 16-18

Lundin Mining Corporation

Eagle Mine

Marquette County, Michigan, U.S.A.

Project Execution Schedule

April 2017

Source: Lundin Mining Corp., 2016.

RPA

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DEVELOPMENT SCHEDULE

The Eagle Mine is a producing mine with ongoing development to sustain the mine production, while the Eagle East is a new zone which would be accessed from the bottom of the existing Eagle Mine. The development schedule includes the sustaining development required for the Eagle Mine, which continues until the year 2020, and the Eagle East exploration development, which commenced in 2016. Eagle East development includes continuation of the Eagle Mine ramp, access to the existing Eagle ventilation system, and miscellaneous items such as re-mucks, passing bays, electrical sub-station cut-outs, and sumps.

The development of the twin ramp system to access the Eagle East zone will need to be driven effectively with little delay in order to permit the timely development of the Eagle East. The existing mining contractor was awarded the initial work in 2016 after providing a detailed execution plan for the development work. Their proposal provided a schedule of the planned advance as shown in Table 16-12. The Eagle East development commenced in Q3 2016 and there was 613 m of advance to the end of 2016. In November 2016, the blasting system was amended to permit on-shift blasting and a rental jumbo was commissioned in December.

TABLE 16-12 EAGLE EAST CONTRACTOR PLANNED ADVANCE
Eagle Mine

Phase	Critical Path Days	Metres of Advance (m)	Rate of Advance (m/d)
Phase 1	208	1,087	5.23
Phase 2 South Decline	456	2,378	5.22
Phase 2 North Decline	4	2,550	5.19
Phase 3	440	2,210	5.02
Phase 3 Vent Drift	0	340	4.03
Phase 4	121	870	7.19
Total	1,229	9,435	7.68

The maximum development rates used in the schedule are shown in Table 16-13.

The development schedule is shown in Table 16-14. The reader is directed to RPA's comments above under the Project Execution Plan.

TABLE 16-13 MAXIMUM DEVELOPMENT RATES USED TO DETERMINE THE MINE SCHEDULE
Eagle Mine

Horizontal Development Type	Width (m)	Height (m)	Development Rates
Decline	5.5	5.35	150 m/month (single heading) 250 m/month (dual heading)
Level Infrastructure *(Footwall Drives, Crosscuts, Sumps, Mucking Bays, Vent Drives).*	5	5.35	4 m/day
Passing Bays	10	5.5	4 m/day
Vertical Development Type	Diameter (m)		Development Rate
Ventilation Raise	4.5		6.2 m/day
Escape Raise	1.5		4.3 m/day

TABLE 16-14 LOM DEVELOPMENT SCHEDULE
Eagle Mine

		2017	2018	2019	2020	2021	2022	2023	LOM
Eagle Development									
Ramp	m	228	275	157	-	-	-	-	660
Level	m	181	150	131	-	-	-	-	462
Primary Stope Access	m	113	213	244	46	-	-	-	616
Secondary Stope Access	m	193	168	142	115	64	16	-	698
Passing-Bay	m	29	69	-	-	-	-	-	98
Raises	m	27	-	61	-	-	-	-	88
Total Advance	m	771	874	735	161	64	16	-	2,622
Waste Tonnes	kt	54	65	49	11	4	1	-	184
Eagle East Development									
Ramp	m	2,432	2,829	1,681	251	60	-	-	7,253
Level	m	35	43	640	802	382	31	-	1,933
Primary Stope Access	m	-	-	50	675	424	64	-	1,212
Secondary Stope Access	m	-	-	-	22	347	685	129	1,184
Passing-Bay	m	96	96	96	-	-	-	-	288
Raises	m	360	-	483	59	13	-	-	915
Total Advance	m	2,923	2,968	2,950	1,809	1,226	780	129	12,785
Waste Tonnes	kt	224	244	227	144	97	63	10	1,008
Total Mine									
Ramp	m	2,660	3,103	1,839	251	60	-	-	7,912
Level	m	216	193	771	802	382	31	-	2,395
Primary Stope Access	m	113	213	294	721	424	64	-	1,828
Secondary Stope Access	m	193	168	142	138	411	701	129	1,882
Passing-Bay	m	125	165	96	-	-	-	-	386
Raises	m	387	-	543	59	13	-	-	1,003
Total Advance	m	3,694	3,843	3,685	1,970	1,290	796	129	15,407
Waste Tonnes	kt	278	309	276	154	101	64	10	1,192

LIFE OF MINE PLAN

The combined Eagle Life-of-Mine (LOM) plan is based upon the Mineral Reserves in the Eagle Mine plus those in Eagle East. The LOM plan is shown in Table 16-15. The LOM processing plan for the Eagle and Eagle East is shown in Table 16-16. Recoveries stated in Table 16-16 reflect the recovery of metals to concentrates where they are payable.

TABLE 16-15 LOM MINE PRODUCTION SCHEDULE
Eagle Mine

		2017	2018	2019	2020	2021	2022	2023	Total
Total									
Stope	kt	633	649	604	530	554	580	368	3,918
Sill	kt	10	-	-	19	25	13	-	68
Floor	kt	95	90	135	189	159	146	23	837
Total	kt	739	739	739	739	738	739	392	4,823
Nickel	%	3.6	2.4	2.1	2.5	2.9	3.2	3.6	2.8
Copper	%	2.7	2.3	2.0	2.2	2.5	2.8	2.8	2.4
Cobalt	%	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Gold	ppm	0.3	0.3	0.2	0.2	0.3	0.3	0.3	0.3
Platinum	ppm	0.8	0.6	0.4	0.6	0.8	1.0	1.0	0.7
Palladium	ppm	0.5	0.4	0.3	0.4	0.6	0.8	0.8	0.5
MgO	%	6.0	12.0	13.4	12.5	10.5	8.8	8.6	10.4
Eagle									
Stope	kt	633	649	604	469	322	111	81	2,868
Sill	kt	10	-	-	-	-	-	-	10
Floor	kt	95	90	135	58	6	17	-	400
Total	kt	739	739	739	527	328	128	81	3,279
Nickel	%	3.6	2.4	2.1	1.9	2.2	1.8	2.2	2.5
Copper	%	2.7	2.3	2.0	1.8	1.7	1.9	1.6	2.2
Cobalt	%	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1
Gold	ppm	0.3	0.3	0.2	0.2	0.1	0.2	0.1	0.2
Platinum	ppm	0.8	0.6	0.4	0.3	0.2	0.3	0.2	0.5
Palladium	ppm	0.5	0.4	0.3	0.2	0.2	0.2	0.1	0.3
MgO	%	6.0	12.0	13.4	15.1	15.1	16.1	16.2	12.0
Eagle East									
Stope	kt	-	-	-	61	232	469	288	1,050
Sill	kt	-	-	-	19	25	13	-	58
Floor	kt	-	-	-	132	153	128	23	436
Total	kt	-	-	-	212	411	610	311	1,544

		2017	2018	2019	2020	2021	2022	2023	Total
Nickel	%	-	-	-	4.0	3.5	3.5	4.0	3.7
Copper	%	-	-	-	3.2	3.1	2.9	3.1	3.1
Cobalt	%	-	-	-	0.1	0.1	0.1	0.1	0.1
Gold	ppm	-	-	-	0.3	0.4	0.3	0.4	0.3
Platinum	ppm	-	-	-	1.2	1.3	1.2	1.2	1.2
Palladium	ppm	-	-	-	0.9	1.0	0.9	1.0	0.9
MgO	%	-	-	-	6.0	6.8	7.3	6.7	6.9

TABLE 16-16 LOM PROCESSING PLAN
Eagle Mine

		2017	2018	2019	2020	2021	2022	2023	Total
Feed	t 000	739	739	739	739	738	739	392	4,823
Ni	%	3.6%	2.4%	2.1%	2.5%	2.9%	3.2%	3.6%	2.8%
Cu	%	2.7%	2.3%	2.0%	2.2%	2.5%	2.8%	2.8%	2.4%
Co	%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
Au	ppm	0.3	0.3	0.2	0.2	0.3	0.3	0.3	0.3
Pt	ppm	0.8	0.6	0.4	0.6	0.8	1.0	1.0	0.7
Pd	ppm	0.5	0.4	0.3	0.4	0.6	0.8	0.8	0.5
MgO	%	6.0%	12.0%	13.4%	12.5%	10.5%	8.8%	8.6%	10.4%
Contained Metal									
Ni	t	26,221	17,531	15,611	18,567	21,517	23,547	14,264	137,258
Cu	t	19,808	16,775	14,941	16,429	18,597	20,417	11,012	117,979
Co	t	718.324	462.334	421.504	467.109	503.692	531.757	320.008	3,425
Au	oz	6,281	6,252	5,419	5,568	6,566	7,365	3,830	41,281
Pt	oz	18,223	13,122	10,345	13,832	19,699	23,962	12,957	112,142
Pd	oz	12,244	8,319	6,574	9,900	14,634	18,271	9,923	79,866
Recovery									
Ni	%	84.0%	80.7%	80.1%	81.1%	81.9%	82.3%	83.1%	82.1%
Cu	%	97.3%	96.9%	96.7%	96.9%	97.1%	97.3%	97.4%	97.1%
Co	%	85.2%	81.9%	81.3%	82.3%	83.1%	83.5%	84.3%	83.2%
Au	%	59.8%	62.7%	62.6%	61.8%	61.7%	61.8%	60.3%	61.6%
Pt	%	57.2%	54.4%	53.9%	54.7%	55.4%	55.8%	56.4%	55.5%
Pd	%	55.8%	52.7%	52.1%	53.0%	53.8%	54.2%	54.9%	54.0%
Metal Recovered to Nickel Concentrate									
Ni	t	22,036	14,150	12,511	15,063	17,620	19,385	11,858	112,622
Cu	t	3,463	2,223	1,966	2,367	2,769	3,046	1,863	17,698
Co	t	612	379	343	385	419	444	270	2,851
Pt	oz	10,426	7,139	5,572	7,564	10,909	13,372	7,312	62,293
Pd	oz	6,831	4,382	3,423	5,245	7,866	9,908	5,450	43,105

		2017	2018	2019	2020	2021	2022	2023	Total
Metal Recovered to Copper Concentrate									
Cu	t	15,802	14,034	12,478	13,548	15,294	16,823	8,857	96,836
Au	oz	3,758	3,923	3,394	3,444	4,050	4,551	2,310	25,430
Nickel Concentrate Grade									
Ni		14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%
Copper Concentrate Grade									
Cu		29.6%	28.4%	27.9%	28.5%	29.1%	29.5%	29.8%	29.0%

17 RECOVERY METHODS

The description of the processing plant is largely taken from information presented in the Eagle East FS (LMC, 2017a).

PROCESSING

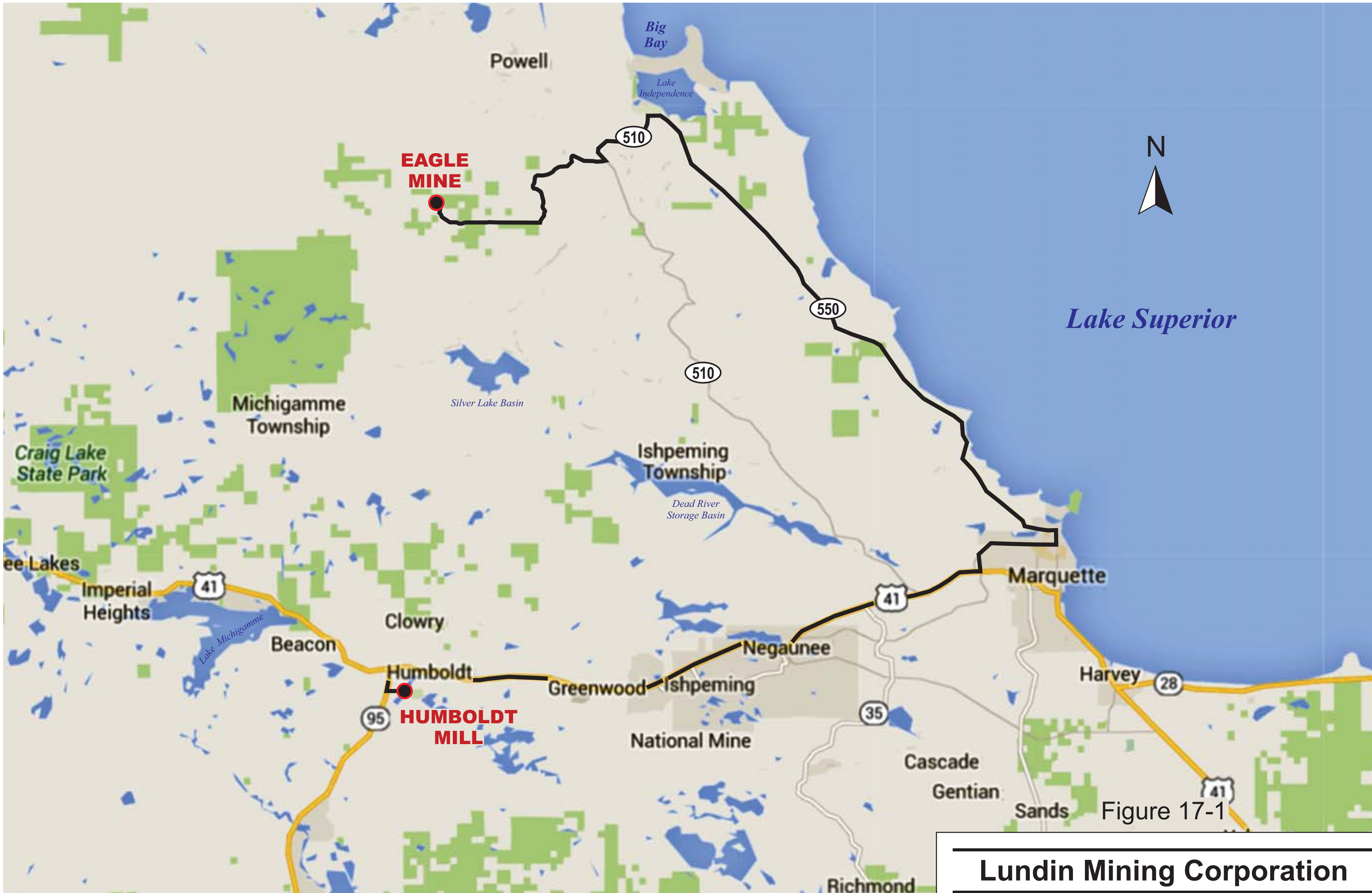
The Humboldt Mill is a former iron ore processing plant that was converted for processing Eagle ore. The ore is transferred from a covered coarse ore storage facility, processed using a conventional three-stage crushing and single-stage ball milling process, and processed through bulk flotation with subsequent separation flotation to produce separate nickel and copper concentrates. Metallurgical recoveries of nickel and copper average 84% and 97% respectively for Eagle Mine ore. Tailings from the plant are deposited sub-aqueously in the adjacent former Humboldt iron ore mine open pit, now known as the Humboldt Tailings Disposal Facility (HTDF).

Nickel and copper concentrates are stored in a covered concentrate building on site prior to being transported via rail car direct to smelter facilities within North America or to ports for shipment overseas.

PLANT AND PROCESS DESCRIPTION

The processing plant at the Humboldt Mill site, located approximately 52 km to the south (approximately 105 km by road) of the Eagle Mine and 40 km west of Marquette (Figure 17-1), employs conventional crushing and grinding followed by flotation.

The mill was designed for a throughput of 2,000 tpd and has been shown to be capable of processing up to 2,500 tpd. The Humboldt Mill produces separate nickel and copper concentrates which are transported from the site via rail. The mill tailings are deposited sub-aqueously in the HTDF.



0 2.5 5 10 Miles
0 2.5 5 10 Kilometres

Figure 17-1

Lundin Mining Corporation

Eagle Mine

Marquette County, Michigan, U.S.A.

Location of Humboldt Mill in Relation to Eagle Mine

April 2017

Source: Map data © Google, 2016.

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The Eagle process flowsheet uses conventional technologies to produce separate copper and nickel concentrate with a throughput of 2,000 tpd (730,000 tpa). A simplified process flowsheet is shown in Figure 17-2. Key elements of the process flowsheet are summarized below:

- Run of mine (ROM) ore in the mine COSA is loaded by front end loader into the road haul trucks to transport ore to the milling facility. There is 10,000 tonnes of storage capacity in the coarse ore storage facility at the mill.

- Initial size reduction of the ore is carried out by a primary jaw crusher to reduce the ore size from nominal minus 450 mm ROM to minus 100 mm.

- Further size reduction of primary crushed ore is carried out in a secondary and tertiary crushing circuit to reduce the ore size from minus 100 mm to nominal minus 10 mm.

- Minus 10 mm tertiary crushed ore is stored in bins and then reclaimed by feeders to feed the grinding circuit.

- Tertiary crushed ore is ground in two, single stage ball mill grinding circuits working in parallel. The ball mills operate in closed circuit with hydrocyclones, targeting a p80 of 100 microns. Sodium carbonate is added to the mills for pH and water chemistry control.

- A bulk copper-nickel concentrate is produced by separating the copper and nickel minerals from gangue material by flotation. The copper-nickel bulk concentrate is reground, followed by one or two stages of cleaning to reject further gangue minerals. The bulk cleaner concentrate is then subjected to a final flotation stage where the copper and nickel minerals are separated from one another through the addition of lime. Final concentrate grades are 14% Ni and 3% Cu in the nickel concentrate and 31% Cu and 0.8% Ni in copper concentrate.

- An on-stream analyzer provides real time analysis from 11 streams in the mill and collects a 12 hour shift composite sample for analysis at the onsite analytical laboratory.

- Copper and nickel concentrates are dewatered to 8% to 10% moisture content by independent thickeners and filter press circuits, then loaded into rail cars for shipment. Concentrates are transported by rail to a port or directly to smelter facilities.

- Flotation tailings are thickened and the slurry is pumped to the existing HTDF for subaqueous deposition.

- Facilities are also present for storing, preparing, and distributing reagents used in the process. Reagents include: sodium isopropyl xanthate (SIPX), methyl isobutyl carbinol (MIBC), sodium carbonate, lime, flocculant, and carboxymethylcellulose (CMC).

- Water from the concentrate dewatering operations, tailings dewatering and the HTDF are recycled for reuse in the process. Plant water stream types include: process water, fresh water, reclaim water, and potable water.

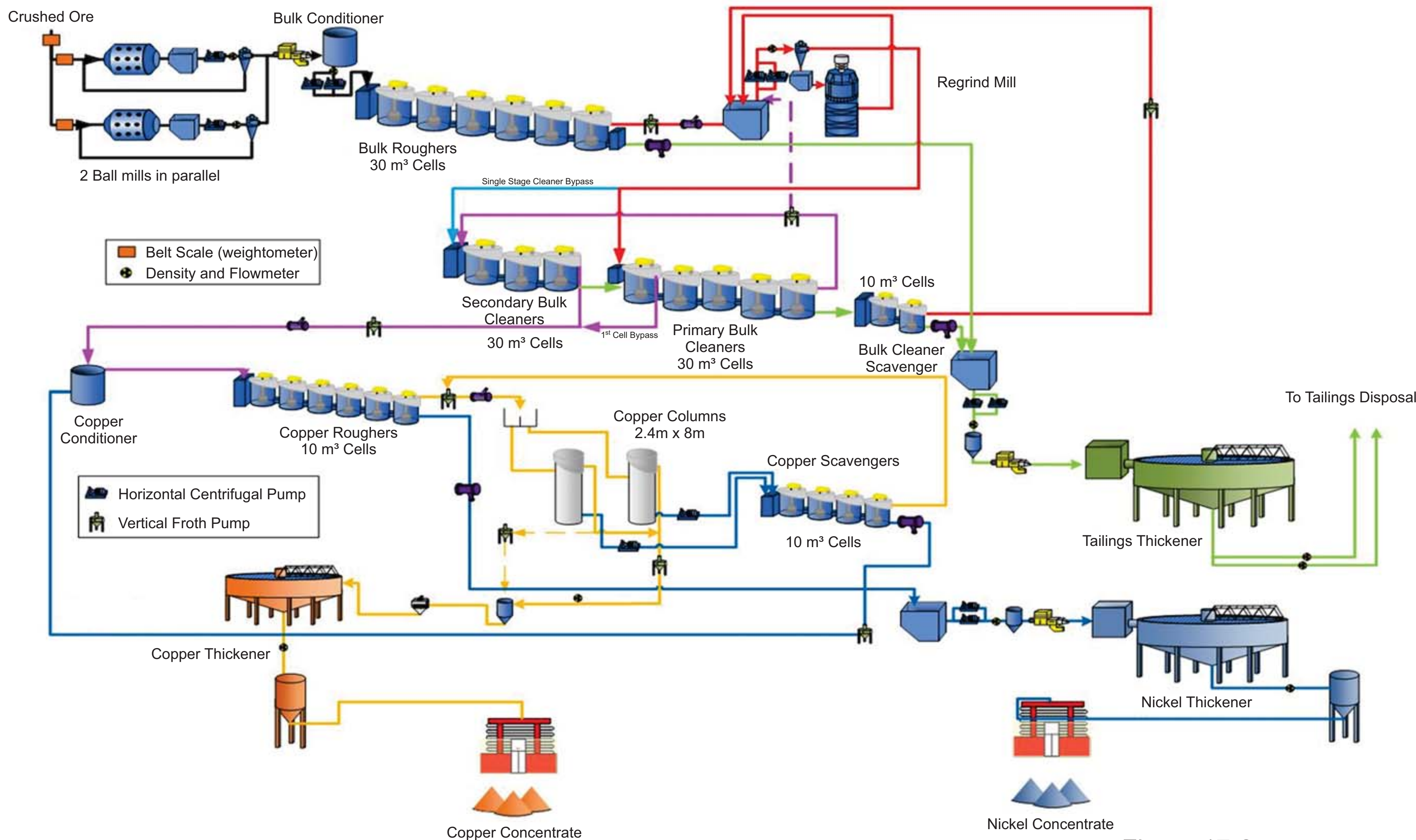


Figure 17-2

Lundin Mining Corporation

Eagle Mine

Marquette County, Michigan, U.S.A.

Simplified Process Flow Sheet

April 2017

Source: Eagle Mine, 2016.

18 PROJECT INFRASTRUCTURE

The main Eagle Mine site infrastructure plan is shown in Figure 18-1. The key Eagle Mine facilities include:

- Treated Water Infiltration System (TWIS) – infiltration system that slowly releases treated water back into the environment through a series of insulated, perforated pipes lying on the ground surface.

- Power House – industrial facility for the distribution of power and backup generation of electrical energy.

- Storage Facility – storage for supplies used in the mining operation.

- Water Treatment Plant (WTP) – a reverse osmosis water treatment plant to purify water from the operations.

- Truck Wash – all vehicles leaving the main operations area contact are cleaned before leaving the area.

- Mine Services Building – buildings and structures used for supporting the Eagle Mine.

- Mine Dry Facilities.

- Workshop.

- Contact Water Basins (CWB) – all water than comes into contact with mining activities will be stored in two basins and pumped into the WTP for purification. The basins are designed to hold water in excess of a 100 year rain event.

- Non-Contact Water Infiltration Basins (NCWIB) – storm water that does not come into contact with mining activities will be collected in these basins. Water will flow to these basins and will be naturally re-absorbed into the ground.

- Coarse Ore Storage Area (COSA) – temporary storage facility for coarse, uncrushed ore that is brought to the surface. Underground mine trucks will off load the ore which will then be loaded onto highway trucks and taken to the Humboldt Mill.

- Temporary Development Rock Storage Area (TDRSA) – this storage facility for development rock features a multi-layered liner, a leak detection system, and sump pump to collect water which is treated by the WTP. All development rock will be returned underground as fill.

- Crushed Aggregate Storage.

- Concrete Backfill Batch Plant – the CRF plant has a capacity of producing 2,000 tpd of CRF that is backhauled by the underground haul trucks and dumped into the open stopes.

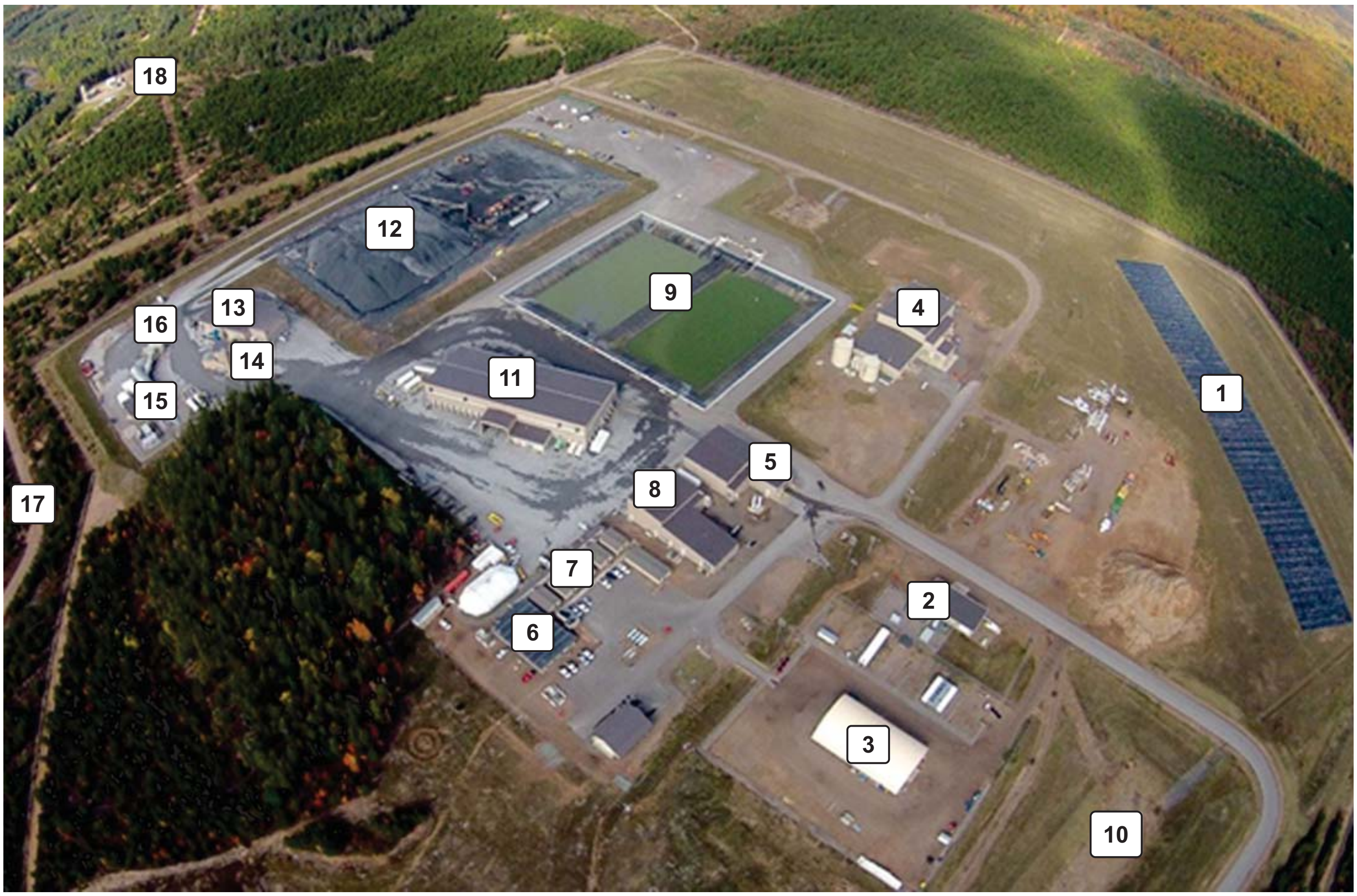
- Portal – entrance to decline leading to the underground development and orebody.
- Mine Air Heater.
- Surface Raise Site (fans, heater, electrical sub-station).
- Mine Security Gatehouse.

Figure 18-2 shows the Surface Raise Site and the key elements.

Figure 18-3 presents an aerial view of the Humboldt Mill site. A general arrangement of the mill area site plan is also illustrated in Figure 18-4.

At the time of RPA's site visit, the infrastructure at the Humboldt Mill included the following:

- A 2,000 tpd grinding and flotation mill.
- Primary, secondary, and tertiary crushing circuit.
- Concentrate storage building.
- Rail yard for rail car storage.
- Rail siding.
- Reclaim water system from tailings area.
- Tailings disposal to the HTDF.
- Mill administration building.
- Mill services building.
- Electrical power supply and distribution.
- SGS sample preparation and analytical laboratory for mill and underground sample analyses.
- Mill Security Gatehouse.



Site Plan Legend:

1. *Treated Water Infiltration System (TWIS)*
2. *Power House*
3. *Storage Facility*
4. *Water Treatment Plant*
5. *Truck Wash*
6. *Mine Services Building*
7. *Mine Dries*
8. *Workshop*
9. *Contact Water Basins*
10. *Non-Contact Water Basins*
11. *Coarse Ore Storage*
12. *Temporary Development Rock Storage Area (TDRSA)*
13. *Crushed Aggregate Storage*
14. *Concrete Backfill Batch Plant*
15. *Portal*
16. *Portal Heater*
17. *County AAA Road*
18. *Surface Raise Site*

Figure 18-1

Lundin Mining Corporation

Eagle Mine
Marquette County, Michigan, U.S.A.
Mine Site Infrastructure

April 2017

Source: Lundin Mining Corp., 2016.

Legend:

1. *Exhaust Raise*
2. *Exhaust Fans*
3. *Exhaust Stack*
4. *Intake Heaters*
5. *Intake Raise with Alimak Lift*
6. *Substation*

Figure 18-2

Lundin Mining Corporation

Eagle Mine
Marquette County, Michigan, U.S.A.
Surface Raise Site

April 2017

Source: Lundin Mining Corp., 2016.

Figure 18-3

Lundin Mining Corporation

Eagle Mine

Marquette County, Michigan, U.S.A.

Aerial View of
Humboldt Mill Site

Legend:

1. *Coarse Ore Storage Building*
2. *Secondary Crushing Building*
3. *Cold Storage Building*
4. *Mill Services Building*
5. *Concentrator Building*
6. *Concentrate Load-Out Building*
7. *Office Building*

Source: Eagle Mine, 2016.

April 2017

RPA

www.rpacan.com

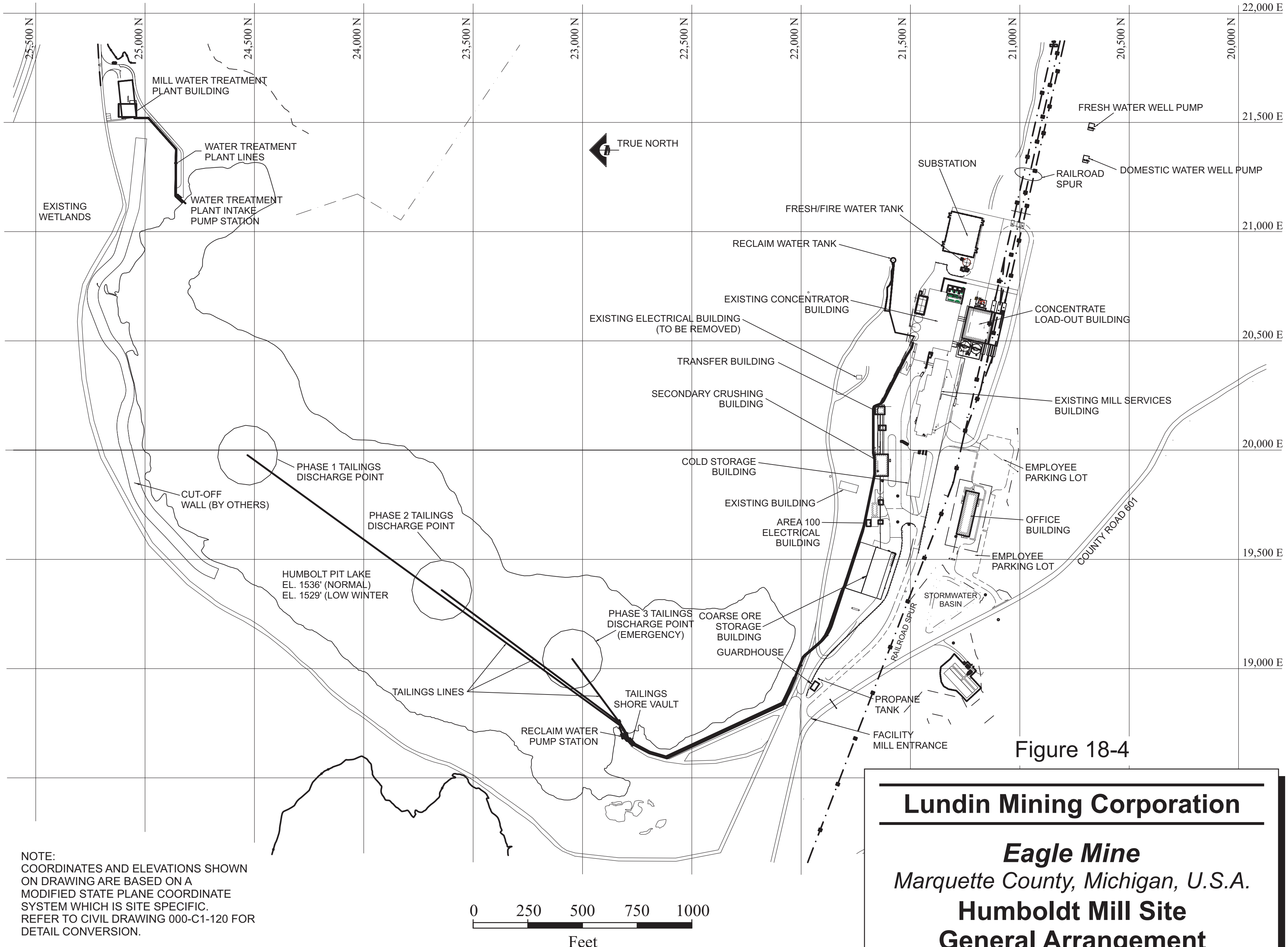


Figure 18-4

NOTE:
COORDINATES AND ELEVATIONS SHOWN ON DRAWING ARE BASED ON A MODIFIED STATE PLANE COORDINATE SYSTEM WHICH IS SITE SPECIFIC. REFER TO CIVIL DRAWING 000-C1-120 FOR DETAIL CONVERSION.

Lundin Mining Corporation

Eagle Mine

Marquette County, Michigan, U.S.A.

Humboldt Mill Site
General Arrangement

April 2017

Source: Eagle Mine, 2016.

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POWER

The mine site has an incoming supply of 6.0 MW from Alger Delta Electric Cooperative (ADEC) of which Eagle has been typically drawing approximately 2.5 MW. The Eagle East Project is expected to increase total power usage at the site by 3.2 MW due to additional ventilation and dewatering demands). The total power consumption will be near the 6.0 MW limit. Further investigation of power consumption with the power company is recommended.

The Humboldt Mill site is currently serviced by the Upper Peninsula Power Company and We Energies. A New 7.5 MVA transformer allowed an increase in distribution voltage from 2.4 kV to 4.16 kV.

Standby power generation at the mine site is with a 2.0 MW diesel generator located in the power house. The diesel generator is designed to operate critical mine support systems to ensure safety and environmental protection. The mill has a 1.0 MW diesel generator.

WATER

There are three water supply sources for the mine site:

- Potable Well.
- Mine Services Well.
- Treated utility water from the WTP.

The domestic well is used to supply potable water to the surface facilities, truck wash, and fire water tank if necessary. The potable well is routinely monitored and samples analyzed, as required by the Safe Drinking Water Act and Marquette County Health Department (MCHD). During 2016, approximate water use was 24,309 m^3.

The mine services well is primarily used to supply water for exploration drilling, underground operations, dust suppression, and the fire water tank that supplies water to the network of fire hydrants onsite. Approximately 88,041 m^3 of water was used in 2016.

The third source of water on the mine site is the treated utility water which is supplied by the WTP. This is water that is collected in the CWBs, treated through the first half of the treatment process, and subsequently recycled within the WTP, or used underground, rather than being discharged to the TWIS. The utility water is required in various stages of the water treatment process, including cooling, dilution, backwash, and in various cleaning processes. In 2016, the total volume of utility water treated and recycled in the water treatment process was approximately 466,031 m^3.

There are four sources of water at the mill site:

- Potable well water.
- Untreated reclaim water from the HTDF.
- Industrial well water for fire and gland seal water.
- Process water recycled from the concentrate thickeners.

The potable water system has a capacity of approximately 325 m^3/day. Process water is supplemented by fresh water from the fresh water distribution system. Reclaimed water is pumped from the HTDF to the reclaim water tank.

Water in the HTDF is treated through a WTP and discharged to adjacent wetlands in accordance with environmental approvals and discharge water quality is monitored carefully. The volume of water that is treated annually is approximately 1,200,000 m^3.

TAILINGS STORAGE

Flotation tailings are collected and pumped to the tailings thickener. The tailings thickener overflow is pumped to a process water tank. The tailings thickener underflow slurry is pumped to the HTDF for sub-aqueous deposition.

There are two, independent tailings lines from the plant to the HTDF. Water is reclaimed from the HTDF by a vertical turbine reclaim water pump that pumps reclaim water to the reclaim water tank.

The HTDF is an iron-mine pit lake which was used for the disposal of gold ore tailings from 1985 to 1989. Since August 2014, the Eagle Mine has placed pyrrhotite-rich, Ni-Cu-ore tailings onto the floor of the HTDF. By the end of mine life, approximately five million tonnes of tailings, equivalent to 3.1 million m^3 will need to be held in the HTDF. The current deposition process has created tailings cones that rise above the floor of the HTDF to a maximum, permitted height of 434 MASL. These cones have an average slope of 15% and an initial settled density of approximately 1.6 t/m^3.

In June 2016, Eagle contracted Hatch Ltd. (Hatch) to develop a new tailings deposition plan to maximize the storage capacity of the HTDF. The Hatch plan ultimately involves the construction of two tailings distribution pipes above the water surface which will extend north along the west and east shorelines of the HTDF, originating from the tailings pump house at the south end of the lake. Each distribution pipe will have small spigot lines spaced at 30 m (100 ft) intervals that run perpendicular to the pit slope from 457 MASL (the surface) to 434 MASL (initial) and 450 MASL (after new permit). This side-wall tailings placement system will operate for seven months each year, between May and November, when the lake is ice free, and will result in the growth of deposition cones which grow from the pit walls towards the lake interior. During the five months between December and April, when the lake is ice covered, the old deposition plan will be utilized to create cones in the interior of the lake.

Side wall placement began in October 2016, following a one-month construction period. Eagle will need to obtain a permit to discharge tailings up to a depth of 452 MASL before July 2017. This new permit will provide a three metre buffer between planned and permitted tailings deposition.

Based on the current projected tailings production schedule and a conservative, initial, settled, density of 1.6 t/m^3, the deposition plan will store all tailings produced from Eagle and East Eagle below 450 MASL with a storage efficiency of 74%. There will be additional storage capacity remaining in the interior of the lake in 2024.

Hatch recommends regularly updating this model as new bathymetric data become available. Consolidation of tailings at the bottom of each cone over time will lead to a higher settled density of 2.3 t/m^3 which will gradually occur within the first 50 years of closure. Future bathymetric observations will lead to an understanding of the rate at which consolidation occurs which will allow for a more accurate, less conservative prediction of tailings deposition.

Annual or biannual bathymetric surveys are recommended to update the deposition model based on the actual deposition rates and locations, updated bathymetry, and experience gained by Eagle. The HTDF Operation Manual should be updated, and the Operations team familiarized with the new procedures.

CONCENTRATE STORAGE AND TRANSPORTATION

The nickel and copper concentrates are stored in a concentrate storage/loadout building immediately adjacent to the mill. The storage capacity of the building is approximately 3,000 wmt for nickel concentrates and 1,000 wmt for copper concentrates.

A rail spur connecting the mill site to the CN railway network runs through the concentrate storage/loadout building. Railcars are loaded by front-end loaders inside the loadout building and the railcars are covered by a fiberglass lid. There are additional rail tracks used to store empty and loaded railcars.

An independent contractor is the rail service provider, managing the rail spur and railing the concentrates to the east side of the city of Ishpeming where they are transferred to the CN rail network for onward railing to either Canadian non-ferrous smelters or to the port of Trois Rivières for overseas shipping.

The port installations at Trois Rivières are owned by Somavrac Inc. (Somavrac). Somavrac provides warehousing at their Shed 25 (capacity 36,000 wmt for two products or 42,000 wmt for one product), stevedoring, and unloading of railcars.

19 MARKET STUDIES AND CONTRACTS

The principal commodities at Eagle are nickel, copper, cobalt, and precious metals contained in nickel and copper concentrates. These products are freely traded at prices that are widely known.

For the economic analysis RPA used metal prices of:

- $7.50/lb nickel in 2020 and $8.00/lb nickel thereafter
- $3.00/lb copper
- $12.00/lb cobalt
- $1,200/oz platinum
- $725/oz palladium in 2020, $800/oz in 2021 and $700/oz thereafter
- $1,200/oz gold
- $18.00/oz silver

The Eagle nickel and copper concentrates are sold under long term contracts directly to smelters or to traders in North America, Europe, and Asia. Both the nickel and the copper concentrates are of clean quality with low levels of impurities and good by-product credits. Eagle has been selling its concentrates since the start of production. RPA has reviewed the smelter contracts, the terms for the payment of metal, and the deductions for treatment and refining. RPA is of the opinion that the smelter contract terms are typical of the industry.

There are four nickel concentrate sales contracts that have various expiration dates between 2017 and 2021. All the copper concentrate is currently sold to a single smelter in Canada. Management are of the opinion that the Eagle concentrate quality makes the concentrate saleable if current contracts were not extended.

Eagle East concentrates will be generated from the comingling of the Eagle and Eagle East feed and would be handled and sold in a continuation of the current operation.

CONTRACTS

Eagle has a number of contracts for services. Mine operations have been carried out by Cementation USA Inc. (Cementation) since December 2013. As of August 1, 2016, Cementation was awarded a new contract for the LOM for the Eagle orebody. Cementation provides manpower and supervision for the development, mining, and backfill operations in the mine. The mining equipment is owned by Eagle but operated by the contractor. Cementation was awarded the initial Eagle East ramp development contract in 2016.

Ore haulage from the mine to the mill is done under contract with MJ Van Damme. The contractor is responsible for loading ore at the coarse ore storage area, hauling the ore via public roads to the mill and dumping in the designated area. The contract was executed in August 2014 and is valid for five years from the start of ore haulage.

An independent contractor, Mineral Range, is the service provider managing the rail spur and railing the concentrates from the mill site to the east side of the city of Ishpeming where they are transferred to the CN rail network. The Mineral Ridge contract is dated October 2011 and valid for 120 months.

The current railcars and lids are under leasing contracts which will need to be reviewed based on the new LOM plan.

Eagle has a contract with Somavrac, the owner of port installations at Trois Rivières, Quebec. The contract for concentrate storage and loading of vessels is dated October 2014 and is valid for three years, from which date it turns into an automatically renewable contract with a notice period of 12 calendar months.

RPA considers the contracts to be within industry norms.

20 ENVIRONMENTAL STUDIES, PERMITTING, AND SOCIAL OR COMMUNITY IMPACT

ENVIRONMENTAL STUDIES

Environmental studies are ongoing and conducted as required to support the operation and any projects and are in accordance with relevant regulatory requirements. Building on baseline studies, LMC continues to conduct permit-required environmental monitoring including water quality and ecological monitoring at both the mine and mill sites. Geochemical sampling and modelling has been ongoing at the HTDF since the start of tailings disposal.

RPA is not aware of any environmental issues that could materially impact Eagle's ability to operate.

PROJECT PERMITTING

Eagle's sites operate under a number of local, state, and federal permits. All permits are in place for the operation and Eagle has maintained full compliance with the corresponding requirements. Information on environmental permits is current as of August 1, 2016.

Table 20-1 lists the principal permits and licences required by local legislation for the operation of the Eagle Mine site.

TABLE 20-1 LIST OF PERMITS AND LICENCES – EAGLE MINE
Eagle Mine

Item	Permit	Permit Type	Issue date	Expiration	Comments
Primary Permits					
1	Part 632 Mining Permit MP 01 2007	Operations	12-14-2007	n/a	
2	Air Quality Permit to Install 50-06B	Operations	6-28-2013	n/a	
3	Part 22 Groundwater Discharge Permit GW1810162	Operations	4-1-2015	4-1-2018	
4	Surface Use Lease No. L-9742	Operations	7-8-2008	7-7-2022	Primary term expiration is 7-7-2022, but Lease continues until reclamation and closure monitoring ceases
Secondary Permits					
5	Potable Septic Permit 20080029	Construction	3-5-2008	n/a	Construction complete
6	Potable Well Permit 20080031	Construction	3-5-2008	n/a	Construction complete
7	Chlorine Treatment (Potable)	Construction	1-23-2013	1-23-2015	Complete
8	Arsenic Treatment (Potable) WL-2013185	Construction	7-12-2013	n/a	
9	EPA Class V UIC Permit by Rule – Well/Septic	Construction	4-16-2007	n/a	
10	Michigamme Township Zoning Permit	Construction	4-26-2010	n/a	Mining Buildings
11	Michigamme Township Zoning Permit	Construction	10-08-2008	n/a	Cold Storage
12	Michigamme Township Mineral Extraction Permit #0106	Construction	6-23-2006	n/a	

Note: Industrial well permit not needed because it was an existing exploration well that was converted to an industrial supply well. Approved by Marquette County Health Department on April 29, 2010.

Table 20-2 lists the principal permits and licences required for operation of the Humboldt Mill.

TABLE 20-2 LIST OF PERMITS AND LICENCES – HUMBOLDT MILL
Eagle Mine

Item	Permit	Permit Type	Issue date	Expiration	Comments
Primary Permits					
1	Part 632 Mining Permit MP 01 2010	Operations	2-9-2010	n/a	
2	Air Quality Permit to Install 405-08A	Operations	1-27-2014	n/a	
3	Part 31 NPDES Surface Water Discharge Permit MI0058649	Operations	4-7-2015	10-01-2019	5-year cycle Minor modification name change Eagle Mine LLC
4	Part 301 Inland Lakes & Streams Permit – Tailings Deposition 14-52-0032-P	Operations	9-29-2014	9-29-2019	Previous 08-52-0104-P 2-9-2010 – 2-9-2015
Active Permits					
5	Part 31 NPDES Industrial Storm Water Permit – HTDF MIS210034	Operations	8-15-2013	4-1-2017	Minor modification name change Eagle Mine
6	Part 31 NPDES Construction Storm Water Permit MIR111712	Construction	11-6-2013	12-31-2015	Terminated – follows Permit MI0058649
7	Soil Erosion Sediment Control #092-09	Construction	Amended 10-29-2013	12-31-2015	Complete – included with Part 632
8	Soil Erosion Sediment Control #012-13	Construction	5-6-2013	12-31-2015	Complete – included with Part 632
9	Wetland – Bentonite Removal 12-52-0088-P	Construction	3-26-2013	3-26-2018	Complete 8-7-2014
10	Wetland Permit – Data Loggers 13-52-0115-P	Construction	2-11-2014	2-11-2019	Most likely not to complete
Secondary Permits					
11	Septic Permit SPT-201210593	Construction	6-25-2012	n/a	
12	Potable Water Supply WL-201210543	Construction	6-25-2012	n/a	
13	Industrial Well Permit WL-20121090	Construction	7-7-2012	7-17-2014	Complete
14	Potable Water Well (WTP Location)	Construction	12-9-2013	n/a	
15	Chlorine Treatment (Potable) WL-20121113	Construction	8-21-2012	8-21-2014	Complete

TABLE 20-2 LIST OF PERMITS AND LICENCES – HUMBOLDT MILL
Eagle Mine

Item	Permit	Permit Type	Issue date	Expiration	Comments
16	Arsenic Treatment (Potable) WL-20130079	Construction	7-16-2013	n/a	
17	WTP Septic System SPT-20130084	Construction	7-30-2013	n/a	Verification constructed to permit 12-10-2013
18	EPA Class V UIC Permit by Rule (Septic)	Construction	10-3-2012	n/a	
19	Humboldt Twp. Zoning Permit File #ZA-08-12	Construction	12-23-2008	n/a	Redevelop existing Mill
20	Humboldt Twp. Zoning Permit ZA-2012-3	Construction	6-29-2012	n/a	Office administration building
21	Install Steel Beam (Wetlands) 14-52-0019-P	Permit to Install	5-23-2014	5-23-2019	Construction not pursued
22	Install Chain Link Fence (wetlands) 14-52-0058-P	Permit to Install	10-13-2014	10-13-2019	Construction completed
23	Permit obsolete/removed from list.				
24	Install Pipeline WTP (wetlands) 14-52-0069-P	Permit to Install	9-22-2014	9-22-2019	Construction completed
25	Wetland-Seismic Survey 14-52-0048-P	Survey Activities	8-21-2014	8-21-2019	Project completed
26	ILSA-Stilling Well 15-52-0013-P	Install water levelling device and Stilling Well	4-24-2015	4-24-2020	Construction completed
27	Wetlands-Drainage Ditch 15-52-0036-P	Excavate area of scrub-shrub to correct SW flow	9-3-2015	9-3-2020	Construction completed

Note: Dewatering (12-4-2013) and dam (12-9-2013) permits not needed.

PERMIT REQUIREMENTS

MINE SITE PERMITTING

Eagle will require an update to the Environmental Impact Analysis (EIA) to accompany a Part 632 mining permit amendment for the mine site with the introduction of Eagle East. A gap analysis was conducted on the existing EIA to determine the revisions that would be needed to support mining of Eagle East. The results of the gap analysis are presented in detail in the Eagle East FS and are summarized in Table 20-3.

TABLE 20-3 ENVIRONMENTAL IMPACT GAP ANALYSIS
Eagle Mine

EIA Aspect	Detail	Status
Bedrock Geology/Hydrogeology		
Bedrock Hydrogeology Model	Update dynamic conceptual bedrock flow model; confirm bedrock hydraulic conductivities along the decline, ramps, and ore body. Determine water infiltration rates and quality to confirm water handling and treatment facilities are sized appropriately.	Completed
Report of Bedrock Geology	Describe bedrock geology in the proposed mine expansion.	Completed
Report of Quaternary Geology	Confirm the hydraulic characteristics of the quaternary deposits. Test to assure there is no hydraulic connection between the quaternary deposits and the bedrock/mine workings.	Completed
Surficial Geology and Terrain Analysis	Document geotechnical properties of materials underlying facilities, site materials of value for construction and identify unsuitable substrates.	Not applicable because there is no planned surface development
Numerical Groundwater model – regional	Confirm groundwater flow direction, understand potential changes to water budgets of rivers and wetlands in the new project area.	Not applicable because there is no planned surface development and there is no influence on shallow groundwater flow by the proposed project.
Water Balance/Water Use	Update the site wide water balance for the mine site and address groundwater resource usage.	Water balance will be updated to reflect the bedrock model and freshwater resource usage.
Evaluate Potential Groundwater Impacts	Assess potential groundwater quality impacts during operations due to failure of liner systems, failure of the water treatment plant, and due to the reclaimed mine.	Commentary in the FS.
Groundwater, surface water, and water level monitoring program updates	Determine locations for additional groundwater monitoring, assess expansion of the surface water monitoring program	Two new well clusters were installed and groundwater level monitoring will be required. Eagle will collect background water quality readings, although this is not required. The surface water program will not be expanded due to no surface expansion of mine footprint.

TABLE 20-3 ENVIRONMENTAL IMPACT GAP ANALYSIS
Eagle Mine

EIA Aspect	Detail	Status
Air Quality/Climatology		
Emissions Inventory/Air Impact/Depositional Analysis	A complete re-analysis of the proposed underground mine activities is needed to determine if a new air quality permit is required	A study was completed.
Threatened & Endangered Species, Aquatic Resources & Wildlife		
Field Monitoring Program	Assess whether aquatic resources, aquatic and terrestrial habitat, and wildlife will be impacted by the proposed expansion.	No additional monitoring, beyond current monitoring programs is required because there is no planned surface development.
Vegetation & Wetland Delineation		
Wetland Delineation	Determine size and location of wetlands in the project area.	No change required because there is no planned surface development.
Cultural Resources		
Archaeological Studies	Complete archaeological studies on parcels that will have a new surface development.	No additional studies are needed because there are no planned impacts to the surface during development or operation.
Site Facilities		
Evaluate facilities with limited mine life design or environmental protection requirements	Determine if environmentally protective facilities will require upgrades to support an extended mine life or more corrosive water quality	A study was completed.
Geochemistry Review	Ore, development rock, and tailings should undergo geochemical testing to ensure they will behave similarly to their Eagle counterparts.	A study was completed.
Closure/Reclamation		
Update Closure and Reclamation Plan prior to re-permitting	Evaluate the closure and reclamation plan for the mine, including an update to the plugging plan. Evaluate the post-reclamation water quality in the reclaimed mine.	Studies and plans are required but have not been completed under the Feasibility Study. Studies and plans will need to be completed to submit a permit amendment request during Q1 2017.

MINE SITE ENVIRONMENTAL ASPECTS

A high level summary of several environmental aspects with respect to the mine site from the Eagle East FS is presented below:

- **Temporary Development Rock Storage Area (TDRSA)**. Based on geochemical testing of waste rock, it was determined that it is not different from rock encountered during the Eagle development phase and not likely to have a higher risk of generating acid rock drainage (ARD). Samples will continue to be collected for analysis during development in accordance with the permit requirement for ongoing geochemical characterization.

- **Contact Water Basins**. The contact area, or paved area that is subject to underground mine vehicle traffic, and the two Contact Water Basins (CWB) are not expected to require any re-design to support Eagle East facilities.

- **Contact Area**. Without engineered controls (e.g., underground manual wash), the concern is that salty brine residues may be tracked to the contact area year-round and may cause rapid deterioration.

- **Truck Wash**. Vehicles entering the contact area will pick up residues (brines potentially tracked to the surface) and it is expected that the dissolved solid loading to the truck wash will increase. This will have a downstream impact on the WTP and will require frequent monitoring.

- **COSA and Truck Scale**. Brine residues on the ore would be expected to deteriorate steel surfaces in the building. Maintenance programs may see increased activity and cost. To prevent downtime, the truck scale should be regularly inspected and maintained.

- **Septic System**. The current system is undersized for the surface facilities. Consideration should be given to increasing the storage and absorption field capacity of the septic system.

- **Water Treatment System**. Based on initial predictions, the current treatment system can treat the water quality and quantity from Eagle East to meet all discharge limitations. However, to achieve sufficient removal of the waste solids through the crystallization process, an additional crystallizer will be required to effectively manage TDS during all phases of the operation.

- **Monitoring Program**. The existing permit-required monitoring is not expected to change, with the exception of the addition of water level measurements being taken quarterly from the newly installed well clusters in the vicinity of Eagle East.

MILL SITE PERMITTING

Tailings storage is limited by two permits:

1. Part 632 Mining Permit for tailings not to exceed elevation of 434 MASL.

2. Part 301 Inland Lakes and Streams Act (ILSA) Permit to fill the HTDF with 1.83 million m^3 of tailings to a maximum thickness of 23 m.

Both permits were developed before Eagle's total size was defined and the permits need to be revised to allow, at a minimum, the entire volume of Eagle's tailings to be placed in the HTDF. The permit application preparation is underway as the amendments are needed mid-2017.

A deposition study for tailings in the HTDF was conducted by Hatch in 2016. The scope of the Hatch study included (Hatch, 2016b):

- Review of the current disposal performance from the quarterly bathymetry surveys;
- Oversee pertinent testwork related to tailings consolidation;
- Model a workable tailings disposal method and sequence that would effectively utilize the volume of the HTDF;
- Determine the ultimate pit tailings capacity; and
- Identify critical tasks and deviations from the original tailings disposal plan.

Key findings from the Hatch tailings deposition study were as follows:

- The HTDF has suitable capacity for tailings storage for both Eagle and Eagle East tailings.
- There is sufficient storage volume in the pit for tailings produced from both Eagle and Eagle East.
- A modification to the current disposal method will be required to better utilize the available capacity within the pit. Hatch recommended the disposal system be designed as a submerged spigot system with multiple disposal points affixed to both the east and west sides of the HTDF.
- The operating consolidated tailings density for design was 1.6 t/m^3, while the ultimate settled tailings density after 50 years is expected to be 2.3 t/m^3.
- The ultimate pit capacity is expected to be 4.8 million m^3, with an allowance for a five metre water cap.

The mill department at Eagle Mine commissioned a pilot spigot disposal system in the HTDF on October 10, 2016, which operated until ice formed on the pit surface. Deposition of tailings from the original buried line disposal resumed once ice formed. After ice melt in the spring of 2017, the spigot disposal system will again be utilized. It is expected that by the summer of 2017, a larger disposal system will be built. Bathymetry surveys are to continue and the performance of spigot disposal system will be monitored to ensure that the volume utilization is appropriate.

The Humboldt Mill closure conditions are not expected to be altered due to Eagle East except for additional time needed to potentially remove dissolved solids from the HTDF. Closure requirements are discussed in more detail under the section of Mine Closure Requirements.

MILL SITE ENVIRONMENTAL ASPECTS

A high level summary of several environmental aspects with respect to the mill site from the Eagle East FS is presented below:

- **Crushing and Concentrating**. No facilities at the mill site are expected to be impacted by Eagle East ore. Similar to the mine site, steel surfaces may deteriorate more rapidly.

- **Tailings Disposal Facility**. Some sections of the bottom portion of the cut off wall at the HTDF would be in contact with tailings and pore water at closure. These areas of the cut off wall will require re-assessment following further engineered controls, including additional grouting to ensure environmental protection upon mine closure and post-closure.

- **Water Treatment Plant**. Brackish to saline groundwater in the underground mine becomes entrained in ore that is shipped to the mill site. The TDS of groundwater at Eagle East is higher than at Eagle, therefore, additional TDS loading will enter the mill process and tailings (Hatch, 2016a). This will have the effect of added TDS loading on the HTDF and require treatment through the WTP to meet the NPDES discharge limits. A number of permit amendments are underway to address TDS limitations and other treatment options are being explored.

ENVIRONMENTAL MONITORING

Eagle Mine operates under the LMC corporate HSEC management system and corresponding health, safety, and environmental standards. Site conformance with the management system and HSE standards is audited annually utilizing an independent third party. RPA is not aware of any major non-conformances.

The Eagle operation undertakes regular environmental monitoring, including:

- Air quality monitoring (monthly).

- Natural surface water quality monitoring is conducted once every three months at both the Eagle Mine and Humboldt Mill sites.
    - Eagle Mine: Surface water sampling is conducted at eleven locations; nine on the Salmon-Trout River and one each on the Yellow Dog River and Cedar Creek. The samples collected represent winter base flow, spring snowmelt/runoff, summer base flow, and the fall rain season. Four locations are installed with meters that continuously monitor for temperature,

conductivity, and flow rate. The meters were originally installed in 2004 and are downloaded monthly by field technicians.
    - Humboldt Mill: Surface water sampling is conducted at eight monitoring locations Four locations are associated with surface water resources in the sub-watershed containing the HTDF and four are associated with the sub-watershed of the milling facility. Samples are generally collected in February, May, August, and November and represent winter base flow, spring snowmelt/runoff, summer base flow, and the fall rain season. Sediment sampling is conduct on a biennial basis and locations are co-located with surface water monitoring stations.

- Once every three months, groundwater quality is monitored through a network of monitoring wells at both the mine and mill sites.
    - Eagle Mine: A total of 38 monitoring locations located both inside and outside the mine site perimeter fence are sampled on a quarterly basis. Many of the monitoring wells have continuous water level meters and results are downloaded quarterly. In addition to continuous monitoring, Eagle implemented a regional monitoring program to assess potential groundwater elevation changes due to mine dewatering. The regional monitoring wells cover an area of approximately 36.2 km^2. Discrete groundwater elevations are measured on a quarterly basis at 116 locations.
    - Humboldt Mill: Twenty-four groundwater monitoring wells are sampled on a quarterly basis, all of which are located within the perimeter fence line. All monitoring locations are equipped with continuous water level meters that are downloaded quarterly. The water quality and water elevations from the leachate and compliance monitoring locations are reviewed to ensure that the integrity of the cut-off wall remains intact.

- Annual biological monitoring events include flora and fauna surveys, wetland monitoring, fish and macro invertebrate surveys and a threatened and endangered species survey are conducted at both sites. . Note that fish tissue monitoring is to be carried out every three years, in accordance with applicable approvals.

- Water quality monitoring at CWB (once every three months).

- Sediment accumulation and measurement at both the CWBs and NCWIBs could result in diminished infiltration capacities in the NCWIB and decreased water storage capacity in the CWB. As required by the Mining Permit, sediment accumulation measurements are conducted on an annual basis for the NCWIB.

- Water quality monitoring at the TDRSA sump (once every three months).

- Monitoring a leak detection system beneath the TDRSA (once per month if required).

- Monitoring the head levels on the TDRSA liner.

- Bathymetric surveys.

- HTDF geochemistry monitoring.

- Inspection of berms and embankments.

- Water treatment plant effluent sampling is completed on a weekly basis.

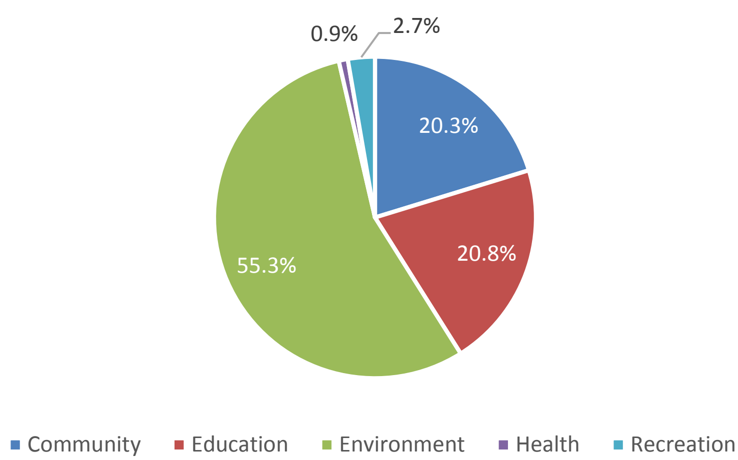
The Eagle Mine is currently extracting groundwater at a rate that is well within allowable limitations. The groundwater discharged from the treatment facility meets all permit requirements and work conducted to date indicates that Eagle East would not significantly impact either of these. Therefore, no water discharge permit changes are anticipated.

SOCIAL OR COMMUNITY REQUIREMENTS

LMC subsidiaries invest in the communities they operate in by providing social investments and participation in partnerships – business connected programs and these items are included in the Eagle annual budget.

Figure 20-1 illustrates the 2016 Eagle budget for social investment by category. The three largest areas of social investment are environment, education, and community.

FIGURE 20-1 SOCIAL INVESTMENT BY CATEGORY



Eagle's commitment to partnerships – business connected programs are listed in Table 20-4.

Eagle is also committed to hiring locally 75% of its employees. "Local" is defined as the Upper Peninsula of Michigan.

TABLE 20-4 PARTNERSHIPS – BUSINESS CONNECTED PROGRAMS
Eagle Mine

Name	Total Project Budget	Timeline	Description	Objective of Project or Initiative
Accelerate UP	$62,000/year	2013-2018	Business coaching for small businesses and entrepreneurs in Marquette County.	Create jobs outside of the mining industry in an effort to alleviate the "boom and bust" cycle typically associated with mining
Marquette-Alger Technical Middle College (MATMC)	$250,000 plus $7,251 per student	Initially three years with intent to renew. Program will continue in perpetuity.	A five-year high school program of study focusing in the skilled trades.	The MATMC addresses concerns brought forth by the community in regards to the "boom and bust" cycle of mining. This program is an attempt to create highly employable skilled individuals, at zero or little cost to the family. The endowment will enable the program to continue long after Eagle Mine ceases operation.
Community Environmental Monitoring Program (CEMP)	$300,000/year	Initial three year agreement was renewed to 2019	Independent third party environmental monitoring of the Eagle Mine, Humboldt Mill, and transport route.	The CEMP aligns with Eagle's commitment to be transparent with the community and provide appropriate environmental protections.
Eagle Emerging Entrepreneurs Fund (EEEF)	$750,000	2013 with no currently defined end date	Micro-loan program to provide financial assistance to small businesses and entrepreneurs in Marquette County.	The EEEF contributes to the long-term economic development of Marquette county by creating and retaining jobs by supporting growth outside of the mining industry. The fund provides affordable financing to high risk clients that would otherwise be ineligible for traditional financing.

Eagle Mine has received positive feedback from the community, elected officials, and regulators in response to transparent public engagement regarding Eagle East and the LOM extension. Environmental concerns will be addressed with required permit modifications and managed.

MINE CLOSURE REQUIREMENTS

As part of the EIA process, Mine Reclamation Plans were separately produced for the Eagle Mine and Humboldt Mill sites. The total closure cost estimate for the mine and the mill was approximately US$48 million, including post closure monitoring (LMC, 2016a). Based on information from the Eagle East FS, the closure costs are expected to increase by approximately US$5.4 million for an estimated additional 2.5 years of water treatment (including contingency) depending on the final water treatment method.

Reclamation of the Eagle Mine will consist of restoring approximately 0.4 km^2 of surface area and the underground mine workings. It is proposed that the closure/reclamation process for the Eagle Mine will start in 2024. Major dismantling work is expected to be completed within three to four years. The post closure period will be determined pending completion of permit requirements for post closure environmental monitoring.

Reclamation of the Humboldt Mill site will consist of decommissioning plant equipment and establishing a property end use that is consistent with local development plans. Procedures and expected timelines for closure are included with the Reclamation Plan, which consists of the following:

- Decommissioning of plant equipment.
- Removal of remaining chemicals/reagents on the property.
- Demolition and/or removal of unwanted structures/buildings.
- Re-vegetation of disturbed areas with natural vegetation.
- Removal of HTDF control structures, including piping and the WTP (note that a sub-surface cut-off wall will remain in place after reclamation).
- Establishment of passive water flow from the HTDF into local wetlands.
- Post-closure monitoring of surface water and groundwater.

Closure/reclamation of the mill will start when ore processing is complete. The Eagle East Project is not expected to have an impact on the closure costs, however, the additional mine life associated with Eagle East will result in an extension of the currently identified period before commencement of the closure activities. The closure period is expected to last for four to five years, while the post closure monitoring period is anticipated to last for a further 20 years.

21 CAPITAL AND OPERATING COSTS

CAPITAL COSTS

The capital cost estimate for the Eagle Mine and the Eagle East Project totals $161 million including $102 million for the Eagle East Project, $31.4 million for Eagle Mine sustaining capital, and $27.6 million for Eagle East sustaining capital.

EAGLE MINE CAPITAL

Sustaining capital of $31.4 million is required for continued operations at the Eagle Mine. The capital may be spread over a longer period with the addition of Eagle East.

The sustaining capital cost estimates for the Eagle Mine are shown in Table 21-1.

TABLE 21-1 EAGLE MINE SUSTAINING CAPITAL
Eagle Mine

Item	Units	2017	2018	2019	2020	2021	Total
Development	$ M	2.1	2.3	2.1	1.1	-	7.6
Mine – Other	$ M	5.6	7.3	8.1	1.8	1.0	23.8
Total Capex	$ M	7.7	9.6	10.2	2.8	1.0	31.4

The Eagle Mine sustaining costs are based upon contract development rates and estimates as of the end of 2016 (in constant Q4 2016 dollars).

EAGLE EAST CAPITAL

The Eagle East Project capital estimate is summarized in Table 21-2. The capital cost estimate is current as of late 2016 (in constant Q4 2016 dollars).

The capital estimate is based upon contracted development costs with allowance for the increased haulage distance as the planned development would start at the bottom of the Eagle Mine. A detailed estimate supplied by the contractor was used for the cost estimation. Electrical, mechanical, and ventilation costs are based upon independent studies. A 9.4% contingency has been included in the Eagle East capital estimates.

TABLE 21-2 EAGLE EAST CAPITAL COSTS
Eagle Mine

Mine Development		2017	2018	2019	2020	2021	2022	Total
Ramp	M$	12.4	15.5	11.9	2.5	-	-	**42.3**
Level	M$	-	-	1.2	5.8	7.6	-	**14.5**
Raises	M$	2.1	-	2.4	0.6	0.1	-	**5.2**
Other	M$	1.2	1.1	1.4	0.5	-	-	**4.1**
Indirects	M$	6.2	6.5	4.6	1.2	-	-	**18.5**
Mobile Equipment	M$	7.4	1.6	2.8	3.0	0.2	0.6	**15.6**
Dewatering	M$	0.7	0.6	0.5	0.3	-	-	**2.1**
Ventilation	M$	1.0	0.1	0.0	0.1	0.0	-	**1.2**
UG Electrical	M$	2.5	0.9	1.0	0.7	0.1	-	**5.2**
Communications	M$	0.2	0.1	0.2	0.2	-	-	**0.7**
UG Infrastructure	M$	-	-	0.1	0.1	-	-	**0.3**
H&S	M$	0.3	0.1	0.3	0.4	0.1	-	**1.2**
Surface Infrastructure	M$	-	1.1	-	-	-	-	**1.1**
Electrical Power	M$	0.9	0.9	1.3	0.8	0.4	0.0	**4.3**
Owners Costs	M$	0.5	0.5	0.5	0.5	0.4	-	**2.5**
Contingency	M$	3.5	3.2	2.9	1.2	0.2	0.0	**11.1**
Total Capex	**k$**	**39.0**	**32.2**	**30.9**	**18.1**	**8.9**	**0.7**	**129.6**

The Eagle East preproduction capital costs, including contingency, total $102 million and the Eagle East sustaining capital (for the period 2020 to 2022) is $27.6 million.

Exclusions from the Eagle East capital cost estimate include, but are not limited to, the following:

- Project financing and interest charges.
- Working capital.

Exploration costs have been included in the operating cost section of this report.

MINE CLOSURE COSTS

The estimated Eagle Mine closure costs total $48.1 million incurred over the period from 2020 to 2044. With Eagle East the estimated closure costs rise to a total of $53.5 million incurred over the period from 2023 to 2044.

OPERATING COSTS

CURRENT OPERATING COSTS

The Eagle Mine operating costs for 2015 and 2016 are shown in Table 21-3. The operating costs for those periods have been lower than the budget.

TABLE 21-3 CURRENT OPERATING COSTS
Eagle Mine

		2015		2016	
Item	**Unit**	**Actual**	**Budget**	**Actual**	**Budget**
Mine Cost	$ M	48.3	46.3	41.7	47.2
Mill Cost	$ M	27.9	32.5	21.7	24.7
Admin Wages & Benefits	$ M	5.5	6.6	5.4	5.4
Admin & Other Costs	$ M	20.9	27.3	8.9	9.6
Less Severance Tax in Other Costs	$ M	(8.4)	(13.2)		
Ore Haulage	$ M	9.0	8.4	9.1	9.4
Total Operating Cost	$ M	103.2	107.8	86.8	96.3
Ore Tonnes Milled	t '000	746.5	737.2	748.5	732
Cost per Tonne Milled	**$**	**138.25**	**146.26**	**115.97**	**131.56**

OPERATING COST FORECAST

The operating cost forecast for the combined Eagle and Eagle East is shown in Table 21-4. The operating costs are based upon a continuation of the current operations and operating practices. The operating costs include a total of $46 million as exploration costs.

TABLE 21-4 EAGLE AND EAGLE EAST OPERATING COSTS
Eagle Mine

Item	Unit	2017	2018	2019	2020	2021	2022	2023	LOM
Mining	$/t milled	54.60	51.91	52.85	59.46	63.01	58.67	52.05	56.37
Ore Haul	$/t milled	12.60	12.60	12.60	12.60	12.60	12.60	12.60	12.60
Processing	$/t milled	31.20	31.20	31.20	31.20	33.23	33.23	31.93	31.88
G&A	$/t milled	20.98	20.98	20.98	20.98	20.98	20.98	19.77	20.88
Exploration	$/t milled	21.57	14.10	12.65	6.52	6.27	1.50	0.08	9.59
Total	**$/t milled**	**140.95**	**130.79**	**130.28**	**130.76**	**136.09**	**126.98**	**116.44**	**131.32**

EAGLE EAST OPERATING COST FORECAST

Operating costs for Eagle East are projected to be higher than Eagle as the operating costs (Table 21-5) have been adjusted for the longer haulage, increased electrical power usage for mine ventilation, and pumping.

TABLE 21-5 EAGLE AND EAGLE EAST OPERATING COSTS
Eagle Mine

Item	Unit	Eagle and Eagle East	Eagle East
Mining	$/t milled	56.37	64.66
Ore Haul	$/t milled	12.60	12.60
Processing	$/t milled	31.88	33.15
G&A	$/t milled	20.88	20.91
Exploration	$/t milled	9.59	3.74
Total Cost	**$/t milled**	**131.32**	**135.07**

MANPOWER

The current manpower including Eagle Mine LLC employees and contractors at the Eagle Mine is shown in Table 21-6.

TABLE 21-6 EAGLE MANPOWER
Eagle Mine

Type	Category	Number of Employees
Unit Employees	Mine	37
	Mill	97
	G&A	32
	OHS & Environment	12
	Exploration	11
	Subtotal	**189**
Contractors	Rail Handling	5
	Miscellaneous	3
	Ore Haul	74
	Mining	69
	Security	19
	Laboratory	9
	Janitorial	8
	Exploration	38
	Subtotal	**225**
Total		**414**

22 ECONOMIC ANALYSIS

Under NI 43-101 rules, producing issuers may exclude the information required in Section 22 – Economic Analysis on properties currently in production, unless the Technical Report includes a material expansion of current production. RPA notes that LMC is a producing issuer, the Eagle Mine is currently in production, and a material expansion is not being planned. RPA has performed an economic analysis of the mine using the estimates presented in this report and confirms that the outcome is a positive cash flow that supports the statement of Mineral Reserves.

ECONOMIC ANALYSIS OF EAGLE EAST

The economic analysis of the Eagle East Project contained in this section is an incremental analysis compared to the LOM of Eagle Mine. The positive economic results support the declaration of Mineral Reserves for the Eagle East. The Project is considered on the assumption that the development will be concurrent with continued production from the current LOM set out in this report.

An incremental cash flow projection has been generated from the LOM production schedule and capital and operating cost estimates. A summary of the key criteria is provided below.

All costs are in US dollars (US$ or $).

REVENUE

- 1.5 million tonnes incremental of Eagle East feed comingled with Eagle material.
- Incremental LOM head grades: 3.7% Ni, 3.0% Cu plus Co and PGMs.
- Eagle East Project recovery averaging 84.7% for nickel and 97.5% for copper.
- Transportation and refining as per existing agreements.
- Metal prices of $7.50/lb Ni in 2020 and $8.00/lb Ni thereafter and $3.00/lb Cu.
- Revenue is recognized at the time of production.

- Eagle East attributable production: 47,100 t Ni and 46,000 t Cu plus minor cobalt and precious metals.

COSTS

- Pre-production period: 3.5 years.
- Eagle East total capital of $129.6 million, including pre-production capital of $102.0 million and sustaining capital of $27.6 million. Additional closure costs of $5.4 million.
- Average Eagle East operating cost is $135.07 per tonne milled.

TAXATION AND ROYALTIES

RPA has relied upon LMC for the calculation of royalties and taxes including:

- Various NSR royalty rates to private landowners based upon production.
- Severance tax of 2.75%.
- A regular income tax rate of 35% and an alternative minimum tax rate of 20%.
- Tax pools from the existing mine.

CASH FLOW ANALYSIS

The Eagle East Project has an incremental undiscounted after-tax cash flow of $337 million and simple payback occurs approximately 1.5 years after the start of production from Eagle East. The incremental cash cost per pound of nickel is $3.68 less $3.87 per pound of nickel in by-product credits giving an incremental C1 cost per pound of nickel of ($0.19).

The average cash cost per pound of nickel for the combined Eagle Mine and Eagle East Project for the period 2020 to 2023 is $4.39 less $3.90 per pound of nickel in by-product credits giving an incremental C1 cost per pound of nickel of $0.49.

The incremental after-tax Net Present Value (NPV) at an 8% discount rate is $205 million, and the after-tax Internal Rate of Return (IRR) is 47%.

The Eagle East incremental cash flow projection is shown in Table 22-1.

TABLE 22-1 EAGLE EAST INCREMENTAL CASH FLOW SUMMARY

Eagle Mine

Date:	UNITS	TOTAL	2017 Year 1	2018 Year 2	2019 Year 3	2020 Year 4	2021 Year 5	2022 Year 6	2023 Year 7	2024 - 44
MINING										
Underground										
Operating Days	days	700				0	191	350	187	
Tonnes milled per day	tonnes / day	1,615				23	10	2,110	2,100	
Production	'000 tonnes	1,544				8	405	739	392	
Ni Grade	%	3.7%				52.6%	3.6%	3.2%	3.6%	
Cu Grade	%	3.1%				39.2%	3.1%	2.8%	2.8%	
Waste	'000 tonnes	1,008	224	244	227	141	99	64	10	
PROCESSING										
Mill Feed	'000 tonnes	1,544	-	-	-	8	405	739	392	
Ni Grade	%	3.7%	0.0%	0.0%	0.0%	52.6%	3.6%	3.2%	3.6%	
Cu Grade	%	3.0%	0.0%	0.0%	0.0%	39.2%	3.1%	2.8%	2.8%	
Contained Ni	tonnes	56,784	-	-	-	4,265	14,708	23,547	14,264	
Contained Cu	tonnes	47,233	-	-	-	3,177	12,627	20,417	11,012	
Production										
Ni	tonnes	48,117	-			3,726	12,445	19,833	12,113	
Cu	tonnes	46,030	-			3,134	12,306	19,870	10,720	
Recovery										
Ni	%	84.7%	0.0%	0.0%	0.0%	87.4%	84.6%	84.2%	84.9%	
Cu	%	97.5%	0.0%	0.0%	0.0%	98.6%	97.5%	97.3%	97.4%	
INCREMENTAL CASH FLOW										
Net Revenue	US$ M	$734	$0	$0	($0)	$54	$194	$307	$180	
Operating Costs	US$ M	$209	$0	$0	$0	$5	$63	$94	$46	
Capital Costs (incl. Closure)	US$ M	$135	$39	$32	$31	$12	($3)	$1	$8	$15
Pre-tax Cash Flow	US$ M	$390	($39)	($33)	($31)	$37	$133	$212	$126	($15)
Taxes	US$ M	$53	($0)	$0	($0)	($0)	$0	$29	$25	$0
PROJECT ECONOMICS										
Pre-Tax IRR	%	51%								
Pre-tax NPV 5%	US$ M	$287								
Pre-tax NPV 8%	US$ M	$238								
Pre-tax NPV 10%	US$ M	$211								
After Tax IRR	%	47%								
After tax NPV 5%	US$ M	$247								
After tax NPV 8%	US$ M	$205								
After tax NPV 10%	US$ M	$181								
COST PER POUND										
Cost/lb Ni	US$/lb Ni	$3.68								
Credits	US$/lb Ni	($3.87)								
C1 cost per pound	US$/lb Ni	($0.19)								

Note. This table is an incremental calculation. The nickel and copper grades in year 4 are calculated arithmetically as the difference between the estimated grades and feed tonnages in two plans and do not represent actual feed grades for year 4.

SENSITIVITY ANALYSIS

After-tax sensitivity analyses for the incremental cash flow were prepared considering changes in the head grade, metallurgical recovery, metal price, operating costs, and capital costs. The Eagle East Project cash flow is most sensitive to changes in metal price. The sensitivities are shown in Table 22-2 and Figures 22-1 and 22-2.

TABLE 22-2 INCREMENTAL AFTER-TAX SENSITIVITY ANALYSIS
Eagle Mine

Head Grade Factor	NPV at 8% ($ M)	IRR (%)
80%	90	30.2
90%	147	39.6
100%	**205**	**47.4**
110%	262	54.1
120%	320	60.0

Recovery Factor	NPV at 8% ($ M)	IRR (%)
80.0%	90	30.2
90.0%	147	39.6
100.0%	**205**	**47.4**
102.5%	219	49.2
105.0%	234	50.9

Metal Price Factor1	NPV at 8% ($ M)	IRR (%)
80%	87	29.3
90%	146	39.2
100%	**205**	**47.4**
110%	264	54.5
120%	323	60.8

Operating Cost Factor	NPV at 8% ($ M)	IRR (%)
80%	233	50.8
90%	219	49.2
100%	**205**	**47.4**
110%	191	45.7
120%	177	43.8

Capital Cost Factor	NPV at 8% ($ M)	IRR (%)
80%	227	57.0
90%	216	51.9
100%	**205**	**47.4**
110%	194	43.5
120%	183	40.0

FIGURE 22-1 AFTER-TAX 8% NPV SENSITIVITY

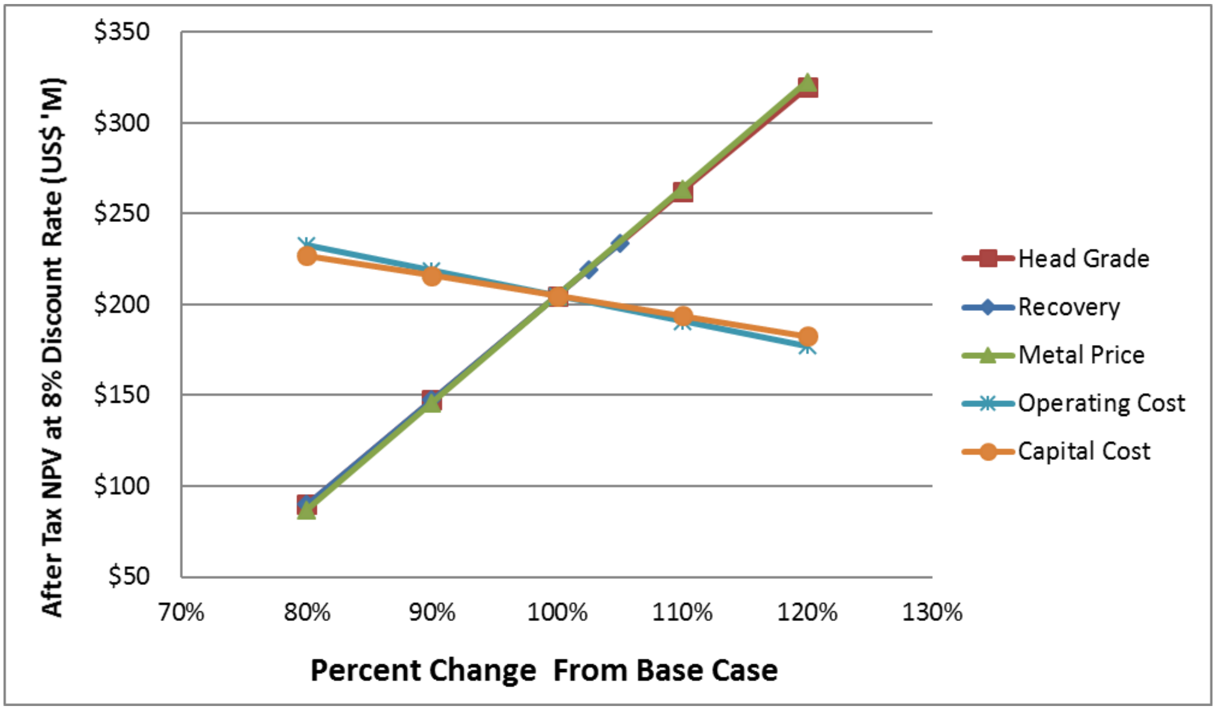
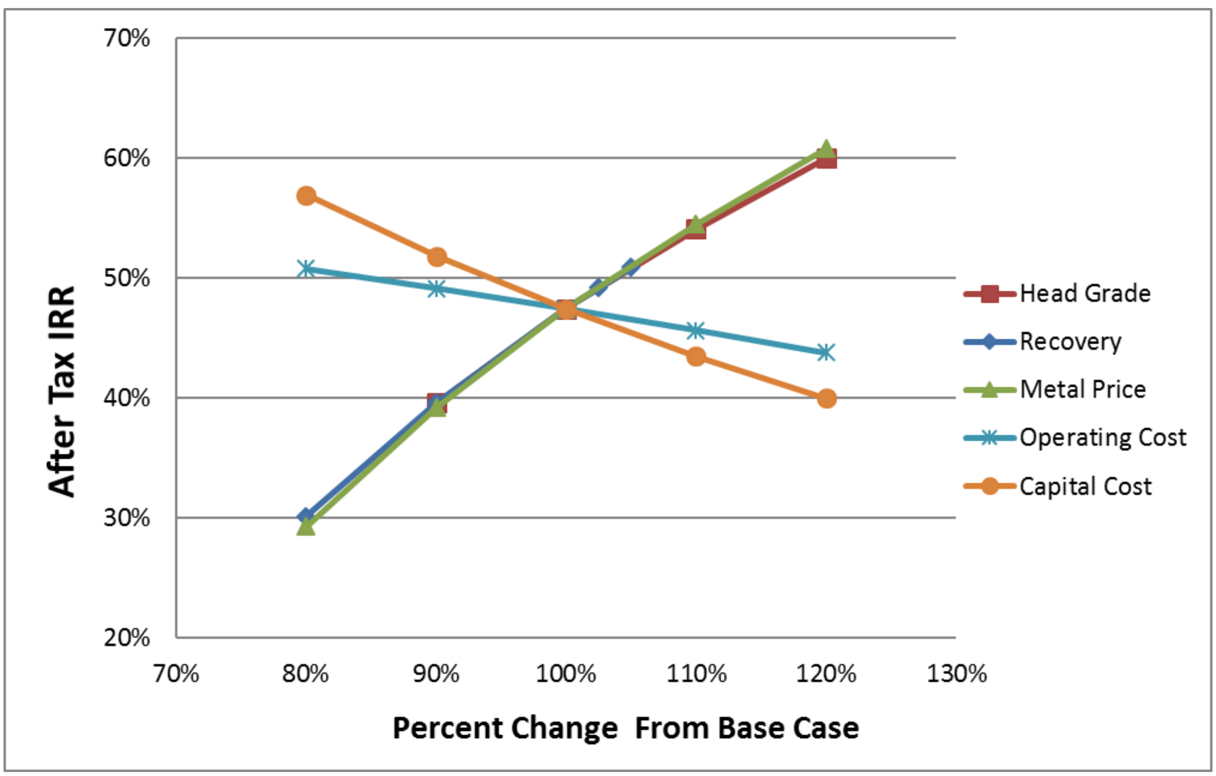


FIGURE 22-2 AFTER-TAX IRR SENSITIVITY



RPA OPINION

RPA is of the opinion that the study work on the Eagle East deposit is suitable for the declaration of Mineral Reserve estimates in Eagle East.

23 ADJACENT PROPERTIES

Eagle Mine is the sole project of economic interest in the area and there are no adjacent properties of significance from a mining perspective.

24 OTHER RELEVANT DATA AND INFORMATION

No additional information or explanation is necessary to make this Technical Report understandable and not misleading.

25 INTERPRETATION AND CONCLUSIONS

Based on the site visit and subsequent review, RPA offers the following conclusions:

MINERAL RESOURCE ESTIMATION

- The drilling at Eagle and Eagle East has been conducted in a competent manner using appropriate equipment and techniques.
- Core handling, logging, and sampling have been carried out to a standard that meets or exceeds common industry practice.
- Drill core and samples are stored and transported in a secure fashion.
- Assaying has been performed by accredited commercial laboratories using conventional methods commonly used in the industry.
- An adequate level of assay QA/QC sampling has been carried out, and the results of this sampling have been used appropriately to ensure that the accuracy and precision of the analyses are within acceptable limits.
- The frequency of QA/QC sampling is somewhat high for an operating mine and can probably be reduced.
- The database is properly managed and validated, in a secure manner.
- The geological models used for the resource estimate are reasonable and consistent with the deposit type and mineralization style.
- Top cuts should be applied to silver assays for the purpose of Mineral Resource estimation.
- The grade interpolations have been carried out using reasonable methods, parameters, and assumptions.
- Mineral Resource classification has been done in a reasonable manner, consistent with the CIM definitions.
- Cut-off criteria used are appropriate.
- The block model validation has been reasonable and appropriate.
- The reconciliation of mill production with the Eagle block model has shown a satisfactory level of agreement which has largely confirmed that the model parameters and assumptions are reasonable and that the database is sound.
- Measured Mineral Resource estimates have decreased since June 2016 owing to depletion. Indicated Mineral Resource estimates have increased overall due to

upgrading of Inferred category at Eagle East. The Inferred Mineral Resource estimates have decreased in size due to the upgrade of the Eagle East material.

MINING AND MINERAL RESERVES

- The Eagle and Eagle East Mineral Reserves have been estimated in a manner consistent with CIM definitions.

- The total estimated Proven plus Probable Mineral Reserves are estimated to be 4.8 million tonnes grading 2.8% Ni and 2.4% Cu.

- In addition to the nickel and copper, there are minor amounts of platinum, palladium, cobalt, gold, and silver.

- The Eagle East deposit has been the subject of a FS and the Probable Mineral Reserves, included in the above noted total, are estimated to be 1.5 million tonnes grading 3.7% Ni and 3.0% Cu plus minor amounts of platinum, palladium, cobalt, gold, and silver. This is the first Mineral Reserve estimate for Eagle East.

- The Mineral Reserve estimates include appropriate allowances for dilution and extraction.

- All of the Mineral Reserve estimates are based upon underground mechanized longhole stoping with backfill.

- A portion of the Eagle Mineral Reserve estimates included in the mine plan is located above the 327.5 MASL elevation specified in the original mining permit. Subsequently, development to the highest elevation of the mine (381 MASL) and mining up to the 353 MASL elevation have been approved. Further studies are required before approval for mining up to the 381 MASL elevation is given by the MDEQ. RPA is of the opinion that this approval will be received in advance of reaching this area.

- Eagle East would be mined by extending a decline from the bottom of the Eagle workings. The decline for the Eagle East commenced in mid-2016.

- Eagle East can extend the estimated mine life of the Eagle Mine by two years to 2023.

- The project schedule for Eagle East depends upon a continuous high rate of advance for the duration of the Eagle East development. RPA is of the opinion that the development rates are aggressive and will require constant monitoring of progress and changes to methods and/or equipment as required to maintain the performance.

- The failure to attain the planned development advance will delay the commencement of production from Eagle East and extend the period at the end of the mine life when production will only be available from Eagle East.

- Eagle East mining would utilize the existing mine and surface infrastructure in the development and production phases.

- The Eagle East geotechnical testing and evaluation has provided a more robust assessment of the geotechnical characteristics and conditions. This work has improved the confidence in the mine design and further supports the feasibility for safe and effective mining.

- RPA considers the mining plans and methods to be appropriate for the deposits. RPA finds the mining method, mine design, ground support, and geotechnical assessment to be consistent with industry best practices.

PROCESS

- RPA confirmed that the procedures used to estimate nickel and copper recoveries meet industry standards.

- Detailed grinding and metallurgical testwork has demonstrated that Eagle East ore is similar in performance to Eagle ore. The current flowsheet is suitable for treatment of Eagle East ore provided plant feed grades remain similar.

- Eagle East samples were found to be mineralogically similar to Eagle samples, although higher in grade, therefore, no changes to the process plant are expected.

- The Eagle East Project assumes that the existing Eagle Mine surface facilities would continue to be used to support the combined Eagle and Eagle East mining operation. The Humboldt Mill site will be unaffected by the Eagle East Project, as modifications to the mill are not expected at the projected feed grades.

INFRASTRUCTURE

- The existing infrastructure is suitable for the Eagle mining and will support the Eagle East development and mining.

- The method for depositing tailings in the pit should be optimized to better utilize the available storage volume for both Eagle and Eagle East tailings. The original method of tailings disposal at the bottom of the pit has resulted in unfavorably steep deposition cones.

- Based on assessment and modelling conducted by Hatch, sufficient capacity exists within the HTDF for containment of all tailings from processing Eagle and Eagle East ore.

- Hatch has reviewed the tailings deposition and facility capacity and provided the design for an alternative deposition method that will use the facility volume more efficiently and allow storage of the LOM plan tailings in the facility as implemented in October 2016.

- Based on assessment and modelling conducted by Hatch, sufficient capacity exists within the HTDF for containment of all tailings from processing Eagle and Eagle East ore.

- A revision to the tailings storage permits will be required in 2017, to discharge tailings up to a depth of 452 MASL.

ENVIRONMENTAL CONSIDERATIONS

- The environmental and social practices at Eagle are very effective and enable Eagle to have a strong social licence to operate.

- To mine and process the Eagle East material, a modification to the Mine Site Mining Permit will be required as well as amendments to the two permits limiting tailings storage at the mill site. Updates to the EIA have been identified, as these will be required in conjunction with modifications to the Mine Site Mining Permit.

- The decline for the Eagle East Project can be developed under the current air permit, which covers exhaust ventilation air, since Eagle East will use the same ventilation system as the Eagle Mine.

- Based on initial predictions, the current treatment system can treat the water quality and quantity from Eagle East to meet all discharge limitations. However, to achieve sufficient removal of the waste solids through the crystallization process, an additional crystallizer will be required to effectively manage TDS during all phases of the operation.

CAPITAL AND OPERATING COSTS

- The Eagle Mine capital and operating costs are based on the mine plans and current operating experience.

- The Eagle East capital and operating costs are based upon feasibility level studies coupled with the mine operating experience.

- RPA considers the Eagle and Eagle East estimates to be appropriate.

- The capital cost estimate for Eagle East is US$102 million for preproduction work plus US$27.6 million in sustaining capital.

- The LOM operating cost for the Eagle East Project is US$135.07 per tonne milled.

- The use of the Eagle East ramp development waste rock for backfilling the Eagle Mine secondary stopes can aid in reducing operating costs.

ECONOMICS

- Robust economics were demonstrated based upon the development of Eagle East and processing by comingling with the Eagle ore using the current infrastructure.

26 RECOMMENDATIONS

RPA makes the following recommendations:

MINERAL RESOURCE ESTIMATION

- Continue exploration drilling to find extensions of the Eagle East mineralization.
- Continue to explore for other deep targets.

MINERAL RESERVE ESTIMATION AND MINING

- Continue the reconciliation of mill production back to the Mineral Reserve estimate.
- Continue the analysis of the CMS and use the analysis of that data for future Mineral Reserve estimate updates. RPA recommends that the analysis include a breakdown of the overbreak and underbreak to assist in optimization of the mining process. This may be more important as the mining of secondary stopes commences and backfill dilution can be assessed.
- Confirm mine design and permitting of the upper portion of the Eagle orebody in the area of the Crown Pillar.
- Monitor the development advance on the Eagle East decline on a daily basis and act quickly to mitigate any matters that slow the rate of advance of the decline.
- Complete the numerical rock stress modelling to assess the impact of development and stoping on the rock stresses.
- Continue geotechnical work including:
    - Ongoing mapping of the advancing face to provide feedback to the ground support design.
    - Investigation of switching to grouted rebar as the primary ground support.
    - Development of an action/response plan for developing through the deformation zone.
    - Additional in-situ stress measurements at greater depths to further validate the vertical magnitudes.
    - Additional numerical modelling of various stope extraction sequences to optimize the mine design and extraction sequence.
- Use the East Eagle flow rate predictions of 216 L/min peak, 125 L/min end of mining for the base case design for underground pumping requirements.
- Continue to improve the hydrological database by updating the database through data collection as development continues.

- In parallel with the development and construction activities, carry out ongoing design optimization including:
  - Stope design optimization.
  - Mining method review.
  - Stope sequence optimisation, including numerical stress modelling.
  - Definition diamond drilling scheduling.
  - CRF retarders to allow transportation to Eagle East.
  - Salt effect on CRF.
  - Ventilation model refinements, updates, and verification.
  - Truck studies and optimization.

PROCESS

- Optimize the combined Eagle/Eagle East production schedule to ensure plant feed grades remain similar. Blending of the high grade Eagle East ore with the lower grade Eagle ore is recommended, however, should feed grades increase, further testwork and engineering would need to be undertaken to better estimate the cost of plant modifications.

- Conduct routine metallurgical tests to improve the accuracy of the calculations used to estimate the recovery of all metals. Assays for gold, cobalt, platinum, and palladium should be collected during operation.

- Undertake metallurgical analysis and testing to better understand silver deportment and potential recovery from ore.

- The relationships between head grade and recovery for nickel and copper for the Eagle East mineralization appear to have been updated in 2017 based on metallurgical evaluations during the FS. Therefore, it is recommended that the application of 2016 grade-recovery relationships established for Eagle ores be reviewed and similarly updated.

INFRASTRUCTURE

- Implement the revised tailings deposition method to increase the utilization of the available volume in the HTDF.

- Monitor the tailings deposition results with biannual or annual bathymetric surveys to assess the deposition and the capacity of the HTDF.

- Use the Monte Carlo simulation for the range of possible daily dissolved loading for the purposes of planning upgrades to the WTP.

- Consider the impact of the higher TDS on the WTP operation in the closure phase.

ENVIRONMENTAL CONSIDERATIONS

- Update specific considerations in the existing Environmental Management System to reflect appropriate changes due to the addition of the Eagle East Project.

- Complete engineering studies in a reasonable time frame to support the required changes in permitting.

- Conduct water sampling during development advance to calibrate the TDS increase with depth, along with water quantity measurements to further calibrate the groundwater model.

- Investigate the limitations regarding the type of flocculent that can be used, with respect to treatment of the discharge water.

ECONOMICS

- Prepare a new bottom up capital cost estimate in late 2017.

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28 DATE AND SIGNATURE PAGE

This report titled "Technical Report on the Eagle Mine, Michigan, USA" and dated April 26, 2017, was prepared and signed by the following authors:

(Signed and Sealed) "*Graham G. Clow*"

Dated at Toronto, ON
April 26, 2017

Graham G. Clow, P.Eng.
Chairman and Principal Mining Engineer

(Signed and Sealed) "*David W. Rennie*"

Dated at Toronto, ON
April 26, 2017

David W. Rennie, P.Eng.
Associate Principal Geologist

(Signed and Sealed) "*Normand L. Lecuyer*"

Dated at Toronto, ON
April 26, 2017

Normand L. Lecuyer, P.Eng.
Principal Mining Engineer

(Signed and Sealed) "*Brenna J.Y. Scholey*"

Dated at Toronto, ON
April 26, 2017

Brenna J.Y. Scholey, P.Eng
Principal Metallurgist

29 CERTIFICATE OF QUALIFIED PERSON

GRAHAM G. CLOW

I, Graham G. Clow, P.Eng., as an author of this report entitled “Technical Report on the Eagle Mine, Michigan, USA” prepared for Lundin Mining Corporation and dated April 26, 2017, do hereby certify that:

1. I am Chairman and Principal Mining Engineer with Roscoe Postle Associates Inc. of Suite 501, 55 University Ave., Toronto, ON, M5J 2H7.

2. I am a graduate of Queen’s University, Kingston, Ontario, Canada in 1972 with a Bachelor of Science degree in Geological Engineering and in 1974 with a Bachelor of Science degree in Mining Engineering.

3. I am registered as a Professional Engineer in the Province of Ontario (Reg. #8750507). I have worked as a mining engineer for a total of 42 years since my graduation. My relevant experience for the purpose of the Technical Report is:
   - Review and report as a consultant on numerous mining operations and projects around the world for due diligence and regulatory requirements.
   - Senior Engineer to Mine Manager at seven Canadian mines and projects.
   - Senior person in charge of the construction of two mines in Canada.
   - Senior VP Operations in charge of five mining operations, including two in Latin America.
   - President of a gold mining company with one mine in Canada.
   - President of a gold mining company with one mine in Mexico.

4. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.

5. I did not visit the Eagle Mine.

6. I have overall responsibility for this Technical Report.

7. I am independent of the Issuer applying the test set out in Section 1.5 of NI 43-101.

8. I have prepared a Technical Report (August 12, 2016) on the property that is the subject of the Technical Report.

9. I have read NI 43-101, and the Technical Report has been prepared in compliance with NI 43-101 and Form 43-101F1.

10. At the effective date of the Technical Report, to the best of my knowledge, information, and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 26th day of April, 2017.

(Signed and Sealed) "*Graham G. Clow*"

Graham G. Clow, P. Eng.

DAVID W. RENNIE

I, David W. Rennie, P.Eng., entitled "Technical Report on the Eagle Mine, Michigan, USA" prepared for Lundin Mining Corporation and dated April 26, 2017, do hereby certify that:

1. I am an Associate Principal Geologist with Roscoe Postle Associates Inc. of Suite 501, 55 University Ave Toronto, ON, M5J 2H7.

2. I am a graduate of the University of British Columbia in 1979 with a Bachelor of Applied Science degree in Geological Engineering.

3. I am registered as a Professional Engineer in the Province of British Columbia (Reg. #13572). I have worked as a geological engineer for a total of 37 years since my graduation. My relevant experience for the purpose of the Technical Report is:
   - Review and report as a consultant on numerous exploration and mining projects around the world for due diligence and regulatory requirements.
   - Consultant Geologist to a number of major international mining companies providing expertise in conventional and geostatistical resource estimation for properties in North and South Americas, and Africa.
   - Chief Geologist and Chief Engineer at a gold-silver mine in southern B.C.
   - Exploration geologist in charge of exploration work and claim staking with two mining companies in British Columbia.

4. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.

5. I last visited the Eagle Mine on June 7 and 8, 2016.

6. I am responsible for Sections 2 to 5, 7 to 12, 14, and 23 and share responsibility with my co-authors for Sections 1, 6, 18, 24, 25, 26, and 27 of the Technical Report.

7. I am independent of the Issuer applying the test set out in Section 1.5 of NI 43-101.

8. I have had prior involvement with the property that is the subject of the Technical Report, including Technical Reports on the Eagle Ni-Cu-PGE deposit for Kennecott Eagle Mining Company in 2005, 2007, 2008, and 2009, a Competent Person's Report on the project for Rio Tinto Technical Services in 2011, and a Technical Report for LMC dated August 12, 2016.

9. I have read NI 43-101, and the Technical Report has been prepared in compliance with NI 43-101 and Form 43-101F1.

10. At the effective date of the Technical Report, to the best of my knowledge, information, and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 26th day of April, 2017.

(Signed and Sealed) "*David W. Rennie*"

David W. Rennie, P. Eng.

NORMAND L. LECUYER

I, Normand L. Lecuyer, P.Eng., as an author of this report entitled “Technical Report On the Eagle Mine, Michigan, USA” prepared for Lundin Mining Corporation and dated April 26, 2017, do hereby certify that:

1. I am Principal Mining Engineer with Roscoe Postle Associates Inc. of Suite 501, 55 University Ave Toronto, ON, M5J 2H7.

2. I am a graduate of Queen’s University, Kingston, Canada, in 1976 with a B.Sc. (Hons.) degree in Mining Engineering.

3. I am registered as a Professional Engineer in the provinces of Ontario (Reg. #26055251) and Québec (Reg. #34914). I have worked as a mining engineer for a total of 40 years since my graduation. My relevant experience for the purpose of the Technical Report is:
   - Review and report as a consultant on numerous exploration and mining projects around the world for due diligence and regulatory requirements.
   - Vice-President Operations for a number of mining companies.
   - Mine Manager at an underground gold mine in Northern Ontario, Canada.
   - Manager of Mining/Technical Services at a number of base-metal mines in Canada and North Africa.
   - Vice-President Engineering at two gold operations in the Abitibi area of Quebec, Canada.

4. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.

5. I last visited the Eagle Mine on June 7 and 8, 2016.

6. I am responsible for Sections 15, 16, 19, 21, and 22 and share responsibility with my co-authors for Sections 1, 6, 18, 24, 25, 26, and 27 of the Technical Report.

7. I am independent of the Issuer applying the test set out in Section 1.5 of NI 43-101.

8. I have had prior involvement with the property that is the subject of the Technical Report, including a Technical Reports on the Eagle Ni-Cu-PGE deposit for Kennecott Eagle Mining Company in 2009, a Competent Person’s Report on the project for Rio Tinto Technical Services in 2011, and a Technical Report for LMC dated August 12, 2016.

9. I have read NI 43-101, and the Technical Report has been prepared in compliance with NI 43-101 and Form 43-101F1.

10. At the effective date of the Technical Report, to the best of my knowledge, information, and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 26th day of April, 2017.

(Signed and Sealed) "*Normand L. Lecuyer*"

Normand L. Lecuyer, P.Eng.

BRENNA J.Y. SCHOLEY

I, Brenna J.Y. Scholey, P.Eng., as an author of this report entitled "Technical Report On the Eagle Mine, Michigan, USA" prepared for Lundin Mining Corporation and dated April 26, 2017, do hereby certify that:

1. I am Principal Metallurgist with Roscoe Postle Associates Inc. of Suite 501, 55 University Ave., Toronto, ON, M5J 2H7.

2. I am a graduate of The University of British Columbia in 1988 with a B.A.Sc. degree in Metals and Materials Engineering.

3. I am registered as a Professional Engineer in the Province of Ontario (Reg. #90503137) and British Columbia (Reg. #122080). I have worked as a metallurgist for a total of 28 years since my graduation. My relevant experience for the purpose of the Technical Report is:
   - Reviews and reports as a metallurgical consultant on a number of mining operations and projects for due diligence and regulatory requirements.
   - Senior Metallurgist/Project Manager on numerous base metals and precious metals studies for an international mining company.
   - Management and operational experience at several Canadian and U.S. milling, smelting and refining operations treating various metals, including copper, nickel, and precious metals.

4. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.

5. I did not visit the Eagle Mine or Humboldt Mill.

6. I am responsible for preparation of Sections 13, 17, and 20 and share responsibility with my co-authors for Sections 1, 6, 18, 24, 25, 26, and 27 of the Technical Report.

7. I am independent of the Issuer applying the test set out in Section 1.5 of NI 43-101.

8. I have prepared a Technical Report (August 12, 2016) on the property that is the subject of the Technical Report.

9. I have read NI 43-101, and the Technical Report has been prepared in compliance with NI 43-101 and Form 43-101F1.

10. At the effective date of the Technical Report, to the best of my knowledge, information, and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 26th day of April, 2017.

(Signed and Sealed) "*Brenna J.Y. Scholey"*

Brenna J.Y. Scholey, P.Eng.

30 APPENDIX A – VARIOGRAM MODELS

TABLE A-1 VARIOGRAM MODELS – MSU
Eagle Mine

Domain		MSU						
Variable		**Ni**	**Cu**	**Au**	**Pt**	**Pd**	**Ag**	**Co**
Rotation Vulcan		278/9.8/ 100	278/9.8/ 100	278/9.8/ 100	278/9.8/ 100	278/9.8/ 100	278/9.8/ 100	278/9.8/ 100
	Nugget	0.27	0.10	0.17	0.09	0.20	0.07	0.13
	Str 1 Sill Diff	0.51	0.64	0.38	0.50	0.38	0.47	0.16
	Str 2 Sill Diff	0.22	0.26	0.45	0.41	0.42	0.45	0.71
Range Str1 (m)	Major Axis	16.0	53.0	27.0	36.0	25.0	41.0	14.0
	Semi-Major Axis	15.0	42.0	23.0	34.0	26.0	65.0	49.0
	Minor Axis	16.0	22.0	16.0	19.0	18.0	21.0	16.0
Range Str2 (m)	Major Axis	61.0	61.0	61.0	55.0	50.0	60.0	86.0
	Semi-Major Axis	29.0	61.0	43.0	49.0	42.0	72.0	79.0
	Minor Axis	22.0	25.0	20.0	22.0	22.0	25.0	18.0

TABLE A-2 VARIOGRAM MODELS – SMSUE
Eagle Mine

Domain		SMSUE						
Variable		**Ni**	**Cu**	**Au**	**Pt**	**Pd**	**Ag**	**Co**
Rotation Vulcan		90/20/ -90	90/20/ -90	90/20/ -90	90/20/ -90	90/20/ -90	90/20/ -90	90/20/ -90
	Nugget	0.11	0.19	0.58	0.24	0.46	0.26	0.12
	Str 1 Sill Diff	0.41	0.40	0.20	0.51	0.24	0.52	0.55
	Str 2 Sill Diff	0.49	0.40	0.22	0.26	0.30	0.22	0.33
Range Str1 (m)	Major Axis	20.0	23.0	23.0	26.0	23.0	37.0	30.0
	Semi-Major Axis	28.0	14.0	14.0	14.0	14.0	14.0	33.0
	Minor Axis	17.0	21.0	8.0	20.0	7.0	17.0	17.0
Range Str2 (m)	Major Axis	31.0	36.0	35.0	39.0	40.0	39.0	70.0
	Semi-Major Axis	41.0	26.0	26.0	31.0	31.0	28.0	41.0
	Minor Axis	35.0	30.0	18.0	25.0	12.0	26.0	27.0

TABLE A-3 VARIOGRAM MODELS – SMSUW
Eagle Mine

Domain		SMSUW						
Variable		**Ni**	**Cu**	**Au**	**Pt**	**Pd**	**Ag**	**Co**
Rotation Vulcan		0/90/-90	0/90/-90	0/90/-90	0/90/-90	0/90/-90	0/90/-90	0/90/-90
	Nugget	0.16	0.18	0.34	0.24	0.18	0.13	0.14
	Str 1 Sill Diff	0.35	0.43	0.47	0.51	0.45	0.47	0.32
	Str 2 Sill Diff	0.50	0.39	0.19	0.26	0.37	0.40	0.54
	Major Axis	16.0	26.0	34.0	26.0	47.0	16.0	40.0
Range Str1 (m)	Semi-Major Axis	15.0	15.0	9.0	14.0	21.0	15.0	15.0
	Minor Axis	5.0	5.0	8.0	20.0	30.0	5.0	5.0
	Major Axis	52.0	55.0	58.0	39.0	62.0	52.0	103.0
Range Str2 (m)	Semi-Major Axis	20.0	20.0	20.0	31.0	24.0	24.0	22.0
	Minor Axis	24.0	25.0	24.0	25.0	37.0	24.0	24.0

31 APPENDIX B – EAGLE CROSS SECTIONS

EAGLE CROSS SECTIONS

Cross sections showing block and composite grades for copper and nickel.

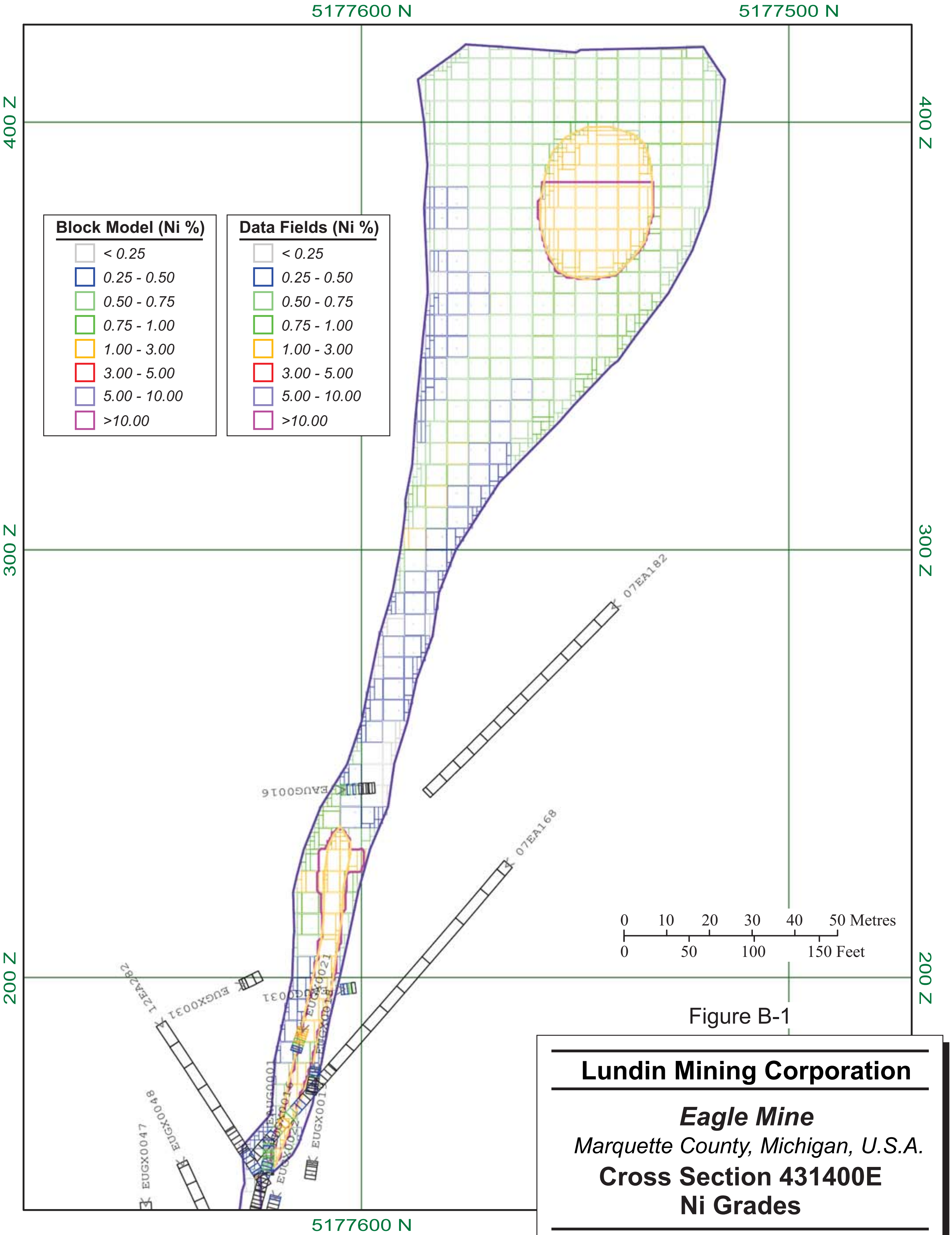


Figure B-1

Lundin Mining Corporation

Eagle Mine

Marquette County, Michigan, U.S.A.

Cross Section 431400E
Ni Grades

April 2017

Source: RPA, 2016.

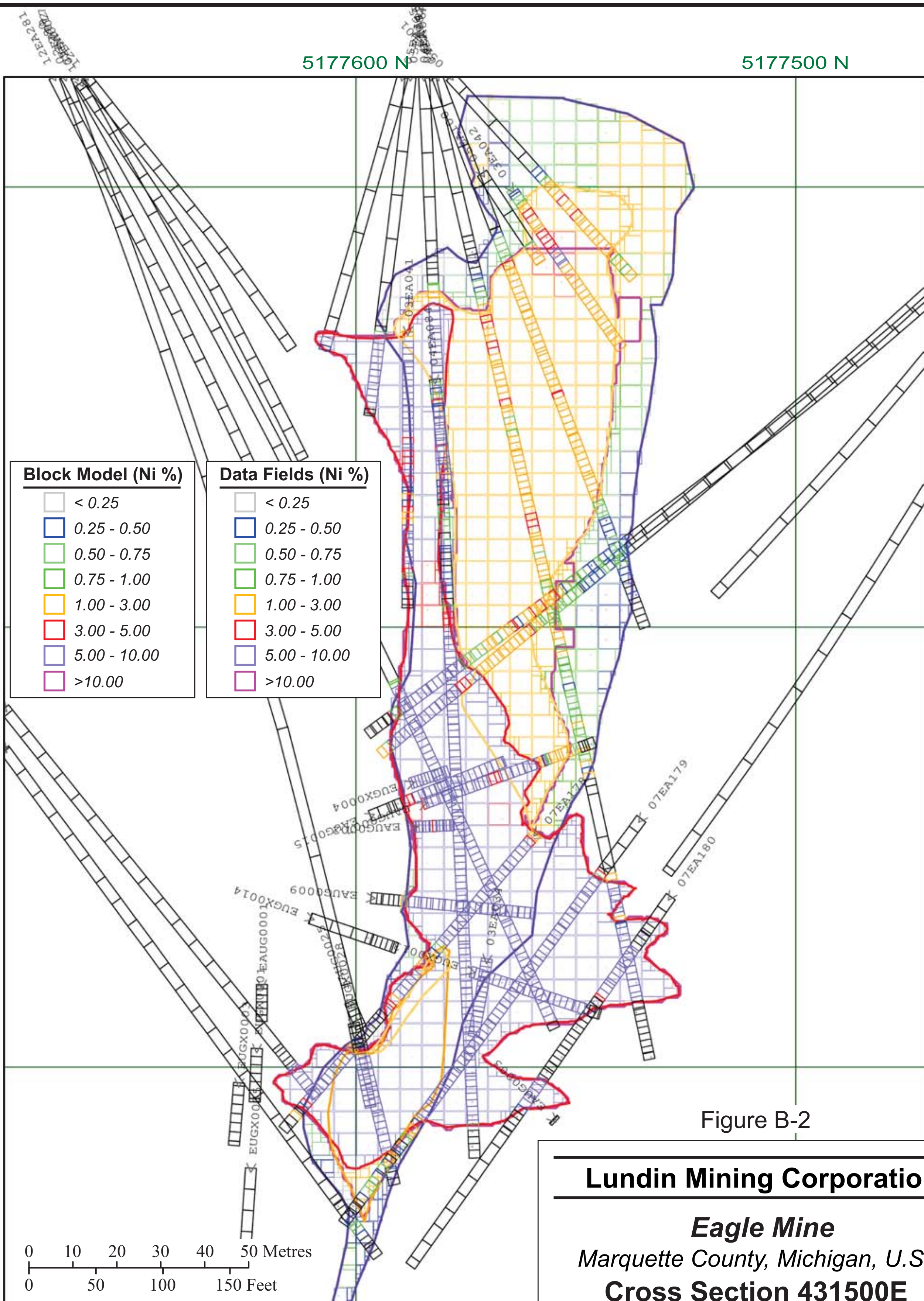


Figure B-2

Lundin Mining Corporation

Eagle Mine

Marquette County, Michigan, U.S.A.

Cross Section 431500E
Ni Grades

April 2017

Source: RPA, 2016.

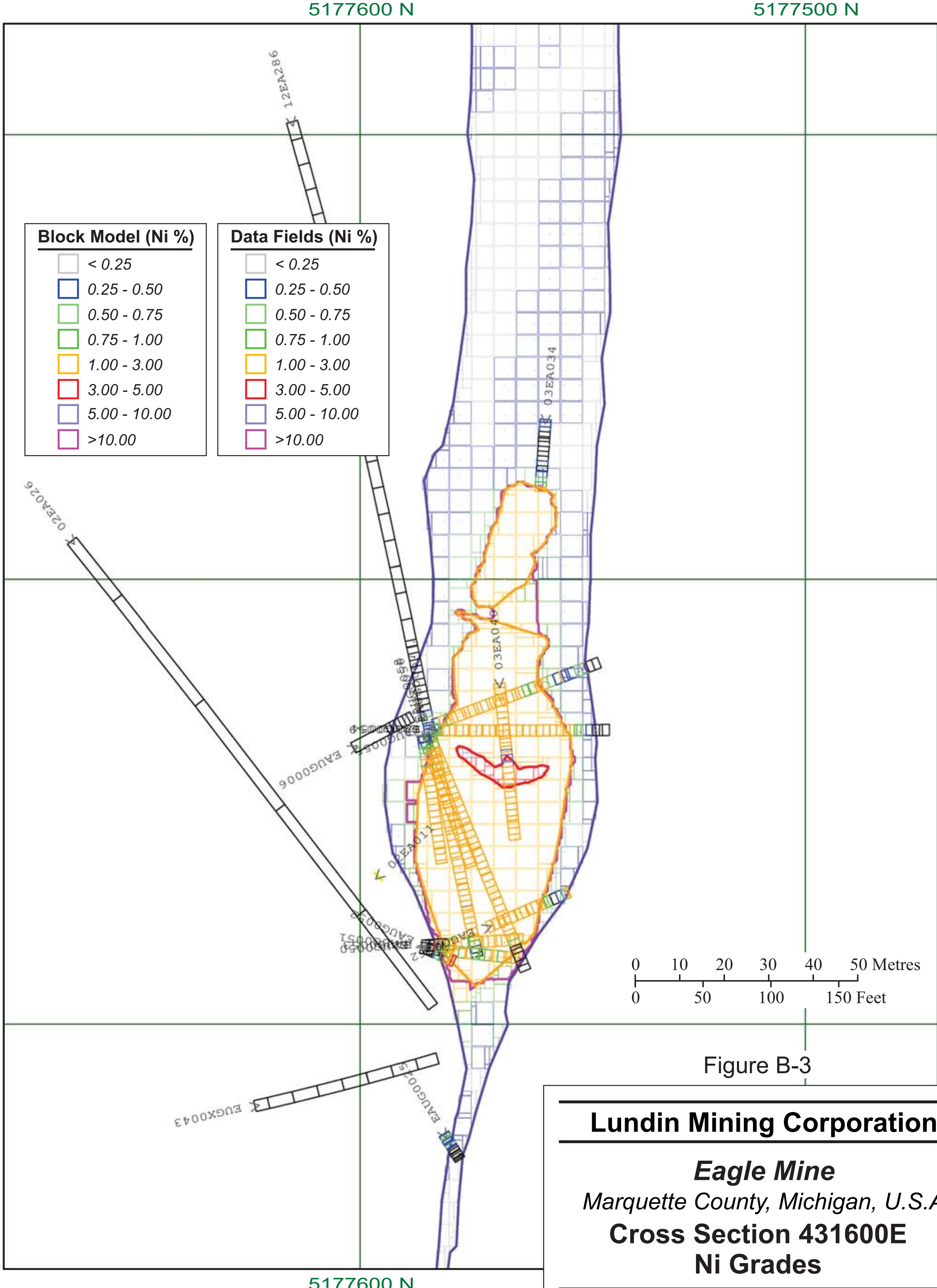


Figure B-3

Lundin Mining Corporation

Eagle Mine

Marquette County, Michigan, U.S.A.

Cross Section 431600E
Ni Grades

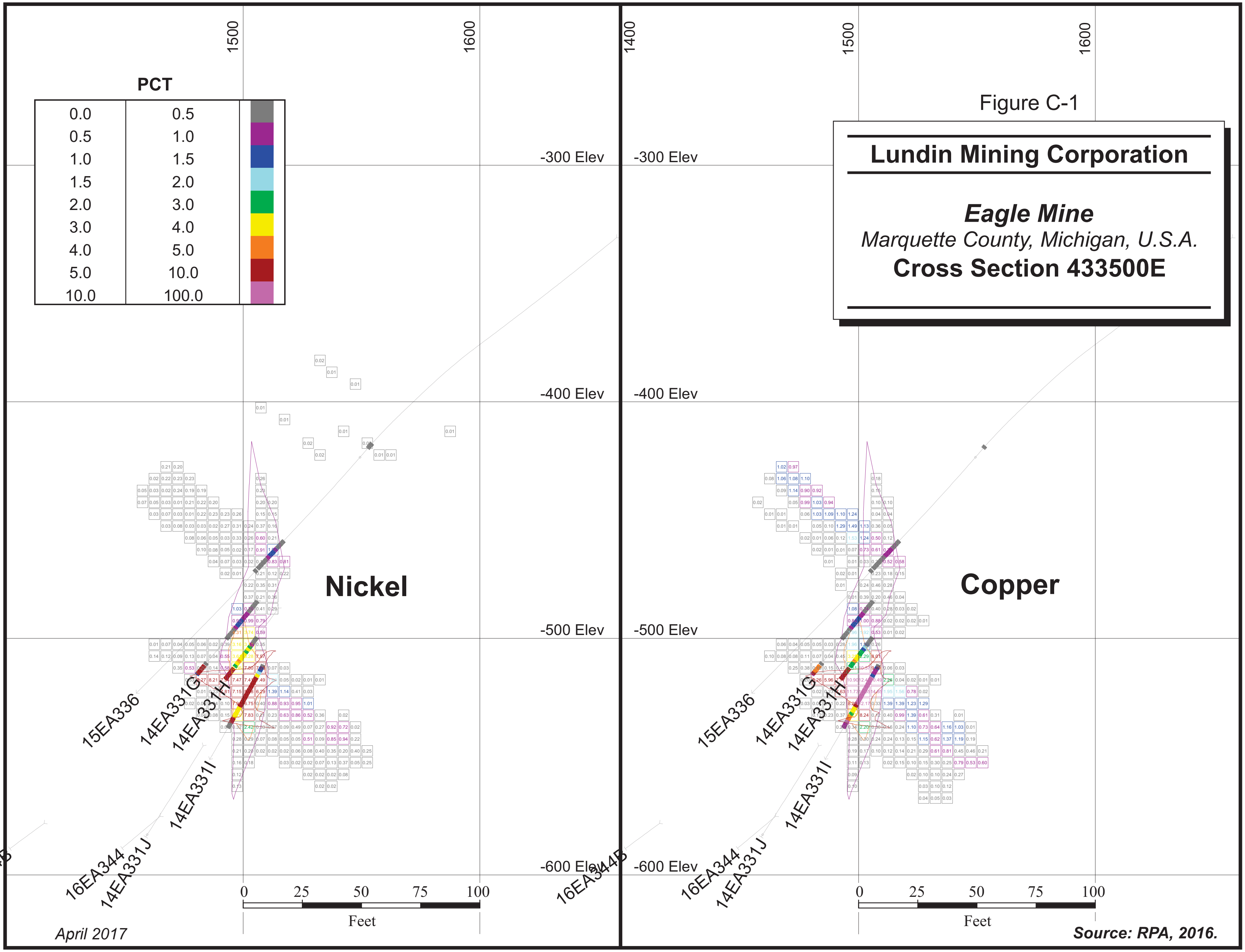
April 2017

Source: RPA, 2016.

32 APPENDIX C – EAGLE EAST CROSS SECTIONS

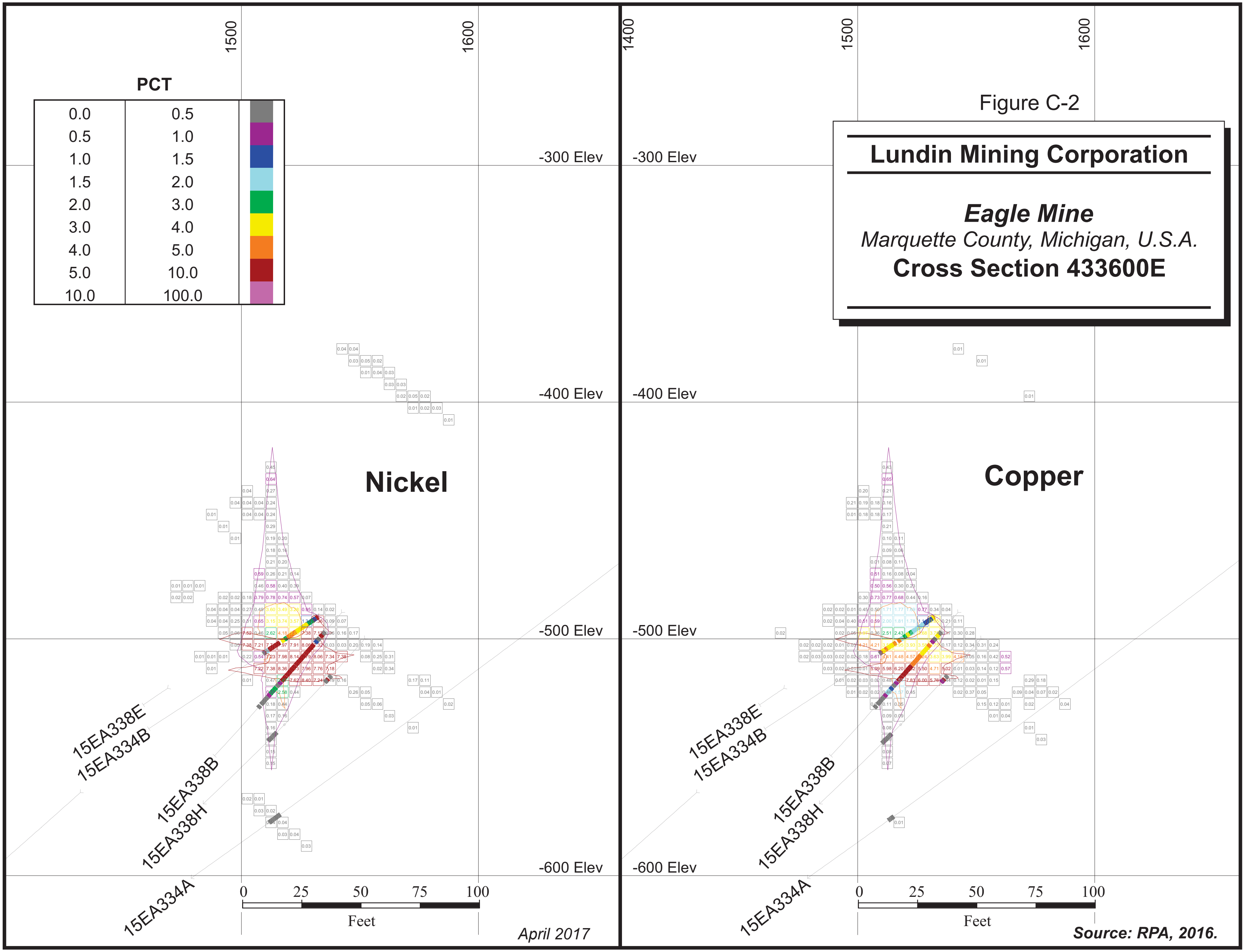
EAGLE EAST CROSS SECTIONS

Cross sections showing block and composite grades for copper and nickel.



RPA

www.rpacan.com



RPA
www.rpacan.com

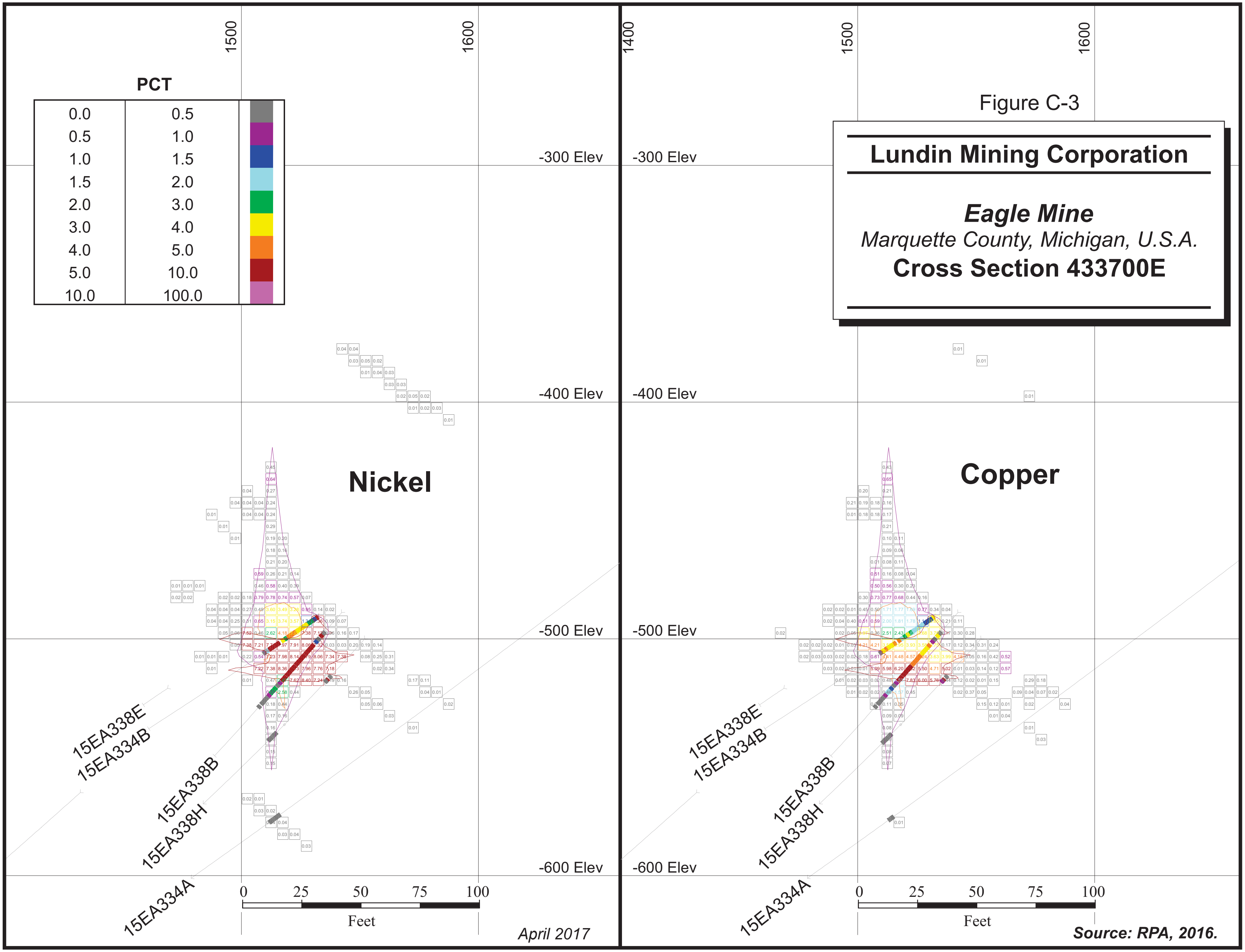


Figure C-3

Lundin Mining Corporation

Eagle Mine

Marquette County, Michigan, U.S.A.

Cross Section 433700E

RPA

www.rpacan.com