Nickel Shäw Ni-Cu-PGM Project PreFeasibility Study for the Nickel Shäw Ni-Cu-PGM Project, Yukon Canada prepared for Nickel Creek Platinum Corp.

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Glossary

Units of Measure

Above mean sea level	amsl
Acre	ac
Ampere	A
Annum (year)	a
Billion	B
Billion tonnes	Bt
Billion years ago,	Ga
British thermal unit	BTU
Centimetre	cm
Cubic centimetre	cm3
Cubic feet per minute	cfm
Cubic feet per second	ft3/s
Cubic foot	ft3
Cubic inch	in3
Cubic metre	m3
Cubic yard	yd3
Coefficients of Variation	CVs
Day	d
Days per week	d/wk
Days per year (annum)	d/a
Dead weight tonnes	DWT
Decibel adjusted	dBa
Decibel	dB
Degree	°
Degrees Celsius	°C
Diameter	ø
Dollar (American)	US$
Dollar (Canadian)	C$
Dry metric ton	dmt
Foot	ft
Gallon	gal
Gallons per minute (US)	gpm
Gigajoule	GJ
Gigapascal	GPa
Gigawatt	GW
Gram	g
Grams per litre	g/L
Grams per tonne	g/t
Greater than	>
Hectare (10,000 m2)	ha

Hertz	Hz
Horsepower	hp
Hour	h
Hours per day	h/d
Hours per week	h/wk
Hours per year	h/a
Inch	"
Kilo (thousand)	k
Kilogram	kg
Kilograms per cubic metre	kg/m3
Kilograms per hour	kg/h
Kilograms per square metre	kg/m2
Kilometre	km
Kilometres per hour	km/h
Kilopascal	kPa
Kilotonne	kt
Kilovolt	kV
Kilovolt-ampere	kVA
Kilovolts	kV
Kilowatt	kW
Kilowatt hour	kWh
Kilowatt hours per tonne (metric ton)	kWh/t
Kilowatt hours per year	kWh/a
Less than	<
Litre	L
Litres per minute	L/min
Megabytes per second	Mb/sec
Megapascal	MPa
Megavolt-ampere	MVA
Megawatt	MW
Metre	m
Metres above sea level	masl
Metres Baltic sea level	mbsl
Metres per minute	m/min
Metres per second	m/s
Metric ton (tonne)	t
Microns	µm
Milligram	mg
Milligrams per litre	mg/L
Millilitre	mL
Millimetre	mm
Million	M
Million bank cubic metres	Mbm3
Million tonnes	Mt

Minute (plane angle)	'
Minute (time)	min
Month	mo
Ounce	oz
Pascal	Pa
Centipoise	mPa·s
Parts per million	ppm
Parts per billion	ppb
Percent	%
Pound(s)	lb
Pounds per square inch	psi
Revolutions per minute	rpm
Second (plane angle)	"
Second (time)	sec
Specific gravity	SG
Square centimetre	cm2
Square foot	ft2
Square inch	in2
Square kilometre	km2
Square metre	m2
Thousand tonnes	kt
Three-Dimensional	3D
Tonne (1,000 kg)	t
Tonnes per day	t/d
Tonnes per hour	t/h
Tonnes per year	t/a
Tonnes seconds per hour metre cubed	ts/hm3
Total	T
Volt	V
Week	wk
Weight/weight	w/w
Wet metric ton	wmt

Abbreviations and Acronyms

Absolute Relative Difference	ABRD
Acid Base Accounting	ABA
Acid Rock Drainage	ARD
Alpine Tundra	AT
Atomic Absorption Spectrophotometer	AAS
Atomic Absorption	AA
British Columbia Environmental Assessment Act	BCEAA
British Columbia Environmental Assessment Office	BCEAO
British Columbia Environmental Assessment	BCEA
British Columbia	BC
Canadian Dam Association	CDA
Canadian Environmental Assessment Act	CEA Act
Canadian Environmental Assessment Agency	CEA Agency
Canadian Institute of Mining, Metallurgy, and Petroleum	CIM
Canadian National Railway	CNR
Carbon-in-leach	CIL
Caterpillar's® Fleet Production and Cost Analysis software	FPC
Closed-circuit Television	CCTV
Coefficient of Variation	CV
Copper equivalent	CuEq
Counter-current decantation	CCD
Cyanide Soluble	CN
Digital Elevation Model	DEM
Direct leach	DL
Distributed Control System	DCS
Drilling and Blasting	D&B
Environmental Management System	EMS
Flocculant	floc
Free Carrier	FCA
Gemcom International Inc.	Gemcom
General and administration	G&A
Gold equivalent	AuEq
Heating, Ventilating, and Air Conditioning	HVAC
High Pressure Grinding Rolls	HPGR
Indicator Kriging	IK
Inductively Coupled Plasma Atomic Emission Spectroscopy	ICP-AES
Inductively Coupled Plasma	ICP
Inspectorate America Corp.	Inspectorate
Interior Cedar – Hemlock	ICH
Internal rate of return	IRR
International Congress on Large Dams	ICOLD
Inverse Distance Cubed	ID3
Land and Resource Management Plan	LRMP

Lerchs-Grossman	LG
Life-of-mine	LOM
Load-haul-dump	LHD
Locked cycle tests	LCTs
Loss on Ignition	LOI
Metal Mining Effluent Regulations	MMER
Methyl Isobutyl Carbinol	MIBC
Metres East	mE
Metres North	mN
Mineral Deposits Research Unit	MDRU
Mineral Titles Online	MTO
National Instrument 43-101	NI 43-101
Nearest Neighbour	NN
Net Invoice Value	NIV
Net Present Value	NPV
Net Smelter Prices	NSP
Net Smelter Return	NSR
Neutralization Potential	NP
Northwest Transmission Line	NTL
Official Community Plans	OCPs
Operator Interface Station	OIS
Ordinary Kriging	OK
Organic Carbon	org
Potassium Amyl Xanthate	PAX
Predictive Ecosystem Mapping	PEM
Preliminary Assessment	PA
Preliminary Economic Assessment	PEA
Qualified Persons	QPs
Quality assurance	QA
Quality control	QC
Rhenium	Re
Rock Mass Rating	RMR ‘76
Rock Quality Designation	RQD
SAG Mill/Ball Mill/Pebble Crushing	SABC
Semi-autogenous Grinding	SAG
Standards Council of Canada	SCC
Stanford University Geostatistical Software Library	GSLIB
Tailings storage facility	TSF
Terrestrial Ecosystem Mapping	TEM
Total dissolved solids	TDS
Total Suspended Solids	TSS
Tunnel boring machine	TBM
Underflow	U/F
Valued Ecosystem Components	VECs

Waste rock facility	WRF
Water balance model	WBM
Work Breakdown Structure	WBS
Workplace Hazardous Materials Information System	WHMIS
X-Ray Fluorescence Spectrometer	XRF

Forward Looking Statements

This Technical Report, including the economics analysis, contains forward-looking statements within the meaning of the United States Private Securities Litigation Reform Act of 1995 and forward-looking information within the meaning of applicable Canadian securities laws. While these forward-looking statements are based on expectations about future events as at the effective date of this Report, the statements are not a guarantee of Nickel Creek's future performance and are subject to risks, uncertainties, assumptions, and other factors, which could cause actual results to differ materially from future results expressed or implied by such forward-looking statements. Such risks, uncertainties, factors, and assumptions include, amongst others but not limited to metal prices, mineral resources, mineral reserves, capital and operating cost forecasts, economic analyses, smelter terms, labour rates, consumable costs, and equipment pricing. There can be no assurance that any forward-looking statements contained in this Report will prove to be accurate, as actual results and future events could differ materially from those anticipated in such statements.

1 SUMMARY

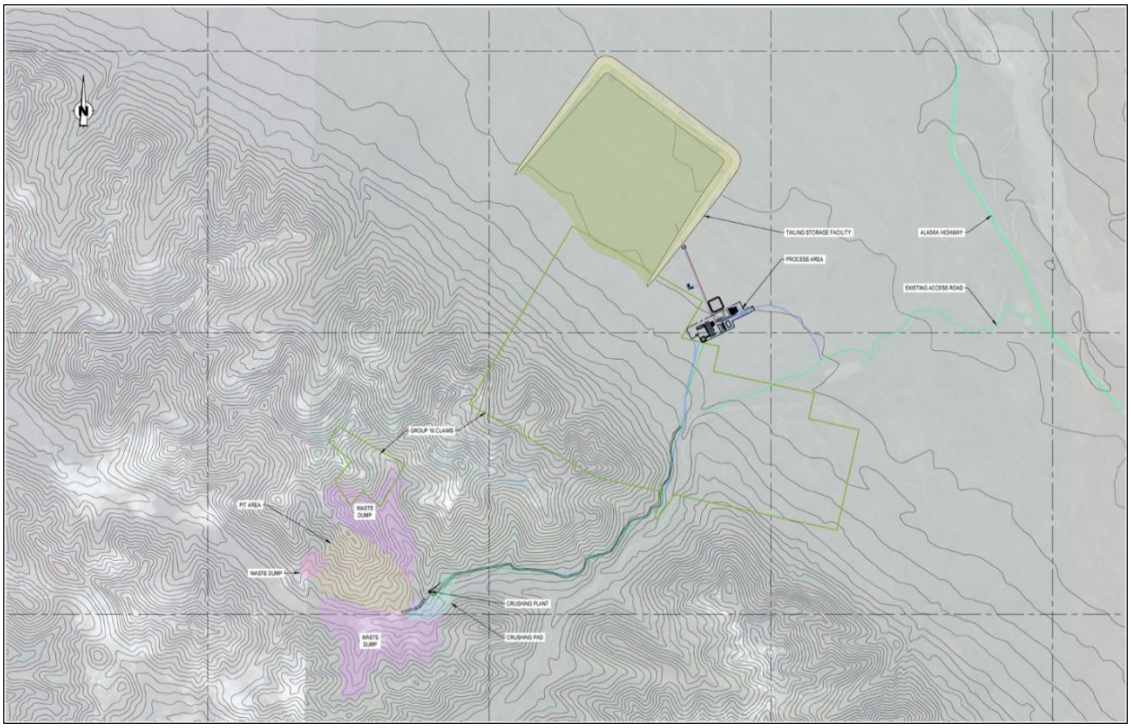
Nickel Creek Platinum Corporation (Nickel Creek) is a Canadian exploration company with its corporate office located in Toronto, Canada. Nickel Creek is solely focused on the development of the Nickel Shäw Ni-Cu-PGM Project (Project) located in western Yukon. Nickel Creek holds a 100% interest in the mineral rights for the Project.

This Technical Report (Report) was prepared on behalf of Nickel Creek by AGP Mining Consultants Inc. (AGP). The purpose of the Report is to present the results of the Prefeasibility Study (PFS) on the Wellgreen Deposit. This Report was prepared in compliance with the Canadian disclosure National Instrument 43-101 (NI 43-101) and in accordance with the requirements of Form 43-101 F1.

1.1 Location

The Project is located approximately 317 km northwest of Whitehorse in southwestern Yukon, at an approximate latitude of 61°28'N, and longitude of 139°32'W. It is accessible by a 14-km road southwest of the paved all-weather Alaska Highway to the northeast. The nearest villages are Burwash Landing and Destruction Bay, both located on the Alaska Highway, on Kluane Lake. The Project lies within the Kluane First Nation "core area" as defined under the Umbrella Final Agreement between the Government of Canada, Government of Yukon, and Council for Yukon Indians (now Council for Yukon First Nations)(see Figure 1-1).

Figure 1-1: Nickel Shäw Project Site Layout



Source: AGP (2023)

1.2 Accessibility

The Project is located approximately 317 km northwest of Whitehorse, Yukon and can be reached via the paved Alaska Highway, Highway 1, which is maintained by the Government of Yukon, at kilometre marker 1727. Turning southwest from the highway to the Project, travel is by all-weather, gravel road that runs beside Quill Creek for a distance of 14 km.

The regional climate is semi-arid, sub-arctic with relatively warm, dry summers and winters characterized by relatively dry, cold interior conditions but tempered by west coast climate influences. Weather records have been historically recorded at the Burwash Landing weather station (806.8 masl). The area lies in the rain shadow of the Saint Elias Mountains, with average annual total precipitation for the Burwash Landing station of approximately 280 mm of which 190 mm typically falls as rain in summer and the remainder as snow in winter.

Exploration drilling has historically been done sporadically throughout the year, but potential future operations would be configured for year around operations.

Generators are used at the exploration camp and are installed for the exploration programs as the supply power for the Project. Water supply adequate for drilling operations can be pumped from local creeks. Potable and non-potable water has been sourced from a shallow well at Lower Camp.

The Project is located in the Kluane Ranges, which are a continuous chain of foothills situated along the eastern flank of the Saint Elias Mountains. The topography across the Project is typical of the interior Yukon with slopes of 250 m to 300 m, and the highest peaks exceed an elevation of 1,800 m. The main mineralized zone on the Project lies between an elevation of 1,250 m and 1,700 m on a moderate to steep south-facing slope. Water drainage on the Project is mainly east and then north into the Quill Creek drainage.

1.3 History

In 1952, the original discovery of mineralization was made the prospectors: W. Green, C. Aird, & C Hankins. The property was optioned to Hudson Bay Exploration and Development and subsequently it was optioned to Yukon Mining Corporation Limited (YMC), a subsidiary of Hudson Bay Mining and Smelting Co. Ltd. (HudBay) that same year. The property was then transferred again, to another subsidiary of HudBay called Hudson-Yukon Mining Co. Ltd. (Hudson-Yukon Mining) in 1955. In 1969, Hudson-Yukon Mining completed a detailed feasibility study for a mining and milling operation at the Project and the mine operated from 1972 to 1973.

From 1987 to 2010, the Project fell under the ownership of several companies and joint venture agreements. During this period, 228 RC and diamond drill holes were completed, totalling approximately 32,675 m. In 2011, the Project and other nickel assets were spun out to its subsidiary Pacific Coast Nickel Corp., which then changed its name to Prophecy Platinum Corp. Prophecy Platinum Corp. changed its name to Wellgreen Platinum Ltd. in 2013. In January 2018, Wellgreen Platinum Ltd. changed its name to Nickel Creek Platinum Corp.

Historic production from the Hudson-Yukon Mining operation was: 171,652 tonnes grading 2.23 % Ni, 1.39 % Cu, 1.3 g/t Pt, 0.92 g/t Pd, 0.17 g/t Au, 0.40 g/t Rh, 0.42 g/t Ru, 0.25 g/t Ir, 0.20 g/t Os, and 0.20 g/t Re were milled to produce 33,853 tonnes of concentrate, which was shipped to Sumitomo in Japan.

1.4 Geology

The Project is located within the Insular Superterrane, which is dominantly composed of two older terranes, the Wrangellia Terrane and Alexander Terrane, that were amalgamated at approximately 320 million years (Ma). These terranes are comprised of island arc and ocean floor volcanic rocks overlain by thick assemblages of oceanic sedimentary rocks that range in age from 220 to 400 Ma. The Project is part of the Kluane Ultramafic Belt, situated in the southwest portion of the Wrangellia Terrane that spans from Vancouver Island, north through British Columbia (BC), into Alaska.

The Wellgreen Deposit occurs within, and along, the lower margin of an Upper Triassic (Kluane) ultramafic-mafic body, within the Quill Creek Complex. This assemblage of mafic-ultramafic rocks is 20 km long and closely intrudes along the contact between the Station Creek and Hasen Creek formations. The main mass of the Quill Creek Complex, the Wellgreen Deposit, and Quill intrusions, is 4.7 km long and up to 1 km wide. A smaller mass of similar intrusive, located along strike to the northwest, is known as the Arch intrusive. The Burwash intrusion is located to the southeast and is likely a continuation of the Quill intrusion.

The Wellgreen Deposit portion of the Quill Creek Complex consists of a main intrusion and an associated group of upright to locally overturned, steeply south dipping sills. Continuing approximately 2.5 km northwest of the Wellgreen Deposit, the recently explored Arch Deposit appears to be an extension of the ultramafic intrusive units of the Wellgreen Deposit.

1.5 Exploration and Drilling

Since 1987, there have been several regional exploration programs and drilling in and around the Wellgreen Deposit. The principal exploration targets are: Wellgreen, Arch, Burwash and Quill. The Arch target is situated 3 km northwest of Wellgreen, the Quill target is situated adjacent to the southeast of Wellgreen (to Aird Creek) and the Burwash target is situated adjacent to the Quill target, southeast of the Quill target (from Aird Creek to the southeast). All four areas have been subject to multiple geological mapping and rock geochemical sampling programs.

The primary focus of exploration and drilling has been focused on the development of the Wellgreen deposit. This included ground geophysical surveys (airborne surveys in 2007, ground surveys in 2009. In 2015 and 2016, a downhole electromagnetic survey was conducted. In 2018, an induced polarity (IP) ground geophysical survey was conducted over the Wellgreen Deposit, Quill and Burwash targets.

The Arch, Burwash and Quill targets were subject to the same airborne and ground geophysical surveys in 2007 and 2009, respectively. In 2013, three ground geophysical surveys were completed on the three targets. During the period 2019-2022, surface EM (time domain) was completed in the Arch, Quill and Burwash areas.

The region has seen many drill campaigns since 1952. Since 1987, the main focus of the drill programs has been on the Wellgreen Deposit with a total of 64,510 m from a total of 200 diamond drill core, 128 reverse circulation (RC) and 66 underground diamond drillholes.

The Arch deposit has been subject to 22 diamond drill holes. Nickel Creek completed 19 of these drill holes in 2021 and 2022, totalling 2,239 m.

Between 2005 and 2021, the Burwash and Quill target areas have had 24 drill holes (20 diamond, 4 RC), and two drill holes completed, respectively, totalling 1,682 m at Burwash and 675 m at Quill. These drill holes were targeting geophysical anomalies.

Since 2013, 27 monitor wells have been drilled within and adjacent to the deposit in order to conduct baseline water quality studies. This work will be used to characterize the background groundwater conditions around the site.

1.6 Sample Preparation and Data Verification

AGP reviewed the Quality Control/Quality Control (QA/QC) program and is of the opinion it is in accordance with standard industry practice and CIM Exploration Best Practice Guidelines. Nickel Creek personnel have taken all reasonable measures to ensure the sample analysis completed is accurate and precise. AGP considers the assay results and database acceptable for use in the estimation of mineral resources. It is the opinion of the QP that the preparation and analyses are satisfactory for this type of the deposit and that the sample handling and chain of custody meet or exceed industry standards.

AGP received the database containing all drill holes for the Wellgreen Deposit and the Arch Deposit in CSV format that included collar, survey, assay, and lithology files. An export of the Geotic database was received for data validation.

AGP reviewed the data prior to the 2022 drill program, and all eight drill holes for the 2022 drill program. Nickel and copper values were compared to the laboratory certificates provided to Nickel Creek by ALS. No errors were found.

The drill holes were also checked visually for any misplaced drill hole collars, deviations in the down hole surveys and for any missing or overlapping intervals. No errors were found.

The most recent site inspection was conducted by the QP from 11 October to 14 October 2022 for two days. The site visit included an inspection of core logging and sampling facilities, core storage facilities, verifying drill hole collar coordinates, and reviewing drill core logs against selected drill core. During the site visit, the 2022 drill program was in progress on the Arch deposit on drill hole ASD22-019.

The QP is of the opinion the database is representative and adequate to support the resource estimates for the Wellgreen Deposit and the Arch Deposit. The QP is also of the opinion the core descriptions, sampling procedures, and data entries were conducted in accordance with industry standards.

1.7 Mineral Resource Estimate

The mineral resources for the Wellgreen Deposit are: Measured Resources of 122.4 Mt at 0.25 %Ni, 0.15 %Cu; Indicated Resources of 314.3 Mt at 0.26 %Ni, 0.13 %Cu; and Inferred Resources of 114.0 Mt at 0.27 %Ni, 0.13 %Cu. The effective date of the Mineral Resources for the Wellgreen Deposit is 3 April 2023. Net Smelter Return (NSR) cut-off grades range from CAD $17.30 to CAD $17.61 depending on reporting to Bulk concentrate or Split concentrates.

The mineral resources for the Arch Deposit at a 0.2 %Ni cut-off grade are: Inferred Resources of 3.2 Mt at 0.35 %Ni, 0.17 %Cu. The effective date of the Mineral Resources for the Arch Deposit is 3 April 2023.

Table 1-1 and Table 1-2 present the Mineral Resources for the Wellgreen Deposit and the Arch Deposit, respectively.

Table 1-1: Mineral Resources - Wellgreen Deposit; effective date of 3 April 2023

		Metal Grades								Contained Metal					
Class	tonnes Kt	Ni %	Cu %	Co %	Pd g/t	Pt g/t	Au g/t	Mg %	S %	Ni Mlbs	Cu Mlbs	Co Mlbs	Pd koz	Pt koz	Au koz
Measured	122,363	0.25	0.15	0.014	0.23	0.24	0.05	16.03	0.78	679	411	38	905	944	184
Indicated	314,332	0.26	0.13	0.014	0.24	0.22	0.04	17.26	0.64	1,792	871	99	2,385	2,197	361
Total M+I	436,695	0.26	0.13	0.014	0.23	0.22	0.04	16.92	0.68	2,471	1,281	137	3,290	3,141	545
Inferred	114,016	0.27	0.13	0.015	0.25	0.20	0.04	17.46	0.69	668	339	37	916	733	128

Source: AGP (2023) - Notes:
Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
Summation errors may occur due to rounding.
Mineral Resources amenable to open pit extraction are reported within an optimized constraining shell.
Metal prices used for Mineral Resource determination ($US):
Nickel: $12.10/lb, Copper: $4.45/lb, Cobalt: $25.30/lb, Palladium: $2,415/troy oz, Platinum: $1,150/troy oz, Gold: $2,015/troy oz
Net Smelter Return (NSR) cut-off grades range from $17.30 to $17.61 Canadian Dollars depending on Bulk Con and Split Con
Mining Cost vary by bench, separately for ore and waste:
base waste mining cost @ 1330m = C$2.26/t, 10m bench incremental cost above =C$ 0.0.004/t, 10m bench incremental cost below = C$0.023/t
base ore mining cost @ 1330m = C$1.99/t, 10m bench incremental cost above =C$ 0.0.019/t, 10m bench incremental cost below = C$0.015/t
Process and G&A costs: bulk con = C$17.30/t
split con = C$17.61/t
Calculated process recoveries by concentrate type:

	Ni	Cu	Co	Pd	Pt	Au
Bulk con:	*Eq1*	*Eq2*	57.0%	54.0%	47.8%	74.4%
Cu con:	*Eq3*	*Eq4*	3.36%	3.19%	0.91%	23.58%
Ni con:	*Eq5*	*Eq6*	53.64%	50.81%	46.89%	50.82%

Where: Eq1 = Ni recovery to Bulk Con = MIN (23.21*LN(X)+30.362,88)
Eq2 = Cu recovery to Bulk Con = ((Cu-0.06)/Cu)) *100, Constant tail at 0.06% Cu
Eq3 = Ni recovery to Cu Con = Ni recovery to achieve 25.6% Cu and 1.1% Ni grades in Cu Con
Eq4 = Cu recovery to Cu Con = Cu recovery to Bulk Con * 0.623
Eq5 = Ni recovery to bulk con - Ni recovery to Cu Con
Eq6 = Cu recovery to bulk con - Cu recovery to Cu Con
Capping of grades varies based on lithology for each metal.
The density is assigned based on lithology and varies between 2.76 g/cm3 and 3.38 g/cm3.

Table 1-2: Mineral Resources - Arch Deposit; effective date of 3 April 2023

		Metal Grades								Contained Metal					
Class	tonnes kt	Ni %	Cu %	Co %	Pd g/t	Pt g/t	Au g/t	Mg %	S %	Ni Mlbs	Cu Mlbs	Co Mlbs	Pd koz	Pt koz	Au koz
Inferred	3,217	0.35	0.17	0.017	0.39	0.25	0.04	16.85	0.70	24.7	11.8	1.2	40.8	25.9	3.9

Source: AGP (2023)
Notes:
Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
Summation errors may occur due to rounding.
Mineral Resources amenable to open pit extraction are reported within an optimized constraining shell.
Cut-off grade to report Mineral Resources is 0.2 %Ni.
Metal prices used for Mineral Resource determination ($US):
Nickel: $12.10/lb, Copper: $4.45/lb, Cobalt: $25.30/lb, Palladium: $2,415/troy oz, Platinum: $1,150/troy oz, Gold: $2,015/troy oz
Metal recoveries used for Mineral Resource determination:
Nickel: 44%, Copper: 73%, Cobalt: 57%, Palladium: 54%, Platinum: 48%, Gold: 74%/troy oz
Capping of grades on raw assays are: 3.0 % Ni and 1.5 %Cu
The density is assigned based on lithology and varies between 2.69 g/cm^3 and 2.80 g/cm^3.

1.8 Mineral Processing and Metallurgical Testing

Metallurgical test work on samples from the Nickel Creek Deposit has been ongoing since 1987. In 1988, two test programs were conducted at Lakefield Research and included hardness testing and a locked cycle testing. In 2011, a limited metallurgical test program was carried out at G&T which included ore characterization and open circuit testing. A more extensive testing program was carried out by SGS Vancouver in 2012. Mineralogy characterization was carried out by QEMSCAN, hardness testing was completed, and all composites were evaluated using locked cycle testing. A test program was conducted by SGS Lakefield in 2013, which involved the characterization of ten individual variability samples for mineralogy and hardness. A composite was produced from the variability samples and a locked cycle test was performed. In 2014, Expert Process Solutions (XPS) conducted a test program that included QEMSCAN mineralogy on a composite sample from the previous SGS program. In 2017, XPS completed a project entitled Phase 1. In this study, variability and composite samples were created representing potential mining periods. Hardness testing including Bond, JK drop weight, (high pressure grinding rolls) HPGR and abrasion were conducted on each composite. Flotation variability testing and composite locked cycle testing were also completed. In 2018 XPS completed a program entitled Phase 2 which was focused on the geometallurgical peridotite type samples which represented 90% of the resource. QEMSCAN mineralogy, hardness testing, flowsheet development, variability testing, locked cycle testing, Cu-Ni separation testing, and operation of a mini pilot plant were included in the study.

The various test programs conducted on samples from the Nickel Creek Deposit have indicated that Ni recovery is related to sulphur content of the feed. Tests with higher sulphur content feed corresponded to higher Ni recovery. To better understand this relationship, an extended variability program was conducted by XPS in 2022. In this recent program, samples with specific Ni to S ratios were evaluated through the rougher/scavenger flowsheet to determine the potential impact on circuit Ni recovery. The program confirmed that surplus sulphide content was the strongest predictor of Ni recovery. This relationship has been used to calculate the Ni recovery for the resource.

1.9 Mineral Reserves Estimate

The Nickel Shäw Project is planned to be an open pit operation using conventional mining equipment. All estimates are based on the mine plans generated by AGP for the pre-feasibility study work.

Costs are based on first principles build-up of operating and capital costs for the life of the project with most current vendor quotations for consumables and capital expenses based on local vendor submissions.

The reserves for the project are based on the conversion of the Measured and Indicated Mineral Resources in the study mine plan within the ultimate open pit limits. The level of information from drill holes and degree of certainty on assumptions used the mine plan estimates provides reasonable support to convert Measured and Indicated Mineral Resources to Proven and Probable Reserves. The estimates were prepared under the supervision of Gordon Zurowski, P.Eng. of AGP, a QP as defined under NI 43-101.

No underground areas are considered in the Mineral Reserves at this time.

The total Mineral Reserves for the project are shown in metric units in Table 1-3. This estimate has an effective date of July 19, 2023. Some variation may exist due to rounding.

Table 1-3: Proven and Probable Reserves – July 19, 2023

		Grades								Contained Metal					
Reserve Class	Tonnes (Mt)	Ni (%)	Cu (%)	Co (%)	Au (g/t)	Pt (g/t)	Pd (g/t)	Mg (%)	S (%)	Ni (Mlbs)	Cu (Mlbs)	Co (Mlbs)	Au (koz)	Pt (koz)	Pd (koz)
Proven	101.0	0.26	0.16	0.014	0.05	0.25	0.24	15.77	0.81	570	355	31	158	802	766
Probable	206.7	0.26	0.12	0.014	0.03	0.21	0.23	17.28	0.60	1,171	538	64	225	1,408	1,555
Proven & Probable	**307.7**	**0.26**	**0.13**	**0.014**	**0.04**	**0.22**	**0.23**	**16.8**	**0.67**	**1,741**	**892**	**96**	**383**	**2,211**	**2,321**

Note: This mineral reserve estimate has an effective date of July 19, 2023, and is based on the mineral resource estimate dated April 3, 2023, for Nickel Creek Platinum by AGP Mining Consultants Inc. The Mineral Reserve estimate was completed under the supervision of Gordon Zurowski, P.Eng. of AGP, who is a Qualified Person as defined under NI 43-101. Mineral Reserves are stated within the final pit design based on prices of US$3.85/lb copper, US$10.50/lb nickel, US$22/oz cobalt, US$1000/oz platinum, US$2100/oz palladium, and US$1,750/oz gold. An NSR cut-off C$17.30/t was used for bulk concentrates while C$17.61/t was used for split concentrates to define reserves. A FEX of US$0.76/C$ was used for block valuation. The life-of-mine mining cost averaged C$2.58/t mined, preliminary processing costs were C$16.15/t for bulk concentrate ore and C$16.46/t for split concentrate ore and G&A was C$1.15/t ore placed. The metallurgical recoveries were varied according to concentrate type and feed grades. Overall metal recoveries were approximately 46.9%, 54.4%, 57.0%, 74.4%, 47.9% and 53.9% for nickel, copper, cobalt, gold, platinum, and palladium respectively.

1.10 Mining Methods

1.10.1 Mine Geotechnical

A geotechnical data gap analysis in 2018 - following the surface geotechnical mapping campaign - indicated the requirement for additional investigation of the rock mass character and structural geology of the proposed pit slopes, particularly within the ultimate pit slope highwall. The 2022 investigation program resulted in moderately improved spatial coverage and resolution for geotechnical domains and related rock mass characteristics. As anticipated, geotechnical data and lab testing data collected from the 2022 program generally confirms earlier indications that the stability of interim / phased pit walls within the ore zone will need to be managed with relatively shallow inter-ramp slope angles, approximating the constituent material's natural angles of repose. This is due to the relatively poor quality and geotechnical character of rock within the ore zone. Bench face slopes in this zone should be expected to ravel regardless of geotechnical structure and catch bench widths should be designed in consideration of material catchment requirements. The 2022 data also confirms prior indications of relatively superior rock quality within the footwall meta-sedimentary and barren volcaniclastic units forming the bulk of the ultimate pit highwall slope. This supports the use of the relatively steeper/optimized inter-ramp to overall pit slope design criteria for the Pre-Feasibility Study (PFS) design work.

Geotechnical review of the available information has resulted in the recommended pit slope angles by rock type as shown in Table 1-4.

Table 1-4: Pit Shell Slope Parameters

Slope	Rock type
33˚	Peridotite
35˚	Clinopyroxenite
35˚	Mineralized Gabbro/Massive Sulfides
44˚	Sediments
44˚	Station Creek Volcanics
44˚	Maple Creek Gabbro

The proposed open pit will intersect and mine into the historical underground workings at approximately mid-slope height on the eastern side of the pit. This will result in increased risks for safely mining in this area and prescriptive plans will need to be developed to adequately mitigate these risks to acceptable levels. Current best practice for advancing open pit mining operations through existing underground voids is to fill them with either waste or low-grade ore, which removes the void and partially supports the wall rock around the void. If a source of waste rock is available and that will be visibly distinguishable from the ore after blasting, dilution can be kept to a minimum, while not tying up ore that could be processed sooner.

1.10.2 Mine Design and Schedule

The Nickel Shäw Project is planned to be an open pit operation using conventional mining equipment.

The pit design consists of 3 main phases of successive pushbacks. Phase 1 provides the initial low strip ratio mill feed in the schedule. A waste quarry has been designated as phase 1B and is immediately southwest of the phase 1 pit. The quarry material will be mined early in the schedule providing material for the crusher and stockpile pad construction early in the schedule. These initial phases will be followed by phases 2 and 3 which both extend to the western and higher main portions of the pit.

The pit optimization shells used to guide the ultimate pits were also used to outline areas of higher value for targeted early mining and phase development. All pits were developed using 10 metre bench heights. Phase tonnages and grades are displayed in Table 1-5.

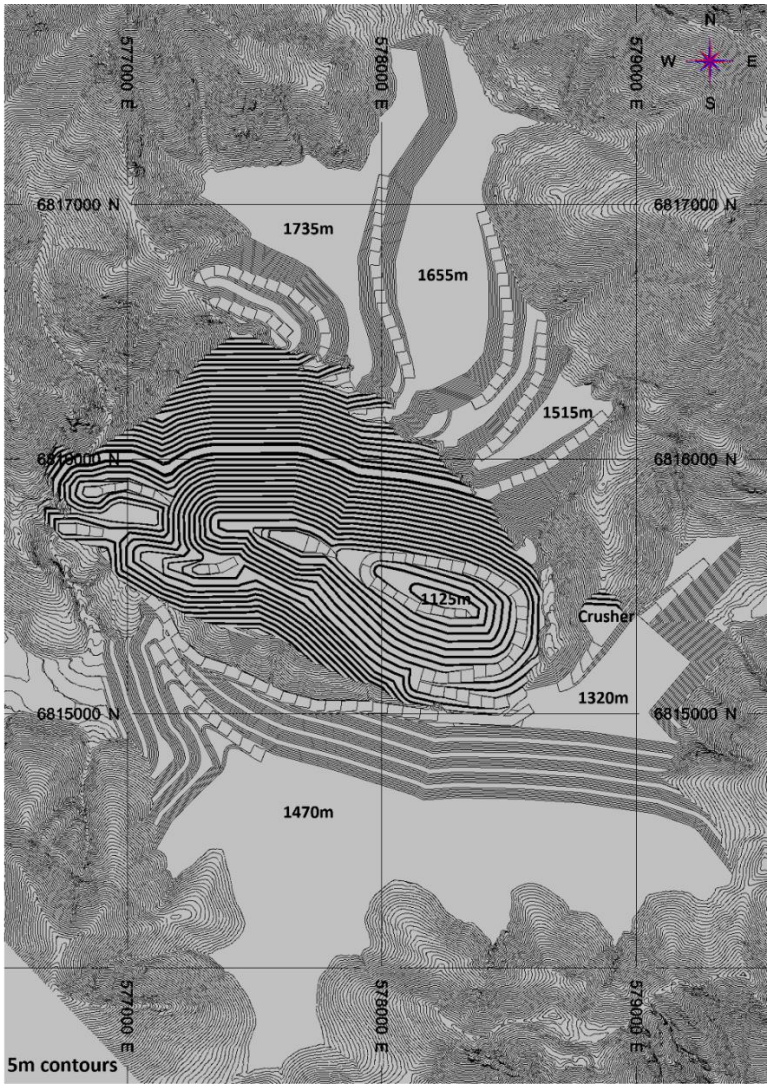
Table 1-5: Pit Phase Tonnages and Grades

Phase	Ore (Mt)	Ni (%)	Cu (%)	Co (%)	Au (g/t)	Pt (g/t)	Pd (g/t)	Mg (%)	S (%)	Waste (Mt)	Total (Mt)	Strip Ratio
1	29.3	0.24	0.10	0.014	0.035	0.17	0.20	17.2	0.57	5.4	34.7	0.2
1B	3.0	0.23	0.03	0.012	0.013	0.09	0.14	21.5	0.25	27.8	30.8	9.2
2	107.7	0.25	0.12	0.014	0.034	0.19	0.22	17.0	0.59	192.6	300.3	1.8
3	167.7	0.26	0.15	0.014	0.043	0.26	0.25	16.5	0.74	368.9	536.6	2.2
Total	**307.7**	**0.26**	**0.13**	**0.014**	**0.039**	**0.22**	**0.23**	**16.8**	**0.67**	**594.6**	**902.3**	**1.9**

The mining rate or 51 Mtpa was selected based on strategic planning scenarios which demonstrated that the targeted mill capacity of 45 ktpd (16.2 Mtpa) would be achieved. Year 1 of process production was reduced to account for plant ramp-up. Two years of pre-production were utilized to develop pioneering roads to mining areas, construct the crusher and stockpile pads, and ensure adequate stockpile material to allow consistent crusher feed in year 1.

The selected mine schedule plans to deliver 308 Mt of mill feed grading 0.13% Cu, 0.26% Ni, 0.014% Co, 0.22 g/t Pt, 0.23 g/t Pd, 0.039 g/t Au, 0.67 % S and 16.8 % Mg over 19 years of mining. Mill feed consists of 190 Mt of bulk concentrate ore and 118 Mt of split concentrate ore. The process facility will continue to operate into year 20 to exhaust the stockpile material. Waste tonnage totalling 595 Mt will be delivered to rock storage facilities. The overall waste versus ore tonnage strip ratio is 1.9:1. The ultimate pit with resulting waste rock facilities is displayed in Figure 1-2.

Figure 1-2: Final Layout of Pit and Waste Rock Facilities



Source: AGP 2023

1.11 Processing Methods

A conventional mineral processing plant has been designed for the project, with a nominal throughput rate of 45,000 tonnes per day. The plant includes a primary gyratory crusher, located near the open pit, with overland conveying of crushed ore down to the lower site area. Crushed ore is stored on an uncovered stockpile, with apron feeders discharging material onto the SAG mill feed conveyor.

The crushed mill feed is ground to 80% passing 110 µm using a single SAG mill and two parallel ball mills. Mill product slurry is pumped to a flotation circuit that includes multiple stages of rougher, scavenger and cleaner flotation and also integrates a magnetic separation circuit for segregation of pyrrhotite. The flotation circuit is configurable to produce either a bulk Cu-Ni concentrate, or separate

Cu and Ni concentrates. The latter configuration is utilized for feedstock with higher Cu concentration, and the individual products carry considerably greater value than the combined/bulk product.

Flotation concentrates of different specifications are stored in a covered storage facility. The design is such that concentrates can be blended or handled separately to best address customer requirements.

Tailings from the flotation circuit are dewatered using a single large diameter thickener, to a high density (approximately 60% solids by weight) before being transported to the tailings management facility some 2 kilometres downslope from the plant.

Reagents, grinding balls and other consumables are transported to site by road and stored within suitable storage areas within or adjacent to the main plant.

Routine maintenance of process plant equipment is completed using staff and equipment from the plant workshop unit. The workshop is located within the overall process plant building.

A contract operated assay lab provides analytical services for the mine and the mill. This containerized unit can handle base metal analysis only, with PGM conducted off site using contractor's remote fire assay facilities.

1.12 Project Infrastructure

The project includes a number of infrastructure items including:

- a remote mine workshop, located adjacent to the mine pit
- mine dewatering facilities, including pumps and ponds
- a primary crushing station adjacent to the open pit
- an overland conveyor to transport crushed run of mine material from the mine to the lower process facilities
- a 45,000 tpd processing facility as described in Section 1.11, including reagents storage, mixing and addition facilities, flotation concentrate storage facilities and infrastructure for loading and weighing of trucks
- mine truck shop, including wash bay, fuelling facilities (diesel and gasoline) and offices
- LNG-fueled gas turbine power generation facility, complete with LNG storage facilities and vaporization facilities
- power and communications distribution infrastructure, including overhead power lines to remote locations on site and buried lines for local power and communications cables
- 500-person camp including accommodation, kitchens, laundry, and recreation facilities
- administration offices, warehouse, mine dry, medical station, fuel bay
- contract operated assay laboratory
- core shed with dedicated core storage area
- potable water, sewage effluent and mine water treatment facilities
- waste disposal facilities, including incinerator, hazardous waste storage and landfill facility
- thickened slurry tailings management facility and quarry for construction

- water management and effluent treatment facilities
- contract operated explosives production and storage facility
- road network including:
  - approximately 7 kilometres of gravel access road from the Alaska Highway to the lower plant
  - mine access road 11 kilometres long between the plant and mine
  - various access/service roads serving the tailings management facility and the explosives storage/manufacturing plant

In addition, the Project considers some offsite infrastructure, including administrative offices and personnel transportation assets in Whitehorse, sulphuric acid storage and loading/unloading facilities at the Port of Skagway, and minor upgrades to the existing Burwash airstrip (CYDB).

1.13 Market Studies and Contracts

Nickel Creek intends to produce marketable bulk (Ni+Cu) and separate Ni and Cu bearing sulfide concentrates. The concentrates will be transported by the existing roads, rail, and port facilities to the smelter(s).

Unlike markets such as copper, zinc, and lead, the nickel concentrate market does not have global benchmarks and commercial terms are negotiated individually with the off-take terms between the buyer and seller held confidentially. No contracts have been negotiated for the Project concentrates.

A review of metal pricing forecasts from many different analysts and bank forecasts in addition to the trailing averages was conducted to help determine average long-term prices to be used by Nickel Creek.

1.14 Environmental Studies, Permitting

Engagement with the Kluane First Nation and White River First Nation regarding the project began in 2010. In 2012, the Kluane First Nation and Nickel Creek signed an Exploration Co-operation Agreement (ECA) which reflects the commitment to recognize concerns of the community, to ensure that socio-economic benefits from the Project that include employment, training, skill progression, etc. is flowing from the Company to the local community, and to recognize the mine will be on Kluane First Nation Traditional Territory. As part of this commitment, Kluane First Nation and NCP have ongoing meetings to discuss changing or new community concerns. The Kluane First Nation is regularly consulted on company policy and management plans for their input.

The following processes are required to obtain regulatory authorizations for the Project to proceed from an advanced exploration project to an operating mine project: (1) Environmental and socio-economic assessment, (2) Quartz Mining License, (3) Water Use License and (4) remaining regulatory approvals (e.g., explosives storage and use, waste management, fisheries authorization, etc.). An environmental and socio-economic assessment is required under the Yukon Environmental and Socio-economic Assessment Act. The Project will require Executive Committee Screening for the assessment which generally takes 3-5 years before a Decision Document is issued. Once the Decision Document is issued the Project can proceed with the Quartz Mining License and Water Use License process, which

generally take an additional 1-2 years. Additional permits can be obtained simultaneously during the Quartz Mining License and Water Use License processes.

Nickel Creek is currently authorized under various permits for exploration activities. The appropriate mining authorizations need to be applied for as part of the ongoing project development plan.

Baseline environmental monitoring of surface water quality at the Project has been conducted from late 2012 and is presently ongoing.

Baseline environmental studies of fisheries and aquatic resources for the Project site began in 2017. The baseline environmental study was primarily focussed on Quill Creek as the proposed Project will have direct impacts to the system.

In addition to environmental assessment related baseline studies, Nickel Creek has been conducting two operational monitoring and mitigation programs associated with its ongoing exploration program. One of these programs is a ground-based, thinhorn sheep-monitoring program. The objective of this program is to monitor the occurrence of sheep within and adjacent to the active exploration areas to determine potential interactions between the Project and sheep and, if negative interactions occur, develop management measures to mitigate effects.

The bulk of wildlife survey efforts has been allocated to thinhorn sheep, which are considered the most prominent game and subsistence species in the area. Since studies began in 2015 the minimum annual counts have suggested a relatively stable population.

In 2018, breeding bird studies were also conducted. Those included three types of survey methods for upland songbirds, riverine birds and pond and marsh birds. Data from the 2018 bird studies have identified that there are no major issues associated with birds that are likely to be considered a 'significant residual effect.'

Preliminary acid rock drainage and metal leaching (ARD/ML) characterization for the Project has been conducted using ore feed, tailings material generated during a metallurgical mini pilot plant (MPP), MPP tailings water (supernatant) and process water produced during the MPP. Acid base accounting (ABA) analyses and net acid generation (NAG) testing indicated that the ore feed and MPP tailings were not expected to be net-acid generating.

Kinetic testing of the MPP tailings was conducted using a humidity cell and subaqueous column to evaluate the long-term ARD/ML potential under sub-aerial and sub-aqueous storage scenarios and thereby inform potential mitigation and management practices. The humidity cell and subaqueous column were terminated after 96 and 43 weeks of operation, respectively, after COPC concentrations had stabilized. Estimation of lag time to acid generation using the last cycles of humidity cell data indicates that a large portion bulk NP will remain after all the sulphur has been depleted. This indicates that net acid generation is not expected from the tailings, consistent with the ABA and NAG results.

There are four main items considered for closure in the Nickel Shäw project: open pit, waste storage facilities, site facilities and tailings management facility. The objective of the reclamation and closure plan for the Nickel Shäw Project is to return the project site to a safe and productive ecosystem after the extraction process is complete. This is while minimizing any potential long-term impacts by a proactive approach to reclamation and closure during operation to reduce the transition period.

1.15 Capital and Operating Costs

Detailed capital and operating cost estimates developed for the PFS including consideration for all direct and indirect costs associated with the Project. All costs were estimated in Canadian dollars unless otherwise noted.

Initial capital costs are estimated to be $1,687.1 million with a further $638.2 million of sustaining capital. The total life of mine project capital is forecast at $2,325.3 million. The initial capital includes $172 million in capitalized pre-stripping. The mining fleet is assumed to be purchased and owner operated. All equipment and material are assumed to be new.

The estimate includes initial capital requirements of the mine, site, and tailings facilities. Sustaining capital needs for the open pits, process plant, infrastructure, and reclamation and closure costs are also included over the life of mine. The capital costs are summarized in Table 1-6.

Table 1-6: Nickel Shäw Project Capital Cost Estimate

Area	Initial Capital (M$)	Sustaining Capital (M$)	Total Capital (M$)
Open Pit- Prestripping (capitalized)	172.0	-	172.0
Open Pit-Capital	226.7	205.6	432.3
Open Pit Mining - Subtotal	398.7	205.6	604.3
Processing	509.9	5.1	515.0
Infrastructure	353.5	257.5	611.0
Environmental	-	52.4	52.4
Indirects	245.1	57.9	303.0
Contingency	179.9	59.7	239.6
Total	**1,687.1**	**638.2**	**2,325.3**

The project operating costs have been estimated at $30.22/t mill feed over the 19.1-year mine life. This includes all mining, processing, G&A, carbon tax and concentrate trucking, port, and shipping costs. The costs were determined with a diesel price of $1.24/l exclusive of carbon tax and an electrical price of $0.194/kWhr. The project operating costs are shown in Table 1-7.

Table 1-7: Nickel Shäw Project Operating Cost Estimate

Area	Units	Life of Mine (Years 1-20)
Open Pit Mining	$/t moved	2.64
	$/t mill feed	7.30
Processing	$/t mill feed	17.32
G&A	$/t mill feed	2.43
Sub-Total	**$/t mill feed**	**27.05**
Carbon Tax	$/t mill feed	0.83
Concentrate Trucking, Port, Shipping	$/t mill feed	2.34
Total Operating Cost	**$/t mill feed**	**30.22**

1.16 Economic Analysis

A discounted cash flow model was prepared to complete the economic analysis. The economic analysis uses the Mineral Reserves and LOM plan presented in this report and confirms the outcome is positive cash flow that supports the statement of Mineral Reserves.

The results indicate a post-tax NPV @ 5% of $143 M and 5.8% IRR for the 19.1-year mine life. This is shown in Table 1-8 with the metal price assumptions.

Taxation applicable to an operation in the Yukon has been included in the cashflow model.

The Canadian tax incentive for critical mineral companies has not been applied as it was not enacted at the time of the study but offers opportunity in the future. Carbon taxes on energy inputs have been included in the operating costs.

Royalty payments are included and total $144 M over the life of the mine.

The analysis indicates the project is most sensitive to operating costs and nickel prices with operating costs just slightly more sensitive. This is shown in Table 1-9.

Table 1-8: Nickel Shäw Project – Discounted Cash Flow Summary

Parameter	Units	Pre-Tax	Post-Tax
Copper Price	$US/lb	4.00	
Nickel Price	$US/lb	11.00	
Cobalt Price	$US/lb	23.00	
Platinum Price	$US/oz	1,000	
Palladium Price	$US/oz	2,100	
Gold Price	$US/oz	1,800	
Exchange Rate	$US:$CDN	0.75	
Economic Indicators			
Net Present Value (5%)	$ M	547	143
Revenue less Royalties	$ M	14,279	14,279
Total Operating Cost	$ M	9,300	9,300
Life of Mine Capital Cost	$ M	2,325	2,325
Net Taxes	$ M	-	999
Net Cash Flow	$ M	2,654	1,655
Cash Cost – Nickel only	$US/lb	11.53	12.75
Cash Cost – Nickel with all credits	$US/lb	4.89	6.10
Payable Metals (Life of Mine)			
Nickel	M pounds	614.3	
Copper	M pounds	281.5	
Cobalt	M pounds	21.5	
Platinum	M ounces	0.6	
Palladium	M ounces	0.7	
Gold	M ounces	0.2	

Parameter	Units	Pre-Tax	Post-Tax
Mine Life	Years	19.1	
Operating Costs			
	$ M	**$/t Ore Milled**	**$/t Mined**
Open Pit Mining	2,245.1	7.30	2.64
Processing	5,329.7	17.32	
G & A	746.8	2.43	
Subtotal	**8,321.6**	**27.05**	
Carbon Tax	256.9	0.83	
Concentrate trucking, port costs	721.3	2.34	
Total	**9,299.9**	**30.22**	
Capital Costs			
Initial Capital	$ M	1,687	
Sustaining Capital	$ M	638	
Total Capital	$ M	2,325	
	$/t ore	7.56	

Production Summary							
	Tonnage Mt	**Nickel %**	**Copper %**	**Cobalt %**	**Platinum g/t**	**Palladium g/t**	**Gold g/t**
Mine Mill Feed	307.7						
Grades		0.26	0.13	0.01	0.22	0.23	0.04
Waste	594.7						
Strip Ratio	1.93						

Table 1-9: Post-Tax Sensitivity Analysis

Variance	Operating Cost NPV @5% $M	Capital Cost NPV @5% $M	Nickel Price	
			$US/lb	NPV @5% $M
-20 %	820	353	8.80	(564)
-10 %	486	249	9.90	(206)
Base	**143**	**143**	**11.00**	**143**
10 %	(213)	36	12.10	480
20%	(578)	(72)	13.20	810

1.17 Conclusions

This PFS provides a conclusion that the Nickel Shäw project as envisaged is economically viable based on the assumptions laid out for metal prices, metallurgical recoveries, and all other available data.

There are no known factors related to, environmental, permitting, legal, title, taxation, socio-economic, marketing, or political issues which could materially affect the mineral resource or reserves estimates.

Based on evaluation of the data available from the Nickel Shäw Project, the authors of this report have drawn the following conclusions:

1.17.1 Geology

The Nickel Shäw Project is made up of the principal Wellgreen Ni-Cu-PGM deposit as well as several exploration targets, including the Arch target. The Wellgreen Deposit has been subject to historical underground mine operations from 1972 to 1973 with limited production. Exploration and drilling programs since 1980's have expanded the deposit to its current size and is amenable to large scale bulk mining.

The nickel and copper mineralization occurs within the peridotite, clinopyroxenite and mineralized Quill Creek gabbro lithologies on the Wellgreen Deposit. There are some, but limited, massive sulphide occurrences within the deposit. The deposit is enclosed in relatively barren volcanoclastic and metasedimentary lithologies. The mineralization is found along approximately 1,700 km strike length with thicknesses ranging from 20 m in the west end to almost 300 m in the east end.

The Project is also host to several exploration targets with limited exploration and drilling information. These include the Arch, Quill and Burwash exploration targets. Nickel Creek's the main focus, outside of the Wellgreen Deposit, is on the Arch target. The Arch target is situated approximately 2 km northwest of the Wellgreen deposit, has intersected several intercepts of nickel and copper sulphide mineralization within peridotite, similar to that of the Wellgreen Deposit.

AGP concludes that there is potential to upgrade some of the Inferred Resources through additional drilling at the Wellgreen and Arch Deposits, and that further exploration and development on the Property is warranted and recommended for the Project.

1.17.2 Mining

The life of mine plan is based on Proven Mineral Reserves of 101.0 Mt with grades of 0.26% nickel, 0.16% copper, 0.014% cobalt, 0.25 g/t platinum, 0.24 g/t palladium and 0.05 g/t gold plus Probable Mineral Reserves of 206.7 Mt with grades of 0.26% nickel, 0.12% copper, 0.014% cobalt, 0.21 g/t platinum, 0.23 g/t palladium and 0.03 g/t gold. Waste to be moved is 594.6 Mt for an overall strip ratio of 1.9:1 (waste: ore).

The Nickel Shäw Project is planned to be an open pit operation using conventional mining equipment. The pit design consists of 3 main phases of successive pushbacks. All pits were developed using 10 metre bench heights.

The mining rate or 51 Mtpa was selected based on strategic planning scenarios which demonstrated that the targeted mill capacity of 45 ktpd (16.2 Mtpa) would be achieved. The mine will be in production for 20 years.

The mining fleet will be comprised of up to seven 165 mm down the hole drills, two 37 m^3 front shovels, and one 21 m^3 front end loader. The truck fleet will total 21 – 240 tonne trucks with the usual assortment of dozers, graders, and other support equipment.

In addition, a small fleet will be used at the quarry for building the tailings management facility. The costs for this are included in Infrastructure capital. That fleet is two 140 mm drills, two 13 m^3 front end loaders and five 91 tonne trucks plus support equipment.

1.17.3 Metallurgy

The various test programs conducted on samples from the Nickel Creek Deposit have indicated that Ni recovery is related to sulphur content of the feed. Tests with higher sulphur content feed corresponded to higher Ni recovery. To better understand this relationship, an extended variability program was conducted by XPS in 2022. In this recent program, samples with specific Ni to S ratios were evaluated through the rougher/scavenger flowsheet to determine the potential impact on circuit Ni recovery. The program confirmed that surplus sulphide content was the strongest predictor of Ni recovery. This relationship has been used to calculate the Ni recovery for the resource.

The metallurgical recoveries used are to a level sufficient to support a Mineral Reserves declaration.

1.17.4 Mineral Processing

A mineral processing design has been prepared that is suitable for the purposes of the current study. This can be built upon as the project progresses and engineering detail develops. Throughput of 45,000 tpd matches PFS mine schedules and assumes an average of 54 hours per month of downtime to allow for maintenance or replacement of equipment and wear items.

Designs and cost estimates are suitable for preliminary feasibility purposes and will benefit from more detailed efforts as the project progresses to Definitive Feasibility.

1.17.5 Infrastructure and Site Layout

Designs for various infrastructure items have been prepared that are suitable for the purposes of the current study. These can be built upon as the project progresses and engineering detail develops. The scope and cost of site civil works may be subject to change once a detailed seismic analysis is completed in conjunction with additional geotechnical drilling and permafrost delineation.

Designs and cost estimates are suitable for preliminary feasibility purposes and will benefit from more detailed efforts as the project progresses to Definitive Feasibility.

1.17.6 Capital and Operating Costs

Detailed capital and operating cost estimates developed for the PFS including consideration for all direct and indirect costs associated with the Project. All costs were estimated in Canadian dollars unless otherwise noted. The cost estimates are sufficient for a PFS level of study.

Initial capital costs are estimated to be $1,687.1 million with a further $638.2 million of sustaining capital. The total life of mine project capital is forecast at $2,325.3 million. The initial capital includes $172 million in capitalized prestripping. The mining fleet is assumed to be purchased and owner operated.

The estimate includes initial capital requirements of the mine, site, and tailings facilities. Sustaining capital needs for the open pits, process plant, infrastructure, and reclamation and closure costs are also included over the life of mine

All equipment and material are assumed to be new. Labour costs based on statutory laws governing benefits in effect at the time of the estimate have been included.

The project operating costs have been estimated at $30.22/t mill feed over the 19.1-year mine life. This includes all mining, processing, G&A, carbon tax and concentrate trucking, port, and shipping costs. The costs were determined with a diesel price of $1.24/l exclusive of carbon tax and an electrical price of $0.194/kWhr.

1.17.7 Economic Analysis

The economic analysis, including taxation, show the Nickel Shäw Project has positive economics and technical merit.

A pre-tax and post-tax cash flow model in Excel was developed for the evaluation of the Nickel Shäw Project PFS. The following key parameters were used in the construction of the cash flow model and the economic results:

- Metal prices of:
  - copper = $4.00 US/lb
  - nickel = $11.00 US/lb
  - cobalt = $23,00 US/lb
  - platinum = $1,000 US/oz
  - palladium = $2,100 US/oz
  - gold = $1,800 US/oz
- 100% equity financing with no debt component
- revenues and costs reported in constant H2 2023-dollar terms without escalation

The results indicate a post-tax $NPV^{5\%}$ of $143 M and 5.8% IRR for the 19.1-year mine life. Total taxes paid life of mine is $998.9 million and is 37.6% of the pretax cashflow.

1.18 Recommendations

The QP's recommend that Nickel Creek proceed with a Feasibility level of study as part of the Nickel Shäw project development plan. Recommendations and associated budgets are provided by the QP's to ensure sufficient information is available going forward.

Some of the costs of the Feasibility are carried as part of the study itself but supporting studies or field work are quoted in the appropriate areas. Estimated costs by area are provided in Table 1-10.

Table 1-10: Estimate of Recommended Feasibility Budgets

Area of Study	Approximate Cost ($CDN)
Geology	$0
Geotechnical	$2,200,000
Mining	$150,000
Metallurgy	$400,000
Infrastructure	$2,950,000
Environmental	$775,000
Feasibility Study	$1,300,000
TOTAL	**$7,775,000**

2 INTRODUCTION

Nickel Creek Platinum Corporation (Nickel Creek) is a Canadian exploration company with its corporate office located in Toronto, Canada. Nickel Creek is solely focused on the development of the Nickel Shäw Ni-Cu-PGM Project (Project) located in Yukon, situated approximately 317 km northwest of Whitehorse. Nickel Creek holds a 100% interest in the mineral rights for the Project.

2.1 Terms of Reference

This Technical Report (Report) was prepared on behalf of Nickel Creek by AGP Mining Consultants Inc. (AGP). The purpose of the Report is to present the results of the Nickel Shäw Project PFS which utilizes the updated Mineral Resources on the Wellgreen nickel copper PGM (Ni-Cu-PGM) Deposit

This Report was prepared in compliance with the Canadian disclosure National Instrument 43-101 (NI 43-101) and in accordance with the requirements of Form 43-101 F1.

2.2 Qualified Persons

The Qualified Persons (QPs), as that term is defined in NI 43–101, responsible for the preparation of the Report include the following people and as shown in Table 2-1:

- Paul Daigle, P.Geo., Principal Resource Geologist (AGP)
- Gordon Marrs, P.Eng., Metallurgical Specialist (XPS)
- J. Roland Tosney, P.Eng., Mining Geotechnical Engineer (Terracon)
- Gordon Zurowski, P.Eng., Principal Mine Engineer (AGP)
- Andrew Holloway, P.Eng., Process Director (Halyard)

Table 2-1: Nickel Shäw Project Technical Report Qualified Persons and Areas of Responsibility

Name	Professional Designation	Title	Responsible for Sections
Mr. Paul Daigle	P.Geo.	Principal Resource Geologist AGP Mining Consultants Inc.	Sections 1.2 – 1.7, 1.17.1, 4 to 12, 14, 23, 25.1, 26.1, 27
Mr. Gordon Marrs	P.Eng.	Metallurgical Specialist XPS Expert Process Solutions	Sections 1.8, 13, 25.3, 26.3
Mr. J. Roland Tosney	P.Eng.	Mining Geotechnical Engineer Terracon Geotechnique Ltd.	Sections 1.10.1, 16.2, 25.2.1, 26.2.1
Mr. Gordon Zurowski	P.Eng.	Principal Mine Engineer AGP Mining Consultants Inc.	Sections 1.1, 1.10.2, 1.12 - 1.18, 2, 3, 15, 16.1, 16.3, 18, 19, 20, 21.1,21.2.1 – 21.2.3, 21.2.6-21.2.10, 21.3.1, 21.3.2, 21.3.4 – 21.3.7, 22, 24, 25.2.2, 25.5 -
Mr. Andrew Holloway	P.Eng.	Process Director Halyard Inc.	Section 1.11, 17, 21.3.3, 25.4, 26.4

2.3 Site Inspection

Site visits were completed by Mr. Daigle, Mr. Tosney, and Mr. Zurowski.

2.3.1 Geology

Mr. Daigle conducted a site visit between 11 October 2022 and 14 October 2022, for two days. The site visit included inspection of the project site, drill core logging, sampling, and core storage facilities. A review was made of the logging and sampling procedures and included a review of selected drill core. The 2022 drill program was in progress at the time of the site visit. Mr. Daigle was accompanied on site by:

- Cameron Bell, P.Geo., Chief Geologist for Nickel Creek
- Linda Lewis, Senior Project Geologist for Nickel Creek

2.3.2 Geotechnical

AGP completed a mining-geotechnical field investigation program at Nickel Shäw Project in the fall of 2022, with Mr. Tosney visiting the property from September 25th to October 1st, 2022. The field investigation program included detailed geotechnical logging, rock mass classification, sampling, and laboratory testing of rock cores selected from a series of (primarily) resource infill drill holes, within prioritized intervals intersecting or adjacent-to proposed ultimate pit slopes. A hydro-geology investigation program was also completed at this time by Hydro-Resources Inc. The purpose of the program was to collect supporting geotechnical and hydro-geology data in advance of PFS-level mine design tasks.

AGP's field program also included overburden drilling and sampling to support preliminary characterization and assessment tasks to evaluate foundation geotechnical conditions for the proposed Tailings Management Facility and mine waste dump areas. The goal of this work is to provide increased confidence in conceptual / preliminary design inputs and initial cost estimates for these key project components.

2.3.3 Metallurgy

Mr. Marrs has not conducted a site visit to the property.

2.3.4 Mining/Infrastructure

Mr. Zurowski conducted a site visit to the Property on 30 April 2017. The Project site was inspected for 1 day during the site visit.

While on site, Mr. Zurowski reviewed drill core from the pit area, visited the pit area and proposed infrastructure locations including the waste storage areas, conveyor and pit access road, proposed plant and stockpile areas, site access road and nearby gravel and sand quarries.

2.3.5 Processing

Mr. Holloway has not conducted a site visit to the property.

2.3.6 Summary of Site Visits

A summary of the site visits is shown in Table 2-2.

Table 2-2: Dates of Site Visits

Name	Site Visit	Dates
Paul Daigle, P. Geo.	Yes	October 11-12, 2022
Gordon Marrs, P.Eng.	No	n/a
Roland Tosney, P.Eng.	Yes	September 25 - October 1, 2022
Gordon Zurowski, P. Eng.	Yes	April 30, 2017
Andrew Holloway, P.Eng.	No	n/a

2.4 Effective Dates

The effective date for the Mineral Resource Estimate for the Wellgreen and Arch Deposits is April 3, 2023.

The effective date for the Mineral Reserve Estimate for Nickel Shäw Project is July 19, 2023.

The effective date of the Nickel Shäw Project PFS Technical Report is September 20, 2023.

2.5 Previous Technical Reports

Previous NI 43-101 technical reports on the Project are listed below:

- McCracken, T., 2011. Technical Report on the Wellgreen Ni-Cu-Pt-Pd Project, Yukon, Canada. Report to Prophecy Resource Corp. and Pacific Coast Nickel Corp. Wardrop Document No. 1055400400-REP-R0001-04. Effective Date: April 14, 2011.
- McCracken, T., 2011. Technical Report and Resource Estimate on the Wellgreen Platinum-Palladium-Nickel-Copper Project, Yukon, Canada. Report to Prophecy Platinum Corp. Wardrop Document No. 1155400200-REP-R0001-02. Effective Date: July 21, 2011.
- Carter, A., Corpuz, P., Brisson, P., McCracken, T., 2012. Wellgreen Project Preliminary Economic Assessment, Yukon, Canada. Report to Prophecy Platinum Corp. Wardrop Document No. 1193460500-REP-R0001-02. Effective Date: August 1, 2012.
- Simpson, R.G., 2014. 2014 Mineral Resource Estimate on the Wellgreen PGM-Ni-Cu Project, Yukon, Canada. Report to Wellgreen Platinum Ltd. Effective Date: September 8, 2014.
- Makarenko, M., Eggert, J., Simpson, R.G., Levy, M., Darling, G., 2015. Preliminary Economic Assessment Technical Report Wellgreen Project, Yukon, Canada. Report to Wellgreen Platinum Ltd. Effective Date: February 2, 2015.

- Marek, J., Jones, L., Zurowski, G., Mani, H., 2017 Mineral Resource Estimate on the Wellgreen Ni-Cu-PGM Project, Yukon, Canada. Report to Wellgreen Platinum Ltd. Effective Date: June 26, 2017.
- AGP Mining Consultants Inc. and Independent Mining Consultants Inc. 2018. Nickel Creek Platinum Corp. Ni-Cu-PGM Project. 2018 NI 43-101 Resource Update. Yukon, Canada. Effective Date: September 25, 2018.

These reports are filed on the SEDAR website (www.sedar.com). Background information and a portion of the technical data for this report were obtained from these reports. This technical report replaces and supersedes all prior technical reports of the Company.

2.6 Units of Measure

Table 2-3 shows units of measure used in this study.

Table 2-3: Units of Measure

Unit	Abbreviation	Unit	Abbreviation
Above mean sea level	amsl	Acre	ac
Ampere	A	Annum (year)	a
Billion	B	Billion tonnes	Bt
British thermal unit	BTU	Centimetre	cm
Cubic centimetre	cm^3	Cubic feet per minute	cfm
Cubic feet	ft^3	Cubic feet per second	ft^3/s
Cubic inch	in^3	Cubic metre	m^3
Cubic yard	yd^3	Coefficients of variation	CVs
Day	d	Days per week	d/wk
Days per year (annum)	d/a	Dead weight tonnes	DWT
Decibel	dB	Decibel adjusted	dBa
Degree	°	Degrees Celsius	°C
Diameter	Ø	Dollar (American)	US$
Dollar (Canadian)	C$	Dry metric ton	dmt
Foot	ft	Gallon	gal
Gallons per minute (US)	gpm	Gigajoule	GJ
Gigapascal	GPa	Gigawatt	g
Gram	g	Grams per litre	g/L
Grams per tonne	g/t	Greater than	>
Hectare (10,000 m^2)	ha	Hertz	Hz
Horsepower	hp	Hour	h
Hours per day	h/d	Hours per week	h/wk
Hours per year	h/a	Inch	“
Kilo (thousand)	k	Kilogram	kg
Kilograms per cubic metre	kg/m^3	Kilograms per hour	kg/h
Kilograms per square metre	kg/m^2	Kilometre	km

Unit	Abbreviation
Kilometres per hour	km/h
Kilotonne	kt
Kilovolt-ampere	kVA
Kilowatt hour	kWh
Kilowatt hours per year	kWh/a
Litre	L
Megabytes per second	Mb/sec
Megavolt-ampere	MVA
Metre	m
Metres Baltic sea level	mbsl
Metres per second	m/s
Microns	µm
Milligrams per litre	mg/L
Millimetre	mm
Million bank cubic metres	Mbm^3
Minute (plane angle)	‘
Month	mo
Pascal	Pa
Parts per billion	ppB
Pound(s)	lb(s)
Revolutions per minute	rpm
Second (time)	sec
Square centimetre	cm^2
Square inch	in^2
Square metre	m^2
Three dimensional	3D
Tonnes per day	t/d
Tonnes per year (annum)	t/a
Total	T
Week	wk
Wet metric ton	wmt

Unit	Abbreviation
Kilopascal	kPa
Kilovolt	kV
Kilowatt	kW
Kilowatt hours per tonne (metric ton)	kWh/t
Less than	<
Litres per minute	L/min
Megapascal	MPa
Megawatt	MW
Metres above sea level	masl
Metres per minute	m/min
Metric ton (tonne)	t
Milligram	mg
Millilitre	mL
Million	M
Million tonnes	Mt
Minute (time)	min
Ounce	oz
Parts per million	ppM
Percent	%
Pounds per square inch	psi
Second (plane angle)	“
Specific gravity	SG
Square foot	ft^2
Square kilometre	km^2
Thousand tonnes	kt
Tonne (1,000 kg)	t
Tonnes per hour	t/h
Tonnes seconds per hour metre cubed	ts/hm^3
Volt	V
Weight per weight	w/w

2.7 Terms of Reference (Abbreviations & Acronyms)

Table 2-4 shows Terms of Reference used in this study. Table 2-5 shows the Conversions for Common Units.

Table 2-4: Terms of Reference

Unit	Abbreviation/Acronym
Absolute Relative Difference	ABRD
Acid Base Accounting	ABA

Unit	Abbreviation/Acronym
Acid Rock Drainage	ARD
Alpine Tundra	AT
Atomic Absorption Spectrophotometer	AAS
Atomic Absorption	AA
British Columbia	BC
British Columbia Environmental Assessment Act	BCEAA
British Columbia Environmental Assessment Office	BCEAO
British Columbia Environmental Assessment	BCEA
Canadian Dam Association	CDA
Canadian Environmental Assessment Act	CEA Act
Canadian Environmental Assessment Agency	CEA Agency
Canadian Institute of Mining, Metallurgy, and Petroleum	CIM
Canadian National Railway	CNR
Carbon-in-leach	CIL
Caterpillar's ® Fleet Production and Cost Analysis software	FPC
Closed-circuit Television	CCTV
Coefficient of Variation	CV
Copper	Cu
Copper Equivalent	CuEq
Counter-current decantation	CCD
Cyanide Soluble	CN
Digital Elevation Model	DEM
Direct Leach	DL
Distributed Control System	DCS
Drilling and Blasting	D&B
Environmental Management System	EMS
Flocculant	floc
Free Carrier	FCA
Gemcom International Inc.	Gemcom
General and Administration	G&A
Gold	Au
Gold Equivalent	AuEq
Heating, Ventilating, and Air Conditioning	HVAC
High Pressure Grinding Rolls	HPGR
Indicator Kriging	IK
Inductively Coupled Plasma	ICP
Inductively Coupled Plasma Atomic Emission Spectroscopy	ICP-AES
Inspectorate America Corp.	Inspectorate
Interior Cedar-Hemlock	ICH
Internal Rate of Return	IRR
International Congress on Large Dams	ICOLD

Unit	Abbreviation/Acronym
Invers Distance cubed	ID^3
Land and Resource Management Plan	LRMP
Lerchs-Grossman	LG
Life-of-Mine	LOM
Load-haul Dump	LHD
Locked Cycle Tests	LCTs
Loss on Ignition	LOI
Metal Mining Effluent Regulations	MMER
Methyl Isobutyl Carbinol	MIBC
Metres East	mE
Metres West	mW
Metres North	mN
Metres South	mS
Mineral Deposits Research Unit	MDRU
Mineral Titles Online	MTO
Nation Instrument 43-101	NI 43-101
Nearest Neighbour	NN
Net Invoice Value	NIV
Net Present Value	NPV
Net Smelter Price	NSP
Net Smelter Return	NSR
Neutralization Potential	NP
Northwest Transmission Line	NTL
Official Community Plans	OCPs
Operator Interface Station	OIS
Ordinary Kriging	OK
Organic Carbon	org
Potassium Amyl Xanthate	PAX
Predictive Ecosystem Mapping	PEM
Preliminary Assessment	PA
Preliminary Economic Assessment	PEA
Qualified Person	QP
Quality Assurance	QA
Quality Control	QC
Quality Assurance and Quality Control	QA/QC
Rhenium	Re
Rock Mass Rating	RMR
Rock Quality Designation	RQD
SAG Mill/Ball Mill/Pebble Crushing	SABC
Semi-autogenous Grinding	SAG
Silver	Ag

Unit	Abbreviation/Acronym
Silver Equivalent	AgEq
Standards Council of Canada	SCC
Stanford University Geostatistical Software Library	GSLIB
Tailings Management Facility	TMF
Terrestrial Ecosystem Mapping	TEM
Total Dissolved Solids	TDS
Total Suspended Solids	TSS
Tunnel Boring Machine	TBM
Underflow	U/F
Valued Ecosystem Components	VECs
Waste Rock Facility	WRF
Water Balance Model	WBM
Work Breakdown Structure	WBS
Workplace Hazardous Materials Information System	WHMIS
X-ray Fluorescence Spectrometer	XRF

Table 2-5: Conversions for Common Units

Table 2-5 shows conversions for common units used in this study.

Metric Unit	Imperial Measure
1 hectare	2.47 acres
1 metre	3.28 feet
1 kilometre	0.62 miles
1 gram	0.032 ounces (troy)
1 tonne	1.102 tons (short)
1 gram/tonne	0.029 ounces (troy)/ton (short)
1 tonne	2,204.62 pounds
Imperial Measure	**Metric Unit**
1 acre	0.4047 hectares
1 foot	0.3048 metres
1 mile	1.609 kilometres
1 ounce (troy)	31.1 grams
1 ton (short)	0.907 tonnes
1 ounce (troy)/ton (short)	34.28 grams/tonne
1 pound	0.00045 tonnes

3 RELIANCE ON OTHER EXPERTS

The QP's conclusions, opinions, and estimates contained herein are based on:

- information available at the time of preparation of this report
- assumptions, conditions, and qualifications as set forth in this report
- data, reports, and other information supplied by Nickel Creek and other third-party sources

AGP has followed standard professional procedures in preparing the content of the Nickel Shäw Project PFS report. Data used in this report has been verified where possible, and the report is based upon information believed to be accurate at the time of completion.

3.1 Ownership, Mineral Tenure, and Surface Rights

AGP has not verified the legal status, legal title to any permit, or the legality of any underlying agreements for the subject properties regarding mineral rights, surface rights, permitting, and environmental issues in sections of this technical report. AGP has relied upon information provided by Mr. Cam Bell, Chief Geologist for Nickel Creek, and Joe Romagnolo, Senior Vice President & CFO for Nickel Creek, which forms the basis for Section 4 of this report.

3.2 Environmental Permitting

Explanation of the Environmental Permitting was provided by Ryan Herbert, Director of Environmental Permitting for Ensero Solutions for Section 20. AGP has relied upon this information and have not researched this information nor expressed an opinion as to the current status of the various permits and compliance.

3.3 Taxation

Nickel Creek provided guidance on applicable taxes, royalties, and other government levies or interests, applicable to revenue or income from Project. The QP's have fully relied upon and disclaim responsibility for taxation information derived from experts retained by Nickel Creek for this information.

Nickel Creek provided the explanation for royalties on the project which are discussed in more detail in Section 4.5 of this technical report. The QP's have fully relied upon and disclaim responsibility for information derived from this information.

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

4.1 Location

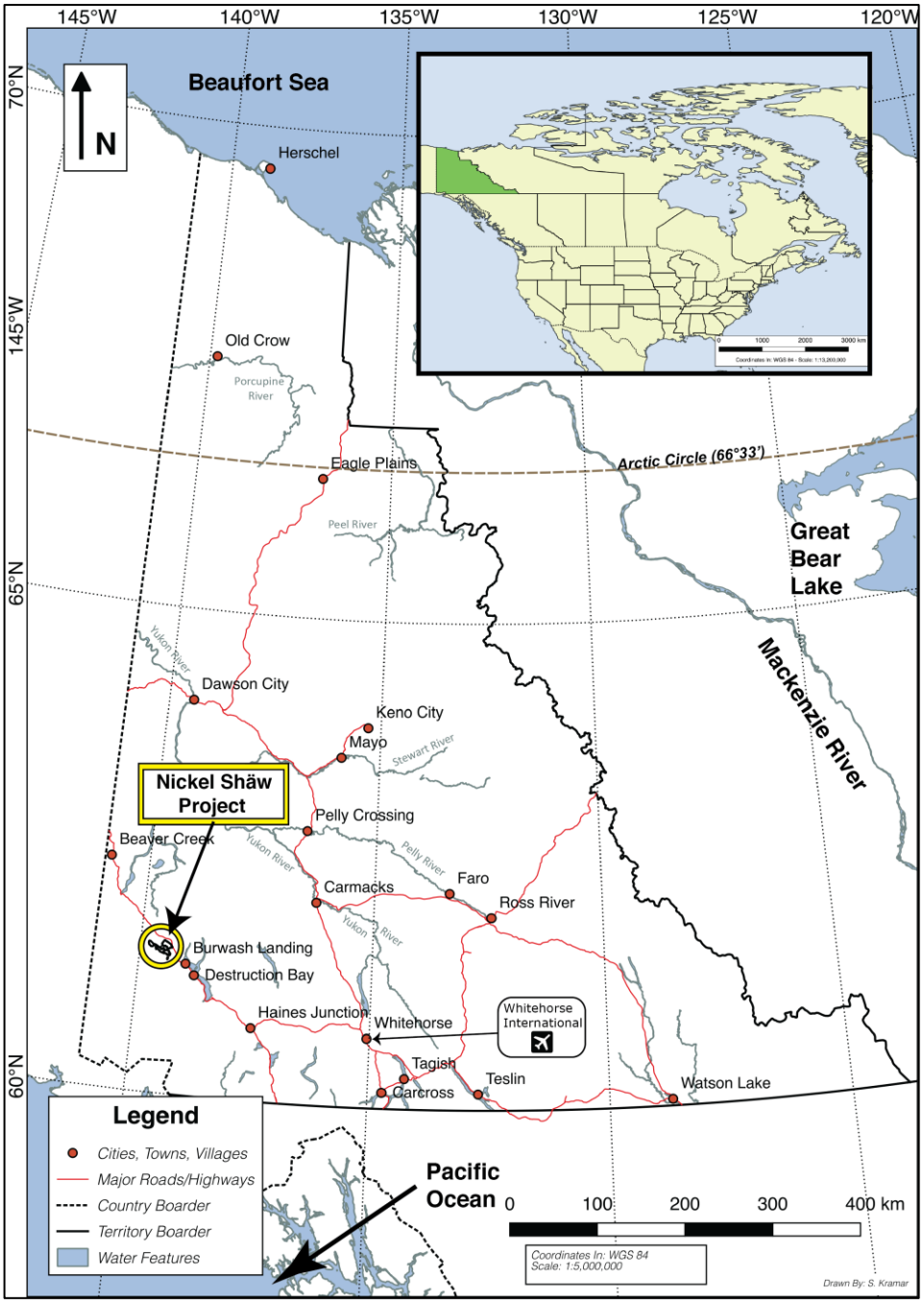
The Project is located:

- at approximately 61°28'N latitude, and 139°32'W longitude on National Topographic System (NTS) map sheets: 115G/05, 115G/06 and 115G/11
- at approximately 577500 m E, 68158350 m N in Zone 7V
- at approximately 317 km northwest of Whitehorse, by road, in southwestern Yukon
- at approximately 40 km northwest of Burwash Landing
- within the Kluane First Nation, Settlement Lands A and B; in the southeast end of the Property
- roughly 15 km north of the Kluane National Park and Reserve
- roughly 30 km northwest of Kluane Lake

The southeast portion of the Project lies within the Kluane First Nation core area as defined by the Umbrella Final Agreement (UFA) with the Government of the Yukon, the Council of Yukon First Nations, and the Government of Canada. The Wellgreen deposit is situated approximately 2.6 km northwest of Quill Creek, which forms the northwestern border of the Kluane First Nation lands.

Figure 4-1 presents the location map for the Project.

Figure 4-1: Nickel Creek Platinum Location Map



Source: Nickel Creek (2018)

4.2 Mineral Rights

The Project is comprised of 711 mineral claims, covering approximately 13,279 ha, and 91 quartz mining leases, covering approximately 1,371 ha, totaling approximately 14,650 ha. Nickel Creek holds

a 100% interest in these claims and leases through their 100% owned subsidiaries: 0905144 B.C. Ltd. and 1043704 B.C. Ltd.

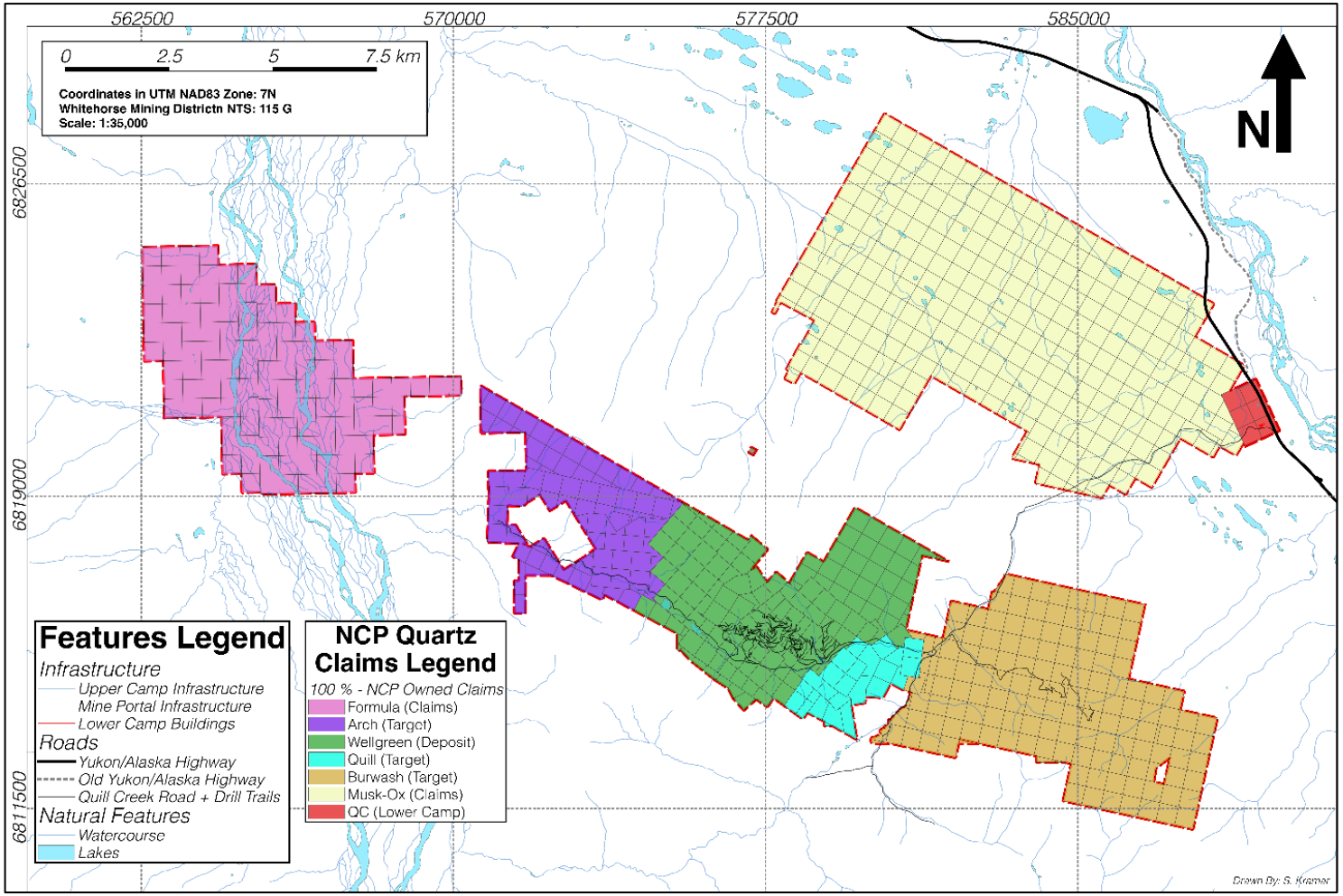
In the Yukon Territory, all work undertaken on the surface for hard rock mineral claims and leases is regulated under the Quartz Mining Act (QMA) through the Quartz Mining Land Use Regulation and is managed by the Energy, Mines and Resources branch of the Yukon Territorial Government, and claims management by the Yukon Mining Recorders Office.

A mineral claim is a parcel of land, no larger than 20.9 ha in area granted for the purposes of securing sub-surface mineral rights with the intention of hard rock exploration ultimately leading to hard rock mining. A claim also includes any ditches or water rights used for mining the claim, and all other things belonging to, or used in, the working of the claim for mining purposes. The holder of a mineral claim is entitled to all minerals found in veins or lodes, together with the right to enter on, and use and occupy, the surface of the claim for the efficient and miner-like operation of the mines and minerals contained in the claim. Continued tenure to the mineral rights is dependent upon work performed on the claim or a group of claims. Renewal of a quartz claim requires Cad$ 100 of work be done per claim, per year. Where work is not performed, the claimant may make a payment of Cad$ 100 in lieu of work.

A Quartz Mining Lease is the most secure form of mineral title in Yukon as the claims are held for a longer period of time (21 years) instead of annually. Mining leases are physically surveyed such that the tenure and boundaries cannot be called into contest. A lease is applied for when a company is contemplating production and would like to advance their claims to a longer, more secure form of tenure in anticipation of long-term land use. This relieves the company of the annual work requirement; there are, however, annual rental fees of CDN$200 per lease. Quartz Mining Leases are issued for 21 years and can be renewed for an additional 21-year term, provided that during the original term of the lease, all conditions of the lease and provisions of the legislation have been adhered to.

Figure 4-2 presents the location map of the Mineral Claims and Mining Leases. Table 4-1 lists the Mineral Claims and Table 4-2 lists the Mining Leases.

Figure 4-2: Mineral Rights – Nickel Shäw Project



Source: Nickel Creek (2018)

Table 4-1: Mineral Claims – Nickel Creek

Claim Number	Claim Name	Claim #	Owner	Area (ha)	Expiry Date	Property
YF44098	ARCH	97	0905144 B.C. Ltd	5.76	13-Feb-2027	WELLGREEN
YF44099	ARCH	98	0905144 B.C. Ltd	14.09	13-Feb-2027	WELLGREEN
YF44100	ARCH	99	0905144 B.C. Ltd	20.88	13-Feb-2027	WELLGREEN
YF44101	ARCH	100	0905144 B.C. Ltd	14.45	13-Feb-2027	WELLGREEN
YF44102	ARCH	101	0905144 B.C. Ltd	20.89	13-Feb-2027	WELLGREEN
YD87935	ARCH	102	0905144 B.C. Ltd	3.72	13-Feb-2027	WELLGREEN
YD87936	ARCH	103	0905144 B.C. Ltd	20.84	13-Feb-2027	WELLGREEN
YD87937	ARCH	104	0905144 B.C. Ltd	18.7	13-Feb-2027	WELLGREEN
YD87938	ARCH	105	0905144 B.C. Ltd	20.89	13-Feb-2027	WELLGREEN
YD87939	ARCH	106	0905144 B.C. Ltd	20.89	13-Feb-2027	WELLGREEN
YD87940	ARCH	107	0905144 B.C. Ltd	20.89	13-Feb-2027	WELLGREEN
YD87941	ARCH	108	0905144 B.C. Ltd	19.57	13-Feb-2027	WELLGREEN
YD87942	ARCH	109	0905144 B.C. Ltd	20.89	13-Feb-2027	WELLGREEN
YD87943	ARCH	110	0905144 B.C. Ltd	13.48	13-Feb-2027	WELLGREEN
YD87944	ARCH	111	0905144 B.C. Ltd	20.89	13-Feb-2027	WELLGREEN
YD87945	ARCH	112	0905144 B.C. Ltd	6.96	13-Feb-2027	WELLGREEN
YD87946	ARCH	113	0905144 B.C. Ltd	20.89	13-Feb-2027	WELLGREEN
YD87947	ARCH	114	0905144 B.C. Ltd	1.05	13-Feb-2027	WELLGREEN
YD87948	ARCH	115	0905144 B.C. Ltd	20.28	13-Feb-2027	WELLGREEN
YD87949	ARCH	116	0905144 B.C. Ltd	14.81	13-Feb-2027	WELLGREEN
YD87950	ARCH	117	0905144 B.C. Ltd	8.29	13-Feb-2027	WELLGREEN
YD87951	ARCH	118	0905144 B.C. Ltd	1.94	13-Feb-2027	WELLGREEN
YD87952	ARCH	119	0905144 B.C. Ltd	0.6	13-Feb-2027	WELLGREEN
YD87953	ARCH	120	0905144 B.C. Ltd	7.57	13-Feb-2027	WELLGREEN
YD87954	ARCH	121	0905144 B.C. Ltd	3.52	13-Feb-2027	WELLGREEN
YD87955	ARCH	122	0905144 B.C. Ltd	0.01	13-Feb-2027	WELLGREEN
YD87956	ARCH	123	0905144 B.C. Ltd	17.16	13-Feb-2027	WELLGREEN
YD87957	ARCH	124	0905144 B.C. Ltd	15.65	13-Feb-2027	WELLGREEN
YD87958	ARCH	125	0905144 B.C. Ltd	12.23	13-Feb-2027	WELLGREEN
YD87959	ARCH	126	0905144 B.C. Ltd	11.07	13-Feb-2027	WELLGREEN
YD87960	ARCH	127	0905144 B.C. Ltd	5.37	13-Feb-2027	WELLGREEN
YD87961	ARCH	128	0905144 B.C. Ltd	8.57	13-Feb-2027	WELLGREEN
YD87962	ARCH	129	0905144 B.C. Ltd	0.63	13-Feb-2027	WELLGREEN
YA94968	BARNY	1	0905144 B.C. Ltd	21.77	11-Feb-2028	WELLGREEN
YA94969	BARNY	2	0905144 B.C. Ltd	20.91	11-Feb-2028	WELLGREEN
YA94970	BARNY	3	0905144 B.C. Ltd	21.3	11-Feb-2028	WELLGREEN

Claim Number	Claim Name	Claim #	Owner	Area (ha)	Expiry Date	Property
YA94971	BARNY	4	0905144 B.C. Ltd	20.27	11-Feb-2028	WELLGREEN
YA94972	BARNY	5	0905144 B.C. Ltd	21.28	11-Feb-2028	WELLGREEN
YA94973	BARNY	6	0905144 B.C. Ltd	20.66	11-Feb-2028	WELLGREEN
YA96002	BARNY	7	0905144 B.C. Ltd	21.86	11-Feb-2028	WELLGREEN
YA96003	BARNY	8	0905144 B.C. Ltd	14.28	11-Feb-2028	WELLGREEN
YA96004	BARNY	9	0905144 B.C. Ltd	21.82	11-Feb-2028	WELLGREEN
YA96005	BARNY	10	0905144 B.C. Ltd	21.33	11-Feb-2028	WELLGREEN
YA96006	BARNY	11	0905144 B.C. Ltd	21.45	11-Feb-2028	WELLGREEN
YA96007	BARNY	12	0905144 B.C. Ltd	20.97	11-Feb-2028	WELLGREEN
YA96008	BARNY	13	0905144 B.C. Ltd	18.56	11-Feb-2028	WELLGREEN
YA96009	BARNY	14	0905144 B.C. Ltd	17.43	11-Feb-2028	WELLGREEN
YA96867	BARNY	19	0905144 B.C. Ltd	21.4	11-Feb-2027	WELLGREEN
YA96868	BARNY	20	0905144 B.C. Ltd	21.55	11-Feb-2027	WELLGREEN
YA96869	BARNY	21	0905144 B.C. Ltd	21.28	11-Feb-2027	WELLGREEN
YA96870	BARNY	22	0905144 B.C. Ltd	21.46	11-Feb-2027	WELLGREEN
YA96871	BARNY	23	0905144 B.C. Ltd	22.38	11-Feb-2027	WELLGREEN
YA96872	BARNY	24	0905144 B.C. Ltd	22.2	11-Feb-2027	WELLGREEN
YA96873	BARNY	25	0905144 B.C. Ltd	10.01	11-Feb-2027	WELLGREEN
YA96874	BARNY	26	0905144 B.C. Ltd	17.26	11-Feb-2027	WELLGREEN
YA96875	BARNY	27	0905144 B.C. Ltd	17.67	11-Feb-2027	WELLGREEN
YA96876	BARNY	28	0905144 B.C. Ltd	17.86	11-Feb-2027	WELLGREEN
YA96877	BARNY	29	0905144 B.C. Ltd	17.61	11-Feb-2027	WELLGREEN
YA96878	BARNY	30	0905144 B.C. Ltd	8.9	11-Feb-2027	WELLGREEN
YA96879	BARNY	31	0905144 B.C. Ltd	13.52	11-Feb-2027	WELLGREEN
YA96880	BARNY	32	0905144 B.C. Ltd	20.44	11-Feb-2027	WELLGREEN
YA97896	BARNY	33	0905144 B.C. Ltd	5.83	11-Feb-2027	WELLGREEN
YA97897	BARNY	34	0905144 B.C. Ltd	12.61	11-Feb-2027	WELLGREEN
YA97898	BARNY	35	0905144 B.C. Ltd	17.53	11-Feb-2027	WELLGREEN
YA97899	BARNY	36	0905144 B.C. Ltd	15.97	11-Feb-2027	WELLGREEN
YA97900	BARNY	37	0905144 B.C. Ltd	17.73	11-Feb-2027	WELLGREEN
YA97901	BARNY	38	0905144 B.C. Ltd	11.22	11-Feb-2027	WELLGREEN
YA97902	BARNY	39	0905144 B.C. Ltd	11.49	11-Feb-2027	WELLGREEN
YA97904	BARNY	41	0905144 B.C. Ltd	19.04	11-Feb-2027	WELLGREEN
YA97905	BARNY	42	0905144 B.C. Ltd	14.77	11-Feb-2027	WELLGREEN
YA97906	BARNY	43	0905144 B.C. Ltd	13.13	11-Feb-2027	WELLGREEN
YA97908	BARNY	45	0905144 B.C. Ltd	14.8	11-Feb-2027	WELLGREEN
YA97910	BARNY	47	0905144 B.C. Ltd	15.04	11-Feb-2027	WELLGREEN

Claim Number	Claim Name	Claim #	Owner	Area (ha)	Expiry Date	Property
YA97911	BARNY	48	0905144 B.C. Ltd	9.37	11-Feb-2027	WELLGREEN
YA97912	BARNY	49	0905144 B.C. Ltd	12.96	11-Feb-2027	WELLGREEN
YB08307	BARNY	50	0905144 B.C. Ltd	5.32	11-Feb-2027	WELLGREEN
YC26564	BUR	1	0905144 B.C. Ltd	20.9	23-Feb-2036	BURWASH
YC26565	BUR	2	0905144 B.C. Ltd	20.92	23-Feb-2036	BURWASH
YC26566	BUR	3	0905144 B.C. Ltd	20.9	23-Feb-2036	BURWASH
YC26567	BUR	4	0905144 B.C. Ltd	20.9	23-Feb-2036	BURWASH
YC26568	BUR	5	0905144 B.C. Ltd	20.9	23-Feb-2036	BURWASH
YC26569	BUR	6	0905144 B.C. Ltd	20.9	23-Feb-2036	BURWASH
YC26570	BUR	7	0905144 B.C. Ltd	20.89	23-Feb-2036	BURWASH
YC26571	BUR	8	0905144 B.C. Ltd	20.9	23-Feb-2036	BURWASH
YC26572	BUR	9	0905144 B.C. Ltd	20.88	23-Feb-2036	BURWASH
YC26573	BUR	10	0905144 B.C. Ltd	20.9	23-Feb-2036	BURWASH
YC26574	BUR	11	0905144 B.C. Ltd	20.91	23-Feb-2036	BURWASH
YC26575	BUR	12	0905144 B.C. Ltd	20.9	23-Feb-2036	BURWASH
YC26576	BUR	13	0905144 B.C. Ltd	20.9	23-Feb-2036	BURWASH
YC26577	BUR	14	0905144 B.C. Ltd	20.9	23-Feb-2036	BURWASH
YC26578	BUR	15	0905144 B.C. Ltd	20.86	23-Feb-2036	BURWASH
YC26579	BUR	16	0905144 B.C. Ltd	20.9	23-Feb-2036	BURWASH
YC26580	BUR	17	0905144 B.C. Ltd	20.88	23-Feb-2036	BURWASH
YC26581	BUR	18	0905144 B.C. Ltd	20.88	23-Feb-2036	BURWASH
YC26582	BUR	19	0905144 B.C. Ltd	20.86	23-Feb-2036	BURWASH
YC26583	BUR	20	0905144 B.C. Ltd	20.9	23-Feb-2036	BURWASH
YC26584	BUR	21	0905144 B.C. Ltd	20.86	23-Feb-2036	BURWASH
YC26585	BUR	22	0905144 B.C. Ltd	20.9	23-Feb-2036	BURWASH
YC26586	BUR	23	0905144 B.C. Ltd	20.86	23-Feb-2036	BURWASH
YC26587	BUR	24	0905144 B.C. Ltd	20.9	23-Feb-2036	BURWASH
YC26588	BUR	25	0905144 B.C. Ltd	20.86	23-Feb-2036	BURWASH
YC26589	BUR	26	0905144 B.C. Ltd	20.9	23-Feb-2036	BURWASH
YC26590	BUR	27	0905144 B.C. Ltd	20.9	23-Feb-2036	BURWASH
YC26591	BUR	28	0905144 B.C. Ltd	20.9	23-Feb-2036	BURWASH
YC26592	BUR	29	0905144 B.C. Ltd	20.9	23-Feb-2036	BURWASH
YC26593	BUR	30	0905144 B.C. Ltd	20.9	23-Feb-2036	BURWASH
YC26594	BUR	31	0905144 B.C. Ltd	20.9	23-Feb-2036	BURWASH
YC26595	BUR	32	0905144 B.C. Ltd	20.9	23-Feb-2036	BURWASH
YC26596	BUR	33	0905144 B.C. Ltd	20.9	23-Feb-2036	BURWASH
YC26597	BUR	34	0905144 B.C. Ltd	20.9	23-Feb-2036	BURWASH

Claim Number	Claim Name	Claim #	Owner	Area (ha)	Expiry Date	Property
YC26598	BUR	35	0905144 B.C. Ltd	20.9	23-Feb-2036	BURWASH
YC26599	BUR	36	0905144 B.C. Ltd	20.84	23-Feb-2036	BURWASH
YC26600	BUR	37	0905144 B.C. Ltd	20.9	23-Feb-2036	BURWASH
YC26601	BUR	38	0905144 B.C. Ltd	20.9	23-Feb-2036	BURWASH
YC26602	BUR	39	0905144 B.C. Ltd	20.9	23-Feb-2036	BURWASH
YC26603	BUR	40	0905144 B.C. Ltd	20.9	23-Feb-2036	BURWASH
YC26604	BUR	41	0905144 B.C. Ltd	20.9	23-Feb-2036	BURWASH
YC26605	BUR	42	0905144 B.C. Ltd	20.9	23-Feb-2036	BURWASH
YC26606	BUR	43	0905144 B.C. Ltd	20.9	23-Feb-2036	BURWASH
YC26607	BUR	44	0905144 B.C. Ltd	20.9	23-Feb-2036	BURWASH
YC26608	BUR	45	0905144 B.C. Ltd	20.93	23-Feb-2036	BURWASH
YC26609	BUR	46	0905144 B.C. Ltd	20.9	23-Feb-2036	BURWASH
YC26610	BUR	47	0905144 B.C. Ltd	20.9	23-Feb-2036	BURWASH
YC26611	BUR	48	0905144 B.C. Ltd	20.9	23-Feb-2036	BURWASH
YC26612	BUR	49	0905144 B.C. Ltd	20.9	23-Feb-2036	BURWASH
YC26613	BUR	50	0905144 B.C. Ltd	20.9	23-Feb-2036	BURWASH
YC26614	BUR	51	0905144 B.C. Ltd	20.9	23-Feb-2036	BURWASH
YC26615	BUR	52	0905144 B.C. Ltd	20.9	23-Feb-2036	BURWASH
YC26616	BUR	53	0905144 B.C. Ltd	20.9	23-Feb-2036	BURWASH
YC26617	BUR	54	0905144 B.C. Ltd	20.9	23-Feb-2036	BURWASH
YC26618	BUR	55	0905144 B.C. Ltd	20.9	23-Feb-2036	BURWASH
YC26619	BUR	56	0905144 B.C. Ltd	20.9	23-Feb-2036	BURWASH
YC26620	BUR	57	0905144 B.C. Ltd	20.9	23-Feb-2036	BURWASH
YC26621	BUR	58	0905144 B.C. Ltd	20.9	23-Feb-2036	BURWASH
YB36423	BURWASH	1	0905144 B.C. Ltd	20.9	23-Feb-2040	BURWASH
YB36424	BURWASH	2	0905144 B.C. Ltd	20.9	23-Feb-2040	BURWASH
YB36425	BURWASH	3	0905144 B.C. Ltd	20.9	23-Feb-2040	BURWASH
YB36426	BURWASH	4	0905144 B.C. Ltd	20.9	23-Feb-2040	BURWASH
YB36427	BURWASH	5	0905144 B.C. Ltd	20.9	23-Feb-2040	BURWASH
YB36428	BURWASH	6	0905144 B.C. Ltd	20.9	23-Feb-2040	BURWASH
YB36429	BURWASH	7	0905144 B.C. Ltd	20.9	23-Feb-2040	BURWASH
YB36430	BURWASH	8	0905144 B.C. Ltd	20.9	23-Feb-2040	BURWASH
YB36431	BURWASH	9	0905144 B.C. Ltd	20.9	23-Feb-2040	BURWASH
YC18485	BURWASH	10	0905144 B.C. Ltd	17.35	23-Feb-2036	BURWASH
YC18486	BURWASH	11	0905144 B.C. Ltd	3.55	23-Feb-2036	BURWASH
YC18487	BURWASH	12	0905144 B.C. Ltd	20.9	23-Feb-2036	BURWASH
YC18488	BURWASH	13	0905144 B.C. Ltd	20.9	23-Feb-2036	BURWASH

Claim Number	Claim Name	Claim #	Owner	Area (ha)	Expiry Date	Property
YC18489	BURWASH	14	0905144 B.C. Ltd	20.9	23-Feb-2036	BURWASH
YC18490	BURWASH	15	0905144 B.C. Ltd	20.9	23-Feb-2036	BURWASH
YC18491	BURWASH	16	0905144 B.C. Ltd	20.89	23-Feb-2036	BURWASH
YC18492	BURWASH	17	0905144 B.C. Ltd	20.9	23-Feb-2036	BURWASH
YC18493	BURWASH	18	0905144 B.C. Ltd	20.9	23-Feb-2036	BURWASH
YC18494	BURWASH	19	0905144 B.C. Ltd	20.9	23-Feb-2036	BURWASH
YC18495	BURWASH	20	0905144 B.C. Ltd	20.9	23-Feb-2036	BURWASH
YC18496	BURWASH	21	0905144 B.C. Ltd	20.9	23-Feb-2036	BURWASH
YC18497	BURWASH	22	0905144 B.C. Ltd	20.9	23-Feb-2036	BURWASH
YC18498	BURWASH	23	0905144 B.C. Ltd	20.92	23-Feb-2036	BURWASH
YC18499	BURWASH	24	0905144 B.C. Ltd	20.9	23-Feb-2036	BURWASH
YC18500	BURWASH	25	0905144 B.C. Ltd	20.92	23-Feb-2036	BURWASH
YC18501	BURWASH	26	0905144 B.C. Ltd	20.88	23-Feb-2036	BURWASH
YC18502	BURWASH	27	0905144 B.C. Ltd	20.9	23-Feb-2036	BURWASH
YC18503	BURWASH	28	0905144 B.C. Ltd	20.9	23-Feb-2036	BURWASH
YC18504	BURWASH	29	0905144 B.C. Ltd	20.9	23-Feb-2036	BURWASH
YC18505	BURWASH	30	0905144 B.C. Ltd	20.9	23-Feb-2036	BURWASH
YC18506	BURWASH	31	0905144 B.C. Ltd	20.9	23-Feb-2036	BURWASH
YC18507	BURWASH	32	0905144 B.C. Ltd	20.9	23-Feb-2036	BURWASH
YC18508	BURWASH	33	0905144 B.C. Ltd	20.9	23-Feb-2036	BURWASH
YE60861	FORMULA	1	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60862	FORMULA	2	1043704 B.C. Ltd	13.74	23-Jul-2024	Formula
YE60863	FORMULA	3	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60864	FORMULA	4	1043704 B.C. Ltd	13.74	23-Jul-2024	Formula
YE60865	FORMULA	5	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60866	FORMULA	6	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60867	FORMULA	7	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60868	FORMULA	8	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60869	FORMULA	9	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60870	FORMULA	10	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60871	FORMULA	11	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60872	FORMULA	12	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60873	FORMULA	13	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60874	FORMULA	14	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60875	FORMULA	15	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60876	FORMULA	16	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60877	FORMULA	17	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula

Claim Number	Claim Name	Claim #	Owner	Area (ha)	Expiry Date	Property
YE60878	FORMULA	18	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60879	FORMULA	19	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60880	FORMULA	20	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60881	FORMULA	21	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60882	FORMULA	22	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60883	FORMULA	23	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60884	FORMULA	24	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60885	FORMULA	25	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60886	FORMULA	26	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60887	FORMULA	27	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60888	FORMULA	28	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60889	FORMULA	29	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60890	FORMULA	30	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60891	FORMULA	31	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60892	FORMULA	32	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60893	FORMULA	33	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60894	FORMULA	34	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60895	FORMULA	35	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60896	FORMULA	36	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60897	FORMULA	37	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60898	FORMULA	38	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60899	FORMULA	39	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60900	FORMULA	40	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60901	FORMULA	41	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60902	FORMULA	42	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60903	FORMULA	43	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60904	FORMULA	44	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60905	FORMULA	45	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60906	FORMULA	46	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60907	FORMULA	47	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60908	FORMULA	48	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60909	FORMULA	49	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60910	FORMULA	50	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60911	FORMULA	51	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60912	FORMULA	52	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60913	FORMULA	53	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60914	FORMULA	54	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula

Claim Number	Claim Name	Claim #	Owner	Area (ha)	Expiry Date	Property
YE60915	FORMULA	55	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60916	FORMULA	56	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60917	FORMULA	57	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60918	FORMULA	58	1043704 B.C. Ltd	20.16	23-Jul-2024	Formula
YE60919	FORMULA	59	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60920	FORMULA	60	1043704 B.C. Ltd	20.19	23-Jul-2024	Formula
YE60921	FORMULA	61	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60922	FORMULA	62	1043704 B.C. Ltd	20.22	23-Jul-2024	Formula
YE60923	FORMULA	63	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60924	FORMULA	64	1043704 B.C. Ltd	20.25	23-Jul-2024	Formula
YE60925	FORMULA	65	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60926	FORMULA	66	1043704 B.C. Ltd	20.28	23-Jul-2024	Formula
YE60927	FORMULA	67	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60928	FORMULA	68	1043704 B.C. Ltd	20.3	23-Jul-2024	Formula
YE60929	FORMULA	69	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60930	FORMULA	70	1043704 B.C. Ltd	20.34	23-Jul-2024	Formula
YE60931	FORMULA	71	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60932	FORMULA	72	1043704 B.C. Ltd	20.36	23-Jul-2024	Formula
YE60933	FORMULA	73	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60934	FORMULA	74	1043704 B.C. Ltd	20.39	23-Jul-2024	Formula
YE60935	FORMULA	75	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60936	FORMULA	76	1043704 B.C. Ltd	20.42	23-Jul-2024	Formula
YE60937	FORMULA	77	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60938	FORMULA	78	1043704 B.C. Ltd	20.44	23-Jul-2024	Formula
YE60939	FORMULA	79	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60940	FORMULA	80	1043704 B.C. Ltd	20.47	23-Jul-2024	Formula
YE60941	FORMULA	81	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60942	FORMULA	82	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60943	FORMULA	83	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60944	FORMULA	84	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60945	FORMULA	85	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60946	FORMULA	86	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60947	FORMULA	87	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60948	FORMULA	88	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60949	FORMULA	89	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60950	FORMULA	90	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60951	FORMULA	91	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula

Claim Number	Claim Name	Claim #	Owner	Area (ha)	Expiry Date	Property
YE60952	FORMULA	92	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60953	FORMULA	93	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60954	FORMULA	94	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60955	FORMULA	95	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60956	FORMULA	96	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60957	FORMULA	97	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60958	FORMULA	98	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60959	FORMULA	99	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60960	FORMULA	100	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60961	FORMULA	101	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60962	FORMULA	102	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60963	FORMULA	103	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60964	FORMULA	104	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60965	FORMULA	105	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60966	FORMULA	106	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60967	FORMULA	107	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60968	FORMULA	108	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60969	FORMULA	109	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60970	FORMULA	110	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60971	FORMULA	111	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60972	FORMULA	112	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60973	FORMULA	113	1043704 B.C. Ltd	20.77	23-Jul-2024	Formula
YE60974	FORMULA	114	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60975	FORMULA	115	1043704 B.C. Ltd	20.78	23-Jul-2024	Formula
YE60976	FORMULA	116	1043704 B.C. Ltd	13.74	23-Jul-2024	Formula
YD80503	GWG	1	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80504	GWG	2	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80505	GWG	3	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80506	GWG	4	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80507	GWG	5	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80508	GWG	6	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80509	GWG	7	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80510	GWG	8	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80511	GWG	9	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80512	GWG	10	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80513	GWG	11	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80514	GWG	12	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK

Claim Number	Claim Name	Claim #	Owner	Area (ha)	Expiry Date	Property
YD80515	GWG	13	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80516	GWG	14	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80517	GWG	15	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80518	GWG	16	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80519	GWG	17	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80520	GWG	18	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80521	GWG	19	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80522	GWG	20	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80523	GWG	21	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80524	GWG	22	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80525	GWG	23	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80526	GWG	24	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80527	GWG	25	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80528	GWG	26	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80529	GWG	27	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80530	GWG	28	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80531	GWG	29	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80532	GWG	30	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80533	GWG	31	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80534	GWG	32	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80535	GWG	33	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80536	GWG	34	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80537	GWG	35	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80538	GWG	36	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80539	GWG	37	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80540	GWG	38	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80541	GWG	39	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80542	GWG	40	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD127061	KAT	1	0905144 B.C. Ltd	17.6	11-Feb-2027	KAT
YD127062	KAT	2	0905144 B.C. Ltd	20.9	11-Feb-2027	KAT
YD127063	KAT	3	0905144 B.C. Ltd	18.08	11-Feb-2027	KAT
YD127064	KAT	4	0905144 B.C. Ltd	14.39	11-Feb-2027	KAT
YD127065	KAT	5	0905144 B.C. Ltd	16.65	11-Feb-2027	KAT
YD127066	KAT	6	0905144 B.C. Ltd	10.11	11-Feb-2027	KAT
YD127067	KAT	7	0905144 B.C. Ltd	16.45	11-Feb-2027	KAT
YD127068	KAT	8	0905144 B.C. Ltd	6.6	11-Feb-2027	KAT
YD127069	KAT	9	0905144 B.C. Ltd	16.1	11-Feb-2027	KAT

Claim Number	Claim Name	Claim #	Owner	Area (ha)	Expiry Date	Property
YD127070	KAT	10	0905144 B.C. Ltd	3.06	11-Feb-2027	KAT
YD127071	KAT	11	0905144 B.C. Ltd	5.63	11-Feb-2027	KAT
YD127072	KAT	12	0905144 B.C. Ltd	19.87	11-Feb-2027	KAT
YD127073	KAT	13	0905144 B.C. Ltd	2.73	11-Feb-2027	KAT
YD127074	KAT	14	0905144 B.C. Ltd	20.57	11-Feb-2027	KAT
YD127075	KAT	15	0905144 B.C. Ltd	5.94	11-Feb-2027	KAT
YD127076	KAT	16	0905144 B.C. Ltd	20.9	11-Feb-2027	KAT
YD127077	KAT	17	0905144 B.C. Ltd	6.52	11-Feb-2027	KAT
YD127078	KAT	18	0905144 B.C. Ltd	20.9	11-Feb-2027	KAT
YD127079	KAT	19	0905144 B.C. Ltd	11.07	11-Feb-2027	KAT
YD127080	KAT	20	0905144 B.C. Ltd	20.9	11-Feb-2027	KAT
YD127081	KAT	21	0905144 B.C. Ltd	15.54	11-Feb-2027	KAT
YD127082	KAT	22	0905144 B.C. Ltd	20.9	11-Feb-2027	KAT
YD127083	KAT	23	0905144 B.C. Ltd	10.86	11-Feb-2027	KAT
YD127084	KAT	24	0905144 B.C. Ltd	20.9	11-Feb-2027	KAT
YD127085	KAT	25	0905144 B.C. Ltd	13.9	11-Feb-2027	KAT
YD127086	KAT	26	0905144 B.C. Ltd	20.9	11-Feb-2027	KAT
YD127087	KAT	27	0905144 B.C. Ltd	7.65	11-Feb-2027	KAT
YD127088	KAT	28	0905144 B.C. Ltd	15.69	11-Feb-2027	KAT
YD127089	KAT	29	0905144 B.C. Ltd	7.86	11-Feb-2027	KAT
YD127090	KAT	30	0905144 B.C. Ltd	2.44	11-Feb-2027	KAT
YD127091	KAT	31	0905144 B.C. Ltd	2.1	11-Feb-2027	KAT
YD127092	KAT	32	0905144 B.C. Ltd	0.92	11-Feb-2027	KAT
YD127093	KAT	33	0905144 B.C. Ltd	1.14	11-Feb-2027	KAT
YD127094	KAT	34	0905144 B.C. Ltd	2.84	11-Feb-2027	KAT
YD127095	KAT	35	0905144 B.C. Ltd	5.49	05-Dec-2023	KAT
YD127096	KAT	36	0905144 B.C. Ltd	3.26	05-Dec-2023	KAT
YD127097	KAT	37	0905144 B.C. Ltd	16.92	05-Dec-2023	KAT
YD127098	KAT	38	0905144 B.C. Ltd	20.02	05-Dec-2023	KAT
YD127099	KAT	39	0905144 B.C. Ltd	16.97	05-Dec-2023	KAT
YD127100	KAT	40	0905144 B.C. Ltd	20.02	05-Dec-2023	KAT
YD127101	KAT	41	0905144 B.C. Ltd	16.02	05-Dec-2023	KAT
YD127102	KAT	42	0905144 B.C. Ltd	20.02	05-Dec-2023	KAT
YE70953	KAT	43	0905144 B.C. Ltd	14.24	05-Dec-2023	KAT
YE70954	KAT	44	0905144 B.C. Ltd	20.02	05-Dec-2023	KAT
YE70955	KAT	45	0905144 B.C. Ltd	10.36	05-Dec-2023	KAT
YE70956	KAT	46	0905144 B.C. Ltd	20.02	05-Dec-2023	KAT

Claim Number	Claim Name	Claim #	Owner	Area (ha)	Expiry Date	Property
YE70957	KAT	47	0905144 B.C. Ltd	17.69	05-Dec-2023	KAT
YE70958	KAT	48	0905144 B.C. Ltd	13.71	05-Dec-2023	KAT
YE70959	KAT	49	0905144 B.C. Ltd	20.9	05-Dec-2023	KAT
YE70960	KAT	50	0905144 B.C. Ltd	19.89	05-Dec-2023	KAT
YE70961	KAT	51	0905144 B.C. Ltd	20.9	05-Dec-2023	KAT
YE70962	KAT	52	0905144 B.C. Ltd	13.92	05-Dec-2023	KAT
YE70963	KAT	53	0905144 B.C. Ltd	20.9	05-Dec-2023	KAT
YE70964	KAT	54	0905144 B.C. Ltd	12.49	05-Dec-2023	KAT
YE70965	KAT	55	0905144 B.C. Ltd	20.9	05-Dec-2023	KAT
YE70966	KAT	56	0905144 B.C. Ltd	20.9	05-Dec-2023	KAT
YE70967	KAT	57	0905144 B.C. Ltd	20.9	05-Dec-2023	KAT
YE70968	KAT	58	0905144 B.C. Ltd	20.9	05-Dec-2023	KAT
YE70969	KAT	59	0905144 B.C. Ltd	20.9	05-Dec-2023	KAT
YE70970	KAT	60	0905144 B.C. Ltd	20.9	05-Dec-2023	KAT
YE70971	KAT	61	0905144 B.C. Ltd	20.9	05-Dec-2023	KAT
YE70972	KAT	62	0905144 B.C. Ltd	20.9	05-Dec-2023	KAT
YE70973	KAT	63	0905144 B.C. Ltd	20.9	05-Dec-2027	KAT
YE70974	KAT	64	0905144 B.C. Ltd	20.9	05-Dec-2027	KAT
YE70975	KAT	65	0905144 B.C. Ltd	20.9	05-Dec-2027	KAT
YE70976	KAT	66	0905144 B.C. Ltd	20.9	05-Dec-2027	KAT
YE70977	KAT	67	0905144 B.C. Ltd	20.9	05-Dec-2027	KAT
YE70978	KAT	68	0905144 B.C. Ltd	20.9	05-Dec-2027	KAT
YE70979	KAT	69	0905144 B.C. Ltd	16.97	05-Dec-2027	KAT
YE70980	KAT	70	0905144 B.C. Ltd	19.65	05-Dec-2027	KAT
YE70981	KAT	71	0905144 B.C. Ltd	8.54	05-Dec-2027	KAT
YE70982	KAT	72	0905144 B.C. Ltd	19.65	05-Dec-2027	KAT
YE70983	KAT	73	0905144 B.C. Ltd	14.09	05-Dec-2027	KAT
YE70984	KAT	74	0905144 B.C. Ltd	18.21	05-Dec-2027	KAT
YE70985	KAT	75	0905144 B.C. Ltd	2.86	05-Dec-2027	KAT
YE70986	KAT	76	0905144 B.C. Ltd	7.56	05-Dec-2027	KAT
YE70987	KAT	77	0905144 B.C. Ltd	4.35	05-Dec-2027	KAT
YE70988	KAT	78	0905144 B.C. Ltd	8	05-Dec-2027	KAT
YE70989	KAT	79	0905144 B.C. Ltd	9.84	05-Dec-2027	KAT
YE70990	KAT	80	0905144 B.C. Ltd	8.44	05-Dec-2027	KAT
YE70991	KAT	81	0905144 B.C. Ltd	10.92	05-Dec-2027	KAT
YE70992	KAT	82	0905144 B.C. Ltd	5.71	05-Dec-2027	KAT
YE70993	KAT	83	0905144 B.C. Ltd	11.7	11-Feb-2028	KAT

Claim Number	Claim Name	Claim #	Owner	Area (ha)	Expiry Date	Property
YE70994	KAT	84	0905144 B.C. Ltd	19.6	11-Feb-2028	KAT
YE70995	KAT	85	0905144 B.C. Ltd	8.78	11-Feb-2028	KAT
YE70996	KAT	86	0905144 B.C. Ltd	19.49	11-Feb-2028	KAT
YA94966	MUS	5	0905144 B.C. Ltd	20.87	11-Feb-2027	WELLGREEN
YA94967	MUS	6	0905144 B.C. Ltd	20.74	11-Feb-2027	WELLGREEN
YA96015	MUS	12	0905144 B.C. Ltd	20.99	11-Feb-2028	WELLGREEN
YA96017	MUS	14	0905144 B.C. Ltd	20.37	11-Feb-2028	WELLGREEN
YA96019	MUS	16	0905144 B.C. Ltd	16.12	11-Feb-2028	WELLGREEN
YD80544	MWSK	42	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80545	MWSK	43	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80546	MWSK	44	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80547	MWSK	45	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80548	MWSK	46	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80549	MWSK	47	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80550	MWSK	48	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80551	MWSK	49	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80552	MWSK	50	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80553	MWSK	51	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80554	MWSK	52	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80555	MWSK	53	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80556	MWSK	54	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80557	MWSK	55	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80558	MWSK	56	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80559	MWSK	57	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80560	MWSK	58	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80561	MWSK	59	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80562	MWSK	60	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80563	MWSK	61	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80564	MWSK	62	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80565	MWSK	63	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80566	MWSK	64	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80567	MWSK	65	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80568	MWSK	66	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80569	MWSK	67	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80570	MWSK	68	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80571	MWSK	69	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80572	MWSK	70	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK

Claim Number	Claim Name	Claim #	Owner	Area (ha)	Expiry Date	Property
YD80573	MWSK	71	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80574	MWSK	72	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80575	MWSK	73	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80576	MWSK	74	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80577	MWSK	75	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80578	MWSK	76	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80579	MWSK	77	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80580	MWSK	78	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80581	MWSK	79	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80582	MWSK	80	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80583	MWSK	81	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80584	MWSK	82	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80585	MWSK	83	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80586	MWSK	84	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80587	MWSK	85	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80588	MWSK	86	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80589	MWSK	87	1043704 B.C. Ltd	19.45	22-Jun-2024	MUSK
YD80590	MWSK	88	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80591	MWSK	89	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80592	MWSK	90	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80593	MWSK	91	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80594	MWSK	92	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80595	MWSK	93	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80596	MWSK	94	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80597	MWSK	95	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YE32227	MWSK	96	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YE32228	MWSK	97	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80600	MWSK	98	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80601	MWSK	99	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80602	MWSK	100	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80603	MWSK	101	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80604	MWSK	102	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80605	MWSK	103	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80606	MWSK	104	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80607	MWSK	105	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80608	MWSK	106	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80609	MWSK	107	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK

Claim Number	Claim Name	Claim #	Owner	Area (ha)	Expiry Date	Property
YD80610	MWSK	108	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80611	MWSK	109	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80612	MWSK	110	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80613	MWSK	111	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80614	MWSK	112	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80615	MWSK	113	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80616	MWSK	114	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80617	MWSK	115	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80618	MWSK	116	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80619	MWSK	117	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80620	MWSK	118	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80621	MWSK	119	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80622	MWSK	120	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80623	MWSK	121	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80624	MWSK	122	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80625	MWSK	123	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80626	MWSK	124	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80627	MWSK	125	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80628	MWSK	126	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80629	MWSK	127	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80630	MWSK	128	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80631	MWSK	129	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80632	MWSK	130	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80633	MWSK	131	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80634	MWSK	132	1043704 B.C. Ltd	20.62	22-Jun-2024	MUSK
YD80635	MWSK	133	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80636	MWSK	134	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80637	MWSK	135	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80638	MWSK	136	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80639	MWSK	137	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80640	MWSK	138	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80641	MWSK	139	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80642	MWSK	140	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80643	MWSK	141	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80644	MWSK	142	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80645	MWSK	143	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80646	MWSK	144	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK

Claim Number	Claim Name	Claim #	Owner	Area (ha)	Expiry Date	Property
YD80647	MWSK	145	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80648	MWSK	146	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80649	MWSK	147	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YE32229	MWSK	148	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YE32230	MWSK	149	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80652	MWSK	150	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80653	MWSK	151	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80654	MWSK	152	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80655	MWSK	153	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80656	MWSK	154	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80657	MWSK	155	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80658	MWSK	156	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80659	MWSK	157	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80660	MWSK	158	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80661	MWSK	159	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80662	MWSK	160	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80663	MWSK	161	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80664	MWSK	162	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80665	MWSK	163	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80666	MWSK	164	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80667	MWSK	165	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80668	MWSK	166	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80669	MWSK	167	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80670	MWSK	168	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80671	MWSK	169	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80672	MWSK	170	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80673	MWSK	171	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80674	MWSK	172	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80675	MWSK	173	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80676	MWSK	174	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80677	MWSK	175	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80678	MWSK	176	1043704 B.C. Ltd	16.02	22-Jun-2024	MUSK
YD80679	MWSK	177	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80680	MWSK	178	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80681	MWSK	179	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80682	MWSK	180	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80683	MWSK	181	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK

Claim Number	Claim Name	Claim #	Owner	Area (ha)	Expiry Date	Property
YD80684	MWSK	182	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80685	MWSK	183	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80686	MWSK	184	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80687	MWSK	185	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80688	MWSK	186	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80689	MWSK	187	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80690	MWSK	188	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80691	MWSK	189	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80692	MWSK	190	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80693	MWSK	191	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80694	MWSK	192	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80695	MWSK	193	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80696	MWSK	194	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80697	MWSK	195	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80698	MWSK	196	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80699	MWSK	197	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80700	MWSK	198	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80701	MWSK	199	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80702	MWSK	200	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80703	MWSK	201	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80704	MWSK	202	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80705	MWSK	203	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80706	MWSK	204	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80707	MWSK	205	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80708	MWSK	206	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80709	MWSK	207	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80710	MWSK	208	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80711	MWSK	209	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80712	MWSK	210	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80713	MWSK	211	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80714	MWSK	212	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80715	MWSK	213	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80716	MWSK	214	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80717	MWSK	215	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80718	MWSK	216	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80719	MWSK	217	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80720	MWSK	218	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK

Claim Number	Claim Name	Claim #	Owner	Area (ha)	Expiry Date	Property
YD80721	MWSK	219	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80722	MWSK	220	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80723	MWSK	221	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80724	MWSK	222	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80725	MWSK	223	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80726	MWSK	224	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80727	MWSK	225	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80728	MWSK	226	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80729	MWSK	227	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80730	MWSK	228	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80731	MWSK	229	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80732	MWSK	230	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80733	MWSK	231	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80734	MWSK	232	1043704 B.C. Ltd	14.92	22-Jun-2024	MUSK
YD80735	MWSK	233	1043704 B.C. Ltd	14.92	22-Jun-2024	MUSK
YD80736	MWSK	234	1043704 B.C. Ltd	14.92	22-Jun-2024	MUSK
YD80737	MWSK	235	1043704 B.C. Ltd	14.92	22-Jun-2024	MUSK
YD80738	MWSK	236	1043704 B.C. Ltd	14.92	22-Jun-2024	MUSK
YD80739	MWSK	237	1043704 B.C. Ltd	14.92	22-Jun-2024	MUSK
YD80740	MWSK	238	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80741	MWSK	239	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80742	MWSK	240	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80743	MWSK	241	1043704 B.C. Ltd	20.55	22-Jun-2024	MUSK
YD80744	MWSK	242	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80745	MWSK	243	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80746	MWSK	244	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80747	MWSK	245	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80748	MWSK	246	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80749	MWSK	247	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80750	MWSK	248	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80751	MWSK	249	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80752	MWSK	250	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80753	MWSK	251	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80754	MWSK	252	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80755	MWSK	253	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80756	MWSK	254	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80757	MWSK	255	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK

Claim Number	Claim Name	Claim #	Owner	Area (ha)	Expiry Date	Property
YD80758	MWSK	256	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80759	MWSK	257	1043704 B.C. Ltd	20.89	22-Jun-2024	MUSK
YD80760	MWSK	258	1043704 B.C. Ltd	9.33	22-Jun-2024	MUSK
YD80761	MWSK	259	1043704 B.C. Ltd	5.92	22-Jun-2024	MUSK
YD80762	MWSK	260	1043704 B.C. Ltd	16.94	22-Jun-2024	MUSK
YD80763	OX	261	1043704 B.C. Ltd	15.49	22-Jun-2024	MUSK
YD80764	OX	262	1043704 B.C. Ltd	16.19	22-Jun-2024	MUSK
YD80765	OX	263	1043704 B.C. Ltd	9.29	22-Jun-2024	MUSK
YD80766	OX	264	1043704 B.C. Ltd	3.28	22-Jun-2024	MUSK
YD80767	OX	265	1043704 B.C. Ltd	1.09	22-Jun-2024	MUSK
YD80768	OX	266	1043704 B.C. Ltd	3.11	22-Jun-2024	MUSK
YD80769	OX	267	1043704 B.C. Ltd	9.34	22-Jun-2024	MUSK
YD80770	OX	268	1043704 B.C. Ltd	11.76	22-Jun-2024	MUSK
YD80771	OX	269	1043704 B.C. Ltd	5.13	22-Jun-2024	MUSK
YD80772	OX	270	1043704 B.C. Ltd	0.94	22-Jun-2024	MUSK
YF35387	QC	1	0905144 B.C. Ltd	20.89	09-Jan-2024	JAN QC
YF35388	QC	2	0905144 B.C. Ltd	20.89	09-Jan-2024	JAN QC
YF35497	QC	3	0905144 B.C. Ltd	20.89	09-Jan-2024	JAN QC
YF35498	QC	4	0905144 B.C. Ltd	20.89	09-Jan-2024	JAN QC
YF35499	QC	5	0905144 B.C. Ltd	20.89	09-Jan-2024	JAN QC
YF35500	QC	6	0905144 B.C. Ltd	20.89	09-Jan-2024	JAN QC
YC40144	RUB	1	0905144 B.C. Ltd	20.9	23-Feb-2033	BURWASH
YC40145	RUB	2	0905144 B.C. Ltd	20.9	23-Feb-2033	BURWASH
YC40146	RUB	3	0905144 B.C. Ltd	20.9	23-Feb-2033	BURWASH
YC40147	RUB	4	0905144 B.C. Ltd	20.9	23-Feb-2033	BURWASH
YC40148	RUB	5	0905144 B.C. Ltd	20.9	23-Feb-2033	BURWASH
YC40149	RUB	6	0905144 B.C. Ltd	20.9	23-Feb-2033	BURWASH
YC40150	RUB	7	0905144 B.C. Ltd	20.9	23-Feb-2033	BURWASH
YC40151	RUB	8	0905144 B.C. Ltd	20.9	23-Feb-2033	BURWASH
YC40152	RUB	9	0905144 B.C. Ltd	20.9	23-Feb-2033	BURWASH
YC40153	RUB	10	0905144 B.C. Ltd	20.9	23-Feb-2033	BURWASH
YC40154	RUB	11	0905144 B.C. Ltd	20.9	23-Feb-2033	BURWASH
YC40155	RUB	12	0905144 B.C. Ltd	20.9	23-Feb-2033	BURWASH
YC40156	RUB	13	0905144 B.C. Ltd	20.9	23-Feb-2033	BURWASH
YC40157	RUB	14	0905144 B.C. Ltd	20.9	23-Feb-2033	BURWASH
YC40158	RUB	15	0905144 B.C. Ltd	20.9	23-Feb-2033	BURWASH
YC40159	RUB	16	0905144 B.C. Ltd	20.9	23-Feb-2033	BURWASH

Claim Number	Claim Name	Claim #	Owner	Area (ha)	Expiry Date	Property
YC40160	RUB	17	0905144 B.C. Ltd	20.9	23-Feb-2033	BURWASH
YC40161	RUB	18	0905144 B.C. Ltd	20.9	23-Feb-2033	BURWASH
YC40162	RUB	19	0905144 B.C. Ltd	20.9	23-Feb-2033	BURWASH
YC40163	RUB	20	0905144 B.C. Ltd	20.9	23-Feb-2033	BURWASH
YC40164	RUB	21	0905144 B.C. Ltd	20.77	23-Feb-2033	BURWASH
YC40165	RUB	22	0905144 B.C. Ltd	20.9	23-Feb-2033	BURWASH
YC40166	RUB	23	0905144 B.C. Ltd	14.03	23-Feb-2033	BURWASH
YC40167	RUB	24	0905144 B.C. Ltd	20.9	23-Feb-2033	BURWASH
YC40168	RUB	25	0905144 B.C. Ltd	20.9	23-Feb-2033	BURWASH
YC40169	RUB	26	0905144 B.C. Ltd	20.9	23-Feb-2033	BURWASH
YC40170	RUB	27	0905144 B.C. Ltd	20.9	23-Feb-2033	BURWASH
YC40171	RUB	28	0905144 B.C. Ltd	20.9	23-Feb-2033	BURWASH
YC40172	RUB	29	0905144 B.C. Ltd	20.9	23-Feb-2033	BURWASH
YD87963	WG	1	0905144 B.C. Ltd	1.99	13-Feb-2024	WELLGREEN
YD87964	WG	2	0905144 B.C. Ltd	3.51	13-Feb-2024	WELLGREEN
YD87965	WG	3	0905144 B.C. Ltd	3.92	13-Feb-2024	WELLGREEN
YD87966	WG	4	0905144 B.C. Ltd	20.89	13-Feb-2024	WELLGREEN
YD87967	WG	5	0905144 B.C. Ltd	1.58	13-Feb-2024	WELLGREEN
YD87968	WG	6	0905144 B.C. Ltd	1.1	13-Feb-2024	WELLGREEN
YD87969	WG	7	0905144 B.C. Ltd	2.34	13-Feb-2027	WELLGREEN
YD87970	WG	8	0905144 B.C. Ltd	0	13-Feb-2027	WELLGREEN
YD87971	WG	9	0905144 B.C. Ltd	2.55	13-Feb-2027	WELLGREEN
YD87972	WG	10	0905144 B.C. Ltd	4.86	13-Feb-2027	WELLGREEN
YD87973	WG	11	0905144 B.C. Ltd	0.71	13-Feb-2027	WELLGREEN
YD87974	WG	12	0905144 B.C. Ltd	20.07	13-Feb-2027	WELLGREEN
YD87975	WG	13	0905144 B.C. Ltd	16.83	13-Feb-2024	WELLGREEN
YD87976	WG	14	0905144 B.C. Ltd	13.43	13-Feb-2024	WELLGREEN
YD87977	WG	15	0905144 B.C. Ltd	10.03	13-Feb-2024	WELLGREEN
YD87978	WG	16	0905144 B.C. Ltd	6.64	13-Feb-2024	WELLGREEN
YD87979	WG	17	0905144 B.C. Ltd	3.24	13-Feb-2024	WELLGREEN
YE91102	LYNX	1	0905144 B.C. Ltd	20.9	28-Aug-2024	LYNX
YE91103	LYNX	2	0905144 B.C. Ltd	20.9	28-Aug-2024	LYNX
YE91104	LYNX	3	0905144 B.C. Ltd	20.9	28-Aug-2024	LYNX
YE91105	LYNX	4	0905144 B.C. Ltd	20.9	28-Aug-2024	LYNX
YE91106	LYNX	5	0905144 B.C. Ltd	3.16	28-Aug-2024	LYNX
YE91107	LYNX	6	0905144 B.C. Ltd	16.23	28-Aug-2024	LYNX
YE91108	LYNX	7	0905144 B.C. Ltd	20.9	28-Aug-2024	LYNX

Claim Number	Claim Name	Claim #	Owner	Area (ha)	Expiry Date	Property
YE91109	LYNX	8	0905144 B.C. Ltd	20.9	28-Aug-2024	LYNX
YE91110	LYNX	9	0905144 B.C. Ltd	20.9	28-Aug-2024	LYNX
YE91111	LYNX	10	0905144 B.C. Ltd	20.9	28-Aug-2024	LYNX
YE91112	LYNX	11	0905144 B.C. Ltd	20.9	28-Aug-2024	LYNX
YE91113	LYNX	12	0905144 B.C. Ltd	4.88	28-Aug-2024	LYNX
YE91114	LYNX	13	0905144 B.C. Ltd	10.68	28-Aug-2024	LYNX
YE91115	LYNX	14	0905144 B.C. Ltd	20.9	28-Aug-2024	LYNX
YE91116	LYNX	15	0905144 B.C. Ltd	20.15	28-Aug-2024	LYNX
YE91117	LYNX	16	0905144 B.C. Ltd	3.42	28-Aug-2024	LYNX

Table 4-2: Mineral Leases

Lease #	Lease Name	Number	Owner	Area (ha)	Expiry Date	Property
60767	QUILL	1	0905144 B.C. Ltd	16.78	05-Dec-2041	Nickel Shäw Qtz
60768	QUILL	2	0905144 B.C. Ltd	17.13	05-Dec-2041	Nickel Shäw Qtz
60769	QUILL	3	0905144 B.C. Ltd	20.89	05-Dec-2041	Nickel Shäw Qtz
60770	QUILL	4	0905144 B.C. Ltd	20.55	05-Dec-2041	Nickel Shäw Qtz
60771	QUILL	5	0905144 B.C. Ltd	20.78	05-Dec-2041	Nickel Shäw Qtz
60772	QUILL	6	0905144 B.C. Ltd	20.78	05-Dec-2041	Nickel Shäw Qtz
60773	QUILL	7	0905144 B.C. Ltd	14.01	05-Dec-2041	Nickel Shäw Qtz
60774	QUILL	8	0905144 B.C. Ltd	16.52	05-Dec-2041	Nickel Shäw Qtz
70829	QUILL		0905144 B.C. Ltd	11.14	05-Dec-2041	Nickel Shäw Qtz
60791	RAM	1	0905144 B.C. Ltd	15.76	05-Dec-2041	Nickel Shäw Qtz
60792	RAM	2	0905144 B.C. Ltd	20.88	05-Dec-2041	Nickel Shäw Qtz
60793	RAM	3	0905144 B.C. Ltd	20.07	05-Dec-2041	Nickel Shäw Qtz
60794	RAM	4	0905144 B.C. Ltd	19.86	05-Dec-2041	Nickel Shäw Qtz
60795	RAM	5	0905144 B.C. Ltd	7.89	05-Dec-2041	Nickel Shäw Qtz
60796	RAM	6	0905144 B.C. Ltd	22.07	05-Dec-2041	Nickel Shäw Qtz
60797	RAM	7	0905144 B.C. Ltd	16.18	05-Dec-2041	Nickel Shäw Qtz
60798	RAM	8	0905144 B.C. Ltd	13.55	05-Dec-2041	Nickel Shäw Qtz
63037	RED	1	0905144 B.C. Ltd	15.34	05-Dec-2041	Nickel Shäw Qtz
63038	RED	2	0905144 B.C. Ltd	13.53	05-Dec-2041	Nickel Shäw Qtz
63039	RED	3	0905144 B.C. Ltd	16.09	05-Dec-2041	Nickel Shäw Qtz
63040	RED	4	0905144 B.C. Ltd	20.69	05-Dec-2041	Nickel Shäw Qtz
63041	RED	5	0905144 B.C. Ltd	20.87	05-Dec-2041	Nickel Shäw Qtz
63042	RED	6	0905144 B.C. Ltd	15.65	05-Dec-2041	Nickel Shäw Qtz
63043	RED	7	0905144 B.C. Ltd	15.46	05-Dec-2041	Nickel Shäw Qtz
63044	RED	8	0905144 B.C. Ltd	19.1	05-Dec-2041	Nickel Shäw Qtz
71432	ROSS	1	0905144 B.C. Ltd	16.47	05-Dec-2041	Nickel Shäw Qtz

Lease #	Lease Name	Number	Owner	Area (ha)	Expiry Date	Property
71433	ROSS	2	0905144 B.C. Ltd	19.75	05-Dec-2041	Nickel Shäw Qtz
71434	ROSS	3	0905144 B.C. Ltd	13.18	05-Dec-2041	Nickel Shäw Qtz
71435	ROSS	4	0905144 B.C. Ltd	11.97	05-Dec-2041	Nickel Shäw Qtz
64076	ROSS	15	0905144 B.C. Ltd	20.74	05-Dec-2041	Nickel Shäw Qtz
64077	ROSS	16	0905144 B.C. Ltd	20.74	05-Dec-2041	Nickel Shäw Qtz
64066	ROSS	25	0905144 B.C. Ltd	15.94	05-Dec-2041	Nickel Shäw Qtz
64086	ROSS	85	0905144 B.C. Ltd	20.88	05-Dec-2041	Nickel Shäw Qtz
64087	ROSS	86	0905144 B.C. Ltd	21.11	05-Dec-2041	Nickel Shäw Qtz
64084	ROSS	94	0905144 B.C. Ltd	22.04	05-Dec-2041	Nickel Shäw Qtz
64085	ROSS	95	0905144 B.C. Ltd	23.86	05-Dec-2041	Nickel Shäw Qtz
64587	ROSS	96	0905144 B.C. Ltd	23.98	05-Dec-2041	Nickel Shäw Qtz
63013	SAM	1	0905144 B.C. Ltd	6.04	05-Dec-2041	Nickel Shäw Qtz
63014	SAM	2	0905144 B.C. Ltd	9.72	05-Dec-2041	Nickel Shäw Qtz
63015	SAM	3	0905144 B.C. Ltd	15.78	05-Dec-2041	Nickel Shäw Qtz
63016	SAM	4	0905144 B.C. Ltd	10.64	05-Dec-2041	Nickel Shäw Qtz
63017	SAM	5	0905144 B.C. Ltd	12.55	05-Dec-2041	Nickel Shäw Qtz
63018	SAM	6	0905144 B.C. Ltd	16.92	05-Dec-2041	Nickel Shäw Qtz
63019	SAM	7	0905144 B.C. Ltd	14.27	05-Dec-2041	Nickel Shäw Qtz
63020	SAM	8	0905144 B.C. Ltd	10.32	05-Dec-2041	Nickel Shäw Qtz
60783	WAGONER	1	0905144 B.C. Ltd	18.46	05-Dec-2041	Nickel Shäw Qtz
60784	WAGONER	2	0905144 B.C. Ltd	18.46	05-Dec-2041	Nickel Shäw Qtz
60785	WAGONER	3	0905144 B.C. Ltd	13.58	05-Dec-2041	Nickel Shäw Qtz
60786	WAGONER	4	0905144 B.C. Ltd	14.37	05-Dec-2041	Nickel Shäw Qtz
60787	WAGONER	5	0905144 B.C. Ltd	16	05-Dec-2041	Nickel Shäw Qtz
60788	WAGONER	6	0905144 B.C. Ltd	16	05-Dec-2041	Nickel Shäw Qtz
60789	WAGONER	7	0905144 B.C. Ltd	13.88	05-Dec-2041	Nickel Shäw Qtz
60790	WAGONER	8	0905144 B.C. Ltd	15.14	05-Dec-2041	Nickel Shäw Qtz
63021	MAC	1	0905144 B.C. Ltd	12.62	05-Dec-2041	Nickel Shäw Qtz
63022	MAC	2	0905144 B.C. Ltd	12.47	05-Dec-2041	Nickel Shäw Qtz
63023	MAC	3	0905144 B.C. Ltd	14.2	05-Dec-2041	Nickel Shäw Qtz
63024	MAC	4	0905144 B.C. Ltd	11.19	05-Dec-2041	Nickel Shäw Qtz
63025	MAC	5	0905144 B.C. Ltd	9.82	05-Dec-2041	Nickel Shäw Qtz
63026	MAC	6	0905144 B.C. Ltd	8.44	05-Dec-2041	Nickel Shäw Qtz
63027	MAC	7	0905144 B.C. Ltd	7.64	05-Dec-2041	Nickel Shäw Qtz
63028	MAC	8	0905144 B.C. Ltd	13.84	05-Dec-2041	Nickel Shäw Qtz
63029	BETTY	1	0905144 B.C. Ltd	10.38	05-Dec-2041	Nickel Shäw Qtz
63030	BETTY	2	0905144 B.C. Ltd	11.58	05-Dec-2041	Nickel Shäw Qtz

Lease #	Lease Name	Number	Owner	Area (ha)	Expiry Date	Property
63031	BETTY	3	0905144 B.C. Ltd	11.83	05-Dec-2041	Nickel Shäw Qtz
63032	BETTY	4	0905144 B.C. Ltd	10.93	05-Dec-2041	Nickel Shäw Qtz
63033	BETTY	5	0905144 B.C. Ltd	18.41	05-Dec-2041	Nickel Shäw Qtz
63034	BETTY	6	0905144 B.C. Ltd	17.59	05-Dec-2041	Nickel Shäw Qtz
63035	BETTY	7	0905144 B.C. Ltd	19.5	05-Dec-2041	Nickel Shäw Qtz
63036	BETTY	8	0905144 B.C. Ltd	21.2	05-Dec-2041	Nickel Shäw Qtz
64742	JEEP	96	0905144 B.C. Ltd	11.93	05-Dec-2041	Nickel Shäw Qtz
64828	JEEP	234	0905144 B.C. Ltd	4.22	05-Dec-2041	Nickel Shäw Qtz
64830	JEEP	236	0905144 B.C. Ltd	5.61	05-Dec-2041	Nickel Shäw Qtz
64122	JEEP	238	0905144 B.C. Ltd	6.75	05-Dec-2041	Nickel Shäw Qtz
64832	JEEP	240	0905144 B.C. Ltd	6.21	05-Dec-2041	Nickel Shäw Qtz
64834	JEEP	242	0905144 B.C. Ltd	8	05-Dec-2041	Nickel Shäw Qtz
64836	JEEP	244	0905144 B.C. Ltd	12.24	05-Dec-2041	Nickel Shäw Qtz
66569	JEEP	265	0905144 B.C. Ltd	9.98	05-Dec-2041	Nickel Shäw Qtz
66571	JEEP	267	0905144 B.C. Ltd	19.7	05-Dec-2041	Nickel Shäw Qtz
66572	JEEP	268	0905144 B.C. Ltd	18.46	05-Dec-2041	Nickel Shäw Qtz
63001	IRISH	1	0905144 B.C. Ltd	19.66	05-Dec-2041	Nickel Shäw Qtz
63002	IRISH	2	0905144 B.C. Ltd	15.14	05-Dec-2041	Nickel Shäw Qtz
63003	IRISH	3	0905144 B.C. Ltd	11.06	05-Dec-2041	Nickel Shäw Qtz
63006	IRISH	6	0905144 B.C. Ltd	16.41	05-Dec-2041	Nickel Shäw Qtz
60775	DISCOVERY	1	0905144 B.C. Ltd	10.04	05-Dec-2041	Nickel Shäw Qtz
60776	DISCOVERY	2	0905144 B.C. Ltd	10.5	05-Dec-2041	Nickel Shäw Qtz
60777	DISCOVERY	3	0905144 B.C. Ltd	16.08	05-Dec-2041	Nickel Shäw Qtz
60778	DISCOVERY	4	0905144 B.C. Ltd	16.82	05-Dec-2041	Nickel Shäw Qtz
60779	DISCOVERY	5	0905144 B.C. Ltd	13.35	05-Dec-2041	Nickel Shäw Qtz
60780	DISCOVERY	6	0905144 B.C. Ltd	16.69	05-Dec-2041	Nickel Shäw Qtz
60781	DISCOVERY	7	0905144 B.C. Ltd	13.66	05-Dec-2041	Nickel Shäw Qtz
60782	DISCOVERY	8	0905144 B.C. Ltd	11.57	05-Dec-2041	Nickel Shäw Qtz

4.3 Surface Rights

Nickel Creek Platinum's interest in the Project property also consists of one surface lease issued by the Government of Canada and administered by the Government of Yukon: Lease 115G05-001, as described below.

Lease 115G05-001 covers a 69.7 ha parcel of land located near the headwaters of Nickel Creek adjacent to the Wellgreen Deposit. Previously, Northern Platinum held a lease on this same area from the early 1990s until October 31, 2011. Prior to expiration, the 21-year lease was assigned to Prophecy Platinum

Corp. (now Nickel Creek), who then applied for renewal of the lease. This lease was renewed on 01 June 2013 and expires on 31 May 2034.

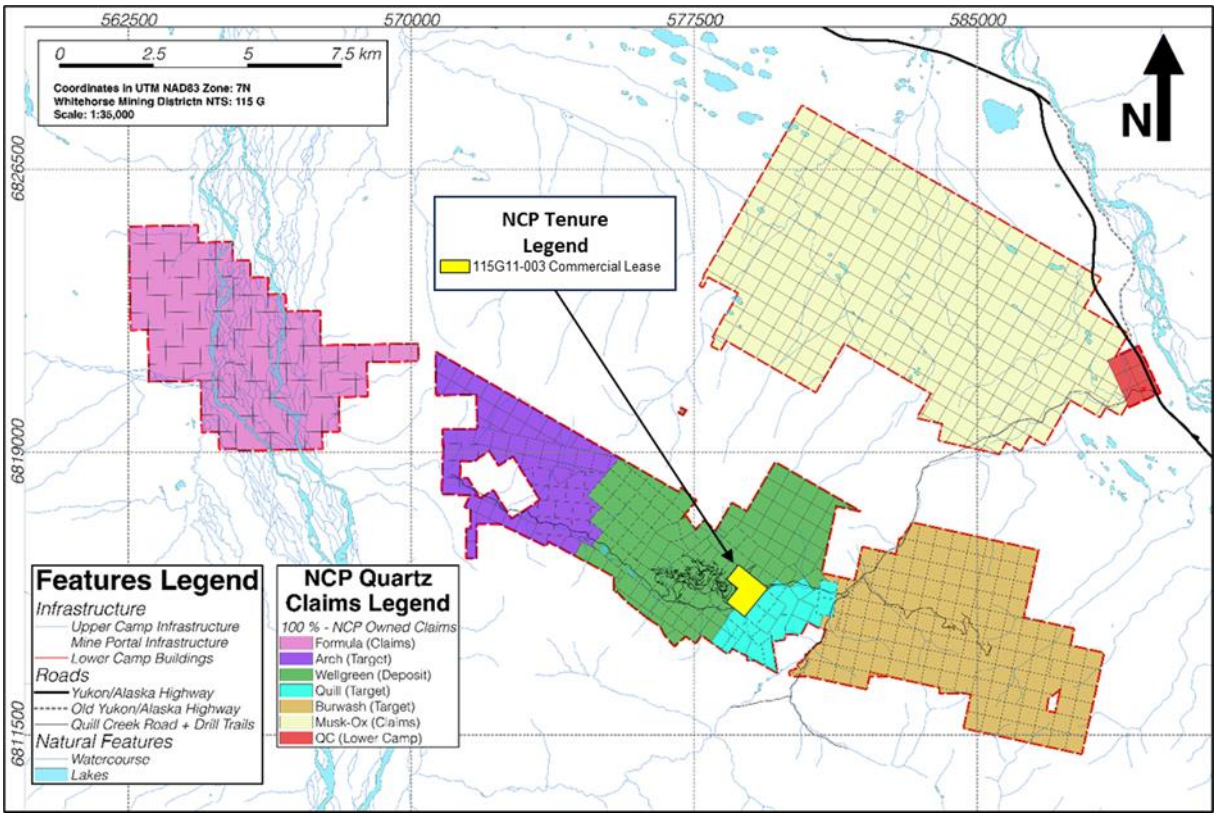
Table 4-2 lists the details of the surface lease. Figure 4-3 shows the location of the surface lease.

Lease 115G11-003 expired on October 31, 2022, and has been included in the Company's Class 4 Permit (LQ00468). The Yukon regulators have confirmed that there are no environmental or remediation liabilities outstanding regarding the former Lease 115G11-003. Nickel Creek has no legal obligations regarding the former Lease 115G11-003.

Table 4-2: Surface Leases – Nickel Creek

Land Disposition	PID	Lease No.	Tenure Purpose	Area (ha)	Expiry Date
2753634	100015069	115G05-001	Industrial	69.7	31/05/2034

Figure 4-3: Surface Leases – Nickel Creek



Source: Nickel Creek, 2018; modified by AGP (2023)

4.4 Property Ownership and History

Nickel Creek has owned a consolidated 100% interest in the Property since June 2011.

An underlying agreement dated 27 April 1999 relating to Northern Platinum's interest in the Arch Joint Venture (Arch Agreement) was entered into between Kaieteur Resource Corporation (Kaieteur)

(formerly International All-North Resources Ltd. (All-North)), Northern Platinum, and J. Patrick Sheridan. Under the Arch Agreement, Northern Platinum agreed to purchase from Kaieteur all of its All-North interest in the Project property, and its interest in the Arch Joint Venture on an "as is" basis for a sum of CDN $62,500 to be paid in cash and shares. The Arch Agreement acknowledged that Northern Platinum had already earned a 20% interest in the Project property, and under the Arch Agreement, Northern Platinum acquired the remaining 80% interest. Kaieteur warranted it was the beneficial owner of All-North's interest in the Project property interest but did not provide the same warranties for the Arch Joint Venture because certain historical documentation for underlying agreements was incomplete; hence the "as is" stipulation. On 22 September 2010, Northern Platinum (who at that time owned a 100% interest in the Project property, subject to a 50% back-in right held by Belleterre Quebec Mines Ltd.) was acquired by Prophecy Resource Corp. As a result, Prophecy Resource Corp. became the owner of a 100% interest in the Project property (subject to the 50% back-in right held by Belleterre Quebec). Subsequently on September 24, 2010, Prophecy Resource Corp. acquired the 50% back-in right held by Belleterre Quebec, resulting in Prophecy Resource Corp. acquiring a 100% interest in the Project, free of any back-in rights.

In June 2011, Prophecy Resource Corp. spun out all of its North American platinum and nickel assets, including its entire 100% interest in the Project, to 0905144 B.C. Ltd., a wholly owned subsidiary of Pacific Coast Nickel Corp. (Wellgreen Platinum and Nickel Creek's predecessor company). As a result of the spin-out transaction, Pacific Coast Nickel Corp. acquired 100% ownership of the Project.

Immediately upon completion of this spin-out transaction, Pacific Coast Nickel Corp. changed its name to Prophecy Platinum Corp., and in December 2013, Prophecy Platinum Corp. changed its name to Wellgreen Platinum Ltd. In January 2018, Wellgreen Platinum Ltd. changed its name to Nickel Creek Platinum Corp.

4.5 Royalties

On November 4, 2015, the Company entered into a transaction whereby it sold to Resource Capital Fund VI L.P., Australind Limited, and Vernon Taylor III, collectively, an aggregate 1% NSR royalty on future production from the Project.

4.6 Permits

In Yukon, the Quartz Mining Land Use Regulation and the Placer Mining Land Use Regulation consist of a classification system based on varying levels of specific activities. These threshold levels categorize exploration activities into four classes of operation. Classes 1 through 4 represent activities with increasing potential to cause adverse environmental impacts.

Nickel Creek currently holds one Class 4 approval through Energy, Mines and Resources (EMR) Land Use Division (see Figure 4-4).

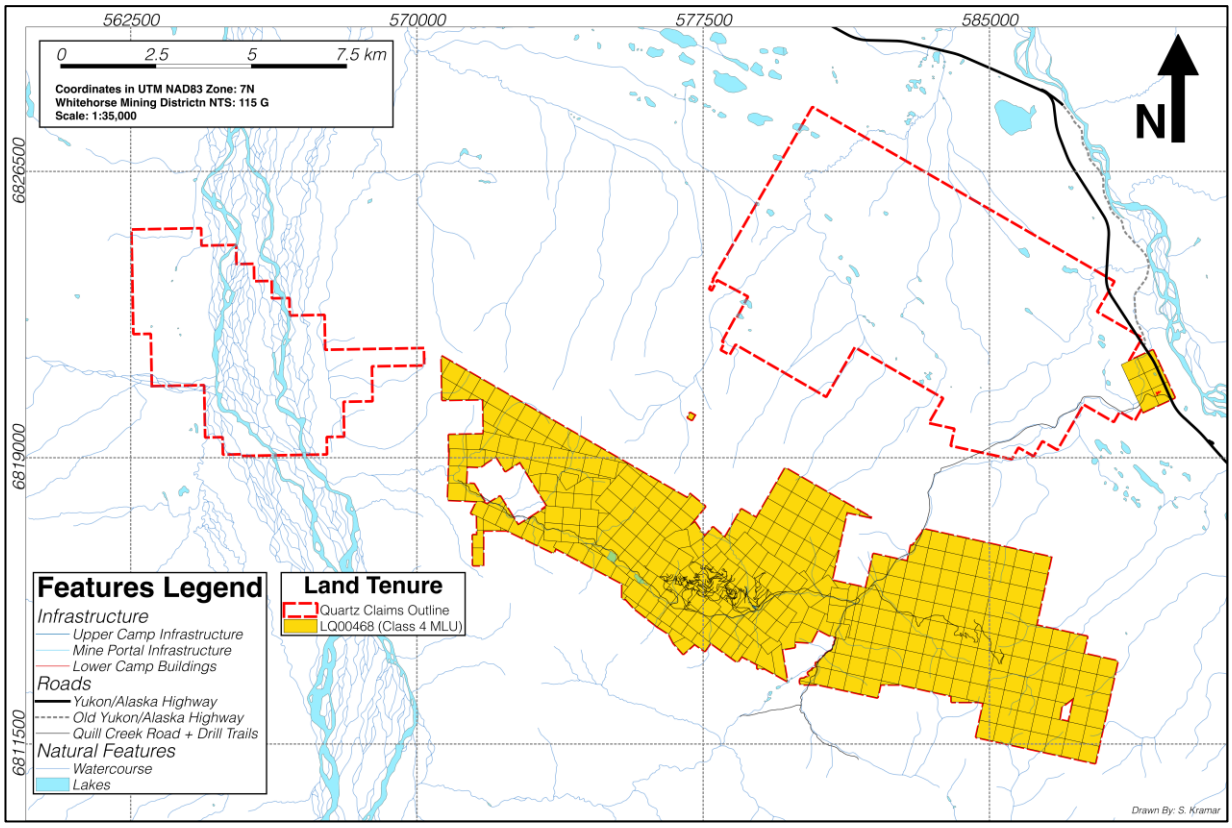
Class 4 Permit LQ00468 covers the claims on which the current mineral resource has been delineated, as well as the historic upper camp of the Project located on surface Lease 115G05-001. This permit expires February 8, 2028.

Class 4 Programs require:

- submission of a detailed operating plan to the Mining Lands Office
- assessment through Yukon Environmental and Socio-economic Assessment Board (YESAB)
- that the operating plan be approved before any other exploration activities can proceed

The operating plan may entail multi-year exploration programs to allow greater flexibility for the operator. Class 4 Program terms and conditions are presented in Table 4-3.

Figure 4-4: Class 4 Operating Permit – Nickel Creek



Source: Nickel Creek, 2018 (modified by AGP, 2023)

Table 4-3: Class 4 Operating Permit Terms

Element	Terms and Conditions
Establishing new access roads per program	On claims for 1 km
Off-Road use of vehicles in summer	Yes
Corridor width	
Lines	1 m wide x 20 km
Establishment of trails per program	4 m wide x 20 km
# of clearings per claim, including existing clearings	Up to 30 clearings per claim
Surface area of each clearing	Approximately 400 m^2.
Total volume of trenching	Up to 2000 m3
# of person days per camp	18,250
# of persons in a camp at any one time	50 persons
Fuel Storage in a stationary container	Diesel: 198,362 L
	Gasoline: 12,200 L
Upgrading of access roads per	On claims for approximately 27 kms
Use of vehicles on existing roads or trails	January 1st to December 31st

4.7 Environmental Liabilities

Some additional reclamation activities remain outstanding associated with the historic HudBay Mill Site and 1970s tailings impoundments which are not on Nickel Creek controlled lands. The Company has entered into a preliminary cooperative working arrangement with Yukon Government and HudBay to assess the reclamation work that will need to be conducted. The financial effect and timing of the reclamation work is indeterminable at this time. Once the assessment is completed and a contractual agreement is entered into, a portion of the financial cost for reclamation may be incurred by the Company, however, Nickel Creek has no legal obligations regarding the potential reclamation.

4.8 First Nations

Surface rights legislation for Yukon First Nations is provided under the Umbrella Final Agreement between the Government of Canada, Government of Yukon, and The Council for Yukon First Nations. This legislation provides a mechanism to resolve disputes over access rights (Mining Yukon 2011 and Minister of Public Works and Government Services Canada 2003).

The Kluane First Nation has a settled land claim, which provides them with access, rights and obligations to land and resources, and the right to govern their own affairs. The Kluane First Nation signed final and self-government agreements with the Yukon and Canadian governments on October 18, 2003. The effective date of these agreements was February 2, 2004 (Yukon ECO 2011a).

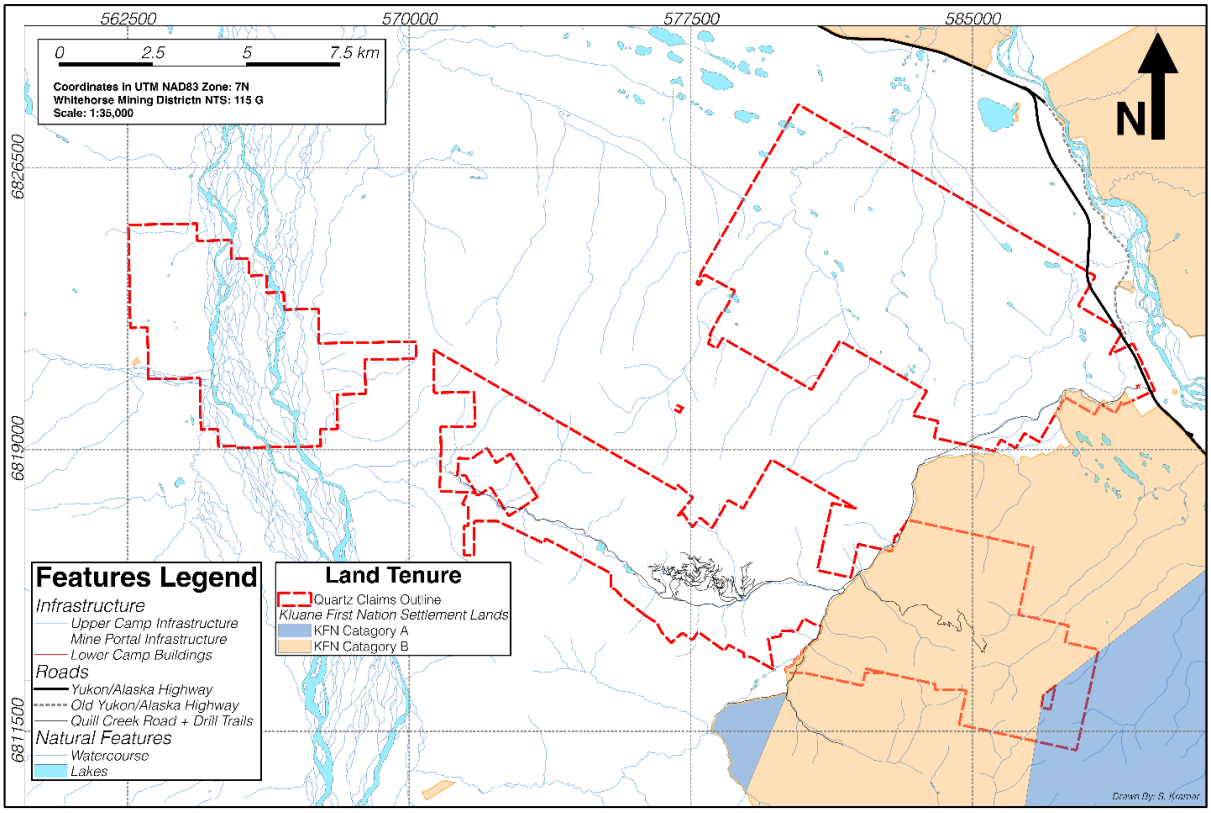
The Project is located in the “core area” of the Kluane First Nation as defined by the Umbrella Final Agreement. The Project partially overlaps on Category B land (R-49 B) and Category A (R-01A) land owned by the Kluane First Nation (Figure 4-5) (Minister of Public Works and Government Services Canada 2003). As of the signing of the Kluane First Nation Final Agreement, the Kluane First Nation

holds both the surface rights and the subsurface/mineral rights on Category A land, while on Category B land the Kluane First Nation owns the surface rights to this land, but not that which is below the surface. However, land belonging to persons holding a right, title, interest, license, and permit on the land prior to the time the area was claimed as Settlement Land are not subject to this legislation (Minister of Public Works and Government Services Canada 2003). The Burwash claims, which are on Category B land, were held prior to the settlement agreement.

The White River First Nation finalized negotiations toward final and self-government agreements with the Canadian and Yukon governments in 2002, when a Memorandum of Understanding (MOU) was signed, signifying the completion of the negotiation process. However, the White River First Nation decided not to ratify the negotiated agreements and there have been no negotiations since. As such, the White River First Nation does not have a settled land claim. Under the terms of the Umbrella Final Agreement, the White River First Nation was allocated Category A and Category B land in their "core area", which have been "interim protected" from third-party interests, pending the settlement or abandonment of a land claim agreement (Yukon ECO 2011b). The "core area" for White River First Nation lies well to the west and north of the Project and is separated from the Kluane First Nation "core area" by an area of overlapping traditional use. On December 18, 2014, the White River First Nations and Government of the Yukon Territory jointly announced the two parties have initiated preliminary negotiations with the goal of reaching a reconciliation agreement. The intent of the reconciliation agreement discussions is to provide the parties with a process to constructively resolve issues relating to land use and other matters.

Nickel Creek signed an Exploration Co-operation Agreement (ECA) with the Kluane First Nation effective August 1, 2012, pursuant to which regular ECA meetings are held between Nickel Creek and the Kluane First Nation.

Figure 4-5: Kluane First Nation Land Status



Source: Nickel Creek (2018)

4.9 Significant Risk Factors

Other than as set out in this Section 4, to the extent known, AGP is unaware of any other environmental liabilities to which the Project is subject and no other significant factors that may affect access, title, or the right or ability to perform work on the Project.

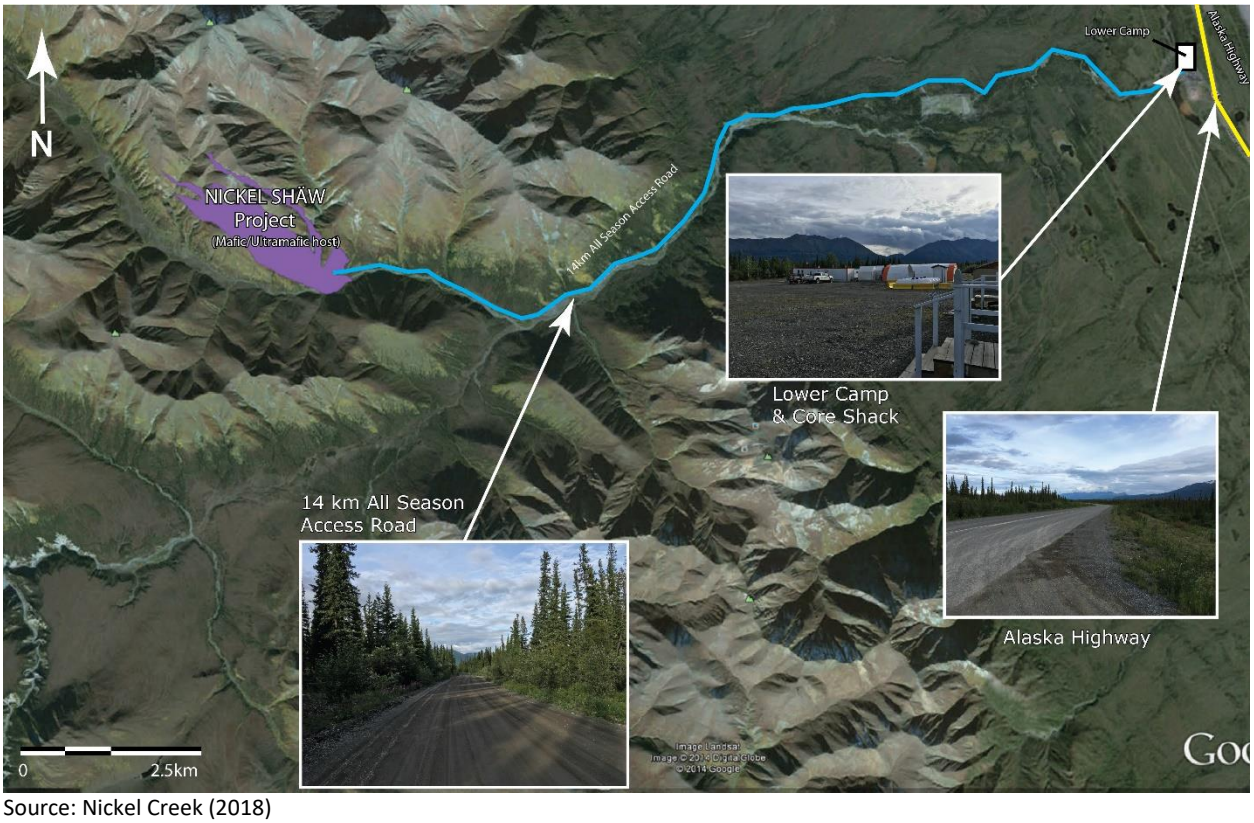
5 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE, AND PHYSIOGRAPHY

The Project is located approximately 317 km northwest of Whitehorse, Yukon and can be reached via the paved Alaska Highway, Highway 1, which is maintained by the Government of Yukon, at kilometre marker 1727. Turning southwest from the highway to the Project, travel is by all-weather, gravel road that runs beside Quill Creek for a distance of 14 km (Figure 5-1).

An all-weather airstrip is located approximately 28 km southeast of the Project at Burwash Landing. It is maintained by NAV CANADA and presently sees limited winter maintenance.

All-season, deep-sea ports are located in Haines, Alaska, 390 km to the southeast, and Skagway, Alaska, which is currently utilized by Capstone Mining Corp. and G&T Resources Corp. for the transport of mining concentrate material on bulk container ships to smelters. Both ports are year-round ice-free ports and are accessible by high-quality paved highways.

Figure 5-1: Project Access and Location



Source: Nickel Creek (2018)

5.1 Climate

The regional climate is semi-arid, sub-arctic with relatively warm, dry summers and winters characterized by relatively dry, cold interior conditions but tempered by west coast climate influences. Weather records have been historically recorded at the Burwash Landing weather station (806.8 masl). The area lies in the rain shadow of the Saint Elias Mountains, with average annual total precipitation for the Burwash Landing station of approximately 280 mm of which 190 mm typically falls as rain in summer and the remainder as snow in winter.

Exploration drilling has historically been done sporadically throughout the year, but potential future operations would be configured for year around operations.

In October 2012, Tetra Tech (EBA) installed a meteorological station near the historic Upper Camp, approximately 600 m southeast of the historic mine portal. It consists of a standard 10 m tower with instrumentation to measure wind speed and direction, air temperature, relative humidity, barometric pressure, incident solar radiation, and water-equivalent precipitation. An evaporation pan was installed in June 2013 at the same location to enable evaporation rates to be recorded over the summer months. Data is collected and stored on a regular basis by EBA.

Data collection recorded over the past five years returned the following details:

- maximum air temperature was 27.5°C on June 10, 2017
- minimum air temperature was -37.4°C on January 28, 2013
- greatest monthly precipitation was 27.5 cm in December 2013
- least monthly precipitation was 0.0 cm in November 2014

5.2 Local Resources Infrastructure

The villages of Burwash Landing and Destruction Bay are located approximately 27 km and 43 km, respectively, southeast from the Project. In addition to the airstrip at Burwash Landing, these villages have lodging, food, and fuel with the potential for future subdivision development to provide housing for mining personnel.

5.2.1 Power

Generators installed for the exploration programs currently supply power to the Project. Haines Junction is the current limit of the high-capacity grid and hydroelectric system of Yukon Energy Corporation (YEC), which is approximately 150 km from the Project along the Alaska Highway. Currently it is believed there are 20 megawatts of surplus capacity on the YEC grid.

5.2.2 Water

Water supply adequate for drilling operations can be pumped from local creeks. Potable and non-potable water has been sourced from a shallow well at Lower Camp. In 2015, a new well was drilled at Lower Camp to provide water to the lodging facilities during exploration. It is assumed sufficient water supplies from pit dewatering and surface run-off will be available for the mill processing needs of the Project.

5.2.3 Mining Personnel

Yukon has no net government debt, no territorial sales tax, and a highly competitive taxation regime; all of which encourage investment in the mining sector. Skilled labour and equipment are available in the city of Whitehorse, population approximately 28,200 (2021), and the community of Haines Junction, population approximately 1,000 (2022). Limited services are also available in the two closest communities, Burwash Landing and Destruction Bay.

5.3 Physiography

The Project is located in the Kluane Ranges, which are a continuous chain of foothills situated along the eastern flank of the Saint Elias Mountains. The topography across the Project is typical of the interior Yukon with slopes of 250 m to 300 m, and the highest peaks exceed an elevation of 1,800 m.

The main mineralized zone on the Project lies between an elevation of 1,250 m and 1,700 m on a moderate to steep south-facing slope. Water drainage on the Project is mainly east and then north into the Quill Creek drainage.

Vegetation consists of typical alpine vegetation on the hillsides, along with a mixture of pine, spruce, and poplar trees located in the lower elevations and creek beds.

6 HISTORY

6.1 Prior Ownership and Ownership Changes

W. Green, C. Aird, & C Hankins were the prospectors who discovered the surface showing near Aird Creek in 1952. The prospectors optioned the Project property to Hudson Bay Exploration and Development and subsequently it was optioned to Yukon Mining Corporation Limited (YMC), a subsidiary of Hudson Bay Mining and Smelting Co. Ltd (HudBay) that same year. Furthermore, the Project property was then transferred again, to another subsidiary of HudBay called Hudson-Yukon Mining in 1955. In 1969, Hudson-Yukon Mining completed a detailed feasibility study for a mining and milling operation at the Project property.

The Project was optioned to the Kluane Joint Venture between All North Resources Ltd. (All-North) and Chevron Minerals Ltd. (Chevron Minerals) in 1986 which acquired a 50% interest in the Project. In 1987, Galactic Resources Ltd. purchased Hudson-Yukon Mining's interest and NSRs royalty on the Project property and merged with All-North. In 1989, All-North purchased Chevron Minerals interest to acquire 100% interest in the Project. Other joint ventures were formed on the Arch property, which lies west of the Wellgreen Deposit.

In 1994, Northern Platinum acquired an 80% interest in the Project from All-North, with the remaining 20% purchased in 1999. Coronation Minerals (Coronation) optioned the Project in 2005 but dropped the option in 2009. The Project was then returned to Northern Platinum.

Prophecy Resource Corp. purchased Northern Platinum near the end of 2010. The Project property and other nickel assets were spun out to its subsidiary Pacific Coast Nickel Corp., which then changed its name to Prophecy Platinum Corp. in 2011. Prophecy Platinum Corp. changed its name to Wellgreen Platinum Ltd. in 2013. In January 2018, Wellgreen Platinum Ltd. changed its name to Nickel Creek Platinum Corp.

6.2 Previous Exploration and Development

During the tenure of Hudson-Yukon Mining, a total of 25,017 m of drilling was completed in 60 surface holes and 481 underground drill holes. Additionally, HudBay undertook 4,267 m of underground development including internal shafts. Ground geophysics and a soil geochemical survey were also conducted.

Between 1987 and 1988 during the Kluane JV, 16,648 m of drilling was completed in 83 surfaces and 34 underground holes with some rehabilitation of the underground workings and slashing of new drill stations. Additional exploration included geological mapping and sampling, Very Low Frequency Electromagnetics (VLF), magnetic surveys, and surface trenching.

From 1996 to 2005, Northern Platinum drilled 4,471 m of surface diamond (10) holes and reverse circulation (57) holes.

Coronation drilled 7,248 m in 24 surfaces and 3 underground holes from 2006 to 2008. This program resulted in the discovery of the deep mineralization in the East Zone. An aeromagnetic survey of 854 linear km was also carried out.

In 2009 and 2010, Northern Platinum drilled 4,190 m in 16 core holes, prior to its acquisition by Prophecy Resources Corp. Prophecy Resources Corp. drilled one more 117 m hole.

In 2011, Prophecy Platinum Corp. (now Nickel Creek) drilled 1,925 m in 6 core holes. This drill program resulted in an updated resource and PEA.

In 2012, Prophecy Platinum Corp. drilled 10,983 m in 51 core holes.

In 2013, Prophecy Platinum Corp. drilled 104 m in one diamond hole, 831 m in one diamond-tail hole and 1,858 m in 25 reverse circulation (RC) holes, totalling 2,793 m of new drilling, along with assaying another 8,462 m of core from approximately 21,784 m of re-logged historical drill core from 108 holes.

In 2014, Wellgreen (now Nickel Creek) drilled 773 m in one diamond hole, 2,024 m in 4 diamond-tail holes and 120 m in one RC hole, totalling 2,917 m of new drilling. The resource was updated during the year to include the 2013 drilling.

In 2015, Wellgreen drilled 5,668 m in 21 diamond holes and 3,336 m in 27 RC holes, totalling 8,904 m of new drilling.

In 2016, Wellgreen drilled 1,364 m in seven diamond holes and 1,139 m in 11 RC holes, totalling 2,503 m of new drilling.

In 2017, Wellgreen drilled 2,720 m in 15 diamond holes for infill and metallurgical samples.

In January 2018, Wellgreen changed their name to Nickel Creek.

Additional information regarding a brief description of the exploration and drill programs, are discussed in Section 9 and Section 10, respectively.

6.3 Historic Mineral Resources and Reserve Estimates

The QP has not completed sufficient work to classify any historical estimates as current mineral resources or mineral reserves. Therefore, Nickel Creek is not treating the historical estimates as mineral resources or mineral reserves. Any previous statements of mineral resources have been superseded by the current mineral resource estimates presented in this document.

6.4 Historic Production

Hudson-Yukon Mining commenced commercial production in 1972. Mined mineralized material was trucked down from the mine to the mill site near the current lower camp beside the Alaska Highway at approximately kilometer 1727. Production ceased in 1973 due to falling metal prices and discontinuous massive sulphide horizons. A total of 171,652 tonnes grading 2.23 % Ni, 1.39 % Cu, 1.3 g/t Pt, 0.92 g/t Pd, 0.17 g/t Au, 0.40 g/t Rh, 0.42 g/t Ru, 0.25 g/t Ir, 0.20 g/t Os, and 0.20 g/t Re were milled to produce 33,853 tonnes of concentrate, which was shipped to Sumitomo in Japan.

7 GEOLOGICAL SETTING AND MINERALIZATION

7.1 Regional Geology

The Project is located within the Insular Superterrane, which is dominantly composed of two older terranes, the Wrangellia Terrane and Alexander Terrane, that were amalgamated at approximately 320 million years (Ma) (Figure 7-1). These terranes are comprised of island arc and ocean floor volcanic rocks overlain by thick assemblages of oceanic sedimentary rocks that range in age from 220 to 400 Ma. Wrangellia exhibits a package of platform-type limestones that are several hundred metres thick conformably overlying a 230 Ma old package of volcanic rocks (the Nikolai Group) that are present on the Project.

The Project is part of the Kluane Ultramafic Belt, situated in the southwest portion of the Wrangellia Terrane that spans from Vancouver Island, north through British Columbia (BC), into Alaska (Figure 7 2). The Northern Wrangellia Terrane is fault bound by the dextral strike-slip Denali Fault to the northeast (Yukon-Tanana Terrane) and the Duke River Thrust Fault to the southwest (Alexander Terrane, Cobbett, and others, 2010). In the southwest Yukon, Wrangellia comprises Paleozoic through to mid-Mesozoic volcanic and sedimentary rocks. Paleozoic strata are overlain by Triassic subaerial flood basalts and complementary intrusive rocks that are designated a Large Igneous Province (LIP). The ultramafic intrusives of the Wrangellia Terrane represent one of the largest tracts of nickel-copper-PGM mineralization in North America, second in size to the Proterozoic Circum-Superior Belt in Northern Quebec that rims the Archean Superior province (Hulbert, 1997).

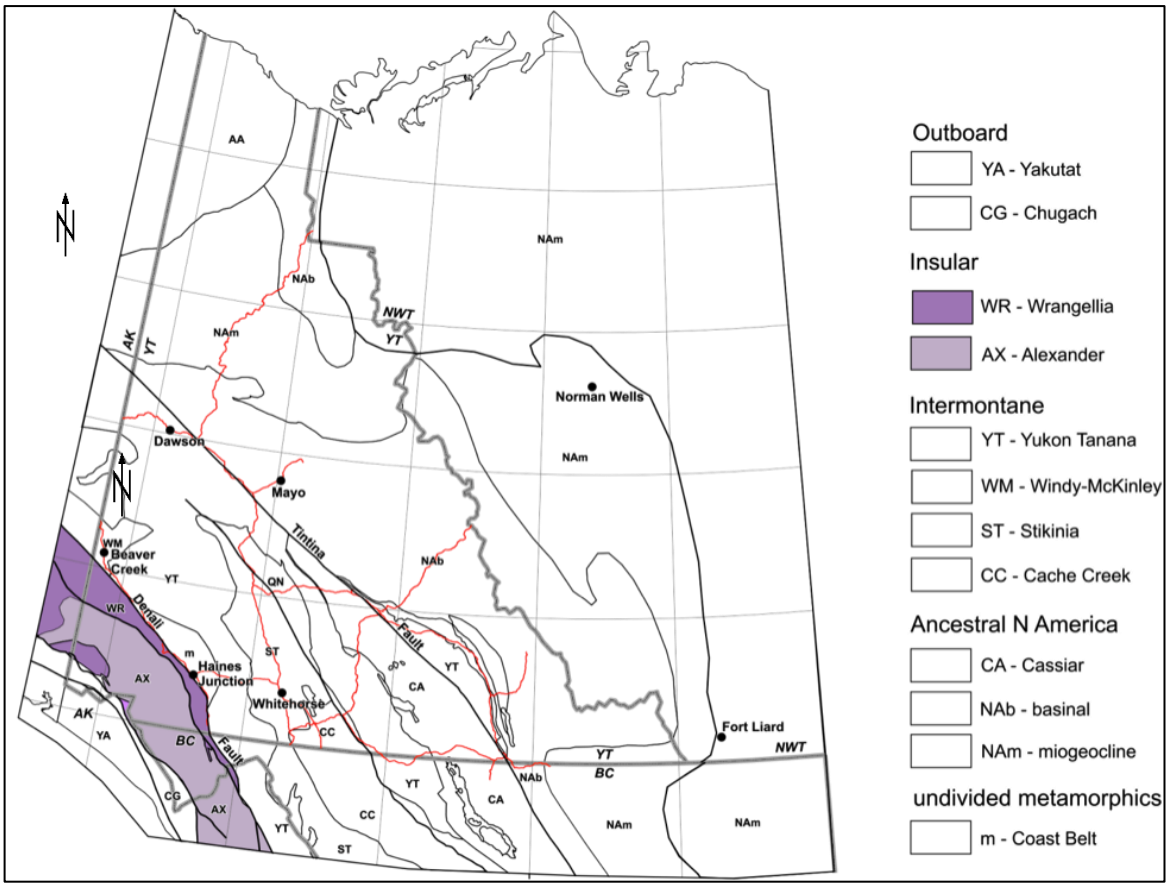
The oldest stratified rocks that represent the base of the Yukon Wrangellia Terrane belong to the Skolai Group (Smith and MacKevett, 1970; Read and Monger, 1976). This group consists of the Pennsylvanian to Permian Station Creek and the Hasen Creek Formations. The Station Creek Formation, named for the type of section in eastern Alaska, includes Early Mississippian (354 Ma) mafic volcanic rocks overlain by volcanic breccia, tuffs, and volcanogenic sandstone. The Station Creek Formation is considered to represent back-arc oceanic crust that was overlain by arc volcanic detritus. Conformably overlying the Station Creek Formation is the Hasen Creek Formation, a sequence of conglomerate, sandstone, and siltstone turbidites, and limestone. The Hasen Creek Formation is Permian in age and is likely the result of sedimentation occurring during the subsidence of the Mississippian-Pennsylvanian Arc.

The Skolai Group is unconformably overlain by the Middle and Late Triassic Nikolai Group generally consisting of basalt flows with minor intercalated limestone. The basalt is the hallmark of the Wrangellia Terrane and is found throughout the terrane from Alaska to Vancouver Island (Karmutsen Formation). The Nikolai volcanic rocks are up to 3000 m thick and mainly subaerial, vesicular to amygdaloidal flows. Rare pillows occur near the base of the formation, and these volcanic rocks are overlain and occasionally intercalated with carbonate horizons of the Chitistone Limestone. The limestones are likely atoll reefs, formed as the volcanic plateau subsided. Deeper marine sedimentary rocks of the McCarthy Formation overlie the carbonate rocks.

Accompanying the eruption of the Nikolai volcanic rocks are the voluminous mafic-ultramafic intrusions. These mafic and ultramafic intrusions are common throughout the area and are generally

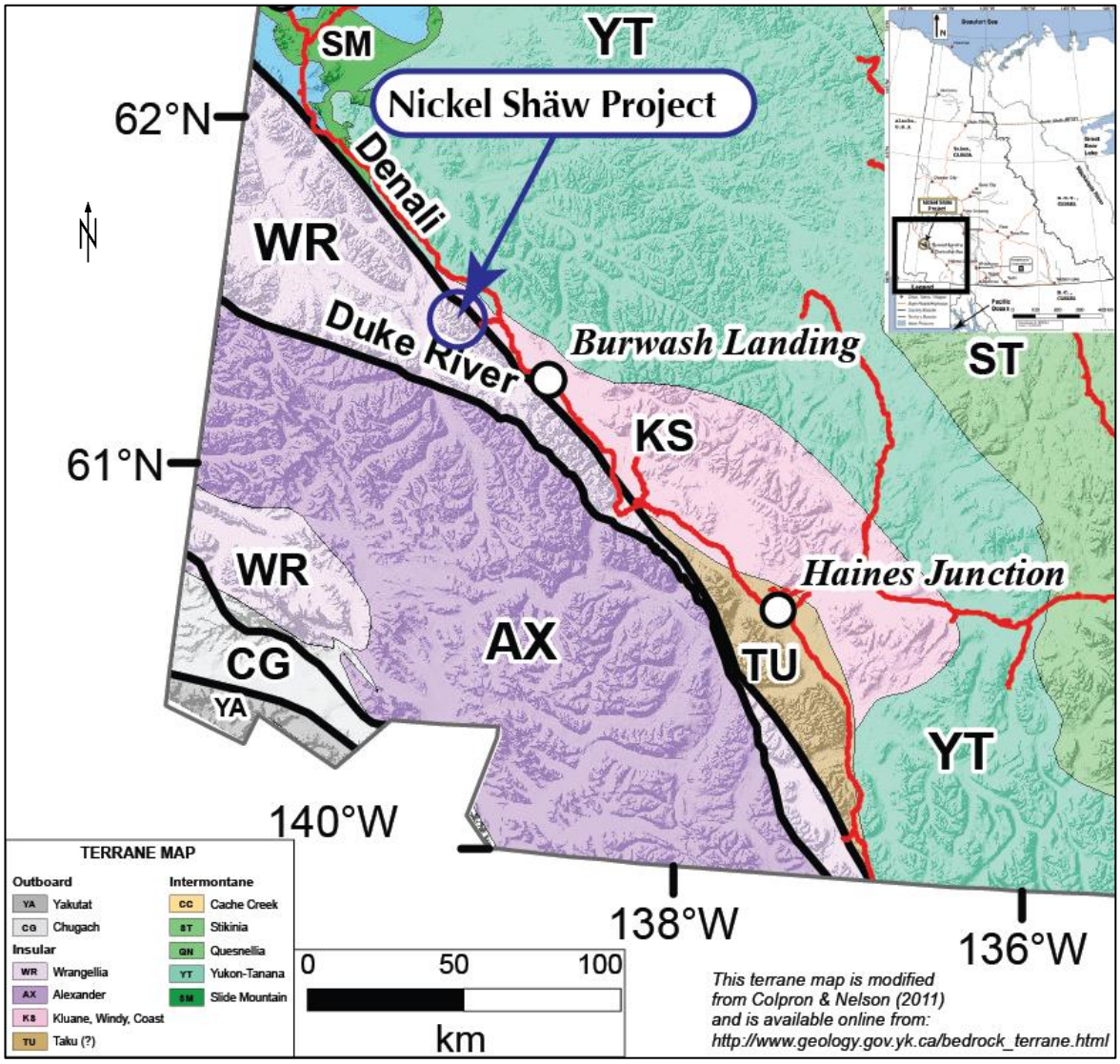
located near the contact between the Station Creek and Hasen Creek Formations. These include gabbro, pyroxenite, peridotite and dunite of the Kluane mafic-ultramafic complex. The intrusions commonly exhibit magmatic sulphide associated nickel-copper-PGM and gold mineralization. These sills, which represent individual members of the Kluane Ultramafic Belt, along with the 232 + 1 Ma Maple Creek Gabbro (Mortensen and Hulbert, 1991) are interpreted as feeders for the Nikolai Formation flood basalts (Israel and van Zeyl 2005). The Maple Creek Gabbro occurs as a series of dikes and plugs that are observed to crosscut the sills of the Kluane Ultramafic Belt and in one case are exposed as feeders to the Nikolai Group basalt (Hulbert, 1997).

Figure 7-1: Regional Geological Setting



Source: Modified from Yukon Geological Survey (2016)

Figure 7-2: Regional Geologic Setting

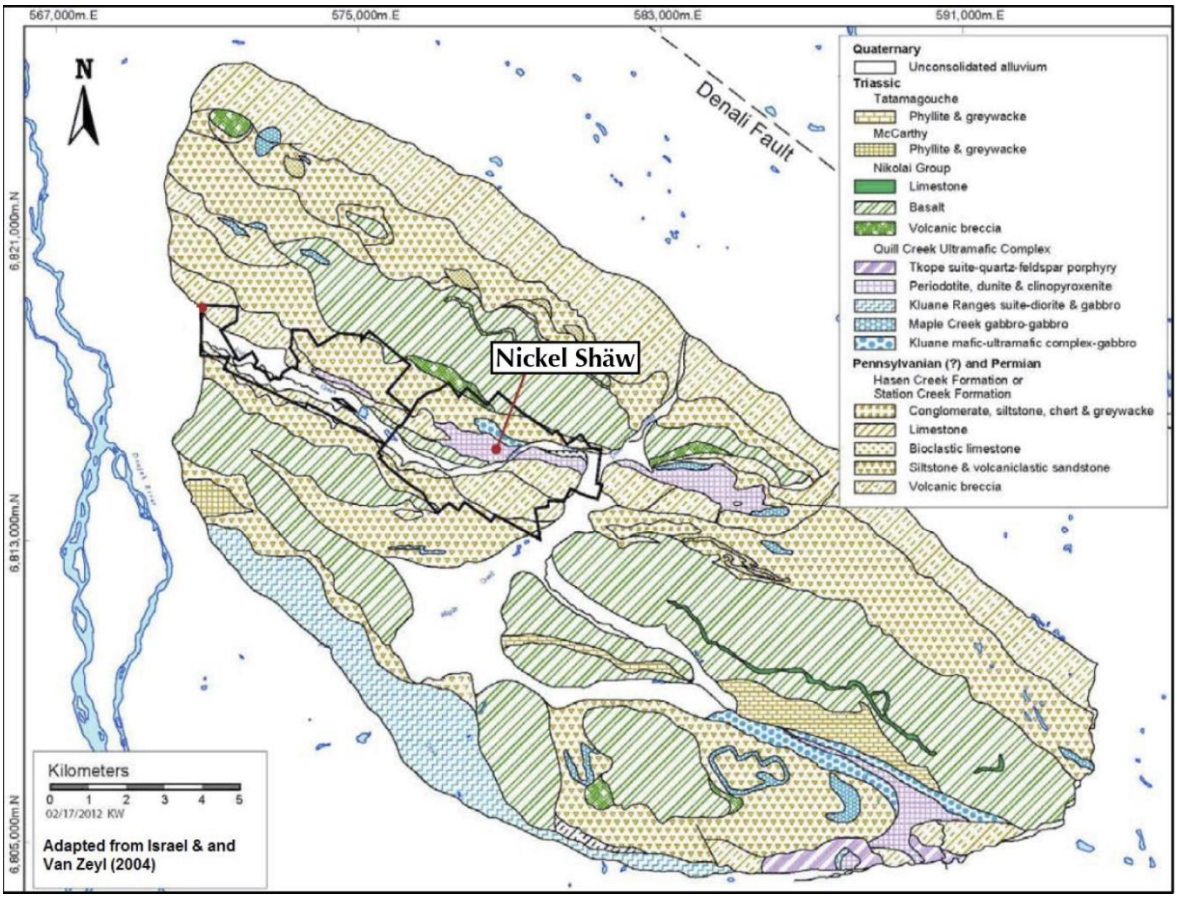


Source: Colpron & Nelson (2016)

7.2 Local Geology

Israel and van Zeyl (2004) provide the most recent, complete regional geological mapping for the Project as illustrated in Figure 7-3. Hulbert (1997) also provides a description and discussion of detailed geology and interpretation covering the Wellgreen Deposit area from maps completed by Archer, Cathro and Associates, who have compiled and reinterpreted exploration results for the Kluane JV programs carried out on behalf of All-North. However, the descriptions and classifications of the geological framework for the Project from these sources are not entirely consistent.

Figure 7-3: Geology of the Quill Creek Area



Source: Israel & van Zeyl (2004)

The oldest rocks of the Skolai Assemblage are represented by the Pennsylvanian Station Creek Formation. The Station Creek Formation underlies significant portions of the Project and is interpreted to be roughly a few hundred metres thick. The formation is composed of basaltic to andesitic, light to medium green volcanic flows, breccias and tuffs that grade into tuffaceous sandstones, moving up section. Pyroclastic breccias and limestone are locally present in this formation but are discontinuous.

The Station Creek Formation is conformably overlain by the Permian Hasen Creek Formation and is defined as beginning where pyroclastic deposition of Station Creek is no longer apparent. The Hasen Creek Formation can be divided into two endmembers (upper and lower). The lower endmember is dominantly composed of grey black phyllite, quartzite, greywacke, cherty argillite, and siltstone. The upper member is dominated by shaley to massive limestone. Discontinuous beds of red-brown conglomerates, massive greywacke, and sandstone interbedded in the limestone horizons are also present. These rocks are folded into a series of parallel, sometimes overturned, synclines and anticlines.

The Hasen Creek Formation rocks are unconformably overlain by locally amygdaloidal flood basalt, volcanic breccias, and limestones of the Middle to Late Triassic Nikolai Group. This sequence of basalt flow contains minor interbedded limestone, and the sequence is capped by a carbonate unit. The flows

are generally thin, vesicular to amygdaloidal, and locally haematitic suggesting either a shallow water or subaerial depositional environment. The Nikolai Group rocks are also folded into a series of southeast-northwest trending anticlines and synclines.

In the Wellgreen Deposit area, Nikolai Group mafic volcanics occur in the area immediately south of the Quill Creek Complex. The volcanics have been interpreted to be in fault contact with the upper part of the Quill Creek Complex and Station Creek Formation rocks (Israel and van Zeyl 2005).

There is an abundant series of relatively small intrusions into Paleozoic metasedimentary rocks and the Quill Creek Complex. They are mapped as andesitic to gabbroic dikes and plugs that are part of the Maple Creek Gabbro and are likely correlated with the Nikolai Formation. Hulbert (1997) describes these same rocks as felsic dikes, which may have been gabbro dikes that experienced post-emplacement alteration. Many of these small intrusions are associated with the northeast-southwest oriented faults that cut the stratigraphic sequence and the Quill Creek Complex, while others are parallel to the structural grain of the Station Creek and Hasen Creek Formations.

The middle to late Triassic Kluane mafic-ultramafic suit is volumetrically important in the Kluane Range. These mafic-ultramafic intrusions occurred preferentially between the Station Creek Formation and the Hasen Creek formation and appear to be sill-like in nature. This complex consists of strongly serpentinized dunite, peridotite, clinopyroxenite, and a marginal gabbro unit along the contact of the footwall rocks. This discontinuous gabbro unit occurs at the base of the sill. It is in the pyroxene rich and gabbro phases that the higher-grade, disseminated, net-textured, and massive sulphide mineralization occurs.

The Early Cretaceous intermediate and felsic intrusives belonging to the Kluane Ranges Suite represent the youngest rocks on the Project. These felsic dikes commonly crosscut the mafic-ultramafic units and have been observed parallel to bedding in the Hasen Creek Formation.

Longitudinal faults and/or shears are common in the ultramafic rocks and some of these faults occur along lithological contacts. Hulbert (1997) describes two western faults as west-dipping reverse faults. Two faults present in the western portion of the Wellgreen Deposit intrusion offset the mafic-ultramafic rocks and dip steeply to the southeast.

7.3 Property Geology

The Wellgreen Deposit occurs within, and along, the lower margin of an Upper Triassic (Kluane) ultramafic-mafic body, within the Quill Creek Complex. This assemblage of mafic-ultramafic rocks is 20 km long and closely intrudes along the contact between the Station Creek and Hasen Creek formations. The main mass of the Quill Creek Complex, the Wellgreen Deposit, and Quill intrusions, is 4.7 km long and up to 1 km wide. A smaller mass of similar intrusive, located along strike to the northwest, is known as the Arch intrusive. The Burwash intrusion is located to the southeast and is likely a continuation of the Quill intrusion.

The Wellgreen Deposit portion of the Quill Creek Complex consists of a main intrusion and an associated group of upright to locally overturned, steeply south dipping sills. Based on drill information, the northernmost sill called the North Arm, and the main Wellgreen Deposit sill appear to be contiguous at depth in the eastern end of the deposit.

The Quill Creek Complex layered intrusion gradationally transitions from peridotite to clinopyroxenite to gabbro with a corresponding increasing sulphide and mineralization content through this sequence toward contact with the Paleozoic sedimentary country rocks (Figure 7-4). The intrusions are serpentinized and locally deformed. Two folding events took place including pre-mineralization isoclinal folding. A series of normal faults are inferred by stratigraphic relationships. Late NNE and NNW striking, steeply dipping faults are observed in outcrop in numerous areas. Locally, the sills have a lower gabbroic margin adjacent to a chilled contact with Paleozoic rocks. Recent observations indicate that many of these marginal gabbros may actually be endo-skarn units that appear to be the direct result of digestion and hybridization of limestone present in the Hasen Creek country rocks by the Wellgreen Deposit parent magma(s). Mafic-rich exo-skarns also occur in the floor rocks adjacent to the marginal gabbro, particularly where the metasedimentary host rock includes limestone or calcareous rocks. The intrusives are zoned upwards/southward away from the lower gabbroic zone through zones of clinopyroxenite and peridotite. This zonation may be directly related to the degree of interaction with the reactive wall-rocks and appears to reflect the relative sulphide content of the rocks with the highest sulphide content at the lower margins grading up to the least sulphide content in the upper parts of the tabular intrusion, mostly as peridotite.

Table 7-1 lists the regionally mapped units and how they relate to the lithologies used in the geologic model for the resource.

Table 7-1: Nickel Shäw Lithologies

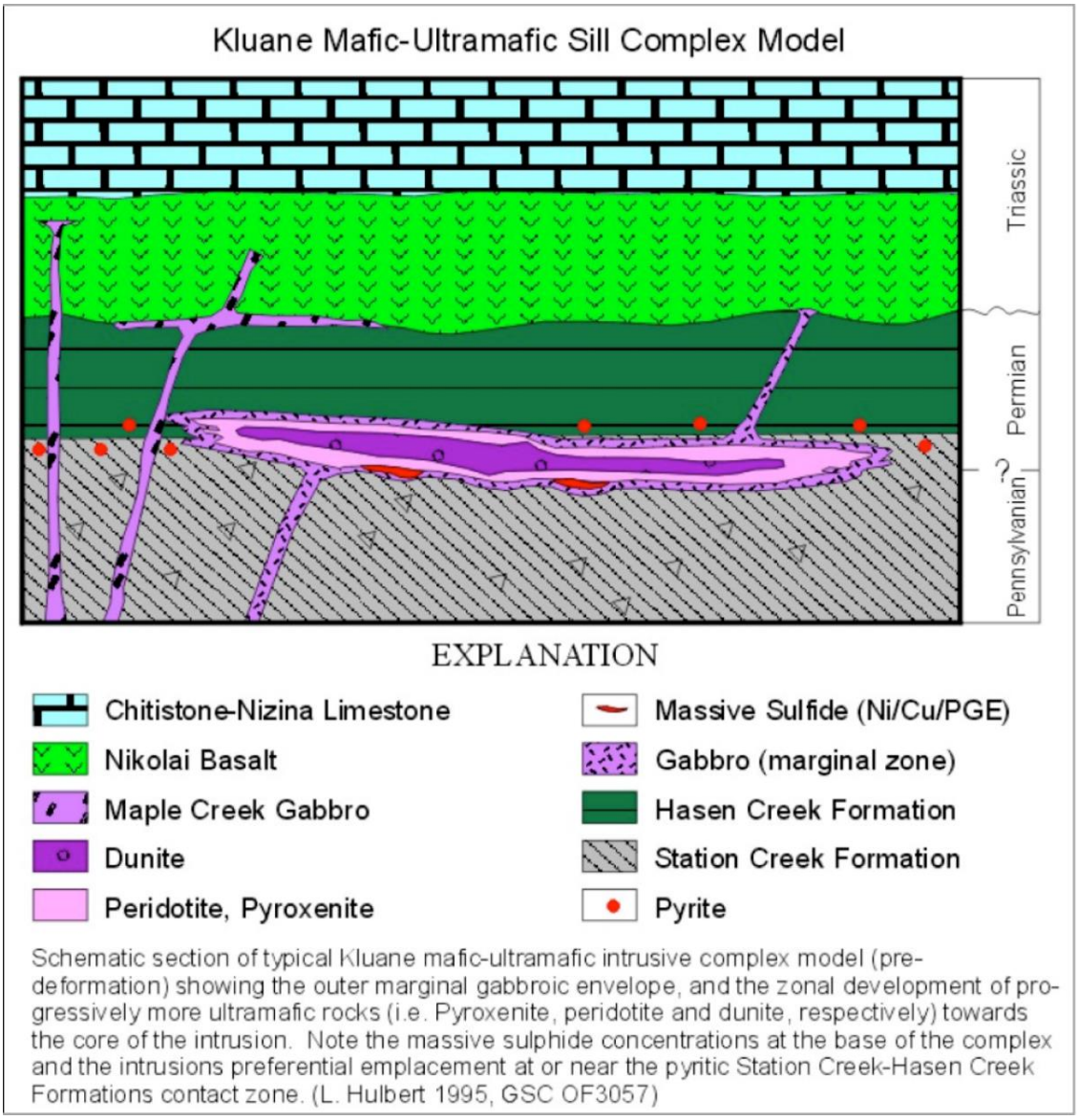
Model Code	Lithologic Description	Mineralization Status	Regionally Mapped Lithology
7	Clinopyroxenite	Ore Host	Quill Creek Clinopyroxenite
20	Mineralized Gabbro	Ore Host	Quill Creek Marginal Gabbro
24	Peridotite	Ore Host	Quill Creek Peridotite
29	Massive Sulfide	Ore Host	Quill Creek Massive-Sulphide
26	Metasedimentary Rocks	Sometimes Ore Host at Contact	Hasen Creek Formation
5	Basalt	Barren	Nikolia Basalt
21	Maple Creek Gabbro	Barren	MC Gabbro
32	Volcaniclastic	Barren	Station Creek Formation

7.4 Mineralization

Mineralization on the Project occurs dominantly within the Quill Creek Complex except for a small portion at the contact within the metasedimentary host rocks. This serpentinized, ultramafic-gabbroic body intrudes the Pennsylvanian-Permian sedimentary and volcanic rocks of the Station Creek and Hasen Creek formations. The main zone of mineralization has a strike length of 1.7 km and thickness ranges from 20 m on the western end to almost 300 m at the eastern end. Drilling intercepts have indicated the mineralization ranges in depth from several metres at the west of the deposit to over 500 m at the eastern side. Discontinuous massive and semi-massive sulphide zones are significantly thinner (centimeters to a few metres), are located near the footwall contact and transition into

disseminated sulfide zones above. Historic exploration and development programs defined two main zones of gabbro-hosted massive and disseminated sulphide mineralization known as the East Zone and West Zone. These zones have since been determined to be contiguous and have been further broken up and now are known as the Far East, East, West, and Far West Zones with the connecting Central Zone. Figure 7-4 presents the current zonation of the deposit. The North Arm Zone is interpreted to be a splay off of the Far East Zone. All intrusive phases containing primary olivine have been moderately to intensely serpentinized. Geologic controls on mineralization are discussed in Section 14.

Figure 7-4: Kluane Mafic-Ultramafic Sill Complex Model



Source: L. Hulbert (1995)

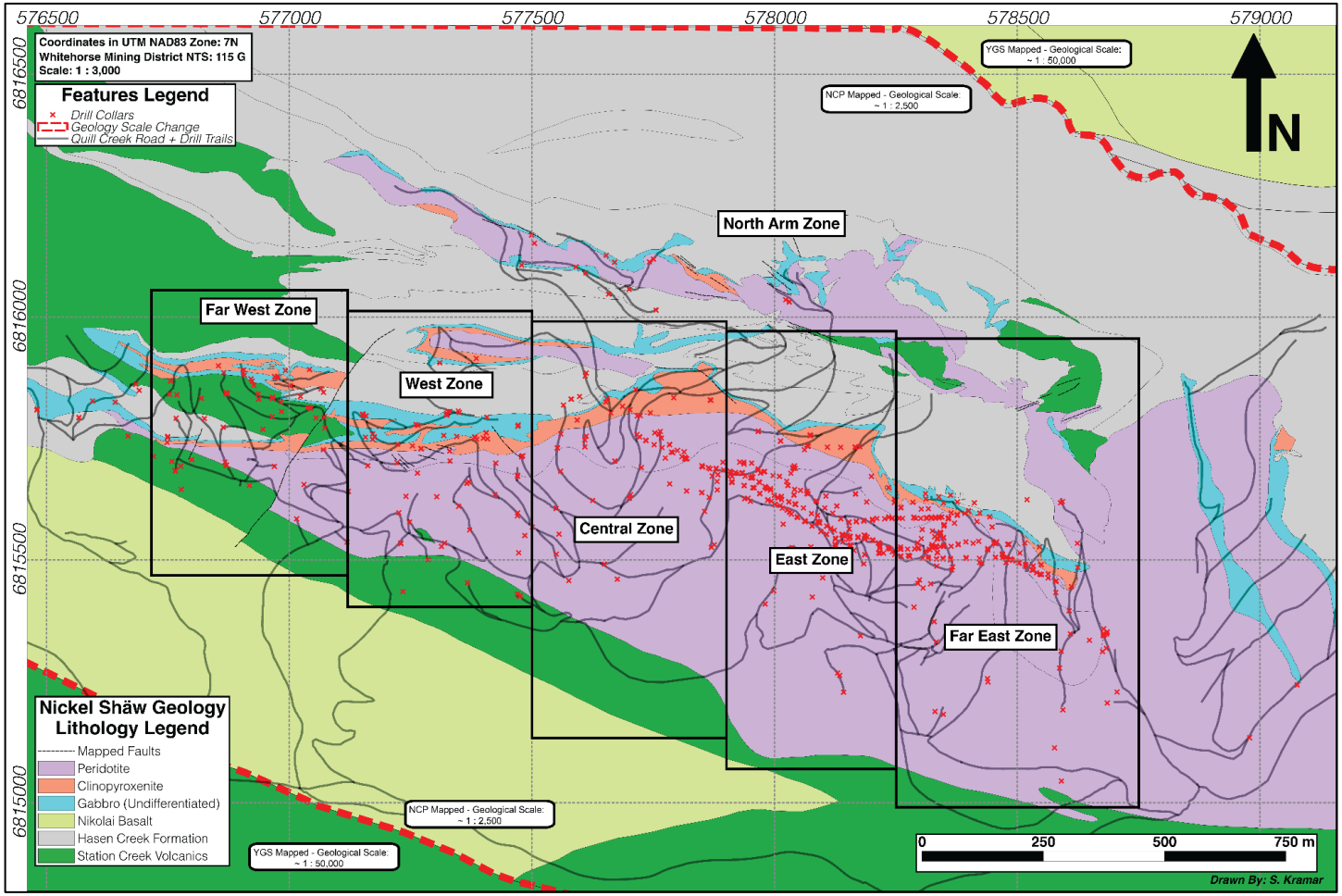
7.4.1 Far East Zone

The Far East Zone represents the easternmost part of the Wellgreen Deposit intrusion. The zone lies between 578250E and Aird Creek, at approximately 578750E (Figure 7-5). In both the current East and Far East Zones, historic exploration efforts focused on defining massive sulfide horizons and lenses near the contact between the Project Intrusion and Hasen Creek metasedimentary rocks and as such this contact is very well defined. This sedimentary contact was historically interpreted to be the steeply dipping southern footwall to mineralization based on the data available at the time, but more recent work in the East Zone showed the sedimentary contact was a wedge of metasedimentary rocks in a much larger ultramafic body. This change in understanding the nature of the sedimentary contact was demonstrated in the Far East Zone by drill holes 154, 160, and 165.

The typical steeply dipping lithological sequence of peridotite, clinopyroxenite, and gabbro with massive sulphide is very well defined in the Far East Zone. The core of the Far East Zone shows a sulphide-rich, clinopyroxenite, and gabbro/skarn horizon with a second clinopyroxenite and gabbro enriched zone at the lower contact with the metasediments.

In the easternmost portion of the Far East Zone, all lithologies exhibit a similar sub-horizontal dip to the symmetrical sequence further west: peridotite transitioning to clinopyroxenite, and gabbro with skarn units and massive sulphide immediately prior to the basal contact with Station Creek volcaniclastics and Hasen Creek metasedimentary rocks. This lower sequence is interpreted to be contiguous with the basal sequence observed 350 m farther to the west. In addition, the foot-wedge pinches out to the east such that in the upper portion of the intrusion, the various contact-proximal lithologies are absent.

Figure 7-5: Property Geology



Source: Nickel Creek (2018)

7.4.2 East Zone

The East Zone lies between 577900E and 578250E and was historically explored for massive sulphide at the footwall contact. As mentioned above, this zone was the first in which the change in the footwall contacts' orientation was observed in drill core. The peridotite-clinopyroxenite-gabbro sequence is observed to wrap around the base of the wedge in the East Zone.

The historic East Zone (current East and Far East Zones combined) was mined by Hudson-Yukon Mining in 1972 and 1973, and approximately 171,652 t of mineralized material was extracted.

7.4.3 Central Zone

The Central Zone lies between 577500E and 577900E. The eastern portion of the zone is similar to the East Zone whereby well-mineralized peridotite gradationally transitions to clinopyroxenite and gabbro, and units are observed near the contact with dominantly Hasen Creek metasedimentary rocks. The western portion of the Central Zone exhibits a sub-horizontal, symmetrical, mineralized unit similar to that intersected at depth in the Far East Zone. Additional drilling will be required to test whether the higher-grade, sub-horizontal, mineralization intersected in the Central Zone connects with that in the East and Far East zones. This represents a high priority exploration target, and currently is the least drilled zone on the Project.

7.4.4 West Zone

The West Zone lies between 577120E and 577500E. Similar to the western portion of the Central Zone, well-mineralized peridotite overlies a comparatively thick package of clinopyroxenite and gabbro with significant semi-massive and massive sulphide zones.

7.4.5 Far West Zone

The Far West Zone lies between 576720E and 577120E, and the northern part of the zone is interpreted to be a branching sill from the main Project intrusion. This sill is generally zoned outwards, well mineralized in the centre, grading from peridotite to clinopyroxenite and gabbro towards the contact with the metasedimentary country rocks. Grades in the Far West Zone are significantly elevated starting at surface with high sulphide content.

7.4.6 North Arm Zone

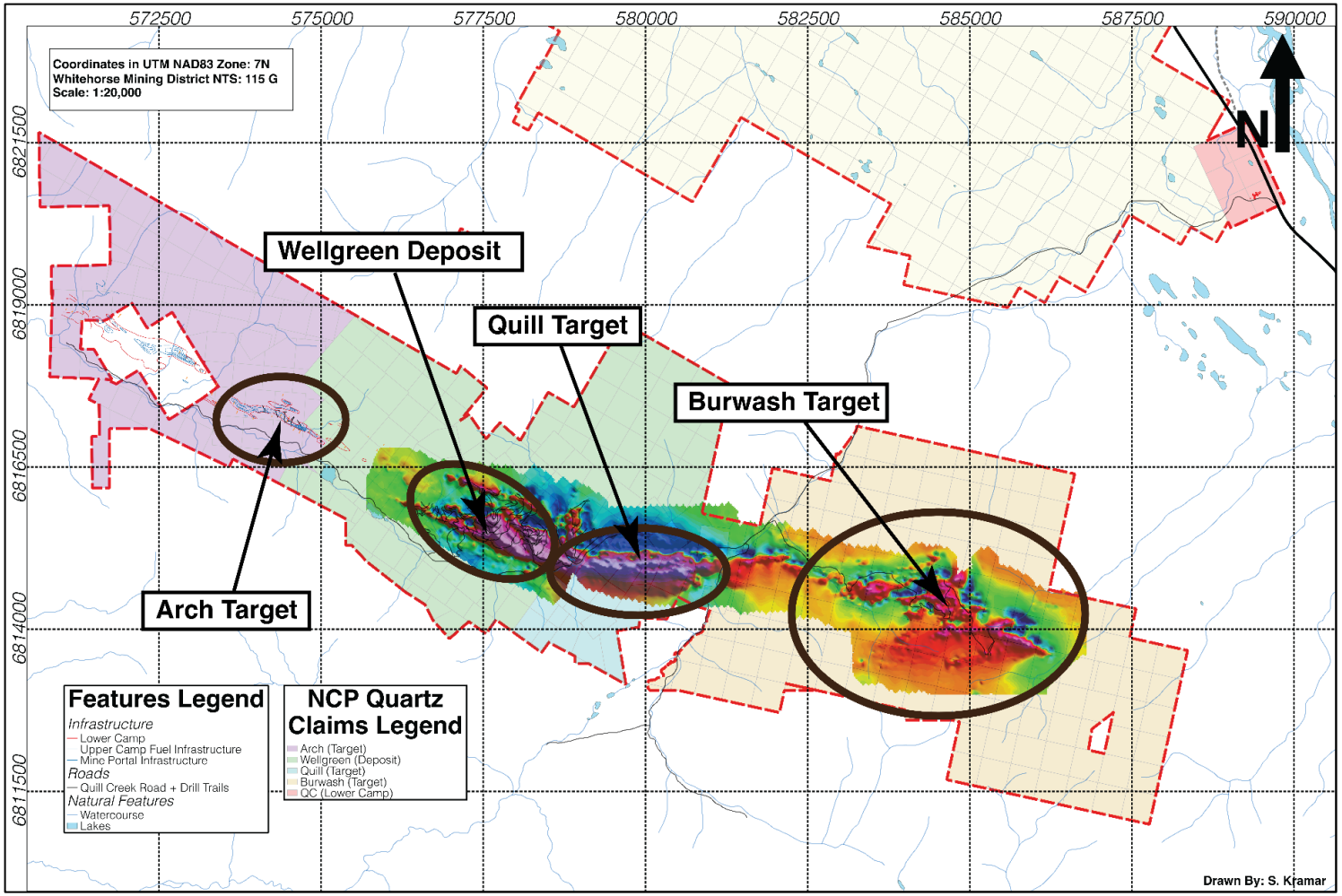
The North Arm Zone is located in the east-central portion of a narrow 1,200 m long sill, positioned approximately 150 m below the main Project intrusion. It was discovered by Hudson-Yukon Mining in the 1950s and explored in 1987 with three drill holes by All-North. All of these drill holes intersected mineralization. The geology of this zone is similar to both the East and West Zones. Mineralization consists of massive sulphide lenses, disseminated sulphide in gabbro and clinopyroxenite, and fracture fillings in footwall Hasen Creek metasedimentary rocks. The North Arm Zone was tested in 1988 and 2005 by limited drilling and was determined to have a sub-vertical dip. The information collected to-date suggests the North Arm Zone is relatively narrow in comparison with the main Project body at surface, but it does represent a prospective area of nickel-copper mineralization that warrants further work and may be contiguous with the main Project intrusion at depth towards the eastern end of the deposit.

7.5 Prospects / Exploration Targets

7.5.1 Arch Target

The Arch Target was discovered as a western extension of the Wellgreen Deposit (Figure 7-6) situated approximately 3 km northwest. Over the last 40 years, mapping, geochemical soil sampling, geophysics, and trenching were performed on the Arch Target. Historical and recent (2021-2022) drilling produced some encouraging results having intersected ultramafic material with significant disseminated sulfide as well as massive sulfides in recent drill campaigns. An initial mineral resource estimate resource is outlined in this report.

Figure 7-6: Project Regional Targets



Source: Arch, Quill & Burwash – defined by Mag/VLF; Arch – defined by Mag Contours (2012)

7.5.2 Quill Target

The Quill ultramafic body (see Figure 7-6) is interpreted to be contiguous (based on surface mapping and geophysical response) with both the Wellgreen Deposit to the west and Burwash to the east and is the least explored ultramafic occurrence in the Project's land package. Surface mapping in 2017 along with mapping by Archer Cathro in 1988 shows a continuous sill of peridotite. Geophysical response (magnetics, VLF & EM) suggests the same type of response in magnitude for both the ultramafic body and contact with the footwall host. Massive or semi-massive sulfide occurrences at the surface have not been observed which may explain the limited exploration. A limited drill test of surface EM targets in 2020 determined the conductors were caused by sheared graphite in sediments in the structural hanging wall of the sill. The Quill target, however, has exploration potential and limited drilling had intersected ultramafic material which is encouraging.

7.5.3 Burwash Target

The Burwash Target area (Figure 7-6) covers part of the Project's ultramafic complex and is located east of both the Wellgreen Deposit and Quill Target areas. The northern and southeastern portions of the Burwash area have had little exploration carried out and/or reported. The northern part of Burwash only has limited soil sampling. A Mag/VLF ground geophysical survey and a small soil-sampling program were conducted in the central part of the Burwash Target since the Project was acquired by the Company, with geophysical anomalies similar to that of the Quill Target and the Wellgreen Deposit.

Historic drilling efforts at Burwash have been limited to a number of shallow holes, which appear to have targeted showings and areas of magnetic anomaly and/or soil geochemical highs. These historic campaigns were testing primarily for high-grade massive sulfide zones. Based on subsequent work by Nickel Creek, it is now recognized that mineralization may occur throughout the ultramafic bodies as disseminated mineralization, in addition to contact related mineralization; however, it is to be noted that the Burwash target is interpreted to be a 'stacked sill' system, and ultramafic material may occur in thin stacked sills (in part due to fault repetition) rather than a large sill system like the Wellgreen Deposit. Geological mapping and limited drilling in 2021 tested several surface EM conductors. Higher grade Ni-Cu sulfide appears to occur in narrow (<1 m) remobilized zones along shears. Wider zones (up to 18 m) have disseminated sulphide, but grades are low (0.24% Ni) and significant Ni in silicate is present. With that in mind, the Burwash target still has exploration potential.

7.6 Minerals

Table 7-2, Table 7-3, and Table 7-4 after Cabri et al. (1993) list the opaque minerals and PGM-bearing minerals found in the deposit. The elevated presence of rhodium, iridium, osmium, rhenium, and ruthenium within the mineral suite provide an opportunity for additional potential economic contributions from these metals. Rhodium is present on the Project in highly anomalous concentrations as compared to the concentrations found in Noril'sk ores in Russia and other significant ultramafic systems globally (Hulbert 1997).

Table 7-2: Opaque Minerals Observed in the Wellgreen Deposit

Major Minerals*	
Pyrrhotite	$Fe_{1-X}S$
Pentlandite	(Fe, Ni)9S8
Chalcopyrite	CuFeS2
Magnetite	Fe3O4
Ilmenite	FeTiO3
Less Common to Rare Minerals *	
Violarite	$FeNi2S_4$
Sphalerite	(Zn, Fe) S
Chromite	$FeCr_2O_4$
Cobaltite**	CoAsS/NiAsS
Arsenopyrite	FeAsS
Ullmannite	NiSbS
Siegenite Argentopentlandite	$(Ni, Ag) (Fe, Ni)_8S_8$
Gold/Electrum	(Au/Ag)
Melonite	$NiTe_2$
Bismuth Tellurides	Bi-Te (?)
Galena	PbS
Altaite	PbTe
Kickline	NiAs
Covellite	CuS
Breuithauptite	NiSb
Barite	$BaSO_4$
Titanite Hessite	$CaTiSiO_2Ag_2Te$
Matildite	$AgBiS_2$
Undefined	Cu-Fe-Ba-S**

Source: Cabri et al. (1993)
Notes: *Ideal Formula
Unidentified mineral of the cobalt-gersdorffite series

Table 7-3: Primary PGM-Bearing Minerals

Mineral	Formula
Sperrylite	PtAs2
Sudburyite	PdSb
Testibiopalladite	PdSbTe
Merenskyite	PdTe2
Moncheite	PtTe2
Michernerite	PdBiTe
Stibiojaiadinite	Pd5Sb2
Mertielte II	Pd8Sb3
Geversite	PtSb2
Hollingworthite	RhAsS
Froodite	PdBi2
Unidentified	(Pd, Ni)2(Te, Sb)3
Unidentified	(Pd, Ni)3(Te, Sb)4
Unidentified	Pd (Bi, Te)
Unidentified	Pd3Ni (Sb, Te, Bi)5
Laurite	RuS2
Kotuiskite	PdTe2
Pt-Fe alloy(s)	Pt3Fe or PtFe(?)
Unidentified	Re>Ir>Os>Ru alloy
Unidentified	Pd-Hg
Iridium	Ir
Unidentified	Re sulphide (?)

Source: Cabri et al. (1993)

Table 7-4: Additional PGM-Bearing Minerals

Mineral	Formula	Metal Content
Melonite	(Ni, Pd, Pt) Te2	Up to 15.1%Pd; up to 9.37% Pt
Unidentified	(Ni, Pd)2(Te, Sb)3	Up to 22.8% Pd
Unidentified	(Ni, Pd)3(Te, Sb)4	Up to 15.9% Pd
Breuithauptite	(Ni, Pd) Sb	Up to 18.9% Pd
Hextestibio-panickelite	(Ni, Pd)2SbTe	Up to 15.9% Pd
Ullmannite	(Ni, Pd) SbS	Up to 0.09% Pd
Cobaltite	(Co, Rh) AsS	Up to 2.7% Rh, in zones
Pentlandite	(Pt, Rh, Ru) *	Up to 34 Pd, 12 Rh, 13 Ru (ppm)
Chalcopyrite	(Ru, Rh, Pd) *	Up to 10 Ru, 10 Rh, 9 Pd (ppm)
Pyrrhotite	(Pd)*	Up to 5.6 Pd (ppm)

Source: Cabri et al. (1993)
Note: *Trace levels as determined by proton microprobe

8 DEPOSIT TYPES

The Wellgreen Deposit is hosted in the Quill Creek Complex, one of a number of mafic-ultramafic sills that are enriched in nickel-copper-PGM mineralization that outcrop within the Kluane Ultramafic Belt of the Wrangellia Terrane in southwestern Yukon. The sills which form the Kluane mafic-ultramafic complex are thought to be part of a sub-volcanic system that feed the Nikolai Formation flood basalts and have been compared to the Noril'sk Deposit in Russia.

Similar deposits also occur elsewhere in Canada (Franklin sills; Bedard et al., 2011; Cape Smith Belt; Giovenazzo et al., 1989), in China (Yangluiping Instrusions; Xie-Yan Song et al. 2003, Jinchuan; Tonnelier, 2010), and southern Africa (Uitkomst intrusion; Maier et al., 2013, floor of eastern Bushveld Complex; Maier et al., 2001).

Many sill-hosted Ni-Cu-PGM deposits are generally considered to be part of a large, interconnected magmatic system that feed voluminous flood basalts and result from the impingement of a mantle plume upon the base of the crust. At Noril'sk, the main sulfide bodies formed from segregated sulfide at the base of magmatic conduits through which multiple pulses of magma travelled, and this mechanism is also believed to have occurred at the Project. Settling of immiscible sulfides, sulfur scavenging from adjacent country rock and silica contamination resulting in sulfur saturation, are thought to be important mechanisms for metal enrichment at the Project. Based on this genetic model, exploration programs have targeted the contact between the Hasen Creek Formation and the mafic-ultramafic host rocks. The Quill Creek complex intruded a Pennsylvanian-Permian Island arc, whereas many of the other deposits are Precambrian and all intruded into cratons. Greene *et al*. (2010) offers compelling evidence that the mafic-ultramafic intrusions and flood basalts of Wrangellia were formed in an oceanic plateau, which itself was formed by a mantle plume (Richards, 1991) and the terrane was subsequently accreted to the margin of North America in the Jurassic. These circumstances make the Project unique among other sill-hosted Ni-Cu-PGM deposits.

9 EXPLORATION

Historic exploration carried out by previous operators is summarized in Section 6. Exploration relevant to the mineral resource update is presented below.

9.1 Exploration Potential

The Project extends over an 18-km mineralized trend with multiple exploration targets. Identified major zones of Kluane ultramafic from mapping, soil sampling and geophysics include (from east to west) Formula Target, Arch Target, Wellgreen Deposit, Quill Target, and Burwash Target. Figure 9-1 presents physical locations of targets described above (Formula is further west, off the map).

9.2 Grids and Surveys

In 2013, the Company conducted a collar monument and surveying program. This effort was undertaken to modernize the Project's drill database by changing the coordinate system for all data from local mine grid to Universal Transverse Mercator (UTM), North American Datum 1983 (NAD83), Zone 7N. Many drill holes on the Project were never surveyed or designated with monuments, and those that were surveyed used the mine grid coordinate system. A differential global position system (DGPS) was used to survey 58 holes. Most collar positions were changed by a few metres however, some collars were more than 30 m away from their supposed locations.

For road and trail surveys, the Trimble GPS unit was carried on the operator's back while they were driving an all-terrain vehicle (ATV). The instrument took a measurement every few seconds. For drill collar surveys, the Trimble was activated directly over the collar and its position was measured every few seconds for one minute. The average of the measurements was then corrected using the base station located in Juneau, Alaska for post processing purposes.

9.3 Geological Mapping

In 2013, a three-day mapping program was undertaken on the eastern portion of the Project, east of Aird Creek and northeast of the upper camp. Parts of this area were exposed by undocumented bulldozer trenching. This mapping effort led to a better understanding of the contacts between the Project intrusion, the Maple Creek Gabbro, and the Hasen Creek sedimentary rocks. In 2015 and 2017 a mapping program was completed over the Wellgreen Deposit, conducted by Dr. Craig Bow in order to better understand the site geology. The results of this mapping have been utilized in the current site geologic model and to identify potential exploration targets. In 2018, geologic mapping was completed to extend Dr. Bow's work beyond the deposit.

9.4 Geochemical Sampling

In 2012, a soil sampling survey was undertaken over the Wellgreen Deposit, Quill, Burwash and Arch targets.

Soil samples were taken on a 25 m nominal spacing, along virtual gridlines across the Project. Soil augers and mattocks were the primary tools used to access the 'B' and/or 'C' soil horizon profiles. Samples were placed in Kraft sample bags and shipped to the ALS Global preparation facility in Whitehorse, YT. Sample pulps were then sent to the ALS Global lab in Vancouver, BC for geochemical assay. The soil sampling procedure and analytic method are appropriate for exploration geochemistry and potential target refinement, however, were not used for determination of mineral resources since they may not be representative of the mineralization.

9.5 Geophysical Surveys

In 2007, Geotech Ltd. conducted an air-borne versatile time domain electromagnetic (VTEM) and magnetic (MAG) survey over the Project, notably the deposit and several new (at the time) areas of interest, hoping to gain information below overburden.

A helicopter-borne magnetic (MAG) and electromagnetic (DIGHEM) survey was flown in 2008 by Fugro over the Project area, hoping to detect zones of conductive mineralization and provide information that could be used during the course of surficial geological mapping. The magnetic response was effective at mapping the host mafic-ultramafic units and the survey returned several anomalous features that could be considered moderate to high priority exploration targets.

In 2009, ground-based geophysics were utilized including a horizontal loop electromagnetic (HLEM) survey and bore hole-Induced Polarization/DC Resistivity (IP) survey conducted by Aurora Geosciences Ltd. as a test, to determine the effectiveness of these geophysical methods. The HLEM survey was ineffective at producing the required depths of penetration along the proposed target lines however, the down-hole IP survey did succeed in showing anomalies over already known mineralization.

In 2012, three ground based geophysical surveys were utilized: a combination total field magnetics (MAG) and Very Low Frequency (VLF) to provide higher resolution data (compared to an air based geophysical method) over the deposit, Quill, Burwash, and parts of Arch, and an Extremely Low Frequency (ELF) survey as a test of the methods effectiveness. Aurora Geosciences Ltd. conducted all the geophysics totalling 148.93 line-kilometres with 62.74 line-kilometres specifically over the deposit/Quill area. The ELF survey was but a few short test lines conducted near the west end of the deposit. Figure 9-1 below presents the area of coverage (gridded) from the MAG/VLF surveys. Magnetic highs correlate well with mapped areas of mafic-ultramafic lithologies, and this information has been used to improve the geologic model and to identify exploration targets.

In 2015, Discovery International Geophysics Inc. carried out a borehole electromagnetic (BHEM) and surface Transient Electromagnetic (TEM) survey at the Project. Four boreholes were surveyed and approximately 2 km was surveyed with the TEM sensor in an effort to target higher grade mineralization based on down hole response.

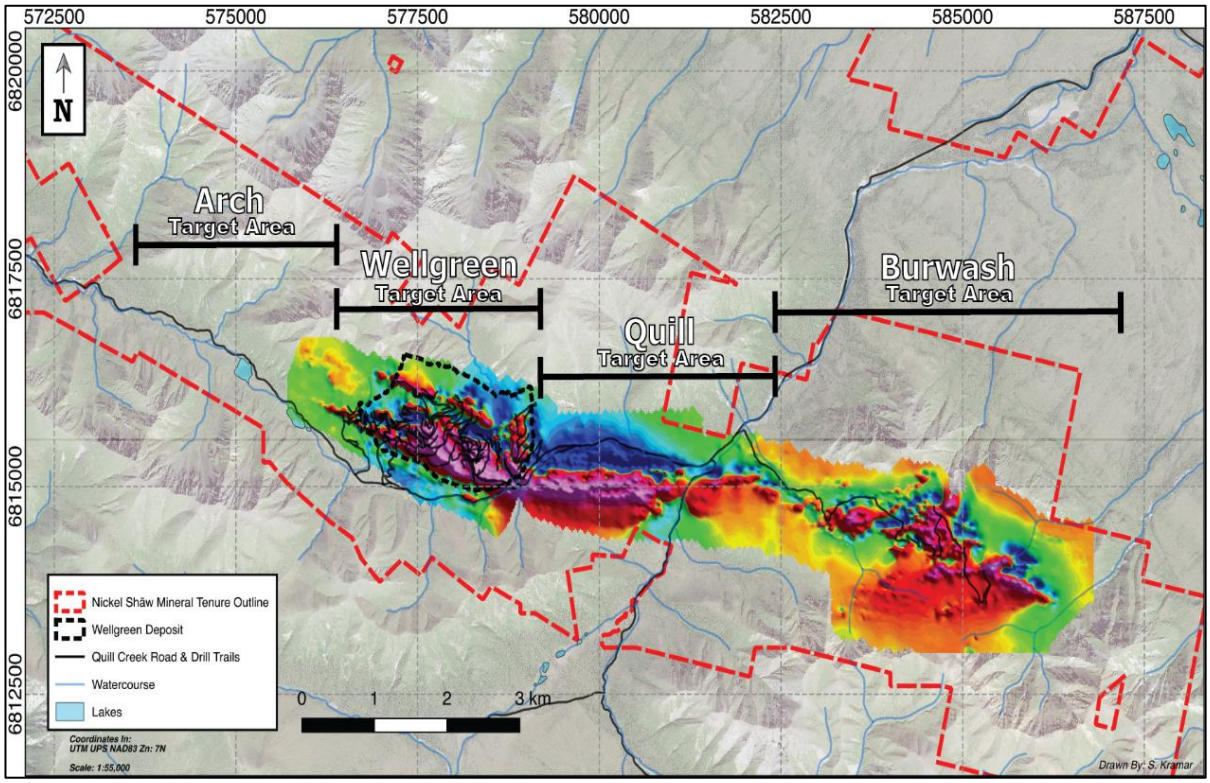
Another Borehole Electromagnetic (BHEM) survey was conducted by Aurora Geosciences at the Project in 2016 to assist in locating massive sulphide ore in the near proximity of select diamond drill holes. Five boreholes were tested, and those holes were selected for proximity to areas of interest.

In 2018, an IP/DC resistivity survey (IP) was done at the Project by Aurora Geosciences Ltd. The survey was designed to test geophysical response on areas with geological control over the known deposit and apply findings to areas of interest for exploration. The survey consisted of nine lines and totaled

11.6 km. The IP survey appears to determine the location of mafic-ultramafic rocks below the surface and has identified target areas that may warrant additional work. At the back of the IP survey, one partial IP line, and subsequent virtual lines adjacent was selected for another test of the ELF geophysical system. Three lines were surveyed for a total of three line-km, also by Aurora Geosciences Ltd. To further bolster the data set collected by the IP survey, drill core samples were sent to Aurora Geoscience's Whitehorse laboratory, to test geophysical (and physical) properties and eventually compare 'micro' results (i.e.: drill core) with 'macro' results (i.e.: IP stations at the deposit).

These geophysical programs, where appropriate, have been used to develop the geological model and identify potential exploration targets.

Figure 9-1: Magnetic-VLF Survey Extent



Source: Nickel Creek (2018)

9.6 Petrology, Mineralogy, and Research Studies

There have been several petrological, mineralogical, and geological studies done at the Project. A Ph.D. thesis was done by S. W. Campbell in 1981, a M.Sc. thesis by S. Miller in 1991, and a B.Sc. thesis by M. Fayak in 1989. Earlier petrologic, mineralogic, and isotopic studies are provided in Hulbert's 1997 Geological Survey of Canada Open File 3057 of the Ni-Cu-PGE deposits in the terrane. Israel and van Zeyl (2005) completed a preliminary regional geology report on the area. Vancouver Petrographics (VanPetro) completed petrography on the Project samples in 2010, and subsequent petrographic studies were again undertaken by the Company in 2015 using VanPetro as the scientific investigator.

9.7 Geotechnical and Hydrological Studies

SRK Consulting conducted a site visit and logged two core holes in 2015 in order to make recommendations for future geotechnical work. In 2017, nine holes that were drilled for infill/metallurgical purposes were logged in detail for geotechnics and were selectively sampled for laboratory strength testing under the direction of AGP. AGP conducted a site visit in 2017 and provided a Preliminary Mining Geotechnical Assessment for pit slope design. This work was followed up in 2018 by surface geotechnical mapping by AGP's geotechnical engineer and Nickel Creek geologists. A data gap analysis completed following the surface geotechnical mapping campaign indicated the requirement for additional investigation of the rock mass character and structural geology particularly within the ultimate pit slopes. Resource infill holes drilled in 2022 intended to partially increase geotechnical and hydrogeological data quantities and confidence within this zone. All eight holes completed on the Wellgreen deposit in 2022 were geotechnically logged, with detailed logging and sampling occurring within key intervals intersecting the pit proposed slopes. Hydrogeological investigations were carried out on five of the eight holes. Further geotechnical and hydrogeological work will be required to confirm pit slopes and pit phase sequencing.

Since 2013, 27 monitor wells have been drilled within and adjacent to the deposit in order to conduct baseline water quality studies. This work will be used to characterize the background groundwater conditions around the site. Additional groundwater studies will be required to further advance the Project.

9.8 Priority Exploration Targets

Exploration potential exists throughout the Kluane Ultramafic Belt, as these rocks are known to be elevated in Ni, Cu, and PGM's. Current understanding indicates higher grade mineralization occurs where magmatic melts have interacted with quartz and carbonate bearing country rock. Potential areas where such interaction is thought to occur are targets for exploration that include the Arch, Quill, and Burwash target areas.

9.8.1 Arch Target

The Arch Target area is located 2 km west and on strike with the Wellgreen Deposit. The target was discovered in 1952 and has been explored by surface sampling, geologic mapping, geophysics, trenching and minor drilling. Three historic drill holes have been drilled on the prospect and occurred in 1955, 1988, and 2001. The drilling done in 2001 encountered massive sulfides that contained 1 m of 4.18% Cu and 1.98% Ni.

The Arch Target was subject to two recent drilling campaigns in 2021 (9 drill holes) and 2022 (10 drill holes).

9.8.2 Quill Target

The Quill Target is located east and along strike with the Wellgreen Deposit and may even be contiguous. A magnetic high (warm colours) trend from the Wellgreen Deposit to Quill, as shown in Figure 9-1 suggests the mafic-ultramafic sill is continuous between these two areas, and the inferred ultramafic target (Quill) is defined by magnetic high. Subsequent surface mapping done in 2017 further

supports this conclusion. The magnetic low trend (cool colours) north of the Quill mass suggests a counterpart rock assemblage to the magnetic low north of the Wellgreen Deposit. If this is the case, then similar metasomatic processes may have acted on the Quill target as the Wellgreen Deposit, making Quill a priority exploration target for follow-up.

The Quill Target area has a strike length of 2 km and surface soil samples across the area are anomalous in Ni and Cu. Peridotite and favorable country rock have been mapped within the target area. Three holes were drilled in the target area during the 1950's when HudBay was exploring for higher-grade massive, and/or semi-massive sulfides. The lack of additional drilling indicates they did not encounter the material deemed "higher-grade" in these holes, and subsequently ceased drill activities. However, these holes did encounter ultramafic material (dominantly peridotite), but with lack of massive or semi-massive sulfides, the determination was not to have the core sampled by assay.

A limited 2-hole drill program was completed in 2020 to test surface EM conductors in the structural hanging wall of the Quill Target. Sheared graphite in hanging wall sediments was determined to be the cause of the conductors.

9.8.3 Burwash Target

The Burwash Target is east of Quill and is along strike with the Wellgreen Deposit. The target area begins about 4 km east of the Wellgreen Deposit and has a strike length of almost 3 km. The magnetic high observed at the Wellgreen Deposit and Quill, broadens and becomes subtler at Burwash. The Ni and Cu geochemical soil sampling results at Burwash are similar in magnitude to the Wellgreen Deposit, indicating a favourable area of exploration interest.

Drilling at Burwash and geologic mapping indicate the ultramafics are a series of bifurcating thin sills and are not as wide as the main sill at the Wellgreen Deposit, and sills are "layer cake" separated by country rock, and is suggested to be a smaller, "stacked sill" system. Drilling was conducted at Burwash in two drill campaigns, one in 2005 and one in 2008. As an example of the exploration potential, one hole drilled in 2008 (BR-08-05) encountered 67.8 m of 0.363 ppm Pt+Pd+Au, 0.22% Ni and 0.07% Cu. Two massive sulphide lenses (1 to 1.3 m thick) have been mapped in the lower reaches of Linda Creek. A 1988 hole returned 0.83 m grading 3.51% Ni and 1.66% Cu with very high PGEs (2700 ppb Pt, 4400 ppb Pd, 500 ppb Rh, 650 ppb Os, 1000 ppb Ir and 900 ppb Ru). A 2020 30-Hz Time Domain Elelctromagnetic (TDEM) survey over this area failed to detect significant conductivity. A resurvey of the target area at 15 Hz is recommended.

Three drill holes, totalling 332 m, were drilled on targets in the Burwash area in 2021. These holes were testing conductors from the 2020 TDEM survey and disseminated sulphide in historic drill holes and trenches. No massive sulphide was intersected in the 2021 Burwash drilling. Several zones of low-grade (< 0.3% Ni) mineralization were intersected with intersection up to 18 m grading 0.24% Ni. This interval had significant Ni in silicate with a sulphur grade of 0.2 %S. Isolated higher-grade Ni-Cu showings in the eastern part of the Burwash area tend to be narrow shear related features.

10 DRILLING

Several companies have completed drilling over an extended period of time on the Project property, and Table 10-1 summarizes the drilling history on the Wellgreen Deposit. The drill count at the bottom of the table illustrates the 1987 through 2022 drilling that was used for the determination of mineral resources.

10.1 Historic Drilling

Considerable surface and underground drilling were completed in the 1950s by Hudson-Yukon Mining, an operating subsidiary of HudBay. Additional drilling was completed under the auspices of the Kluane JV (All-North, Chevron and Galactic Resources) in the 1980s by Archer, Cathro & Associates Ltd. Drill logs and assay summaries and certificates for many of these historic drill holes are available and have been compiled into a database along with more recent drill data. This historic work has not been thoroughly documented, however, much of the data has been located and digitized. Drilling prior to 1987 has not been used for the resource estimation other than to guide the construction of the geologic model. The pre-1987 drilling was removed because 1) long intervals of the holes were not assayed, 2) the criteria to assay or not assay does not appear consistent, and 3) high-grade intervals seem to be highly biased relative to drilling after 1987.

Table 10-1: Project Drill Hole Summary

Year	Company	Surface Drilling				Underground		Total	
		Diamond		RC or Partial RC		Diamond Drilling		Reported Drilling	
		Hole	Metre	Hole	Metre	Hole	Metre	Hole	Metre
1952	Yukon Mining	18	1,982					18	1,982
1953	Yukon Mining	27	2,500			27	693	54	3,192
1954	Yukon Mining	2	193			159	3,940	161	4,132
1955	Hudson Yukon Mining					154	9,019	154	9,019
1956	Hudson Yukon Mining					38	1,904	38	1,904
1969	Hudson Yukon Mining	13	1,314					13	1,314
1971	Hudson Yukon Mining					81	2,522	81	2,522
1972	Hudson Yukon Mining					23	990	23	990
1987	All North / Galactic	46	5,027					46	5,027
1988	All North / Chevron	37	6,050			34	5,571	71	11,62
1996	Northern Platinum			57	3,874			57	3,874
2001	Northern Platinum	6	530					6	530
2005	Northern Platinum	4	67					4	67
2006	Coronation Minerals	11	2,017					11	2,017
2007	Coronation Minerals					3	577	3	577
2008	Coronation Minerals	13	4,655					13	4,655
2009	Northern Platinum	10	2,052					10	2,052
2010	Northern Platinum	7	2,255					7	2,255
2011	Wellgreen Platinum	6	1,925					6	1,925
2012	Wellgreen Platinum	22	5,566			29	5,417	51	10,98
2013	Wellgreen Platinum	1	104	26	2,689			27	2,793
2014	Wellgreen Platinum	1	773	7	2,144			8	2,917
2015	Wellgreen Platinum	21	5,668	27	3,336			48	9,005
2016	Wellgreen Platinum	7	1,364	11	1,139			18	2,503
2017	Wellgreen Platinum	15	2,720					15	2,720
2022	Nickel Creek	8	1,710					8	1,710
Total Project Drilling to Date									
The Mineral Resources are based on drilling from 1987 through 2022									

10.2 1996 – 2005 Northern Platinum

Northern Platinum conducted numerous drill campaigns on the Project property between 1996 and 2010. The drilling conducted by Northern Platinum in 2009 and 2010 was designed to extend and expand the potential resource of the Wellgreen Deposit by targeting mineralization up-dip of the East Zone and east along strike. Drilling was completed by E. Caron Diamond Drilling Ltd. of Whitehorse.

All holes drilled in 2009 and 2010 were HQ diameter (63.5 mm core size), and all drilling was run in five-foot intervals (1.52 m). Ten holes were drilled in the East Zone in 2009, totalling 2051.75 m. In 2010, prior to its acquisition by Prophecy Resources Corp., Northern Platinum drilled six holes in the East Zone. After the acquisition, one more hole was drilled, bringing the 2010 total to 2,254.77 m.

10.2.1 1996 Drill Program

In 1996, Northern Platinum conducted a reverse circulation (RC) program that focused on the historic East and West Zones. Drilling was completed by Northern Platinum staff using an Ingersoll Rand ECM-350 3.5" diameter RC drill. A total of 57 holes totalling 3,873.7 m were drilled, and drilling was run on five-foot intervals (1.52 m).

10.2.2 2001 Drill Program

The 2001 program targeted mineralization along the historic footwall contact and drill-tested the Middle Arm, a splay off the main property intrusion in the West Zone. Drilling was conducted by E. Caron Diamond Drilling Ltd. of Whitehorse. A total of six drill holes were completed on the Project property and one hole on the adjacent Arch property, for a total of 591.92 m. All 2001 drilling was HQ diameter, sampled on 5 ft intervals (1.52 m).

10.2.3 2005 Drill Program

A small program was conducted in 2005. This program focused on the North Arm and the drilling was completed by Northern Platinum staff using an Ingersoll Rand (ECM)-350 3.5" diameter RC drill. A total of four holes were completed totalling 67.05 m. Sampling was on 5 ft intervals (1.52 m).

10.3 2006 – 2008 Coronation Minerals

The holes drilled on the Project property by Coronation Minerals in 2006 were to validate the historical drilling done by the Kluane JV in 1987 and 1988. The program was designed by Watts, Griffis, and McQuat, Ltd. (WGM) with a total of 24 holes proposed. Coronation Minerals engaged E. Caron Diamond Drilling Ltd. of Whitehorse, Yukon as the drilling contractor. All the surface drilling was HQ, and holes were reduced to NQ (47.6 mm core diameter), as the depth increased, and ground conditions became unfavourable. The underground drilling was all BTW (42 mm) core size. The drilling began in late July 2006, and a total of 11 holes were completed for 2,016.87 m. Ten of the holes drilled in 2006 were drilled to "twin" historical holes drilled by the Kluane JV. In 2007, three underground holes were completed totalling 576.99 m. Two of the holes were designed to "twin" historical holes. In 2008, 13 additional surface diamond drill holes were drilled by Coronation Minerals.

10.4 2011 – 2017 Wellgreen

10.4.1 2011 Wellgreen Drill Program

The drilling conducted by Wellgreen in 2011 was designed initially to delineate the resource potential of the deposit by targeting the area between the East and West Zones to prove the zones are not separate, but rather one continuous zone. The focus of the program evolved to test the hanging wall disseminated sulphides located in the ultramafic unit. Drilling was completed by E. Caron Diamond

Drilling Ltd. of Whitehorse. A total of nine drill holes were completed during the 2011 drill program from June to October. However, three collar locations were never recorded and are considered lost. All holes were drilled HQ, and all drilling was run in 5 ft intervals (1.52 m). Including the lost holes, a total of 2269.17 m was drilled in 2011.

10.4.2 2012 Wellgreen Drill Program

The surface drilling conducted by Wellgreen in 2012 was designed to infill the potential resource of the Wellgreen Deposit in the East and West Zones. The underground program focused on upgrading the resource category of the high-grade hanging-wall gabbro in the East Zone. Surface drilling was completed by Foraco International SA of Toronto, ON, while DMAC Drilling of Aldergrove, BC completed underground drilling. A total of 22 drill holes from surface and an additional 29 drill holes from underground were completed during the 2012 drill program from February to November, totalling 10,983.11 m. All the holes were HQ diameter.

10.4.3 2013 Wellgreen Drill Program

The drilling conducted by Wellgreen in 2013 was designed to extend, expand, and upgrade the resource of the Wellgreen Deposit. The program initially focused on defining and expanding the Far East Zone and a second program drilled in-fill holes in the resource with dual purpose geologic definition and groundwater monitoring wells in the Project and areas of potential future mine infrastructure. The first drill program was completed by Boart Longyear of South Jordan, Utah, USA. A total of nine drill holes were completed during the 2013 drill program from July to October, totalling 2,027 m. Eight of the nine holes were drilled with 5.5" RC, one of which was continued in HQ and later downsized to NQ, and one other hole was drilled HQ. All drilling was run in 3 m intervals. Midnight Sun Drilling of Whitehorse completed the second program. A total of 18 vertical holes were completed during the program from October to November, totalling 765.93 m. All of those holes were drilled with 4.5" RC and were run in 5 ft intervals (1.52 m).

10.4.4 2013 Re-Sampling of Historic Drill Core

In 2013, the Company sampled and assayed previously non-sampled core intervals and re-assayed all available sampled intervals from the 1987-1988 programs. A total of 3,087 samples were analyzed from 108 holes (8,462 m). The existing half core was sawn so that ¼ core samples were sent for assay and the Company's preparation and assay protocols were applied.

Missing intervals within the 2006 through 2007 programs were also resampled with ¼ core and assayed using the Company's preparation and assay protocols.

10.4.5 2014 Wellgreen Drill Program

During October and November of 2014, the Company completed 2,916.49 m of drilling in eight holes. Most holes were started with an RC rig and finished with HQ core.

10.4.6 2015 and 2016 Wellgreen Drill Program

The Company completed a mix of core and RC drilling during 2015 and 2016. Starting in 2015, HQ drill core was sawn in half, and half of the core was sawn again to generate ¼ core samples that were used

for assay. This procedure was intended to ensure that samples for metallurgical testing were available (½ core) but still retain ¼ of the core for verification.

10.4.7 2017 Wellgreen Drill Program

Fifteen diamond core holes were drilled during the last half of 2017 at the Project property. Four of the holes were vertical, and the remaining 11 were angle holes collared on the south side of the main mineralization, and oriented to plunge downward to the north. The plan for these holes was to infill zones within the deposit.

The challenges of a late fall/early winter drill campaign and collar locations that were not ideal due to surface permit constraints limited the effectiveness of the 2017 program in achieving the stated goals.

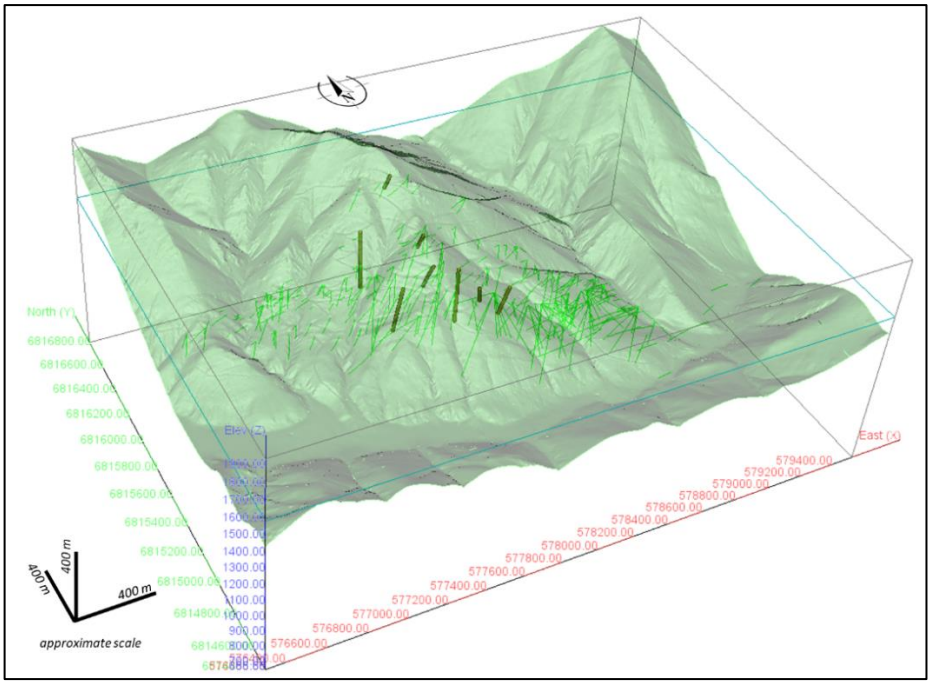
10.5 2022 Nickel Creek

In the summer/fall of 2022, Nickel Creek completed two drilling programs, for the Wellgreen deposit and the Arch target. Drilling was completed by Superior Diamond Drilling of Powell River, B.C. using a Discovery 2 MultiPower skid mounted drill rig. Wellgreen holes were drilled HQ with reduction to NQ when necessitated by drilling conditions. For the Wellgreen deposit, 8 drill holes, totalling 1,710 m, were completed. All drill holes targeted Inferred classed blocks from the 2018 mineral resources and several drill holes were used for geotechnical evaluation. Regrading was carried out, switchbacks upgraded, and safety berms were repaired on the main drill access trails and selected secondary trails.

For the Arch target, in 2021, Nickel Creek drilled 9 NQ holes at Arch, totalling 1,075 m, by a heli-configured Discovery 2 MultiPower rig. In 2022, 10 NQ drill holes, totalling 1,171 m, were completed. All drill holes targeted the principal mineralized peridotite unit. Due to the difficult terrain, drill collars were located on the current drill access trails and short extensions. On the historic drill access trails, regrading was carried out, switchbacks upgraded, and safety berms repaired where material was available.

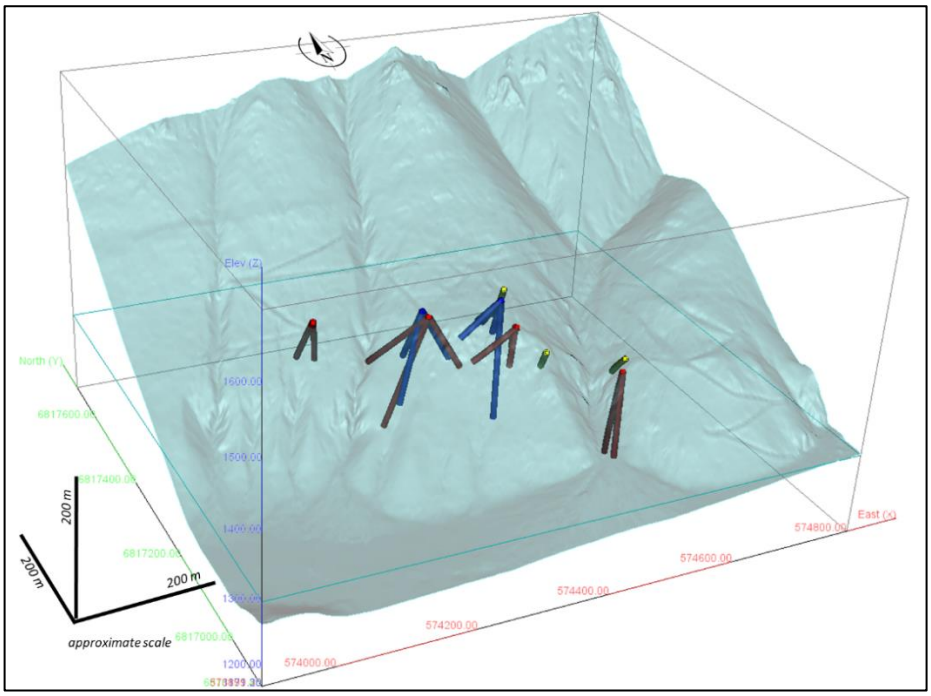
Figure 10-1 shows the drill hole locations on the Wellgreen Deposit. Figure 10-2 shows the 2021 and 2022 drill hole locations for the Arch drill program.

Figure 10-1: 2022 Drill Hole Location Map – Wellgreen; perspective view looking northeast



Note: 2022 drill holes highlighted
Source: AGP (2023)

Figure 10-2: Drill Hole Location Map – Arch; perspective view looking northeast



Note: 2021 drill holes (blue); 2022 drill holes (red)
Source: AGP (2023)

10.6 Collar Survey Procedures

Before the 2013 field season, drill collars were spotted with a compass and chain off the local mine grid, with the last completed collars surveyed with a hand-held GPS, compass and chain or a total station GPS, or not at all. In 2013 all collars were spotted using a hand-held GPS and later surveyed with a differential GPS. All early drilling in mine grid has been converted to the UTM Zone 7N coordinates.

For the 2022 drill program, Underhill Geomatics, based in Whitehorse, was retained to survey the drill collars. Underhill used a Real Time Kinematic GPS for the collar coordinate survey.

10.7 Downhole Survey Procedures

Downhole surveys were performed differently in different years depending on the operator at the time. HudBay, Archer-Cathro, and Northern Platinum (from 1996-2005) used acid dip tests to determine hole deviation, either at regular intervals or, in the case of Northern Platinum, at the end of each hole. Coronation Minerals used acid dip tests in 2006 and 2007 and used a Reflex Single Shot magnetic tool in 2008. Northern Platinum (from 2009-2010) and Prophecy Resources Corp. (2011) reported the use of a ReflexIt© tool, and survey readings were collected approximately 9 m off the bottom of the hole and at about 152 m intervals up the hole; however, no azimuth data was recorded.

In 2012, Wellgreen completed downhole surveys using the Reflex Maxibor II© tool. Survey readings were collected every 3 m up the hole. Some measurements or surveys were subject to tool malfunction and deemed unreliable. In 2013, Wellgreen completed downhole surveys using the Icefield Tools Gyro Shot® tool. Survey readings were collected approximately 9 m off the bottom of the hole and at every 18 m up the hole. Geotechnical/groundwater holes drilled in the Wellgreen deposit were spotted with a hand-held GPS and were surveyed with differential GPS (DGPS). Downhole surveys were not conducted due to the shallow lengths and vertical dips of the holes.

In 2022, Nickel Creek employed a Sprint IQ gyro tool, a continuous multi-shot tool for their down hole surveys. Downhole surveys were completed by the drillers with the assistance of Nickel Creek personnel.

10.8 Logging Procedures

Drill core was transported to the core logging facility by the drillers or Nickel Creek personnel.

Core boxes are well marked on the boxes with drill hole number, from's and to's, and box number. In the box, wood meterage markers are placed at the end of every core run. The drill core is aligned, and core run metre markers are checked by Nickel Creek personnel before sample marking and core logging.

Core is marked up for sample intervals every 1.5 m., which may vary dependant on lithological contacts, faults, or other geological considerations. Sample numbers are written in permanent marker on the core dividers at the beginning of the sample interval. Sample tags are stapled onto the box at the beginning of the sample interval. Magnetic susceptibility measurements are generally collected every metre by a hand-held instrument.

Photos are taken of the core boxes, three at a time, both wet and dry, prior to core logging. A whiteboard is used to identify the drill hole number, box numbers, and interval being photographed. A scale rule is also shown in the photos.

Drill core descriptions are entered into a computer and include, but not limited to lithology, alteration, mineralization, texture, structure, and grain size.

Drill core is brought to the core sampling facility, adjacent to the core logging tent for sampling. Drill core is sampled on half core with second half placed in the core box. Core duplicates use two quartered core intervals. Samples are placed in sample bags, marked with sample numbers, and with a sample tag placed in the bag.

Figure 10-3 and Figure 10-4 show the drill core logging facility and the core sampling facility, respectively.

Figure 10-3: Drill Core Logging Facility

Source: AGP (2023)

Figure 10-3: Drill Core Sampling Facility

Source: AGP (2023)

10.9 Exploration Drilling

Between 2005 and 2021, the Burwash and Quill target areas have had 24 drill holes (20 diamond, 4 RC), and two drill holes completed, respectively, totalling 1,682 m at Burwash and 675 m at Quill. These drill holes were targeting geophysical anomalies.

11 SAMPLE PREPARATION, ANALYSES, AND SECURITY

Sample collection and preparation protocols have changed over the 65 years of drilling that have occurred at the Project. This section will focus on the procedures that have been followed by the Company on their drilling and sampling as well as the resampling of the 1987 to 1988 historic holes.

The available knowledge of the historic drilling is briefly discussed below, and the outcome of data verification is provided indicating if the information package was utilized in this statement of mineral resources. Information on the historical programs has been summarized from the Technical Report "Mineral Resource Estimate of the Wellgreen Ni-Cu-PGM Project" June 26, 2017.

AGP is of the opinion that the sampling protocols and procedures that were applied to the data utilized in the mineral resource estimate are appropriate for the determination of mineral resources.

The sample preparation and analysis methods that were applied in 2017 are identical to those used in the years 2013 through 2016 as reported in this section.

11.1 Programs Before Wellgreen Platinum

11.1.1 Historic Drill Programs 1952-1988

AGP has not verified sampling details for historic programs. No documented Quality Assurance/Quality Control (QA/QC) programs are available for review. Based on assay results, it appears that Hudson-Yukon Mining only sampled intervals considered to be well mineralized. Long drill intervals were not sampled, and the determination of when to and when not to assay is inconsistent. Hudson-Yukon Mining assayed the core at their internal lab in Flin Flon, Manitoba.

Archer Cathro & Associates Ltd. supervised drill programs in 1987-1988 on behalf of All North Resources, Ltd. Assessment reports filed during these years do not document sampling or analytical details; however, it appears only "mineralized" intervals were sampled.

Archer-Cathro assayed the core at Bondar-Clegg & Company Ltd. in North Vancouver.

File information suggests Archer-Cathro core was analyzed for Pt and Pd by fire assay, and Cu and Ni by atomic absorption (AAS). In addition, some samples were analyzed for the other PMEs and as such underwent neutron activation.

Wellgreen sampled and assayed previously non-sampled core intervals and re-assayed all available sampled intervals from the 1987-1988 programs in 2013. A total of 3,087 samples were analyzed from 108 holes (8,462 m). Most of these samples were ¼ core.

The resampled intervals from 1987 and 1988 were used in the estimation of mineral resources. Otherwise, the pre-1987 data was not used in the estimation of mineral resources.

11.1.2 Coronation Minerals Programs 2006-2008

The drill core was logged and sampled by the Company's geologist and assistants under the direct supervision of Mr. Rory Calhoun, P.Geo., at the designated facilities of the Coronation Minerals base

camp on site. The geologists recorded lithology, mineralization, structures, sample numbers etc., and assistants would record the geotechnical data [rock quality designation (RQD)] and core recovery.

Sample length was variable based on lithology and mineralization observed by the geologist, and the core was marked accordingly. Most sampled intervals were 1.52 m (or 5 ft) in length. The assistant transported the core into the saw shack and cut it in half using a core saw. After cutting, the core was returned to the core tray, and the geologist would sample it. Half of the split core would be placed in a plastic sample bag with the sample tag. The sample number was also written on the outside of each bag for easy identification. No sample tags were left in the core trays. All of the data from logging the core was recorded in handwritten logs and then transferred to Microsoft Excel™ spreadsheets, for later import into a geological software package.

11.1.3 Northern Platinum Programs 1996-2005 and 2009-2010

There is no available documentation on sampling details for the older Northern Platinum programs; however, based on handwritten assays on the paper drill logs, samples were taken every 5 ft (1.52 m) and were assayed for Cu, Ni, and Co and sometimes for Pt, Pd, and Au.

Northern Platinum sampled core based on lithology and observed mineralization, and where no contacts were present used a nominal 5 ft (1.52 m) sample interval.

Most samples, including field-inserted Standards and Blanks, were sent to Loring Laboratories in Calgary, AB for assaying. In 2009, samples were also analyzed at ALS Global in North Vancouver, BC. Loring Laboratories has ISO 9001:2000 certification and ALS Global has ISO/IEC 17025:2005 and ISO 9001:2000 certification. A 30-element package, including copper, nickel, and cobalt reported in parts per million was analyzed by aqua regia “partial digestion” followed by ICP analyses. Gold, platinum, palladium, and rhodium were analyzed by four acid digestion followed by a 30 g fire assay with an atomic absorption (AA) finish.

11.2 Wellgreen – Nickel Creek Sampling Protocols

11.2.1 Wellgreen – Nickel Creek Programs 2011-2022

The sampling methodology adopted by both Wellgreen and Nickel Creek was as follows:

The drill contractor delivers the drill core to the core shack, and the core boxes are sorted and placed in groups of three. The group of boxes is photographed and run markers and other marker blocks are checked for accuracy. The geologist or technician collects RQD and recovery data, and the geologist logs the core. Prior to 2013 all recovery, RQD, and geology data were hand-written onto paper forms that were then entered into spreadsheets. From 2013 onwards, all of this data is captured digitally in an Access database.

Ideally, only one geologist is logging each individual hole for consistency. Most of the samples vary in length from 0.5 to 3.5 m with 96% of the intervals falling in this range.

In 2013, the sample interval was written on a lab-provided tag that was then stapled onto the box. The tag displays the sample number and interval. Previously, the sample was marked on the box with the footage and sample number in permanent marker. Processed boxes of the core are taken to the core cutting facility for cutting by a technician. The saw uses fresh water for cooling that is not recycled.

The core is cut, and the technician places the samples in clean plastic bags with a sample tag. The sample number is written on the outside of the sample bag, and the bag is then sealed using a heavy-duty zip tie rendering it impermeable to outside contamination.

Starting in 2012 through 2017, the core was sawn twice:

- entire core was sawn in half
- one of the core halves was sawn again to generate two, quarter samples

The half core is maintained for possible future metallurgical sampling, while one quarter is left in the box and the other quarter is sent to the lab for assay.

All samples collected in 2011 and 2012, including field-inserted Certified Reference Materials (CRMs) and Blanks, were sent to ALS Global in Vancouver, BC, for assaying. In 2013 all samples were sent to Bureau Veritas (formerly ACME Laboratories) in Vancouver, BC, for analysis. Both labs have ISO/IEC 17025:2005 and ISO 9001:2000 certification and are independent of both Wellgreen and Nickel Creek.

The samples were assayed for copper, nickel, cobalt, gold, platinum, and palladium. The following is a brief description of the sample preparation:

- samples are sorted into numerical order and then dried
- once dried, the material is crushed using a jaw crusher
- the sample is then split to get a 250 g sample for pulverizing
- the total 250 g of split sample is pulverized to 85% passing 75 microns (µm)
- gold, platinum, and palladium are assayed by fire assay fusion of 30 g with an ICP-ES finish; the resulting values reported in parts per million
- copper, nickel, and cobalt are assayed by four-acid “near total” digestion ICP-ES

During 2015 through 2017 the primary assay lab was Bureau Veritas Labs in Vancouver (using Bureau Veritas preparation facility in Whitehorse), and the check lab was AGAT Laboratories. AGAT is ISO 9001:2015 certified. Bags of ¼ core were shipped to ACME in lots of 50 to 100 samples. For every batch of samples, Bureau Veritas sends a second pulp to AGAT as a check assay as directed by the Company’s geology staff.

The QA/QC procedure for sample shipment, based on the sequential sample number with samples ending with the following values, is as follows:

- 000 Inserted Certified reference material (CRM) CDN-ME-1309
- 002 Lab Check to AGAT of Sample 001 (Pulp)
- 020 CRM CDN-ME-1310
- 025 Field duplicate (other ¼ of the core, field duplicates not sampled in 2017)
- 030 Coarse Blank
- 040 CRM CDN-ME-09
- 050 Pulp Blank
- 060 CRM CDN-ME-09
- 075 Field duplicate (other 1/4 of the core, field duplicates not samples in 2017)

- 080 CRM CDN-ME-1310
- 090 Coarse Blank

The same QA/QC protocols are used when drilling Reverse Circulation (RC). RC samples are collected at the rig with a rotary splitter. Water was added to all RC sampling to facilitate sample collection.

The sample shipments are transferred from the site to the Bureau Veritas preparation facility in Whitehorse by a third-party transport service. The lab confirms the transmittal list from the mine upon arrival in Whitehorse.

In 2022, Nickel Creek sent their samples to ALS Limited (ALS) in Whitehorse, for sample preparation. Samples pulps were sent onward to ALS in Vancouver for sample analysis. ALS is ISO/IEC 17025 and ISO 9001 certified. Samples were analyzed by 4-acid digestion and ICP-AES (ALS method MEICP-61) with platinum, palladium, and gold analysis by fire assay with ICP-AES finish (ALS method PGM-ICP23).

The QA/QC procedure for sample shipment, based on an insertion rate as follows:

- Certified Reference Material (CRM) every 30 samples; alternating between CDN-ME-1309 and CRM CDN-ME-1310
- Field duplicates, nominally every 50 samples (¼ core and ¼ core)
- Coarse Blank (garden marble) every 30 samples

The sample shipments are transferred from the site to the ALS preparation facility in Whitehorse by a third-party transport service. The lab confirms the transmittal list from the mine upon arrival in Whitehorse.

11.2.2 Density Measurement

Both Wellgreen and Nickel Creek completed relative specific gravity measurements with one sample from each core box before sawing the core. Core boxes hold approximately 5 m of core. Samples are solid pieces of core between 10 and 20 cm long.

The sample is weighed directly from the core box for the “in air” weight and suspended in water for the wet weight. Both weights are recorded in the database, and the relative specific gravity is calculated from those values. Samples are air-dried (not oven dried) before testing. There is no provision for sealing the sample in wax or vacuum bags to prevent water from entering the samples.

11.3 Quality Assurance/Quality Control

11.3.1 Statistical Analysis of Certified Reference Material

Company geologists inserted certified reference materials with each laboratory submission of samples. Thirteen CRMs have been or are currently in use to monitor laboratory performance.

Six of these are site-specific CRMs collected from the Project and prepared by CANMET Mining and Mineral Sciences Laboratory in Ottawa as part of the Canadian Certified Reference Material Project (CCRMP). Two of the CRMs were purchased from Ore Research and Exploration Pty. Ltd. (OREAS from Australia), two were purchased from African Mineral Standards (AMIS from South Africa), and three

were purchased from CDN Resource Laboratories Limited (CDN from Canada). The certified values of the CRMs are summarized in Table 11-1.

Table 11-1: Certified Values of Certified Reference Materials used by Wellgreen

CRM Name	Nickel %	Copper %	Cobalt %	Platinum gm/t	Palladium gm/t	Gold gm/t
AMIS 0253	0.035	0.014	0.002	4.030	2.340	0.060
AMIS 0326	0.224	0.142	0.006	1.040	1.250	0.170
CDN-ME-09	0.912	0.654	0.017	0.664	1.286	0.154
CDN-ME-1309	0.194	0.519	0.014	0.707	0.363	0.113
CDN-ME-1310	0.379	0.276	0.019	0.433	0.563	0.063
OREAS 13P	0.226	0.250	0.009	0.047	0.070	0.047
OREAS 14P	2.090	0.997	0.075	0.099	0.150	0.051
WGB-1	0.008	0.011	0.003	0.006	0.014	0.003
WMG-1	0.270	0.590	0.020	0.731	0.382	0.110
WMG-1A	0.248	0.712	0.019	0.899	0.484	0.062
WMS-1A	3.020	1.396	0.145	1.910	1.450	0.300
WPR-1	0.290	0.164	0.018	0.285	0.235	0.042
WPR-1a	0.439	0.021	0.021	0.452	0.614	0.050

Provisional Values not Certified

These CRMs reflect a range of values for the six elements that span the grade ranges at the Project. Where certified values were not present, provisional values were used.

Since the lab does the sample preparation, and the CRMs are pulps, the lab knows which samples are CRMs. However, they do not know which CRM or pulp blank has been inserted in the sample stream.

The CRM results from 2007 through 2016 correspond to the drilling completed by Coronation, Northern Platinum, and Wellgreen. No CRMs were inserted in previous drill programs.

This dataset contained 1,010 CRM (not including blanks). This amounts to roughly one CRM insertion for every 20 assay values during the 2006-to-2016-time frame.

Figure 11-1 and Figure 11-2 are summary plots of the CRM sample values on the X-axis versus the laboratory reported result on the Y-axis. The graph indicates there are numerous sample swaps for all elements being studied. It is likely the wrong CRM was either recorded or inserted in the sample submission.

The CRM WMS-1A shows numerous sample swaps in Ni, Pt, Pd, Au, and Cu, as well as a wide scatter in the high-grade nickel result. The three high values that are shown above the line for the 3.02% Nickel value should have been considered for re-assay.

The OREAS 14P CRM does not have certified values for cobalt, only recommended values which are noticeable in the cobalt graph as a low bias for the sample in the middle of the plot.

The graphs do not indicate any substantial bias in the results for the certified values. Except for the WMS-1A CRMs, the other 12 CRMs perform well in all grade ranges. Gold results indicate some scatter, which prompted the tabulations below.

Table 11-2 summarizes the number of CRMs that are outside of a 10% error band when compared against the CRM value. The detection limit has been added to the 10% error to account for the variation in the very low-grade range.

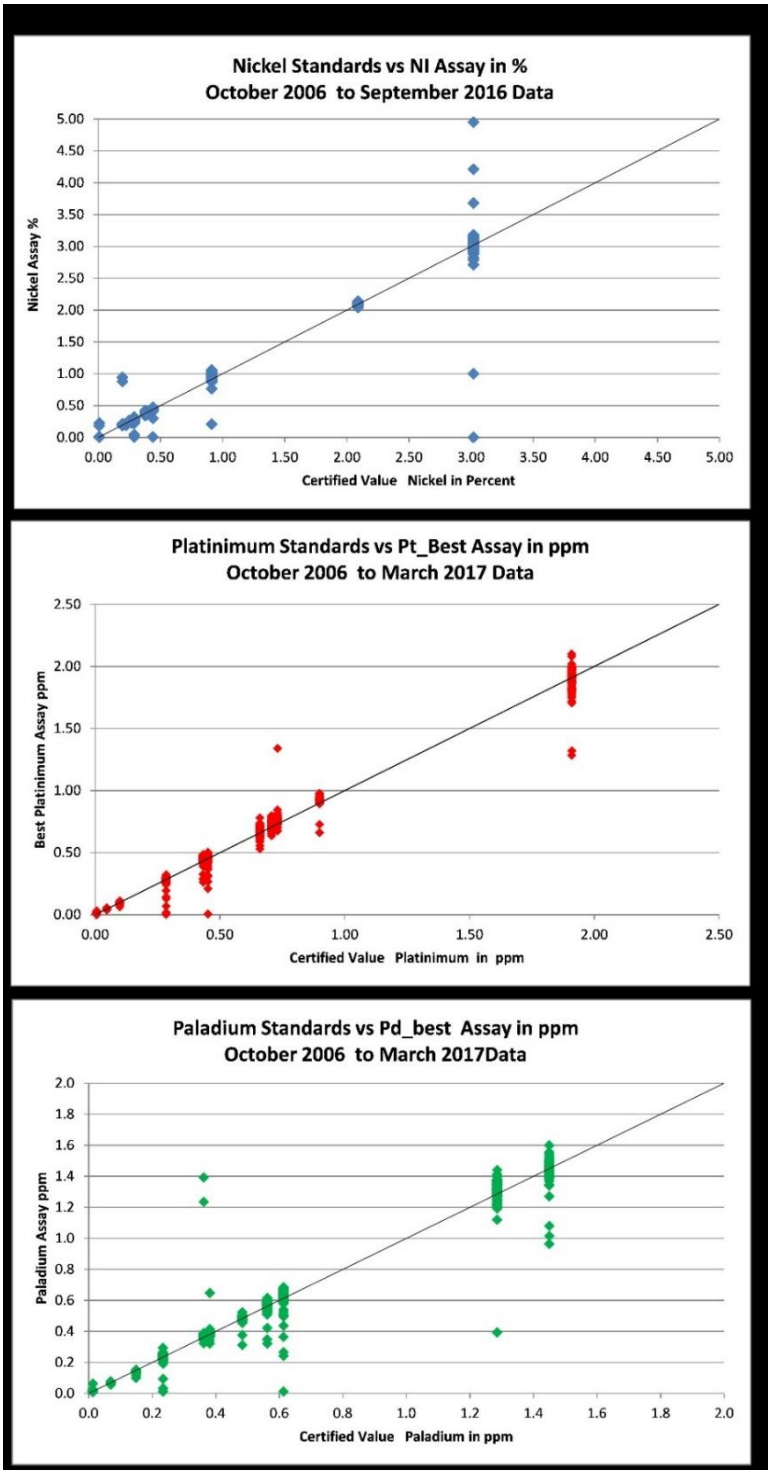
Table 11-2: CRMs out of 10% Tolerance from CRM Value

Wellgreen CRMs Assay Statistics, 2006 - 2016						
	Ni %	Cu %	Co %	Pt ppm	Pd ppm	Au ppm
Number of CRM Assays	1010	1008	1010	1006	1006	1006
Number Greater than 10% Error	36	25	17	45	38	39
Percentage Outside 10%	3.56%	2.48%	1.68%	4.47%	3.78%	3.88%

Source: AGP (2018)

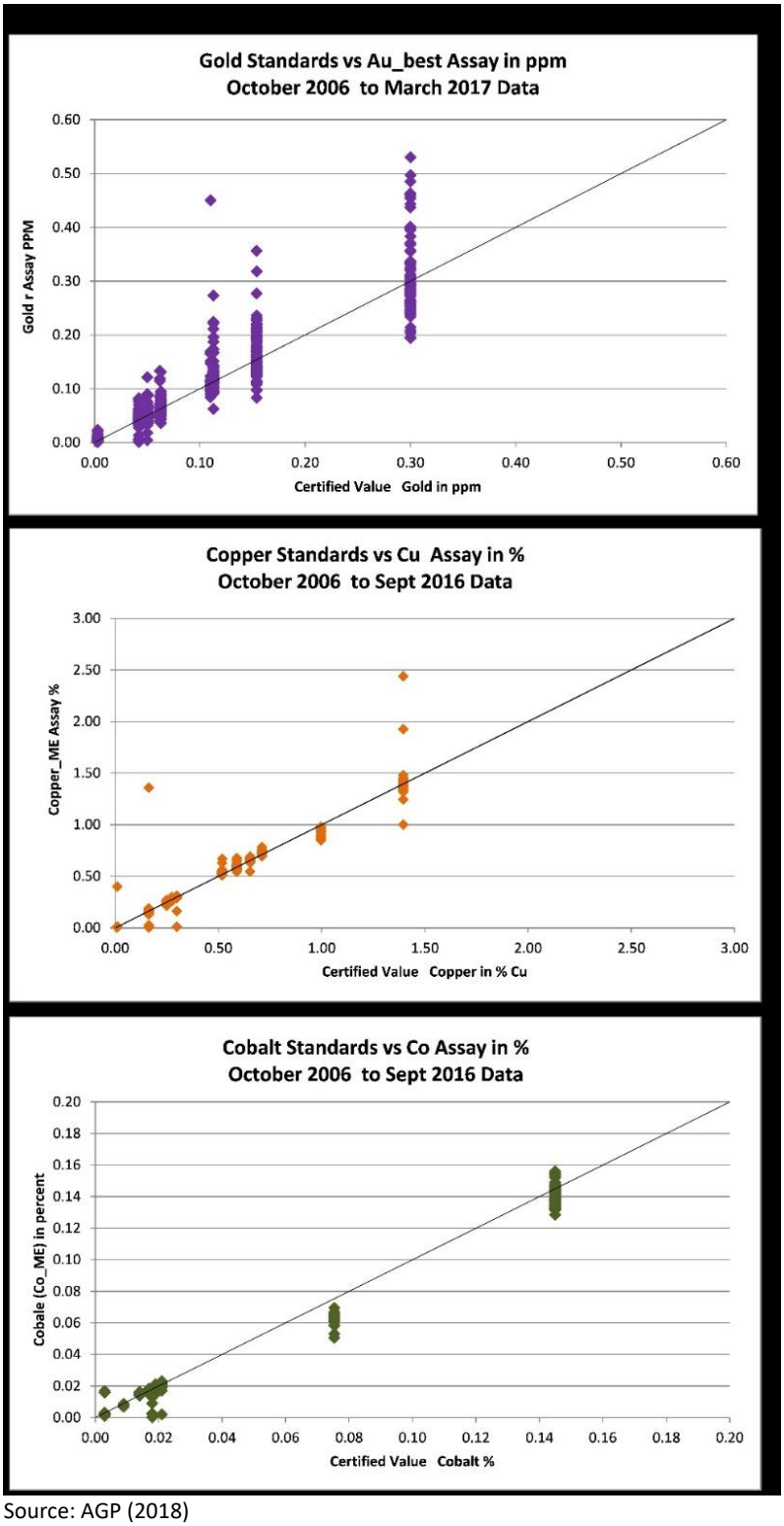
The error rates are similar for all metals which may be more of an indication of sample swapping than assay issues.

Figure 11-1: CRMs Results, Ni, Pt, Pd



Source: AGP (2018)

Figure 11-2: CRMs Results, Au, Cu, Co



Source: AGP (2018)

11.3.2 Statistical Analysis of Blanks

Blank samples were used to check for contamination during sample preparation. The coarse blank material was obtained from two sources: granodiorite from a nearby road quarry, and garden marble from hardware stores in Whitehorse, Yukon. Pulp blanks are sourced from commercial labs.

2015 sample submission protocols state there are two coarse blanks and one pulp blank inserted into every standard submission of samples. The blank data has dates from 2007 through 2016. This period corresponds to the drilling completed by Coronation, Northern Platinum and Wellgreen. No blanks were inserted in previous drill programs.

This dataset contained 909 blanks (not including CRMs). This amounts to roughly one blank insertion for every 20 assay values during 2006 to the 2016-time frame.

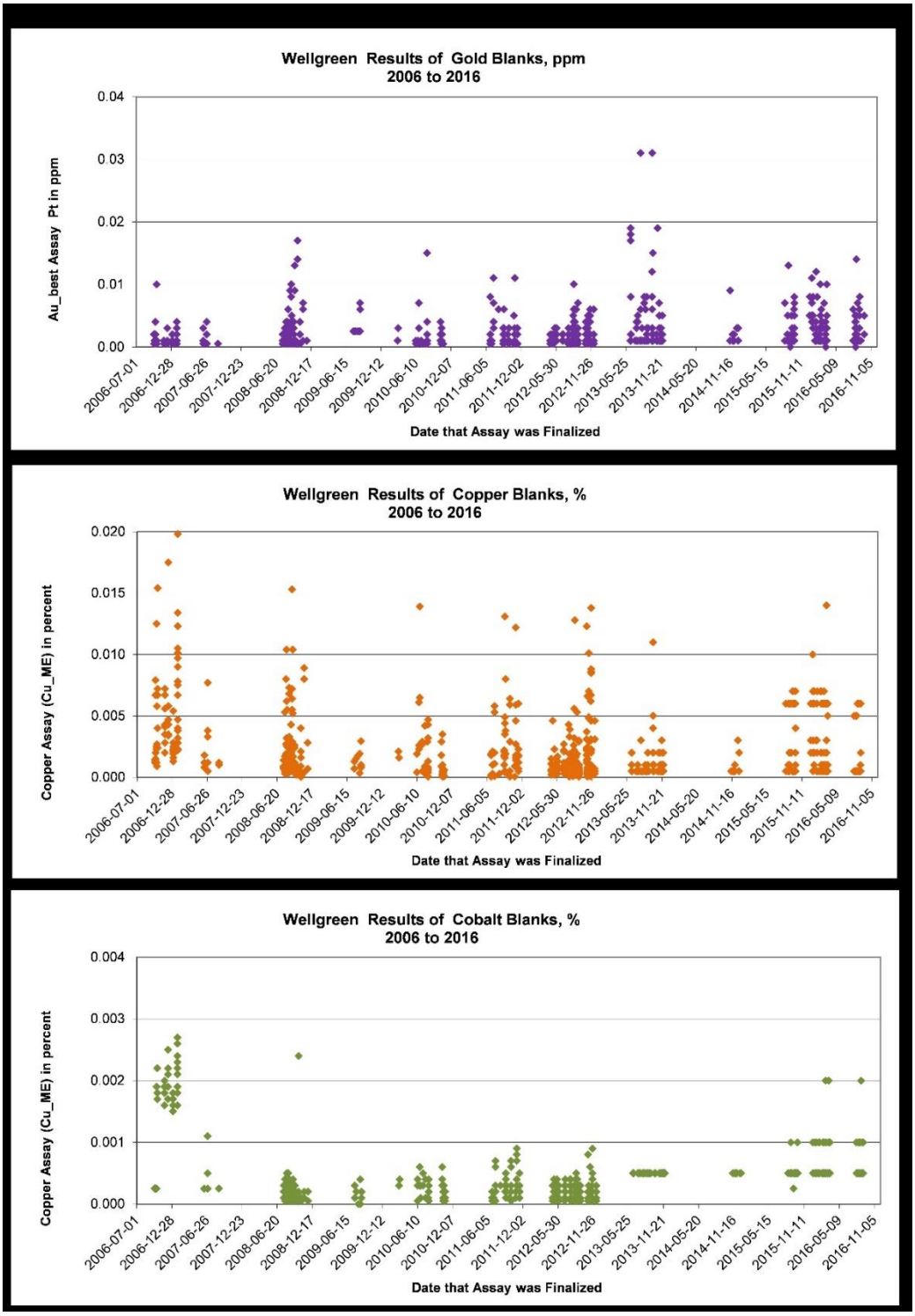
Figure 11-3 and Figure 11-4 show the blanks by date assayed for Ni, Pt, Pd, Au, Cu, and Co. The levels for reporting high valued blanks were based on detection limit, and low practical values for resource modelling. Table 11-3 summarizes the number of blanks that were higher than expected. In summary, the out of tolerance blanks are few in the data set.

Table 11-3: Blanks above Threshold Value

Wellgreen Blanks Assay Statistics, 2006 to 2016						
	Ni %	**Cu %**	**Co %**	**Pt ppm**	**Pd ppm**	**Au ppm**
Number of Blank Assays	907	907	907	909	909	909
Threshold Grade Level for test	0.02 %	0.02 %	0.002 %	0.05 ppm	0.05 ppm	0.05 ppm
Number Above Blanks Grade Level	7	9	21	10	10	7
Percentage Above Threshold	0.77%	0.99%	2.32%	1.10%	1.10%	0.77%

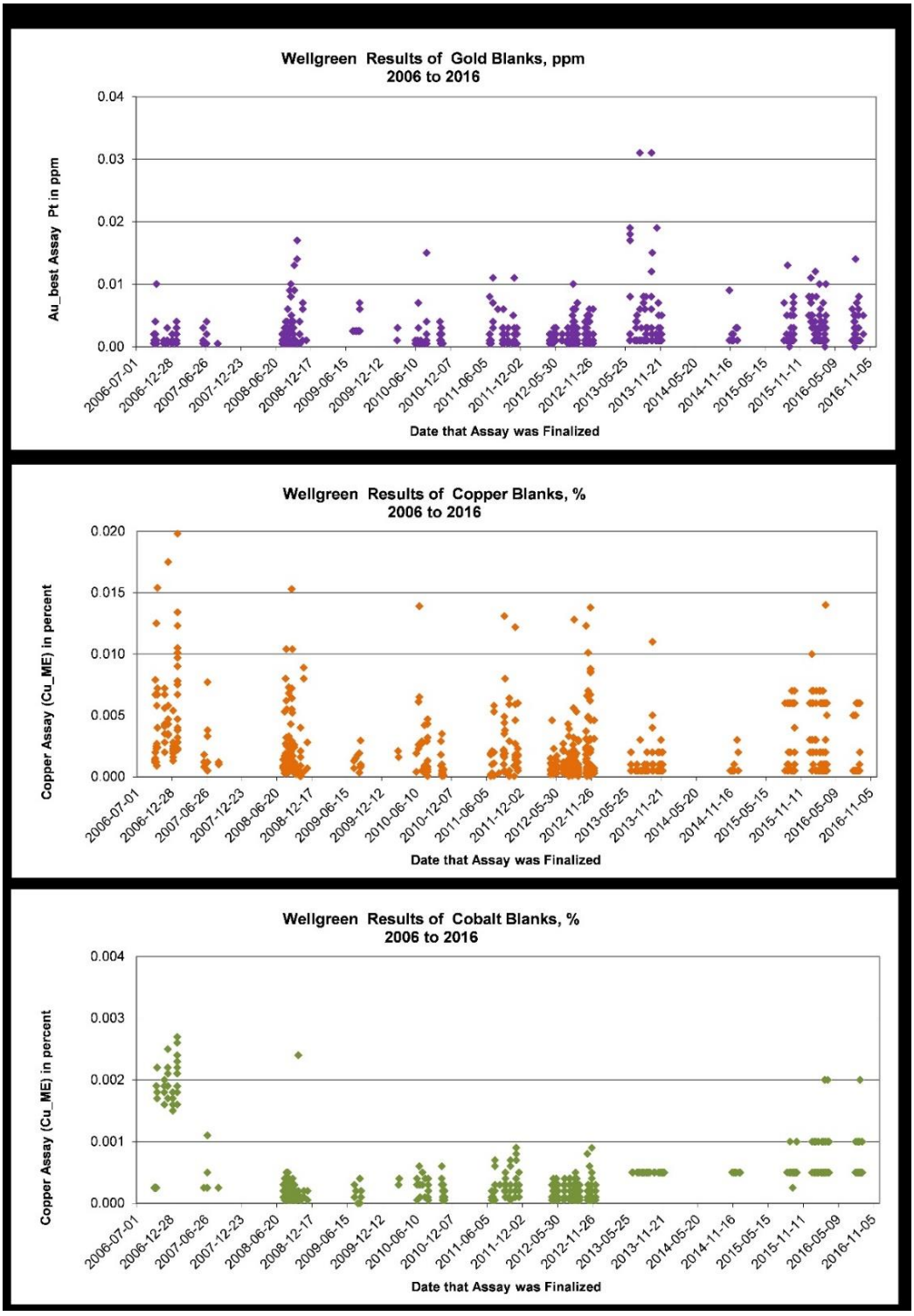
Source: AGP (2018)

Figure 11-3: Blank Results, Au, Cu, Co, 2006 to 2016



Source: AGP (2018)

Figure 11-4: Blank Results, Au, Cu, Co, 2006 to 2016



Source: AGP (2018)

11.3.3 Statistical Analysis of Lab Duplicates

Several types of duplicate samples have been utilized from 2006 through 2016. There is a total of 831 duplicates from 206 drill holes completed during that period.

- 2006 - 2011 ¼ core samples sent as "field duplicates"
- 2012 - 2014 Crusher duplicates from the lab
- 2015 - 2016 Reverse Circulation duplicates on the RC holes
- 2016 - 2016 ¼ core samples sent as "field duplicates"

The duplicates are intended to confirm the repeatability of the sample preparation procedures and assay procedures combined. They are not intended to measure bias of sampling or assay.

Figure 11-5 and Figure 11-6 illustrate all of the duplicate results, showing the grade difference between the original and duplicate versus the original sample value.

A 20% error envelope added to the assay threshold is shown on each graph.

Table 11-4 is a count of the number of duplicates that are outside of the 20% error bounds. The detection limit has been added to the 20% error bound to provide more realistic results at grades near detection.

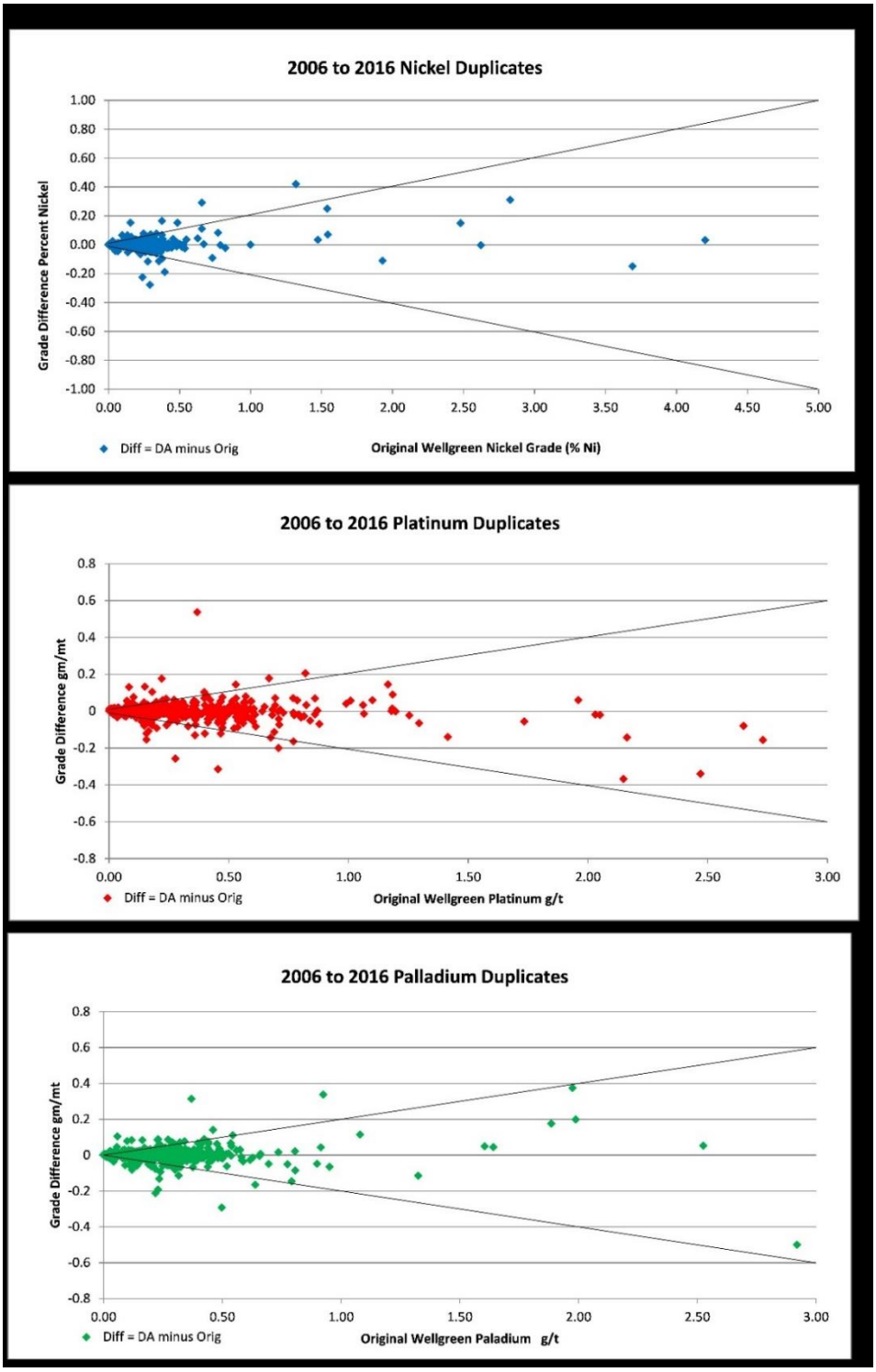
Table 11-4: Duplicate Count Outside of 10% Error

Wellgreen Duplicate Assay Statistics, 2006 to 2016 (All Duplicate Types)						
	Ni%	Cu%	Co%	Pt ppm	Pd ppm	Au ppm
Number of Duplicate Assays	829	832	829	831	830	832
Number More than 20% Different	46	76	13	67	55	94
Percentage, more than 20% Different	5.55%	9.13%	1.57%	8.06%	6.63%	11.30%
Mean of First Assay	0.240	0.171	0.014	0.252	0.225	0.052
Mean of Second Assay	0.240	0.173	0.014	0.253	0.225	0.054

Source: AGP (2018)

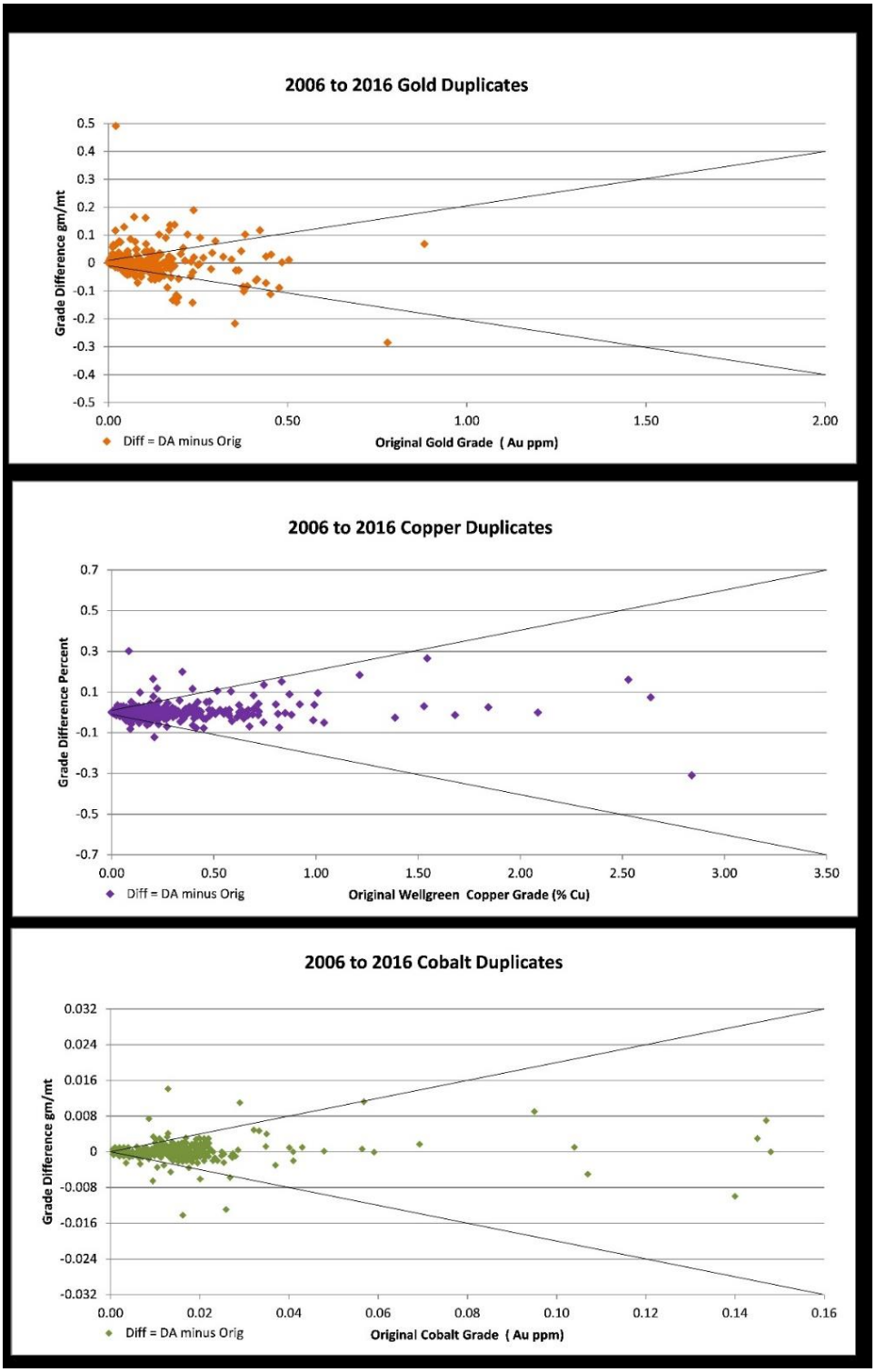
All of the results are typical for ¼ core and RC samples. The results indicate the level of uncertainty with the ¼ samples. For example, for copper, the results are not repeatable within 20% about 9% of the time.

Figure 11-5: Duplicate Results for Ni, Pt, Pd, All Duplicate Types



Source: AGP (2018)

Figure 11-6: Duplicate Results for Au, Cu, Co, all duplicate types



Source: AGP (2018)

11.3.4 Check Assays

In 2014, Wellgreen personnel began requesting the ACME lab send a split of selected assay pulps to the AGAT Laboratory in Whitehorse. This is reportedly every 22nd sample.

These check assays are intended to be a measure on the precision of the ACME pulverizing, pulp splitting, and assay procedure in combination.

Figure 11-7 and Figure 11-8 illustrate XY plots of the lab checks. A scan of the graphs indicates AGAT is reporting low relative to ACME on the same pulps, particularly for the ICP analysis of Ni, Co, and to a lesser degree, Cu. The standards result discussed earlier did not indicate a bias for these metals. The assay of the standards did have substantial scatter due to sample swaps in the data set.

Both AGATS and ACME procedures are four acid digestion with ICP-OES finish for base metals. A review of the standards sent to the AGAT lab should be implemented to confirm there are no issues with the check assay lab.

Table 11-5 is a comparison of the reported means of the original ACME check assays and the AGAT check assays. The table also provides the results of a "students-t" hypothesis test to give an indication of the impact of the bias.

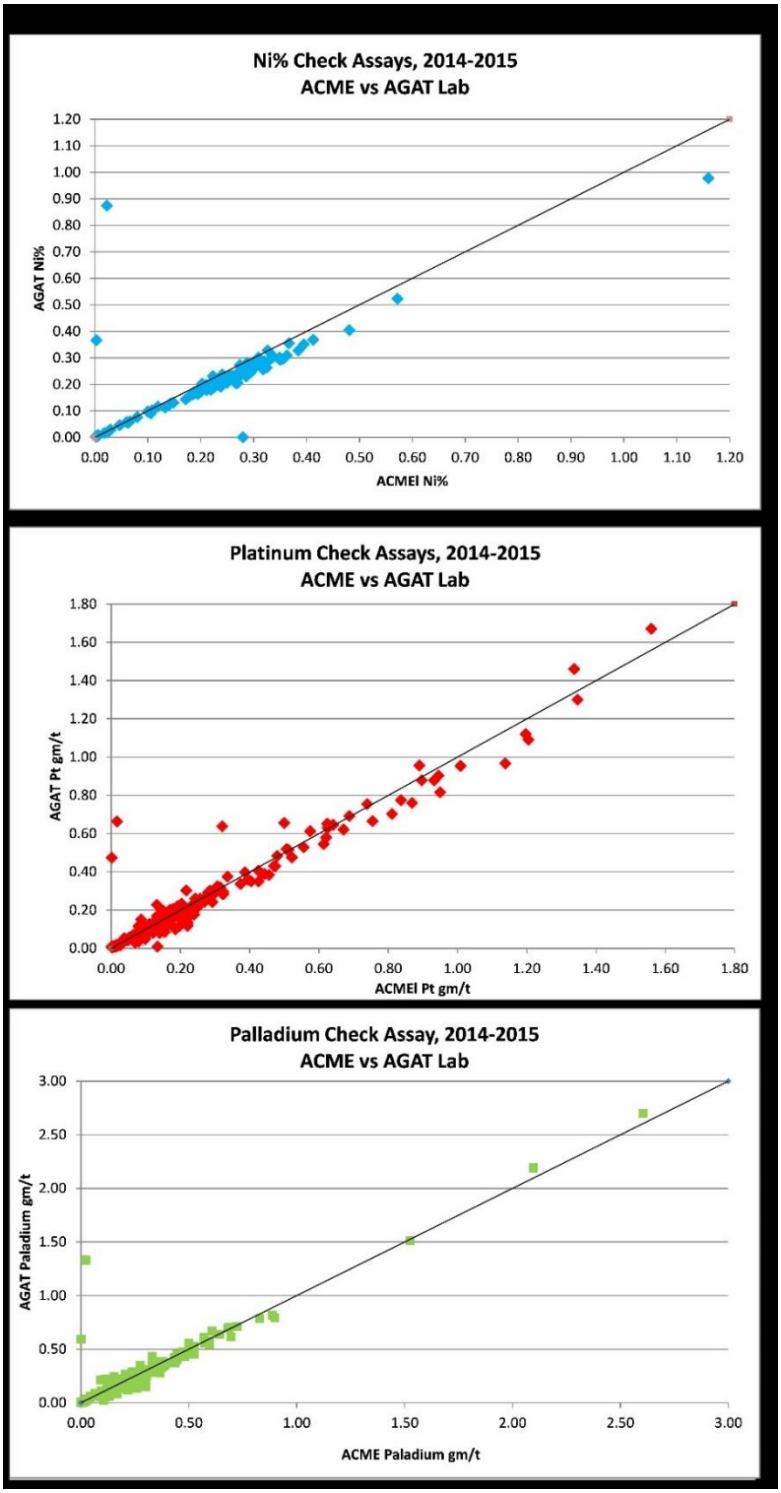
Table 11-5: Check Assay Summary, 2014-2015

Metal	# of Check	ACME Mean	AGAT Mean	Hypothesis Test	
				Students-T	Paired-T
Ni%	119	0.233	0.214	Pass	Fail
Pt gm/t	237	0.260	0.254	Pass	Pass
Pd gm/t	237	0.238	0.234	Pass	Pass
Au gm/t	237	0.050	0.052	Pass	Pass
Cu%	119	0.131	0.135	Pass	Pass
Co%	119	0.014	0.012	Pass	Fail

Source: AGP (2018)

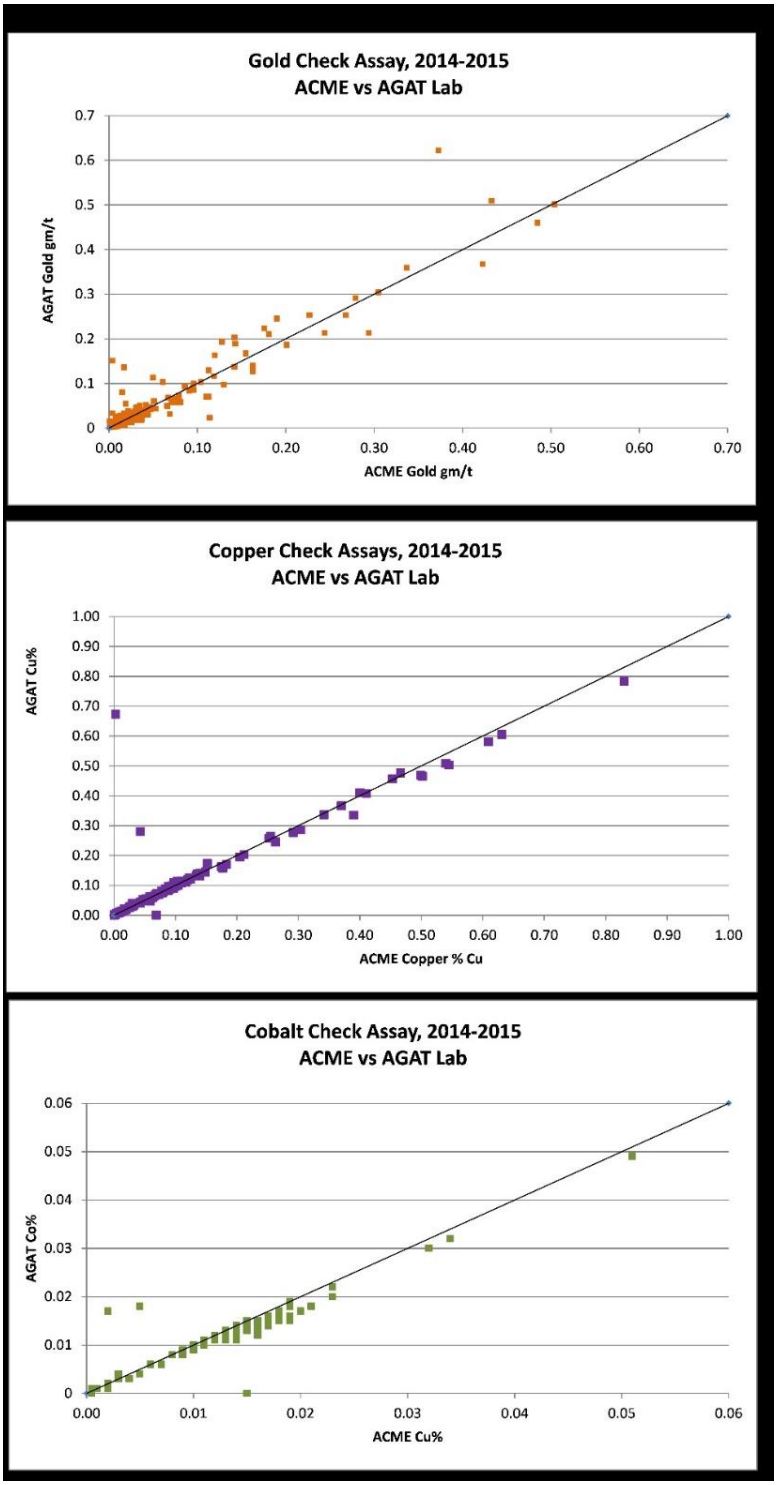
The Student's-T statistic indicate all the observed bias is sufficiently small and there is a 95% chance the two data sets could have come from the same population. The reason for the bias in nickel should be further investigated, but there is not sufficient evidence to reject one data set or the other.

Figure 11-7: Check Assays, 2014-2015



Source: AGP (2018)

Figure 11-8: Check Assays, 2014-2015



Source: AGP (2018)

11.4 QP Opinion

AGP reviewed the QA/QC program and is of the opinion it is in accordance with standard industry practice and CIM Exploration Best Practice Guidelines. Nickel Creek personnel have taken all reasonable measures to ensure the sample analysis completed is accurate and precise. AGP considers the assay results and database acceptable for use in the estimation of mineral resources. It is the opinion of the QP that the preparation and analyses are satisfactory for this type of the deposit and that the sample handling and chain of custody meet or exceed industry standards.

12 DATA VERIFICATION

12.1 Data Verification

AGP received the database containing all drill holes for the Wellgreen deposit in CSV format that included collar, survey, assay, and lithology files. An export of the Geologic database was received for data validation.

AGP reviewed the data prior to the 2022 drill program, and all eight drill holes for the 2022 drill program. Nickel and copper values were compared to the laboratory certificates provided to Nickel Creek by ALS. No errors were found.

The drill holes were also checked visually for any misplaced drill hole collars, deviations in the down hole surveys and for any missing or overlapping intervals. No errors were found.

12.2 AGP Site Visit

The most recent site inspection was conducted by the QP from 11 October to 14 October 2022 for two days. The QP was accompanied on the site visit by:

- Cam Bell, P.Geo. Consulting Chief Geologist, Nickel Creek
- Linda Lewis, Senior Geologist, Nickel Creek

The site visit included an inspection of core logging and sampling facilities, core storage facilities, verifying drill hole collar coordinates, and reviewing drill core logs against selected drill core. The 2022 drill program was in progress on the Arch deposit on drill hole ASD22-019 at the time of the site visit.

Due to hazardous conditions on the access roads to the drill pads, only two drill holes were located, and coordinates measured.

12.2.1 Logging and Sampling and Storage Facilities

Core logging and sampling facilities are based in the exploration camp situated just off Alaska Highway (Highway 1). The exploration camp is a semi-permanent set of trailers, for offices, lodging and kitchen; Weatherhaven tent for drill core logging; and a permanent building for equipment and temporary core storage.

Figure 12-1 shows the warehouse used for core logging and sampling. Figure 12-2 shows the interior of the core logging facility. Figure 12-3 shows the drill core lay down area and pulp and reject storage sea containers.

Figure 12-1: Exploration Camp; Offices (right) and Core Sampling (centre) and Logging (tent, right)

Source: AGP (2023)

Figure 12-2: Exploration Camp; Lodging and Kitchen

Source: AGP (2023)

Figure 12-3: Drill Core Lay Down Area and Pulp and Reject Storage Sea Containers

Source: AGP (2023)

12.2.2 Drill Hole Collar Locations

Two drill hole collar coordinates were located and verified on the Wellgreen deposit area. The locations of the drill hole collars were measured in the field using a hand-held Global Positioning System (GPS) device (Garmin GPS map 62s) using NAD 83 datum, the same datum used by Nickel Creek. One drill hole was covered by snow, the second, from the 2022 drill program, was evidenced by a PVC collar with a temporary plastic cap. Further collars could not be located due to hazardous snow conditions on the steep access roads.

The collar coordinates measured by AGP fell within a 4m tolerance of those reported by Nickel Creek. It is the QP's opinion the coordinates are acceptable given the accuracy of the handheld GPS used to review the drill hole collar locations.

Figure 12-4 shows the drill hole collar for WS22-309. Table 12.1 shows the drill hole coordinates for the two drill holes.

Figure 12-4: Drill Hole Collar for WS22-309

Source: AGP (2023)

Table 12-1: Comparison of Drill Hole Collar Coordinates – Bayan Khundii

Drill Holes	Nickel Crk Easting (m UTM)	Nickel Crk Northing (m UTM)	AGP Easting (m UTM)	AGP Northing (m UTM)	Δ Easting (m)	Δ Northing (m)
WS15-261	578035.6	6815525.8	578032.0	6815524.1	3.5	1.7
WS22-309	578011.5	6815511.3	578007.9	6815508.7	3.6	2.6

12.2.3 Drill Core Review

A review of the drill core and drill core logs was made on selected drill core intervals in the Wellgreen Deposit. The lithology descriptions and sample intervals in the drill logs were reviewed and compared to the database and were found to be consistent. All sample tag numbers in the core boxes match with the intervals in the database.

Table 12-2 lists the selected drill core intervals examined during the site visit.

12.2.4 Independent Samples

The collection of independent samples is meant to demonstrate the presence of mineralization on the property in similar ranges as reported by the issuer. These samples are not intended to act as duplicate samples. AGP collected four samples selected from the available drill core during the site visit. The sample intervals were selected from four different areas within the Wellgreen deposit. The samples were collected from the same sample intervals as those of Nickel Creek for a more direct comparison.

AGP supervised the quartering of the selected samples by rock saw and each sample was placed in a marked sample bag, sealed with a zip tie. AGP placed a sample tag in the core box at the location of the Nickel Creek sample. Collected samples were transported by the QP and couriered directly to Actlabs in Ancaster, Ontario assay analysis.

Once received at Actlabs, samples were prepared by crushing the sample to 80% passing 10 mesh and then a split of 250 g was pulverized to 85% passing 200 mesh (Actlabs code: RX1). Samples were analyzed for PGMs, included with 41 elements by four acid digestion and ICPOES/ICPMS method (Actlabs code UT-MS; 8-4ACID-ICP for Ni, Cu and Ag). was analyzed separately by fire assay and ICPMS (Actlabs code 1C-Exp). The list of independent samples is shown in Table 12-2 and the comparison of results are presented in Table 12-3.

Table 12-2: Summary of Independent Samples

AGP Sample No.	Nickel Creek Sample No.	Drill Hole	From (m)	To (m)	Sample Interval (m)
A0265758	N834319	WS12-209	48.0	49.5	1.5
A0265757	2034384	WS88-139	357.4	358.7	1.3
A0265756	B701897	ASD21-008	71.5	73.0	1.5
A0265755	B701730	ASD21-004	27.5	29.0	1.5

Table 12-3: Independent Sample Results

Sample No.	Drillhole	Ni%	Cu%	Co%	Au (ppm)	Pt (ppm)	Pd (ppm)
AGP							
A0265758	WS12-209	0.29	0.54	0.0229	0.30	0.37	0.71
A0265757	WS88-139	0.31	0.70	0.0212	0.08	0.40	0.71
A0265756	ASD21-008	0.36	0.12	0.0142	0.02	0.47	0.30
A0265755	ASD21-004	0.48	0.06	0.0164	0.07	0.47	0.31
Nickel Creek							
N834319	WS12-209	0.29	0.57	0.024	0.34	0.71	0.36
2034384	WS88-139	0.73	0.90	0.042	0.22	2.61	1.25
B701897	ASD21-008	0.34	0.10	0.014	0.03	0.27	0.41
B701730	ASD21-004	0.50	0.05	0.018	0.07	0.67	1.04
Difference							
		0.00	-0.03	-0.001	-0.04	-0.34	0.36
		-0.42	-0.20	-0.021	-0.15	-2.21	-0.54
		0.02	0.03	0.000	-0.01	0.21	-0.11
		-0.02	0.00	-0.002	0.00	-0.20	-0.73

AGP interprets the differences of nickel and copper grades from WS88- due to the degree of variability of the mineralization within the drill core. AGP considers the grade ranges of the samples to be acceptable and demonstrates the presence of mineralization on the Property.

12.3 QP Opinion

The QP is of the opinion the database is representative and adequate to support the resource estimates for the Wellgreen Deposit and the Arch Deposit. The QP is also of the opinion the core descriptions, sampling procedures, and data entries were conducted in accordance with industry standards.

13 MINERAL PROCESSING AND METALLURGICAL TESTING

Metallurgical test work has been carried out on samples from the Nickel Creek Deposit (previously Wellgreen) since 1987.

13.1 Historical Metallurgical Test Work

13.1.1 Lakefield Research 1988

Two test programs were conducted at Lakefield Research (now SGS) in 1988. The first test program evaluated two composites (Comp 1 and Comp 2) containing high sulphide content. Flowsheet development was conducted and Locked Cycle Tests (LCT) were completed for each. The second program evaluated Composite A, produced from samples from the first program, as well as an additional sample called Composite B, identified as a low-grade composite. A Bond ball work hardness was performed on Composite A and was determined to be Wi=17.8 kWhr/t, which is considered moderately hard. The process identified in the final report was a primary grind of 96% minus 200 mesh (d80 ~45 µm), soda ash/sodium silicate for gangue control, xanthate sulphide collector and pine oil frother. After open circuit roughing, the bulk Cu-Ni concentrate was conditioned at high speed before a stage of open circuit cleaning. The Cleaner 1 concentrate was reground to d80 of 25 µm before final upgrading in additional two stages of counter current cleaners. An LCT was completed on Composite A. In the absence of LCT results for Composite B, the low-grade composite recovery at Cleaner 1 is reported as an estimate of composite entitlement. Table 13-1 summarizes the results achieved.

Table 13-1: Lakefield Test Program Results 1988

Laboratory	Year	Composite Sample	Heads Assay			Test Recovery (%)	
			Ni (%)	Cu (%)	S (%)	Ni	Cu
Lakefield	1988	Feb-88 Comp 1	0.65	0.87	6.59	85.30	94.90
Lakefield	1988	Feb-88 Comp 2	0.61	0.90	6.85	76.80	94.10
Lakefield	1988	Nov-88 Comp A	0.57	0.94	5.51	82.10	95.50
Lakefield	1988	Nov-88 Comp A	0.58	0.96	5.46	81.10	96.10
Lakefield	1988	Nov-88 Comp B	0.41	0.57	3.88	79.30	95.40
Lakefield	1988	Low-grade Comp	0.23	0.08	0.25	20.00	33.80

13.1.2 G&T Metallurgical Services 2011

A limited ore characterization and metallurgical program was carried out by G&T in 2011 on a composite sample identified as peridotite Composite 1. The ore characterizations identified the mineralization of half the sample as serpentine followed by amphibole, chlorite, goethite, and sulphides. Although Ni and Cu assays are more in line with resource estimates, the S grade of 1.8% was still elevated in comparison to the resource grade of less than 1% S. At a primary grind d80 of 93 µm the liberation of chalcopyrite and pentlandite was low at 35%. The program concluded a grind between d80 of 65 and 93 µm was required for optimum rougher recovery. Xanthate (PAX) and MIBC were used as collector and frother. The addition of hexametaphosphate to the cleaners was found to be the most significant for gangue control, however MgO at 11% in concentrate was identified as a

potential risk for smelter penalties. No LCT's were performed on this composite but a number of cleaner tests were performed on the optimized rougher conditions. To indicate the entitlement of this composite, the recovery to Cleaner 1 was averaged from the three open circuit tests. The results are presented in Table 13-2.

Table 13-2: G&T Test Program Results 2011

Laboratory	Year	Composite Sample	Heads Assay			Test Recovery (%)	
			Ni (%)	Cu (%)	S (%)	Ni	Cu
G&T	2011	2012 P. Composite 1	0.26	0.29	1.80	65.73	65.10

13.1.3 SGS Vancouver 2012

A more extensive metallurgical testing program was conducted at SGS Vancouver in 2012. Several ore type samples were provided and SGS Vancouver produced a master composite for flowsheet development and a high Ni composite for additional testing. In this composite the Ni, Cu, and S assays were above the resource grades. The master composite was characterized for both mineralogy and grindability. QEMSCAN analysis of the MC composite indicated model mineralogy of 46% serpentine/chlorite, 13% clinopyroxenite, 13% amphibole, 8% orthopyroxenite, and 8% sulphides. At a primary grind of d80 of 80 µm, high liberation (pure, free, or liberated) values of 72% for chalcopyrite and 84% for pentlandite were measured. Bond ball grinding tests were completed indicating that the ore as very hard with a Bond Wi at 19.7 kWhr/t to a closing size of 100 µm. An abrasion index (Ai) of 0.088 was measured for the composite, which is low. Two flowsheet configurations were tested: a split float producing a Cu and Ni concentrate, and a bulk float. In both flowsheets the primary grind was at a d80 of 90 µm and xanthate (SIPX) and MIBC were used as collector and frother in the roughers. In the cleaners a 50:50 mixture of CMC and guar gum were used to control MgO recovery and in the split concentrate copper sulphate addition was required for the Ni cleaners. QEMSCAN analysis performed on the LCT flotation products indicated higher Ni recovery would require higher pyrrhotite recovery and that would reduce the grade of concentrate. All the composites were tested to the LCT results, although some were evaluated for the sequential production of Cu and Ni concentrates. For tests where separate Cu and Ni concentrates were produced, the combined recovery to bulk concentrate was calculated. The recovery of all the LCT's is presented in Table 13-3.

Table 13-3: SGS Vancouver Program Results 2012

Laboratory	Year	Composite Sample	Heads Assay			Test Recovery (%)	
			Ni (%)	Cu (%)	S (%)	Ni	Cu
SGS Vancouver	2012	Master Comp 2012	0.48	0.34	2.95	62.80	86.20
SGS Vancouver	2012	Master Comp 2012	0.42	0.33	2.53	63.40	84.90
SGS Vancouver	2012	Master Comp 2012	0.45	0.37	2.92	67.60	87.80
SGS Vancouver	2012	Master Comp 2012	0.44	0.35	2.85	65.70	85.90
SGS Vancouver	2012	High Ni Comp 2012	0.83	0.55	6.73	72.90	88.00

13.1.4 SGS Lakefield 2014

A test program was conducted by SGS Lakefield, which issued a report in January 2015. This program was a more extensive program where ten individual variability samples were individually characterized for mineralogy and hardness. The samples were ground to a primary grind at a d80 = 100 µm and sized

for QEMSCAN mineralogy analysis. The samples highlighted the variations in serpentine content (80% to 5%) and were classified as six high serpentine samples (peridotite) and four low serpentine samples (gabbro). The high serpentine peridotite samples tended to have lower Ni grade, with a greater proportion of the Ni in non-sulphide minerals, and lower pentlandite liberation. The liberation for pentlandite was between 9% and 50% for the peridotite samples and averaged 70% for the gabbro samples. The hardness of each sample was also measured and ranged from 14.4 kWh/t to 21.3 kWh/t, which is moderate to very hard.

A composite sample identified as LUC was produced from the variability samples for metallurgical testing. A series of open circuit tests identified a sequential flotation of Cu and Ni concentrates of a primary grind d80 of 90 µm was required to produce the best metallurgy. QEMSCAN analysis was performed on the flotation products identifying most of the Cu losses as being attributed to locking, as were the Ni losses to the Mag circuit rougher tails. An LCT was performed using the final conditions and produced separate Cu and Ni concentrates. The combined recovery to the two concentrates was calculated and presented in Table 13-4.

Table 13-4: SGS Lakefield Program Results 2013

Laboratory	Year	Composite Sample	Heads Assay			Test Recovery (%)	
			Ni (%)	Cu (%)	S (%)	Ni	Cu
SGS Lakefield	2013	LUC 2013	0.39	0.41	2.34	68.00	88.50

13.1.5 XPS 2014

A test program was conducted by XPS in 2014. The test program included QEMSCAN mineralogy on a composite of peridotite from the previous SGS program labelled 203 Lower. The mineralogy identified 15% of the Ni occurs in silicates and another 15% occurs as ultrafine pentlandite locked in gangue. The flotation Ni recovery entitlement of the sample, based on mineralogy, was determined to be 69%. A test program determined that rougher circuit with a primary grind of d80 = 50 µm, CMC circuit, produced a suitable rougher concentrate that when reground to a d80 of 25 µm and activated with copper sulphate, produced good cleaning results. The test program did not include an LCT. Open circuit testing produced a final concentrate of Cu+Ni of 14.2% and a recovery of 58.2% Ni and 62.7% Cu. The results are presented in Table 13-5.

Table 13-5: XPS Program Results 2014

Laboratory	Year	Composite Sample	Heads Assay			Test Recovery (%)	
			Ni (%)	Cu (%)	S (%)	Ni	Cu
XPS 2014	2014	203 Lower Variability	0.33	0.18	1.24	58.20	62.70

13.1.6 XPS 2017 – Phase 1

A comprehensive program was completed in 2017 and early 2018 by XPS. The objective of this work was to maximize Ni recovery to a bulk concentrate and evaluate variability across the resource. Composites were produced from the drill core covering proposed mining years 1-16 (Yr. 1-16), years 1-5 (Yr. 1-5), year 2 (Yr. 2) and years 6-10 (Yr. 6-10) from both peridotite and clinopyroxenite domains. Also, from drill core, 26 variability samples spanning the range of Ni heads, along geologically recognizable domains of peridotite and clinopyroxenite, were identified. A precious metal deportment

study identified that up to 1/3rd of the Pt and Pd was locked with magnetite confirming the requirement for magnetic separation circuit.

Hardness testing of the samples was more comprehensive than previous studies. Samples representing rock types of gabbro and blend, along with composites representing years 1-16 for both clinopyroxene and peridotite were subject to various hardness tests. The Bond ball work hardness was confirmed to be very high with all composite samples having a Wi measuring between 19.0 and 21.5 kWhr/t which is very high and consistent with previous studies. JK drop weight tests, used to determine semi autogenous mill sizing, and HPi, used to determined high pressure grinding rolls (HPGR) sizing were also completed. The JK dimensionless parameter Axb was found to be 33.9 to 36.8 which is moderately hard. The HPi was found to be a low of 15.0 kWh/t for peridotite and increasing in hardness through gabbro, blend and clinopyroxene to 21.3 kWh/t.

A flowsheet was developed which includes a magnetic circuit after roughing to enhance PGM recovery. MgO flotation was identified as a challenge to concentrate grade with the peridotite composite. To control MgO, in order to obtain concentrate grade, the flotation process required lower feed density and froth depressants. LCT's of the optimized process were performed on the two prevalent geometallurgical composites and the results are summarized in Table 13-6 below.

Table 13-6: XPS Program Results 2017

Laboratory	Year	Composite Sample	Heads Assay			Test Recovery (%)	
			Ni (%)	Cu (%)	S (%)	Ni	Cu
XPS 2017	2017	PERD Comp Yr. 1-16	0.29	0.15	0.81	58.80	73.40
XPS 2017	2017	CLPX Comp Yr. 1-16	0.25	0.37	1.46	70.50	93.20
XPS 2017	2017	Peridotite Comp - Ph 2a	0.30	0.17	0.87	50.40	60.90

Variability testing on the 26 samples identified a relationship between Ni recovery and the S/Mg ratio of the feed. For resource estimation, a projected recovery versus head grade was identified for each of the peridotite and clinopyroxenite. The variability relationship was further refined in subsequent phases.

13.2 XPS 2019 – Phase 2

Based on the XPS Phase 1 program recommendations, additional metallurgical samples were obtained by drilling to provide material for a Phase 2 Study. The samples focused on peridotite which represented the majority of the resource and divided into two composites representing years 1-5 and years 6-10. The Phase 2 Study was designed to reconfirm the hardness, optimize the bulk flotation process, to evaluate Cu-Ni separation, and to characterize tailings using products obtained from a Mini Pilot Plant (MPP) campaign. As the drill core sample for piloting was not available at the beginning of the Phase 2 program, process optimization was performed on a blend of composites remaining from the previous XPS program.

In the flotation phase of the program, control of recovery of MgO to concentrate had been identified as a challenge for this resource. The process optimization phase, which is discussed later, found a low pH acid circuit provided more effective depression of the MgO than did the CMC circuit. The lower pH also resulted in an increase in total S recovery to final concentrate. Grinding size, magnetic separation, and cleaning were also optimized in Phase 2 testing.

With this fundamental change in process, it was considered necessary to repeat the variability testing of peridotite samples from the previous XPS 2017 test work. During this test program, the inherent variability of the resource, based primarily on S levels, became increasingly significant and the Ni and Cu recovery relationships were refined from previous studies.

13.3 Process Optimization

13.3.1 Sample for Process Optimization

A test program to optimize the process based on recommendations of XPS Phase 1 test work was conducted. The optimization was completed prior to the completion of the drilling for a new metallurgical sample so a sample was created for optimization testing from the inventory of composites available from the previous stage. The remaining PERD Comp Yr. 1-16 augmented with composites to match as close as possible to the LOM grades (Table 13-7). To rule out sample aging, flotation tests were completed on the PERD Yr. 1-16 to show no detrimental impact of storage on the sample.

Table 13-7: Phase 2a Blend Recipe

		Blend Ratio %	Cu	Ni	Fe	MgO	S	Au	Pd	Pt
Composite 001	PERD Yr1-16	28.0	0.15	0.30	10.13	32.70	0.87	0.04	0.25	0.23
Composite 002	PERD Yr1-5	10.0	0.02	0.30	10.50	29.90	1.05	0.08	0.29	0.32
Composite 003	PERD Yr6-10	42.0	0.11	0.29	9.48	33.20	0.61	0.05	0.24	0.17
Composite 004	PERD Yr2	10.0	0.35	0.30	11.63	28.10	1.80	0.08	0.35	0.43
Composite 009	PERD Yr1-5 Spatial	10.0	0.21	0.31	10.13	32.10	0.86	0.06	0.31	0.32
Calculated Phase 2 A Blend		100.0	0.17	0.30	10.05	32.12	0.87	0.06	0.26	0.24
Actual Phase 2 A Blend			**0.17**	**0.29**	**10.15**	**31.09**	**0.89**	**0.05**	**0.26**	**0.25**

QEMSCAN quantitative mineralogy was determined on the new composite and compared to the PERD Yr. 1-16 to confirm the sample was consistent with the previous phase.

13.3.2 MgO Control

Control of the MgO flotation in both the rougher and cleaner circuits had been identified in previous studies as being critical to the production of saleable concentrates. The previous phase of testing had identified soda ash, CMC, and low-density solids were required for the control of MgO recovery to rougher concentrate. In this phase, it was necessary to scale up from 1.2 kg per test to 2 kg and then to 5 kg to facilitate production of sufficient bulk concentrate for Cu-Ni separation. The increasing density associated with the scale-up resulted in an increase in the amount of CMC required to control MgO flotation. The amounts of CMC required became uneconomic and alternate MgO control strategies were evaluated.

Acid (H_2SO_4) was added to lower the pH to 5 to reduce the MgO entering the froth. The high acid dosage was successful at depressing MgO flotation in the initial stages of flotation. With added flotation time, similar grades and recoveries were achieved but with lower MgO recovery.

Alternatives to the acid (H_2SO_4) addition were also evaluated in the optimization program however, in conclusion, the high acid H_2SO_4 circuit was included in the final process. With the low pH acid circuit, the MgO control was possible with lower residence times and at higher densities. Rougher retention time was reduced to 25 minutes and the rougher flotation pulp density of 22%, was raised to 35% to be more in line with standard rougher operations. These conditions established were shown to be scalable to larger feed masses.

13.3.3 Rougher Collector Addition

Another factor to be optimized was collector dosage, which in excessive amounts, not only adds to operating costs but also negatively impacts downstream Cu/Ni separation. Collector dosage was reduced to a total of 70g/t at a ratio of 3:1 3477: PIBX (from 120g/t total at a ratio of 1:1 3477: PIBX).

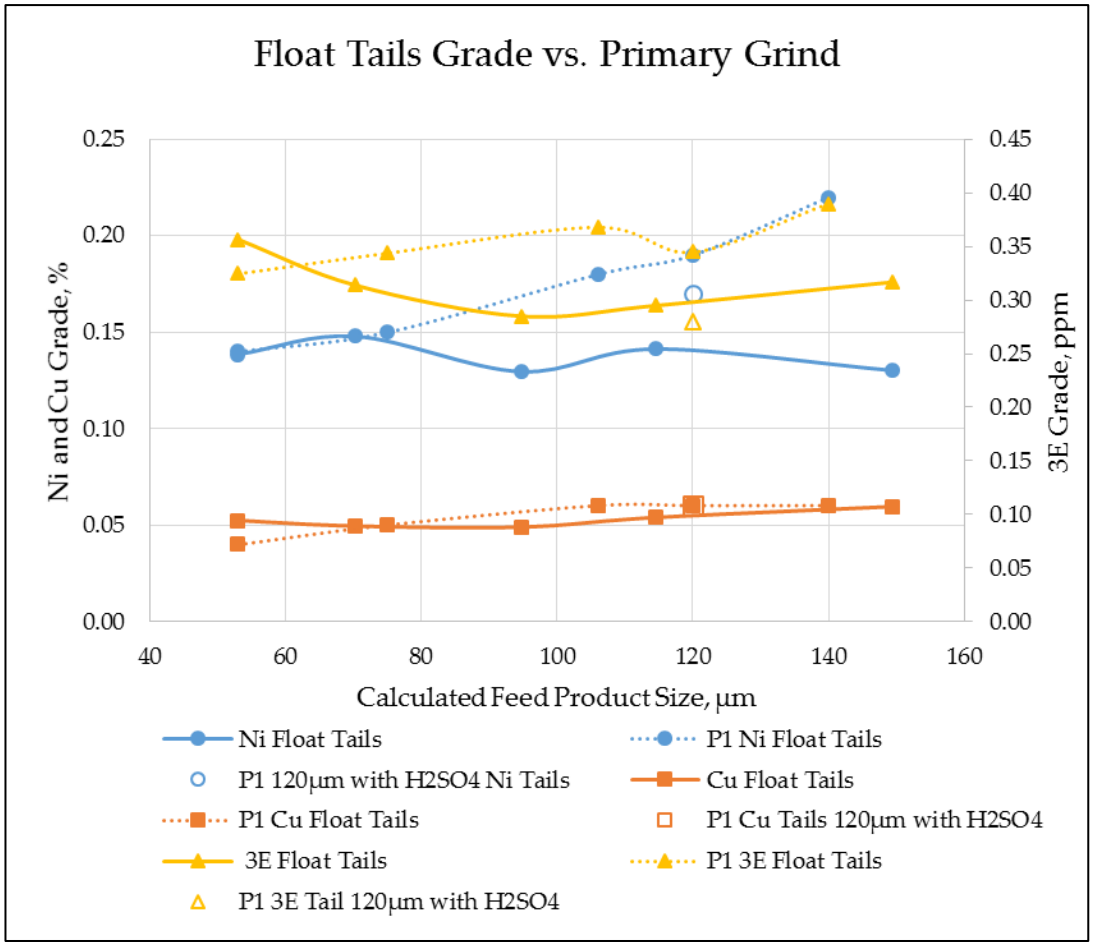
13.3.4 Primary Grind

The primary grind requirement was re-evaluated in this phase. Grind targets of d80 53µm, 75µm, 100µm, 120µm, and 140µm were included in the program. Data showed there was little difference in the sulphide tailings grade between these primary grinds for Ni. PGM tailings grade improved with coarser primary grind. Cu tails increased marginally with grind size indicating a small decrease in recovery.

The flotation tailings analysis by primary grind size is shown in Figure 13-1. The plot of tailings grade-by-grind size compares the earlier Phase 1 sample results using CMC + soda ash (dashed lines) and Phase 2 sample results with H_2SO_4 (solid lines). A repeat test at 120µm on a Phase 1 sample using Phase 2 conditions including H_2SO_4 is also shown.

A grind target of 100µm was chosen for further testing of the ore.

Figure 13-1: Flotation Tailing Grades for Ni, Cu and 3E (Pt+Pd+Au) by Grind Size



Source: XPS 2018 Development - P.12

Magnetic Separation XPS Phase 1 testwork identified that magnetite carries a significant portion of the PGE through locking of precious metal minerals at magnetite grain boundaries. That phase showed between 30-40% of the PGEs are recovered to the magnetic scavenger concentrate after regrinding to a d80 of 10 µm.

For Phase 1, a magnetic concentrate was collected using a laboratory hand magnet. Approximately 20% mass was collected to the concentrate. Mineralogy showed this required regrinding to 10µm to aid in PGE mineral liberation. For this phase of testing, and to better represent industrial practice, an Eriez Electro Drum magnet was used. The operation of the drum magnet was adjusted to get the mass pull to 25%. In Phase 2a a two-pass approach was adopted which was replaced in Phase 2b with a single pass procedure targeting the same mass pull (25%).

13.3.5 Cleaner Flotation

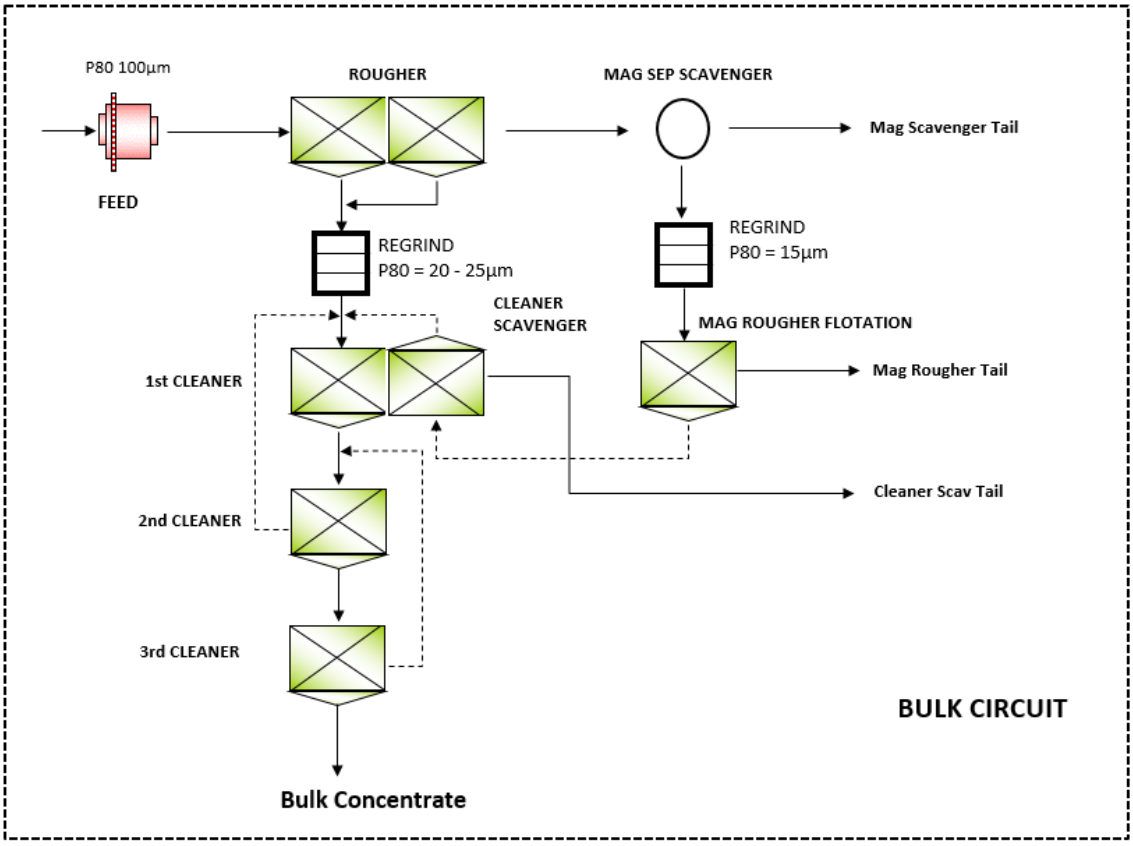
Cleaner circuit modifications were made to match the cleaner performance of previous test programs. Modifications to the Cleaner 1 condition included an addition of 10g/t CuSO4 based on cleaner feed and an additional two minutes was added to the retention time. The cleaner scavenger conditions

were also modified by increasing collector doses of xanthate and increasing retention to ten minutes which significantly lowered the cleaner scavenger tailings grade.

13.3.6 Final Phase 2 Flowsheet

Based on the optimization phase, the flowsheet for Mini Pilot Plant (MPP) evaluation was finalized and is presented in Figure 13-2.

Figure 13-2: Final Phase 2 Flowsheet



Source: XPS 2018 MPP - P.25

13.4 MPP Operation

13.4.1 MPP Objectives

The objectives of the MPP test program were:

- to generate representative sample of ROM composites for Yr. 1-5 and Yr. 6-10
- to benchmark these composites on the flowsheet recommended from Phase 2 testing
- to complete comminution testing
- mini piloting to confirm overall circuit performance and to generate products for:
  - Cu/Ni separation on bulk concentrate

- settling, filtration, process water, and environmental testing on flotation tailings

13.4.2 MPP Composite Selection

Geology Representation

The MPP composites are representative of production periods and a crosscheck on proportional ratios of rock types within a composite has been completed.

For both composites, the PERD (peridotite) lithology is overrepresented in the MPP composite compared to the parent population. It was mentioned that the LOM distribution is now defined as 86% PERD and 14% CLPX. The average of the two composites in terms of peridotite distribution (PERD+FPERD) is 88.9%. Clinopyroxenite ore is low for both Yr. 1-5 and Yr. 6-10 MPP composites, however, some of this lithology has been captured. Yr. 1-5 Composite over represents lithology defined as SKAR or massive sulphide.

Grade and Grade Distribution

Grade comparison tables are presented in Table 13-8: Comparison Table of Grades for Yr. 1-5 Target, Parent and MPP Composite Populations

Table 13-8 and Table 13-9. The rows of each table are defined as follows:

- ROM Target Grade – Nickel Creek target grades based on revised block model and mine plan (2017)
- Block Model Population Calculated Parent Grade – Block model grades of the Yr. 1-5 and Yr. 6-10 pits calculated from the same solids that were used for determining the samples for the parent populations and is based on a 0.2% Ni cut-off grade
- DDH Samples Parent Population – calculated grades (weighted by mass) from all diamond drill holes (DDH) sample intervals extracted from the block model solids that represent the parent populations with 0.2% Ni cut-off grade
- MPP Composite Calculated Grade – expected grade (weighted by mass) of MPP composites using sample assays from split core weighted by measured mass of each sample
- MPP Composite Actual Grade – Robust measured average grade of between 3-10 sub-samples of MPP composite after crushing, blending, representative sub-sampling

Note the comparison to the ROM Target grades are most significant in the context of this review.

Table 13-8: Comparison Table of Grades for Yr. 1-5 Target, Parent and MPP Composite Populations

		Ni	Cu	Pt	Pd	Au	# Holes	# Samples	Mass (kg)
		%		ppm					
1	Yr. 1-5 ROM Target Grade	0.26	0.14	0.210	0.240	0.040			
2	Yr. 1-5 Block Model Population Calculated Parent Grade	0.27	0.14	0.213	0.255	0.042			
3	Yr. 1-5 DDH Samples Parent Population Calculated Grade	0.31	0.22	0.317	0.285	0.058	152	2780	
4	Yr. 1-5 MPP Composite Calculated Grade	0.32	0.14	0.218	0.278	0.033	6	213	1744
5	**Yr. 1-5 MPP Composite Actual Grade**	0.33	0.16	0.227	0.287	0.036			
	Calculated Composite (4) % Variance to Target (1)	22%	-1%	4%	16%	-19%			
	Calculated Composite (4) % Variance to Block Model Parent (2)	18%	-1%	2%	9%	-22%			
	Calculated Composite (4) % Variance to DDH Parent (3)	4%	38%	-31%	-2%	-44%			
	Measured Composite (5) % Variance to Target (1)	27%	14%	8%	20%	-10%			
	Measured Composite (5) % Variance to Block Model Parent (2)	22%	14%	7%	13%	-14%			
	Measured Composite (5) % Variance to DDH Parent (3)	8%	-28%	-28%	1%	-38%			

Table 13-9: Comparison Table of Grades for Yr. 6-10 Target, Parent and MPP Composite Populations

		Ni	Cu	Pt	Pd	Au	# Holes	# Samples	Mass (kg)
		%		ppm					
1	Yr. 6-10 ROM Target Grade	0.26	0.11	0.190	0.230	0.030			
2	Yr. 6-10 Block Model Population Calculated Parent Grade	0.28	0.10	0.187	0.241	0.029			
2	Yr. 6-10 DDH Samples Parent Population Calculated Grade	0.29	0.14	0.228	0.269	0.031	86	1907	
4	Yr. 6-10 MPP Composite Calculated Grade	0.30	0.10	0.171	0.244	0.027	9	206	1730
5	**Yr. 6-10 MPP Composite Actual Grade**	0.31	0.12	0.178	0.266	0.022			
	Calculated Composite (4) % Variance to Target (1)	16%	-6%	-10%	6%	-11%			
	Calculated Composite (4) % Variance to Block Model Parent (2)	10%	-1%	-8%	1%	-8%			
	Calculated Composite (4) % Variance to DDH Parent (3)	2%	-27%	-25%	-9%	-13%			
	Measured Composite (5) % Variance to Target (1)	19%	9%	-6%	16%	-27%			
	Measured Composite (5) % Variance to Block Model Parent (2)	13%	15%	-5%	10%	-24%			
	Measured Composite (5) % Variance to DDH Parent (3)	5%	-15%	-22%	-1%	-28%			

The following comments and observations are noteworthy:

- A recommendation from the previous sample selection review indicated new drilling (>2015) be added to the parent population dataset. The parent population dataset used here contains all drilling up to 2017, including the samples used for MPP composite selection.
- The Block model parent population grade and the calculated DDH parent population grades are listed as separate numbers. It is observed that the calculated grades of the DDH parent populations are high for both Cu and Pt. These discrepancies are artefacts associated with the estimation process within the block model and how internal dilution is accounted for by compositing the samples. The Cu and Pt grades drop off significantly more from the high- grade zones than the Ni and Pd.
- The calculated MPP composite Ni grades for both the Yr. 1-5 and Yr. 6-10 composites are higher than the target grades. Target grades are 0.26% Ni with Yr. 1-5 calculated as 0.32% and Yr. 6-10 calculated as 0.30%.
- The calculated MPP composite Cu grades are well matched to the targets.
- The calculated precious metal grades for the MPP composite are overall closer to target for the Yr. 6-10 samples. The Pt for the Yr. 1-5 is on target, however, Pd is higher, and Au is lower. Given the low-grades of the precious metal variance, within +/-20% is considered acceptable.
- S assays were not directly compared for this dataset, however an assessment by Nickel Creek geologists indicated that S grades were similar to what should be expected based on the sulphur data available in the resource model.
- Overall grade representativity for all elements, except Ni, is acceptable and close to target grades.

The main purpose of attempting to match grade distributions is to help capture inherent geomet variability with the composites (textures, grain sizes, hardness etc.). Grades and grade variability can be a proxy for changes in metallurgical response, so efforts to gather samples which capture grade variability can enhance overall composite representativity.

Grade variability with the two composites captured by the samples selected from the 2017 drilling program have been compared to the parent population grade distributions. Distributions were compared as measured and weighted by length and mass due to the significant difference in interval length distribution observed between the parent populations and the MPP composite populations.

The following general comments and observations are presented:

- Ni distribution for the MPP composite Yr. 1-5 match very well with the parent population.
- Cu and precious metal distributions are generally narrowed compared to the parent populations. These are centred on the mean, and it is observed that attempts were made to proportionally include some low- and higher-grade samples to improve composite representativity.

Spatial Representation

Spatial representativity of the composite is dependent on sample availability. Completing large testwork programs on composites composed of material from highly clustered drill holes or in the centre of the ore body would be considered a potential representativity risk. As such, for the MPP

composites, new drilling was completed with a series of 10 holes to generate sufficient sample mass. The location of these drill holes was selected by the Nickel Creek Project team to obtain the best spatial representativity they considered possible.

The following conclusions on representation of the samples tested are noteworthy:

- The number and composition of the composites were selected by the Nickel Creek Project team and were based on updated production profile data (reviewed and revised in 2017); sequential open pit mining Yr. 1-5 and Yr. 6-10.
- There is a recognized grade discrepancy between the target grade and the built MPP composites for both the Yr. 1-5 and Yr. 6-10 periods. For Yr. 1-5 Ni is calculated at 22% higher than target and 16% higher than the target for Yr. 6-10.
- Cu and precious metals show good grade representativity for the calculated MPP composites compared to the target grades.

With respect to grade distribution, Ni is well matched for both composites to the parent population. Cu and precious metals are generally narrowed compared to the parent population; however, attempts were made to pull both lower and higher-grade intervals.

13.4.3 Comminution Testing

Two separate composites of ~90 kg each were generated for comminution testing. Comminution testing was completed at SGS Lakefield, and standard sampling protocols were followed. The hardness tests completed were SMC, Bond work index, abrasion testing, and static pressure test (SPT).

The SMC tests are used to size semi-autogenous grinding mills. The two composites tested resulted in the Axb parameter to be 49.4. This measurement is at the 40th percentile of samples in the JK Drop test database and is classified as moderately soft. The tα was at the 37th percentile and the SCSE was at the 39th percentile. The relative density of the samples was 2.72 and 2.73.

The Bond test generates a Bond work index estimate for use in the sizing of mills. Both Rod and Ball Bond tests were performed. The Rod Bond tests were performed at a closing size of 1180µm, whereas the Bond Ball tests were performed at a closing size of 106µm. The measured Rod bond work index of 15.2 kWh/t is at the 62nd percentile of the hardest of all samples evaluated by SGS and are rated as moderately hard. The measured Ball bond work index of between 19.8 and 21.4 kWh/t is at 92 and 96 percentiles of the hardest of all samples evaluated by SGS and are rated as very hard.

The Bond abrasion test is used to determine wear rates of media in grinding. The results of 0.012 g and 0.005 g which is under the 10th percentile of materials tested, indicated the samples are very mild in terms of abrasion.

The STP test was performed to estimate the energy required for high pressure grinding rolls (HPGR) to achieve a product of 3.35 mm. At 14.4 kWhr/t and 16.5 kWhr/t the samples are classified as medium in terms of HPGR hardness.

The results of the hardness testing are summarized in Table 13-10. Comminution Parameters for MPP Composites Yr. 1-5 and Yr. 6-10.

Table 13-10: Summary of MPP Composite Hardness Results

Sample Name	Relative Density	JK Parameters				RWI (kWh/t)	BWI (kWh/t)	AI (g)	HPI (kWh/t)
		A x b[1]	A x b[2]	t_a[3]	t_a[4]				
Composite Yr 1-5	2.72	51.8	49.9	0.55	0.47	15.2	19.8	0.012	14.5
Composite Yr 6-10	2.73	-	49.0	-	0.46	15.2	21.4	0.005	16.5
Average	**2.73**	**-**	**49.4**		**0.47**	**15.2**	**20.6**	**0.009**	**15.5**

13.4.4 MPP Sample

Each of the two composites, Yr. 1-5 and Yr. 6-10, were assembled from 1,670 kg of half core for bench and pilot scale test work. The composites were stage crushed individually to -10 mesh (-1.7 mm) and blended to homogenize the contents of each composite.

260 kg of the homogenized feed from each composite was split into 2 kg test charges for bench scale testing. The remaining material was then split into 6 kg ore charges for the MPP campaign.

Sub-samples for head analyses were taken using a spin riffler. Head assays were completed in triplicate on the two ore blends. A summary of the head analyses is presented in Table 13-11.

Table 13-11: Composite Head Assays

		Ni %	Cu %	Co %	Fe %	S %	MgO %	Au g/t	Pd g/t	Pt g/t
Yr. 1 - 5	Average	0.329	0.163	0.018	9.67	0.97	30.02	0.036	0.287	0.277
	Rel. Stdv	1.1	10.1	3.3	0.3	2.6	4.5	19.9	3.8	8.0
Yr. 6 - 10	Average	0.306	0.116	0.016	9.42	0.5	34.11	0.022	0.266	0.178
	Rel. Stdv	0.3	2.3	3.5	0.3	2.0	4.4	20.8	1.7	7.7

Relative deviation values of less than 5% on the base metal elements indicate the head analysis was robust and representative of the blended composite. Relative deviation values are typically higher for the precious metals, particularly Au, due to nuggeting effects and generally lower grades.

Bench and MPP scale results were reconciled against the measure head analyses.

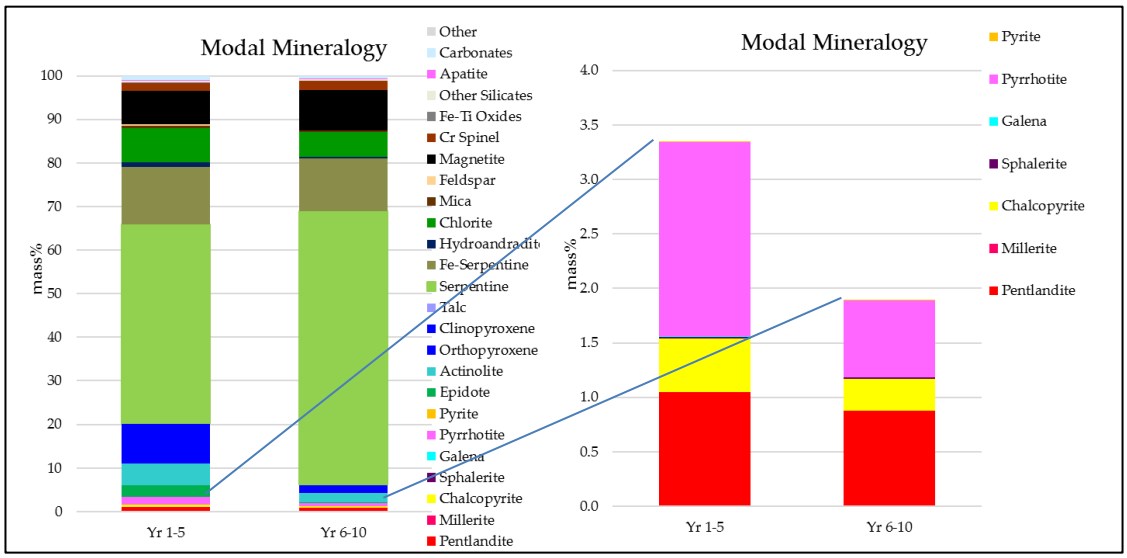
MPP Composite Mineralogy

Figure 13-3 shows the bulk mineralogy from size-by-size measurements for the Yr. 1-5 and Yr. 6-10 samples.

The mineralogy observed for the MPP composites is consistent to what is expected based on the lithology proportions in each. MPP Yr. 1 - 5 shows higher levels of clinopyroxenite, actinolite and epidote minerals consistent with a higher proportion of clinopyroxenite ore type in this sample. The MPP Yr. 6 - 10 sample is predominantly peridotite ore, and this is reflected in the higher proportion of serpentine mineralogy.

XRD was completed on each sample to review the types of serpentine present. No significant changes in peak ratios between the serpentines (antigorite, lizardite and clinochrysotile) were visible in the patterns. There is a significant difference in total sulphide content in Yr. 6 - 10 compared to Yr. 1 – 5.

Figure 13-3: Comparison of Mineralogy of the Nickel Creek Calculated Phase 2A and MPP Composites; Full Mineralogy is Shown Left While Only Sulphides are Shown Right

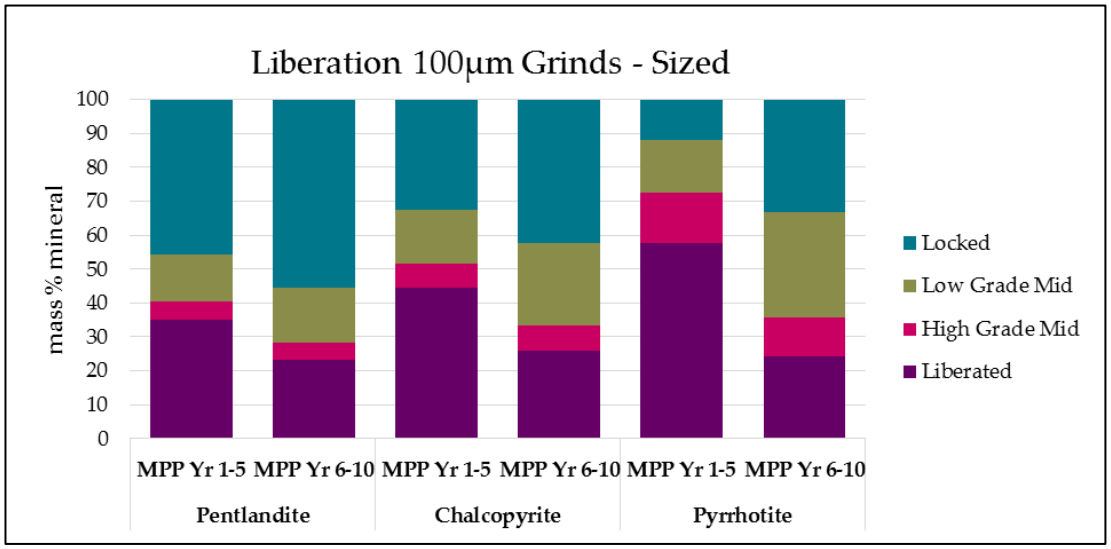


Source: XPS 2018 Development P.14

Using the compositions of minerals determined by EPMA, Ni deportment was determined to be 83% in sulphide for Yr. 1-5 vs. 80% in sulphide for Yr. 6-10. For both samples, 30% of the pentlandite occurs as fine pentlandite/serpentine texture.

Liberation for the sized samples is shown in Figure 13-4. Yr. 6-10 samples had a significantly lower liberation for all sulphides than Yr. 1-5 samples.

Figure 13-4: Sulphide Liberation for MPP Composites Displayed as Mass % of Mineral in Each Sample



Source: XPS 2018 Development - P.16

13.4.5 MPP Results Yr. 1 – 5 Composite

Objectives

The main objectives for the Yr. 1 – 5 composite was to produce a minimum of 25 kg of bulk concentrate for subsequent Cu/Ni separation test work and to demonstrate the performance of the low pH flowsheet. The secondary objective was collection of tailings products for environmental and geotechnical assessment.

Metallurgical Results

The closed-circuit product only survey balance (Table 13-12) showed a bulk concentrate recovery of 53.3% Ni, and 59.6% Cu was achieved at grades of 6.08% Ni and 3.06% Cu. Pt and Pd recoveries of 53.9% Pd and 47.9% Pt was achieved at grades of 4.85 g/t Pd and 3.64 g/t Pt.

Table 13-12: Yr. 1 - 5 Closed Circuit – Products Only Balance

Closed Sample 3	Mass						Assays (%,ppm)					
	(g)	(%)	Ni	Cu	Cu+Ni	Co	Fe	S	MgO	Au	Pd	Pt
Reference Head			0.33	0.15	0.48	0.018	9.7	0.97	30.0	0.036	0.287	0.227
Balanced Head	200.9	100.0	0.35	0.16	0.51	0.018	10.2	1.06	31.3	0.022	0.280	0.237
Call Factor			**108**	**104**	**106**	**102**	**105**	**109**	**104**	**61**	**98**	**104**
Mag Scav Tail	114.7	57.1	0.15	0.06	0.21	0.007	5.0	0.15	33.7	0.003	0.055	0.083
Mag Ro Tail	48.0	23.9	0.16	0.06	0.22	0.007	15.6	0.20	29.9	0.003	0.190	0.122
Clnr Scav Tail	31.9	15.9	0.27	0.10	0.37	0.013	13.8	0.79	29.9	0.020	0.330	0.295
3rd Clnr Conc	**6.3**	**3.1**	**6.08**	**3.06**	**9.13**	**0.330**	**43.9**	**25.59**	**5.6**	**0.525**	**4.853**	**3.643**
	Mass						Distribution (%)					
	(g)	(%)	Ni	Cu	Cu+Ni	Co	Fe	S	MgO	Au	Pd	Pt
Balanced Head	200.9	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Mag Scav Tail	114.7	57.1	23.7	20.9	22.8	22.2	28.2	8.1	61.5	8.0	11.2	20.0
Mag Ro Tail	48.0	23.9	10.8	9.6	10.4	9.3	36.7	4.5	22.8	3.0	16.2	12.3
Clnr Scav Tail	31.9	15.9	12.2	9.9	11.5	11.5	21.7	11.9	15.2	14.6	18.7	19.8
3rd Clnr Conc	**6.3**	**3.1**	**53.3**	**59.6**	**55.3**	**57.0**	**13.5**	**75.5**	**0.6**	**74.4**	**53.9**	**47.9**

Table 13-13 illustrates the internal balance for the closed-circuit. Rougher selectivity achieved the expected performance. Ni grade of the Mag-Scav-Tailing was higher than the LCT by 0.01%, but the 8% higher mass pull by the magnet pushed the base and precious metals recovery in the MPP over that of the LCT.

The Mag Scavenger concentrate had a density of 37% solids. After regrinding to 17µm, the pulp appeared more viscous than expected. Water was added to the front end of the mag rougher flotation stage to dilute the slurry to approximately 20% solids. Froth was weak after dilution and the frother change to W55 helped stabilized the froth and improved recovery. Since the weak froth was likely dilution induced, an increase in MIBC dosage may be sufficient as an alternative to W55.

The cleaners showed excellent gangue rejection, reducing MgO from 22.7% in the cleaner feed to 5.6% in the final bulk concentrate. Pyrrhotite was the main diluent in the bulk concentrate as the acidic nature of the flowsheet encouraged flotation of all sulphide species.

Sample Generation

All of the bulk concentrate produced during the Yr. 1 – 5 run, except for the portion consumed for assays, was captured and blended for the subsequent Cu/Ni separation testing. The bulk concentrate assays averaged moderately lower grade than the reported balanced assays because it represents concentrate produced during the entire run and not just during the period of the plant survey. Bulk concentrate totalling around 25 kg was split into 50 batches of 500 g. The concentrate was filtered and frozen until used.

Table 13-13: Comparison of Total Bulk Sample produced vs. Survey Result

	Assay (%, gpt)										
	Ni	Cu	Cu+Ni	Co	S	Fe	MgO	Pt	Pd	Au	3E
Bulk Sample for Cu-Ni Sep	5.64	3.37	8.95	0.35	24.5	41.2	6.56	3.06	4.48	0.502	8.04
MPP Survey Sample	6.08	3.06	9.14	0.33	25.6	43.9	5.60	3.64	4.85	0.525	9.02

Tailing samples, as individual tailings streams and combined, were collected as per instruction from Alexco Environmental Group (AEG). Samples were prepared and shipped to SGS Lakefield for environmental and geotechnical assessment. Additional tailings material was shipped to Outotec's testing facility in Sudbury for de-watering and filtration testing.

13.4.6 MPP Results Yr. 6 – 10 Composite

Objectives

The Yr. 6 – 10 composite showed poor flotation selectivity and recovery during the bench scale testing. Uncertainty over the performance of this composite postponed its intended MPP campaign. When the Yr. 1–5 campaign met its objectives ahead of schedule, an opportunity arose for an abbreviated (16 hour) run using the Yr. 6–10 composite to evaluate and demonstrate the flotation performance on a continuous basis.

The primary objective of this run was to achieve steady state in the metallurgy for the Yr. 6–10 composites. The flotation circuits stabilized very quickly after the removal of the excess frother from

the process allowing for collection of a closed-circuit survey. A longer run would have permitted further optimization and the results of the abbreviated run are presented below.

Metallurgical Results

Overall, the bulk concentrate recovered 31.2% Ni and 33.2% Cu at grades of 9.44% Ni and 3.76% Cu. Concentrate grade was higher because of the lower pyrrhotite content in feed. The MgO grade in concentrate was 7.1%. Precious metal recovery to the bulk concentrate was 54.3% Au, 28.5% Pd, and 27.8% Pt at grades of 1.1 g/t Au, 6.8 g/t Pd, and 4.6 g/t Pt. The products only balance from the survey is presented in Table 13-14.

Table 13-14: Yr. 6 - 10 Closed Circuit – Products Only Balance

	Mass		Assays (%, ppm)									
	(g)	(%)	Ni	Cu	Cu+Ni	Co	Fe	S	MgO	Au	Pd	Pt
Reference Head			0.31	0.12	0.42	0.016	9.4	0.50	29.4	0.022	0.266	0.178
Balanced Head	151.4	100.0	0.32	0.12	0.44	0.016	9.6	0.53	35.0	0.022	0.253	0.173
Call Factor			**104**	**103**	**104**	**95**	**102**	**105**	**119**	**100**	**95**	**98**
Mag Scav Tail	103.0	68.0	0.20	0.07	0.27	0.008	5.7	0.21	37.4	0.006	0.096	0.068
Mag Ro Tail	34.9	23.0	0.19	0.07	0.26	0.009	17.6	0.23	30.7	0.012	0.261	0.159
Clnr Scav Tail	12.0	7.9	0.51	0.16	0.67	0.029	15.9	1.11	31.0	0.044	0.695	0.533
Bulk Clnr Conc	**1.6**	**1.1**	**9.44**	**3.76**	**13.20**	**0.542**	**39.2**	**23.22**	**7.1**	**1.134**	**6.846**	**4.589**
	Mass		**Distribution (%)**									
	(g)	**(%)**	**Ni**	**Cu**	**Cu+Ni**	**Co**	**Fe**	**S**	**MgO**	**Au**	**Pd**	**Pt**
Balanced Head	151.4	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Mag Scav Tail	103.0	68.0	42.2	42.4	42.2	35.2	40.1	26.9	72.6	17.1	25.9	26.6
Mag Ro Tail	34.9	23.0	13.9	13.9	13.9	13.4	42.4	10.0	20.2	12.8	23.8	21.2
Clnr Scav Tail	12.0	7.9	12.7	10.6	12.1	14.8	13.2	16.8	7.0	15.8	21.8	24.4
Bulk Clnr Conc	**1.6**	**1.1**	**31.2**	**33.2**	**31.7**	**36.6**	**4.3**	**46.4**	**0.2**	**54.3**	**28.5**	**27.8**

The rougher concentrate showed grades similar to that of the Yr. 1–5 composites albeit at a much lower recovery. Detailed analysis of the internal streams indicated the rougher tail was higher than achieved in a comparable bench scale rougher test and may indicate an opportunity to improve recovery with further optimization.

Grade and recovery of the Mag Scavenger concentrate was comparable to that of Yr. 1–5. The mag rougher flotation stage recovery for all pay metals was under 50% compared to over 50% with the Yr. 1–5 composite. The recovered concentrate showed significantly higher grades.

The cleaner scavenger showed a similar response to the mag rougher - high upgrading ratio, but poor recovery. The excellent selectivity shown by both the Mag Scavenger and cleaner scavenger appeared to indicate the possibility of recovery improvement. It was uncertain whether the recovery improvements were limited by reagent dosage or mineral liberation.

The cleaners performed as expected in gangue rejection. Final bulk concentrate grades were higher because of less pyrrhotite content in the feed.

13.5 Cu/Ni Separation Test Work

All Cu/Ni separation test work was completed on the bulk concentrate produced from MPP processing of the Yr. 1-5 composite.

Cu separation from Ni is typically achieved by elevating the bulk concentrate pulp to a 12-pH using lime which depresses the Ni mineral pentlandite allowing the Cu concentrate to be floated off. The process is sometimes aided by the addition of sodium cyanide.

Separation test work performed as part of the optimization program utilized these conditions. It was found at the time that a 20-minute aeration of the pulp prior to Cu flotation, that bulk concentrate regrind and a small NaCN dose was required to achieve the required selectivity.

The MPP Yr. 1-5 sample produced a persistent froth during Cu-Ni separation and required several changes to the separation process. The cause of the persistent froth may be linked to the use of a stronger frother in the MPP or the impact of the magnetic rougher concentrate, which was finely ground to a d80 of 15 µm.

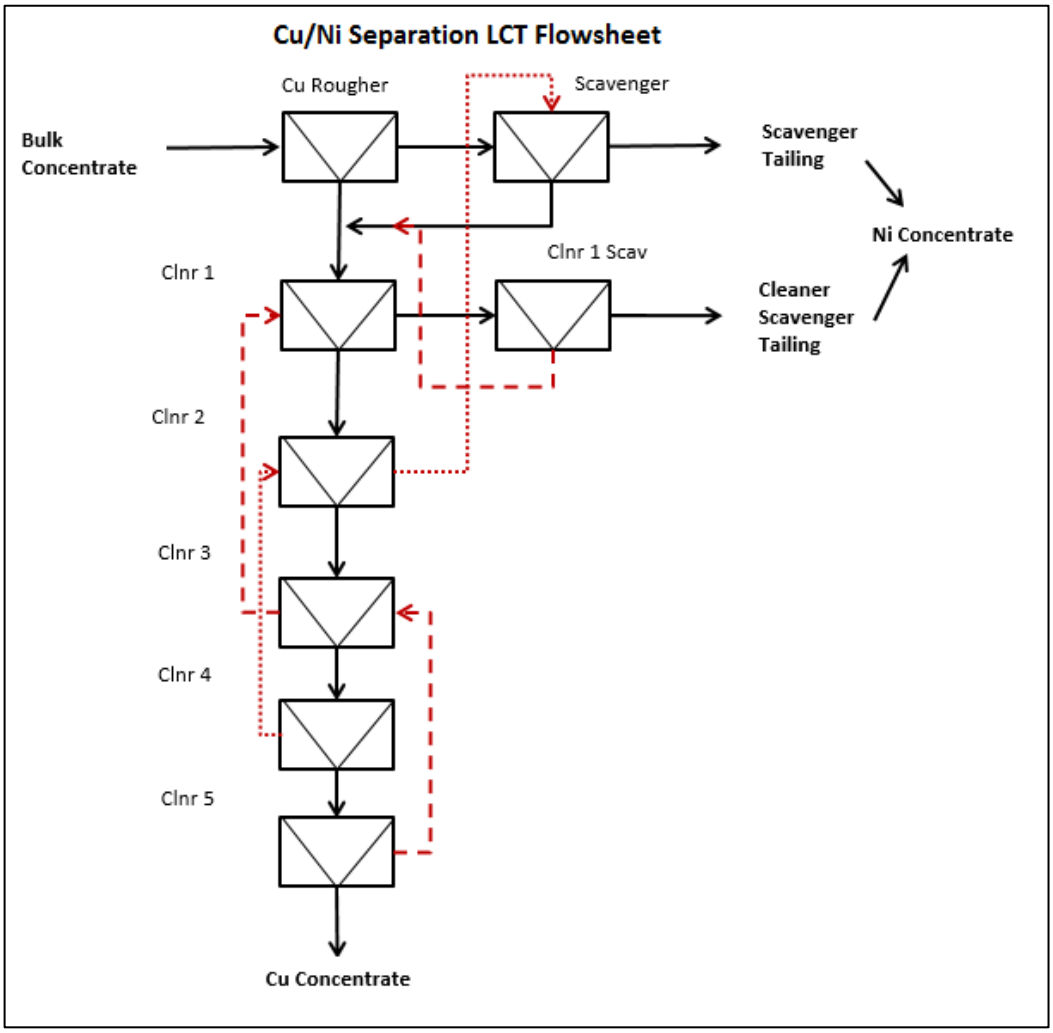
The additional changes incorporated into the separation flowsheet included a conditioning stage with activated carbon to remove excess frother, a more aggressive aeration stage with the addition of sodium metabisulfite (SMBS) and the use of CMC to disperse the fines during the cleaning stages. Once the conditions for Cu-Ni separation were established, an LCT to measure the effect of recirculating loads on the process was performed.

13.5.1 Cu/Ni Separation Locked Cycle Test

The Locked Cycle Test (LCT) flowsheet is illustrated in Figure 13-5. The pre-test simulations for the LCT determined the number of conventional stages required would not reach steady state in the typical 6 cycles. The decision was made to include only 5 cleaning stages and conduct an extended test of 10 cycles over two days; as such, 5 cycles per day and the internal products at the end of Day 1 were frozen overnight and used the following day. The objective of the LCT was to determine closed-circuit split factors that could be used for the simulation of an industrial Cu-Ni separation process.

Lime was used to increase and maintain a pulp pH of 12 throughout the rougher and cleaner stages. Activated carbon was used in the initial conditioning stage to remove residual xanthate and frother from the bulk flotation circuit. SMBS was added to aid the aeration process and refresh mineral surfaces. Finnfix 150 was used to depress silicate fines and provide better froth drainage. Several smaller additions of Finnfix were applied in the cleaners as the recirculating loads reduced the fluidity of the froth. A small amount of MIBC was added in the later parts of the cleaner circuit as the pulp density decreased and the amount of fresh water added to top up the flotation cell increased.

Figure 13-5: Cu/Ni Separation LCT Flowsheet



Source: XPS 2018 MPP - P.46

Although there were some fluctuations from cycle to cycle, the test achieved an overall balanced state when averaging out the feed in and products out from cycles 4 to 10. All metal units in the product out were within 5% of the feed in when measured over the 7 cycles.

The formal balance for the LCT is presented in Table 13-15. The recalculated head assay from the 7-cycle average compares well against the Bulk Concentrate head assays from the MPP closed circuit balances.

The LCT produced a Cu concentrate at 13.8% Cu and 1.1% Ni grade with 53.2% Cu and 2.5% Ni recovery. Pt and Pd recoveries to Cu concentrate were below 10% at grades of over 1g/t. 31% of Au in bulk concentrate reported to the Cu concentrate at a grade of 1.2 g/t. The balance of the metals reported to Ni concentrate.

Cu concentrate was diluted mainly by pyrrhotite; evident with the grades of 43.7% Fe and 34.4% S. The pyrrhotite in the recirculating loads may be responsible for the visual thickening of the froth as the test progressed and this may have led to higher pyrrhotite recovery to the Cu concentrate. MgO grade in Cu concentrate was 1.6%.

Table 13-15: Cu/Ni Separation LCT Balance

Cycle 4 - 10	Mass		Assays (%, ppm)										
	(g)	(%)	Cu	Ni	Cu+Ni	Co	S	Fe	MgO	Pt	Pd	Au	3E
Bulk Con Calc Head Assay			3.25	5.70	8.95	0.32	24.6	41.3	6.9	3.1	4.5	0.5	8.04
Cyc 4-10 Calc Head Assay	3401.5	100.0	3.37	5.77	9.14	0.32	24.5	41.1	6.8	3.0	4.4	0.5	7.94
Call Factor			104	101	102	101	100	100	100	98	99	100	99
Cycle 4 - 10 Scav Tail	1921.3	56.5	1.22	7.67	8.89	0.43	20.9	38.6	8.7	3.2	4.6	0.3	8.13
Cycle 4 - 10 Clnr Scav Tail	1037.9	30.5	2.91	4.23	7.14	0.23	27.0	44.5	5.5	3.3	4.7	0.5	8.54
Cycle 4 - 10 Ni Conc	2959.2	87.0	1.81	6.46	8.28	0.36	23.0	40.7	7.6	3.3	4.6	0.4	8.27
Cycle 4 - 10 Cu Conc	442.3	13.0	13.8	1.09	14.9	0.05	34.4	43.7	1.6	1.4	3.2	1.2	5.72
Cycle 4 - 10	**Mass**		**Distribution (%)**										
	(g)	**(%)**	**Cu**	**Ni**	**Cu+Ni**	**Co**	**S**	**Fe**	**MgO**	**Pt**	**Pd**	**Au**	**3E**
Product Out Cycle 4 -10	3401.5	100.0	146.8	197.5	178.8	198.1	181.8	186.2	196.9	194.2	190.7	168.6	190.6
Cycle 4 - 10 Scav Tail	1921.3	56.5	20.4	75.2	55.0	76.5	48.2	53.1	72.2	60.5	58.5	36.2	57.8
Cycle 4 - 10 Clnr Scav Tail	1037.9	30.5	26.4	22.4	23.8	21.6	33.6	33.1	24.7	33.7	32.2	32.3	32.8
Cycle 4 - 10 Ni Conc	2959.2	87.0	46.8	97.5	78.8	98.1	81.8	86.2	96.9	94.2	90.7	68.6	90.6
Cycle 4 - 10 Cu Conc	442.3	13.0	53.2	2.5	21.2	1.9	18.2	13.8	3.1	5.8	9.3	31.4	9.4

13.5.2 Cu/Ni Mineral Based Simulation

Assays of the recirculating streams from the 10th cycle were used to calculate the secondary split factors in order to build a predictive model for the varying bulk concentrate grades. The secondary split factors are presented in Table 13-16. These secondary split factors also allow for the simulation of the Cu concentrate grade and recovery for changing feed grades and alternative configurations of the separation circuit.

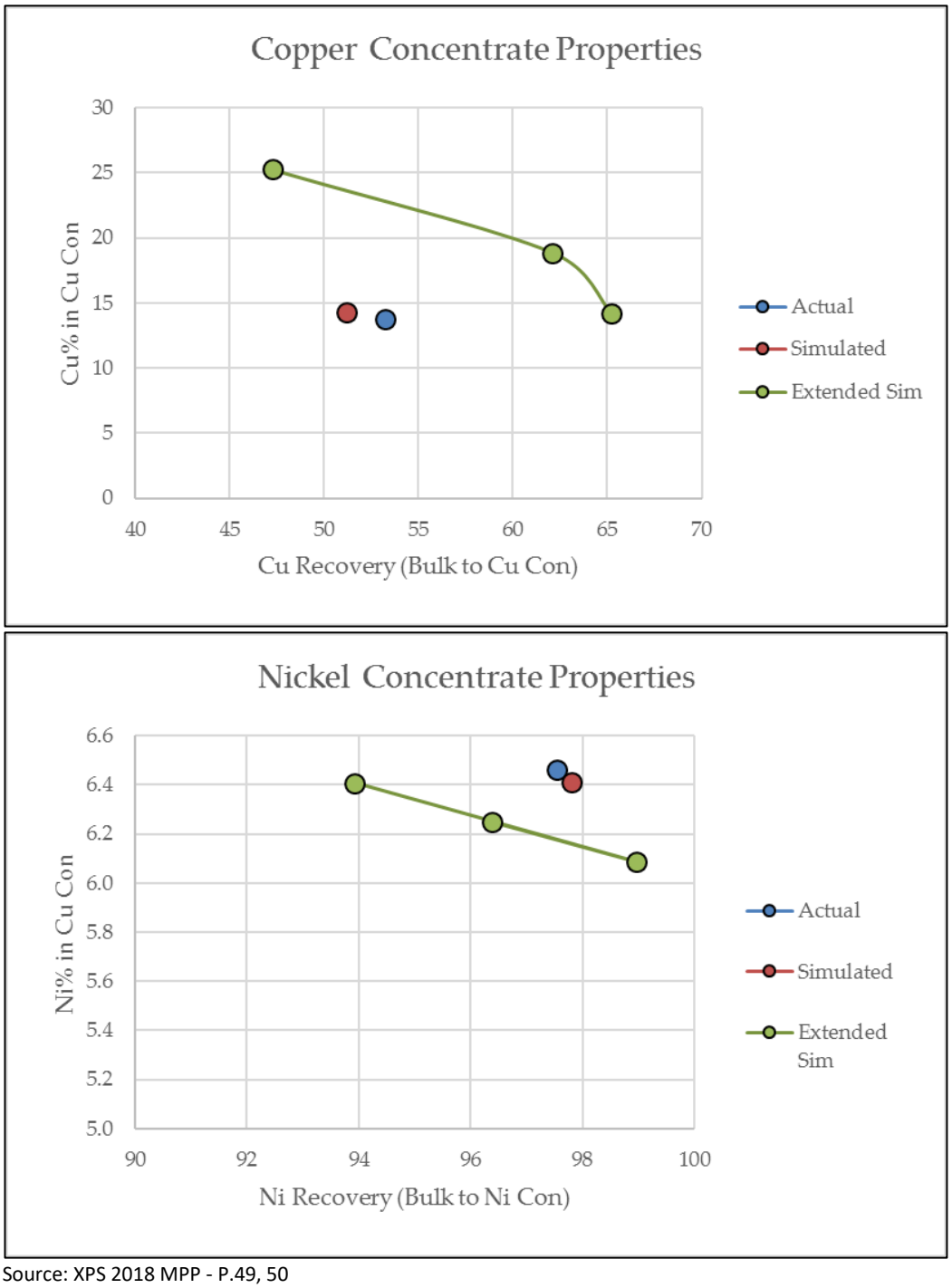
Table 13-16: Secondary Split Factors Captured on Cycle 10

Stage	Mass	Cu	Ni	Co	S	Fe	MgO	Pt	Pd	Au	3E	Cp	Pn	Po	NSG
Rougher	53	83	32	30	62	58	35	50	52	72	53	83	30	66	36
Cleaner 1	45	68	29	27	50	46	31	40	45	58	44	68	27	49	30
C1 Scav	50	43	50	50	50	50	48	51	49	48	50	43	50	51	50
Cleaner 2	63	79	53	51	65	63	54	58	64	73	63	79	52	62	54
Cleaner 3	62	76	53	51	63	61	56	50	52	67	53	76	52	60	54
Cleaner 4	68	83	59	58	69	66	57	57	63	72	63	83	58	64	57
Cleaner 5	74	88	62	61	75	72	63	60	67	75	67	88	60	68	61

A simulation utilizing the mineral split factors was constructed using Excel. As a test of the simulation, the original data from the LCT was entered into the simulation. The result is shown as the red dot in Figure 13-6 whereas the actual LCT result is shown as the blue dot. The offset between the two dots is the result of the merged split factor for rougher and scavenger. As a result, the simulation is expected to produce a conservative estimate.

A simulation was performed of extended cleaners to 10 stage via mechanical cells and added an additional increment of scavenger concentrate to emulate a more aggressive pull in the rougher/scavengers. The simulation and their grade recovery curves are shown in Figure 13-6.

Figure 13-6: Simulated Cu and Ni Concentrate Grade Recovery

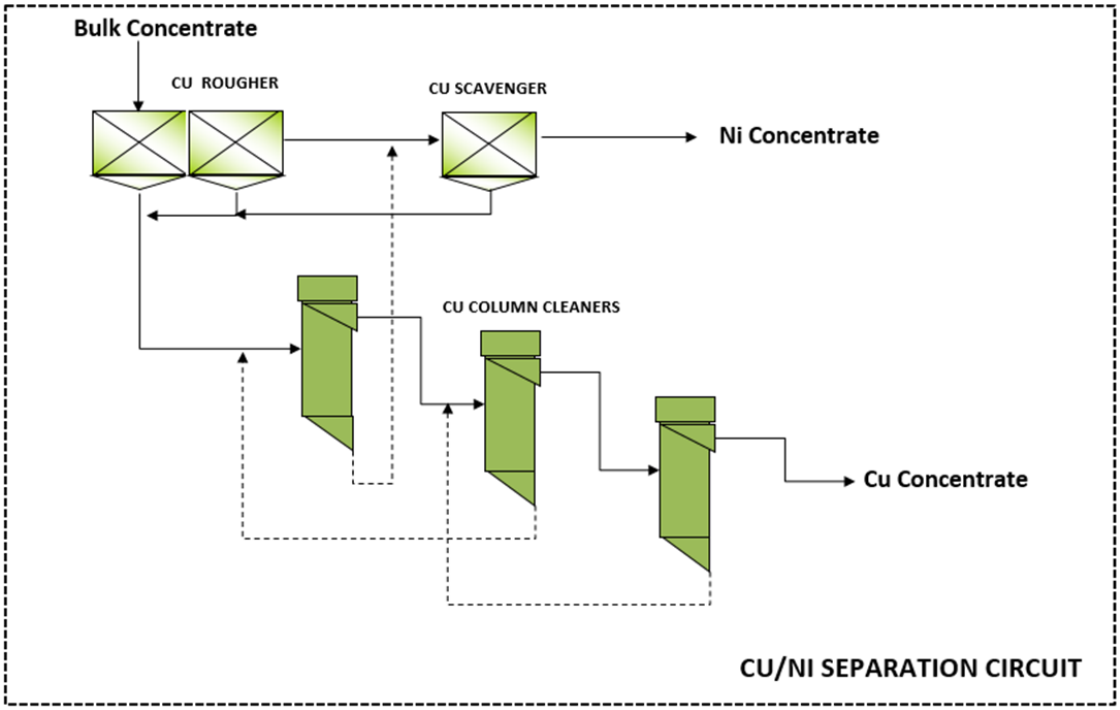


Source: XPS 2018 MPP - P.49, 50

Simulated Cu and Ni concentrate grade recovery. Ten cleaner stages via mechanical cells are approximately equivalent to three industrial columns in series. Figure 13-7 illustrates the Cu/Ni separation circuit layout as intended by the extended simulation. By extending the cleaner stages, the expectation is an improvement of

Cu recovery to around 65% at the 14% grade, or an improvement of grade to 18% Cu at 62% Cu recovery. The Ni concentrate will contain 98% of the Ni however, the Ni concentrate grades are expected to see a drop as the pyrrhotite units are rejected from the Cu concentrate into Ni concentrate.

Figure 13-7: Cu/Ni Separation Circuit Flowsheet as per Simulation



Source: XPS 2018 MPP - P.49

The overall split of bulk concentrate into Cu concentrate and Ni concentrate is dependent on the ratio of Cu, Ni, and pyrrhotite in the bulk concentrate. Based on this simulation, the bulk concentrate produced from composite Yr. 1-5 would separate into Cu and Ni concentrate according to the results presented in Table 13-17. Based on the MPP close balance of composite Yr. 1-5 an overall balance incorporating Cu-Ni Separation is presented in Table 13-18.

Table 13-17: Simulated Final Concentrates using the MPP Year 1 – 5 Bulk Concentrate

	Mass	Assays (%, ppm)										Mineral Concentration (%)			
	(%)	Ni	Cu	Cu+Ni	Co	Fe	S	MgO	Au	Pd	Pt	Cp	Pn	Po	NSG
Bulk Concentrate		6.08	3.06		0.330	43.9	25.59	5.6	0.525	4.853	3.643	8.81	16.02	43.38	31.80
Cu Concentrate	10.5	1.10	18.02		0.060	42.9	35.34	0.7	1.578	2.820	0.734	51.92	2.45	41.59	4.04
Ni Concentrate	89.5	6.66	1.29		0.362	44.0	24.45	6.1	0.400	5.093	3.986	3.73	17.61	43.59	35.06
	Mass	Distribution (%)										Mineral Distribution (%)			
	(%)	Ni	Cu	Cu+Ni	Co	Fe	S	MgO	Au	Pd	Pt	Cp	Pn	Po	NSG
Bulk Concentrate		100.0	100.0		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Cu Concentrate	10.5	1.9	62.1		1.9	10.3	14.5	1.3	31.7	6.1	2.1	62.1	1.6	10.1	1.3
Ni Concentrate	89.5	98.1	37.9		98.1	89.7	85.5	98.7	68.3	93.9	97.9	37.9	98.4	89.9	98.7

Table 13-18: Overall MPP Balance Yr 1-5 –Feed to Separated Cu and Ni Concentrate

	Mass	Assays (%, ppm)										Mineral Concentration (%)			
	(%)	Ni	Cu	Cu+Ni	Co	Fe	S	MgO	Au	Pd	Pt	Cp	Pn	Po	NSG
Feed	**100.0**	**0.35**	**0.16**	**0.51**	**0.018**	**10.2**	**1.06**	**31.3**	**0.022**	**0.280**	**0.237**	**0.46**	**0.95**	**1.53**	**97.06**
Mag Scav Tail	57.1	0.15	0.06	0.21	0.007	5.0	0.15	33.7	0.003	0.055	0.083	0.17	0.40	0.00	99.43
Mag Ro Tail	23.9	0.16	0.06	0.22	0.007	15.6	0.20	29.9	0.003	0.190	0.122	0.18	0.44	0.00	99.38
Clnr Scav Tail	15.9	0.27	0.10	0.37	0.013	13.8	0.79	29.9	0.020	0.330	0.295	0.29	0.73	1.13	97.86
Bulk Concentrate	**3.1**	**6.08**	**3.06**	**9.13**	**0.330**	**43.9**	**25.59**	**5.6**	**0.525**	**4.853**	**3.643**	**8.81**	**16.02**	**43.38**	**31.80**
Cu Concentrate	**0.3**	**1.10**	**18.02**	**19.12**	**0.060**	**42.9**	**35.34**	**0.7**	**1.578**	**2.820**	**0.734**	**51.92**	**2.45**	**41.59**	**4.04**
Ni Concentrate	**2.8**	**6.66**	**1.29**	**7.96**	**0.362**	**44.0**	**24.45**	**6.1**	**0.400**	**5.093**	**3.986**	**3.73**	**17.61**	**43.59**	**35.06**
	Mass	**Distribution (%)**										**Mineral Distribution (%)**			
	(%)	**Ni**	**Cu**	**Cu+Ni**	**Co**	**Fe**	**S**	**MgO**	**Au**	**Pd**	**Pt**	**Cp**	**Pn**	**Po**	**NSG**
Feed	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Mag Scav Tail	57.1	23.7	20.9	22.8	22.2	28.2	8.1	61.5	8.0	11.2	20.0	20.9	24.3	0.0	58.5
Mag Ro Tail	23.9	10.8	9.6	10.4	9.3	36.7	4.5	22.8	3.0	16.2	12.3	9.6	11.0	0.0	24.5
Clnr Scav Tail	15.9	12.2	9.9	11.5	11.5	21.7	11.9	15.2	14.6	18.7	19.8	9.9	12.2	11.7	16.0
Bulk Concentrate	**3.1**	**53.3**	**59.6**	**55.3**	**57.0**	**13.5**	**75.5**	**0.6**	**74.4**	**53.9**	**47.9**	**59.6**	**52.5**	**88.3**	**1.0**
Cu Concentrate	**0.3**	**1.0**	**37.0**	**12.2**	**1.1**	**1.4**	**11.0**	**0.0**	**23.6**	**3.3**	**1.0**	**37.0**	**0.8**	**8.9**	**0.0**
Ni Concentrate	**2.8**	**52.3**	**22.6**	**43.1**	**56.0**	**12.1**	**64.5**	**0.5**	**50.8**	**50.6**	**46.9**	**22.6**	**51.7**	**79.4**	**1.0**

13.6 Current Test Work - Extended Variability Testing

Considerable variability testing had been completed previously on samples which spanned the range of Ni values observed in the resource. The previous variability samples were also evaluated using different processing options considered in the studies. The previous study concluded that sulphur content of the sample was a major driver of Ni recovery. As previous variability samples were selected based on Ni heads and independent of S values, it was recommended that additional samples be tested below 0.8% S to validate the Ni recovery relationship in lower S material. This section reviews the previous variability evaluation followed by the evaluation of additional samples tested and its impact on the Ni recovery projection for the resource.

In the previous studies, a series of samples were identified as being representative of the resource range in Ni and Cu values for variability testing. The samples consisted of one clinopyroxenite intersection and twelve peridotite intersections based on their location in the most recent mine plan. Sample description indicates the original lithological ore type followed by Ni feed grade. Designation of either A or B indicates there was originally two intersections tested in Phase 1 for that specific Ni feed grade from special different locations. A summary of the samples is presented in Table 13-19.

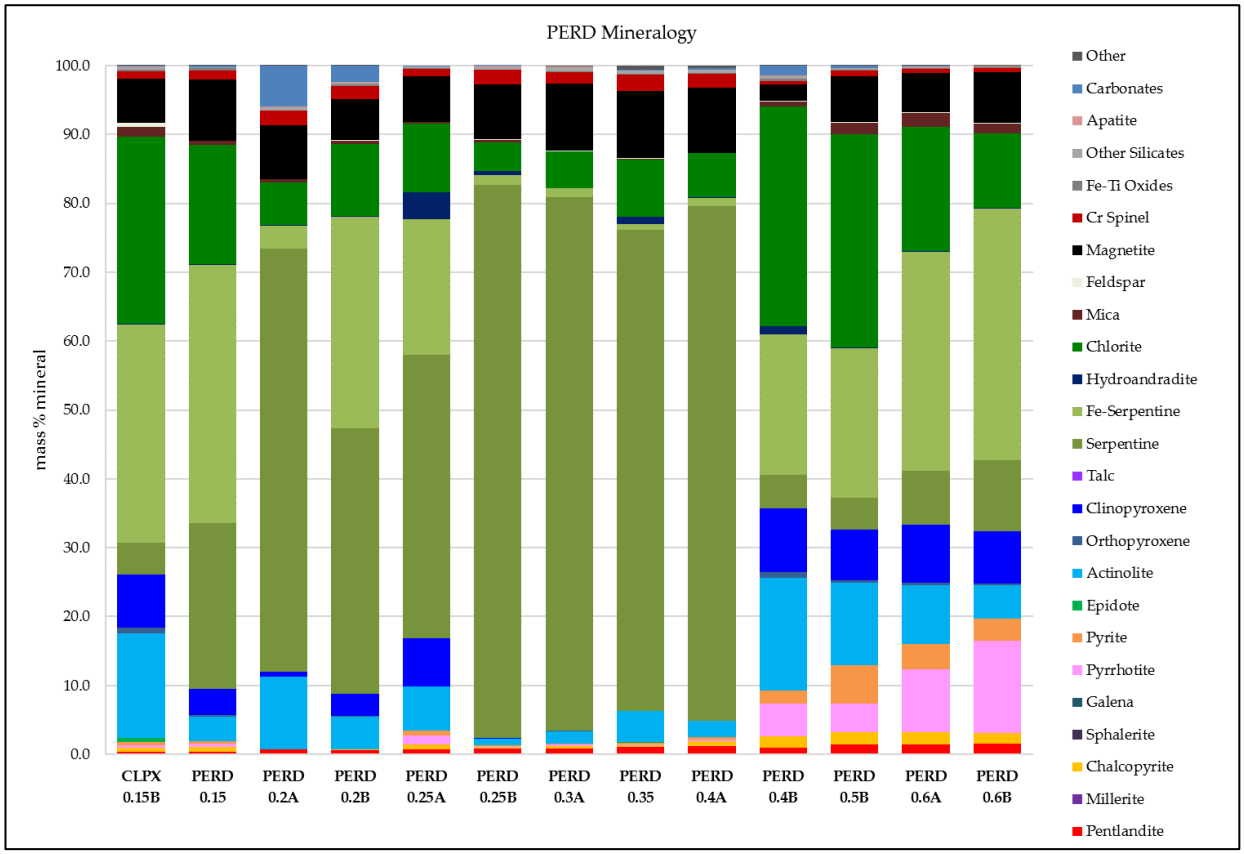
Table 13-19: Variability Intersections Tested for Phase 2

Sample Description	Met ID	Head Assays (%)						
		Ni	Cu	Cu+Ni	S	Fe	Co	MgO
CLPX 0.15B	WM16-112	0.14	0.19	0.32	0.77	11.40	0.02	29.02
PERD 0.15	WM16-336	0.14	0.18	0.32	0.61	11.55	0.02	34.49
PERD 0.2A	WM16-326	0.21	0.02	0.23	0.10	8.50	0.01	34.99
PERD 0.2B	WM16-317	0.20	0.03	0.23	0.17	9.38	0.01	35.74
PERD 0.25A	WM16-323	0.24	0.21	0.45	1.43	12.10	0.02	32.92
PERD 0.25B	WM16-330	0.27	0.06	0.33	0.45	8.83	0.02	38.89
PERD 0.3A	WM16-319	0.28	0.12	0.40	0.50	9.99	0.02	38.97
PERD 0.35	WM16-331	0.32	0.10	0.42	0.59	9.70	0.02	37.81
PERD 0.4A	WM16-334	0.37	0.17	0.54	0.85	10.15	0.02	37.89
PERD 0.4B	WM16-284	0.38	0.50	0.88	3.74	15.05	0.03	24.87
PERD 0.5B	WM16-329	0.49	0.55	1.04	4.97	16.95	0.03	26.62
PERD 0.6A	WM16-328	0.55	0.53	1.08	6.12	18.30	0.04	25.62
PERD 0.6B	WM16-327	0.60	0.48	1.08	7.96	21.75	0.05	24.63

13.6.1 Mineralogy, Head Grade and Entitlement Sensitivities

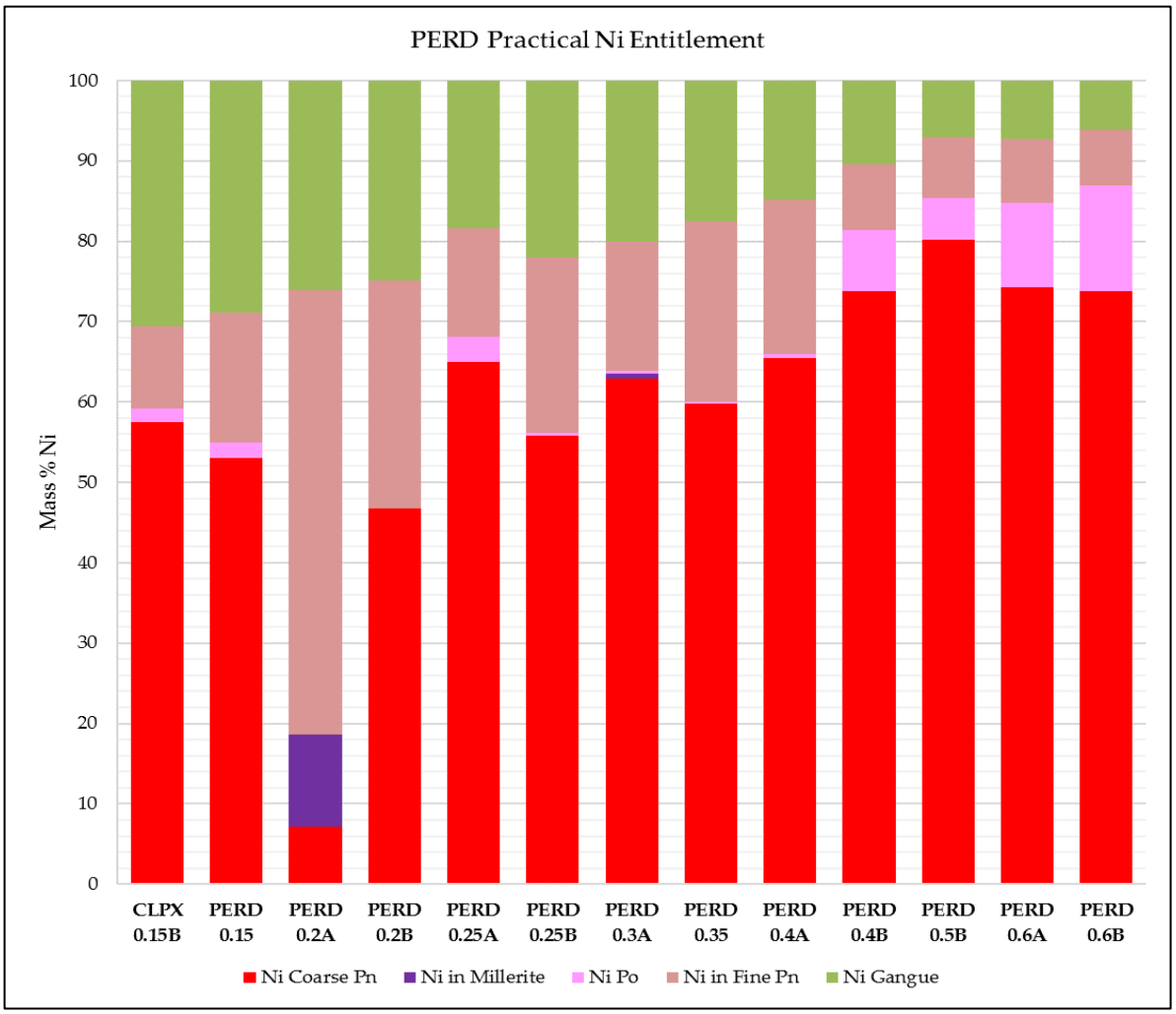
A summary of the mineralogy for the selected intersections is shown in Figure 13-8. Ni deportment was also measured to indicate the percentage of total Ni in Sulphides. Of the Ni in sulphides, an amount occurs as <5µ pentlandite inclusions in serpentine which are not recoverable. Figure 13-9 shows the results of these measurements indicating the remaining Ni in sulphides (shown in red) as the mineralogically measured practical Ni entitlement. Practical Ni entitlement is the maximum amount of Ni in the sample which is recoverable by flotation.

Figure 13-8: Variability Samples Mineralogy



Source: XPS 2018 Variability Report - P.4

Figure 13-9: Ni Entitlement (deportment) (left) and Practical Ni Entitlement (right) for the Variability Intersections Reassessed for Phase 2; Data Presented as Mass Percent of Ni in Each Sample



Source: XPS 2018 Variability Report - P.4

The following mineralogical conclusions were made on intersections tested:

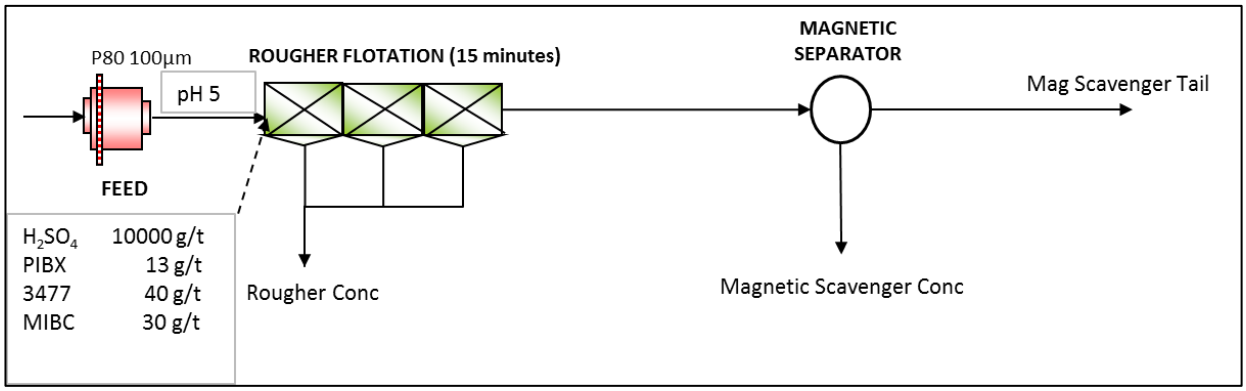
- mineralogy identified total sulphide and pentlandite content increasing with Ni head grade
- magnetite content did not increase with head grade and was relatively constant across the variability samples
- trend of increasing pentlandite, chalcopyrite, and pyrrhotite grain size with increased sulphide content and Ni feed grade (not observed in CLPX samples); this correlates with a decrease in "unrecoverable" Ni in serpentine
- trend of increasing pentlandite, chalcopyrite, and pyrrhotite liberation with increased sulphide content and Ni feed grade (not observed in CLPX samples)
- constant Ni in silicate composition was observed, independent of head grade

- a base Ni grade of between 0.04% and 0.06% Ni was determined to be in gangue with the average at 0.06%
- pyrrhotite did show same levels of increasing Ni in solid solution with increasing pyrrhotite content

13.6.2 Flotation Results Analysis

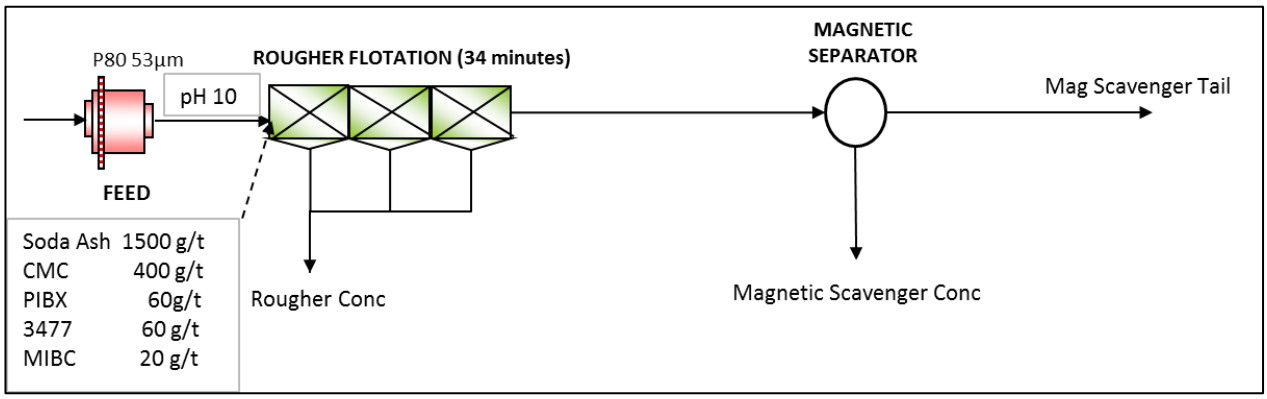
The aim of the Phase 2 variability program was to determine Ni recovery sensitivities as a function of Ni head grade with the optimized low pH acid flowsheet (Figure 13-10). The high pH, soda ash/CMC relationship of head grade to rougher Ni recovery had previously been generated using XPS Phase 1 test conditions (Figure 13-11) and it was expected a similar relationship would be seen between the circuits.

Figure 13-10: Variable Testing Flowsheet Phase 2



Source: XPS 2018

Figure 13-11: Variable Testing Flowsheet Phase 1



Source: XPS 2018

A summary of the head grade, rougher concentrate recovery, magnetic scavenger concentrate recovery, and magnetic scavenger tails grade is shown in Table 13-20.

Table 13-20: Concentrate Recovery and Tailings Grade for Variability Tests

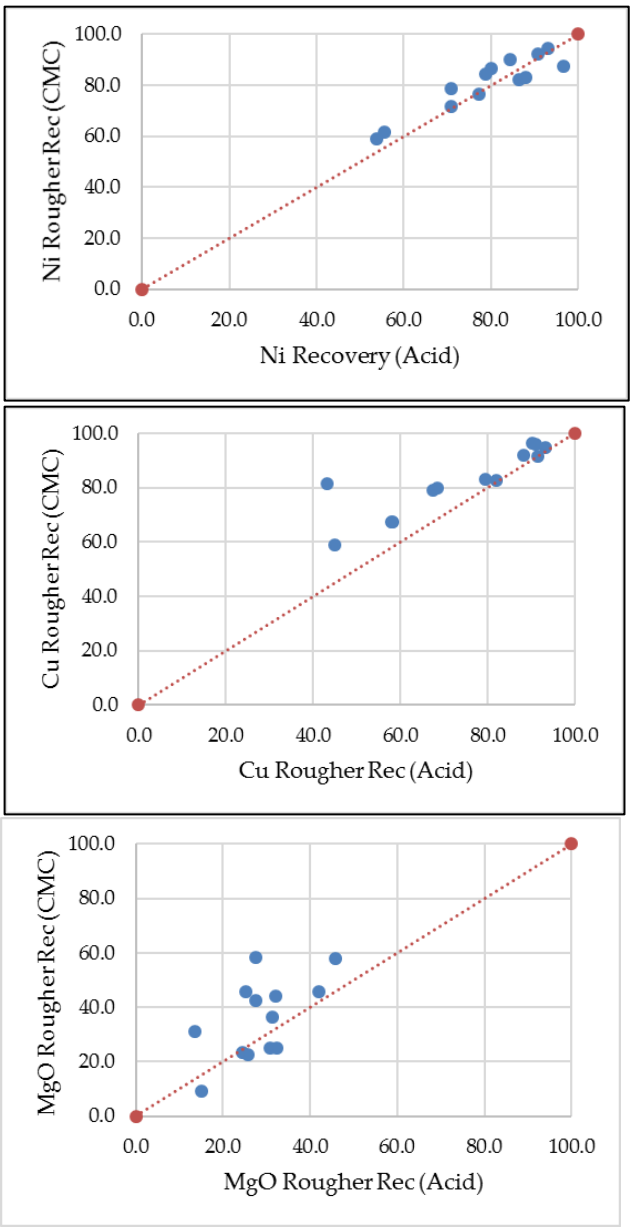
Sample Description	Met ID	Head Grade			Rougher Conc				Magnetic Scavenger Conc				Mag Scav Tail	
		Ni	Cu	S	wt%	R%Ni	R%Cu	R%MgO	wt%	R%Ni	R%Cu	R%MgO	Ni	Cu
CLPX 0.15B	WM16-112	0.14	0.19	0.77	8.6	63.4	85.0	8.4	15.9	7.3	3.2	16.1	0.06	0.04
PERD 0.15	WM16-336	0.14	0.18	0.61	4.3	55.2	61.2	3.3	30.2	22.0	18.2	27.6	0.05	0.07
PERD 0.2A	WM16-326	0.21	0.02	0.10	25.0	38.5	54.7	27.4	16.0	17.0	12.7	14.6	0.18	0.02
PERD 0.2B	WM16-317	0.20	0.03	0.17	7.2	25.3	30.7	6.8	29.0	28.5	12.5	24.4	0.17	0.05
PERD 0.25A	WM16-323	0.24	0.21	1.43	12.1	79.3	74.3	8.7	18.9	7.2	7.5	17.1	0.05	0.06
PERD 0.25B	WM16-330	0.27	0.06	0.45	26.9	55.6	38.1	29.1	18.9	24.6	19.7	16.7	0.11	0.05
PERD 0.3A	WM16-319	0.28	0.12	0.50	8.1	37.4	17.3	8.5	27.8	33.5	27.7	23.4	0.14	0.12
PERD 0.35	WM16-331	0.32	0.10	0.59	13.4	50.1	38.2	13.6	19.2	28.5	19.9	13.8	0.11	0.06
PERD 0.4A	WM16-334	0.37	0.17	0.85	17.8	68.4	56.2	17.0	15.0	16.0	12.3	10.6	0.11	0.10
PERD 0.4B	WM16-284	0.38	0.50	3.74	13.9	84.8	88.3	5.5	10.7	3.1	3.1	9.5	0.07	0.06
PERD 0.5B	WM16-329	0.49	0.55	4.97	17.3	89.1	89.3	5.7	7.7	1.7	1.7	7.9	0.07	0.07
PERD 0.6A	WM16-328	0.55	0.53	6.12	19.9	89.7	86.1	6.2	17.8	3.3	4.2	18.9	0.07	0.09
PERD 0.6B	WM16-327	0.60	0.48	7.96	26.0	94.9	89.8	7.7	19.9	1.9	3.4	24.7	0.04	0.07

The Ni feed grade relationship to rougher recovery for Cu and Ni contained significant scatter. Even with the change in flowsheet, the mass pull to the rougher concentrate was highly variable as was observed in Phase 1. This variability was hypothesised to be related to changes in ratios of the type of serpentine-antigorite, lizardite, and clinochrysotile. The difference in flotation properties drives the MgO recovery to rougher concentrate and results in differences in mass pull. This scatter was somewhat reduced with the low pH circuit and/or the reduced retention time in the optimized (Phase 2) flowsheet rather than CMC and soda ash added in the Phase 1 testing.

The optimized rougher results from the current phase were made with the same samples from Phase 1 and have been compared to review differences in results. Note that primary grind (53µm vs. 100µm), collector dose, MgO depression strategy (low pH acid vs. CMC) and retention time are different between the flowsheets.

A comparison of the total rougher recovery (rougher float + magnetic scavenger) is provided in Figure 13-12 and shows nearly identical results between the two flowsheets for Ni recovery. Cu recovery, when below 80% is lower with the low pH circuit as is MgO recovery.

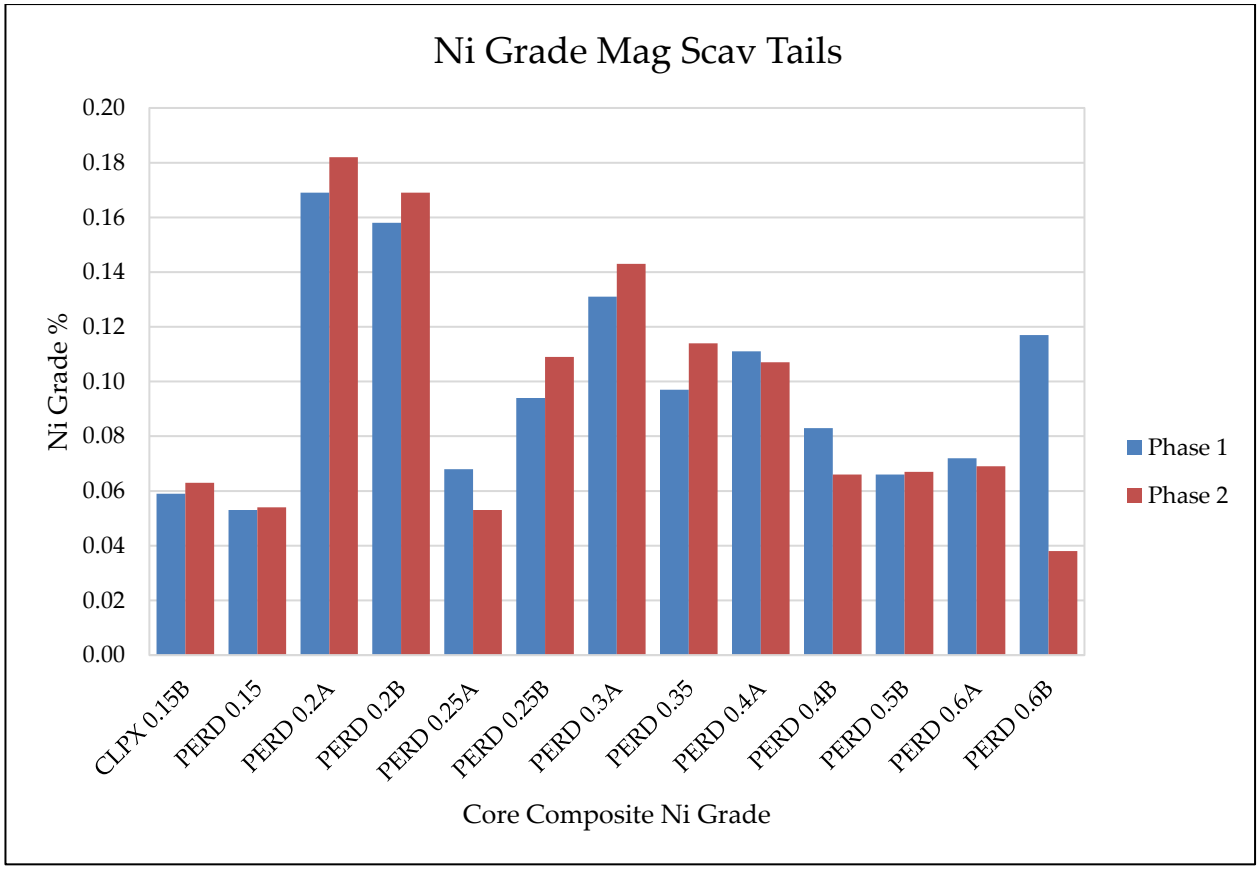
Figure 13-12: Comparison for Ni (top left) and Cu (top right) and MgO (bottom) Total Rougher Recoveries (float + mag scavenger) from CMC Process and Acid Process



Source: XPS 2018 Variability Report - P.7, 8

Ni content in the magnetics scavenger tails as a ratio of the feed Ni is indicative of recovery. The Ni grade of the magnetics scavenger tails (Mag-Scav-Tails) was also compared from the two flowsheets and the results are presented in Figure 13-13. These show Ni tailing grades are within 0.01% Ni of both flowsheets following flotation and magnetic scavenging with the exception of the highest Ni variability sample and in that sample the tail was lower for the new circuit.

Figure 13-13: Comparison of Mag Scav Tail Ni Grade for Phase 1 and Phase 2 Flow Sheets



Source: XPS 2018 Variability Report P.8

The comparison demonstrates only minor differences in the Ni recovery of the two processes, the previous study evaluated numerous relationships to project the Ni recovery from the head assays. As an indicator of recovery, the study compared Ni in the Scavenger tails against numerous relationships in the feed. The best relationship developed was against a ratio of the sulphur, not combined with Cu, and Ni. This ratio can be calculated from the head assays according to the equation (S-Cu)/Ni.

The samples were originally selected for Ni distribution and with the added parameter of sulphur now identified, it was found that only two data points used for the relationship had S values less than 0.8% S. It was recommended that as Ni recovery contribution from samples below 0.8% S are important to determine the value of the resources, that additional samples with variable Ni values for set S ranges be collected and tested. Twelve (12) additional samples were obtained. The samples were selected in pairs of high and low Ni values at six specific S ranges. The assays are available in Table13-21.

Table 13-21: Head Assays of Additional Variability Samples

Client ID	Head Assays									
	Ni %	Cu %	S %	Fe %	Co %	MgO %	Pt g/t	Pd g/t	Au g/t	3E g/t
Composite A	0.33	0.12	0.15	9.46	0.017	36.8	0.18	0.28	0.04	0.50
Composite B	0.22	0.05	0.16	8.97	0.015	37.3	0.14	0.17	0.03	0.35
Composite C	0.35	0.11	0.27	9.77	0.018	36.5	0.20	0.29	0.04	0.53
Composite D	0.24	0.03	0.23	8.36	0.014	39.1	0.08	0.14	0.02	0.24
Composite E	0.34	0.13	0.42	9.40	0.017	36.2	0.19	0.30	0.04	0.52
Composite F	0.24	0.06	0.48	8.74	0.015	37.1	0.10	0.14	0.02	0.27
Composite G	0.38	0.14	0.51	9.32	0.017	35.2	0.23	0.35	0.04	0.63
Composite H	0.23	0.07	0.51	8.66	0.014	34.3	0.14	0.18	0.02	0.34
Composite I	0.32	0.12	0.63	9.41	0.016	34.2	0.18	0.28	0.03	0.49
Composite J	0.23	0.09	0.64	9.37	0.015	32.3	0.15	0.21	0.03	0.38
Composite K	0.35	0.13	0.74	9.44	0.017	36.3	0.21	0.30	0.03	0.55
Composite L	0.28	0.12	0.78	9.62	0.016	33.5	0.19	0.23	0.05	0.48

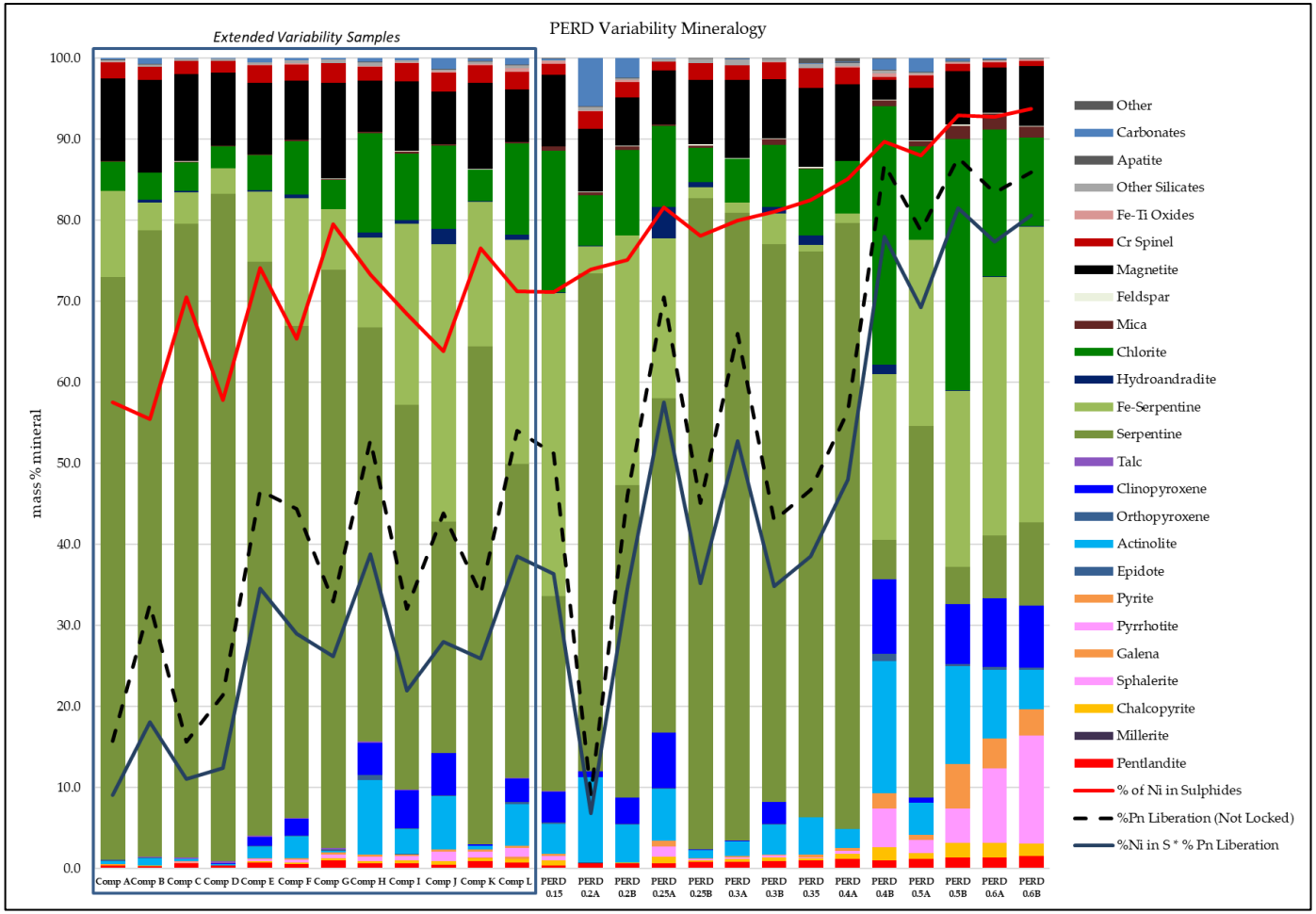
Mineralogy was performed on the additional samples and their modal mineralogy. Ni deportment and liberation measurements were also conducted on the additional samples. For comparison purposes, the data was plotted together with the original peridotite samples and presented in Figure 13-14.

The new samples of the extended variability test work are presented in pairs of a high and low Ni value at a similar S value. The S value of the pairs increase from left to right. The previous variability results are ordered by Ni value from low to high.

The primary mineralogy is serpentine in all the samples. In samples with increased sulphur content, actinolite, clinopyroxene, and chlorite are also increased whereas the serpentine decreased. Magnetite is relatively constant across all samples.

The gangue contains on average 0.06% Ni and as expected the % of the total Ni associated with sulphides (red line on figure) increases with the Ni grade of the sample. The percent liberation of Pn is also plotted (dashed black line). The % liberated includes all liberation classifications including free, liberated and middlings and excludes locked particles in which less than 30% of the particle is Pn. Lower sulphur samples are observed to have lower Pn liberation. The total Ni recovery will be a function of the % Ni available as sulphides and the % to which it is liberated. The solid black line is the product of these two values.

Figure 13-14: Modal Mineralogy of All Variability samples indicating Ni as Sulphide and Pn liberation

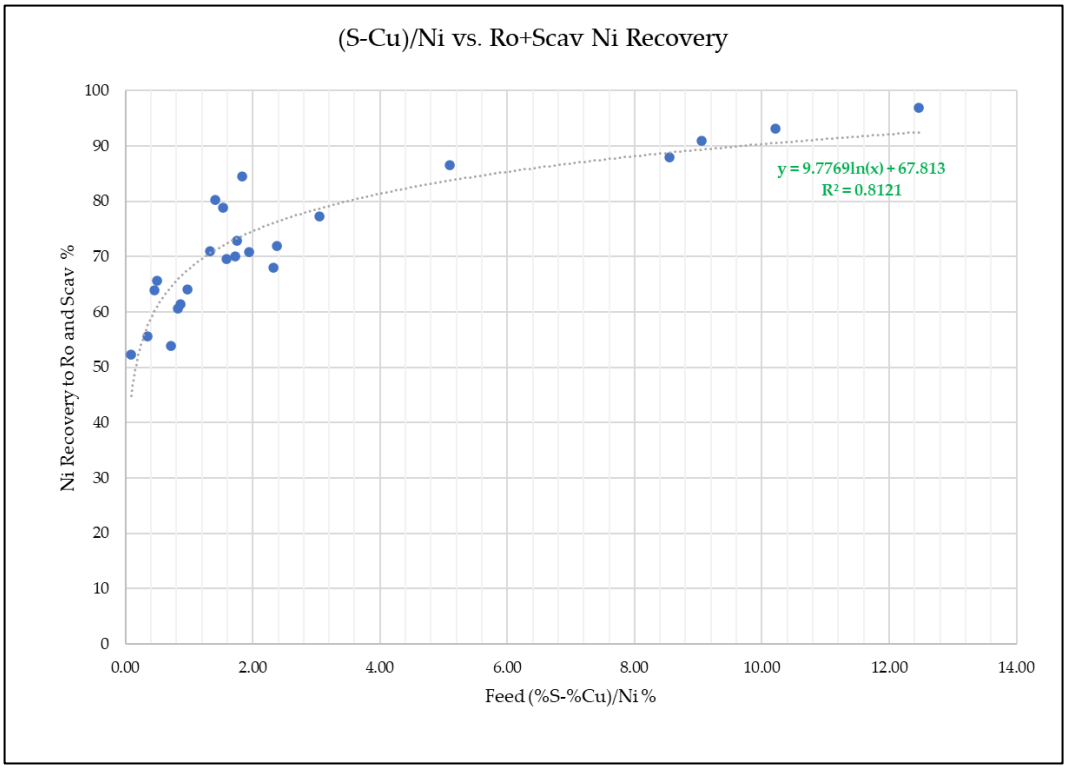


Source: XPS 2022 Variability Report - P.7

Observing that metallurgy would be driven by Ni as NiS, the potential of using NiS assays an indicator for metallurgical recovery was also considered. An evaluation comparing NiS assay results against the total Ni heads was very consistent. However, when compared to either mineralogically determined NiS or rougher scavenger recovery, correlations were less robust and did not improve on the current feed factor of (S-Cu)/Ni.

The additional variability samples were processed according to the flowsheet shown in Figure 13-15 to determine the potential rougher/scavenger recovery possible from the samples. The samples were added to the variability database and a Ni recovery relationship was generated for all the data. After comparison against numerous feed ratios, it was determined that the factor of (S-Cu)/Ni provided the best relationship to Ni rougher/scavenger recovery resulting in an R-squared of 0.81 as presented in Figure X. This factor was not only related to Ni rougher/scavenger recovery but also Ni rougher/scavenger concentrate grade. The tests indicated that low feed (S-Cu)/Ni also produced lower upgrade ratios also will impact cleaner recovery.

Figure 13-15: Combined Rougher + Scavenger Ni Recovery versus Feed (%S-%Cu)/%Ni



Source: XPS 2022 Variability Report - P.10

13.6.3 Recovery Models

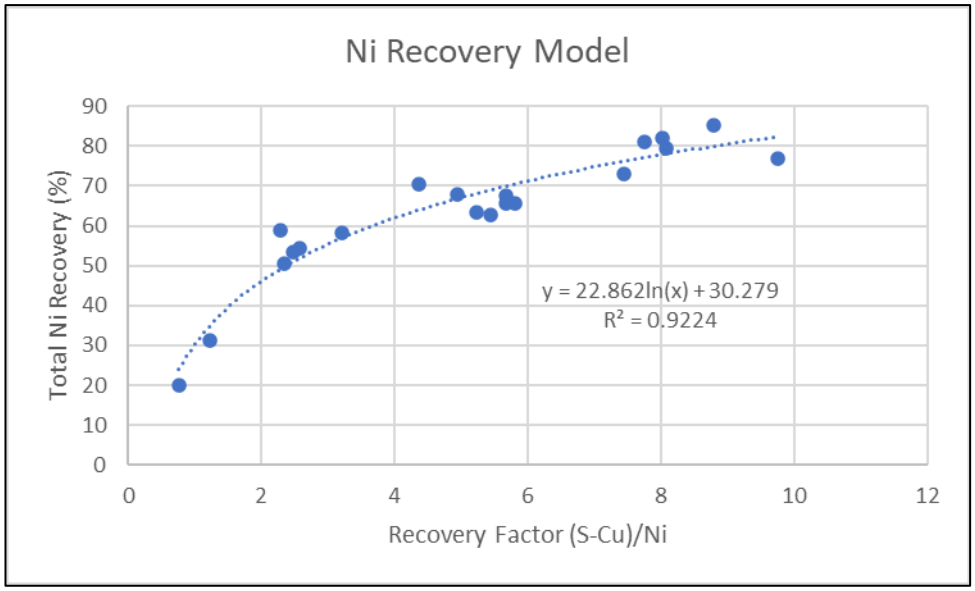
The recovery model for this resource were developed based on data from both closed circuit and variability testing. The main financial driver for this resource in Ni recovery which represents more than 50% of the gross value. Cu and Pd follow in value at just over 10% of the gross value followed by Co and Au at just under 10% of the gross value.

It was identified through variability testing that the feed ratio of the difference in S in the heads less Cu in the heads divided by Ni in the heads ((SHd-CuHd)/NiHd) was the most robust factor identified for the prediction of Ni recovery. Since the original discovery of this resource, various samples have been evaluated in closed circuit. A total of 21 tests which including partial and complete locked cycle tests, and mini pilot plant tests were documented. A list of the tests, the samples and the results are presented in Table 13-22. The relationship between Ni recovery from these tests and the head ratio of (SHd%-CuHd%)/NiHd% is provided in Figure 13-16.

Table 13-22: Summary of Historic Test Work and XPS Model Calculation (from previously reported data)

Laboratory	Year	Composite Sample	Heads Assay			Test Recovery (%)		XPS Model Recovery (%)	
			Ni (%)	Cu (%)	S (%)	Ni	Cu	Ni	Cu
Lakefield	1988	Feb-88 Comp 1	0.65	0.87	6.59	85.30	94.90	79.9	93.10
Lakefield	1988	Feb-88 Comp 2	0.61	0.90	6.85	76.80	94.10	82.2	93.33
Lakefield	1988	Nov-88 Comp A	0.57	0.94	5.51	82.10	95.50	77.7	93.62
Lakefield	1988	Nov-88 Comp A	0.58	0.96	5.46	81.10	96.10	77.0	93.75
Lakefield	1988	Nov-88 Comp B	0.41	0.57	3.88	79.30	95.40	77.9	89.47
Lakefield	1988	Low-grade Comp	0.23	0.08	0.25	20.00	33.80	23.4	20.00
G&T	2011	2012 P. Composite 1	0.26	0.29	1.80	65.73	65.10	70.4	79.31
SGS Vancouver	2012	Master Comp 2012	0.48	0.34	2.95	62.80	86.20	68.9	82.35
SGS Vancouver	2012	Master Comp 2012	0.42	0.33	2.53	63.40	84.90	68.0	81.82
SGS Vancouver	2012	Master Comp 2012	0.45	0.37	2.92	67.60	87.80	69.8	83.78
SGS Vancouver	2012	Master Comp 2012	0.44	0.35	2.85	65.70	85.90	69.9	82.86
SGS Vancouver	2012	High Ni Comp 2012	0.83	0.55	6.73	72.90	88.00	76.1	89.09
SGS Lakefield	2013	LUC 2013	0.39	0.41	2.34	68.00	88.50	66.7	85.37
XPS 2014	2014	203 Lower Variability	0.33	0.18	1.24	58.20	62.70	56.9	66.67
XPS 2017	2017	PERD Comp Yr. 1-16	0.29	0.15	0.81	58.80	73.40	49.0	60.00
XPS 2017	2017	CLPX Comp Yr. 1-16	0.25	0.37	1.46	70.50	93.20	63.9	83.78
XPS 2017	2017	Peridotite Comp - Ph 2a	0.30	0.17	0.87	50.40	60.90	49.6	64.71
XPS 2018	2018	MPP 1-5 Comp - Ph 2b	0.33	0.15	1.00	54.40	57.10	51.9	60.00
XPS 2018	2018	MPP 1-5 Comp - Ph 2b	0.33	0.15	0.97	53.30	59.60	51.0	60.00
XPS 2018	2018	MPP 6-10 Comp - Ph 2b	0.31	0.12	0.50	31.20	33.20	34.9	50.00

Figure 13-16: Feed (S-Cu)/Ni Ratio Correlation with Closed Circuit Test Results



Source: G. Marrs 2023

Based on this relationship it can be seen that Ni recovery can be projected from feed grade based on the following equation. The highest recorded Ni recovery from these tests is 88% which is recommended as a maximum cap.

13.6.4 Equation 1: Ni Recovery

Ni Recovery = 23.21*LN((SHds%-CuHds%)/NiHds%) +30.362 and provides an R-squared of 0.94.

Cu recovery model was estimated based on a review of the variability testing tails. The Cu tails grade centres around 0.06% for most of the variability samples. For samples where Cu head grade is 0.06% or lower, the measured head is assigned as the Mag-Scav-Tail grade meaning no Cu recovery to final concentrate.

13.6.5 Equation 2: Cu Recovery

- Cu Recovery = (Cu Hd - 0.6)/Cu Hd
- where, Cu Hd is Cu head assay

The final metal recovery to bulk concentrate, prior to Cu-Ni separation, used in the resource calculations were calculated based on the above equations.

13.7 Application of Metallurgical Results to the Resource

In summary, the Ni and Cu recovery models were validated against historic test results. These models calculated the total recovery to bulk concentrate. Co and precious metal recoveries to bulk concentrate provided were based on the stable results of the pilot plant composite Yr. 1-5. The recovery of metals to separate Cu and Ni concentrates from the total bulk recovery was determined by the mineral based simulated Cu-Ni separation model developed by XPS.

The application of modelled Cu-Ni separation results to the block model identified variable Cu distribution in the resource. In blocks with low Cu heads the economic results were better with a bulk concentrate. In the blocks with high Cu heads, production of separate Cu and Ni concentrates provided superior economics.

In reviewing the areas of the resource which contained either the low or the high Cu, it was determined that an opportunity existed to separately process these materials. In processing these materials separately, the conditions could be selected to optimize concentrate grade and hence overall Project economics.

The low Cu material, containing an average Cu/Ni ratio of only 0.37, also contained low (0.52%) S values and was most similar to the Phase 2 composites tested at XPS. These composites responded well with the low pH circuit. The low pH circuit has the benefit of reducing MgO content while increasing pyrrhotite recovery. Based on the two MPP results a weighted average concentrate grade of Cu+Ni of 10.4% was calculated with an MgO content of 5.6%. These values were used to determine bulk concentrate production.

The remaining high Cu material, containing an average Cu/Ni ratio of 1.12, also contained higher (1.32%) S values and was more comparable to samples tested prior to Phase 2. There are numerous tests performed on higher sulphur samples however the closest match was the 203 lower peridotite sample tested by XPS in 2014 which contained 1.24% S. With the higher sulphur values, the CMC circuit which demonstrated superior pyrrhotite rejection albeit at a higher MgO content, was selected as the preferred processing route. To determine the concentrate tonnage produced from the higher Cu material the results from the 2014 study with a grade of Cu+Ni of 14.2% and an MgO content of 9.8% was used.

The bulk concentrate produced from the higher Cu material was entered in the simulated Cu-Ni separation circuit designed by XPS. With the higher Cu grade in the feed, the simulation projected a higher grade of 25.6% Cu although, Cu recovery to Cu concentrate was unchanged at 62.3% of the Cu reporting to bulk concentrate.

A summary of the metal recoveries, for metallurgical calculation purposes, is presented in Table 13-23. For resource calculation purposes, a constant concentrate grade was used.

Table 13-23: Summary Table of Metallurgical Calculations

Metal Recovery	
Ni Recovery based on Closed Circuit Testing	
Total Ni Recovery	=22.862*LN((HdS%-HdCu%)/HdNi%) +30.279
Maximum Ni Recovery	88%
Cu Recovery Based on Variability Testing	
Where CuHd%	>0.6%
Total Cu Recovery	=(HdCu%-0.06)/HdCu%*100;
Co, Au, Pt, Pd Recoveries Fixed Based on MPP Results	
Total Co Recovery	= 57%
Total Au Recovery	= 74.4%
Total Pt Recovery	= 47.8%
Total Pd Recovery	= 54%
Concentrates Production	
Low Cu/S Resource Blocks Produce Bulk Concentrate	
Bulk concentrate grade based on MPP results	
Bulk Cu+Ni Grade	=10.4%
High Cu/S Resource Blocks Produce Cu and Ni Concentrates from Bulk	
Intermediate Bulk Concentrate Grade Based on XPS 2014 Program	
Bulk Cu+Ni Grade	=14.2%
Split Cu and Ni Concentrates based on XPS Simulation and LCT results	
Cu Concentrate split from High Cu/S Bulk Concentrate	
Cu recovery to Cu conc	= 62% of Cu in high Cu/S bulk concentrate
Grade of Cu Conc	= 25.6% Cu, 1.1% Ni
Pd recovery to Cu conc	= 5.9%
Au recovery to Cu conc	= 31.7%
Ni Concentrate Split from High Cu/S Bulk Concentrate	
Ni recovery to Ni conc	= based on 1.1% Ni in Cu Conc (96.2% of Ni in bulk conc)
Cu recovery to Cu conc	= remaining 38% of Cu in bulk concentrate
Co recovery to Ni conc	= 98.1% of high Cu/S bulk concentrate
Au recovery to Ni conc	= 68.3% of high Cu/S bulk concentrate
Pt Recovery to Ni conc	= 98.1% of high Cu/S bulk concentrate
Pd Recovery to Ni conc	= 94.1% of high Cu/S bulk concentrate

14 MINERAL RESOURCE ESTIMATES

This section discloses the Mineral Resources for the Project, prepared, and disclosed in accordance with the CIM Standards and Definitions for Mineral Resources and Mineral Reserves (2014). The QP responsible for these resource estimates is Mr. Paul Daigle, P.Geo., Senior Resource Geologist for AGP. The effective date of this mineral resource is 3 April 2023.

The current Mineral Resources for Project are amenable to an open pit mining scenario and has been prepared using lithology domains that comprise the Project (Figure 14 1).

14.1 Data Base

The Mineral Resources use only data starting from 1987. Table 14-1 summarizes the drill hole statistics.

Table 14-1: Summary of Drill Hole Data Used for Resource Estimation

	Count
Drill holes	394
Sample Intervals	24,341
Metres of Drilling	64,510
Ni	25,749
Cu	25,749
Co	25,749
Au	25,749
Pd	25,749
Pt	25,749
S	20,762
Mg	22,118

Source: AGP (2023)

14.2 Geology Interpretation

The additional 8 drill holes from the 2022 drill program almost exclusively within the peridotite lithology. Therefore, the geologic interpretation developed for the 2018 Mineral Resources was kept the same for the current resource estimation. The latest drilling was reviewed with respect to the current interpretation and found no significant changes were required.

Table 14-2 presents the lithological domains and rock codes for the Project.

Table 14-2: Summary of Lithology Domains and Rock Codes

Lithology	Rock Code	Comments
Clinopyroxenite	7	Mineralized
Mineralized Gabbro	20	Mineralized
Peridotite	24	Mineralized
Massive Sulfide	29	Mineralized
Metasedimentary Rocks	26	Mainly Barren
Basalt	5	Barren
Maple Creek Gabbro	21	Barren

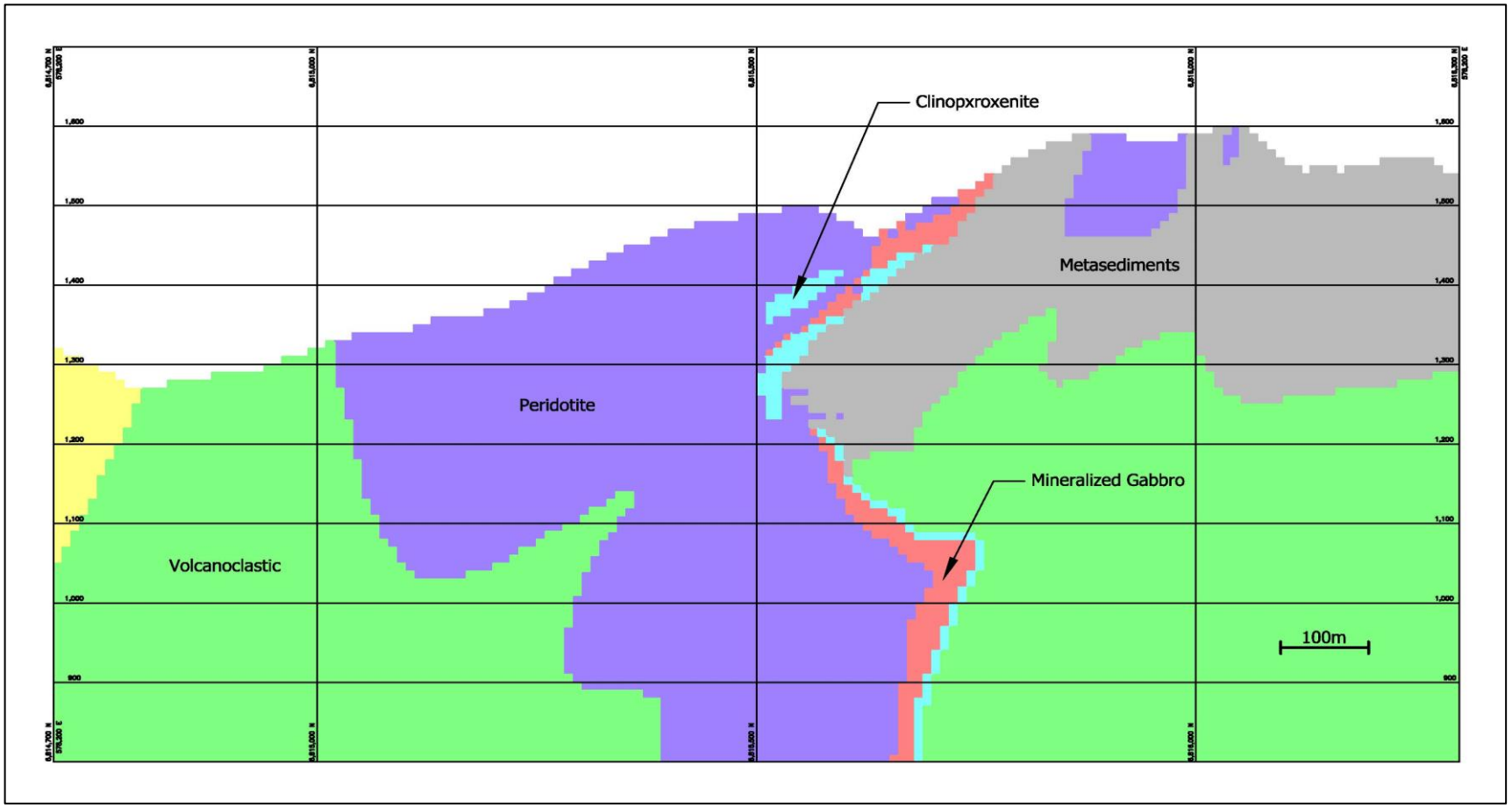
Source: AGP (2023)

The main hosts for the mineralization are within clinopyroxenite, mineralized gabbro, peridotite, and massive sulfide lithologies. Metasedimentary rocks may host sulfide mineralization when in close contact with the intrusive units of clinopyroxenite, mineralized gabbro, and peridotite. Although, the extent of mineralization into the metasedimentary rocks is minor, it has local high grades.

Peridotite is well mineralized near the contacts and becomes lower grade as one migrates to the south, away from the sediment contact. The southernmost distal peridotite mineralization dominantly reflects the nickel contained in olivine/serpentine and is not anticipated to be recovered. Peridotite near the contacts contains more sulfides and consequently higher grades of sulphides which are more easily recoverable.

Figure 14-1 presents a north-south cross section (Section 578,200 E) through the deposit looking west. The mineralized rock types are shown, as well as the metasediments and volcanoclastics, are shown on the section.

Figure 14-1: North-South Section 578,200 E, Looking West



Source: AGP (2018)

14.3 Exploratory Data Analysis

All six metals have been estimated as they are a credit to the deposit. Sulfur and magnesium have been estimated as they may used for metallurgical purposes. There is no commercial benefit from sulfur or magnesium and are not included in the final statement of mineral resources.

14.3.1 Raw Assays

The drill hole data used for the Wellgreen data, consists of 394 drill holes and 25,749 assay values for each metal: nickel, copper, gold, palladium, platinum, and gold. Sulphur and magnesium have fewer values. The assay values reported below detection limit were assigned half the detection limit for statistical analysis and grade estimation. Any missing values were assigned a zero.

Table 14-3 presents the descriptive statistics of the drill holes in the in the Wellgreen deposit by mineralized domains.

Table 14-3: Descriptive Statistics for Raw Assays

Rock Type	Statistic	Statistics for Raw Assays							
		Ni%	Cu%	Co%	Pt gm/t	Pd gm/t	Au gm/t	S%	Mg%
Clinopyroxenite	Number	4373	4373	4373	4373	4373	4373	3272	3385
	Mean	0.23	0.27	0.015	0.09	0.25	0.36	1.27	12.75
	Std Dev	0.23	0.32	0.011	0.13	0.24	0.41	1.57	4.99
	CV	1	1.18	0.75	1.46	0.95	1.16	1.24	0.39
Mineralized Gabbro	Number	3147	3147	3147	3147	3147	3147	2322	2422
	Mean	0.25	0.32	0.02	0.08	0.26	0.37	1.56	7.24
	Std Dev	0.64	0.44	0.02	0.16	0.38	0.50	2.35	4.97
	CV	2.59	1.4	1.32	1.9	1.48	1.36	1.51	0.69
Peridotite	Number	15,333	15,333	15,333	15,333	15,333	15,333	13,136	14,203
	Mean	0.25	0.10	0.014	0.03	0.21	0.18	0.52	17.68
	Std Dev	0.12	0.11	0.005	0.06	0.16	0.16	0.56	5.37
	CV	0.49	1.05	0.34	1.88	0.75	0.88	1.08	0.30
Massive Sulfide	Number	85	85	85	85	85	85	68	71
	Mean	0.87	0.84	0.044	0.15	0.77	1.01	4.38	5.00
	Std Dev	1.02	0.82	0.046	0.22	0.95	2.18	4.81	5.60
	CV	1.17	0.98	1.05	1.45	1.25	2.16	1.1	1.12

14.3.2 Grade Capping

Capping analysis was carried out on each domain for all metals to reduce the influence of outliers. Histograms, cumulative frequency plots and disintegration plots were used to analyze each metal by domain and capping levels were applied where deemed necessary.

Table 14-4 presents the capping levels for each metal and the number of values capped, by domain.

Table 14-4: Capping Levels (No. of Values Capped), by Domain

Rock Type		Metal or Element to be Estimated							
	Code	Ni%	Cu%	Co%	Au g/t	Pd g/t	Pt g/t	S%	Mg%
Clinopyroxenite	7	3.00 (5)	2.86(7)	0.150(5)	1.14(3)	4.20 (7)	3.00 (3)	10.00 (8)	No Cap
Minlzd Gabbro	20	2.31 (28)	3.00(8)	0.150(14)	0.91(13)	3.89 (3)	3.35 (13)	10.00 (24)	No Cap
Peridotite	24	1.50 (4)	1.89(1)	0.102(1)	0.91(7)	2.24 (3)	2.53 (2)	10.00 (2)	No Cap
Massive Sulfide	29	2.00(16)	2.50(6)	0.100(13)	0.80(8)	2.16 (13)	2.00 (13)	10.00 (13)	No Cap
Metasediment	26	3.10(3)	2.70(1)	0.147(1)	0.88(2)	2.16 (6)	3.38(1)	15.00 (1)	14.3 (5)
Volcanoclasitic	32	0.418(3)	0.83(5)	0.027(6)	0.40(4)	0.94 (9)	0.54 (12)	2.76 (8)	No Cap

Mg assays completed during 2009 were found to be significantly low biased compared to all other years of Mg assay. The 2009 drilling was consequently not used for estimation of Mg.

14.3.3 Compositing

The procedure for compositing was of equal length down the hole and back tagged based on the intersection with the lithological domain wireframes. Any composites outside a domain wireframe were coded based on the logged lithology.

The descriptive statistics for capped 10 m composites, for the primary hosts for mineralization, are summarized in Table 14-5.

Table 14-5: Basic Statistics of 10 m Capped Composites

Rock Type	Statistic	Statistics of 10 m Capped Composites							
		Ni%	Cu%	Co%	Au g/t	Pd g/t	Pt g/t	S%	Mg%
Clinopyroxenite	Number	926	926	926	926	926	926	926	926
	Mean	0.22	0.24	0.014	0.08	0.24	0.33	0.86	9.90
	Std Dev	0.13	0.21	0.007	0.09	0.17	0.28	1.03	6.62
	CV	0.62	0.89	0.49	1.11	0.72	0.86	1.20	0.67
Mineralized Gabbro	Number	642	642	642	642	642	642	642	642
	Mean	0.21	0.28	0.013	0.08	0.23	0.33	0.99	5.49
	Std Dev	0.20	0.26	0.011	0.08	0.21	0.33	1.27	4.98
	CV	0.95	0.95	0.82	1.13	0.92	0.99	1.29	0.91
Peridotite	Number	3374	3374	3374	3374	3374	3374	3374	3374
	Mean	0.24	0.10	0.014	0.03	0.21	0.18	0.43	16.04
	Std Dev	0.09	0.09	0.004	0.04	0.12	0.14	0.45	6.85
	CV	0.39	0.90	0.32	1.14	0.56	0.76	1.03	0.43
Massive Sulfide	Number	11	11	11	11	11	11	11	11
	Mean	0.64	0.79	0.038	0.17	0.56	0.78	2.82	4.20
	Std Dev	0.75	0.63	0.039	0.17	0.44	0.65	3.42	4.57
	CV	1.18	0.79	1.02	1.02	0.78	0.83	1.21	1.09

14.3.4 Boundary Analysis

To determine the proper treatment of rock type or other boundaries, or contact, analysis was conducted. The procedure pairs composites from opposite sides of rock type borders and compares their statistical properties to understand how populations behave at the contact of lithologies. A 'hard' boundary indicates separate populates, and a 'soft' boundary indicates a gradational, or no separation between domain populations; and allows composites from either side of the rock type boundary to be used for grade estimation. In all cases, the massive sulfide rock type (Code 29) appears to be a separate population from all others and is treated as a hard boundary.

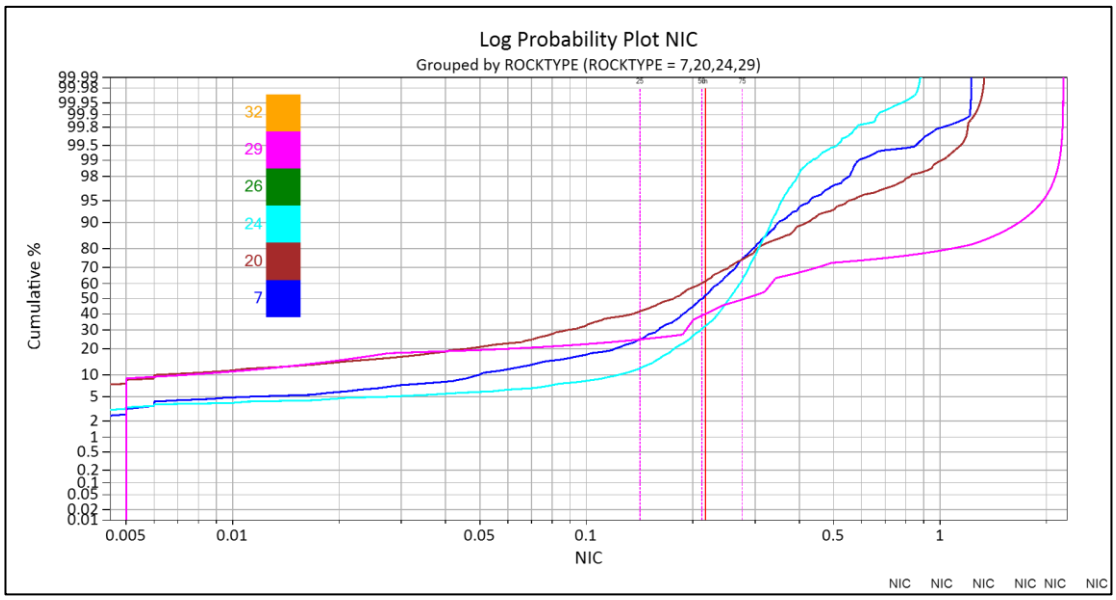
Error! Reference source not found. summarizes the results of the boundary analysis.

Table 14-6: Summary Results of Boundary Analysis

Rock Type	Paired With	Summary of Boundary Analysis							
		Ni%	Cu%	Co%	Au g/t	Pd g/t	Pt g/t	S%	Mg%
Clinopyroxenite	Gabbro	soft	soft	hard	soft	soft	soft	soft	hard
Clinopyroxenite	Peridotite	soft	soft	soft	hard	soft	soft	soft	hard
Clinopyroxenite	Mass Sulf	hard	hard	hard	hard	hard	hard	hard	hard
Gabbro	Peridotite	soft	hard	soft	hard	soft	soft	hard	hard
Gabbro	Mass Sulf	hard	hard	hard	hard	hard	hard	hard	hard
Peridotite	Mass Sulf	hard	hard	hard	hard	hard	hard	hard	hard

Figure 14-2 presents a log probability plot showing the distribution of the nickel composites for each of the four mineralized host rock types. The clinopyroxenite, peridotite, and gabbro all show a population change at about 0.35% Ni.

Figure 14-2: Log Probability Plot for 10 m Nickel Composites



Source: AGP (2023)

A review of cross sections also indicates that each of the rock types contain a component of greater than 0.35% Ni with limited areal extent. Those high-grade zones often appear to connect across the rock type boundaries prompting the use of an indicator estimate to establish the volume of the 0.35 %Ni population, independent of rock type boundaries. Once the 0.35% volume was defined, the grades inside were estimated with the indicator boundary treated as a hard boundary.

14.3.5 Bulk Density

Bulk density assignment to the model was based on the samples collected at the core shed by staff geologists. Selected samples from each core box are weighed wet and dry to calculate specific gravity.

AGP completed the calculation of specific gravity for those samples in the Nickel Shäw data base where the weights had been collected, but the specific gravity field was not populated.

Several class regression analyses to determine if there was a correlation between fracturing represented by RQD and specific gravity. The average RQD for each rock type was then used to determine the density reduction factor used from the RQD plots. In summary, a 2% reduction of measured specific gravity was applied across the board to all the mineral bearing rock types.

Table 14-7 illustrates the results of the specific gravity tests and the actual density value assigned to the respective rock type in the block model.

Table 14-7: Bulk Density Assignment to the Block Model

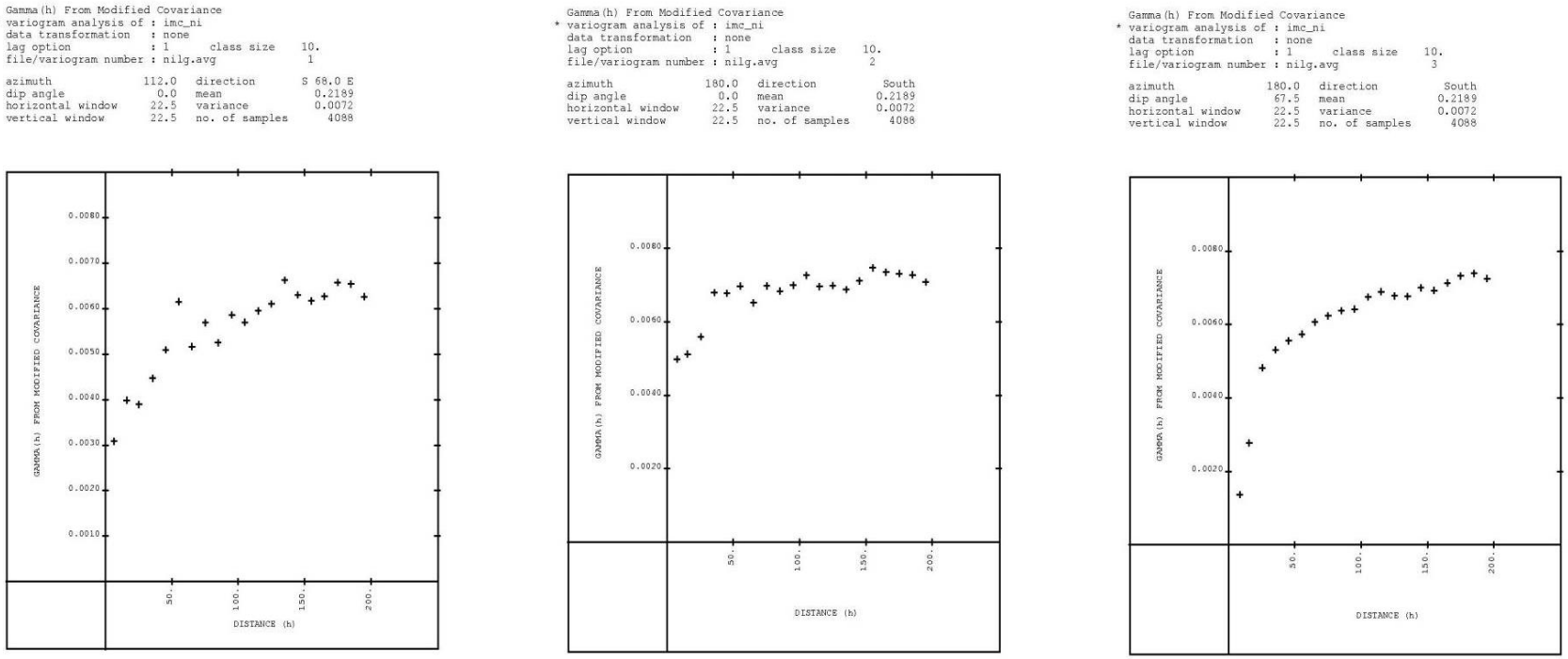
Rock Type	Model Code	Number of Samples	Mean of Samples	Assigned Value
Clinopyroxenite	7	369	2.95	2.89
Mineralized Gabbro	20	548	3.05	2.98
Peridotite	24	3,579	2.85	2.79
Massive Sulfide	29	15	3.45	3.38
Sedimentary Rocks	26	88	2.86	2.80
Volcanics	32	245	2.82	2.76
Basalt	5			2.77
Maple Creek Gabbro	21			2.80
Unassigned				2.77

14.3.6 Variography

Variograms were developed for each metal in each rock type as a guide to the search radius for block grade estimation. In addition to the variograms on grade, a series of 0.35% Ni indicator variograms were run for nickel to set the parameters for the indicator estimate of that grade range. The same search radius was used for block grade estimation.

Figure 14-3 and Figure 14-4 are examples of the variograms obtained for nickel. The summarized results from the variograms are shown in the tables defining the estimation methods in the next sub-section.

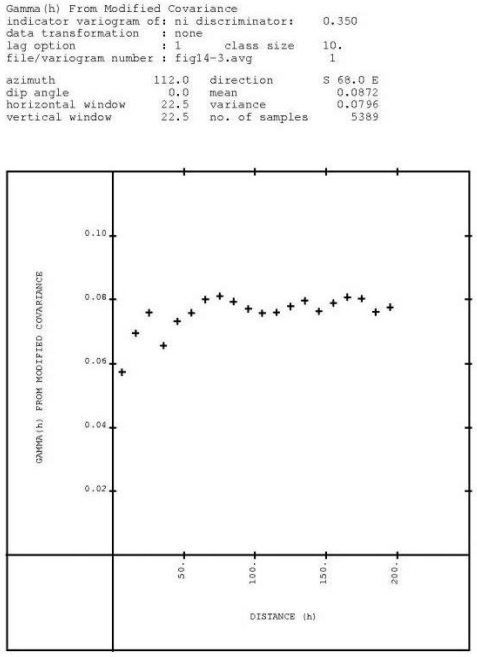
Figure 14-3: Example Indicator Variograms for Nickel Indicator at 0.35% Ni



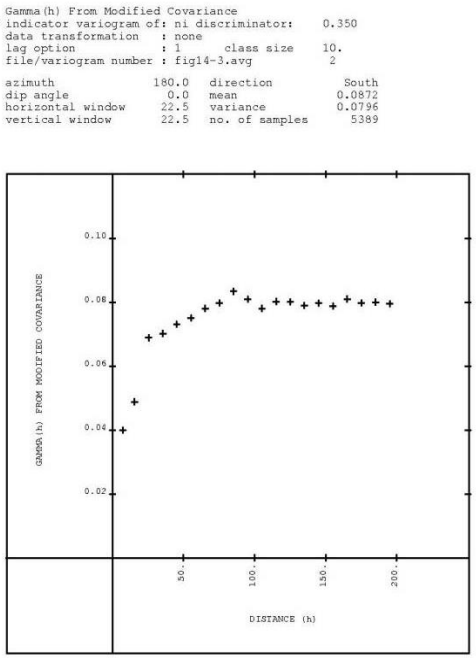
Strike **Down Dip** **Perpendicular**

Source : AGP (2023)

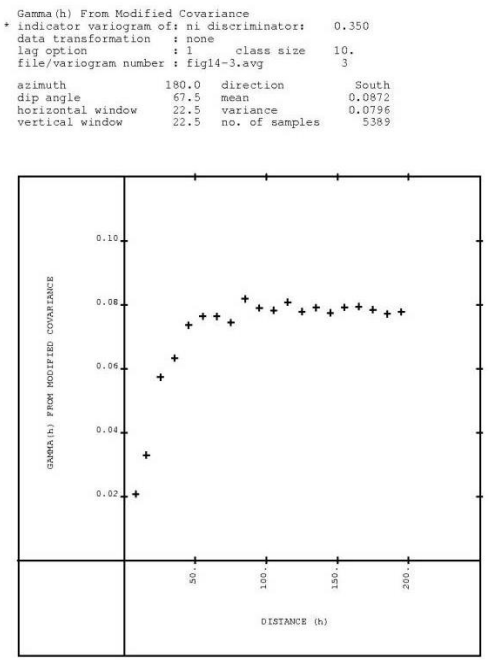
Figure 14-4: Example Grade Variograms for Nickel Less than 0.35% Ni



Strike



Down Dip



Perpendicular

Source : AGP (2023)

14.4 Block Model

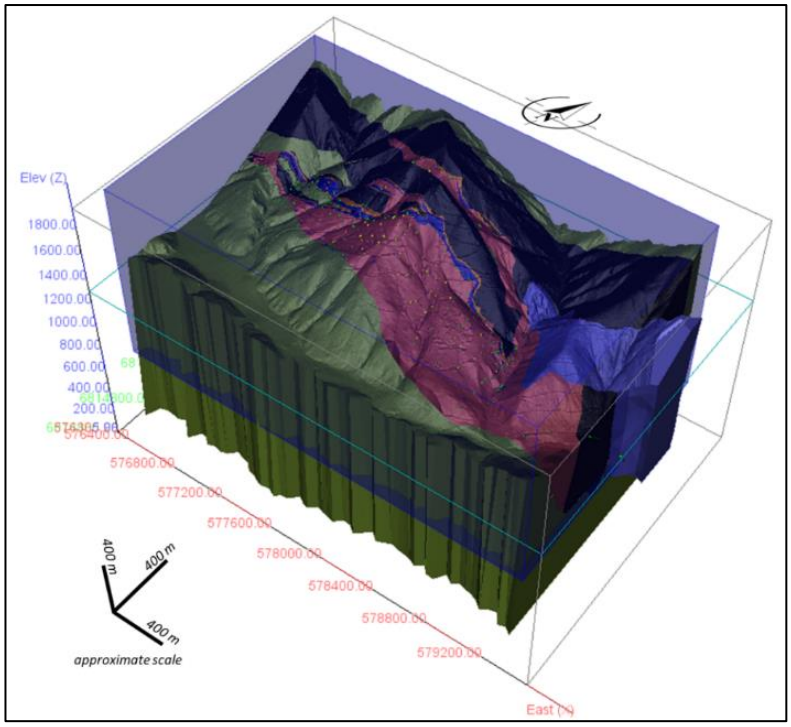
14.4.1 Block Model

The block model for the Wellgreen deposit was set up with a block matrix of 10 m long by 10 m long by 10 m high. The block model is not rotated. The block matrix was selected for the drill spacing and the block height was selected in consideration of an open pit operation. Table 14-8 summarizes the block model parameters and Figure 14-5 presents the block model over the interpreted domains for the Wellgreen Deposit.

Table 14-8: Block Model Parameters – Wellgreen Deposit

Parameters	Minimum	Maximum	No. of Blocks	Block Size
Easting	576,325	579,505	318	10 m
Northing	6,814,500	6,816,800	230	10 m
Elevation	600	1,960	136	10 m
Rotation Angle	No rotation°			

Figure 14-5: Block Model – Wellgreen Deposit



Source : AGP (2023)

14.4.2 Estimation Strategy

The Wellgreen block model was estimated using Inverse Distance squared (ID2) interpolation for all metals. A nearest neighbour (NN) interpolation was made for validation purposes. Nickel used an

indicator boundary rather than a rock type boundary. All other metals utilized some combination of rock type boundaries for estimation. The mineralized rock types were estimated: clinopyroxenite, mineralized gabbro, peridotite, massive sulphide, and included the few boundary blocks of sediments and volcanoclastics.

The indicator model for nickel did allow some mineralization to be estimated into the metasedimentary rocks and volcanoclastics, however, the amount of that material was specifically limited to be only one block width into either rock type. The mineralization on the sediment or volcanoclastic contact is of minor tonnage and does not penetrate those units any substantial distance.

The economic mineralization is generally conformal to the intrusive-sediment contact, with higher grade values tending to be proximal to the contact. To model that occurrence, a series of sub-domains were established that allow the search orientations to be parallel to the intrusive-sediment contact. The domains were selected on plan and section to reflect the changes in strike and dip of the intrusive sediment contact. There were 19 sub-domains established to reflect the variability in the contact. Those domains were not hard boundaries for grade estimation but reflected a local change in search orientation.

Table 14-9 presents the orientation of each domain. Domain boundaries are established by coordinate and elevation limits across the deposit. Table 14-10 summarizes the estimation parameters by metal, indicator, and rock type.

Table 14-9: Search Orientation by Domain

Search Domain Orientations		
Domain	**Strike Degrees**	**Dip Degrees**
1	90	45 S
2	90	90 S
3	90	90 S
4	90	60 S
5	120	65 SW
6	120	90 SW
7	120	45 SW
8	120	65SW
9	300	60 NE
10	120	60 SW
11	120	45 SW
12	300	60 NE
13	120	75 SW
14	120	45 SW
15	300	45 NE
16	120	75 SW
17	120	50 SW
18	120	75 SW
19	120	50 SW

Table 14-10: Block Grade Estimation Parameters

Orientation Domains	Search Distance (metres)			Estimation Method
	Strike	Down Dip	Perpendicular	
Nickel Indicator at 0.35% Ni Discriminator				
3 and 4	75	120	15	ID2
1, 2 and 5 to 19	75	90	15	ID2
Nickel Grade inside the Indicator Zone				
3 and 4	75	120	15	ID2
1, 2 and 5 to 19	75	90	15	ID2
Nickel Grade Outside the Indicator Zone				
3 and 4	75	120	75	ID2
1, 2 and 5 to 19	75	90	75	ID2
Copper Grade				
3 and 4	75	120	75	ID2
1, 2 and 5 to 19	75	90	75	ID2
Cobalt Grade				
3 and 4	75	120	75	ID2
1, 2 and 5 to 19	75	90	75	ID2
Platinum Grade				
3 and 4	75	120	75	ID2
1, 2 and 5 to 19	75	90	75	ID2
Palladium Grade				
3 and 4	75	120	75	ID2
1, 2 and 5 to 19	75	90	75	ID2
Gold Grade				
3 and 4	75	120	75	ID2
1, 2 and 5 to 19	75	90	75	ID2
Sulfur Grade				
3 and 4	75	120	75	ID2
1, 2 and 5 to 19	75	90	75	ID2
Magnesium Grade				
3 and 4	180	180	120	ID2
1, 2 and 5 to 19	180	180	120	ID2

All grade estimates use the following number of composites:
Maximum = 10, Minimum = 1, Maximum per hole = 3

Additional Magnesium Blocks

The results of the Magnesium estimation indicate there were a number of blocks that had Ni grades but did not have Mg grades. This is due the removal of the 2009 values from estimation. In order to provide information for process evaluation, the average Mg grade of each rock type was assigned to those blocks that were not estimated. Table 14-11 lists the mean values of Mg assigned.

Table 14-11: Mg Default values if Not Estimated and Ni is Present

Mg Default Values		
Rock Type Code	Rock Type	Assigned Average Mg%
7	Clinopyroxenite	12.76
20	Minlzd. Gabbro	7.24
24	Peridotite	17.68
26	Metasedimentary Rocks	5.61
29	Massive Sulfide	4.53
32	Volcanics	6.21

Additional Sulfur Estimation

The results of the sulfur estimation indicate there were a number of blocks that had Ni grades but did not have sulfur grades. In order to provide an estimate of sulfur for metallurgical recovery estimation, a series of correlations were developed based on the sulfur: nickel + copper values by domain.

For the Clinopyroxenite and Peridotite domains, the nickel block grade was adjusted to remove nickel in silicate based metallurgical factor

Table 14-12 summarizes the formulas used to populate blocks of missing sulfur grades.

Table 14-12: Correlation Formulas to calculate Missing Sulfur Values

Domain	Sulfur to Nickel+Copper Correlation	Adjustment for Ni in Silicate
7	(3.022 x (Ni'+Cu)) - 0.167	Ni' = Ni – 0.003
20	(2.679 x (Ni+Cu)) +0.026	
24	(2.337 x (Ni'+Cu)) - 0.183	Ni' = Ni – 0.06
26	(2.690 x (Ni+Cu)) + 0.057	
29	(2.676 x (Ni+Cu)) - 0.014	
32	(1.556 x (Ni+Cu)) +0.089	

14.4.3 Validation

The block model was validated using the following methods:

- visual inspection and comparison of block grades with composite and assay grades
- statistical comparison of resource assay and block grade distributions
- inspection of swath plots with composites and block grades elevations and northings

Table 14-13 presents a comparison of 10 m composites to ID^2 and NN interpolated mean grades by mineralized domain. AGP is satisfied that the block model grades reflect the grades from the drill core samples.

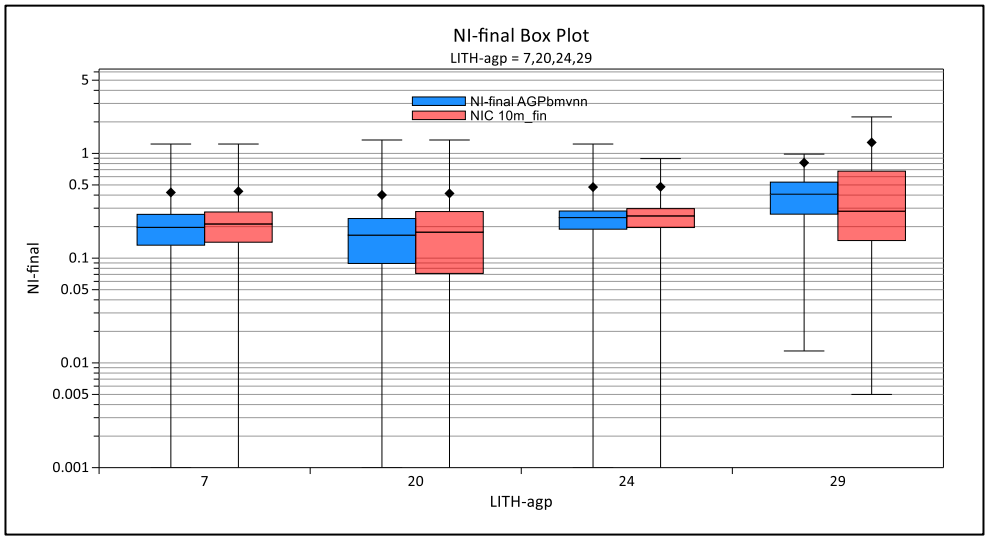
Table 14-13: Statistical Comparison of Mean Grades by Domain

Nickel	10 m Comps	NN	ID2	Gold	10 m Comps	NN	ID2
7	0.22	0.20	0.21	7	0.93	0.73	0.73
20	0.21	0.18	0.20	20	0.75	0.55	0.56
24	0.24	0.24	0.24	24	0.31	0.26	0.26
Copper	**10 m Comps**	**NN**	**ID2**	**Palladium**	**10 m Comps**	**NN**	**ID2**
7	0.24	0.22	0.22	7	0.24	0.22	0.22
20	0.28	0.19	0.19	20	0.21	0.20	0.15
24	0.10	0.09	0.10	24	0.21	0.20	0.20
Cobalt	**10 m Comps**	**NN**	**ID2**	**Platinum**	**10 m Comps**	**NN**	**ID2**
7	0.014	0.014	0.014	7	0.33	0.31	0.32
20	0.130	0.011	0.012	20	0.34	0.25	0.25
24	0.014	0.014	0.014	24	0.18	0.16	0.16

Source: AGP (2023)

Figure 14-6 shows the box plot for nickel for the main mineralized domain: clinopyroxenite (7), mineralized gabbro (20), peridotite (24) and massive sulfides (29).

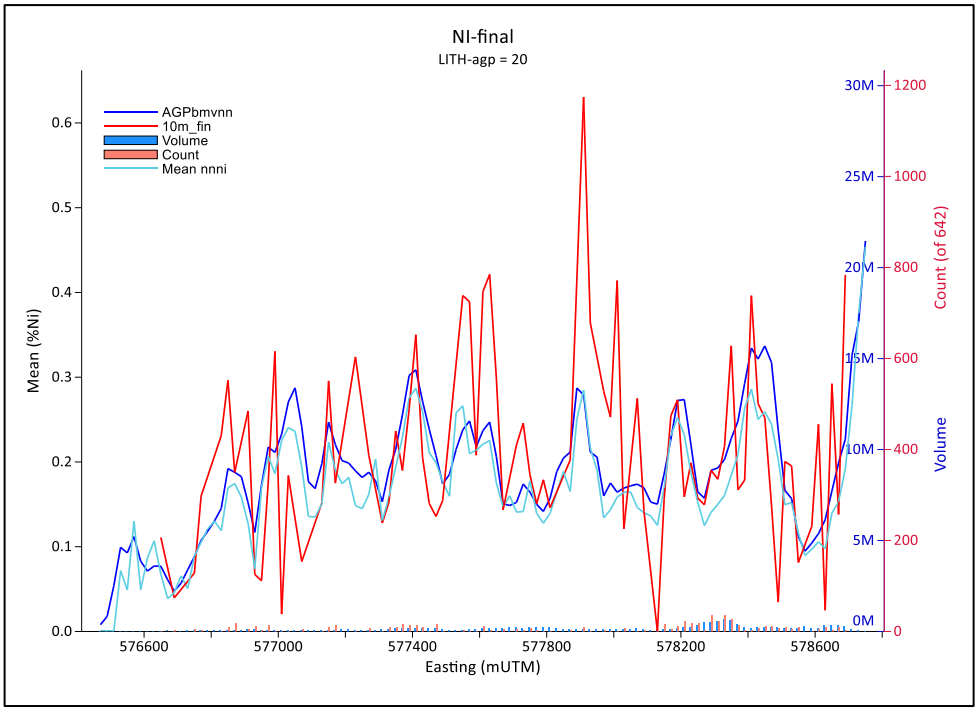
Figure 14-6: Box Plots for Nickel by Mineralized Domain – Wellgreen Deposit



Source : AGP (2023)

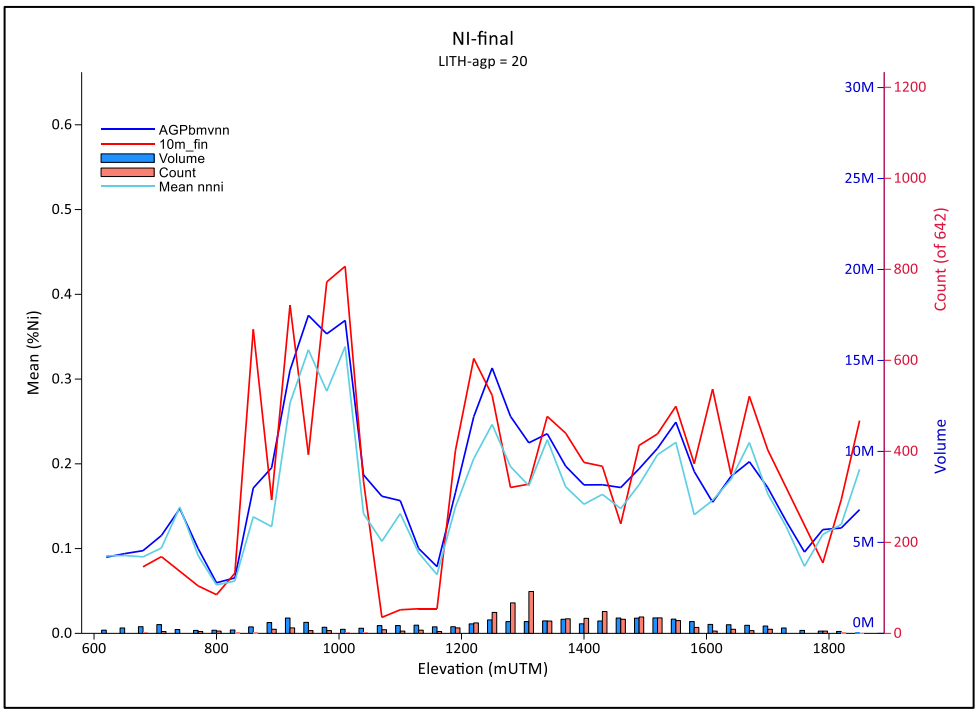
Figure 14-7 and Figure 14-8 show the swath plots by Easting and Elevation for Nickel, respectively, for the Wellgreen Deposit. AGP is satisfied that the interpolation shows no apparent bias.

Figure 14-7: Swath Plots for Nickel, Gabbro Domain [20], by Easting – Wellgreen



Source : AGP (2023)

Figure 14-8: Swath Plots for Nickel, Gabbro Domain [20], by Easting – Wellgreen



Source : AGP (2023)

14.5 Mineral Resource Statement

14.5.1 Classification

The classification categories of Measured, Indicated, and Inferred were based on the number of samples used to estimate the block and the average distance from the block to the data used for block grade estimation. The classification codes were based on the estimation parameters for nickel. This is appropriate because all economic metals were estimated with nearly the same number of composites.

Measured

- 10 composites were used
- average distance of the searched samples was <= 45 m (½ of range)

Indicated

- at least 4 composites were used (minimum 2 drill holes)
- average distance of the searched samples was <=70 m (78% of range)

Inferred

- any remaining block with a nickel grade out to the search distance

Treatment of Mined Out Workings

The historic stopes and underground workings at the Project have been modeled as 3D solid wireframes. Blocks that are greater than 25% of any underground workings (stopes or drifts) were considered as 'mined out' and assigned the Class code of 9. These blocks are excluded from the reporting of Mineral Resources.

14.5.2 Reasonable Prospects for Eventual Economic Extraction

In order to satisfy reasonable prospects for eventual economic extraction, Mineral Resources are reported within a constraining shell. The block model was imported to Hexagon Minesight software where AGP generated the optimized pit constraint.

Error! Reference source not found.14 summarizes the parameters that were applied to develop the optimized pit constraint and for the NSR.

Table 14-14: Optimized Resource Shell Parameters

		$ Cad	$US	unit
Metal Prices				
	Nickel		12.10	/lb
	Copper		4.45	/lb
	Cobalt		25.10	/lb
	Palladium		2,415.00	/ oz
	Platinum		1,150.00	/ oz
	Gold		2,015.00	/ oz
Waste Mining				
	Base	2.26		
	Subtract per bench above 1330	0.004		
	Add per bench below 1330	0.023		
Ore Mining				
	Base	1.99		
	Add per bench above 1330	0.019		
	Add per bench below 1330	0.015		
Process Costs and G&A Costs				
	Total Process + G&A; Bulk Con	17.30		
	Total Process + G&A; Split Con	17.61		
Over Slope Angles for Pit Generation				
	Basalt, Volcanoclastics, Maple Creek Gabbro, Metasediments, Default, Massive Sulfide	**44** Degrees		
	Mineralized Gabbro, Clinopyroxenite	35 Degrees		
	Peridotite	33 Degrees		
Exchange Rate: $ Cad x 0.76 = $ US				

14.5.3 Mineral Resource Statement

The mineral resources for the Wellgreen Deposit are: Measured Resources of 122.4 Mt at 0.25 %Ni, 0.15 %Cu; Indicated Resources of 314.3 Mt at 0.26 %Ni, 0.13 %Cu; and Inferred Resources of 114.0 Mt at 0.27 %Ni, 0.13 %Cu. The effective date of the Mineral Resources is 3 April 2023. Net Smelter Return (NSR) cut-off grades range from CAD $17.30 to CAD $17.61 depending on reporting to Bulk concentrate or Split concentrate.

Table 14-15 presents the Mineral Resources amenable to open pit extraction for the Wellgreen Project.

Table 14-15: Mineral Resources; Wellgreen Deposit; Effective Date of 3 April 2023

		Metal Grades								Contained Metal					
Class	tonnes kt	Ni %	Cu %	Co %	Pd g/t	Pt g/t	Au g/t	Mg %	S %	Ni Mlbs	Cu Mlbs	Co Mlbs	Pd koz	Pt koz	Au koz
Measured	122,363	0.25	0.15	0.014	0.23	0.24	0.05	16.03	0.78	679	411	38	905	944	184
Indicated	314,332	0.26	0.13	0.014	0.24	0.22	0.04	17.26	0.64	1,792	871	99	2,385	2,197	361
Total M+I	436,695	0.26	0.13	0.014	0.23	0.22	0.04	16.92	0.68	2,471	1,281	137	3,290	3,141	545
Inferred	114,016	0.27	0.13	0.015	0.25	0.20	0.04	17.46	0.69	668	339	37	916	733	128

Notes:
Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
Summation errors may occur due to rounding.
Mineral Resources amenable to open pit extraction are reported within an optimized constraining shell.
Metal prices used for Mineral Resource determination ($US):
Nickel: $12.10/lb, Copper: $4.45/lb, Cobalt: $25.30/lb, Palladium: $2,415/troy oz, Platinum: $1,150/troy oz, Gold: $2,015/troy oz
Net Smelter Return (NSR) cut-off grades range from $17.30 to $17.61 Canadian Dollars depending on Bulk Con and Split Con
Mining Cost vary by bench, separately for ore and waste:
base waste mining cost @ 1330m = C$2.26/t, 10m bench incremental cost above =C$0.004/t, 10m bench incremental cost below = C$0.023/t
base ore mining cost @ 1330m = C$1.99/t, 10m bench incremental cost above =C$0.019/t, 10m bench incremental cost below = C$0.015/t
Process and G&A costs: bulk con = C$17.30/t
split con = C$17.61/t
Calculated process recoveries by concentrate type:

	Ni	Cu	Co	Pd	Pt	Au
Bulk con:	Eq1	Eq2	57.0%	54.0%	47.8%	74.4%
Cu con:	Eq3	Eq4	3.36%	3.19%	0.91%	23.58%
Ni con:	Eq5	Eq6	53.64%	50.81%	46.89%	50.82%

Where:
Eq1 = Ni recovery to Bulk Con = MIN (23.21*LN(X)+30.362,88)
Eq2 = Cu recovery to Bulk Con = ((Cu-0.06)/Cu)) *100, Constant tail at 0.06% Cu
Eq3 = Ni recovery to Cu Con = Ni recovery to achieve 25.6% Cu and 1.1% Ni grades in Cu Con
Eq4 = Cu recovery to Cu Con = Cu recovery to Bulk Con * 0.623
Eq5 = Ni recovery to bulk con - Ni recovery to Cu Con
Eq6 = Cu recovery to bulk con - Cu recovery to Cu Con
Capping of grades varies based on lithology for each metal.
The density is assigned based on lithology and varies between 2.76 g/cm^3 and 3.38 g/cm^3.

14.6 Comparison with Previous Mineral Resources - Wellgreen

The principal differences between the April 2023 and September 2018 Mineral Resources for the Wellgreen Deposit lies in:

- upgrade of some Inferred Resources to Indicated categories; and some Indicated Resources to Measured categories
- differences in metal prices and recovery formulas in the NSR and net value per tonne, thereby increasing the depth of the optimized pit constraint

Table 14-16 shows the comparison of current April 2023 Mineral Resources compared to the previous September 2018 Mineral Resources, for nickel and copper only.

Table 14-16: Mineral Resources; Wellgreen Deposit; Effective Date of 3 April 2023

April 2023		Metal Grades		Contained Metal	
Class	**Tonnes (kt)**	**Ni %**	**Cu %**	**Ni (M lbs)**	**Cu (M lbs)**
Measured	122,363	0.25	0.15	679	411
Indicated	314,332	0.26	0.13	1,792	871
M+I	436,695	0.26	0.13	2,471	1,281
Inferred	114,016	0.27	0.13	668	339
Sept. 2018					
Class	**Tonnes (kt)**	**Ni %**	**Cu %**	**Ni (M lbs)**	**Cu (M lbs)**
Measured	93,300	0.25	0.17	514	350
Indicated	230,100	0.27	0.15	1,370	761
M+I	323,400	0.26	0.16	1,884	1,111
Inferred	108,100	0.29	0.15	691	357
Difference					
Measured	29,063	0.00	-0.02	165	61
Indicated	84,232	-0.01	-0.02	422	110
M+I	113,295	0.00	-0.03	587	170
Inferred	5,916	-0.02	-0.02	-23	-18

M+I = Measured + Indicated

14.7 Arch Deposit

This section discloses the initial mineral resources for the Arch Deposit, of the Nickel Shäw Project, prepared and disclosed in accordance with the CIM Standards and Definitions for Mineral Resources and Mineral Reserves (2014). The QP responsible for these resource estimates is Mr. Paul Daigle, P.Geo., Senior Resource Geologist for AGP. The effective date of this mineral resource is 3 April 2023.

14.7.1 Database

The Arch database consists of 20 drill holes and 469 assay values. For sulfur and magnesium, these were not analyzed in the two drill holes from 2001.

Table 14-17 summarizes the drill hole database used for the Arch Deposit

Table 14-17: Summary of Drill Hole Data – Arch Deposit

	Count
Drill holes	20
Sample Intervals	469
Metres of Drilling	2,257
Ni	469
Cu	469
Co	469
Au	428
Pd	468
Pt	468
S	432
Mg	432

Source: AGP (2023)

14.7.2 Geology Interpretation

The mineralization in the Arch Deposit appears to occur mainly within the peridotite lithology. The peridotite at Arch represents a western extension of the Wellgreen Deposit, situated roughly 2,400 m to the southeast and, possibly the nose of a fold. There are some noted semi-massive sulphide occurrences within peridotite, however, there is insufficient data to determine a separate domain.

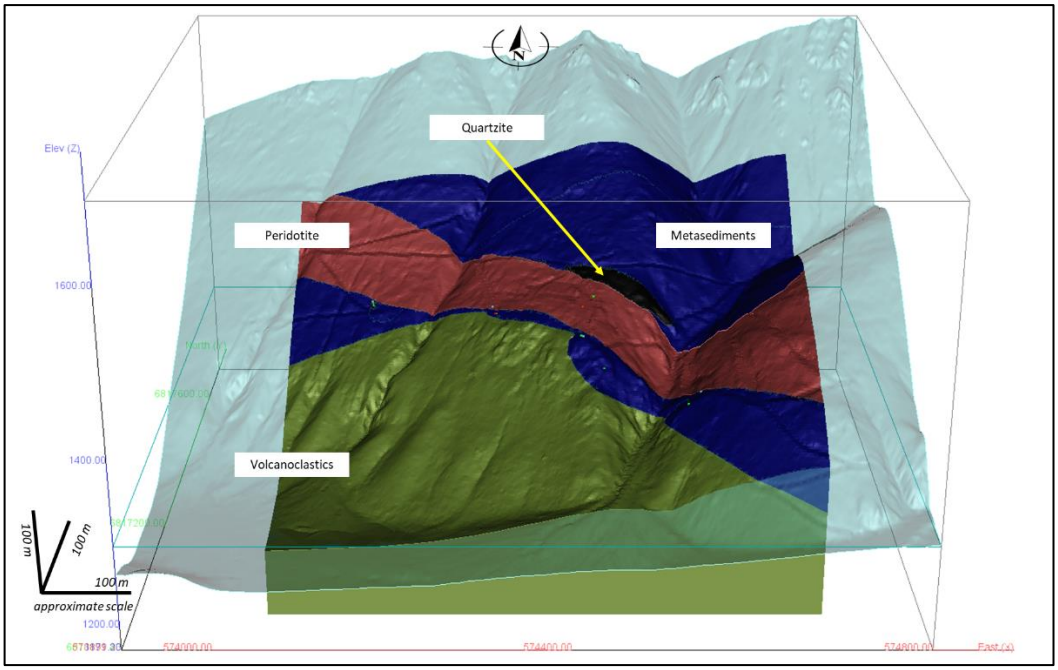
The lithology domains were created in Leapfrog Geo. Four lithological domains were logged: peridotite, metasediments, and volcanoclastic and quartzite units. The majority of the mineralization occurs in the peridotite domain whereas the metasediments, quartzite and volcanoclastics are mainly barren of mineralization.

Table 14-18 presents the lithological domains and rock codes for the Project. Figure 14-9 shows the lithology domains at the Arch deposit.

Table 14-18: Summary of Lithology Domains and Rock Codes

Lithology	Rock Code	Comments
Peridotite	24	Mineralized
Metasedimentary Rocks	26	Barren
Volcanoclastics	32	Barren
Quartzite	90	Barren

Figure 14-9: Lithology Domains – Arch Deposit



Source : AGP (2023)

14.7.3 Exploratory Data Analysis

All six metals have been estimated as they are a credit to the deposit. Sulfur and magnesium have been estimated as they may used for metallurgical purposes. There is no commercial benefit from sulfur or magnesium and are not included in the final statement of mineral resources.

Raw Assays

The drill hole data used for the Arch Deposit, consists of 20 drill holes and 469 assay values for each metal: nickel, copper, gold, palladium, and platinum. Gold, sulfur, and magnesium have less values as these elements were not assayed in the 2001 drill hole. The assay values reported below detection limit were assigned half the detection limit for statistical analysis and grade estimation.

Table 14-19 presents the descriptive statistics of the drill holes in the in the Arch deposit within the peridotite mineralized domain.

Table 14-19: Descriptive Statistics for Raw Assays - Arch

Rock Type	Statistic	Statistics for Raw Assays							
		Ni%	Cu%	Co%	Au g/t	Pd g/t	Pt g/t	S%	Mg%
Peridotite	Number	373	373	337	373	372	372	338	338
	Mean	0.42	0.21	0.04	0.019	0.47	0.30	0.82	16.16
	Std Dev	0.51	0.28	0.05	0.022	0.51	0.32	0.95	4.98
	CV	1.23	1.36	1.22	1.120	1.09	1.06	1.15	0.31

Grade Capping

Capping analysis was carried out on each metal within the peridotite domain to reduce the influence of outliers. Histograms, cumulative frequency plots and disintegration plots were used to analyze each metal by domain and capping levels were applied where deemed necessary.

Table 14-20 presents the capping levels for each metal and the number of values capped, by domain.

Table 14-20: Capping Levels (No. of Values Capped) - Arch

Rock Type		Metal or Element to be Estimated							
	Code	Ni%	Cu%	Co%	Au g/t	Pd g/t	Pt g/t	S%	Mg%
Peridotite	24	3.03 (7)	1.50(10)	No Cap	No Cap	No Cap	No Cap	4.1 (16)	No Cap

Composites

For the Arch Deposit, a composite length of 6 m was chosen as the representative length for each lithology, on capped values, and were adjusted to the intersection of the lithological boundaries.

Table 14-20 presents the descriptive statistics of the drill holes in the in the Arch deposit within the mineralized peridotite domain.

Table 14-21: Descriptive Statistics for Capped 6 m Composites

Rock Type	Statistic	Statistics for 6 m Composites							
		Ni%	Cu%	Co%	Au g/t	Pd g/t	Pt g/t	S%	Mg%
Peridotite	Number	110	110	110	101	110	110	101	101
	Mean	0.35	0.16	0.017	0.04	0.38	0.24	1.00	17.03
	Std Dev	0.24	0.16	0.010	0.03	0.33	0.20	1.00	3.39
	CV	0.69	1.00	0.570	0.88	0.86	0.81	1.08	0.20

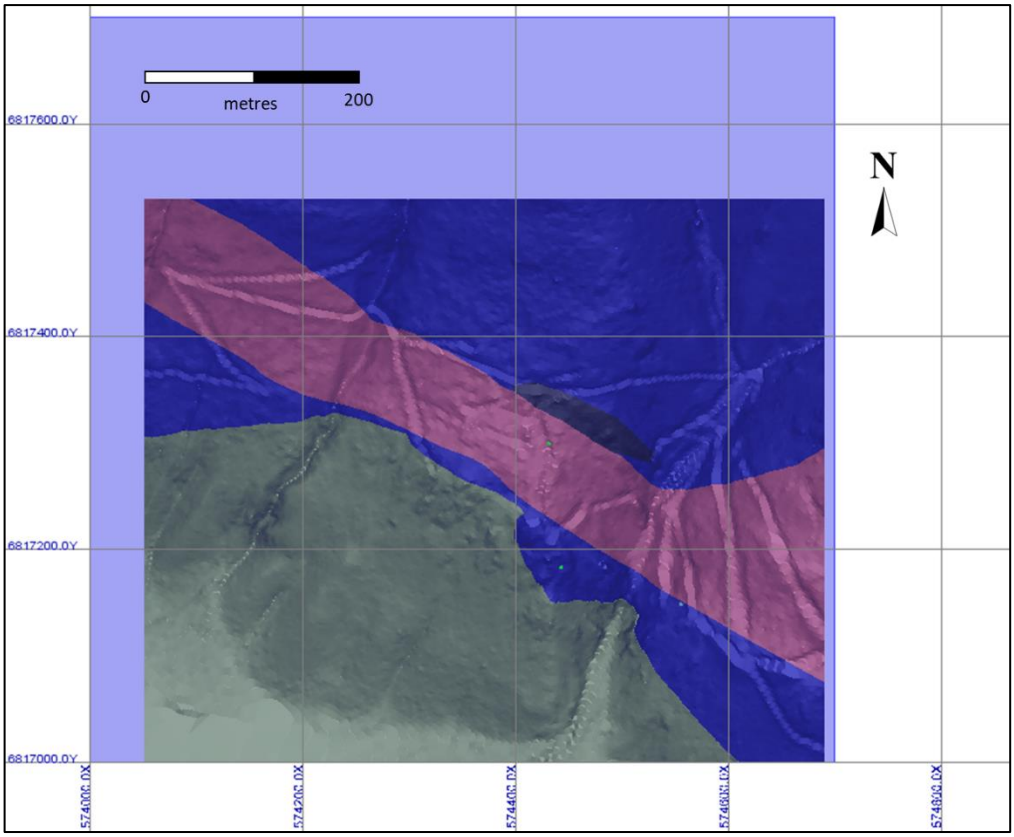
14.8 Block Model

The block model for the Arch deposit was set up with a block matrix of 10 m long by 10 m long by 10 m high. The block model is not rotated, and the block matrix was selected based on the drill spacing. Table 14-22 summarizes the block model parameters and Figure 14-10 presents the block model over the interpreted domains for the Arch Deposit.

Table 14-22: Block Model Parameters – Arch Deposit

Parameters	Minimum	Maximum	No. of Blocks	Block Size
Easting	574000	574700	70	10 m
Northing	6817000	6817700	70	10 m
Elevation	605	1955	135	10 m
Rotation Angle	No rotation°			

Figure 14-10: Block Model – Arch Deposit; plan view



Source : AGP (2023)

14.8.1 Estimation Strategy

The metal grades were interpolated in a single pass using the 6 m capped composites. The metal grades were interpolated using ID2 interpolation method. A NN interpolation was also run for validation purposes. Each metal required the same minimum and maximum number of composites with a maximum of three composites per drill hole. The estimation honoured only the data within the peridotite domain.

Table 14-23 shows estimation parameters for each pass used to estimate metal grades. Table 14-24 shows the search ellipse parameters for the Arch deposit.

Table 14-23: Estimation Parameters – Arch

Pass	Min No Composites	Max No Composites	Max Composites per Drill Holes	Min No of Drill Holes
Pass 1	1	10	3	1

Table 14-24: Search Ellipse Parameters – Arch

Pass	Anisotropy	Azimuth (°)	Dip (°)	Azimuth (°)	Range X (m)	Range Y (m)	Range Z (m)	Search
Pass 1	Az, Dip, Az	200	-80	300	80	66	22	Ellipsoidal

Note: Az, Dip, Az – Azimuth, Dip, Azimuth

14.8.2 Validation

The block model was validated using the following methods:

- visual inspection and comparison of block grades with composite and assay grades
- statistical comparison of resource assay and block grade distributions
- inspection of swath plots with composites and block grades elevations and northings
- visual inspection of the block grades to the composite grade do not show any inherent bias in the estimation of grades

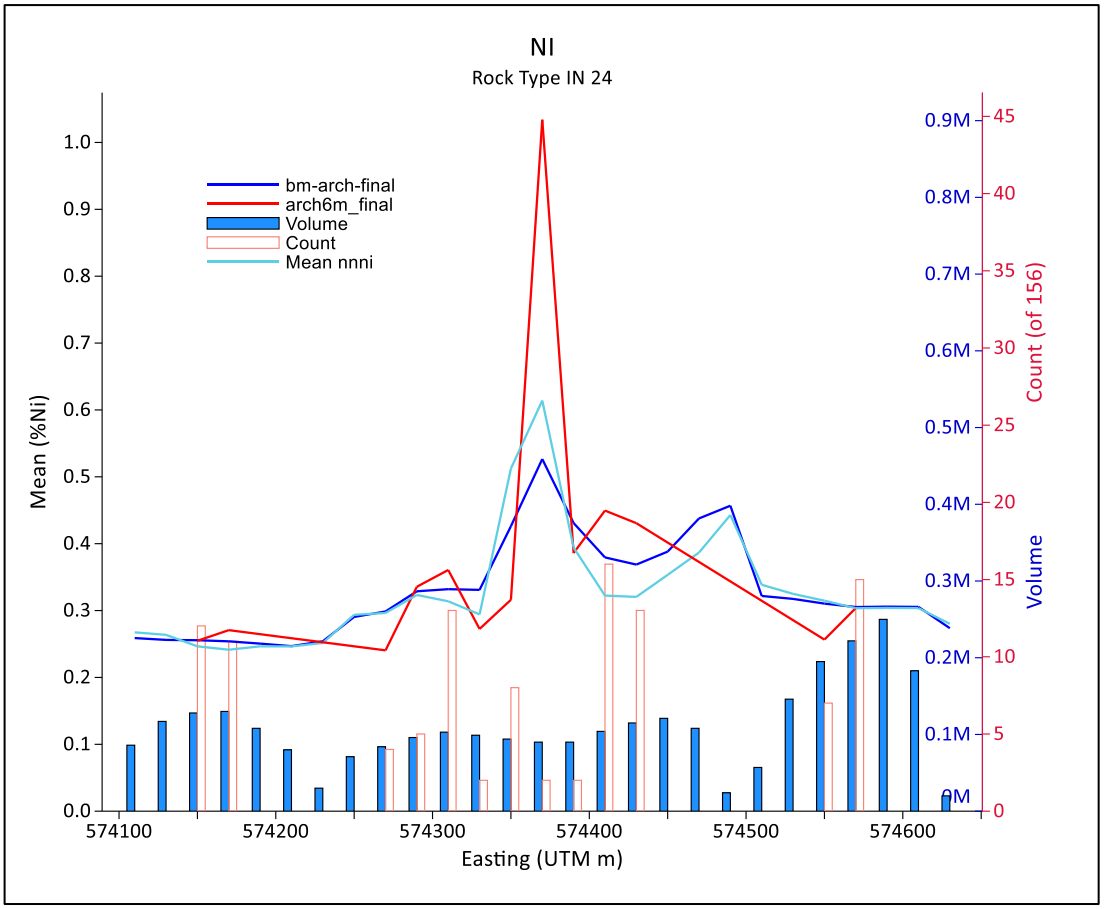
In a statistical comparison, the composite mean grades were compared to the ID^2 and NN interpolated block grades. Table 14-25 presents a comparison of 6 m composites to ID^2 and NN interpolated mean grades by mineralized domain. AGP is satisfied that the block model grades reflect the grades from the drill core samples.

Table 14-25: Statistical Comparison of Mean Grades within the Peridotite Domain [24]

Nickel	6 m Comps	NN	ID2	Gold	6 m Comps	NN	ID2
24	0.35	0.22	0.33	24	0.04	0.03	0.03
Copper	**6 m Comps**	**NN**	**ID2**	**Palladium**	**6 m Comps**	**NN**	**ID2**
24	0.16	0.14	0.14	24	0.38	0.26	0.33
Cobalt	**6 m Comps**	**NN**	**ID2**	**Platinum**	**6 m Comps**	**NN**	**ID2**
24	0.017	0.011	0.016	24	0.24	0.17	0.22

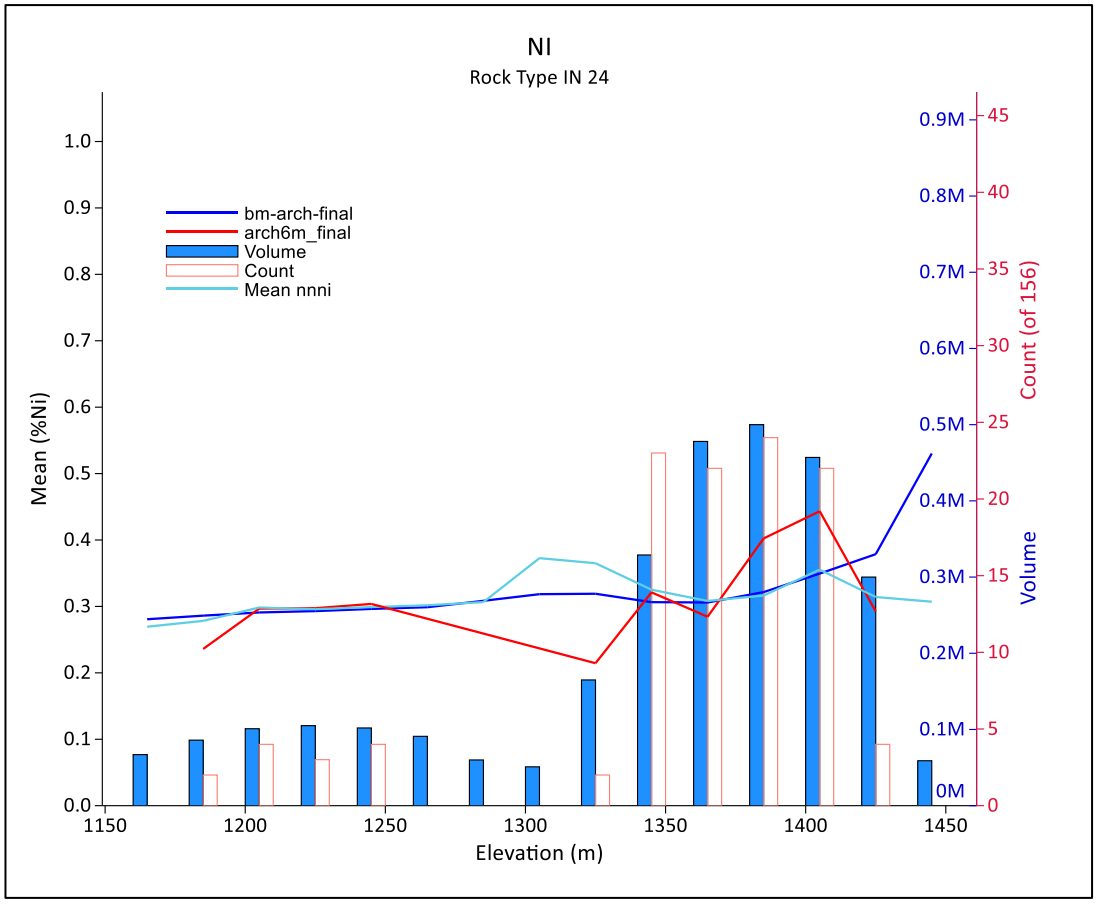
Figure 14-11 and Figure 14-12 show the swath plots by Easting and Elevation for Nickel, respectively, for the Arch Deposit. AGP is satisfied that the interpolation shows no apparent bias.

Figure 14-11: Swath Plots for Nickel, Peridotite Domain, by Easting – Arch



Source : AGP (2023)

Figure 14-12: Swath Plots for Nickel, Peridotite Domain, by Easting – Arch



Source : AGP (2023)

14.9 Mineral Resource Statement

14.9.1 Classification

The Mineral Resources for the Arch Deposit are classified as Inferred Resources using a minimum criterion of two drill holes within a search radius of 80 m.

14.9.2 Reasonable Prospects for Eventual Economic Extraction

To satisfy reasonable prospects for eventual economic extraction, Mineral Resources are reported within a constraining shell. The block model was imported to Hexagon MineSight software where AGP generated the optimized pit constraint.

Table 14-26 summarizes the parameters that were applied to develop the optimized pit constraint and nickel cut-off grade.

Table 14-26: Optimized Resource Shell Parameters

		$ Cad	$US	unit	%
Metal Prices					
	Nickel		12.10	/lb	
	Copper		4.45	/lb	
	Cobalt		25.30	/lb	
	Palladium		2,415.00	/troy oz	
	Platinum		1,150.00	/troy oz	
	Gold		2,015.00	/troy oz	
Metal Recoveries					
	Nickel				44%
	Copper				73%
	Cobalt				57%
	Palladium				54%
	Platinum				48%
	Gold				74%
Mining Costs					
	Waste	2.30			
	Ore	2.50			
Process Costs and G&A Costs					
	Total Process + G&A	17.30			
Over Slope Angles for Pit Generation					
	Basalt, Volcanoclastics, Metasediments, Default Massive Sulfide	44 degrees			
	Peridotite	33 degrees			
Exchange Rate: $ Cad x 0.76 = $ US					

14.9.3 Mineral Resource Statement

The mineral resources for the Arch Deposit at a 0.2 %Ni cut-off grade are: Inferred Resources of 3.2 Mt at 0.35 %Ni, 0.17 %Cu. The effective date of the Mineral Resources is 3 April 2023.

Table 14-27 presents the Mineral Resources amenable to open pit extraction for the Wellgreen Project.

Table 14-27: Mineral Resources; Arch Deposit; Effective Date of 3 April 2023

		Metal Grades								Contained Metal					
Class	tonnes kt	Ni %	Cu %	Co %	Pd g/t	Pt g/t	Au g/t	Mg %	S %	Ni Mlbs	Cu Mlbs	Co Mlbs	Pd koz	Pt koz	Au koz
Inferred	3,217	0.35	0.17	0.017	0.39	0.25	0.04	16.85	0.70	24.7	11.8	1.2	40.8	25.9	3.9

Notes:
Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
Summation errors may occur due to rounding.
Mineral Resources amenable to open pit extraction are reported within an optimized constraining shell.
Cut-off grade to report Mineral Resources is 0.2 %Ni.
Metal prices used for Mineral Resource determination ($US):
Nickel: $12.10/lb, Copper: $4.45/lb, Cobalt: $25.30/lb, Palladium: $2,415/troy oz, Platinum: $1,150/troy oz, Gold: $2,015/troy oz
Metal recoveries used for Mineral Resource determination:
Nickel: 44%, Copper: 73%, Cobalt: 57%, Palladium: 54%, Platinum: 48%, Gold: 74%/troy oz
Capping of grades on raw assays are: 3.0 % Ni and 1.5 %Cu
The density is assigned based on lithology and varies between 2.69 g/cm3 and 2.80 g/cm^3.

14.10 Factors That May Affect Mineral Resources

Factors that may affect the Mineral Resource estimates include:

- metal price and exchange rate assumptions
- changes to the assumptions used to generate the copper grade cut-off grade
- changes in local interpretations of mineralization geometry and continuity of mineralized zones
- changes to geological and mineralization shape and geological and grade continuity assumptions
- density and domain assignments
- geometallurgical assumptions
- changes to geotechnical, mining, and metallurgical recovery assumptions
- change to the input and design parameter assumptions that pertain to the conceptual pit and stope designs constraining the estimates
- assumptions as to the continued ability to access the site, retain mineral and surface rights titles, maintain environment and other regulatory permits, and maintain the social license to operate

There are no other known environmental, legal, title, taxation, socioeconomic, marketing, political or other relevant factors that would materially affect the estimation of Mineral Resources that are not discussed in this Report.

15 MINERAL RESERVE ESTIMATES

15.1 Introduction

The Nickel Shäw Project is planned to be an open pit operation using conventional mining equipment. All estimates are based on the mine plans generated by AGP for the pre-feasibility study work.

Costs are based on first principles build-up of operating and capital costs for the life of the project with most current vendor quotations for consumables and capital expenses based on local vendor submissions.

15.2 Mineral Reserves Statement

The reserves for the project are based on the conversion of the Measured and Indicated Mineral Resources in the study mine plan within the ultimate open pit limits. The level of information from drill holes and degree of certainty on assumptions used the mine plan estimates provides reasonable support to convert Measured and Indicated Mineral Resources to Proven and Probable reserves. The estimates were prepared under the supervision of Gordon Zurowski, P.Eng. of AGP, a QP as defined under NI 43-101.

No underground areas are considered in the Mineral Reserves at this time.

The total Mineral Reserves for the project are shown in metric units in Table 15.1. This estimate has an effective date of July 19, 2023. Some variation may exist due to rounding.

Table 15-1: Proven and Probable Reserves – July 19, 2023

		Grades								Contained Metal					
Reserve Class	**Tonnes (Mt)**	**Ni (%)**	**Cu (%)**	**Co (%)**	**Au (g/t)**	**Pt (g/t)**	**Pd (g/t)**	**Mg (%)**	**S (%)**	**Ni (Mlbs)**	**Cu (Mlbs)**	**Co (Mlbs)**	**Au (koz)**	**Pt (koz)**	**Pd (koz)**
Proven	101.0	0.26	0.16	0.014	0.05	0.25	0.24	15.77	0.81	570	355	31	158	802	766
Probable	206.7	0.26	0.12	0.014	0.03	0.21	0.23	17.28	0.60	1,171	538	64	225	1,408	1,555
Proven & Probable	**307.7**	**0.26**	**0.13**	**0.014**	**0.04**	**0.22**	**0.23**	**16.8**	**0.67**	**1,741**	**892**	**96**	**383**	**2,211**	**2,321**

Note: This mineral reserve estimate has an effective date of July 19, 2023, and is based on the mineral resource estimate dated April 3, 2023, for Nickel Creek Platinum by AGP Mining Consultants Inc. The Mineral Reserve estimate was completed under the supervision of Gordon Zurowski, P.Eng. of AGP, who is a Qualified Person as defined under NI 43-101. Mineral Reserves are stated within the final pit design based on prices of US$3.85/lb copper, US$10.50/lb nickel, US$22/oz cobalt, US$1000/oz platinum, US$2100/oz palladium, and US$1,750/oz gold. An NSR cut-off C$17.30/t was used for bulk concentrates while C$17.61/t was used for split concentrates to define reserves. A FEX of US$0.76/C$ was used for block valuation. The life-of-mine mining cost averaged C$2.58/t mined, preliminary processing costs were C$16.15/t for bulk concentrate ore and C$16.46/t for split concentrate ore and G&A was C$1.15/t ore placed. The metallurgical recoveries were varied according to concentrate type and feed grades. Overall metal recoveries were approximately 46.9%, 54.4%, 57.0%, 74.4%, 47.9% and 53.9% for nickel, copper, cobalt, gold, platinum, and palladium respectively.

15.3 Factors that May Affect the Mineral Reserves

The QP has not identified any known legal, political, or environmental risks that would materially affect the potential development of the Mineral Reserves.

Risks that could materially affect the reserve include mining selectivity near the ore contacts, slope stability and assumed process recoveries for given rock types. These are considered manageable risks which will be mitigated as more test work and operating experience is obtained.

15.4 Key Assumptions/Basis of Estimate

For the statement of open pit reserves for the Project, an NSR value per tonne was determined for both the bulk and split concentrate types in each block. NSR calculations are inclusive of all revenues and royalties for the nickel and copper concentrates. Revenues are based on contributions of nickel, copper, cobalt, platinum, palladium, and gold metals. The preliminary combined process and site G&A costs for bulk and split concentrates were C$17.30/t and C$17.61/t respectively. Net values for each concentrate type were then calculated when the combined process cost and site G&A are subtracted from the NSR value. The net block value of C$0.001/t was used as the cut-off to flag initial feed and waste blocks prior to dilution and represents the higher net value of the two concentrate types.

No underground reserves are stated in this report but remain an opportunity for future development.

A restriction was placed on the pit optimization run so that pit shells could not expand into the drainage along the east side of the deposit. It was felt that water management would be much more manageable this way by using rock drains below the waste fill there, rather than having to deal with significant water inflow into the pit. The contraction in pit size was less than 5% of total ore tonnes.

15.5 Pit Slopes

Wall slopes for pit optimization were based on the assessment discussed in Section 16.2. Inter-ramp slopes were not flattened for haulage ramps as the intent was to retreat down the slope during the final pit phase. The overall slope angles for use in LG routines are shown in Table 15-2. Much of the project ore is contained in the very poor-quality peridotite rock, so shallower slopes occur in this rock type in internal pit phase walls.

Table 15-2: Pit Shell Slopes

SLP code	LITH code	Material Type	Inter-ramp angle (degrees)
1	0	Default	44
1	5	Gabbro (southeast corner)	44
1	21	Maple Creek Gabbro	44
1	26	Metasediments	44
1	29	Massive Sulphides	44
1	32	Volcanoclastics	44
2	24	Peridotite	33
3	7	Clinopyroxenite	35
3	20	Mineralized Gabbro	35

15.6 Economic Pit Shell Development

The open pit ultimate size and phasing opportunities were completed with various input parameters including estimates of the expected mining, processing, and G&A costs, as well as metallurgical recoveries, pit slopes, and reasonable long-term metal price assumptions. AGP worked together with Nickel Creek personnel to select appropriate operating cost parameters for the open pit.

The mining costs are estimates based on cost estimates for equipment from vendors and previous studies completed by AGP. The costs represent what is expected as a blended cost over the life of the mine for all material types to the various dump locations. Process costs and a portion of the G&A costs were developed by AGP in consultation with Nickel Creek personnel.

The parameters used for pit shell generation are shown in Table 15-3. Costs and revenues are converted to Canadian dollars for use in pit shell determination. The mining cost estimates are based on the use of 240 tonne trucks using an approximate waste dump configuration to determine incremental hauls for mill feed and waste. Nickel, copper, cobalt, platinum, palladium, and gold grades are used in the revenue calculations.

The smelting terms and recovery assumptions are based on creating either a bulk concentrate, or when there is more value, splitting the feed into separate nickel and copper concentrates. The plant will require time to change processes from a bulk to a split concentrate process, so stockpile capacity will be important in the production schedule.

Table 15-3: Economic Pit Shell Parameters

Description		Units	Value	Value	Value
Exchange rates					
	CAD	US$ =	1.32		
Resource Model					
	Resource class		M+I		
	Block/Bench Height	m	10		
Metal Prices					
	Cu	US$/lb	3.85		

Description		Units	Value	Value	Value
	Ni	US$/lb	10.50		
	Co	US$/lb	22.00		
	Pt	US$/oz	1,000		
	Pd	US$/oz	2,100		
	Au	US$/oz	1,750		
Royalty					
		%	1		
Payable Metal and Deductions			**Bulk con**	**Split Ni con**	**Split Cu con**
	Cu Payable	%	65	65	95
	Cu Deduction	Unit	0	0	1
	Ni Payable	%	78	78	25
	Ni Deduction	Unit	0	0	0
	Co Payable	%	40	40	0
	Co Deduction	Unit	0	0	0
	Pt Pay Factor	%	60	60	80
	Pt Deduction	g/dmt	0	0	1
	Pd Pay Factor	%	60	60	80
	Pd Deduction	g/dmt	0	0	1
	Au Pay Factor	%	60	60	90
	Au Deduction	g/dmt	0	0	1
Treatment and Shipping					
	Treatment Cost	US$ / dmt	0	0	70
	Logistics Cost	US$ / dmt	113.93	113.93	113.93
	Moisture	%	5	5	5
	Transit Losses per transfer	%	0.25	0.25	0.25
Refining Charges					
	Cu	US$/pay lb			0.07
	Au	US$ /pay oz			6.00
	Pt	US$ /pay oz			23
	Pd	US$ /pay oz			23
Penalties (Ni in Cu Con)					
	Penalty	$ /%			0.00
	Hurdle	%			0.50
	Increment	%			0.10
Process Recoveries					
	Cu	%	(Cu-0.06) /Cu *100 where Cu+Ni = 10%	Bulk rec - CuCon rec	62.3% of Bulk rec

Description		Units	Value	Value	Value
	Ni	%	23.21*LN(X)+30.362 , 88 max where X = (S-Cu)/Ni	Bulk rec - CuCon rec	@ 1.1% Ni con
	Co	%	57	Bulk rec - CuCon rec	5.9% of Bulk rec
	Pt	%	47.8	Bulk rec - CuCon rec	1.9% of Bulk rec
	Pd	%	54	Bulk rec - CuCon rec	5.9% of Bulk rec
	Au	%	74.4	Bulk rec - CuCon rec	31.7% of Bulk rec
Concentrate Grades					
	Cu	%	variable	variable	25.60
	Ni	%	variable	variable	1.10
Processing and G&A					
	Processing Cost	C$/t mill feed	16.15	16.46	16.46
	G&A Cost	C$/t mill feed	1.15	1.15	1.15
	Process + G&A	C$/t mill feed	17.30	17.61	17.61
Mining Cost					
	Base Rate - 1330m Elevation				
	Waste	C$/t moved	2.26		
	Ore	C$/t moved	1.99		
	Incremental Rate - above 1330m				
	Waste	C$/t/bench	-0.004		
	Ore	C$/t/bench	0.019		
	Incremental Rate - below 1330m				
	Waste	C$/t/bench	0.023		
	Ore	C$/t/bench	0.015		
* mining costs based on 240 t haul trucks					
* preliminary process costs based on 45ktpd mill throughput					

15.7 Mine Dilution and Mining Recovery

The resource model was provided in a whole block format. A whole block model means that for any given block, it is routed as either mill feed or waste. The block size within each of the models was 10 m by 10 m in plan, and 10 m high. The resource grade model includes some internal dilution, where the grade from the wire frames was diluted over the full volume of the block to arrive at a diluted smooth block grade. A coding approach was used to add external dilution to the model so that it is more suitable for mine planning.

Dilutions skins are considered around a mill feed block if the mill feed block is in contact with neighbouring waste blocks. The first step in was to define mill feed and waste blocks. A net value per tonne (NVT) cut-off value of C$0.001/t was used to define mill feed blocks where only Measured and Indicated blocks would be considered. This NVT cut-off value represents the marginal cut-off as it has captured the sum of process costs and G&A costs. The second step in each method is to determine the number of waste neighbour contacts for each mill feed block. For each waste neighbour, a dilution tonnage and grade are applied to the mill feed block based on the specified dilution skin thickness. The third step is to reduce the tonnage in the neighbouring waste blocks to remove the diluting material.

The dilution material is added to the parent mill feed block and removed accordingly in neighbouring waste blocks to achieve a material balance. The diluted model includes revised diluted density and metal grades for all blocks.

AGP also believed that contact dilution would play a role in material sent to the mill. The size of the block in the model was examined as well as the ore zone thicknesses to determine the amount of dilution that would be appropriate for the deposit. A dilution skin thickness of 0.5 m was selected and resulted in the diluted mill feed containing approximately 1.2% more tonnes and 0.5% lower nickel grades and 0.7% lower copper than the in-situ mill feed summary. AGP considered this dilution as acceptable due to the large ore mineralization zones being mined.

A mining recovery of 99% was applied in the final diluted mill feed summaries to account for losses in mining and transportation to the mill.

15.8 Pit Design

The pit design consists of 3 main phases of successive pushbacks. Phase 1 provides the initial low strip ratio mill feed in the schedule. A waste quarry has been designated as phase 1B and is immediately southwest of the phase 1 pit. The quarry material will be mined early in the schedule so that the crusher and stockpile pad can be constructed as soon as possible. These initial phases will be followed by phases 2 and 3 which both extend to the western and higher main portions of the pit. The pit optimization shells used to guide the ultimate pits were also used to outline areas of higher value for targeted early mining and phase development. All pits were developed using 10 metre bench heights. Phase tonnages and grades are displayed in Table 15-4 and phase locations can be observed in Figure 15-1. The ultimate pit with resulting waste rock facilities is displayed in Figure 15-2.

Table 15-4: Pit Phase Tonnages and Grades

Phase	Ore (Mt)	Ni (%)	Cu (%)	Co (%)	Au (g/t)	Pt (g/t)	Pd (g/t)	Mg (%)	S (%)	Waste (Mt)	Total (Mt)	Strip Ratio
1	29.3	0.24	0.10	0.014	0.035	0.17	0.20	17.2	0.57	5.4	34.7	0.2
1B	3.0	0.23	0.03	0.012	0.013	0.09	0.14	21.5	0.25	27.8	30.8	9.2
2	107.7	0.25	0.12	0.014	0.034	0.19	0.22	17.0	0.59	192.6	300.3	1.8
3	167.7	0.26	0.15	0.014	0.043	0.26	0.25	16.5	0.74	368.9	536.6	2.2
Total	**307.7**	**0.26**	**0.13**	**0.014**	**0.039**	**0.22**	**0.23**	**16.8**	**0.67**	**594.6**	**902.3**	**1.9**

Figure 15-1: Pit Phase Locations

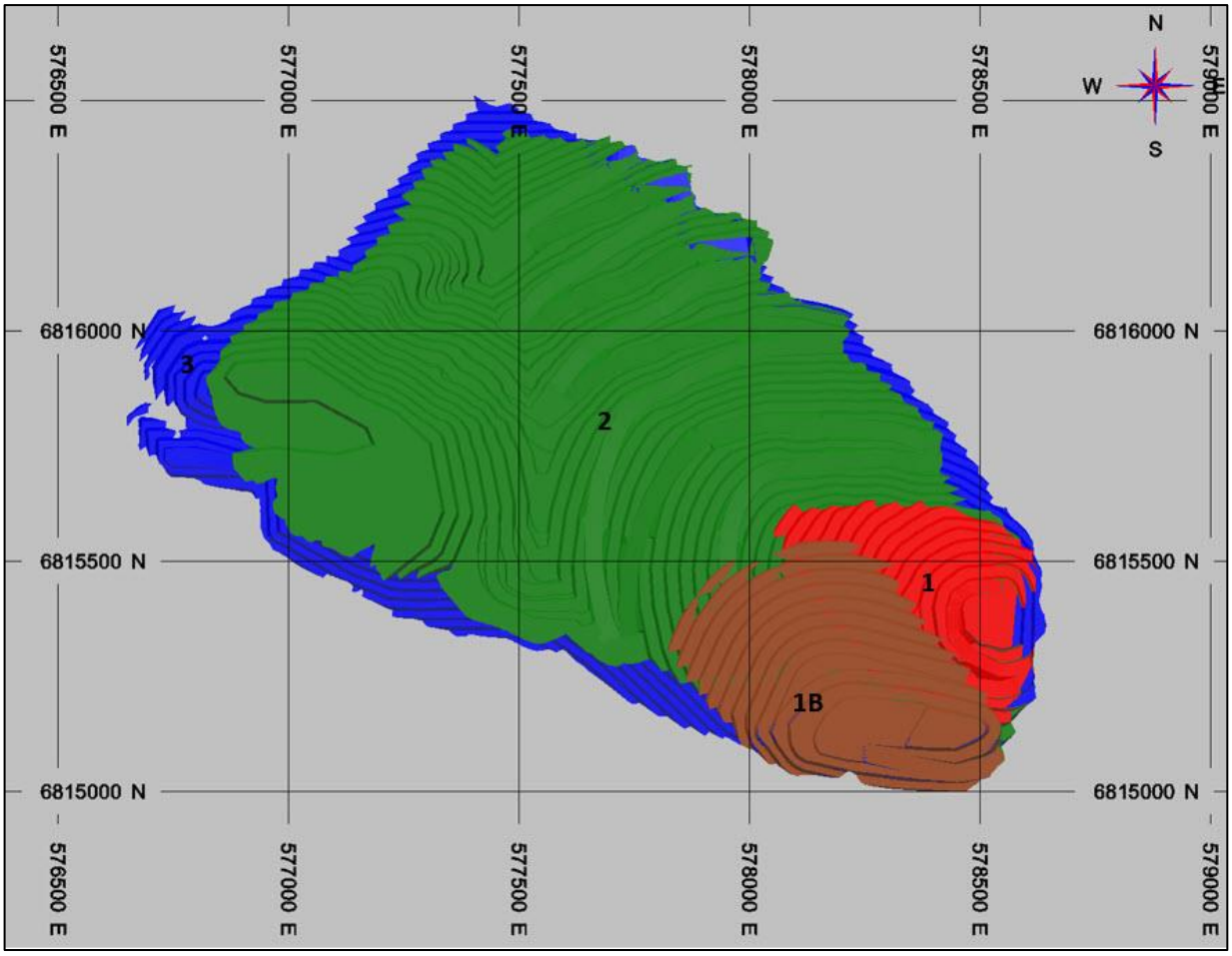
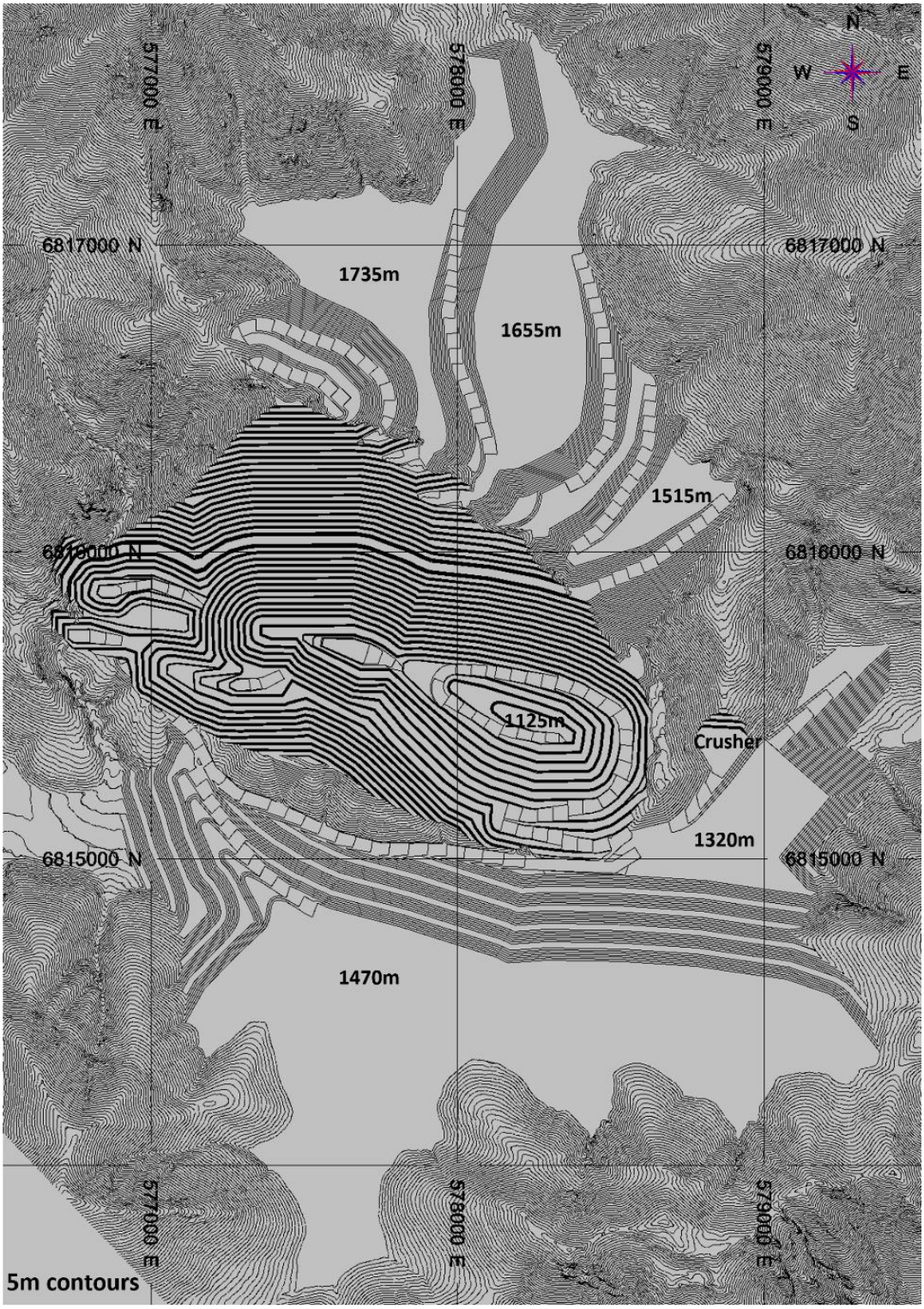


Figure 15-2: Final Layout of Pit and Waste Rock Facilities



15.9 Mine Schedule

The mining rate or 51 Mtpa was selected based on strategic planning scenarios which demonstrated that the targeted mill capacity 45 ktpd (16.2 Mtpa) of would be achieved. Year 1 of process production was reduced to account for plant ramp-up. Two years of pre-production were utilized to develop pioneering roads to mining areas, construct the crusher and stockpile pads, and ensure adequate stockpile material to allow consistent crusher feed in year 1.

The selected mine schedule plans to deliver 308 Mt of mill feed grading 0.13% Cu, 0.26% Ni, 0.014% Co, 0.22 g/t Pt, 0.23 g/t Pd, 0.039 g/t Au, 0.67 % S and 16.8 % Mg over 19 years of mining. This mill feed consists of 190 Mt of bulk concentrate ore and 118 Mt of split concentrate ore. The process facility will continue to operate into year 20 to exhaust the stockpile material. Waste tonnage totalling 595 Mt will be delivered to rock storage facilities. The overall waste versus ore tonnage strip ratio is 1.9:1.

16 MINING METHODS

16.1 Introduction

The Nickel Creek Project is located approximately 317 km northwest of Whitehorse in southwestern Yukon. Historic underground mining occurred in 1972 and 1973 within the Wellgreen deposit. It has been established that there are still significant open pit mineral resources in this zone.

The Mineral Resources for the Project include the Wellgreen and Arch deposits, however the Arch deposit was only recently explored and will not be included in the Mineral Reserves. AGP's opinion is that with current metal pricing levels and knowledge of the mineralization and previous mining activities, open pit mining offers the most reasonable approach for development of the deposit. This is based on the size of the resource, tenor of the grade, grade distribution and proximity to topography for the deposits.

The mine schedule for open pit mining consists of 308 Mt of mill feed grading 0.26% nickel, 0.13% copper, 0.014% cobalt, 0.23 g/t palladium 0.22 g/t platinum, 0.04 g/t gold, 16.8% magnesium, and 0.67% sulfur over a processing life of slightly more than 19 years. Open pit waste tonnage totals 595 Mt and will be placed into waste storage areas. The overall open pit strip ratio is 1.9:1. The mine schedule utilizes open pit mining areas to supply mill feed up to a maximum of 16.2 Mtpa to the mill facility.

The current mine life includes two years of pre-stripping followed by nineteen years of mining. Mill feed is stockpiled during the pre-production years and reaches a peak stockpile capacity of 3.9 Mt near the end of pre-production.

The open pit mining starts in Year -2 and continues uninterrupted until early in Year 19.

16.2 Mining Geotechnical

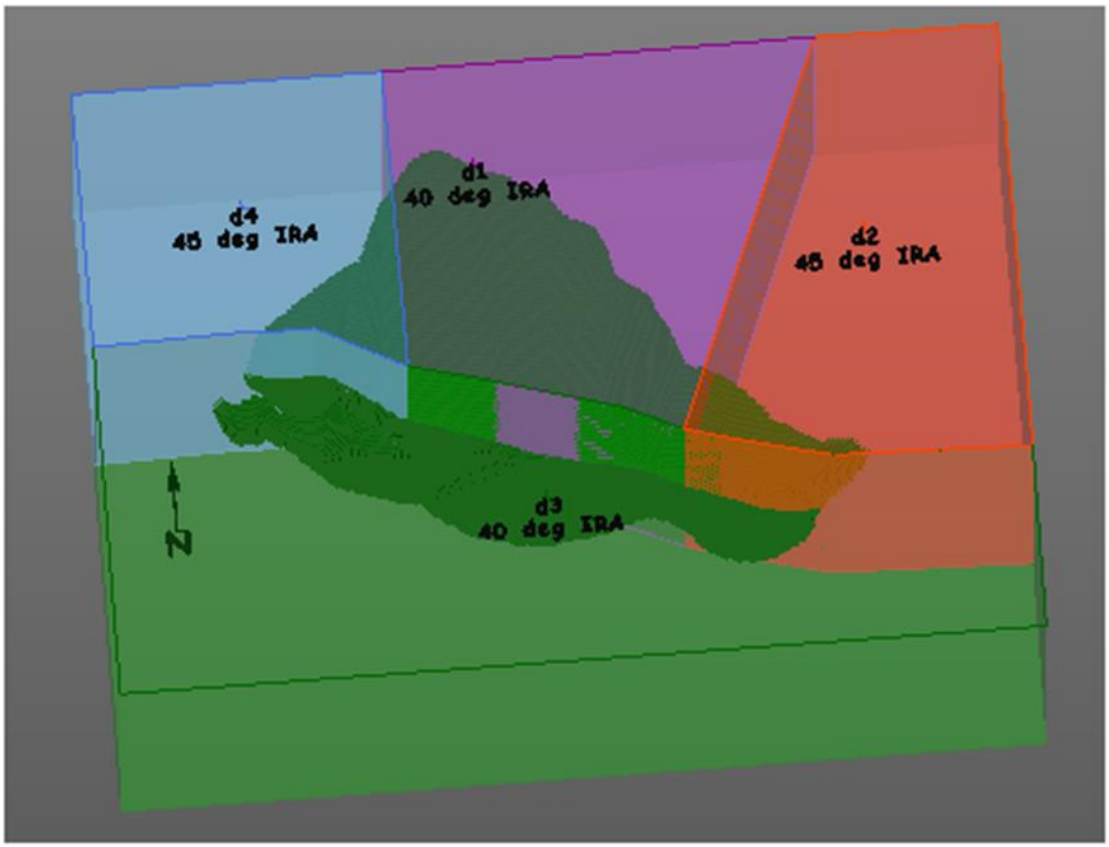
16.2.1 Preliminary Geotechnical Assessments

Key mining geotechnical investigations and rock mass classification work completed in the past for the project includes the following:

- detailed geotechnical logging of drill core from two (2) holes in 2015 (WS15-232,257)
- detailed geotechnical logging of drill core from nine (9) holes in 2017 (WS17-292,294,296-301)
- basic geotechnical logging of resource infill and metallurgy drill holes from 2015-2017 (~ 60 holes)
- site wide / representative geotechnical cell mapping and rock mass classification in 2018 (126 cells)

In 2017, based on a review of the limited geotechnical and hydrogeological data available at the time, AGP recommended the following simplified initial slope designs for the desktop level studies (Figure 16-1). These were intended to be updated and refined where appropriate once reasonable levels of confidence in geotechnical conditions were established.

Figure 16-1:Preliminary Desktop Study Slope Design Guidelines



Rocktype	IR Slope Angle
Domain 1 (D1) - North Wall	40
Domain 2 (D2) - NE Wall	45
Domain 3 (D3) - South Wall	40
Domain 4 (D4) - NW Wall	45

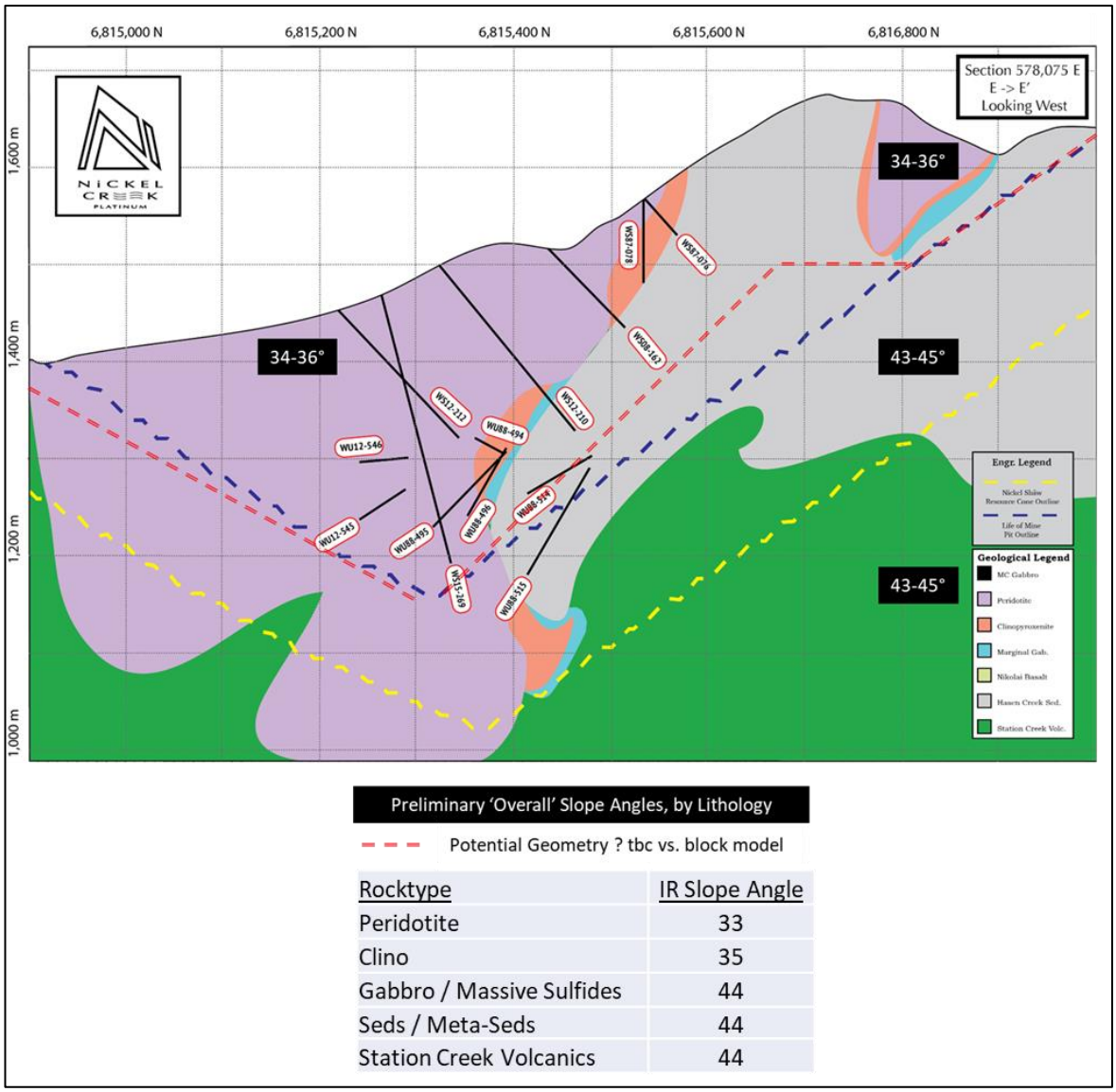
Source: AGP 2023

AGP noted at the time that efforts to 'maximize' slope angles based on limited data can often lead to overly optimistic designs and related project economics. These can be difficult to 'walk back' if, or when, contrarian data is recorded during subsequent investigation work. AGP recognized the potential to improve upon/optimize relatively conservative initial guidance, as additional confirmatory data became available.

A data gap analysis reviewed in 2018 - following the surface geotechnical mapping campaign - indicated the requirement for additional investigation of the rock mass character and structural geology of the proposed pit slopes, particularly within the ultimate pit slope highwall. (Resource infill holes drilled in 2022 intended to partially increase geotechnical data quantities and confidence within this zone. Further investigations will be required at the FS level).

Also in 2018, with the addition of geotechnical mapping data, an attempt was made by AGP to estimate possible "optimized" pit slope angles given the indications of moderately superior rock quality in the highwall meta-sedimentary units and barren volcaniclastics as confirmed by the additional data. To that end AGP developed the following pit design guidance by rock type, from which a number of pit optimization scenarios were developed (Figure 16-2). This work was not issued beyond internal discussion between AGP and NCP.

Figure 16-2: Preliminary PFS Slope Design Guidelines



Preliminary 'Overall' Slope Angles, by Lithology

Potential Geometry ? tbc vs. block model

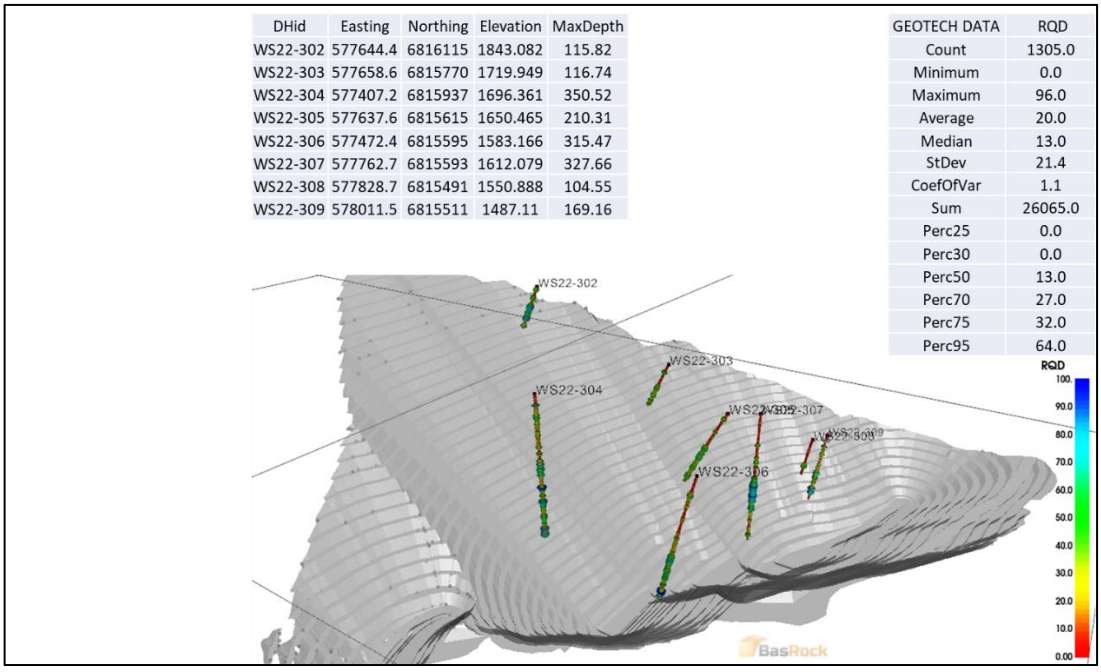
Rocktype	IR Slope Angle
Peridotite	33
Clino	35
Gabbro / Massive Sulfides	44
Seds / Meta-Seds	44
Station Creek Volcanics	44

Source: AGP 2023

16.2.2 2022 Mining Geotechnical Investigation Program

The 2022 investigation program resulted in moderately improved spatial coverage and resolution for geotechnical domains and related rock mass characteristics. A summary of data and information is presented in Figure 16-3 and Figure 16-4 below.

Figure 16-3: Open Pit Drill Program Summary and Detailed Geotechnical Logging Priority- Looking Northeast



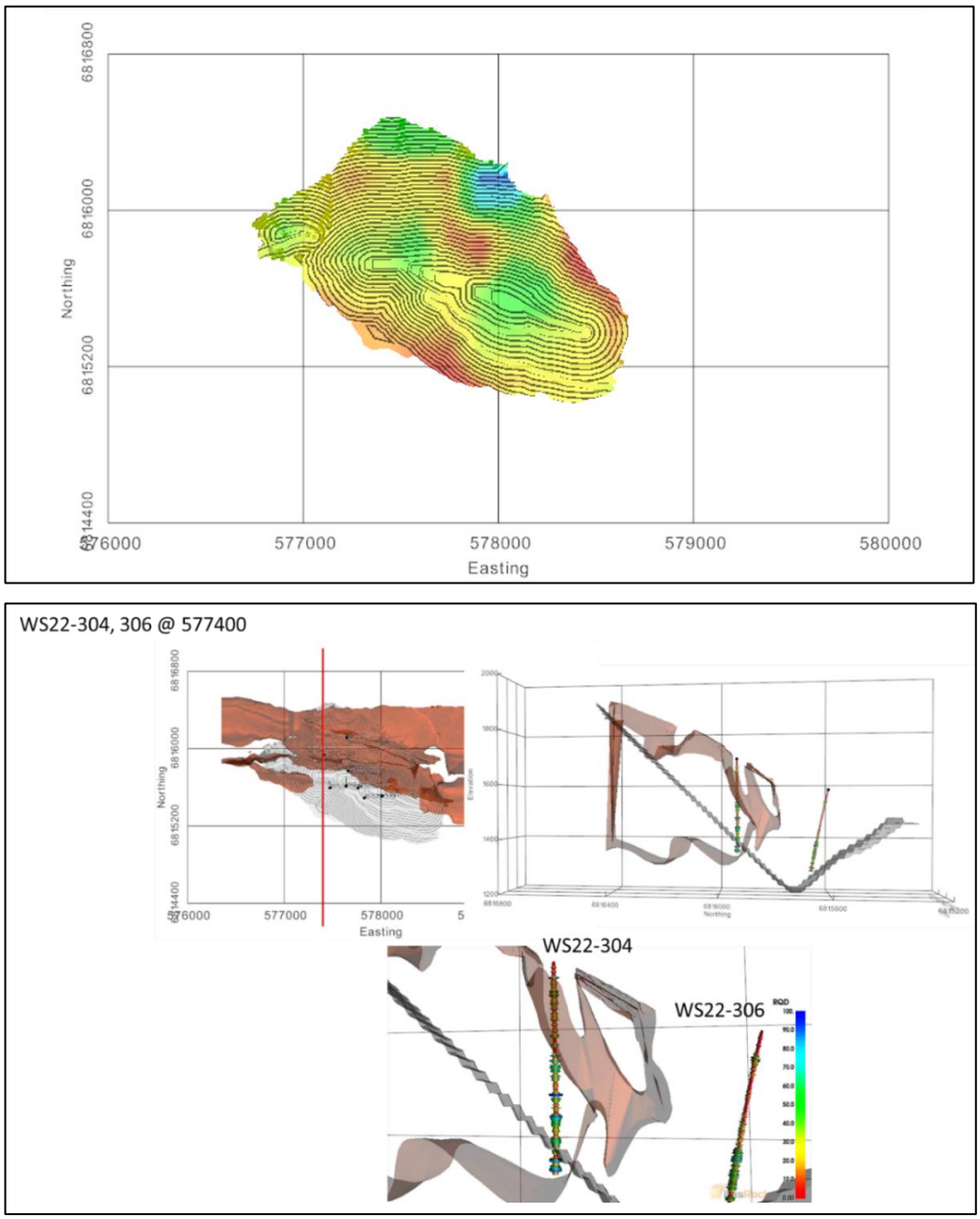
Source: AGP 2023

As anticipated geotechnical data and lab testing data collected from the 2022 program generally confirms earlier indications that the stability of interim / phased pit walls within the ore zone will need to be managed with relatively shallow inter-ramp slope angles, approximating the constituent material's natural angles of repose. This is due to the relatively poor quality and geotechnical character of rock within the ore zone. Bench face slopes in this zone should be expected to ravel regardless of geotechnical structure and catch bench widths should be designed in consideration of material catchment requirements.

The 2022 data also confirms prior indications of relatively superior rock quality within the footwall meta-sedimentary and barren volcaniclastic units forming the bulk of the ultimate pit highwall slope. This supports the use of the relatively steeper/optimized inter-ramp to overall pit slope design criteria for PFS design work. Optimized design criteria are defined above as the 'PFS Slope Angle Recommendations' and are provided by rock type/lithology/geotechnical domain. As described below, the rock intersected and logged in detail by AGP in 2022 is observed here to be relatively competent and strong compared to the variably serpentenized ore bearing units. This concept will continue to require further confirmation with targeted drilling during the project FS phase. It's likely sonic or similar drilling methods can be used to rapidly advance though difficult / poorer quality ore zones (where sufficient FS-Level geotechnical data now exists), with further coring-through-casing to penetrate and

assess footwall meta-sediments and volcanics. Development and integration of a conceptual structural geological model at the FS stage will also be a key item for further study.

Figure 16-4: 1988-2022 NCP AGP – Pit Slope by RQD (From 2022 AGP RQD Block Model)



Source: AGP 2023

A number of core samples were selected for rock strength testing, details of which are provided in Table 16-1.

Rock Strength testing was completed by JFA Engineering out of Queens University in Kingston. Test results are presented in Table 16-2.

Table 16-1: Geotechnical Samples for Rock Strength Testing

Date	Sample Type	Sample No.	Sample ID	From (m)	To (m)	Length (m)	Core Diam.	Rock Type	Logged Strength (Rock Hammer)	Comment
9/30/2022	UCS w/ mod	1	WS22-304-1	228	228.3	0.3	HQ	Metasediments	R4/R3, ~60 Mpa	Heavily microfractured (moderately strong degree of microfracturing), slightly weathered
9/30/2022	UCS w/ mod	2	WS22-304-2	253.2	253.65	0.45	HQ	Metasediments	R4, ~75-100 Mpa	Minor to moderate microfracturing (moderately strong degree of microfracturing), fresh to slightly weathered
9/30/2022	UCS w/ mod	3	WS22-304-3	269.2	269.55	0.35	HQ	Metasediments	R4/R3, ~50 Mpa	Moderate to Heavily microfractured (moderately strong degree of microfracturing), slightly weathered. Well developed foliation at 30° TCA.
9/30/2022	UCS w/ mod	4	WS22-304-4	296.8	297.2	0.4	HQ	Metasediments	R4, ~75-100 Mpa	Heavily microfractured (moderately strong degree of microfracturing), fresh to slightly weathered, erratic carbonate microfractures.
10/1/2022	UCS w/ mod	5	WS22-304-5	310.4	310.7	0.3	HQ	Metasediments	R4, ~75 Mpa	Moderate to Heavily microfractured, fabric parallel microdefects, fresh to slightly weathered
10/1/2022	UCS w/ mod	6	WS22-304-6	329.7	330.1	0.4	HQ	Metasediments	R4, ~75 Mpa	Moderate to Heavily microfractured (moderately strong degree of microfracturing), slightly weathered, fabric with erratic microdefects
10/3/2022	UCS w/ mod	1	WS22-306-1	283.6	283.9	0.3	HQ	Fault / Volcaniclastic	R1/R2, ~5 Mpa	Brecciated volcaniclastic, clay-carbonate matrix, heavily microfractured (weak strength), completely weathered
10/3/2022	UCS w/ mod	2	WS22-306-2	292.2	292.4	0.2	HQ	Volcaniclastic	R3/R2, ~25 Mpa	Lapilli Tuff “damage zone”, heavily microfractured (weak strength, brittle), moderate to highly weathered (clay-carbonate)
10/3/2022	UCS w/ mod	3	WS22-306-3	300.8	301.1	0.3	HQ	Volcaniclastic	R4, ~75 Mpa	Lapilli and Ash Tuff. Heavily microfractured but maintains high strength based on “drop test”. Slight carbonate-clay alteration. Hammer breaks parallel to core axis, brittle.
10/3/2022	UCS w/ mod	4	WS22-306-4	311.7	311.94	0.24	HQ	Volcaniclastic	R4, ~75 Mpa	Lapilli tuff. Heavily microfractured (carbonate) but maintains high strength based on “drop test”. Moderate to strong silicifications, joints have a soapy feel.
10/3/2022	UCS w/ mod	5	WS22-306-5	312.47	312.8	0.33	HQ	Volcaniclastic	R4/R5, ~100 Mpa	Lapilli tuff. Heavily microfractured (carbonate) but maintains high strength based on “drop test”. Moderate to strong silicifications, joints have a soapy feel.

Table 16-2: Rock Geotechnical Parameters

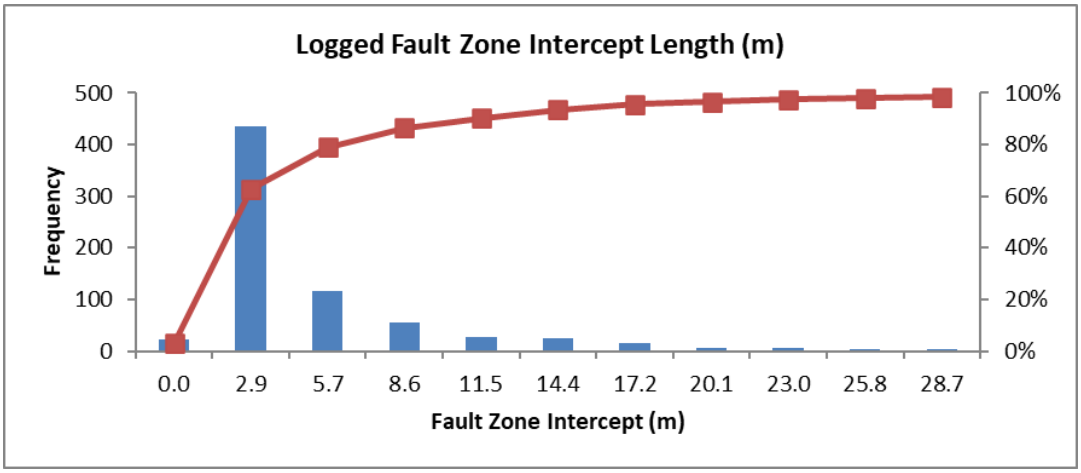
Sample (depth, m)	Length (cm)	Dia. (cm)	Weight (g)	Density (kg/m^3)	Young's Modulus (GPa)	Poisson's Ratio	UCS (MPa)	Sigma 1 (MPa)	Sigma 3 (MPa)	Brazilian Indirect Tensile Strength (values/average) (MPa)	Point Load Strength Index (IS50, MPa)
WS22-304-1	14.32	6.09	1094.5	2628	40.19	0.26	44.8	---	---	---	7.53
(228.00-228.30)							(pf)				
WS22-304-2	14.09	6.09	1091.7	2661	41.238	---*	114.6 (pf)	---	---		5.02
(253.20-253.65)											
WS22-304-3	13.95	6.09	1094.6	2694	55.79	0.28	13	---	---	---	1.1
(269.20-269.55)							(f)				
WS22-304-4	14.13	6.1	1103.9	2679	46.053	---	---	110.6 (f)	2	(5.3, 7.1, 5.8, 12.9, 9.0, 16.0)/9.4	---
(296.80-297.20)											
"	"	"	"	"	---	---	---	134.9	8		---
"	"	"	"	"	---	---	---	141.6	15		---
WS22-304-5	14.15	6.1	1119.2	2709	56.765	0.27	45.7	---	---	(8.3, 7.3, 7.6)/7.7	---
(310.40-310.70)							(pf)				
WS22-304-6	13.64	6.09	1090.6	2743	11.004	---	---	14.6 (f)	5	(7.5, 4.2, 2.7, 2.9, 3.5)/4.2	---
(329.70-330.10)											
"	"	"	"	"	---	---	---	49.6	12		---
"	"	"	"	"	---	---	---	141.4	20		---
WS22-306-1	10.65	6.1	765.6	2465	---*	---*	3.4	---	---	---	NEC
(283.60-283.90)											
WS22-306-2	11.51	6.09	885.3	2641	25.638	0.2	18.8	---	---	---	NEC
(292.20-292.40)							(pf)				
WS22-306-3	14.31	6.11	1106.6	2640	57.32	0.25	36.4	---	---	---	0.63
(300.80-301.10)							(pf)				
WS22-306-4	13.99	6.1	1116.6	2735	49.493	0.16	29.6	---	---	---	NEC
(311.70-311.94)							(pf)				
WS22-306-5	14.31	6.1	1158.9	2775	38.68	0.15	35.6	---	---	---	2.24
(312.47-312.80)							(pf)				

16.2.3 Structural Geology

A number of features interpreted as shears, faults, and fault zones/systems have been mapped in outcrops and intersected by drillholes within the proposed pit extents.

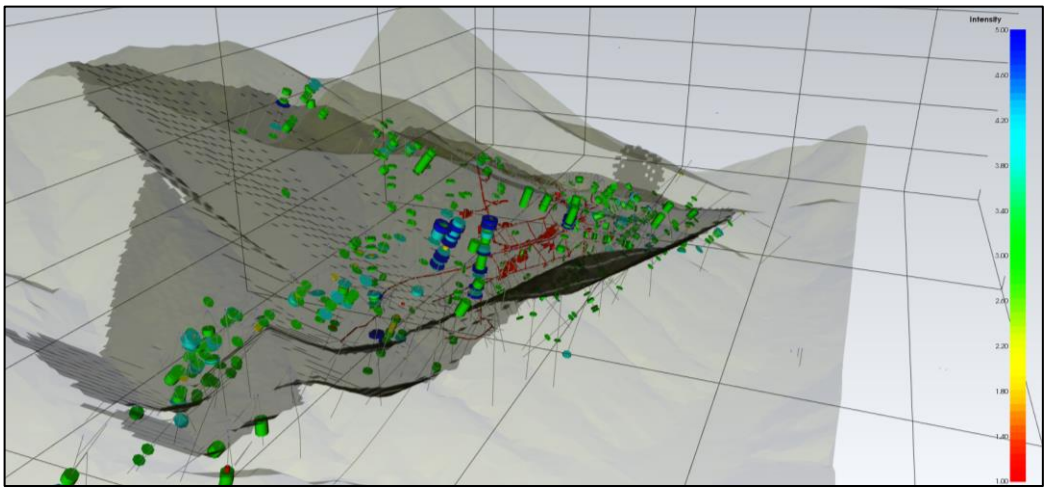
AGP reviewed the data associated with these features to better understand the frequency and ranges in material conditions. The data suggested that local faults typically occur as discrete to coalescing features with apparent moderate-to-high persistence (i.e., greater than 5-10 m continuity), with variable thickness ranging from tens of centimeters to greater than 10 m, (most commonly ~1-3 m). Faults and fault zones exhibit mostly curved, anastomosing surface shapes, with gougey to smooth, polished, and slicken-sided surfaces predominant; rough and irregular surfaces are also frequently observed. (Figure 16-5 to Figure 16-7).

Figure 16-5: Logged Fault Intercept Length (m)



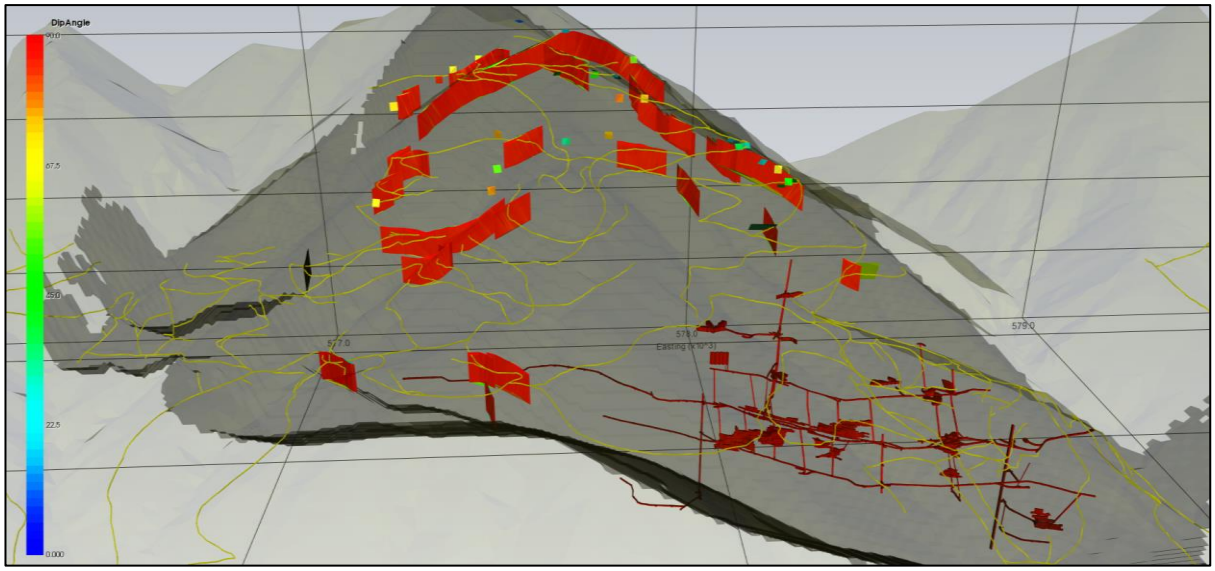
Source: AGP 2023

Figure 16-6: Logged Faults Intercepts (with 'Fault Intensity' indicated) – Looking Northeast



Source: AGP 2023

Figure 16-7: Mapped Faults and Bedding Planes (with 'Dip Angle' indicated) – Looking North



Source: AGP 2023

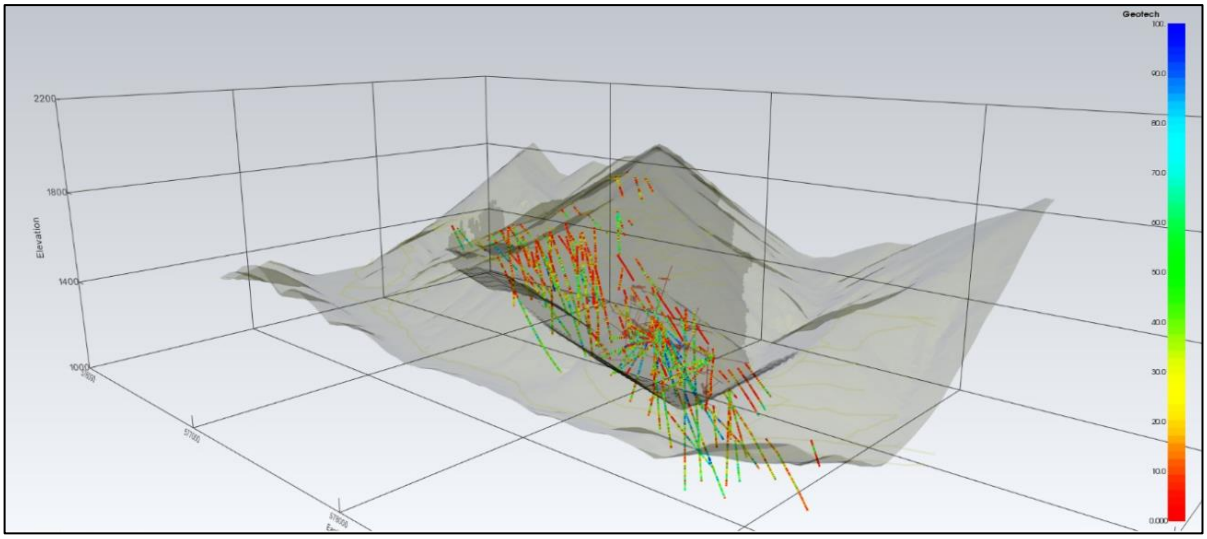
16.2.4 Geotechnical Model

A number of parameters have been considered by AGP in developing a preliminary geotechnical model for the project, including available information on lithology types, geologic structures, rock quality designation (RQD) data, intact rock strengths (from field index testing and lab test results), joint spacing, condition and infill characteristics, and rock mass classification data.

Historically recorded RQD values have been reviewed, error-checked, and plotted by AGP along drillhole surveys to assist in developing a three-dimensional (3D) approximation of the condition and variability of rock quality in the vicinity of the proposed slopes. Alteration models and RMR89 models using available data have also been developed using similar techniques. Views of this data are presented in the following illustrations (Figure 16-8 to Figure 16-11).

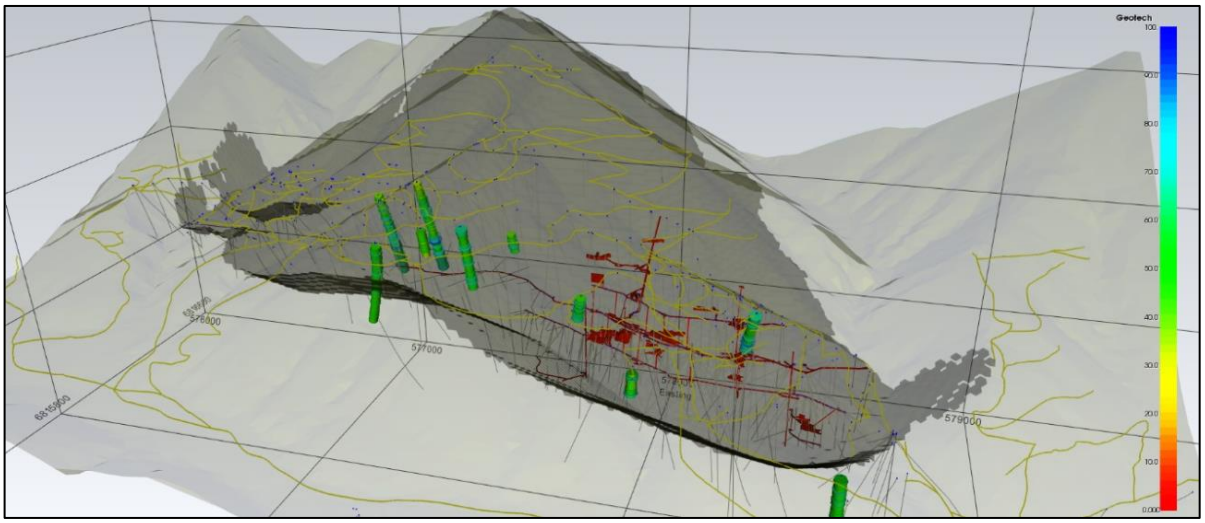
Of particular note is the limited amount of drilling and geotechnical data for the bulk of the proposed north slope high-wall, and the apparent variability of rock quality throughout the deposit area.

Figure 16-8: RQD Drill String Profiles – Looking NW



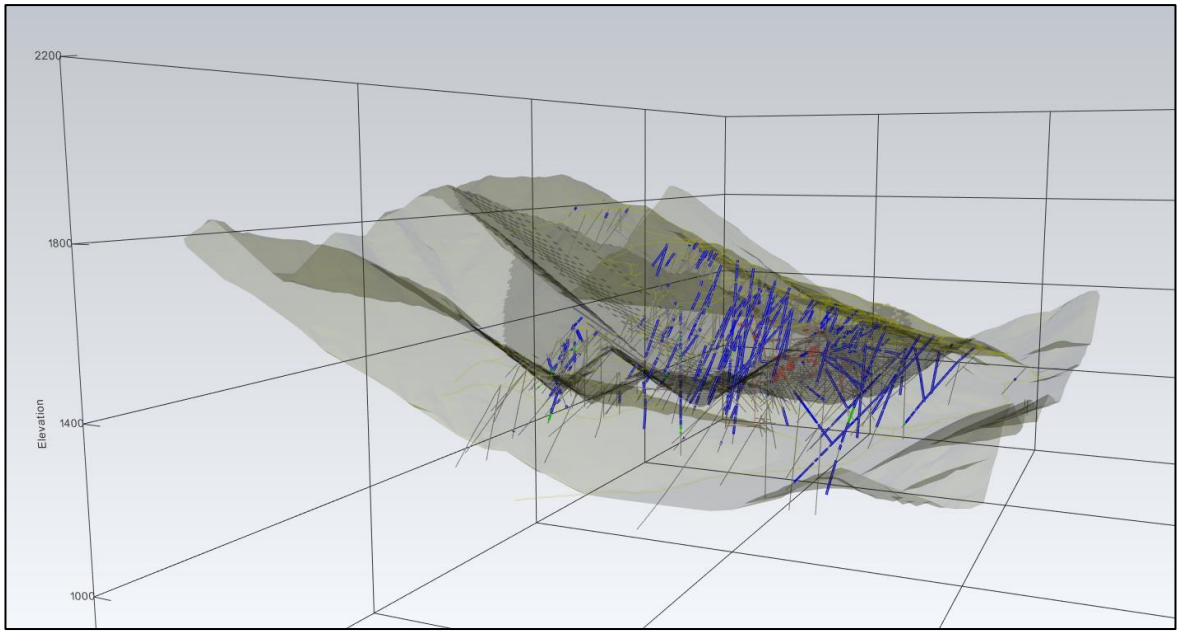
Source: AGP 2023

Figure 16-9: RMR Model – Looking North (with underground working shown)



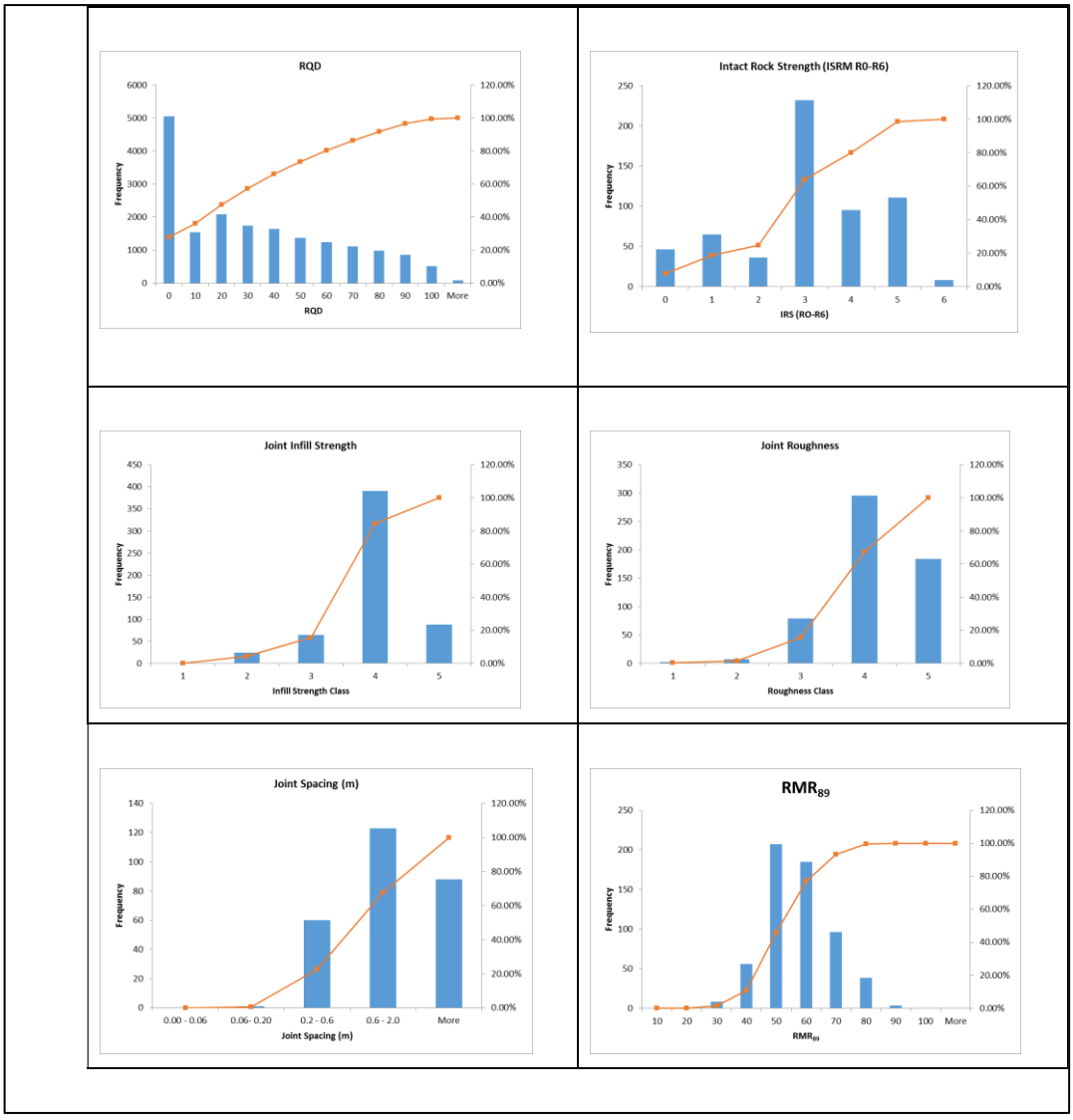
Source: AGP 2023

Figure 16-10: Serpentinization / Alteration Intensity Model – Looking East



Source: AGP 2023

Figure 16-11: Drill Core Logging – Detailed Geotechnical Data Summary



Source: AGP 2023

Due to the current limited quantity of geotechnical data and relatively low data density in relation to a pit of the proposed size, geotechnical units for the project have been defined by AGP based on observed ranges in rock mass classification values, rather than, say, lithological or structural domains that are more typical at advanced levels of study.

Preliminary geotechnical units comprising the current project geotechnical model are summarized below in Table 16-3.

Table 16-3: Rock Mass Classification Summary & Preliminary Geotechnical Units

Geotech Unit	RQD		Discontinuity Spacing		UCS			Jc (RMR_{89})	Groundwater	~ RMR_{89}
	%	Rating	(m)	Rating	ISRM (R0-R6) Core	Rating	UCS (est.)	Rating	Rating	
General Conditions (Mean)	25 – 50	8	0.06 – 0.20	8	R3	4	25-50	10-20	7-15	(~) 40-55
SD+1	50 - 75	13	0.20 – 0.60	10	R4	7	50-100	20-30	7-15	(~) 55-75
SD-1	0 – 25	3	0.06 – 0.20	8	R2	2	1-25	0-10	7-15	(~) 20-40

Notes:

General (Mean), rock mass conditions / slight – moderate Serpentinization, average joint conditions

+1 Standard Deviation, low to negligible Serpentinization, low degree of faulting intensity, fair to favourable joint conditions

-1 Standard Deviation, moderate to high Serpentinization, moderate to high degree of faulting intensity, fair to poor joint conditions.

Overall, the data indicates generally 'fair' rock mass conditions throughout mining zone (i.e., the 'general/mean' unit), and possibly fair to good conditions (SD+1) within the north slope (south-facing) highwall. Poorer quality rock mass is likely to be encountered in the south pit slopes (north facing), in zones where elevated degrees of Serpentinization are intersected (SD-1 Unit).

RQD values typically range from zero in upper hole intervals and fault zones, to 20% to 50%+ in most drill runs. Joint spacing typically varies from 0.2 to 2 m. Intact rock strength varies from R1 to R5, with most rock reporting strengths in the R3 or 25 to 50 MPa range. Laboratory test results corroborate these in-field strength estimates (see Appendix A-4 for a detailed lab test results). Typical joint characteristics include slightly rough to (mostly) smooth to slickensided surfaces, with soft infill less than 5 mm thick.

RMR89 values typically range from 40 to 55 for the 'general' geotechnical unit, 20 to 40 for the SD-1 unit, and 55-70+ for the SD+1 unit.

Rock Mass Classification values were subsequently used to determine rock mass strength and deformation parameters for the range of likely conditions (Appendix A-1). Strength envelopes are defined over representative stress ranges that are a function of the proposed slope heights.

A conservative "Disturbance Factor" (D) of 0.75 - 1.0 has been assumed in deriving the various rock mass strength parameters, indicative of significant disturbance to the rock mass due to production blasting and stress redistributions from planned mining activities.

To date, no strength testing has been carried out on the discontinuities. Consequently, it has been necessary to estimate bedding, joint, and fault strengths based on a review of the qualitative data and relevant experience in similar rock masses. These estimates are presented below in Table 16-4.

Table 16-4: Preliminary Discontinuity Friction Angle

Type	Friction Angle Range (°)
Joints	25 to 35
Beddings	25 to 25
Fault	20-30

16.2.5 Preliminary Empirical Design and 3D Stability Modeling

Empirical evidence from similar sized pits and results of preliminary stability analyses indicate optimized inter-ramp slope angles of 45 to 50 degrees may be possible under favourable geotechnical conditions, similar to those determined for the SD+1 geotechnical unit (and assuming dewatered and seismically inactive scenarios). At this stage, optimized design criteria are provided by AGP for discussion purposes and blue-sky analysis only, they will need to be evaluated and confirmed as the project advances.

AGP notes that development of relatively steep inter-ramp slopes (i.e., 75°-plus bench face angles and 50°-plus inter-ramp slope angles) typically requires excellent operating practices, favourable geological conditions, and employment of an effective pre-split blasting technique. Consequently, 50° inter-ramp slopes tend to be considered aggressive without adequate substantiating evidence.

Comments specific to the main north and south walls are provided below.

North Wall

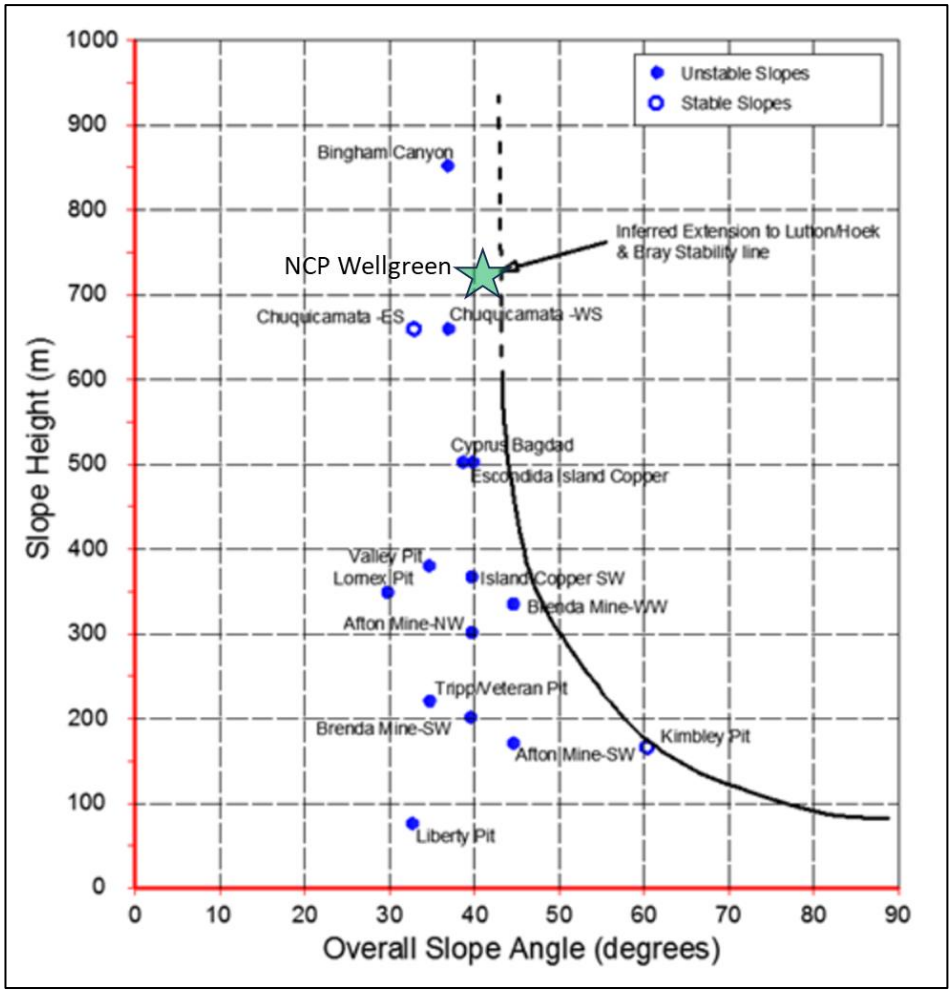
The final north pit wall will be considered 'large-scale', using common terminology, with a maximum slope height likely greater than 700 m and comprised mostly of the Hansen Creek metasedimentary rocks. Based on review of available information, AGP's initial assessment is that these units are likely of generally good geotechnical character (likely 'SD+1' unit), with a relatively low fracture frequency and high intact rock strength. It does not appear from the core photos that the metasedimentary units are anisotropic in terms of strength or have a dominant fabric along bedding or foliation planes. It is noteworthy that relatively few exploration holes have intersected the upper portions of the critical north wall ultimate north slope.

South Walls

The south walls (north facing) will have a maximum height of approximately 300 m and will be comprised mostly of the mafic-ultramafic intrusive package. It appears that a significant portion of the upper mafic intrusive complex (dunite, peridotite and clinopyroxenite) is highly altered and serpentenized, which is expected to be of relatively low geomechanical quality, exhibiting high fracture frequency and low fracture strength.

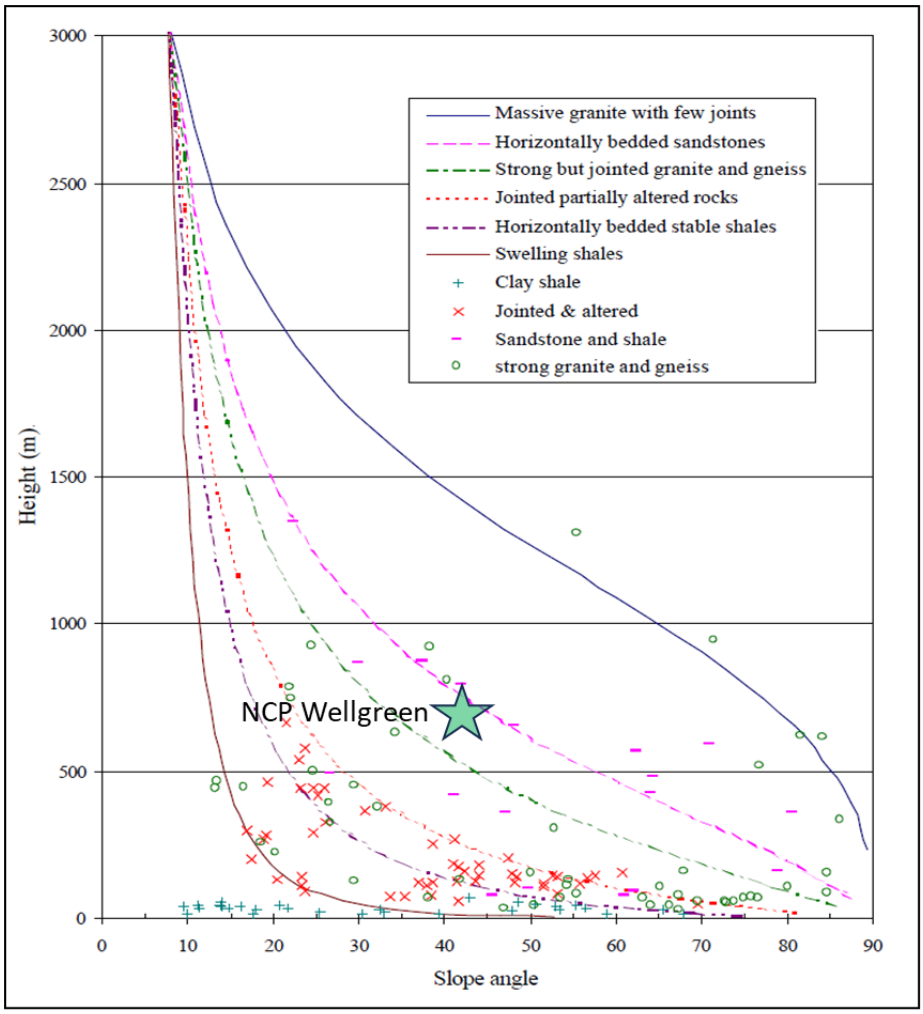
A number of authors have published slope angle versus slope height charts demonstrating typical safety factors for a variety of slope configurations and rock types (Figure 16-12 and Figure 16-13). Well-known examples include charts published by Hoek (1970, 1981) and updated by Sjöberg (1999), and McMahon (1976). AGP's preliminary guidance is illustrated in the figures below; the recommended slope angles are consistent with the data and stability guidelines presented on these charts.

Figure 16-12: Slope Stability – Height vs Slope Angle vs Factor of Safety



Source: Hoek 1981, AGP 2023

Figure 16-13: Slope Stability Chart – Height vs Slope Angle for Various Rock Types



Source: Hoek 1981, AGP 2023

Preliminary 2D limit equilibrium and 3D finite element simulations were completed by AGP using the 2023 PFS pit shell and the initial pit design guidance described above, to gather initial insight into inter-ramp and overall slope geomechanics. While currently generic in nature, these models can be used to assess and interpret a wide variety of geotechnical and slope stability issues that may arise as a result of future investigations, including changes to the geological and structural models, variable non-linear and anisotropic rock mass strength criteria, and ground water conditions, as well as the effects of excavation rates and sequencing. Output from a few of the modelled scenarios are provided below to illustrate typical results.

The conditions typically considered in evaluating slope failures are slope geometry, rock mass and discontinuity strengths and conditions, stress conditions, hydrogeological conditions, and seismic loading. Each of these is briefly described below.

Rock Mass and Discontinuity Strengths

Estimates of rock mass and discontinuity strengths were obtained using data summarized in preceding sections. These were used to derive Hoek-Brown failure criterion (Hoek et. al., 2002). The estimates are based on the intact rock strengths (i.e., UCS, mi) and rock mass quality (i.e., logged, and mapped RMR89, and GSI values).

A Disturbance Factor (D) is used in the Hoek-Brown criterion to account for rock mass disturbance from blasting and stress change effects. Values of D=0.7, 0.85 and 1.0 have been found, from experience, to be roughly equivalent to excellent controlled blasting, normal controlled blasting, and heavy production blasting, respectively.

Stress Conditions

For deep open pits, stress-induced disturbance is expected to influence rock mass quality and the long-term performance of the slopes. This type of disturbance will occur when the load applied to the pit walls exceeds the strength of the rock mass at that location. Disturbance of this type will tend to manifest itself as a reduction in rock mass quality and an increase in deformation. The impact of stress induced disturbance can be estimated and accounted for by both adjusting the depth of the disturbed zone and the level of disturbance. With the notable exception of the north highwall, the proposed walls are shallow to moderately deep and the impact of stress conditions on the slope performance at these locations is expected to be minor. Stress related impacts are likely to be more apparent within the 700-metre-high north slope wall.

Hydrogeological Conditions

Hydro-Resources Inc. (HRI) was mandated to carry out a hydrogeological analysis, covering the footprint of the proposed project, at prefeasibility level. The purpose of the hydrogeological program was as follows:

- obtaining hydrogeological data to better understand the flow in rock formation within the proposed pit area
- evaluating the role of geological structure on the flow regime
- assessing an approximate inflow at the end of operation
- defining potential risks for the operation
- gathering hydrogeological information for the overburden in the TMF and waste dump areas
- providing adequate recommendations for the remainder of the project

Field works were completed at site in one field trip of about 20 days in September and October 2022. The following investigations were performed:

- Slug Tests
- Injection Tests
- Profile Tracer Tests (PTT)
- Chemical Profiles

Five exploration drill holes were tested (WS22-305 to WS22-309). Slotted PVC pipe was installed in all of them so equipment could be introduced freely into the holes. Slug tests were completed in holes

WS22-308 and WS22-309. Injection tests were completed in holes WS22-306, ES22-307, WS22-308 and WS22-309. PTT were completed in holes WS22-305, WS22-306, WS22-307, WS22-308 and WS22-309. PTT allows to isolate water bearing discontinuities with precision using a groundwater tracer. Compared to packer testing, the PTTs are not affected by scale and are highly valuable in type of environment. PTT consists of mixing a tracer as uniformly as possible along an open borehole. Then, a series of concentration profiles are carried out along the same hole at various intervals. The dilution of the tracer indicates the position of the flow along the borehole, and the presence of vertical flow, caused by variable pressure within the discontinuities. A chemical profile was completed in holes WS22-305 to WS22-309. This provides a full profile of water temperature, Total Dissolve Solids (TDS), Electrical Conductivity (EC) and Salinity along the drilled holes. These chemical profiles allow to isolate change in water chemistry, often caused by water bearing discontinuities. They also allow to validate links between water bearing discontinuities. Results obtained to date indicate a low permeability environment as shown in Table 16-5.

Table 16-5: Compilation of K values for Various Test Results

ID	K slug (m/s)	K injection (m/s)	K average PTT (m/s)	K peak PTT (m/s)
WS22-305	---	---	1.79E-8	---
WS22-306	---	4.27E-8	3.74E-9	2.7E-8
WS22-307	---	2.16E-8	5.25E-9	---
WS22-308	2.11E-7	7.65E-8	1.87E-8	4.4E-7
WS22-309	7.91E-8	1.81E-7	7.09E-10	8.1E-9

The pit slope models incorporate groundwater as the testing confirms the proposed open pits are generally expected to be partially to near fully saturated. Groundwater conditions were modelled using a phreatic surface that mimics the surface topography at various elevations within the rock mass.

Seismic Loading

Dynamic loading of the slopes during an earthquake would be expected to temporarily influence slope stability. In Canada, Natural Resources Canada (NRC) is tasked with mapping active faults and developing reliable seismic models for the entire country. NRC provides site specific seismic hazard data consistent with that required for input to designs. Regions of high seismicity are prone to relatively more frequent and larger earthquake events than regions of low seismicity, and the seismic NRC design parameters reflect this distinction. NRC provides seismic design parameters with simply an input of the site coordinates. Doing so for the current project location reveals that the site is in close proximity to modelled onshore fault(s) in northwestern British Columbia and western Yukon with the seismic hazard for the property expected to be relatively high (Natural Resources Canada, 2023) for a preliminary classification of “Site Class A” corresponding to a “Hard Rock”. As a result, the analyses have considered dynamic loading at various earthquake magnitudes. Upper ranges demonstrate predictably negative consequences for slope stability. Seismic conditions require further assessment and advancement at the next level of study.

AGP commonly uses the following approach for target Factor of Safety (FOS) values at the Pre-Feasibility level of study:

- multi-bench or inter-ramp slopes controlled by discontinuities should achieve a minimum FOS of 1.2
- inter-ramp or overall slopes involving shearing through the rock mass and with a low or medium consequence of instability should meet a minimum FOS of 1.3
- overall slopes with a high consequence of instability should meet a minimum FOS of 1.5

Typical details and results from the recent 2D & 3D analyses are shown in Figure 16-14 and Figure 16-15 below. Slope heights ranging from 100 to 730 m with inter-ramp and global slope angles varying from 30° to 45° were analyzed under fully to partially saturated conditions.

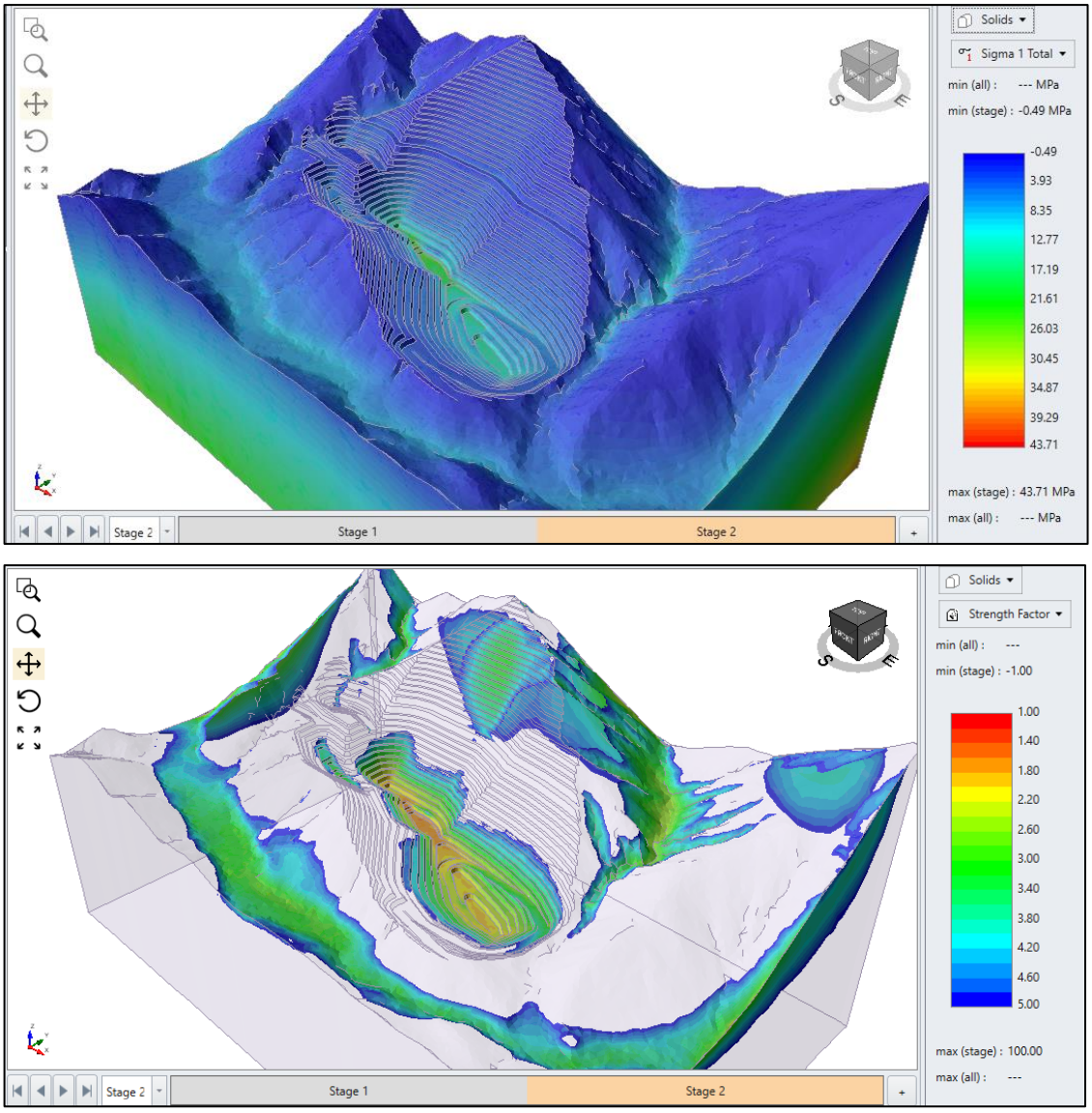
As indicated the designed slopes are predicted to exhibit generally 'stable' conditions for a variety of scenarios, with typical 'minimum 'FOS's ranging from ~1.1 - 1.9 for inter-ramp and global slopes.

It is probable that unfavorably oriented geologic structures are present locally within various slope pit sectors, particularly given the size and extents of the pit and the observed variability in discontinuity orientations; it's assumed at present that small bench-scale failures developed along these features can be managed with careful blasting techniques and regular berm maintenance/clearing, wherever access is possible.

On the other hand, both seismic loading and multi-bench-scale to pit-scale structures have the potential to significantly affect overall pit slope stability. The current status and impact of these require further assessment.

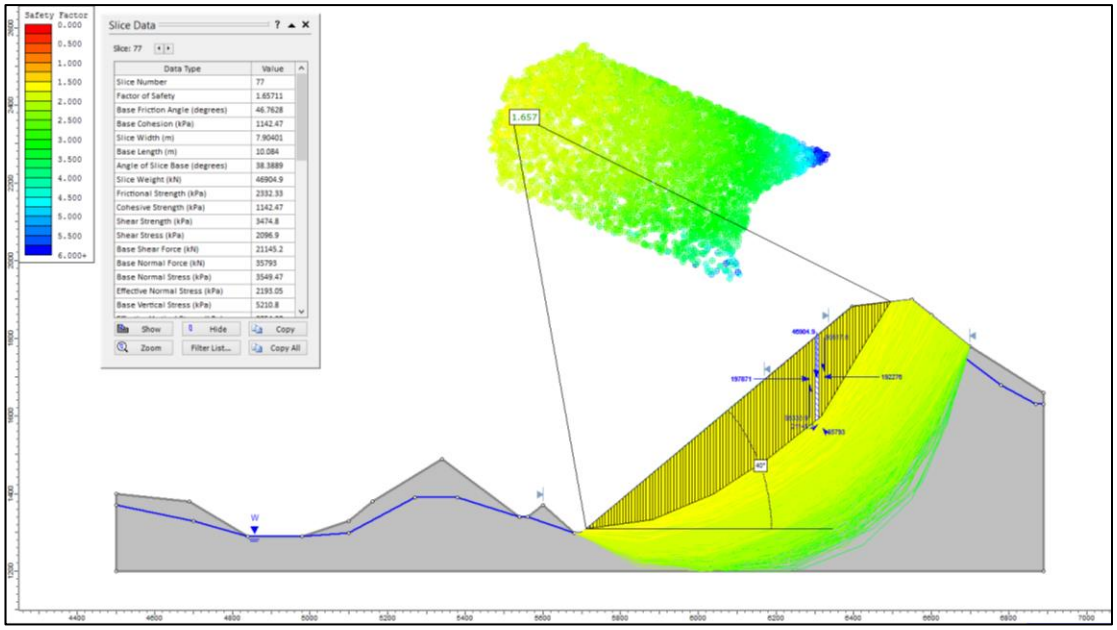
The inclusion of hypothetical adversely oriented faults and bedding planes in the stability analyses indicates potential FOS's less than 1.0 (FOS=1.0 for example model with Seismic loading applied) Further geotechnical investigations are warranted to determine the location and character of inter-ramp to global-scale features that may impact stability and mining outcomes.

Figure 16-14: Typical Results from Preliminary 3D Geomechanical Modeling



Source: AGP 2023

Figure 16-15: Typical Results from Preliminary 2D Limit Equilibrium Modeling



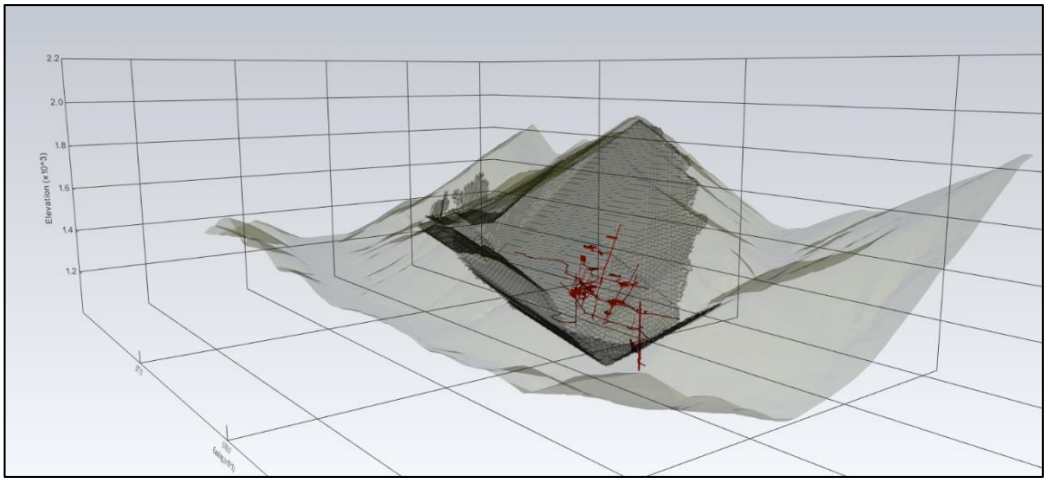
Source: AGP 2023

Sufficient data has been compiled regarding geotechnical strengths and characteristics of the primary rock types to provide a range of potential pit wall design guidelines. However, numerous assumptions had to be made about the primary controls on rock mass stability, geology, rock mass strength, groundwater pressures, and potential failure mechanisms. As such, the models should be considered conceptual in nature. Updated models can be generated and analyzed by AGP if and when updates to the mine plan and/or geotechnical model become available and require additional assessment and evaluation.

16.2.6 Existing Underground Workings

Hudson Yukon Mining commenced commercial production from an underground mine within the deposit in 1972. Mined mineralized material was trucked down from the mine to the mill site near the current lower camp beside the Alaska Highway at approximately kilometre 1,727. Production ceased in 1973 due to falling metal prices and discontinuous massive sulphide horizons. A total of 171,652 tonnes grading 2.23 % Ni, 1.39 % Cu, 1.3 g/t Pt, 0.92 g/t Pd, 0.17 g/t Au, 0.40 g/t Rh, 0.42 g/t Ru, 0.25 g/t Ir, 0.20 g/t Os, and 0.20 g/t Re were milled to produce 33,853 tonnes of concentrate, which was shipped to Sumitomo in Japan.

Figure 16-16: U/G Mine Workings within Proposed Pit – Looking Northwest



Source: AGP 2023

As illustrated in Figure 16-16 above, the proposed open pit will intersect and mine into the historical underground workings at approximately mid-slope height on the eastern side of the pit. This will result in increased risks for safely mining in this area and proscriptive plans will need to be developed to adequately mitigate these risks to acceptable levels.

Current best practice for advancing open pit mining operations through existing underground voids is to fill them with either waste or low-grade ore, which removes the void and partially supports the wall rock around the void. If a source of waste rock is available and that will be visibly distinguishable from the ore after blasting, dilution can be kept to a minimum, while not tying up ore that could be processed sooner. Failing this, using lower grade ore to fill the voids is a practical approach.

Although working around known voids will present safety and productivity challenges, a larger concern is the potential for unknown voids. Even with historic mining records and as-built level maps, one has to assume that unidentified voids exist. Mining should therefore advance from lower risk areas toward higher risk areas, with probe drilling and perhaps geophysical detection methods.

Based on the above information, the following slopes (Table 16-6) were applied for the resource constraining pit shell.

Table 16-6: LG Shell Slope Parameters

Slope	Rock type
33˚	Peridotite
35˚	Clinopyroxenite
35˚	Mineralized Gabbro/Massive Sulfides
44˚	Sediments
44˚	Station Creek Volcanics
44˚	Maple Creek Gabbro

16.3 Open Pit

16.3.1 Geologic Model Importation

The 2023 resource estimate for the Wellgreen deposit was created using GEMS software for mineralization domains and block modelling. The block model was exported to a CSV format for open pit mine planning purposes.

Framework details of the open pit block model is provided in Table 16-7. The final mine planning model items are displayed in Table 16-8. The mining model created by AGP in Hexagon MinePlan® includes additional items for mine planning purposes. MinePlan® was used for the mining portion of the PFS, utilizing their Lerchs Grossman (LG) shell generation, pit and dump design and mine scheduling tools. Only Measured and Indicated Mineral Resources were used for conversion to reserves in the PFS.

Table 16-7: Open Pit Model Framework

Framework Description	Value
MinePlan® file 10 (control file)	ncp210.dat
MinePlan® file 15 (model file)	ncp215.m02
X origin (m)	576,330
Y origin (m)	6,814,705
Z origin (m) (max)	1955
Rotation (degrees clockwise)	0
Number of blocks in X direction	347
Number of blocks in Y direction	239
Number of blocks in Z direction	135
X block size (m)	10
Y block size (m)	10
Z block size (m)	10

Table 16-8: Open Pit Model Item Descriptions

Field Name	Min	Max	Precision	Units	Comments
LITH	0	99	1	-	Rock Type, mineralized domains only
DEN	0	9	0.001	t/m3	Density assigned by Lithology
NI	0	9	0.001	%	undiluted NI grade
CU	0	9	0.001	%	undiluted CU grade
CO	0	1	0.001	%	undiluted CO grade
AU	0	9	0.001	g/t	undiluted AU grade
PT	0	9	0.001	g/t	undiluted PT grade
PD	0	9	0.001	g/t	undiluted PD grade
CLASS	0	9	1	-	Resource class, where 1=Measured, 2=Indicated, 3=Inferred, 4=unclassified, 9 =mined out (u/g)
MG	0	99	0.001	%	undiluted MG grade
S	0	99	0.001	%	undiluted S grade
TOPO	0	100	0.01	%	Percentage below topography
SLP	0	9	1	-	Slope domains, where 1=default, 2=peridotite, 3 =Clinopyroxenite and mineralized gabbro
CON1	0	9	1	-	Scenario 1 MI base case - con type, where 0=waste, 1=bulk, 2=split
NVT1	0	9999	0.001	C$/t	Scenario 1 MI base case - Net value per tonne before mining costs
MCO1	0	9	0.01	C$/t	Mining cost for ore
MCW1	0	9	0.01	C$/t	Mining cost for waste
VLT1	0	999	0.01	C$/t	MI block value per tonne run 1, excluding mining costs
VLB1	-99999	999999	1	C$/t	MI block value run 1
CON2	0	9	1	-	Scenario 2 MII RSC case - con type, where 0=waste, 1=bulk, 2=split
NVT2	0	9999	0.001	C$/t	Scenario 2 MII RSC case - Net value per tonne before mining costs
VLT2	0	999	0.01	C$/t	block value per tonne run 2, excluding mining costs
VLB2	-99999	999999	1	C$/t	block value run 2
RSCOD	-1	1	1	-	mining restriction, road only (-1=no mining, 1=mining allowed)
VLT3	0	999	0.01	C$/t	block value per tonne run 3, excluding mining costs. Mining restriction added.
VLB3	-99999	999999	1	C$/t	block value run 3. Mining Restriction added.

Field Name	Min	Max	Precision	Units	Comments
BLOKT	0	9999	0.01	t	In-situ block tonnage
DTON	0	9999	0.01	t	Diluted block tonnage
OWFL	0	1	1	-	Ore waste flag, where 0=waste and 1=ore ** current run uses NVT1
ROUTE	0	9	1	-	Routing code for dilution calculations (set to 1 for this project as single cut-off used)
DDEN	0	99	0.001	t/m3	diluted density
DNI	0	9	0.001	%	diluted NI grade
DCU	0	9	0.001	%	diluted CU grade
DCO	0	1	0.001	%	diluted CO grade
DAU	0	9	0.001	g/t	diluted AU grade
DPT	0	9	0.001	g/t	diluted PT grade
DPD	0	9	0.001	g/t	diluted PD grade
DMG	0	99	0.001	%	diluted MG grade
DS	0	99	0.001	%	diluted S grade

16.3.2 Economic Pit Shell Development

The open pit ultimate size and phasing opportunities were completed with various input parameters including estimates of the expected mining, processing, and G&A costs, as well as metallurgical recoveries, pit slopes, and reasonable long-term metal price assumptions. AGP worked together with Nickel Creek personnel to select appropriate operating cost parameters for the open pit.

Wall slopes for pit optimization were based on the assessment discussed in Section 16.2. Inter-ramp slopes were not flattened for haulage ramps as the intent was to retreat down the slope during the final pit phase. The overall slope angles for use in LG routines are shown in Table 16-9. Much of the project ore is contained in the very poor-quality peridotite rock, so shallower slopes occur in this rock type in internal pit phase walls.

The mining costs are estimates based on cost estimates for equipment from vendors and previous studies completed by AGP. The costs represent what is expected as a blended cost over the life of the mine for all material types to the various dump locations. Process costs and a portion of the G&A costs were developed by AGP in consultation with Nickel Creek personnel.

The parameters used for pit shell generation are shown in Table 16-10. Costs and revenues are converted to Canadian dollars for use in pit shell determination. The mining cost estimates are based on the use of 240 tonne trucks using an approximate waste dump configuration to determine incremental hauls for mill feed and waste. Nickel, copper, cobalt, platinum, palladium, and gold grades are used in the revenue calculations.

Table 16-9: Pit Shell Slopes

SLP code	LITH code	Material Type	Inter-ramp angle (degrees)
1	0	Default	44
1	5	Gabbro (southeast corner)	44
1	21	Maple Creek Gabbro	44
1	26	Metasediments	44
1	29	Massive Sulphides	44
1	32	Volcanoclastics	44
2	24	Peridotite	33
3	7	Clinopyroxenite	35
3	20	Mineralized Gabbro	35

The smelting terms and recovery assumptions are based on creating either a bulk concentrate, or when there is more value, splitting the feed into separate nickel and copper concentrates.

For block valuation, an NSR value (C$/t) was determined for each concentrate type in every block. As the bulk concentrate was estimated to have a slightly lower process cost, each block had a net value per tonne (NVT) calculated where the NSR is used as the revenue and the process and G&A costs are subtracted. The higher value NVT of the bulk and split concentrate types was selected and flagged for each block.

Table 16-10: Economic Pit Shell Parameters

Description		Units	Value	Value	Value
Exchange Rates					
	CAD	US$ =	1.32		
Resource Model					
	Resource class		M+I		
	Block/Bench Height	m	10		
Metal Prices					
	Cu	US$/lb	3.85		
	Ni	US$/lb	10.50		
	Co	US$/lb	22.00		
	Pt	US$/oz	1,000		
	Pd	US$/oz	2,100		
	Au	US$/oz	1,750		
Royalty					
	Royalty	%	1		
Payable Metal and Deductions			**Bulk con**	**Split Ni con**	**Split Cu con**
	Cu Payable	%	65	65	95
	Cu Deduction	Unit	0	0	1
	Ni Payable	%	78	78	25
	Ni Deduction	Unit	0	0	0
	Co Payable	%	40	40	0
	Co Deduction	Unit	0	0	0
	Pt Pay Factor	%	60	60	80
	Pt Deduction	g/dmt	0	0	1
	Pd Pay Factor	%	60	60	80
	Pd Deduction	g/dmt	0	0	1
	Au Pay Factor	%	60	60	90
	Au Deduction	g/dmt	0	0	1
Treatment and Shipping					
	Treatment Cost	US$ / dmt	0	0	70
	Logistics Cost	US$ / dmt	113.93	113.93	113.93
	Moisture	%	5	5	5
	Transit Losses per transfer	%	0.25	0.25	0.25
Refining Charges					
	Cu	US$/pay lb			0.07
	Au	US$ /pay oz			6.00
	Pt	US$ /pay oz			23

Description		Units	Value	Value	Value
	Pd	US$ /pay oz			23
Penalties (Ni in Cu Con)					
	Penalty	$ /%			0.00
	Hurdle	%			0.50
	Increment	%			0.10
Process Recoveries					
	Cu	%	(Cu-0.06) /Cu *100 where Cu+Ni = 10%	Bulk rec - CuCon rec	62.3% of Bulk rec
	Ni	%	23.21*LN(X)+30.362, 88 max where X = (S-Cu)/Ni	Bulk rec - CuCon rec	@ 1.1% Ni con
	Co	%	57	Bulk rec - CuCon rec	5.9% of Bulk rec
	Pt	%	47.8	Bulk rec - CuCon rec	1.9% of Bulk rec
	Pd	%	54	Bulk rec - CuCon rec	5.9% of Bulk rec
	Au	%	74.4	Bulk rec - CuCon rec	31.7% of Bulk rec
Concentrate Grades					
	Cu	%	variable	variable	25.60
	Ni	%	variable	variable	1.10
Processing and G&A					
	Processing Cost	C$/t mill feed	16.15	16.46	16.46
	G&A Cost	C$/t mill feed	1.15	1.15	1.15
	Process + G&A	C$/t mill feed	17.30	17.61	17.61
Mining Cost					
	Base Rate - 1330m Elevation				
	Waste	C$/t moved	2.26		
	Ore	C$/t moved	1.99		
	Incremental Rate - above 1330 m				
	Waste	C$/t/bench	-0.004		
	Ore	C$/t/bench	0.019		
	Incremental Rate - below 1330 m				
	Waste	C$/t/bench	0.023		
	Ore	C$/t/bench	0.015		

* mining costs based on 240 t haul trucks
* preliminary process costs based on 45 ktpd mill throughput

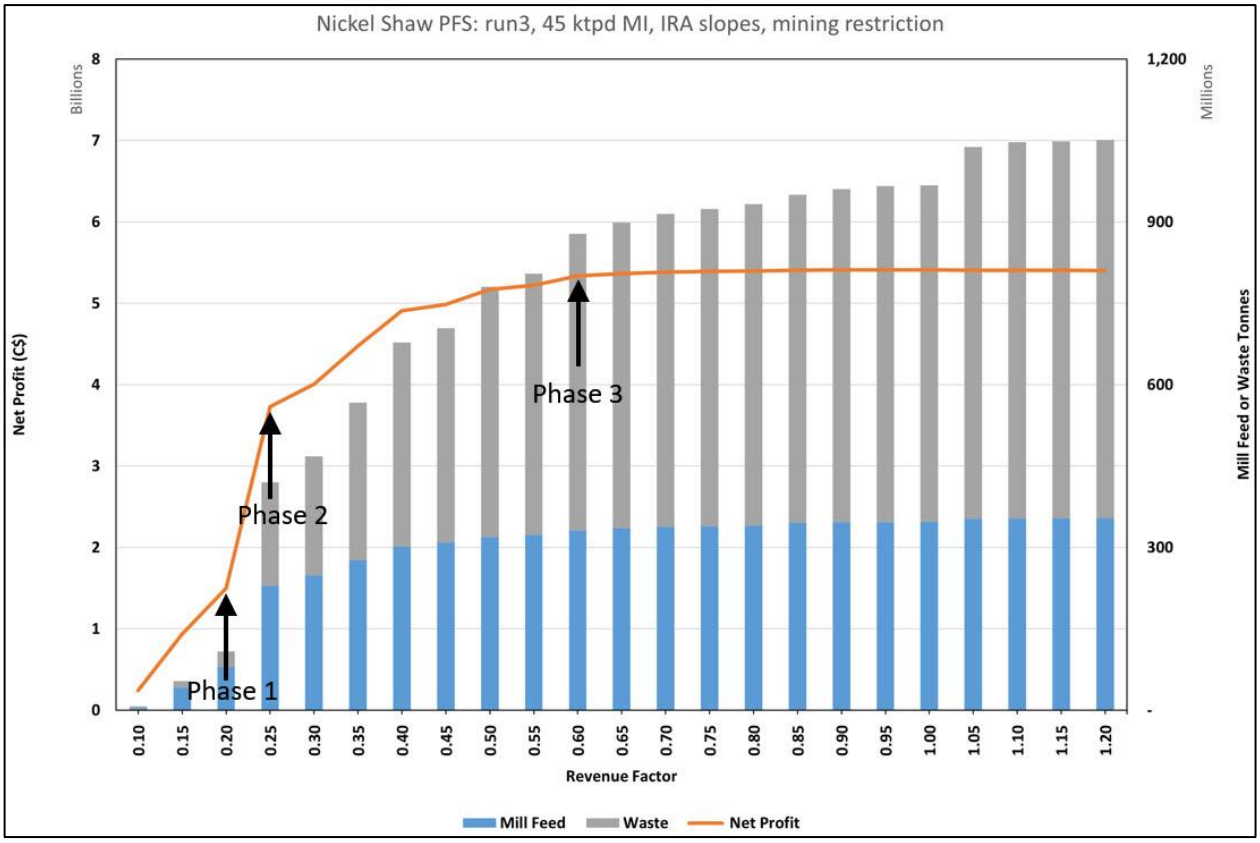
The plot of pit profit versus price is displayed in Figure 16-17 and illustrates various break points in the pit shells. A restriction was placed on the pit optimization run so that pit shells could not expand into the drainage along the east side of the deposit. It was felt that water management would be much more manageable this way by using rock drains below the waste fill there, rather than having to deal with significant water inflow into the pit. The contraction in pit size was less than 5% of total ore tonnes.

In the case of the first break point shown at revenue factor 0.2 (~US$2.10/lb Ni), the cumulative waste tonnage is 28.9 Mt, with a corresponding mill feed tonnage of 80.0 Mt or a strip ratio of 0.36:1. The net profit also increased beyond this point showing that there was still value to be obtained by going with a higher metal price or an additional phase. This break point represented 28% of the net value of a US$10.50/lb Ni pit but with only 5% of the waste of the larger pit shell. This pit shell was used for the pit design of Phase 1 along the east portion of the deposit.

A second break point was identified at revenue factor 0.25 (~US$2.63/lb Ni), with cumulative waste tonnage of 191 Mt and a corresponding cumulative mill feed tonnage of 229 Mt or a strip ratio of 0.83:1. The net profit also increased beyond this point showing that there was still value to be obtained by going with a higher metal price or an additional phase. This break point represented 69% of the net value of the revenue factor 0.60 (~US$10.50/lb Ni) pit shell but with only 31% of the waste of the larger pit shell. This pit shell was used for the pit design of Phase 2.

The next significant break point was at revenue factor 0.60 (~US$6.30/lb Ni). The incremental waste tonnage from the second break point is 356 Mt, with a corresponding increase in mill feed tonnage of 102 Mt or a strip ratio of 3.47:1. This pit shell was used for the pit design of Phase 3. The cumulative value of the final selected pit shell was 99% of revenue factor 0.60 (~US$10.50/lb Ni) pit shell but with only 88% of the waste movement of the larger pit required. This pit shell ran the entire length of the orebody and allows a reasonable mining width from phase 2. The additional potential pit value in larger pit shells was considered insufficient to cover schedule discounting.

Figure 16-17: Profit vs. Price by Pit Shell



Source: AGP 2023

16.3.3 Dilution

The resource model was provided in a whole block format. A whole block model means that for any given block, it is routed as either mill feed or waste. The block size within each of the models was 10 m by 10 m in plan, and 10 m high. The resource grade model includes some internal dilution, where the grade from the wire frames was diluted over the full volume of the block to arrive at a diluted smooth block grade. A coding approach was used to add external dilution to the model so that it is more suitable for mine planning.

Dilutions skins are considered around a mill feed block if the mill feed block is in contact with neighbouring waste blocks. The first step in was to define mill feed and waste blocks. A net value per tonne (NVT) cut-off value of C$0.001/t was used to define mill feed blocks where only Measured and Indicated blocks would be considered. This NVT cut-off value represents the marginal cut-off as it has captured the sum of process costs and G&A costs. The second step in each method is to determine the number of waste neighbour contacts for each mill feed block. For each waste neighbour, a dilution tonnage and grade are applied to the mill feed block based on the specified dilution skin thickness. The third step is to reduce the tonnage in the neighbouring waste blocks to remove the diluting material.

The dilution material is added to the parent mill feed block and removed accordingly in neighbouring waste blocks to achieve a material balance. The diluted model includes revised diluted density and metal grades for all blocks.

AGP also believed that contact dilution would play a role in material sent to the mill. The size of the block in the model was examined as well as the ore zone thicknesses to determine the amount of dilution that would be appropriate for the deposit. A dilution skin thickness of 0.5 m was selected and resulted in the diluted mill feed containing approximately 1.2% more tonnes and 0.5% lower nickel grades and 0.7% lower copper than the in-situ mill feed summary. AGP considered this dilution as acceptable due to the large ore mineralization zones being mined.

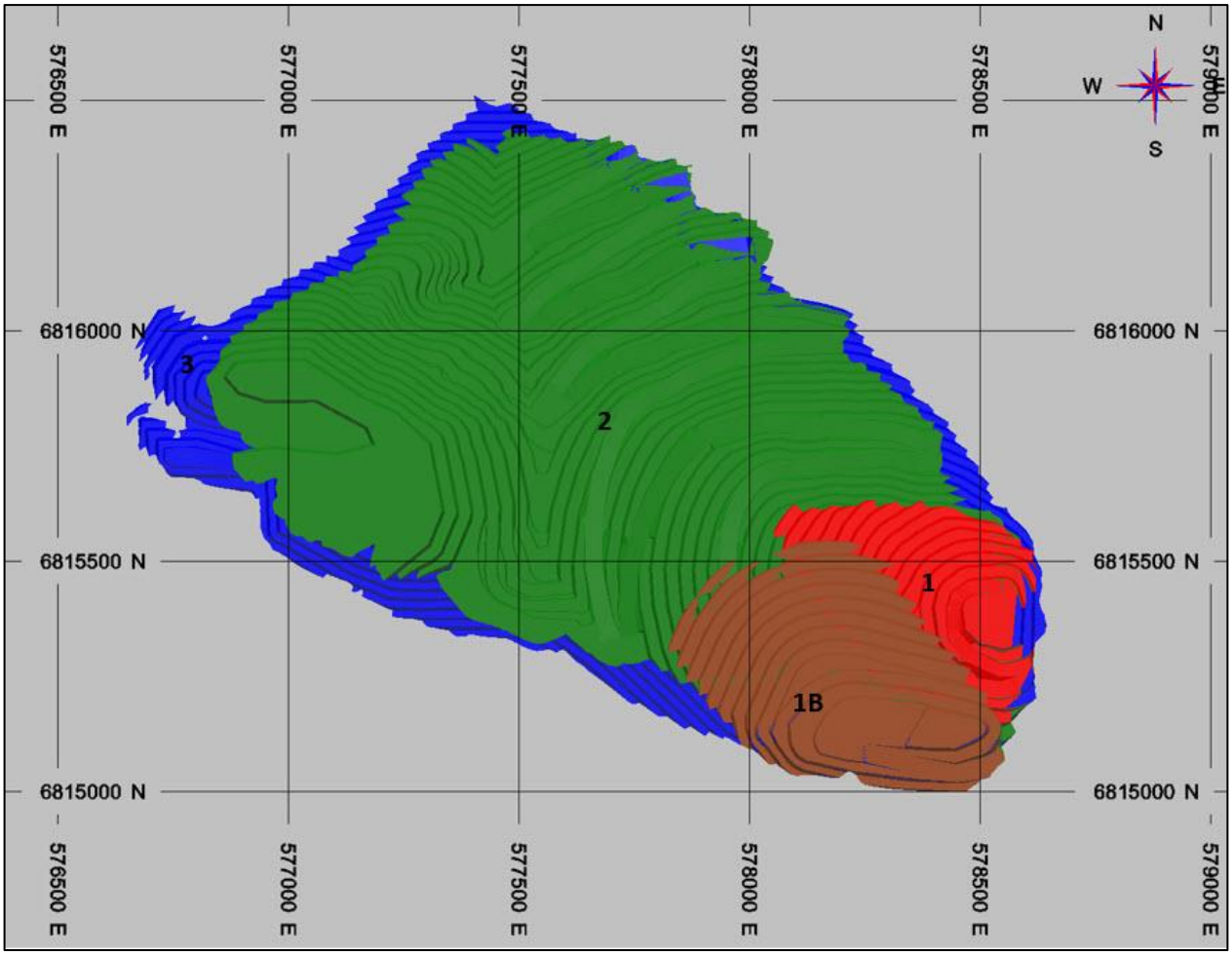
16.3.4 Pit Design

The pit design consists of 3 main phases of successive pushbacks. Phase 1 provides the initial low strip ratio mill feed in the schedule. A waste quarry has been designated as phase 1B and is immediately southwest of the phase 1 pit. The quarry material will be mined early in the schedule so that the crusher and stockpile pad can be constructed as soon as possible. These initial phases will be followed by phases 2 and 3 which both extend to the western and higher main portions of the pit. The pit optimization shells used to guide the ultimate pits were also used to outline areas of higher value for targeted early mining and phase development. All pits were developed using 10 metre bench heights. Phase tonnages and grades are displayed in Table 16-11 and phase locations can be observed in Figure 16-18.

Table 16-11: Pit Phase Tonnages and Grades

Phase	Ore (Mt)	Ni (%)	Cu (%)	Co (%)	Au (g/t)	Pt (g/t)	Pd (g/t)	Mg (%)	S (%)	Waste (Mt)	Total (Mt)	Strip Ratio
1	29.3	0.24	0.10	0.014	0.035	0.17	0.20	17.2	0.57	5.4	34.7	0.2
1B	3.0	0.23	0.03	0.012	0.013	0.09	0.14	21.5	0.25	27.8	30.8	9.2
2	107.7	0.25	0.12	0.014	0.034	0.19	0.22	17.0	0.59	192.6	300.3	1.8
3	167.7	0.26	0.15	0.014	0.043	0.26	0.25	16.5	0.74	368.9	536.6	2.2
Total	**307.7**	**0.26**	**0.13**	**0.014**	**0.039**	**0.22**	**0.23**	**16.8**	**0.67**	**594.6**	**902.3**	**1.9**

Figure 16-18: Pit Phase Locations



Source: AGP 2023

Geotechnical parameters discussed in Section 16.2 were applied to pit designs as shown in Table 16-12.

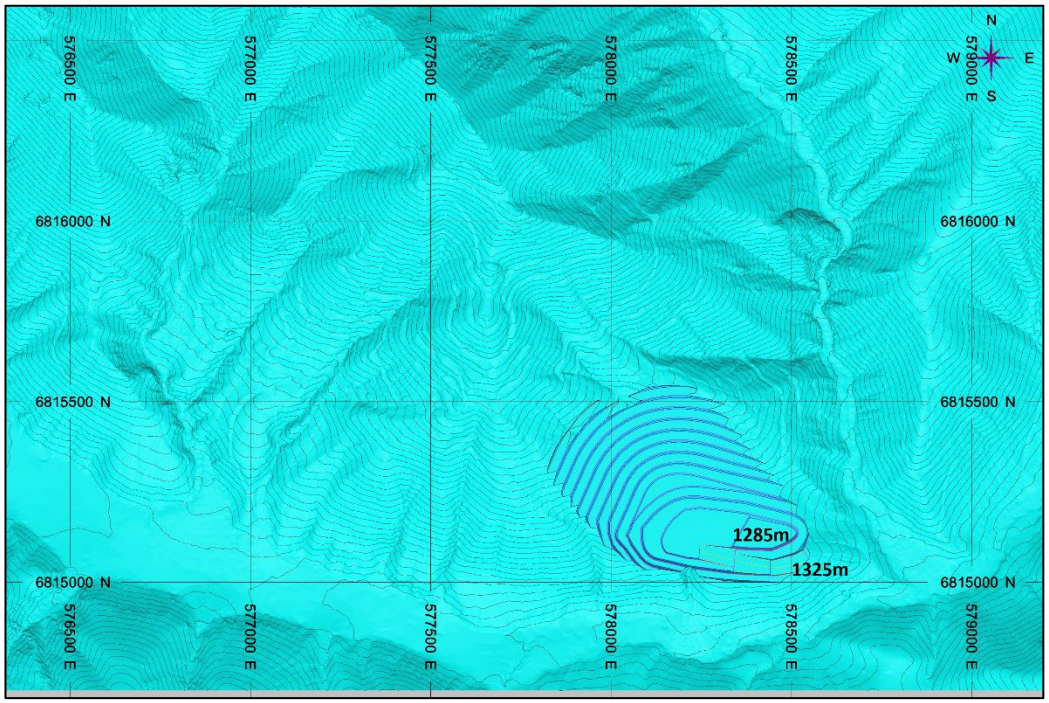
Table 16-12: Pit Slope Design Criteria

SLP Code	LITH Code	Material Type	Inter-ramp Angle (degrees)	Bench Face Angle (degrees)	Bench Height (m)	Height Between Berms (m)	Berm Width (m)
1	0	Default	44	70	10	20	13.4
1	5	Gabbro (SE corner)	44	70	10	20	13.4
1	21	Maple Creek Gabbro	44	70	10	20	13.4
1	26	Metasediments	44	70	10	20	13.4
1	29	Massive Sulphides	44	70	10	20	13.4
1	32	Volcanoclastics	44	70	10	20	13.4
2	24	Peridotite	33	70	10	20	23.5
3	7	Clinopyroxenite	35	70	10	20	21.3
3	20	Mineralized Gabbro	35	70	10	20	21.3

Phase 1B

Phase 1B is the first mined in the pit. It has been designed as a nearby source of waste for the construction of the crusher and stockpile pad. This phase is mined from 1505 masl down to 1285 masl. Narrow waste benches near the top of the phase will be mined with dozers and pushed down to lower benches. Pioneering access will be shared with phase 1 for some of the upper benches. The design is shown in Figure 16-19.

Figure 16-19: Phase 1B Design

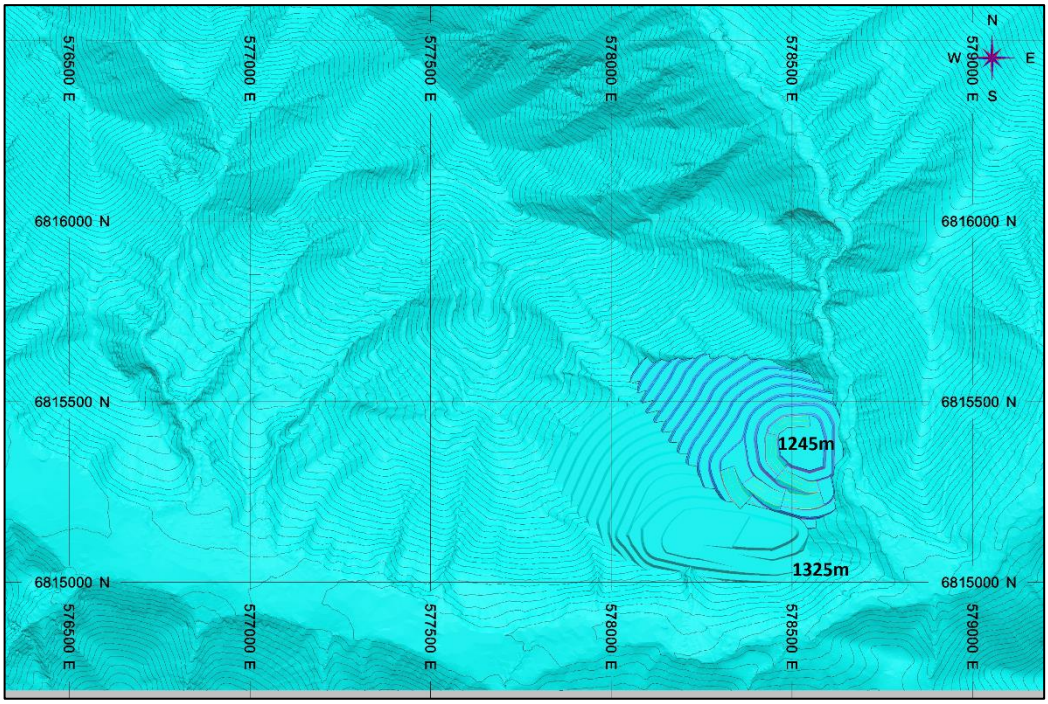


Source: AGP 2023

Phase 1

Phase 1 is the first significant source of ore mined in the pit. It will be mined concurrently with phase 1B and will release ore as stockpile capacity increases with pad construction. This phase is mined from 1515 masl down to 1245 masl. Pioneering access will be shared with phase 1B for some of the upper benches. The design is shown in Figure 16-20.

Figure 16-20: Phase 1 Design

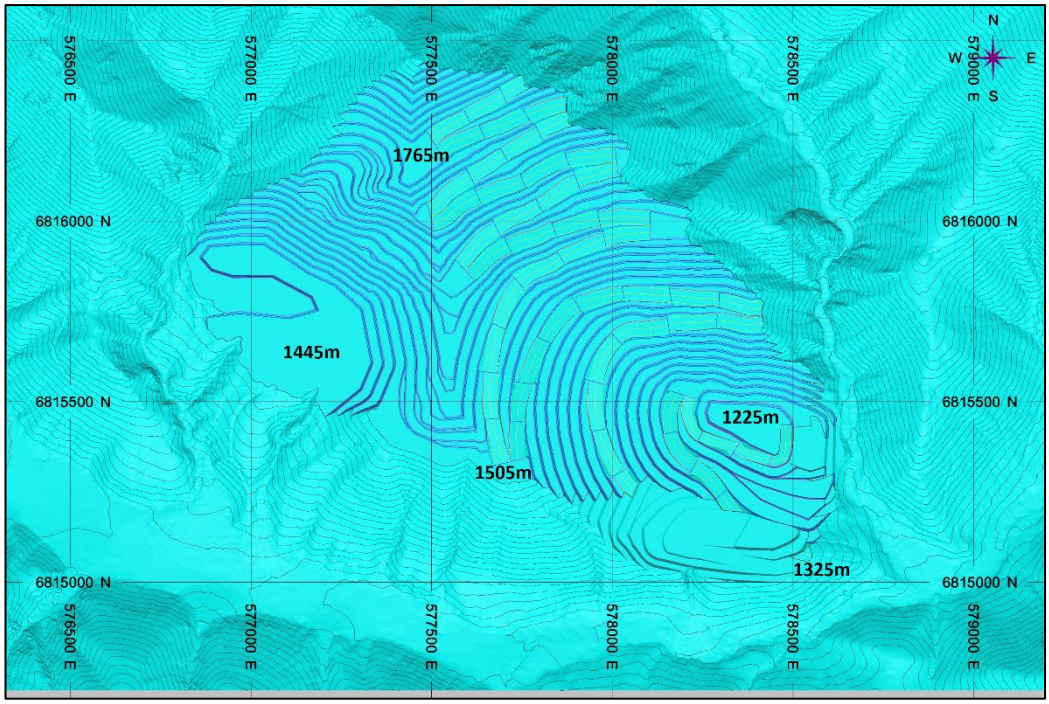


Source: AGP 2023

Phase 2

Phase 2 extends the mine to higher elevations and also to the western portion of the deposit. Once the pioneering road is complete to the upper elevations, the phase retreats back down the mountain and leaves haul road access in its wall for phase 3. This phase is mined from 1925 masl down to 1225 masl. The design is shown in Figure 16-21.

Figure 16-21: Phase 2 Design

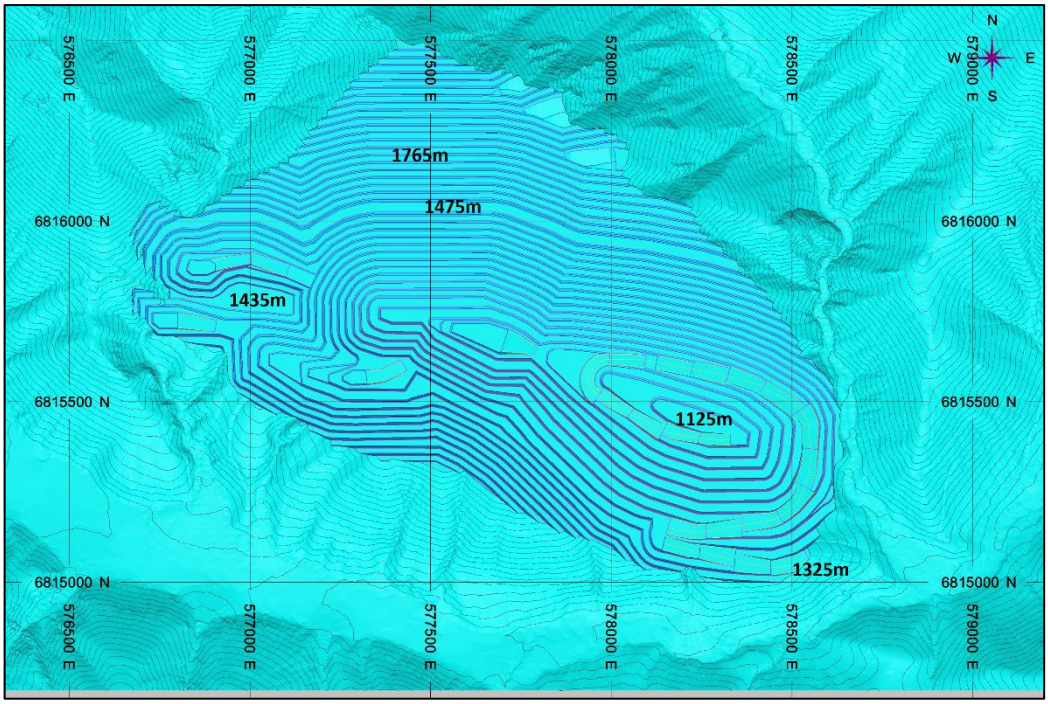


Source: AGP 2023

Phase 3

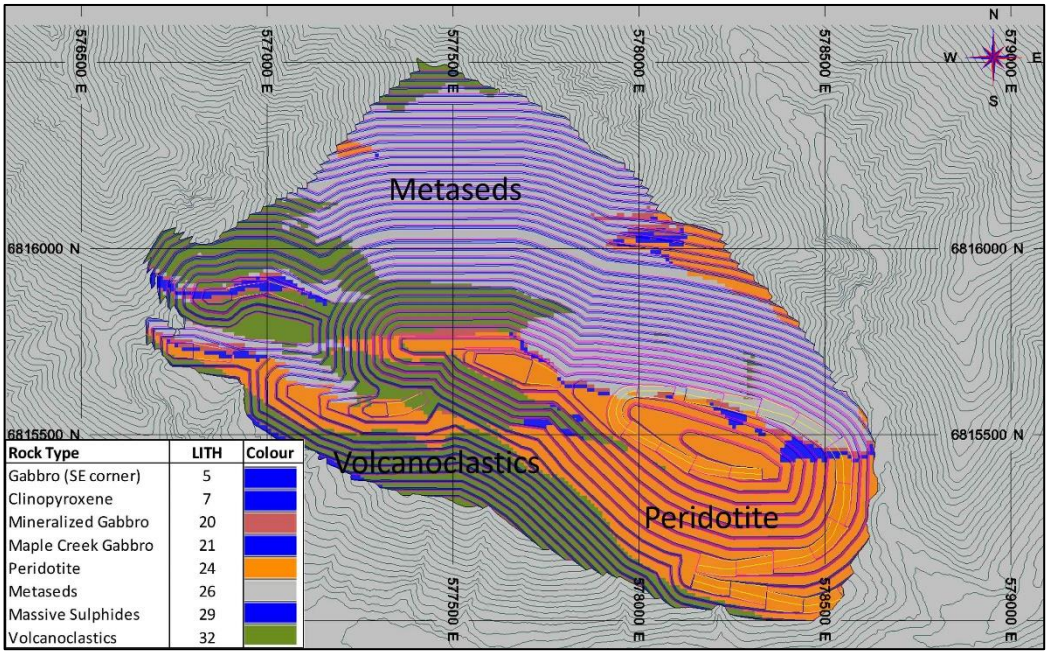
Phase 3 is the final phase to be mined in the deposit. The haul road access from phase 2 is mined to final wall and the final access to upper elevations is via haulage ramps on the northeast waste rock facilities. This phase is mined from 1925 masl down to 1125 masl. As the ultimate pit has a very high north wall, a wider berm of approximately 26 m width was used at 1475 m elevation. This berm can then be maintained to allow for safer working conditions at lower elevations. The design is shown in Figure 16-22. Lithologies in the final pit walls are displayed in Figure 16-23.

Figure 16-22: Phase 3 Design



Source: AGP 2023

Figure 16-23: Lithologies in Final Pit Walls



Source: AGP 2023

16.3.5 Rock Storage Facilities

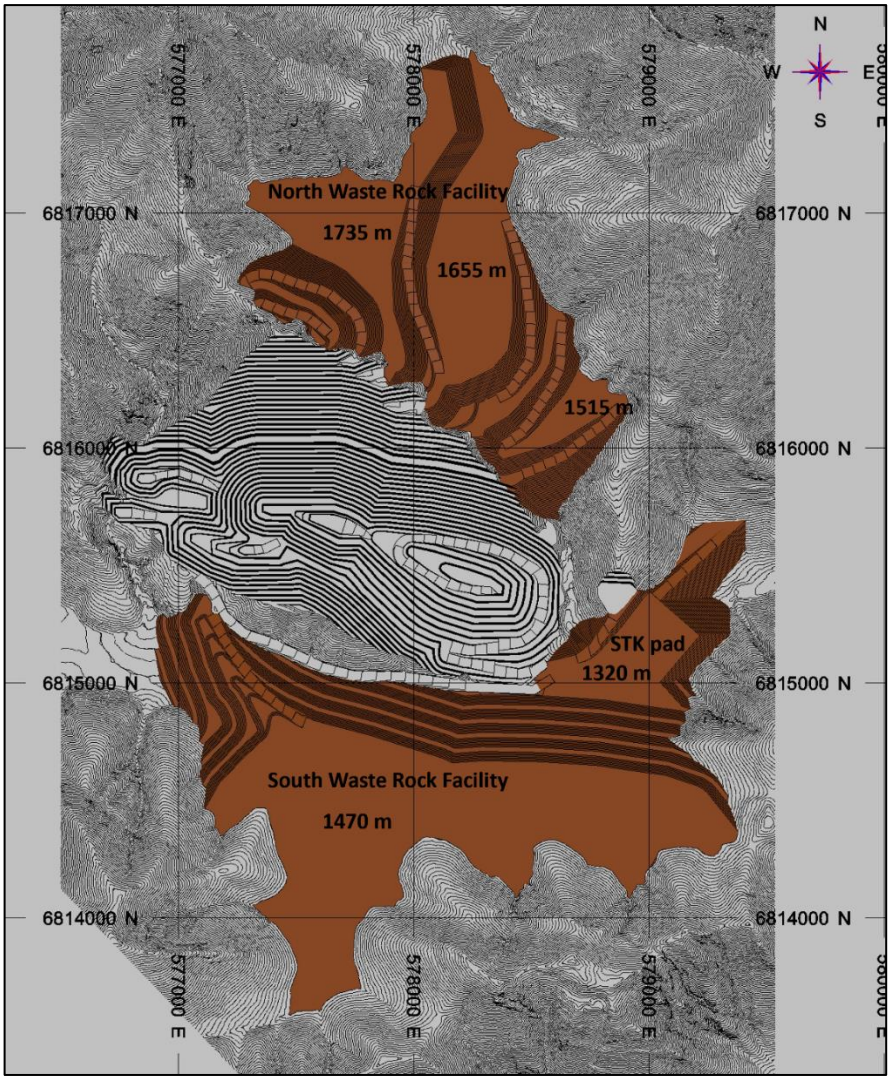
The total amount of waste within the mine plan is 595 Mt.

The design of the rock waste dumps used a swell factor of 1.30 and were designed with a 37° face slope. The north waste rock facilities (WDN) will be constructed with wrap-around accesses near the bench exits. The south waste rock facility (WDS) will be built from the bottom up with overall slopes of 21.8° (2.5H:1V) and 30 m lift heights.

Waste management facilities will be actively reclaimed as areas are considered final. Dozers will re-slope them as they are advanced to allow revegetation to occur as soon as possible.

The locations of the waste rock facilities are shown in Figure 16-24. The north waste rock facilities are shown with capacity for 121M cubic metres (cum) of loose rock. The south waste rock facilities have a top elevation of 1470 masl and have capacity for 152M cum of loose material. The crusher pad required 17.8M cum of waste rock during construction. There is an opportunity to store a small amount of waste in the west end of the pit in future detailed waste sequencing.

Figure 16-24: Waste Rock Facility Locations



Source: AGP 2023

16.3.6 Mine Schedule

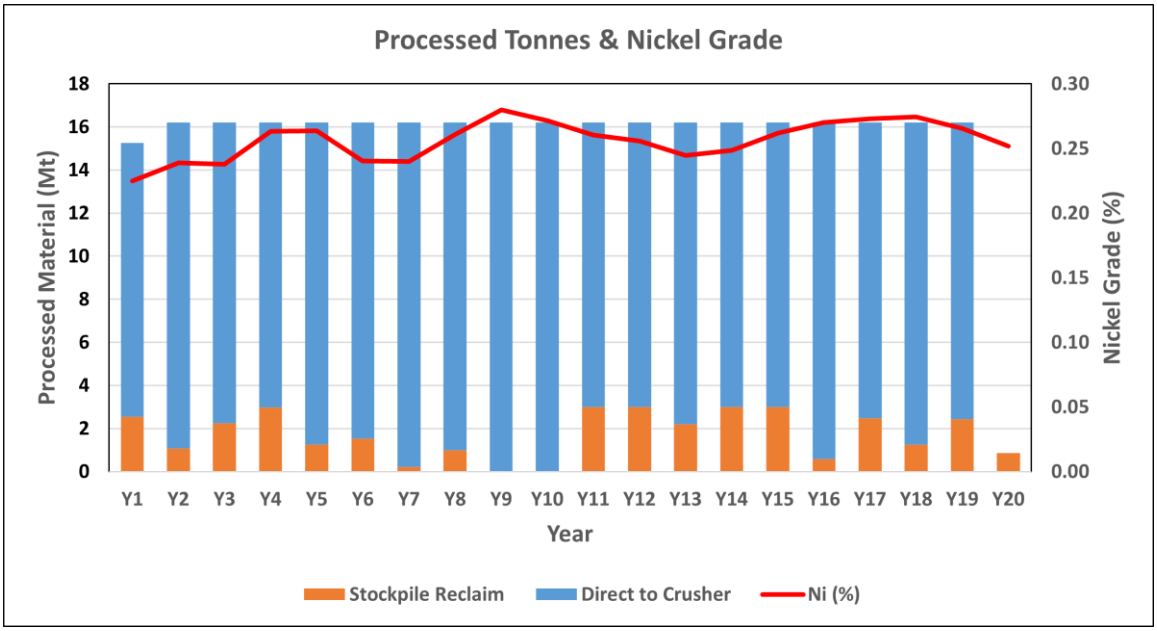
The mining rate was selected based on strategic planning scenarios which demonstrated that the targeted mill capacity of 45 ktpd (16.2 Mtpa) would be achieved. Year 1 of process production was reduced to account for plant ramp-up.

The mined ore was separated into bulk concentrate and split nickel and copper concentrate types based on the highest value per tonne (NVT). This was described in more detail in section 16.3.2. All values of NVT greater than C$0.001/t have already considered process and G&A costs so are considered as ore. Only Measured and Indicated Mineral Resources were used in the NVT ore calculations. A single separate stockpile was used for each ore type in the schedule with maximum individual stockpile capacities of 1.5 Mt after pre-production. These stockpiles provide flexibility in how

material is fed to the process plant. The process plant can only process one of these or types at a time, so it is assumed that there will be several days to transition between ore feeds. In future studies, further refinement is recommended for the use of different stockpile strategies to maximize value to the mill.

The selected mine schedule plans to deliver 308 Mt of mill feed grading 0.13% Cu, 0.26% Ni, 0.014% Co, 0.22 g/t Pt, 0.23 g/t Pd, 0.039 g/t Au, 0.67 % S and 16.8 % Mg over 19 years of mining. This mill feed consists of 190 Mt of bulk concentrate ore and 118 Mt of split concentrate ore. The process facility will continue to operate into year 20 in order to exhaust the stockpile material. Waste tonnage totalling 595 Mt will be delivered to rock storage facilities. The overall waste versus ore tonnage strip ratio is 1.9:1. The annual tonnages and nickel grades of process material are shown in Figure 16-25.

Figure 16-25: Annual Process Tonnages and Nickel Grades



Source: AGP 2023

Detailed annual schedule summaries are displayed in Table 16-13.

Table 16-13: Annual Mining and Process Schedule Details

	Description	Y-2	Y-1	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11	Y12	Y13	Y14	Y15	Y16	Y17	Y18	Y19	Y20	Total
Mining Summary	**Waste (Mt)**	**13.2**	**36.8**	**35.1**	**33.6**	**31.8**	**31.8**	**33.6**	**33.3**	**34.6**	**35.8**	**34.3**	**34.3**	**26.1**	**21.8**	**29.6**	**27.7**	**25.6**	**31.2**	**29.3**	**11.6**	**3.8**		**595**
	Ore (Mt)	**1.8**	**2.1**	**13.4**	**16.4**	**17.0**	**16.2**	**16.2**	**16.2**	**16.2**	**15.2**	**16.7**	**16.7**	**16.2**	**16.2**	**16.2**	**16.2**	**16.2**	**16.2**	**16.2**	**16.2**	**14.1**		**307.7**
	Cu (%)	0.06	0.05	0.08	0.10	0.10	0.13	0.14	0.12	0.08	0.10	0.13	0.14	0.15	0.13	0.13	0.14	0.15	0.17	0.18	0.19	0.15		0.13
	Ni (%)	0.23	0.18	0.23	0.24	0.24	0.27	0.26	0.24	0.24	0.26	0.28	0.27	0.26	0.25	0.24	0.25	0.26	0.27	0.27	0.27	0.27		0.26
	Co (%)	0.013	0.010	0.012	0.013	0.013	0.014	0.014	0.013	0.013	0.014	0.015	0.015	0.014	0.014	0.014	0.014	0.014	0.015	0.015	0.015	0.015		0.014
	Pt (g/t)	0.11	0.12	0.14	0.18	0.18	0.22	0.21	0.20	0.15	0.15	0.20	0.22	0.23	0.23	0.24	0.25	0.29	0.32	0.31	0.31	0.24		0.22
	Pd (g/t)	0.16	0.18	0.20	0.23	0.22	0.23	0.22	0.21	0.20	0.20	0.23	0.24	0.23	0.23	0.23	0.24	0.27	0.28	0.27	0.27	0.25		0.23
	Au (g/t)	0.016	0.015	0.026	0.034	0.032	0.034	0.039	0.040	0.025	0.025	0.037	0.041	0.042	0.038	0.037	0.038	0.045	0.049	0.052	0.061	0.045		0.039
	S (%)	0.34	0.34	0.41	0.50	0.52	0.63	0.70	0.60	0.45	0.54	0.69	0.67	0.68	0.59	0.63	0.67	0.79	0.89	0.97	0.99	0.80		0.67
	Mg (%)	18.7	16.1	16.3	16.4	17.3	17.5	17.2	17.2	17.8	17.6	17.3	16.8	16.5	16.9	16.3	16.5	16.0	16.0	16.1	15.8	17.3		16.8
	Total (Mt)	**15.0**	**38.9**	**48.5**	**49.9**	**48.8**	**48.0**	**49.8**	**49.5**	**50.8**	**51.0**	**51.0**	**51.0**	**42.3**	**38.0**	**45.8**	**43.9**	**41.8**	**47.4**	**45.5**	**27.8**	**17.9**		**902**
Processing Summary	**Total Feed (Mt)**			**15.3**	**16.2**	**16.2**	**16.2**	**16.2**	**16.2**	**16.2**	**16.2**	**16.2**	**16.2**	**16.2**	**16.2**	**16.2**	**16.2**	**16.2**	**16.2**	**16.2**	**16.2**	**16.2**	**0.9**	**307.7**
	Cu (%)			0.07	0.10	0.10	0.13	0.14	0.12	0.08	0.10	0.13	0.14	0.14	0.13	0.14	0.13	0.15	0.18	0.18	0.19	0.14	0.05	0.13
	Ni (%)			0.23	0.24	0.24	0.26	0.26	0.24	0.24	0.26	0.28	0.27	0.26	0.26	0.24	0.25	0.26	0.27	0.27	0.27	0.27	0.25	0.26
	Co (%)			0.012	0.013	0.013	0.014	0.015	0.014	0.013	0.014	0.015	0.015	0.014	0.014	0.014	0.014	0.014	0.015	0.015	0.015	0.015	0.014	0.014
	Pt (g/t)			0.14	0.18	0.18	0.21	0.21	0.20	0.15	0.15	0.20	0.22	0.22	0.23	0.24	0.25	0.28	0.32	0.31	0.31	0.23	0.12	0.22
	Pd (g/t)			0.19	0.23	0.22	0.23	0.23	0.21	0.20	0.20	0.24	0.24	0.23	0.24	0.24	0.24	0.26	0.28	0.27	0.27	0.25	0.17	0.23
	Au (g/t)			0.024	0.034	0.032	0.034	0.039	0.040	0.025	0.025	0.038	0.041	0.041	0.038	0.038	0.038	0.044	0.049	0.053	0.061	0.042	0.018	0.039
	S (%)			0.41	0.51	0.53	0.64	0.70	0.60	0.45	0.52	0.70	0.68	0.65	0.60	0.63	0.67	0.77	0.89	0.99	1.00	0.75	0.30	0.67
	Mg (%)			16.6	16.2	17.0	17.3	17.2	17.2	17.8	17.8	17.2	16.8	16.8	17.1	16.3	16.2	16.0	15.9	16.0	15.7	17.5	20.1	16.8
	Bulk Feed (Mt)			**12.9**	**12.2**	**11.8**	**9.2**	**8.9**	**9.7**	**11.6**	**11.4**	**10.1**	**10.4**	**10.3**	**11.0**	**10.4**	**8.5**	**7.4**	**7.5**	**7.9**	**8.1**	**9.9**	**0.9**	**190**
	Cu (%)			0.07	0.09	0.09	0.09	0.08	0.08	0.07	0.08	0.11	0.10	0.10	0.10	0.10	0.10	0.11	0.13	0.12	0.11	0.10	0.05	0.09
	Ni (%)			0.22	0.24	0.24	0.27	0.26	0.25	0.24	0.25	0.29	0.28	0.27	0.27	0.26	0.25	0.27	0.29	0.28	0.28	0.28	0.25	0.26
	Co (%)			0.012	0.013	0.013	0.014	0.014	0.013	0.013	0.014	0.015	0.015	0.014	0.015	0.014	0.014	0.014	0.014	0.014	0.015	0.015	0.014	0.014
	Pt (g/t)			0.13	0.17	0.18	0.17	0.16	0.15	0.13	0.14	0.18	0.18	0.18	0.19	0.22	0.21	0.25	0.29	0.25	0.22	0.19	0.12	0.18
	Pd (g/t)			0.19	0.22	0.22	0.21	0.21	0.21	0.19	0.19	0.24	0.23	0.22	0.24	0.24	0.23	0.25	0.29	0.26	0.25	0.24	0.17	0.22
	Au (g/t)			0.023	0.032	0.031	0.026	0.023	0.023	0.020	0.021	0.029	0.029	0.029	0.029	0.031	0.030	0.033	0.033	0.037	0.038	0.032	0.018	0.028
	S (%)			0.40	0.49	0.53	0.53	0.42	0.40	0.39	0.48	0.61	0.53	0.54	0.52	0.54	0.53	0.62	0.77	0.80	0.71	0.64	0.30	0.54
	Mg (%)			16.8	16.7	17.5	18.3	18.4	18.4	18.5	18.6	18.4	18.9	18.5	18.6	17.5	17.3	16.7	16.3	17.7	18.2	19.1	20.1	17.9
	Split Feed (Mt)			**2.3**	**4.0**	**4.4**	**7.0**	**7.3**	**6.5**	**4.6**	**4.8**	**6.1**	**5.8**	**5.9**	**5.2**	**5.8**	**7.7**	**8.8**	**8.7**	**8.3**	**8.1**	**6.3**	**0.0**	**118**
	Cu (%)			0.10	0.14	0.11	0.17	0.20	0.19	0.13	0.14	0.18	0.22	0.21	0.20	0.19	0.17	0.18	0.21	0.23	0.27	0.20		0.19
	Ni (%)			0.25	0.25	0.23	0.26	0.27	0.23	0.23	0.28	0.26	0.25	0.24	0.22	0.23	0.24	0.26	0.25	0.27	0.27	0.25		0.25

	Description	Y-2	Y-1	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11	Y12	Y13	Y14	Y15	Y16	Y17	Y18	Y19	Y20	Total
	Co (%)			0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.01		0.015
	Pt (g/t)			0.16	0.20	0.19	0.27	0.28	0.28	0.21	0.19	0.24	0.29	0.29	0.30	0.29	0.29	0.31	0.34	0.37	0.39	0.28		0.29
	Pd (g/t)			0.22	0.25	0.22	0.24	0.24	0.23	0.22	0.23	0.24	0.24	0.25	0.23	0.23	0.25	0.27	0.28	0.28	0.30	0.26		0.25
	Au (g/t)			0.03	0.04	0.04	0.05	0.06	0.06	0.04	0.03	0.05	0.06	0.06	0.06	0.05	0.05	0.05	0.06	0.07	0.08	0.06		0.056
	S (%)			0.43	0.56	0.53	0.77	1.05	0.89	0.62	0.62	0.86	0.96	0.83	0.77	0.80	0.82	0.90	0.99	1.17	1.29	0.93		0.88
	Mg (%)			15.37	14.97	15.58	15.99	15.69	15.41	16.02	15.84	15.05	13.13	14.04	14.06	14.06	14.93	15.34	15.59	14.42	13.19	15.15		14.9
Stockpiles	Bulk Con (Mt)	1.4	3.3	1.1	1.0	1.5	1.5	1.5	1.5	1.5	1.0	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	0.9	0.0	
	Split Con (Mt)	0.4	0.7	1.0	1.2	1.5	1.5	1.5	1.5	1.5	1.0	1.0	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	0.0	0.0	
	Total (Mt)	**1.8**	**3.9**	**2.1**	**2.2**	**3.0**	**3.0**	**3.0**	**3.0**	**3.0**	**2.0**	**2.5**	**3.0**	**3.0**	**3.0**	**3.0**	**3.0**	**3.0**	**3.0**	**3.0**	**3.0**	**0.9**	**0.0**	
	Reclaim (Mt)	**0.0**	**0.0**	**2.5**	**1.1**	**2.2**	**3.0**	**1.2**	**1.5**	**0.2**	**1.0**	**0.0**	**0.0**	**3.0**	**3.0**	**2.2**	**3.0**	**3.0**	**0.6**	**2.5**	**1.2**	**2.4**	**0.9**	**35**
	Total Moved (Mt)	**15.0**	**38.9**	**51.0**	**51.0**	**51.0**	**51.0**	**51.0**	**51.0**	**51.0**	**52.0**	**51.0**	**51.0**	**45.3**	**41.0**	**48.0**	**46.9**	**44.8**	**48.0**	**48.0**	**29.0**	**20.3**	**0.9**	**937**

When mining starts, various infrastructure items will be under development. Key significant activities near the pit will include construction of the crusher and stockpile pad. A suitable rock drain will need to be established in the drainage below the stockpile pad. A pioneer road up the mountain will need to be developed early in the schedule to begin mining in phase 2. Phases 1B and 1 will also require a pioneer road so that nearby waste may be sent to the stockpile pad.

During preproduction, phase 1B will act as a quarry for stockpile pad construction material while phase 1 will be an early ore source once stockpile space is available. Once pioneering is completed to the top of the mountain, phases 2 and 3 will commence mining downward with waste being sent to the north wrap-around style waste rock facilities.

By the end of year 1, it is anticipated that the process facilities have completed the ramp-up production and the mining layout has progressed as shown in Figure 16-26. At this time, the phase 1B will have been completed and reached 1295 m elevation. Phase 1 will be the primary source of ore and will be mined down to 1365 m elevation. Phase 2 will be mined down to 1685 m elevation and access to the phase 3 will be left by a combination of ramps in the pit wall or north waste rock facilities. The upper benches of phase 3 will be mined down to 1915 m elevation.

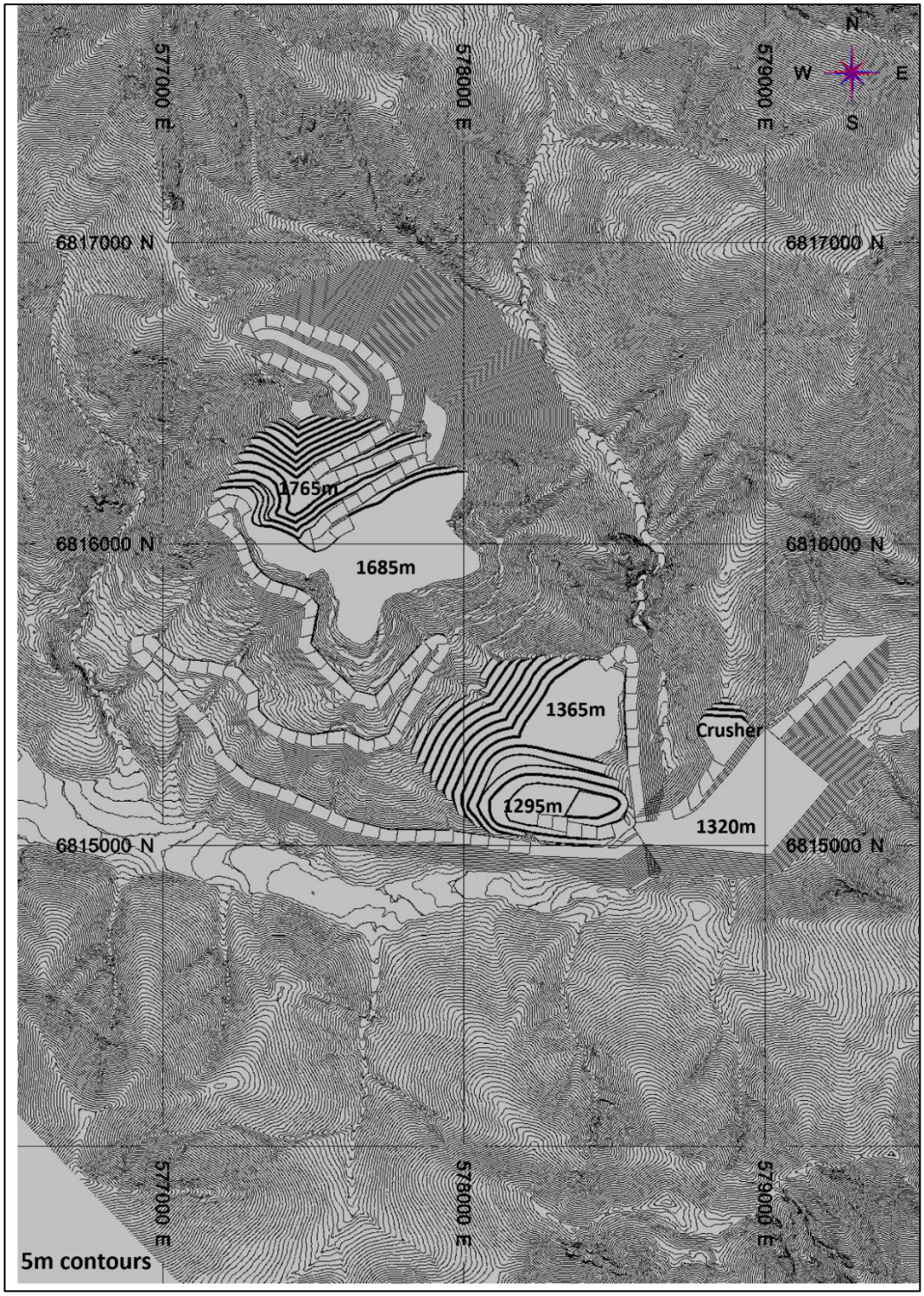
Years 2 to 5 will have mining in phases 1, 2 and 3 with resulting mining layout for year 5 displayed in Figure 16-27. Phase 1 will be mined down to 1245 m elevation with completion in year 4. Waste from phase 1 will used for widening the stockpile pad or starting the lower levels of the south waste rock facility. Phase 2 will be mined down to 1435 m elevation with waste being sent primarily to the north waste rock facilities, but the lower benches would have the option of using longer hauls to send some waste to the south waste rock facilities. Phase 3 will continue mining down to 1675 m elevation with all waste being sent to the north waste rock facilities.

Years 6 to 10 will have mining in phases 2 and 3 with the resulting mining layout for year 10 displayed in Figure 16-28. Mining in phase 2 will progress down to 1255 m elevation with most waste being sent to the south waste facilities. Mining in phase 3 will progress down to 1465 m elevation with waste being sent to the north waste rock facilities until year 9, and then starting to use the south waste rock facilities as the waste destination. While mining phase 3 in year 10, a geotechnical berm will be established at 1475 m elevation across the full length of the pit wall. This geotechnical berm is planned to be used to facilitate a water diversion around the west side of the pit.

Years 11 to 15 will have mining in phases 2 and 3 with the resulting mining layout for year 15 displayed in Figure 16-29. As the phases are now at lower elevations, all waste will be directed to the south waste rock facilities. The south waste rock facility is expected to reach 1440 m elevation by year 15. Phase 2 will be mined complete to 1225 m elevation in year 11. Phase 3 is expected to reach 1325 m elevation by year 15 with the haul road access transitioning to the east side of the pit.

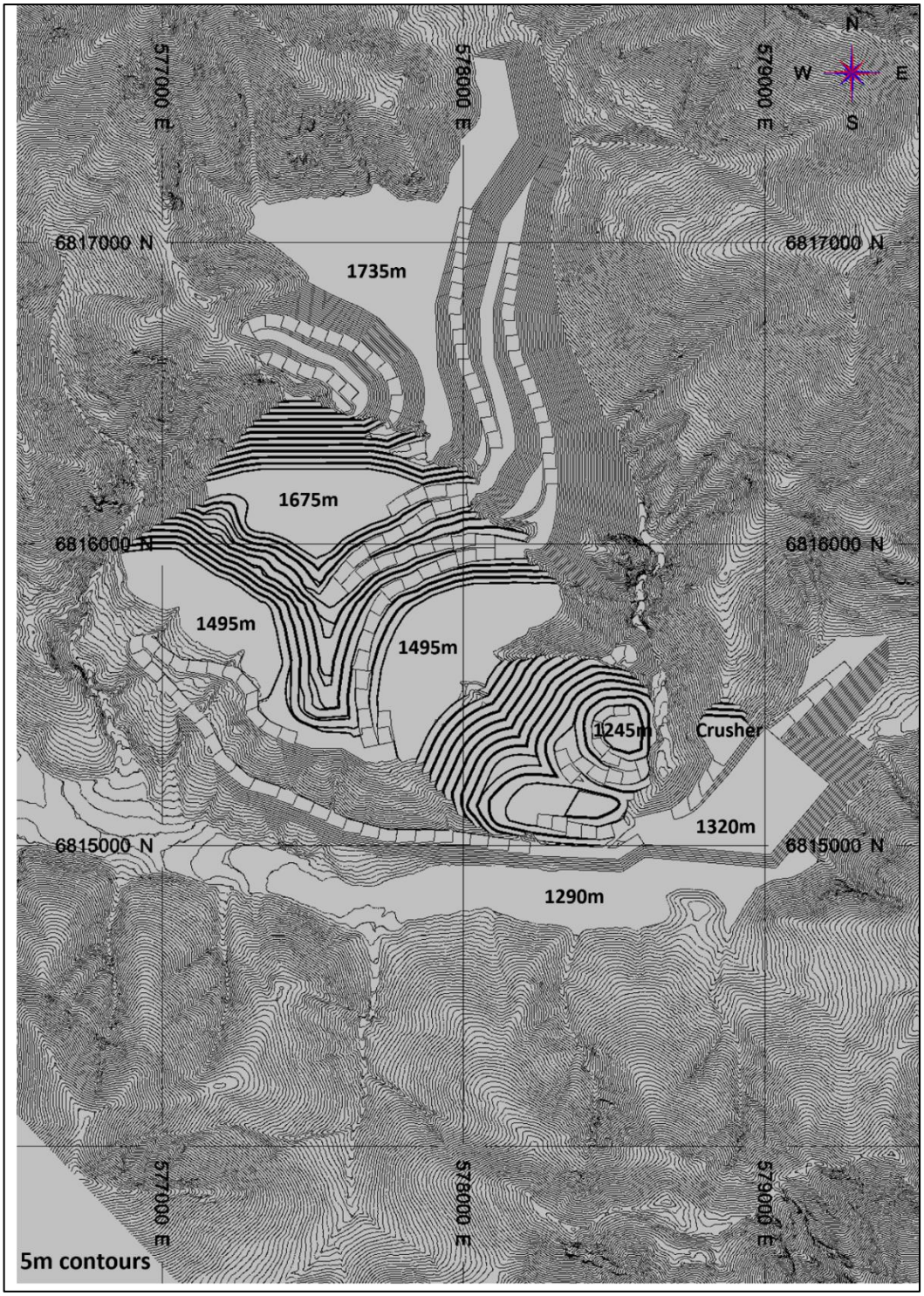
Years 16 to 19 will have mining only in phase 3 with the final mining layout shown in Figure 16-30. The south waste rock facilities will receive all waste during these final years and will reach a final lift elevation of 1470 m. Phase 3 will be mined down to a final elevation of 1125 m by year 19.

Figure 16-26: End of Year 1



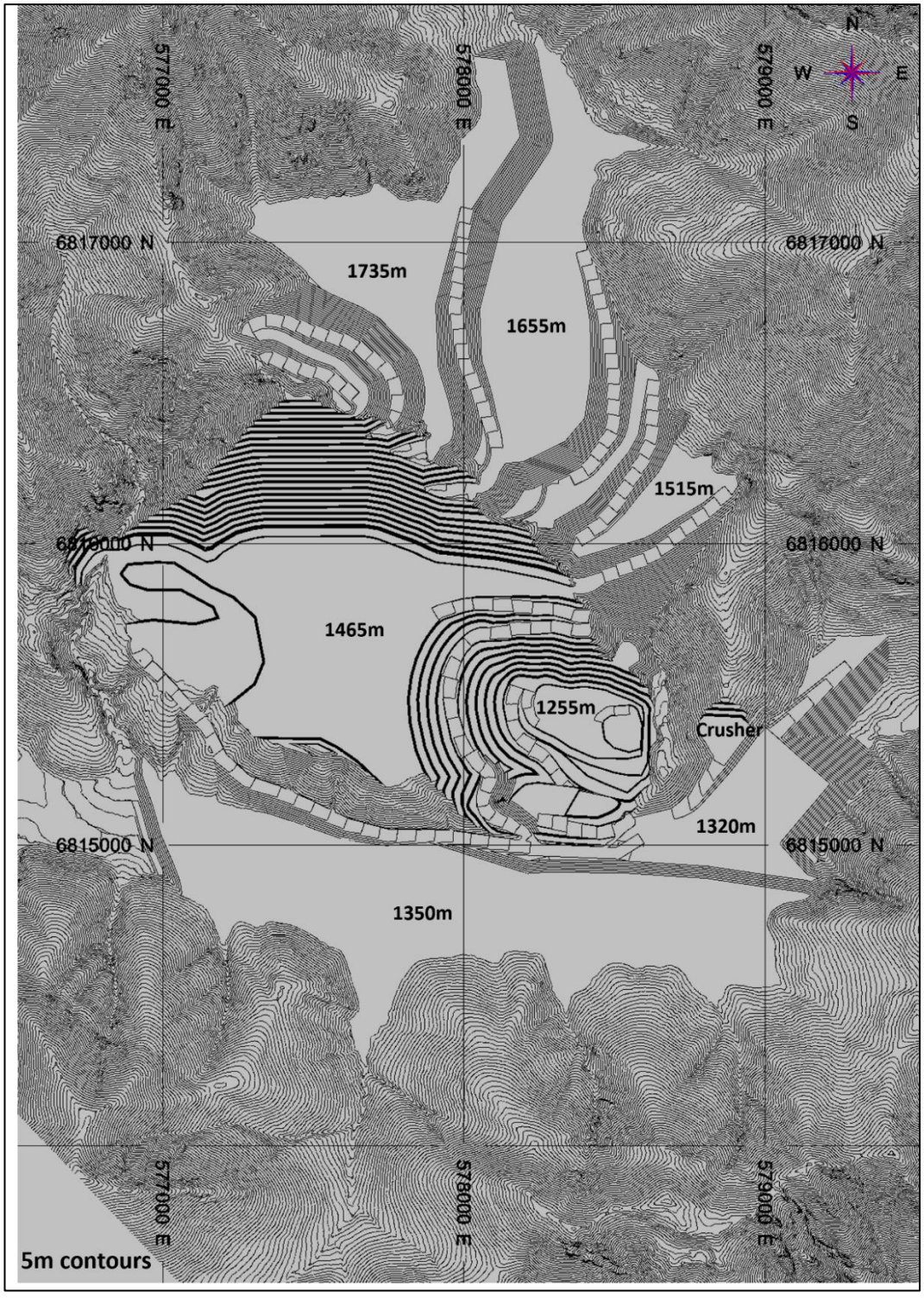
Source: AGP 2023

Figure 16-27: End of Year 5



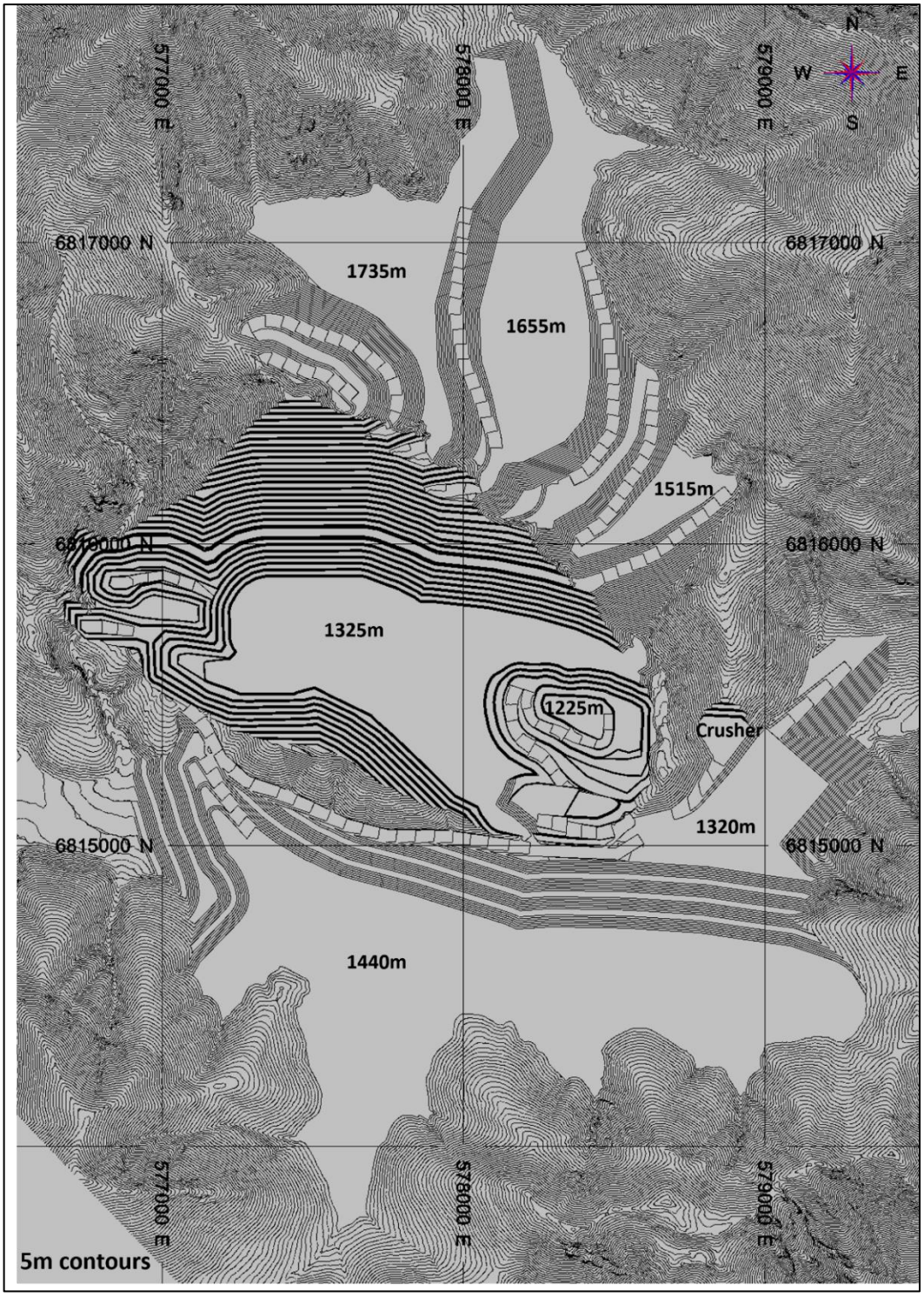
Source: AGP 2023

Figure 16-28: End of Year 10



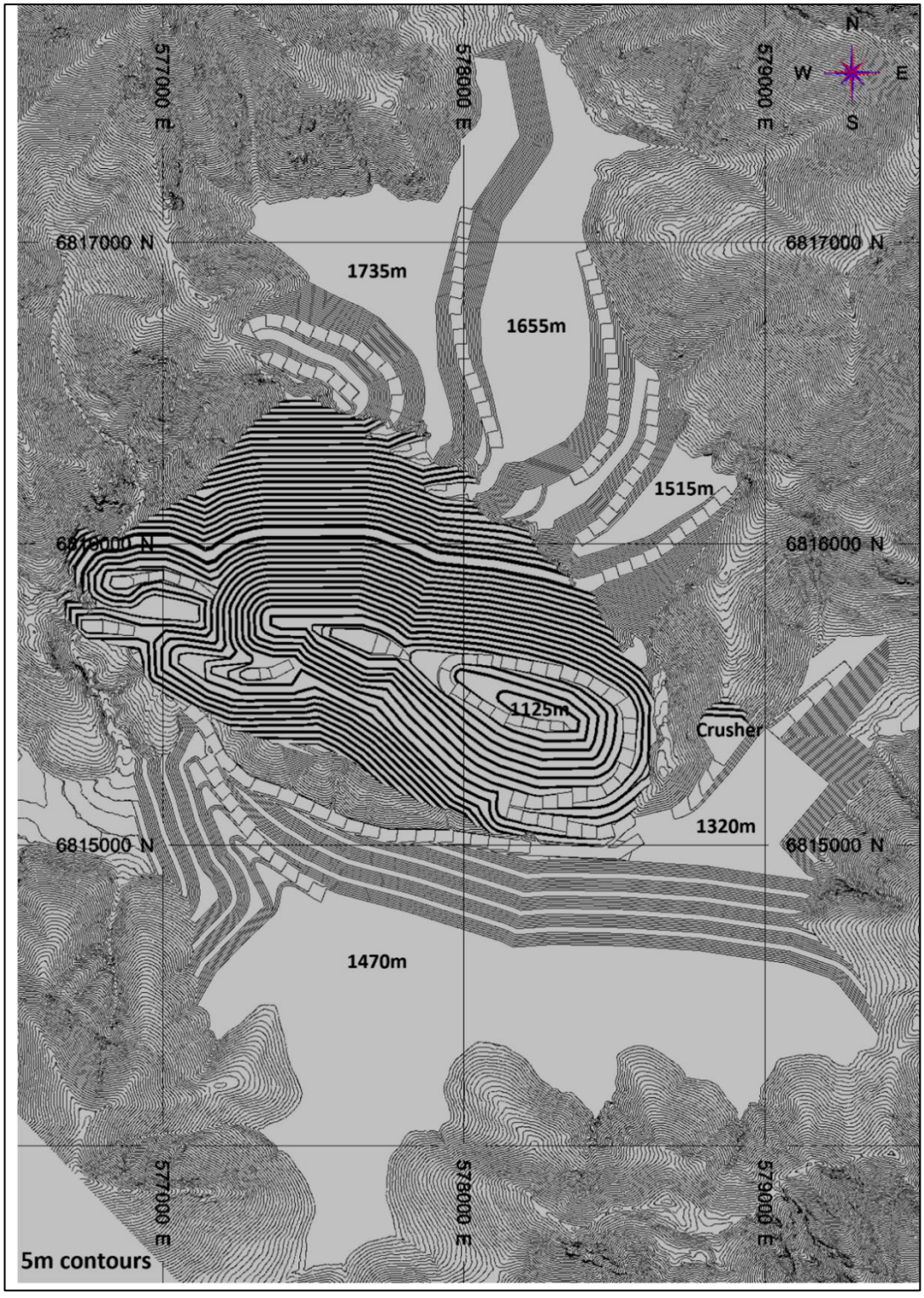
Source: AGP 2023

Figure 16-29: End of Year 15



Source: AGP 2023

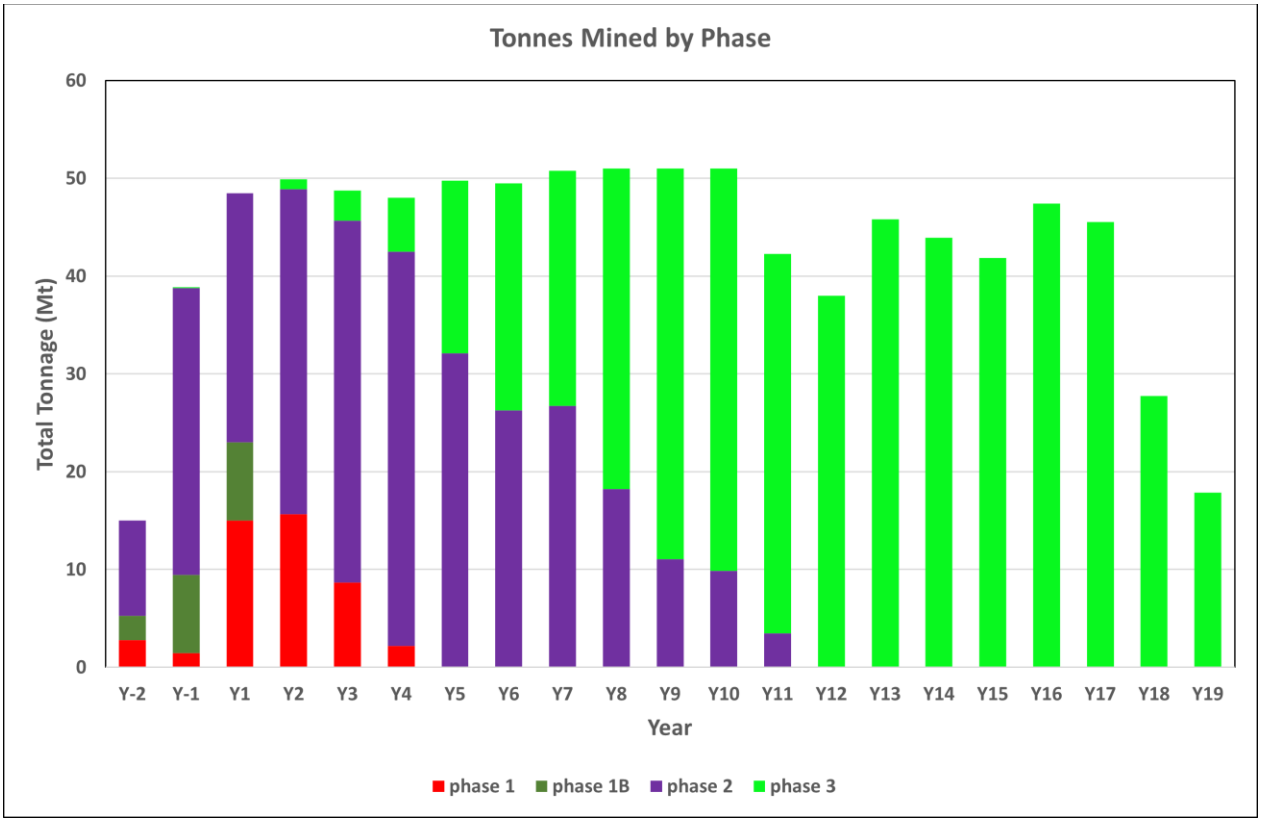
Figure 16-30: End of Year 19 (Mining Complete)



Source: AGP 2023

A summary of mined tonnage by phase is displayed in Figure 16-31.

Figure 16-31: Annual Mined Tonnage by Phase



Source: AGP 2023

16.3.7 Mine Equipment Selection

The mining equipment selected to meet the required production schedule is conventional mining equipment, with additional support equipment for snow removal and surface ditching maintenance.

Drilling will be completed with down the hole hammer (DTH) drills with a 165 mm bit. This provides the capability to drill 10 metre bench heights in a single pass.

The primary loading units will be 37 m^3 hydraulic shovels. Additional loading will be completed by 21 m^3 loaders. It is expected that one of the loaders will be at the primary crusher for the majority of its operating time. The haulage trucks will be conventional 240 tonne rigid body trucks.

The support equipment fleet will be responsible for the usual road, pit, and dump maintenance requirements. But due to the climatic conditions expected will have a larger role in snow removal and water management. Aggregate production of approximately 250 kt per year will be required for stemming and road crush purposes. In addition, smaller road maintenance equipment is included to keep drainage ditches open and sedimentation ponds functional.

Additional fleet detail is included in Section 21.

16.3.8 Blasting and Explosives

Blast patterns are the same for feed and waste material. The blast patterns will be 5.5 m x 4.8 m (spacing x burden). Holes will be 10 m plus an additional 1.4 m sub-drill for a total 11.4 m.

The power factor with this pattern size will be 0.28 kg/t. Only emulsion explosives will be used due to the expected wet conditions.

The blasting cost is estimated using quotations from a local vendor. The mine is responsible for guiding the loading process, including placement of boosters/Nonels, and stemming and firing the shot.

Total monthly cost in the service of delivering the explosives to the hole is $213,700/month for the vendor's pickup trucks, pumps, and labour is also applied and covers the cost of the explosives plant. The explosives vendor also leases the explosives and accessories magazines as part of that cost. Further explosives details are included in Section 21.

16.3.9 Grade Control

Grade control will be completed with a separate fleet of reverse circulation (RC) drill rigs. They will drill the deposit off on a 10 m x pattern in areas of known mineralization taking samples each metre. The holes will be inclined at 60 degrees.

In areas of low-grade mineralization or waste the pattern spacing will be 20 m x 10 m with sampling every 5 m. These holes will be used to find undiscovered veinlets or pockets of mineralization.

These grade control holes serve to define the mill feed grade and mineralization contacts.

Samples collected will be sent to the assay laboratory and assayed for use in the short-range mining model. Blasthole sampling will also be part of the grade control program initially to determine the best method.

16.3.10 Pit Dewatering

Efficient and cost-effective dewatering will play a role in the project development. Dewatered slopes may allow a reduction in the strip ratio by permitting steeper inter-ramp angles that would also be inherently safer.

The dewatering system includes the pumps, sumps, and pipelines responsible for moving water from the pit to the discharge points. Labour for this is already included in the General and Mine Engineering category of the mine operating cost. The mine has a dedicated road/pump crew.

Additional dewatering in the form of horizontal drain holes is also part of the dewatering operating costs. These holes will be drilled in annual campaigns starting in Year 2. The design concept is a series of holes 50 m in length, angled up slightly and drilled into the highwalls. They will allow the water behind the wall to drain freely and prevent pore water pressure build-up particularly during freezing conditions.

16.3.11 Pit Slope Monitoring

Slope movement monitoring will be required during operations. Initial slope monitoring could be conducted with prisms read by manual or automated survey methods. A permanent, automated system may be necessary once operating slope measurements results for the first several years have

been gathered and analysed. Radar systems are one of the possible methods for gathering monitoring information. Detailed slope movement information will be useful for calibrating future numerical models to support detailed pit designs at depth.

A limited number of vibrating wire piezometers should be installed around the pit to capture information about the drawdown cones / pore pressure distributions as the pit get deeper. They may also be useful to evaluate effectiveness of installed drains. Horizontal passive drains of 50 m spacing have been included in the costing. These drains will provide local depressurization to improve slope performance.

Pit wall mapping may be conducted using either digital or physical methods. The mapping results can then be reviewed and interpreted for use in verifying suitability of slope and blast designs.

Operating practices will need to be developed so that blast designs and vibrations are monitored for their impact on pit walls. Equipment operator training is also recommended to ensure scaling and clean-up near walls is completed adequately.

17 RECOVERY METHODS

This section describes the parameters used to define a nickel-copper-PGM mineral process plant suitable for the Project located near Burwash, SW Yukon Territory. A nominal throughput of 45,000 metric tonnes per day has been selected for the purposes of this study.

The process flowsheet is based primarily upon recent metallurgical work completed in 2018, as described in Chapter 13. The testwork included a mini pilot plant (MPP) campaign, and the MPP flowsheet specifications provide the design basis for the PFS process. The process plant mass balance, grinding targets, energy consumption calculations, flotation circuit configuration (arrangement of cells and residence times), and reagent consumptions are derived to a great extent from the MPP conditions and results.

The selected flowsheet is in most respects a very conventional mineral processing circuit, consisting of primary gyratory crushing, overland conveying, Run of Mine ("ROM") stockpiling, SAG and ball mill grinding, froth flotation, low intensity magnetic separation, concentrate dewatering, and tailings thickening. The flotation process includes a cleaning circuit designed to separate copper and nickel minerals (Copper-Nickel Separation).

Studies of the project included a trade-off of different concentrator configurations for optimized costs and benefits. Two different flowsheet configurations were considered:

- an acidic bulk flotation process, complete with magnetite separation and regrinding, to produce a bulk sulphide (Cu+Ni) flotation concentrate
- an alkaline bulk flotation process, complete with magnetite separation and regrinding plus a copper-nickel separation circuit (multiple stages of selective flotation to make separate Cu-rich and Ni-rich concentrates as opposed to a single mixed product)

Comparing the revenue drivers (pay-metal recovery rate and concentrate valuation), equipment list cost/complexity and operating costs of either option, the trade off study suggests that option b.) is used for optimum cost vs revenue for higher-copper ("High-Cu") parts of the deposit, while option a.) is preferred for the low-copper component. The mine plan outlined in Chapter 16 describes a mill feed profile that includes roughly 38% high-copper material, and this is stockpiled ahead of the crusher and treated through the mill in large batches.

The flowsheet described in this section caters for this requirement.

17.1 Design Basis

The following preliminary design documents have been developed for the PFS, using Halyard's process experience together with the results of recent MPP testwork:

- process design criteria (PDC)
- mass, water, and metal balances
- mechanical equipment listing

- process flow diagrams (PFD's)

Together, these documents specify a mineral process plant suitable for the desired 45,000 tpd nominal duty. A summary of the key process design criteria is given in Table 17-1, Table 17-2 and summary PFD's of the two flowsheet configurations (bulk concentrate and separate Cu/Ni concentrates) are given in Figure 17-1 and Figure 17-2.

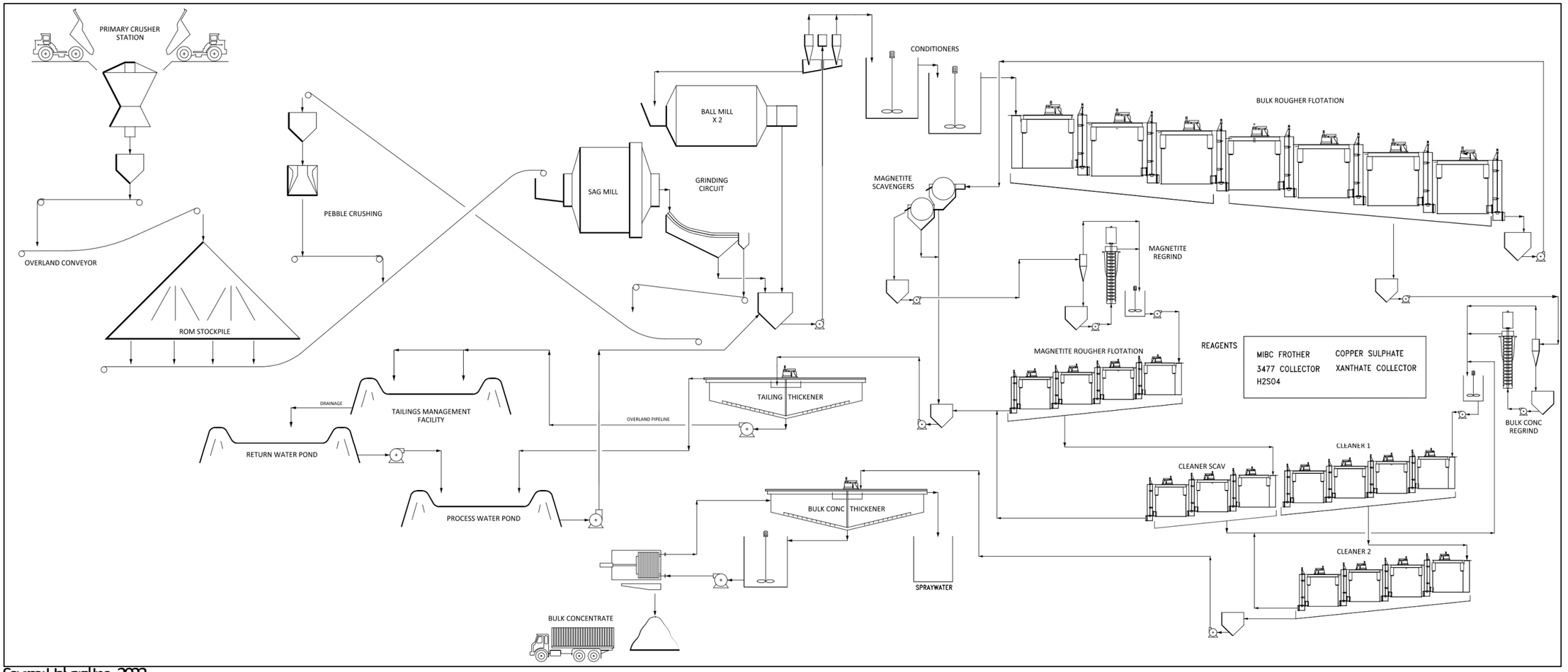
Table 17-1: Summary of Process Design Criteria

Parameter	Unit	Design Data
Process Plant Nominal Throughput	dmtpd	45,000
LOM Average Head Grades:		
Nickel / Copper / Sulphur	%	0.26 / 0.15 / 0.76
Platinum / Palladium / Gold	g/t	0.25 / 0.25 / 0.04
% Availability of Crushing / Grinding / Flotation	%	85.0 / 92.6 / 92.6
Particle Sizes:		
Crusher Feed Size, F_{100} / F_{80}	mm	500 / 220
SAG Mill Feed Size, F_{100} / F_{80}	mm	350 / 140
Primary Grind size, P_{80}	µm	110
Regrind P_{80}, Rougher Conc / Magnetite Conc	µm	23 / 17
Grindability Data:		
Relative Density Range	t/m^3	2.72 – 2.73
Axb value	-	52
Bond Rod / Ball Wi (Average)	kWh/t	15.2 / 20.6
Abrasion Index (Ai)	g	0.01
Flotation Nominal Retention times:		
Bulk Rougher / Cleaner / Cleaner Scavenger	min	38 / 30 / 38
2^{nd} / 3^{rd} Bulk Cleaner	min	25 / 14
Magnetite Rougher	min	50
Cu-Ni sep. Rougher-Scavenger	min	55
Cu-Ni sep. 1st Cleaner	min	55
Dewatering data:		

Table 17-2: Summary of Reagent Dosages

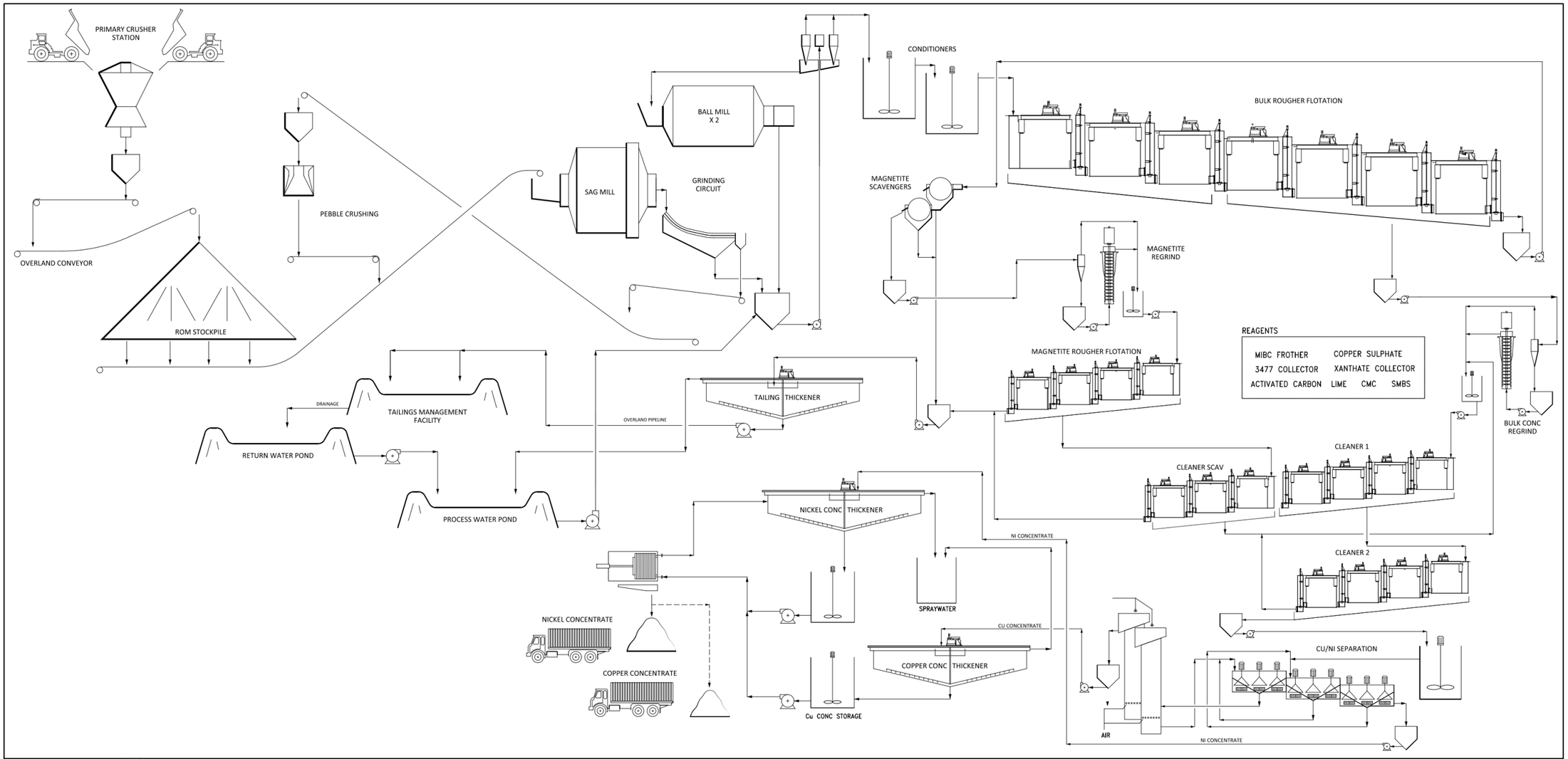
Reagent Type	Unit	Low-Cu Flowsheet	High-Cu Flowsheet
Frother – MIBC	g/t	120	120
Collector 1 – PIBX	g/t	40	40
Collector 2 – 3477 dithiophosphate	g/t	90	90
Activator – copper sulphate	g/t	50	50
pH Adjustment – H_2SO_4	g/t	11,000	-
Modifier – activated carbon	g/t	-	25
Depressant – Finnfix 150 CMC	g/t	33	600
pH Adjustment – Lime	g/t	-	300
Sodium Metabisulphite	g/t	-	47

Figure 17-1: Flowsheet Summary for Bulk Concentrate Configuration



Source: Halyard Inc., 2023

Figure 17-2: Flowsheet Summary for Copper/Nickel Concentrate Configuration



Source: Halyard Inc., 2023

17.1.1 Grindability

The SAG and ball mills were specified with reference to grindability testwork carried out in past programs, with particular reference to the XPS Mini Pilot Plant ("MPP") program.

Early work tested several composites for amenability to SAG milling (Table 17-3) and ball milling (Table 17-4). Both test sets gave data suggesting a high grinding energy requirement, particularly the ball milling. Ball mill grinding energy needs are higher at the finer grind setting.

Table 17-3: 2016 SAG Milling Test Data

Sample Name	A	b	Axb	Hardness Percentile	t_a	DWI (kWh/m³)	M_{ia} (kWh/t)	M_{ih} (kWh/t)	M_{ic} (kWh/t)	SCSE (kWh/t)	Relative Density
Gabbro	64.6	0.57	36.8	68	0.30	8.52	20.2	15.6	8.1	11.3	3.16
Blend	77.0	0.44	33.9	75	0.30	8.53	22.0	17.0	8.8	11.2	2.90

Table 17-4: 2016 Ball Mill Work Index Data

Sample Name	Mesh of Grind	F_{80} (µm)	P_{80} (µm)	Gram per Revolution	Work Index (kWh/t)	Hardness Percentile	Work Index % Increase
Gabbro	150	2,387	84	0.99	19.0	88	-
Gabbro	200	2,387	58	0.79	19.9	92	4.5
Blend	150	2,403	84	0.91	20.5	94	-
Blend	200	2,403	58	0.72	21.5	96	5.0
CP x Year 1-16	150	2,525	82	0.89	20.4	94	-
CP x Year 1-16	200	2,525	58	0.74	20.9	95	2.0
Px Year 1-16	150	2,459	82	0.94	19.6	91	-
Px Year 1-16	200	2,459	57	0.78	19.9	92	1.5

In 2018, two further composites were tested, corresponding to estimated mine production periods (Y1-5 and Y6-10). In contrast to earlier work, the test data used to specify SAG mill performance suggests that the samples are classified as moderately soft (Table 17-5) and are relatively consistent in hardness.

The test data used for ball mill specification (Table 17-6) confirms the 2016 "very hard" classification and also suggests that the ROM feed material could become slightly more resistant to grinding in the later years of production. Average 2018 data has been used for equipment specification, and so the ball mills are required to draw slightly less power during years 1-5.

Table 17-5: 2018 SAG Milling Test Data

Sample Name	A	b	Axb	Hardness Percentile	t_a[1]	Hardness Percentile	DWI (kWh/m³)	M_{ia} (kWh/t)	M_{ih} (kWh/t)	M_{ic} (kWh/t)	SCSE (kWh/t)	Relative Density
Wellgreen	63.2	0.82	51.8	41	0.55	37	-	-	-	-	8.82	2.72
Yr 1-5	66.5	0.75	49.9	44	0.47	-	5.47	16.4	11.6	6.0	8.99	2.73
Wellgreen Yr 6-10	67.1	0.73	49.0	45	0.46	-	5.57	16.6	11.8	6.1	9.06	2.73

Table 17-6: 2018 Ball Mill Work Index Data

Sample Name	Mesh of Grind	F_{80} (µm)	P_{80} (µm)	Gram per Revolution	Work Index (kWh/t)	Hardness Percentile
Wellgreen Yr 1-5	150	2,522	91	1.00	19.8	92
Wellgreen Yr 6-10	150	2,539	89	0.89	21.4	96

The abrasion index test data is helpful when estimating the wear rates of both grinding media and mill/crusher liners. Test data suggests that the ROM feed material is not abrasive in nature.

17.1.2 Flotation

The specification of flotation circuit residence time is a determining factor in the overall size of the flotation circuit. The nominal residence time ("NRT") for each stage of flotation is determined for the PFS using MPP data and established scale-up factors. (Table 17-7).

Table 17-7: Flotation Nominal Residence Time Requirements

Flotation Stage	NRT (min.)
Rougher	37.5
1st Cleaner	27.5
1st Clnr Scav	35
2nd Cleaner	25
3rd Cleaner	12
Mag Rougher	50

17.1.3 Dewatering

The specification of tailings thickening, and filtration equipment relies on the test data generated by dewatering testwork. Work by Outotec in 2018 on a sample of MPP tailings slurry, consisting of settling (thickening) testwork and pressure filtration testwork, is the primary reference used for PFS dewatering design.

Dewatering testwork has not been completed on flotation concentrate samples. The PFS design criteria makes dewatering performance assumptions based on industry standard data and similar project benchmarking.

17.2 Process Description

17.2.1 Summary

The PFS is based on a process plant flowsheet that includes equipment sized and specified for a nominal 45,000 tonnes per day throughput rate. The plant is housed in a large steel-framed insulated building, located in the lower site area, some 10-km to the east of the pit.

240-tonne mine haul trucks tip into a single 450kW gyratory crusher station designed with a planned 85% circuit availability and located adjacent to the pit. Should the crusher feed pocket be full on arrival, the mine truck has the option of dumping run-of-mine material ("ROM") on the ground for later reclamation. Crushed ROM material is transferred from the crusher surge pocket to the mill circuit by

an overland conveying system, incorporating a single flight 2,700 kW conveyor that for the most part follows the mine-mill access road down the valley.

Surge capacity between the primary crusher station and the mill circuit is handled by a single 30,000-tonne coarse rock stockpile adjacent to the process plant. Crushed ROM is withdrawn from the stockpile, in a controlled manner, using multiple apron feeders. SAG mill feed control is achieved using variable speed feeding with mill feed size distribution measurement and conveyor weigh scale. The mill circuit includes a 16,500kW twin pinion grate discharge SAG mill with pebble ports and a vibrating pebble screen. Pebbles are crushed using a 600-kW cone crusher to assist the comminution of critical size material that otherwise accumulates within the SAG mill and impacts performance.

Secondary milling to a product size of 80% -110 microns is achieved by two twin pinion 16,500 kW overflow ball mills, operating in parallel. Each ball mill operates in closed circuit with multiple hydro cyclones and discharges into a common mill tank. SAG mill discharge slurry also gravitates from the SAG mill via a single vibrating screen into the mill sump. The mill discharge tank contents are diluted with process water and then pumped via two 1,100 kW discharge pumps to the two parallel cyclone clusters associated with the two ball mills.

Cyclone overflow slurry gravitates from the cyclone packs through a sampling station and into a pair of surge/conditioning tanks ahead of the rougher flotation circuit. The rougher flotation plant consists of six 500 m^3 tank cells in series, with each cell having independent air flow and individual pulp level control.

Rougher flotation concentrate is reground in a 2,300 kW inert media vertically stirred mill to a P_{80} of 25 µm and then cleaned in a three-stage cleaner circuit with a cleaner scavenger circuit on 3rd cleaner tails. Bulk concentrate from the 3rd cleaner is pumped to a dual-purpose concentrate thickener from where the underflow slurry is either:

- pumped directly to concentrate pressure filtration equipment for dewatering and sale as a bulk (Cu + Ni) concentrate
- pumped to the head of the copper-nickel flotation circuit for separation of copper and nickel minerals to give separate copper and nickel concentrates

Rougher flotation tailing slurry is pumped to a magnetite removal circuit, consisting of two stages of 1.2 m diameter x 4 m long wet low intensity magnetic separation (LIMS). The LIMS equipment is configured to remove a magnetite concentrate from the rougher tailing slurry and direct this stream to a pair of 5,000 kW inert media regrind mills for regrinding, prior to rougher flotation for further recovery of valuable minerals. Magnetite rougher flotation concentrate is pumped to the first sulphide cleaner scavenger cell whilst magnetite rougher tailing slurry is sampled and pumped to the tailing thickener for dewatering and disposal at the TMF.

The copper nickel separation process included in the flowsheet is a selective flotation process that generally occurs at high pH. Lime and other reagents are added to the bulk concentrate prior to Cu/Ni separation flotation. The pulp must be aerated for approximately 10 minutes in the presence of activated carbon at this point to facilitate adsorption of any excess sulphide collector. In copper nickel separation, the copper minerals are collected very selectively, and the nickel minerals are depressed. Column flotation cells are used for cleaning the Cu/Ni separation rougher concentrate, and column

flotation concentrate is pumped to the copper concentrate dewatering circuit. Cu/Ni separation scavenger tailing pulp is pumped to the nickel concentrate dewatering circuit.

The plant is supplied with water (raw/fresh and process/recycled) from various tanks and ponds within the plant.

Reagents are stored, mixed, and distributed from a central reagents area, adjacent to the plant. Frother, collector, promoter, and depressant etc. are pumped from the reagents area to day tanks within in the flotation section, from where peristaltic reagent pumps would accurately dose to the process.

More detailed process descriptions are given in the following subsections.

17.2.2 Primary Crushing

Run-of-Mine (ROM) material is delivered to the primary tip location by 240t mine trucks at an average frequency of roughly 15 to 16 trucks per hour. Trucks tip ROM directly into the primary crusher throat at a peak delivery rate of approximately 2,400 dmtph where it is crushed between the crusher mantle and the concave shell.

The selected primary crusher, a modern 42-65” gyratory unit, accepts feed material up to 800 mm and runs with a 165 mm open side setting. Crushed rock discharges by gravity into an 800-tonne rail-lined surge pocket, which provides at least 20 minutes of surge capacity between the crusher and the stockpile. An apron feeder is used to withdraw crushed rock from the surge pocket onto a short sacrificial conveyor. This conveyor discharges onto the main overland conveyor, which in turn transports material down the valley to the crushed ROM stockpile area.

Spillage and run-off in the primary crusher building is pumped to surface and co-mingled with mine water as it is discharged down to the lower plant area for treatment. The primary crusher area is served by a contract mobile crane for routine maintenance.

17.2.3 Stockpile

The overland conveyor transports ROM material from the mine to the stockpile in the plant area. The crushed ROM stockpile is uncovered and provides a live capacity equivalent to roughly 12-14 hours of plant production. Mill feed is withdrawn from the stockpile via four lined discharge chutes and up to four apron feeders (nominally two operating, two standby). Each apron feeder is variable speed and capable of providing up to 80% of the nominal mill feed rate. Feeders discharge via lined chutes onto the SAG mill feed conveyor.

17.2.4 SAG & Ball Milling

From the stockpile discharge apron feeders, mill feed material is withdrawn at a controlled rate onto the SAG mill feed conveyor, which discharges into the SAG mill feed hopper. Key process variables such as the throughput and the particle size distribution are monitored using an accurate weightometer and high-speed camera system respectively and controlled using standard plant control systems.

The selected SAG mill is 38-foot diameter x 19-foot long, with grate discharge and with a 2 x 8,250-kW twin pinion drive system. Fresh ROM rock and water are added to the SAG mill and slurry and pebbles

exit the mill after passing through the discharge grate or pebble ports onto a vibrating scalping screen. Scalping screen oversize material (consisting mainly of pebbles) is directed by chute onto the pebble recycle conveyor for crushing and recycling to the mill. Scalping screen undersize slurry (-2 mm) gravitates into the common mill discharge sump, where it is mixed with ball mill discharge and further diluted with water.

From the discharge sump, the coarse mill discharge slurry is pumped to the ball mill cyclones.

SAG mill slurry spillage is collected in a drive-in sump, and then returned to process by a submersible slurry pump. The solids from large spillages can be recovered using a bobcat or small loader.

The milling area (SAG and ball mill x 2) is served by two 15t overhead cranes. Mill lining replacement is carried out using a single shared 5-axis relining machine.

SAG mill grinding media (5" diameter) is stored in ball bunkers located partway along the mill feed conveyor belt. The bunkers are served with a small spillage pump and a ball loading crane and magnet. Balls are added to mill feed on the SAG feed conveyor at timed intervals using a ball loading chute.

After SAG milling, the nominal particle size is further reduced by a pair of conventional, closed circuit ball mills operating in parallel. Each mill is 26.5-foot diameter x 40-foot long with overflow discharge. Slurry is pumped from the common mill discharge sump to two independent clusters of cyclones, with each cluster consisting of 8 x 28" units. Cyclone underflow of roughly 70% solids discharges from the cyclone spigots to the ball mill for more grinding. Each ball mill is equipped with a 2 x 8,250-kW twin pinion drive system and discharges ground pulp into the common mill discharge sump.

The overflow from each cyclone cluster gravitates to a sampling launder and automatic sample cutter before passing into conditioning tanks ahead of flotation. Particle size distribution is monitored automatically using an online particle size analysis (PSA) system that provide control system data - viewable and actionable from the control room.

Spillage contained in the ball mill area is pumped to the common mill discharge sump for re-treatment.

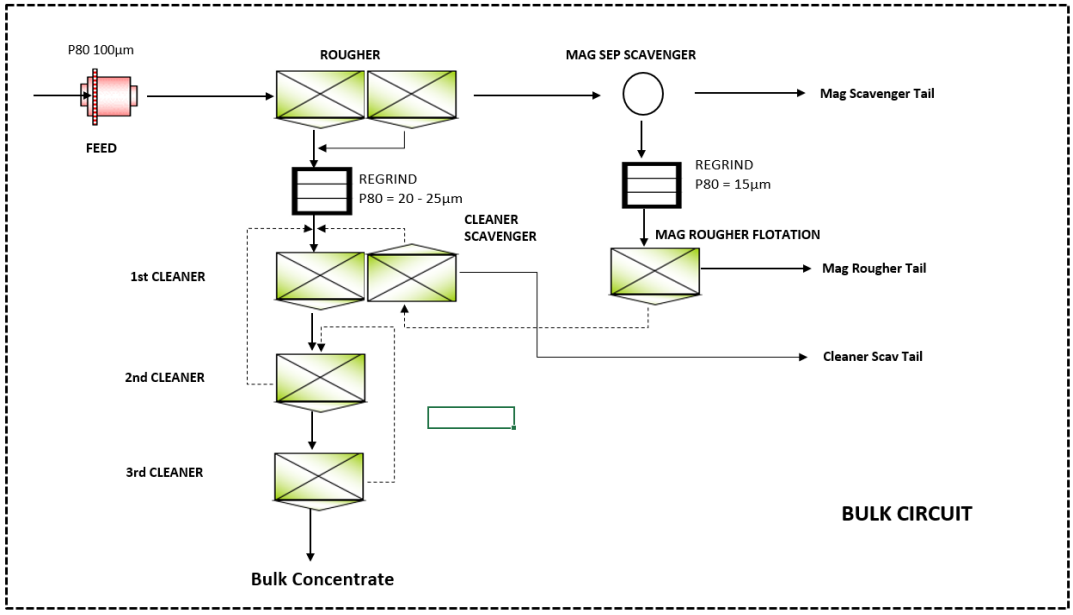
Ball mill grinding media is delivered to the Project site in bulk and is stored in the ball mill ball bunkers. The ball bunkers are serviced by a crawl and electric hoist arrangement, allowing balls to be lifted into a kibble using the ball loading magnet, and tipped into the mill feed spout via a rubber lined ball loading chute.

17.2.5 Bulk Flotation

Bulk Rougher Flotation

The bulk flotation testwork flowsheet is illustrated in Figure 17-3. This is shown in PFD format again in Figure 17-8.

Figure 17-3: Bulk Concentrate Flowsheet



Source: XPS 2018 MPP - P.25

Cyclone overflow pulp is conditioned in a pair of conditioning tanks – each sized to give six minutes conditioning time ahead of rougher flotation. The bulk rougher/scavenger bank consists of six 500 m^3 cells operating in series. Flotation air is supplied using flotation blowers via a low-pressure manifold, and air flow to each cell is controlled by modulating valves and flow meters. Pulp level within cells is maintained by modulating dart valves and ultrasonic pulp level instruments.

Bulk rougher concentrate slurry is collected via concentrate launders and directed into the rougher concentrate pump box. Concentrate slurry is pumped to the bulk concentrate regrind circuit for regrinding to 80% -25µm prior to cleaner flotation.

Spillage in the rougher and regrind sections is collected in a common sump and pumped back into the first rougher cell using a vertical spillage pump.

Bulk Cleaner Flotation

After regrinding, rougher concentrate slurry is pumped to the first cleaner circuit, which consists of 4 x 130 m^3 cleaner tank cells and 4 x 200 m^3 cleaner scavenger tank cells. First cleaner concentrate is collected and pumped to the head of cleaner 2, while first cleaner tails gravitate together with magnetite rougher concentrate into the cleaner scavenger cells. Cleaner scavenger concentrate is pumped back to the head of the first cleaner and cleaner scavenger tailing slurry is pumped to the tailing thickener for dewatering and disposal.

Second cleaner feed consists of first cleaner concentrate plus third cleaner tailing (i.e.: a traditional counter-current cleaner arrangement). Cleaner 2, a collection of 4 x 50 m^3 tank cells, collects concentrate slurry in a launder, and directs it to the second cleaner concentrate pump box. From here it is pumped up to the head of the third cleaner line for further upgrading. The third cleaner is a set of 4 x 10 m^3 tank cells.

Third cleaner concentrate slurry is collected in a launder and directed to the final bulk concentrate pump box for pumping to the bulk concentrate thickener for dewatering. Third cleaner tailing slurry passes by gravity into the second cleaner feed box and second cleaner tailing slurry passes by gravity into the first cleaner feed box in a traditional counter-current manner. The flow of process streams is depicted in the flowsheet summary above (**Error! Reference source not found.**).

Low pressure air for bulk flotation is supplied by several fan compressors, and a low-pressure manifold/distribution system. Pulp level in each cell is maintained by modulating dart valves and ultrasonic level instruments. Pulp levels and air flowrates are viewed and controlled from the central control room.

Any cleaner area slurry spillage is collected in a bermed sloped floor area where it gravitates to the cleaner area spillage pump, which would pump back to the first cleaner feed box.

17.2.6 Magnetite Scavenger Circuit

The bulk rougher flotation tailing slurry is sampled as it discharges the final bulk rougher flotation cell into the rougher tailing tank. From here it is pumped to a distribution box above the magnetic separation plant. This plant consists of two stages of low intensity wet magnetic separation in series, with tailing slurry from the second stage being pumped to the rougher tailing thickener. Three rougher and twelve scavenger drum separators have been allowed in the design, with scavenger machines utilizing slightly higher gauss configurations than the rougher machines.

Magnetic separator concentrate slurry is washed with water down to the magnetite regrind circuit feed pumps while tailing slurry from the scavenger separators is combined into the magnetite scavenger tailing tank from where it is pumped to the tailing system for dewatering and storage/disposal.

Once reground, the magnetite concentrate is pumped to the magnetite rougher flotation circuit, consisting of six 320 m^3 tank cells designed to give 50 minutes nominal retention time. Magnetite rougher concentrate slurry is collected in launders and directed to the magnetite rougher concentrate pump box. From there, the magnetite concentrate is pumped to the bulk cleaner scavenger cells for mixing and further upgrading with sulphide concentrates.

17.2.7 Concentrate Regrinding Circuit

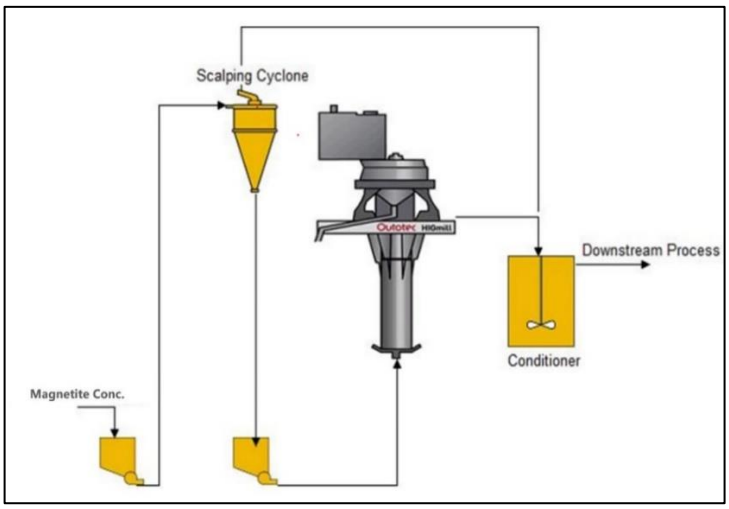
The concentrate regrinding area consists of two independent regrind streams, namely the bulk rougher concentrate regrind circuit and the magnetite concentrate regrind circuit.

Magnetite Concentrate Regrind

Magnetic separator circuit concentrate gravitates to the magnetite regrind circuit, which grinds the concentrate to approximately 80% -17µm. The regrind circuit consists of a circuit feed tank, a cluster of scalping cyclones, two 5MW vertically stirred mills in parallel, and an agitated product tank (Figure 17-4).

The 2 inert regrind mills are served by a single ceramic media addition system.

Figure 17-4: Typical inert regrind mill configuration



Source: MO Group

Rougher Concentrate Regrind

Bulk rougher concentrate gravitates to the bulk rougher regrind circuit, which grinds the concentrate to approximately 80% passing 25µm. The regrind circuit consists of a circuit feed tank, a cluster of scalping cyclones, a single 3.5MW vertically stirred mill, and an agitated product tank and is very similar in configuration to the Magnetite Concentrate Regrind circuit (Figure 17-4). The inert media mill is served by a single ceramic media addition system.

After regrinding, concentrate slurry is pumped to the bulk cleaner flotation circuit for further upgrading.

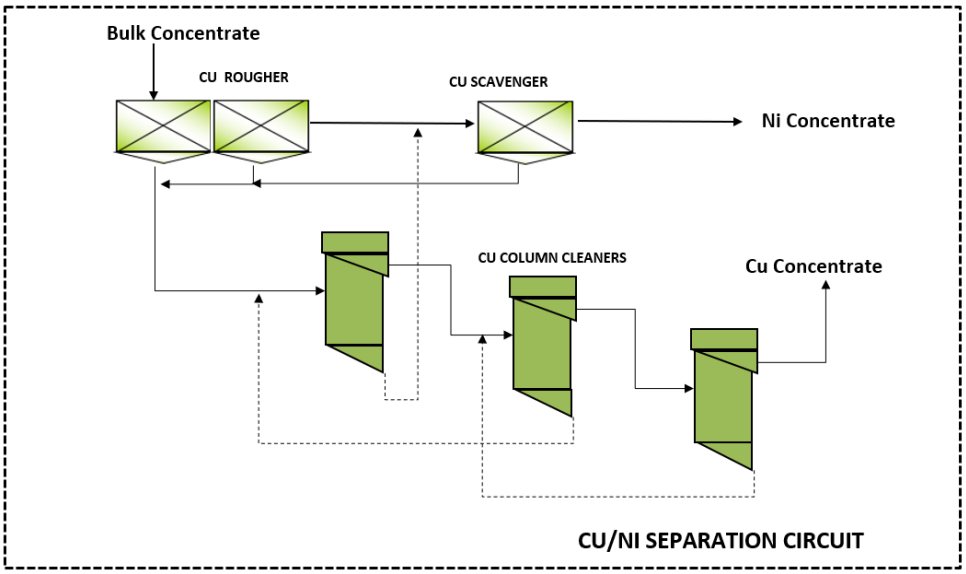
17.2.8 Copper Nickel Separation Flotation – Area 450

The Copper Nickel separation process is illustrated in Figure 17-5. This uses a change to the pulp electrochemistry to depress nickel and iron sulphide minerals, while allowing copper sulphide minerals to float. In this way, the Cu/Ni separation concentrate becomes enriched in copper, and the Cu/Ni separation tailing stream is depleted in copper and becomes richer in nickel.

When high-Cu ROM is fed to the process plant, valves are reconfigured in the bulk concentrate regrind circuit to deliver concentrate to the head of the copper nickel separation circuit. This additional circuit consists of an agitated and aerated conditioning tank, followed by six 30 m^3 tank cells in series. Rougher and scavenger concentrates are collected in launders and pumped to the first of three stages of counter-current column type cleaner flotation cells. Cleaner tail slurry from each column is recycled back to the previous stage using froth pumps, and the concentrate from the third cleaner column is pumped forward as copper concentrate to the copper concentrate thickener. The first column cleaner tailing slurry is pumped to the copper scavenger feed box.

Tailing slurry from the final copper scavenger cell is typically very low in copper (<1%) and therefore suitable as nickel concentrate. Thus, copper scavenger tailing slurry is pumped to the bulk concentrate thickener (now repurposed as a nickel concentrate thickener) for further treatment.

Figure 17-5: Copper/Nickel Separation Testwork Configuration



Source: XPS 2018 MPP - P.49

17.2.9 Copper Concentrate Dewatering – Area 500

When in use, the Cu/Ni separation circuit pumps final copper concentrate slurry to the copper concentrate thickener sampling launder and sampler before entering the thickener tank for settling and dewatering. These 10 m-diameter thickeners are equipped with a rake lift, bed level detection, and bed mass monitoring. Thickener overflow gravitates to a common spray water tank for recycling as flotation sprays, while the thickener underflow is withdrawn from the cone by a centrifugal underflow pump and pumped to mechanically agitated storage tanks ahead of the multi-use pressure filter.

Copper concentrate slurry is pumped from the storage tank to the pressure filter for final dewatering (reduction from 45% moisture down to approximately 8% moisture). Filtrate from the pressure filter is recycled back to the copper concentrate thickener as additional feed dilution. Auxiliary systems, such as membrane squeeze water and core-blow air equipment, are located on a lower floor and are controlled entirely from the pressure filter control system.

Copper filter cake is discharged automatically from the press via two cake discharge chutes onto the cake transfer belt, which transfers cake to the concentrate storage shed. A tramming conveyor deposits cake in the correct storage bay. A front-end loader serves the concentrate shed and loads cake from Cu/Ni/Bulk concentrate piles into side-tipping trucks. Each truck is auger-sampled at the concentrate shed and weighed at the weighbridge prior to dispatch.

Copper concentrate dewatering area spillage is recovered from the area floor via vertical spindle pumps and pumped back to the copper concentrate thickener feed launder.

The copper concentrate thickener is located inside the process plant.

17.2.10 Bulk/ Nickel Concentrate Dewatering

The bulk concentrate thickener serves as the nickel concentrate thickener during periods where high-Cu ROM is fed to the plant. Nickel concentrate slurry is pumped from the Cu/Ni separation circuit to the nickel concentrate thickener-sampling launder and sampler before entering the thickener tank for settling and dewatering. These 22 m-diameter thickeners are equipped with a rake lift, bed level detection, and bed mass monitoring. Thickener overflow gravitates to a common spray water tank for recycling as flotation sprays, while the thickener underflow is withdrawn from the cone by a centrifugal underflow pump and pumped to the mechanically agitated storage tank ahead of the multi-use concentrate pressure filter.

Nickel concentrate slurry is pumped from the storage tank to the pressure filter for final dewatering (reduction from 45% moisture down to approximately 8-10% moisture). Filtrate from the pressure filter is recycled back to the nickel concentrate thickener for recycling and additional feed dilution. Auxiliary systems, such as membrane squeeze water and core-blow air equipment, are located on a lower floor and are controlled entirely from the pressure filter control system.

Nickel filter cake is discharged automatically from the press via two cake discharge chutes onto the cake transfer belt, which transfers cake to a tramming conveyor in the concentrate storage shed. A front-end loader serves the storage shed and loads cake into side-tipping trucks that transport the concentrate by road to the port of Skagway. Trucks are auger-sampled at the concentrate shed and weighed at the weighbridge prior to dispatch.

Nickel concentrate dewatering area spillage is recovered from the area floor via vertical pump and pumped back to the nickel concentrate thickener feed launder.

The nickel concentrate thickener is located indoors.

17.2.11 Tailings Dewatering/Disposal

The tailings dewatering circuit would consist of a 65 m-diameter thickener and an overland pipeline to the tailings management facility (TMF). Thickener underflow pumps collect a thickened slurry and pump this to the final tailing tank. In the early years of TMF operation this tank will simply gravitate slurry via the pipeline. As the TMF crest height increases, then pumps will be installed to assist slurry transportation.

Overflow from the thickener tank gravitates to the process water pond for re-use in the mills.

The tailing thickeners is an in-ground unit with concrete tank and cone access via an underground tunnel. The thickener is located outdoors, with the following heat loss prevention included:

- underflow pump tunnel area is sheeted and heated to avoid freezing
- feed pipe and drive area are sheeted and heated to maintain adequate lubrication
- thickener surface is fitted with a floating hexagonal thermal cover system

17.2.12 Services – Area 600

Process water is stored in the holding process water pond and is distributed to the plant by the process water pumps. Plant hosing/flushing water is provided by the hose-down water supply pumps.

Raw water is piped into the plant from the Kluane River and is stored in the insulated clean water tank. From the tank, clean water is pumped around the plant for use as reagent mixing water, slurry pump gland seal water, and if required, for mill lubrication system cooling.

Plant and instrument air is provided by two compressors. Air quality is maintained by a filtration system. Instrument air is dried using a refrigeration drier. Separate air receivers are provided for compressed and instrument air lines to allow for surges in demand.

Low-pressure air is supplied to the flotation plant by a bank of four blowers. The blowers are fixed speed, with manifold pressure controlled using modulating valves on exhaust ports.

17.2.13 Reagents – Area 600

Frother – MIBC

Liquid methyl isobutyl carbinol (MIBC) is delivered to site in bulk tankers at a rate of 160 tonnes per month. As delivered (full strength), MIBC is transferred into holding tanks at the reagent storage facility, from where it is pumped on demand to a head tank within the flotation plant.

From the head tank, MIBC is dosed to several points by dedicated peristaltic pumps. Each reagent dosage pump is equipped with a flowmeter on the delivery line to allow precise control of reagent dosage.

Collector 1 – Potassium isobutyl Xanthate (PIBX)

PIBX is delivered to site in 50-kg bags a rate of 54 tonnes per month. Bags is fed into automatic bag breakers and discharged into mixing tanks, where the PIBX pellets are mixed with water to a 12% solution strength. Mixed PIBX is transferred to the Collector 1 storage tank and from there to a head tank above the flotation circuit.

From the head tank, PIBX is dosed to several points by dedicated peristaltic pumps. Each reagent dosage pump is equipped with a flowmeter on the delivery line to allow precise control of reagent dosage.

Suitable ventilation will be provided around mixing and storage facilities to prevent the buildup of HS_2 gas – a flammable decomposition product of xanthate mixtures.

Collector 2 - 3477

3477 dithiophosphate collector is delivered to site in bulk tankers at a rate of 122 tonnes per month. As delivered (full strength), 3477 is transferred into holding tanks at the reagent storage facility, from where it is pumped on demand to a head tank within the flotation plant.

From the head tank, 3477 is dosed to several points by dedicated peristaltic pumps. Each reagent dosage pump is equipped with a flowmeter on the delivery line to allow precise control of reagent dosage.

Activator – Copper Sulphate

Copper sulphate is delivered to site in 50-kg bags at a rate of 68 tonnes per month. Bags is fed into automatic bag breakers and discharged into mixing tanks, where the copper sulphate solids are mixed

with water to a 15% solution strength. Mixed activator is transferred to the activator storage tank and from there to the activator head tank above the flotation circuit.

From the head tank, copper sulphate is dosed to several points by dedicated peristaltic pumps. Each reagent dosage pump is equipped with a flowmeter on the delivery line to allow precise control of reagent dosage.

Depressant – Finnfix 150 (CMC)

Finnfix 150 is a carboxymethyl cellulose powder that is delivered to site in 1000-kg bags at a rate of 47 tonnes per month. Bags is hoisted over automatic feed systems that discharged metered amounts of powder into mixing tanks, where the CMC solids are mixed with water to a 2% solution strength. Mixed CMC is transferred to the CMC storage tank and from there to the CMC head tank above the flotation circuit.

From the head tank, CMC solution is dosed to various points by dedicated peristaltic pumps. Each reagent dosage pump is equipped with a flowmeter on the delivery line to allow precise control of reagent dosage.

Non-slip floors are provided in and around the CMC mixing and storage facilities as the main risk with this substance is slippery floors.

Reagent spillage is pumped to the tailings tank for disposal in the tailings dam. The reagent areas are served with safety showers.

Flocculant – Magnafloc 10

Flocculant powder is delivered to site in 1000-kg bags at a rate of 50 tonnes per month and stored in the reagent storage area. Bags is lifted by the reagent area crane and added to the flocculant powder hopper. Powder is withdrawn by the flocculant screw feeder and blown through a venturi to a wetting head located on top of the mechanically agitated mixing tank.

From the mixing tank, mixed flocculant can be fed forward to the storage tanks or recycled back into the mixing tank to aid mixing. Once mixed, the flocculant should be left for several hours to hydrate. A storage tank would provide sufficient volume for storage of flocculant while the mixed batch hydrates in the mixing tank.

From the storage tank, flocculant is pumped directly to the tailings and concentrate thickeners.

Granulated Activated Carbon (GAC)

GAC is delivered to site in 500 kg bags at a rate of 34 tonnes per month. GAC is transferred to the plant by forklift and added to the process using water to transport it to the dosage point in the Cu/Ni separation plant.

Sodium Metabisulphite (SMBS)

SMBS is delivered to site in 1,000 kg bags at a rate of 68 tonnes per month. It is transferred to the plant by forklift and added to the process using water to transport it to the dosage point in the Cu/Ni separation plant.

pH Control (Lime)

Lime is delivered to site in 1,000-kg bags at a rate of 115 tonnes per month. Bags are fed into automatic bag breakers and discharged into mixing tanks, where the lime is mixed with water to a 12% solution strength. Mixed lime is pumped around the plant in a ring main system and drawn off at dosage points for addition to the process.

pH Control (Sulphuric Acid)

Sulphuric Acid is delivered to site in bulk tankers at a rate of up to 500 tonnes per day (when the acid circuit is in use). As delivered (93% or 96% strength) acid is transferred into holding tanks within deep berms near the reagent storage facility. All normal precautions and procedures for handling sulphuric acid is executed. From the storage tanks, acid is distributed via a ring main system within the plant. The ring main is protected from leaks and damage by double walled piping. The sulphuric acid is metered out of the ring main at the required rate, at dosage points as required by the process.

17.3 Equipment List

Individual equipment items are shown on the PFD's presented in the following sections. Table 17-8 below provides a summary of the installed power in each plant area.

Table 17-8: Mechanical Equipment Summary

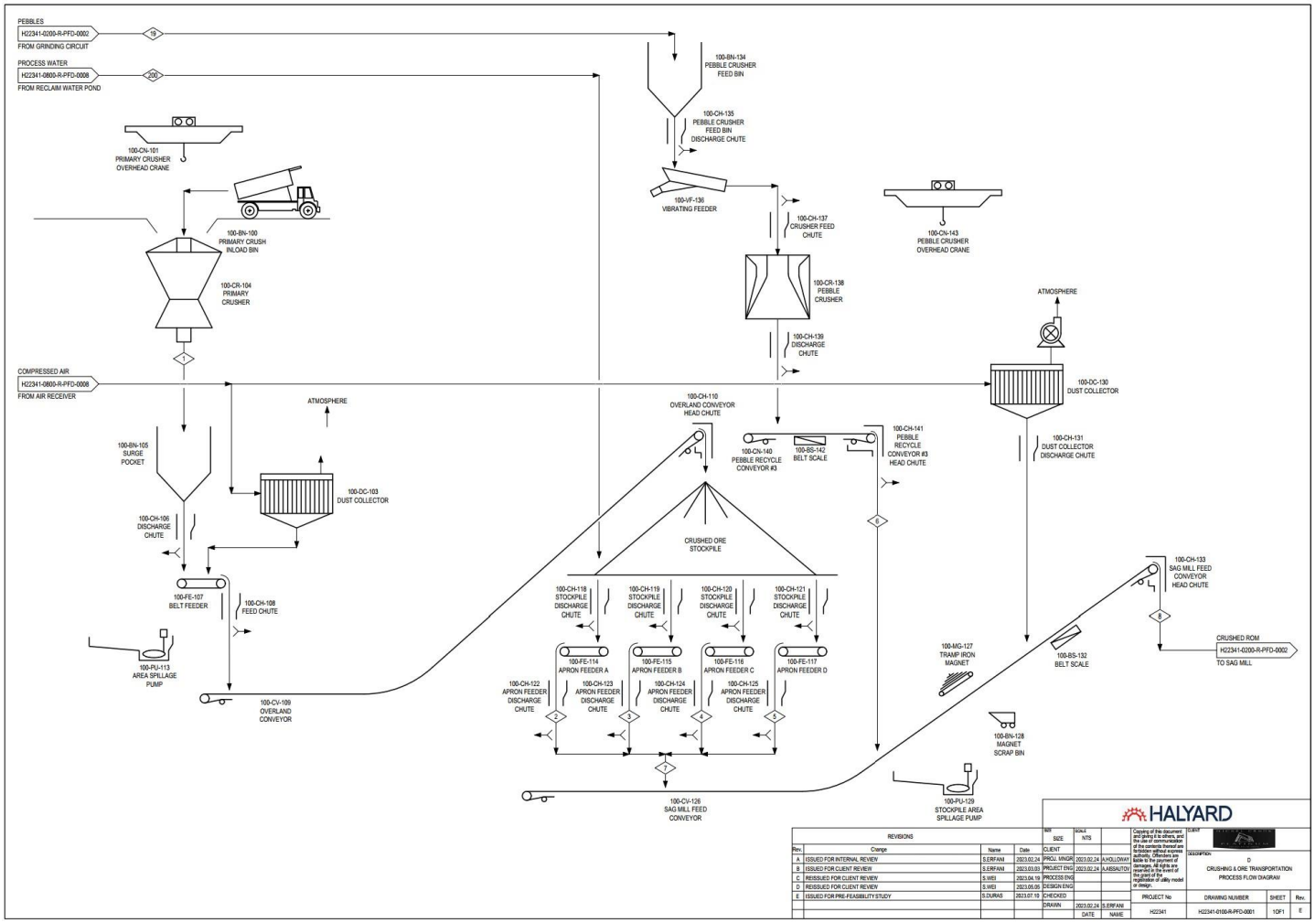
Area	Description	kW Installed
100	Crushing & ore transportation	1,424
200	Grinding circuit	53,312
300	Bulk concentrate flotation	8,256
400	Regrind circuit	12,841
500	Magnetic separation	540
600	Cu & ni concentrate separation	932
700	Dewatering circuit	2,575
800	Auxiliary items and services	3,598
900	All reagent areas	544
	Total Plant	**84,022**

The process plant includes equipment with a total connected power rating of 84 MW. An estimate of applied power for each equipment item has been calculated for PFS operating cost estimates, using typical utilization rates and the typical electrical load as a percentage of rated current. A 110-kW drive that runs for 22 hours per day (91.6% availability) and draws only 90kW when running (77% of motor full load) will consume 1707 kWh per day. Standby equipment, although fitted with dedicated motors, will consume no power while the duty drive runs, and vice versa. Overall, the process plant power consumption is estimated to be 510 MWh p.a., equivalent to approximately 30.5 kWh/t.

17.4 Process Flow Diagrams

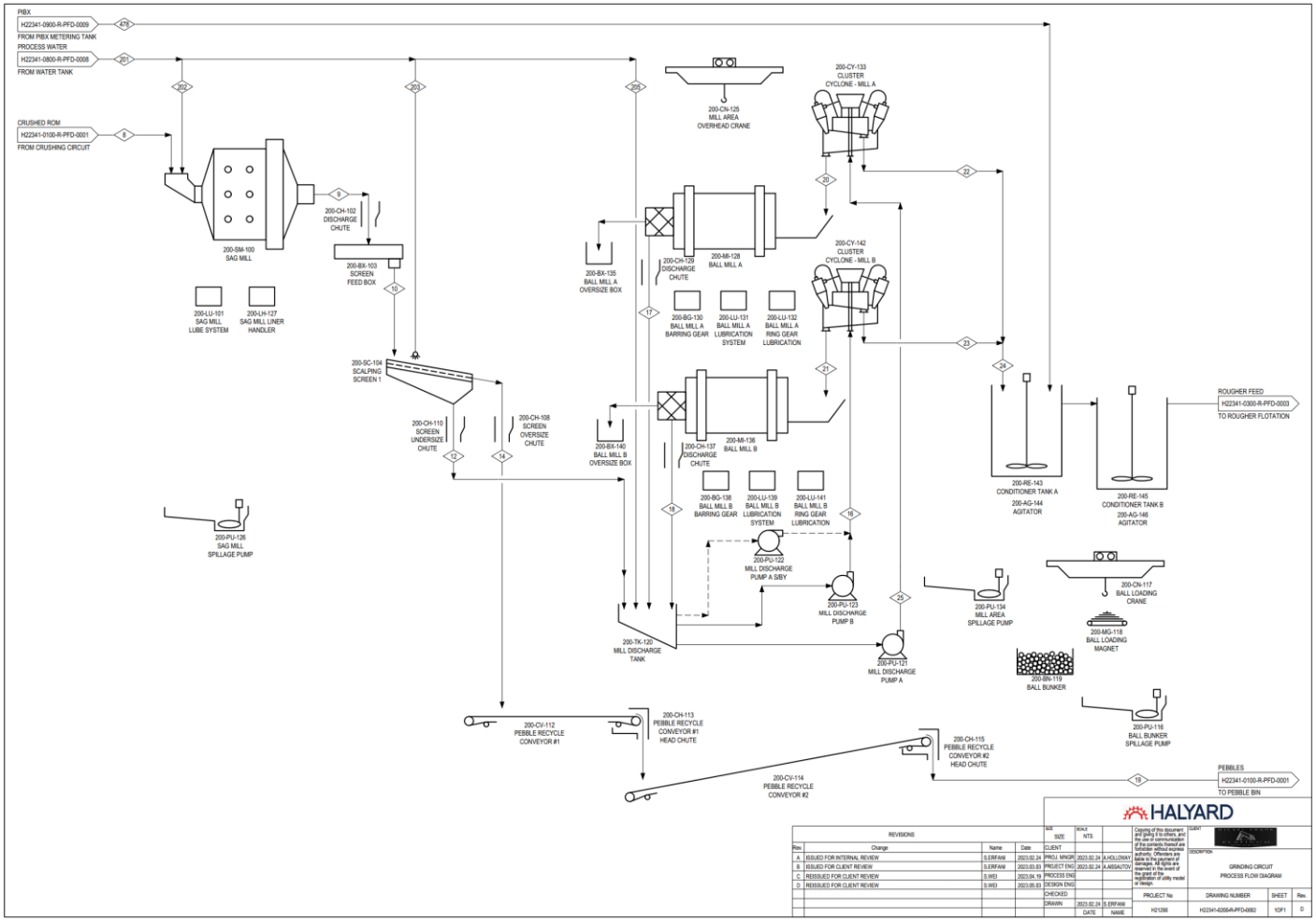
Preliminary process flow diagrams were prepared for the PFS. These drawings are shown in Figure 17-6 to Figure 17-18 in the following pages.

Figure 17-6: Area 100 – Crushing & ROM Transportation



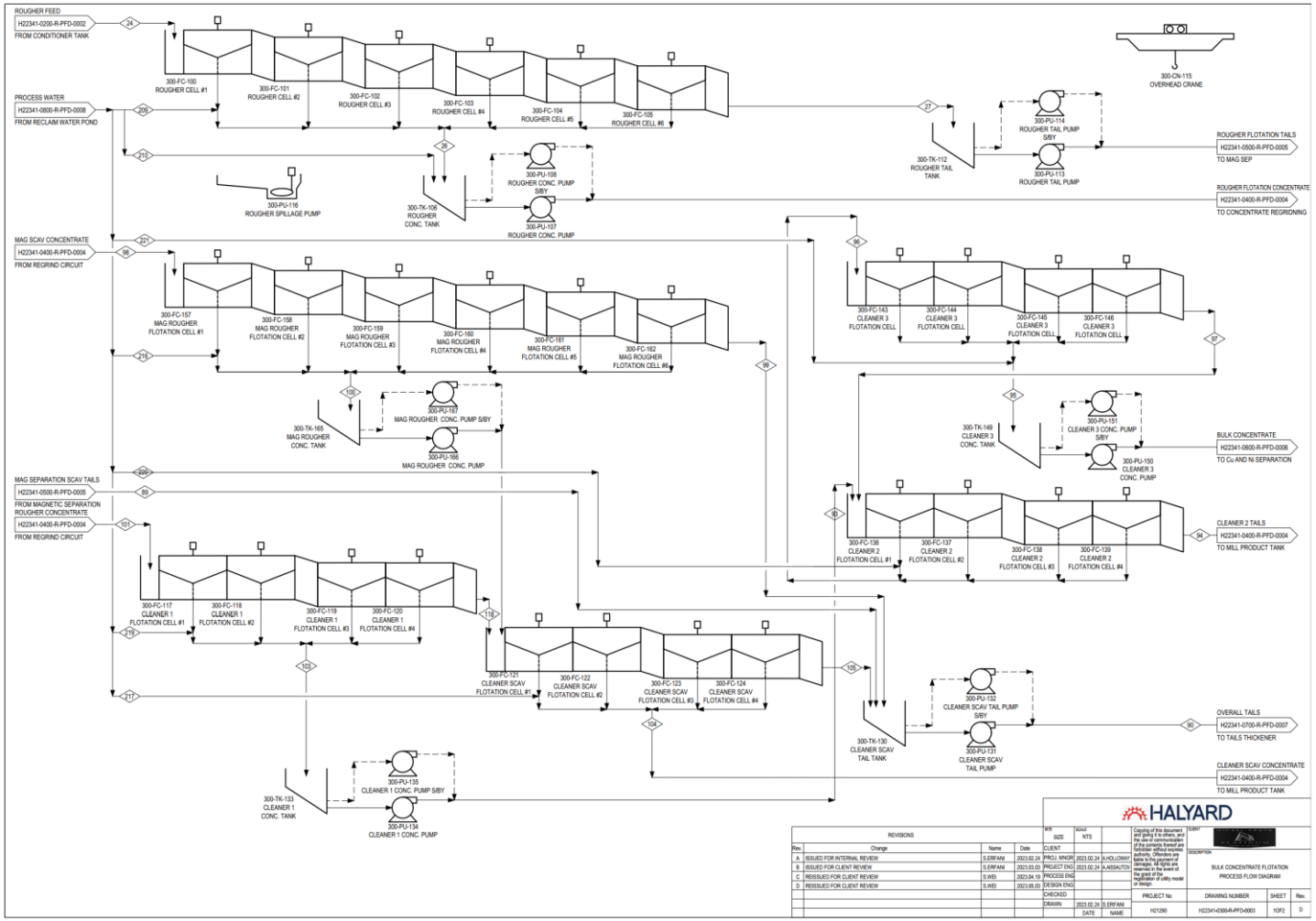
Source: Halyard Inc., 2023

Figure 17-7: Area 200 – Grinding & Classification



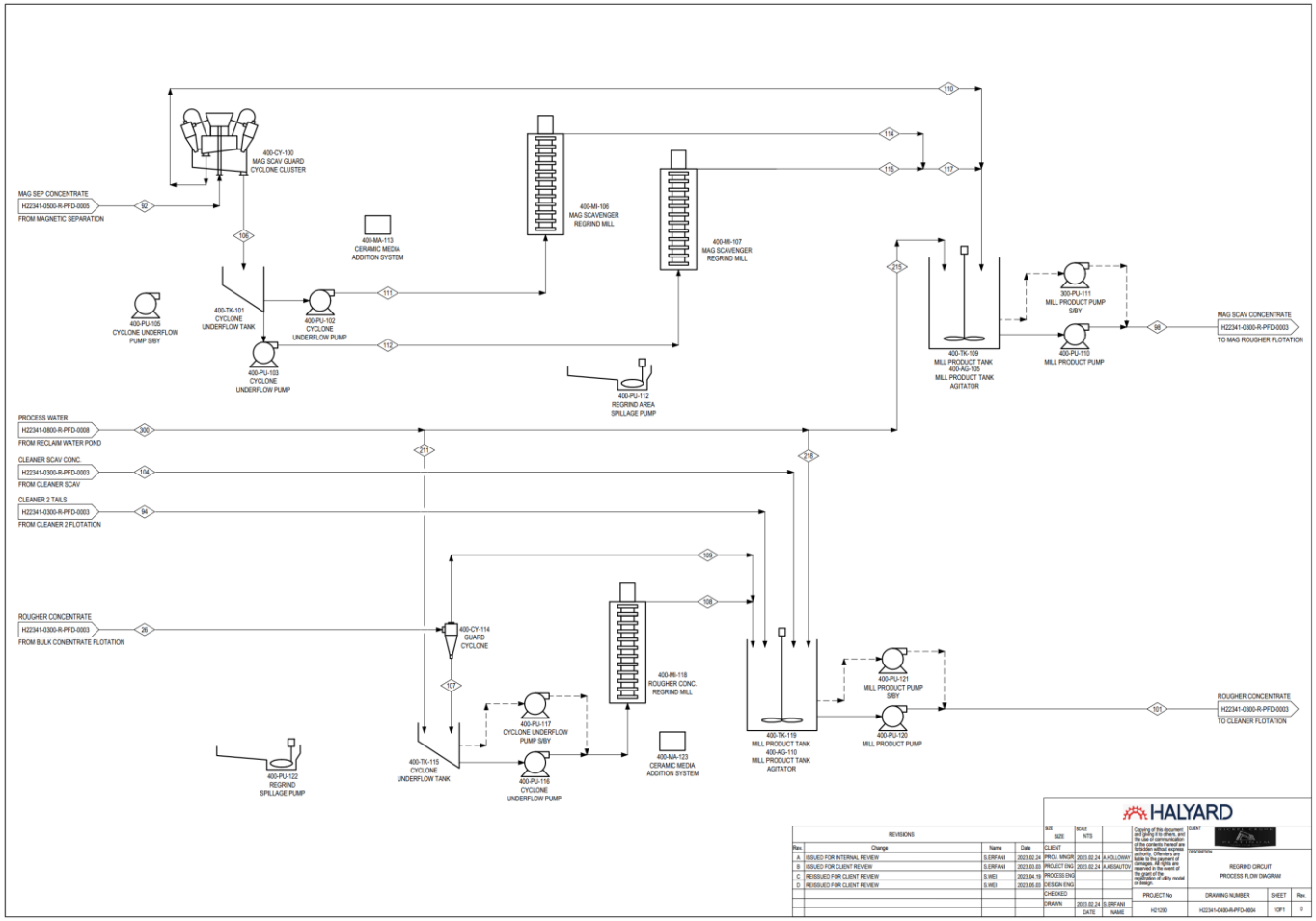
Source: Halyard Inc., 2023

Figure 17-8: Area 300 – Bulk Flotation



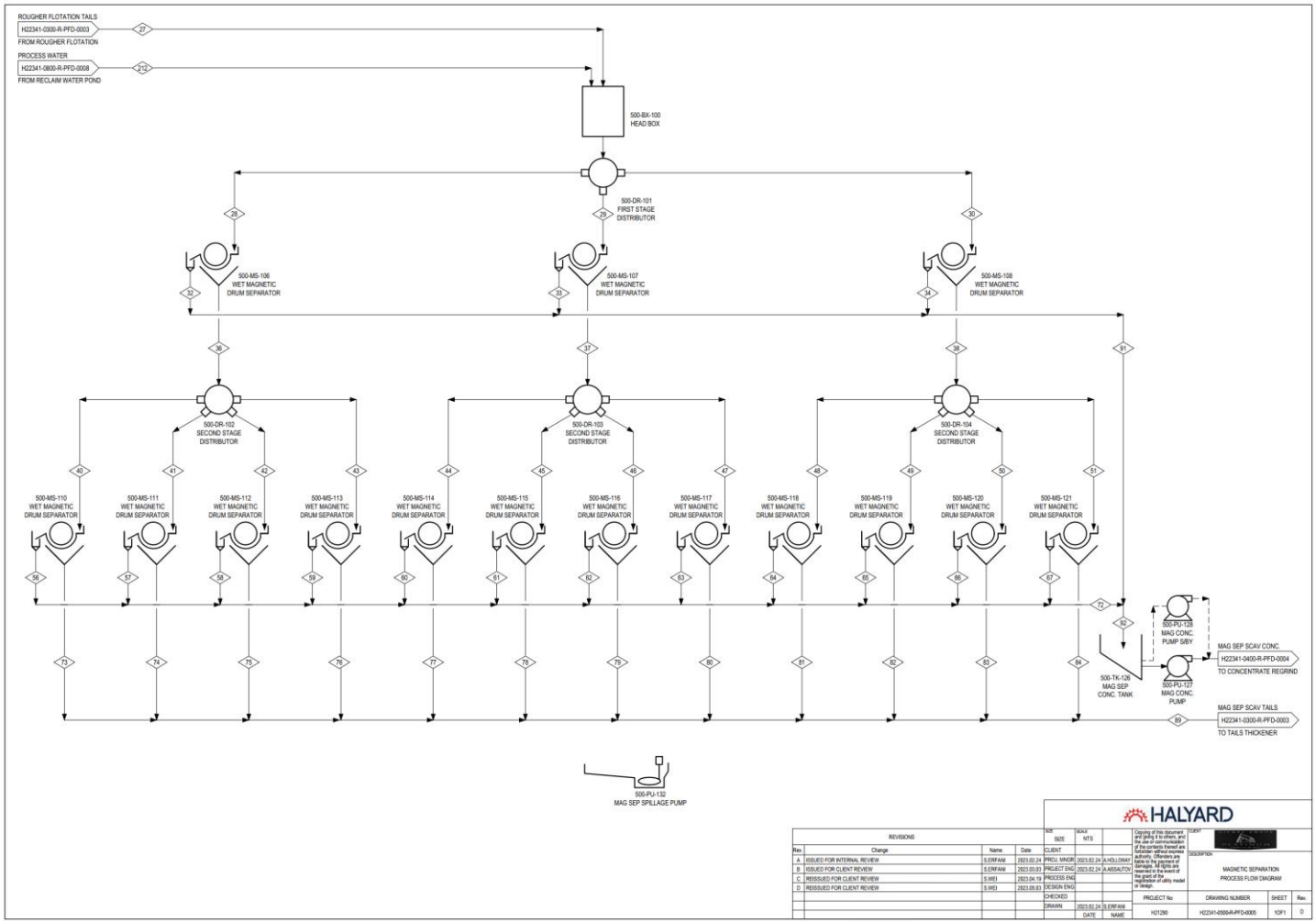
Source: Halyard Inc., 2023

Figure 17-9: Area 400 – Concentrate Regrinding



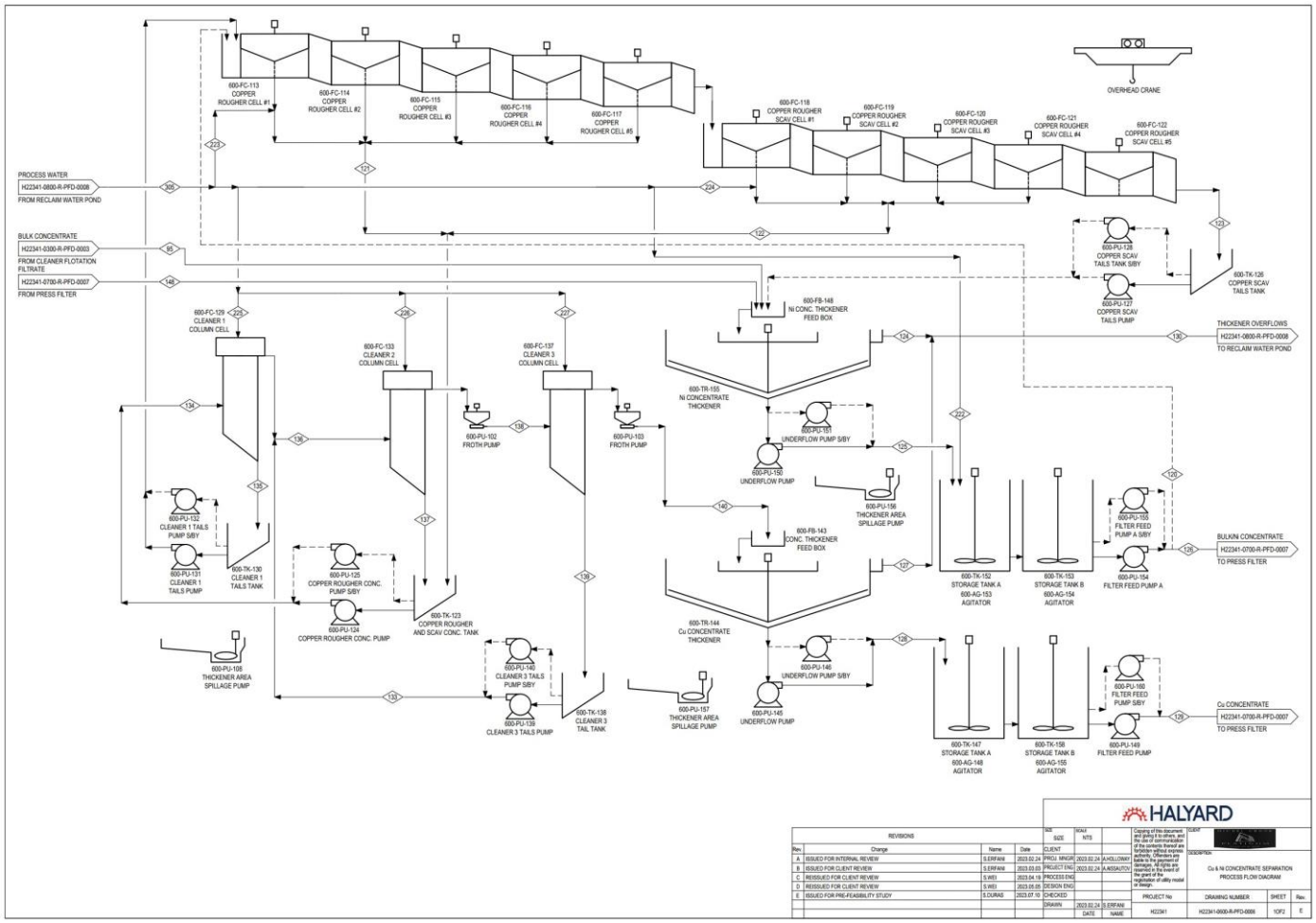
Source: Halyard Inc., 2023

Figure 17-10: Area 500 – Magnetite Recovery



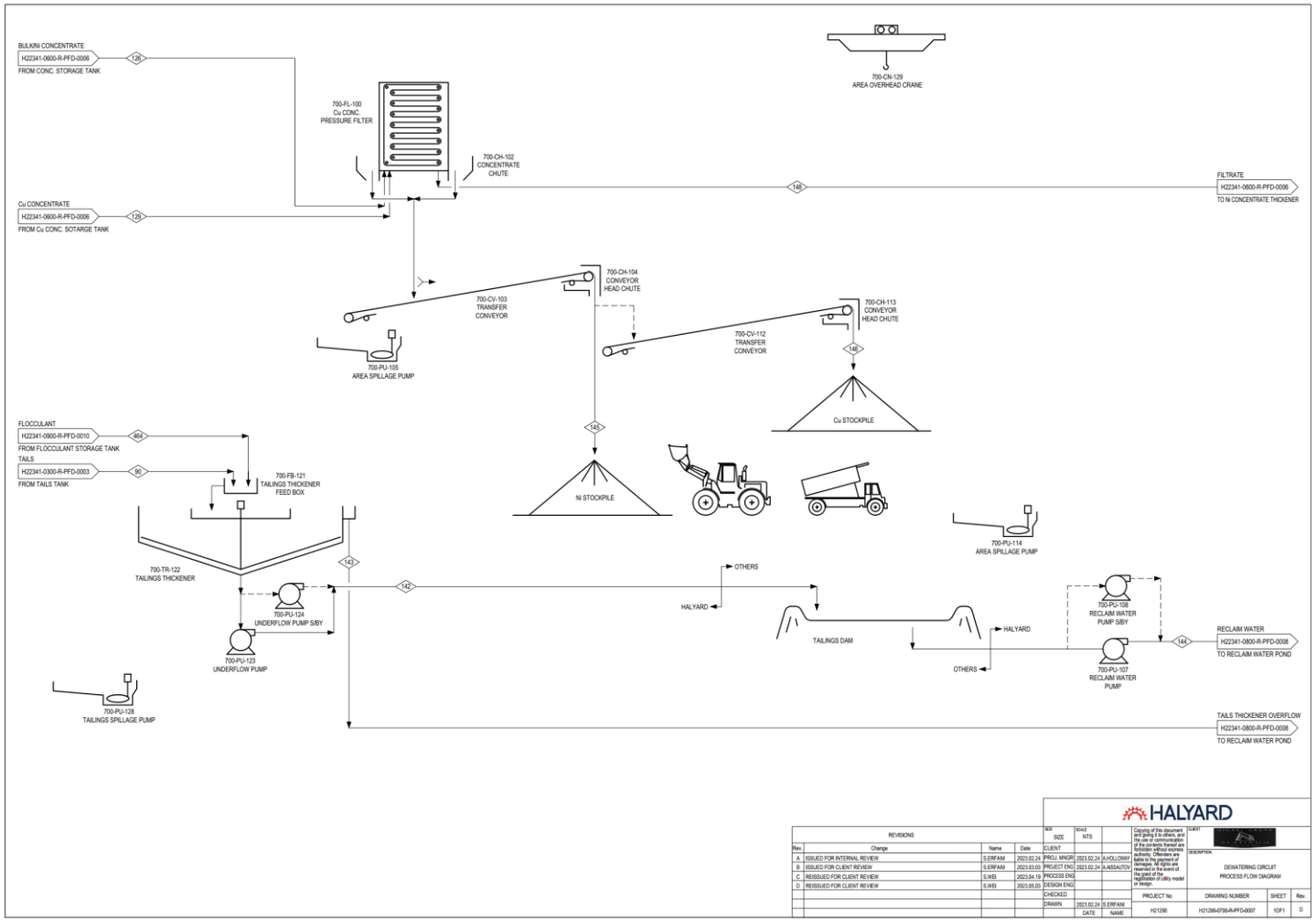
Source: Halyard Inc., 2023

Figure 17-11: Area 600 – Copper/Nickel Separation & Concentrate Thickening



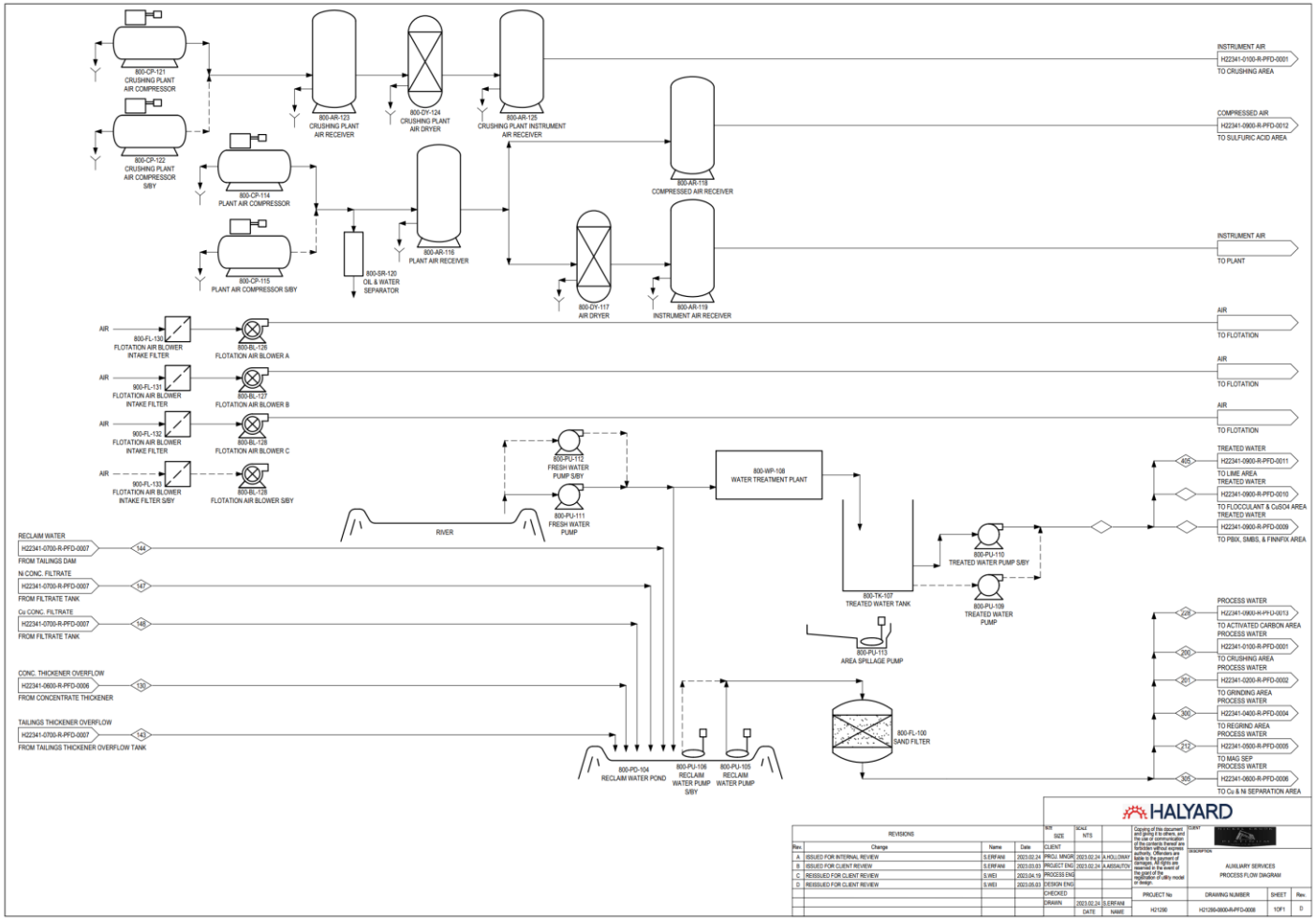
Source: Halyard Inc., 2023

Figure 17-12: Area 700 – Concentrate Filtration & Tailings



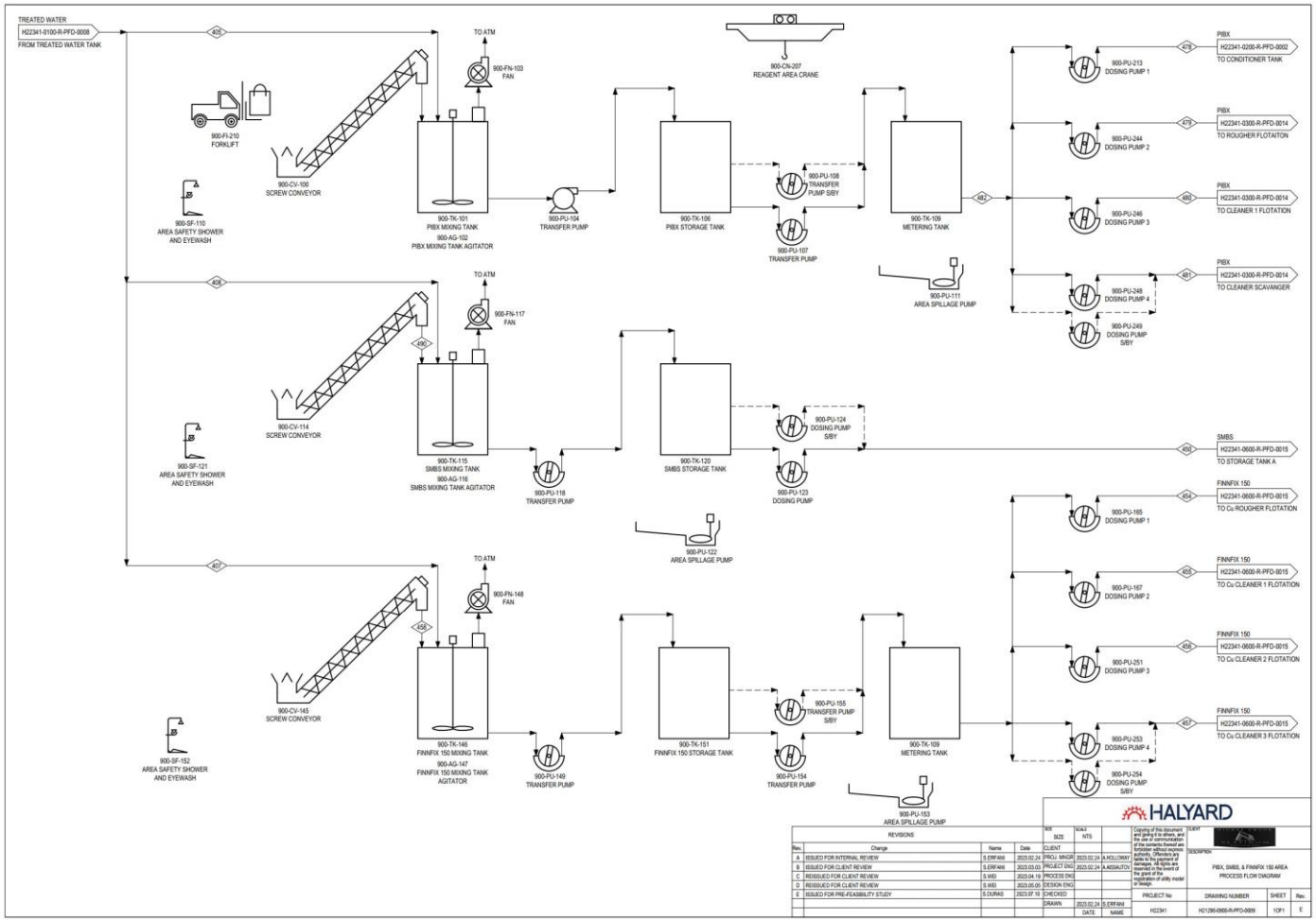
Source: Halyard Inc., 2023

Figure 17-13: Area 800 - Services



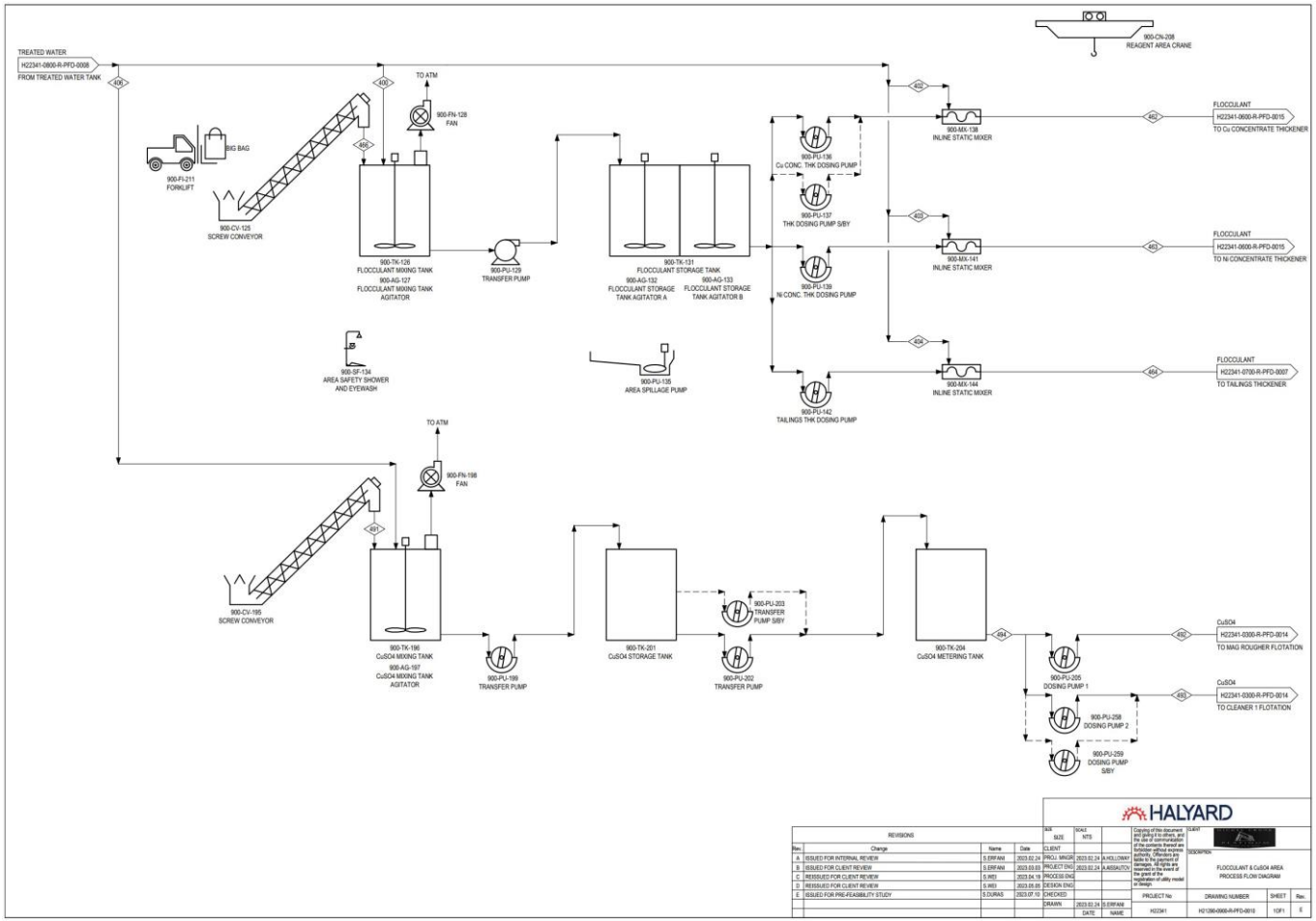
Source: Halyard Inc., 2023

Figure 17-14: Area 900 – Reagents #1



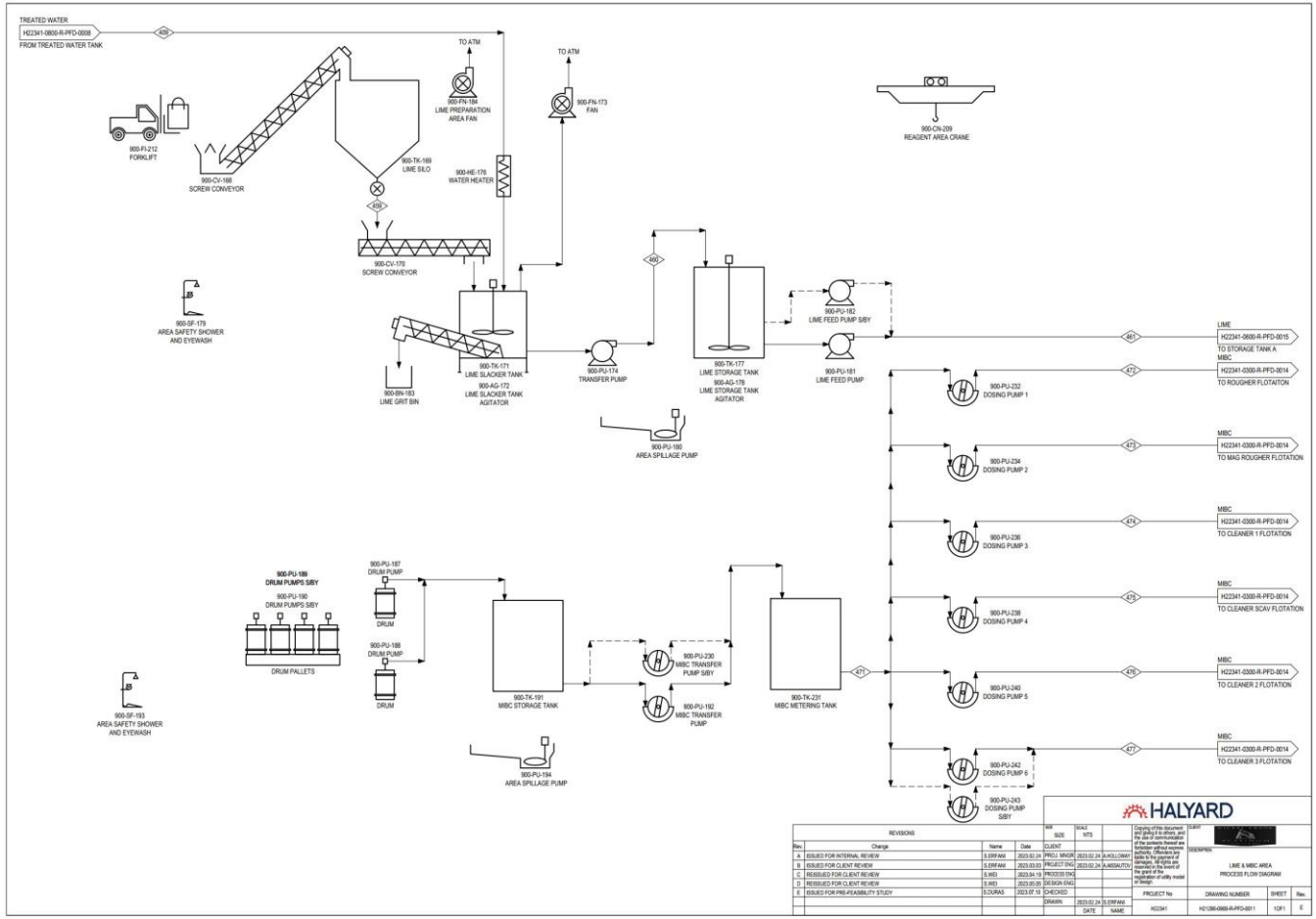
Source: Halyard Inc., 2023

Figure 17-15: Area 900 – Reagents #1



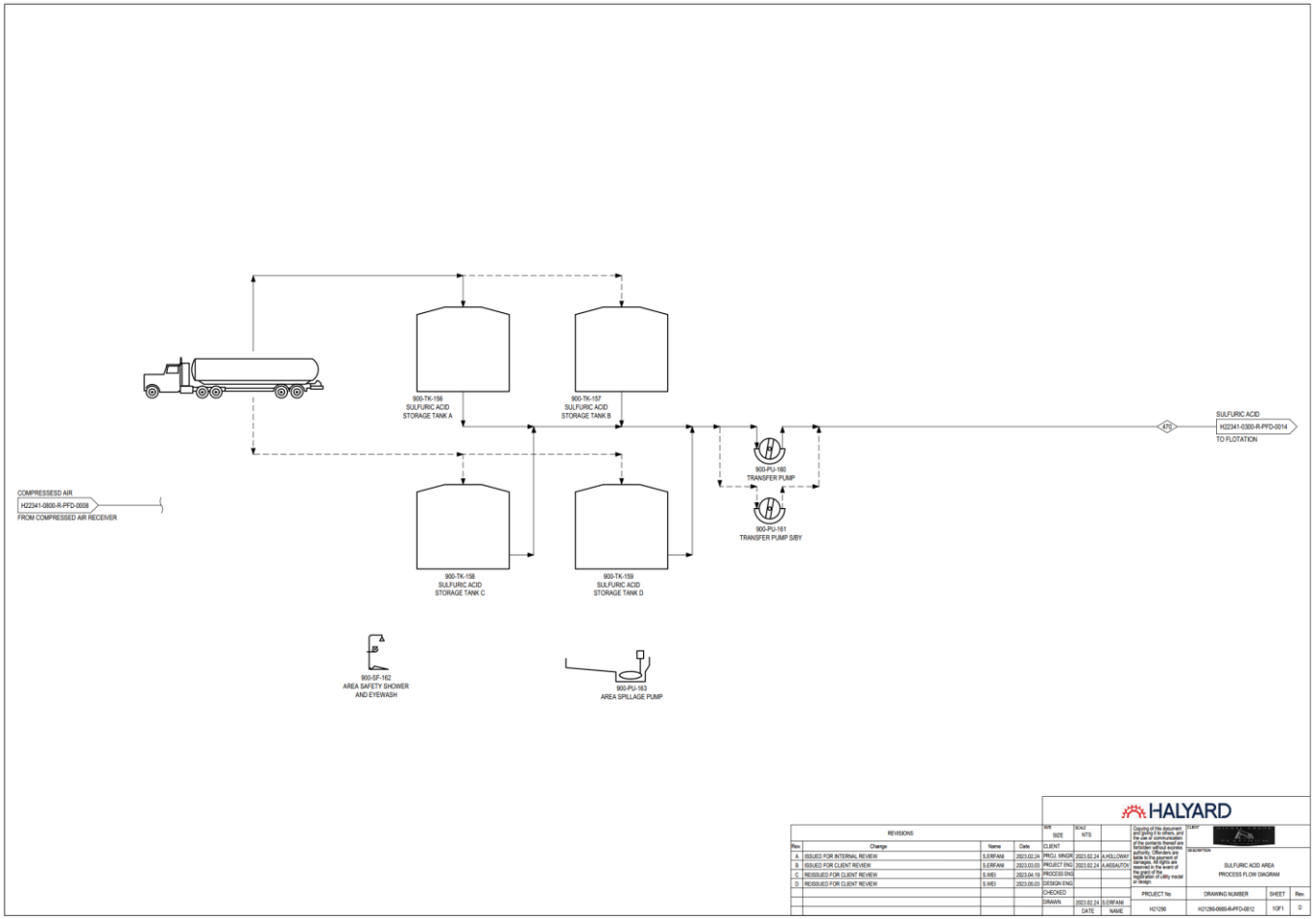
Source: Halyard Inc., 2023

Figure 17-16: Area 900 – Reagents #2



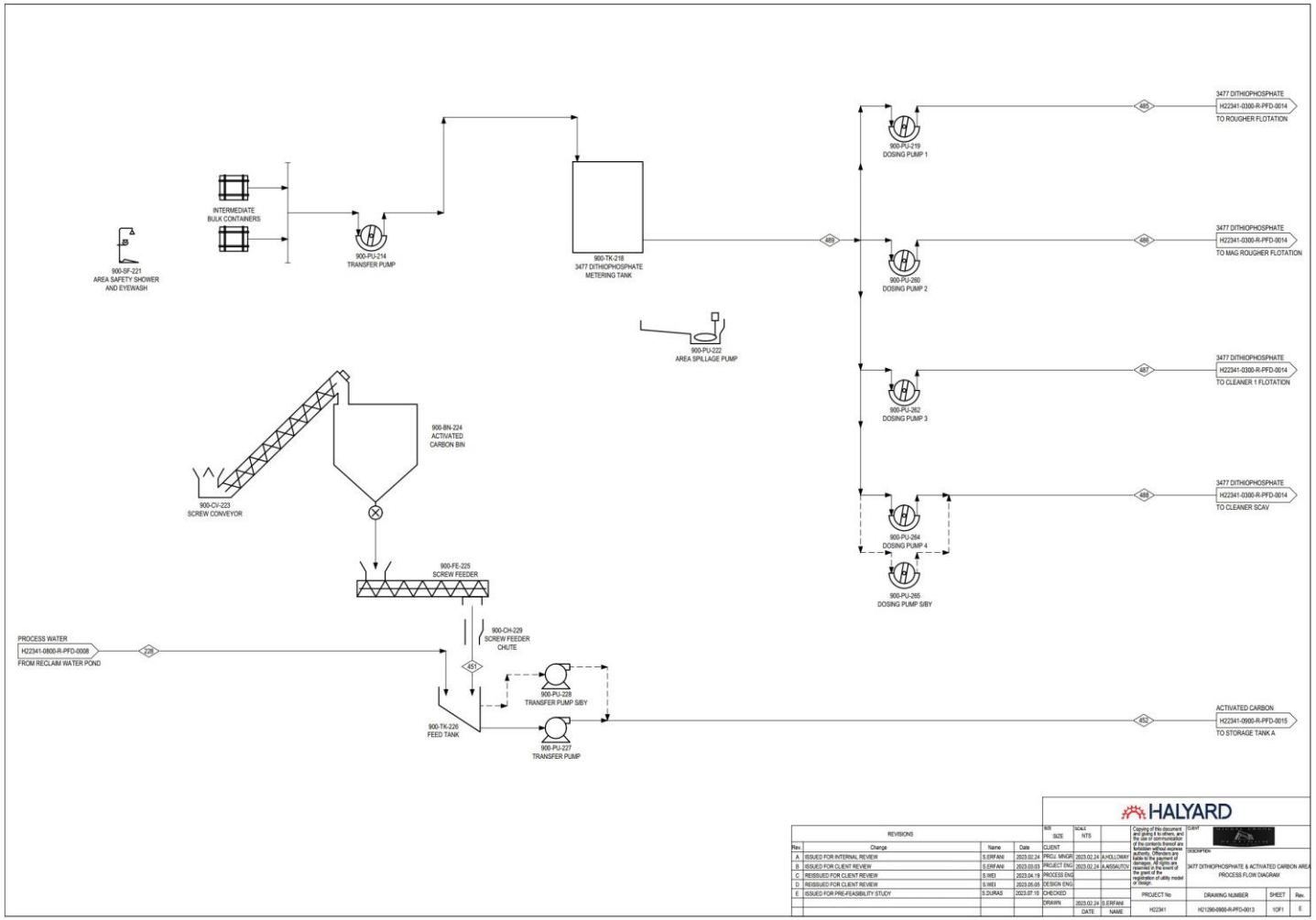
Source: Halyard Inc., 2023

Figure 17-17: Area 900 – Reagents #4



Source: Halyard Inc., 2023

Figure 17-18: Area 900 – Reagents #4



Source: Halyard Inc., 2023

18 PROJECT INFRASTRUCTURE

18.1 Summary

The site is located approximately 317 km northwest of Whitehorse in southwestern Yukon, at an approximate latitude of 61°28'N, and longitude of 139°32'W on NTS map sheet 115G/05, 115G/06 and 115G/11. The Project is broadly divided into two discrete areas: the open pit mine and associated equipment and a lower plant/infrastructure area some 10-km closer to the Alaska Highway. The mine is accessed via an all-weather road past the process plant area from the paved Alaska Highway to the northeast. The project access road is shown in Figure 18-1.

Figure 18-1: Project Access Road, Looking SW from Quill Creek

Source: AGP 2023

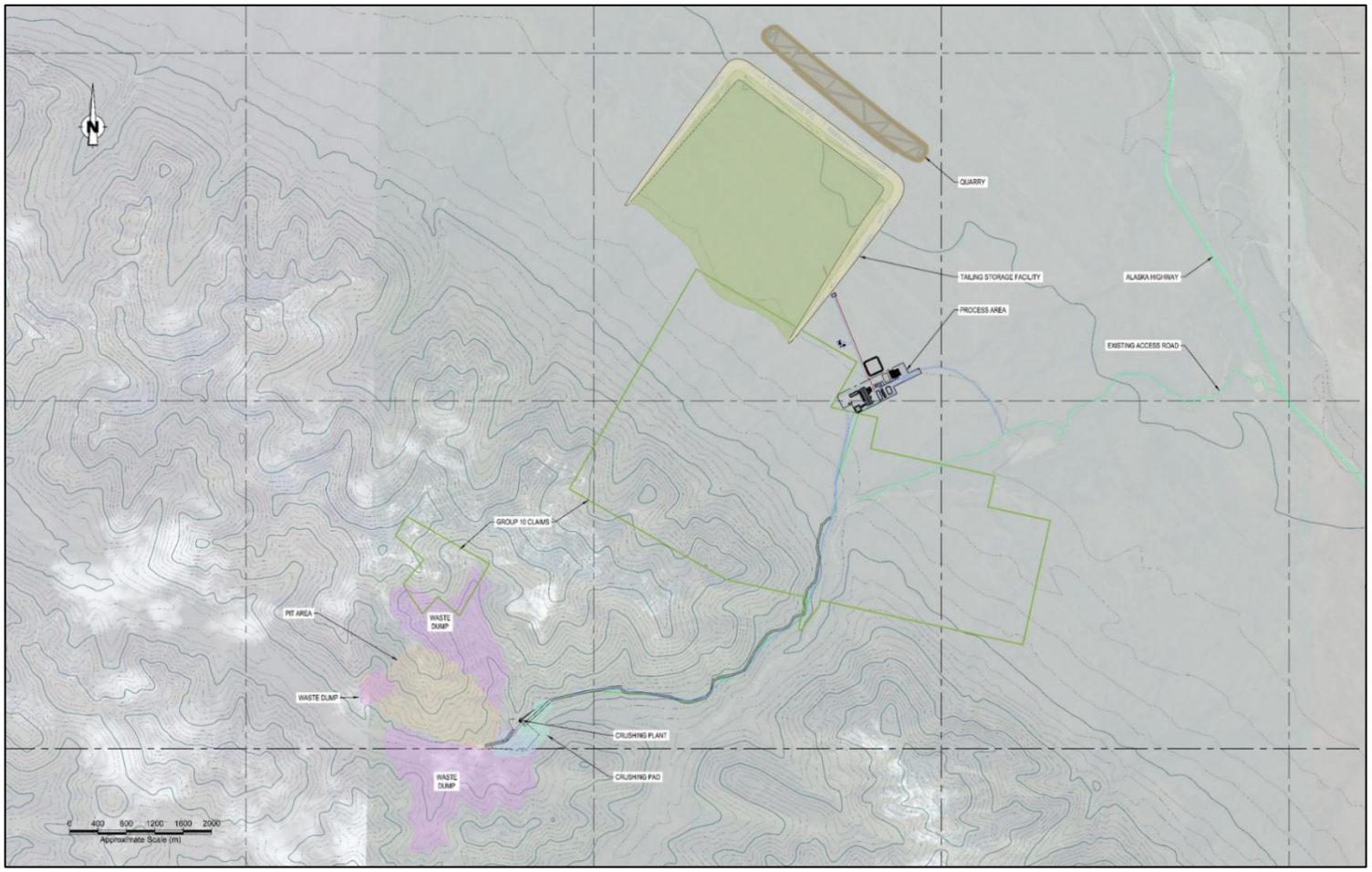
A site layout drawing is shown in Figure 18-2 and gives the location of major infrastructure items such as the open pit, processing plant and supporting infrastructure. Detail on the plant area is shown in Figure 18-3.

The main infrastructure items include:

- at the mine site (1,200 mAMSL):
  - a remote mine workshop, located adjacent to the mine pit
  - mine dewatering facilities, including pumps and ponds
  - a primary crushing station
  - overland conveyor to transport run of mine material from the mine to the lower process facilities
- at the lower plant area (830 mAMSL):
  - 45,000 tpd processing facility, including ROM stockpiling, grinding, pebble crushing, flotation, magnetic separation, and dewatering
  - reagents storage, mixing and addition facilities

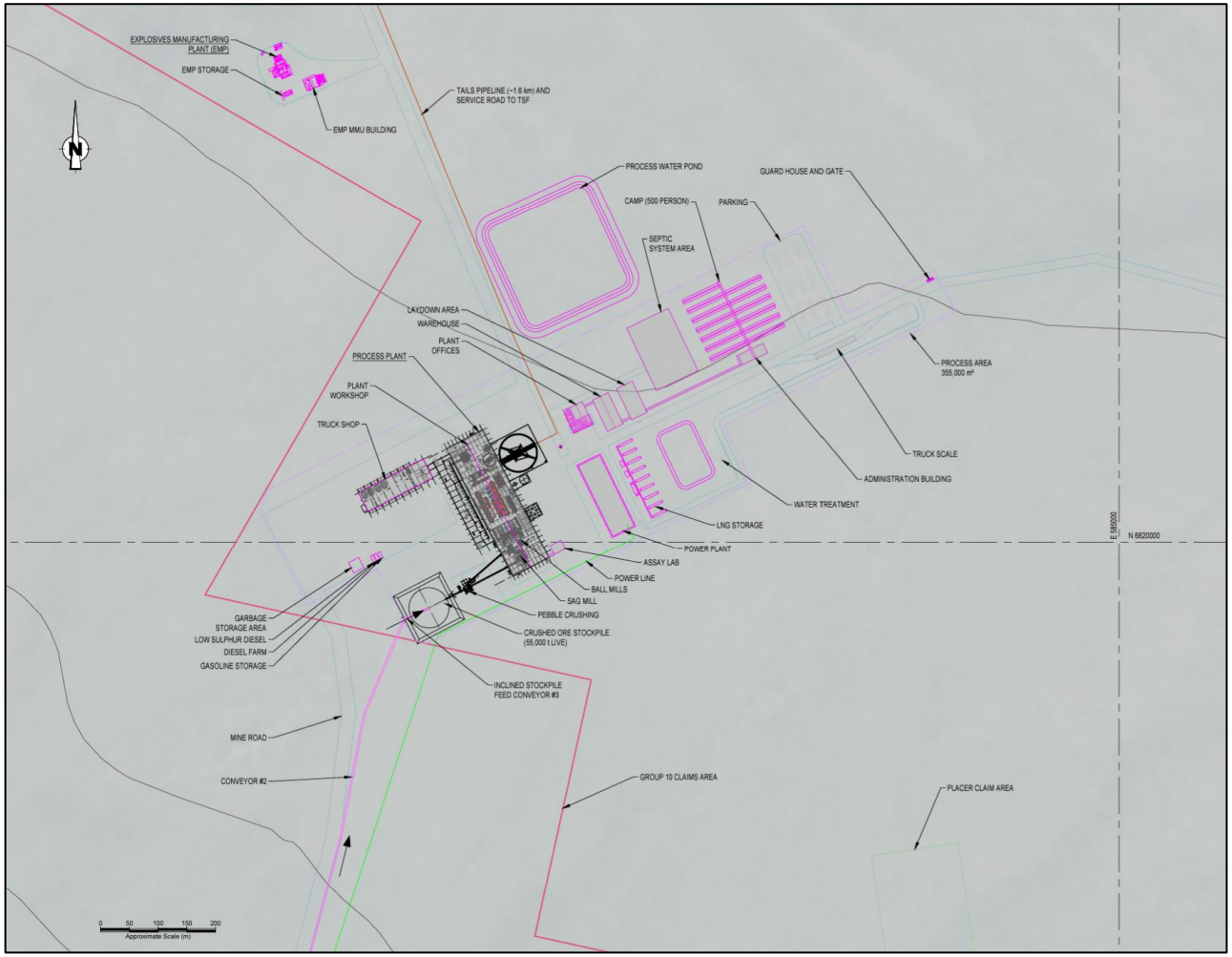
  - flotation concentrate storage facilities and infrastructure for loading and weighing of trucks
  - mine truck shop, including wash bay, fuelling facilities (diesel and gasoline) and offices
  - LNG-fueled gas turbine power generation facility, complete with LNG storage facilities and vaporization facilities
  - power and communications distribution infrastructure, including overhead power lines to remote consumers and buried lines for local power and communications cables
  - 500-person camp including accommodation, kitchens, laundry, and recreation facilities
  - administration offices, warehouse, mine dry, medical station, fuel bay
  - contract operated assay laboratory
  - core shed with dedicated core storage area
  - potable water, sewage effluent and mine water treatment facilities
  - waste disposal facilities, including incinerator, hazardous waste storage and landfill facility
  - thickened slurry tailings management facility
  - water management and effluent treatment facilities
  - contract operated explosives production and storage facility
- Access Roads:
  - 7-km access road from the Alaska Highway to the lower plant, with gatehouse and fencing
  - 11-km mine access road between the plant and mine
  - access/service roads to/from the tailings management facility and the explosives storage/manufacturing plant
- The main project infrastructure is shown on the project site plan. The drawing shows the lower section of the site, and highlights proximity to the Alaska Highway.
- In addition, the Project considers some offsite infrastructure, including the following:
  - administrative offices in Whitehorse, together with personnel transportation assets
  - sulphuric acid storage and loading/unloading facilities at the Port of Skagway
  - minor upgrades to the existing Burwash airstrip (CYDB)

Figure 18-2: Nickel Shaw Project Site



Source: Halyard 2023

Figure 18-3: Plant Site Detail



Source: Halyard 2023

18.2 Site Conditions – General

The Project site is impacted by two factors that influence the designs and subsequent costs related to buildings and structures. The first factor is permafrost, and the second factor is seismicity.

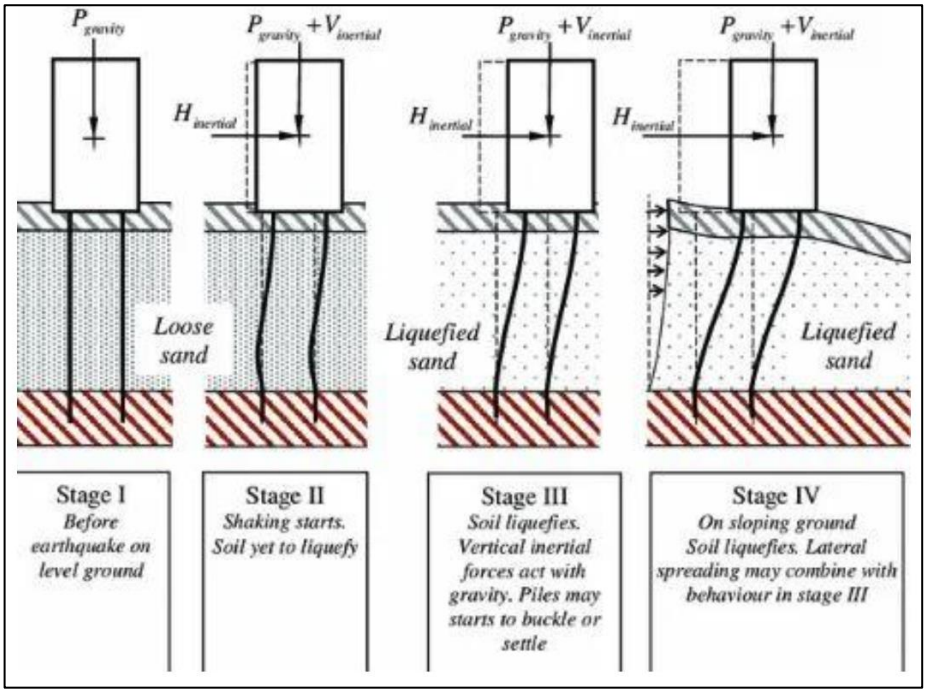
18.2.1 Permafrost

Some areas adjacent to the Project site have been the focus of geotechnical surveys and these have reported intermittent occurrences of permafrost. The lower project site has not yet been surveyed, and therefore the risk that permafrost complicates civil work and building foundations can not be discounted.

> *"Permafrost or perennially frozen ground is defined, on the basis of temperature, as soil or rock that remains at or below freezing temperature (0ºC) for at least two years. Permafrost sensitivity is usually described in terms of temperature (warm or cold), ice content (ice-rich or ice-poor) and type of ground ice (visible or non-visible). Permafrost has an active layer, which freezes and thaws each year, and a perennially frozen layer. Permafrost should never be considered "permanent" as it is always in a dynamic equilibrium with the surrounding temperature boundary conditions." MERG Report 2004-1 "Permafrost Considerations for Effective Mine Site Development In the Yukon Territory" By Eba Engineering Consultants Ltd."*

Where it occurs, the depth of permafrost at the upper and lower project sites is estimated to be about 3 m deep and deemed unacceptable for use to support of any foundations, instead it was recommended that deep foundations, such as piles and or caissons – bearing on the underlying bedrock – be used to support the main infrastructure. Piles and caissons are structural members that transfer load from the superstructure into the soil and or rock beneath the structure. Gravity loads are transferred rather efficiently through axial tension and compression in the caisson, but lateral forces (such as those due to earthquake loading) need to be resisted through bending of the caisson when the lateral restraint offered by the soil is lacking. Thus, for the present case, the upper 3 m of soil was deemed inadequate (because of the permafrost) creating a cantilever-type condition in the caissons (or a flag-pole condition). This means, that both axial loads and bending forces can develop in the caisson – see the below graphic for an illustration (Figure 18-4). In present context, the liquefied sand represents the weakened permafrost layer (that may have thawed) and can not provide any lateral restraint to the caissons.

Figure 18-4: Effect of Seismic Action on Caisson Style Foundation



Source: Consultec 2023

18.2.2 Seismicity

Seismicity is the study of how often and with what magnitude earthquakes occur at a given location. In Canada, Natural Resources Canada (NRC) is tasked with mapping active faults and developing reliable seismic models for the entire country. NRC provides site specific seismic hazard data consistent with that required input for structural design in accordance with the National Building Code of Canada (NBCC). Regions of high seismicity are prone to relatively more frequent and larger earthquake events than regions of low seismicity, and the seismic NRC design parameters reflect this distinction.

Over the past number of NBCC code cycles, there has been a trend towards increased seismic hazard estimates, and the present site is no exception. NRC provides seismic design parameters with simply an input of the site coordinates. Doing so for the current project location reveals that there is an active fault nearby, along with a notable increase of about 60% in the required earthquake design parameters when transitioning from the 2015 to the 2020 version of the NBCC. It is important to note that Yukon Territory recently adopted the 2020 version.

From a design perspective, earthquakes generate motion (and therefore forces) in a structure that occur both in the vertical and horizontal directions. For design, the magnitude is represented as a percentage of gravity, so a 10% earthquake means that the horizontal forces are 10% of the gravity forces.

The percentage magnitude is a function of many parameters, namely:

- soil type: solid rock results in lower forces than does swamp-type materials

- structural rigidity: rigid structures experience larger forces than do flexible structures
- structural type: determined by the Seismic Force Resisting System (SFRS)

Inherent in the design provisions of the NBCC is that structures will experience damage during a major earthquake event, and many owners may not be aware of this fact. However, economical design requires that some level of damage be permitted to absorb the energy imposed by a seismic event. Design of buildings, in this respect, is like that of a crumple zone of a car – it is designed to exceed the elastic limit (no damage) such that permanent deformations are imposed (lots of damage), but the occupants are kept safe. Allowing damage is an effective means of absorbing the impact energy. Similarly, and for most buildings the criterion is to ensure the structure remains standing with the intent of keeping the occupants safe, but generally with no guarantee that it will be useable post-earthquake.

From a structural design standpoint, there are numerous structural systems that have proven energy absorption capabilities (or high ductility), and the magnitude of the design earthquake forces is dependent on the chosen system. So, the better the structural ductility the lower the seismic forces. Conversely, lower ductility systems render larger design seismic forces.

It is also important to note that NBCC design provisions focus on high occupancy structures with modest attention paid to low-occupancy industrial provisions.

Annex M "Seismic Design of Industrial Steel Structures" (CSA - S16 "Design of Steel Structures" - Steel Design Code for Canada) notes the following:

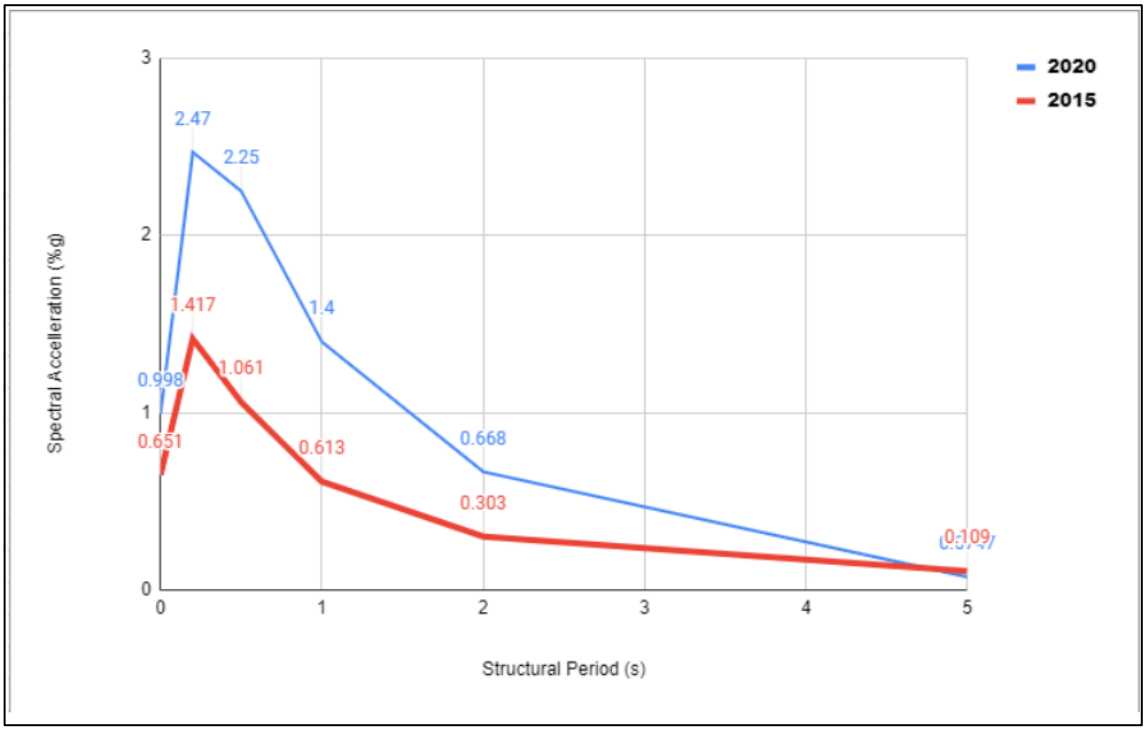
> *This Annex applies to industrial type structures that are expected not to respond to seismic ground motions in a fashion similar to conventional buildings because of non-uniform distribution of mass, strength and stiffness in the building, absence of clearly defined floors, or reduced damping due to limited architectural components. The intended use of these structures is essentially to support equipment and material for an industrial process that may significantly affect the structure seismic response, and do not include the shelter of persons.*

As noted, industrial structures tend not to behave like conventional buildings and as such are likely to be designed using moderate to low ductility systems. For example, consider the support of a SAG or ball mill on a mass concrete foundation; there is no resemblance to a structural system that would be used in an office complex (with conventional bracing, columns etc..). Further, these massive foundations tend to be very rigid and therefore attract large amounts of seismic force.

NBCC provisions treat the superstructure design differently from that of the foundation, simply because foundations are very difficult to repair after a seismic event. Thus, modern wisdom suggests that foundations be designed for the maximum amount of lateral force the superstructure is capable of transferring to it, or the lateral force corresponding to no damage to the superstructure. Ultimately, the superstructure becomes the fuse or the weak link of the structural system by limiting the amount of load transferred into the foundation.

The raw seismic data was taken from the NRC for both the 2015 and 2020 versions as shown in Figure 18-5 below.

Figure 18-5: Specific Acceleration vs Structural Period, 2015 vs 2020 Data



Source: NRC 2020

Having adequate design information at a preliminary stage of project development is important and so assumptions must be employed based on previous experience or similar projects. In regions of high seismicity, it is important to consider the seismic force resisting system as an integral part of the plant layout, but this simply may not be attainable at the early stages of a project. For this reason, some conservatism in the approach to quantifying materials and costs is prudent. For this Project, consider the following calculations for the seismic force as a function of the gravity load, W:

- preliminary classification of "Site Class C" was provided by the geotechnical/geology engineer, which corresponds to a very "dense soil or soft rock" profile
- seismic force resisting system is "Conventional Construction", with ductility factors R_d=1.5, R_o =1.3
- seismic importance factor, I_e = 1.0

Then for superstructure design: Ve = 1.150 W and for design of foundations: Ve = 1.725W.

Frankly, these are very large seismic forces, partly due to the choice of the seismic force resisting system. Lower seismic forces may be realized for some structures with an in-depth assessment of how higher ductility systems could be incorporated into the layout, but this was not done at this stage of the project. There are more sophisticated measures to reducing seismic forces such as base isolation and specialty energy absorption systems, but their application to industrial structures may be limited.

Imposing design criterion on vendors is an important step in the process as well. All equipment, such as the mill, thickeners and tanks must be designed to these large seismic forces and this to be then coordinated with support and foundation design.

18.3 Mine Area Infrastructure

18.3.1 Mine Dewatering

Primary water collection and management facilities are located at the mine and also the quarry near the tailings.

The mine dewatering is expected to result from seepage within the pit and atmospheric recharge. Wherever possible, diversion ditches will be employed to divert water from entering the pit and towards settlement facilities.

Inpit dewatering is expected to total approximately 890,000 m^3 per year. Traditional sump pumps will be employed to remove this water in advance of mining. This water will be directed to settling ponds adjacent to the primary crusher where it will be tested for any corrective measures required. This water can be utilized for process operations or discharged depending on the quality and the downstream requirements (seasonal).

Additional study is required of the water quality for discharge in future studies.

18.3.2 Waste Rock Stockpiles

The open pit mine will have two dedicated mine rock storage areas. The storage areas have been situated to minimize haulage distances while accounting for topography to provide adequate volume for the materials to be generated. This was discussed in Section 16.3.5.

18.3.3 Mine Maintenance Facility

Adjacent to the primary crusher area, an insulated sprung structure will be built upon concrete slab and caisson type foundations to provide sheltered maintenance space for day to day mine activities (i.e., where a trip to the main workshop is not warranted).

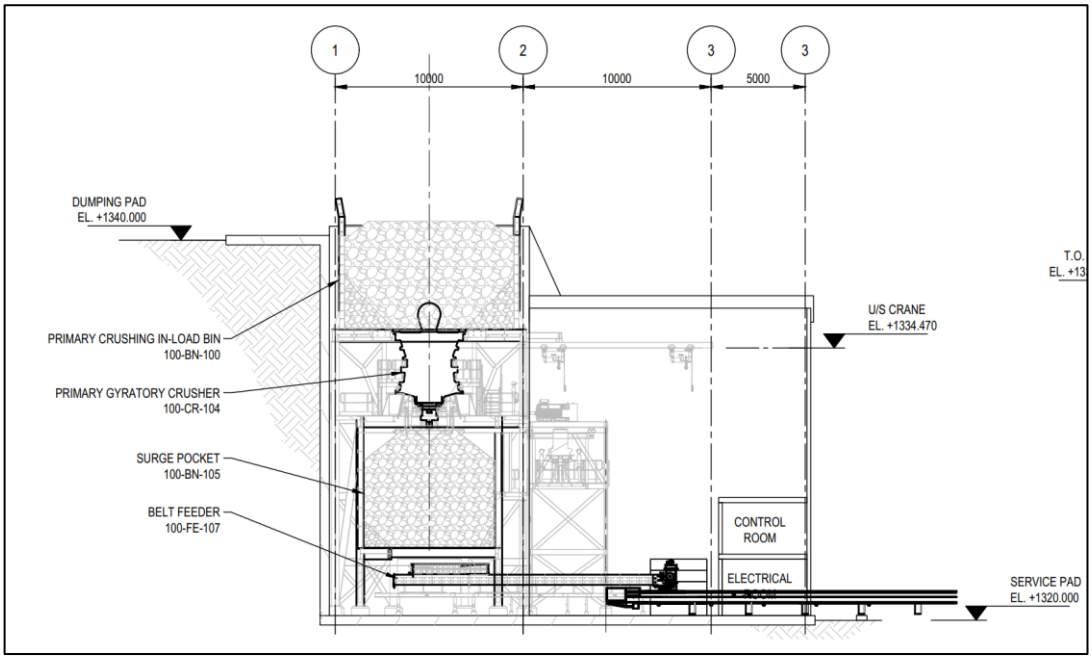
The building will be 50 m x 70 m in size and would be equipped with roller doors (for mobile equipment) and manways. Offices, ablutions, and communications would be provided. Incoming power will be supplied from the primary crushing area switch-room via overhead line.

18.4 Primary Crushing Area

The primary crushing facilities will be located on the South side of the pit at the 1,320 m elevation. The crusher structure is roughly 20 m in height and is cut into the side of a crushed/compacted rock dump placed by mining as part of the mine access establishment. Foundations will include caisson piles to bedrock.

Power requirements for the crushing facility will be met via the installation of a 13.8kV overhead powerline from the plant site The primary crushing plant elevation is shown in Figure 18.6.

Figure 18-6: Primary Crushing Plant Elevation



Source: Halyard, 2023

The primary crushing facilities are described in more detail in Chapter 17. Operations and maintenance personnel access the crushing area via the mine access road.

A communications tower is installed in the vicinity of the crusher station.

18.5 Overland ROM Conveyor

The primary crushing station and the ROM stockpile at the process plant are located approximately 12-km apart, with the ROM stockpile base approximately 500 m lower elevation than the crusher discharge.

A single flight conveyor system is included in the Project scope, to cater for the need for transportation of 45,000 tpd of crushed ore. A typical configuration is shown in Figure 18-7. A 55 m long, 2,000 mm wide variable speed conveyor belt discharges crushed rock from the primary crusher surge pocket onto the overland conveyor via a transfer chute in a controlled manner. Tramp steel is removed at this point using a cross belt self cleaning magnet.

The overland conveyor is a 1,200 mm wide steel belted design, running at 4.5 m/s belt speed. The belt incorporates several horizontal curves of at least 1,000 m radius to maintain broad proximity to the mine access road along its entire length. Civil works will include upslope stormwater management berms and diversion ditches. Likewise, leveling and profiling of the conveyor route will ensure that any possible rock spillages are contained in close proximity for clean up using loaders and/or skid-steer vehicles.

The conveyor system is powered by 3 x 900 kW drives (2 located at the head and 1 at the tail end) and includes a horizontal winch operated gravity take up. The conveyor is sheeted/covered along its entire

length and includes elevated sections every 0.5 – 1 km to allow wildlife access. Where elevated, the conveyor structure includes maintenance access walkways on both sides. The conveyor belt structure is founded on concrete piles every 3-6 m of suitable design to handle site specific seismic loads as well as normal bearing pressures and dynamic loads. The steel-cored belt will be supported using 35-degree trough idler sets every 1.5 m on the carrying side and 10-degree trough return idlers every 3-6 m on the reverse side.

Figure 18-7: Overland Conveyor, Typical Arrangement

Source: RBL/REI 2023

A belt turnover system is installed at the lower (head) end of the installation (example in Figure 18-8), so as to keep the potentially dirty top cover from contacting return idlers. This system dramatically lessens the risk of spillage build-up below return idlers.

Figure 18-8: Conveyor Belt Turnover System

Source: RBL/REI 2023

The belt is powered by 3 synchronized variable speed drive stations that due to negatively inclined profile (head pulley lower than tail pulley) have the ability to recover/regenerate power once the conveyor is fully loaded and in motion. Initial calculations suggest that the system could recover over 800 kW power under specific conditions. This power saving has been ignored for the purposes of the PFS but should be considered in future engineering studies.

The conveyor system includes all normal instrumentation and protection systems such as emergency trip switches, pull wires, belt travel (misalignment) switches, belt speed switches, belt rip detection systems and CCTV monitoring systems. A fire protection system is fed from the mine – mill water transfer line.

The conveyor route places it at considerable risk of operational interruption and/or damage due to avalanche activity during winter/spring months. In total the conveyor passes 10 or 11 areas of high avalanche risk, requiring some level of protection. For the PFS, capital cost allowances have been made for up to 11 snow shed structures such as that shown in Figure 18-9 below.

Figure 18-9: Example of a Snow Shed Structure

Source: Halyard 2023

The overland conveyor discharges directly onto the ROM Stockpile at the process plant facility.

18.6 Lower Site Structures and Installations

The majority of site infrastructure items are located at the lower/camp area, closer to the highway and on more straightforward terrain (Figure 18-10). These lower site facilities include the following:

- process plant and associated structures (ROM stockpile, pebble crusher, concentrate storage, tailings thickening, reagents storage, water storage)
- truck shop
- 500-person camp
- LNG power plant
- site administrative offices
- warehouse
- mine dry
- assay lab
- fuel storage and dispensing area
- fire protection
- landfill with incinerator
- mobile maintenance facility
- core shack

- access gate & weighbridge
- construction laydown area

These items are described in more detail in the following sub-sections.

Figure 18-10: Lower Site Location, looking North

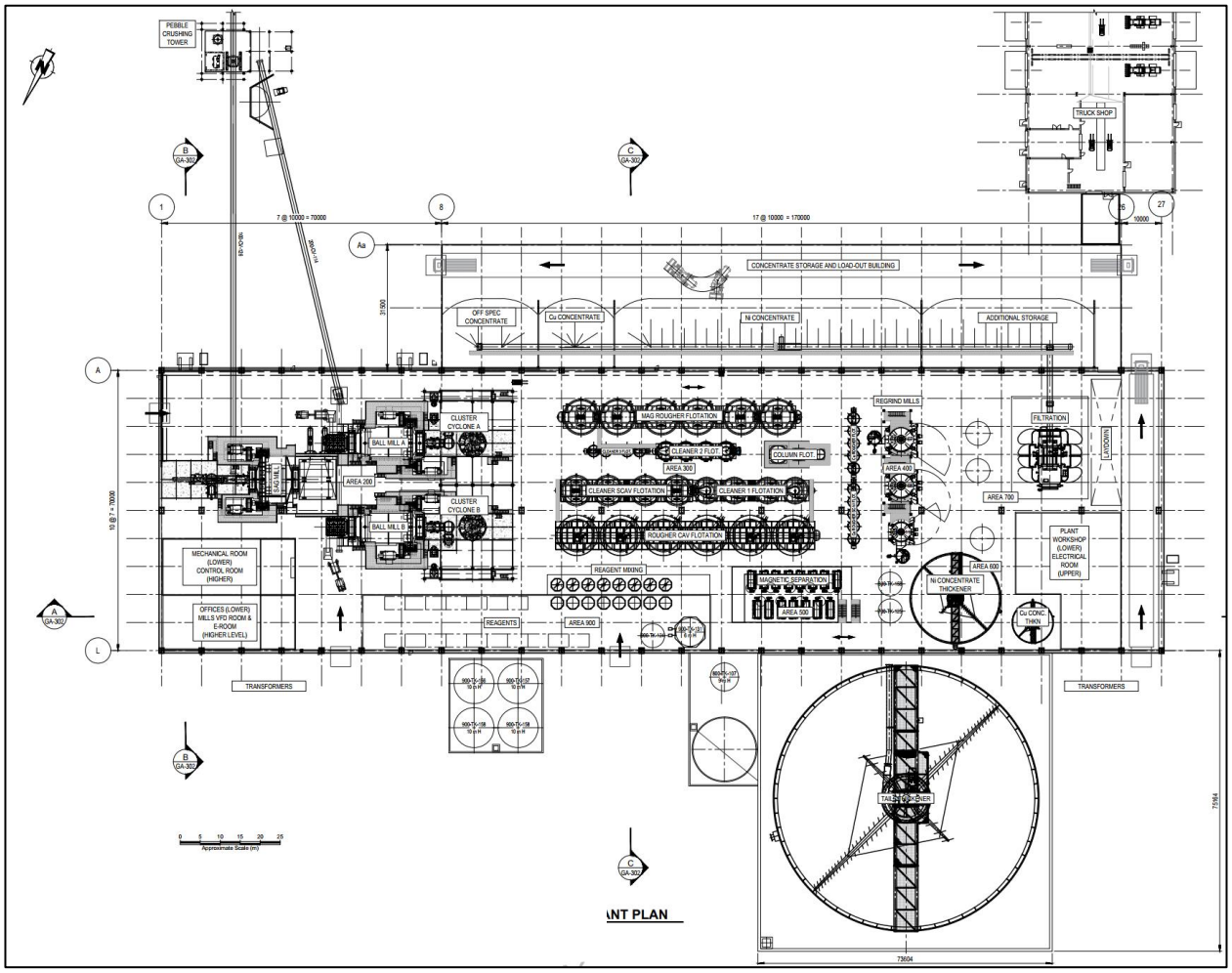
Source: Halyard 2023

18.6.1 Process Plant

The process plant is described in more detail in Chapter 17. The main process building has a 170 m x 70 m footprint and is approximately 31 m high (to accommodate lifting of major equipment items for maintenance). Within this building (shown below, Figure 18-11), various processing equipment is housed, together with the plant workshop, offices, dry, motor control centres and HVAC systems.

The process building includes a concentrates storage area, designed to handle copper, nickel and/or bulk concentrates. The concentrate storage area is connected to the truck shop by a covered personnel access way to cater for winter conditions.

Figure 18-11: Process Plant Plan



Source: Halyard 2023

18.6.2 Truck Shop

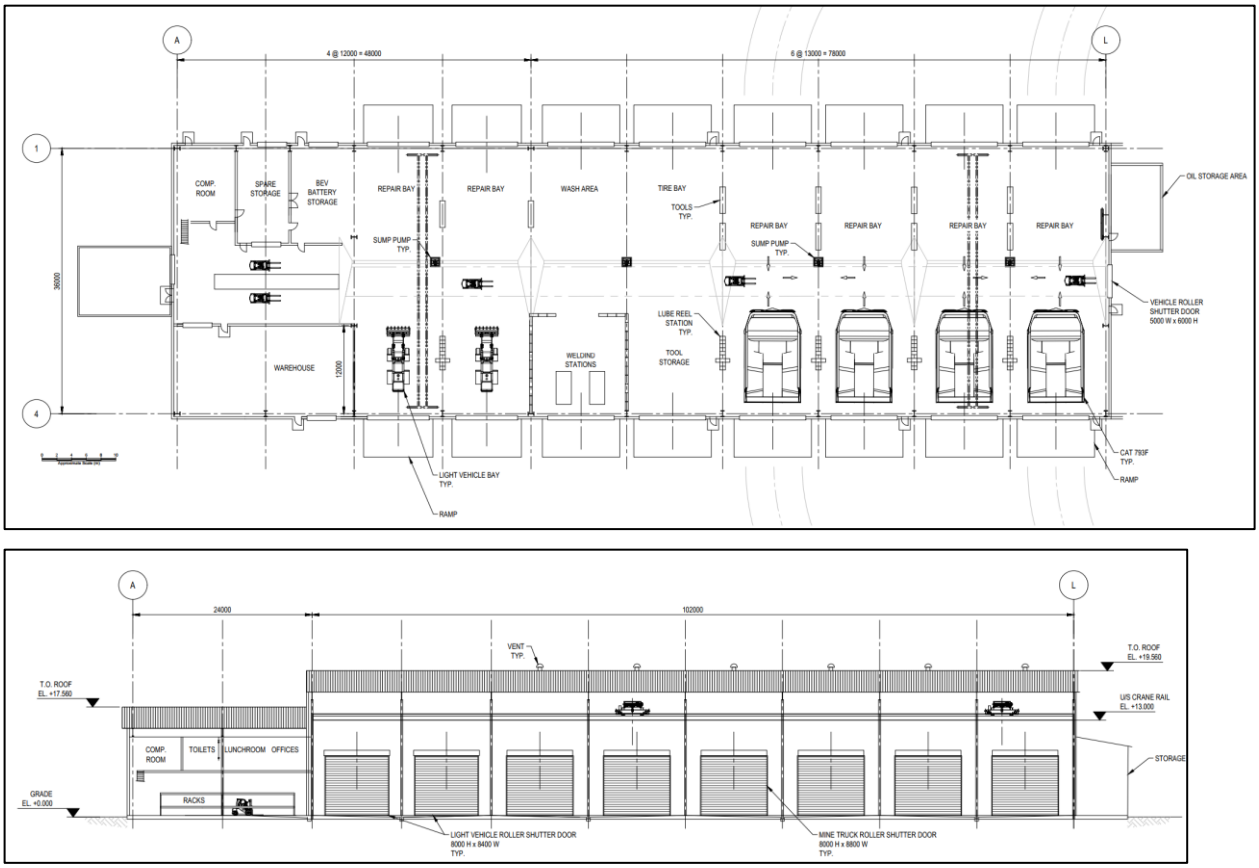
Adjacent to the process plant lies the truck shop, shown below in Figure 18-12. This is a pre-engineered 100 m x 36 m insulated steel structure founded on concrete piles and slab. The shop consists of 8 main repair bays (13 m width) and 4 light vehicle repair bays (12 m width) plus associated wash bay, tire bay tool storage and welding station. The facility is designed to allow drive through access for 240t mine trucks via 8 m x 8.5 m roller shutter doors on either side. The repair bays are served by 3 overhead cranes.

Equipment and tools can be moved between bays via a central accessway designed for heavy forklift use. A smaller roller door at the end of the workshop provides forklift access.

Offices, a lunchroom, ablutions, and an equipment store are provided via a 24 m x 36 m area on the northwest side of the shop. This area has a lower roofline (17.5 m vs 20 m for the main truck shop).

Scrubber-equipped ventilation systems are installed to handle welding fumes, and normal HVAC systems are provided. The LNG power plant heat recovery system can provide baseline heating capacity in winter months.

Figure 18-12: Truck Shop Plan & Elevation



Source: Halyard 2023

18.6.3 Mine Dry

A modular mine dry consisting of showers/ablutions, lockers and dry baskets is provided for construction and operations accommodation, consisting of 10 modular units adjacent to the main camp. The dry is designed to accommodate mine and plant personnel, although typically mine/plant shifts changes will be staggered to reduce operational loads on this and other camp systems & services.

18.6.4 Camp

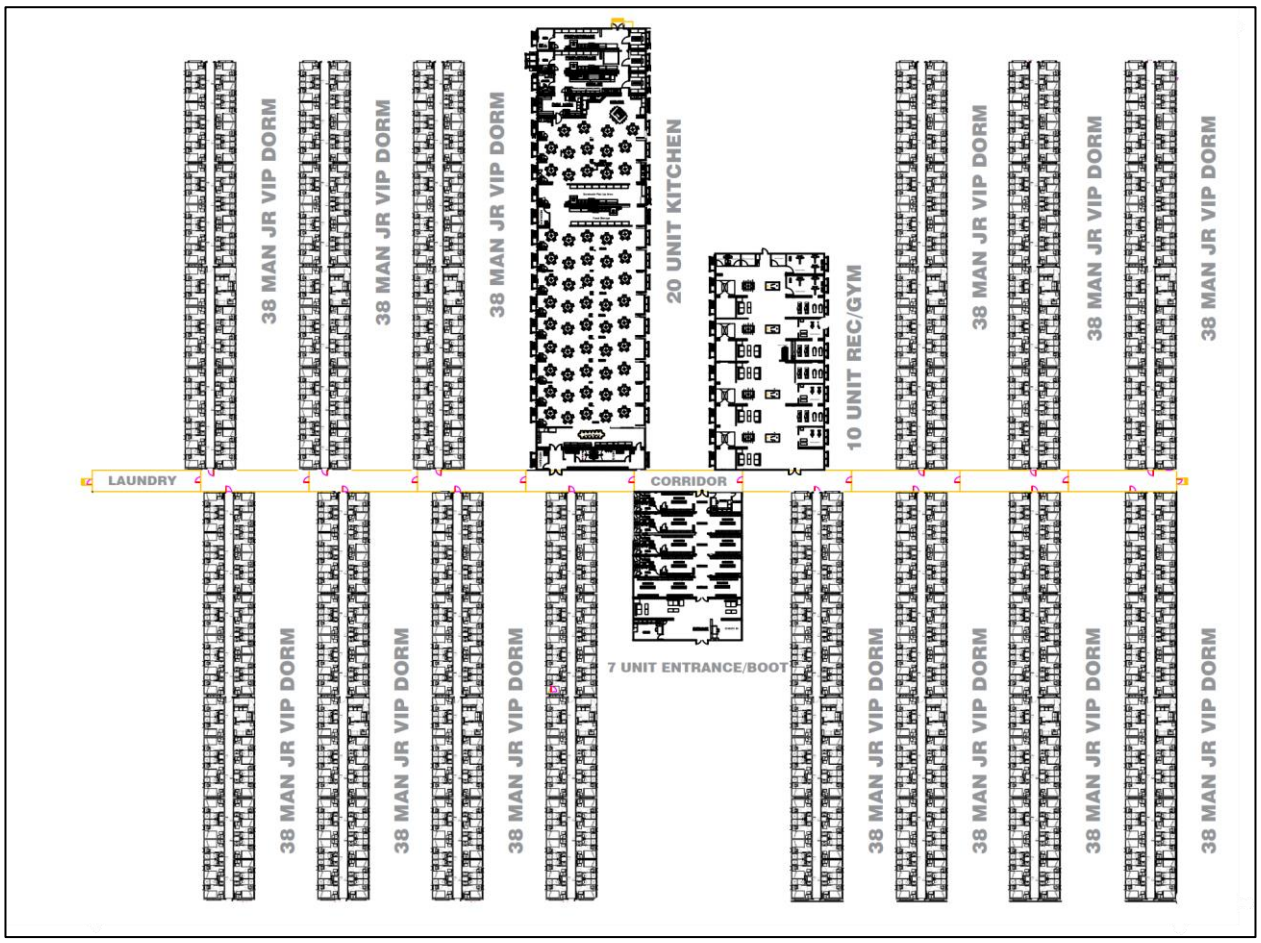
A 500-person camp is provided for construction and operations accommodation, shown in Figure 18-13. The camp is constructed using 165 modular 12 m long units and occupies approximately 2.6 hectares of prepared ground. Units would be founded on piles for long term stability. The camp includes the following facilities:

- 20-unit kitchen and dining area (to seat ~300 persons)
- 10-unit gym and recreation area

- 14 dormitories consisting of single occupancy rooms with private washrooms
- laundry unit
- 7-unit boot room and entrance facility
- 10 arctic corridors
- wastewater treatment facilities
- potable water treatment/storage facilities

The camp is established early in the construction schedule and will be made available to contract construction personnel as the project is built.

Figure 18-13: 500 Person Camp, Typical Plan



Source: Torch Industries 2023

18.6.5 Domestic and Potable Water Treatment Plants

A wastewater treatment plant will be installed in the vicinity of the camp. This modular unit is designed to treat domestic wastewater originating from the camp, the process plant and office facilities. A number of modular membrane bioreactor units are suggested at this stage in order to bring water to a quality that is suitable for recycle or discharge.

18.6.6 Potable Water Treatment Plants

Potable water treatment plants will be used to provide all on-site potable water requirements, including the camp, the process plant, truck shop and offices. Modular (containerised) potable water treatment plants will utilize Reverse Osmosis (RO) to treat raw water and bring it to a level that is suitable for human consumption.

18.6.7 Site Power Supply

The Project site consumes approximately 510,000 MWh of power annually (process plant, workshops, mine infrastructure, construction/operations camp, auxiliary buildings, overland conveyor etc.) under average conditions, and as the site location is a considerable distance from current power transmission infrastructure, the Project must rely on locally generated power. To this end, a 93MW n+1 LNG-fueled power station has been included in the Project scope, and this is designed, supplied, operated, and maintained by a contractor as a turnkey power purchase agreement ("PPA").

A summary of the main site power consumers is given in Table 18-1 below.

Table 18-1: Site Power Requirements

Item/Area	kW Installed	MWh consumed p.a.
Process Plant	84,000	495,000
500 Person Camp	1800	8,300
Offices, assay lab, warehouse, gatehouse, weighscale, parking etc.	180	535
Water and effluent treatment	320	1,800
Mine Dry & truck shop	180	880
TMF (return water services)	200	1200
Overland Conveyor	2700	1600
Explosives Plant	30	100
Mine Services (pit area)	50	250
Misc Other items	100	330
Acid Storage/Offloading	10	52
Total Project	89,600	510,000

Power is distributed to the various site areas using a combination of buried cables (covered trenches) and overhead lines. Voltages used in various site electrical systems are given in Table 18-2 below.

Table 18-2: Equipment Voltages

Item/Area	Voltage (volts)
3-Phase Systems	
As generated	13,800
Overhead Lines – Site distribution	13,800
Mill Motors (VFD)	13,800
Large Motors (> 200 kW)	4,160
Small motors (< 200 kW)	600
Welding socket supply	600
Single Phase Systems	
V. Small motors (< 0.5kW)	120
Lighting	120
Instrumentation	120
Heat Tracing	120

18.6.8 Site Admin Offices

A prefabricated building system consisting of 14 prefabricated modules will be installed with roughly 900 m^2 available for management and administrative personnel. The building includes offices, meeting rooms, a lunchroom, a conference room, ablutions and two discrete open workspaces (see Figure 18-14).

Figure 18-14: 80 Person office Complex

Source: Halyard 2023

18.6.9 Warehouse

Warehousing facilities are provided via a 55 m x 25 m x 22 m high insulated steel structure, located on a concrete slab. The warehouse building is fitted with roller doors for forklift access and walk-in doors for personnel. Shelving systems will hold spare parts and supplies/consumables for mine and plant operations (excluding process plant reagents, which would be stored in the dedicated facility at the process plant). The warehouse is adjacent and connected to the plant offices and warehouse admin/management space would be provided in that building.

18.6.10 Communications

Site-wide communications are provided via a fibre optic distribution system. Telephones (VOIP style), site intranet and broadband internet access will be distributed by this network. Internet access is provided by a satellite service provider.

Radio communication for data systems have been included in the mine capital that would access the fibre system. Radio connections for the mine equipment would allow voice and data communication.

18.6.11 Laydown Area

A crushed gravel laydown area of roughly 1,000 m^2 adjacent to the warehouse will be established as part of the site earthworks, for use as construction and subsequently operational laydown/storage facilities.

18.6.12 Fuel Storage & Distribution

A fuel storage tank farm and fueling facilities are located at the west side of the process plant, so as to better service mine traffic (mine trucks being the main diesel consumers). Conventional (highway) traffic facilities are also provided, but in an area distinctly separate from the mine vehicle facilities.

The fuel storage and fuelling area includes diesel fuel tanks, a gasoline tank, fuel offloading equipment, fuel dispensing system for haulage trucks and fuel trucks for remote dispensing. The facilities are appropriately bermed and collision protected with bollards.

18.6.13 Weigh Scale

A 90-tonne capacity weigh-scale will be installed on the east side of the lower site for vehicles up to B-train size. The scale is used to accurately weigh arriving and departing commercial vehicles so as to determine masses delivered and/or shipped (in the case of copper/nickel concentrates).

The scale includes a pc-based control system that is equipped with a local ticket printer in addition to connectivity to the site local area network.

18.6.14 Fire Protection System

A diesel-powered firewater pump and electric jockey pump combination will be installed in a heated/insulated building adjacent to the process water pond. The jockey pump maintains nominal/standby pipeline pressure, and the diesel pump kicks in on a low-pressure switch to supply nominal hydrant flows. The network of distribution piping includes supply to the process plant, truck shop, offices, camp, assay lab and other nearby buildings but excludes the overland conveyor and the crushing station. Approximately 25 hydrants are included. Water for firefighting service is drawn from the process water pond. This system does not provide protection for the overland conveyor, which has its own system.

18.6.15 Waste Disposal and Landfill

An area dedicated to landfill of waste, together with recycling and hazardous waste disposal facilities are provided on site to handle all waste types as they are generated by the Project. Procurement policies will limit the use of hazardous materials on site, together with preference towards re-usable packaging and other site policies will control the disposal and recycling of all waste streams. The waste disposal facility is located adjacent to the process water storage pond and includes the following:

- hazardous substance storage building
- recycling facility
- scrap metal handling
- incinerator for hazardous waste
- small landfill area (<1 ha) for non-hazardous waste

The LNG fired incinerator will be used for the disposal of certain waste items, including hazardous items and sewage treatment plant residues.

Garbage collection vehicles and personnel are allowed for within the G&A scope and budget.

18.6.16 Mine/Plant Dry Facility

The dry facility for operations personnel will be housed in six connected modular units attached directly to the office complex and connected to the process plan via enclosed corridor.

The dry is scaled to accommodate a total of 250 employees and will serve the mines, maintenance, and process plants. Start and end times for times for work groups will be offset slightly to reduce the number of personnel passing through the dry at any given time.

The dry will consist of:

- dry baskets, 2.5 modules
- lockers, 2.5 modules
- showers/washrooms, 1 module

18.6.17 Maintenance Shop

Maintenance of process plant equipment will be conducted within the process plant building, within a dedicated maintenance area. This area is served by overhead crane and forklift and equipped with tools and equipment to perform routine maintenance of the majority of items in the plant.

18.6.18 Assay Lab

An on-site assay lab will be required to support processing operations, mine geologists (i.e., blasthole samples) and to a lesser extent, exploration activities. For this study, an all-inclusive proposal was obtained from a well-established 3rd party analytical group with existing offices in Whitehorse. A turnkey contract solution was proposed including commissioning, operation, and established QA/QC/round robin services.

The on-site laboratory would operate full time (24/7, 365 days per year) and would determine the values of copper, nickel, sulphur, and iron contained in the samples. No on-site fire assay facilities would be provided, so samples for PGM analysis would be sent to contractor assaying facilities in Vancouver.

The site laboratory facilities would include sample preparation equipment (crushers, pulverizers, dryers, dust management/collection, drying, scales etc.) and an analytical section including Leco analyser for sulphur analysis, and an AA machine for other base metals.

Three 18.3 m x 3 m modular units will make up the assay lab. The lab is located next to the processing plant so as to allow easy (covered) access.

The lab equipment and technicians will be provided by a third party as a service to ensure that results are independent and impartial.

Power and HVAC for the laboratory would be fed from the main process plant building.

18.6.19 Core Shed

A simple core shed, and storage area is provided, to allow ongoing geological work and regional exploration. A 10 m x 30 m pre-engineered insulated steel structure will be located on a concrete slab

and foundation. The core shed will be equipped with core handling/cutting/logging facilities and the storage area will be equipped with sample storage shelving.

Power would be fed from the admin/camp area and heating would be electric baseboard units.

18.7 Power Plant and LNG Facilities

The power plant contractor will establish, operate, and maintain a new 200,000 gallon per day liquefaction facility at the existing distribution facilities in Fort Nelson, BC. From this installation, LNG is transported to site using a dedicated fleet of B-train style trailers (roughly 17,000 gallons per load). Approximately 10 loads per day will be required by the Project. Trucks will be weighed and off-loaded at the on-site LNG storage facilities. Re-gasification/vaporization facilities are installed near the power generation plant, together with regulation and distribution piping. The vaporization process makes use of exhaust heat created by the power generation equipment.

The power plant requires approximately 170,000 gallons (14,500 GJ) of LNG fuel per day and given winter weather concerns, a five-day on-site storage installation is provided to ensure service reliability. An 800,000-gallon on-site LNG storage facility consisting of 8 x 100,000-gallon vertical bullet-type storage tanks is therefore included in the power plant supply package.

The power plant itself includes 7 natural gas turbines (rated for 10MW each) plus an additional 5 x 5MW steam turbines designed to capitalize on the heat generated by the main gas turbines, giving rise to increased fuel efficiency. Turbines and associated power generation/heat recovery systems, together with control room, ablutions and offices would be housed within a pre-engineered, insulated steel structure with reinforced concrete footings and floor. All significant foundations will incorporate caissons to ensure stability during possible seismic events.

18.7.1 Wind Energy

A provision for wind power has been included in the cost estimate. This would be a turnkey operation in a Build, Own, Operate (BOO) scenario. Discussions with Wind Power vendors indicated that this may be a viable option considering the location of the Nickel Shäw project. The wind turbines proposed would include battery storage to help mitigate the variation possible in wind power generation.

For the purpose of the Nickel Shäw project, the assumption that 50% of the power could be provided by wind energy at an all-in cost of $0.15/ kWhr. This offsets the cost of the LNG power which is generated at a cost of $0.24/ kWhr giving a blended rate of $0.194/ kWhr.

Wind projects in southern Alberta have been highly successful with large scale wind farms of 200 MW or more and competitive costs per kilowatt. As the project is not connected to a grid beyond the project, the financial risk of installing the power system needs to be included in the contract rate and therefore is significantly higher than could be obtained connected to the grid.

The next phase of study for the Project needs to complete the proper wind power studies to assess and prepare for permitting of Wind Power Generation. This includes environmental studies of wildlife both day and night, as well as wind surveys. Initial information for wind and wind direction have been collected as part of environmental baseline study work but this must be expanded to properly outline the power profile possible.

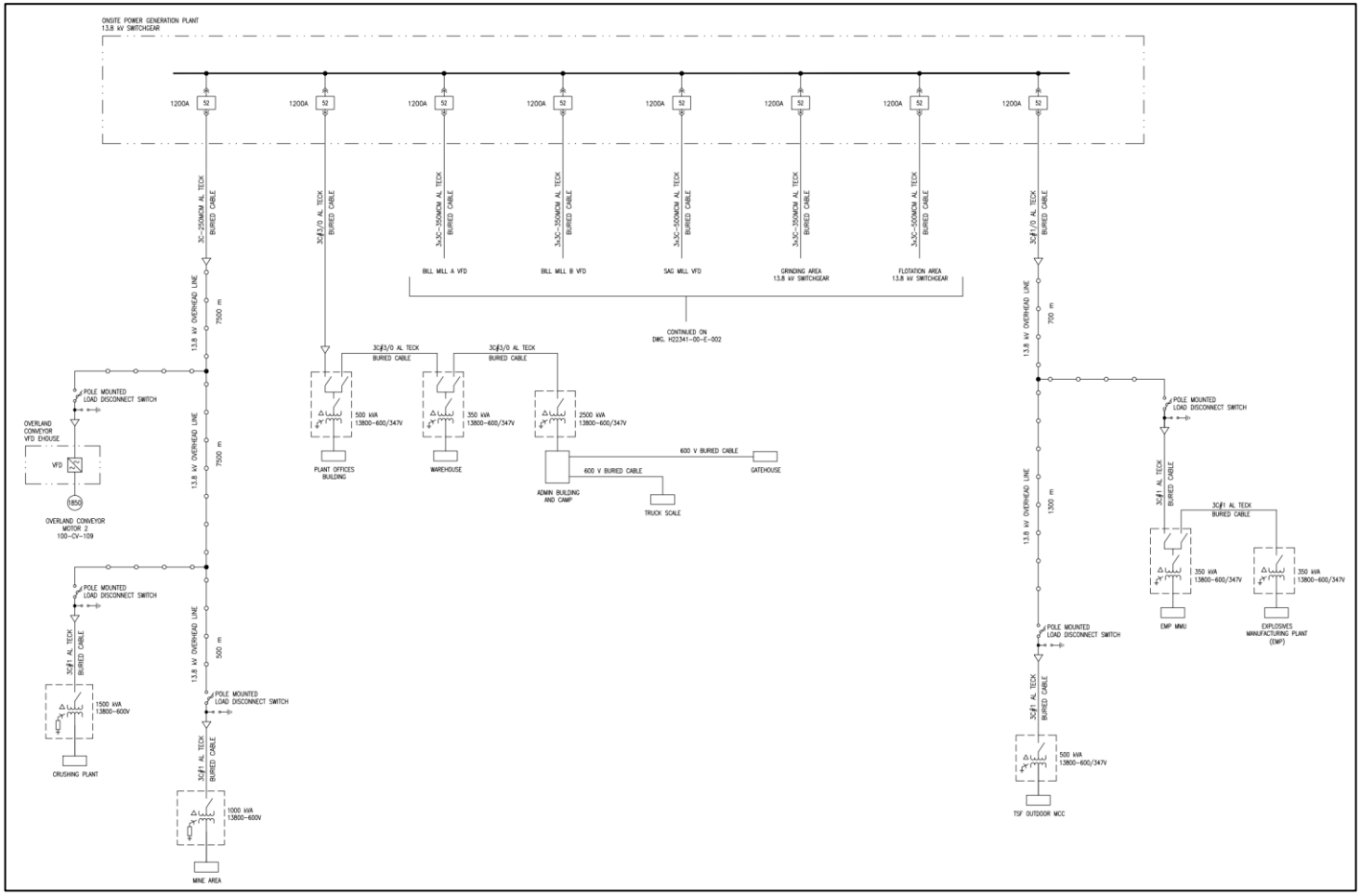
18.7.2 Power Distribution

Preliminary site power distribution designs have been developed for the Project at this stage, as summarized via the single line diagrams in Figure 18-15 and Figure 18-16 overleaf.

From switchgear within the power generation plant, power will be distributed to various site locations using overhead lines or buried cables. Overhead lines will feed power at 13.8 kV to the primary crushing area (following the overland conveyor routing), the tailing management facility (via the tailings and return water pipe corridors) and the explosives manufacturing plant (alongside the access road) whilst other loads within the lower site area will be fed using a system of buried 13.8 kV cables.

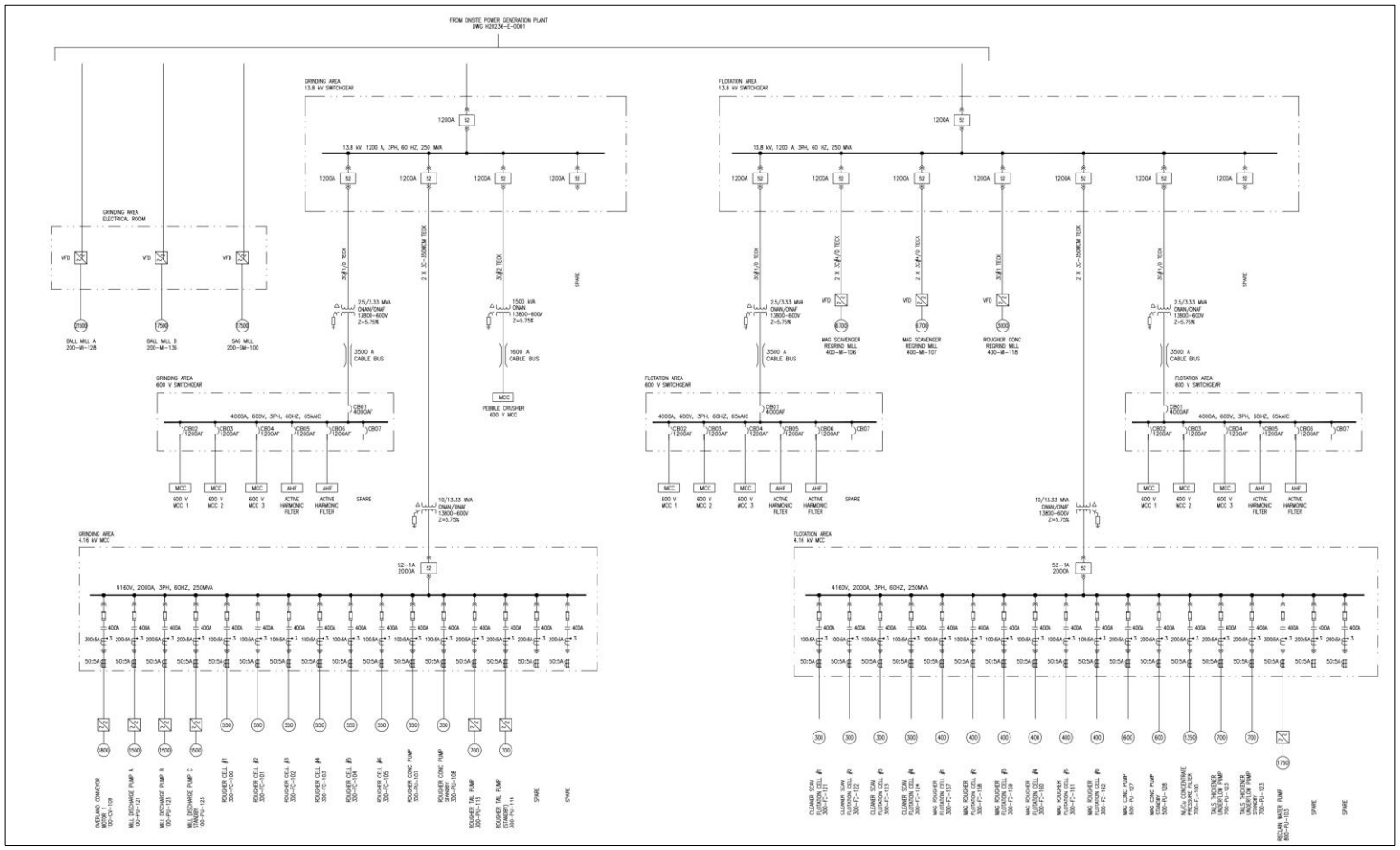
Transformers and switching at each location will step the voltage down from 13.8 kV to 600 V and distribute the power to the associated loads.

Figure 18-15: Single Line Diagram



Source: Halyard 2023

Figure 18-16: Single Line Diagram



Source: Halyard 2023

18.8 Access Roads

18.8.1 Site Access Road

The main road connecting the camp and lower site facilities will be with a gravel access off of the Alaska Highway. The road will follow the existing access road route for approximately 5.5 km, then branch off via a new 1.8 km section of gravel road to the lower site access point (parking area, security etc.). The road is unsealed and approximately 8 m in width with trafficable shoulders of approximately 2.5 m width.

18.8.2 Plant Access Road

Gravel access roads are provided in and around the lower site, and also to various remote locations including the tailings management facility and the explosives manufacturing plant.

18.8.3 Tailings Management Facility Access Road

The 1.6 km tailings access road will be a gravel access road to the tailings management facility and supporting quarry with mine equipment. This road is expected to serve as access only as opposed to production use with the quarry fleet traveling to the Mine Truck Shop with radio-controlled communication. Light vehicle traffic supporting the TMF will also use this road under radio-controlled traffic.

18.8.4 Explosives Facility Access Road

The Explosives facility is located along the route to the TMF and clear of personnel in the camp. This location is provided to the explosives vendor to store their equipment and prepare the product for delivery to the mine each day. All maintenance of explosive equipment is completed in this location by vendor personnel.

18.8.5 Mine to Mill

Multiple haul roads are planned to be constructed on site for transporting mineralization and waste from the open pit to their designated destinations. The haul roads will also connect to the crusher and mine services facilities. Service roads are to be constructed to allow for vehicle traffic to the explosives facility, camps, airstrip, discharge point, reclaimed pond, and mine water treatment facility.

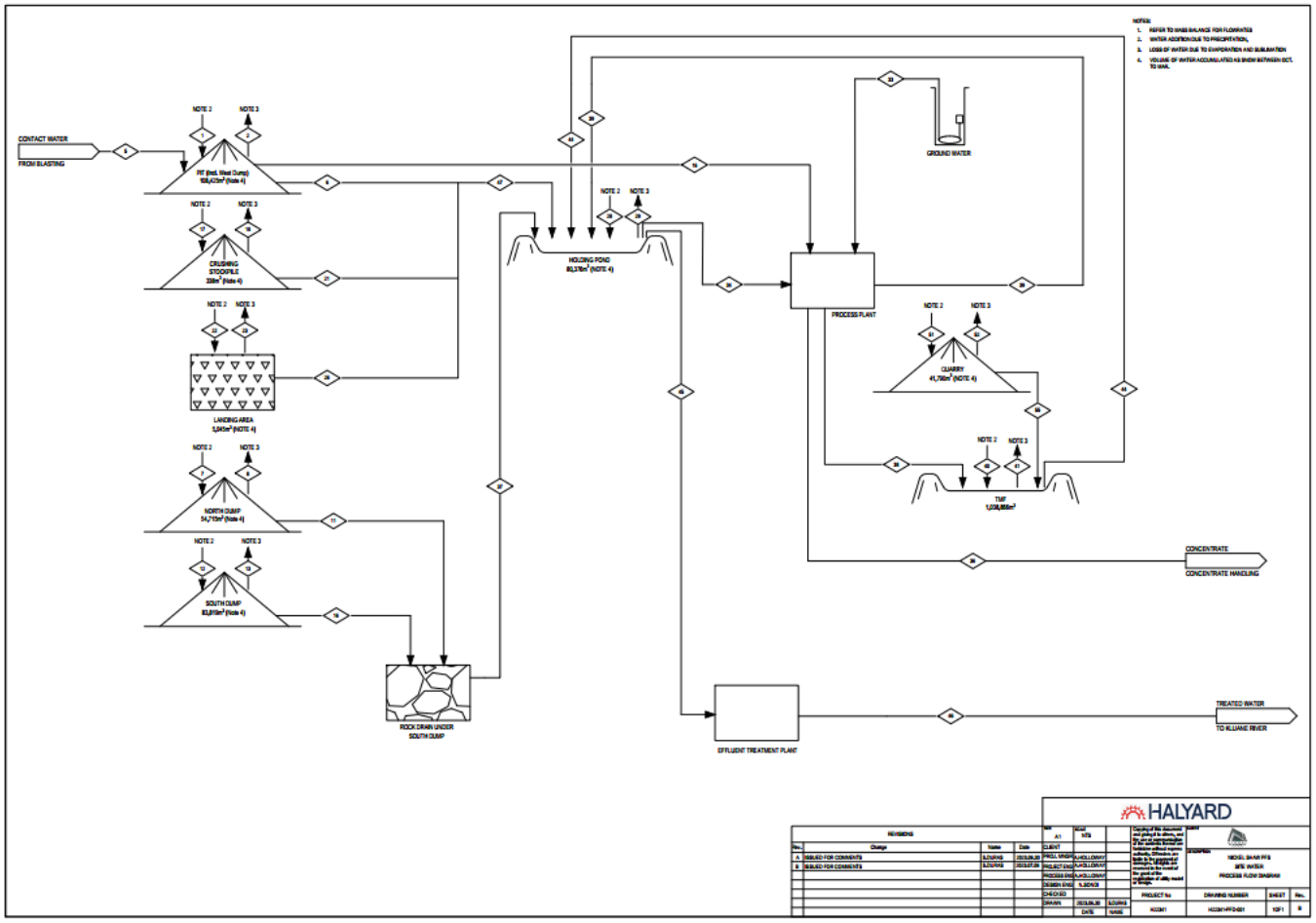
18.9 Site Water Management

The site water management strategy is to, to the extent possible, divert or deflect non-contact surface runoff water away from the project site. Contact water within the site and any other site-influenced contact water will be collected in local ponds and directed to a holding pond at the lower site. The holding pond water is used primarily as process water in the mineral processing plant but can be optionally discharged to the environment via the effluent treatment plant.

Wherever feasible, gravity flow has been utilized to convey water.

The water balance is depicted in Figure 18-17.

Figure 18-17: Site Water Process Flow Diagram



Source: Halyard, 2023

18.9.1 Non-Contact Water Management

Perimeter deflection berms and diversion ditches will be constructed around the site to minimize site catchment area and to facilitate drainage of non-contact water away from the site. Water outside of the catchment area will not be treated and is not considered within the water balance.

Within the site, the only source of non-contact water is from ground water that could be required occasionally as raw water for the process plant. Water would be drawn either from wells or the Kluane river and directed to the process plant. The requirement is seasonal and can be managed to a great extent by storing water within the various site storage facilities.

18.9.2 Contact Water Management

Site Runoff

Contact water refers to water that is or has been in contact with mining activities or mined material. Surface contact water collection will be undertaken by grading and channeling the site towards lined collection sumps. From the sump, the water will be sent to a holding pond located near the process plant by pipes running alongside the overland conveyor.

There will be 3 dumps, 1 stockpile and 1 workshop area (Landing Area) on the site:

- pit and West Dump
- North Dump
- South Dump
- crushing stockpile
- landing area

The South Dump shall be built on a rock drain to allow for some pre-filtration of the water. Water resulting from precipitation onto the North Dump and South Dump shall be drained into the rock drain and collected in a sump. This water will then be conveyed through a pipe that runs beside the overland conveyor to the lower holding pond. Hourly runoff from the North Dump and South Dump variable, but has been estimated to average roughly 90 m^3/h.

Water from the pit and West Dump, seepage water from the crushing stockpile, and run-off water from the landing area shall all be diverted to a separate sump and conveyed through a second pipeline to the holding pond. Again, runoff from the pit and West Dump, crushing stockpile and landing area can be expected to be variable, but has been estimated to average approximately 130 m3/h.

The level of contaminants in the water is not fully known at this stage of project development, and so the design includes two pipelines running to the holding pond from the crushing area allowing flexibility if the need for additional treatment of the contact water arises.

Site runoff was calculated using precipitation data from a climate station located in Burwash Airport, a runoff coefficient of 0.85 (value utilized for industrial sites) and an assumed area of the afore mentioned stockpiles and dumps.

During winter months (October to March), it is assumed that 90% of the water will be entrapped as ice or snow until the May freshet. It is assumed that no evaporation shall occur during the winter months

but 35% loss due to sublimation will occur. Additionally, it is assumed that all the ice and snow shall report as runoff during the months of April and May.

Process Plant, and Tailings Management Facility (TMF)

The process plant requires approximately 5,000 m^3/h of process water from the holding pond along with roughly 70 m^3/h of raw water which is assumed to be substantially free of solids and neutral pH. The water balance assumes a 92% availability for the process plant. Thickener overflows from the process plant report directly to the holding pond and will do so year-round. Other water discharges from the process plant include approximately 1,300 m^3/h of water in tailing slurry to the TMF, and <20 m^3/h of water shipped in trucks as copper/nickel concentrate.

Decanted water from the TMF is pumped back to the holding pond for re-use in the process plant. This amounts to almost 800 m^3/h of water on average. It is assumed that approximately 60% of the tailings water reports back to the holding pond at all times of the year (the remainder being held interstitially within the TMF) and also that up to 40% of the water within the TMF becomes frozen during the winter months.

Holding Pond and Effluent Treatment Plant (ETP)

Water that has been collected from the crushing area can report either to the holding pond or to the TMF by way of ditches, channels, and pipelines. Thickener overflows from the process plant along with decanted water from the TMF shall also report to the holding pond.

Water flows from the upper site area do not provide sufficient make-up volume for the Process Plant at all times of the year. Between April and September, a surplus of water will be present, whilst in the winter months, a shortage will tend to occur. The Holding Pond and the storage facilities at the mine and the TMF have been sized to buffer these seasonal imbalances, thereby limiting the Holding Pond size to 250,000 m^3.

While there may be fluctuations during the year, on average the site has a water surplus and therefore treatment and discharge at certain times has been allowed for. The overall capacity of various ponds also allows for year-round operation of an Effluent Treatment plant, should that be required.

Based upon the various pond capacities and the expected seasonal variation of water flow, a 250 m^3/h effluent treatment plant (ETP) has been specified, assuming an availability of 92%. At the time of this study the Kluane River has year-round flow, with the lowest flow being 5,300 m^3/h in April and the mean yearly flow being almost 34,000 m^3/h.

Based upon the above, it was estimated that the holding pond should have a capacity of roughly 200,000 m^3. Due to the process plant water requirement, it has been assumed that the holding pond will be designed such that there will be liquid water available for the process plant at all times of the year.

18.9.3 Assumptions and Further Investigations

The following assumptions have been used to construct the preliminary water balance for the Project:

- rate of evaporation on site was assumed to be the same as that measured at Whitehorse
- site runoff coefficient was assumed to be 0.85, typical for an industrial site

- sublimation losses assumed to be 35%
- holding pond will always have sufficient liquid water to supply the process water plant

As the Project advances, the following items need further investigation and more detailed engineering:

- ice thickness through the winter months within the area
- sublimation loss shall need to be better estimated using climactic data of the area (sunshine days, snow cover, wind speeds)
- site ground cover and material to better estimate the runoff coefficient of the plant

18.10 Tailings Management Facility

A thickened slurry tailings stream will be produced by the tailings thickener within the process plant. The 60% solids (by weight) slurry from the tailings thickener will be transported by pipeline to the management facility – initially by gravity, but in later years using pumps (as the TMF crest height increases).

A conceptual design for the Tailings Management Facility (TMF) was completed by AGP, including location, layout, construction sequencing, plans for deposition of tailings, impoundment structures, related water management infrastructure conceptual design. The TMF embankment will be a zoned ROM waste rock embankment with upstream sand and gravel filters in the downstream construction TMF. Filters will be produced on site through crushing and screening of locally sourced materials.

The design makes the following assumptions:

- location as detailed in the previous section
- TMF feed will be a nominal 45,000 tpd dry solids, transported by pipeline as a thickened slurry; nominal density of slurry would be 60% solids
- a supernatant pond would be built on the east side of the TMF; supernatant water will be recovered by barge and returned to the process plant by pumps
- deposition will occur from the perimeter of the facility, and dykes will be built in different stages as required

18.10.1 Geochemistry

Information to date on the tailings has indicated that the material for tailings will be non-acid generating (NAG).

The tailings management facility is expected to store 298.1 Mt of tailings, which corresponds to a LOM of 20 years of anticipated production. The TMF capacity has been evaluated at conceptual level and will need to be validated in further stages of the Project.

18.10.2 Tailings Production and Characteristics

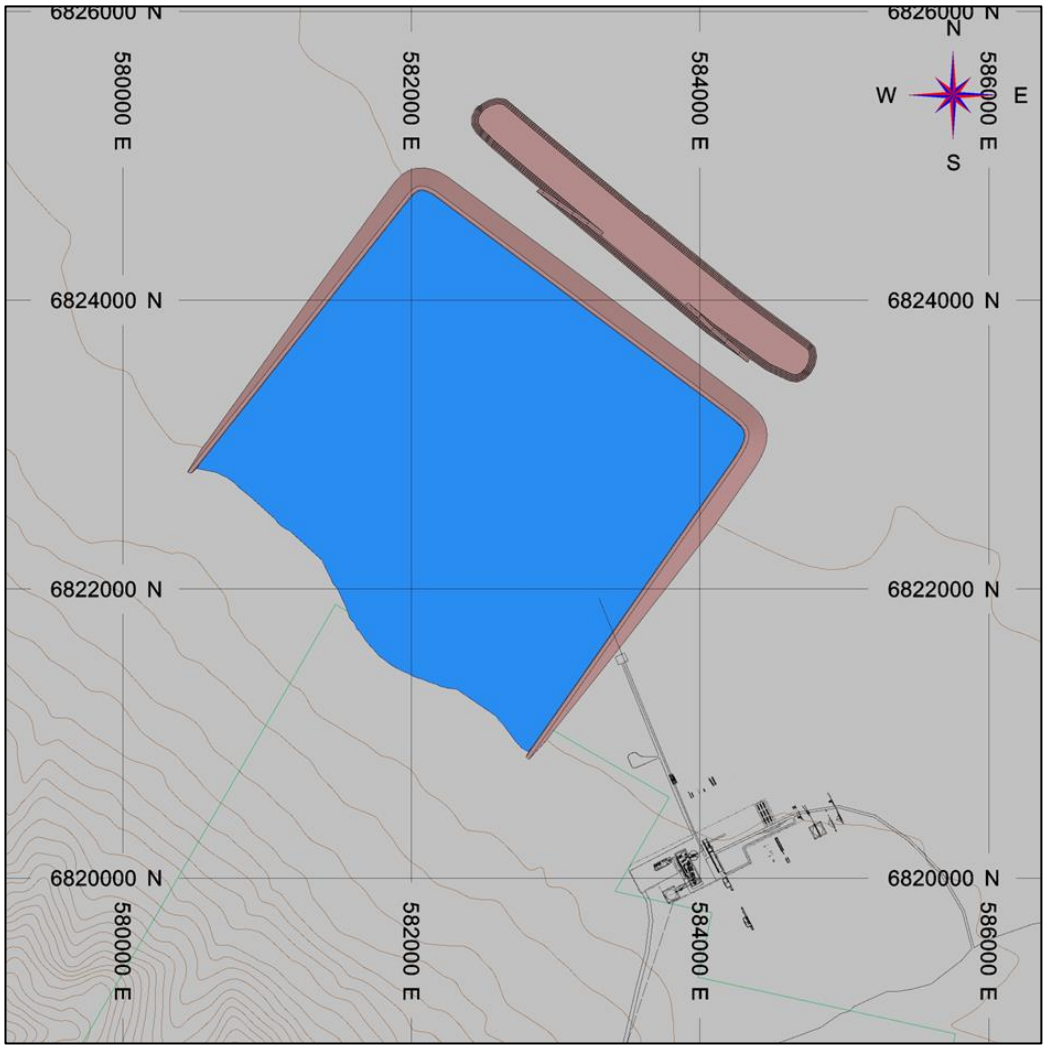
The physical properties of slurry tailings are assumed for the purposes of this study to be as follows:

- slurry characteristics: 55 - 60% solids (w/w)
- tailings beach slope: 2%

- specific gravity of tailings is taken as 2.85
- tailings considered as non-acid generating and non-metal leaching material at this stage of project

The TMF is located north of the plant facilities (Figure 18-18). It will be an unlined facility constructed from quarry material mined adjacent to the TMF.

Figure 18-18: Nickel Creek Project Tailings Management Facility and Quarry



Source: AGP 2023

The TMF has been designed to accommodate the mill feed tonnage of 307.7 million tonnes. Placement density for the thickened tails is expected to be 1.5 t/m^3. With the consideration for mass pull, a total volume of 198.8 million cubic metres will need to be placed within the TMF.

The tailings embankment will have a base elevation of 802 masl and a top of 850 masl. A freeboard distance of 2 metres has been included for the final position of the tailings at the end of mining.

The embankment construction will be in a downstream manner on an annual basis. Construction will be completed with a separate owner team responsible for the quarry to supply embankment and filter materials for the TMF. Lifts will be 2 metres in height with compaction and filter placement. Total quarry material requirements are 43.9 million m^3. The final level of the TMF embankment will be 26 metres wide and the facility will be 48 metres above the lowest point in the TMF area.

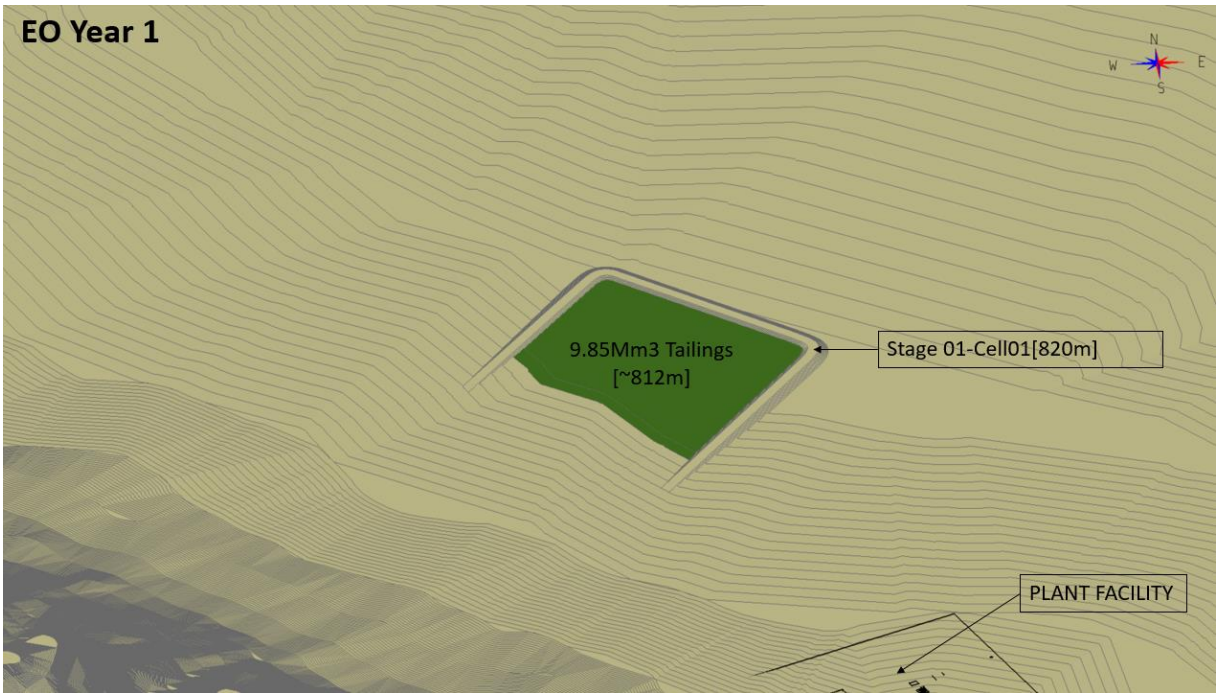
The quarry fleet will be comprised of two 140 mm drills, 2- 13 m^3 loaders, 5 – 91 metric tonne trucks, three dozers and the normal support equipment fleet including compactors and crushing unit for filter construction.

The facility will be built with a smaller initial cell closer to the plant, then a second temporary cell constructed to the northwest of the initial cell. The second cell establishes the outline of the facility which will then be built in a downstream construction manner. The facility utilizes the natural topography to grow vertically while only needing to maintain three sides of embankment.

The initial cell (Stage 1) will have 35 million m^3 of capacity, sufficient for 2.5 years of storage capacity. The embankment will rise from 802 masl to 826 masl. The second cell will be constructed starting in Year 2 and will into the initial cell.

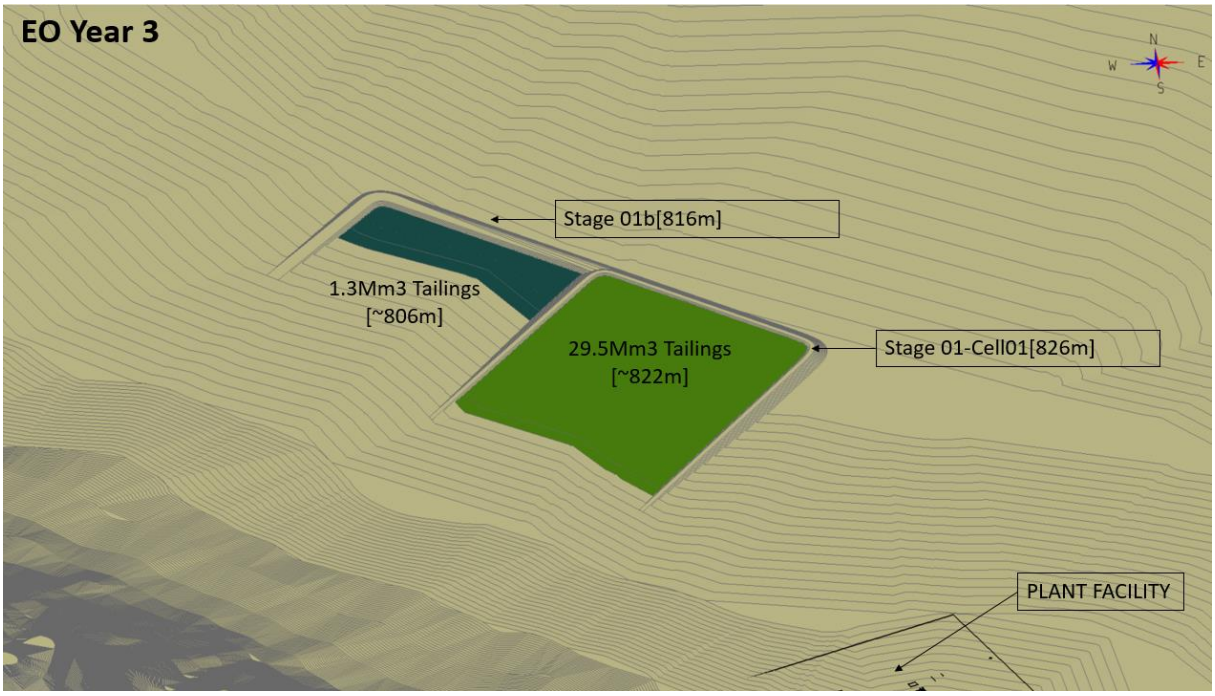
Subsequent lifts of the combined structure (Stage 3) will bring it to 834 masl in Year 10 and the 848 level in Year 15 and final level in Year 20. The construction sequence is shown in Figure 18-19 to Figure 18-24.

Figure 18-19: TMF – End of Year 1



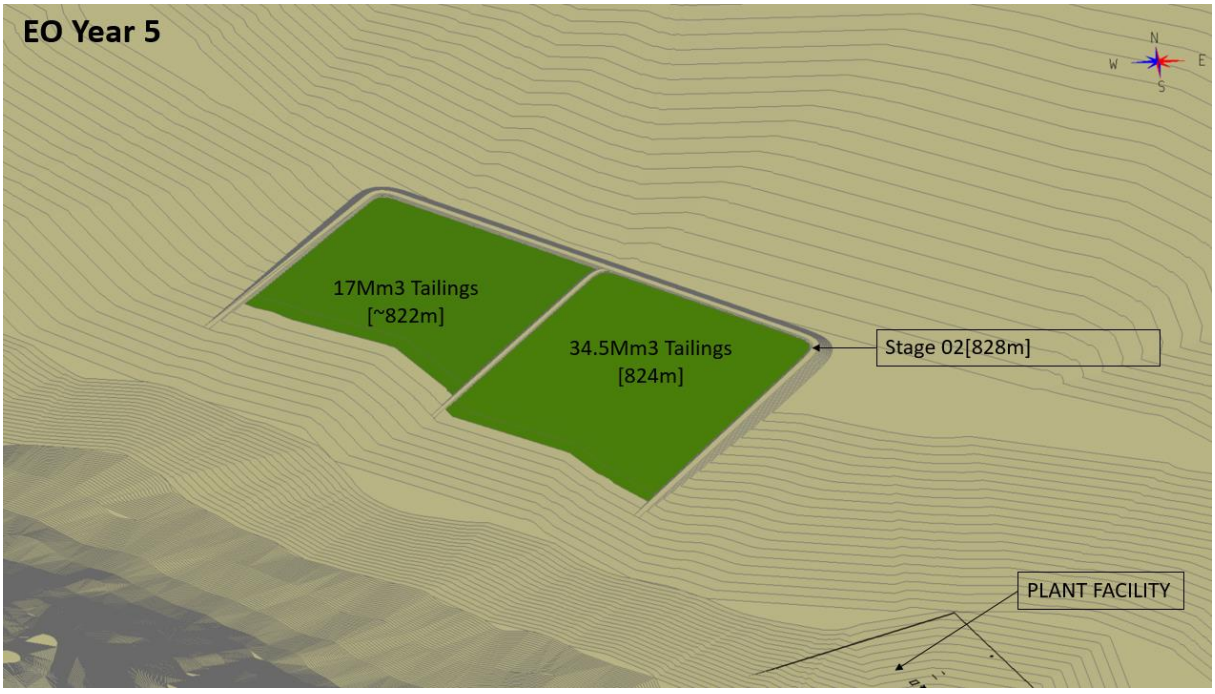
Source: AGP 2023

Figure 18-20: TMF – End of Year 3



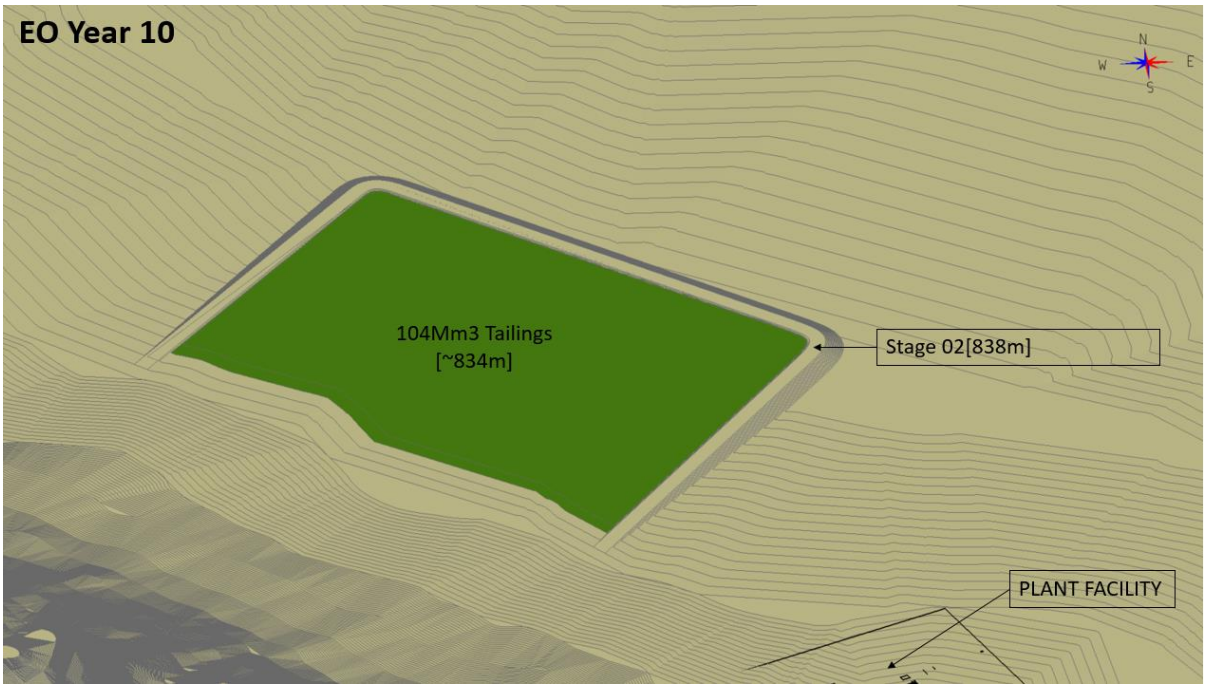
Source: AGP 2023

Figure 18-21: TMF Position – End of Year 5



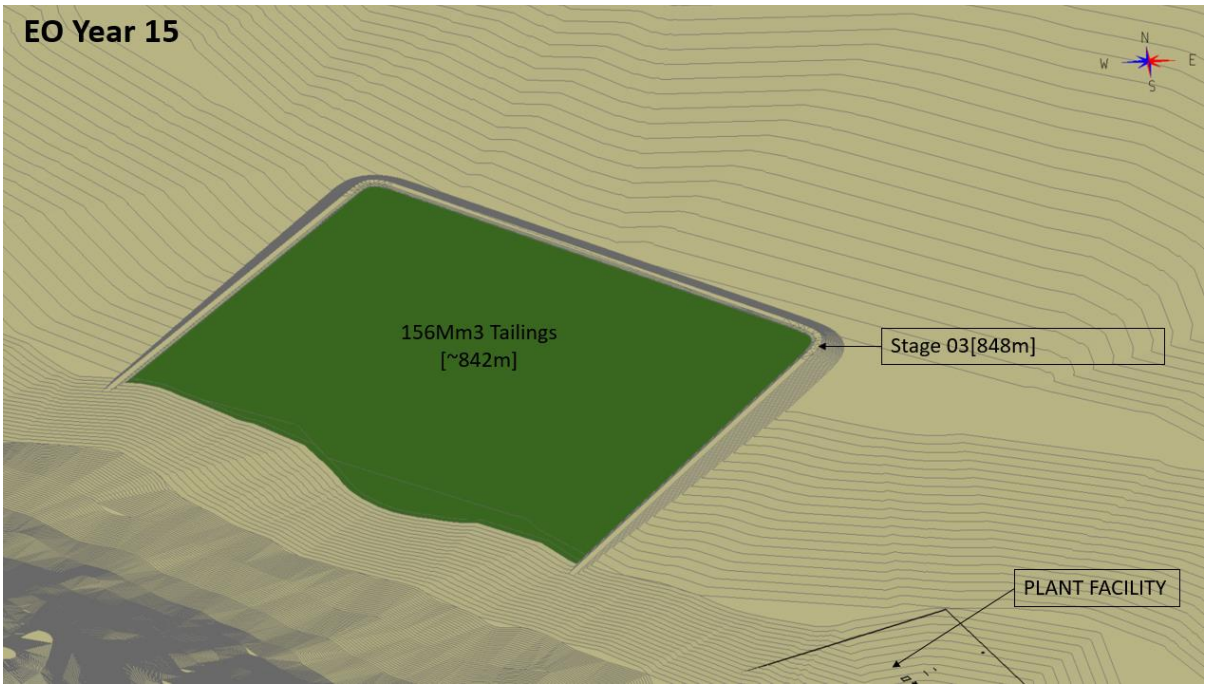
Source: AGP 2023

Figure 18-22: TMF Position – End of Year 10



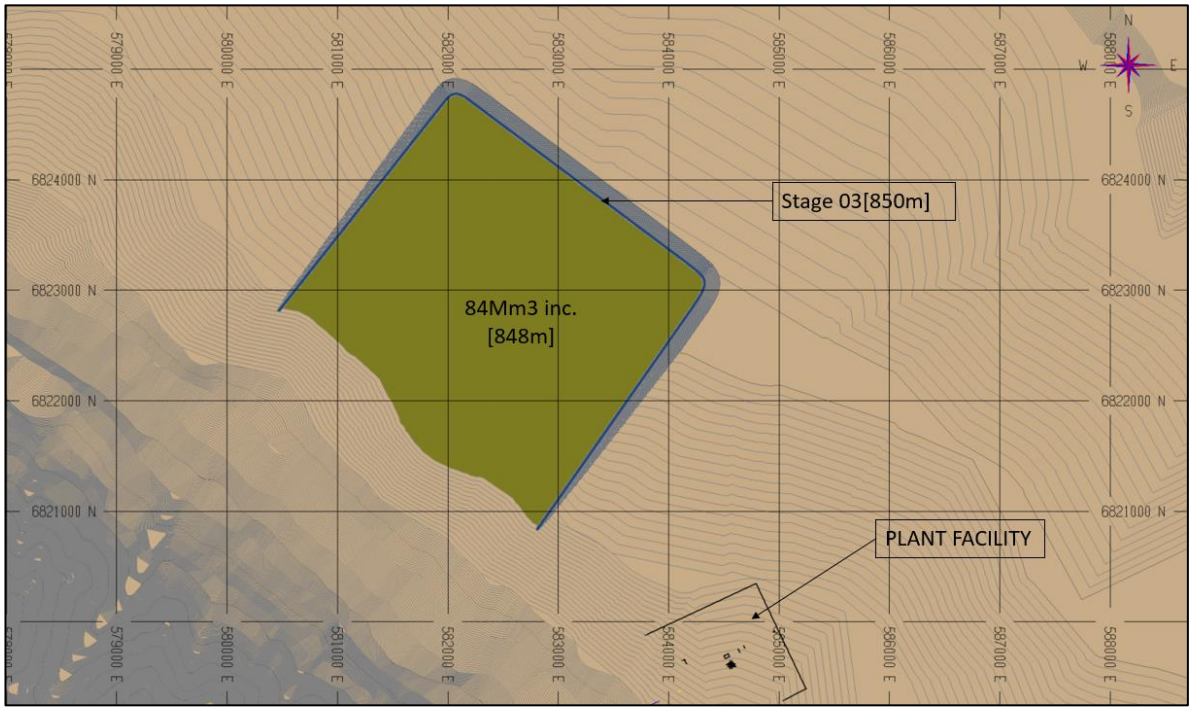
Source: AGP 2023

Figure 18-23: TMF Position – End of Year 15



Source: AGP 2023

Figure 18-24: TMF – Ultimate elevation Year 20



Source: AGP 2023

Surface water entry to the facilities will be controlled by ditching upslope of the TMF and diverted away from the facility during mining.

Seepage ponds will be constructed around the perimeter of the TMF and below the quarry for control of seepage from the TMF during mining and after closure.

Static testwork on samples of the tailings material has indicated that the material is not net acid generating. Kinetic testwork also confirms that potential for acid generation of the total tails is low but the testwork suggests the potential exceedance of water quality guidelines for the leaching of selenium in the total tailings.

The next stage of study will need to consider the development of a water quality model to predict the water quality in the receiving environment which will help inform the water management strategies in operations and closure.

18.11 Offsite Infrastructure

18.11.1 Offices (Whitehorse)

Rental office space in Whitehorse will be acquired as part of the G&A cost for the project. This will be utilized by various departments in dealings with various parties and purchasing.

18.11.2 Airstrip

The Project is located approximately 26-km from Burwash Landing Airport (CYDB) and so a site-specific airstrip is considered unnecessary. CYDB is a government operated site that includes a 1,500 m long x 150 m wide gravel runway and is operated year-round. For the PFS, AGP has assumed that this airport will serve as a key site access method during the construction, commissioning, and operational phases.

The airport is considered to be suitable for aircraft such as the Dash 8, ATR-42, or the DHC-6 Twin Otter.

An insulated and heated structure at the air strip will house de-icing and anti-icing equipment. This equipment is not intended for regular use and is intended to be deployed in emergency situations or when inclement weather would otherwise strand an aircraft on site.

18.11.3 Port Facilities

The study assumes that filtered flotation concentrates (copper, nickel, and bulk Cu-Ni) will be shipped in bulk from site to overseas markets via the Port of Skagway, using a fleet of trucks. Skagway is approximately 450km from site and has a history of handling similar concentrates of lead, zinc, and copper. Roughly 150,000 wet tonnes p.a. of copper, nickel and bulk concentrate would be shipped through the port.

In parallel, an average 150,000 tonnes p.a. of sulphuric acid will be shipped to Skagway for delivery to site.

Development options for the port of Skagway have been under discussion for some time, but post-Covid the emphasis is now firmly on the cruise ship market, with approximately 300 cruise ships visiting the port each year. The 2021 Port Master Plan is in the public domain and outlines extensive plans for cruise ship facilities.

The port facilities include an old “ore handling terminal” with bulk shiploader equipment, and this is scheduled to be decommissioned and replaced. The study has assumed that suitable ship loading facilities will be in place in time for project use. Published tariffs for wharfage and handling have been used in the financial analysis.

19 MARKET STUDIES AND CONTRACTS

Multi-year deficits will be required to balance the market with improved demand growth rates in stainless steel being a key driver of nickel prices. Currently, the nickel price in the first half of 2023 has averaged US$10.98/lb. In the long term, higher prices will be required to incentivize the development of nickel projects which will be needed to avoid another price run-up as witnessed in April 2007.

19.1 Commodity Price Projection

A review of metal pricing forecasts from many different analysts and bank forecasts in addition to the trailing averages was conducted to help determine average long-term prices to be used by Nickel Creek. These are presented in Table 19-1. As the project is some years from production due to permitting and additional study work, the long-term pricing for Year 2030 has been shown for the Analyst values based on commodity estimates generated in H1 2023.

Table 19-1: Long Term Price Projection

	Units	Study Price Used	Analyst Minimum	Analyst Maximum	Spot Price July 26, 2023	3 Year Average	5 Year Average	10 Year Average
Nickel	US$/lb	**11.00**	8.00	12.00	9.79	9.68	8.19	6.93
Copper	US$/lb	**4.00**	4.25	5.00	3.87	3.93	3.43	3.09
Cobalt	US$/lb	**23.00**	25.00*	25.00*	14.96	22.55	20.45	19.31
Platinum	US$/oz	**1,000**	1,700	2,760	964	1,009	946	1,025
Palladium	US$/oz	**2,100**	750	844	1,251	2,106	1,896	1,334
Gold	US$/oz	**1,800**	1,900	1,950	1,969	1,840	1,677	1,462

*No long term forecast for 2030 was provided in the commodity estimate so FY2027 was used in this instance

19.2 Nickel Concentrate Market

Nickel Creek intends to produce marketable bulk (Ni+Cu) and separate Ni and Cu bearing sulfide concentrates. The concentrates will be transported by the existing roads, rail, and port facilities to the smelter(s). A nickel concentrate market has developed in the last 25 years with growing need by smelters to replace nickel sulfide concentrate units as older mines are depleted. Unlike markets such as copper, zinc, and lead, the nickel concentrate market does not have global benchmarks and commercial terms are negotiated individually with the off-take terms between the buyer and seller held confidentially. No contracts have been negotiated for the Project concentrates.

20 ENVIRONMENTAL STUDIES, PERMITTING, AND SOCIAL OR COMMUNITY IMPACT

20.1 Regional Setting

The Project is located in the southwestern foothills of the St. Elias Mountains, in the Kluane Range, approximately 27 km northwest of Burwash Landing, 150 km northwest of Haines Junction and 15 km southwest of the Alaska Highway. The Project is in the Traditional Territory of Kluane First Nation. Access to the Project is via a 14 km long, all weather road that connects the Project to the Alaska Highway. The main deposit is located at elevations between 1,000 to 1,300 metres above sea level (masl) on a south facing slope. The area to the north of the deposit is drained by the Swede Johnson Creek, which flows into the Kluane River. Quill Creek, and its tributaries, Aird Creek, and Nickel Creek, is the dominant catchment of the area and drains the site to the northeast and flows into the Kluane River. Arch Creek drains the western part of the site, into the Donjek river, to the west of the Project.

The Project occurs within the northeastern portion of the St. Elias Mountain Ecoregion. The physiography is characterized by mountain ranges and alpine plateaus bisected by broad valleys with wide, braided rivers. The climate consists of short, dry summers and long, cold winters. Precipitation is moderated by a rain shadow effect caused by the St. Elias Mountains. Discontinuous permafrost is widespread across the region. Vegetation zones include the Boreal High below 1,080 masl, the Subapline Shrub between 1,080 to 1,230 masl, and the Alpine Tundra zone above 1,400 masl. Dominant vegetation associations include white and black spruce forests, subalpine willow-scrub birch shrublands, and dwarf shrub-graminoid alpine meadows (AGP, et al., 2018).

The Project is entirely within the Kluane Wildlife Sanctuary, which limits licensed hunting to two Dall's sheep per year, while respecting First Nations subsistence harvesting rights. The Asi Keyi Natural Environment Park is located approximately 3 km east of the Project area and Kluane National Park and Reserve is located 5 km south of the Project area. Environmental management for the area is primarily focused on, but not limited to, water quality and proximity to sensitive wildlife areas.

20.2 Environmental and Socio-Economic Studies

Table 20-1 summarizes the environmental and socio-economic studies reviewed for this report. Following Table 20-1 is a list of ongoing environmental and socio-economic studies and engagement activities.

Table 20-1: Environmental and Socio-Economic Studies Reviewed as of June 2023

Discipline	Report	Timeline of Data Collection
Hydrometeorology	Wellgreen 2014 Hydrometeorological Report (Tetra Tech, 2015c) Surface and Groundwater Water Gap Analysis for the Wellgreen Platinum Project (Hatfield 2016b) Nickel Shäw Meteorological Data Summary (Alexco, 2018g)	2012 - 2023

Discipline	Report	Timeline of Data Collection
	Hydrometeorology Summary Report Nickel Shäw Project (Ensero, 2022c) Hydrometeorology Summary Report Nickel Shäw Project (Ensero, 2023b)	
Surface Water Quality	2013-2014 Surface Water Quality Monitoring Report at the Wellgreen Project, Yukon (Tetra Tech, 2015b) Surface and Groundwater Water Gap Analysis for the Wellgreen Platinum Project (Hatfield 2016b) Evaluation of Adit and Aird Creek (AdC-0.8) water quality results from February 2012 to August 2016 (Hatfield, 2016a) Characterization of Wellgreen Adit, Aird Creek and Nickel Creek Water Quality (Alexco, 2017) Characterization of Wellgreen Adit, Aird Creek and Nickel Creek Water Quality (Alexco, 2018b) Review of Yukon Government Adit Water Quality Audit Report (Alexco, 2018c) Surface Water Quality Baseline Report Nickel Shäw Project (Alexco, 2018a) Surface Water Quality Baseline Report Nickel Shäw Project (Ensero, 2023a)	2012 - 2023
Groundwater	Monitoring Well Completion Report and Preliminary Hydrogeological Assessment, Wellgreen Mine, Yukon (Tetra Tech 2015a) Surface and Groundwater Water Gap Analysis for the Wellgreen Platinum Project (Hatfield 2016b) Wellgreen December 2015 Hydrogeological Dilling Program Summary (Lorax 2016) Nickel Shäw Project Condition of Groundwater Monitoring Wells (Ensero, 2020) Groundwater Summary Report Nickel Shaw Project (Ensero, 2022a)	2013-2023
Geology	Nickel Creek Platinum Corp. Ni-Cu-PGM Project. 2018 NI 43-101 Resource Update. Yukon, Canada (APG, et al. 2018)	ongoing
Terrain and Soils	Nickel Creek Platinum Corp. Ni-Cu-PGM Project. 2018 NI 43-101 Resource Update. Yukon, Canada (APG, et al. 2018) Nickel Shäw Project, Baselin Studies Report: Ecological and Landscape Classification Mapping (EDI 2018a)	2016-2018
Geochemistry	Platinum Group Minerals from the Wellgreen Ni-Cu-PGE Deposit, Yukon, Canada (Barkov, et al, 2002) Mineralogical Study of Six Samples from the Wellgreen Deposit (Yukon) for Prophecy Platinum Corp.: Report 1 (Cabri, 2012) Petrographic Report on 48 Rock Samples	2002-ongoing

Discipline	Report	Timeline of Data Collection
	For Wellgreen Platinum Ltd. Part 1 (Samples 1–25) (Vancouver Petrographics Ltd, 2015) Petrographic Report on 48 Rock Samples For Wellgreen Platinum Ltd. Part 2 (Samples 26–48) (Vancouver Petrographics Ltd, 2015) Cleaner Tails Mineralogy (XPS, 2017) Period Composite Mineralogy and Entitlement (XPS, 2017) Static Acid Rock Drainage / Metal Leaching Assessment of Nickel Shäw Ore and Tailings from Mini Pilot Plant (Alexco 2018e) Draft: Interim Results of Kinetic Testing of Tailings from Mini Pilot Plant - Nickel Shäw Project (Alexco 2019) Geochemical Characterization of Ore and Tailings from Mini Pilot Plant Nickel Shäw Project (Alexco 2020) NCP Carbon Sequestration - Phase 1: Desktop Preliminary Study (Ensero, 2021a) NCP Carbon Sequestration – Detailed Study Plan for Phase 2 (Ensero, 2021b) Preliminary assessment of carbon capture and storage potential of variably serpentinized ultramafic rocks of the Wellgreen Project, Yukon (UBC, 2022) Preliminary Geochemical Characterization of Waste Rock Nickel Shaw Project (Ensero, 2022b)	
Vegetation	Nickel Creek Platinum Corp. Ni-Cu-PGM Project. 2018 NI 43-101 Resource Update. Yukon, Canada (APG, et al. 2018) Nickel Shäw Project, Baseline Studies Report: Trace Metals Sampling (EDI 2018b)	2017, 2018
Aquatics	Wellgreen Project: Fish and Fish Habitat Assessment Quill and Arch Creek Watershed (EDI 2016) Aquatic Ecosystems and Resources Baseline Report Nickel Shäw Project (Alexco 2018d)	2016-2018
Wildlife	Nickel Creek Platinum Corp. Ni-Cu-PGM Project. 2018 NI 43-101 Resource Update. Yukon, Canada (APG, et al. 2018) Nickel Shäw Project, Baseline Studies Report: Thinhorn Sheep Habitat Modelling Report (EDI, 2018c) Nickel Shäw Project, Baseline Studies Report: Thinhorn Sheep Studies 2015-2019 (EDI, 2020a) Nickel Shäw Project, Baseline Studies Report: Bird Studies 2018 (EDI, 2020b)	2015-2018

Discipline	Report	Timeline of Data Collection
	Letter to Nickel Creek Platinum Corp. RE: Conclusions, Implications and Recommendations Resulting from Thinhorn Sheep Studies. (EDI, 2020c)	
Heritage	Nickel Creek Platinum Corp. Ni-Cu-PGM Project. 2018 NI 43-101 Resource Update. Yukon, Canada (APG, et al. 2018) Heritage Resource Impact Assessment: Wellgreen Platinum Property Class 4 Quartz Exploration (17-14ASR). (Ecofor 2018)	2017, 2018
Socio-economic	Traditional Knowledge and Traditional Land Use Work to Date (Hemmera, 2017)	2017 – ongoing

20.3 Regulatory Framework

The following processes are required to obtain regulatory authorizations for the Project to proceed from an advanced exploration project to an operating mine project: (1) Environmental and socio-economic assessment, (2) Quartz Mining License, (3) Water Use License and (4) remaining regulatory approvals (e.g., explosives storage and use, waste management, fisheries authorization, etc.). An environmental and socio-economic assessment is required under the Yukon Environmental and Socio-economic Assessment Act. The Project will require Executive Committee Screening for the assessment which generally takes 3-5 years before a Decision Document is issued. Once the Decision Document is issued the Project can proceed with the Quartz Mining License and Water Use License process, which generally take an additional 1-2 years. Additional permits can be obtained simultaneously during the Quartz Mining License and Water Use License processes.

Information required for assessment and permitting is presented in Table 20-2.

Table 20-2: Overview of Environmental & Socio-Economic Information Required for Assessment & Licensing

Discipline	Information	Discipline	Information
Mine Engineering	Mine Plan: construction, operations, closure, and post-closure Engineering design for major mine facilities (i.e., open pit, waste storage facilities, tailings facilities) Inputs into all disciplines	Wildlife and Wildlife Habitat	Baseline conditions (3 years) Inputs to wildlife management, adaptive management, and monitoring plans
Hydrology	Baseline conditions (3 years) Water Balance Inputs to water quality model Inputs to water management, adaptive management, and monitoring plans	Vegetation	Baseline conditions (3 years) Inputs to vegetation management, adaptive management, and monitoring plans
Surface Water Quality	Baseline conditions (3 years) Water quality effluent standards Water quality objectives Water quality modelling	Terrain and Soil	Baseline conditions (3 years) Inputs to permafrost considerations, overburden,

Discipline	Information	Discipline	Information
	Inputs to water management, adaptive management, and monitoring plans		adaptive management, and monitoring plans
Groundwater Quantity and Quality	Baseline conditions (3 years) Water quality objectives Water quality modelling Inputs to water management, adaptive management, and monitoring plans	Heritage and Cultural Resources	Baseline conditions Heritage Resource Overview Assessments Heritage Resource Impact Assessment Archaeological information Cultural Heritage Inventories Traditional Land Use Studies Traditional and Ecological Knowledge Studies Inputs into management and monitoring plans
Meteorology and Climate Change	Baseline conditions (3 years) Climate change considerations Inputs to water balance Inputs to water management, adaptive management, and monitoring plans	Socioeconomics	Baseline conditions: regional and local study areas Land use and resource use Population and demographics Economy, labour, and business Transportation Housing and accommodation Infrastructure and social services Inputs into management and monitoring plans
Geochemistry	Kinetic and static testing for acid rock drainage and metal leaching Inputs to waste rock management, water management, adaptive management, and monitoring plans	Engagement and Consultation	Communication with regulatory agencies Ongoing engagement and consultation with communities, municipal government, First Nation governments, land users, etc. Inputs into management and monitoring plans
Aquatic Life	Baseline conditions (3 years) Inputs to aquatic life management, adaptive management, and monitoring plans	Reclamation and Closure	Progressive and final reclamation details Security estimate Inputs into management and monitoring plans

20.3.1 Existing Authorizations

Nickel Creek is currently authorized under various permits for exploration activities and has the following existing authorizations (see Table 20-3).

Table 20-3: Nickel Shäw Project – Existing Regulatory Authorizations

Regulatory Authorization	Activities	Regulatory Agency
Class 4 Quartz Mining Land Use Approval (LQ00468)	Exploration activities (e.g., drilling, trenching, reclamation, etc.)	Government of Yukon, Department of Energy, Mines and Resources
Class 1 Quartz Mining Land Use Approval (C1Q00483)	Geotechnical/hydrogeology drill holes and supporting activities.	Government of Yukon, Department of Energy, Mines and Resources
Industrial Lease, 115G05-0-1	Historic Upper Camp, Fuel Infrastructure	Government of Yukon, Department of Energy, Mines and Resources
Storage Tank System Permits, 2017-022 and 2017-031	Fuel Storage	Government of Yukon, Fire Marshal's Office
Building Permits, various	ATCO trailer camp housing facilities	Government of Yukon
Food Premises Permit		Government of Yukon, Environmental Health Services

20.3.2 Existing Environmental Management and Operating Plans

The following list summarizes the existing environmental management and operating plans:

- COVID Operational Safety Plan
- Spill Response Plan
- Emergency Response and Health and Health and Safety Guidelines
- Fish and Wildlife Adaptive Management Plan
- Sheep Observation and Monitoring Plan
- Environmental Monitoring/Observation Plan
- Waste Management Plan
- Access Management Plan
- Chance Find Procedure for Heritage Resources
- Petroleum Fuel and Hazardous Substances Policy
- Water Management and Sediment Control
- Reclamation and/or Decommissioning

20.3.3 Required Authorizations

The authorizations listed in Table 20-4 may be required to operate a mine:

Table 20-4: Potential Regulatory Authorizations for a Quartz Mine in the Yukon

Act	Regulation	Regulatory Approval	Scope	Responsible Agency
Territorial Government				
Boiler and Pressure Vessels Act		Registration	Installation of power boilers over 10 kW, heating boilers over 20 kW, pressure vessels and piping systems	Community Services, Building Safety

Act	Regulation	Regulatory Approval	Scope	Responsible Agency
Building Standards Act		Building Permit	Construction of buildings outside of a municipality	Community Services, Building Safety
		Plumbing Permit	Installation of plumbing outside of Whitehorse	
Dangerous Goods Transportation Act	Dangerous Goods Regulations	Certificate and/or permit for transport of dangerous goods	Transportation of dangerous goods within Yukon on highways	Highways and Public Works, Transport Services Branch
Electrical Protection Act	Canadian Electrical Code (23rd edition)	Electrical Permit	Electrical work	Community Services, Building Safety
Environment Act	Air Emission Regulations	Air Emissions Permit	Operation of fuel burning equipment greater than 5 million British thermal units per hour (Mbtu/hr) Release of air pollutants Operation of solid waste incinerator Excavation of a quarry that is greater than 4 ha	Environment, Environmental Programs
	Contaminated Sites Regulation	Land Treatment Facility Permit	Operation of a land treatment facility for contaminated soils	
		Relocation Permit	Relocation of contaminated material	
	Ozone Depleting Substances and Other Halocarbon Regulation	Ozone Depleting Substances and Other Halocarbons Permit	Servicing or installation of equipment containing ozone depleting substances (e.g., refrigeration equipment) Purchasing, handling, and services in/of ozone depleting substances equipment Use of ozone depleting substances and equipment	
	Solid Waste Regulations	Waste Management Permit	Solid waste disposal facility Operation of solid waste incinerator	
	Special Waste Regulations	Special Waste Permit Waste Manifest	Handling, disposal, generation, or storage of special (hazardous) waste Transportation of dangerous goods/waste	
	Storage Tank Regulations	Application for Operation, Closure, Abandonment, or Renovations to Storage Tanks Above-Ground Storage Tank Permit	Storage and handling of petroleum products Use of storage tanks containing petroleum and allied petroleum products	Community Services, Fire Marshal's Office
Forest Protection Act	Forest Protection Regulation	Burning Permit	Burning of refuse (wood)	Community Services, Protective Services

Act	Regulation	Regulatory Approval	Scope	Responsible Agency
Forest Resources Act	Forest Resources Regulation	Forest Resources Permit	Clearing of forest resources incidental to other activity (including mining, land use, road construction, FireSmart, work in the right-of-way, etc.)	Energy, Mines and Resources, Forest Management Branch
Gas Burning Devices Act	Gas Regulations	Gas Installation Permit	Gas installation or modification	Community Services, Building Safety
Highways Act	Bulk Commodity Haul Regulations	Bulk Commodity Agreement	Bulk commodity hauling	Highways and Public Works, Transport Services Branch
	Highways Regulations	Over-dimensional or Over-weight Vehicle Permits	Oversize trucking	
		Permit under Highways Act	Construction of new road access	Highways and Public Works, Transportation Maintenance Branch
		Access Permit	Construction of road access on a highway right-of-way	
Historic Resources Act	Archaeological Sites Regulation	Archaeological Site Regulation Permit	Search for and research at archaeological and paleontological sites	Tourism and Culture, Heritage Resources
Lands Act	Lands Regulations	Land Use Permit	Use of Yukon lands, as defined in the Act for the following: Construction of a solid waste disposal facility Storage and handling of petroleum products Conduct of geotechnical studies Construction of new road access Construction of a new bridge crossing.	Energy, Mines and Resources, Land Branch
	Quarry Regulations	Quarry Permit, Quarry Lease	Removal of gravel/sand from a quarry on Yukon lands	
Land Titles Act	Land Titles Plans Regulation Land Titles Office Regulation	Registration of interest in land	Title to land	Justice, Land Titles
Occupational Health and Safety Act	Occupational Health and Safety Regulations	Notification to Director OHS	Trenching excavation in excess of 6 m	Yukon Workers' Compensation Health and Safety Board, Occupational Health, and Safety
		Underground and Surface Authorization to Conduct Blasting in Yukon	Blasting – underground or surface	

Act	Regulation	Regulatory Approval	Scope	Responsible Agency
		Temporary Blaster's Permit	Temporary blasting	
Public Health and Safety Act	Regulations Respecting the Sanitation of Camps in the Yukon Territory	During operation of the camp, provision of information to the health officer in respect of the Regulations, as required.	Maintenance of a camp in a sanitary condition	Health and Social Services, Environmental Health Services
	Drinking Water Regulation	Approval to construct a large public drinking water system Permit to operate a large public drinking water system	Construction, installation, modification, and operation of a drinking water system with 15 or more service connections to a piped distribution system; or 5 or more delivery sites on a trucked distribution system, and includes the water source, any infrastructure (e.g., a well, pumphouse, water treatment plant, storage tank, reservoir, water delivery truck, or a piped or trucked distribution system).	
	Sewage Disposal Systems Regulation	Permit to install a sewage disposal system	Installation of an on-site sewage disposal system	
	Eating and Drinking Places Regulation	Permit to Operate a Food Premise	Operation of a food premises	
Quartz Mining Act	Quartz Mining Land Use Regulation	Quartz Mining License	Quartz mining operation	Energy, Mines and Resources, Mineral Resources Branch
Territorial Lands (Yukon) Act	Land Use Regulation	Land Use Permit	Use of territorial lands, as defined in the Act for the following: Construction of a solid waste disposal facility Storage and handling of petroleum products Establishment and use of fuel caches of more than 4,000 L of any single container of more than 2,000 L on Commissioner's Land Use of more than 50 kg of explosives on Commissioner's Land in any 30-day period	Energy, Mines and Resources, Lands Branch

Act	Regulation	Regulatory Approval	Scope	Responsible Agency
			Temporary use or occupation of Commissioner's Land Conduct of geotechnical studies Construction of new road access Construction of a new bridge crossing.	
	Territorial Lands Regulation	Application for land lease or purchase	Tenure for land lease or agreement of sale	
Waters Act	Waters Regulation	Water License	Direct use of water Deposit of waste Construction of watercourse crossing Watercourse training	Yukon Water Board
Federal Government				
Explosives Act	Explosives Regulations	ANFO Permit	Manufacture of ANFO	Natural Resources Canada, Minerals and Metals Sector
		Explosives Magazine Storage and Use Permit for Mining Purposes	Explosives storage	Yukon Workers' Compensation Health and Safety Board, Occupational Health, and Safety
Fisheries Act	Metal and Diamond Mining Effluent Regulations	Section 35(2) Authorization	To carry on a proposed work, undertaking, or activity causing serious harm to fish that are part of a commercial, recreational, or Aboriginal fishery or to fish that support such a fishery	Fisheries and Oceans Canada
		Authorization to deposit an effluent that contains a deleterious substance	Applies to mines that exceed an effluent flow rate of 50 m^3 per day, based on effluent deposited from all the final discharge points of the mine, and that deposit a deleterious substance in any water frequented by fish or in any place under any conditions where the deleterious substance or any other deleterious substance that results from the deposit of the deleterious substance may enter any such water	
Yukon Environmental and Socio-economic Assessment Act	Assessable Activities, Exceptions and Executive Committee	Decision Document	Environmental Impact Assessment	Yukon Environmental and Socio-economic Assessment Board Yukon Government (represented by

Act	Regulation	Regulatory Approval	Scope	Responsible Agency
	Projects Regulations			ECO-Development and Assessment Branch)

20.4 Summary of Baseline Conditions

20.4.1 Hydrometeorology

A Campbell Scientific meteorological station at Nickel Shaw was commissioned on October 12, 2012, at UTM coordinates 07 6,815,155N 578,939E and elevation 1,275 metres above sea level (masl). Since commissioning the station measures wind speed and direction at a height of 10 metres, air temperature, barometric pressure, relative humidity, incident solar radiation, and water-equivalent precipitation. Meteorological data are logged at 15-minute intervals as an average of instantaneous measurements recorded every 5 seconds. The station is manually downloaded as part of the environmental monitoring program.

The mean annual temperatures over the period of record ranged from -4.2°C in 2021 to 0.00°C in 2019. Extreme annual temperature ranged from -37.1°C in January 2020, to 27.9°C in June 2019. Due to seasonal variability the site sees most of the precipitation fall as snow. Based on available data, 2015 and 2020 saw the largest amount of precipitation, 550.16 mm, and 574.29 mm respectively with the majority falling during February, July, and December. The prevailing winds at the Project are from the southwest to northeast and the highest average wind speeds originate from the southwest. Relative humidity, evapotranspiration and barometric pressure show seasonal patterns. On average, the relative humidity is below 60% during February through June and barometric pressure cycles between high pressure months (mid-summer) and low-pressure months (late fall).

With reference to hydrology, the Project area is made up of seven waterways: Aird Creek, Arch Creek, Glacier Creek, Kluane River, Nickel Creek, Quill Creek, and Swede-Johnson Creek.

The current surface water quality monitoring network (discussed in detail in Section 7.2) is sampled at a range of stations for the Nickel Shäw Project to establish existing conditions and to assess potential impacts of the project when proposed for both a local and regional study area. The types of stations established include reference stations on creeks outside of the proposed Project footprint, background stations upstream of the proposed Project, and receiving environment (both near and far field sites) downstream of the proposed Project.

The surface water quality monitoring program is currently being conducted quarterly at 16 surface water sample stations when conditions allow [e.g., winter access to upper Aird Creek (AdC-0.8) is often not possible due to avalanche hazard whereas other locations such as upper Arch Creek (AhC-7.6) and lower Quill Creek (QC-3.2, QC-1.4, and QC-0.9) are dry at certain times of the year]. Sites NC-0.1 and QC-16.9 are no longer sampled as part of the current water quality monitoring program since nearby stations (i.e., NC-1.1 and QC-15.4, respectively) adequately capture similar information. In May 2017, a new station was established on the Kluane River, approximately 5 kilometres downstream from the confluence with Quill Creek. In June 2017 two new reference sampling stations were established. One on Glacier Creek, the other on Quill Creek (QC-0.9) downstream of existing site QC-1.4.

Of the 16 surface water quality sites, only 13 are possible to collect hydrometric data from (three sites are on the Kluane River). Monthly sampling was completed between 2015 and 2019 before moving to quarterly sampling in 2020. In addition to the monthly sample collection prior to 2020, a more intensive program of 5 samples in 30-day were conducted between May and June 2017 to better characterize constituent variability under the high flow freshet conditions expected over this period. To compliment this, a second 5-in-30-day sampling event was also conducted between November and December 2017 under low flow conditions.

Local hydrologic conditions are assessed using the continuous water level data collected at four hydrometric monitoring stations and manual water discharge measurements at eight stations. Local hydrometric stations have been sited to monitor flows in watercourses that would either be future receiving waters or may be affected by future project activities, and the distribution of the hydrometric network provides a highly correlated representation to local hydrometric conditions in the project area. Watershed drainage area of interest to the Project range between 3.95 km^2 and 80.19 km^2 excluding the Kluane River. The average discharge discounting the adit and the Kluane River at the Project ranges from 77.5 L/s (Nickel Creek) to 460.0 L/s (Swede-Johnson Creek).

20.4.2 Surface Water Quality

Baseline environmental monitoring of surface water quality at the Project has been conducted from late 2012 and is presently ongoing. Surface water quality sampling was initially conducted at monthly intervals, with a brief disruption to sampling in 2014-2015. In 2020, sampling frequency was reduced to quarterly (Ensero, 2023a). The Government of Yukon Water Resource Branch irregularly collected water quality samples from 2000 to 2017 (AEG, 2018a). The influence of discharge from the historic Wellgreen Adit on surface water quality at the Project has also been investigated as part of the baseline studies (AEG, 2018b and AEG 2018c). The baseline surface water quality at the Project is summarized below.

The current surface water quality monitoring network is sampled at a range of stations for the Nickel Shäw Project to establish existing conditions and to assess potential impacts of the project when proposed for both a local and regional study area. The types of stations established include reference stations on creeks outside of the proposed Project footprint, background stations upstream of the proposed Project, and receiving environment (both near and far field sites) downstream of the proposed Project.

Surface water quality sampling was conducted at monitoring stations located along Aird Creek, Nickel Creek, and Quill Creek, which bisect the Project, and along the Kluane River, downstream of the Project. Discharge from the Wellgreen Adit, before it enters Aird Creek, was also sampled. Aird Creek flows into Nickel Creek, which flows into Quill Creek, which flows into the Kluane River downstream of the Project.

Additional sampling was conducted at monitoring stations not expected to be influence by the Project, including Arch Creek to the west of the Project, and at reference monitoring stations on Swede Johnson Creek and Glacier Creek.

Surface water at the Project were circumneutral to mildly alkaline (median pH 7.7 to 8.2) with hardness varying from hard (Kluane River; median 172 to 191 mg/L) to very hard (Arch Creek, Nickel Creek, Quill Creek, Glacier Creek, and Swede Johnson Creek median 220 to 518 mg/L).

Several constituents, within the Project area, were naturally elevated compared to CCME, BC ENV and FEQ guidelines, due to the local geology and groundwater. Concentrations of total selenium were found to be naturally elevated, frequently exceeding the generic water quality guidelines at monitoring stations along all creeks, but not the Kluane River. Likewise, concentrations of aluminum, arsenic, chromium, copper, iron, and nickel were found to be seasonally naturally elevated, exceeding the generic water quality guidelines at multiple monitoring stations along the Kluane River and all creeks, except Glacier Creek. These constituents were naturally elevated due to increased suspended particulate loads during freshet and other high flow periods. Most waters in the Project area tended to observe seasonal trends for multiple parameters, with the exception of Glacier Creek.

Elevated concentrations of fluoride, sulphate, arsenic, boron, cobalt, nickel, and manganese were consistently observed in the Wellgreen Adit discharge exceeding generic water quality guidelines. In Aird Creek, downstream of the Wellgreen Adit, these constituents were observed in higher concentrations than upstream of the adit indicating that the adit discharge is a loading source of these constituents to the downstream receiving environment. The influence of the Wellgreen Adit was most apparent during the winter months when the volumetric contribution of the adit to Aird Creek was greatest. The adit-related constituents continued to be observed in elevated concentrations in Nickel Creek, downstream of the confluence with Aird Creek, however, the concentrations met the generic surface water guidelines.

Past toxicity testing (rainbow trout LC50) of the undiluted Wellgreen Adit discharge water indicated no acute toxicity or atypical effects for rainbow trout (AEG, 2018d). Furthermore, Aird Creek, Nickel Creek, and Quill Creek are not fish-bearing due to a fish barrier located immediately below the Alaska Highway (AEG, 2018d). This combined with the lower reaches of Quill Creek freezing to the ground over winter, and going dry during the summer months, means that fish are not expected to enter Aird Creek, Nickel Creek, or most of Quill Creek, regardless of water quality. Finally, preliminary benthic community sampling has indicated a healthy benthic community in Nickel and Quill Creek downstream of the Wellgreen Adit (AEG, 2018d). As such, the Wellgreen Adit discharge does not currently present a significant risk to aquatic life in the receiving environment.

20.4.3 Groundwater

Hydrogeological studies of baseline groundwater quality were initiated in 2013, including an initial hydrogeology assessment in January 2015 (Tetra Tech, 2015a). Since the 2015 assessment, supplemental groundwater monitoring was conducted from 2017 and 2023. In 2022 a groundwater quality baseline report was completed summarizing the groundwater quality data collected at the site since 2013 (Ensero, 2022a). The results of the report are summarized below.

The groundwater flow regime at the Project Site generally mimics the local topography, with groundwater recharge occurring from higher elevations on the mountain slopes and groundwater discharge occurring in the valley bottoms. Hydraulic conductivities of the overburden and bedrock aquifers were inferred from hydraulic response tests conducted by Tetra Tech (2015a). Hydraulic response tests conducted by Tetra Tech (2015a) reported hydraulic conductivities from 2×10^{-8} m/s to 9×10^{-4} m/s with the highest values observed in coarse overburden sediments and the lowest in peridotite and dunite bedrock. Hydraulic conductivity in bedrock is inferred to be largely controlled by fracture density and permeability, which was observed to decrease with depth. Very little investigation

has been completed to date on the presence of permafrost within the project area, however, some monitoring wells on the site are frozen seasonally.

The current groundwater monitoring well network at the Project consists of 32 wells. The groundwater monitoring network includes nested and paired wells, in order to characterize the overburden and bedrock aquifers. Groundwater monitoring wells were installed at the Project based on proposed mine workings and infrastructure, to support future assessment and licensing applications for the development of the Project. The frequency of groundwater monitoring and sampling at the Project has varied since 2013, however the frequency of events has been one to four times per year, with more regularly scheduled quarterly site visits occurring since 2016.

The analytical results of the 2013 to 2022 groundwater monitoring program at the Project revealed exceedances of YCSR or FIGWQ guidelines for dissolved sulphate and dissolved metals including aluminum, cobalt, iron, and selenium at select monitoring wells. Dissolved sulphate concentrations are generally quite stable across all monitoring wells at the Project, with some seasonal trends occurring between May and June, and seasonal minima occurring in early spring, presumably right before freshet. Based on the 2013-2022 data, Ensero made the following recommendations at the conclusion of the 2022 baseline report (Ensero 2022a). The recommendations were to reduce the groundwater sampling frequency to semi-annual, until mine planning advances, reassess the monitoring well network and sampling plan to ensure sufficient groundwater-related information is being collected to satisfy a project proposal submission under YESAA, as well as to complete a gap-analysis of the groundwater data available for the project, conduct maintenance for the current monitoring well networks which would include surveying all monitoring wells, recovering Leveloggers™ that are frozen within monitoring wells, and decommissioning damaged wells as well as determining replacement options for the damaged wells within lower Arch Creek. Lastly, the final recommendation was to characterize the extent and distribution of permafrost in the Project Area.

20.4.4 Geology

There are two main areas associated with the Project: Arch and Burwash. The following subsections describe the local geology.

Arch Geology

Geology of the Arch Property has been previously described in Carne (1988). Much of the information below has been extracted from these sources. The Arch Property covers a northwest trending sequence of Pennsylvanian to Upper Triassic sedimentary and volcanic rocks that are intruded by a series of semi-conformable, mafic, and ultramafic sills. These sills form the western end of the 20 km long Quill Creek Ultramafic Complex.

There are numerous showings on the Arch Property. Most are associated with a 100 m thick sill that is intermittently exposed in creek cuts and trenches for a 750 m length. Additional smaller ultramafic bodies have been located – two southeast of the main sill and three to the northwest. Geophysical surveys have suggested that additional sills are likely present on the Property but are covered by glacial till and are therefore, more difficult to locate.

These sills are mainly composed of strongly magnetic, dark green to black, medium grained and moderately to strongly serpentinized feldspathic peridotite. Fracture surfaces commonly show

slickensides and scaly fractures. Olivine gabbro occurs as a chilled phase at the northern margin of the main sill and is host to the higher-grade Ni-Cu-PGE mineralization.

The main sill on the Arch property dips steeply to moderately southwest and appears to have intruded the conformable contact between the Station Creek and Hasen Creek Formations – as the Wellgreen and Burwash intrusions have. The southwest dip of the ultramafic body could represent a right side up sequence enclosing strata becoming younger in a downhill direction. The footwall rocks are the Hasen Creek sediments which range from argillite, mudstone, and quartzite – the latter which occurs particularly along the mineralized contact.

The argillite on the property is strongly layered with inconsistent thicknesses of greys and black. The mudstone is finely layered with a light green-brown colour on fresh broken surfaces. Quartzite here tends to be dark green to light brown and is often tuffaceous.

Station Creek Formation rocks comprise the hanging wall of the main sill and are mainly composed of andesite and agglomerate. The andesite is variable – can be light to dark green and is composed of a chloritized matric with chlorite pseudomorphs after hornblende. The agglomerate is also green and is composed of subangular to subrounded chert fragments in a laminated volcanic matrix.

Maple Creek Gabbro is prominent on the property, forming sills in many localities. Some instances can be extremely fine grained and resemble volcanic rocks. This gabbro has been interpreted in regional studies as a feeder to the Upper Triassic Nikolai Group volcanic rocks.

The Nikolai Group unconformably overlies the other units on the property. The basaltic flows and related sedimentary rocks are rich in ferromagnesian minerals and exhibit amygdules that are partly filled with calcite and limonite.

There are a couple strong, near vertical faults with a northwesterly trend that cut across all units and appear to be post-Triassic, despite the fact that some host some copper showings. An erosional remnant of Pleistocene glacial-fluvial gravel covers a large area along the lower North side of Arch Creek. This down-stream dipping gravel is well-sorted and can reach maximum thicknesses of 30 m.

Burwash Geology

Geology of the Burwash Property has been previously described in reports of exploration that have been filed for assessment credit including Eaton (1987 and 1988), McGoran (1997), Carne (1999, 2004, 2005, 2007 and 2008) and Oosterman (2011). Much of the information below has been extracted from these sources.

The Burwash Property lies within a steeply dipping package of Late Paleozoic and Early Mesozoic volcanic and sedimentary rocks. The oldest rocks on the Burwash Property are massive, bedded basalts and andesite tuffs of the Lower Station Creek Formation. They occur mainly in the northeast to central part of the claim block. The top layer of the Lower Station Creek Formation is generally described as interbedded black, carbonaceous phyllite and andesitic tuff. The Station Creek strata are overlain conformably on the property by the Hasen Formation - black, carbonaceous pyritic phyllite with interbedded limestone, quartzite, and andesitic tuff.

There are eight separate mafic-ultramafic sills mapped on the property. These are distinct and are exposed at surface. The larger bodies are composed of dunite and peridotite which in field mapping

have not been differentiated due to intense serpentinization. In these bodies, gabbro and clinopyroxenite are located in lenses and in elongate pods along margins of these ultramafic rocks.

These intrusions are surrounded by a sedimentary-volcanic package with an overall strike length of 4.5 km and a stratigraphic thickness of 1500 m. The majority of the intrusions occur in the upper part of the Station Creek Formation volcanic rocks. Peridotite and dunite are predominant in the ridge crests of the intrusions and gabbro and pyroxenite occur in lesser amounts and in narrow extensions on the western part of the property.

There are several very thin sills of the mafic-ultramafics that intrude the overlying Hasen Creek Formation. These are much more irregular and are mostly comprised of pyroxenite with very little peridotite and gabbro. Where gabbros are present, they occur generally at the stratigraphic top of the unit.

Small plugs and dykes of the Maple Creek Gabbro intrude all units. They are light in colour, medium grained and equigranular with trace amounts of pyrite.

20.4.5 Geochemistry

Preliminary acid rock drainage and metal leaching (ARD/ML) characterization for the Project has been conducted using ore feed, tailings material generated during a metallurgical mini pilot plant (MPP), MPP tailings water (supernatant) and process water produced during the MPP (AEG, 2018e; AEG, 2020), as well as screening level characterization of representative waste rock lithologies (Ensero, 2022b). The carbon dioxide (CO_2) sequestration capacity of the Project tailings and waste rock is being evaluated as a potential beneficial application (Ensero, 2021), and the effect of CO_2 sequestration on the ARD/ML potential of the MPP tailings and waste rock continue to be assessed as part of this study (Ensero, 2022b).

ARD/ML characterization of the ore feed and MPP tailings consisted of static and leach testing to evaluate the composition, ARD potential, and short-term metal leaching potential of ore produced during the first five years of mining and the tailings produced during the MPP.

Acid base accounting (ABA) analyses and net acid generation testing indicated that the ore feed and MPP tailings were not expected to be net-acid generating. However, calcite, which provides the fastest acid neutralization reaction, only comprised a minor proportion of the acid neutralizing potential (NP) in the ore and tailings. The majority of NP was sourced from relatively slower reacting aluminosilicate minerals, but the minerals identified (diopside, serpentine, chlorite) in the ore and tailings are known to be fast reacting aluminosilicates phases. The results of the ABA analyses indicated that the concentration of reactive aluminosilicate minerals in the samples will control the ARD potential classification especially in rock units with low concentrations of carbonate minerals. The combined NP from calcite and fast reacting aluminosilicates was adequate to prevent the onset of acidic conditions but additional testing such as the net acid generation test is recommended for samples that have conflicting NPR assignments based on bulk NP or carbonate NP to confirm their potential for net acid generation potential.

Shake flask extraction (SFE) testing of tailings, and chemical analyses of tailings water and MPP process water identified sulphate, boron, chromium, cobalt, copper, manganese, nickel, and selenium concentrations at levels that were generally exceeding their generic water quality guidelines. These

parameters were considered as constituents of potential concern (COPC) and monitored during kinetic testing to determine the rate and magnitude of leaching of these parameters.

Kinetic testing of the MPP tailings was conducted using a humidity cell and subaqueous column to evaluate the long-term ARD/ML potential under sub-aerial and sub-aqueous storage scenarios and thereby inform potential mitigation and management practices. These data could also be used to develop metal release source terms to inform subsequent water quality models. The humidity cell and subaqueous column were terminated after 96 and 43 weeks of operation, respectively, after COPC concentrations had stabilized. Estimation of lag time to acid generation using the last cycles of humidity cell data indicates that a large portion bulk NP will remain after all the sulphur has been depleted. This indicates that net acid generation is not expected from the tailings, consistent with the ABA and NAG results. Significant changes occurred during the humidity cell test, including the complete or near complete depletion of sulphide and carbonate minerals, significant decreases in total sulphur, total carbonate, and bulk NP, but without affecting the potential of the material to prevent long-term acid generation.

Of the COPCs identified from static testing, only selenium concentrations regularly exceeded generic water quality guidelines for the humidity cell leachate but were consistently below the generic water quality guideline for the subaqueous column. The results of the COPC steady state release rates show higher metal releases from the subaqueous column compared to the humidity cell because the higher mass of tailings used in the subaqueous column test. The exception was chromium and selenium which showed an increased concentration during the second half of the humidity cell test. Following testing, the humidity cell residue remained enriched in select metals, and short-term leaching may generate drainage with COPC concentrations that exceed generic water quality guidelines.

ARD/ML characterization of waste rock samples included clinopyroxenite (3 samples), dunite/peridotite (3 samples), gabbro (2 samples), metasediment, tuff, and basalt, from varying depths within the deposit and with a wide range of sulphide and mineralization content. ABA results indicated that the waste rock samples had low potential for ARD due to their relatively low sulphide content and are not expected to be acid generating, although it was recommended that a larger and more comprehensive ARD/ML dataset is developed so that an adequate number of samples, which would be representative of the volume of waste rock units to be excavated or disturbed during project development, is collected, and assessed. There was an indication of very low potential for the release of high concentration of metal(loid)s (i.e., arsenic, cadmium, selenium, silver, nickel, and copper) from the waste rock based on elemental analysis.

The next step in the Preliminary Geochemical Characterization of Waste Rock Study (Ensero 2022b) is to assess the effect of CO_2 sequestration experiments on the ARD/ML of the waste rock and tailings.

20.4.6 Vegetation and Trace Metals

The information in this section has been sourced from *the Nickel Creek Platinum Corp. Ni-Cu-PGM Project 2018 Resource Update Yukon, Canada* (2018) and supplemented with updates since 2018.

Vegetation studies include three components: Ecosystem and Landscape Classification (ELC) mapping, rare plants, and traditional use plants. ELC mapping is a standardized process for mapping ecosystem units (communities) across large landscapes based on patterns of vegetation type, vegetation structure, topography, terrain and soil moisture and nutrients. In addition to ELC mapping being a

standalone product required by YESAB to assess vegetation communities in an environmental assessment, ELC mapping is a critical product for wildlife habitat interpretation, which is used for i) effectively designing baseline wildlife studies and ii) developing wildlife habitat models which are the primary tool used to assess potential Project effects on wildlife in an environmental assessment. Due to its requirement as an input for wildlife studies, ELC mapping was prioritized as one of the first terrestrial baseline study components, and that work was completed in 2017. A total of 2,366 map polygons were delineated across the study area, representing 39 unique ecosystem unit types (EDI 2018a).

Rare plants (i.e.: species of conservation concern) and traditional use plants (i.e.: plants used by local First Nations for subsistence and medicinal use) are additional vegetation valued components that must be considered in the environmental assessment.

In 2017 a trace metals study was conducted to document current levels of trace metal concentrations in soil and vegetation across the Project area (EDI 2018b). This information is required as baseline information for the Project application and may be used as benchmark data for future monitoring. This data can be used in conjunction with the "non-degradative" philosophy to investigate if exploration/mining activities are the potential cause for any elevated concentrations of metals in the Project area.

20.4.7 Aquatics

Baseline environmental studies of fisheries and aquatic resources for the Project site began in 2017. The following paragraphs provide a summary of the studies carried out in 2017 and 2018 (AEG, 2018d and AEG 2018f).

The baseline environmental study was primarily focussed on Quill Creek as the proposed Project will have direct impacts to the system. Other systems included in the study are Nickel Creek (a headwater tributary of Quill Creek), Aird Creek, Arch Creek, and the Kluane River as mine development has the potential to impact these systems to some extent. The only prior information available on fish and fish habitat in Quill Creek was collected in September 2016. The studies included fisheries investigations, sampling for stream sediments, benthic invertebrates, periphyton and chlorophyll-a and aim to gather more information on seasonality (June, July, August, and October). The study also included Glacier Creek and Swede Johnson Creek, which were used as reference sites for the project.

A fish survey was conducted to determine the presence or absence of species using both minnow trapping and electrofishing. Several graylings (Thymallus arcticus) with fork-lengths of 62-80 mm and one slimy sculpin (Cottus cognatus) (53 mm) were captured on Quill Creek during the August sampling event. No fish were captured during any of the other sampling events at Quill Creek, and no fish were captured at Glacier Creek, Arch Creek, or Nickel Creek during any of the sampling events. Eight grayling (55-64mm) and two longnose suckers (Catostomus catostomus) (96-98 mm) were captured on the Swede Johnson Creek during the July sampling event. Two slimy sculpins were captured but only one was measured (69 mm) on the Swede Johnson Creek during the October sampling event.

Stream sediment samples were taken and analyzed for 32 metals to determine if there are trace pollutants or accumulating toxins that could impact aquatic organisms. Arsenic, Chromium and Copper levels were high throughout the study area and exceeded the interim freshwater sediment quality guidelines (ISQG) or probable effects levels (PEL) at all sites. Mercury exceeded the ISQG at Glacier

Creek, Arch Creek, Aird Creek, and exceeded both ISQG and PEL at Nickel Creek. Zinc exceeded the ISQG at Swede Johnson Creek, Quill Creek, Arch Creek, Aird Creek, and Nickel Creek.

Benthic invertebrates assist ecosystem assessment to determine potential impacts of metal toxicity and nutrient enrichment of a system. Kick netting was conducted to collect samples and shipped to Cordillera Consulting, in Summerland, B.C. for taxonomic identification to the lowest practical taxonomic level. Aquatic macrophyte presence was highest at Glacier Creek followed by Arch Creek and Quill Creek sites. The highest abundance (# organisms) was observed in Glacier Creek (30380) and the lowest in the Kluane River (1322). Diversity (total # taxonomic groups) was highest in Swede Johnson Creek (40) and lowest in Arch Creek (average 21.5). Simpsons Index of Diversity was highest in Quill Creek (average 0.91) and lowest in Glacier Creek (0.73). Diptera (true flies) were the dominant order at Swede Johnson Creek, Glacier Creek-1.5, Arch Creek-3.9, Aird Creek-7.6, and Nickel Creek 3.3. Plecoptera (stoneflies) were the dominant order at Glacier Creek-15.4, Nickel Creek-1.1, and Aird Creek-0.8. Ephemeroptera (mayflies) was the dominant order at the Kluane River.

Periphyton algae are simple aquatic plants that form the base of the aquatic food web. It was sampled as a bio monitoring tool to assess toxicity and nutrient enrichment. Density was obtained based on a sampling surface area of 102.2 cm2 (5 disks of 20.43 cm2 per site). Abundance and density were the highest in Swede Johnson Creek and the lowest in Arch Creek. Diversity was highest in Swede Johnson Creek and lowest in Nickel Creek. The dominant phylum observed at all sites was Bacillariophyta, with other phyla generally representing less than 1% of the total number of algae.

Chlorophyll A is a primary photosynthetic pigment and common to all algae, the concentration was measured to provide the biomass of algae at each site. Trends in chlorophyll a content can be an indicator of pollution levels through an increase/decrease in nutrients. The Chlorophyll a concentration throughout the project area were generally low, which is an indication of low productivity systems.

With the conclusion of the aquatic resource studies conducted in 2017 it was observed that the lack of flowing water during the majority of the year in the lower reaches and the fish barrier located on Quill Creek at the Alaska highway limits its value as habitat for fish. This barrier also reduces the potential for fish to move into other tributaries of Quill Creek including Nickel Creek and Aird Creek. This is similar in Arch Creek, where steep gradients and the suspected presence of natural barriers has also prohibited fish movement into the upper reaches. The results of the stream sediment sampling indicate that arsenic, chromium, and copper are at levels that may impact aquatic organisms, however, more data are needed to better understand the potential interactions. Benthic invertebrates within the project appear to be healthy, however, further sampling will be needed to be conducted to support this conclusion as only one year of data is available.

Additional fish surveys were completed in 2019 and consisted of electrofishing and minnow trapping throughout the summer period. Lake Chub minnows were captured in Swede Johnson Creek in June's sampling event. No other fish were caught in minnow traps or electrofishing conducted in Glacier Creek, Quill Creek, or Aird Creek during surveys completed in June, August, and September 2019.

20.4.8 Wildlife

To date, the bulk of survey efforts has been allocated to thinhorn sheep, which are considered the most prominent game and subsistence species in the area. The objectives of thinhorn sheep studies include determining seasonal habitat use requirements and seasonal movement patterns, and

monitoring population abundance and distribution. Surveys have utilized a variety of ground and aerial-based survey methods and remote camera monitoring across key sensitive seasonal periods: lambing, rutting, and late winter (EDI 2018c, EDI 2020a and EDI 2020b).

Since studies began in 2015 the minimum annual counts have suggested a relatively stable population. The ratios of adult males to nursery sheep and lambs to nursery sheep have been indicative of healthy reproduction rates. Habitat use surveys have been analyzed, in conjunction with the ELC mapping, to develop seasonal habitat models across the Project area. While the data collected between 2015 and 2018 are adequate to meet requirements for a YESAB project application, additional recommendations were recommended following the conclusion of the baseline study report *Nickel Shäw Project, Baseline Studies Report: Thinhorn Sheep Studies, 2015-2019* (EDI 2020a). These recommendations are presented in a letter to Nickel Creek Platinum (EDI 2020b) identifying some information gaps and key outstanding information needs related to thinhorn sheep in the Project area.

In 2018, breeding bird studies were also conducted. Those included three types of survey methods for upland songbirds (n= sites), riverine birds (n= sites) and pond and marsh birds (n=sites). Data from the 2018 bird studies have identified that there are no major issues associated with birds that are likely to be considered a 'significant residual effect' in an effects assessment (EDI 2020c). A recommendation to conduct a baseline study of cliff-nesting raptors was made following the bird study in 2018 (EDI 2020c). Planning for rare moth and butterfly studies was also initiated in 2018. Surveys for the remaining wildlife valued components will be conducted prior to environmental assessment submission.

In addition to environmental assessment related baseline studies, Nickel Creek has been conducting two operational monitoring and mitigation programs associated with its ongoing exploration program. One of these programs is a ground-based, thinhorn sheep-monitoring program. The objective of this program is to monitor the occurrence of sheep within and adjacent to the active exploration areas to determine potential interactions between the Project and sheep and, if negative interactions occur, develop management measures to mitigate effects (EDI 2020a). That program consists of weekly surveys from fixed observation stations within, and adjacent to, the exploration area to map sheep occurrences and potential interactions with Project activities.

The second operational monitoring program is for a golden eagle breeding area north of the main exploration area. No special management measures for the eagles were applied for the 2018 season. During times of field activity, in addition to the above, Nickel Creek works collaboratively with Kluane First Nations and EDI to train and assist a wildlife monitor that carries out activity/disturbance related duties to ensure the Company has the lowest impact on the natural environment around the Project area.

20.4.9 Heritage and Archaeology

The information in this section has been sourced from the *Nickel Creek Platinum Corp. Ni-Cu-PGM Project 2018 Resource Update Yukon, Canada* (2018) and supplemented with updates since 2018.

To protect the archaeological potential of heritage use (trails, gathering places, etc.) and artifacts, in 2017 Nickel Creek undertook two archaeological studies: i) Heritage Resource Impact Assessment and ii) Heritage Resource Overview Assessment. Both studies covered the Project area and were conducted

by ECOFOR. As a result of these studies, all workers and visitors that come to the Project are given a specific point of orientation for procedure to follow when finding a potential archaeological site(s).

20.4.10 Traditional Knowledge and Traditional Land Use

In 2017 Hemmera began compiling traditional knowledge (TK) and traditional land use (TLU) information associated with the Project which involved two First Nations: Kluane First Nation and White River First Nation. The information collected was based on a review of secondary and publicly available sources. A reference list was developed, and a database was compiled. As of 2017 there were approximately 300 lines of information and data listed in the database and 24 references.

20.5 Reclamation and Closure

20.5.1 Regulatory Requirements

There are four main items considered for closure in the Nickel Shäw project: open pit, waste storage facilities, site facilities and tailings management facility. Closure requirements are outlined in the document "Guidelines for Mine Waste Management Facilities – February 2023" and the Reclamation and Closure Planning for Quartz Mining Projects Plan Requirements and Closure Costing Guidance – August 2013. These guidelines are used and considered in the design concepts used in the Nickel Shäw project.

20.5.2 Objectives and Approach

The objective of the reclamation and closure plan for the Nickel Shäw Project is to return the project site to a safe and productive ecosystem after the extraction process is complete. This is while minimizing any potential long-term impacts by a proactive approach to reclamation and closure during operation to reduce the transition period.

20.5.3 Progressive Reclamation

Progressive reclamation of the mine area is considered as part of the operating cost. The waste storage facilities will be resloped as they are developed and revegetated during mine operation. This will require only the final lifts of the waste facilities to be reclaimed at the end of the mine life.

The waste facilities north of the pit are deposited in a top-down manner which allows the equipment to reslope as the dump advances to its ultimate position.

The south waste facility is developed in a bottom-up manner. This also allows for progressive reclamation to occur with resloping and revegetation activities advancing upwards as the facility is built out to final capacity. Equipment associated with normal mine operation will be used to advance the reclamation.

The tailings management facility and associated quarry will be maintained in an operating state until mine closure to ensure proper monitoring can occur.

20.5.4 Closure Activities

Closure activities are broken into the various project areas:

1) Tailings Management Facility (TMF)
    a. slope regrading of the embankment and placement of organic cover for revegetation on the tailings
    b. completion of the flood routing study and design of spillway upgrade (if required)
    c. tailings quarry stabilization and revegetation
    d. perimeter ditching for control of surficial water
2) Waste Storage Facilities
    a. final regrading as needed
    b. perimeter ditching for control of surficial water
    c. placement of organic cover for revegetation
    d. revegetation
3) Water Treatment System
    a. modify and commission the plant for reduced post closure flow rates
    b. construct a low-level service spillway for the polishing pond dam
4) Process Plant Demolition and Disposal
    a. demolition and disposal of all process plant and site facilities buildings including the mine equipment shop, process plant and office/camp complex
    b. disposal of non-salvageable rubble in the TMF
    c. removal of all salvageable materials from site
5) Conveyor Removal and Cleanup
    a. removal of conveyor system including disposal of all belting and stands
    b. cleanup of any spillage in the conveyor corridor and disposal in the TMF
6) Surface Soils Cleanup
    a. on-site disposal of materials in the TMF estimated at 20% of the site area of 0.25 m depth
    b. off-site bioremediation of hydrocarbon contaminated soils
    c. on-site disposal of metal contaminated soils
    d. off-site disposal of hazardous waste material
7) Open Pit Closure
    a. third-party study of pit slopes at end of mine life to establish safe slope guideline
    b. berming of entrances to prohibit unauthorized access
    c. perimeter ditching (upper portion established as pit develops downwards)
    d. warning sign placement
    e. biological studies of impacts and further discussions with DFO
8) Infrastructure
    a. scarify and revegetate haulroad
    b. scarify and revegetate redundant site roads
    c. removal of surface pipelines and site team trailers
    d. decommissioning of redundant power lines
9) Reclamation
    a. plant site – scarify, grade, and revegetate

b. waste dumps – scarify and final grade then revegetate

20.5.5 Closure and Post-Closure Monitoring

Considered within the current Project plan is for the operation of a water treatment plant for 5 years post closure. Testwork has indicated the tailings to be NAG. The next stage of the project will need to complete additional testwork, studies and water modelling/prediction to help inform the closure plan and water treatment requirements for the site.

Environmental monitoring of the site and receiving environment is assumed to be required for 20 years post-closure on a quarterly basis.

Annual site inspections are considered for 100 years as part of the closure plan.

20.6 Engagement/Consultation

Information in this section has been taken from the 2018 NI 43-101 Resource Update and supplemented with summaries of additional efforts since 2018.

20.6.1 First Nations and Project Location

The Project and all current infrastructure are located approximately 30 km northwest of Burwash Landing, on leased (commercially and/or industrially) Crown Land and within the Traditional Territory of Kluane First Nation and asserted territory of White River First Nation. The current Class IV MLU permit covers 401 active (quartz claims and mineral leases) tenures, and the claim block has partial overlap with Kluane First Nation Settlement Land Parcels R-49B (Category B Settlement Land) and R-1A (Category A Settlement Land). However, the Project including all active land tenures, is entirely in Kluane First Nation Traditional Territory and asserted White River First Nation territory. Kluane First Nation is a self-governing nation with a settled land claim agreement.

20.6.2 Communities

The Project is located in western Yukon, within the Whitehorse Mining District. The primary communities potentially affected by the Project and related infrastructure are Burwash Landing, Destruction Bay, Haines Junction, and Beaver Creek, that are approximately, 30, 50, 100 and 150 km from the Project, respectively.

Burwash Landing

Burwash Landing is located on the west shore of Kluane Lake, in the Shakwak valley on the perimeter of Kluane National Park and the Tachal Region (YG, 2023). Burwash Landing is home of Kluane First Nation. The current site is the community was a traditional summer camp location (YG, 2023). First nations people began settling in this area in the early 1900s (YG, 2023). According to 2022 census data from the Yukon Bureau of Statistics the population in Burwash Landing was 102 in 2022 (YG, 2023).

Destruction Bay

Destruction Bay is located on the west shore of Kluane Lake south of Burwash Landing. It is located in the Shakwak valley on the perimeter of Kluane National Park and the Tachal Region (YG, 2023). This community was established as a center for construction and maintenance on the Alaska Highway,

which remains its primary role today (YG, 2023). According to 2022 census data from the Yukon Bureau of Statistics the population in Destruction Bay was 59 in 2022 (YG, 2023).

Haines Junction

Haines Junction is located at the junction of the Alaska Highway and the Haines Highway, 158 km west of Whitehorse (YG, 2023). Haines Junction is located on trade route used by the Costal Tlingit and Chilkat peoples and as a staging area for traditional activities by the Southern Tutchone (YG, 2023). The community was established in 1942 during the construction of the Alaska Highway (YG, 2023). The community is an access point to the Kluane National Park and Reserve which is a UNESCO World Heritage Site (YG, 2023). According to 2022 census data from the Yukon Bureau of Statistics the population in Haines Junction was 1,035 in 2022 (YG, 2023).

Beaver Creek

Beaver Creek is near the Canada- USA boarder on the Alaska Highway and the most westerly settlement in Canada (YG, 2023). Beaver Creek is home of White River First Nation and also serves as boarder post and service centre (YG, 2023). This community is isolated located approximately 300 km from Haines Junction and 457 km from Whitehorse (YG, 2023). Beaver Creek was home to the Upper Tanana people who used the area as a camp during seasonal migrations (YG, 2023). People started settling in Beaver Creek in the 1900s as a camp for surveying the boarder, and in the 1940s due to mining interest and in the mid-1950s when the Canadian Customs post was established (YG, 2023). According to 2022 census data from the Yukon Bureau of Statistics the population in Beaver Creek was 103 in 2022 (YG, 2023).

20.6.3 Community Engagement and Consultation

Community engagement and consultation are core values of NCP, so that the Project advances responsibly towards mine development and ultimately, mine production. As part of that responsibility, dialogue between NCP and the local community members includes discussions regarding environmental concerns, health and safety, socio-economic benefits, and other potential effects advancing the Project may have.

NCP initiated engagement with Kluane First Nation and White River First Nation regarding the Project beginning in 2010. As the relationship between NCP and Kluane First Nation developed, an Exploration Co-operation Agreement (ECA) was signed on August 1, 2012. The ECA reflects NCP's commitment to recognize concerns of the community, to ensure that socio-economic benefits from the Project that include employment, training, skill progression, etc. is flowing from the Company to the local community, and to recognize the mine will be on Kluane First Nation Traditional Territory. As part of this commitment, Kluane First Nation and NCP have regular ECA meetings to discuss changing or new community concerns. The Kluane First Nation is regularly consulted on company policy and management plans for their input. Most recently NCP met with Kluane First Nation Lands Department leadership, a Kluane First Nation elder and citizen and leadership from the Kluane Community Development Limited Partnership (KCD) met to discuss NCP's plans for 2023 as well as contracting issues and opportunities.

In 2020 through 2022 engagement and consultation efforts were reduced because of restrictions in place due to the COVID-19 pandemic. Currently Project updates continue via meetings and site visits, and additional engagement are planned for 2023.

21 CAPITAL AND OPERATING COSTS

21.1 Summary

The initial and life of mine capital cost estimate is summarized in Table 21-1. All costs are expressed in Canadian Dollars (CDN) unless otherwise stated and are based on Q2 2023 pricing.

Table 21-1: Nickel Shäw Capital Cost Estimate

Area	Initial Capital (M$)	Sustaining Capital (M$)	Total Capital (M$)
Open Pit – Prestripping (capitalized)	172.0	-	172.0
Open Pit - Capital	226.7	205.6	432.3
Open Pit Mining - Subtotal	398.7	205.6	604.3
Processing	509.9	5.1	515.0
Infrastructure	353.5	257.5	611.0
Environmental	-	52.4	52.4
Indirects	245.1	57.9	303.0
Contingency	179.9	59.7	239.6
Total	**1,687.1**	**638.2**	**2,325.3**

The life of mine operating cost summary is shown in Table 21-2.

Table 21-2: Nickel Shäw Operating Cost Estimate

Area	Units	Life of Mine (Year 1-20)
Open Pit Mining	$/t moved	2.64
	$/t mill feed	7.30
Processing	$/t mill feed	17.32
G&A	$/t mill feed	2.43
Sub-Total	**$/t mill feed**	**27.05**
Carbon Tax	$/t mill feed	0.83
Concentrate Trucking, Port, Shipping	$/t mill feed	2.34
Total Operating Cost	**$/t mill feed**	**30.22**

21.2 Capital Cost

21.2.1 Summary

This section outlines the capital costs for the 45 kt/d Project. The capital cost estimate includes all the direct and indirect costs along with the appropriate estimated contingencies for all the facilities required to bring the Project into production, as defined by this Study. All equipment and material are

assumed to be new. Labour costs are based on the statutory laws governing benefits to workers in effect in the Yukon at the time of the estimate. The estimate does not include any allowances for scope changes, escalation, and exchange rate fluctuations. The execution strategy is based on an engineering, procurement, and construction management (EPCM) implementation approach.

The capital cost estimate for the Project was developed to provide an estimate suitable for a PFS phase including cost to design, construct, and commission the facilities. The estimate produced is described as a Class 4 with an expected accuracy of +25% -20%. This classification is based on the AACE international standard.

Table 21-3 shows the summary of total capital costs for the 45 kt/d Project including mine, process plant, TMF on-site infrastructure and Project indirect costs for the major areas. The initial, sustaining, and total capital costs for the Project is estimated to be $2,325.3 million dollars expressed in Q2 2023 price levels exclusive of duties and taxes.

Table 21-3: Nickel Shäw Project Capital Cost Estimate

Area	Initial Capital (M$)	Sustaining Capital (M$)	Total Capital (M$)
Open Pit – Prestripping (capitalized)	172.0	-	172.0
Open Pit - Capital	226.7	205.6	432.3
Open Pit Mining - Subtotal	398.7	205.6	604.3
Processing	509.9	5.1	515.0
Infrastructure	353.5	257.5	611.0
Environmental	-	52.4	52.4
Indirects	245.1	57.9	303.0
Contingency	179.9	59.7	239.6
Total	**1,687.1**	**638.2**	**2,325.3**

21.2.2 Estimate Responsibility

This capital cost estimate reflects the joint efforts of Halyard, AGP and specialty consultants retained by Nickel Creek. AGP was responsible for compiling the submitted data into the overall estimate but did not review or validate the inputs from Nickel Creek or its other consultants. Table 21-4 outlines the responsibilities of each company for input of information into the capital cost estimate.

Table 21-4: Capital Cost Estimate Responsibilities

Company	Responsibility
Halyard	process plant, on-site/off site infrastructure.
AGP	mining and dewatering
AGP	TMF construction and sustaining capital
AGP	Income taxes (included in the financial model).

Each consultant provided input to the capital cost estimate appropriate to a +25% -20% accuracy estimate, including all related indirect costs and allowances.

The exchange rate applied was $0.75 USD: $1 CDN

21.2.3 Mine Capital Costs

The open pit mining equipment capital costs were developed from quotations from local vendors. Base capital costs were obtained and developed with options. Some smaller equipment information from AGP's database of recent projects was applied. The base costs provided by the vendors are included in the calculation for each unit cost and options were added to that as shown in Table 21-5.

Table 21-5: Major Mine Equipment – Capital Cost ($)

Equipment	Unit	Capacity	Capital Cost
Production Drill	mm	140	1,750,000
Production Drill	mm	165	4,105,000
Production Loader	m^3	21	9,447,000
Production Loader	m^3	13	3,295,000
Hydraulic Shovel	m^3	37	18,890,000
Hydraulic Excavator	m3	3.2	923,000
Haulage Truck	t	240	7,291,000
Haulage Truck	t	91	2,576,000
Crusher Loader	m^3	13	3,295,000
Track Dozer	kW	565	2,356,000
Grader	kW	163	515,000

Some items such as spare truck boxes and spare shovel buckets were capitalized and purchased at the same time as the mine equipment. In the case of the haulage trucks, spare boxes are estimated one spare box will be required for every four trucks. For the hydraulic shovels and loader, the estimate is that one spare bucket per two loading units will be required.

The distribution of the capital cost is completed using the units required within a period. If new or replacement units are needed, that number of units, by unit cost, determines the capital cost for that period. There is no allowance for escalation in any of these costs. Timing of major capital equipment costs is one year in advance of the need for that piece of equipment. Therefore, if the equipment is required in Year 1, the cost is charged in Year -1.

The number of units are determined by the mine schedule and the operating cost estimate for required operating hours. These were balanced over periods of time so if there are fluctuations in the hours from period to period, or year to year, they are distributed for the entire equipment fleet to balance the hours.

Replacement times for the equipment are average values from AGP's experience and vendor suggestions. Options around rebuilds and recertification of equipment like track dozers is not considered, nor is used equipment, although that should be considered during the purchase of the mine fleet.

The balancing of equipment units based on operating hours is completed for each major piece of mine equipment. The smaller equipment was based on number of units required, based on operational experience. This includes such things as pickup trucks (dependent on the field crews), lighting plants, mechanics trucks, etc.

The most significant piece of major mine equipment is the haulage trucks. The peak of mining is in Year 2 and the haulage fleet needs 21 units of 240 t size to maintain mine production. The maximum hours per truck/per year are set at 6,000. There are periods where the maximum hours per unit are below what the maximum possible can be. In those cases, the hours required are distributed evenly across the number of trucks within the fleet.

The other major mine equipment is determined in the same manner. Therefore, in some instances the smaller production loaders have a longer period of life (same number of hours between replacements) due to the sharing of hours with the other units in the fleet.

The support equipment is usually replaced on a number of year's basis. For example, pickup trucks are replaced every four years, with the older units possibly being passed down to other departments on the mine site, but for capital cost estimating new units are considered for mine operations, engineering, and geology.

The timing of equipment purchases, initial and sustaining, are shown in Table 21-6. The forecast operating life by unit is also shown in the table. Table 21-7 shows the total number of units on site by year.

Table 21-6: Equipment Purchases – Initial and Sustaining

Equipment	Unit Life (hrs.)	Yr -2	Yr -1	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8	Yr 9	Yr 10	Yr 11-20
Production Drill–140mm	25,000	2		1					1					2
Production Drill-165mm	35,000	3	2	1					3	3	1			5
Production Loader-21m3	72,000	1	1											2
Production Loader-13m3	35,000	2								1				
Hydraulic Shovel-37m3	80,000	1	1											2
Hydraulic Excavator-3.2m3	10 years	2										1		
Haulage Truck-240t	72,000	5	8	3	5									
Haulage Truck-91t	35,000	5												
Crusher Loader-13m3	35,000			1						1				2
Track Dozer	35,000	7	2									2	2	1
Grader	20,000	2	1			1		1			1			2

Table 21-7: Equipment Fleet Size

Equipment	Unit Life (hrs.)	Yr -2	Yr -1	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8	Yr 9	Yr 10	Yr 11-20
Production Drill–140mm	25,000	2	2	3	3	3	3	3	2	2	2	2	2	2
Production Drill-165mm	35,000	3	5	6	6	6	6	6	6	7	7	7	7	7
Production Loader-21m3	72,000	1	3	3	3	3	3	3	3	3	3	3	3	3
Production Loader-13m3	35,000	2	2	2	2	2	2	2	2	2	2	2	2	2
Hydraulic Shovel-37m3	80,000	1	2	2	2	2	2	2	2	2	2	2	2	2
Hydraulic Excavator-3.2m3	10 years	2	2	2	2	2	2	2	2	2	2	2	2	2
Haulage Truck-240t	72,000	5	13	16	21	21	21	21	21	21	21	21	21	21
Haulage Truck-91t	35,000	5	5	5	5	5	5	5	5	5	5	5	5	5
Crusher Loader-13m3	35,000			1	1	1	1	1	1	1	1	1	1	1
Track Dozer	35,000	7	9	9	9	9	9	9	9	8	8	8	8	8
Grader	20,000	2	3	3	3	3	3	3	3	3	3	3	3	3

The mining capital is further tabulated in Table 21-8.

Table 21-8: Mining Capital Cost Estimate ($M)

Equipment	Preproduction Year -2, -1	Sustaining	Total
Pre-Production Stripping			
Pre-Production Stripping	172.0	-	172.0
Mining Equipment			
Major Equipment	208.3	187.3	395.6
Support Equipment	18.4	18.3	36.7
Subtotal-Mining Equipment	226.7	205.6	432.3
Total Mine Capital	398.7	205.6	604.3

Pre-Production Stripping

The mine is scheduled to initiate mining in Year -2. The material moved will be used to develop the mine roads to the top of the pit, the stockpile pad, crusher pad and initiate mining. A total of 53.0 Mt total will be mined in this time period and the costs are being attributed to capital. Part of that tonnage, 4.3 Mt is material to be placed in the stockpile prior to processing commencing. This pre-production stripping is expected to cost $172.0 M. This cost includes all associated management, dewatering, drilling, and blasting, loading, hauling, support, engineering and geology department labour, and grade control costs.

Mining Equipment

The mining equipment is split into major and minor equipment categories. Major equipment includes drills, production loaders, hydraulic shovels, haulage trucks, dozers, and graders. Other equipment such as mechanics trucks, small excavators, water trucks, pump trucks, pickups, lowbed, etc. are part of the support equipment fleet cost. A crushing plant is part of the support equipment fleet and will provide crushed rock for road surfacing and blasthole stemming.

This estimate also includes the tailings construction fleet which will be used at the Tailings Management Facility and adjacent quarry. Material from the quarry will be used to construct the tailings structure. Capital costs for the construction of the tailings facility are included in Infrastructure.

21.2.4 Process Plant and Infrastructure Capital Cost

Process plant and surface infrastructure costs are summarized in the following tables.

Direct Capital Costs

Process Plant direct costs are summarized in Table 21-9 below.

Table 21-9: Process Plant Direct Capital Cost Estimate

Area	Total Capital (M$CDN)
Mechanical Equipment	202.3
Civil Construction	180.5
Structural Steel	42.6
Platework	10.7
Piping and Valves	29.7
Electrical	32.1
Instrumentation and Controls	12.0
Total	**509.9**

Direct capital costs for surface infrastructure items are summarized in Table 21-10 below.

Table 21-10: Site Infrastructure Direct Capital Cost Estimate

Area	Initial Capital ($M)	Sustaining Capital ($M)	Total Capital ($M)
Site Infrastructure, Buildings and Camp			
Site General	8.3	-	8.3
Permanent Camp	48.3	-	48.3
Administration Building	2.7	-	2.7
Mine Dry	2.9	-	2.9
Assay Laboratory	0.6	-	0.6
Main Warehouse	3.7	-	3.7
Process Plant Building	51.9	-	51.9
Water and Sewer Systems			
Fresh Water System	0.4	-	0.4
Potable Water	2.9	-	2.9
Fire Protection	5.1	-	5.1
Water Treatment	3.1	-	3.1
Sewage Treatment	3.2	-	3.2
Reclaim Water Pond	2.2	-	2.2
Site Layout Infrastructure and Roads			
Fuel Storage Depot	3.3	0.3	3.6
Weigh Scale	0.5	-	0.5
Laydown Area	0.1	-	0.1
Solid Waste Disposal	1.8	-	1.8
Main Access Road to Site	5.3	-	5.3
Plant Roads	3.6	-	3.6
Security Gate	0.8	-	0.8
Parking Lot	0.7	-	0.7

Area	Initial Capital ($M)	Sustaining Capital ($M)	Total Capital ($M)
Mine Infrastructure – Plant Area			
Mine Maintenance Shop	8.8	-	8.8
Warehouse	3.6	-	3.6
Mine Truck Maintenance Shop -including supplies	31.7	-	31.7
Maintenance Shop Outfitting	1.1	-	1.1
Explosives Plant Area	1.4	-	1.4
Mining Infrastructure – Pit Area			
Aeird Creek Waste Facility Development	0.5	-	0.5
Aeird Creek Waste Facility Diversion Ditch	0.6	-	0.6
Nickel Creek Waste Facility Development	0.8	-	0.8
Nickel Creek Waste Facility Diversion Ditch	0.6	-	0.6
Waste Facilities Settling Pond	0.5	-	0.5
Mine Access Road to top of Pit	9.4	-	9.4
Mine Communication System	1.5	-	1.5
Engineering Office Equipment	1.5	-	1.5
Dispatch System – Initial and Sustaining Software	1.4	6.8	8.2
Pit Dewatering System	0.5	2.7	3.2
Site Power System			
LNG Power Plant (included in cost of power)	-	-	-
Surface Power Distribution	21.4	-	21.4
Overland Conveyor			
Overland Conveyor – Mine to Plant	59.2	-	59.2
Settling Ponds Along Conveyor	0.8	0.2	1.0
Tailings Management Facility			
Embankment Construction	39.0	246.6	285.6
Access Roads	0.5	-	0.5
Tailings Pipelines	0.9	0.9	1.8
Main Seepage Pond	0.8	-	0.8
Skagway Facilities			
Conc Storage Skagway	9.3	-	9.3
H_2SO_4 Facilities, Skagway	7.6	-	7.6
Total	**353.5**	**257.5**	**611.0**

The processing and infrastructure capital cost estimates were developed in the following manner.

Estimating Methodology

The process and infrastructure cost estimates have been completed following the typical characteristics of an AACE Class 4 cost estimate. Process design documents (process design criteria, process flow diagrams, mass balances) and mechanical equipment lists have been produced with sufficient detail to permit the preparation of 2D layout drawings and together these have been used to determine a bill of quantities for the various engineering disciplines, including mechanical

equipment, concrete and civil works, steel structures, buildings and major electrical equipment for the process plant and associated surface infrastructure. Construction/Installation rates used in the estimate have been calculated using information drawn from a variety of sources, including actual costs at an ongoing nearby construction project, quotes from Canadian construction companies and Halyard's historical cost databases (escalated to account for market conditions where necessary). Multiple budget quotes for large equipment electrical items were obtained from reputable suppliers.

Quantity Development

Quantities were determined primarily from the 2D plant and site layout drawings, together with mechanical equipment lists and specifications.

In general, one of three approaches to the determination of quantity was taken, dependent upon design maturity and/or uncertainty.

- A Material Take-Off (MTO) approach was selected where more detailed specifications and 2D drawings were available (e.g., SAG and ball mill foundation volumes calculated using vendor drawings, specifications, and typical loads).
- Factored: quantities derived from percentages applied as a factor, either as a percentage of total cost, or as a percentage of quoted mechanical equipment cost, determined by process area (crushing, grinding, flotation etc.) and based on experience from projects of similar size and/or scope.
- Allowance: lump sum added to the cost estimate to account for costs that are certain to occur, but they cannot be identified with the same accuracy as those above.

Pricing

Unit costs were determined using several established estimating methods, and where required were applied to calculated quantities.

Budget quotations were obtained wherever practical, primarily for the mechanical items within the process plant. Where capital costs were anticipated to be significant, multiple quotations were collected.

A number of significant scope items have been included on a supply/operate basis, and as such the capital costs for these have been amortized over the project life and included within the ongoing operating cost budget. Examples include the power plant and associated LNG storage/gasification areas, the assay laboratory, and the explosives production plant.

21.2.5 Direct Capital Cost Estimating by Discipline

Earthworks

Material take-offs were developed for the earthwork quantities using the surface works layout drawings. Calculated areas and volumes have been used together with database rates and/or quotes from Northern BC suppliers to complete this section of the estimate.

The earthworks budget has assumed no complications related to permafrost.

Concrete

Material take-offs have been prepared for the estimate with reference to various design codes including the National Building Code of Canada (NBCC) and the seismicity models prepared by Natural Resources Canada (NRC). The Yukon Territory recently adopted the 2020 version of the NBCC, and this references the most recent seismic design parameters for buildings and structures.

Of note, the Project site is in an area immediately adjacent to an active fault, and this has a significant impact on the civil designs and associated quantities. Civil design specifications, and the impact of seismic conditions at the project site, are discussed in detail in Section 17.

Supply and installation rates for concrete works were based on information taken from a number of sources, most notably from an active construction site in a nearby region.

Composite rates and quantities were determined on a volume or area basis, specific to each plant area and infrastructure building.

Steelwork

Structural steel quantities were estimated using material take-off for each process plant area. For other buildings within the surface infrastructure scope, turnkey estimates were obtained from a northern BC contractor.

Structural steel installation rates were sourced in a similar fashion to the concrete, together with additional database information and discussions with local contractors. Steel supply costs have been subject to significant escalation and volatility recently, and these aspects have been averaged out so some extent to provide a longer-term view on costs.

Platework and Shop / Field Fabricated Tanks

Platework and tankage quantities were specified by the process engineer as part of the mechanical equipment list. Estimated weights and lining quantities were then determined for the capital estimate.

Rates for the supply and fabrication of platework were based on recent quotes for similar units, escalated as necessary. The supply rate for the platework assumes fabrication in Alberta.

Costs for installation of platework have been estimated using similar methodology to the Structural Steelwork budget.

Mechanical Equipment

Supply costs for over 75% of the mechanical equipment (cost basis) have been priced based on budget quotes, with the remainder of items estimated using historical project cost data.

Mechanical equipment installation costs have been determined using data obtained from recent projects of similar scope.

Piping

The process plant piping bulks were factored based on similar historical information identified for each plant area.

Overland piping was routed on site plans and measured accordingly. Costs for these pipelines have been estimated using supply and installation rates for similar northern projects.

Electrical / Instrumentation

An all-inclusive supply/operate type arrangement has been selected for the power plant and associated power supply infrastructure. Single line diagrams have been prepared for the project and costs for electrical distribution equipment (buried and overhead lines etc.) are based on budget quotes. The remaining supply prices are based on historical rates and recent projects. The electrical bulks were factored based historical data for each plant area.

Instrumentation bulks and process control, including PLC hardware and software, was factored by area, based on recent similar projects.

Buildings

The majority of building costs are based on detailed supply/install quotations from a BC based contractor. Building fit out and HVAC allowances are included for the process plant building.

The power plant buildings, assay lab and explosive mix plant were quoted as part of supply/operate quotes and included under OPEX.

Contractor Indirects

Contractor indirects have been built into the compound labour rates for all disciplines. These costs are based on historical project work in similar locations in Canada and include offsite management, onsite staff and supervision above trade level, crane drivers, equipment and labour mobilization and demobilization.

21.2.6 Environmental Capital Cost

The Environmental Capital Cost estimate is shown in Table 21-11.

Table 21-11: Environmental Capital Cost Estimate

Area	Initial Capital ($M)	Sustaining Capital ($M)	Total Capital ($M)
Reclamation – Direct Cost	-	9.8	9.8
Initial Bond Payment	-	8.9	8.9
Bond Repayment	-	(8.9)	(8.9)
Interest on Financial Assurance	-	42.6	42.6
Total	**-**	**52.4**	**52.4**

The mine will be working with the concept of concurrent reclamation of slopes during the mine operation. At the end of the mine life, the waste storage facilities will be finally re-sloped, and reseeded. The mine access roads will be scarified and reseeded. The site buildings will be removed and sold for scrap and salvage and the area reclaimed. The salvage value has been applied against the direct cost to arrive at the value of $9.8 million.

Financial assurance works with an estimated cost of $35.5 million. A bond representing 25% of that value is the initial payment in Year 1. Interest will be paid on the bond for the life of the mine resulting in a charge of $42.6 million. The bond will be repaid at the end of the mine life for a credit.

21.2.7 Indirect Capital Costs

The Indirect Capital costs have been summarized in Table 21-12.

Table 21-12: Project Indirect Capital Costs by Area

Area	% of Direct CAPEX	Cost ($M)
Open Pit Indirects	5%	21.6
Processing Indirects	25%	127.5
Infrastructure Indirects	18%	109.9
Environmental Indirects	-	-
Owners Cost	3%	44.0
Total	**19%**	**303.0**

The open pit indirects are associated with the cost of spares not already considered in the initial capital purchase. In many instances some of these spares are stocked on site as part of the purchase agreement for the mining equipment.

The owners cost represents the costs associated with the owners team and items payable by Nickel Creek during construction.

The processing and infrastructure indirects are estimated using the following subcategories as part of the overall capital cost estimate.

Engineering, Procurement and Construction Management (EPCM)

The EP and CM costs has been factored based on historical ratios and industry standards.

Construction Indirects

Construction indirect costs were factored and included for items not included in other contractor or Client budgets. This typically includes temporary facilities, warehousing, and utilities. Fuel, meals and accommodation, vehicles, are included.

Construction room and board has been estimated based on camp loading, construction duration and recent pricing for Canadian camp maintenance cost and is included in the capital cost estimate as a direct cost.

Spares

A budget for Initial and commissioning spares for mechanical equipment was factored using industry standards.

Vendor Representatives

The majority of equipment require vendors to be present during commissioning in order to obtain proper guarantees. A provision has therefore been included in the estimate to cover the vendor representatives' services, based on mechanical equipment packages.

Freight

Freight costs have been calculated based on a percentage of the supply cost. Factors varied dependent on the source, size, weight, type, and complexity of equipment. The factors are based on historical rates depending on sourcing of materials and equipment.

21.2.8 Contingency

An amount of contingency has been allowed for to cover unknown variances between the specific items allowed in the estimate and the final total installed Project cost. The contingency does not cover scope changes, design growth, etc., or the listed qualifications and exclusions.

The contingency costs for each cost area are summarized in Table 21-13.

Table 21-13: Project Contingency Cost by Area ($M)

Area	% of Direct CAPEX	Cost ($M)
Open Pit	5%	21.6
Processing	20%	104.5
Infrastructure	18%	112.4
Environmental	2%	1.0
Total	**15%**	**239.6**

Contingency has been applied to the process plant mechanical equipment estimate on a line-by-line basis, with ratios determined according to the level of confidence (i.e., quoted, database or factored). Elsewhere in the estimate, factors have been applied by discipline, as listed in Table 21-14 below.

Table 21-14: Process Plant Contingencies

Area	% of Direct CAPEX
Mechanical Equipment	13%
Civil Construction	25%
Structural Steel	25%
Platework	15%
Piping and Valves	20%
Electrical	15%
Instrumentation and Controls	20%
Total	**20%**

Contingency on infrastructure items is summarized in Table 21-15 below.

Table 21-15: Infrastructure Contingencies by Major Category

Area	% of Direct CAPEX
Buildings and Plant	15%
Roads and Parking Lot	15%
Power Supply	15%
Overland Systems	25%
Port Facilities (Skagway)	30%
Tailings Storage	25%

Escalation

There is no allowance for escalation in the estimate.

21.2.9 Qualifications and Assumptions

The capital cost estimate is qualified by the assumptions listed in Table 21-16.

Table 21-16: Qualifications and Assumptions

Qualifications / Assumptions
GENERAL
Plant mobile equipment will be leased.
The base date for the bulk of pricing estimate is second quarter 2023 (2Q 2023).
Prices of materials and equipment with an imported content have been entered in native currencies and converted to CDN at the rates of exchange stated previously in this document.
Nickel Creek will provide sufficient power and water for construction.
No allowance has been considered for civil unrest or disturbances.
Nickel Creek will secure and provide all required permits.
EARTHWORKS
The bulk earthworks commodity rates that include imported material assume that suitable construction/fill materials will be available from borrow pits within 2 km of the work fronts.
CONCRETE
Assume sand, aggregate and cement are by contractors to specification and assumed to be available locally.
INDIRECTS
Construction contractor rates include mobile equipment, vehicles, fuel, construction power and consumables for the duration of construction. Potable water and raw water supply will be provided by Nickel Creek and available at site for use by contractors.
Mobilization/demobilization/R&R flights of construction contractor personnel are incorporated in the contractor in-direct labour rates. Construction contractor meals and accommodation are carried as a direct cost in the capital cost estimate.
Accommodation & Meals CM Team – camp and meals will be provided to the CM Team

21.2.10 Exclusions

The following items are specifically excluded from the capital cost estimate:

- permits and licences
- project sunk costs

- escalation
- exchange rate variation
- capital cost risks

The cost of many capital items is being impacted due to world/market conditions. This estimate is unable to take uncertainty of this nature into consideration. The capital cost estimate is based on Q2 2023 cost quotations.

Given the above-mentioned challenges, capital cost sensitivity has been reviewed as part of the financial modelling.

21.3 Operating Cost Estimates

21.3.1 Operating Cost Summary

The estimated Project operating costs are shown in Table 21-17. The open pit is mined until Year 19 with the final extraction of material from the stockpile in part of Year 20.

Table 21-17: Nickel Shäw Project Operating Costs

Area	Units	Life of Mine (Year 1-20)
Open Pit Mining	$/t moved	2.64
	$/t mill feed	7.30
Processing	$/t mill feed	17.32
G&A	$/t mill feed	2.43
Sub-Total	**$/t mill feed**	27.05
Carbon Tax	$/t mill feed	0.83
Concentrate Trucking, Port, Shipping	$/t mill feed	2.34
Total Operating Cost	**$/t mill feed**	30.22

General data sources and assumptions used as the basis for estimating the process operating costs include:

- process design criteria outlined in Section 17
- average production rate of 45 kt/d
- manpower requirements as developed by AGP and Halyard
- unit cost of electrical energy of $0.194/kWh
- unit cost of diesel fuel of $1.24/L
- carbon taxes on fuel are excluded from the operating cost but included in the financial model
- income taxes are excluded from the G&A but are applied to the financial model
- refining costs and NSR royalties are excluded from the operating costs but are applied to the financial model

21.3.2 Mine Operating Costs

Mine operating costs are estimated from base principles. Key inputs to the mine costs are fuel and labour. The fuel cost is estimated using local vendor quotations for fuel delivered to site and ratioed to a long-term estimate of USD$75/barrel world oil price. A value of $1.24/L is used in this estimate.

Open Pit Mine Operating Cost Estimate

Labour cost estimates were based on queries to other operations and recent salary surveys at mines in the Yukon and BC. Shift schedules are 12-hour shifts with a 4 days on/4 days off schedule. Some management positions will be on a 4-days on and 3-days off basis. A burden rate of 40% was applied to all rates. Mine positions and salaries are shown in Table 21-18.

Table 21-18: Open Pit Mine Staffing Requirements and Annual Salaries (Year 5)

Staff Position	Employees	Full Load Annual Salary ($/a)
Mine Maintenance		
Maintenance Superintendent	1	231,000
Maintenance General Foreman	1	196,000
Maintenance Shift Foremen	4	147,000
Maintenance Planner/Contract Admin	2	154,000
Clerk/Assistant	1	98,000
Subtotal	**9**	
Mine Operations		
Mine Ops/Technical Superintendent	1	266,000
Mine Operations General Foreman	1	217,000
Mine Shift Foreman	8	147,000
Drill and Blast Foreman	1	133,000
Road Crew/Services Foreman	1	147,000
Clerk/Assistant	1	98,000
Subtotal	**13**	
Mine Engineering		
Chief Engineer	1	224,000
Senior Engineer	1	196,000
Open Pit Planning Engineer	2	168,000
Geotech Engineer	1	154,000
Blasting Engineer	1	154,000
Blasting/Geotech Technician	1	126,000
Dispatch Technician	1	126,000
Surveyor/Mining Technician	2	126,000
Surveyor/Mine Technician Helper	2	105,000
Clerk/Assistant	1	98,000
Subtotal	**13**	
Geology		
Chief Geologist	1	210,000
Senior Geologist	1	182,000
Grade Control Geologist/Modeler	2	154,000

Staff Position	Employees	Full Load Annual Salary ($/a)
Sampling/Geology Technician	4	98,000
Clerk/Assistant	1	98,000
Subtotal	**9**	
Total Mine Staff	**44**	

The mine staff labour remains consistent for the mine life after the initial recruitment in the pre-production period (Year -2 and -1).

Hourly employee labour force levels in the mine operations and maintenance departments fluctuate with production requirements. A snapshot of the labour makeup for Year 5 is shown in Table 21-19.

Table 21-19: Hourly Pit Manpower Requirements and Annual Salary (Year 5)

Hourly Position	Employees	Full Load Annual Salary ($/a)
Mine General		
General Equipment Operator	8	95,000
Road/Pump Crew	4	93,000
General Mine Laborer	4	74,000
Light Duty Mechanic	2	126,000
Tire Man	4	101,000
Lube Truck Driver	4	86,000
Subtotal	**26**	
Mine Operations		
Driller	32	101,000
Blaster	2	101,000
Blaster's Helper	4	74,000
Loader Operator	4	113,000
Hydraulic Shovel Operator	8	113,000
Haul Truck Driver	60	97,00
Dozer Operator	12	101,000
Grader Operator	5	101,000
Snowplow/Water Truck	5	97,000
Backhoe Operator	1	102,000
Subtotal	**133**	
Mine Maintenance		
Heavy Duty Mechanic	31	126,000
Welder	21	126,000
Electrician	2	126,000
Apprentice	6	87,000
Subtotal	**60**	
Total Hourly	**219**	

Labour costs are based on an owner operated scenario. Nickel Creek is responsible for the maintenance of the equipment with its own employees.

Not shown is the tailings crew responsible for the quarry and tailings facility construction. That accounts for another nine staff (surveyors, geotechnical engineer, and shift foremen) and a peak of 85 hourly in Years 9 and 10.

Over seeing all of the mine operations, engineering, and geology functions is a Technical Superintendent. This person would have the Mine Maintenance Superintendent, Mine General Foremen, Chief Engineer, and Chief Geologist reporting to them. The Technical Superintendent would report to the Mine General Manager.

The Mine General Foreman would have the shift foremen report directly to him.

The mine has four mine operations crews, each with two Senior Shift Foremen. For the mine life, there is also a Road Crew/Services Foreman responsible for roads, drainage, and pumping around the mine. This person would also be a backup Senior Mine Shift Foreman. The Mine Operations department has its own clerk/assistant.

The Chief Engineer has one Senior Engineer and two open pit engineers reporting to him. The Blasting Engineer is included in the short-range planning group and would double as drill and blast foreman as required. The Geotechnical Engineer would cover all aspects of the wall slopes and waste dumps together with one shared technician in blasting.

The short-range planning group in engineering also has two surveyor/mine technicians and two surveyors/mine helpers. These people will assist in the field with staking, surveying, and sample collection with the geology group; they will have a clerk/assistant to assist the team.

In the Geology department, there is one Senior Geologist reporting to the Chief Geologist. There are also two grade control geologists/modellers; one will be in short range and grade control drilling, and the other will be in long range/reserves. There are also four grade control geologists (one per mine operations crew) and one clerk/assistant.

The Mine Maintenance Superintendent has the Maintenance General Foreman reporting to him. Four Mine Maintenance Shift Foremen will report to the Maintenance General Foreman. As well, there are two maintenance planners/contract administrators and a clerk.

The hourly labour force includes positions for the light duty mechanic, and lube truck drivers. These positions all report to Maintenance. There are generally one of each position per crew. Other general labour includes general mine labourers (two per crew).

The drilling labour force is based on one operator per drill, per crew while operating. This on average is 8 drillers per crew and holds there until Year 10 when it drops down over time as the drilling hours are diminished.

Shovel and loader operators peak at 12 in Year -1 and hold at that level until Year 19 when it also will start to tail off. Haulage truck drivers peak at 76 in Year 2 and then drop to around 60 in Year 11 then taper off to the end of the mine life.

Maintenance factors are used to determine the number of heavy-duty mechanics, welders and electricians are required and are based on the number of drill operators. Heavy duty mechanics work out to 0.25 mechanics required for each drill operator. Welders are 0.25 per drill operator and

electricians are 0.05 per drill operator. This method of estimating maintenance requirements is used for each category of the mine operating cost and is summarized in Table 21-20.

Table 21-20: Maintenance Labour Factors (Maintenance per Operator)

Maintenance Job Class	Drilling	Loading	Hauling	Mine Operations Support
Heavy Duty Mechanic	0.25	0.25	0.25	0.25
Welder	0.250	0.25	0.25	0.25
Electrician	0.05	0.01	-	-
Apprentice	-	-	-	0.25

The number of loader, truck, and support equipment operators is estimated using the projected equipment operating hours. The maximum number of employees is four per unit to match the mine crews.

The vendors provided repair and maintenance (R&M) costs for each piece of equipment. These came in the quotations for the capital cost. Fuel consumption rates are also estimated for the conditions expected at Nickel Shäw and are used in the detail costs for the mine equipment. The costs for the R&M are expressed in a $/h form.

The various suppliers provided the costs for different tire sizes that will be used during the project. Estimates of the tire life are based on AGP's experience and conversations with mine operators. The operating cost of the tires is expressed in a $/h form. The life of the haulage truck tires is estimated at 4,500 hours per tire with proper rotation from front to back. On the haulage trucks each tire costs $57,400 so the cost per hour for tires is $76.53/h for the truck using six tires in the calculation.

Ground Engaging Tool (GET) costing is estimated from other projects and conversations with personnel at other operations. This is an area of cost that is expected to be fine-tuned during mine operations.

Drill consumables were estimated as a complete drill string using the parts list and component lives provided by the vendor. Drill productivity for the 140 mm drill is estimated at 28.2 m/h and for the 165 mm drill at 27.1 m/h. Equipment costs used in the estimate are shown in Table 21-21.

Table 21-21: Major Equipment Operating Costs – no labour ($/h)

Equipment	Fuel/ Power	Lube/ Oil	Tires	Under-Carriage	Repair & Maintenance	GET/ Consumables	Total
Production Drill (140 mm)	111.60	11.16	-	-	73.00	90.85	286.61
Production Drill (165 mm)	135.16	13.52	-	6.00	95.65	173.29	423.61
Production Loader (21 m3)	142.60	21.39	43.54	-	97.02	15.00	319.55
Production Loader (11.5 m3)	93.00	9.30	32.34	-	95.12	10.00	239.76
Hydraulic Shovel (37 m3)	494.76	49.48	-	-	486.35	20.00	1,050.59
Haulage Truck – 240 t	181.04	18.10	76.53	-	133.24	6.00	414.91
Haulage Truck – 91t	93.00	9.30	21.70	-	62.82	3.00	189.82
Track Dozer	99.20	9.92	-	10.00	105.01	5.00	229.13
Grader	27.28	2.73	3.50	-	18.37	5.00	56.88

Drilling in the open pit will be performed using conventional down the hole (DTH) blasthole rigs with 140- and 165-mm bits. The pattern size was the same for mill feed and waste and are blasted with

recognition that the rock is competent, and finer material improves productivity and reduces maintenance costs as well as improved plant performance. The drill pattern parameters are shown in Table 21-22.

Table 21-22: Drill Pattern Specification

Specification	Unit	Mill Feed/Waste (140 mm)	Mill Feed/Waste (165 mm)
Bench Height	m	10	10
Sub-Drill	m	0.8	1.4
Blasthole Diameter	mm	140	165
Pattern Spacing – Staggered	m	5.0	5.5
Pattern Burden – Staggered	m	4.3	4.8
Hole Depth	m	10.9	11.4

The sub-drill was included to allow for caving of the holes in the weaker zones, avoiding re-drilling of the holes or short holes that would affect bench floor conditions and thereby increasing tire and overall maintenance costs.

Below in Table 21-23 are the parameters used for estimating drill productivity. The larger drill is configured for single pass drilling of the 11.4 m deep hole.

Table 21-23: Drill Productivity Criteria

Drill Activity	Unit	Mill Feed/Waste (140 mm)	Mill Feed/Waste (165 mm)
Pure Penetration Rate	m/min	0.60	0.55
Hole Depth	m	10.9	11.4
Drill Time	min	18.17	20.73
Move, Spot, and Collar Blasthole	min	3.00	3.00
Level Drill	min	0.50	0.50
Add Steel	min	0.50	0.00
Pull Drill Rods	min	1.00	1.00
Total Setup/Breakdown Time	min	5.00	4.50
Total Drill Time per Hole	min	23.2	25.2
Drill Productivity	m/h	28.2	27.1

An emulsion product will be used for blasting to provide water protection. With the wet conditions expected, it is believed that a water-resistant explosive will be required. The powder factors used in the explosives calculation are shown in Table 21-24.

Table 21-24: Design Powder Factors

	Unit	Mill Feed/Waste (165 mm)	Mill Feed/Waste (200 mm)
Powder Factor	kg/m3	0.849	0.781
Powder Factor	kg/t	0.24	0.28

The blasting cost is estimated using quotations from a local vendor. The emulsion price is $169/100 kg. The mine is responsible for guiding the loading process, including placement of boosters/Nonels, and stemming and firing the shot.

Total monthly cost in the service of delivering the explosives to the hole is $214,000/month for the vendor's pickup trucks, pumps, and labour is also applied and covers the cost of the explosives plant. The explosives vendor also leases the explosives and accessories magazines to the Nickel Creek as part of that cost.

Mill feed and waste loading costs were estimated using the front-end loaders and hydraulic shovels as the only loading units. The shovels are the primary diggers for mill feed and waste, with the front-end loader being used as backup. The average percentage of each material type that the various loading units are responsible for is shown in Table 21-25. This highlights the focus on the shovels over the loaders.

Table 21-25: Loading Parameters – Year 5

	Unit	Front-End Loader	Hydraulic Shovel
Bucket Capacity	m3	23	37
Waste Tonnage Loaded	%	15	85
Mill Feed Tonnage Mined	%	13	87
Bucket Fill Factor	%	88	88
Cycle Time	sec	42	38
Trucks Present at the Loading Unit	%	80	80
Loading Time	min	4.7	2.0

The trucks present at the loading unit refers to the percentage of time a truck is available to be loaded. To maximize truck productivity and reduce operating costs, it is more efficient to slightly under-truck the loader or shovel. The single largest operating cost item is haulage and minimizing this cost by maximizing truck productivity is crucial to lower operating costs. The value of 80% comes from the standby time shovels typically encounter due to a lack of trucks.

Haulage profiles were determined for each pit phase for the primary crusher or the waste rock management facility destinations. Cycle times were generated for the appropriate period tonnage by destination and phase to estimate the haulage costs. Maximum speed on trucks is limited to 50 km/h for tire life and safety reasons. Calculation speeds for various segments are shown in Table 21-26.

Table 21-26: Haulage Cycle Speeds

	Flat (0%) on surface	Flat (0%) Inpit, Crusher, Dump	Slope Up (8%)	Slope Up (10%)	Slope Down (8%)	Slope Down (10%)	Acceleration or Deceleration
Loaded (km/h)	50	40	16	12.1	30	30	20
Empty (km/h)	50	40	35	25	35	35	20

Support equipment hours and costs are determined using the percentages shown in Table 21-27.

Table 21-27: Support Equipment Operating Factors

Mine Equipment	Factor	Factor Units
Track Dozer	40%	Of haulage hours to a maximum of 5 dozers
Grader	9%	Of haulage hours to a maximum of 2 graders
Crusher Loader	40%	Of loading hours to maximum of 1 loader
Support Backhoe	5%	Of loading hours to maximum of 1 backhoe
Water Truck	10%	Of haulage hours to a maximum of 2 trucks
Lube/Fuel Truck	6	h/d
Mechanic's Truck	12	h/d
Welding Truck	12	h/d
Blasting Loader	8	h/d
Blaster's Truck	8	h/d
Integrated Tool Carrier	4	h/d
Compactor	2	h/d
Lighting Plants	12	h/d
Pickup Trucks	10	h/d
Dump Truck – 20 ton	5	h/d

These percentages resulted in the need for five track dozers, two graders, and one support backhoe. Part of this is due to the spread-out nature of the various pit areas which landlocks some of the equipment for periods of time. Their tasks include cleanup of the loader faces, roads, dumps, and blast patterns. The graders will maintain the mill feed and waste haul routes. In addition, water trucks have the responsibility for patrolling the haul roads and controlling fugitive dust for safety and environmental reasons. The support backhoe will assist on dilution control on mill feed/waste separation. A small backhoe will be responsible for cleaning out sedimentation ponds and water ditch repairs together with the two small dump trucks.

These hours are applied to the individual operating costs for each piece of equipment. Many of these units are support equipment so no direct labour force is allocated to them due to their function.

Grade Control

Grade control will be completed with the blasthole drillings. Cuttings from the drilling process will be collected and assayed.

In areas of low-grade mineralization or waste the pattern spacing will be 20 m x 10 m with sampling over 5 m. These holes will be used to find undiscovered veinlets or pockets of mineralization. Over the life of the mine, a total of 1.8 Mm of drilling are expected to be completed for grade control work.

A total of 954,000 samples will be assayed from that drilling at a cost of $15/sample. Samples collected will be sent to the assay laboratory and assayed for use in the short-range mining model.

Annual costs for this program are $0.75 million per year. This is included in the General Mine and Engineering category.

Dewatering

Pit dewatering is an important part of mining at Nickel Shäw particularly since the pit will be below the creek level. Efficient and cost-effective dewatering will play a role in the Nickel Shäw Project development. Dewatered slopes may allow a reduction in the strip ratio by permitting steeper inter-ramp angles that would also be inherently safer.

It is estimated that 0.9 Mm3/year on average will need to be pumped from within the pit. From there, it will need to be pumped to the required discharge point near the settling ponds.

The dewatering system includes the pumps, sumps, and pipelines responsible for moving water from the pit to the discharge points. Labour for this is already included in the General and Mine Engineering category of the mine operating cost. The mine has a dedicated pump crew and pump crew foreman.

Additional dewatering in the form of horizontal drain holes is also part of the dewatering operating costs. These holes will be drilled in annual campaigns starting in Year 2. The design concept is a series of holes 50 m in length, angled up slightly and drilled into the highwalls. They will allow the water behind the wall to drain freely and prevent pore water pressure buildup particularly during freezing conditions.

The dewatering operating cost is estimated at $18.9 million over the mine life or $1.0 million/a. It is included in the General Mine and Engineering Category of the mine cost.

Total Open Pit Mine Costs

The total life of mine operating costs per tonne of material moved and per tonne of mill feed processed are shown in Table 21-28 and Table 21-29.

Table 21-28: Open Pit Mine Operating Costs ($/t Total Material Moved)

Open Pit Operating Category	Unit	Year 1	Year 3	Year 5	LOM Average Cost
General Mine and Engineering	$/t	0.25	0.24	0.24	0.28
Drilling	$/t	0.30	0.30	0.33	0.31
Blasting	$/t	0.67	0.65	0.68	0.69
Loading	$/t	0.35	0.33	0.32	0.34
Hauling	$/t	0.92	0.89	0.83	0.75
Support	$/t	0.28	0.27	0.26	0.27
Total	**$/t**	2.77	2.68	2.67	2.64

Table 21-29: Open Pit Mine Operating Costs ($/t Mill Feed)

Open Pit Operating Category	Unit	Year 1	Year 3	Year 5	LOM Average Cost
General Mine and Engineering	$/t mill feed	0.79	0.74	0.74	0.78
Drilling	$/t mill feed	0.95	0.90	1.02	0.87
Blasting	$/t mill feed	2.08	1.99	2.11	1.91
Loading	$/t mill feed	1.08	1.01	1.00	0.93
Hauling	$/t mill feed	2.87	2.73	2.59	2.06
Support	$/t mill feed	0.87	0.82	0.81	0.75
Total	**$/t mill feed**	8.64	8.20	8.28	7.30

21.3.3 Process Operating Costs

The process plant operating costs have been developed based on the design processing rate of 45 kt/d. The process plant will normally operate 24 h/d, 365 d/a with 7,344 operating h/for the crushing circuit and 8,000 operating h/a for grinding, flotation, and dewatering circuits. Costs have been determined to an AACE Class 4 accuracy level and are based on Q2 2023 pricing. The process plant operating costs are broken down into fixed and variable costs and are summarized below in Table 21-30. No contingency has been added to the process operating cost.

Table 21-30: Average LOM Process Operating Costs

Cost Type	Total M$/a	Total $/t
Labour	$15.1	$0.93
Liners and Grinding Media	$60.2	$3.72
Safety Equipment & Training	$0.3	$0.02
Contract Lab Services	$6.6	$0.41
Reagents	$81.0	$5.00
Process Plant Power	$102.8	$6.36
Maintenance	$13.9	$0.86
Other Contract Services	$0.2	$0.02
Total Process Plant	$280.1	17.32

Process plant operating costs were developed in accordance with typical industry practices for base metal concentrators. The cost estimate was developed from first principals, using a variety of source data including:

- metallurgical test work results
- quotations for various consumables (reagents, grinding media etc.)
- recent quotations from similar projects
- QP's operating experience and first principal calculations

The following sections outline various aspects of the operating cost estimate.

Reagents

Reagents are used in the flotation plant and to assist with product dewatering. The reagent addition strategy specified by metallurgists is such that fundamentally different recipes are used dependent upon the ore type:

- For mill feed material with higher copper concentrations, a copper/nickel separation circuit is employed to make separate copper and nickel rich flotation concentrates. These are separate products that attract higher prices and are destined for copper and nickel smelters respectively. The sequential flotation circuit employs an alkaline flotation system and fairly large quantities of lime (as a pH modifier) and silicate gangue depressants.
- For mill feed material with lower copper concentrations, the copper/nickel separation approach is not economic, and a bulk (Cu + Ni) concentrate is produced in preference. In contrast to the previous approach, this feed material responds well to acidic flotation conditions, and this provides superior economics despite copper and nickel being mixed in a single product. The acidic flotation approach requires significant quantities of sulphuric acid, but no lime and considerably less depressant.

Reagent dosages for the two strategies are listed in Section 17 and costs are summarized in Table 21-31 below.

Table 21-31: Average LOM Reagent Costs

Reagent	Acid Circuit (Lo-Cu) M$/a	Alkaline Circuit (Hi-Cu) M$/a
Xanthate Collector	$1.90	$1.90
Dithiophosphate Collector	$9.39	$9.39
MIBC Frother	$9.20	$9.20
Sodium Silicate	$0.00	$2.29
Copper Sulphate	$6.34	$6.34
Activated Carbon	$0.00	$2.21
CMC Depressant	$2.00	$36.41
Sodium Metabisulphite	$0.00	$1.29
Sulphuric Acid	$51.68	$0.00
Lime	$0.00	$2.07
Flocculant	$3.08	$3.52
Total Process Plant	$83.59	$74.62

Liners and Grinding Media

The cost of steel and rubber liners (used in crushers and mills) plus the cost of chrome steel grinding balls and ceramic grinding beads have been calculated using industry standard wear rates (given specific material characteristics) and budget quotations from vendors. Average life of mine costs is given in Table 21-32 below.

Table 21-32: Average LOM Steel Liner/Media Costs

Item	Average LOM Cost M$/a
Grinding Media (SAG, Ball and Regrind)	$41.9
Crusher Liners	$2.7
Mill Liners	$15.3
Total Process Plant	$59.90

Maintenance and consumables

Maintenance parts costs (exclusive of labour) were estimated as a factor of equipment supply costs by area. Factors vary slightly by area, with an average across the plant of 6.2%. Piping and electrical/instrumentation budgets were estimated in a similar fashion, with a factor of 5% used for each. These factors are in line with normal operating budgets for base metal concentrators.

Power

Process plant power consumption has been calculated using the mechanical equipment list. The installed motor power for individual items (excluding standby equipment) was adjusted to accommodate drive efficiency, % load, and % utilisation rates to derive an annual total power draw (measured in kWh). Added to this are various allowances for power in surface infrastructure items such as the camp, office, and water treatment areas.

The process plant and surface infrastructure items have an installed rating of approximately 93MW. Overall power consumption for the Project is estimated at 77 MW.

The overall budget for power has been calculated as $102.8 million per year which is an all-in cost including fuel delivery to site, liquefaction, storage, and gasification.

Labour

The process plant operating, and maintenance labour costs were estimated from first principles based on a typical organization chart and typical labour rates from the Halyard and AGP project databases. The process plant labour includes a combination of day and shift work. A summary of the labour complement is provided below in Table 21-33.

Table 21-33: Process Labour

Location	Number of Employees
Plant Management	10
Operations	76
Maintenance	40
Laboratory	Nil (contract)
Total	**126**

The following shift rotations were assumed:

- professional employees and management - 5 days on/ 2 days off
- operations and maintenance staff - 12-hour shifts, 4 days on, 4 days off rotation

The cost of bussing staff from Whitehorse to site is included in G&A budgets.

Laboratory Costs

An all-in quotation for assay laboratory costs was obtained from a reputable assay company with existing facilities in Whitehorse. The all-in cost of assaying 100 plant samples per day and 250 geology/grade control samples per day was estimated to be approximately $6.6M p.a.

Exclusions

The process operating cost estimate excludes the following items:

- escalation
- all G&A costs
- environmental monitoring and compliance costs
- closure costs
- local and federal government taxes and duties
- impacts of foreign exchange rates
- licence and union fees
- other insurance costs
- contingency

21.3.4 General and Administrative Operating Costs

The General and Administrative costs were estimated for each year of the Project schedule. This was to consider the varying manpower levels for the camp cost and overall G&A needs. The cost averages $2.43/t of ore over the life of the mine or on average $38.3 million per year. The G&A cost includes typical camp and labour costing as well as freight costs. The freight cost is $0.63 per tonne of mill feed with the typical camp and labour portions of G&A costing $1.80 per tonne of mill feed.

The largest cost in the G&A cost is the catering and accommodation based on a $100 per day per person in camp rate. This averages $11 million per year and varies between $7.1 and $12.5 million per year based on staffing levels.

The G&A manpower totals 58 people with 16 staff and 42 hourlies. The wages average $6.2 million per year.

The life of mine average G&A cost was $ 2.43/t of ore or $ 746.8 million total life of mine.

21.3.5 Carbon Tax

The carbon tax was accumulated as a separate line item for transparency and ease of adjustment for sensitivity examination. This allows the Nickel Shäw project to be easily compared to other projects where a carbon tax is not applied to mining costs.

The carbon tax was applied at the rate at the time of the study of $0.13/l for diesel and $3.75 $/Gj.

The diesel fuel for the mine fleet, the tailings fleet and the fuel delivered to site were included in the diesel calculation. The LNG powerplant gas consumption was tracked annually and from this the carbon tax could be estimated.

The ITC (Investment Tax Credit) was applied at 100% for 0 – 6 kilo tonnes of carbon and 50% for 6-10 kilo tonnes. The credits were applied against the tax payable.

21.3.6 Concentrate Trucking, Port Costs and Shipping to Smelter

The cost of trucking was determined by contacting a well-established transportation company with existing contracts in the vicinity of the Project. Quotes for shipping concentrates in bulk by road from site to the port of Skagway resulted in a transportation cost of $115 per wet metric tonne to the port facilities.

Port storage and handling costs are estimated at $46.67 per wet metric tonne.

21.3.7 Operating Cost Summary

The life of mine operating cost estimate summary is shown in Table 21-34.

Table 21-34: Nickel Shäw Project Operating Cost Estimate

Area	Units	Life of Mine (Year 1-20)
Open Pit Mining	$/t moved	2.64
	$/t mill feed	7.30
Processing	$/t mill feed	17.32
G&A	$/t mill feed	2.43
Sub-Total	**$/t mill feed**	27.05
Carbon Tax	$/t mill feed	0.83
Concentrate Trucking, Port, Shipping	$/t mill feed	2.34
Total Operating Cost	**$/t mill feed**	30.22

22 ECONOMIC ANALYSIS

22.1 Introduction

This section presents the life of mine cash flow forecast model for the Nickel Shäw Project. This is used in the financial evaluation to determine the Net Present Value (NPV) of the mine, calculation for Internal Rate of Return (IRR) and payback period.

Annual cash flow projections were estimated over the life of the mine based on the current PFS study estimates of capital expenditures, operating costs, and revenue less taxation. The estimates of capital expenditures and site production costs have been developed specifically for this project and have been presented in Section 21 of this report.

The sales revenue is based on the production of three concentrates; bulk nickel, nickel concentrate and copper concentrate.

The following key parameters were used in the construction of the cash flow model and the economic results:

- metal prices of:
  - copper = $4.00 US/lb
  - nickel = $11.00 US/lb
  - cobalt = $23,00 US/lb
  - platinum = $1,000 US/oz
  - palladium = $2,100 US/oz
  - gold = $1,800 US/oz
- 100% equity financing with no debt component
- revenues and costs reported in constant H2 2023-dollar terms without escalation

This analysis was completed primarily utilizing a Microsoft Excel-based discounted cash flow model. Currency is provided in Canadian (CDN) dollars unless otherwise noted.

Taxation calculations were completed with the assistance of Nickel Creek and their advisory accounting firm. Their analysis was reviewed by AGP.

22.2 Summary Economic Analysis

Table 22-1 presents the summary economic analysis results for the Nickel Shäw project.

Table 22-1: Nickel Shäw Project – Discounted Cash Flow Summary

Parameter	Units	Pre-Tax	Post-Tax
Copper Price	$US/lb	4.00	
Nickel Price	$US/lb	11.00	
Cobalt Price	$US/lb	23.00	
Platinum Price	$US/oz	1,000	

Parameter	Units	Pre-Tax	Post-Tax
Palladium Price	$US/oz	2,100	
Gold Price	$US/oz	1,800	
Exchange Rate	$US: $CDN	0.75	
Economic Indicators			
Net Present Value (5%)	$ M	547	143
Revenue less Royalties	$ M	14,279	14,279
Total Operating Cost	$ M	9,300	9,300
Life of Mine Capital Cost	$ M	2,325	2,325
Net Taxes	$ M	-	999
Net Cash Flow	$ M	2,654	1,655
Cash Cost – Nickel only	$US/lb	11.53	12.75
Cash Cost – Nickel with all credits	$US/lb	4.89	6.10
Payback Period	Years	12.0	12.7
Payable Metals (Life of Mine)			
Nickel	M pounds	614.3	
Copper	M pounds	281.5	
Cobalt	M pounds	21.5	
Platinum	M ounces	0.6	
Palladium	M ounces	0.7	
Gold	M ounces	0.2	
Mine Life	Years	19.1	
Operating Costs			
	$ M	**$/t Ore Milled**	**$/t Mined**
Open Pit Mining	2,245.1	7.30	2.64
Processing	5,329.7	17.32	
G & A	746.8	2.43	
Subtotal	**8,321.6**	**27.05**	
Carbon Tax	256.9	0.83	
Concentrate trucking, port costs	721.3	2.34	
Total	**9,299.9**	**30.22**	
Capital Costs			
Initial Capital	$ M	1,687	
Sustaining Capital	$ M	638	
Total Capital	$ M	2,325	
	$/t ore	7.56	

Production Summary

	Tonnage Mt	Nickel %	Copper %	Cobalt %	Platinum g/t	Palladium g/t	Gold g/t
Mine Mill Feed	307.7						
Grades		0.26	0.13	0.01	0.22	0.23	0.04
Waste	594.7						
Strip Ratio	1.93						

22.3 Mine Production Statistics

Mine production is reported as open pit mill feed ore and waste. The annual production figures were obtained from the mine plans discussed in Section 16 earlier in this report. The life of mine ore, waste quantities, and ore grade are presented in Table 22-2.

Table 22-2: Mill Feed, Waste and Metal Grades

	Tonnage Mt	Nickel %	Copper %	Cobalt %	Platinum g/t	Palladium g/t	Gold g/t
Mine Mill Feed	307.7						
Grades		0.26	0.13	0.01	0.22	0.23	0.04
Waste	594.7						
Total	**902.4**						

22.4 Plant Production Statistics

Feed from the open pit mine will be processed in the 45,000 tpd process plant to make a bulk concentrate. Approximately 38% of the material has the ability to be further split economically in a separate nickel and copper concentrate. This material will receive better smelter terms, justifying the additional operating cost for the separation.

Overall recoveries vary by material and metal with the nickel recovery at 46.9%, copper at 54.4%, cobalt at 57%, platinum at 47.9%, palladium at 53.9% and gold at 74.4%.

22.5 Marketing Terms

Marketing terms have been applied to the three different concentrate types: bulk, nickel, and copper. Concentrate grades of 10.4% copper plus nickel is expected for the bulk concentrate. The nickel concentrate will have an 8.3% nickel grade and the copper concentrate a 25.6% copper grade.

Shipping of the concentrates will be to Skagway and then destined for overseas smelters. Industry standard payable terms have been applied to each of the concentrates. No penalties are expected for any of the concentrates.

22.6 Capital Costs

The financial indicators have been determined with 100% equity financing of the initial capital. Capital costs included in the financial model are shown below in Table 22-3. The largest component of the initial open pit capital is the capitalization of $172 million of preproduction stripping. The largest cost items for the initial infrastructure category include the mine camp, overland conveying system and initial tailings embankment construction.

Table 22-3: Nickel Shäw Project Capital Costs

	Units	Initial	Sustaining	Total
Open Pit	$ M	398.7	205.6	604.3
Processing	$ M	509.9	5.1	515.0
Infrastructure	$ M	353.5	257.5	611.0
Environmental	$ M	-	52.4	52.4
Indirects	$ M	245.1	57.9	303.0
Contingency	$ M	179.9	59.7	239.6
Total	**$ M**	**1,687.1**	**638.2**	**2,325.3**

22.7 Operating Costs

Life of mine cash operating costs include mine operations, process plant operations, general and administration, carbon taxes and transportation/port costs for the concentrate produced. The operating cost detail is presented in a variety of manners in Table 22-4 and in Section 21.

Table 22-4: Operating Cost Summary

Category	$ M	$/t Ore Milled	$/t Mined
Open Pit Mining	2,245.1	7.30	2.64
Processing	5,329.7	17.32	
G & A	746.8	2.43	
Subtotal	**8,321.6**	**27.05**	
Carbon Tax	256.9	0.83	
Concentrate trucking, port costs	721.3	2.34	
Total	**9,299.9**	**30.22**	

22.8 Royalties

On November 4, 2015, the Company entered into a transaction whereby it sold to Resource Capital Fund VI L.P., Australind Limited, and Vernon Taylor III, collectively, an aggregate 1% NSR royalty on future production from the Project. This royalty has been applied in the cashflow model.

22.9 Taxation

Taxation applicable to an operation in the Yukon has been included in the cashflow model. A Federal tax rate of 15% and Yukon tax rate of 12% have been applied. Further, an annual royalty in the Yukon is payable on mining income. Standard depreciation calculations are applied to the various asset classes.

The Canadian tax incentive for critical mineral companies has not been applied as it was not enacted at the time of the study but offers opportunity in the future. Carbon taxes on energy inputs have been included in the operating costs.

22.10 Project Financial Indicators

The financial evaluation presents the calculated Net Present Value (NPV), and Internal Rate of Return (IRR) for the Nickel Shäw PFS. The evaluation shows the following financial indicators with the base case metal prices discussed previously. The results are:

- Net Present Value (5%), After-Tax $143 million
- IRR 5.8%
- Payback Period 12.7 years

The detailed information in the cashflow model is shown in Table 22-5. Additional information on the financial results is shown in Figure 22-1 to Figure 22-4.

Table 22-5: Detailed Financial Model

		Total	Year -3	Year -2	Year -1	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16	Year 17	Year 18	Year 19	Year 20	Year 21	Year 22
Mill Production		307,709,690				15,250,000	16,200,000	16,200,000	16,200,000	16,200,000	16,200,000	16,200,000	16,200,000	16,200,000	16,200,000	16,200,000	16,200,000	16,200,000	16,200,000	16,200,000	16,200,000	16,200,000	16,200,000	16,200,000	16,200,000	859,690		
Total Mill Feed	tonnes	307,709,690		-	-	15,250,000	16,200,000	16,200,000	16,200,000	16,200,000	16,200,000	16,200,000	16,200,000	16,200,000	16,200,000	16,200,000	16,200,000	16,200,000	16,200,000	16,200,000	16,200,000	16,200,000	16,200,000	16,200,000	16,200,000	859,690	-	-
Copper	%	0.13		-	-	0.08	0.10	0.10	0.13	0.14	0.12	0.10	0.10	0.11	0.14	0.13	0.12	0.13	0.15	0.16	0.16	0.19	0.20	0.14	0.04	-	-
Nickel	%	0.26		-	-	0.23	0.23	0.24	0.26	0.26	0.24	0.25	0.26	0.26	0.26	0.25	0.25	0.25	0.26	0.26	0.27	0.28	0.27	0.27	0.25	-	-
Cobalt	%	0.01408		-	-	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.01	0.01	-	-
Platinum	gpt	0.22		-	-	0.15	0.18	0.18	0.21	0.22	0.20	0.17	0.17	0.18	0.21	0.22	0.22	0.23	0.26	0.29	0.30	0.32	0.32	0.23	0.11	-	-
Paladium	gpt	0.23		-	-	0.21	0.22	0.21	0.23	0.22	0.22	0.21	0.22	0.22	0.23	0.23	0.23	0.23	0.24	0.27	0.28	0.27	0.28	0.25	0.16	-	-
Gold	gpt	0.04		-	-	0.03	0.03	0.03	0.03	0.04	0.04	0.03	0.03	0.03	0.04	0.04	0.04	0.04	0.04	0.05	0.05	0.06	0.06	0.04	0.02	-	-
S	%	0.67		-	-	0.43	0.50	0.52	0.63	0.72	0.59	0.48	0.49	0.57	0.69	0.63	0.58	0.64	0.77	0.81	0.84	1.01	1.02	0.75	0.26	-	-
MgO	%	16.78		-	-	16.46	16.12	17.46	17.21	17.13	16.97	17.63	18.32	17.41	16.60	16.79	16.93	16.52	16.01	15.84	16.27	15.82	15.52	17.61	20.45	-	-
Split Con %	%	38.2%				18.9%	22.2%	27.5%	42.6%	46.3%	37.3%	32.0%	30.8%	24.4%	37.9%	36.8%	35.2%	39.6%	48.6%	52.9%	53.6%	55.3%	46.5%	39.0%	0.0%		
Bulk Con %	%	61.8%				81.1%	77.8%	72.5%	57.4%	53.7%	62.7%	68.0%	69.2%	75.6%	62.1%	63.2%	64.8%	60.4%	51.4%	47.1%	46.4%	44.7%	53.5%	61.0%	100.0%		
Total Metal Recovered			**Incremental Recoveries**																								
Copper	pounds	485,459,050	0%	-	-	6,682,988	13,759,862	12,942,596	23,805,464	28,582,313	21,746,312	13,497,027	13,268,939	18,712,593	29,904,607	26,053,772	23,107,520	25,147,860	32,901,861	34,434,469	37,448,758	45,117,414	49,339,313	29,005,383	-	-	-
Nickel	pounds	816,689,406	0%	-	-	31,467,030	35,703,974	37,244,537	42,851,872	45,693,178	39,548,044	36,200,088	37,381,634	40,654,907	44,287,874	41,345,650	39,606,067	41,901,680	46,815,033	48,476,853	49,492,668	54,934,149	54,816,507	46,976,762	1,290,898	-	-
Cobalt	pounds	54,449,658	0%	-	-	2,400,381	2,593,052	2,647,493	2,895,578	2,972,039	2,735,581	2,761,892	2,916,746	2,900,568	2,959,155	2,849,820	2,812,180	2,830,714	2,914,031	2,915,722	2,961,232	3,128,062	3,111,813	2,990,564	153,036	-	-
Platinum	oz	1,059,045	0%	-	-	34,658	43,842	44,963	53,332	54,193	49,945	42,239	41,832	43,700	53,488	55,326	53,952	58,082	65,298	73,056	74,029	80,162	79,071	56,468	1,410	-	-
Paladium	oz	1,251,122	0%	-	-	54,590	62,531	60,070	63,421	63,115	60,420	58,680	61,583	62,583	65,405	63,549	64,124	64,249	67,643	75,480	78,376	75,730	78,229	69,025	2,320	-	-
Gold	oz	285,321	0%	-	-	9,190	12,825	12,134	13,403	15,677	14,998	10,789	10,639	12,016	15,947	15,148	13,611	13,935	17,239	17,921	17,872	21,349	24,042	16,262	324	-	-
Split Con Millfeed	tonnes	117,677,191		-	-	2,884,307	3,594,172	4,450,294	6,905,279	7,497,919	6,039,184	5,178,793	4,986,688	3,960,330	6,144,879	5,966,799	5,701,622	6,420,688	7,870,180	8,574,762	8,689,274	8,960,407	7,541,005	6,310,609	-		
Copper	%	0.19		-	-	0.10	0.14	0.11	0.17	0.21	0.19	0.15	0.13	0.18	0.21	0.20	0.18	0.18	0.20	0.19	0.20	0.24	0.29	0.20	-		
Nickel	%	0.25		-	-	0.25	0.25	0.24	0.26	0.26	0.23	0.25	0.26	0.24	0.24	0.23	0.24	0.24	0.25	0.26	0.25	0.27	0.26	0.25	-		
Cobalt	%	0.015		-	-	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.01	-		
Platinum	gpt	0.29		-	-	0.17	0.20	0.20	0.27	0.29	0.28	0.22	0.21	0.23	0.28	0.30	0.27	0.27	0.30	0.32	0.31	0.38	0.41	0.28	-		
Paladium	gpt	0.25		-	-	0.23	0.25	0.22	0.24	0.24	0.23	0.22	0.23	0.23	0.24	0.23	0.23	0.23	0.25	0.28	0.27	0.28	0.31	0.26	-		
Gold	gpt	0.06		-	-	0.03	0.04	0.04	0.05	0.06	0.06	0.04	0.04	0.05	0.06	0.06	0.05	0.05	0.05	0.06	0.06	0.07	0.09	0.06	-		
S	%	0.88		-	-	0.43	0.59	0.53	0.77	1.06	0.90	0.67	0.60	0.72	0.87	0.83	0.73	0.80	0.94	0.94	0.93	1.16	1.37	0.93	-		
MgO	%	14.91		-	-	15.09	14.65	16.60	15.86	15.60	15.22	15.68	16.40	14.18	14.07	13.95	14.20	14.60	14.46	15.03	16.05	14.72	12.39	15.00	-		
Bulk Con Millfeed	tonnes	190,032,499		-	-	12,365,693	12,605,828	11,749,706	9,294,721	8,702,081	10,160,816	11,021,207	11,213,312	12,239,670	10,055,121	10,233,201	10,498,378	9,779,312	8,329,820	7,625,238	7,510,726	7,239,593	8,658,995	9,889,391	859,690		
Copper	%	0.09		-	-	0.07	0.09	0.09	0.09	0.08	0.08	0.07	0.08	0.09	0.10	0.10	0.09	0.10	0.11	0.12	0.13	0.12	0.12	0.11	0.04		
Nickel	%	0.26		-	-	0.23	0.23	0.24	0.27	0.26	0.25	0.25	0.27	0.27	0.28	0.27	0.26	0.26	0.27	0.28	0.29	0.28	0.28	0.28	0.25		
Cobalt	%	0.014		-	-	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01		
Platinum	gpt	0.18		-	-	0.14	0.17	0.17	0.17	0.16	0.15	0.14	0.15	0.16	0.17	0.18	0.19	0.21	0.23	0.26	0.28	0.25	0.23	0.19	0.11		
Paladium	gpt	0.22		-	-	0.20	0.22	0.21	0.21	0.21	0.21	0.20	0.21	0.22	0.23	0.22	0.23	0.23	0.23	0.26	0.29	0.26	0.25	0.24	0.16		
Gold	gpt	0.03		-	-	0.02	0.03	0.03	0.03	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.03	0.02		
S	%	0.54		-	-	0.43	0.47	0.52	0.53	0.42	0.41	0.39	0.44	0.53	0.58	0.51	0.50	0.54	0.60	0.66	0.73	0.82	0.73	0.64	0.26		
MgO	%	17.94		-	-	16.78	16.54	17.79	18.22	18.45	18.00	18.54	19.17	18.45	18.15	18.45	18.41	17.79	17.47	16.75	16.53	17.17	18.26	19.27	20.45		

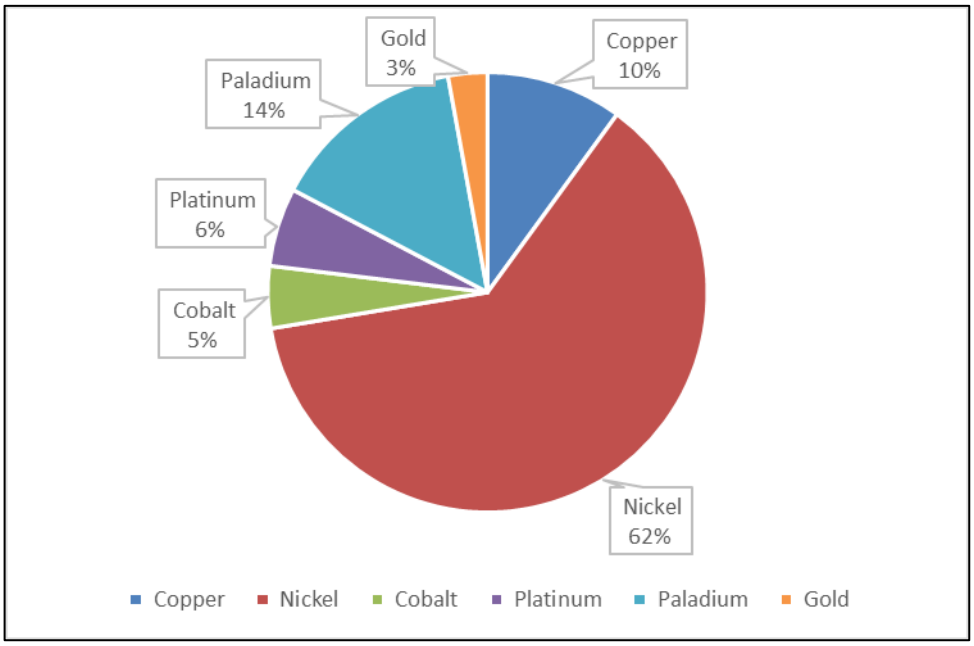
		Total	Year -3	Year -2	Year -1	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16	Year 17	Year 18	Year 19	Year 20	Year 21	Year 22
Con Quantities and Recovered Metals																											
Ni Concentrate	DMT	1,804,846.60				24,383	40,693	42,791	98,336	130,531	92,304	64,981	56,554	54,081	98,415	88,854	78,412	90,239	126,661	136,193	139,695	173,959	167,302	100,461	-		
Copper	pounds	128,920,947				1,050,445	2,362,945	1,943,728	6,495,733	9,263,724	6,803,670	3,938,286	3,023,823	3,832,109	7,803,435	6,833,727	5,718,946	6,194,234	9,044,871	9,325,954	10,032,646	13,455,585	14,508,396	7,288,690	-		
Nickel	pounds	329,415,792				5,598,333	8,330,499	9,658,515	18,825,888	23,924,018	16,497,631	13,028,297	12,009,435	9,922,064	16,677,554	15,408,681	14,115,572	16,888,147	23,122,235	25,525,906	25,406,854	30,040,382	26,286,984	18,148,793	-		
Cobalt	pounds	21,044,382				466,784	586,628	715,226	1,234,050	1,438,395	1,034,164	889,789	889,580	695,391	1,097,541	1,008,090	944,847	1,100,117	1,411,132	1,544,098	1,610,876	1,781,229	1,471,531	1,124,913	-		
Platinum	ounces	510,495				7,213	10,875	13,120	27,860	32,455	25,465	17,513	15,675	13,846	26,300	26,743	23,195	26,305	35,551	41,840	41,288	50,943	47,245	27,064	-		
Paladium	ounces	481,587				11,020	14,499	15,997	27,541	29,529	22,703	18,949	18,671	15,116	24,511	22,299	21,404	23,722	31,996	38,812	38,711	41,131	38,085	26,890	-		
Gold	ounces	106,787				1,354	2,428	2,565	5,175	7,350	6,395	3,545	3,092	3,145	6,300	5,689	4,533	4,731	7,050	7,921	8,288	10,253	10,943	6,030	-		
Cu Concentrate	DMT	372,698.69				3,037	6,831	5,619	18,779	26,781	19,669	11,385	8,742	11,078	22,559	19,756	16,533	17,907	26,148	26,960	29,003	38,899	41,942	21,071	-		
Copper	pounds	210,344,703	68.5%			1,713,884	3,855,332	3,171,346	10,598,301	15,114,498	11,100,724	6,425,625	4,933,606	6,252,388	12,731,920	11,149,765	9,330,912	10,106,382	14,757,421	15,216,031	16,369,053	21,953,848	23,671,594	11,892,073	-		
Nickel	pounds	13,012,266	52.8%			221,140	329,063	381,521	743,642	945,024	651,674	514,631	474,385	391,932	658,781	608,659	557,580	667,099	913,352	1,008,300	1,003,597	1,186,626	1,038,363	716,896	-		
Cobalt	pounds	407,587	57.0%			9,041	11,362	13,852	23,901	27,859	20,030	17,233	17,229	13,468	21,257	19,525	18,300	21,307	27,331	29,906	31,199	34,499	28,501	21,787	-		
Platinum	ounces	9,887	47.9%			140	211	254	540	629	493	339	304	268	509	518	449	509	689	810	800	987	915	524	-		
Paladium	ounces	30,195	53.9%			691	909	1,003	1,727	1,851	1,423	1,188	1,171	948	1,537	1,398	1,342	1,487	2,006	2,433	2,427	2,579	2,388	1,686	-		
Gold	ounces	49,563	74.4%			628	1,127	1,190	2,402	3,411	2,968	1,645	1,435	1,460	2,924	2,640	2,104	2,196	3,272	3,677	3,847	4,759	5,079	2,799	-		
Bulk Concentrate	DMT	2,061,269.06	Overall Recoveries			112,588	120,202	121,005	101,838	81,770	91,462	97,041	109,079	134,065	117,865	109,363	109,632	106,524	98,909	96,392	102,582	104,373	117,683	123,274	5,623		
Copper	pounds	14,619,340	40%			391,866	754,158	782,752	671,143	420,409	384,192	313,312	531,151	862,810	936,925	807,028	805,766	884,724	909,957	989,248	1,104,706	970,798	1,115,932	982,462	-		
Nickel	pounds	457,993,706	46%			25,422,570	26,806,037	26,961,590	22,678,629	18,328,139	20,586,558	21,936,557	24,478,751	29,875,856	26,087,389	24,267,915	24,330,874	23,539,307	21,768,081	21,111,653	22,415,631	22,960,135	25,866,634	27,282,051	1,289,349		
Cobalt	pounds	32,997,688	57%			1,924,556	1,995,062	1,918,415	1,637,627	1,505,785	1,681,387	1,854,869	2,009,937	2,191,708	1,840,357	1,822,205	1,849,033	1,709,289	1,475,568	1,341,718	1,319,156	1,312,334	1,611,782	1,843,864	153,036		
Platinum	ounces	538,663				27,305	32,756	31,589	24,933	21,109	23,987	24,387	25,853	29,586	26,679	28,065	30,308	31,268	29,059	30,406	31,942	28,233	30,911	28,880	1,410		
Paladium	ounces	739,339				42,878	47,124	43,070	34,153	31,734	36,294	38,543	41,740	46,519	39,357	39,852	41,378	39,039	33,641	34,234	37,238	32,020	37,756	40,448	2,320		
Gold	ounces	128,971				7,208	9,270	8,379	5,826	4,916	5,635	5,598	6,112	7,411	6,724	6,819	6,973	7,009	6,917	6,323	5,737	6,336	8,019	7,434	324		
Concentrates																											
Ni Concentrate (DMT) - Grades	DMT	1,804,847		-	-	24,383	40,693	42,791	98,336	130,531	92,304	64,981	56,554	54,081	98,415	88,854	78,412	90,239	126,661	136,193	139,695	173,959	167,302	100,461	-	-	-
Copper	%	3.24%		0.00%	0.00%	1.95%	2.63%	2.06%	3.00%	3.22%	3.34%	2.75%	2.43%	3.21%	3.60%	3.49%	3.31%	3.11%	3.24%	3.11%	3.26%	3.51%	3.93%	3.29%	0.00%	0.00%	0.00%
Nickel	%	8.28%		0.00%	0.00%	10.41%	9.29%	10.24%	8.68%	8.31%	8.11%	9.09%	9.63%	8.32%	7.69%	7.87%	8.17%	8.49%	8.28%	8.50%	8.25%	7.83%	7.13%	8.19%	0.00%	0.00%	0.00%
Cobalt	%	0.53%		0.00%	0.00%	0.87%	0.65%	0.76%	0.57%	0.50%	0.51%	0.62%	0.71%	0.58%	0.51%	0.51%	0.55%	0.55%	0.51%	0.51%	0.52%	0.46%	0.40%	0.51%	0.00%	0.00%	0.00%
Platinum	g/DMT	8.80		-	-	9.20	8.31	9.54	8.81	7.73	8.58	8.38	8.62	7.96	8.31	9.36	9.20	9.07	8.73	9.56	9.19	9.11	8.78	8.38	-	-	-
Paladium	g/DMT	8.30		-	-	14.06	11.08	11.63	8.71	7.04	7.65	9.07	10.27	8.69	7.75	7.81	8.49	8.18	7.86	8.86	8.62	7.35	7.08	8.33	-	-	-
Gold	g/DMT	1.84		-	-	1.73	1.86	1.86	1.64	1.75	2.15	1.70	1.70	1.81	1.99	1.99	1.80	1.63	1.73	1.81	1.85	1.83	2.03	1.87	-	-	-
MgO	%	11.10%		0.0%	0.0%	11.1%	11.1%	11.1%	11.1%	11.1%	11.1%	11.1%	11.1%	11.1%	11.1%	11.1%	11.1%	11.1%	11.1%	11.1%	11.1%	11.1%	11.1%	11.1%	0.0%	0.0%	0.0%
Ni Concentrate (WMT)	WMT	1,899,839		-	-	25,666	42,835	45,043	103,512	137,401	97,162	68,401	59,531	56,927	103,595	93,530	82,539	94,989	133,328	143,361	147,048	183,115	176,108	105,749	-	-	-
Ni Concentrate Delivered to Smelter (less losses)	DMT	1,795,822		-	-	24,261	40,490	42,577	97,845	129,878	91,842	64,656	56,271	53,811	97,923	88,409	78,020	89,788	126,028	135,512	138,997	173,089	166,466	99,959	-	-	-
Ni Concentrate Payables						808																					
Copper	pounds	82,700,247		-	-	-	1,528,235	1,257,106	4,201,115	5,991,314	4,400,273	2,547,087	1,955,658	2,478,416	5,046,871	4,419,713	3,698,728	4,006,121	5,849,770	6,031,561	6,488,614	8,702,399	9,383,305	4,713,960	-	-	-
Nickel	pounds	255,661,915		-	-	4,344,906	6,465,359	7,496,042	14,610,905	18,567,599	12,803,927	10,111,353	9,320,607	7,700,584	12,943,567	11,958,786	10,955,195	13,107,010	17,945,330	19,810,835	19,718,438	23,314,552	20,401,514	14,085,406	-	-	-
Cobalt	pounds	8,375,664		-	-	185,780	233,478	284,660	491,152	572,481	411,597	354,136	354,053	276,766	436,821	401,220	376,049	437,847	561,631	614,551	641,129	708,929	585,669	447,715	-	-	-
Platinum	ounces	304,766		-	-	4,306	6,492	7,833	16,632	19,376	15,202	10,455	9,358	8,266	15,701	15,966	13,848	15,704	21,224	24,978	24,649	30,413	28,205	16,157	-	-	-
Paladium	g/DMT	287,508		-	-	6,579	8,656	9,550	16,442	17,629	13,554	11,313	11,147	9,024	14,633	13,312	12,778	14,162	19,102	23,171	23,110	24,555	22,737	16,053	-	-	-
Gold	ounces	63,752		-	-	808	1,450	1,531	3,089	4,388	3,818	2,117	1,846	1,878	3,761	3,396	2,706	2,824	4,209	4,729	4,948	6,121	6,533	3,600	-	-	-
Cu Concentrate (DMT) - Grades	DMT	372,699		-	-	3,037	6,831	5,619	18,779	26,781	19,669	11,385	8,742	11,078	22,559	19,756	16,533	17,907	26,148	26,960	29,003	38,899	41,942	21,071	-	-	-
Copper	%	25.60%		0.00%	0.00%	25.60%	25.60%	25.60%	25.60%	25.60%	25.60%	25.60%	25.60%	25.60%	25.60%	25.60%	25.60%	25.60%	25.60%	25.60%	25.60%	25.60%	25.60%	25.60%	0.00%	0.00%	0.00%
Nickel	%	1.58%		0.00%	0.00%	3.30%	2.19%	3.08%	1.80%	1.60%	1.50%	2.05%	2.46%	1.60%	1.32%	1.40%	1.53%	1.69%	1.58%	1.70%	1.57%	1.38%	1.12%	1.54%	0.00%	0.00%	0.00%
Cobalt	%	0.05%		0.00%	0.00%	0.14%	0.08%	0.11%	0.06%	0.05%	0.05%	0.07%	0.09%	0.06%	0.04%	0.04%	0.05%	0.05%	0.05%	0.05%	0.05%	0.04%	0.03%	0.05%	0.00%	0.00%	0.00%
Platinum	g/DMT	0.83		-	-	1.43	0.96	1.41	0.89	0.73	0.78	0.93	1.08	0.75	0.70	0.82	0.85	0.88	0.82	0.93	0.86	0.79	0.68	0.77	-	-	-
Paladium	g/DMT	2.52		-	-	7.08	4.14	5.55	2.86	2.15	2.25	3.25	4.17	2.66	2.12	2.20	2.52	2.58	2.39	2.81	2.60	2.06	1.77	2.49	-	-	-
Gold	g/DMT	4.14		-	-	6.44	5.13	6.59	3.98	3.96	4.69	4.50	5.11	4.10	4.03	4.16	3.96	3.81	3.89	4.24	4.13	3.81	3.77	4.13	-	-	-
MgO	%	1.5%																									
Cu Concentrate (WMT)	WMT	392,314		-	-	3,197	7,191	5,915	19,767	28,190	20,704	11,984	9,202	11,661	23,746	20,795	17,403	18,849	27,524	28,379	30,530	40,946	44,150	22,180	-	-	-
Cu Concentrate Delivered to Smelter (less losses)	DMT	370,835		-	-	3,022	6,797	5,591	18,685	26,647	19,570	11,328	8,698	11,023	22,446	19,657	16,450	17,817	26,017	26,826	28,858	38,704	41,733	20,966	-	-	-
Cu Concentrate Payables																											
Copper	pounds	198,828,331		-	-	1,620,049	3,644,252	2,997,715	10,018,044	14,286,979	10,492,959	6,073,822	4,663,491	5,910,070	12,034,847	10,539,315	8,820,045	9,553,058	13,949,453	14,382,953	15,472,848	20,751,875	22,375,574	11,240,982	-	-	-
Nickel	pounds	3,236,801		-	-	55,009	81,855	94,903	184,981	235,075	162,104	128,015	118,003	97,493	163,872	151,404	138,698	165,941	227,196	250,815	249,645	295,173	258,293	178,328	-	-	-
Cobalt	pounds	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Platinum	ounces	110		-	-	33	-	58	-	-	-	-	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Paladium	ounces	14,497		-	-	472	549	655	894	788	630	654	708	471	646	607	645	726	928	1,247	1,190	1,057	827	803	-	-	-
Gold	ounces	33,653		-	-	475	813	904	1,610	2,284	2,092	1,146	1,034	988	1,969	1,796	1,408	1,451	2,177	2,516	2,610	3,142	3,341	1,900	-	-	-
Bulk Concentrate (DMT) - Grades	DMT	2,061,288		-	-	112,589	120,203	121,006	101,839	81,771	91,463	97,042	109,080	134,066	117,866	109,364	109,633	106,525	98,910	96,392	102,583	104,374	117,684	123,275	5,623	-	-
Copper	%	**0.32%**		0.00%	0.00%	0.16%	0.28%	0.29%	0.30%	0.23%	0.19%	0.15%	0.22%	0.29%	0.36%	0.33%	0.33%	0.38%	0.42%	0.47%	0.49%	0.42%	0.43%	0.36%	0.00%	0.00%	0.00%
Nickel	%	10.08%		0.00%	0.00%	10.24%	10.12%	10.11%	10.10%	10.17%	10.21%	10.25%	10.18%	10.11%	10.04%	10.07%	10.07%	10.02%	9.98%	9.93%	9.91%	9.98%	9.97%	10.04%	10.40%	0.00%	0.00%
Cobalt	%	0.73%		0.00%	0.00%	0.78%	0.75%	0.72%	0.73%	0.84%	0.83%	0.87%	0.84%	0.74%	0.71%	0.76%	0.77%	0.73%	0.68%	0.63%	0.58%	0.57%	0.62%	0.68%	1.23%	0.00%	0.00%
Platinum	g/DMT	8.13		-	-	7.54	8.48	8.12	7.61	8.03	8.16	7.82	7.37	6.86	7.04	7.98	8.60	9.13	9.14	9.81	9.68	8.41	8.17	7.29	7.80	-	-
Paladium	g/DMT	11.16		-	-	11.85	12.19	11.07	10.43	12.07	12.34	12.35	11.90	10.79	10.39	11.33	11.74	11.40	10.58	11.05	11.29	9.54	9.98	10.21	12.83	-	-
Gold	g/DMT	1.95		-	-	1.99	2.40	2.15	1.78	1.87	1.92	1.79	1.74	1.72	1.77	1.94	1.98	2.05	2.18	2.04	1.74	1.89	2.12	1.88	1.79	-	-
MgO	%	5.6%		0.0%	0.0%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	0.0%	0.0%
Bulk Concentrate (WMT)	WMT	2,169,777		-	-	118,515	126,529	127,375	107,199	86,075	96,277	102,150	114,821	141,122	124,069	115,120	115,403	112,131	104,115	101,466	107,982	109,867	123,878	129,763	5,919	-	-
Bulk Concentrate Delivered to Smelter (less losses)	DMT	2,050,981		-	-	112,026	119,602	120,401	101,330	81,362	91,006	96,557	108,535	133,395	117,276	108,817	109,085	105,992	98,415	95,910	102,070	103,852	117,095	122,658	5,595	-	-
Bulk Concentrate Payables			payable of recovered																								
Copper	pounds	-	80%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nickel	pounds	355,448,915	77%	-	-	19,730,456	20,804,165	20,924,890	17,600,884	14,224,469	15,977,227	17,024,962	18,997,959	23,186,652	20,246,423	18,834,329	18,883,191	18,268,856	16,894,208	16,384,754	17,396,771	17,819,361	20,075,095	21,173,600	1,000,664	-	-
Cobalt	pounds	13,133,080	40%	-	-	765,973	794,035	763,529	651,776	599,303	669,192	738,238	799,955	872,300	732,462	725,238	735,915	680,297	587,276	534,004	525,024	522,309	641,489	733,858	60,908	-	-
Platinum	ounces	321,582		-	-	16,301	19,555	18,859	14,885	12,602	14,320	14,559	15,434	17,663	15,927	16,755	18,094	18,667	17,348	18,152	19,069	16,855	18,454	17,241	842	-	-
Paladium	ounces	441,386		-	-	25,598	28,133	25,713	20,389	18,945	21,667	23,010	24,919	27,772	23,496	23,792	24,703	23,307	20,084	20,438	22,231	19,116	22,540	24,148	1,385	-	-
Gold	ounces	76,996		-	-	4,303	5,534	5,002	3,478	2,935	3,364	3,342	3,649	4,425	4,014	4,071	4,163	4,185	4,129	3,775	3,425	3,783	4,787	4,438	194	-	-
Total Payable Metals																											
Copper	pounds	281,528,578		-	-	1,620,049	5,172,487	4,254,821	14,219,160	20,278,293	14,893,233	8,620,908	6,619,149	8,388,486	17,081,718	14,959,028	12,518,773	13,559,179	19,799,223	20,414,514	21,961,461	29,454,275	31,758,879	15,954,942	-	-	-
Nickel	pounds	614,347,632		-	-	24,130,371	27,351,378	28,515,836	32,396,770	33,027,143	28,943,259	27,264,329	28,436,570	30,984,729	33,353,861	30,944,518	29,977,084	31,541,807	35,066,734	36,446,404	37,364,855	41,429,086	40,734,901	35,437,334	1,000,664	-	-
Cobalt	pounds	21,508,744		-	-	951,753	1,027,513	1,048,189	1,142,927	1,171,784	1,080,789	1,092,374	1,154,008	1,149,066	1,169,283	1,126,457	1,111,964	1,118,144	1,148,907	1,148,555	1,166,153	1,231,238	1,227,158	1,181,573	60,908	-	-
Platinum	ounces	626,457		-	-	20,641	26,048	26,750	31,517	31,978	29,523	25,014	24,810	25,929	31,628	32,720	31,941	34,371	38,572	43,131	43,718	47,268	46,659	33,398	842	-	-
Paladium	ounces	743,391		-	-	32,650	37,337	35,918	37,725	37,363	35,851	34,977	36,774	37,267	38,775	37,712	38,126	38,194	40,113	44,856	46,531	44,729	46,104	41,004	1,385	-	-
Gold	ounces	174,401		-	-	5,587	7,796	7,438	8,178	9,606	9,274	6,604	6,528	7,290	9,744	9,262	8,278	8,459	10,516	11,020	10,983	13,046	14,662	9,937	194	-	-

Mine Production			Year -3	Year -2	Year -1	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16	Year 17	Year 18	Year 19	Year 20	Year 21	Year 22
Open Pit																											
Mill Feed																											
Feed to Mill	tonnes	276,594,336			-	11,861,498	14,532,741	14,754,464	14,234,152	15,423,809	15,192,167	15,363,051	15,143,539	15,915,091	15,931,226	15,022,779	13,200,000	13,200,000	13,200,000	13,431,955	14,045,247	16,200,000	15,893,950	14,048,666	0		
Feed to Stockpile	tonnes	31,115,355		1,684,056	2,598,414	2,648,596	1,124,696	1,445,536	1,965,848	776,191	1,007,833	836,949	779,271	562,100	268,774	1,177,221	3,000,000	3,000,000	3,000,000	2,768,045	931,679	-	1,529,123	11,025	-		
Stockpile to Mill	tonnes	31,115,354		-	-	3,388,502	1,667,259	1,445,536	1,965,848	776,191	1,007,833	836,949	1,056,461	284,909	268,774	1,177,221	3,000,000	3,000,000	3,000,000	2,768,045	2,154,753	-	306,050	2,151,334	859,690		
Waste	tonnes	594,652,652		13,315,944	35,401,586	33,101,404	33,675,304	33,354,464	32,834,152	34,023,809	33,792,167	33,963,051	34,020,729	34,237,900	34,531,226	33,622,779	23,921,728	20,631,615	19,425,614	29,031,955	30,868,321	32,989,780	14,116,497	3,765,034	27,591		
Total Material	tonnes	933,477,697	-	15,000,000	38,000,000	51,000,000	51,000,000	51,000,000	51,000,000	51,000,000	51,000,000	51,000,000	51,000,000	51,000,000	51,000,000	51,000,000	43,121,728	39,831,614	38,625,614	48,000,000	48,000,000	49,189,780	31,845,620	19,976,059	887,282	-	-
Strip Ratio		1.93	-	-	-	2.17	2.08	2.06	2.03	2.10	2.09	2.10	2.11	2.13	2.08	1.48	1.27	1.20	1.79	1.91	2.04	0.87	0.23	0.03	-	-
Operating Cost																											
Open Pit Mining	dollars	2,245,125,933	Prestripping capitalized			131,832,784	145,825,626	132,889,074	122,581,315	134,094,857	130,771,038	131,695,251	125,731,955	125,229,987	129,248,860	112,845,721	103,069,590	118,375,257	110,338,468	105,091,670	117,620,856	116,070,199	79,719,445	57,289,721	14,804,259	0	0
Underground Mining	dollars	0																									
Processing	dollars	5,329,711,367				266,450,068	280,646,157	280,361,935	278,773,817	278,614,533	279,103,191	280,235,443	280,145,889	279,472,754	279,482,437	279,446,757	279,852,246	279,463,017	278,338,327	277,733,454	277,768,752	277,958,817	278,170,051	279,211,692	38,482,031		
G&A	dollars	746,798,433	Owners Cost			39,034,211	40,317,403	39,219,843	38,494,323	39,742,783	39,555,383	39,791,013	39,556,763	39,744,853	40,413,863	38,300,713	37,103,243	37,728,163	37,396,763	37,156,303	37,586,923	36,340,533	35,468,253	34,221,863	19,625,238	-	-
Carbon Tax	dollars	256,909,734				13,771,795	14,303,404	13,663,123	13,091,587	13,672,112	13,627,970	13,681,459	13,486,950	13,514,877	13,678,931	12,570,953	12,470,207	12,915,303	12,538,070	12,399,652	12,682,912	12,658,472	11,584,933	10,932,868	9,664,154	-	-
Concentrate Trucking	dollars	0																									
Port Costs	dollars	0																									
Concentrate trucking, Port, Shipping to Smelter	dollars	721,345,274		-	-	23,825,969	28,543,100	28,830,501	37,260,654	40,685,982	34,619,793	29,509,807	29,674,472	33,903,204	40,644,684	37,093,655	34,814,050	36,531,735	42,836,376	44,168,343	46,165,527	53,985,081	55,635,188	41,660,178	956,974	-	-
Subtotal Operating	dollars	9,299,890,740	0	0	0	474,914,827	509,635,690	494,964,476	490,201,697	506,810,267	497,677,374	494,912,974	488,596,028	491,865,675	503,468,775	480,257,798	467,309,336	485,013,475	481,448,004	476,549,422	491,824,969	497,013,103	460,577,871	423,316,323	83,532,656	0	0
Open Pit Mining	dollars	604,296,019	0	198,076,201	200,665,971	32,010,880	36,937,122	1,655,000	56,000	3,286,000	14,359,256	19,804,342	5,099,520	8,240,854	5,062,060	7,776,726	19,186,005	26,804,916	16,954,080	1,140,000	515,000	1,621,000	5,045,087	0	0	0	0
Underground Mining	dollars	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Processing	dollars	514,998,815	50,989,982	203,959,927	254,949,909	0	283,278	283,278	283,278	283,278	283,278	283,278	283,278	283,278	283,278	283,278	283,278	283,278	283,278	283,278	283,278	283,278	283,278	283,278	0	0	0
Infrastructure	dollars	611,008,699	36,696,803	187,691,082	129,089,422	19,129,018	17,761,454	14,371,181	11,122,668	18,554,355	20,717,626	22,018,471	23,947,761	26,116,475	27,939,674	8,012,552	9,659,494	9,659,494	9,358,447	9,862,203	8,149,529	587,748	187,748	187,748	187,748	0	0
Environment Costs	dollars	52,401,294	0	0	0	8,875,788	2,130,189	2,130,189	2,130,189	2,130,189	2,130,189	2,130,189	2,130,189	2,130,189	2,130,189	2,130,189	2,130,189	2,130,189	2,130,189	2,130,189	2,130,189	2,130,189	2,130,189	2,130,189	4,579,568	602,537	0
Indirect	dollars	303,005,586	28,022,778	108,638,552	108,476,361	5,041,719	5,112,134	2,738,142	2,073,807	3,572,215	4,515,035	5,021,302	4,633,127	5,180,330	5,349,371	1,900,356	2,767,093	3,148,039	2,601,341	1,901,259	1,561,911	256,900	356,147	103,893	33,775	0	0
Contingency	dollars	239,564,603	17,103,178	82,728,148	80,054,960	5,120,283	5,172,469	2,784,553	2,106,876	3,635,807	4,587,511	5,099,121	4,718,869	5,274,980	5,451,508	1,920,651	2,794,152	3,175,098	2,627,164	1,929,151	1,582,769	246,701	344,305	92,051	230,496	587,851	195,950
Subtotal Capital	dollars	2,325,275,017	132,812,740	781,093,910	773,236,622	70,177,687	67,396,645	23,962,342	17,772,818	31,461,844	46,592,895	54,356,703	40,812,744	47,226,106	46,216,080	22,023,752	36,820,211	45,201,013	33,954,498	17,246,079	14,222,675	5,125,816	8,346,754	2,797,159	5,031,586	1,190,388	195,950
	$/tonne feed	$ 7.56	$ -	$ -	$ -	$ 4.60	$ 4.16	$ 1.48	$ 1.10	$ 1.94	$ 2.88	$ 3.36	$ 2.52	$ 2.92	$ 2.85	$ 1.36	$ 2.27	$ 2.79	$ 2.10	$ 1.06	$ 0.88	$ 0.32	$ 0.52	$ 0.17	$ 5.85	$ -	$ -
Revenue (after smelting, refining, payables, etc)																											
Nickel Concentrate																											
Copper	dollars	441,067,985	-	-	-	-	8,150,586	6,704,567	22,405,949	31,953,674	23,468,124	13,584,462	10,430,173	13,218,221	26,916,647	23,571,801	19,726,552	21,365,979	31,198,776	32,168,325	34,605,939	46,412,796	50,044,294	25,141,121	-	-	-
Nickel	dollars	3,749,708,090	-	-	-	63,725,288	94,825,264	109,941,946	214,293,266	272,324,788	187,790,935	148,299,845	136,702,242	112,941,899	189,838,984	175,395,523	160,676,196	192,236,147	263,198,167	290,558,920	289,203,764	341,946,762	299,222,200	206,585,953	-	-	-
Cobalt	dollars	256,853,697	-	-	-	5,697,258	7,159,996	8,729,573	15,061,989	17,556,093	12,622,320	10,860,168	10,857,616	8,487,485	13,395,857	12,304,075	11,532,174	13,427,300	17,223,338	18,846,231	19,661,279	21,740,488	17,960,523	13,729,936	-	-	-
Platinum	dollars	406,354,131	-	-	-	5,741,684	8,656,542	10,443,476	22,176,512	25,834,380	20,269,793	13,940,452	12,477,261	11,021,428	20,934,550	21,287,661	18,463,527	20,939,050	28,298,307	33,304,345	32,865,089	40,550,248	37,607,043	21,542,785	-	-	-
Paladium	dollars	805,021,714	-	-	-	18,421,654	24,236,088	26,740,928	46,037,644	49,360,540	37,950,148	31,675,176	31,211,266	25,268,458	40,973,196	37,274,660	35,778,709	39,654,347	53,484,534	64,877,851	64,708,525	68,755,199	63,663,277	44,949,514	-	-	-
Gold	dollars	153,004,274	-	-	-	1,939,777	3,479,148	3,674,772	7,414,450	10,530,450	9,162,487	5,079,668	4,430,451	4,506,031	9,026,075	8,150,514	6,495,536	6,777,969	10,101,580	11,349,721	11,875,122	14,690,984	15,679,729	8,639,809	-	-	-
less Penalties																											
MgO	dollars	49,085,811	-	-	-	663,126	1,106,727	1,163,775	2,674,424	3,550,001	2,510,356	1,767,261	1,538,086	1,470,822	2,676,564	2,416,525	2,132,538	2,454,210	3,444,768	3,703,996	3,799,245	4,731,105	4,550,065	2,732,217	-	-	-
Subtotal Ni Concentrate Revenue	dollars	5,762,924,079	-	-	-	94,862,533	145,400,896	165,071,487	324,715,387	404,009,924	288,753,451	221,672,511	204,570,923	173,972,700	298,408,746	275,567,709	250,540,155	291,946,582	400,059,934	447,401,398	449,120,472	529,365,371	479,627,002	317,856,900	-	-	-
Copper Concentrate																											
Copper	dollars	1,007,249,167	-	-	-	8,207,043	18,461,504	15,186,196	50,750,649	72,376,747	53,156,532	30,769,518	23,624,890	29,939,964	60,967,618	53,391,366	44,681,675	48,395,063	70,666,864	72,862,944	78,384,267	105,127,418	113,352,952	56,945,957	-	-	-
Nickel	dollars	47,473,085	-	-	-	806,792	1,200,533	1,391,917	2,713,054	3,447,761	2,377,522	1,877,546	1,730,715	1,429,898	2,403,452	2,220,591	2,034,237	2,433,801	3,332,214	3,678,614	3,661,457	4,329,208	3,788,295	2,615,476	-	-	-
Cobalt	dollars	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Platinum	dollars	143,159	-	-	-	43,625	-	76,159	-	-	-	-	23,376	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Paladium	dollars	40,147,729	-	-	-	1,307,942	1,519,786	1,812,786	2,475,659	2,183,282	1,743,865	1,812,108	1,961,112	1,304,133	1,788,982	1,681,855	1,786,569	2,009,639	2,569,108	3,453,556	3,294,764	2,928,042	2,291,318	2,223,222	-	-	-
Gold	dollars	80,498,417	-	-	-	1,136,823	1,943,643	2,162,844	3,851,439	5,462,463	5,003,046	2,740,563	2,472,151	2,363,672	4,709,349	4,294,882	3,368,481	3,469,828	5,208,454	6,018,543	6,242,408	7,514,780	7,991,237	4,543,811	-	-	-
less Penalties																											
Ni in Copper concentrate	dollars	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal Copper Concentrate Revenue	dollars	1,175,511,557	-	-	-	11,502,226	23,125,466	20,629,903	59,790,802	83,470,253	62,280,966	37,199,736	29,812,244	35,037,667	69,869,401	61,588,694	51,870,961	56,308,331	81,776,639	86,013,657	91,582,895	119,899,448	127,423,802	66,328,467	-	-	-
Bulk Concentrate																											
Copper	dollars	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nickel	dollars	5,213,250,755		-	-	289,380,027	305,127,755	306,898,391	258,146,300	208,625,541	234,332,669	249,699,440	278,636,729	340,070,893	296,947,530	276,236,821	276,953,472	267,943,225	247,781,716	240,309,722	255,152,648	261,350,621	294,434,722	310,546,129	14,676,404	-	-
Cobalt	dollars	402,747,787		-	-	23,489,844	24,350,397	23,414,893	19,987,787	18,378,611	20,521,890	22,639,300	24,531,955	26,750,526	22,462,166	22,240,621	22,568,065	20,862,443	18,009,795	16,376,112	16,100,743	16,017,476	19,672,336	22,504,973	1,867,852	-	-
Platinum	dollars	428,775,842		-	-	21,734,684	26,073,880	25,144,856	19,846,544	16,802,571	19,063,917	19,411,899	20,579,208	23,550,248	21,236,433	22,339,551	24,124,901	24,888,992	23,130,649	24,203,051	25,425,874	22,473,367	24,604,932	22,988,243	1,122,042	-	-
Paladium	dollars	1,235,879,582		-	-	71,675,557	78,771,886	71,996,101	57,089,711	53,047,375	60,668,257	64,427,735	69,773,248	77,761,003	65,789,394	66,617,428	69,167,432	65,258,283	56,233,853	57,226,251	62,247,426	53,524,478	63,112,441	67,613,613	3,878,107	-	-
Gold	dollars	184,789,909		-	-	10,327,387	13,281,388	12,005,468	8,348,158	7,043,778	8,074,162	8,021,318	8,756,971	10,619,051	9,634,104	9,770,117	9,991,442	10,042,907	9,910,210	9,059,248	8,220,010	9,078,917	11,489,953	10,650,913	464,406	-	-
less Penalties																											
MgO	dollars	19,142,492	-	-	-	1,045,576	1,116,285	1,123,744	945,748	759,382	849,389	901,198	1,012,989	1,245,024	1,094,580	1,015,623	1,018,122	989,259	918,540	895,164	952,656	969,287	1,092,889	1,144,812	52,223	-	-
Subtotal Bulk Concentrate Revenue	dollars	7,484,586,367	-	-	-	417,653,076	448,721,592	440,583,453	364,364,248	304,657,258	343,540,284	365,100,891	403,291,101	479,996,745	417,164,207	398,220,162	403,823,434	389,985,110	355,984,763	348,069,549	368,099,358	363,414,147	414,407,273	435,448,684	22,061,035	-	-
less Royalty	dollars	144,230,220	-	-	-	5,240,178	6,172,480	6,262,848	7,488,704	7,921,374	6,945,747	6,239,731	6,376,743	6,890,071	7,854,424	7,353,766	7,062,346	7,382,400	8,378,213	8,814,846	9,088,027	10,126,790	10,214,581	8,196,341	220,610	-	-
Net Revenue	dollars	14,278,791,784	-	-	-	518,777,657	611,075,474	620,021,994	741,381,732	784,216,060	687,628,953	617,733,407	631,297,525	682,117,041	777,587,930	728,022,799	699,172,205	730,857,622	829,443,122	872,669,758	899,714,688	1,002,552,176	1,011,243,495	811,437,710	21,840,425	-	-
	$/tonne feed	$ 46.40	$ -	$ -	$ -	$ 34.02	$ 37.72	$ 38.27	$ 45.76	$ 48.41	$ 42.45	$ 38.13	$ 38.97	$ 42.11	$ 48.00	$ 44.94	$ 43.16	$ 45.11	$ 51.20	$ 53.87	$ 55.54	$ 61.89	$ 62.42	$ 50.09	$ 25.40	$ -	$ -
Revenue Summary by Metal																											
Copper	dollars	1,448,317,153	-	-	-	8,207,043	26,612,090	21,890,763	73,156,598	104,330,420	76,624,656	44,353,980	34,055,064	43,158,185	87,884,265	76,963,167	64,408,227	69,761,042	101,865,639	105,031,269	112,990,206	151,540,215	163,397,246	82,087,078	-	-	-
Nickel	dollars	9,010,431,930	-	-	-	353,912,107	401,153,551	418,232,255	475,152,621	484,398,091	424,501,127	399,876,832	417,069,686	454,442,690	489,189,966	453,852,935	439,663,905	462,613,173	514,312,096	534,547,256	548,017,868	607,626,591	597,445,217	519,747,559	14,676,404	-	-
Cobalt	dollars	659,601,484	-	-	-	29,187,102	31,510,393	32,144,465	35,049,776	35,934,704	33,144,210	33,499,469	35,389,571	35,238,011	35,858,023	34,544,696	34,100,239	34,289,743	35,233,133	35,222,344	35,762,022	37,757,964	37,632,858	36,234,908	1,867,852	-	-
Platinum	dollars	835,273,113	-	-	-	27,519,993	34,730,421	35,664,492	42,023,056	42,636,951	39,363,710	33,352,351	33,079,944	34,571,675	42,170,983	43,627,212	42,588,428	45,828,042	51,428,956	57,507,396	58,290,963	63,023,615	62,211,975	44,531,028	1,122,042	-	-
Paladium	dollars	2,081,049,025	-	-	-	91,405,153	104,527,760	100,549,815	105,603,014	104,591,197	100,362,269	97,915,020	102,945,627	104,333,594	108,551,573	105,573,944	106,732,709	106,922,270	112,287,496	125,557,659	130,250,715	125,207,719	129,067,036	114,786,349	3,878,107	-	-
Gold	dollars	418,292,599	-	-	-	13,403,987	18,704,180	17,843,084	19,614,048	23,036,690	22,239,695	15,841,549	15,659,573	17,488,754	23,369,528	22,215,513	19,855,459	20,290,704	25,220,244	26,427,513	26,337,540	31,284,680	35,160,920	23,834,532	464,406	-	-
Pre-Tax Cashflow																											
Operating Cost	dollars	9,299,890,000	0	0	0	474,915,000	509,636,000	494,964,000	490,202,000	506,810,000	497,677,000	494,913,000	488,596,000	491,866,000	503,469,000	480,258,000	467,309,000	485,013,000	481,448,000	476,549,000	491,825,000	497,013,000	460,578,000	423,316,000	83,533,000	0	0
Capital Cost	dollars	2,325,277,000	132,813,000	781,094,000	773,237,000	70,178,000	67,397,000	23,962,000	17,773,000	31,462,000	46,593,000	54,357,000	40,813,000	47,226,000	46,216,000	22,024,000	36,820,000	45,201,000	33,954,000	17,246,000	14,223,000	5,126,000	8,347,000	2,797,000	5,032,000	1,190,000	196,000
Revenue	dollars	14,278,792,000	0	0	0	518,778,000	611,075,000	620,022,000	741,382,000	784,216,000	687,629,000	617,733,000	631,298,000	682,117,000	777,588,000	728,023,000	699,172,000	730,858,000	829,443,000	872,670,000	899,715,000	1,002,552,000	1,011,243,000	811,438,000	21,840,000	0	0
Pre-Tax Cashflow	dollars	2,653,625,000	-132,813,000	-781,094,000	-773,237,000	-26,315,000	34,042,000	101,096,000	233,407,000	245,944,000	143,359,000	68,463,000	101,889,000	143,025,000	227,903,000	225,741,000	195,043,000	200,644,000	314,041,000	378,875,000	393,667,000	500,413,000	542,318,000	385,325,000	-66,725,000	-1,190,000	-196,000
Pre-Tax Cumulative Cashflow	dollars		-132,813,000	-913,907,000	-1,687,144,000	-1,713,459,000	-1,679,417,000	-1,578,321,000	-1,344,914,000	-1,098,970,000	-955,611,000	-887,148,000	-785,259,000	-642,234,000	-414,331,000	-188,590,000	6,453,000	207,097,000	521,138,000	900,013,000	1,293,680,000	1,794,093,000	2,336,411,000	2,721,736,000	2,655,011,000	2,653,821,000	2,653,625,000
Post-Tax Cashflow																											
Yukon QMA Royalty (tax)	dollars	405,800,371	-	-	-	-	-	-	-	677,651	-	-	9,292,014	16,483,103	25,525,426	22,936,076	23,289,649	23,140,307	34,404,756	41,502,076	44,711,928	56,686,461	63,263,885	43,887,039	-	-	-
Yukon Taxes	dollars	263,620,626	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,066,618	20,592,922	31,847,617	37,450,846	39,283,162	50,349,396	55,652,044	39,014,445	(9,497,757)	(1,246,457)	(892,210)
Federal Taxes	dollars	329,525,783	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,333,272	25,741,153	39,809,521	46,813,557	49,103,952	62,936,745	69,565,055	48,768,056	(11,872,196)	(1,558,071)	(1,115,262)
Total Tax	dollars	998,946,779	-	-	-	-	-	-	-	677,651	-	-	9,292,014	16,483,103	25,525,426	22,936,076	25,689,538	69,474,383	106,061,894	125,766,480	133,099,043	169,972,602	188,480,985	131,669,540	(21,369,953)	(2,804,529)	(2,007,472)
Post-Tax Cashflow	dollars	1,654,678,221	-132,813,000	-781,094,000	-773,237,000	-26,315,000	34,042,000	101,096,000	233,407,000	245,266,349	143,359,000	68,463,000	92,596,986	126,541,897	202,377,574	202,804,924	169,353,462	131,169,617	207,979,106	253,108,520	260,567,957	330,440,398	353,837,015	253,655,460	-45,355,047	1,614,529	1,811,472
Post-Tax Cumulative Cashflow	dollars		-132,813,000	-913,907,000	-1,687,144,000	-1,713,459,000	-1,679,417,000	-1,578,321,000	-1,344,914,000	-1,099,647,651	-956,288,651	-887,825,651	-795,228,665	-668,686,768	-466,309,193	-263,504,269	-94,150,807	37,018,810	244,997,916	498,106,437	758,674,394	1,089,114,792	1,442,951,808	1,696,607,267	1,651,252,220	1,652,866,749	1,654,678,221

		Pre-Tax
NPV (millions) @	**5%**	$547
	7.5%	$37
	10%	-$286
Payback Period	**years**	12.0
Mine Life	**years**	19.1
IRR	**%**	7.7%

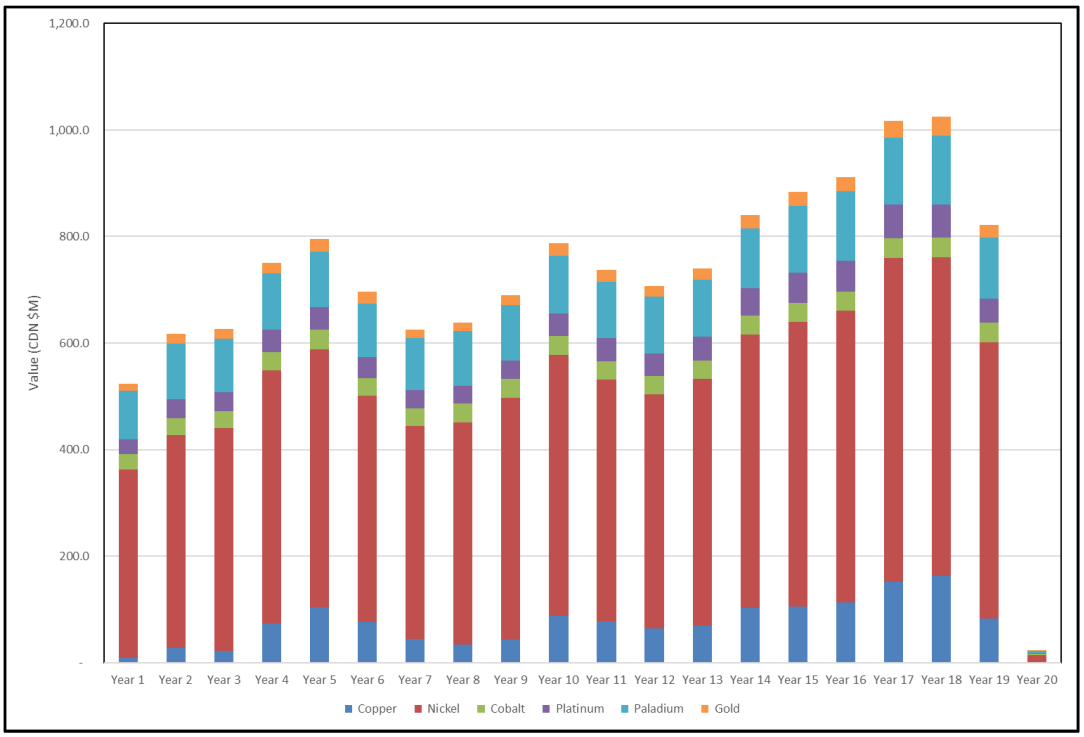
19.1

Figure 22-1: Revenue by Metal – Life of Mine



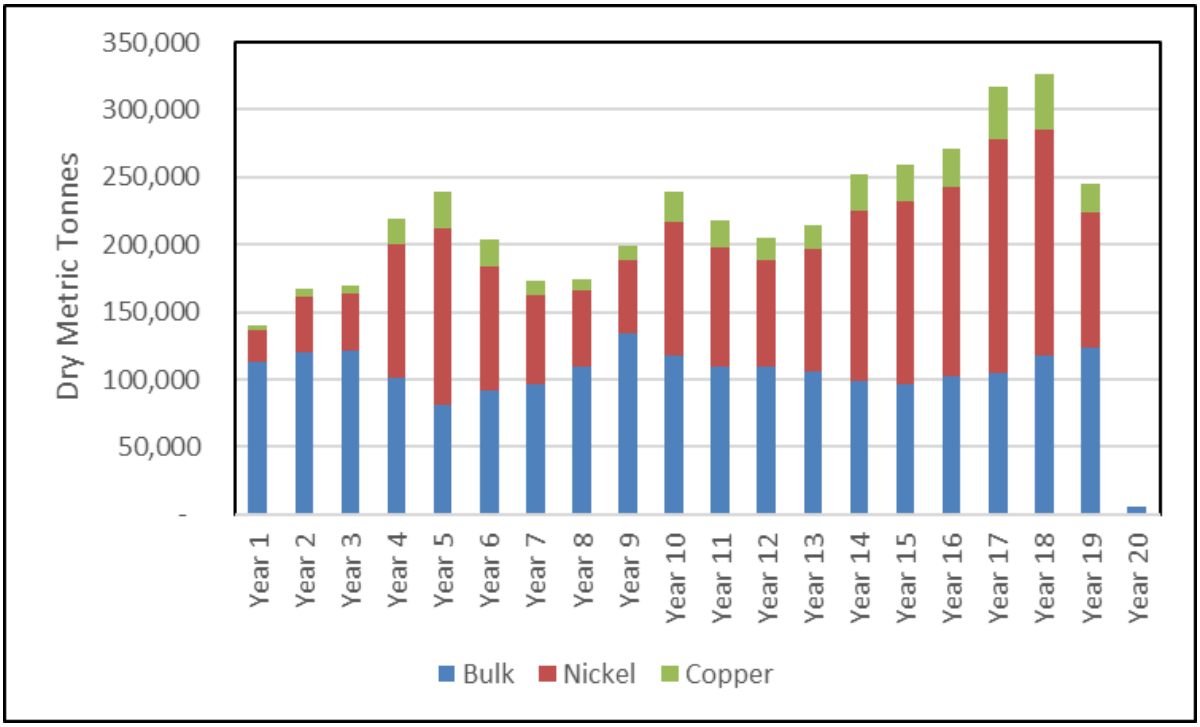
Source: AGP 2023

Figure 22-2: Revenue by Metal – Annually



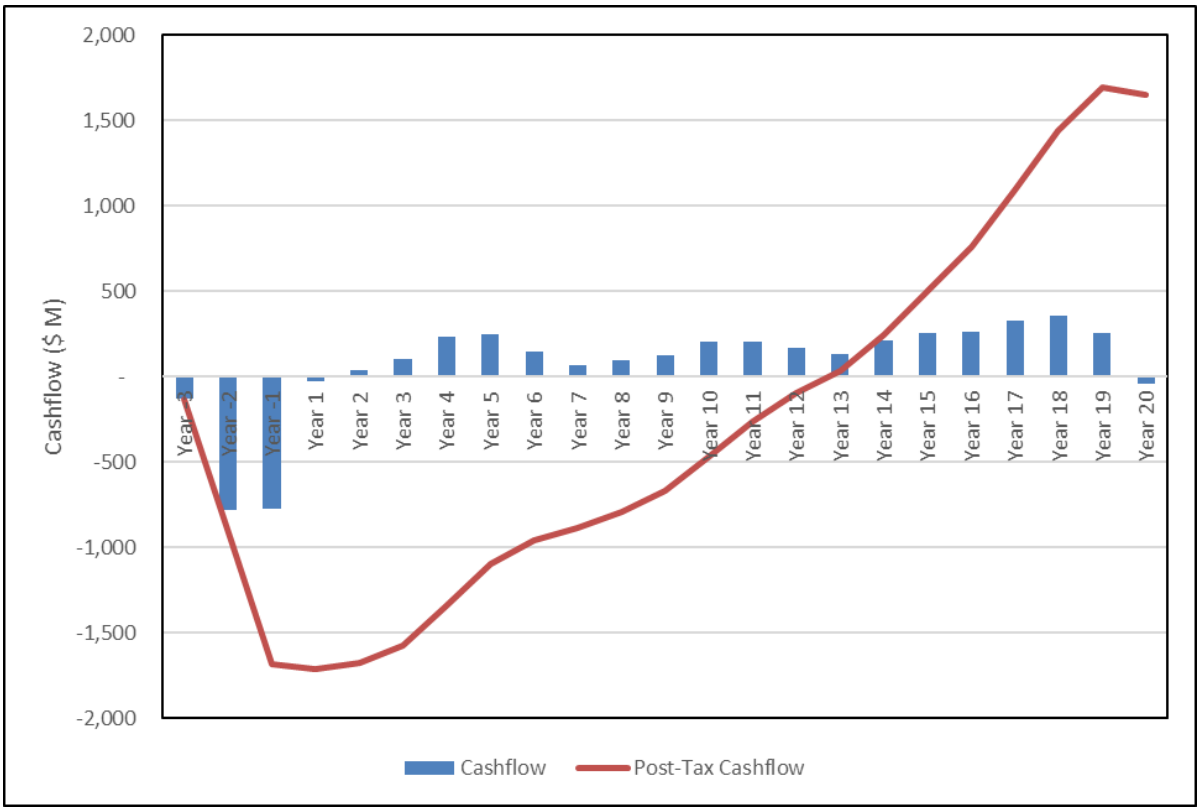
Source: AGP 2023

Figure 22-3: Concentrate Production – Life of Mine



Source: AGP 2023

Figure 22-4: Nickel Shäw PFS Cashflow – Post-Tax



Source: AGP 2023

22.11 Sensitivity Analysis

Various sensitivities were applied to the project to examine opportunities and also potential impact of current infrastructure requirements.

Impacts of variable metal pricing of nickel and copper, the two primary metal revenue generators, was examined. The results are shown in Table 22-6.

Table 22-6: Nickel and Copper Price Sensitivity – Post-Tax NPV $M

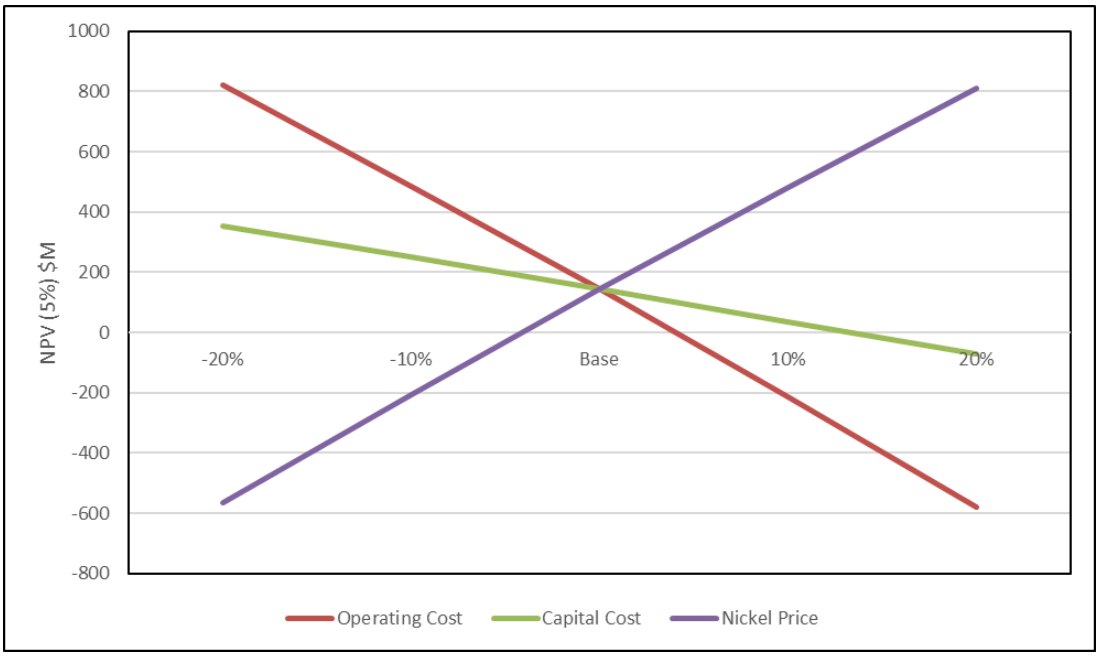
NPV (5%) $M		Nickel Price ($US/lb)						
Metal Prices		$8.00	$9.00	$10.00	$11.00	$12.00	$13.00	$14.00
Copper Price ($US/lb)	$3.00	(1,003)	(633)	(306)	14	325	628	925
	$3.25	(961)	(599)	(273)	47	357	658	955
	$3.50	(918)	(566)	(240)	79	388	689	985
	$3.75	(876)	(532)	(207)	111	419	720	1,015
	$4.00	(834)	(498)	(174)	143	450	751	1,045
	$4.25	(796)	(465)	(141)	175	481	781	1,075
	$4.50	(762)	(431)	(108)	207	512	811	1,105

Reviewing the more traditional sensitivities of operating cost, capital cost, and metal price (nickel price) it becomes apparent that operating cost and nickel price are the two major impacts to the project with operating cost being just slightly more impactful. Capital costs have less impact on sensitivity. This is shown in Table 22-7 and Figure 22-5.

Table 22-7: Post-Tax Sensitivity

Variance	Operating Cost NPV @5% $M	Capital Cost NPV @5% $M	Nickel Price	
			$US/lb	NPV @5% $M
-20 %	820	353	8.80	(564)
-10 %	486	249	9.90	(206)
Base	**143**	**143**	**11.00**	**143**
10 %	(213)	36	12.10	480
20%	(578)	(72)	13.20	810

Figure 22-5: Sensitivity Analysis – Post-Tax NPV @ 5%



Source: AGP 2023

One of the key items in the Nickel Shäw project operating cost is the cost of power. This sensitivity was also examined and the results of a change in power price is shown in Table 22-8.

Table 22-8: Power Cost Sensitivity – Post-Tax NPV (5%) $M

	Power Cost ($/kWhr)						
	$0.09	**$0.11**	**$0.13**	**$0.15**	**$0.17**	**$0.194**	**$0.21**
Post Tax NPV (5%) $M	543	467	391	314	237	143	80

23 ADJACENT PROPERTIES

There are no significant deposits adjacent to the to the Property.

There are several placer claims situated along Quill Creek, however, these do intersect with the Wellgreen Deposit.

24 OTHER RELEVANT DATA AND INFORMATION

There is no other relevant data or information for this report.

25 INTERPRETATION AND CONCLUSIONS

This PFS provides a conclusion that the Nickel Shäw project as envisaged is economically viable based on the assumptions laid out for metal prices, metallurgical recoveries, and all other available data.

There are no known factors related to, environmental, permitting, legal, title, taxation, socio-economic, marketing, or political issues which could materially affect the mineral resource or reserves estimates.

Based on evaluation of the data available from the Nickel Shäw Project, the authors of this report have drawn the following conclusions.

25.1 Geology

The Nickel Shäw Project is made up of the principal Wellgreen Ni-Cu-PGM deposit as well as several exploration targets, including the Arch target. The Wellgreen Deposit has been subject to historical underground mine operations from 1972 to 1973 with limited production. Exploration and drilling programs since 1980's have expanded the deposit to its current size and is amenable to large scale bulk mining.

The nickel and copper mineralization occurs within the peridotite, clinopyroxenite and mineralized Quill Creek gabbro lithologies on the Wellgreen Deposit. There are some, but limited, massive sulphide occurrences within the deposit. The deposit is enclosed in relatively barren volcanoclastic and metasedimentary lithologies. The mineralization is found along approximately 1,700 km strike length with thicknesses ranging from 20 m in the west end to almost 300 m in the east end.

The mineral resources for the Wellgreen Deposit are: Measured Resources of 122.4 Mt at 0.25 %Ni, 0.15 %Cu; Indicated Resources of 314.3 Mt at 0.26 %Ni, 0.13 %Cu; and Inferred Resources of 114.0 Mt at 0.27 %Ni, 0.13 %Cu. The effective date of the Mineral Resources is 3 April 2023. Net Smelter Return (NSR) cut-off grades range from CAD $17.30 to CAD $17.61 depending on reporting to Bulk concentrate or Split concentrate.

The mineral resources for the Arch Deposit at a 0.2 %Ni cut-off grade are: Inferred Resources of 3.2 Mt at 0.35 %Ni, 0.17 %Cu. The effective date of the Mineral Resources is 3 April 2023.

The quantity and grade of Inferred Resources reported above are conceptual in nature and are estimated on the basis of limited geological evidence and sampling. Geological evidence is sufficient to imply, but not verify, geological and grade or quality continuity. For these reasons, an Inferred Mineral Resource has a lower level of confidence than an Indicated Mineral Resource and it is reasonably expected the majority of Inferred Mineral Resources could be upgraded to Indicated Mineral Resources with continued exploration. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability. AGP is unaware of any known environmental, permitting, legal, title, taxation, socio-economic, marketing, political, or other relevant factors that could materially affect the mineral resource estimate.

The Project is host to several exploration targets with limited exploration and drilling information. These include the Arch, Quill and Burwash exploration targets. Nickel Creek's the main focus, outside

of the Wellgreen Deposit, is on the Arch target. The Arch target is situated approximately 2 km northwest of the Wellgreen deposit, has intersected several intercepts of nickel and copper sulphide mineralization within peridotite, similar to that of the Wellgreen Deposit.

AGP concludes that there is potential to upgrade some of the Inferred Resources through additional drilling at the Wellgreen and Arch Deposits, and that further exploration and development on the Property is warranted and recommended for the Project.

25.2 Mining

25.2.1 Mine Geotechnical

A geotechnical data gap analysis in 2018 - following the surface geotechnical mapping campaign - indicated the requirement for additional investigation of the rock mass character and structural geology of the proposed pit slopes, particularly within the ultimate pit slope highwall. The 2022 investigation program resulted in moderately improved spatial coverage and resolution for geotechnical domains and related rock mass characteristics. Geotechnical data and lab testing data collected from the 2022 program generally confirms earlier indications that the stability of interim / phased pit walls within the ore zone will need to be managed with relatively shallow inter-ramp slope angles, approximating the constituent material's natural angles of repose. This is due to the relatively poor quality and geotechnical character of rock within the ore zone. Bench face slopes in this zone should be expected to ravel regardless of geotechnical structure and catch bench widths should be designed in consideration of material catchment requirements. The 2022 data also confirms prior indications of relatively superior rock quality within the footwall meta-sedimentary and barren volcaniclastic units forming the bulk of the ultimate pit highwall slope. This supports the use of the relatively steeper / optimized inter-ramp to overall pit slope design criteria for PFS design work.

Geotechnical review of the available information has resulted in the recommended pit slope angles by rock type that vary between 33 degrees and 44 degrees.

25.2.2 Mining

The life of mine plan is based on Proven Mineral Reserves of 101.0 Mt with grades of 0.26% nickel, 0.16% copper, 0.014% cobalt, 0.25 g/t platinum, 0.24 g/t palladium and 0.05 g/t gold plus Probable Mineral Reserves of 206.7 Mt with grades of 0.26% nickel, 0.12% copper, 0.014% cobalt, 0.21 g/t platinum, 0.23 g/t palladium and 0.03 g/t gold. Waste to be moved is 594.6 Mt for an overall strip ratio of 1.9:1 (waste:ore).

The Nickel Shäw Project is planned to be an open pit operation using conventional mining equipment. The pit design consists of 3 main phases of successive pushbacks. All pits were developed using 10 metre bench heights.

The mining rate or 51 Mtpa was selected based on strategic planning scenarios which demonstrated that the targeted mill capacity 45 ktpd (16.2 Mtpa) of would be achieved. The mine will be in production for 20 years.

The mining fleet will be comprised of up to seven 165 mm down the hole drills, two 37 m^3 front shovels, and one 21 m^3 front end loader. The truck fleet will total 21 – 240 tonne trucks with the usual assortment of dozers, graders, and other support equipment.

In addition, a small fleet will be used at the quarry for building the tailings management facility. The costs for this are included in Infrastructure capital. That fleet is two 140 mm drills, two 13 m^3 front end loaders and five 91 tonne trucks plus support equipment.

25.3 Metallurgy

Metallurgical test work on samples from the Nickel Creek Deposit has been ongoing since 1987. In 1988, two test programs were conducted at Lakefield Research and included hardness testing and a locked cycle testing. In 2011, a limited metallurgical test program was carried out at G&T which included ore characterization and open circuit testing. A more extensive testing program was carried out by SGS Vancouver in 2012. Mineralogy characterization was carried out by QEMSCAN, hardness testing was completed, and all composites were evaluated using locked cycle testing. A test program was conducted by SGS Lakefield in 2013, which involved the characterization of ten individual variability samples for mineralogy and hardness. A composite was produced from the variability samples and a locked cycle test was performed. In 2014, XPS conducted a test program that included QEMSCAN mineralogy on a composite sample from the previous SGS program. In 2017, XPS completed a project entitled Phase 1. In this study, variability and composite samples were created representing potential mining periods. Hardness testing including Bond, JK drop weight, (high pressure grinding rolls) HPGR and abrasion were conducted on each composite. Flotation variability testing and composite locked cycle testing were also completed. In 2018 XPS completed a program entitled phase 2 which was focused on the geometallurgical peridotite type samples which represented 90% of the resource. QEMSCAN mineralogy, hardness testing, flowsheet development, variability testing, locked cycle testing, Cu-Ni separation testing, and operation of a mini pilot plant were included in the study.

The various test programs conducted on samples from the Nickel Creek Deposit have indicated that Ni recovery is related to sulphur content of the feed. Tests with higher sulphur content feed corresponded to higher Ni recovery. To better understand this relationship, an extended variability program was conducted by XPS in 2022. In this recent program, samples with specific Ni to S ratios were evaluated through the rougher/scavenger flowsheet to determine the potential impact on circuit Ni recovery. The program confirmed that surplus sulphide content was the strongest predictor of Ni recovery. This relationship has been used to calculate the Ni recovery for the resource.

The metallurgical recoveries used are to a level sufficient to support a Mineral Reserves declaration.

25.4 Mineral Processing

A conventional mineral processing flowsheet has been developed using metallurgical testwork results and the combined process engineering experience of Halyard's engineers together with those from key equipment vendors.

Unit operations include crushing, grinding (using a SAG mill, ball mills and vertical mills for regrinding), froth flotation, magnetic separation, and products dewatering. Due to the large throughput rates, the unit processes utilize some of the larger items of equipment manufactured by vendors.

Although quite typical for the target commodities, the specified flotation process is relatively complex, with multiple stages of treatment, careful adjustment of chemistry, intermediate fine grinding, and

magnetic separation. However, the metallurgy is well understood, comprehensively tested and not unique therefore the technical risk is considered low.

Additional testing as outlined in Section 26 aims to characterise mill feed together with flotation products, thereby enriching current datasets to allow further process specification de-risking.

25.4.1 Risks

The process flowsheet allows for the scheduling and batch treatment of Hi-Cu and Low-Cu ores. The Hi-Cu material is higher value and can carry the additional cost of a copper/nickel separation process to produce individual copper and nickel concentrates as opposed to the Low-Cu approach which produces a single mixed Cu + Ni "bulk" concentrate. The two separate process approaches utilize quite different reagent recipes, including the pH within the flotation circuit (Low-Cu = acidic, Hi-Cu = alkaline). Lime and sulphuric acid are used to affect these pH changes. Looking forward to a feasibility study, the impact of the pH changes with time should be modelled as part of a more comprehensive site water management strategy. The construction of separate water storage facilities may be required to adequately mitigate this risk.

25.4.2 Opportunities

As mentioned above, the process flowsheet will operate using an acidic water chemistry as the low-Cu ore is treated. During this time, the process plant consumption of sulphuric acid is significant, requiring large volumes to be shipped to site. In addition to relatively volatile prices for this commodity, the logistics of moving large volumes of concentrated acid is not without risk. As an alternative, installation of sulphur-burning equipment on site represents an opportunity to reduce risk and to potentially reduce the cost of this consumable. The sulphur feedstock required for this approach is produced in large quantities as a byproduct of natural gas facilities in Alberta, so can be transported by road/rail in the required quantities.

Power usage is a significant component of the process plant operating cost. At present, the process plant layout is somewhat generic in nature and has not been optimized to maximize value to the project. A design exercise that aims to minimize overall power consumption (via selection of more power-efficient equipment combined with maximum use of gravity flow) would represent a significant improvement in power supply costs. A key element of this exercise would be to evaluate the impact of an alternate comminution circuit, including HPGR circuit options.

25.5 Infrastructure and Site Layout

Designs for various infrastructure items have been prepared that are suitable for the purposes of the current study. These can be built upon as the project progresses and engineering detail develops. The scope and cost of site civil works may be subject to considerable change once a detailed seismic analysis is completed in conjunction with geotechnical drilling and permafrost delineation.

Designs and cost estimates are suitable for preliminary feasibility purposes and will benefit from more detailed efforts as the project progresses to Definitive Feasibility.

A site-wide water balance model was developed, which confirmed the process water supply availability and supported the design. The specified water circuit maintains a good degree of flexibility, with passive and/or active facilities to treat and discharge surplus contact water as it occurs, plus the option

to draw fresh water from the Kluane river during months where a shortfall may occur. Although the water balance is subject to seasonal effects such as the gradual freezing and thawing of water and precipitation and/or evaporation, this variation in flow is handled to a great extent by allowing the pond volume at the TMF to vary (i.e., higher levels during the spring thaw and lower levels during fall/winter).

The TMF embankment will be a zoned ROM waste rock embankment with upstream sand and gravel filters in the downstream construction TMF. Filters will be produced on site through crushing and screening of locally sourced materials.

Tailings slurry from the processing plant will be thickened in a high-rate thickener to approximately 60 % solids by weight before being transported to the TMF and deposited via pipeline spigots along the crest of the main dam.

Drainage from the tailings beach and mountain slope will be collected by gravity to the TMF pond and pumped up to the mill holding pond for recirculation into the milling process.

25.6 Environmental and Permitting

Engagement with the Kluane First Nation and White River First Nation regarding the project began in 2010. In 2012, the Kluane First Nation and Nickel Creek singed an Exploration Co-operation Agreement (ECA) which reflects the commitment to recognize concerns of the community, to ensure that socio-economic benefits from the Project that include employment, training, skill progression, etc. is flowing from the Company to the local community, and to recognize the mine will be on Kluane First Nation Traditional Territory. As part of this commitment, Kluane First Nation and NCP have regular meetings to discuss changing or new community concerns. The Kluane First Nation is regularly consulted on company policy and management plans for their input.

The following processes are required to obtain regulatory authorizations for the Project to proceed from an advanced exploration project to an operating mine project: (1) Environmental and socio-economic assessment, (2) Quartz Mining License, (3) Water Use License and (4) remaining regulatory approvals (e.g., explosives storage and use, waste management, fisheries authorization, etc.). An environmental and socio-economic assessment is required under the Yukon Environmental and Socio-economic Assessment Act. The Project will require Executive Committee Screening for the assessment which generally takes 3-5 years before a Decision Document is issued. Once the Decision Document is issued the Project can proceed with the Quartz Mining License and Water Use License process, which generally take an additional 1-2 years. Additional permits can be obtained simultaneously during the Quartz Mining License and Water Use License processes.

Nickel Creek is currently authorized under various permits for exploration activities. The appropriate mining authorizations need to be applied for as part of the ongoing project development plan.

Baseline environmental monitoring of surface water quality at the Project has been conducted from late 2012 and is presently ongoing.

Baseline environmental studies of fisheries and aquatic resources for the Project site began in 2016. The baseline environmental study was primarily focussed on Quill Creek as the proposed Project will have direct impacts to the system.

In addition to environmental assessment related baseline studies, Nickel Creek has been conducting two operational monitoring and mitigation programs associated with its ongoing exploration program. One of these programs is a ground-based, thinhorn sheep-monitoring program. The objective of this program is to monitor the occurrence of sheep within and adjacent to the active exploration areas to determine potential interactions between the Project and sheep and, if negative interactions occur, develop management measures to mitigate effects.

The bulk of wildlife survey efforts has been allocated to thinhorn sheep, which are considered the most prominent game and subsistence species in the area. Since studies began in 2015 the minimum annual counts have suggested a relatively stable population.

In 2018, breeding bird studies were also conducted. Those included three types of survey methods for upland songbirds, riverine birds and pond and marsh birds. Data from the 2018 bird studies have identified that there are no major issues associated with birds that are likely to be considered a 'significant residual effect'.

Preliminary acid rock drainage and metal leaching (ARD/ML) characterization for the Project has been conducted using ore feed, tailings material generated during a metallurgical mini pilot plant (MPP), MPP tailings water (supernatant) and process water produced during the MPP. Acid base accounting (ABA) analyses and net acid generation (NAG) testing indicated that the ore feed and MPP tailings were not expected to be net-acid generating.

Kinetic testing of the MPP tailings was conducted using a humidity cell and subaqueous column to evaluate the long-term ARD/ML potential under sub-aerial and sub-aqueous storage scenarios and thereby inform potential mitigation and management practices. The humidity cell and subaqueous column were terminated after 96 and 43 weeks of operation, respectively, after COPC concentrations had stabilized. Estimation of lag time to acid generation using the last cycles of humidity cell data indicates that a large portion bulk NP will remain after all the sulphur has been depleted. This indicates that net acid generation is not expected from the tailings, consistent with the ABA and NAG results.

There are four main items considered for closure in the Nickel Shäw project: open pit, waste storage facilities, site facilities and tailings management facility. The objective of the reclamation and closure plan for the Nickel Shäw Project is to return the project site to a safe and productive ecosystem after the extraction process is complete. This is while minimizing any potential long-term impacts by a proactive approach to reclamation and closure during operation to reduce the transition period.

25.7 Capital and Operating Costs

Detailed capital and operating cost estimates developed for the PFS including consideration for all direct and indirect costs associated with the Project. All costs were estimated in Canadian dollars unless otherwise noted. The cost estimates are sufficient for a PFS level of study.

Initial capital costs are estimated to be $1,687.1 million with a further $638.2 million of sustaining capital. The total life of mine project capital is forecast at $2,325.3 million. The initial capital includes $172 million in capitalized prestripping. The mining fleet is assumed to be purchased and owner operated.

The estimate includes initial capital requirements of the mine, site, and tailings facilities. Sustaining capital needs for the open pits, process plant, infrastructure, and reclamation and closure costs are also included over the life of mine.

All equipment and material are assumed to be new. Labour costs based on statutory laws governing benefits in effect at the time of the estimate have been included.

The project operating costs have been estimated at $30.22/t mill feed over the 19.1-year mine life. This includes all mining, processing, G&A, carbon tax and concentrate trucking, port, and shipping costs. The costs were determined with a diesel price of $1.24/l exclusive of carbon tax and an electrical price of $0.194/kWhr.

25.8 Economic Analysis

The economic analysis, including taxation, show the Nickel Shäw Project has positive economics and technical merit.

The economic analysis, including taxation, show the Nickel Shäw Project has positive economics and technical merit.

A pre-tax and post-tax cash flow model in Excel was developed for the evaluation of the Nickel Shäw Project PFS. The following key parameters were used in the construction of the cash flow model and the economic results:

- Metal prices of:
  - copper = $4.00 US/lb
  - nickel = $11.00 US/lb
  - cobalt = $23,00 US/lb
  - platinum = $1,000 US/oz
  - palladium = $2,100 US/oz
  - gold = $1,800 US/oz
- 100% equity financing with no debt component
- revenues and costs reported in constant H2 2023-dollar terms without escalation

The results indicate a post-tax NPV5% of $143 M and 5.8% IRR for the 19.1-year mine life.

Total taxes paid life of mine is $998.9 million and is 37.6% of the pretax cashflow.

Critical metal sourcing has become a focus of governments worldwide with Canada as no exception. Various programs are currently available or in the works. Additional research into these programs and how Nickel Shäw may participate needs to be completed.

26 RECOMMENDATIONS

The QP's recommend that Nickel Creek proceed with a Feasibility level of study as part of the Nickel Shäw project development plan. Recommendations and associated budgets are provided by the QP's to ensure sufficient information is available going forward.

Some of the costs of the Feasibility are carried as part of the study itself but supporting studies or field work are quoted in the appropriate areas. Estimated costs by area are provided in Table 26-1.

Table 26-1: Recommended Feasibility Study Budgets

Area of Study	Approximate Cost ($CDN)
Geology	$0
Geotechnical	$2,200,000
Mining	$150,000
Metallurgy	$400,000
Infrastructure	$2,950,000
Environmental	$775,000
Feasibility Study	$1,300,000
TOTAL	**$7,775,000**

26.1 Geology

26.1.1 Feasibility

For the Wellgreen geology model, it is recommended that the lithological domains be adjusted to clip to one another to avoid minor gaps or overlaps. This is expected to be part of the overall Feasibility study.

26.1.2 Exploration

This work is not required or part of the Feasibility study budget but represents ongoing exploration opportunities at the Wellgreen and Arch deposits.

In order to continue the development of the Wellgreen Deposit, there are several geophysical anomalies that have not been fully investigated. Additionally, there are some areas of Inferred blocks that fall into the positive net value per tonne criteria that may also be potential drill targets. It is recommended additional drilling be conducted to target both of these areas. An initial drill program of four drill holes, is proposed with an estimated budget of $1 million CDN. Pending positive results, further drilling may be proposed.

At the Arch Deposit, the geophysical targets have not yet been fully investigated and the mineralized deposit remains open laterally and at depth. An additional drill program of four drill holes is initially planned, with an estimated budget of $0.5 million CDN. Pending positive results further drill holes may be proposed. This material is not currently planned to be part of the FS therefore is a budget unto itself.

26.2 Mining

26.2.1 Mining Geotechnical

The sufficiency of available rock and soil geotechnical data to support Feasibility-Level studies for the Wellgreen deposit have been evaluated relative to the following considerations:

- Spatial Coverage – ensuring sufficient spatial coverage of the various rock masses and soil units expected to be encountered across the project site.
- Geological Coverage - ensuring sufficient material characterization work to define reliable ranges of properties for the various rock masses and soil units expected to be encountered across the project site, including engineering properties and structural discontinuity orientations within the walls of each major sector of the open pit, and engineering properties and foundation conditions for the waste rock dumps, upper mine site, overland conveyor, lower plant / project site, TMF, mine access and haul roads, etc.
- Coverage of Major Features - ensuring known faults and other features (permafrost, seismic hazards) have been identified, intersected, interpreted, and characterized.
- Orientation Data Bias - ensuring the discontinuity orientation data is sufficiently free of directional bias.
- Orientation Data Quality – ensuring the discontinuity orientation data is of suitable quality.
- Laboratory Testing - ensuring sufficient laboratory testing has been completed to assist with adequately characterizing the soil, rock, and discontinuity properties of the different geological units expected across the project site.

NCP Wellgreen Project Feasibility Level Geotechnical Data Gap Analysis (Status following 2022 PFS Investigation Program) (Table 26-2).

Table 26-2: Nickel Shäw Geotechnical Data Gap Analysis

Data Criteria	Status	Progress to Feasibility-Level Study	Gaps
Spatial Coverage	Fair	~50%	Geotechnical data has been collected primarily from recent resource infill holes, contained mostly within the pit limits; these holes do not intersect large portions of the pits, including large portion of the proposed highwall Detailed geotechnical data, and structural data are required for large portions of pit slopes, including the north slope highwall *Recent geotechnical and structural mapping has improved knowledge on conditions at surface, particularly near pit rims. More work study and interpretation are required.* *Limited surface (soil) geotechnical data exists for mine infrastructure including waste rock dumps, overland ROM conveyor, lower plant site, and TMF. Initial investigation work completed in 2022 shall be used to inform and define elements of the FS program.*
Geological Coverage	Fair	~50%	Limited geotechnical data currently exists for Station Creek and Hanson Creek formations Limited spatial and geotechnical knowledge exists regarding location and intensity of serpentenized alteration zones. *Recent mapping and drilling (incl. at Arch) have improved knowledge of local geotechnical conditions. Course geotechnical domains have been defined at surface. Data has been collected from Station Cr. and Hanson Cr. fms.* *Limited surface (soil) geotechnical data exists for mine infrastructure including waste rock dumps, overland ROM conveyor, lower plant site, and TMF. Initial investigation work completed in 2022 shall be used to inform and define elements of the FS program.*
Coverage of Major Features	Fair	~50%	Prelim outcrop and bedding mapping has been completed; more is required to confirm trends, assess for current unknowns. Initial fault characterization work initiated based on core data, more work required. Limited orientation and persistence data available *Recent mapping and overburden characterization work has improved knowledge of local geotech conditions.* *A meaningful quantity (100's) of bench to inter-ramp scale structural features have been identified and characterized.*
Orientation Data Bias and Quality	Fair	~50%	Further structural orientation data and analysis required. *Outcrop mapping has improved knowledge of predominant structural trends and orientations, feature sets, and conditions.*
Laboratory Testing	Fair	~50%	Preliminary UCS and tensile strength and soil characterization testing has been complete, additional test work required to confirm engineering design propertied to an FS level.

Footwall rock masses intersected and logged by AGP in 2022 were observed to be relatively competent and strong compared to the variably serpentenized ore bearing units, as expected. This concept will continue to require further confirmation with targeted drilling during the project Feasibility Study phase. It's likely sonic or similar drilling methods can be used to rapidly advance though difficult / poorer quality ore zones (where sufficient FS-Level geotechnical data now exists), with further coring-through-casing to penetrate and assess footwall meta-sediments and volcanics. Development and integration of a conceptual structural and hydro-geological models at the FS stage will also be key items for further study.

A detailed surface geotechnical investigation program is required to further support feasibility-level designs for mine infrastructure components including the waste rock dumps, overland ROM conveyor, lower plant site, and Tailings Management Facility. The program shall include a series of investigatory test pits and drill holes throughout the project area, combined with in situ material characterization and laboratory testing to define standardized material properties, and geotechnical and hydro-geological instrumentation including piezometers, thermistors, and settlement / displacement monitoring. Once collected this data will be compiled and analysed to determine appropriate inputs to define feasibility level designs and support FS-Level cost estimating and mine planning tasks.

Elements and approximate costs (including drilling / excavating) of an appropriately scoped open pit and surface geotechnical program to advance the project to an FS-Level are detailed below:

- Open Pit Mining Geotechnical - $1,800,000
  - rock drilling (sonic and core)
  - hydrogeology investigations
- Site Investigations Engineering Field Support - $150,000
- Laboratory Testing and Field Instrumentation - $100,000
- FS-Level Surface Geotechnical and Open Pit Engineering Design - $150,000
- total is $2,200,000

26.2.2 Mine Design and Costing

In the FS study additional study is required in the following areas above the normal mine planning activities for an FS:

- Blast Optimization - $30,000
  - fine tune explosives with detailed rock information to reduce consumable costs
- Equipment Selection - $100,000
  - review/implement opportunities for new technologies including battery or hydrogen powered trucks to reduce diesel trucking costs
- Stockpile Management - $20,000
  - opportunities to vary grades and tonnage in stockpile to assist in increasing NPV
  - temporary additional storage space may be required

26.3 Metallurgy

For the FS study the following is recommended:

- Optimization of Scavenger Magnet Circuit - $150,000
  - the lower the grade of sulphur in the feed, the more the overall recovery is from the scavenger magnetic circuit
  - further evaluation of the treatment of the scavenger magnetic circuit may identify methods to enhance metallurgical performance
- Additional comminution testwork for additional depth of information - $150,000
  - for primary crusher design, SAG Mill, Ball Mill, and HPGR options
- Further tailings characterisation studies - $100,000
  - physical and geochemical properties should be completed, to assist with the design and optimization of tailing management facilities

26.4 Mineral Processing

The mineral process flowsheet and plant design is conventional in nature and is supported by comprehensive metallurgical testwork. However, the various inputs and assumptions used to size and specify equipment for the processing plant will all need to be re-evaluated at FS level, with the most recent geological database and mine plan information at hand. The applicability of tested samples should be checked against the most recent plans.

Additional comminution testwork is required to support the final sizing and selection of crushing and grinding equipment. In addition, the selection of a conventional gyratory crusher + SAG mill/ball mill combination should be tested and the opportunity for HPGR should be examined. These costs are covered within the Metallurgy (testwork) budget.

The quality and quantity of tailings geochemical and geotechnical information should be improved for the FS. The costs for this work are included under Tailings below.

26.5 Infrastructure

Additional study work for the FS and opportunities for project improvement include:

- Topography - $100,000
  - acquisition of Lidar topography in conveyor, tailings, and site area suitable for FS design work
- Surface Geotechnical Investigation program – $1,000,000
  - test pits and soil drilling, sampling, instrumentation, surface hydrogeology, UAV surveys, tunnel outcrop mapping
  - approximately 100 sites at $5,000 per site - $500,000
  - site investigations engineering field support - $150,000
  - laboratory testing and field instrumentation - $200,000
  - borrow pit study for construction materials - $150,000

- Tailings - $400,000
  - permafrost assessment of tailings facility - $100,000
  - detailed design of tailings facility to provide material takeoffs - $300,000
- LNG Power Design - $200,000
  - detailed analysis of LNG options available with different turbine arrangements
  - logistics analysis for reducing LNG transportation costs
  - requires the use of specialized firms for assessment
- Wind Power Study - $500,000
  - additional studies are required to assess wind power potential - $100,000
  - wind tower specific environmental studies are required prior to permitting; these usually require a small tower to be installed for study of wind, birds, and bats and the tower is typically $400,000 to install and operate for the study
- Civil and Structural Design Studies - $300,000
  - detailed specialist studies are required to consider and model options for the design of foundations for buildings and structures, particularly the larger structures required to support items such as the grinding mills and the gyratory crusher- $100,000
  - these studies would utilize information obtained from geotechnical studies listed in the previous bullet point, together with known seismic data, standards, and specifications - $100,000
  - the quantity of steel and concrete required to support site structures safely and effectively is presently uncertain, and additional contingencies have therefore been included in the current study. Opportunity to reduce quantities and contingencies could be substantial - $100,000
- Ore Conveyance Routing and Design Study - $450,000
  - two drill sites along alignment – 2 holes x $100,000 each - $200,000
  - avalanche study to place appropriate protection - $50,000
  - hydrogeological assessment - $50,000
  - design and support determination - $150,000

26.6 Environmental

There is additional study work required for the FS and forward to permitting and it includes:

- Updated aquatics baseline - $ 75,000
  - benthic invertebrate
  - fish and fish habitat assessment
  - stream sediment characterization
  - periphyton
- Water and Load Balance Modelling - $300,000
  - development of geochemical source terms
  - development of site wide water balance
  - development of site wide water quality predictions

- Water Treatment Options Assessment - $200,000
  - review water quality predictions
  - water treatment technology evaluation and selection
  - water treatment testing
  - water treatment design
- Reclamation and Closure Planning - $200,000
  - further development of closure concepts
  - reclamation closure material balance
  - alternatives assessment of closure concepts

27 REFERENCES

AGP Mining Consultants Inc. and Independent Mining Consultants Inc. 2018. Nickel Creek Platinum Corp. Ni-Cu-PGM Project. 2018 NI 43-101 Resource Update. Yukon, Canada. Effective Date: September 25, 2018.

Alexco Environmental Group Inc. (2018a). Surface Water Quality Baseline Report Nickel Shäw Project. Report prepared for Nickel Creek Platinum Corp.

Alexco Environmental Group Inc. (2018b). Characterization of Wellgreen Adit, Aird Creek and Nickel Creek Water Quality. Report prepared for Wallgreen Platinum Ltd.

Alexco Environmental Group Inc. (2018c). Review of Yukon Government Adit Water Quality Audit Report. Report prepared for Nickel Creek Platinum Corp

Alexco Environmental Group Inc. (2018d). Aquatic Ecosystems and Resources Baseline Report Nickel Shäw Project. Report prepared for Nickel Creek Platinum Corp.

Alexco Environmental Group Inc. (2018e). Static Acid Rock Drainage / Metal Leaching Assessment of Nickel Shäw Ore and Tailings from Mini Pilot Plant. Report prepared for Nickel Creek Platinum Corp.

Alexco Environmental Group Inc. (2018f). Wellgreen Aquatic Resources Summary From 2017 Baseline Studies. Report prepared for Nickel Creek Platinum Corp.

Alexco Environmental Group Inc. (2018g). Nickel Shäw Meteorological Data Summary.

Alexco Environmental Group Inc. (2019). Draft: Interim Results of Kinetic Testing of Tailings from Mini Pilot Plant – Nickel Shäw Project. Report prepared for Nickel Creek Platinum Corp.

Alexco Environmental Group Inc. (2020). Geochemical Characterization of Ore and Tailings from Mini Pilot Plant - Nickel Shäw Project. Report prepared for Nickel Creek Platinum Corp.

Barkov. et al. (2002). Platinum Group Minerals from the Wellgreen Ni-Cu-PGE Deposit, Yukon, Canada

Bedard, J.H., Naslund, H.R., Nabelek, P., Winpenny, A., Hryciuk, M., Macdonald, W., Hayes, B., Steigerwaldt, K., Hadlari, T., Rainbird, R., Dewing, K. and Girard, E., 2012, Fault-mediated melt ascent in Neoproterozoic continental flood basalt province, the Franklin sills, Victoria Island, Canada, Geological Society of America Bulletin 124

Cabri, Louis J; Hulbert, Larry J.; LaFlamme, J.H. Gilles; Lastra, Rolando; Sie, Soey H.; Ryan, Chris G.; and Campbell, John L., 1993. Process Mineralogy of Samples from the Wellgreen Cu-Ni-Pt-Pd.

Cabri. (2012). Mineralogical Study of Six Samples from the Wellgreen Deposit (Yukon) for Prophecy Platinum Corp.: Report 1

Carne, R.C. 1987. Report on 1987 Exploration For Copper-Nickel-Platinum Group Elements Wellgreen Property Southwestern Yukon Territory, December 1987.

Carne, R.C. 1989. Report on Diamond Drilling Wellgreen Property – Work done between January 31 to October 31, 1988.

Carne, R.C. 2006 Assessment Report describing 2005 Diamond Drilling, Soil Sampling, Prospecting and Geological Mapping on the Burwash Property. Archer, Cathro & Associates

Carne, R.C and Smith, H. 2008. Assessment Report describing Diamond Drilling at the Burwash Property, December 2008.

Cobbett, R., Israel, S. and Mortensen, J., 2010. The Duke River fault, southwest Yukon: Preliminary examination of the relationships between Wrangellia and the Alexander terrane.

Eaton, W.D. 1988. Summary Report on 1988 Exploration Arch Property, November 1988.

Ecofor. (2018). Heritage Resource Impact Assessment: Wellgreen Platinum Property Class 4 Quartz Exploration (17–14ASR). Report Prepared for Wellgreen Platinum Ltd.

Environmental Dynamic Inc (EDI). (2016). Wellgreen Project: Fish and Fish Habitat Assessment Quill and Arch Creek Watershed. Report Prepared for Wellgreen Platinum.

Environmental Dynamic Inc (EDI). (2018a). Nickel Shäw Project, Baseline Studies Report: Ecological and Landscape Classification Mapping. Report Prepared for Nickel Creek Platinum.

Environmental Dynamic Inc (EDI). (2018b). Nickel Shäw Project, Baseline Studies Report: Trace Metals Sampling. Report Prepared for Nickel Creek Platinum.

Environmental Dynamic Inc (EDI). (2018c). Nickel Shäw Project, Baseline Studies Report: Thinhorn Sheep Habitat Modelling Report. Report Prepared for Nickel Creek Platinum.

Environmental Dynamic Inc (EDI). (2020a). Nickel Shäw Project, Baseline Studies Report: Thinhorn Sheep Studies 2015-2019. Re Prepared for Nickel Creek Platinum.

Environmental Dynamic Inc (EDI). (2020b). Conclusions, Implications and Recommendations Resulting from Thinhorn Sheep Studies. Letter Prepared for Nickel Creek Platinum.

Environmental Dynamic Inc (EDI). (2020c). Nickel Shäw Project, Baseline Studies Report: Bird Studies 2018. Report Prepared for Nickel Creek Platinum.

Ensero Solutions. (2020). Nickel Shäw Project Condition of Groundwater Monitoring Wells. Report prepared for Nickel Creek Platinum Corp.

Ensero Solutions. (2021a). NCP Carbon Sequestration - Phase 1: Desktop Preliminary Study. Report prepared for Nickel Creek Platinum Corp.

Ensero Solutions. (2021b). NCP Carbon Sequestration – Detailed Study Plan for Phase 2. Report prepared for Nickel Creek Platinum Corp.

Ensero Solutions. (2022a). Groundwater Summary Report Nickel Shaw Project. Report prepared for Nickel Creek Platinum Corp.

Ensero Solutions. (2022b). Preliminary Geochemical Characterization of Waste Rock Nickel Shäw Project. Report prepared for Nickel Creek Platinum Corp.

Ensero Solutions. (2022c). Hydrometeorology Summary Report Nickel Shäw Project.

Ensero Solutions. (2023a). 2022 Surface Water Quality Baseline Report Nickel Shäw Project.

Ensero Solutions. (2023b). Hydrometeorology Summary Report Nickel Shäw Project.

Giovenazzo, D., Picard C., Guha, J., 1989, Tectonic setting of Ni-Cu-PGE deposits in the central part of the Cape Smith Belt, Geoscience Canada 16, No. 3, p. 134-136.

Government of Yukon. 2023. Yukon Community Statistics. Retrieved 2023: https://community-statistics.service.yukon.ca/pages/community.

Greene, A.R., Scoates, J.S., Weis, D., Katvala, E.C., Israel, S., Nixon, G.T., 2010, The architecture of oceanic plateaus reveled by the volcanic stratigraphy of the accreted Wrangellia oceanic plateau, Geospere, V. 6, No. 1, p. 47-73.

Hatfield Consultants. (2016a). Evaluation of Adit and Aird Creek (AdC-0.8) water quality results from February 2012 to August 2016.

Hatfield Consultants. (2016b). Surface and Groundwater Water Gap Analysis for the Wellgreen Platinum Project.

Hatfield Consultants. (2016b). Surface and Groundwater Water Gap Analysis for the Wellgreen Platinum Project.

Hatfield Consultants. (2016b). Surface and Groundwater Water Gap Analysis for the Wellgreen Platinum Project.

Hemmera. (2017). Memo: Traditional Knowledge and Traditional Land Use Work to Date.

Hoek, E.: Estimating the stability of excavated slopes in opencast mines. Trans. Inst. Min. Metall., Sect. A: Min. Ind. 79, A109–A132 (1970)

Hoek, E., Bray, J.: Rock Slope Engineering, 3rd edn. Institute Mining and Metallurgy, London (1981)

Hulbert, L. J., 1997. Geology and Metallogeny of the Kluane Mafic-Ultramafic Belt, Yukon Territory, Canada: Eastern Wrangellia – A new Ni-Cu-PGE Metallogenic Terrane, Geological Survey of Canada Bulletin 506.

Israel, S. and Cobbett, R., 2008. Kluane Ranges bedrock geology, White River area (Parts of NTS 115F/9, 15 and 16; 115G/12 and 115K/1, 2) In: Yukon Exploration and Geology 2007, D.S Emond, L.R. Blackburn and L.H. Weston (eds.), Yukon Geological Survey.

Israel, S. and Van Zeyl, D.P., 2005. Preliminary geology of the Quill Creek map area, southwest Yukon, parts of NTS 115G/5, 6, 12. In; Yukon Exploration and Geology 2004, D.S. Emond, L.L. Lewis, and G. D. Bradshaw (eds.), Yukon Geological Survey.

Lorax Environmental. (2016). Wellgreen December 2015 Hydrogeological Drilling Program Summary.

McGoran, J.P. 1997. Summary Report: Prospecting, Road Maintenance and Drilling on 1997 Exploration Arch Property, December 1997.

McMahon, B.K.: Estimation of upper bounds to rock slopes by analysis of existing slope data. CANMET report; 76-14E. Ottawa (1976)

Mortensen, J.K and Hulbert, L.J, 1991, A U-Pb zircon age for a Maple Creek gabbro sill, Tatamagouche Creek area, southwest Yukon Territory; in Radiogenic Age and Isotopic Studies; Report 5; Geological Survey of Canada, Paper 91-2.

Oosterman D.J. 2011. Assessment Report describing Geophysical Work specifically 2010 TEM Survey on the Burwash Property, October 2011.

Read, P.B. and Monger, J.W.H., 1976, Pre-Cenozoic volcanic assemblages of the Kluane and Alsek Ranges, southwestern Yukon Territory; Geological Survey of Canada, Open File 381.

Sjoberg, J.: Analysis of large-scale rock slopes. PhD thesis (unpublished). Lulea University of Technology, Lulea (1999)

Smith, J.G. and MacKevett, E.M., Jr., 1970, The Skolia Group in the McCarthy B-4, C-4, and C-5 quadrangles, Wrangell Mountains, Alaska; United States Geological Survey, Bulletin 1274-Q.

Statutes of British Columbia. (2006) Securities Act: National Instrument 43-101 Standards of Disclosure for Mineral Projects. Retrieved 2023: https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/86_2011#item20

Tetra Tech. (2015a). Monitoring Well Completion Report and Preliminary Hydrogeological Assessment, Wellgreen Mine, Yukon.

Tetra Tech. (2015b). 2013-2014 Surface Water Quality Monitoring Report at the Wellgreen Project, Yukon.

Tetra Tech. (2015c). Wellgreen 2014 Hydrometeorological Report.

University of British Columbia. (2022). Preliminary assessment of carbon capture and storage potential of variably serpentinized ultramafic rocks of the Wellgreen Project, Yukon.

Vancouver Petrographics Lds. (2015a). Petrographic Report on 48 Rock Samples. Report prepared for Wellgreen Platinum Ltd. Part 1 (Samples 1–25)

Vancouver Petrographics Lds. (2015b). Petrographic Report on 48 Rock Samples. Report prepared for Wellgreen Platinum Ltd. Part 2 (Samples 26-48)

XPS. (2017a). Cleaner Trails Minerology. Wellgreen Platinum, Prefeasibility Project. Report prepared for Wellgreen Platinum Ltd.

XPS. (2017b). Period Composite Mineralogy and Entitlement. Wellgreen Platinum, Prefeasibility Project. Report prepared for Wellgreen Platinum Ltd.

Yukon Ecoregions Working Group. (2004). Ecoregions of the Yukon Territory: Biophysical properties of Yukon Landscapes. Summerland: Agriculture and Agri-Food Canada. Retrieved 2022.

Technical Reports

Carter, A., Corpuz, P., Brisson, P., McCracken, T., 2012. Wellgreen Project Preliminary Economic Assessment, Yukon, Canada. Report to Prophecy Platinum Corp. Wardrop Document No. 1193460500-REP-R0001-02. Effective Date: August 1, 2012.

Makarenko, M., Eggert, J., Simpson, R.G., Levy, M., and Darling, G., 2015. Preliminary Economic Assessment Technical Report Wellgreen Project, Yukon, Canada. Report to Wellgreen Platinum Ltd. Effective Date: February 2, 2015. Issue Date: 18 March 2015.

Marek, J., Jones, L., Zurowski, G., Mani, H., 2017 Mineral Resource Estimate on the Wellgreen Ni-Cu-PGM Project, Yukon, Canada. Report to Wellgreen Platinum Ltd. Effective Date: June 26, 2017.

Marek, J., Marrs, G., Zurowski, G., Holloway, A., 2018. Nickel Creek Platinum Corp., Ni-Cu-PGM Project 2018 NI 43-101 Resource Update, Yukon, Canada. Effective Date: September 25, 2018.

McCracken, T., 2011. Technical Report on the Wellgreen Ni-Cu-Pt-Pd Project, Yukon, Canada. Report to Prophecy Resource Corp. and Pacific Coast Nickel Corp. Wardrop Document No. 1055400400-REP-R0001-04. Effective Date: April 14, 2011.

McCracken, T., 2011. Technical Report and Resource Estimate on the Wellgreen Platinum-Palladium-Nickel-Copper Project, Yukon, Canada. Report to Prophecy Platinum Corp. Wardrop Document No. 1155400200-REP-R0001-02. Effective Date: July 21, 2011.

Simpson, R.G., 2014. 2014 Mineral Resource Estimate on the Wellgreen PGM-Ni-Cu Project, Yukon, Canada. Report to Wellgreen Platinum Ltd. Effective Date: September 8, 2014.

28 CERTIFICATE OF AUTHORS

28.1 Paul Daigle, P.Geo.

To accompany the technical report entitled: "Nickel Shäw Ni-Cu-PGM Project PreFeasibility Study for the Nickel Shäw Ni-Cu-PGM Project, Yukon Canada" dated 05 October 2023, with an effective date of 20 September 2023 (the "Technical Report").

I, Paul Daigle, P.Geo., do hereby certify that:

- I am a Senior Resource Geologist with AGP Mining Consultants Inc., with a business address at #246-132K Commerce Park Dr., Barrie, Ontario L4N 0Z7, Canada.
- I am a graduate of the Concordia University with a degree in B.Sc. Geology, Specialization in 1989.
- I am a member in good standing of the Engineers and Geoscientists of British Columbia (Member Number 55629).
- I have practiced my profession in the mining industry continuously since graduation.
- My relevant experience includes over 33 years in a wide variety of mineral exploration projects, where my most recent experience in nickel-PGM deposits include: the Lac des Iles PGM Project, Lynn Lake and South Bay nickel deposits, Manitoba.
- I have read the definition of "qualified person" set out in National Instrument 43-101 Standards of Disclosure for Mineral Projects ("NI 43-101") and certify that by virtue 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.
- I am independent of the issuer, Nickel Creek Platinum Corp., as defined in Section 1.5 of NI 43-101.
- I am responsible for Sections 1.2-1.7,1.17.1, 4-12,14, 23, 25.1, 26.1, 27 of this report and accept professional responsibility for those sections of the Technical Report.
- I have not had any previous involvement with the Project as independent Qualified Person.
- My most recent site visit to the Project was from 11 October to 14 October 2022 for two days.
- As of the effective date of the Technical Report, to the best of my knowledge, information and belief, the portions of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make the portions of the Technical Report for which I am responsible not misleading.
- I have read NI 43-101 and Form 43-101F1, and the Technical Report has been prepared in accordance with NI 43-101 and Form 43-101F1.

Dated this 5th day of October 2023, in Toronto, Ontario, Canada.

"signed electronically"

Paul Daigle, P.Geo.

28.2 Gordon Marrs, P.Eng.

To accompany the technical report entitled: "Nickel Shäw Ni-Cu-PGM Project, Yukon, Canada Prefeasibility Study" dated 05 October 2023, with an effective date of 20 September 2023 (the "Technical Report").

I, Gordon Marrs, P.Eng., do hereby certify that:

- I am a Metallurgical Specialist with XPS Expert Process Solutions, with a business address at Centre 6 Edison Road, Falconbridge, ON, P0M 1S0 Canada.
- I am a graduate of the University of Toronto with a degree in Applied Science and Engineering, Geological Engineering, in 1980.
- I am a member in good standing of the Professional Engineers Ontario 29172509.
- I have practiced my profession in the mining industry continuously since graduation. My relevant experience includes over 35 years of mineral processing operations, process design and process diagnosis. Much of the experience is from both inside and outside the Sudbury region on similar Cu-Ni-PGM ores.
- I have read the definition of "qualified person" set out in National Instrument 43-101 Standards of Disclosure for Mineral Projects ("NI 43-101") and certify that by virtue 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.
- I am independent of the issuer, Nickel Creek Platinum Corp., as defined in Section 1.5 of NI 43-101.
- I am responsible for Sections 1.8, 13, 25.3, and 26.3 of this report and accept professional responsibility for those sections of the Technical Report.
- I have not had any involvement with the Project other than as an independent Qualified Person.
- I have not conducted a site visit.
- As of the effective date of the Technical Report, to the best of my knowledge, information and belief, the portions of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make the portions of the Technical Report for which I am responsible not misleading.
- I have read NI 43-101 and Form 43-101F1, and the Technical Report has been prepared in accordance with NI 43-101 and Form 43-101F1.

Dated this 5th day of October 2023, in Sudbury, Ontario, Canada.

"signed electronically"

Gordon Marrs, P.Eng.

28.3 J. Roland Tosney, P.Eng.

To accompany the technical report entitled: "Nickel Shäw Ni-Cu-PGM Project PreFeasibility Study for the Nickel Shäw Ni-Cu-PGM Project, Yukon Canada" dated 05 October 2023, with an effective date of 20 September 2023 (the "Technical Report").

I, J. Roland Tosney, P.Eng., do hereby certify that:

- I am a Mining Geotechnical Engineer with Terracon Geotechnique Ltd., with a business address at #200-688 Heritage Drive SE., Calgary, Alberta T2H 1M6, Canada.
- I am a graduate of the University of Saskatchewan with a B.E. in Geological Engineering (1998) and an M.Sc. in Mining Geotechnical Engineering (2001).
- I am a member in good standing of the Engineers and Geoscientists of British Columbia.
- I have practiced my profession in the mining industry continuously since graduation.
- My relevant experience includes over 25 years in a wide variety of mining projects, where my experience in large open pit geotechnics includes: Teck's Highland Valley Copper, Skeena Resources Eskay Creek, New Gold's New Afton, Flying Nickel's Minago Project, and B2 Gold's Goose Project Echo Pit.
- I have read the definition of "qualified person" set out in National Instrument 43-101 Standards of Disclosure for Mineral Projects ("NI 43-101") and certify that by virtue 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.
- I am independent of the issuer, Nickel Creek Platinum Corp., as defined in Section 1.5 of NI 43-101.
- I am responsible for Section 16.2 of this report and accept professional responsibility for that section of the Technical Report.
- I have not had any previous involvement with the Project as independent Qualified Person.
- My most recent site visit to the Project was from 25 September to 01 October 2022 for seven days.
- As of the effective date of the Technical Report, to the best of my knowledge, information and belief, the portions of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make the portions of the Technical Report for which I am responsible not misleading.
- I have read NI 43-101 and Form 43-101F1, and the Technical Report has been prepared in accordance with NI 43-101 and Form 43-101F1.

Dated this 5th day of October 2023, in Calgary, Alberta, Canada.

"signed electronically"

J. Roland Tosney, P.Eng.

28.4 Gordon Zurowski, P.Eng.

To accompany the technical report entitled: "Nickel Shäw Ni-Cu-PGM Project PreFeasibility Study for the Nickel Shäw Ni-Cu-PGM Project, Yukon Canada" dated 05 October 2023, with an effective date of 20 September 2023 (the "Technical Report").

I, Gordon Zurowski, P.Eng., do hereby certify that:

- I am a Principal Mine Engineer with AGP Mining Consultants Inc., with a business address at #246-132K Commerce Park Dr., Barrie, Ontario L4N 0Z7, Canada.
- I am a graduate of the University of Saskatchewan with a degree in B.Sc. Geological Engineering, 1989.
- I am a member in good standing of the Professional Engineers of Ontario (membership #100077750).
- I have practiced my profession in the mining industry continuously since graduation.
- My relevant experience includes over 30 years in mineral resource and reserve estimations and feasibility studies for over 30 years in Canada, the United States, Central and South America, Europe, Asia, Africa, and Australia. As a result of my experience and qualifications, I am a Qualified Person as defined in NI 43–101.
- I have read the definition of "qualified person" set out in National Instrument 43-101 Standards of Disclosure for Mineral Projects ("NI 43-101") and certify that by virtue 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.
- I am independent of the issuer, Nickel Creek Platinum Corp., as defined in Section 1.5 of NI 43-101.
- I am responsible for Sections 1.1, 1.10.2, 1.12 - 1.18, 2, 3, 15, 16.1, 16.3, 18, 19, 20, 21.1, 21.2.1 to 21.2.3, 21.2.6 to 21.2.10, 21.3.1, 21.3.2, 21.3.4 to 21.3.7, 22, 24, 25.2.2, 25.5 to 25.7, 26.2.2, and 26.5 to 26.6 of this report and accept professional responsibility for those sections of the Technical Report.
- I have not had any previous involvement with the Project as independent Qualified Person.
- My most recent site visit to the Project was 30 April 2017, for one day.
- As of the effective date of the Technical Report, to the best of my knowledge, information and belief, the portions of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make the portions of the Technical Report for which I am responsible not misleading.
- I have read NI 43-101 and Form 43-101F1, and the Technical Report has been prepared in accordance with NI 43-101 and Form 43-101F1.

Dated this 5th day of October 2023, in Stouffville, Ontario, Canada.

"signed electronically"

Gordon Zurowski, P.Eng.

28.5 Andrew Holloway, P.Eng.

To accompany the technical report entitled: "Nickel Shäw Ni-Cu-PGM Project PreFeasibility Study for the Nickel Shäw Ni-Cu-PGM Project, Yukon Canada" dated 05 October 2023, with an effective date of 20 September 2023 (the "Technical Report").

I, Andrew Holloway, P.Eng., do hereby certify that:

- I am Process Director at Halyard Inc., with a business address at #501-212 King St. W., Toronto, Ontario M5H 1K5, Canada.
- I graduated in 1989 with B.Eng. (Hons) Metallurgy from the University of Newcastle upon Tyne, England.
- I am a member in good standing of the Professional Engineers of Ontario (membership #100082475).
- I have practiced my profession continuously since graduation and have worked in numerous operating process plants, metallurgical laboratories, engineering firms and consultancies over a period of 33 years. Work experience covers a range of commodities including base metals, PGM and gold projects and was obtained in southern Africa, Asia, and the Americas.
- As a result of my experience and qualifications, I am a Qualified Person as defined in NI 43–101.
- I have read the definition of "qualified person" set out in National Instrument 43-101 Standards of Disclosure for Mineral Projects ("NI 43-101") and certify that by virtue 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.
- I am independent of the issuer, Nickel Creek Platinum Corp., as defined in Section 1.5 of NI 43-101.
- I am responsible for Sections 1. 11, 17, 21.3.3, 25.4, and 26.4 of this report and accept professional responsibility for those sections of the Technical Report.
- I have not had any previous involvement with the Project as independent Qualified Person.
- I have not conducted a site visit.
- As of the effective date of the Technical Report, to the best of my knowledge, information and belief, the portions of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make the portions of the Technical Report for which I am responsible not misleading.
- I have read NI 43-101 and Form 43-101F1, and the Technical Report has been prepared in accordance with NI 43-101 and Form 43-101F1.

Dated this 5th day of October 2023, in Toronto, Ontario, Canada.

"signed electronically"

Andrew Holloway, P.Eng.