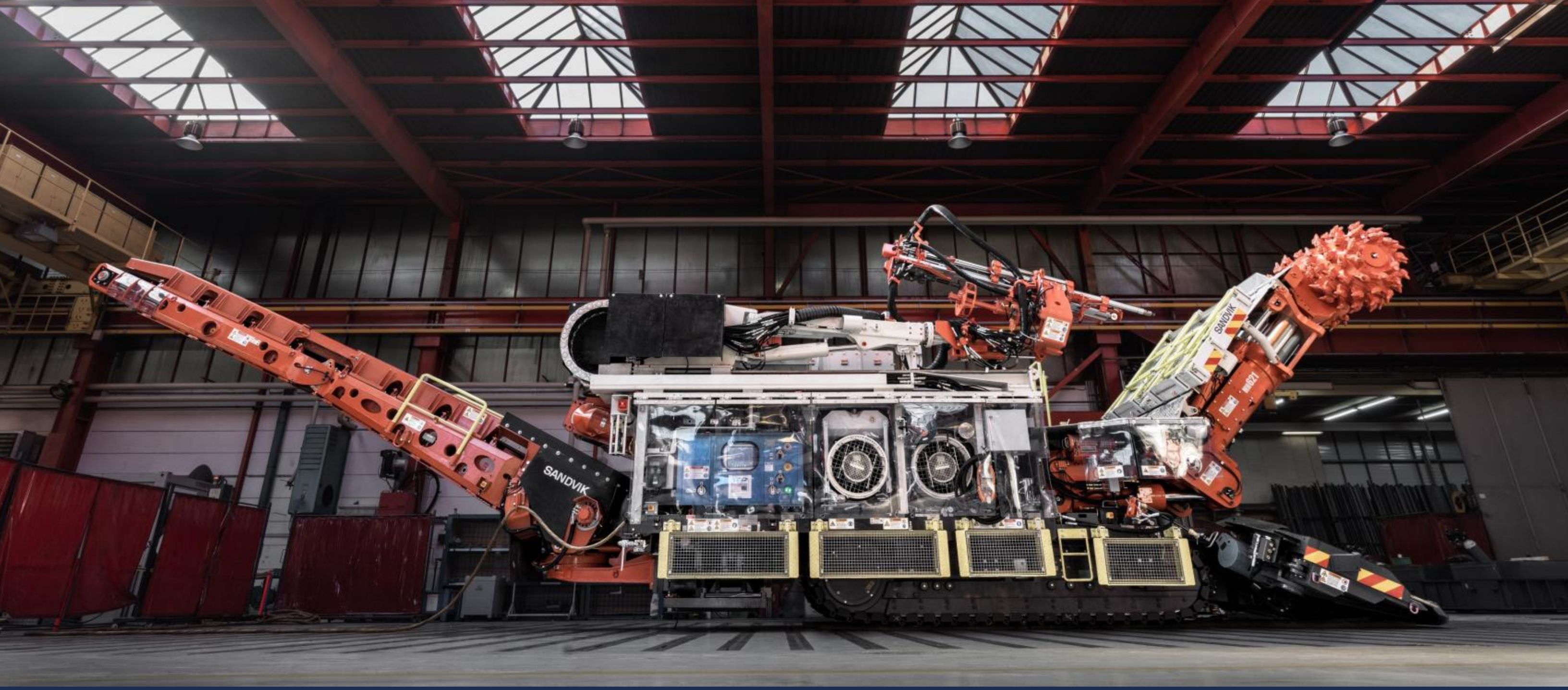

NI 43-101 Technical Report

Feasibility Study for the Cariboo Gold Project

District of Wells, British Columbia, Canada

Prepared for:

Osisko Development Corp.

Effective Date: December 30, 2022

Signature Date: January 10, 2023; Amended January 12, 2023

OSISKO DEVELOPMENT

CARIBOO GOLD PROJECT

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This technical report is effective as of the 30th day of December 2022.

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List of Abbreviations

Abbreviation	Description
3D	Three dimensional
a	Annum (year)
AACE	American Association of Cost Engineers
AAS	Atomic absorption spectroscopy
ABA	Acid-base accounting
ADR	Adsorption, desorption, and recovery
Ag	Silver
Ai	Abrasion index
AIS	Air insulated switchgear
AISC	All-in sustaining cost
Al	Aluminum
Al_2O_3	Aluminium oxide
ALR	Agricultural Land Reserve
ALS	ALS Minerals
ARD	Acid rock drainage
ARENA	A simulation software
ATV	All-terrain vehicle
Au	Gold
Au-in soil	Gold-in-soil
AXPL	Axial planar
B	Billion
BaO	Barium oxide
BAT	Best Available Technology
BBA	BBA Engineering Ltd.
BC	British Columbia
BCEAA	British Columbia Environmental Assessment Act
BCSC	BC Securities Commission
BCWQG-AL	British Columbia Water Quality Guideline for Freshwater Aquatic Life
BGM	Barkerville Gold Mines Division
BMP	Best Management Practices
BWi	Bond work index
C	Carbon
CA	Channel aggregation
CAC	Criteria Air Contaminants

Abbreviation	Description
CAD or $	Canadian dollar
CAM	Chlumsky, Armbrust and Meyer LLC
CaO	Calcium oxide (lime)
CAPEX	Capital expenditure
CCLUP	Cariboo Chilcotin Land Use Plan
CDA	Canadian Dam Association
CIM	Canadian Institute of Mining, Metallurgy and Petroleum
CIP	Carbon-in-pulp
Cl	Chloride
CLMV	Calcareous Mafic Volcaniclastic
CLR	Construction Labour Relations Association of British Columbia
CLSI	Calcareous siltstone
CLSS	Calcareous sandstone
CM	Cow Mountain
CMT	Construction Management Team
CN	Cyanide
CoG	Cut-off grade
Conc.	Concentrate
COO	Chief Operating Officer
COPC	Constituent of potential concern
CPT	Cone penetration test
Cr_2O_3	Chromium (III) oxide
CRD	Cariboo Regional District
CRF	Cemented rockfill
CRM	Certified reference material
CSA	Canadian Standards Association
CSI	Carbonaceous siltstone
CTO	Cease trade order
Cu	Copper
$CuSO_4$	Copper sulphate
CWi	Crusher work index
CZ	Cow Zone
Datamine	Datamine Studio RM 1.11.300.0
DDH	Diamond drill hole
DFO	Department of Fisheries and Oceans
DMR	Digital mobile radio

Abbreviation	Description
DRIPA	BC's *Declaration on the Rights of Indigenous Peoples Act*
DSO	Deswik Stope Optimizer
EA	Environmental assessment
EAC	Environmental assessment certificate
EAO	Environmental Assessment Office
EBA	EBA Engineering Consultants Ltd.
EBIT	Earnings before interest and tax
ECCC	Environment and Climate Change Canada
EDF	Environmental Design Flood
EGBC	Engineers & Geoscientists British Columbia
E-GRG	Extended gravity recoverable gold test
EL	Elevation
ELOS	Estimated linear overbreak and sloughing
EMLI	BC Ministry of Energy, Mines and Low Carbon Innovation
ENV	Ministry of Environment and Climate Change Strategy
EOH	End of hole
EPCM	Engineering, Procurement, Construction Management
ESS	Electrical substation
ESSF	Engelmann Spruce-Subalpine Fir
et al.	et alla (and others)
EXT	Extensional
F_{80}	80% passing - Feed size
FA	fire assay
Falkirk	Falkirk Environmental Consultants Ltd.
Fe	Iron
Fe_2O_3	Iron (III) oxide
FIDQ	Fish Inventories Data Queries
FIFO	fly-in fly-out
FMR	Flood Management Reservoir
FS	Feasibility Study
FSR	Forest Service Road
FSTSF	Filtered stack tailings storage facility
FW	Footwall
G&A	General and Administration
GA	General arrangement
GEMS	Geovia GEMS software

Abbreviation	Description
Geoex	Geoex Ltd.
GHG	Green House Gas
Gold City Mining	Gold City Mining Corp.
Golden Cariboo	Golden Cariboo Resources Ltd.
Golder	Golder Associated Ltd.
HADD	Harmful alteration, disruption, or destruction
HCT	humidity cell test
HDPE	High-density polyethylene
HDS	High-density sludge
HMI	Human-machine interface
HQ	HQ - drill core diameter (63.5 millimetres)
HSE	Health, safety and environment
HSRC	Health, Safety, and Reclamation Code
Hudson Bay	Hudson Bay Mining and Smelting Co. Ltd.
HVAC	Heating, ventilation, and air conditioning
HW	Hanging wall
Hy-Tech	Hy-Tech Drilling Ltd.
I/O	Input/Output
IBA	Impact Benefit Agreement
ICP	Inductively coupled plasma
ID2	Inverse distance squared
IDF	Inflow Design Flood
IEC	International Electrotechnical Commission
IGM	Island Mountain Gold Mines Ltd.
IHA	Interior Health Authority
IM	Island Mountain
InnovExplo	InnovExplo Inc.
IOC	Integrated Operations Centre
IP	Induced Polarization
IPD	Initial project description
IPT	Integrated Project Team
IROC	Integrated Remote Operational Centre
IRR	Internal rate of return
IRS	Intact rock strength
ISO	International Organization for Standardization
IT	Information technology

Abbreviation	Description
IWGM	International Wayside Gold Mines Ltd.
JAIR	Joint Application Information Requirement
JOC	Jack of Clubs Lake
K	Potassium
K_2O	Potassium oxide
K_{80}	80% passing – Particle size
KCB	Klohn Crippen Berger Consultants
KL	KL Zone
LBMA	London Bullion Market Association
LeapFrog	LeapFrog GEO™ v.2021.2.4
LECO	A type of elemental analyzer
LED	Light-emitting diode
LHD	Load haul dump - scooptram
LLDPE	Linear Low-Density Polyethylene
LNG	Liquified natural gas
LOM	Life of mine
LP	Layer Parallel
LSA	Local Study Area
LST	Aurum Limestone
LTE	Long-term evolution
M	Million
Ma	Mega annum (million years)
MAA	Multiple Account Analysis
masl	Metres above sea level
MBBR	Mix bed bioreactor
MBR	Membrane biological reactor
MC	Mosquito Creek
MCC	Motor control centre
MD&A	Management Discussion and Analysis
Mg	Magnesium
MgO	Magnesium oxide
MIBC	Methyl isobutyl carbinol
Min	Minutes
MINFILE	Mineral Inventory of BC
Minimum NOWL	Minimum Normal Operating Water Level
ML	Metal leaching

Abbreviation	Description
MMF	Multi Media Filtration
MnO	Manganese(II) oxide
MOF	Ministry of Forests
Mosquito Creek Gold	Mosquito Creek Gold Mining Company Ltd.
MOTI	Ministry of Transportation and Infrastructure
MPa	Megapascals
MRE	Mineral Resource Estimate
MRMR	Mineral Resources and Mineral Reserves
MSC	Mine Site Complex
MSCSP	Mine Site Complex Sediment Pond
msl	mean sea level
MSO	Minable Shape Optimiser®
MTO	Mineral Titles Online
MTOs	Material take-offs
MZ	Mosquito Zone
MZP	Main Zone Pit
Na	Sodium
Na_2O	Sodium oxide
$Na_2S_2O_5$	Sodium metabisulphite
NaCN	Sodium cyanide
NAG	net acid generation
NaOH	Sodium hydroxide
NE	Northeast
Newmont	Newmont Mining Corporation
NHA	Northern Health Authority
NI	National Instrument
Ni	Nickel
No.	Number
NO_2	Nitrogen dioxide
NPAG	Non-potentially acid generating
NPC	Natal Portland Cement
NPV	Net present value
NQ	NQ - drill core diameter (47.6 millimetres)
NS	No sample point
NS	North-South orientated
NSCP	North Seepage Collection Pond

Abbreviation	Description
NSR	Net smelter return
NWP	Northwest Zone Pit
NYSE	New York Stock Exchange
O_2	Oxygen
ODV	Osisko Development Corp.
OGR	Osisko Gold Royalties Ltd.
OK	Ordinary kriging
OPEX	Operational expenditure
OREAS	Ore Research and Exploration Pty Ltd.
OSC	Ore sorter concentrate
P_2O_5	Phosphorus pentoxide
P_{80}	80% passing - Product size
Pa	Pascal
PAG	Potentially acid generating
Pan Orvana	Pan Orvana Resources Inc.
PAX	Potassium amyl xanthate
Paycore	Paycore Drilling
Pb	Lead
PCS	Process control system
PD	Project Description
PDT	Project Development Team
PEA	Preliminary Economic Assessment
PFS	Pre-feasibility study
Ph	Potential of hydrogen
PHREEQC	Computer program for simulating chemical reactions and transport processes in natural or polluted waters
PLC	Programmable logic controller
PLT	Point load tests
PMF	Probable Maximum Flood
PoC	Push-to-Talk over Cellular
PQ	PQ – drill core diameter (85.0 millimetres)
PSD	Particle size distribution
Q2	Second quarter
Q3	Third quarter
QA/QC	Quality Assurance / Quality Control

Abbreviation	Description
QP	Qualified person
QR	Quesnel River
QR Mill	Quesnel River Mill
RCP	Reclamation and Closure Plan
RDFFG	Regional District of Fraser Fort George
RFP	Request for Proposal
RISC	Resources Information Standards Committee
RMR	Rock mass rating
ROM	Run of mine
RQD	Rock quality designation
RSA	Regional Study Area
S	Sulphur
SARA	*Species at Risk Act*
SBS	Sub-Boreal Spruce
SCP	Sediment control pond
SEDAR	System for electronic document analysis and retrieval
SESC	Surface Erosion and Sediment Control
SFE	Shake flask extraction
SG	Specific gravity
SGS	Société Générale de Surveillance
SI	Siltstone
SiO_2	Silica dioxide
SMBS	Sodium metabisulphite
Snowden	Snowden Mining Industry Consultants Pty
SO_2	Sulphur dioxide
SO_4	Sulphate
SOP	Standard Operating Procedure
SP	Sediment pond
SP	Self-potential
SRK	SRK Consulting (Canada) Inc.
SrO	Strontium oxide
SS	Lower Sandstone Facies
SS	South sump
SSCP	South Seepage Collection Pond
SST	Site Services Team
Supervisor	Datamine Supervisor v.8.14.3

Abbreviation	Description
SZ	Shaft Zone
TAC	Technical Advisory Committee
Talisker	Talisker Exploration Services Inc.
tCO_2e	Tonne carbon dioxide equivalent
TCP/IP	Transmission Control Protocol/Internet Protocol
TCS	Triaxial compressive strength
TiO_2	Titanium dioxide
TL	Transmission Line
TMF	Tailings Management Facility
TOC	Total organic carbon
TSF	Tailings Storage Facility
TSS	Total suspended solids
TSX	Toronto Stock Exchange
TSXV	TSX Venture Exchange
U/F	Underflow
U/G	Underground
UCS	Uniaxial or unconfined compressive strength
USD or US$	United States dollar (examples of use: USD2.5M / US$2.5M)
UTM	Universal Transverse Mercator
UV	Ultraviolet
UWR	Ungulate winter ranges
Valley Portal	Valley (Main) Portal
VLF-EM	Very-low-frequency electromagnetic
VM	Virtual Machine
vs.	Versus
VWP	Vibrating wire piezometer
VZ	Valley Zone
w/w	Weight per weight
WAN	Wide area network
WBM	Water Balance Modelling
WBS	Work breakdown structure
WBWQM	Water Balance and Water Quality Model
Wells	District of Wells
WGC	World Gold Council
WGM	International Wayside Gold Mines Ltd.
WMP	Water management plan

Abbreviation	Description
WQM	Water quality model/modelling
WRP	Waste rock pile
WRSF	Waste rock storage facility
WSP	WSP Canada Inc.
WTP	Water treatment plant
WTS	Water treatment system
XRD	X-Ray Diffraction
XRT	X-Ray Transmission
Zn	Zinc

List of Abbreviations – Units of Measurement

Unit	Description
$/oz	Dollars per ounce
$/t	dollars per tonne
%	percent
% solids	percent solids by weight
°C	degrees Celsius
°F	degrees Fahrenheit
µm	micron
A	ampere
cm	centimetre
d	day (24 hours)
deg. or °	angular degree
ft or '	feet (12 inches)
G	giga
g	gram
g/cm^3	grams per cubic centimetre
g/t	grams per tonne
GJ	gigajoules
GPa	gigapascal
H or hr	hour (60 minutes)
h/day	hour per day
ha	hectare
hp	horsepower
in. or "	inch
kcfm	kilowatt cubic foot per minute
kcfm	thousand cubic foot per minute
kg	kilogram
kg/m^2	kilograms per metre square
kg/m^3	kilograms per metre cube
kg/t	kilograms per tonne
km	kilometre
koz	Thousand ounces
kPa	kilopascal
kt	kilotonne
kV	kilovolt

Unit	Description
kW	kilowatt
kWh	kilowatt hour
kWh/t	kilowatt hour per tonne
L	litre
L/s	litres per second
lb	pound
m	metre
m/h	metres per hour
m/s	metres per second
m^2	square metre
m^3	cubic metre
m^3/day	cubic metres per day
m^3/h	cubic metres per hour
m^3/s	cubic metres per second
m^3/s/kW	cubic metres per second per kilowatt
mesh	US Mesh
mH	metres high
min	minute (60 seconds)
mm	millimetre
Mm^3	million cubic metres
Moz	million ounces
MPa	megapascal
Mt	million tonnes
Mtpy	million tonnes per year
MVA	mega volt ampere
MW	megawatt
mW	metres wide
Ø	diameter
Oz	Troy ounce
ppm	parts per million
psi	pounds per square inch
rpm	Rotations per minute
s	second
st	short ton (2,000 lb)
t	tonne (1,000 kg) (metric ton)
tpd	tonnes per day

Unit	Description
tph	tonnes per hour
tpy	tonnes per year
V	volt
W	watt
W/m^2	watts per square metre
y	year (365 days)

1. Summary

This NI 43-101 Technical Report Feasibility Study ("FS") for the Cariboo Gold Project (the "Project") (the "Report") was prepared and compiled by BBA Engineering Ltd. ("BBA") at the request of Osisko Development Corp. ("ODV"). The Project is an advanced stage gold exploration project located in the historic Wells-Barkerville mining camp, in the District of Wells ("Wells"), British Columbia ("BC"), Canada. The purpose of this Report is to summarize the results of the FS for the Project in accordance with the guidelines of the Canadian Securities Administrators National Instrument 43-101 ("NI 43-101") and Form 43101.

This Report was prepared based on contributions from several independent consulting firms including, BBA Engineering Ltd. ("BBA"), Falkirk Environmental Consultants Ltd. ("Falkirk"), Golder Associates Ltd. (amalgamated with WSP Canada Inc. on 1 January 2023 to form WSP Canada Inc.) ("Golder"), InnovExplo Inc.("InnovExplo"), JDS Energy and Mining Inc. ("JDS"), KCC Geoconsulting Inc. ("KCC"), Klohn Crippen Berger Ltd. ("KCB"), SRK Consulting (Canada) Inc. ("SRK"), and WSP USA Inc. ("WSP"). This study provides a base case assessment for developing the Cariboo Gold deposit as an underground mine with a Services Building, including a concentrator located at the Mine Site Complex ("MSC") at Wells and further processing at the Quesnel River ("QR") Mill. The Project is designed in phases: in Phase 1, a 1,500 tonnes per day ("tpd") crushing and ore sorting plant will be built at the Bonanza Ledge Site, located 3.5 kilometres ("km") from the MSC in Wells, and in Phase 2, a pre-concentrator designed to have a capacity of 4,900 tpd will be built at the MSC. The QR Mill will ramp down from 859 tpd in Phase 1 to 644 tpd in Phase 2. The pre-concentration steps in Phase 2 are designed to produce less concentrate at higher grades. The MSC and the QR Mill are separated by approximately 111 kilometres ("km"). Waste rock storage will be located at the Bonanza Ledge Site, which will store 8.5 million tonnes ("Mt") of waste material from the Project.

All monetary units in the Report are in Canadian dollars ("CAD" or "$"), unless otherwise specified. Costs are based on fourth quarter (Q4) 2022 dollars. Quantity and grades are rounded to reflect that the reported values represent approximations.

1.1 Contributors

The major FS contributors and their respective areas of responsibility are presented in Table 1-1.

Table 1-1: Report contributors

Qualified Person	General overview of responsibilities
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Qualified Person	General overview of responsibilities
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Golder Associates Ltd. (amalgamated with WSP Canada Inc. on January 1, 2023 to form WSP Canada Inc. ("Golder")	
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1.2 Key Project Outcomes

The reader is advised that the results of the FS summarized in this Report are intended to provide an initial, high-level review of the Project and potential design options. The FS mine plan and economic model include numerous assumptions. Only Measured and Indicated Resources (i.e. "Proven" and "Probable" Reserves) have been used in the economic analysis as defined by Canadian Securities Administrators' National Instrument 43-101 in FS studies.

The following list details the key project outcomes of the Report:

- Cariboo Gold Project Resources: 14.7 Mt at 3.3 g/t Au (Measured and Indicated) and 15.5 Mt at 3.4 g/t Au (Inferred), exclusive of Mineral Reserves;
- Total Proven and Probable Mineral Reserve: 16.7 Mt at 3.78 g/t Au average diluted gold grade;
- Mine life of 12 years, with peak year payable production of 222,651 ounces, average life of mine ("LOM") annual payable production of 163,695 ounces of gold;
- Gold payable recovery of 92.0%;
- Payable production (LOM) of 1.87 million ("M") Au ounces;
- Initial capital costs of $137.4M;
- Expansion capital costs of $451.1M;
- Sustaining costs of $466.6M;
- Reclamation costs of $17.3M, and a salvage value of $56.2M;
- Operating costs (total) of $102.6 per tonne mined;
- All-in sustaining costs of US$ 968.1/oz net of by-product credits, including royalties, over LOM;
- Net smelter return ("NSR") revenue of $4.13 billion ("B") and a cumulative free cash flow (A-T) of $901.1M LOM;
- Net present value ("NPV") of $502M at a 5% discount rate, and an internal rate of return ("IRR") of 20.7% after taxes and mining duties;
- LOM taxes of $290.6M and royalties of $206.3M;
- NPV of $691M at a 5% discount rate, and an IRR of 24.4% before taxes and mining duties;
- Pay-back period (after start of operations) of 5.8 years pre-tax and 5.9 years after-tax;
- Approximately 634 workers during the construction period and up to 488 employees will be required during operations for Phase 2;
- Phase I of the Project will commence in 2024 with 1,500 tonnes per day ("tpd") production, ramping up to 4,900 tpd production in 2027 for Phase 2;

1.3 Property Description and Ownership

The Project is located in ODV's Cariboo Gold Project Main Block, a group of claims located in the historical Wells-Barkerville mining camp of British Columbia that extends for approximately 77 km from northwest to southeast.

The Project falls within the Cariboo Regional District ("CRD"), a division of the local government system in BC, and Wells, BC. Wells is situated 74 km east of Quesnel, approximately 115 km southeast of Prince George, and approximately 500 km north of Vancouver.

ODV's land holdings consist of 415 mineral titles totalling 155,088.69 hectares ("ha") across two contiguous property blocks known as the Cariboo Main Block and the QR Mill site. These mineral titles include mineral claims, mineral leases, placer claims, and placer leases.

Through its 100% owned subsidiary Barkerville Gold Mines Ltd. ("BGM"), ODV holds 100% interest in 56 Cariboo Main Block placer titles, 35 QR Mill Property mineral claims, the QR mineral lease No. 320752, and 362 of the 379 Cariboo Main Block mineral and placer claims and placer leases. 17 mineral claims are jointly owned with other companies and individuals: ODV holds a 97.5% interest in six mineral claims, a 85% interest in two mineral claims, and a 50% interest in the other nine mineral claims.

The Project also contains 546 private land parcels from Crown-granted mineral claims (3,330.20 ha) that overlap many of the mineral titles where BGM is the registered owner on the title of the surface and/or undersurface rights to the parcels. A net smelter return ("NSR") royalty of 5% payable to Osisko Gold Royalties Ltd. ("OGR") is the only royalty that applies to the Project.

1.4 Geology and Mineralization

The Project lies within the Kootenay Terrane of the Omineca Tectonic Belt in the south-central Canadian Cordillera. The Omineca rocks were complexly deformed by Middle Jurassic to Early Tertiary compressional tectonics, and by Tertiary transtension and extension. The Kootenay Terrane in the vicinity of the Project is subdivided into the eastern Cariboo and western Barkerville subterranes. The Cariboo Subterrane is juxtaposed on the Barkerville Subterrane by the east-dipping Pleasant Valley Thrust.

The Snowshoe Group, central to the Barkerville Subterrane, hosts the Project.

The Barkerville and Cariboo Subterranes comprise metamorphosed equivalents of continent-derived siliciclastic protoliths with interlayered marble units and granitic orthogneiss. The subterranes are pericratonic in character and are thought to have formed near the current western margin of Laurentia. Various authors suggest that both Barkerville and Cariboo Subterranes share the same tectostratigraphic position and depositional environment.

The principal gold-producing areas in the Barkerville Subterrane are hosted in rocks metamorphosed to lower-greenschist facies (sub-biotite isograd); amphibolite-facies rocks are locally found on the Project but are not associated with any significant mineralization. The S1 and S2 fabrics are defined by phyllosilicate minerals (sericite and chlorite); they generally define foliation suggesting that peak metamorphic temperature coincided with the formation of cleavage.

Lode-gold mineralization in the Wells-Barkerville mining camp (Cariboo Gold District) shares many characteristics with an orogenic gold deposit model. Gold mineralization is associated with orogenic silica-carbonate-sericite-pyrite stable fluids moving along secondary permeability controlled by metamorphic fabrics, vein arrays, faults, lithologic contacts, and rheological contrasts.

Deposit types on the Project consist of vein and replacement-type mineralization grouped into five inter-related styles: 1) Fault-fill breccia veins subparallel to foliation (S1), hosted in carbonaceous mudstone; 2) Vertical northeast-trending extensional (axial planar) veins dominantly hosted in sandstone units in S3 cleavages; 3) Fractured moderately dipping east-northeast-trending shear veins, hosted in sandstone units; 4) Gold bearing sulphide replacements hosted in fold hinges of calcareous sandstone units; and 5) Gold-bearing sulphide replacement mineralization hosted in fault-bounded calcareous siltstone units.

1.5 Status of Exploration and Drilling

ODV's exploration team executed a systematic methodology to the exploration program on the Project. The program included geological mapping, channel, soil, underground sampling, and diamond drilling.

The exploration team has continued its geological mapping across the Project's area to identify lithologic contacts, define alterations and geochemical signatures, record micro- and macro-scale structural data, and to collect select rock samples. The targeted deposit types within the Project are structurally and/or geochemically controlled, thus the mapping data continues to play a vital role in refining the geologic model of the area and defining mineralized zones.

The objectives for the 2020 and 2021 diamond drilling programs (the "2020 Program" and the "2021 Program") were to test new brownfields targets adjacent to known deposits, infill high-grade vein corridors modelled from the 2019 Preliminary Economic Assessment ("PEA") classified as Inferred and explore the depth potential of known deposits.

The focus of the 2022 diamond drilling program (the "2022 Program") was the infill of a proposed underground bulk-sampling area, the continued category conversion from Inferred to Indicated status of modelled vein corridors, and the delineation of additional vein corridors. The 2022 Program started on March 25, 2022, and was completed on July 06, 2022.

1.6 Mineral Resource Estimate

The 2022 Feasibility Mineral Resource Estimate for the Project (the "2022 FS MRE") encompasses updated resources for the deposits of Cow Mountain (Cow Zone and Valley Zone), Island Mountain (Shaft Zone and Mosquito Zone), and Barkerville Mountain (Lowhee Zone and KL Zone). The updates were prepared by Daniel Downton, P.Geo., of Osisko Development ("ODV"), and reviewed and validated by Carl Pelletier, P.Geo., and Vincent Nadeau-Benoit, P.Geo., both of InnovExplo Inc. ("InnovExplo"), using all available information. Since the 2022 Preliminary Economic Assessment Mineral Resource Estimate ("MRE"), dated May 17, 2022 (the "2022 PEA MRE"), no new gold assay results were added to the databases for the Mosquito, Cow, and KL Zone deposits, but gold resources in a dilution halo and silver mineralization estimates in the vein corridors were added to the models. No changes are reported for the Bonanza Ledge or BC Vein (Barkerville Mountain) deposits. To report the 2022 FS MRE for the Project, conceptual "potential mining shapes" were used as constraints to demonstrate mineralized continuity and to show that the "reasonable prospects for eventual economic extraction" criteria is met, as defined in the Canadian Institute of Mining ("CIM") Definition Standards on Mineral Resources and Reserves (CIM Definition Standards, 2014) and the CIM Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines (MRMR Best Practice Guidelines, 2019). The Mineral Resource updates for Shaft, Valley, and Lowhee Zones include new information from the end of the 2021 exploration program. The dilution halos and silver estimate additions contain data from all previous drilling campaigns, including previously validated historic information.

The 2022 FS MRE covers all the deposits in the Cow-Island-Barkerville Mountain Corridor. The resource area for the Cow Mountain/Island Mountain segment covers a strike length of 3.7 km and a width of approximately 700 metres ("m"), down to a vertical depth of 600 m below surface. The estimate for the Barkerville Mountain segment covers a strike length of 3 km and a width of approximately 700 m, down to a vertical depth of 500 m below surface.

Two diamond drill hole databases cover the Project: Bonanza Ledge and BM-CM-IM (Barkerville Mountain including the BC Vein, KL, and Lowhee deposits, Cow Mountain including the Cow and Valley deposits, and Island Mountain including the Shaft and Mosquito deposits). These databases were filtered by deposit (Cow, Shaft, Valley, Mosquito, BC Vein, KL, or Lowhee) before the work in Datamine. A subset of drill holes was used to generate the 2022 FS MRE database for each deposit, as follows:

- The Cow deposit contains 1,219 validated drill holes;
- The Valley deposit contains 254 validated drill holes;
- The Shaft deposit database contains 1,010 validated drill holes;
- The Mosquito deposit contains 641 validated drill holes;
- The Lowhee deposit contains 113 validated drill holes;
- The BC Vein and KL Zone deposits contain 420 validated drill holes.

The qualified persons ("QP") data verification included the diamond drill hole databases (the "ODV Databases") used for the 2022 FS MRE, as well as the review and validation of the geological models of each deposit, the review of information on mined-out areas, and the data for selected drill holes (assays, quality assurance/quality control ["QA/QC"] program, downhole surveys, lithologies, alteration and structures).

The QPs also reviewed and validated the resource estimation process followed by ODV, including all parameters, geological interpretation, basic statistics, variography, interpolation parameters, block model construction, scripts that run the model, volumetric report, and the validation process.

Historical work subject to verification consisted of the holes used for the 2022 Preliminary Economic Assessment MRE ("2022 PEA MRE") (Hardie et al., 2022). Basic cross-check routines were performed between the current ODV Databases and the previously validated database for the 2022 PEA MRE.

The QPs were granted access to the assay certificates for all holes in the 2021 drilling programs. Assays were verified for 5% of the drill holes. No discrepancies were found.

Overall, the QPs data verification demonstrates that the data, protocols, and estimation process for the Project are acceptable. The QPs consider the ODV databases to be valid and of sufficient quality to be used for the Mineral Resource Estimate herein.

ODV updated, in 2022, the geological models for the Valley, Shaft, and Lowhee deposits using historical data, the data from the 2015–2019 drilling programs, and new holes from the 2020–2021 drilling programs. The KL and BC Vein deposit were not drilled in 2021 and the Mosquito and Cow deposits had no new data since the May 17, 2022 update, though the geological models were reviewed by the QPs. The Bonanza Ledge geological model, initially from Brousseau et al. (2017), was reviewed and validated by the QPs.

A total of 482 geological solids were created and/or updated for all the deposits.

The QPs have classified the 2022 FS MRE as Measured, Indicated, and Inferred Mineral Resources based on data density, search ellipse criteria, drill hole density, and interpolation parameters. The 2022 FS MRE is considered to be reliable and established on quality data and geological knowledge. The 2022 FS MRE follows the 2014 CIM Definition Standards on Mineral Resources and Reserves.

Table 1-2 displays the results from the 2022 FS MRE, exclusive of the reserves, for the Project for all eight deposits: Cow, Valley, Shaft, Mosquito, KL, Lowhee, BC Vein, and Bonanza Ledge.

Table 1-2: Cariboo Gold Project 2022 FS MRE
Reported at a 2.0 g/t Au cut-off grade (except for Bonanza Ledge reported at a 3.5 g/t Au cut-off grade)

Category	Deposit	Tonne	Au Grade	Au Ounce	Ag Grade	Ag Ounce
		'000	(Au g/t)	'000	(Ag g/t)	'000
Measured	Bonanza Ledge	47	5.06	8		
Indicated	Bonanza Ledge	32	4.02	4		
	BC Vein	1,030	3.12	103		
	KL	386	3.18	39		
	Lowhee	1,368	3.18	140	0.23	10
	Mosquito	1,288	3.68	152	0.08	3
	Shaft	4,781	3.39	523	0.06	9
	Valley	2,104	3.14	213	0.09	6
	Cow	3,644	3.31	388	0.09	11
Total Indicated Mineral Resources		**14,635**	**3.32**	**1,564**	**0.09**	**39**
Inferred	BC Vein	461	3.55	53		
	KL	1,918	2.75	169		
	Lowhee	445	3.34	48	0.10	1
	Mosquito	1,290	3.55	147	0.01	0
	Shaft	6,468	3.84	800	0.01	1
	Valley	2,119	3.30	225	0.02	1
	Cow	2,769	3.03	270	0.00	0
Total Measured and Indicated Mineral Resources		**14682**	**3.33**	**1,571**	**0.09**	**39**
Total Inferred Mineral Resources		**15470**	**3.44**	**1712**	**0.01**	**4**

Mineral Resource Estimate notes:

1. The independent and qualified persons for the Mineral Resource Estimates, as defined by NI 43-101, are Carl Pelletier, P.Geo., and Vincent Nadeau Benoit, P.Geo. (InnovExplo Inc.). The effective date of the 2022 Feasibility Study Mineral Resource Estimate is November 11, 2022.
2. These Mineral Resources, exclusive of the reserves, are not Mineral Reserves as they do not have demonstrated economic viability.
3. The Mineral Resource Estimate follows the 2014 CIM Definition Standards on Mineral Resources and Reserves and the 2019 CIM Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines.
4. A total of 481 vein zones were modelled for the Cow Mountain (Cow and Valley), Island Mountain (Shaft and Mosquito), Barkerville Mountain (BC Vein, KL, and Lowhee) deposits and one gold zone for Bonanza Ledge. A minimum true thickness of 2.0 m was applied, using the gold grade of the adjacent material when assayed or a value of zero when not assayed.

5. The estimate is reported for a potential underground scenario at a cut-off grade of 2.0 g/t Au, except for Bonanza Ledge at a cut-off grade of 3.5 g/t Au. The cut-off grade for the Cow, Valley, Shaft, Mosquito, BC Vein, KL, and Lowhee deposits was calculated using a gold price of US$1,700/oz; a USD:CAD exchange rate of 1.27; a global mining cost of $54.32/t; a processing and transport cost of $22.29/t; a G&A plus Environmental cost of $15.31/t; and a sustaining CAPEX cost of $31.19/t. The cut-off grade for the Bonanza Ledge deposit was calculated using a gold price of US$1,700/oz; a USD:CAD exchange rate of 1.27; a global mining cost of $79.13/t; a processing and transport cost of $65.00/t; and a G&A plus Environmental cost of $51.65/t. The cut-off grades should be re-evaluated in light of future prevailing market conditions (metal prices, exchange rate, mining cost, etc.).
6. Density values for Cow, Shaft, Lowhee, and BC Vein were estimated using the ID^2 interpolation method, with a value applied for the non-estimated blocks of 2.80 g/cm^3 for Cow, 2.78 g/cm^3 for Shaft, 2.74 g/cm^3 for Lowhee, and 2.69 g/cm^3 for BC Vein. Median densities were applied for Valley (2.81 g/cm^3), Mosquito (2.79 g/cm^3), and KL (2.81 g/cm^3). A density of 3.20 g/cm^3 was applied for Bonanza Ledge.
7. A four-step capping procedure was applied to composited data for Cow (3.0 m), Valley (1.5 m), Shaft (2.0 m), Mosquito (2.5 m), BC Vein (2.0 m), KL (1.75 m), and Lowhee (1.5 m). Restricted search ellipsoids ranged from 7 g/t Au to 50 g/t Au at four different distances ranging from 25 m to 250 m for each deposit. High-grades at Bonanza Ledge were capped at 70 g/t Au on 2.0 m composited data.
8. The gold Mineral Resources for the Cow, Valley, Shaft, Mosquito, BC Vein, KL, and Lowhee vein zones were estimated using Datamine Studio™ RM 1.9 software, using hard boundaries on composited assays. The silver Mineral Resources and the dilution halo gold mineralization were estimated using Datamine Studio™ RM Pro 1.11. The Ordinary Kriging ("OK") method was used to interpolate a sub-blocked model (parent block size = 5 m x 5 m x 5 m). Mineral Resources for Bonanza Ledge were estimated using GEOVIA GEMS™ 6.7 software using hard boundaries on composited assays. The OK method was used to interpolate a block model (block size = 2 m x 2 m x 5 m).
9. Results are presented in situ. Ounce (troy) = metric tons x grade / 31.10348. Calculations used metric units (metres, tonnes, g/t, etc.). The number of tonnes was rounded to the nearest thousand. Any discrepancies in the totals are due to rounding effects. Rounding followed the recommendations as per NI 43101.
10. The qualified persons responsible for this section of the Report are not aware of any environmental, permitting, legal, title, taxation, socio-economic, marketing, political, or other relevant factors that could materially affect the Mineral Resource Estimate.

1.7 Mining Methods

1.7.1 Overview

The Project consists of three main zones (Cow, Shaft, and Valley) with two smaller satellite zones (Lowhee and Mosquito). The rate of exploitation of each deposit will change over time, while the overall steady state production rate is 4,900 tpd. In 2024, production will begin at 1,500 tpd (pending permitting) for 2.75 years and will ramp up to 4,900 tpd (pending permitting) in 2027 for 8.5 years.

The selected mining method is mainly long hole longitudinal retreat with some stopes using a modified long hole longitudinal retreat method. Primary materials handling fleet will comprise of 10 tonne (t) scooptram Load Haul Dump ("LHD") and 50 t haul trucks.

Pre-production of the underground workings is set to begin in 2023 with 1,500 tpd achieved in September 2024 and full production of 4,900 tpd at the MSC in Q4 2027. Underground mine life is set to last until January 2036.

A hydrogeological investigation program was completed to provide key groundwater related inputs to the FS, namely, to estimate potential mine dewatering rates, to understand further the regional groundwater flow regime, and to characterize potential impacts of mine dewatering on groundwater and surface water systems.

1.7.2 Geotechnical Evaluation

SRK undertook two geotechnical field investigation programs on the Project designed to characterize the rock geotechnical conditions and support the underground mine and infrastructure designs. These investigations also supported structural geology reviews, detailed evaluation of geotechnical design domains, and the development of geotechnical design guidelines within each of these domains. These guidelines included excavation design parameters, estimates of dilution, as well as support requirements.

The 2018 geotechnical field data acquisition program included drilling and logging of 13 dedicated geotechnical drill holes. The 2021 geotechnical field data acquisition program included drilling and logging of five dedicated geotechnical drill holes. During both programs, representative rock core samples from each geotechnical domain were collected from the geotechnical drill holes for laboratory testing.

A review of photographs taken of exploration drill holes was undertaken from 2020 to 2022 to build a broader geotechnical understanding of the rock mass conditions across the Project site to optimize the geotechnical design. A total of 83,047 m of photo-logging has been conducted to date.

In addition to the 3D structural model created by ODV to represent the major Regional Fault structures on the Cariboo Gold Project property, SRK also provided a 3D fault model that was created for the secondary structures.

The geotechnical evaluation focused on a qualitative drill-hole-based assessment of the rock mass forming the immediate hanging wall and footwall of the proposed mineable stopes in each vein. Planned stopes in each major vein corridor, in each mining zone were individually assessed based on the lithology logging data provided by ODV, the regional structural model provided by ODV, the secondary structural model provided by SRK, the current understanding of existing historic mine workings, the geotechnical data acquired from the field program, and qualitative photographic review of drill holes intercepting the planned stopes.

Excavation stability assessments have been completed using well-established empirical and semi-empirical relationships and engineering experience. The design procedure involves two steps: the quality of the rock mass is rated using a pre-defined classification system, and then the expected performance of the underground openings is predicted using an empirically derived stability correlation with the rock mass quality.

Sub-level open stoping with a sub-level spacing of 30 m is achievable in rock mass Class 1 to Class 3 lower by varying the open strike length and the use of two-phase backfill in the Class 3 lower rock mass in the Shaft Zone where stope widths are less than 5 m.

Mining Method Description

The long hole mining method was primarily selected due to the sub vertical geometry of mineralized vein corridors and the relatively lower cost. This method involves driving two drifts longitudinally along the mineralized vein corridors to define a stope. The top access serves as a drilling platform while the bottom access allows for mucking of drilled then blasted material. Once empty, these stopes are then backfilled with either paste fill or cemented rockfill. Stopes are mined retreating towards the access. This method allows for simultaneous mining of stopes along different vein corridors as well as along the same corridor if a pillar exists between active levels. A modified longitudinal method will also be used to a lesser extent (10% of the tonnage). That method essentially follows the same approach as the first one, except that the mucking and backfilling are done in two steps to limit the size of the exposed walls. This method will only be used for stopes located in poor ground during Phase 2, since paste backfill is required.

The minimum designed stope width for all zones is 3.7 m and the sill to sill stope height for all zones is 30 m. The maximum permissible strike length (the distance along strike that can be mined before backfilling is required) is a function of geotechnical constraints and differs by zone.

1.7.3 Mine Design

There will be two portals accessing underground ramps. The Cow Portal will allow access to the Lowhee, Shaft, and Mosquito zones in the earlier stages of the Project. The Valley portal will be built during the expansion to develop the Main ramp connecting the previous zones to the new Cow and Valley Zones. The Valley Portal will be used as the main services access. The zones are accessed by main ramps connecting to haulage drifts, and each individual zone has an internal ramp system. The Mosquito Zone is further west, connected to Shaft Zone by a 1,150 m long haulage drift.

Each zone is planned to be mined with the longitudinal retreat long hole method, except for the Shaft Zone and Mosquito Zone that will be mined using both mining methods. Sublevels for all zones are 30 m sill to sill and a combination of Cemented Rock Fill ("CRF") and paste fill are planned to backfill mined stopes. Stope strike lengths vary by zone based on geotechnical assessments of each zone. All zones are capped by a crown pillar (15 m for Cow and Valley and 20 m for Shaft and Mosquito) and vary in depth.

1.7.4 Underground Infrastructure

A major piece of underground infrastructure for the Phase 2 of the Project is the underground crushing system. This crusher is located below the services building in a location that has been identified as geotechnically favourable for long-term infrastructure. Ore will be brought to the crusher by underground trucks from all mining zones.

Ore will ultimately be brought to surface using a vertical conveyor to be pre-concentrated by sorting and flotation. The material rejected by the sorter will be transferred back underground using a wastepass raise and then it will either be used as backfill material or hauled to the Bonanza Ledge Waste Rock Storage Facility ("WRSF") using automated trucks.

The mine will include haulage drifts connecting the five separate zones, an underground garage, and pumping stations. The Valley Portal will provide access for material and the labour force.

1.7.5 Development Schedule

The development schedule has been created with a combination of traditional jumbo development and roadheaders. The roadheaders are scheduled to provide a lateral advance of 200 m per month in single heading conditions and will be concentrated on the ramps and level access development. The jumbos will provide an average overall lateral advance of 300 m per month per jumbo crew when multiple active headings are available. Lateral development will rely on contractors for the initial pre-production phase, with a handover to mine personnel with the initiation of production.

1.7.6 Electrical Distribution and Communication

During Phase 1, electrical power will be delivered to the mine through the Cow Portal from a 13.8 kV overhead power line originating from Bonanza Ledge Site. At Phase 2, power will be delivered from the main electrical room at the MSC to Valley Portal, while the power connection at Cow Portal will remain as a redundant power connection. Underground substations will transform the power to 600 volt ("V") or 1,000 V depending on need or equipment to be supplied.

Fiber optics will be used to provide a data backbone to the mine. The mine network will then rely on 4G provided by radiant cables. This will allow for communication, automation of equipment, as well as ventilation-on-demand.

1.7.7 Mine Automation and Monitoring Systems

The layout of mine levels was designed to facilitate the automation of mucking and hauling. Each level will have one load out, which will allow for tele-remote loading of haulage trucks or loading of dumped waste material. Automation, or tele-operation of haulage trucks will be limited to dedicated drift or between shifts only. Automation and tele-remote for load haul dump/scooptram will be available any time as production levels will be isolated with barricades. By the end of 2027, all mucking operation on the production levels will be fully automated, with one operator for two scooptrams.

1.7.8 Permanent Mine Pumping Network

The mine dewatering network was designed to handle 10,666 cubic metres per day ("m^3/day"). This system will also contribute to the dewatering of historic excavations.

1.7.9 Ventilation

The ventilation system has been designed to comply with British Columbia regulations. The airflow required to ventilate diesel engines was compiled using a 0.06 cubic metres per second ("m^3/s")/ kilowatt ("kW") rate.

The system will be comprised of four independent intake fresh air raises, one exhaust raise and remaining exhaust through the main ramps and the Cow Portal. The total estimated airflow required to meet production is 715,000 cubic feet per minute ("cfm") (337 m^3/s).

1.7.10 Production Rate

Beginning in 2024, the total production rate will be 1,500 tpd (Phase 1), ramping up in 2027 to 4,900 tpd (Phase 2) (ore), with each zone contributing a different ratio to production over time.

1.7.11 Production Plan

The life of mine plan ("LOM") has a 12-year mine life at maximum production rates from 1,500 tpd to 4,900 tpd. Production ramps-up to steady state of 4,900 tpd is achievable by the end of 2027, the third production year, with completion of the flotation circuit. The overall mine plan comprises 16.7 million tonnes ("Mt") of ore that will be processed with an average grade of 3.8 grams per tonne ("g/t") gold ("Au"). The mine will produce 7.1 Mt of waste from the development over the life of mine ("LOM").

Table 1-3: Ore produced per year

Year		2023	2024	2025	2026	2027	2028	2029
Lowhee	t	4,823	178,373	382,498	854	-	-	-
	g/t	4.37	4.68	4.51	5.19	-	-	-
Cow	t	-	-	-	-	-	87,289	315,430
	g/t	-	-	-	-	-	3.55	4.05
Valley Upper	t	-	-	-	4,615	8,503	163,792	164
	g/t	-	-	-	3.09	4.00	3.16	1.70
Valler Lower	t	-	-	-	-	-	200	170,592
	g/t	-	-	-	-	-	4.36	4.11
Shaft	t	-	-	155,885	535,687	676,495	1,308,353	1,302,626
	g/t	-	-	4.48	4.37	3.54	3.53	3.79
Mosquito	t	-	-	-	8,368	358,879	235,344	-
	g/t	-	-	-	4.34	5.31	4.36	-
Year		**2030**	**2031**	**2032**	**2033**	**2034**	**2035**	**2036**
Lowhee	t	-	-	-	-	-	-	-
	g/t	-	-	-	-	-	-	-
Cow	t	102,785	108,332	111,743	424,534	1,431,941	1,520,129	24,774
	g/t	4.28	3.86	2.67	3.59	3.39	3.21	3.20
Valley Upper	t	73,178	55,075	401,230	333,481	-	-	-
	g/t	3.35	3.66	3.63	3.57	-	-	-
Valler Lower	t	413,547	733,222	670,563	307,727	86,442	22,581	-
	g/t	4.30	3.69	3.69	3.50	3.35	3.02	-
Shaft	t	1,200,306	891,828	611,251	723,113	271,700	248,599	36,605
	g/t	4.23	4.07	3.91	3.85	3.50	3.41	3.09
Mosquito	t	-	-	-	-	-	-	-
	g/t	-	-	-	-	-	-	-

1.7.12 Mine Equipment and Personnel

During pre-production, all development will be conducted by contractors. These contractors will provide the equipment used to develop lateral advance except for the roadheaders. ODV will take over the development and production work at the beginning of the production phase, gradually integrating its own equipment according to the needs of the operation.

The mine will operate 365 days/year with three different rosters for office and hourly personnel. A total of 298 employees (excluding staff and supervision) related to underground mining for operation and maintenance services for Phase 2 are anticipated in Wells.

1.8 Mineral Processing and Metallurgical Testing

A preliminary metallurgical testwork program was previously undertaken to determine the metallurgical response on samples prepared from drill holes obtained from the Shaft, Cow, and Valley deposits. The testwork consisted of an investigation into the amenability of mineral sorting to pre-concentrate the run of mine ("ROM") prior to milling, chemical characterization, a preliminary evaluation of comminution characteristics, a series of gravity, flotation and leaching tests, cyanide destruction testing, as well as preliminary thickening and rheology tests. Additional testwork on samples from the Lowhee deposit was performed during and after the "NI 43-101 Technical Report, Preliminary Economic Assessment of the Cariboo Gold Project, effective date: May 24, 2022". The testwork on samples from the Shaft, Cow and Valley Zones consisted of metallurgical testing on ore sorting test products, an extended gravity recoverable test, a series of flotation and cyanide leaching testing, a feasibility past fill test, as well as a final dewatering and rheology test. The latest testwork program was completed to characterize and understand the metallurgical response of materials from the Lowhee deposit. The latest testwork included ore sorting tests, comminution tests, leaching tests, and cyanide destruction tests. In addition to metallurgical testing, paste backfill test results are summarized in this Report. Paste backfill testwork programs were completed to characterize ore sorter tailings and flotation tailings, to design the paste system, and to determine the backfill strategy. Testwork data from the "NI 43-101 Technical Report, Preliminary Economic Assessment of the Cariboo Gold Project, effective date: May 24, 2022", and new testwork with effective date on November 15, 2022 was considered for the process design.

1.9 Recovery Methods

The Project will ramp up tonnage in two phases, Phase 1 starting with a 1,500 tpd ore sorting and leaching flowsheet, followed by Phase 2 with a 4,900 tpd ore sorting, flotation, and leaching flowsheet.

In the first phase, the ore will be processed in two stages at two sites: the Bonanza Ledge Site located at the current Bonanza Ledge Mine, and the QR Mill located 111 km from the MSC.

For the initial throughput, during Phase 1, of 1,500 tpd, a pre-concentrator, including mobile crushing and ore sorting, will be built at the Bonanza Ledge Site. The use of the Bonanza Ledge Site will reduce the overall operation and transportation costs. The crushing operation will consist of a two-stage crushing and screening. The crushed product will be processed in an ore sorting circuit. The concentrate from the sorted concentrate will be crushed and then trucked to the QR Mill for further comminution, leaching, and refining.

The QR Mill is an existing plant under care and maintenance with a daily capacity to treat 860 t of ore. The QR Mill will require refurbishment of some areas before start-up. A filtration plant will be added to produce dry tailings.

In Phase 2, the ore will be processed in two stages at two sites: the MSC and the QR Mill located 111 km west of the MSC.

For the expanded throughput of 4,900 tpd, crushing will occur underground and will then be conveyed to the surface, where ore sorting, grinding and flotation will be conducted in a services building at the MSC. The MSC services building will serve as a pre-concentration step to reduce the overall operation and transportation costs. The primary crushing operation will be located underground, and the crushed product will be conveyed to the surface to feed a sizing screen. The sizing screen undersize will be discharged into a fine storage bin and the oversize will be sent to the ore sorting circuit. The sorted concentrate will be combined with the fine storage bin material to feed a grinding and flotation circuit. The flotation concentrate will be trucked to the QR Mill for further comminution, leaching, and refining.

The QR Mill will be upgraded to process the higher concentrate feed grades in the second phase. Carbon in leach and the Adsorption, Desorption, Recovery (ADR) circuit will be replaced and the refinery will be upgraded.

1.10 Project Infrastructure

The Project will include the following infrastructure:

Phase 1

- Bonanza Ledge
  - First phase of the Waste Rock Storage Facility ("WRSF");
  - Surface water management infrastructure;
  - Fuel systems (liquified natural gas ("LNG") and diesel storage and distribution);
  - Natural gas power plant;
  - Ore crushing and sorting facility;
- QR Mill
  - Upgrades to the QR Mill to process ore sorting concentrate and a new tailings dewatering circuit;
  - Filtered stack tailings storage facility ("FSTSF");
  - Water management infrastructure;
  - Relocation and upgrade of the propane system;
  - Improvements to the fire protection system.
- Offsite Infrastructure
  - Construction of an Integrated Remote Operational Centre ("IROC").

Phase 2

- Mine Site Complex
  - Access roads, bridge, parking lots, security facilities and access gates;
  - Mine surface infrastructure including a portal and mine ventilation and heating infrastructure;
  - Concentrator
  - Office complex including office space and mine dry facilities;
  - Surface water management infrastructure;
  - MSC water treatment plant and treated effluent discharge line;
  - Fuel systems (liquified natural gas ("LNG") and diesel storage and distribution)
  - 66 kV to 13.8 kV electrical substation;
  - Site electrical distribution and lighting;
  - Fiber optic network;

  - Firewater pumping station and distribution piping system;
  - Potable water well, treatment plant and distribution system;
  - Sewage treatment system.
- Bonanza Ledge
  - Second phase of the WRSF and associated surface water management infrastructure.
- QR Mill
  - Upgrades to the QR Mill to process high-grade flotation concentrate from the concentrator at the MSC;
  - Information technology ("IT") and telecom upgrade to support remote process monitoring;
  - Potable water treatment plant and distribution system;
  - Sewage treatment system.
- Offsite Infrastructure
  - 66 kV power line connecting BC Hydro's Barlow substation to the MSC 66 kV/13.8 kV substation;
  - Increase the number of rooms for worker accommodations;
  - Final expansion of the IROC in Quesnel.

1.11 Environmental and Permitting

1.11.1 Regulatory Context and Environmental Studies

An Environmental Assessment ("EA") for the Project was initiated with the submission and acceptance of an Initial Project Description ("IPD") in 2020, as per the *BC Environmental Assessment Act* (2018), at a production rate of 4,750 tpd. Submission of the revised application occurred in October 2022, and acceptance to the Effects Assessment Phase was issued by the EAO on November 30, 2022. Issuance of an Environmental Assessment Certificate ("EAC") is expected after the successful review of the Application.

As part of the EA Application for the Project, site-specific environmental baseline modelling and existing conditions characterization has been ongoing since 2016, with updates made to various reports following comments from the Technical Advisory Committee, the Participating Indigenous nations and the Community Advisory Committee. ODV has prepared a preliminary list of key provincial and federal authorizations, licenses, and permits that may be required for the Project, following the EA process. The QR Mill and Bonanza Ledge, constituent parts of the Project, are authorized under separate *Mines Act* and *Environmental Management Act* permits, and each have their own associated reclamation bonding and liability estimates. Extensive baseline data collection and monitoring occurred as part of permit amendment applications for these sites, and monitoring data continues to be collected in support of site-specific environmental management and permit requirements.

Environmental baseline studies and modelling for the Project have been undertaken in the following areas: air quality, terrain and soils, vegetation, wildlife and wildlife habitat, climate and physiography, fisheries and aquatic resources, surface water, and groundwater. In addition, ODV has established environmental monitoring plans for a suite of valued components to respond to regulatory requirements and best management practices for the Project.

1.11.2 Considerations of Social and Community Impacts

Since 2016, ODV has been undertaking meaningful and transparent engagement with Indigenous nations, the public, local community members, provincial and local government agencies and other stakeholders, and this engagement is ongoing. Positive relationships have been developed and maintained with three participating indigenous nations, Lhtako Dené Nation, Xatśūll First Nation, Williams Lake First Nation, and ODV intends to maintain these relationships through all phases of the Project.

1.11.3 Mine Reclamation and Closure Plan

ODV has prepared various Reclamation and Closure Plans ("RCP") for the Project to detail how the sites will be reclaimed to a safe, stable, and non-polluting condition. An updated RCP was provided as an appendix to the EA for the Project. RCPs will continue to be updated as mine plans evolve, regulatory guidelines change, and in accordance with permit requirements. The Project footprint at each site has been divided into Master Areas to reflect disturbance type and proposed end land use. Detailed closure and reclamation prescriptions will be provided for each Master Area.

1.12 Capital and Operating Costs Estimates

1.12.1 Capital Costs

The total initial capital cost (Phase 1) for the Cariboo Gold Project is estimated to be $137.3M and the total expansion capital cost (Phase 2) is estimated to be $451.1M. The overall capital cost estimate developed in this FS generally meets the American Association of Cost Engineers ("AACE") Class 3 requirements and has an accuracy range of between -10% and +15%. The capital cost estimate was compiled using mix of quotations and budgetary quotations, database costs, and database factors. Items such as sales taxes, land acquisition, permitting, licensing, feasibility studies, and financing costs are not included in the cost estimate.

Costs are expressed in Q4 2022 Canadian dollars with an exchange rate of CAD 1.00 for USD 0.77 with no allowances for escalation, currency fluctuation or interest during construction.

The cumulative life of mine capital expenditures ("CAPEX"), including initial capital, expansion capital, sustaining capital, is estimated to be $1,055.0M. The Project's site reclamation and closure costs are estimated at $17.3M and its salvage value is expected to be $56.2M.

Table 1-4: Project capital costs summary[(1)]

WBS	Cost area	Initial capital cost ($M)	Expansion capital cost ($M)	Sustaining capital cost ($M)	Total cost ($M)
000	Surface mobile equipment	-	0.1	9.3	9.4
200	Underground mine	53.8	110.8	313.3	478.0
300	Water and waste management	6.5	12.9	37.3	56.7
400	Electrical and communication	10.2	31.8	62.9	104.9
500	Surface infrastructure	1.8	33.0	2.7	37.5
600	Process Plant - Wells	5.2	114.5	4.4	124.1
600	Process Plant – QR Mill	17.5	25.7	-	43.2
700	Construction indirect costs	10.6	55.6	1.1	67.3
800	General services	8.7	30.0	27.0	65.7
900	Pre-production	12.7	-	-	12.7
999	Contingency	10.3	36.7	8.5	55.6
	Total	**137.3**	**451.1**	**466.6**	**1,055.0**

WBS	Cost area	Initial capital cost ($M)	Expansion capital cost ($M)	Sustaining capital cost ($M)	Total cost ($M)
-	Site Reclamation and Closure	-	-	17.3	17.3
-	Salvage Value	-	-	(56.2)	(56.2)
	Project Total	**137.3**	**451.1**	**427.8**	**1,016.2**

Notes:
(1) Does not include sunk costs ($2.5M) and pre-permit expenses ($64.8M), which total $67.3M.

All capital costs for the Project have been distributed against the development schedule to support the economic cash flow model. Figure 1-1 presents the planned annual and cumulative LOM capital cost profile.

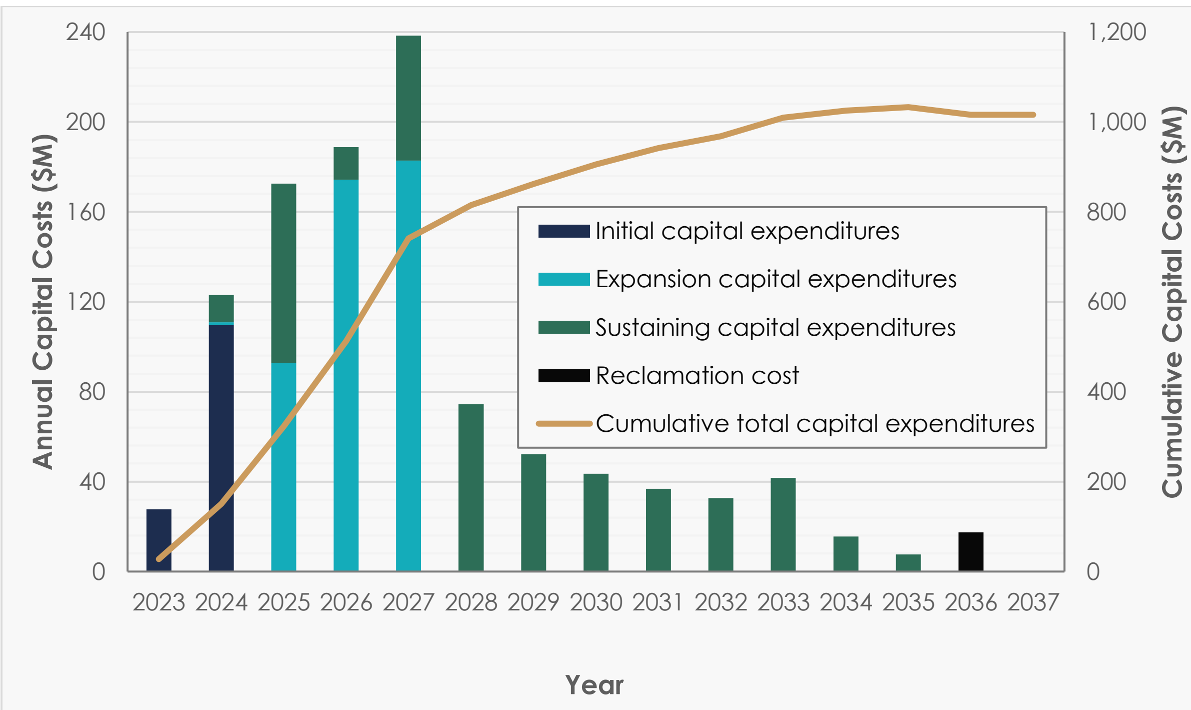


Figure 1-1: Annual and cumulative Project capital costs

1.12.2 Operating Costs

The operating cost estimate was based on multiple sources, such as budget quotations, in-house data, and ODV's projected salary chart. The operating cost expenditure ("OPEX") estimate is based on a combination of experience, reference projects, quotes, and budgetary quotes and factors appropriate for a FS study. The target accuracy of the operating costs is ±10%. No cost escalation or contingency has been included within the operating cost estimate.

The operating cost estimate includes the costs to mine, transport, and process the ore to produce gold doré. It also includes costs for tailings management, water treatment, and general and administration expenses ("G&A").

The average operating cost over the 12-year mine life is estimated to be $102.6 per tonne mined. Total Phase 1 & 2, LOM and unit operating cost estimates are summarized and shown on a percentage basis in Table 1-5. Mining costs are presented inclusive of costs related to backfilling, including paste backfilling. Processing costs are presented inclusive of the flotation circuit during Phase 2 of the Project, as well as the costs related to ore sorting for both phases of the Project.

Table 1-5: Total operating cost breakdown

Area	Cost area description	Phase 1 unit cost ($/t mined)	Phase 2 unit cost ($/t mined)	Average LOM unit cost ($/t mined)	LOM ($M)	Annual average cost ($M/year)	Average LOM ($/oz)	OPEX (%)
000	Material transport	17.3	3.5	4.8	79.5	7.0	42.5	5%
200	Underground mining	77.6	51.1	53.6	894.9	78.4	478.7	52%
300	Water and waste management[1]	18.4	6.1	7.2	120.7	10.6	64.6	7%
600	Processing - mine site complex and QR	37.1	25.3	26.4	440.4	38.5	235.6	26%
800	General and administration[1]	19.4	9.8	10.7	178.8	15.7	95.7	10%
	Total	**169.8**	**95.8**	**102.6**	**1,714.4**	**150.2**	**917.0**	**100%**

1- Water and Waste Management and G&A operating costs do not include a portion of the expenditures which have been capitalized – refer to Sections 21.2.6 and 21.2.7.

It is anticipated that 488 employees (staff and labour) will be required during the peak of operations during Phase 2. Table 1-6 provides a summary of the employees by phase.

Table 1-6: Summary of maximum personnel per phase

Area	Activity	Phase 1	Phase 2
General and administration	Mine administration	3	3
	Logistics	5	5
	Finance	3	3
	Information technology	2	3
	Human resources	2	2
	Health and safety	5	6
	Technical services	17	24
	Environmental department	6	9
	Site services	5	7
	Subtotal	**48**	**62**
Underground mine	Staff and supervision	9	12
	Operations	122	201
	Maintenance and services	57	97
	Subtotal	**188**	**310**
Process plant	Staff and supervision	11	16
	Operations	38	53
	Maintenance and services	20	38
	Subtotal	**69**	**107**
Water and waste management	Operations	9	9
	Subtotal	**9**	**9**
Total		**314**	**488**

1.13 Project Economics

The economic/financial assessment of the Project was carried out using a discounted cash flow approach on a pre-tax and after-tax basis, based on Q4 2022 metal price projections in US dollars (“USD”), and cost estimates capital expenditures (“CAPEX”) and (“OPEX”) in Canadian dollars (“CAD” or “$”). Inflation or cost escalation factors were not taken into account. The base case gold price is USD $1,700/oz.

The economic analysis presented in this section contains forward-looking information with regards to the Mineral Resource Estimates, commodity prices, exchange rates, proposed mine production plan, projected recovery rates, operating costs, construction costs, and project schedule. The results of the economic analysis are subject to a number of known and unknown risks, uncertainties, and other factors that may cause actual results to differ materially from those presented here.

The input parameters used, and results of the financial analysis are presented in Table 1-7.

The pre-tax base case financial model resulted in an internal rate of return ("IRR") of 24.4% and a NPV of $691M using a 5% discount rate. The pre-tax payback period after start of operations is 5.8 years.

On an after-tax basis, the base case financial model resulted in an IRR of 20.7% and a NPV of $502M using a 5% discount rate. The after-tax payback period after start of operations is 5.9 years.

The all-in sustaining costs ("AISC") including royalties over the LOM are USD $968.1/oz.

Table 1-7: Financial analysis summary

Description	Unit	Value
Total Tonnes Mined	M tonne (Mt)	16.7
Average Diluted Gold Grade	g/t	3.78
Total Gold Contained	oz	2,031,153
Total Gold Payable	oz	1,868,856
Average Annual Gold Produced	Au oz per year	163,695
Total Initial Capital Cost[1]	$M	137.3
Total Expansion Capital Cost	$M	451.1
Sustaining Capital	$M	466.6
Site Reclamation Cost	$M	17.3
Salvage Value	$M	56.2

Description	Unit	Value
Operating Costs	$/t mined	102.6
All-in Sustaining Costs	USD/oz	968.1
Total LOM NSR Revenue	$M	4,126
LOM Royalties	$M	206.3
Total LOM Pre-Tax Cash Flow	$M	1,191.7
Average Annual Pre-tax Cash Flow	$M	104.4
LOM Taxes	$M	290.6
Total LOM After-Tax Free Cash Flow	$M	901.1
Average Annual After-Tax Free Cash Flow	$M	78.9
Valuation Summary		
Pre-Tax NPV (at 5% Discount Rate)	$M	691
Pre-Tax IRR	%	24.4
Pre-Tax Payback (after start of operations)	year	5.8
After-Tax NPV (at 5% Discount Rate)	$M	502
After-Tax IRR	%	20.7
After-Tax Payback (after start of operations)	year	5.9

Notes:

(1) Not including sunk costs ($2.5M) and pre-permit expenses ($64.8M) totalling $67.3M.

A financial sensitivity analysis was conducted on the Project's after tax NPV and IRR using the following variables: capital cost (pre-production and sustaining) operating costs, USD:CAD exchange rate, and the price of gold.

The graphical representations of the financial sensitivity analysis on NPV and IRR are depicted in Figure 1-2 and Figure 1-3. The sensitivity analysis reveals that the USD:CAD exchange rate and gold price have the most significant influence on both NPV and IRR compared to the other parameters, based on the range of values evaluated. After the USD:CAD exchange rates and gold price, NPV was most impacted by changes in operating costs and then, to a lesser extent, capital costs. It should be noted that the economic viability of the Project will not be significantly negatively impacted by variations in the capital cost, within the margins of error associated with the FS capital cost estimate.

After the USD:CAD exchange rates and gold price, the Project's IRR was most impacted by variation in capital costs, and to a lesser extent by the operating costs.

Overall, the NPV and IRR of the Project are generally positive over most of the range of values used for the sensitivity analysis when analyzed individually.

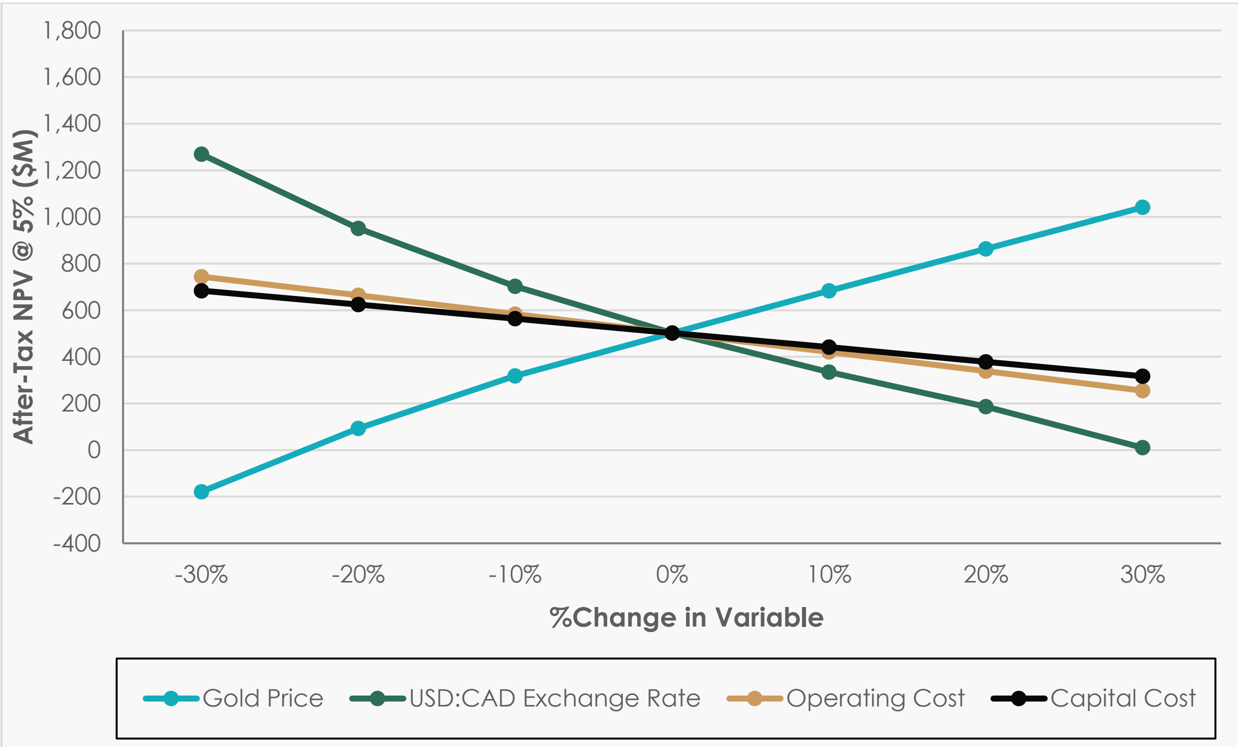


Figure 1-2: After-tax sensitivity analysis – Net present value (NPV)

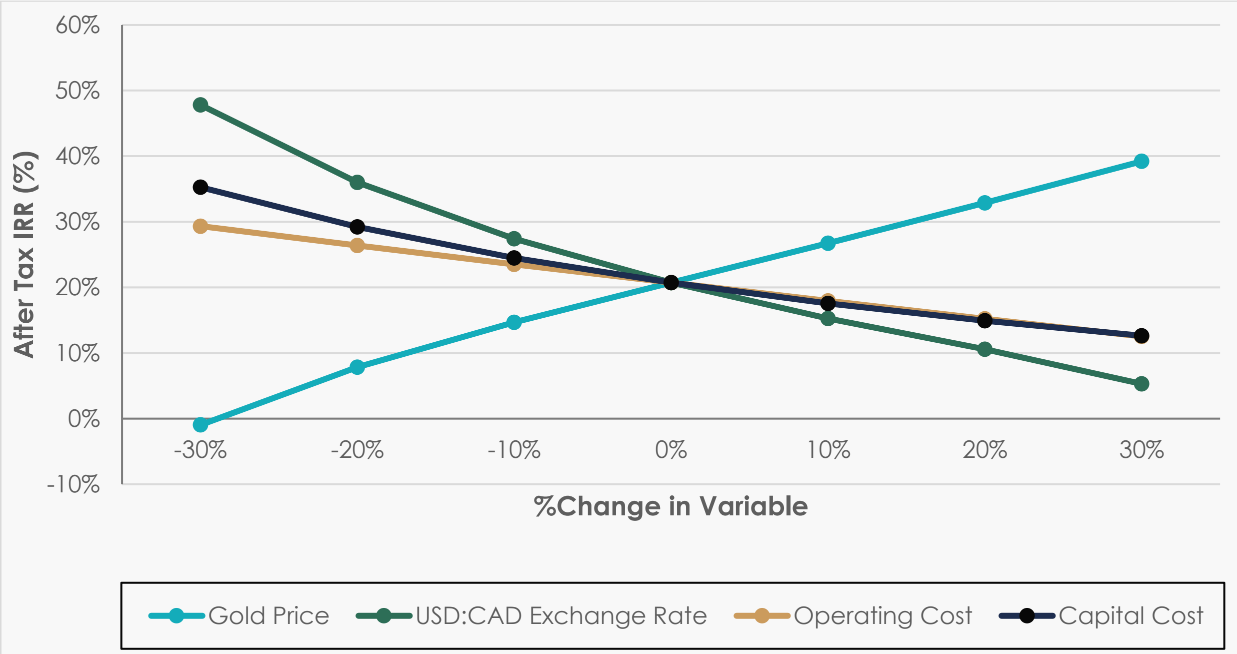


Figure 1-3: After-tax sensitivity analysis – Internal rate of return (IRR)

1.14 Project Schedule and Organization

The Cariboo Gold Project (the "Project") will be developed by Osisko Development Corp. ("ODV") using a two-phased approach to favour early production and reduce the initial financing requirements of the Project. Phase 1 will focus on upgrading the existing facility at the Bonanza Ledge Site and Quesnel River Mill ("QR Mill") to a 1,500 tonnes per day ("tpd") ore sorting and leaching operation, respectively, followed by Phase 2 at the Mine Site Complex ("MSC") in the District of Wells ("Wells"), with the construction of a 4,900 tpd concentrator producing ore sorting and gold flotation concentrates, which will then be transported to the QR Mill for final processing.

Pending the completion of all studies and receipt of the required permits, the development of Lowhee Zone is scheduled to begin in Q4 2023 while the concentrator and MSC infrastructure construction (Phase 2) is scheduled to begin in Q3 2025 with full production expected to be achieved in Q4 2027.

The Project's organization and construction execution philosophy benefits from the existing facilities and experience gained with the current operations at the Bonanza Ledge Mine and QR Mill.

ODV will assemble a team to manage the Project technical studies and the Project construction. All Project phases, including detailed engineering, procurement, pre-production, and construction activities will be under the direction of the Chief Operating Officer ("COO") of ODV . Permitting and Project financing will be supported and performed by ODV's Project Development Team and Financial teams, respectively.

During Phase 1, the construction activities were planned in close coordination with pre-production activities with the aim of respecting the existing lodging facilities in Wells and the existing camp at the QR Mill site. During Phase 2, given the substantially higher construction labour requirements at the MSC, the construction activities were planned to respect the new lodging capacity at Wells and the existing satellite facilities.

The preliminary on-site workforce requirement for construction, including infrastructure, concentrator, and development of the underground mine is expected to be approximately 635 construction personnel to achieve the Phase 2 Project capacity of4,900 tpd for 2027.

The implementation of Phase 2 will be undertaken in such a way as to turn over key process components progressively, so that the concurrent operation availability is not dramatically impacted.

As an example, at the QR Mill site, the schedule to implement the new carbon in pulp ("CIP") circuit has been planned to enable the dismantlement of the existing Phase 1 CIP circuit within the process building and allow for sufficient time for the construction of the elution circuit at that same location.

Similarly during Phase 2, the ore sorters at Bonanza Ledge will be progressively dismantled and inserted in the services building at the MSC during ramp-up to minimize the downtime of operations at QR Mill and impact on commissioning and ramp-up at the MSC.

The major Project activity milestones are presented in Table 1-8.

Table 1-8: Key milestones

Activity	Date
Pre-permit Activities	
Detail engineering activities for Phase 1	Q1 2023
Start of bulk sample Lowhee Zone	Q1 2023
Start of engineering to support permitting	Q1 2023
End of bulk sample Lowhee Zone	Q4 2023
Water drawdown commencement at TMF – QR Mill Site	Q1 2023
New water treatment plant construction – QR Mill Site	Q2 2023

Activity	Date
New water treatment plant operation – QR Mill Site	Q3 2023
Water management infrastructure – Bonanza Ledge Site	Q3 2023
New water treatment plant construction – Bonanza Ledge Site	Q3 2023
Sanitary upgrades at Ballarat Camp	Q3 2023
New water treatment plant operation– Bonanza Ledge Site	Q4 2023
Water drawdown Completion at TMF – QR Mill Site	Q2 2024
Phase 1	
The Project's Environmental Assessment Certificate ("EAC") application and reception of certificate	Q1/Q2 2023
Construction of waste rock storage facility at Bonanza Ledge	Q2 2023
Commitment to equipment packages	Q3 2023
Start of dismantling activities as part of Care and Maintenance for Lowhee extraction	Q4 2023
Start of underground development	Q4 2023
Waste rock storage facility ready for storage at Bonanza Ledge Site	Q1 2024
Start of major construction at QR Mill – Phase 1	Q4 2023
Start construction of ore sorting facility at Bonanza Ledge	Q2 2024
Commissioning of ore sorting facility at Bonanza Ledge	Q3 2024
Commissioning of QR Mill – Phase 1	Q3 2024
Ramp-up to 1,500 tpd	Q4 2024
Phase 1 commercial production achieved	Q4 2024
Phase 2	
Transmission line license of occupation	Q3 2023
Expansion of Ballarat Camp	Q2 2025
Site preparation at MSC	Q2 2025
Start of transmission line clearing and construction	Q4 2025
BC Hydro grid tie-in	Q3 2026
Start of Major Construction at MSC	Q3 2025
Commissioning WTP at MSC	Q1 2026
Start of construction at QR Mill	Q3 2026
Commissioning of QR Mill new process components	Q3 2027
Commissioning process plant at the MSC	Q3 2027
Ramp up to 4,900 tpd	Q3 2027
Phase 2 commercial production achieved	Q4 2027

1.15 Interpretations and Conclusions

This FS was prepared by BBA and other experienced consultants for ODV to demonstrate the economic viability of developing the Project resources as an underground mine, and pre-concentrating the ore using an ore sorter circuit followed by flotation and transportation from the MSC to the QR Mill for further processing by gravity and leaching. This Report provides a summary of the results and findings from each major area of investigation. Standard industry practices, equipment, and processes were used. To date, the QPs are not aware of any unusual or significant risks or uncertainties that could materially affect the reliability or confidence in the Project based on the information available.

The results of the Report indicate that the proposed Project has technical and financial merit using the base case assumptions. The QPs consider the FS results sufficiently reliable and recommend that the Project be advanced to next stage of development through the initiation of Phase 1 detailed engineering..

The following conclusions are based on the QPs detailed review of all pertinent information:

- The results demonstrate the geological and grade continuities for all eight gold deposits in the Cow-Island-Barkerville Mountain Corridor.
- In a potential underground scenario, the Cariboo Gold Project contains an estimated Measured Resource of 8,000 ounces of gold, and Indicated Resource of 3,463,000 ounces, and an Inferred Resource of 1,621,000 ounces.
- The resource estimates for the Mosquito, Shaft, Valley, Cow, and Lowhee deposits were updated using the 2021 drill results. Additional diamond drilling on multiple zones would likely increase the Inferred Resources and upgrade some of the Inferred Resources to Indicated Resources.
- The selected flowsheet for processing material from the deposits includes mineral sorting, grinding, flotation and leaching. The process at the Mine Site Complex produces a pre-concentrate consisting of mineral sorting concentrate in Phase I and in Phase II mineral sorting and flotation concentrate both Phases concentrates are transported to the QR Mill for further milling and leaching. Based on the testwork results and the proposed mining plan at the time, the overall projected Au recovery is 92.0%.
- The Project mine layout demonstrates a development intensive stope access requirement and therefore has a high development meter per tonne of mineralized material ratio. These factors may pose a challenge to successful implementation of the mine plan given the restrictive geotechnical parameters and intrinsically lower productivities of the mining method. However, through diligent planning and adherence to proper work procedures, sufficient active headings and stoping areas should meet daily production requirements.

- The use of innovative technologies and techniques may improve productivity: Such as roadheaders, and the use of autonomous equipment.
- The environmental baseline work completed to date is sufficient to support a FS. Further work is underway, as required, to support the Environmental Assessment process and permit applications for the Project.
- The information and assumptions used in the design of the Mine Site Complex, Bonanza Ledge, and QR Mill infrastructure are sufficient to support a FS. Further work is underway and recommended to support subsequent design phases.
- The total capital costs (initial, expansion and sustaining) for the Project were estimated at $1,055.0M, and the average operating costs over the 12-year mine life is estimated to be $102.6/tonne mined. The all-in sustaining costs ("AISC") including royalties over the LOM are USD $968.1/oz.
- The financial analysis performed as part of this revised FS using the base case assumptions results in an after-tax NPV 5% of $502.4M and an internal rate of return of 20.7% (base case exchange rate of 0.77 CAD for 1.00 USD). The cumulative cash flow for the Project (after-tax) is $901.1M and the payback period after start of operations is 5.9 years over the planned mine life of 12 years.

The QPs consider the FS to be reliable, thorough, based on quality data, reasonable hypotheses, and parameters compliant with NI 43-101 requirements and CIM Definition Standards.

1.15.1 Risks and Opportunities

An analysis of the results of the investigations has identified a series of risks and opportunities associated with each of the technical aspects considered for the development of the Project.

Potential Risks

The most significant potential risks associated with the Project are:

- The planned daily mining production rate may be difficult to achieve due to geological continuity issues, geotechnical issues, possible interaction of equipment, automation constraints, and other potential slowdowns resulting in a longer mining cycle time;
- Greater water inflow than anticipated leading to an increase in water pumping and treatment capital and operational costs;
- There is currently limited contingency storage if the water treatment system at the QR site is unable to operate or meet discharge criteria. A mitigation approach could include consideration of additional contingency storage locations and maintaining pumping system redundancy.

- Tailings and paste management: A different than estimated mass distribution between ore sorting and flotation will create challenges to manage and store the different waste streams. (Mitigation: old workings to help)
- The inability to locate an appropriate borrow source for aggregate material near the Mine Site could increase the construction cost and environmental impact of the Project due to transporting the material over a greater distance;
- Discovery of an unidentified contaminant that cannot be treated by the chosen mine water treatment systems (complexity of contaminants) may lead to increased water treatment costs;
- The inability, for technical or permitting reasons, to use the old underground galleries at BL as a flood management reservoir may lead to the need for an additional basin at surface, resulting in higher capital costs and possible project delays.

Several of the previous noted risks are common to most mining projects, many of which may be mitigated, at least to some degree, with adequate engineering, planning, and pro-active management.

Key Opportunities

There are several opportunities that could improve the economics, timing, and/or permitting potential of the Project. The key opportunities that have been identified at this time are as follows:

- Additional exploration and surface definition diamond drilling could identify new resource areas and upgrade Inferred resources to the Indicated category;
- The opportunity exists to examine alternative mining methods that could be considered in certain areas of the mine. In veins of sufficient width and continuity, the application of transverse longhole stoping could be considered which may allow for improved mine operations, lower capital and/or operating costs.
- Additional geotechnical data will be collected during the Lowhee bulk sample and the underground development of Phase 1, including geotechnical mapping and underground geotechnical core drilling. This information could result in design modifications with lower operating or capital costs.
- A geometallurgical system could be implemented that would gather and analyse data collected during definition drilling and mapping to collect geotechnical, rock mass, and mineralogical properties. This could allow for the optimization of the mine sequence and cost structure to maximize the economics of each individual stope within the life of mine;
- There is a capital cost reduction opportunity to possibly mix non-potentially acid generating ("NPAG") waste rock material with borrow pit aggregate for the construction of some of the civil and water management infrastructure at the MSC;

- Refinement of water quality model and additional hydrogeological investigations during Phase 1 of the mine operations may allow for MSC water treatment plant design improvements potentially leading to lower Capital and/or Operating Costs.

1.16 Recommendations

Based on the results of the 2022 FS, the QPs recommend that the Project move to an advanced phase of development which would involve Phase 1 detail engineering and that project execution activities commence at ODV's discretion.

Specifically, the QPs recommend continuing ODV's exploration program, completing the bulk sample, and various pre-permitting activities (see below for details).

It is recommended that the drilling (infill and exploration), geological mapping, and grab sampling test the extensions of known high-grade vein corridors and identify new targets.

The recommended work program is detailed below:

A) Exploration Work:

Based on the results of the 2022 FS MRE, it is recommended that the Project deposit be advanced to the next phase. Additional exploration and delineation drilling, as well as further geological and structural interpretation are recommended to determine the extents of the gold mineralization. The recommended geology work program is detailed below. Infill drilling in high-grade vein corridors (greater than 6.0 grams per tonne ["g/t"] gold ["Au"]) is recommended to convert resources currently categorized as Inferred to the Indicated category. A budget of 130,000 metres ("m") of drilling is recommended for this program;

B) Complete the bulk sample:

Underground bulk sampling program to test geological and grade continuities, metallurgical and geotechnical parameters.

C) Pre-permitting work:

It is recommended that Phase 1 environmental and engineering work continue to support the completion of the Environmental Assessment ("EA") and permitting process already underway which is expected to be completed in 2023. Concurrently, it is recommended that ODV execute the work planned in the Phase 1 pre-permitting schedule including the purchase of long lead time equipment and initiating detailed engineering.

The budget for the proposed work program is presented in Table 1-9. and amounts to a total budget of $114.8M. The QPs believe the recommended work program and proposed expenditures are appropriate and well thought out, and that the proposed budget reasonably reflects the contemplated activities.

Additional recommendations and further details on the proposed work program can be found in Chapter 26.

Table 1-9: Work program budget

Work Program	Cost Estimate ($M)
Infill and exploration drilling (130,000 m)	30.0
Surface mapping and sampling	0.5
Bulk sample	15.0
Pre-permitting work	57.2
000-Mobile equipment	4.3
200-Underground mine	3.1
300-Water and waste management	21.9
400-Electrical and communication	7.4
500-Surface infrastructure	0.4
600-Processing – Mine Site Complex	3.4
600-Processing – QR Mill	4.7
700-Construction indirect costs	12.0
Subtotal	**102.7**
Contingency	12.1
Total	**114.8**

2. Introduction

This NI 43-101 Technical Report ("Report") Feasibility Study ("FS") for the Cariboo Gold Project (the "Project") was prepared and compiled by BBA Engineering Ltd. ("BBA") at the request of Osisko Development Corp. ("ODV"). The purpose of this Report is to summarize the results of the Feasibility Study ("FS") for the Project in accordance with the guidelines of the Canadian Securities Administrators National Instrument 43-101 ("NI 43-101") and Form 43101. BBA is an independent engineering consulting firm headquartered in Mont-Saint-Hilaire, Québec with mining groups based in Montréal, Vancouver, Toronto, and Sudbury. The Vancouver team led the overall integration of this Report. This Report was prepared under ODV's Project Manager, François Girard, and the ODV team, based on contributions from several independent consulting firms, including BBA Engineering Ltd. ("BBA"), Falkirk Environmental Consultants Ltd. ("Falkirk"), Golder Associates Ltd. (amalgamated with WSP Canada Inc. on January 1, 2023 to form WSP Canada Inc.) ("Golder"), InnovExplo Inc.("InnovExplo"), JDS Energy and Mining Inc. ("JDS"), KCC Geoconsulting Inc. ("KCC"), Klohn Crippen Berger Ltd.("KCB"), SRK Consulting (Canada) Inc. ("SRK"), and WSP USA Inc. ("WSP").

2.1 Barkerville Gold Mines Division

Barkerville Gold Mines Division ("BGM") is a 100%-owned subsidiary of ODV, focused on the development of over 2,000 square kilometres ("km^2") of mineral tenures in the Cariboo Mining District in British Columbia ("BC"), Canada. The land holdings consist of a 67 kilometre ("km") long and 25 km wide belt that contains historically-producing mines, including Mosquito Creek Mine, Aurum Mine, and Cariboo Gold Quartz Mine. The current resource development is focused on the Island Mountain, Cow Mountain, and Barkerville Mountain corridor (collectively, the "Cow-Island-Barkerville Mountain Corridor"), where gold had been extracted from both pyrite replacement and quartz vein ores.

2.2 Basis of Technical Report

The following Report presents the results of the Feasibility Study for the development of the Project. As of the date of this Report, ODV is a North American mine development company with a focus towards becoming a mid-tier gold miner with opportunities for immediate production. ODV is listed on the TSX Venture Exchange ("TSXV") and the New York Stock Exchange ("NYSE") under the symbol "ODV" with its head office situated at:

1100, av des Canadiens-de-Montréal
Suite 300, P.O. Box 211
Montréal, QC H3B 2S2

This Report, titled, "NI 43-101 Technical Report Feasibility Study for the Cariboo Gold Project (BBA, January 10, 2023; Amended January 12, 2023)" and effective as of December 30, 2022, was prepared following the guidelines of the NI 43-101 and in conformity with the guidelines of the Canadian Institute of Mining, Metallurgy and Petroleum ("CIM") Standards on Mineral Resources and Reserves ("CIM Definition Standards").

2.3 Report Responsibility and Qualified Persons

The following individuals, by virtue of their education, experience, and professional association, are considered Qualified Persons ("QPs") as defined in the NI 43-101 and are members in good standing of appropriate professional institutions:

- Colin Hardie, P.Eng. — BBA Engineering Ltd.
- Mathieu Bélisle, P.Eng. — BBA Engineering Ltd.
- Katherine Mueller, P. Eng. — Falkirk Environmental Consultants Ltd.
- John Cunning, P.Eng. — Golder Associates Ltd.*
- Paul Gauthier, Peng. — Golder Associates Ltd.*
- Aytaç Göksu, P.Eng. — Golder Associates Ltd.*
- Saileshkumar Singh, P.Eng. — Golder Associates Ltd.*
- Jean-François Maillé, P.Eng. — JDS Energy and Mining Inc.
- Eric Lecomte, P.Eng. — InnovExplo Inc.
- Vincent Nadeau-Benoit, P.Geo — InnovExplo Inc.
- Carl Pelletier, P.Geo — InnovExplo Inc.
- Jean-François Maillé — JDS Energy and Mining Inc.
- Keith Mountjoy, P. Geo — KCC Geoconsulting Ltd.
- Michelle Liew, P.Eng. — Klohn Crippen Berger Ltd.
- David Willms, P.Eng. — Klohn Crippen Berger Ltd.
- Timothy Coleman, P.Eng. — SRK Consulting (Canada) Inc.
- Thomas Rutkowski, P.Eng. — WSP USA Inc.
- Laurentius Verburg, P.Geo. — WSP USA Inc.

* Note that Golder Associates Ltd. amalgamated with WSP Canada Inc. on January 1, 2023 to form WSP Canada Inc. The company's abbreviation is being shown herein as "Golder".

The preceding QPs have contributed to the writing of this Report and have provided QP certificates, included at the beginning of this Report. The information contained in the certificates outlines the sections in this Report for which each QP is responsible. Each QP has also contributed figures, tables, and portions of Chapter 1 (Summary), Chapter 2 (Introduction), Chapter 25 (Interpretation and Conclusions), Chapter 26 (Recommendations), and Chapter 27 (References).

Table 2-1 outlines the responsibilities for the various sections of the Report and the name of the corresponding Qualified Person.

Table 2-1: Qualified Persons and areas of report responsibility

Chapter	Description	Qualified Person	Company	Comments and exceptions
1.	Summary	C. Hardie	BBA	All QPs contributed based on their respective scope of work and the Chapters/Sections under their responsibility.
2.	Introduction	C. Hardie	BBA	All QPs contributed based on their respective scope of work and the Chapters/Sections under their responsibility.
3.	Reliance on other Experts	C. Hardie	BBA	Sections 3.1 and 3.3
		V. Nadeau-Benoit C. Pelletier	InnovExplo	Section 3.2
4.	Project Property Description and Location	V. Nadeau-Benoit C. Pelletier	InnovExplo	Sections 4.1–4.5.
		K. Mueller	Falkirk	Section 4.6 and 4.7
5.	Accessibility, Climate, Local Resource, Infrastructure and Physiography	V. Nadeau-Benoit C. Pelletier	InnovExplo	All of Chapter 5
6.	History	V. Nadeau-Benoit C. Pelletier	InnovExplo	All of Chapter 6
7.	Geological Setting and Mineralization	V. Nadeau-Benoit C. Pelletier	InnovExplo	All of Chapter 7
8.	Deposit Types	V. Nadeau-Benoit C. Pelletier	InnovExplo	All of Chapter 8
9.	Exploration	V. Nadeau-Benoit C. Pelletier	InnovExplo	All of Chapter 9
10.	Drilling	V. Nadeau-Benoit C. Pelletier	InnovExplo	All of Chapter 10
11.	Sample Preparation, Analyses and Security	V. Nadeau-Benoit C. Pelletier	InnovExplo	All of Chapter 11
12.	Data Verification	V. Nadeau-Benoit C. Pelletier	InnovExplo	All of Chapter 12
13.	Mineral Processing and Metallurgical Testing	M. Bélisle	BBA	All of Chapter 13
14.	Mineral Resource Estimate	V. Nadeau-Benoit C. Pelletier	InnovExplo	All of Chapter 14, except for Section 14.12
		E. Lecomte	InnovExplo	Section 14.12

Chapter	Description	Qualified Person	Company	Comments and exceptions
15.	Mineral Reserve Estimate	E. Lecomte	InnovExplo	All of Chapter 15
16.	Mining Methods	E. Lecomte	InnovExplo	Sections 16.1, 16.5, 16.6, 16.8.2, 16.9, and 16.10
		A. Göksu	Golder	Section 16.4
		T. Coleman	SRK	Section 16.2
		P. Gauthier	Golder	Sections 16.3, 16.7, and 16.8 (except 16.8.1.1, 16.8.2)
		M. Bélisle	BBA	Section 16.8.1.1
17.	Recovery Methods	M. Bélisle	BBA	All of Chapter 17
18.	Project Infrastructure	P. Gauthier	Golder	Sections 18.3.1.1, 18.4.1.7, 18.4.2.4, 18.4.2.7, 18.4.2.8, 18.4.3, 18.5.1.1, 18.5.1.2, 18.5.1.4, 18.5.3.2, 18.5.4.2, and 18.5.4.3
		T. Rutkowski	WSP	Sections 18.2.1.3, 18.2.2.1, 18.4.1.5, 18.4.2.5, and 18.5.1.8
		S. Singh	Golder	Sections 18.2.1.4, 18.4.1.6, 18.5.1.9, and 18.5.3.6
		J. Cunning	Golder	Sections 18.2.1.1, 18.3.1.2, 18.3.2.1, 18.4.1.2, and 18.5.3.3
		A. Göksu	Golder	Section 18.2.1.2, 18.4.1.3, 18.4.1.4, 18.5.1.6, 18.5.1.7, 18.5.3.4, and 18.5.3.5
		D. Willms	KCB	Sections 18.3.3.1, 18.3.3.2, and 18.4.2.2
		M. Liew	KCB	Sections 18.4.2.2 and 18.4.2.3
		C. Hardie	BBA	Sections 18, 18.1, 18.2, 18.2.1.5, 18.2.2, 18.2.3, 18.2.4, 18.3, 18.4.1, 18.4.1.8, 18.4.1.9, 18.4.2.6, 18.5.1, 18.5.1.3, 18.5.1.10, 18.5.1.11, 18.5.2.2, 18.5.3.1, and 18.5.4.1
		M. Bélisle	BBA	Sections 18.4.1.1, 18.4.2.1, 18.5.1.5, and 18.5.2.1
19.	Market Studies and Contracts	C. Hardie	BBA	All of Chapter 19
20.	Environmental Studies, Permitting, and Social or Community Impact	K. Mueller	Falkirk	All of Chapter 20, except for 20.3
		M. Liew	KCB	Sections 20.3.5.1, 20.3.6.5, and 20.3.6.6
		A. Göksu	Golder	Section 20.3.6.1, 20.3.6.2, and 20.3.6.3
		L. Verburg	WSP	Sections 20.3.1 and 20.3.6.4
		P. Gauthier	Golder	Introduction to section 20.3, and sections 20.3.2, 20.3.3, and 20.3.5.2
		K. Mountjoy	KCC	Sections 20.3.4 and 20.3.7

Chapter	Description	Qualified Person	Company	Comments and exceptions
21.	Capital and Operating Costs	C. Hardie	BBA	Sections 21, 21.1.1, 21.1.2, 21.1.3, 21.1.4, 21.1.4.1, 21.1.4.5, 21.1.4.7 to 21.1.4.11, 21.1.5, 21.1.5.1, 21.1.5.8, 21.1.5.10 to 21.1.5.14, 21.1.6, 21.1.6.1, 21.1.6.10, 21.1.6.12 to 21.1.6.15, 21.1.6.17, 21.2.1, 21.2.2, 21.2.4, 21.2.7, 21.3
		P. Gauthier	Golder	Sections 21.1.4.3 (co-author with J-F. Maillé), 21.1.4.4, 21.1.4.6, 21.1.5.4, 21.1.5.6, 21.1.5.7, 21.1.5.9, 21.1.6.5, 21.1.6.9, and 21.1.6.11
		M. Bélisle	BBA	Section 21.2.5
		E. Lecomte	InnovExplo	Sections 21.1.4.2, 21.1.5.2, 21.1.6.2, 21.2.3
		T. Rutkowski	WSP	Sections 21.1.6.7, 21.2.6 (co-author with J-F. Maillé, K. Mueller, S. Singh)
		S. Singh	Golder	Sections 21.1.5.5 (co-author with J-F. Maillé), 21.1.6.6 (co-author with J-F. Maillé), 21.1.6.8 (co-author with A. Göksu), 21.2.6 (co-author with J-F. Maillé, K. Mueller, T. Rutkowski)
		A. Göksu	Golder	Sections 21.1.6.8 (co-author with S. Singh)
		L. Verburg	WSP	Section 21.1.6.16
		K. Mueller	Falkirk	21.2.6 (co-author with J-F. Maillé, T. Rutkowski, S. Singh)
		J-F. Maillé	JDS	Sections 21.1.4.3 (co-author with P. Gauthier), 21.1.5.3, 21.1.5.5 (co-author with S. Singh), 21.1.6.3, 21.1.6.4, 21.1.6.6 (co-author with S. Singh), 21.2.6 (co-author with T. Rutkowski, K. Mueller, S. Singh)
22.	Economic Analysis	C. Hardie	BBA	All of Chapter 22
23.	Adjacent Properties	V. Nadeau-Benoit C. Pelletier	InnovExplo	All of Chapter 23
24.	Other Relevant Data and Information	C. Hardie	BBA	All of Chapter 24
25.	Interpretation and Conclusions	C. Hardie	BBA	All QPs contributed based on their respective scope of work and the Chapters/Sections under their responsibility.
26.	Recommendations	C. Hardie	BBA	All QPs contributed based on their respective scope of work and the Chapters/Sections under their responsibility.
27.	References	C. Hardie	BBA	All QPs contributed based on their respective scope of work and the Chapters/Sections under their responsibility.

2.4 Effective Dates and Declaration

The overall effective date of the Report is December 30, 2022.

The Report has several effective dates for information:

- Effective date of the Cariboo Gold Project Mineral Resource Estimate: November 11, 2022;
- Effective date of the Cariboo Gold Project Mineral Reserve Estimate has an effective date of December 6, 2022;
- Date of last supply of laboratory testwork and investigations: November 15, 2022;
- Date of the financial analysis closure: December 30, 2022.

This Report was prepared as a National Instrument 43-101 Standards of Disclosure for Mineral Projects Technical Report for ODV by QPs, collectively the "Report Authors". The quality of information, conclusions, and estimates contained herein is consistent with the level of effort involved in the Report Authors' services, based on i) information available at the time of preparation; ii) data supplied by outside sources; and iii) the assumptions, conditions, and qualifications set forth in this Report. This Report is intended for use by ODV, subject to the terms and conditions of its respective contracts with the Report Authors, and relevant securities legislation.

The contract allows ODV to file this Report as a Technical Report with Canadian Securities Regulatory Authorities pursuant to National Instrument 43-101. Except for the purposes legislated under provincial securities law, any other uses of this Report by any third party is at that party's sole risk. The responsibility for this disclosure remains with ODV. The user of this document should ensure that this is the most recent Technical Report for the property as it is not valid if a new Technical Report has been issued.

2.5 Sources of Information

2.5.1 General

This Report is based in part on internal company reports, maps, published government reports, company letters and memoranda, and public information, as listed in Chapter 27 (References) of this Report.

Sections from reports authored by other consultants may have been directly quoted or summarized in this Report and are so indicated, where appropriate.

This Feasibility Study has been completed using available information contained in, but not limited to, the following reports, documents, and discussions:

- Technical discussions with ODV personnel;
- QPs' personal inspection of the Project site(s);
- Reports of mineralogical, metallurgical, and grindability characteristics of the Island Mountain, Cow Mountain, and Barkerville Mountain deposits, and Bonanza Ledge site, conducted by industry recognized metallurgical testing laboratories on behalf of ODV;
- The Project resource block model and estimate provided by InnovExplo, which are effective as of November 11, 2022;
- The Project revised Environmental Assessment application as submitted to the BC Environmental Assessment Office ("EAO") in October 2022;
- Internal and commercially available databases and cost models;
- Various reports covering site hydrology, hydrogeology, geotechnical, and geochemistry;
- Various reports covering site physical and biological environment;
- Internal unpublished reports received from ODV;
- Additional information from public domain sources.

The QPs have no known reason to believe that any of the information used to prepare this Report and evaluate the Mineral Resources presented herein is invalid or contains misrepresentations.

The Report Authors have sourced the information for this Report from the collection of documents listed in Chapter 27 (References).

2.5.2 BBA Engineering Ltd.

The following entities or individuals provided specialist input to Mathieu Bélisle, QP:

- Helin Girgin (BBA) provided data analysis and interpretation of the metallurgical testwork (Chapter 13), as well as inputs for the development of the process plant operating cost estimate in Chapter 21 (Capital and Operating Costs).

The following entities or individuals provided specialist input to Colin Hardie, QP:

- Gilles Léonard (BBA) and Yves Bouchard (BBA) provided the design and cost estimates for the Mine Site communications infrastructure;
- Yves Robitaille (BBA) provided the design and cost estimates for the Mine Site Complex ("MSC") electrical substation, power line, and electrical power distribution;

- ODV and its external advisors have provided an estimate for the owner's costs and contingencies used in the development of the Project's baseline capital cost estimate found in Chapter 21 (Capital and Operating Costs);
- ODV provided an estimate for the General and Administration ("G&A") costs of the Project's operating cost estimate found in Chapter 21 (Capital and Operating Costs);
- Claude Catudal (BBA) and Jocelyn Marcoux (BBA) provided inputs for the industrial standards and norms for the various material, manpower, and construction costs used in the development of the Project capital costs (Chapter 21);

These specialists are not considered as QPs for the purposes of this NI 43-101 Report.

2.5.3 InnovExplo Inc.

The following individuals provided specialist input to Eric Lecomte, QP:

- Sébastien Tanguay (InnovExplo) and Jean-Olivier Brassard (InnovExplo) provided the design for underground workings and scheduled mine plan;
- Yolaine Lavoie (Meglab) provided the underground electrical and communication design and cost estimates for related materiel and electrical charge. She also provided electrical and communication sections of Chapter 16;
- Annie-Pier Maltais (Technosub) provided the underground dewatering design, cost estimates for related materials, and the dewatering sections of Chapter 16;
- Robert Hamilton (Independent external consultant) provided the mobile equipment rebuild schedule and related personnel and material cost estimates for the major maintenance of mobile fleet. He also contributed to the equipment purchasing schedule and yearly operating hours;
- Hugo Della Sbarba (Dello Ventilation) provided the ventilation design, underground heating demand, cost estimates, and hardware requirements. He also provided ventilation sections of Chapter 16.

These specialists are not considered as QPs for the purposes of this NI 43-101 Report.

2.5.4 SRK Consulting (Canada) Inc.

The following individual provided specialist input to Timothy Coleman, QP:

- Olga Gibbons and Adrienne Joaquim (SRK) provided design inputs into the geotechnical assessments found in Chapter 16 (Mining Methods).

These specialists are not considered as QPs for the purposes of this NI 43-101 Report.

2.5.5 Golder Associates Ltd. (amalgamated with WSP Canada Inc. on January 1, 2023 to form WSP Canada Inc.)

The following individuals provided specialist input to Paul Gauthier, QP:

- Isaac Ahmed (Golder) provided the design for the underground paste backfill network and cost estimation;
- Gabriel Germain (WSP Canada Inc.) provided the underground mineral handling design and cost estimation;
- Darlene Nelson (WSP Canada Inc.) provided the design and cost estimate for the Valley portal;
- Ian Hunsche (WSP Canada Inc.) and Trent Purvis (WSP Canada Inc.) provided the design for roads and the infrastructure civil design;
- Joske Whiteside (WSP Canada Inc.) provided the design and cost estimation for piping works related to infrastructure connections;
- Donald Kaluza (WSP Canada Inc.) provided guidance on geotechnical requirements for roads, portals, pads, and buildings installations;
- Suchit Kaila (WSP Canada Inc.) provided the design for the fire protection system;
- Kirollos Shenouda (WSP Canada Inc.) provided the design for the electrical distribution of the surface infrastructure and site lighting.

The following individuals provided specialist input to Aytaç Göksu, QP:

- Philippe Benoît (Golder) provided inputs on water management strategy, water balance modelling, and water management infrastructure at the MSC and Bonanza Ledge site;
- Jennifer Levenick (Golder) provided inputs on groundwater inflows modelling predictions.

The following individuals provided specialist input to John Cunning, QP:

- Fernando Ascencio (Golder) supported the design for the Bonanza Ledge waste rock storage facility design;
- Joanna Chen (Golder) supported the design for the MSC sediment pond dam and liner system.

The following individual provided specialist input to Saileshkumar Singh, QP:

- Jesse Maddaloni (Golder) supported the preliminary process design and cost estimate for the Bonanza Ledge and the MSC water conveyance systems (pumping stations and water pipelines).

These specialists are not considered as QPs for the purposes of this NI 43-101 Report.

2.5.6 WSP USA Inc.

The following individuals provided specialist input to Thomas Rutkowski, QP:

- Darryl Howard (Golder) directed the development of the preliminary process designs and costs estimates for the Bonanza Ledge water treatment plant, the MSC water treatment plant, and the Quesnel River water treatment plant;
- Joanna Stec (Golder) supported the development of the preliminary process designs and costs estimates for the Bonanza Ledge water treatment plant, the MSC water treatment plant, and the Quesnel River water treatment plant;
- Marcus Yu (Golder) provided the preliminary process design and cost estimate for the Bonanza Ledge water treatment plant;
- Jeremy Anderson (Golder) provided the preliminary process design and cost estimate for the MSC water treatment plant;
- Jeff MacSween (Golder) provided the preliminary process design and cost estimate for the Quesnel River water treatment plant.

The following individuals provided specialist input to Laurentius Verburg, QP:

- Lisa May (Golder) provided inputs on reclamation and mine closure;
- Alison Snow (Golder) provided inputs on site water quality modelling.

These specialists are not considered as QPs for the purposes of this NI 43-101 Report.

2.5.7 Klohn Crippen Berger Ltd.

The following individuals provided specialist input for the Quesnel River ("QR") Mill to David Willms, QP, and Michelle Liew, QP:

- Drew Hegadoren (KCB), Maxwell Cronk (KCB), and Trisha Yang (KCB) provided inputs on geotechnical design, construction staging planning, and material takeoff for the QR Mill filtered stack tailings storage facility;
- Adrian Moreau (KCB), Jiajia Zheng (KCB), and Alex Fitzpatrick (KCB) provided inputs on the QR Mill surface water management and water quality predictions.

These specialists are not considered as QPs for the purposes of this NI 43-101 Report.

2.5.8 Falkirk Environmental Consultants Ltd.

The following individuals provided specialist input to Katherine Mueller, QP:

- Michelle Liew (KCB) provided guidance, review, and edits on the filtered stack tailings storage facility.
- Claudia Castro and Jennifer Gebert (Falkirk) provided inputs on permitting, approvals, and social considerations;
- ODV has provided summary details regarding community and the engagement with Indigenous Nations for the Project.

These specialists are not considered as QPs for the purposes of this NI 43-101 Report.

2.5.9 KCC Geoconsulting Ltd.

No individuals provided specialist input to Keith Mountjoy, QP.

2.5.10 JDS Energy and Mining Inc.

The following individuals provided specialist input to Jean-François Maillé, QP:

- Thomas Gobeil (JDS) provided cost estimates for the waste management, tailings management, and water management infrastructure.
- Michelle Liew (KCB) and David Willms (KCB) provide engineering MTOs for the filtered stack tailings storage facility.

This specialist is not considered as QPs for the purposes of this NI 43-101 Report.

2.6 Site Visits

The following bulleted list describes which Qualified Persons visited the site(s) (MSC in Wells, QR Mill, and Bonanza Ledge site), the date of the visit, and the general objective of the visit:

- Carl Pelletier (InnovExplo) conducted a site visit from February 1 to 4, 2016, and from May 3 to 12, 2016. The first visit included the Bonanza Ledge pit, the Cow Mountain area, and the Island Mountain area. The second involved a visit to the core logging facilities and several drill hole collars. While on site, he also reviewed selected core intervals from the Barkerville Mountain and Cow Mountain deposits, performed an independent resampling program of said core, and verified the Project databases;

- Vincent Nadeau-Benoit (InnovExplo) conducted a site visit from November 1 to 5, 2021. The visit included a tour and review of the core logging facilities, drill pads, and mineralized outcrops, as well as a review of drill hole cores from the 2020 and 2021 drilling programs;
- Timothy Coleman (SRK) visited the proposed MSC in Wells and the Bonanza Ledge site on February 25, 2022, to conduct a review of the Project site, geotechnical review of drill cores, and observe ground conditions and excavation behaviour at the Bonanza Ledge site;
- Eric Lecomte (InnovExplo) visited the proposed MSC in Wells and the Bonanza Ledge site, on February 25, 2022, to conduct a review of the Project site and observe ground conditions and excavation behaviour at the Bonanza Ledge site;
- Mathieu Bélisle (BBA) visited the QR Mill from July 8 to 11, 2019 to conduct a review of the actual installation;
- John Cunning (Golder) visited the site between August 17 and 18, 2021, to carry out an inspection of the proposed sediment pond site at the Wells mine site and of the proposed waste rock storage area at Bonanza Ledge site;
- Thomas Rutkowski (WSP) visited the proposed MSC in Wells, the Bonanza Ledge, and the QR Mill Site, on October 05 and 06, 2022, to conduct a review of the Project site and observe the Bonanza Ledge and QR Mill water treatment facilities;
- Aytaç Göksu (Golder) visited the proposed MSC in Wells and the Bonanza Ledge site, on October 05 and 06, 2022, to conduct a review of the Project site and observe the existing water management structure conditions;
- Katherine Mueller (Falkirk) visited the site between June 15 and June 16, 2022, to discuss all of the environmental management, compliance, and water management activities on site as it related to the current and future permitting requirements for the Project;
- Michelle Liew (KCB) visited the QR Mill from July 26 to 28, 2021, to conduct a review of the Project site and observe the water management structures;
- David Willms (KCB) visited the QR Mill from July 26 to 28, 2021, and September 22, 2022 to conduct dam safety inspections of the tailings storage facility and main zone pit;
- Keith Mountjoy (KCC) has visited the Cariboo Property that is the subject of the Technical Report on various occasions but at a minimum annually since 2017. Additionally, he was an employee of Barkerville Gold Mines Ltd. from 2017 to 2018.
- Jean-Francois Maillé (JDS) visited the proposed MSC and worked at Bonanza Ledge and QR Mill site from January to September 2021.

As of the effective date of this report, the following QPs have not visited the Project site(s):

- Colin Hardie (BBA);
- Paul Gauthier (Golder);
- Saileshkumar Singh (Golder);
- Laurentius Verburg (WSP).

2.7 Currency, Units of Measurement, and Calculations

Unless otherwise specified or noted, the units used in this Report are metric. Every effort has been made to clearly display the appropriate units being used throughout this Report, which comprise:

- Currency is in Canadian dollars ("CAD" or "$");
- All ounce units are reported in troy ounces, unless otherwise stated:
  1 oz (troy) = 31.1 grams ("g") = 1.1 ounce ("oz") (Imperial);
- All metal prices are expressed in US dollars ("USD" or "US$");
- A Canadian dollar ("CAD" or "$") to United States dollar ("USD") exchange rate of 0.77 USD for 1.00 CAD was used;
- All cost estimates have a base date of the fourth quarter ("Q4") of 2022.

This Report includes technical information that required subsequent calculations to derive subtotals, totals, and weighted averages. Such calculations inherently involve a degree of rounding and consequently introduce a margin of error. Where these occur, the QPs consider them immaterial.

2.8 Acknowledgement

BBA and the other study contributors would like to acknowledge the general support provided by the following personnel during this assignment:

The Project benefitted from the specific input of François Vézina, François Girard, Victor Gauthier, Alexandre Burelle, Christopher Waite, Sylvie St-Jean, Daniel Mathieu, Walter Dorn, John-Paul McGrath, Martin Ménard, Maggie Layman, Ryan Friesen, Luc Lessard, Kelsey Dodd, Julia Gartley, Amanda Fitch, Cassia Fração, and Manon Dussault. Their contributions are greatly appreciated.

3. Reliance on Other Experts

The Qualified Persons ("QPs") have relied upon reports, information sources, and opinions provided by outside experts related to the Cariboo Gold Project's ("the Project") mineral rights, surface rights, property agreements, royalties, and fiscal situation.

As of the date of this Feasibility Study for the Cariboo Gold Project ("Report"), Osisko Development Corp. ("ODV") indicates that there are no known litigations potentially affecting the Project.

A draft copy of the Report has been reviewed for factual errors by ODV. Any changes made as a result of these reviews did not involve any alteration to the conclusions made. Hence, the statements and opinions expressed in this document are given in good faith and in the belief that such statements and opinions are neither false nor misleading at the date of this Report.

3.1. Mineral Tenure and Surface Rights

ODV supplied information about mining titles, option agreements, environmental liabilities, permits, and First Nations negotiations. Carl Pelletier, QP, and Vincent Nadeau-Benoit, QP, of InnovExplo consulted British Columbia's internet-based electronic mineral titles administration system (Mineral Titles Online) (https://www.mtonline.gov.bc.ca/mtov/home.do) for the latest status regarding ownership and mining titles. Although the QPs have reviewed the option agreements and available claim status documents, they are not qualified to express any legal opinion with respect to the property titles, current ownership, or possible litigation. A description of such agreements, the property, and ownership thereof is provided for general information purposes only. In this regard, the QPs have relied on information supplied by ODV and the work of experts they understand to be appropriately qualified.

This information is used in Chapter 4 of the Report. The information is also used in support of the Mineral Resource Estimate in Chapter 14.

3.2. Taxation and Royalties

Colin Hardie, QP, from BBA has relied upon ODV for guidance on applicable taxes, royalty agreements, and other government levies or interests, applicable to potential revenue or income from the Project. This information is used in Chapter 19 (Market Studies and Contracts) and Chapter 22 (Economic Analysis) of the Report.

4. Property Description and Location

4.1. Location

The Cariboo Gold Project (the "Project") is located in the historic Wells-Barkerville mining camp of British Columbia and extends for approximately 60 kilometres ("km") from northwest to southeast.

The Project falls within the Cariboo Regional District ("CRD"), a division of the local government system in British Columbia ("BC"). The main towns in the Project area are the District of Wells ("Wells") and Barkerville Historic Town & Park. Wells is situated 74 km east of Quesnel, approximately 115 km southeast of Prince George, and approximately 500 km north of Vancouver (Figure 4-1).

The coordinates of the centre of the Project are 121°34'46"W and 53°06'07"N (UTM coordinates: 595102E and 5884577N, NAD 83, Zone 10). The Project lies on NTS maps sheets 93A/12/13/14, 93G/08 and 93H/03/04/05.

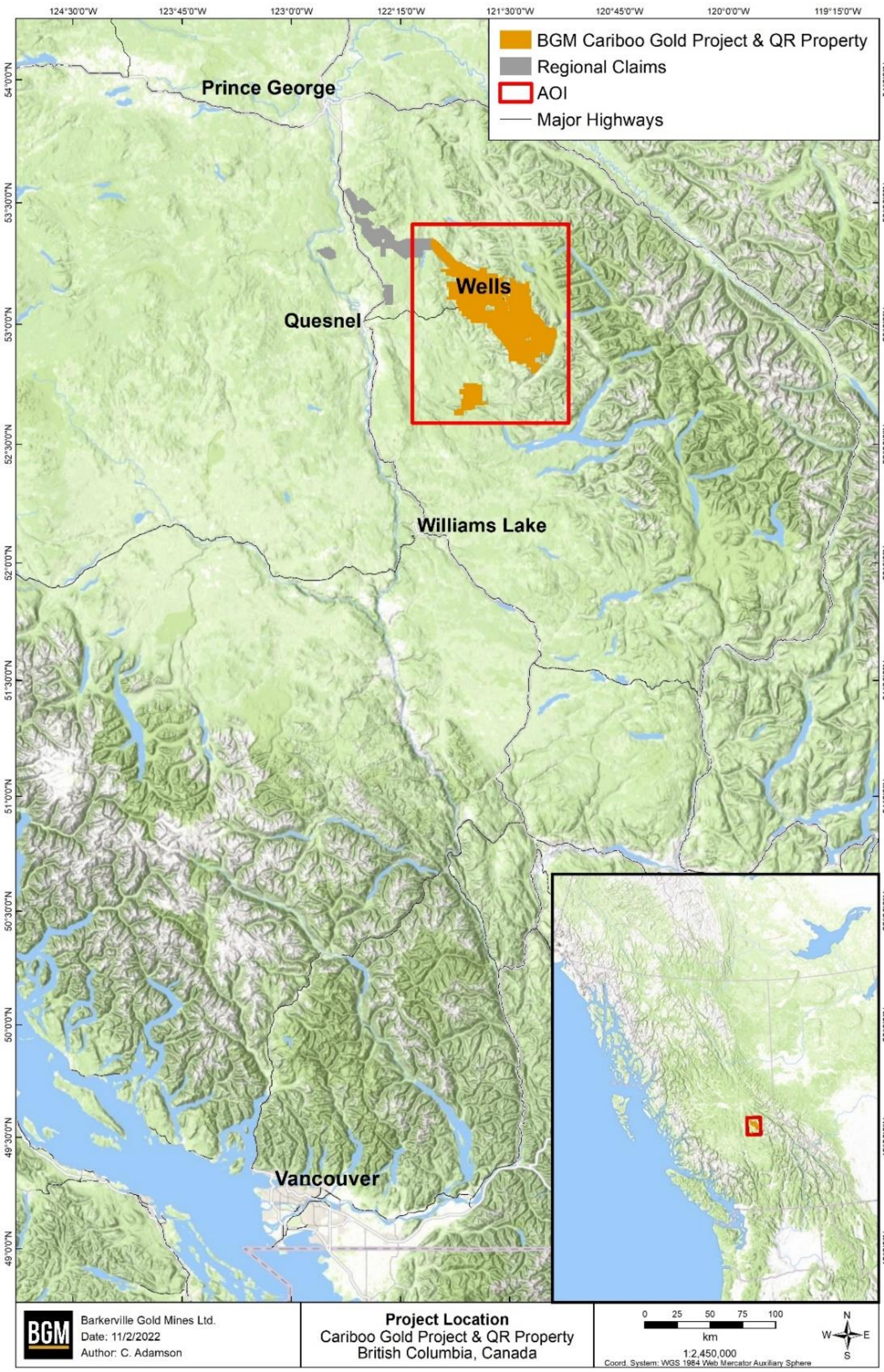


Figure 4-1: Location of the Cariboo Gold Project

4.2. Mineral Title Status

Osisko Development Corp. ("ODV") supplied all mineral title maps and tables. ODV's Barkerville Gold Mines Division Free Miner Certificate number is 110263668 and their Mineral Title Branch Client ID is 104256. The Qualified Persons ("QP") verified the status of all mineral titles using Mineral Titles Online ("MTO"), the BC's internet-based electronic mineral titles administration system.

ODV's land holdings consist of 415 mineral titles totalling 155,088.69 hectares ("ha") across two contiguous property blocks known as the Cariboo Main Block and the Quesnel River ("QR") Mill Property. The reader is reminded that the land holdings are registered in the names of Barkerville Gold Mines Ltd. ("BGM") and will be referred to as such in the following sections. These mineral titles include mineral claims, mineral leases, placer claims, and placer leases. Whereas BGM is a wholly owned subsidiary of ODV, these titles grant ODV the rights to explore for metal ores in bedrock or talus rock, including rock and other materials from mine tailings, dumps, and previously mined deposits of minerals, as set out in the *Mineral Tenure Act*. The breakdown according to type of mineral title is as follows:

Cariboo Main Block: 379 mineral titles (142,284.23 ha):

- 323 mineral claims totalling 135,421.46 ha (Figure 4-2);
- 43 placer claims totalling 4,467.03 ha (Figure 4-4); and
- 13 placer leases totalling 2,395.74 ha (Figure 4-4).

QR Property area: 36 mineral titles (12,804.46 ha):

- 35 mineral claims totalling 9,640.06 ha (Figure 4-2); and
- 1 mineral lease (QR Mineral Lease #320752) totalling 3,164.40 ha (Figure 4-2).

BGM holds 100% of interest in 56 Cariboo Main Block placer titles, 35 QR Property mineral claims, and the QR mineral lease #320752. BGM holds 100% of interest in 362 of the 379 Cariboo Main Block mineral and placer claims and placer leases. A total of 17 mineral claims are jointly owned with other companies and individuals: BGM holds 97.5% of interest in six mineral claims, 85% of interest in two mineral claims, and 50% interest in the other nine mineral claims.

A map showing mineral title distribution and ownership is presented in Figure 4-2.

The Project also contains 546 private land parcels from Crown-granted mineral claims (3,330.20 ha) that overlap many of the mineral titles, where BGM is the registered owner on title of the surface and/or undersurface rights to the parcels (Figure 4-2).

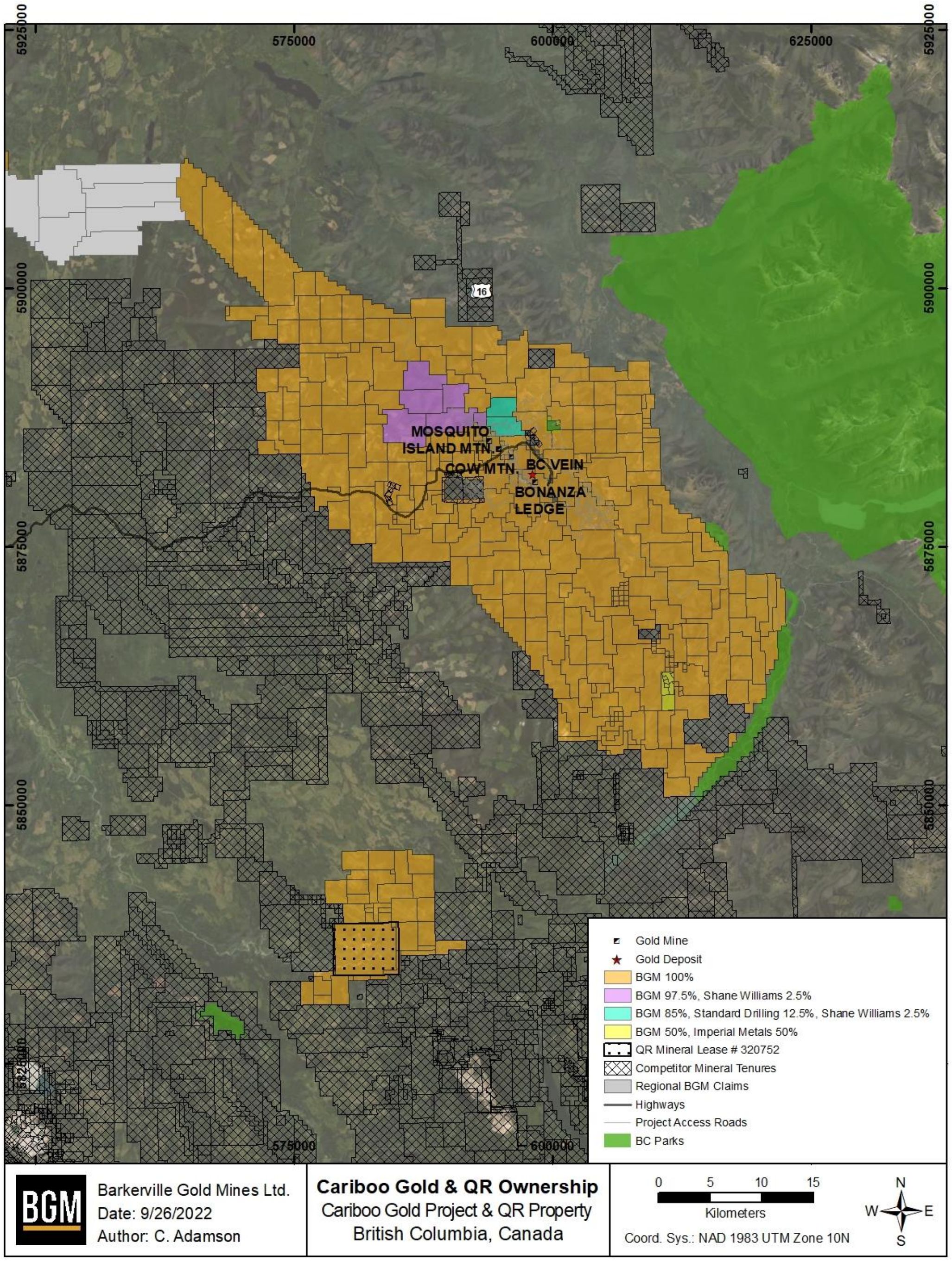


Figure 4-2: Mineral title and ownership map for the Cariboo Gold Project

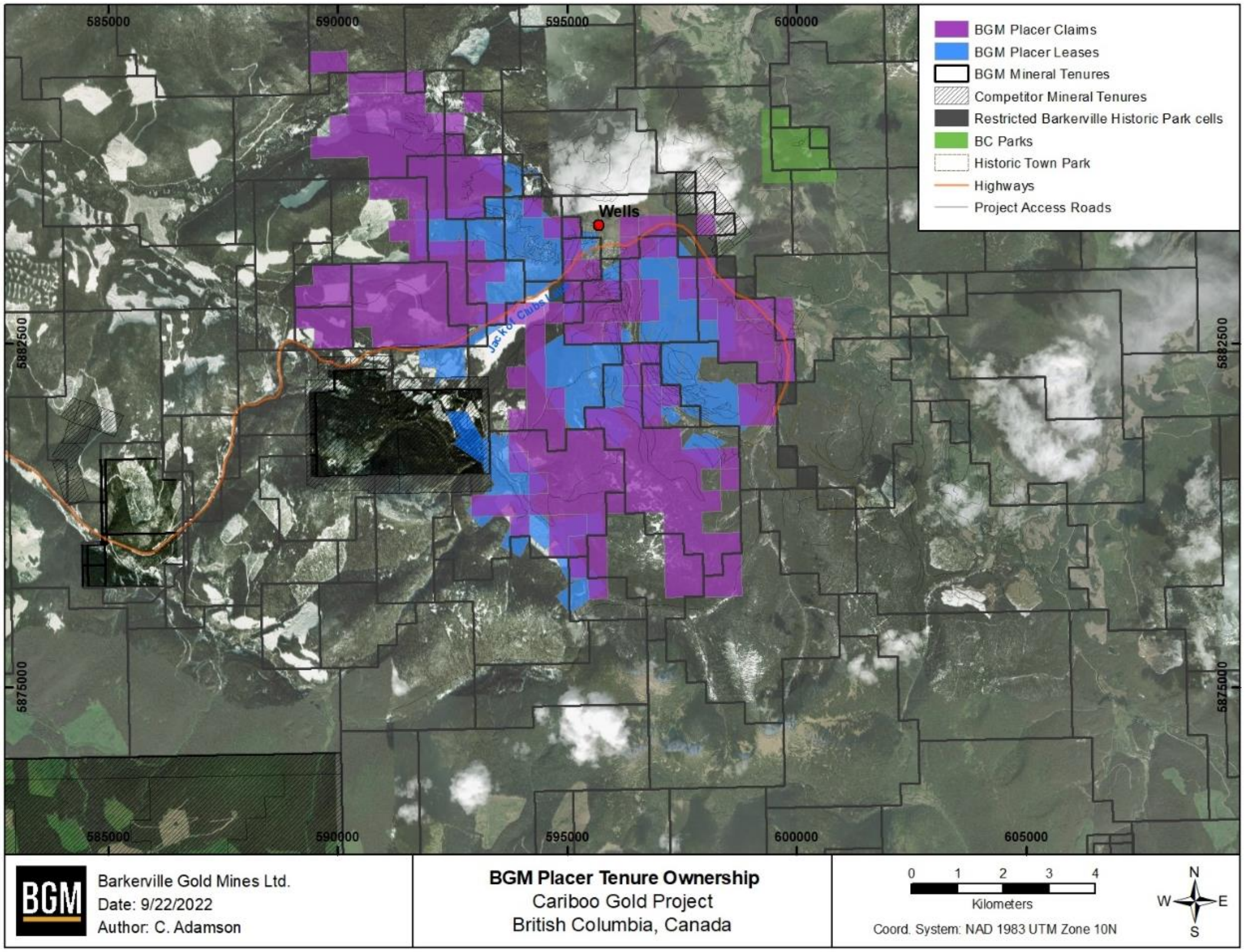


Figure 4-3: Placer tenure ownership map for the Cariboo Gold Project

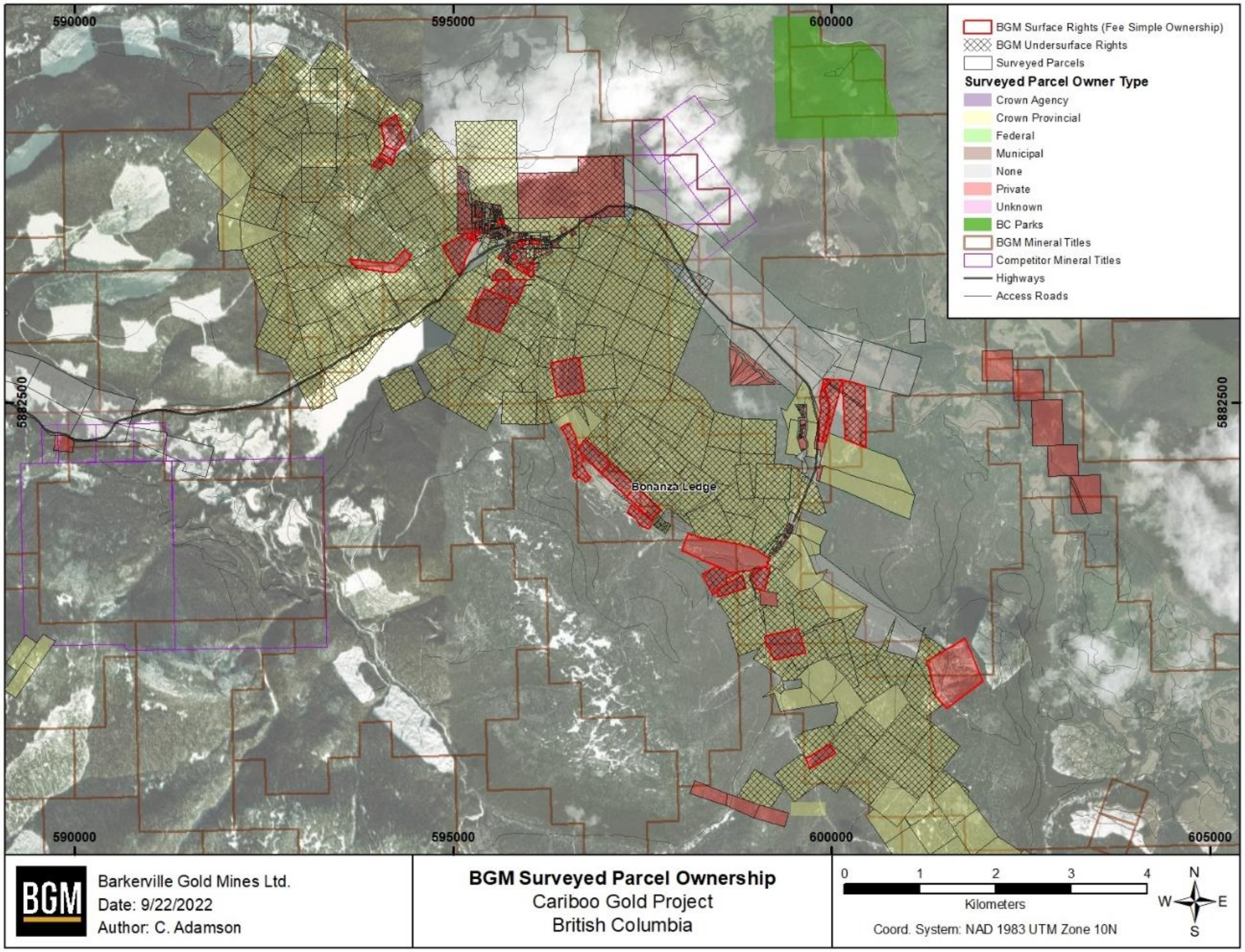


Figure 4-4: Map of Crown-granted mineral claims on the Cariboo Gold Project

All placer claims, leases, and 306 out of 323 mineral claims within the Cariboo Main Block are registered in the name of BGM. The remaining 17 mineral claims are registered jointly with various other companies and individuals. All mineral titles held entirely or partially by BGM are in good standing according to the MTO database.

There are no known significant factors or risks that may affect access, title, or the right or ability to perform work on the Project.

The Project is subject to various royalties, agreements, and encumbrances, as discussed below. A detailed list of mineral titles, ownership, royalties, and expiration dates is provided in Appendices 1, 2, and 3.

4.3. Acquisition of the Cariboo Gold Project

BGM began acquiring land in Wells, BC and surrounding areas in the Cariboo Regional District in 1994. Under an option agreement dated October 4, 1994 (the "Cariboo Option Agreement"), BGM was granted an option to acquire a 50% interest in the Cariboo Gold Quartz Property in the Cariboo Gold District. In 2009, BGM completed the consolidation of the land package by acquiring contiguous projects belonging to Island Mountain Gold Mines Ltd ("IGM") and Golden Cariboo Resources Ltd ("Golden Cariboo"), both related parties to BGM and listed on the TSX Venture Exchange.

On May 12, 1999, BGM optioned to IGM a 50% interest in the Island Mountain / Aurum Gold Mine and the properties belonging to Mosquito Creek Gold Mining Company Limited. That option was then renegotiated in October 2004. In January 2006, BGM agreed to buy back the 50% interest in the optioned lands and purchase all of IGM's land holdings northwest of the Wells, BC. This was approved by the TSX Venture Exchange on May 2, 2006.

To finalize the consolidation of the major land holdings in the Cariboo Gold District, BGM acquired all of the lands controlled by Golden Cariboo that lay along strike of the known mineralized trend for some 25 km from Barkerville Historic Town and Park, southeast of the Cariboo Hudson Mine. The acquisition of Golden Cariboo's mineral tenure holdings was approved by the TSX Venture Exchange on April 9, 2009, resulting in BGM's land tenure extending 60 km and encompassing the majority of the known strike length of the Barkerville Gold Belt.

Since 1994, BGM has acquired many mineral titles by staking and through agreements with other owners of titles within the Cariboo Gold District. Several claim groups are subject to net smelter return ("NSR") royalties (see Appendices 1, 2, and 3 for details).

Surface and undersurface rights to Crown Granted surveyed land parcels within the Project have also been acquired by BGM as per Table 4-1.

4.4. Agreement and Royalties with Osisko Gold Royalties Ltd.

On November 30, 2015, Barkerville entered into a letter agreement with Osisko Gold Royalties Ltd. ("OGR") whereby OGR agreed to purchase 32 million common shares of BGM (the "Private Placement") and a 1.5% NSR royalty on the Project (the "Royalty Financing"). Pursuant to the Private Placement, OGR agreed to acquire 32 million flow-through common shares of BGM at a price of $0.32 per share, for total proceeds to BGM of $10,240,000. Following the Private Placement, OGR expected to have ownership over 47,625,000 common shares of BGM, representing approximately 19.9% of the issued and outstanding BGM shares.

OGR also agreed to acquire a 1.5% NSR royalty on the Project for a cash consideration of $25 million. As part of the Royalty Financing, OGR and BGM also agreed to negotiate a gold stream agreement ("Gold Stream Agreement") following the completion by BGM of a feasibility study on the Project. According to the terms, following a 60-day negotiation period, if OGR and BGM had not entered into a Gold Stream Agreement, BGM would either grant a right to OGR to purchase an additional 0.75% NSR royalty for consideration of $12.5 million or make a payment of $12.5 million to OGR.

On March 27, 2017, BGM announced it had entered into a letter agreement with OGR whereby OGR agreed to purchase an additional 0.75% NSR royalty on the Project for a cash consideration of $12.5 million (paid). At the time, OGR owned a total NSR royalty of 2.25% on all mineral claims and leases, placer claims and leases and crown-granted mineral claims held by BGM. The grant of the additional royalty would cancel OGR's royalty right, which was granted pursuant to the investment agreement between OGR and BGM dated February 5, 2016; however, OGR would retain a right of first refusal relating to any gold stream offer received by BGM with respect to the Project.

On September 5, 2018, BGM entered into the Second Amended and Restated Royalty Purchase Agreement whereby OGR purchased an additional 1.75% NSR royalty on the Cariboo Gold Project for a cash consideration of $20 million (paid), with an option for OGR to purchase an additional 1.0% NSR royalty for $13 million to bring the Cariboo NSR to 5.0%.

On September 23, 2019, BGM and OGR entered into a definitive agreement, pursuant to which OGR acquired all of the issued and outstanding common shares of BGM that it did not already own by way of a plan of arrangement (the "Arrangement"). Under the terms of the Arrangement, each shareholder of BGM (excluding OGR) received 0.0357 (the "Exchange Ratio") of a common share of OGR for each share of BGM held. The Exchange Ratio implied a consideration of $0.58 per BGM share, based on the closing price of OGR shares on the Toronto Stock Exchange ("TSX") on September 20, 2019. The Exchange Ratio implied an equity value of approximately $338 million on a fully diluted in-the-money basis, inclusive of BGM shares held by OGR.

On November 21, 2019, the Arrangement became effective at 12:01 a.m. (Vancouver Time), and resulted in BGM becoming a wholly owned subsidiary of OGR.

On October 5, 2020, OGR announced a spin out of mining assets, and the creation of ODV, and exercised the 1.0% NSR purchase option on the Project, bringing the total royalty held by OGR on the Project to 5.0%. The Project is now operated by ODV (formerly Barolo Ventures Corp.), with BGM now a wholly owned subsidiary of ODV. BGM no longer trades publicly on the TSX or any other stock exchange, pursuant to the earlier definitive agreement dated September 23, 2019, and the Arrangement whereby all of the issued and outstanding shares of BGM were acquired by OGR. ODV trades publicly under the symbol ODV on the TSX and the NYSE.

OGR's 5.0% NSR royalty is the only royalty that applies to the mineral resource area of the Project.

4.5. Surface Rights Option Agreements

Table 4-1 lists properties where BGM owns the surface rights as well as the underlying option agreements under which the properties were acquired.

Table 4-1: Barkerville surface rights option agreements

Pid	Cg #	District Lot	Fee simple owner	Title #	Agreement name	Vendee	Vendor
008-218-803	5313/624 (U), 5763/628 (S)	10518	BARKERVILLE GOLD MINES LTD.	CA3393918	Island Mountain & Mosquito Creek Properties (MCG - IWG)	International Wayside Gold Mines Ltd.	Mosquito Consolidated Gold Mines
008-801-908	35/36 (B), 2672/597 (U)	93	BARKERVILLE GOLD MINES LTD.	CA3322180	Wells - Barkerville Cariboo Claims	Mosquito Creek Gold Mining Company Ltd.	Wharf Resources Ltd. / Peregrine Petroleum Ltd.
004-056-582	41F/34	41F	BARKERVILLE GOLD MINES LTD.	BB1960681	Myrtle-Proserpine Property (Newmont - GC)	Gold City Mining Corp.	Newmont Exploration Inc.
004-056-710	1F/34	1F	BARKERVILLE GOLD MINES LTD.	CA6623323	Williams Creek Crown Grants	Barkerville Gold Mines Ltd.	Williams Creek Gold
004-056-736	1B/35	1B	BARKERVILLE GOLD MINES LTD.	CA6623292	Derrien Road Access Agreement	Charls Derrien	Barkerville Gold Mines Ltd.
004-056-752	32F/34	32F	BARKERVILLE GOLD MINES LTD.	CA4347922	Williams Creek Crown Grants	Barkerville Gold Mines Ltd.	Williams Creek Gold
004-056-787	4B/35	4B	BARKERVILLE GOLD MINES LTD.	CA4347919	Derrien Road Access Agreement	Charls Derrien	Barkerville Gold Mines Ltd.
004-078-543	2F/34	2F	BARKERVILLE GOLD MINES LTD.	CA3322186	Blackbull & Camusa Crown Grants	International Wayside Gold Mines Ltd.	Grand Lowhee Mining Co. Ltd.
004-078-560	42F/34	42F	BARKERVILLE GOLD MINES LTD.	CA332187	Blackbull & Camusa Crown Grants	International Wayside Gold Mines Ltd.	Grand Lowhee Mining Co. Ltd.
004-078-578	17F/34	17F	BARKERVILLE GOLD MINES LTD. & GOLDEN CARIBOO RESOURCES LTD.	CA3322185	Xmas Crown Grants	International Wayside Gold Mines Ltd. and Golden Cariboo Resources Ltd.	P. Wright Contracting Ltd.
004-078-608	35F/34	35F	BARKERVILLE GOLD MINES LTD.	CA5682814	35F St George Crown Grant	Barkerville Gold Mines Ltd.	Prarie Flower Company Inc.
004-078-632	5F/34	5F	BARKERVILLE GOLD MINES LTD.	FB503371	Derrien Road Access Agreement	Charls Derrien	Barkerville Gold Mines Ltd.
004-086-627	2B/35	2B	BARKERVILLE GOLD MINES LTD.	CA3393199	Wells - Barkerville Cariboo Claims	Mosquito Creek Gold Mining Company Ltd.	Wharf Resources Ltd. / Peregrine Petroleum Ltd.
004-086-872	20F/34	20F	BARKERVILLE GOLD MINES LTD.	PT5233, PC16246	Island Mountain & Mosquito Creek Properties (MCG - IWG)	International Wayside Gold Mines Ltd.	Mosquito Consolidated Gold Mines
004-086-902	30F/34	30F	BARKERVILLE GOLD MINES LTD.	PT5234, PC16247	Island Mountain & Mosquito Creek Properties (MCG - IWG)	International Wayside Gold Mines Ltd.	Mosquito Consolidated Gold Mines
004-087-054	39F/34	39F	BARKERVILLE GOLD MINES LTD.	PT5232, PC16245	Island Mountain & Mosquito Creek Properties (MCG - IWG)	International Wayside Gold Mines Ltd.	Mosquito Consolidated Gold Mines
004-087-097	38F/34	38F	BARKERVILLE GOLD MINES LTD.	PT5235, PC16248	Island Mountain & Mosquito Creek Properties (IWG - IMG)	Island Mountain Gold Mines Ltd.	International Wayside Gold Mines Ltd.
014-385-643	5436/625	7795	BARKERVILLE GOLD MINES LTD.	CA3322188	P Wright Mosquito Crown Grants	International Wayside Gold Mines Ltd.	P.Wright Contracting Ltd.
014-385-686	5439/625	7798	BARKERVILLE GOLD MINES LTD.	CA3322189	Wells - Barkerville Cariboo Claims	Mosquito Creek Gold Mining Company Ltd.	Wharf Resources Ltd. / Peregrine Petroleum Ltd.
014-385-741	535/92	318	BARKERVILLE GOLD MINES LTD.	CA3322182	Wells - Barkerville Cariboo Claims	Mosquito Creek Gold Mining Company Ltd.	Wharf Resources Ltd. / Peregrine Petroleum Ltd.
014-385-759	4614/617 (S), 35/36 (B)	92	BARKERVILLE GOLD MINES LTD.	CA3322179	Cariboo Gold Quartz Property	International Wayside Gold Mines Ltd.	Mosquito Consolidated Gold Mines Ltd.
014-982-013	35/36	94	BARKERVILLE GOLD MINES LTD.	CA3322181	Cariboo Gold Quartz Property	International Wayside Gold Mines Ltd.	Mosquito Consolidated Gold Mines Ltd.
015-289-681	385/674	10467	BARKERVILLE GOLD MINES LTD.	CA4347921	Williams Creek Crown Grants	Barkerville Gold Mines Ltd.	Williams Creek Gold

Pid	Cg #	District Lot	Fee simple owner	Title #	Agreement name	Vendee	Vendor
014-385-732	2517/101	391	BARKERVILLE GOLD MINES LTD.	CA3322183	P Wright Mosquito Crown Grants	International Wayside Gold Mines Ltd.	P.Wright Contracting Ltd.
006-787-592	4215/55	131	BARKERVILLE GOLD MINES LTD.	CA3322184	12422 Barkerville Hwy (Parcel B Block 7 DL 131)	International Wayside Gold Mines Ltd.	Kenneth James Pollock and Dianne Lee Verne Pollock
026-025-906	2517/101	391	BARKERVILLE GOLD MINES LTD.	BB1991819	Barkerville Apartments (Lot 1 DL 391)	Barkerville Gold Mines Ltd.	Standard Drilling & Engineering Ltd.
017-589-517	2517/101	391	BARKERVILLE GOLD MINES LTD.	CA4545743	LV Fuel Tank Lot (Lot 1 DL 391) & Lot 2 DL 391	Barkerville Gold Mines Ltd.	Pete Wright (017-589-517)
018-685-056	1036/97	289	BARKERVILLE GOLD MINES LTD.	CA6190280	4270 Sanders Ave (Community Relations Office)	Barkerville Gold Mines Ltd.	Dennis Wayne Manuel
005-537-541	5313/624 (U), 5763/628 (S)	10518	BARKERVILLE GOLD MINES LTD.	CA8578737	4192 Davies Rd. (House Purchase)	Barkerville Gold Mines Ltd.	Robin Sharpe
006-773-931	1036/97	289	BARKERVILLE GOLD MINES LTD.	CA9231853	4206 & 4215 Margaret Ave	Barkerville Gold Mines Ltd.	Kelsey Dodd
009-497-463	2517/101	391	BARKERVILLE GOLD MINES LTD.	CA6851547	Merrick Wells Lots	Barkerville Gold Mines Ltd.	Estate of Douglas Warren Merrick
018-847-340	1036/97	289	BARKERVILLE GOLD MINES LTD.	BX36213	Merrick Wells Lots	Barkerville Gold Mines Ltd.	Estate of Douglas Warren Merrick
013-100-572	2517/101	391	BARKERVILLE GOLD MINES LTD.	CA6670546	Merrick Wells Lots	Barkerville Gold Mines Ltd.	Estate of Douglas Warren Merrick
013-778-366	1036/97	289	BARKERVILLE GOLD MINES LTD.	CA9229300	4206 & 4215 Margaret Ave	Barkerville Gold Mines Ltd.	Kelsey Dodd
018-328-288	1036/97	289	BARKERVILLE GOLD MINES LTD.	CA8802577	Blair Ave Subdivided Lots (House Purchase)	Barkerville Gold Mines Ltd.	Sharon Brown
019-113-854	2517/101	391	BARKERVILLE GOLD MINES LTD.	CA6881775	Merrick Wells Lots	Barkerville Gold Mines Ltd.	Estate of Douglas Warren Merrick
023-677-007	4215/55	131	BARKERVILLE GOLD MINES LTD.	PM47667	Cariboo RV Park	Barkerville Gold Mines Ltd.	Joy Stepan
018-856-870	4215/55	131	BARKERVILLE GOLD MINES LTD.	CA801713	12438 Barkerville Hwy (Hubs Motel Purchase)	Barkerville Gold Mines Ltd.	Harald Dietrich Andreesen and Dianne Elaine Andreesen
015-300-226	2099/1091	12634	BARKERVILLE GOLD MINES LTD.	CA2741385	Lightning Hotel / Stanley Road	Barkerville Gold Mines Ltd.	Karen Olsen
024-954-527	3417/306	363	BARKERVILLE GOLD MINES LTD.	FB488576	Bowron Lake Cabin	Barkerville Gold Mines Ltd.	Pete Wright
031-410-821	1036/97	289	BARKERVILLE GOLD MINES LTD.	CA9059927	Blair Ave Subdivided Lots (House Purchase)	Barkerville Gold Mines Ltd.	Sharon Brown
031-410-812	1036/97	289	BARKERVILLE GOLD MINES LTD.	CA9505757	Blair Ave Subdivided Lots (House Purchase)	Barkerville Gold Mines Ltd.	Sharon Brown

4.6. Environment

Environmental reclamation security or bonds are required to be posted for all areas where mining or exploration disturbance has been approved. The permittee should also maintain regular water, environmental and wildlife monitoring activities as part of their permitting requirements within the Project area.

4.6.1. Environmental Liabilities

Environmental liabilities associated with the development and operation of the Project must be addressed for each disturbance associated with the proposed operations through active management and reclamation/closure of the Project sites as the operation winds down. The permittee is also required to provide reclamation bonds that are set at a level that reflects outstanding reclamation, environmental and closure obligations associated with the site. The amount of security may be increased or decreased based on the mine's actual reclamation liability at any point in time, including decreases as progressive reclamation is completed.

Both the QR Mill and Bonanza Ledge ("BL") Mine sites are currently approved under separate *Environmental Management Act* and *Mines Act* permits, with associated, detailed Reclamation and Closure Plans ("RCP") and closure bonds in place. The liability estimate for the Cariboo Gold Project reclamation and closure will be determined during permitting processes at a later date.

A site-specific RCP for the Mine Site Complex, located at Wells, will be submitted to the BC Ministry of Energy, Mines, and Low Carbon Innovation ("EMLI"), in accordance with the application requirements for a *Mines Act* permit pursuant to the *Mines Act* (Government of BC, 1996), and Parts 10.6 and 10.7 of the revised Health, Safety, and Reclamation Code ("HSRC") for Mines in British Columbia (EMLI, 2021).

ODV has estimated that a reclamation bond for $17,341,000 will be required for the Project, and will be posted to the BC Ministry of Finance as part of the permit process. This bond can be progressively recovered pending satisfactory completion of reclamation and closure objectives.

4.6.2. Require Permit and Status

The Project is subject to a provincial environmental assessment ("EA") as it exceeds the following threshold under the Reviewable Projects Regulation (BC Reg. 243/2019): "A new mine facility that, during operations, will have a production capacity of >75,000 tonnes/year (t/yr) of mineral ore".

In October 2019, the EA process commenced with the submission of an initial Project Description and Engagement Plan, to the BC Environmental Assessment Office (the "EAO"), under the former the *BC Environmental Assessment Act* ("BCEAA") (2002). Following guidance from the EAO, in collaboration with ODV, and following regulatory requirements, it was decided the Project would continue the EA process under the new *BCEAA* (2018). Subsequently, the Project Description submitted in October 2019 was accepted as fulfilling the requirements of the Initial Project Description as part of the new Act, in February 2020. The revised application was submitted in October 2022 to initiate the effects assessment and decision phases per the *BCEAA* (2018). Issuance of an Environmental Assessment Certificate ("EAC") is expected within the mandated 180-day period for these two phases.

A number of regulations establish the legal framework for the EA process under the *BCEAA* (2018) and are detailed in Table 4-2. The intention is that the Project will receive an EAC from the BC EAO, under the *BCEAA* (2018) following the prescribed process and assessment phases.

Table 4-2: Summary of regulations supporting the BCEAA (2018)

Regulation	Description
Reviewable Project Regulation (2019)	The Reviewable Projects Regulation sets out the criteria and thresholds for projects required to undergo the EA process (EAO, 2019a). Reviewable proposed projects are primarily those with a higher potential for adverse environmental, economic, social, heritage, or health effects. Thresholds for both new projects and modifications to existing projects are provided.
Protected Areas Regulation (2019)	This regulation identifies prescribed protected areas (as defined in other enactments) for the purposes of the Reviewable Projects Regulation, which determines which projects must automatically undergo an EA. This regulation is also related to the Minister of Environment and Climate Change Strategy's authority to terminate a project from the EA process if it would have extraordinarily adverse effects on a listed protected area.
Environmental Assessment Fees and Fines Regulation (2019)	The EAO charges fees for a range of services, from undertaking EAs through to compliance inspections. The fees provide partial recovery of the costs incurred by the EAO in delivering high-quality and timely EAs. Revenue from fees allows the organization to maintain appropriate staffing levels. The funding is also used to support other provincial agencies in their participation in the EA process.
Violation Ticket Administration and Fines Regulation (2019)	This regulation enables the EAO Compliance and Enforcement Officers to issue tickets with associated monetary penalties to proponents who are not in compliance with their certificate conditions, or their exemption order conditions.

Regulation	Description
Administrative Penalties Regulation (2020)	Administrative Monetary Penalties are financial penalties that can be issued for prescribed contraventions of the Act or failures to comply with the Act, including failing to comply with the requirements of an EAC or an exemption order made under the Act. Regulated parties will be given prior notice of the EAO's intention to issue an administrative monetary penalty and will be provided with an opportunity to respond before an administrative monetary penalty is issued.

In addition to the provincial EAC, Table 4-2 and Table 4-3 summarize expected federal and provincial permits, approvals and authorizations for the Project. As the Project proceeds, specific permit requirements will be determined with the regulatory agencies.

Table 4-3: Federal permits and approvals potentially applicable to the Project

Permit / Approval	Responsible agencies	Federal statute	Project activity/Regulatory context
Fisheries Act Authorization	Fisheries and Oceans Canada ("DFO")	*Fisheries Act*	No person shall carry on any work, undertaking, or activity other than fishing that results in the death of fish. No person shall carry on any work, undertaking, or activity that results in the harmful alteration, disruption, or destruction ("HADD") of fish habitat. If the death of fish or a HADD cannot be avoided during any part of the Project, an Authorization under Section 35 may be required.
Migratory Birds Convention Act Authorization	Environment and Climate Change Canada ("ECCC")	*Migratory Birds Convention Act*	Deposit of substances harmful to migratory birds or vegetation clearing for the Project during the migratory bird nesting season as outlined by ECCC (May 1 to July 15, Zone A4) Permits may be issued to eliminate dangerous conditions or damage to property caused by migratory birds or their nests.
Navigation Protection Program Notification and/or Approval	Transport Canada	*Canadian Navigable Waters Act*	Notification and information to the Minister for works that are in, on, over, under, through, or across any navigable water. Application for approval from the Minister is required for works (other than minor works) that are in, on, over, under, through, or across any navigable water and that may interfere with navigation.
Species at Risk Act Authorizations (if required	ECCC, DFO, and Parks Canada	*Species at Risk Act* ("SARA")	The Competent Minister may issue a *SARA* permit authorizing activity that will affect a listed wildlife species, any part of its critical habitat, or the residences of its individuals.
Explosive Licences and Permits	Natural Resources Canada	*Explosives Act*	Explosive Licence required for factories and magazines. Explosive Permit required for vehicles used for the transportation of explosives.
Transportation of Dangerous Goods Permits	Transport Canada	*Transportation of Dangerous Goods Act*	Addresses the classification, documentation, marking, means of containment, required training, emergency response, accidental release, protective measures and permits required for the transportation of dangerous goods by road, rail or air.

Table 4-4: Provincial permits and approvals potentially applicable to the Project

Permit / Approval	Responsible agencies	Provincial statute
Mines Act Permit	BC Ministry of Energy, Mines, and Low Carbon Innovation ("EMLI")	*Mines Act*
Effluent Discharge Permit	BC Ministry of Environment and Climate Change Strategy ("ENV")	*Environmental Management Act*
Mineral Lease	EMLI, Mineral Titles Branch	*Mineral Tenure Act*
Emissions Discharge Permit	ENV	*Environmental Management Act*
Refuse Permit and Waste Storage Approval	ENV	*Environmental Management Act*
Heritage Conservation Act Permit	Ministry of Forests ("MOF"), Archaeology Branch	*Heritage Conservation Act*
Heritage Conservation Act Concurrence letters	MOF, Archaeology Branch	*Heritage Conservation Act*
License of Occupation	MOF	*Land Act*
Statutory Right of Way	MOF	*Land Act*
Wildlife Act Permit	MOF, Resource Stewardship Division	*Wildlife Act*
Sewer System Regulation Approval	BC Ministry of Health, Interior Health Authority ("IHA"), Northern Health Authority ("NHA")	*Public Health Act*
Construction Permit for a Potable Water Well	BC Ministry of Health, NHA	*Drinking Water Protection Act*
Water System Construction Permit	BC Ministry of Health, NHA	*Drinking Water Protection Act*
Drinking Water System Operations Permit	BC Ministry of Health, NHA	*Drinking Water Protection Act*
Short Term Use of Water Permit Water Sustainability Act Section 10	MOF, Water Stewardship Branch	*Water Sustainability Act*
Change Approval (for changes in and about a stream), *Water Sustainability Act* Section 11	MOF, Water Stewardship Branch	*Water Sustainability Act*
Water Licence (diversion, storage, and use of water) *Water Sustainability Act* Sections 7 and 9 (Government of BC, 2014)	MOF, Water Stewardship Branch	*Water Sustainability Act*
Licences to Cut and Special Use Permit	MOF, Forest Tenures Branch	*Forest Act*
Industrial Access Permit	BC Ministry of Transportation and Infrastructure ("MOTI")	*Transportation Act*
Permit for regulated activities	Ministry of Health	*Public Health Act*
Explosives Magazine Storage and Use Permit	EMLI	*Mines Act*

The Project facilities include areas within the jurisdictions of the CRD and the District of Wells, for the Mine Site Complex specifically. Both jurisdictions have passed bylaws that may pertain to Project activities/operations and property ownership or business operations, including:

- CRD Invasive Plant Management Regulation Bylaw, No. 4949, 2015, regarding the management of invasive plants;
- CRD Untidy and Unsightly Premises Regulatory Bylaw, No. 4628, regarding the management of untidy/unsightly properties;
- District of Wells Noise Control Bylaw, No. 93, 2018 limiting hours of noise during operations/construction; and
- District of Wells Traffic and Streets Bylaw, No. 68, addressing traffic, and providing load and size restrictions.

Other Wells bylaws are applicable to utility connections and municipal service fees related to property development (water, sewer, garbage). These bylaws would be addressed through direct applications with the District of Wells.

4.7. Communication and Consultation with the Community

4.7.1. Indigenous Nations

ODV is committed to ongoing engagement and consultation with Indigenous nations that may have an interest in the Project. ODV initiated discussions in 2016, and engagement and consultation activities are ongoing. Activities have included meetings, presentations, site tours, written correspondence, emails, and telephone conversations with leaders and representatives of Indigenous nations. ODV will continue to consult Indigenous nations to better understand how the Project may affect past or current Indigenous practices, traditions and customs, and how measures may be incorporated into the Project to avoid, mitigate or otherwise address potential effects.

As the Project is undergoing an EA, the EAO stipulates the level of engagement for each Indigenous nation in the Project area. Based on strength of claim, proximity to Project components, and nation-specific requests to participate, the EAO designates which nations will be Participating Indigenous nations. The following three nations have been confirmed as Participating Indigenous nations:

- Lhtako Dené Nation;
- Xatśūll First Nation;
- Williams Lake First Nation (T'exelc);
- The Tŝilhqot'in National Government and Nazko First Nation continue to be at the notification level of engagement and are sent Project updates and documents as relevant. ODV was directed to cease engagement with Neskonlith Indian Band, as per the EAO, in March 2020.

The following details ODV's record of engagement:

- ODV first initiated meetings with the Chief and Council of Lhtako Dené Nation and Xatśūll First Nation, to discuss the Project in 2016 and 2017 respectively. At the direction of the EAO, ODV later expanded the scope of its engagement activities to include the Williams Lake First Nation, Nazko First Nation, Neskonlith Indian Band and the Tŝilhqot'in National Government.
- Based on early discussions with and concerns expressed by Lhtako Dené Nation concerning open pit mining, ODV changed the mine plan from an open pit to an entirely underground mine in early 2017.
- ODV sent a draft Project Description ("PD") to Indigenous nations on December 21, 2018, for review and comment. Indigenous nations were asked to provide comments on the draft PD by January 31, 2019
- Lhtako Dené Nation and Xatśūll First Nation provided comments to ODV. Neskonlith Indian Band requested spatial files for information in the PD but did not provide further comments. No comments on the PD were received from Williams Lake First Nation, Nazko First Nation, or the Tsilhqot'in National Government. ODV provided the spatial files requested by Neskonlith Indian Band and revised the PD based on the comments received from Lhtako Dené Nation and Xatśūll First Nation.
- ODV sent a revised PD to Indigenous nations for review and comment on April 18, 2019.
- Lhtako Dené Nation and Xatśūll First Nation provided comments on the PD to ODV on May 16, 2019. ODV revised the PD based on the comments received from Lhtako Dené Nation and Xatśūll First Nation. No comments on the PD were received from Neskonlith Indian Band, Williams Lake First Nation, Nazko First Nation, or the Tsilhqot'in National Government.
- ODV sent a revised PD to Indigenous nations for review and comment on July 26, 2019.
- On July 29, 2019, Lhtako Dené Nation notified Barkerville that it supported the submission of the PD in its current form.
- Xatśūll First Nation provided comments to ODV on August 22, 2019. Barkerville revised the PD based on the comments received from Xatśūll First Nation. No comments on the PD were received from Neskonlith Indian Band, Williams Lake First Nation, Nazko First Nation, or the Tsilhqot'in National Government.
- ODV received additional comments from the EAO requesting further detail and refinement of certain project components on August 28, 2019. ODV revised the PD based on the EAO's comments and recirculated the PD to Indigenous nations for review and comment on September 5, 2019. No additional comments on the PD were received from Lhtako Dené Nation, Xatśūll First Nation, Neskonlith Indian Band, Williams Lake First Nation, Nazko First Nation, or the Tsilhqot'in National Government.
- ODV submitted the final PD to Indigenous nations and the EAO on October 24, 2019.

In addition to direct engagement on the PD, ODV's engagement activities with Participating Indigenous nations from 2016 to 2022 also included the following:

- ODV has provided regular Project updates to each of the Indigenous nations, participated in community meetings, and organized site tours and field visits with elected leaders, technical staff and members of the Lhtako Dené Nation, Xatśūll First Nation and Williams Lake First Nation.
  - Site tours with Lhtako Dené Nation members occurred in May 2018, July 2019, and June 2022.
  - Site tours with Xatśūll First Nation members occurred in July 2018, July 2019, September 2020, and August 2022.
  - Site tours with Williams Lake First Nation members in June 2018, July 2020, and September 2022.
  - Formal community meetings with Lhtako Dené Nation members occurred in June 2019, January 2021, and April 2022.
  - Formal community meetings with Xatśūll First Nation members in August 2020 and October 2022.
  - Formal community meetings with Williams Lake First Nation members in August 2020 and October 2022.
- Meetings with Chief and Council, staff, and third party consultants of Lhtako Dené Nation, Xatśūll First Nation, and Williams Lake First Nation occurred on a regular schedule for Project and EA updates.
- Lhtako Dené Nation, Xatśūll First Nation, and Williams Lake First Nation were invited to the general community update meetings in Quesnel and Wells in 2019 and virtual workshops that began taking place in 2020 and have continued through to the present.
- ODV invited representatives from Indigenous nations to participate in Project-specific baseline studies from 2016 to 2020 for wildlife, vegetation, water quality and aquatic health, fish habitat, terrain and soils, hydrology, heritage, human health and ecology risk assessment, and hydrogeology.
- ODV funded a Project-specific Traditional Use and Knowledge Study for Lhtako Dené Nation, which was completed in August 2019. Additionally, funding was provided for a joint Project-specific Traditional Land Use Study for Xatśūll First Nation and Williams Lake First Nation, which was completed in January 2021.
- ODV entered into capacity funding agreements with Lhtako Dené Nation (June 2016, November 2016, May 2017, April 2019), Xatśūll First Nation (2017, 2019) and Williams Lake First Nation (2019).
- ODV has held discussions with Lhtako Dené Nation, Xatśūll First Nation and Williams Lake First Nation regarding Valued Component selection since the submission of the IPD.

The focus of preliminary engagement has been to establish consistent points of contact with the authorized representatives of each Indigenous nation, inform Indigenous nations about the next steps in the regulatory review, and respond to questions and concerns raised by Indigenous nations about the PD, Draft Application, Final Application, Baseline Reports, Technical Memos and the Project in general.

As noted above, ODV has reached Project-specific agreements that provide funding capacity to Indigenous nations. They include agreements with Lhtako Dené Nation, Xatśūll First Nation and Williams Lake First Nation.

- On October 2, 2020, ODV signed a Life-of-Project Agreement with Lhtako Dené Nation providing benefits to the nation through funding, employment, training, and business opportunities. Furthermore, the Agreement created the position of Lhtako Dené Nation Liaison, who acts as a conduit between ODV and the Lhtako Dené Nation community and leadership.
- ODV has capacity funding agreements with Williams Lake First Nation to cover the costs of their participation in the EA for the Project. Additionally, on June 10, 2022, ODV signed a Participation Agreement with Williams Lake First Nation.
- ODV also has capacity funding agreements with Xat'śūll First Nation. An Interim Relationship Agreement was signed with Xat'śūll First Nation in 2017 and negotiations are ongoing for a Participation Agreement.

4.7.2. Stakeholders

ODV is committed to communicating and consulting with stakeholders, including members of the general public, local, regional, provincial and federal government elected officials and staff, community organizations, recreational groups, authorization holders, landowners, resource users, permanent and temporary residents of the District of Wells, and others.

Stakeholder engagement began in 2016 and is ongoing. Engagement initially focused on the District of Wells and introducing the Project to the residents of Wells. Engagement with stakeholders to date has primarily been via public meetings, community workshops, one-on-one meetings, and small group tours. A monthly newsletter, sent to all stakeholder lists, was developed in December 2020, highlighting activities on ODV's sites, Project updates, and upcoming work. These activities are also posted on ODV's community-focused social media pages such as Facebook and Instagram. Additionally, engagement has included meetings with the Cariboo Regional District, the Fraser-Fort George Regional District, Quesnel, Williams Lake, and Prince George mayors and councils, and chambers of commerce. ODV also met with the EAO early in the planning process to discuss the Project.

Engagement activities held with stakeholders are presented in Table 4-5.

Table 4-5: ODV's engagement activities with stakeholders activity dates

Activity	Dates
Community Meetings (In Person and Virtual)	June 22, 2016 August 25, 2016 January 19, 2017 February 22, 2017 August 22, 2017 October 19, 2017 October 24, 2017 November 16, 2017 February 1, 2018 August 13, 2018 July 9, 2019 September 17, 2019 September 18, 2019 June 17, 2020 July 13, 2020 July 14, 2020 July 23, 2020 August 19, 2020 August 25, 2020 September 22, 2020 September 30, 2020 November 10, 2020 November 12, 2020 November 17, 2020 February 3, 2021 February 13, 2021 February 25, 2021 March 13, 2021 March 24, 2021 March 25, 2021 April 15, 2021 April 24, 2021 May 13, 2021 May 27, 2021

Activity	Dates
	September 22, 2021 November 24, 2021 March 23, 2022 March 24, 2022 April 11, 2022 April 12, 2022 April 24, 2022 June 8, 2022 June 9, 2022 September 20, 2022
Events	Wells: ▪ Annual BBQ (2017 to 2019, 2022) ▪ Annual Community Christmas Dinner (2018, 2019) ▪ Santa Claus Parade (2020, 2021) ▪ Wells Reunion (2019) ▪ Sponsor of Arts Wells Music Festival (2016 to present) Regional: ▪ Quesnel Outdoor Trade Show (2021, 2022) Industry: ▪ AME Roundup ▪ CIMPDAC Convention ▪ Minerals North Conference ▪ BC Natural Resources Forum
Correspondence	Stakeholder contact has been undertaken through meetings, e-mails, the monthly newsletter, and letters. ODV has engaged with the following stakeholders: ▪ Indigenous nations ▪ Local residents ▪ Community and environmental organizations and interest groups ▪ Community service providers ▪ Business and economic development organizations ▪ Landowners Tenure holders ▪ Other resource users Tourism and other businesses ▪ Arts organizations ▪ ODV employees ▪ Vendors ▪ Educational Institutions

Community meetings were advertised broadly in the District of Wells, and posters were placed at key locations between Wells and Quesnel. The sessions were announced on social media, and community members on the District of Wells' contact list were notified through email. The September 2019 meetings were also advertised in the Quesnel Observer. Approximately 225 people have attended community meetings. Indigenous nations were invited to participate in stakeholder and public events, and Indigenous individuals may have attended these events.

Presentations are made regularly to the community on mitigation efforts, and proposed strategies are developed by ODV to improve community relations, promote sustainability, and improve quality of life in the community while developing the Project and advancing through the EA application and permitting processes. Feedback from the community and stakeholders is sought and obtained throughout the process.

5. Accessibility, Climate, Local Resources, Infrastructure and Physiography

Osisko Development Corp. ("ODV") is committed to communicating and consulting with stakeholders in the District of Wells ("Wells") and the surrounding Cariboo Gold Project ("the Project") area, including but not limited to the provincial government, third party mineral and placer owners operating in the area, neighbouring the property owners, Barkerville Historic Town and Park, and Indigenous nations communities.

Wells is a mining town with a rich history of mineral exploration and production and is also a regional centre and tourist attraction for artists and outdoor enthusiasts. ODV maintains and fosters relationships with the community through public and stakeholder meetings (see Section 4.7), and through recruiting employees and sponsoring community events. The city of Quesnel, with a population of 23,000, is located 74 kilometres ("km") to the east of Wells. It has an airport and can provide the goods and services that ODV requires. Williams Lake and Prince George are the nearest other major transportation and logistical hubs in the federal electoral district of Cariboo–Prince George, located 193 km and 115 km from Wells, respectively.

The following descriptions of the accessibility, climate, local resources, infrastructure, and physiography for the Project and the Cariboo Gold District are taken from Georges et al. (2013) and Dzick (2015). Slight modifications have been made to adapt the text to the style of this Report.

5.1. Accessibility

The Project is located in Wells, British Columbia (BC), approximately 74 km east of the City of Quesnel. The Project is accessible via Highway 26, which branches off Provincial Highway 97 at Quesnel (Figure 5-1). A network of gravel roads provides access to Cow, Island, and Barkerville Mountains.

ODV's Project offices and related facilities are located in the town of Wells. The QR Mill is a wholly-owned and fully permitted milling and tailings facility approximately 110 km from Wells. An all-season forest service road provides access (500 Nyland Lake Road).

5.2. Infrastructure and Local Resources

The City of Quesnel is the primary supply and service centre for natural resource industries and has the closest regional hospital. Manpower is also available in the region.

The Project has sufficient power and water to support a mining operation. Canadian National Railway provides rail access from Quesnel to the Port of Vancouver.

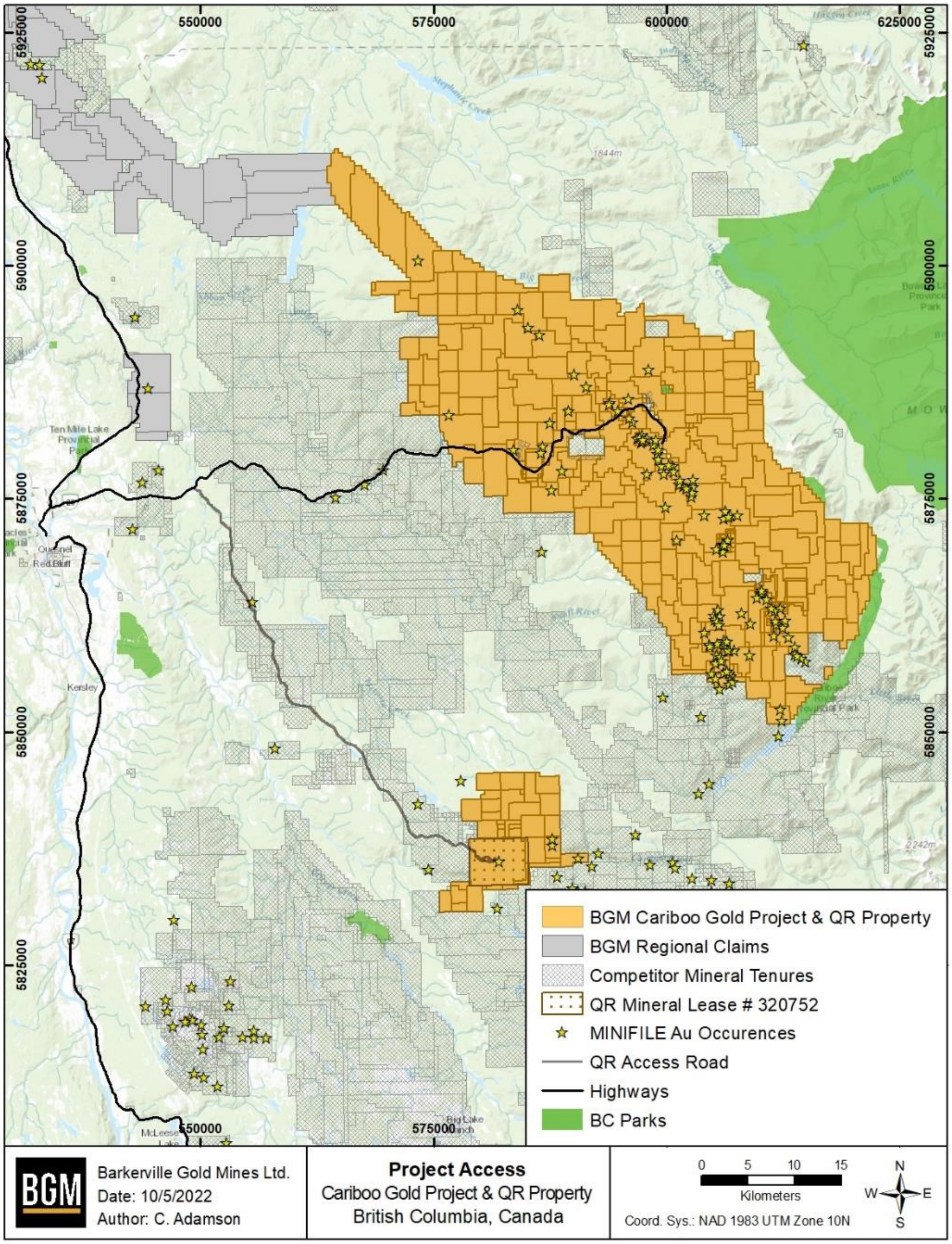


Figure 5-1: Access to the Cariboo Gold Project

ODV has sufficient surface rights in the Project area for mineral exploration and development operations. These rights are generally conveyed by ODV's Crown-granted mineral claims or by specific permits, such as those related to tailings and waste disposal areas, or water and timber use, and the mineral lease currently being applied for.

Currently, local resources include single-phase 7.2 kV power, potable water from the District of Wells public works (supplying roughly 985,000 litres ["L"] per day to the town), local sewage treatment, waste disposal sites, and high-speed internet and telecommunication services, including a communication tower maintained by Telus and radio repeater stations maintained by ODV for use by company personnel and site contractors. The Project infrastructure includes an upgrade to the potable water supply and the construction of a 138 kV Transmission Line, connecting to the Barlow Creek Substation and terminating at the Mine Site Complex in Wells.

ODV completed an assessment of the Project areas and have determined availability of a tailings storage area at the QR Mill, waste disposal areas at the Mine Site Complex and Bonanza Ledge, and a location for the processing plant at the Mine Site Complex and the QR Mill. Further information on this infrastructure can be found in Chapter 18 (Project Infrastructure).

ODV holds seven water licences: one for Willow River, three at the QR Mill, one at the Ballarat temporary work camp, one unused licence on Island Mountain, and one for a well at the geological compound and field offices at Lowhee Creek. The climate allows for year-round mining operations, and there is enough readily available water to conduct diamond drilling.

5.3. Climate

The Cariboo Region experiences a dry continental climate due to the coastal mountains influencing the westerly flow of winds and moisture coming from the Pacific Ocean. The climate at the site is characterized by relatively cold winters and mild summers. The annual precipitation is moderate and there is comparatively little variation over the year in monthly precipitation. The Project is able to operate 365 days a year.

Historical trend analysis and climate change predictions were used to evaluate the likelihood of the historical measurements to represent future climate conditions. Climate existing condition studies for the Project were conducted by Golder. Table 20-1(see Chapter 20) consolidates the main climate normals obtained from the Mine Site and QR Mill existing conditions report (Golder, 2022a; Golder, 2022b).

5.4. Physiography

The topography in the Project area is mountainous (Figure 5-2), rising from a low point of approximately 1,190 metres above sea level ("masl") in the incised river valleys around Wells and Barkerville Historic Town and Park, to a peak of 2,060 masl at Roundtop Mountain, located 25 km south of Wells. Mount Proserpine, 11 km south of the town, summits at 1,830 masl.

Mountain summits are generally rounded, reflecting the passage of continental ice sheets during the Pleistocene Epoch. Pleistocene glacial till and clay are widespread. Moderately drained and well-drained morainal and colluvial materials dominate at higher elevations. Valley bottoms are overlain by very poorly drained organic deposits or moderately drained fluvial sands adjacent to Willow River, downstream of Jack of Clubs Lake, lower Lowhee Creek and Willow River. Ice direction is generally to the northwest near Wells, and glacial till is the most widespread surficial deposit in the area.

The relatively small drainage basins of Jack of Clubs Lake and Williams Creek converge at Wells and together compose the upper headwaters of Willow River. They represent a combined catchment area of approximately 100 km^2 at the southern extremity of the Willow River Basin and together embody roughly 3% of the total area of the basin. Willow River flows into Fraser River east of Prince George.

The area is well forested, and the mountains are typically covered with subalpine forests, except near their peaks. Vegetation is dominated by Engelmann Spruce (*Picea engelmann*), Lodgepole Pine (*Pinus contorta var. latifolia*) and Subalpine Fir (*Abies lasiocarpa*), accompanied by alders and other deciduous varieties on lower wetter slopes flanking river valleys. Prominent in the subalpine flora is the shrub *Rhododendron albiflorum*. Bedrock exposure is poor, except along creeks, ridgelines, and logging roads.

Figure 5-2: Aerial view of the town of Wells looking east

Photograph looking east from above Island Mountain. Mount Murray (left) and Mt. Waverly (right) are the highest peaks in the distance, with the Cariboo Mountains beyond. Island Mountain forms the foreground with Valley Mountain to the left and Cow Mountain to the right, on the south side of the town of Wells (centre). Barkerville Mountain is located beyond Cow Mountain to the right of the photo. The southeastern part of Wells is built on a fan of placer tailings that issued from Lowhee Creek, right, into Jack of Clubs Lake (bottom right). (Photo from Google Earth, 2020).

6. History

The Cariboo Gold Project ("the Project") contains several historical mines, including Cariboo Gold Quartz Mine, Aurum Mine/Island Mountain Mine, and Mosquito Creek Mine. The local placer claims highlight the general endowment of the Project camp, but for the purposes of this Report, they are not discussed in detail.

For the purposes of this chapter, the term "ore" is being used in a historical context.

6.1. Historical Mines

6.1.1. Cariboo Gold Quartz Mine

Fred Wells purchased the Rainbow claim group from A.W. Sanders and formed Cariboo Gold Quartz Mining Company Ltd. ("Cariboo Gold Quartz Mining") in 1927. The Cariboo Gold Quartz Mine operated from 1927 to 1959 at Cow Mountain.

In October 1942, gold mining was classified as a non-war industry by the federal government and received no priority for labour or supplies. As a result, gold mines in British Columbia ("BC") were unable to hire replacement labour for the duration of the war. The mining operation never recovered from the loss of revenue caused by a 50% reduction in production and the depletion of reserves in the absence of exploration drilling and only minor development during this period.

Following the purchase of the Island Mountain Mine in 1954, Cariboo Gold Quartz Mining focused on developing higher grade pyrite-type replacement ore.

The Cariboo Gold Quartz Mine closed on August 31, 1959.

In 1959, in its 33rd Annual Report, the company reported book reserves of 95,265 tonnes ("t") of ore, including a 1952 reserve write-down of 42,275 t of 9.26 grams per tonne ("g/t") gold ("Au") and another 52,990 t of 12.69 g/t Au scattered in 51 ore remnants through 13 levels and across a distance of 10,500 feet ("ft") (3,200 metres ["m"]).

These "reserves" are historical in nature and should not be relied upon. It is unlikely that they comply with current NI 43-101 requirements or follow Canadian Institute of Mining ("CIM") Definition Standards, and their relevance and reliability have not been verified. They are included in this section for illustrative purposes only and should not be disclosed out of context.

The Cariboo Gold Quartz Mill continued processing ore from the Aurum Mine on Island Mountain until March 1967. During the period between 1933 and 1967, a total of 1,951,944 t of ore was mined, yielding 863,307 ounces ("oz") of gold and 91,652 oz of silver (MINFILE number 093H 019). The average recovery during that period was 95.3%.

6.1.2. Island Mountain Mine (Aurum Mine)

In 1925, C.J. Seymour Baker acquired the original five Crown-granted mineral claims (later known as the Aurum Group), which was worked until 1932.

In 1932, Newmont Mining Corporation ("Newmont") acquired the Aurum Group and eight adjacent claims to form Island Mountain Mines Company Ltd.

Milling commenced in 1934 at a rate of 50 short tons ("st") per day and reached a peak of 149 st/d in 1941. Quartz-type ore in diagonal vein structures and pyrite-type ore in the Aurum limestone unit were both extracted. The mine was developed over a strike length of 4,500 ft (1,371.6 m). After 1945, no further exploration or development was carried out west of the Aurum Fault, and in 1952 the mine suspended active exploration and development.

Under Newmont's ownership, production from the mine was 770,093 st (699,536 t), from which 333,705 oz of gold and 48,130 oz of silver were recovered (MINFILE number 093H 006). The mill also recovered 531 lb of zinc and 134 lb of lead.

Cariboo Gold Quartz Mining purchased the mine and equipment from Newmont in 1954 for a sum of $305,000. Underground workings extending northwest from the Island Mountain Mine into the Mosquito Group are formally known as the Aurum Mine. The Cariboo Gold Quartz Mine and Island Mountain Mine do not connect below Jack of Clubs Lake.

6.1.3. Mosquito Creek Mine

Andrew H. Jukes, of Calgary, acquired the Mosquito Creek claim group and formed Mosquito Creek Gold Mining Company Ltd. ("Mosquito Creek Gold") in 1971 to explore the ground above the Aurum Mine. Surface exploration drilling and underground development from 1971 to 1975 were financed by a joint venture agreement with the Home Oil Company Ltd. of Calgary. They conducted an extensive surface and underground exploration and development program on the property. In 1975, Mosquito Creek Gold purchased all of Home Oil Company's interests in the property. Subsequently, Peregrine Petroleum Ltd. ("Peregrine") entered into a joint venture agreement with Mosquito Creek Gold, whereby it ultimately earned a 50% working interest in the property.

A total of 27,384 oz of gold were recovered from 86,248 t of mostly pyrite-type ore milled during the main production period (1980 to 1983). The operation failed due to low initial reserves and a low discovery rate of new ore. The latter was the result of insufficient development at depth and northwest of the Mosquito Fault.

In 1984, Hudson Bay Mining and Smelting Co. Ltd. ("Hudson Bay") optioned the property but dropped it after earning a 10% interest. Hudson Bay sold its interest back to Mosquito Creek Gold, and Peregrine sold its 50% interest to Mosquito Creek Gold.

In 1986, the property was optioned by Hecla Mining Company of Canada Ltd. who conducted underground exploration work and then dropped their interest in the company.

Mining operations were intermittent until 1987 when Mosquito Creek Gold became Mosquito Creek Consolidated Gold Mines Ltd. After the gold prices dropped, and new ore became hard to find, the mine closed in 1987. During the period between 1980 and 1987, a total of 92,826 t of ore were mined from which 35,054 oz of gold and 9,750 oz of silver were recovered (MINFILE number 093H 010).

In 1988, Lyon Lake Mines Ltd. optioned the property and earned a 50% interest after performing underground exploration.

6.2. Surface Work Programs

6.2.1. Cariboo Gold Quartz Mining Company Ltd. (1968)

In 1968, Dolmage Campbell and Associates Ltd. carried out 5 km of bulldozer trenching on behalf of Cariboo Gold Quartz Mining.

A total of 17 trenches, approximately 2 m to 2.5 m deep, were excavated across the Baker-Rainbow contact over a strike length of 1.6 km on Island Mountain. Pyritic mineralization, 6 m long by 1 m wide, was discovered in Trench J.

6.2.2. Wharf Resources Ltd. (1980–1981)

In 1972, Cariboo Gold Quartz Mining amalgamated with Coseka Resources Ltd. to form a company with the name of the latter. In April 1973, Wharf Resources Ltd. (formerly Plateau Metals and Industries) amalgamated with French Exploration Ltd. (a wholly owned subsidiary of Coseka Resources).

Wharf Resources carried out surface drilling programs in 1980 and 1981 to search for near-surface ore on the Cariboo and Island Mountain claim groups. A total of 7,010 m of percussion drilling and 1,219 m of diamond drilling were completed in 1980 and 1981 (Bolin, 1984).

6.2.3. Blackberry Gold Resources Inc. (1988)

In 1987, Blackberry Gold Resources Inc. completed several work programs on the ARCH 1-4 claim group located on Cow Mountain and Richfield Mountain. The objective of the work was to discover gold mineralization associated with the system of north-striking fault structures. Very-low-frequency electromagnetic ("VLF-EM") geophysical surveys were used to define conductors inferred to be the strike extension of major faults on the Cariboo Group of Crown-granted mineral claims. Four strong conductive trends were tested along six fences of percussion drill holes for a total of 2,424 m of drilled in 79 holes. This was followed by 2,465 m of diamond drilling in 19 holes.

6.2.4. Pan Orvana Resources Inc. (1989–1991)

On July 12, 1985, Mosquito Creek Gold purchased the Cariboo and Island Mountain claim groups from Wharf Resources Ltd. Pan Orvana Resources Inc. ("Pan Orvana") signed the Cariboo Gold Option Agreement on May 20, 1988, obtaining the right to earn a 50% interest in the Cariboo Group, but terminated the agreement in 1991 without exercising the option.

Pan Orvana excavated 20 surface trenches, drilled four holes, and conducted ground geophysical surveys, geochemical sampling programs, and geological mapping.

6.2.5. Gold City Mining Corp. (1994–1995)

In 1994 and 1995, Gold City Mining Corp. ("Gold City Mining") assembled a large land position consisting of 13,000 hectares ("ha") of mineral titles between Mount Tom and the Cariboo Hudson Mine to form the Welbar Gold Project.

Doing so involved seven option agreements, including one that covered the Mosquito Creek, Island Mountain, and Cariboo claim groups. The latter was subject to the Cariboo Option Agreement between Mosquito Creek Consolidated Gold Mines Ltd. and International Wayside Gold Mines Ltd. Intera Information Technologies Corp. flew a synthetic aperture radar survey in July 1995. DIGHEM I Power completed a regional airborne radiometric-Mag-EM survey of 1,280 line-km, as well as trenching and diamond drilling on some of their properties, including one drill hole on the Mosquito Creek Group.

From October 1 to November 30, 1995, Gold City Mining conducted a 13-hole (1,865 m) diamond drilling program on the Cariboo-Hudson Property (Chapman, 1996a).

Gold City Mining optioned the Cariboo-Hudson Property from Cathedral Gold Corp. in 1994.

In November 1995, Gold City Mining sunk four diamond drill holes (560 m) on the Williams Creek Property (Chapman, 1996b). That same month, Gold City Mining drilled two holes (390 m) on the Island Mountain Property (Chapman, 1997).

6.3. International Wayside Gold Mines Ltd. (1999–2014)

Table 6-1 summarizes the work conducted by International Wayside Gold Mines Ltd. ("IWGM") on the Island Mountain Project between 1999 and 2014, as documented in Pickett (2000; 2001; 2002; 2003), Pautler (2003; 2004), Johnson (2005), Moore (2006), Yin and Daignault (2007) and Yin (2011), as well as Management Discussion and Analysis reports ("MD&A") from Island Mountain Gold Mines Ltd. ("IGM"), International Wayside Gold Mines Ltd. ("IWGM"), and Barkerville Gold Mines Ltd. ("BGM").

Table 6-1: Summary of diamond drilling on the Island Mountain Project from 1999 to 2014

Year	Zone/Area	Surface diamond drilling	
		(drill hole)	(m)
1999	Footwall of the West Fault	10	902.2
2000	Northwest of the Mosquito Creek Mine	10	1,750.5
2001	Gold-in-soil anomaly	2	367.3
	Favourable stratigraphy	1	183.8
	Kutney Zone	4	672.7
2002	Gold-in-soil anomaly and IP anomaly	2	191.7
	Gold-in-soil anomaly	2	210.3
2003	2003 trenching program	13	1,397.5
2004	Snapjack Zone	3	303.9
	Teapot Vein	3	555.0
2005	Snapjack Zone	9	906.1
	Southern soil anomaly	4	780.3
	Channel sample anomaly	2	202.1
2006–2009	No drilling	0	0.0
2010	Reconnaissance exploration	1	178.6
2011–2014	No drilling	0	0.0
	Total	**66**	**8,602.0**

6.4. International Wayside Gold Mines Ltd. (1995–2009)

The following descriptions cover the history of exploration work conducted by IWGM on the Cariboo Gold Quartz Project between 1995 and 2009 and are taken from Lord and Reid (1997), Reid (1999), Hall (1999), Lord and Hall (2001), Walton (2002a; 2002b; 2003a; 2003b), Gates et al. (2005), Duba (2005), Daignault and Moore (2006), Sandefur and Stone (2006), Yin and Daignault, (2007; 2008), Brown (2009), Fier et al. (2009), and Yin (2010a; 2010b). The text retains the references therein.

6.4.1. 1995–1999 Work Programs

During that 1995 to 1999 period, IWGM worked the Project area continuously starting May 1, 1995. Most of the work was carried out on the main mine trend, either from the surface or underground from the 1200 level adit.

In 1998 and 1999, a secondary target, the BC Vein, was explored over a strike length of 384 m by 31 surface drill holes totalling 2,245.2 m. The goal of this program was to find high-grade ore shoots of the kind located by Cariboo Gold Quartz Mining in the 1940s. Table 6-2 summarizes IWGM's drilling on the Project between 1995 and 1999.

In the summer of 1997, IWGM carried out a geochemical and prospecting program to find new mineralized showings and generate targets for further exploration. The geochemical surveys yielded 1,079 soil samples, 59 stream sediment samples, and 121 rock samples.

Table 6-2: Summary of diamond drilling on the Cariboo Gold Project from 1995 to 1999

Year	Zone	Surface diamond drilling		Underground diamond drilling		Underground percussion drilling	
		(drill hole)	(m)	(drill hole)	(m)	(drill hole)	(m)
1995	Rainbow	17	844.0	12	496.5	6	96.9
1996	Rainbow	8	424.0	5	157.6	38	867.8
	Pinkerton	5	385.3	-	-	25	998.5
1997	Rainbow	20	1,617.6	-	-	-	-
	Pinkerton	17	1,359.4	-	-	9	481.5
	Sanders	2	170.1	-	-	33	2,023.6
1998	Pinkerton	-	-	-	-	5	307.2
	Sanders	2	157.9	-	-	19	964.4
	Butts	2	146.0	-	-	-	-
	BC Vein	13	846.7	-	-	-	-
1999	BC Vein	18	1,398.4	-	-	-	-
Total		**104**	**7,349.4**	**17**	**654.1**	**135**	**5,739.9**

6.4.2. 2000–2009 Work Programs

IWGM carried out extensive work from 2000 to 2009. Table 6-3 summarizes the drilling by year and area of interest.

Table 6-3: Summary of diamond drilling on the Cariboo Gold Project from 2000 to 2009

Year	Zone/Area	Surface diamond drilling		Underground diamond drilling	
		(drill hole)	(m)	(drill hole)	(m)
2000	BC Vein Bonanza Ledge	48	6,227.4	-	-
2001	BC Vein Bonanza Ledge	22	5,145.9	-	-
	Cow Mountain	3	653.8	-	-
2002	BC Vein Bonanza Ledge	18	3,394.0	-	-
	Myrtle Property	5	1,206.1	-	-
2003	Bonanza Ledge	26	3,037.3	3	203.3
	Myrtle Property	4	781.5	-	-
2004	Bonanza Ledge	60	7,788.6	73	5,974.1
	Bonanza Ledge – engineering	17	1,899.5	-	-
	Myrtle Property	5	861.4	-	-
	Goldfinch Target	6	826.6	-	-
	Groundwater monitoring well holes	2	120.1	-	-
2005	Lowhee Creek	23	4,422.4	-	-
	Black Bull	3	474.9	-	-
2006	Mucho Oro	31	4,682.1	-	-
2007	Cow Mountain	15	1,463.6	-	-
2008	Goldfinch and Bonanza Ledge	10	1,762.1	-	-
2009	Cow Mountain	11	1,900.2	-	-
	Lowhee Creek	2	329.8	-	-
	Bonanza Ledge	18	1,781.5	-	-
	Groundwater monitoring well holes	7	362.7	-	-
	Total	**336**	**49,121.5**	**76**	**6,177.4**

6.4.2.1. 2000 Work Program

On March 23, 2000, IWGM announced the discovery of a new mineralized zone while drilling the BC Vein. The type of mineralization encountered had not previously been identified in the region. The new zone was named the Bonanza Ledge Zone.

Subsequent geochemical, geophysical, and diamond drilling programs explored the Bonanza Ledge and BC Vein zones to look for new Bonanza Ledge-type targets away from the initial discovery. The work program consisted of 48 drill holes for 6,227.4 m and focused on area adjacent to the BC Vein. Surface exploration, completed mainly between August and October 2000, included geological mapping, prospecting, 44.2 line-km of soil sampling (2,400 samples on cut grid lines, spacing of 61 m by 15.2 m), and 32.9 line-km of ground geophysical surveys, including self-potential ("SP"), Induced Polarization ("IP"), VLF-EM, and ground Mag surveys. To provide an accurate topographic base map for IWGM's claims, an aerial photographic survey was flown in August and September 2000, covering its full extent. Historical mineral resource estimates from this period are superseded by those reported herein. They are described in detail in a previous technical report (Beausoleil and Pelletier, 2018) available on SEDAR.

In 2000, IWGM hired an independent consultant, R.G. Simpson (P.Geo.), to review the Cow Mountain data and the 1999 Resource (Dykes, 1999). Simpson estimated an Inferred resource (see IWGM's 2000 AIF) for Cow Mountain and following the recommendations from Simpson, another mineral resource estimate was completed by G.H. Giroux in 2000 (Giroux, 2000).

6.4.2.2. 2001 Work Program

The program in 2001 included diamond drilling, 20 line-km IP survey along 22 lines on Cow Mountain, 24.3 line-km of SP surveying, and 7.2 line-km of brushing out of lines for the IP survey on 11 lines.

6.4.2.3. 2002 Work Program

Diamond drilling was carried out in 2002, along with a mineral resource estimate by Giroux Consulting (the "2002 Estimate"; Giroux, 2002).

6.4.2.4. 2003 Work Program

The 2003 work program involved 70 m of trenching in six trenches. The work concentrated on the Bonanza Ledge Zone, the adjacent Myrtle Group, and the Sanders Zone. The program also included surface and underground drilling. Historical mineral resource estimates from this period are superseded by those reported herein. They are described in detail in a previous technical report (Beausoleil and Pelletier, 2018) available on SEDAR.

In 2003, an independent preliminary economic assessment ("PEA") completed by DJP Consultants Ltd. (Pow, 2003) concluded that the 2002 Estimate yielded a probable reserve of 3,109,000 t grading 2.95 g/t Au for 294,700 oz of contained gold, and that there were sufficient reserves to supply an on-site processing plant with 1,359 tonnes per day ("tpd") using open pit mining methods over 6.5 years, for life of mine ("LOM") production of 261,900 oz of gold. The PEA was based upon a pre-tax initial rate of return ("IRR") of 29.5% (used equipment) at a gold price of US$340/oz.

This "PEA" is historical in nature and should not be relied upon. In 2003, it was compliant with NI 43-101 requirements. Since 2003, more drilling has been added, and more geological information has become available. Additionally, the assumptions for the cut-off grade calculations, as well as the estimated capital and operating costs, are likely to have changed since 2003. Consequently, the DJP Consultants Ltd. PEA cannot be considered as current. It is included in this section for illustrative purposes only and should not be disclosed out of context.

6.4.2.5. 2004 Work Program

The work program in 2004 focused mainly on the Bonanza Ledge Zone. The Bonanza Ledge Zone was drilled from the surface and underground.

Underground development at Bonanza Ledge started in late 2003 and continued into 2004.

Exploration activities also included underground and surface drilling, geological mapping, trenching, a soil grid extension, and channel sampling along road exposures.

6.4.2.6. 2005 Work Program

In March 2005, 10,000 dry tonnes of concentrate from Bonanza Ledge were shipped via CN Rail to Noranda Inc.'s smelter in Rouyn-Noranda, Québec, for refining into gold bullion. IWGM received net proceeds before royalties of $1,505,720 for 5,200 oz recovered post-milling from the Bonanza Ledge bulk sample collected in 2004.

The exploration program included surface drilling, surface mapping, and sampling.

A gravity geophysical survey was planned to cover the Bonanza Ledge and Lowhee Creek areas. The survey was initiated in November 2005 but only covered the grid on the Bonanza Ledge deposit.

6.4.2.7. 2006 Work Program

The work program in 2006 consisted of surface drilling, prospecting, surface mapping, and sampling.

IWGM retained Chlumsky, Armbrust and Meyer LLC ("CAM") of Lakewood, Colorado to prepare a public PEA (the "2006 PEA"). Prior to the 2006 PEA, CAM and Minefill Services Inc. had completed an internal "scoping study" for IWGM on the Bonanza Ledge Zone. CAM advanced this internal study to comply with NI 43-101 standards. The study used the 2002 Estimate of Giroux (2002).

IWGM intended to process the material mined from Bonanza Ledge at a nearby facility, in particular, the Quesnel River Mill ("QR Mill") facility belonging to Cross Lake Minerals. Testing showed good amenability to cyanidation with recoveries ranging from 93% to 97%. These recoveries were attained rapidly, with 98% of the recovery occurring in the first six hours of the 72-hour leach.

The economic analysis of this scenario reported an estimated net present value ("NPV") of $10.7 million, assuming a discount rate of 5%, and total expenditures of approximately $23.0 million. The sensitivity analyses carried out on the cash flow model determined that the project was most sensitive to changes in recovery and gold price, and the project was least sensitive to changes in capital costs.

6.4.2.8. 2007–2008 Work Programs

The work programs in 2007 and 2008 consisted of surface drilling. In 2007, 1,463.54 m were drilled on Cow Mountain in 15 holes to test the Rainbow and Sanders zones. In 2008, 1,762.07 m were drilled in 10 holes to further define the Bonanza Ledge Zone and test the adjacent Goldfinch Target.

6.4.2.9. 2009 Work Program

Surface drilling was conducted during the 2009 work program.

In 2009, an NI 43-101 technical report was prepared (Brown, 2009). It addressed the geology and exploration history for gold on properties in the IWGM land package comprising the Cariboo Gold Project. The scope of the technical report included an update and compilation of recent exploration activities completed by IWGM on the land tenure of the Cariboo Gold Project from 2006 to 2008. This report built on previous technical reports that outlined gold mineral resources contained in the Project area, with mineral resource calculations specific to the Cow Mountain area (Giroux, 2006) and the Bonanza Ledge Zone area (Sandefur and Stone, 2006).

A pre-feasibility study ("PFS") was prepared for the Bonanza Ledge Project by EBA Engineering Consultants Ltd. ("EBA") of Vancouver, British Columbia, and several independent professionals and consultants. The study used the mineral resource and mineral reserve evaluation (the "2009 Estimate") of Mintec Inc. of Tucson, Arizona, as the basis of its economic analysis. The PFS was an update of the previously disclosed mineral resource (Sandefur and Stone, 2006). An NI 43-101 technical report was prepared by EBA. Historical mineral resource estimates from this period are superseded by those reported herein and described in detail in these previous technical reports available on SEDAR.

In late 2009, International Wayside Gold Mines purchased the QR Mine and Mill from Cross Lake Minerals Ltd. and in January 2010, changed their name to Barkerville Gold Mines Ltd (BGM).

6.5. Barkerville Gold Mines Ltd. (2010-2014)

The following description of work conducted by BGM on the Project between 2010 and 2014 is taken from Yin (2011; 2013), Georges (2012), Georges et al. (2013), Dzick (2015), Layman (2015), and BGM's MD&A reports. The text retains the references therein.

Table 6-4 outlines the drilling on the Project from 2010 to 2014.

Table 6-4: Summary of diamond drilling on the Cariboo Gold Project from 2010 to 2014

Year	Zone/Area	Surface Diamond Drilling	
		(drill hole)	(m)
2010	Bonanza Ledge	17	2,918.2
	Cow Mountain	45	5,792.3
	Island Mountain	1	178.6
2011	Pit Vein Zone	10	1,045.2
	BC Vein	30	9,284.6
	Bonanza Ledge (ARD samples)	5	943.1
	Cow Mountain	163	43,410.6
	Stouts Gulch and Myrtle Property	2	212.2
	Groundwater monitoring well holes	21	3,019.9
2012	Cow Mountain	14	2,753.2
2013	No drilling	0	0
2014	Cow Mountain	10	4,142.2
Total		**318**	**73,700.1**

6.5.1. 2010–2011 Work Programs

Surface trenching and sampling work were completed in 2010. A total of 175 samples were collected from 18 channels. The channels were spaced approximately 6 m apart along a 125 m long trench.

The work program in 2011 included surface drilling and trenching. A total of 66 channel samples were collected from the trenches.

6.5.2. 2012 Work Program

All historical estimates are superseded by the current mineral resource estimate reported in Chapter 14 of this Report.

On June 28, 2012, BGM announced a public mineral resource estimate for the Gold Quartz open pit model on Cow Mountain (the "Gold Quartz Estimate") and the geological potential of the 6.4 km Cow–Island–Barkerville Mountain Corridor (BGM news release of June 28, 2012). Geoex Ltd. ("Geoex") prepared the independent estimate. The announcement of the estimate led to a request for a supporting technical report within 45 days from the BC Securities Commission ("BCSC") and initiated a request for further information from the Geoex QP (Peter T. George). The BCSC was provided with a draft technical report. Upon review of the draft technical report, the BCSC expressed concerns about certain methods, parameters, and assumptions used to estimate the mineral resources and potential exploration targets at Cow Mountain, as well as the estimates themselves. The final version of the NI 43-101 technical report was filed on SEDAR on August 13, 2012 (Georges, 2012).

On August 14, 2012, the BCSC issued a cease trade order ("CTO") against BGM, stating that the report was not in the required form under NI 43-101 (BGM press release of August 15, 2012). BGM was advised that the CTO would remain in place until BGM filed an NI 43-101 report acceptable to the BCSC, addressing all technical disclosure concerns.

On October 19, 2012, BGM retained Snowden Mining Industry Consultants Pty ("Snowden") to review the report in question and help satisfy the CTO conditions. On November 5, 2012, BGM provided an additional update on its technical review. As requested by Snowden, 14 twin holes had been drilled on Cow Mountain between September 22, 2012 and October 14, 2012 (drill holes CM12-01A to CM12-09C), for a total of 2,759.4 m. The total meterage included five drill holes that had to be abandoned after hitting shafts and/or underground workings before reaching their target. Channel samples were also collected from the 2012 trenches on Cow Mountain. This data was used to verify the results of the report in question.

During its review of the NI 43-101 report, Snowden examined historical samples not included in the original Gold Quartz Estimate. Snowden recommended that these samples be included in the ongoing mineral resource estimate for Cow Mountain after being validated. The Gold Quartz Estimate was based on a database containing 619 drill holes. About 2,142 holes had been drilled on the property of which more than 1,464 had been verified by Mintec.

In July 2012, BGM received an amendment to *Mines Act* Permit M-198 for the QR Mill to allow the custom milling of up to 300,000 t of ore from the Bonanza Ledge Mine, as well as the disposal of associated mine tailings in the QR Main Zone Pit. In December 2012, BGM received an amended *Environmental Management Act* Permit, PE-17876, to allow effluent discharge associated with active mining at Bonanza Ledge.

6.5.3. 2013 Work Program

In June 2013, BGM filed an NI 43-101 technical report to present and support the updated mineral resource estimate for Cow Mountain (the "2013 Estimate"; Georges et al., 2013). As part of the mandate, Snowden assisted Geoex and BGM in the review and audit of the data validation and verification aspects of the Cow Mountain data, the determination of the most appropriate estimation method for Cow Mountain, and the preparation of the independent mineral resource estimate for the Cow Mountain area.

The 2013 estimate was reported at a range of cut-off grades for the Indicated and Inferred categories (Georges et al., 2013). No Measured mineral resources were estimated.

On July 15, 2013, the BCSC Rescinded the CTO issued on August 14, 2012. On October 9, 2013, common shares of BGM resumed trading on the Toronto Stock Exchange ("TSX:V").

To satisfy some of the recommendations of the last technical report (Georges et al., 2013), BGM reviewed core sampling records for all drill holes in the Cow Mountain mineral resource model. A core sampling and assaying program was conducted to provide assays for any previously unsampled drill core intervals. The infill sampling program (55,698.6 m) was conducted on 250 holes drilled in 2007, 2009, 2010, and 2011 on Cow Mountain (BGM press release of January 20, 2014). The program was completed in January 2014. Available reject samples for all the Cow Mountain drill holes were shipped to Acme Labs for fire assay–metallic screen analysis. In total, 25,280 samples were sent to Acme Labs.

Historical mineral resource estimates from this period are superseded by the 2021 Mineral Resource Estimate ("2021 MRE") reported herein. They are described in detail in previous technical reports available on SEDAR.

6.5.4. 2014 Work Program

BGM conducted surface drilling in 2014.

In March 2014, BGM announced the commencement of operations at the Bonanza Ledge Mine under *Mines Act* permit M-238. The first production blast was on March 12, 2014. Over the course of the year, BGM milled 53,090 t of ore at an average head grade of 6.23 g/t Au and a recovery rate of 90%. The average net operating cost was $1,669 per ounce.

6.6. Barkerville Gold Mines Ltd. (2015–2022)

All exploration and drilling results from 2015–2022 are summarized in Chapters 9 and 10. Production and historical mineral resource estimates are summarized below.

For the purposes of this Report, Barkerville Gold Mines Ltd., as it operated from 2015–2021, will be referred to as Osisko Development Corp. ("ODV"). Current ODV management has been in place since 2015 and on November 21, 2019, Osisko Gold Royalties acquired the Cariboo Gold Project through the acquisition of Barkerville Gold Mines Ltd. The Project was part of the Osisko Gold Royalties contributed assets that created the Osisko Development Corp. on November 25, 2020.

During 2015, ODV milled 11,275 t of Bonanza Ledge ore at an average head grade of 10.14 g/t Au, a recovery rate of 94%, and an average net operating cost of $877/oz. Based on the results as of February 28, 2015, management decided to cease production and place Bonanza Ledge under care and maintenance.

In 2016, ODV mandated InnovExplo Inc. ("InnovExplo") (Brousseau et al., 2017) to complete an NI 43-101 technical report and Mineral Resource Estimate (the "2017 MRE") for the Barkerville Mountain deposit. GEOVIA GEMS™ was used for modelling purposes and the estimation approach, which consisted of 3D block modelling and the ordinary kriging interpolation method. The close-out date of the database was July 18, 2016, and the effective date of the 2017 MRE was March 21, 2017 (Brousseau et al., 2017).

In January 2017, ODV began commissioning its wholly owned QR Mill using the low-grade stockpile at the Bonanza Ledge open pit. Material sorting was done at the stockpile, producing relatively high-grade pre-concentrate. By the end of February 2017, 2,860 t of ore was transported to the QR Mill for an average grade of 2.94 g/t Au. During the second quarter of 2017, portal and underground development began at the Bonanza Ledge Mine to prepare for the processing of in-situ Bonanza Ledge material. A total of 470 m of underground development was completed in 2017, resulting in the processing of approximately 7,000 t of both low and high-grade development material at the QR Mill for commissioning and training purposes.

In 2017, ODV mandated InnovExplo to update the 2017 MRE and perform a review and validation of the maiden mineral resource estimate for the Cow Mountain and Island Mountain deposits combined. The close-out date of the database was December 31, 2017, and the effective date for the 2018 Mineral Resource Estimate was May 2, 2018 (Beausoleil and Pelletier, 2018).Test Mining at Bonanza Ledge was completed in December 2018. The objective was to gain technical information and train personnel to aid in future studies, permitting, and future mining. A total of 1,900 m of development took place at the Bonanza Ledge Mine in 2018. Approximately 120,000 t of ore was extracted and processed at an average grade of 5.94 g/t Au. Bonanza Ledge Mine was placed on care and maintenance in December 2018.

In 2019, ODV mandated InnovExplo to review, validate, and update the 2018 Mineral Resource Estimate (Beausoleil and Pelletier, 2019).Based on the results of Mineral Resource Estimate completed in 2019, ODV mandated BBA Engineering Ltd. ("BBA") to prepare a technical report and Preliminary Economic Assessment ("PEA") for the Cariboo Gold Project (Morgan et al., 2019). A number of specialized consultants assisted BBA with the PEA: Allnorth Consultants Ltd., Golder Associates Ltd., InnovExplo Inc., Mining Plus Canada Consulting Ltd., SRK Consulting (Canada) Inc., and WSP Canada Inc. The effective date of the PEA was August 18, 2019. The purpose was to complete a review and compilation of the mineral resources, mining designs, processing options, and preliminary economics of the Project, and to support the results disclosed in ODV's press release entitled "Barkerville Gold Mines Delivers Positive PEA for Cariboo Gold Project" dated August 19, 2019. The PEA provided a base case assessment for developing the Cariboo Gold Project as a 4,000 tpd underground mine, with a concentrator located at the Mine Site at Wells and further processing at the QR Mill. The mine life was estimated to be 11 years. These results are described in detail in the PEA (Morgan et al., 2019) available on SEDAR.

In 2020, ODV mandated InnovExplo (Beausoleil and Pelletier, 2020) to complete an NI 43-101 technical report to present an updated mineral resource estimate and geological model (the "2020 MRE") for the Cariboo Gold Project. The close-out date of the database was January 29, 2020, and the effective date of the 2020 Mineral Estimate was April 28, 2020 (Beausoleil and Pelletier, 2020). In 2022, a PEA was completed for the Project; ODV mandated BBA to prepare a technical report and updated PEA for the Cariboo Gold Project (Hardie et al., 2022). This report was prepared based on contributions from several independent consulting firms, including InnovExplo Inc., SRK Consulting (Canada) Inc., WSP Canada Inc., BBA Engineering Ltd., Falkirk Environmental Consultants Ltd., and Klohn Crippen Berger Ltd. It encompassed updated resources for the deposits of Cow Mountain (Cow Zone and Valley Zone), Island Mountain (Shaft Zone and Mosquito Zone), and Barkerville Mountain (Lowhee Zone). The updates were prepared by Leonardo de Souza, MAusIMM (CP), of Talisker Exploration Services Inc., and reviewed and validated by Carl Pelletier, P.Geo., and Vincent Nadeau-Benoit, P.Geo., both of InnovExplo Inc., using all available information. The effective date of the 2022 Mineral Resource Estimate update was May 17, 2022 (Hardie et al., 2022).The Bonanza Ledge Mine resumed development in mid–2019 and in 2020, 3,268 t of ore was extracted at an average grade of 2.58 g/t Au. In 2020, the underground focus was the development of drifts to access the BC Vein. In 2021, 98,786 t of ore was extracted at an average grade of 4.48 g/t Au (as of December 31, 2021). In 2022, 170,652 t of ore was extracted at an average grade of 5.16 g/t Au. Development of a new portal to access and develop a bulk sample at the Cow Mountain portion of the mineral resource was completed in December 2021. The Bonanza Ledge Mine was placed on care and maintenance in June, 2022.

7. Geological Setting and Mineralization

7.1 Introduction and Clarification

For the purposes of this Report, Barkerville Gold Mines Ltd. ("BGM"), as it operated from 2015 to 2021, will be referred to as Osisko Development Corp. ("ODV"). Current ODV management has been in place since 2015 and on November 21, 2019, Osisko Gold Royalties acquired the Cariboo Gold Project through the acquisition of Barkerville Gold Mines Ltd. The Project was part of the Osisko Gold Royalties contributed assets that created the Osisko Development Corp. on November 25, 2020.

In addition, the Cariboo Gold Project as described geologically refers to the entirety of the ODV land package in British Columbia ("BC"). Within this land package, the proposed Cariboo Gold Project ("the Project") is currently undergoing an Environmental Assessment under the *BC Environmental Assessment Act* (2018) with the addition of the Lowhee Zone discovered in 2019. The Project mining zones are limited to the Cow Zone, Lowhee Zone, Valley Zone, Shaft Zone, and Mosquito Creek.

7.2 Regional Geological Setting

The principal vein and gold-rich replacement-style deposits of the Cariboo Gold Project are hosted within Neoproterozoic to Paleozoic off-shelf siliciclastic and lesser carbonate facies rocks belonging to the Snowshoe Group of the peri-cratonic Barkerville terrane (e.g., Monger and Berg, 1984; Struik, 1986;1988; Schiarizza and Ferri, 2003; Ferri and Schiarizza, 2006). The Barkerville terrane, or sub-terrane, has several stratigraphic correlatives within the more southerly Kootenay terrane (Struik,1986;1988; Ferri and Schiarizza 2006) and may likewise correlate in part with the Yukon-Tanana terrane of northern BC, Yukon, and Alaska (Struik, 1986; Monger and Price, 2002). Within central BC, the Barkerville terrane represents the westernmost component within the Omineca morphogeological belt of the Canadian Cordillera (Figure 7-1).

The Omineca Belt, relative to the more easterly Foreland Belt, is characterized by elevated metamorphic grades, Paleozoic through early Tertiary granitoid intrusions, and protracted polyphase deformation beginning by the Middle Jurassic (e.g., Monger and Price, 2002) (Figure 7-2). Physiographic domains of the Omineca Belt include the Purcell, Selkirk, Monashee, Cariboo, Omineca, Cassiar, and Selwyn mountains (Monger and Price, 2002). Across the Cariboo Mountains, the Omineca Belt can be described as consisting of the following tectonostratigraphic elements:

1. Neoproterozoic rift-related clastic and minor volcanic rocks deposited on continental basement attenuated during break-up of the supercontinent Rodinia (e.g., Monger and Price, 2002; Hoffman, 1991) (basal Barkerville and Cariboo terrane sequences);
2. Paleozoic peri-cratonic off-shelf siliciclastic rocks, with lesser volcanic, volcaniclastic, and carbonate facies rocks (characteristic Barkerville terrane sequences) (e.g., Struik 1988; Schiarizza and Ferri, 2003);
3. More proximal Paleozoic platformal carbonate facies and siliciclastic rocks (characteristic Cariboo terrane sequences) (e.g., Schiarizza and Ferri, 2003);
4. Large-scale klippe including Late Paleozoic mafic volcanic rocks, ultramafic to mafic intrusive rocks, and deep sea pelagic sedimentary rocks often interpreted as representing a partial ophiolite sequence (Slide Mountain terrane) (e.g., Struik, 1988; Nelson, 1993).

Proximal and off-shelf sequences of the Cariboo and Barkerville terranes are interpreted to have been deposited on and adjacent to the continental margin of ancestral North America (Laurentia). This idea is supported by deep-crustal geophysical data collected through the National Lithoprobe Geoscience Project (Monger and Price, 2002; Cook, 1995) (Figure 7-3), and by locally exhumed windows of Paleoproterozoic continental basement of North American affinity occurring within the Omineca Belt of south-central BC (e.g., the Monashee core complex) (Monger and Price, 2002).

The metamorphism and magmatism that characterize the Omineca Belt are superimposed across the interface between peri-autochthonous terranes (e.g., Barkerville, Kootenay) and allochthonous terranes of the more westerly Intermontane Belt. The boundary between the two belts can thus be placed somewhat arbitrarily, unless coincident with a major fault (Monger and Price, 2003). Within the Cariboo terrane, the Omineca-Intermontane Belt boundary is coincident with the Barkerville-Quesnellia terrane boundary along the Jurassic aged Eureka thrust (e.g., Struik, 1988; Schiarizza and Ferri, 2003; Ferri and Schiarizza, 2006). Figure 7-4, modified from Struik (1988), details the inferred tectonic architecture across the Omineca Belt in the Cariboo Gold District.

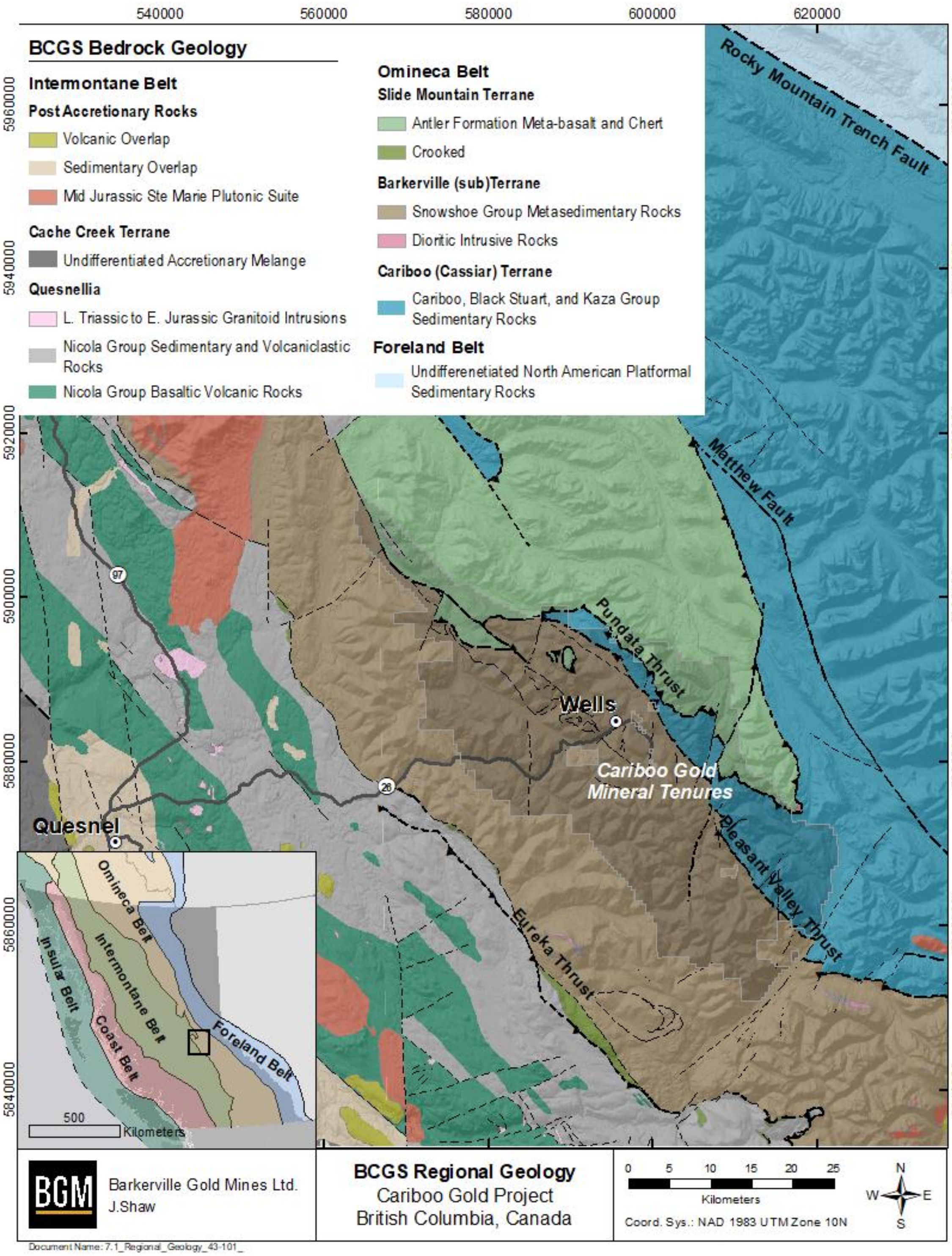
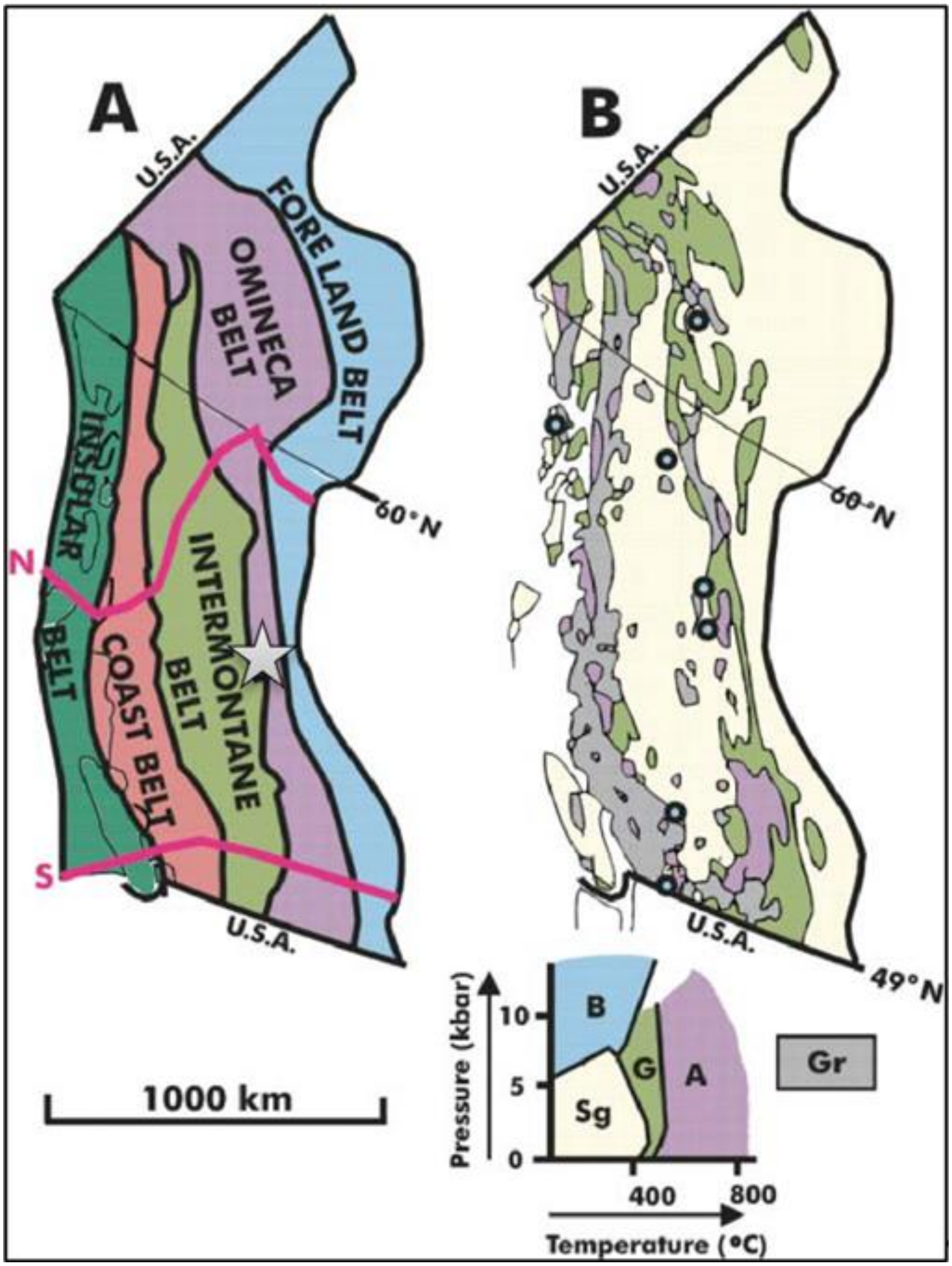


Figure 7-1: BCGS bedrock geology of the Cariboo Gold Project area



(**A**) Approximate location of the Cariboo Gold Project indicated by the star.
(**B**) Sg – sub-greenschist facies; G – greenschist facies; A – amphibolite facies; B – Blueschist facies (dots); Gr – granitic rocks.

Figure 7-2: Morphogeological belts of the Canadian Cordillera with the northern (N) and southern (S) Lithoprobe transects; B) Simplified map of the distribution of granitic rocks and regional metamorphic grade (Monger and Price, 2002)

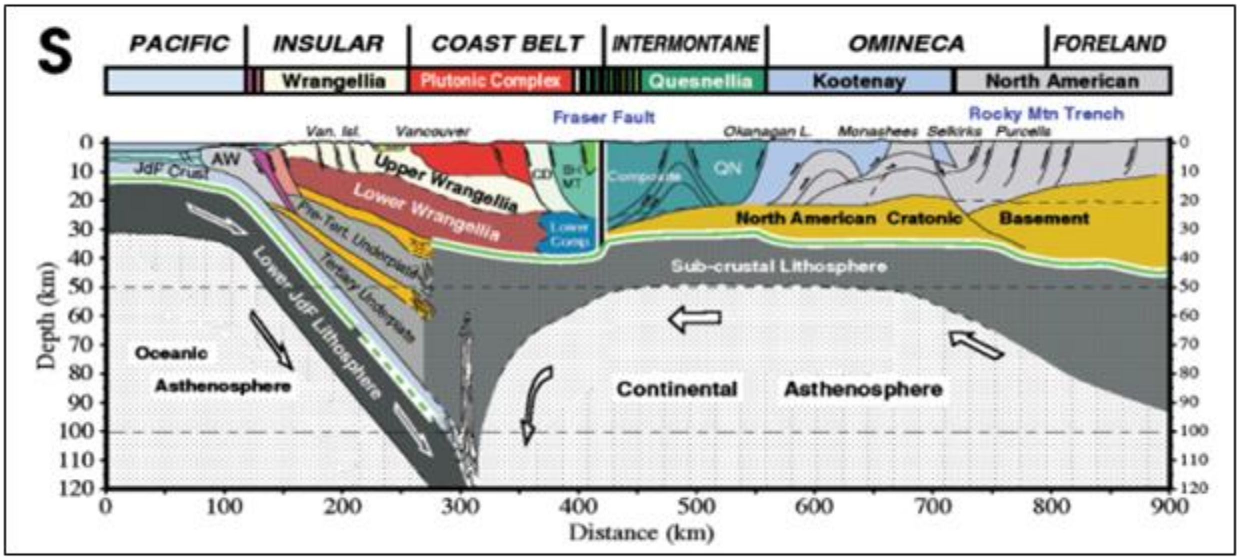


Figure 7-3: Lithospheric-scale cross-section of the southern Cordilleran Lithoprobe transect (Monger and Price, 2002)

The Cariboo terrane represents the easternmost component of the Omineca Belt within the Cariboo district; its boundary with the Foreland Belt coincides with the eastern limit of the Cariboo Mountains at the Rocky Mountain Trench. The Cariboo terrane is juxtaposed atop the Barkerville terrane along the E-dipping Pleasant Valley Thrust. The age of formation of the thrust must post-date the youngest rocks within the Barkerville and Cariboo terranes, which fossil age constraints place within the Lower Permian (Struik, 1986; 1988). While stratigraphic similarities certainly exist between sections of the Barkerville and Cariboo terranes (e.g., Monger and Berg, 1984; Struik, 1986) the more carbonate-rich stratigraphy of the Cariboo suggests a setting proximal to the Laurentian margin, and it is commonly classified as a sub-terrane of the more northerly Cassiar (Struik, 1986; Ferri and Schiarizza, 2006). Significant (≥500 km) relative-northward Cretaceous through Eocene translation of the Cassiar terrane along the Northern Rocky Mountain – Tintina fault system is believed to disperse and step westward at the northern limits of the Cariboo mountains. The more southerly accommodation of this translation is believed to have occurred along the intra-Omineca Matthew and McLeod Lake faults, with comparatively minor displacements experienced along the Rocky Mountain Trench (Gabrielse et al., 2006).

The allochthonous Quesnel terrane, or Quesnellia, consists primarily of Middle Triassic to Lower Jurassic sedimentary, volcanic, and intrusive rocks formed in an island arc – arc-marginal basin setting (Struik, 1988; Panteleyev et al., 1996). These rocks represent the easternmost component of the Intermontane Belt and were emplaced above the Barkerville terrane along the east-vergent Eureka Thrust during the Early to Middle Jurassic (e.g., Schiarizza and Ferri, 2003). The thrust itself was folded not long after its formation (Struik, 1988; Schiarizza and Ferri, 2003), and it is marked by lenses of variably sheared mafic and serpentinized ultramafic rocks collectively described as the Crooked Amphibolite (Struik, 1988; Schiarizza and Ferri, 2003; Ferri and Schiarizza, 2006). The Crooked Amphibolite represents an ophiolitic sliver (e.g., Pantaleyev et al., 1996), and it is commonly viewed as a correlative of a potential root to the shallowly emplaced Slide Mountain terrane (Pantaleyev et al., 1996, Struik, 1986; Ash, 2001; Ray et al., 2001; Ferri and Schiarizza, 2006). Quesnel terrane accretion, perhaps co-eval with the emplacement of the Slide Mountain terrane, has been linked with the development of the earliest recognizable phases of deformation and accompanying regional metamorphism within the Cariboo and Barkerville terranes (Schiarizza and Ferri, 2003). Metamorphic cooling ages of 174+\- 4 Ma obtained from U-Pb dating of metamorphic sphene from the Quesnel Lake area (Mortensen et al., 1987) constrain peak metamorphism to the Middle Jurassic.

The Slide Mountain terrane structurally overlies both the Cariboo and Barkerville terranes along the sub-horizontal, broadly warped and locally folded Pundata Thrust (Struik, 1986). In the Wells-Barkerville area, the Slide Mountain klippe consists of Lower-Mississippian to Lower Permian meta-basalt and chert of the Antler Formation (e.g., Schiarizza and Ferri, 2003). The structural relationship between the Pleasant Valley and Pundata thrusts seems to suggest that the latter post-dates the former and that, therefore, Slide Mountain emplacement post-dates Cariboo-Barkerville terrane amalgamation (Struik 1986, 1988). However, Schiarizza and Ferri (2003) note that it is in fact unclear whether the Pleasant Valley thrust cuts up-section through the Pundata to affect Antler Formation rocks of the Slide Mountain terrane.

Smaller-scale klippen of amphibolite facies metabasaltic and metasedimentary rocks of uncertain terrane affiliation overlie lower greenschist facies rocks of the Barkerville terrane at both Mount Tom and Island Mountain (Struik, 1988; Ferri and Schiarizza, 2006).

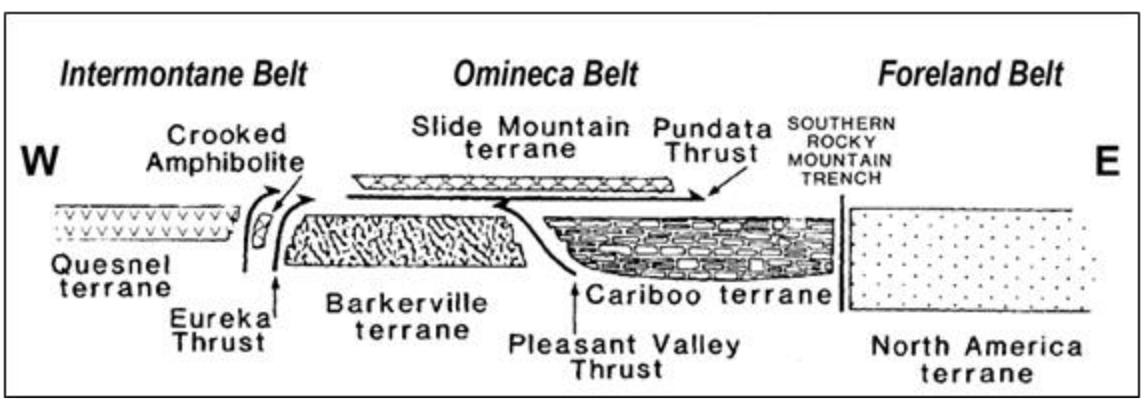


Figure 7-4: Tectonic architecture of the Cariboo Gold District
Modified from Struik (1986)

7.2.1 Snowshoe Group Stratigraphy

Siliciclastic and carbonate sequences, volcanic and volcaniclastic rocks of the Barkerville terrane collectively comprise the Snowshoe Group, a singular formal unit proposed by Struik (1986). Stratigraphic subdivisions of the Snowshoe Group proposed by Struik (1986) were qualified as "informal", given uncertainties regarding relative stratigraphic order. A final re-interpretation, as presented in Ferri and Schiarizza (2006) goes hand in hand with a new model for the fundamental structural architecture within the Barkerville terrane allowing for large-scale structural repetitions of a simplified stratigraphic sequence. See Struik (1988) for further discussion of earlier stratigraphic interpretations across the Barkerville and Cariboo terranes. The simplified stratigraphy of Ferri and Schiarizza (2006) divides the Snowshoe Group into three major successions, from oldest to youngest: the Downey, Harveys Ridge and Goose Peak successions (Figure 7-5).

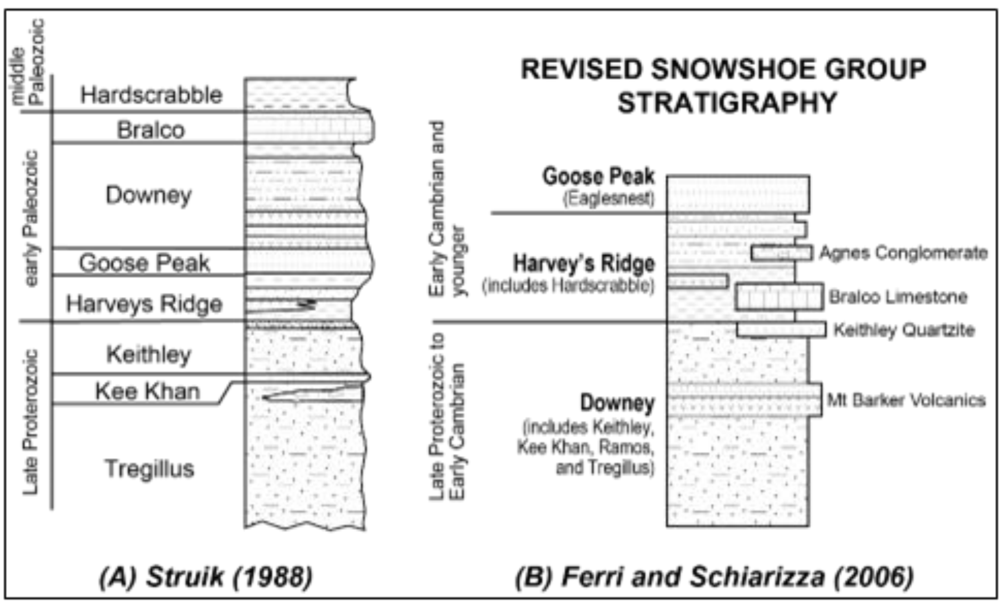


Figure 7-5: Stratigraphic interpretations of the Snowshoe Group
Modified from Ferri and Scharizza (2006)

The revised Downey succession of Ferri and Schiarizza (2006) outcrops within two separate belts in the Barkerville terrane. An eastern belt corresponds to the original Downy succession of Struik (1988); a western belt corresponds to and includes the Tregillus clastic rocks, Kee Khan marble, Keithley, and Ramos successions as defined by Struik (1988). Siliciclastic rocks within the Downey succession of Ferri and Schiarizza (2006) consist of green-grey micaceous to feldspathic quartzite and phyllite or schist, depending on metamorphic grade. Ferri and Schiarizza retain the name "Keithley Quartzite" to describe a localized marker orthoquartzite occurring near the top of the sequence. The Downey succession commonly includes relatively thick and discontinuous carbonate units, including the Kee Khan marble of Struik (1988), which are found most often in association with alkali mafic metavolcanic and volcaniclastic rocks (e.g., Mt. Barker Volcanics). Metavolcanic rocks range from thin horizons of chloritic phyllite in the Wells-Barkerville area, to thick, regional-scale exposures of chlorite±actinolite phyllite and schist north of Cariboo Lake (Allan et. al., 2017). Ferri and Schiarizza (2006) constrain the depositional age range for the Downey succession to Late Proterozoic through Early Cambrian. The geochemical nature of Downey volcanic rocks and the immature nature of its siliciclastic sequences are consistent with deposition in a continental rift environment (Ferri and Schiarizza, 2006). Depositional onset is consistent with the timing of Rodinia break-up (e.g., Hoffman, 1991).

The revised Harveys Ridge succession of Ferri and Schiarizza (2006) includes rocks grouped by Struik (1988) into the separate Harveys Ridge and Hardscrabble Mountain successions. The sequence consists predominantly of dark grey to black carbonaceous and locally pyritic siltstone to phyllite and variably carbonaceous dark to pale grey quartzite. The term 'Hardscrabble facies' is still employed to describe the finer grained rocks in the succession, though facies changes between carbonaceous siltstones and quartzites occur both in section and laterally. The Harveys ridge succession also includes intervals of dark grey to black (carbonaceous) limestone and minor mafic metavolcanic rocks. The Agnes Conglomerate of Struik (1988) forms discontinuous lenses at the uppermost levels of the succession. The Bralco Limestone of Struik (1988) is found at the base of the succession but is believed to occur only within its eastern exposures. Rocks of the Harveys Ridge succession are believed to be in sharp contact with rocks of the underlying Downey, though Harveys Ridge is transitional into the overlying Goose Peak succession, grading from carbonaceous to clean quartzites in its upper reaches.

The Goose Peak succession of Ferri and Schiarizza (2006) consists predominantly of light grey to grey-green quartzite to feldspathic quartzite with lesser interbedded dark grey phyllite and siltstone. The redefined sequence includes both the Goose Peak and Eaglesnest successions of Struik (1988).

Ferri and Schiarizza (2006) constrain the Harveys Ridge and Goose Peak successions as Early Cambrian or younger, based on correlations with similar units within the Cariboo terrane to the east. Lower Permian conodont ages are determined for the Sugar Limestone, which unconformably overlies Hardscrabble facies rocks at Sugar Creek on Hardscrabble Mountain (Struik, 1988). While the upper age limits of the Harvey's Ridge and Goose Peak successions are otherwise poorly constrained, the age gap represented by the unconformity at the base of the Sugar Limestone may be quite profound (Ferri and O'Brein, 2002).

Snowshoe group rocks are locally intruded by dikes and sills of varying composition and relative timing of emplacement (e.g., Struik 1988).

In tandem with the revised Snowshoe Group stratigraphy, Ferri and Schiarizza (2006) present a model within which Snowshoe Group rocks, along with the overriding Eureka Thrust, are folded into a terrane-scale SW-vergent nappe (Figure 7-6). The nappe is overridden in the NE by the Cariboo terrane along the Pleasant Valley Thrust, beneath which Downey succession rocks are interpreted to represent the core of an early recumbent anticline. The nappe itself is then subjected to another phase of upright folding about a horizontal axis to produce a broad antiform with the youngest Snowshoe group rocks of the Goose Peak succession exposed at its core. The broad antiform, known as the Lightning Creek Anticlinorium, was recognized by Struik (1988) as a domain across which orogenic vergence transitions from NE to SW. In a transect along the Barkerville Highway (BC 26) the domain is characterized by predominantly subhorizontal regional foliation. Further south, i.e., in the Yanks Peak area north of Cariboo Lake, the domain is characterized by tight upright folds.

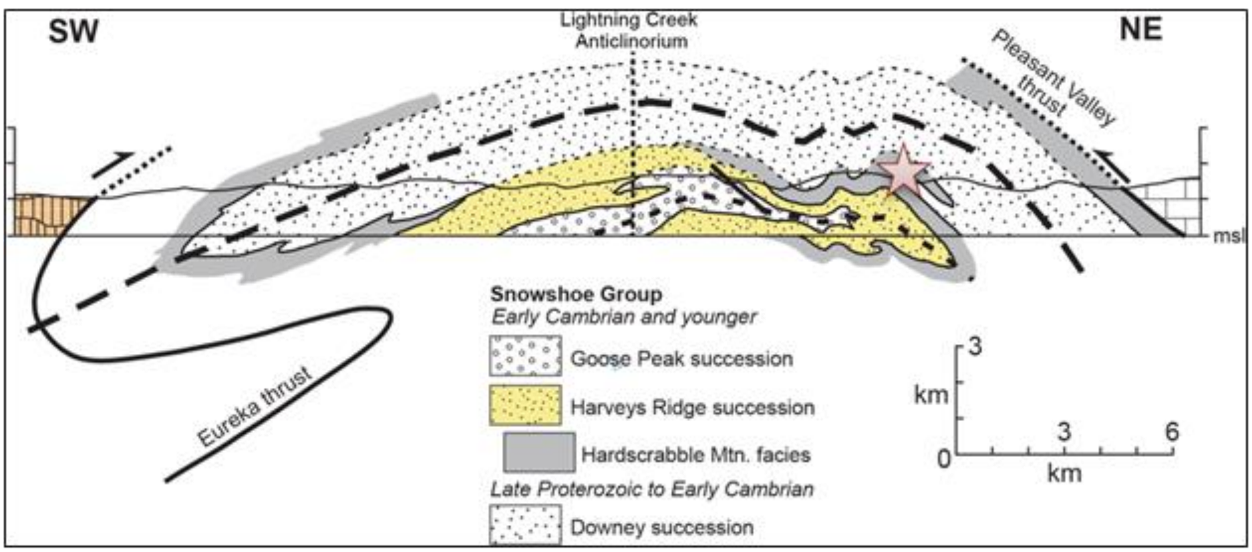


Figure 7-6: Barkerville terrane nappe model
Modified from Ferri and Schiarizza (2006)

7.2.2 Metamorphism

All known gold and silver mineralization within the Barkerville trend is hosted in rocks metamorphosed to lower-greenschist facies (sub-biotite isograd). The principal metamorphic minerals largely depend on the protolith but generally include sericite, chlorite, quartz, and iron-carbonate. A regional S1 foliation is defined by the alignment of metamorphic micas, suggesting that peak metamorphic temperature coincided with the D1 deformation with possible overprinting during D2 (Struik, 1988). Peak metamorphism is thought to have occurred at approximately 174±4 Ma, based on a U-Pb age for metamorphic titanite (sphene) collected near

Quesnel Lake (Mortensen et al., 1987). Andrew et al. (1983) reported a similar K-Ar whole-rock age of 179±8 Ma for phyllite at the Cariboo Gold Quartz Mine. However, more recent dating by Rhys et al. (2009) constrained the age of the metamorphism at Cariboo Gold Quartz and Bonanza Ledge Mines between 146.6±1.1 and 151.5±0.8 Ma, which is significantly closer to the age of mineralization.

Amphibolite-facies rocks are found within a klippe atop Island Mountain but are not associated with any significant mineralization and their origin is not well understood. Rocks within the klippe at Island Mountain include both amphibolite and garnet-mica (white mica ± biotite) schist. They have been postulated as correlative with the Slide Mountain terrane and/or Crooked Amphibolite but may alternatively represent more deeply rooted rocks of Barkerville terrane affinity (e.g., Schiarizza and Ferri, 2003). Amphibolite-facies rocks are also found at the western margin of the Barkerville terrane, where Snowshoe Group rocks consist of garnet-biotite schists and micaceous quartzites (Moynihan & Logan, 2009; Struik et al., 1992).

7.3 Property Geology

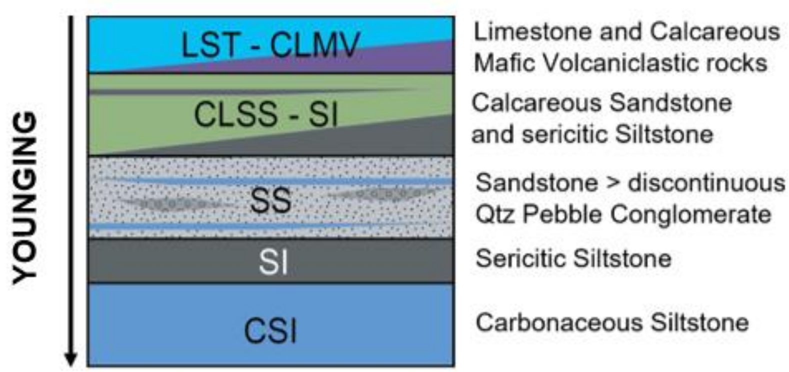
Detailed surface mapping conducted at a 1:2,000 scale and the collection of high-density structural data was completed within the core of the Cariboo Gold Project area covering the Island Mountain, Cow Mountain, Barkerville Mountain, and Mount Proserpine prospect areas during the 2018-2019 field seasons. The following synthesis is based largely on that work. Culminating map and cross-section products are presented in Figure 7-13 and Figure 7-14 at the end of this section.

Snowshoe Group rocks within the Cariboo Gold Project consists of an internally deformed sequence of siliciclastic, carbonate, and lesser volcaniclastic rocks that correspond with both the Downey and Harveys Ridge (including Hardscrabble facies) successions of Ferri and Schiarizza (2006). Historical workings in the Cariboo Gold District along with active brownfields exploration of approximately 13 km in strike length define a strike-parallel belt of lode gold deposits hereafter and historically referred to as the Barkerville trend. Within the Barkerville trend, Snowshoe Group rocks are deformed within a close to tightly folded northwest-southeast striking and northeast-dipping tectonostratigraphic sequence regionally metamorphosed to greenschist facies and locally disrupted by strike-parallel shear structures of varying thickness and undetermined offset (e.g., BC Vein). Given the consistency of low metamorphic grades within deposit hosting rocks of the Cariboo Gold Project, all Snowshoe Group lithologies are referenced using protolith terminology in both core logging and surface mapping. These pre-established protocols will be followed herein.

Each of the vein-related deposits within the Cariboo Gold Project (Mosquito Creek, Shaft, Valley, Cow Mountain, Lowhee, and KL) are hosted in Snowshoe Group rocks within the hanging-wall to the BC Vein shear structure. A large-scale (ca. 300 m wavelength) D2 fold pair, consisting of the Mosquito Creek antiform and Barkerville synform, is exposed at different structural levels across Island Mountain, Cow Mountain, and Barkerville Mountain drill areas. Most of the diamond drilling at the Cariboo Gold Project takes place within the shared overturned limb of the Mosquito Creek-Barkerville antiform-synform pair. Despite complexities of finer-scale structural repetition and lateral facies changes, the tectonostratigraphy in this shared overturned limb can be described in terms of a simplified five-member sequence (Figure 7-7) that can be applied across the Island Mountain, Cow Mountain, and Barkerville Mountain drill areas. From top to bottom (oldest to youngest) this sequence includes:

1. Calcareous facies rocks including limestone (LST), characteristically chloritic and effervescent volcaniclastic rocks with varying degrees of intermixed carbonates classified within the Project as calcareous mafic volcaniclastic rocks (CLMV), and lesser occurrences of dominantly sericitic to weakly chloritic calcareous siltstones (CLSI).
2. Transitional calcareous siliciclastic facies rocks including dominantly sericitic to locally chloritic and less commonly fuchsite-bearing calcareous sandstone (CLSS) and sericitic siltstone (SI).
3. A sandstone dominant facies characterized by generally weakly carbonaceous pale to medium-grey, fine to locally coarse-grained, quartz-dominant to sub-arkosic sandstone (SS) with varying scales of intercalated carbonaceous siltstone (CSI) horizons (interlaminations to map-scale interbeds) and less common discontinuous lenses of quartz to locally polymictic quartz-plagioclase-lithic pebble conglomerate (CGL).
4. A laterally extensive siltstone facies generally characterized by iron-carbonate porphyroblastic sericitic to locally weakly chloritic siltstone (SI).
5. A carbonaceous siltstone facies correlative to the Hardscrabble facies of Ferri and Schiarizza (2006) and characterized by moderate to strongly carbonaceous siltstone (CSI) with locally characteristic euhedral diagenetic pyrite and variable intercalations of very fine to fine-grained carbonaceous sandstone.

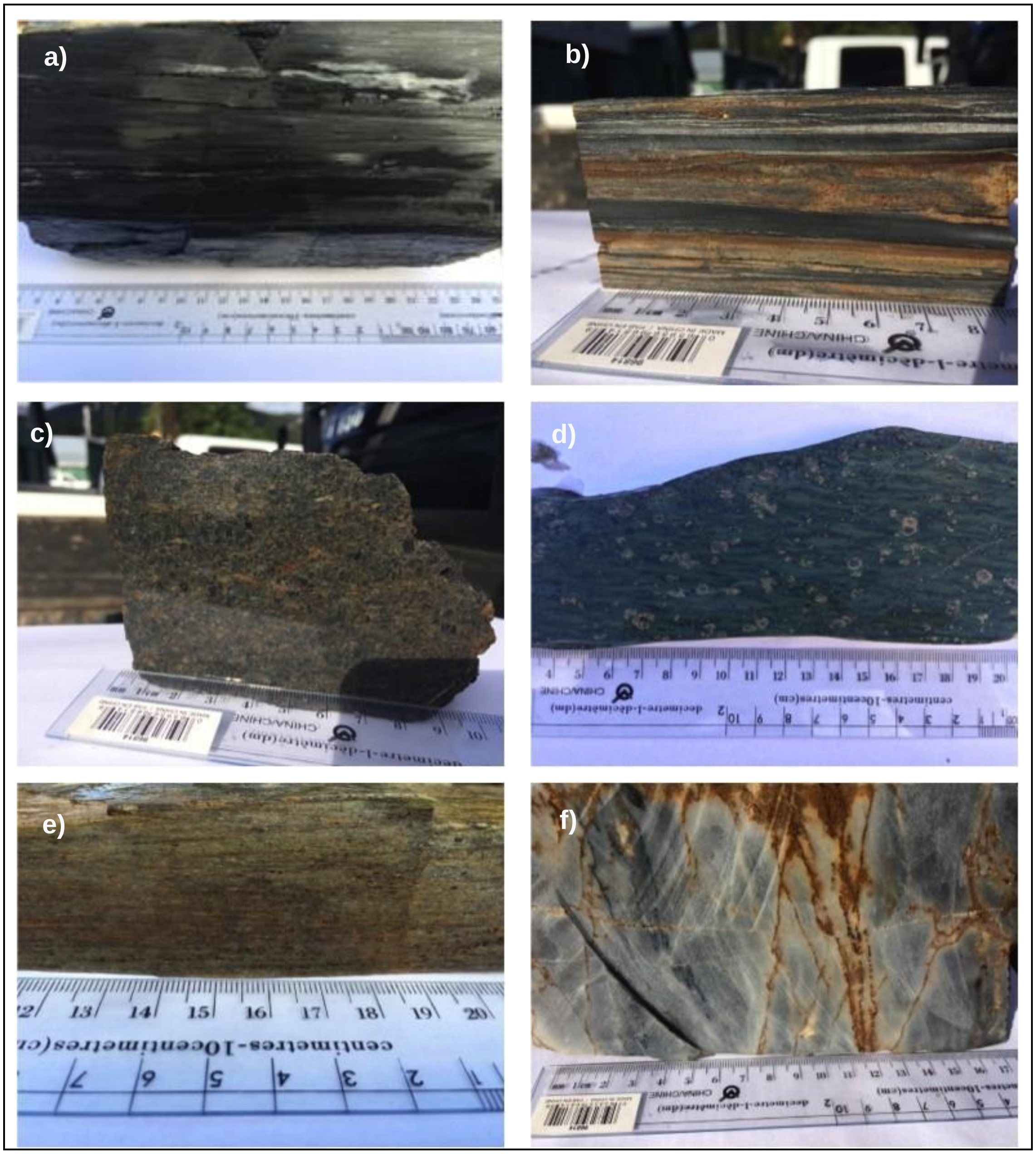
The highest density and largest scale veins at the Cariboo Gold Project are hosted within the rheologically favourable central sandstone facies, sometimes referred to as the "*Target Sandstone*". It should be noted that rocks of both the sericitic siltstone and carbonaceous siltstone facies gradually coarsen moving laterally to the southeast, respectively correlating with micaceous sandstone and carbonaceous sandstone dominant facies in the Mount Proserpine area.



Note that the sequence, presented as commonly drilled, is overturned.

Figure 7-7: Simplified BC Hanging-wall tectonostratigraphy for the Island, Cow, and Barkerville Mountain drill areas

Photographic examples of select lithologies encountered at the Cariboo Gold Project are presented in Figure 7-8. More detailed tectonostratigraphic facies models prepared by Harbort (2017a) for Island Mountain – Cow Mountain and Barkerville Mountain sequences are presented (likewise overturned) in Figure 7-9 and Figure 7-10, respectively. Specific details of these models will not be discussed herein.



a) carbonaceous siltstone; **b)** interlaminated carbonaceous siltstone and fine-grained sandstone; **c)** coarse-grained sandstone; **d)** calcareous mafic volcaniclastic; **e)** calcareous siltstone; **f)** micritic limestone.

Figure 7-8: Select rock-types observed on the Cariboo Gold Project (Barkerville Gold Mines, 2018)

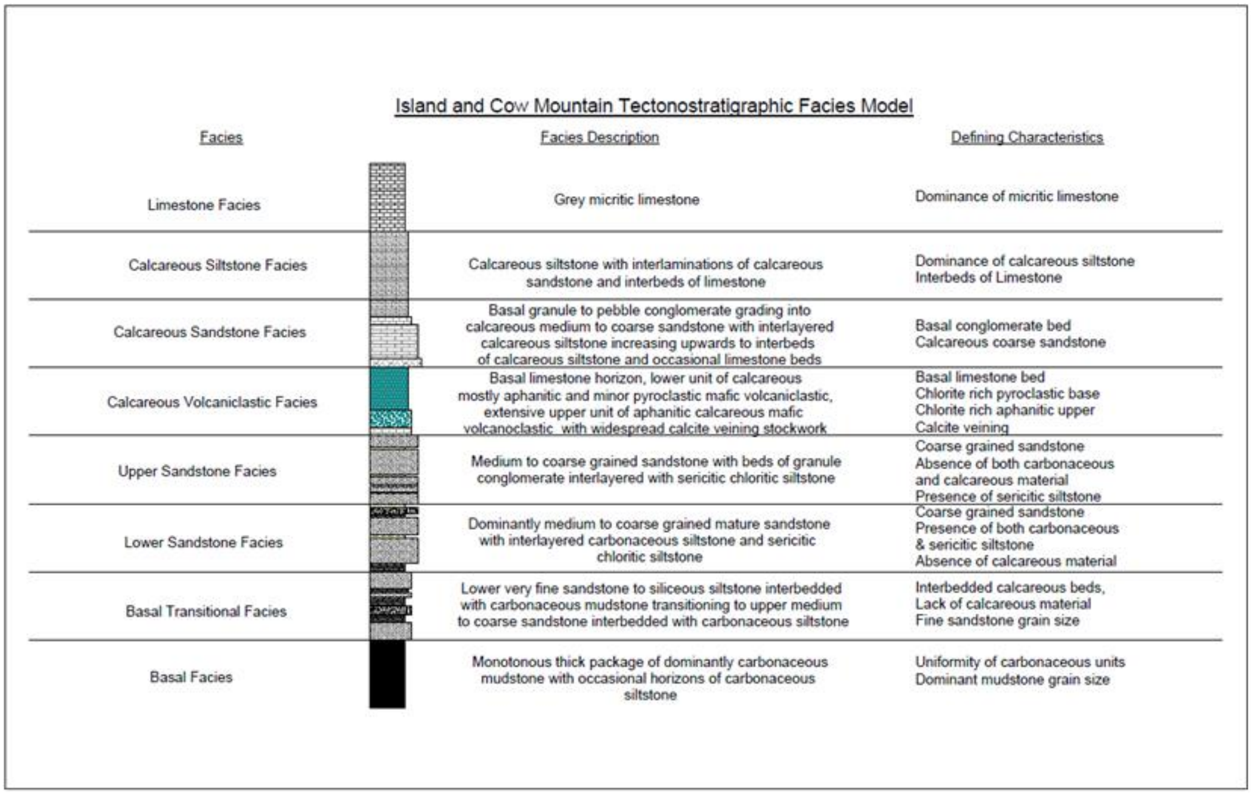


Figure 7-9: Detailed tectonostratigraphic facies model for Island and Cow Mountains (Harbort, 2017a)

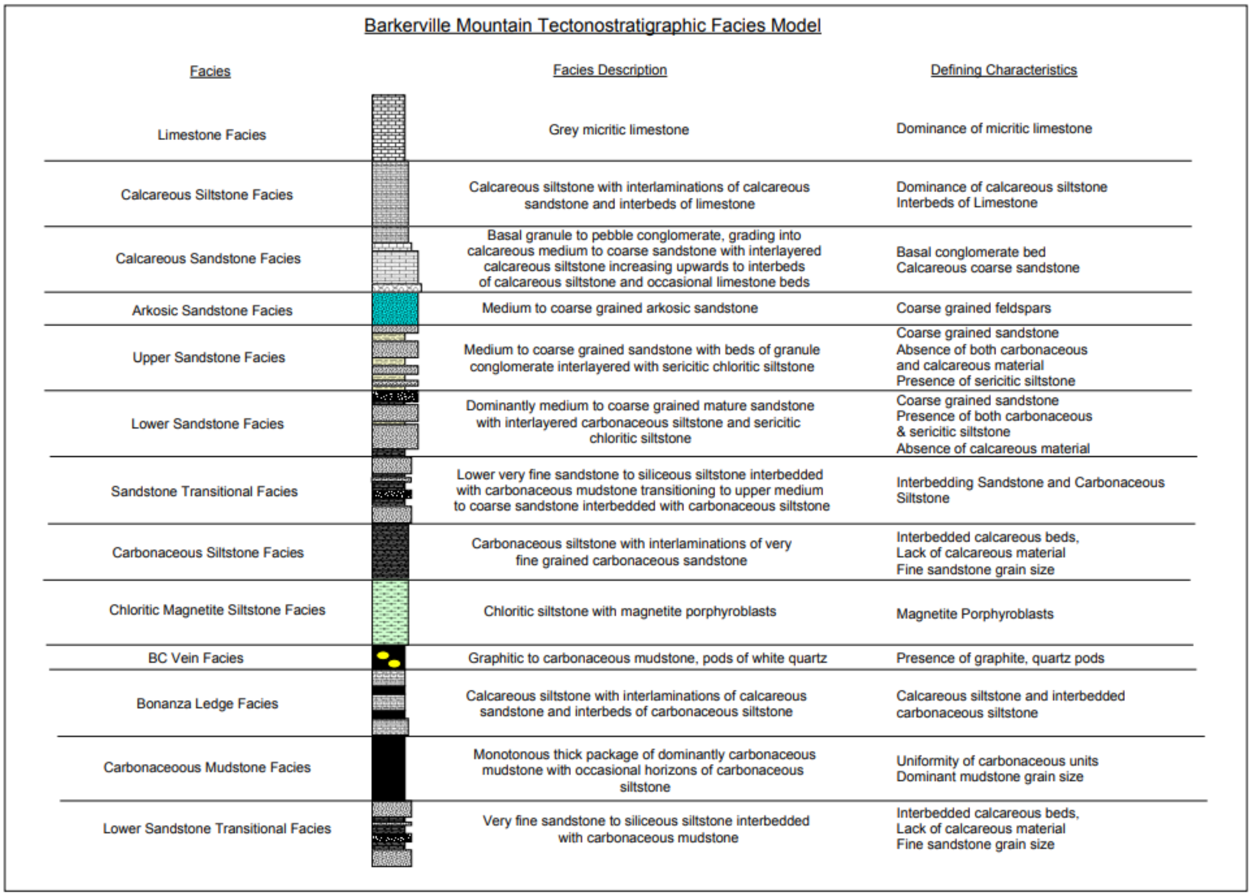


Figure 7-10: Detailed tectonostratigraphic facies model for Barkerville Mountain (Harbort, 2017a)

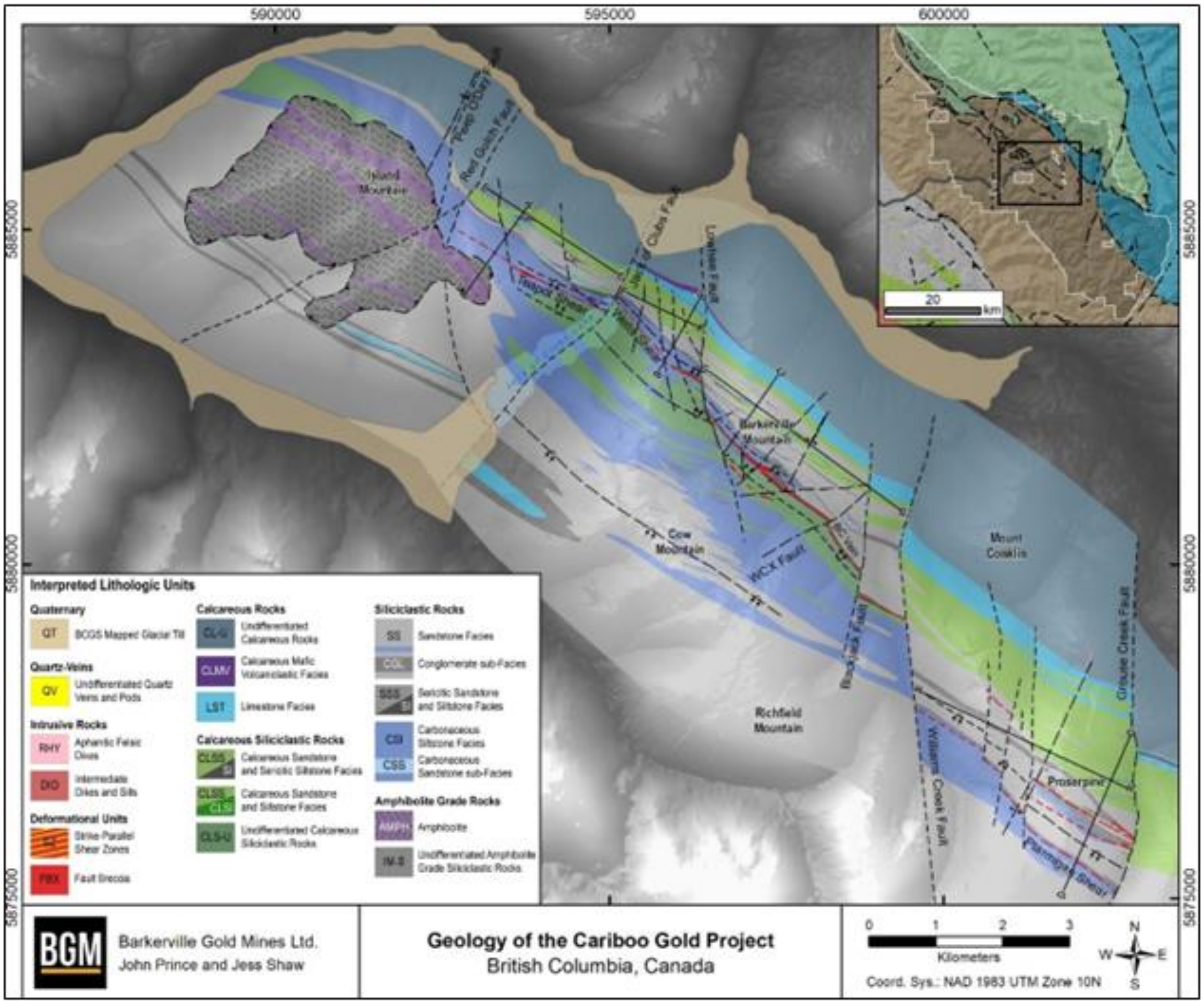
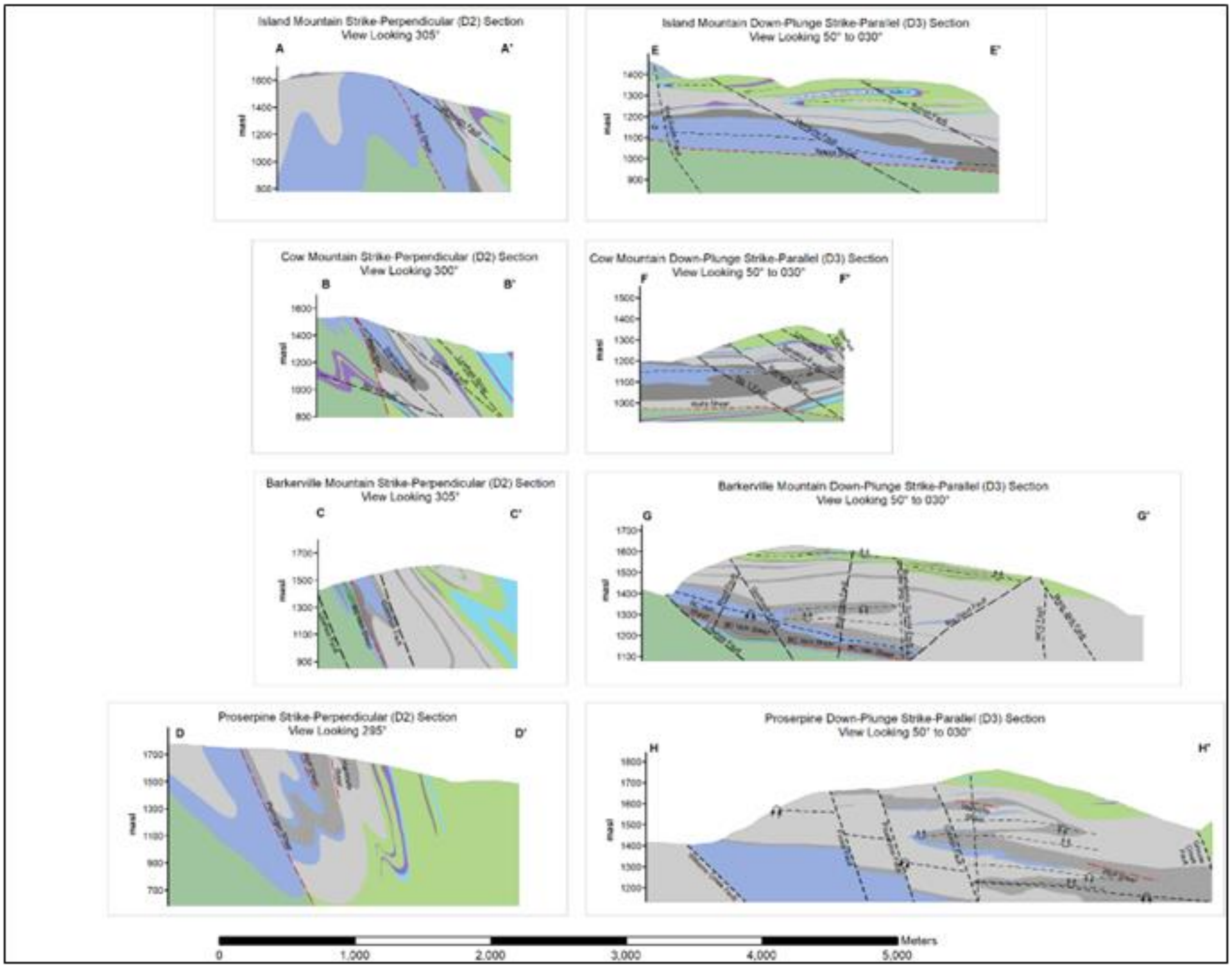


Figure 7-11: Geologic map of the core Cariboo Gold Project area
Corresponding sections presented in Figure 7-12
(Shaw and Prince, 2019)



a) Island Mountain sections; **b)** Cow Mountain sections; **c)** Barkerville Mountain sections; **d)** Mount Proserpine sections

Figure 7-12: Vertical strike-perpendicular (left) and down-plunge strike-parallel (right) cross-sections for the core Cariboo Gold Project area (Shaw and Prince, 2019)

7.4 Structural Geology

A minimum of four phases of deformation are recognized within the Cariboo Gold Project area, resulting in a complex array of intersecting and cross-cutting deformational fabrics (Figure 7-13).

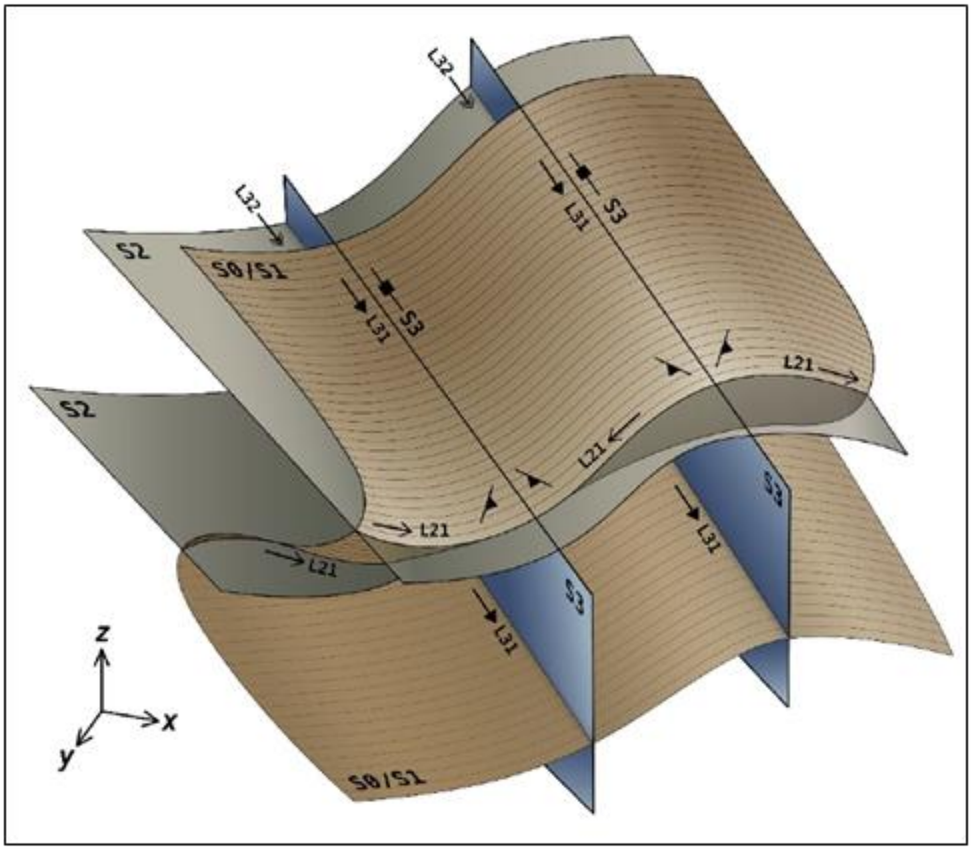


Figure 7-13: Relative orientation of variable structures arising from polyphase deformation within the Wells-Barkerville area (Shaw and Prince, 2019)

7.4.1 Deformation 1

The earliest recognizable phase of deformation (D1) in the Cariboo Gold District is best evidenced by the presence of a penetrative slaty to phyllitic cleavage (S1) developed axial planar ("AXPL") to rarely observed transpositional folds (F1). The S1 foliation is the generally the dominant fabric throughout the area and is predominantly defined by phyllosilicate minerals (sericite and chlorite). F1 folds are rarely observed, expressed as highly asymmetric and isoclinal isolated hinges of rootless folds (Figure 7-14a). The D1 event is commonly attributed to emplacement of the Slide Mountain allochthon and is believed to be transitional into D2.

7.4.2 Deformation 2

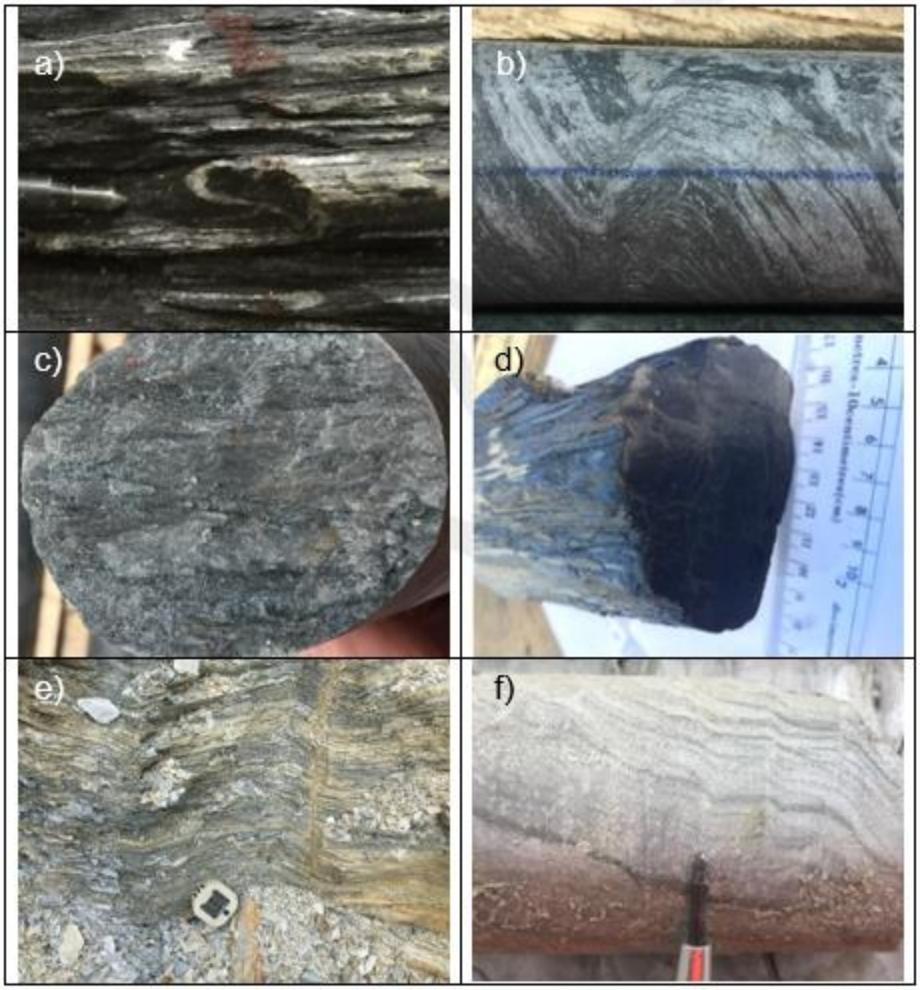
A secondary phase of deformation (D2) accommodated northeast-southwest shortening with the development of close to locally isoclinal F2 folds moderately inclined with vergence toward the SW in the Barkerville trend. Folding was accompanied by the development of a disjunctive to locally phyllitic axial planar crenulation cleavage (S2) (Figure 7-14b) striking west-northwest with an average dip ~50° to the northeast within the Barkerville trend. A well-developed S1-S2 intersection lineation (Figure 7-14c) approximates the F2 axis. The S2 foliation becomes more penetrative where proximal to F2 hinge zones, making it difficult to discern between S1 and S2 foliations locally. Rod-shaped L-tectonites developed under uniaxial strain (Figure 7-14d) are also observed within F2 hinge zones and are particularly well-formed within the carbonaceous siltstone facies. The long axes of replacement mineralization at Mosquito Creek and Island Mountain are parallel to these lineations, within the hinge zones and parallel to the axes of F2 folds.

This second phase of deformation is likely related to the progressive collision of the Quesnel terrane. The final phase of northeast-southwest shortening (D3 of Ferri and Schiarizza, 2003) is characterized by the local development of a steeply dipping S2-strike parallel, disjunctive fracture set within the Barkerville trend and is grouped within the D2 event at the Cariboo Gold Project.

7.4.3 Deformation 3

A tertiary phase of deformation (D3) accommodated strike-parallel (northwest-southeast) shortening with the development of gentle F3 folds with a generally disjunctive sub-vertical axial planar cleavage (S3). The geometry, scale, and deformation mechanics involved with the formation of F3 folds are significant contributors to structural control and distribution of vein-hosted Au-mineralization within the Barkerville trend. With continued shortening under more brittle crustal conditions, local extension in the hinge zones of F3 antiforms resulted in the opening of S3-parallel Mode 1 fractures. The primary Au-bearing vein systems in the region are classified as axial planar because they parallel the S3 disjunctive cleavage and are believed to have exploited and/or contributed to the progressive opening of these fracture systems.

F3 folds are observable at the hand sample and outcrop scale but can also reach wavelengths exceeding 1km (Figure 7-14e,f and Figure 7-15). The geometry of the larger-scale F3 folding is best recognized by changing dip angles through S3 cleavage fanning, folding of the L21 intersection lineation, and by deflections in S1 strike (Shaw and Prince, 2019).



a) F1 isoclinal fold hinges attributed to remnant transposed layering during D1; **b)** F2 folds with weakly developed S2 foliations AXPL to folds; **c)** L21 intersection lineation; **d)** Rod-shaped L-tectonite fold hinge structure of F2 fold axis; **e)** Open gentle F3 folds with weakly developed spaced AXPL cleavage; **f)** Weakly developed F3 crenulation cleavage.

Figure 7-14: Deformation phases and associated fabrics on the Cariboo Gold Project (Barkerville Gold Mines, 2018)

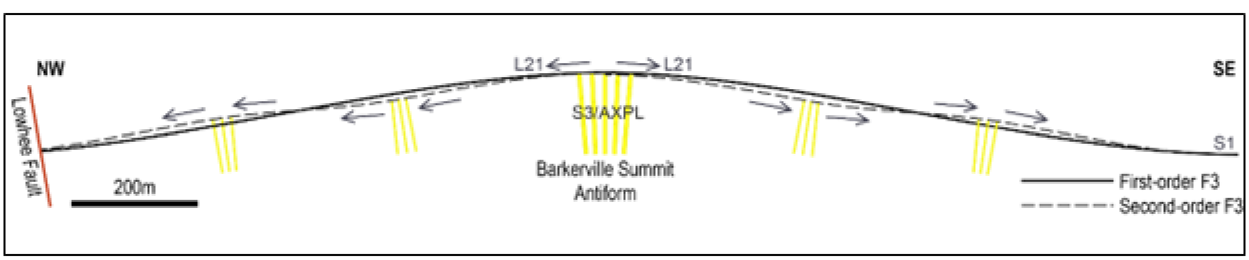


Figure 7-15: To scale schematic strike parallel Barkerville Mountain section illustrating the geometries of first and second order F3 folds (Shaw and Prince, 2019)

7.4.4 Deformation 4

A final brittle phase of deformation (D4) is recognized by the development of both S3-parallel and N-S trending faults with constrained relative surface offsets (most commonly dextral) locally exceeding 1,000 m (e.g., Grouse Creek and Williams Creek faults). The S3-parallel D4 faults may be post-orogenic relaxation structures reactivating and inverting D3 reverse faults, or simply normal faults exploiting zones of high density S3 fractures. The N-S striking D4 faults may likewise form as normal structures linking pre-existing fracture systems but are locally characterized by dominant components of dextral strike-slip. This latter observation suggests either a syn-relaxation component of dextral transtension, or an independent, post-relaxation phase of dextral transpression.

The presence of brecciated mineralized quartz vein material within D4 structures has been observed in drill core (Figure 7-15a) and was reported by Skerl (1948), indicating that at least some of the movement on D4 faults must postdate mineralization. D4 structures (e.g., Lowhee fault) are also observed to cross-cut and offset mineralized corridors. Many of the best-mineralized prospects within the Barkerville Trend are formed adjacent to the D4 faults, e.g., Shaft Zone, Valley Zone, Lowhee Zone. The observed spatial association between vein zones and major D4 structures may simply reflect the preferential formation of each within zones of high S3 fracture density.

7.5 Mineralization and Alteration

Gold +/- silver-bearing veins and replacement-style mineral deposits in the Cariboo Gold Project are inter-related but can be subdivided into five principal types:

1. Fault-fill shear veins in fractured early-phase quartz lenses within carbonaceous mud and silt-rich, foliation sub-parallel (northwest-southeast trending) shear zones (BC Vein-style).
2. Sub-vertical, foliation-perpendicular (northeast-southwest trending) so-called AXPL veins structurally controlled by late-stage extensional fractures preferentially formed in rheologically brittle sandstone units.
3. Foliation-oblique so-called extensional (“EXT”) veins characterized by greatest mineral potential where in association with AXPL vein systems.
4. Sulphide-replacement bodies structurally controlled by and elongate parallel to the hinges of F2 folds within calcareous sandstones and limestones (Mosquito Creek-style).
5. Fault bound sulphide-replacement bodies within calcareous siltstones (Bonanza Ledge-style).

Photographic examples of varying mineralization styles are presented in Figure 7-16 and Figure 7-17.

7.5.1 Vein-related Mineralization

Axial planar quartz veins are the primary source of vein hosted Au +/- Ag within the Barkerville trend, defining the fundamental architecture of the Mosquito Creek, Shaft, Valley, Cow Mountain, Lowhee, and KL deposits. Individual veins range in width from millimeters to several meters. Where density is high, AXPL veins form mineralized corridors extending for up to a few hundred metres along strike and down-dip within rheologically prospective units. Though often advantageous to model and describe AXPL veins as tabular bodies, their morphologies are generally more complex. They are often observed to pinch and swell in thickness with undulatory margins, and commonly network with (and/or refracture and cross-cut) earlier EXT vein systems. Au-Ag-bearing EXT veins and Au-rich (+/- Ag) sulphide replacement bodies are intimately related to AXPL vein systems, both spatially and presumably in terms of mineralizing fluid dynamics.

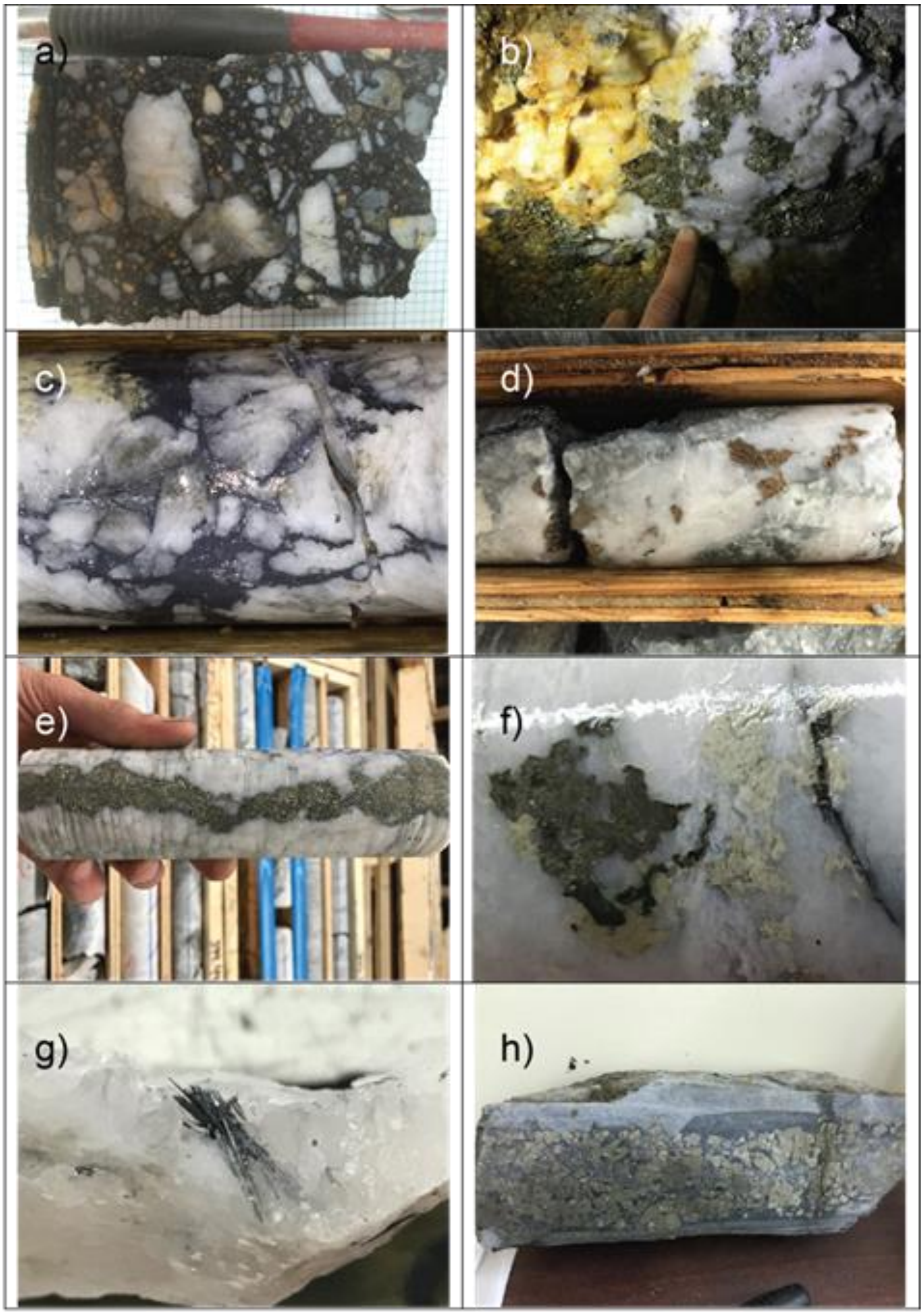
The composition of both the AXPL and EXT veins is quartz dominant. Lesser iron carbonate usually occurs as vein-marginal or clustered intergrowths and vein-hosted sericite is also common. Pyrite is the most prevalent sulphide mineral across all deposits, with vein content ranging from trace amounts to tens of percent (Figure 7-16b). Pyrite content appears to have a direct association with gold and silver content within veins. Galena (Figure 7-16c) and arsenopyrite are also common vein-hosted sulphides, occurring in individual veins in amounts up to several percent and locally exceeding pyrite content. Additional sulphide minerals generally occurring in trace amounts include pyrrhotite, sphalerite (Figure 7-16d), chalcopyrite and (rarely) argentite. Pb-Ag-Bi sulphosalts including cosalite are found in trace amounts within veins and generally have a close association with elevated Au grades (Figure 7-16g). Elevated silver grades are typically accompanied by vein hosted pyrite, galena, or cosalite mineralization. Scheelite is also locally observed, generally as secondary fill within quartz vein vugs.

Veining can be subdivided into at least two temporally separate events. Both events are characterized by a quartz - iron carbonate ± sericite hydrothermal fluid, but they differ greatly in their Au potential. Early veins may host sulphides (mostly Py, Po, Gal, Sph ± Cpy) but tend to be barren of Au and Ag except where mineralized by later fluids. The later, Au +/- Ag bearing veins tend to be more sulphide-rich (mostly Py, Aspy, Gal, Sph ± Arg ± Cos) and cross-cut earlier veining (Figure 7-16e). In these cases, sulphides may be observed filling void space or occasionally replacing the iron-carbonate within the early veins (Figure 7-16f), a reaction which is known to precipitate Au from solution:

$$FeCO_3 + Au(HS)_2^- = FeS_2 + CO_2 + H_2O + Au$$ (Zhu et al., 2011)

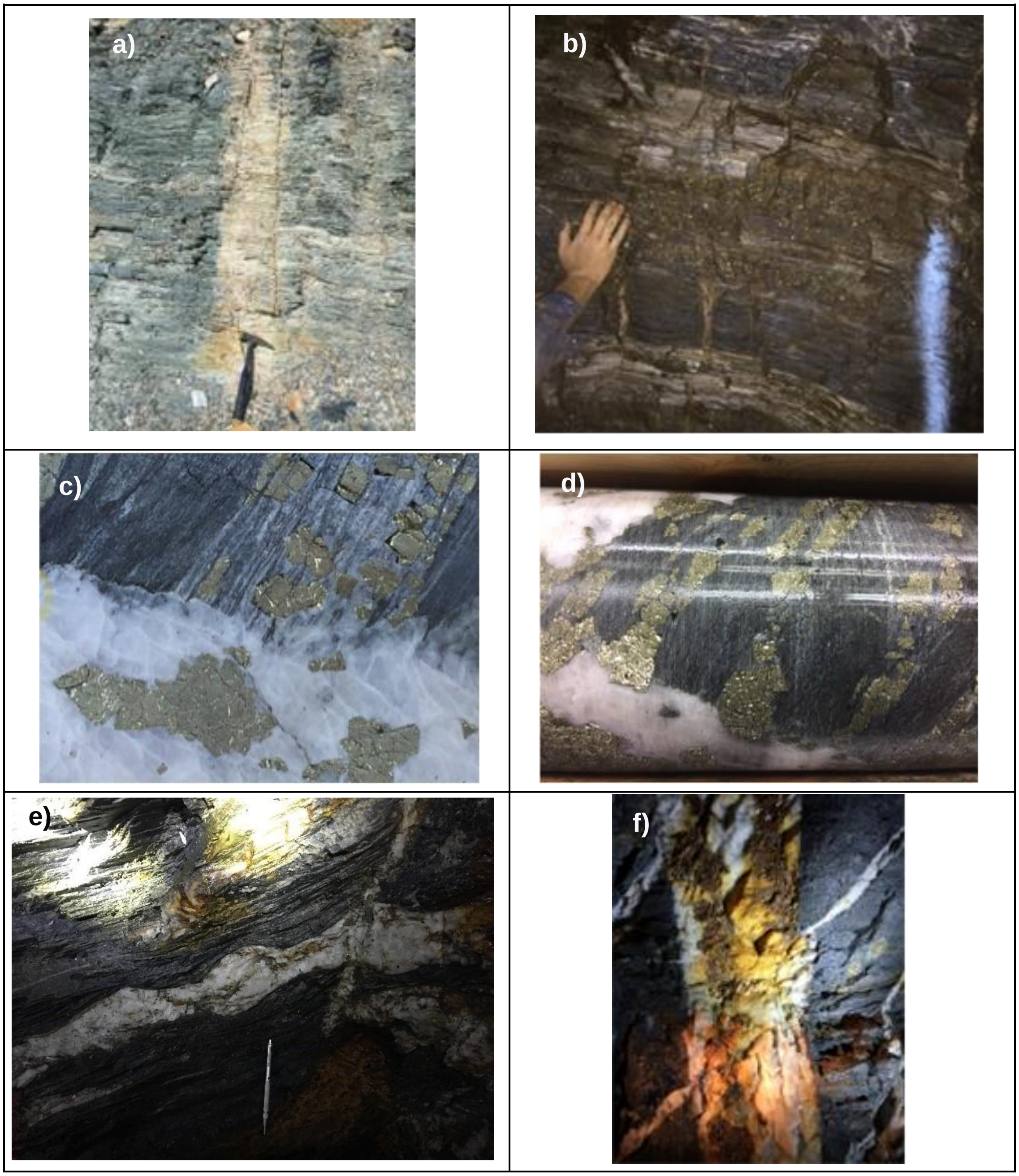
7.5.2 Replacement-style Mineralization

Replacement mineralization (Figure 7-16h) in calcareous siliciclastic and carbonate facies rocks varies from fine to coarsely crystalline pyrite with rare arsenopyrite. This style of mineralization is thought to be the result of a reaction between the slightly acidic, Au-Ag bearing hydrothermal fluid and carbonate minerals within the host rocks which results in the simultaneous dissolution of carbonate and precipitation of gold-rich sulphide. Bonanza Ledge-style replacement mineralization is hosted in calcareous siltstone and consists entirely of fine-grained pyrite ore. Sulphide content in replacement ore types is generally high, ranging from 10% (replacing thin calcareous bands) to massive (replacing entire beds). Mosquito Creek-style replacement bodies in limestones and calcareous sands contain the most consistently high Au grades in the Cariboo Gold Project. These replacement bodies are thought to be both spatially and temporally related to the mineralized AXPL vein systems (Figure 7-17b).



a) BC Vein-style fault-fill (breccia annealing) mineralization; **b)** Pyrite in quartz vein; **c)** Galena in quartz vein; **d)** Sphalerite in quartz vein; **e)** Pyrite deposition along the centerline of veins in pre-existing inter-crystal void space; **f)** Pyrite replacement of iron-carbonate; **g)** Cosalite in quartz vein; **h)** Sulphide replacement mineralization.

Figure 7-16: Mineralization styles observed on the Cariboo Gold Project (Barkerville Gold Mines, 2018)



a) Vertical S3 structures bounding sericite-Fe-carbonate alteration; **b)** Vertical AXPL veins acting as multiple feeders to sulphide replacement body; **c)** Diffuse AXPL vein boundary with silica bleeding into replacement band; **d)** Outgrowths of pyrite from vein into carbonate replacement bands; **e)** Semi-vertical AXPL vein cutting across boudinaged layer-parallel vein; **f)** Vertical AXPL vein cross-cutting oblique-dipping shear veins.

Figure 7-17: Mineralization styles observed on the Cariboo Gold Project

7.5.3 Vein-related Alteration

A schematic illustrating the relationships between mineralized quartz veins and their associated alteration halos as observed within the Cariboo Gold Project is presented in Figure 7-18. Large veins tend to exhibit a strong silica alteration halo with associated vein halo pyrite (Figure 7-19a). Stepping outward, moderate silicification persists, accompanied by moderate sericite, with pyrite present only in trace amounts (Figure 7-19b). A widespread moderate silica envelope with patchy but intense silica closer to the veins is observed within high density vein corridors. Moving further from the fluid source, silicification becomes weak and sericite is present as the dominant alteration mineral (Figure 7-19). The distal-most alteration halo is characterized by iron carbonate and lesser sericite (Figure 7-19d). Clay minerals (e.g., illite, smectite) and chlorite may be presented as vein forming minerals outside of mineralized corridors (Figure 7-19e, f).

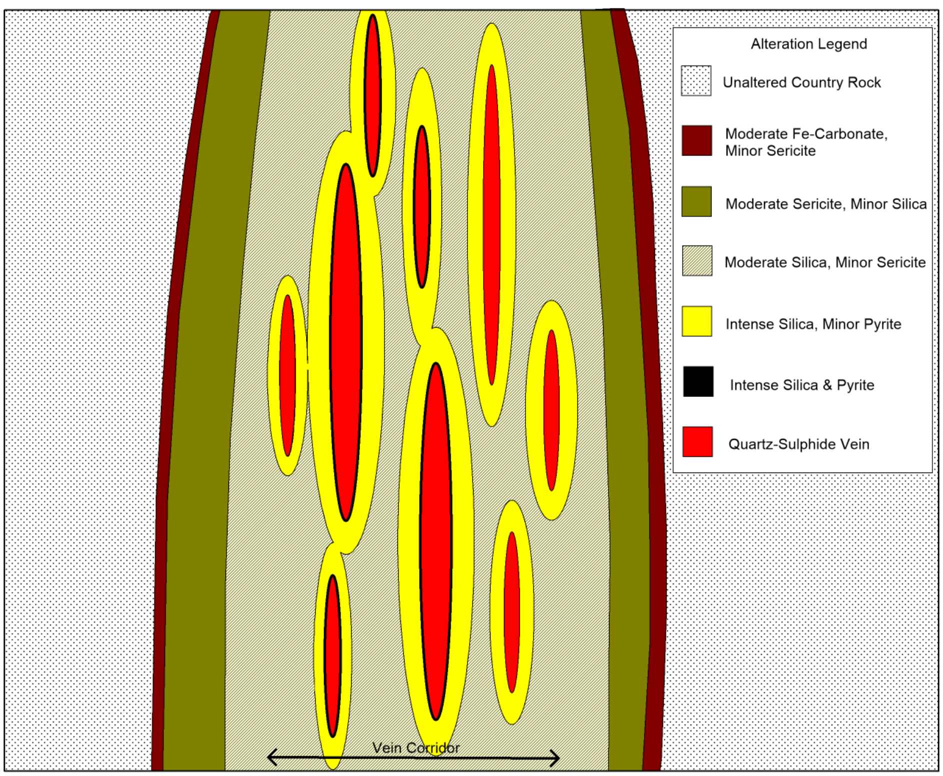
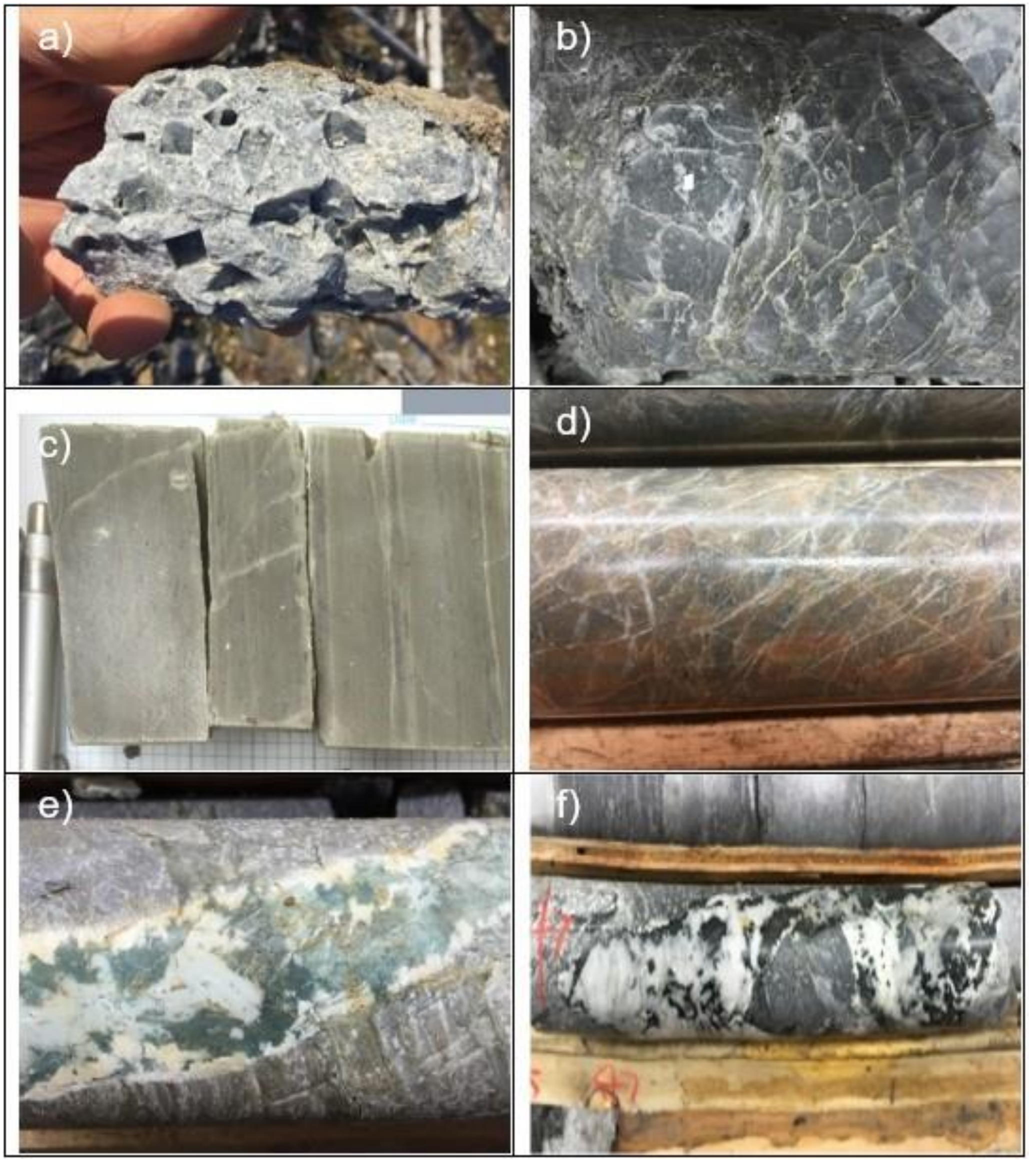


Figure 7-18: Schematic vertical section (looking NE) of vein alteration observed at the Cariboo Gold Project (Barkerville Gold Mines, 2018)



a) Intense silica alteration with boxwork textures after pyrite in vein margin; **b)** Intense silica alteration with trace pyrite adjacent to vein margin; **c)** Moderate sericite alteration distal from vein array; **d)** Iron carbonate alteration distal from vein array; **e)** Late argillic alteration in vertical AXPL vein; **f)** Late chlorite alteration in vertical AXPL vein.

Figure 7-19: Vein-related alteration styles at the Cariboo Gold Project (Barkerville Gold Mines, 2018)

7.6 Age of Mineralization

Age of mineralization in the Cariboo Gold District is currently constrained to an approximate 20 Ma window straddling the Jurassic-Cretaceous boundary. ^{40}Ar-^{39}Ar dates obtained from white mica in Au-bearing veins and replacement bodies by Rhys et al. (2009), Mortensen et. al. (2011) and Allan et al. (2017) are presented in Figure 7-20).

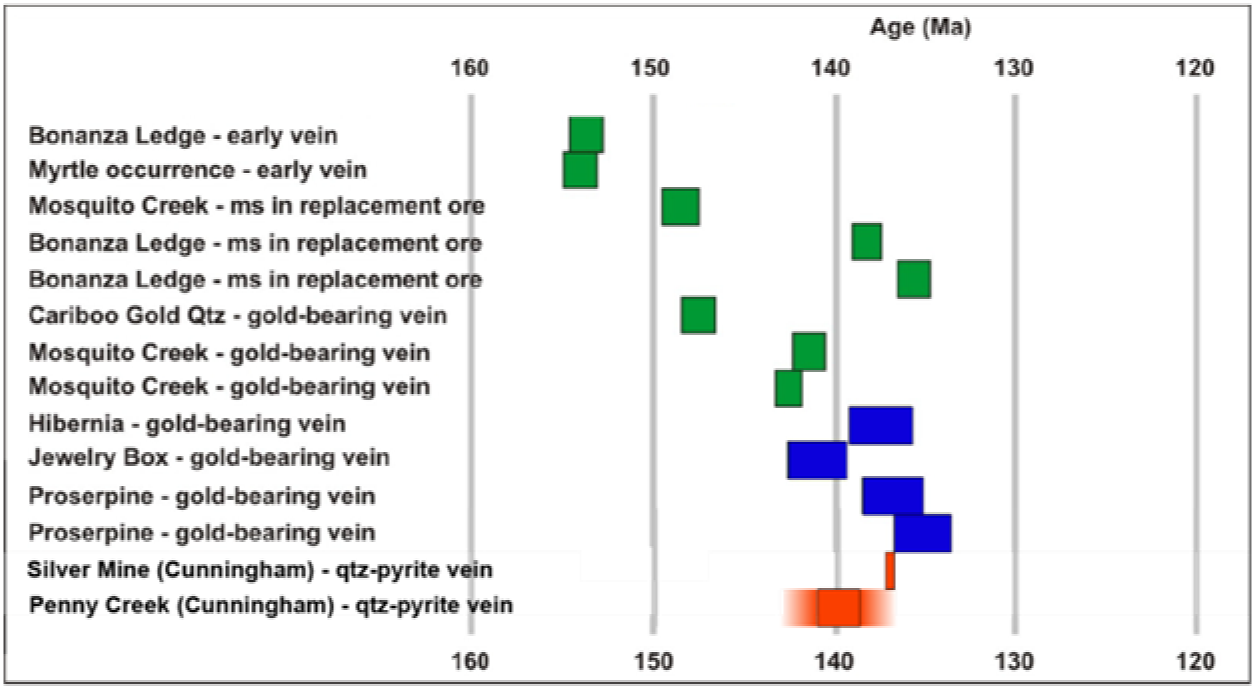


Figure 7-20: Compilation plot of $^{39}Ar/^{40}Ar$ age data from white mica in veins and replacement bodies in the Cariboo Gold District
Green blocks from Rhys et al. (2009); blue blocks from Mortenson et al. (2011); red blocks from Allan et al. (2017). Modified from Mortensen et. al. (2011).

8. Deposit Types

The Cariboo Gold Project ("the Project") shares many characteristics with an orogenic gold deposit model (Chapman and Mortensen, 2016). This class of deposit is typified by deformed and metamorphosed mid-crustal blocks and major structures, inherent products of orogenesis (Figure 8-1). Orogenic gold deposits span the entire breadth of the province of British Columbia, occurring predominantly within two main belts. The westerly belt is associated with accreted pericratonic terranes linked to Late Cretaceous to Paleocene movement on crustal-scale dextral strike-slip fault systems along the western margin of the Stikine terrane, and eastern Coast Belt (e.g., Bralorne-Pioneer, Atlin, Cassiar). The easterly belt is crudely cospatial with the Jurassic to Cretaceous accretion of the Intermontane terranes and autochthonous strata of the ancestral North American (e.g., Cariboo, Sheep Creek) (Allan, 2017). Orogenic deposits have significant economic importance, as they are known to host auriferous mineralization as high-grade vein deposits, low-grade bulk-tonnage lode deposits, and are intimately linked with substantial placer accumulations (Goldfarb et al., 2001; 2005).

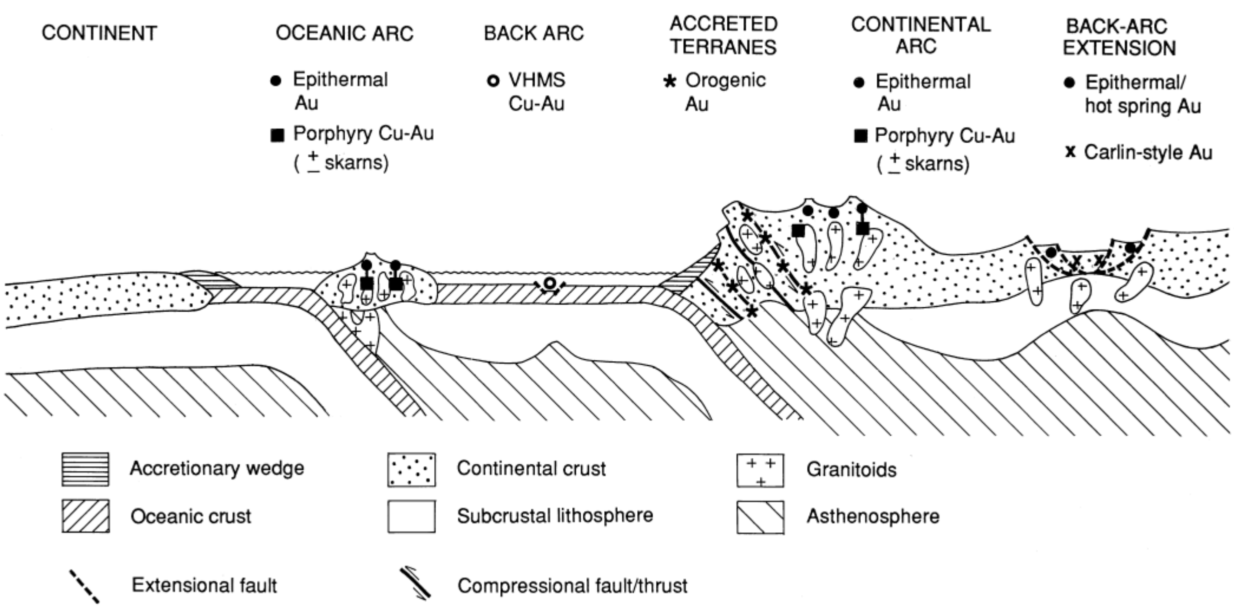


Figure 8-1: Tectonic settings of gold-rich epigenetic mineral deposits
Orogenic gold deposits are emplaced during compressional to transpressional regimes and throughout much of the upper crust, in deformed accretionary belts adjacent to continental magmatic arcs. (Modified after Groves et al. 1998)

Most orogenic gold deposits in metamorphic terranes, such as the Barkerville terrane, are found adjacent to first-order, deep-crustal fault zones, which show complex structural histories and may extend along strike for hundreds of kilometres with widths of as much as a few thousand metres (Goldfarb et al., 2005). Most orogenic gold deposits occur in greenschist facies rocks, but significant orebodies can be present in both lower and higher-grade rocks (Phillips and Powell, 2010). Hydrothermal fluids are generated from metamorphic dehydration reactions along deep-crustal fault zones, driven by episodes of major pressure fluctuations during seismic events (Cox, 2005). Gold mineralization is associated with orogenic silica-carbonate-sericite-pyrite stable fluids moving along secondary permeability controlled by metamorphic fabrics, vein arrays, faults, lithologic contacts, and rheological contrasts (Groves et al., 2003). Gold deposits form as simple to complex networks of gold-bearing, laminated quartz-carbonate shear veins along second- and third-order faults, particularly at jogs or changes in strike along major deformation zones. Mineralization styles vary from stockworks and breccias in shallow, brittle regimes, through laminated crack-seal veins and sigmoidal vein arrays in brittle-ductile crustal regions, to replacement- and disseminated-type orebodies in deeper, ductile environments (Groves et al., 2003). Mineralization is syn- to late-deformation and typically post-peak metamorphism, and commonly associated with silica-carbonate-sericite-pyrite alteration. Gold is largely confined to the quartz-carbonate vein network, but may also be present in significant amounts within iron-rich sulphidized wall-rock selvages, or within silicified and sulphide-rich replacement zones (Dubé and Gosselin, 2007). One of the key structural factors for gold mineralization emplacement is often a late strike-slip movement event that reactivates earlier-formed structures within the developing orogen (Goldfarb et al., 2001). The following aims to highlight economically significant deposit types within the Cariboo Gold Project.

8.1. Vein Deposits

Inter-related vein systems are the principal source of gold and silver within the Barkerville trend and are a key fluid pathway for sulphide mineralization. Axial planar ("AXPL") quartz veins represent the dominant vein system hosting gold-and-silver-rich sulphide mineralization for the Mosquito Creek, Shaft, Valley, Cow Mountain, Lowhee, and KL zone deposits. AXPL veins are classified as such since they are believed to have exploited and/or contributed to the progressive opening of axial planar fracture systems in the hinge zones of F3 folds. AXPL veins parallel the sub-vertical F3 axial planar disjunctive cleavage (S3) and are classifiable by a perpendicular relationship with S1 foliation (Figure 8-2).

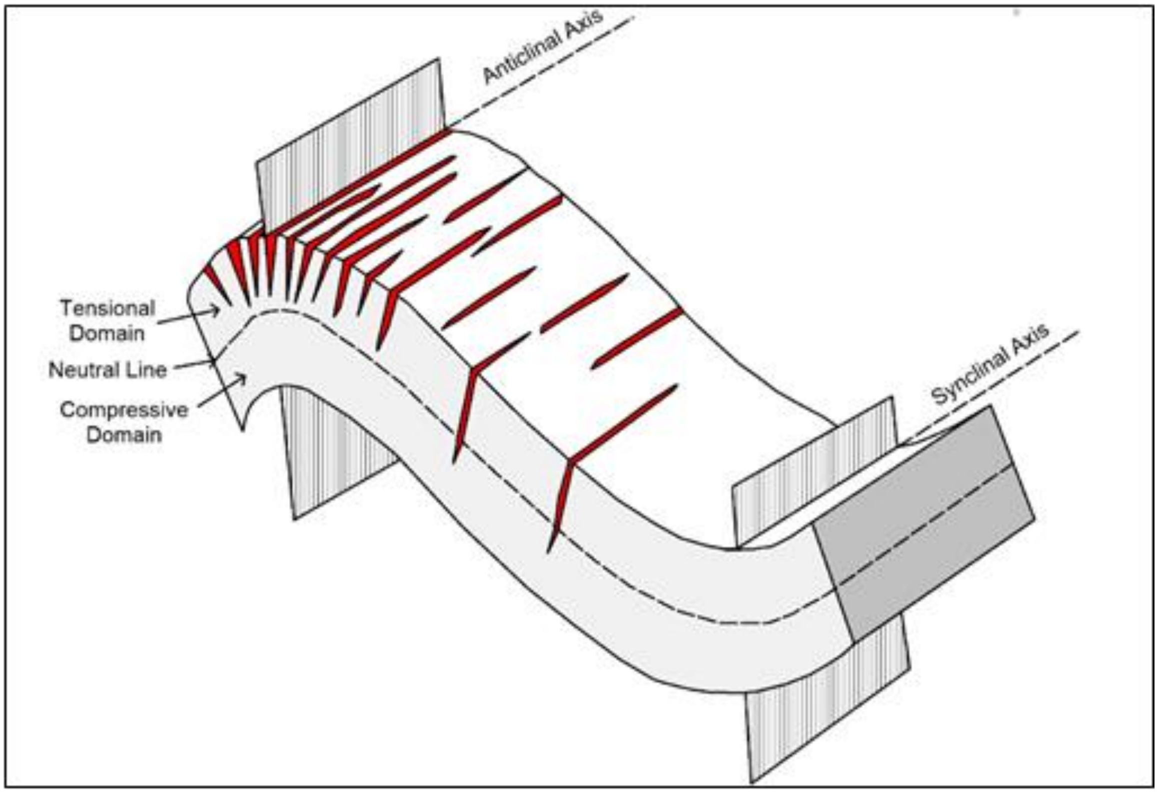


Figure 8-2: Model for the formation of vertical AXPL veins in the hinges of F3 folds on the Cariboo Gold Project (Harbort, 2017a)

Extensional ("EXT") veins are classified by an orientation oblique to S1-foliation (Figure 8-3). Significant scatter in both drill hole and surface datasets suggests that veins classified as EXT may represent multiple variably oriented S1-oblique sub-populations. At least one population of EXT veins is parallel to the S2 cleavage and suggests veins classified as EXT may have exploited S2 surfaces.

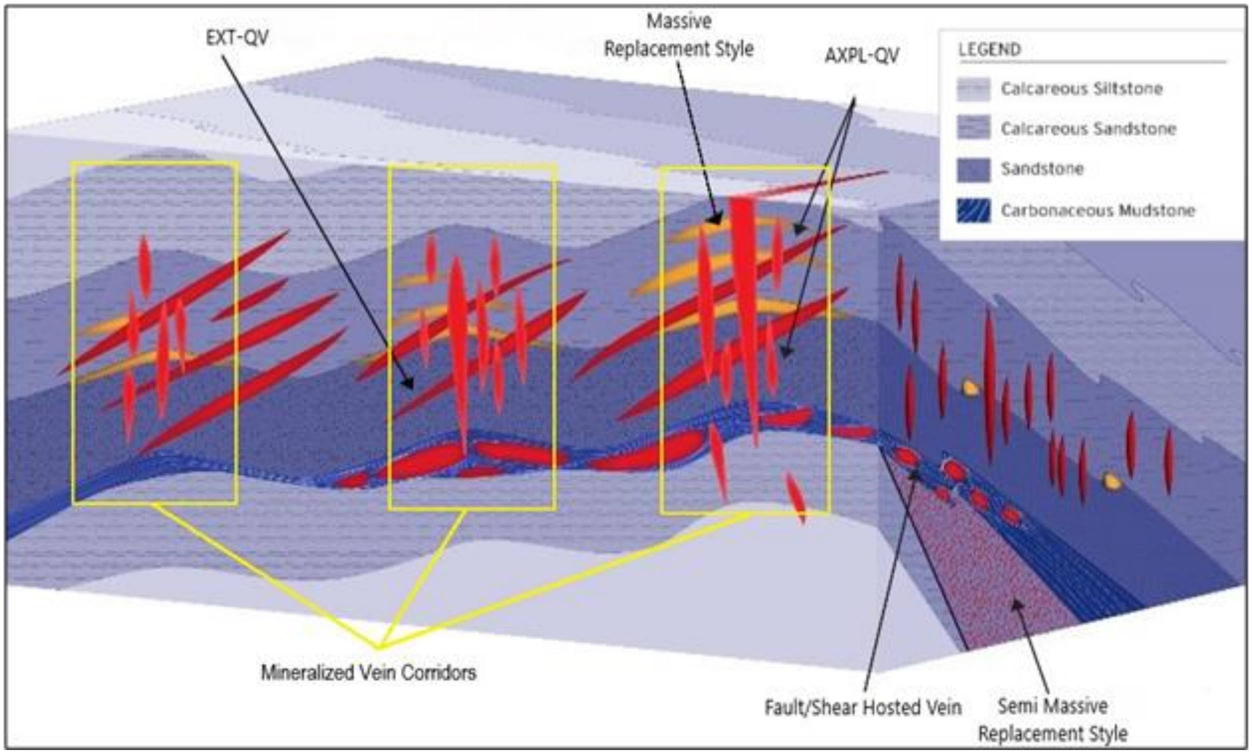


Figure 8-3: Composite model of the mineralization styles on the Cariboo Gold Project Illustrating oblique EXT quartz veins (dark red), Massive replacement style in the hinges of F2 folds (orange), sub vertical AXPL quartz veins along S3 surfaces (light red), D2 related Fault. Shear hosted (BC Vein) and semi massive replacement (Bonanza Ledge) (modified after Harbort, 2017a).

Veins range in width from millimetres to several metres ("m") and are termed vein corridors when highly concentrated over 2 m in width and up to hectometres in strike. Vein corridors are planar structures, typified as steeply dipping, striking N020-N050, 100 m–700 m downdip and extending 100 m–300 m along strike. The principal aims of exploration and infill drilling programs involve testing the extent and concentrations of AXPL vein corridor deposits, with targeting based in part on proximity to identifiable large-scale F3 hinge zones (Shaw and Prince, 2019).

8.2. Replacement Deposits

Replacement-style gold mineralization contains the most consistently high gold grades in the Cariboo Gold Project and were the main target for the historic underground Mosquito Creek Mine on Island Mountain. Occasional elevated silver grades are also observed within replacement sulphide bodies at Cariboo. Semi-massive replacement style mineralization observed at the historically mined Bonanza Ledge is fault-bounded in the footwall of the BC Vein shear. The replacement deposits observed at Island Mountain and Mosquito Creek are thought to be structurally controlled in the hinges of F2 folds and the formation of L-tectonites and considered contemporaneous with the AXPL veining (Figure 8-4). These rod-like structures which parallel F2 fold axis' act as conduits for hydrothermal fluids which react with the pH buffered calcareous sediments. This reaction simultaneously creates pore space and precipitates gold-rich sulphides.

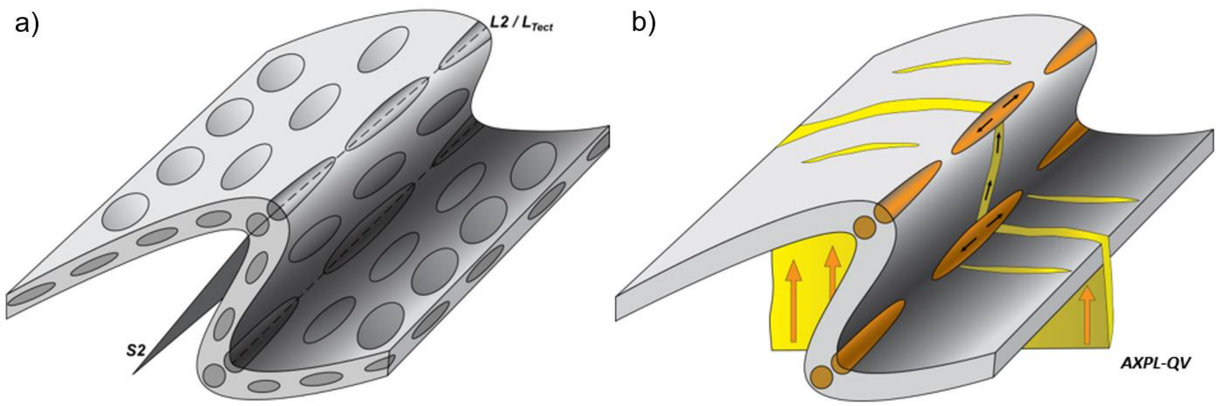


Figure 8-4: a) Formation of structural traps in F2 hinges as L-Tectonites; b) Replacement style mineralization (orange) fed by AXPL quartz veins (yellow)

8.3. Shear Zone Deposits

Steep, orogen-parallel, D2-parallel faults, and damage zones act as fluid pathways for crustal fluids. The BC Vein is a poly-deformed, steeply-dipping, and S1 strike-parallel shear zone of unknown relative offset. The structure is internally characterized by strongly carbonaceous to graphitic siltstone fault breccia, discontinuous pods of brecciated milky white quartz and later stage grey quartz which has, in places, annealed the breccia matrix. Fine-grained pyrite and gold are associated with the annealing late-stage grey quartz. The Wells Shear is interpreted as the offset Cow Mountain equivalent of BC Vein owing to its similar strike, deformational style, and position within tectonostratigraphic sequence. The BC Vein-Wells Shear structure is highly variable in thickness both along strike and down dip. The close geographic association between this structure and the locations of highest density axial planar veining as well as the highest gold grades in both soil and rock geochemical assays is taken to reflect its importance as a fluid pathway at the time of mineralization.

9. Geological Setting and Mineralization

For the purposes of this Report, Barkerville Gold Mines Ltd. ("BGM"), as it operated from 2015 to 2021, will be referred to as Osisko Development Corp. ("ODV"). Current ODV management has been in place since 2015 and on November 21, 2019, Osisko Gold Royalties acquired the Cariboo Gold Project through the acquisition of Barkerville Gold Mines Ltd. The Project was part of the Osisko Gold Royalties contributed assets that created the Osisko Development Corp. on November 25, 2020.

ODV carried out work on the Cariboo Gold Project yearly from 2015 to 2021. These programs consisted of geologic mapping, surface rock sampling, and soil sampling. The field programs typically ran from April to October, depending on the weather, with the soil program occurring towards the middle of that period. Mapping and sampling efforts targeted the northwest and southeast extensions of the known mineralized corridor in the Wells area, as well as a parallel trend, at Mount Burns (Lightning Creek Trend). These prospect areas are displayed in Figure 9-1.

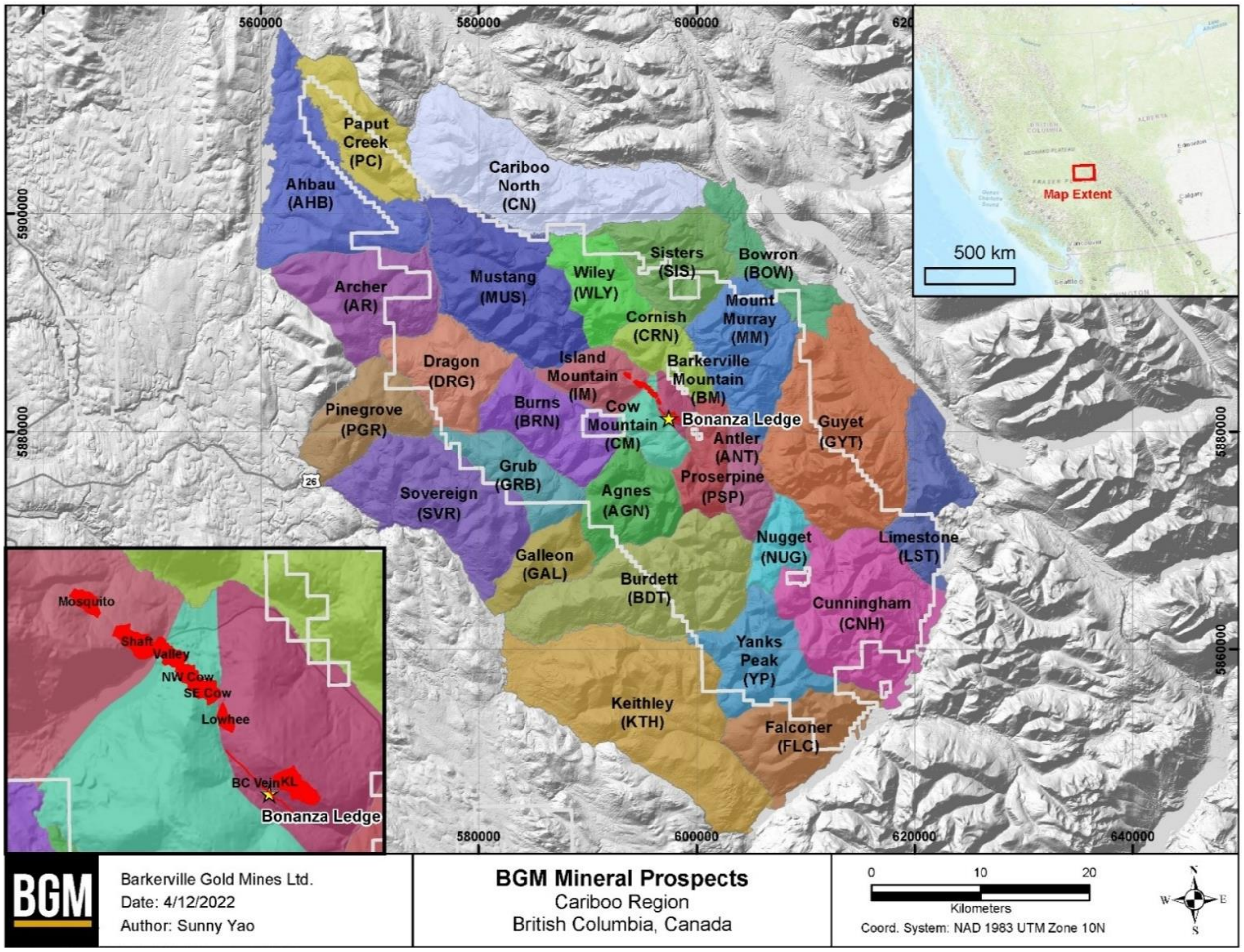
9.1 2020 and 2021 Purpose and Methodology

9.1.1 Geologic Mapping

Geological mapping was conducted to identify lithologic contacts, define alteration and geochemical signatures, record structural data and collect select rock samples. The scale of mapping was conducted at 1:2,000. Mapping of an area was classified as complete when all roads, trails, and stream valleys were traversed. Rock samples were taken when significant veining and/or sulphide mineralization occurred. These samples were sent to be fire assayed to provide gold-grade and multi-element data to aid in future exploration programs.

9.1.2 Soil Sampling

Soil sampling was conducted to identify gold-in-soil anomalies, which were then used to target prospective bedrock. Dutch augers were used to taking 500-gram ("g") soil sample from the B soil horizon. If the B horizon was not present, a C horizon sample was taken. If insufficient sample material was available, a no sample ("NS") point was marked and noted. Soil samples were collected every 50 metres ("m") along north-south oriented lines spaced 200 m apart. The sample lines were oriented to best test for gold mineralization hosted in quartz lenses oriented parallel to stratigraphy and northeast-southwest trending quartz veins noted throughout the Cariboo Gold prospect. At any outcrop or historical working site observed in the field, geologic information was collected, and a rock sample was taken if the material yielded possible mineralization. Soil samples returned with gold ("Au") values in the 90th percentile and above were considered anomalous. Anomalous samples were used to guide further exploration.



Note: The grey colour delineates the boundary of the Cariboo claims. Prospects are broken down by region with the associated name and acronym.

Figure 9-1: Barkerville's mineral prospects of the Cariboo Region

9.2 Program Objectives and Results

For Barkerville Gold Mines ("BGM") and previous operators' works prior to 2015, refer to Chapter 6.

9.2.1 2015–2019 Geochemical and Mapping Programs

From 2015 to 2019, ODV executed a systematic approach with surface mapping and geochemical sampling. From 2015 to 2017, sampling efforts specifically targeted the Barkerville Trend, a major deep-seated shear that trends 60 km northwest-southeast through the centre of the Project area, called the Cariboo Break at the time. In 2018 and 2019, the focus shifted to the northwest and southeast extensions of known mineralization around the Wells area within the

Barkerville Trend. Further exploration was conducted along the parallel Lightning Creek Trend. A summary of the samples collected from mapping and geochemical sampling is summarized in Table 9-1. Figure 9-2 and Figure 9-3 illustrate the locations of the work programs. Results from these programs generated drill targets for past and current drilling.

Table 9-1: Surface geochemical samples collected on the Cariboo Gold Project 2015-2019

Year	Rock Samples (qty)						Structural Stations (qty)	Soil Samples (qty)
	Grab	Select	Float	Linear	Channel	Panel		
2015	-	25	-	-	-	111	1,875	-
2016	81	75	1	17	341	50	704	4,928
2017	121	42	-	10	11	-	439	3,775
2018	108	182	25	8	26	4	4,961	6,307
2019	52	139	-	1	-	8	1,291	-
Total	**362**	**463**	**26**	**36**	**378**	**173**	**9,270**	**15,010**

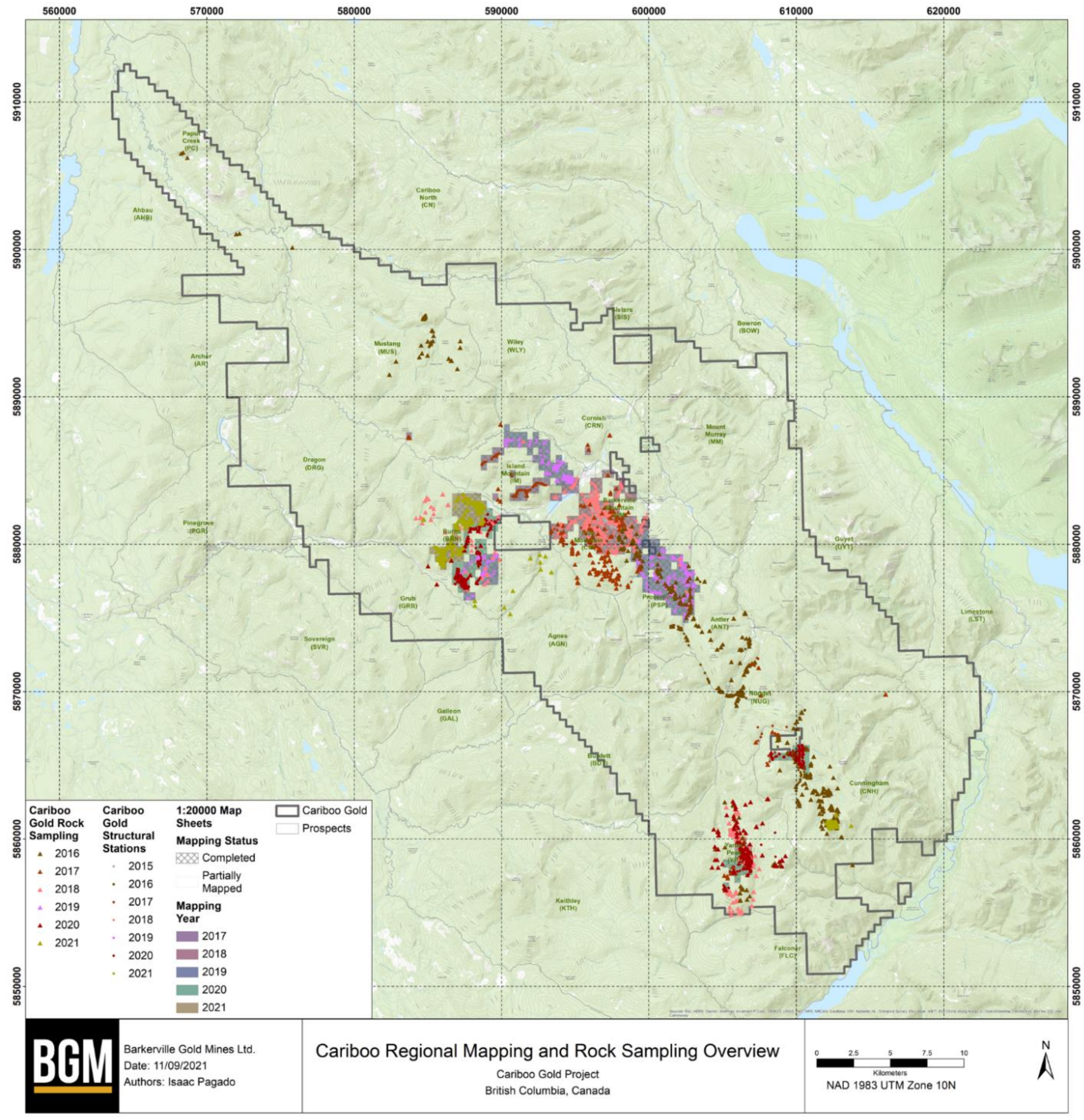


Figure 9-2: Cariboo Regional mapping and rock sampling overview from 2015 to 2021

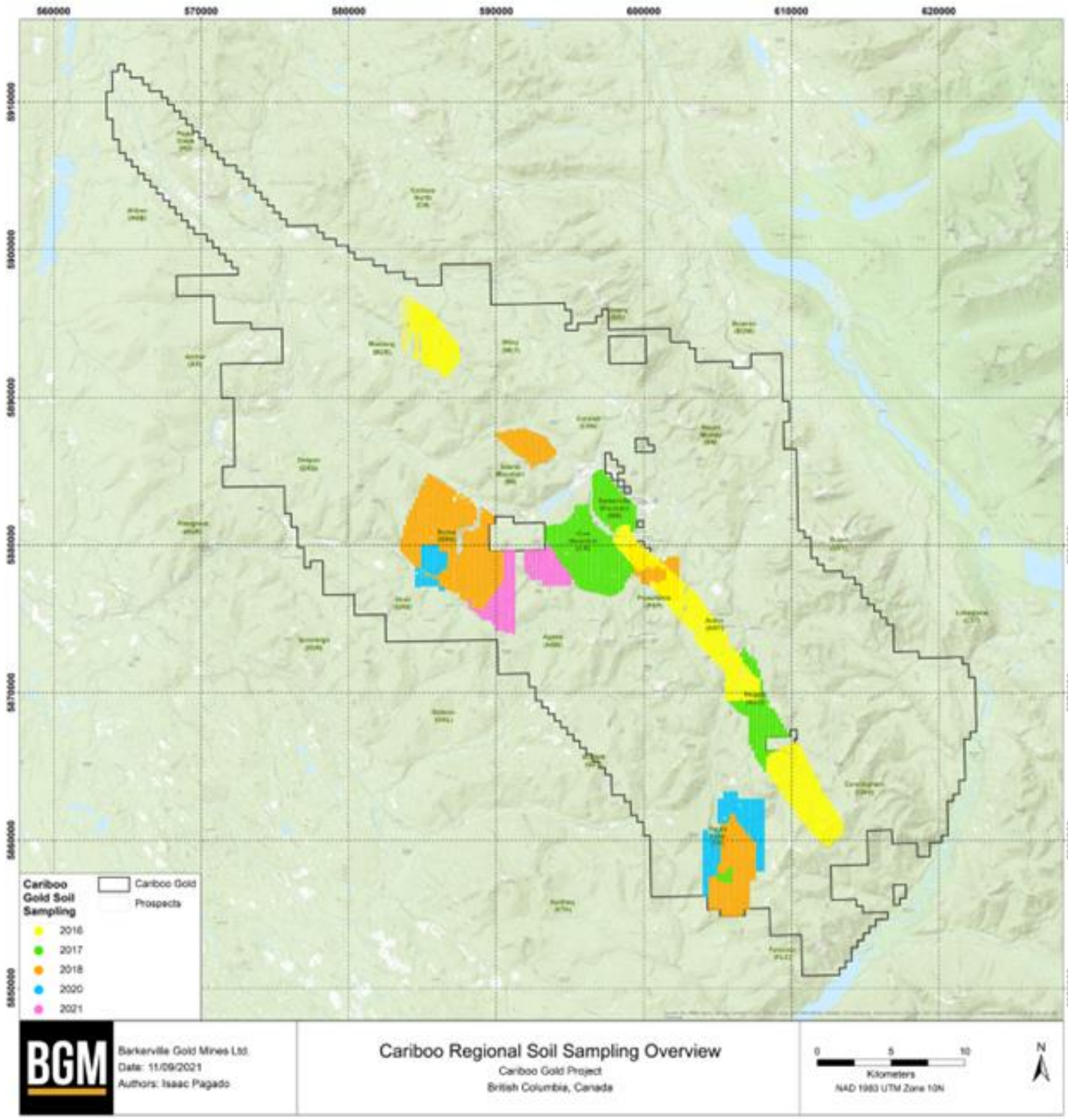


Figure 9-3: Cariboo Regional soil sampling overview from 2016 to 2021

9.2.2 2016 Magnetic and VTEM Survey Program

In 2016, a helicopter-borne Magnetic and VTEM Survey was conducted by Geotech Ltd. over ODV's Cariboo Gold Project. The principle geophysical sensors used were a VTEM Plus system and a horizontal magnetic gradiometer with two caesium sensors. The sensors were tested daily to verify data integrity. The survey was flown in southwest to northeast lines spaced 200 m apart. A total of 7,024 line-km of data was acquired. The data was corrected against a base station. The program resulted in 1,308 km^2 of geophysical data that confirmed a northwest-southeast anomaly associated with magnetic anomalies.

9.2.3 2020 Geochemical and Mapping Programs

Geological surface mapping took place on the Burns Mountain prospect from June 22 to August 4, 2020. Geochemical surveying coincided with mapping on the Yanks Peak prospect from August 18 to September 10, 2020. The geochemical survey then moved to Burns Mountain from September 10 to 29, 2020. The objective at Yanks Peak prospect was designed to expand upon the results derived from the 2017 and 2018 geochemical survey completed by ODV. The grid at the Burns Mountain prospect was designed to infill a gap in the geochemical grid and expand to the south of Lightning Creek to Chisholm Creek.

The 2020 geochemical sampling program was designed to primarily test for soil geochemical signatures in an area known to host several mineral occurrences which lay within a quartzite dominant lithology. A secondary objective was to collect stratigraphic and structural geologic information with emphasis on structural control and the structural relation to mineralization on the properties. A total of 429 soil samples and seven rock samples were collected on the Burns Mountain prospect; 1,187 soil samples and 56 rock samples were collected on the Yanks Peak prospect in 2020. These results are summarized in Table 9-2.

The principal aims of the 2020 mapping program were to refine the understanding of local stratigraphy and structure, with emphasis on the structural controls on mineralization. Additionally, another goal of the program was to delineate highly prospective target areas for future brownfields exploration and provide recommendations for targeting methodology. The program consisted of detailed geologic mapping at a 1:2000 scale at the Burns Mountain, Yanks Peak and Cunningham Creek prospects. A total of 43 rock samples were collected at the Burns Mountain prospect, 12 rock samples at the Cunningham Creek prospect and 42 rock samples at the Yanks Peak prospect. The 2020 program collected an additional 3,060 structural measurement at 905-point locations on the Burns Mountain prospect, 1,036 structural measurements at 341-point locations on the Cunningham Creek prospect, and 2,318 structural measurements at 706-point locations on Yanks Peak prospect. The results from the mapping program are summarized in

Table 9-2. The anomalous gold-in-soil values along with the data gleaned from the geologic mapping program on these prospects indicated stratigraphy and veining similar to those which are gold-bearing in the Wells-Barkerville area. Exploratory drilling in this area is recommended in the future to test the area's viability.

Table 9-2: 2020 Soil, Rock Samples and Structural Station by Prospect

Prospect	Soil Samples	Grab Samples	Select Mineralized Samples	Panel Samples	Linear Samples	Channel Samples	Structural Stations
Burns	429	15	32	2	1	-	905
Cunningham	-	-	12	-	-	-	341
Yanks Peak	1,187	34	63	-	-	1	706
Total	**1,616**	**49**	**107**	**2**	**1**	**1**	**1,952**

9.2.4 2021 Geochemical and Mapping Programs

Geological surface mapping took place on the Burns Mountain prospect from June 1 to July 25, 2021, and September 18 to October 3, 2021, and on the Cunningham Creek prospect from August 12 to October 21, 2021. The geochemical survey took place on the Burns Mountain, Cow Mountain, and Mount Agnes prospects from June 26 to July 21, 2021 and July 25 to August 31, 2021.

The primary objective of the 2021 Soil program was to connect the Burns Mountain and Yanks Peak soil sampling grids along the Lightning Creek Trend. A secondary objective was to begin closing the gap in the soil data between Cow Mountain and Burns Prospects, following up on anomalies seen in the eastern portion of Burns Mountain and western portion of Cow Mountain. In total, 651 soil samples were collected on the Burns Mountain prospect, 682 on the Mount Agnes prospect and 20 on the Cow Mountain prospect areas. In addition, a total of e rock samples were collected on the Mount Agnes prospect and eight on the Burns Mountain prospect by the geochemical sampling team in 2021. These results are summarized in Table 9-3. The 2021 Geologic mapping programs principal aims were to delineate and provide detailed exploration strategies for greenfield-brownfield exploration targets within both Burns Mountain and Cunningham Creek prospects. The focus of the mapping efforts in the Burns Mountain area was on Mount Nelson and Oregon Gulch. The efforts on Mount Nelson were in following up on geochemical anomalies found in previous years' soil programs. Oregon Gulch has many historic showings that suggest mineralization in a style comparable to what ODV is targeting. On the Cunningham Creek prospect mapping was focused on the historic Cariboo-Hudson Mine and along the trend of it. Detailed geologic mapping was conducted at a 1:2000 scale. A total of 244 rock samples were collected on Burns Mountain, eight rock samples on Mount Agnes, and 97 rock samples on the Cunningham Creek prospects. The 2021 mapping team collected an additional 3,509 structural measurements at 844-point locations on the Burns Mountain prospect, and 1,390 structural measurements at 407-point locations on the Cunningham Creek prospect. These results are summarized in Table 9-3. The anomalous gold-in-soil values along with the data collected from the geologic mapping program on both prospects indicated stratigraphy and veining similar to those which are gold-bearing in the Wells-Barkerville area. Exploratory drilling in this area is recommended in the future to test the area's viability.

Table 9-3: 2021 Soil, Rock Samples and Structural Station by Prospect

Prospect	Soil Samples	Grab Samples	Select Mineralized Samples	Panel Samples	Linear Samples	Channel Samples	Structural Stations
Agnes	682	1	7	-	-	-	-
Burns	651	105	127	10	1	1	844
Cunningham	-	41	51	1	1	3	407
Cow Mountain	20	-	-	-	-	-	-
Total	**1,353**	**147**	**185**	**11**	**2**	**1**	**1,251**

10. Drilling

This chapter focuses mainly on Osisko Development Corp.'s ("ODV") 2020, 2021 and 2022 diamond drilling programs (the "2020 Program", "2021 Program" and "2022 Program") and Barkerville Gold Mines Ltd. ("BGM") 2015 to 2019 diamond drilling programs. Drilling prior to 2015 is summarized in the history chapter (Chapter 6). Meterage summaries by prospect may differ from those reported in previous NI 43-101 reports, as drill holes have been re-assigned to prospects based on the target deposit rather than their collar location.

The objectives for the 2020 and 2021 programs were to test new brownfields targets adjacent to known deposits, infill high-grade vein corridors modelled from the 2019 preliminary economic assessment ("PEA") currently classified as Inferred and explore the depth potential of known deposits. The primary focus of the 2022 Program was the infill of a proposed underground bulk-sampling area, the continued category conversion from inferred to indicated status of modelled vein corridors, and the delineation of additional vein corridors. Previous drilling programs are summarized in Chapter 6. Figure 10-1 shows an overview map of the 2015 through 2022 Programs.

From 2015 to 2022, BGM/ODV drilled a total of 2,280 diamond drill holes, totalling 695.08 kilometres ("km") of drill core. While surface data continues to inform the geologic model, diamond drill core is the primary source of geological information for the Project.

The current mineral resource estimate update (the "2022 FS MRE") presented in Chapter 14, with an effective date of November 11, 2022, includes assay results from up to April 6, 2022. The potential impact on the 2022 FS MRE of the assay results received after this date is also commented below.

10.1. Drilling Methodology

Drills are aligned using a Suunto compass. Drill alignments are confirmed using Minnovare's Azimuth Aligner (it was used for a part of the 2021 drilling campaign and all of the 2022 drilling campaign). The downhole dip and azimuth are surveyed using a REFLEX EZ-TRAC too. Collar locations are determined using a Trimble DGPS. The first survey was usually measured 9 metres ("m") below the casing, and readings were then taken every 30 m downhole. A survey was also taken at the bottom of the hole if the end of hole ("EOH") depth was 15 m or more from the previous test. The instrument was handled by the drilling contractors, and survey information was digitally recorded using IMDEX's IMDEXHUB-IQ, as well as transcribed and provided in paper format to ODV geologists.

At the drill rig, the drill helpers placed core into core boxes and marked off every 3-m drill run using a labeled wooden block. The drill helpers were also responsible for marking orientation information on the core using either the REFLEX ACT III™ tool or the Devico DeviHead orientation tool. All holes were drilled in NQ diameter unless noted otherwise in this Report.

All drill hole casings collared at an elevation similar to Jack of Clubs Lake were cemented into bedrock. Special consideration was given to the Valley Zone due to the local groundwater conditions, whereby a cementing procedure was deployed to ensure no groundwater would escape the drill hole once plugged: A first hole was drilled through the overburden and cased (HWT size) 6 m to 9 m into competent bedrock. HQ drill rods were then drilled 1 m beyond casing. Once the geologist and drill foreman inspected the rock to ensure the rock was competent bedrock, casing was reamed to the bottom of the hole and cemented with the drill foreman present. A PQ displacement plug was then pushed downhole until cement came up around the casing, leaving it to set. After at least 24 hours, 250 pounds per square inch (“psi”) of water pressure was applied to the drill hole. If, during the pressure test, the pressure decreased and water was able to escape the cement, the drill hole was either abandoned or recemented. If no issues were experienced during the pressure test, drilling would then commence, and this process was repeated for any additional holes. Upon completion of the drill hole, a safety plug was placed 24 m past the shoe and the hole cemented. The HQ drill rods were then removed, and a displacement plug was pumped down the hole. One additional batch of cement was then pumped downhole, and a wait time of 45 minutes was observed, ensuring that no water was seen exiting the hole.

10.2. Core Logging Procedures

The drill core was transported to ODV’s facility in the District of Wells (“Wells”), British Columbia (“BC”) where it was cleaned of drilling additives and mud, and the metres were marked before collecting the data. Recovery for each 3 m drill run was noted. When recovery was less than 2.5 m (>0.5 m of loss), loss was recorded on a separate block as a “lost core interval”.

Geotechnical data collection included Rock Quality Designation (“RQD”), Intact Rock Strength (“IRS”), and fracture counts at 1–3 m intervals. Magnetic susceptibility data were not collected because it was concluded that such data are not relevant to the deposit. Downhole orientation lines were connected where possible, and orientation off-set measurements were recorded.

All data (lithology, alteration, mineralization, structures, interval structures, and veins less and greater than 5 centimetres [“cm”]) were recorded using Datamine DHLogger software. Sample intervals and pertinent information regarding lithology, mineralization and alteration were marked on the core.

After recording the sampling information, drill core samples were cut in half using a diamond-blade table mounted rock saw. Half the sample was bagged and labelled, then packaged for shipment to an assay lab. Numbered security tags were applied to lab shipments for chain of custody requirements. Samples were then shipped to the laboratory of ALS Minerals in North Vancouver, BC, for analysis. The remaining half-core samples are stored on-site in a secured location for future reference.

The qualified persons ("QP") have not identified drilling, sampling, or recovery factors that could materially impact the accuracy and reliability of the results. In the opinion of the QPs, the core logging and sampling procedures used by ODV are consistent with generally accepted industry best practices and are, therefore, adequate for an advanced exploration project.

10.3. 2015 to 2019 Drilling

In 2015, drilling was focused on Barkerville Mountain (Figure 10-6) with 180 holes drilled on the BC Vein and Bonanza Ledge deposit, totalling 35,848.5 m; eight drill holes on the KL Zone totalling 1,675 m, and 12 dill holes on the Barkerville Mountain deposit totalling 3,626.7 m. The 2015 diamond drill program was designed to drill the BC Vein structure at a spacing of 25 m to 50 m to a depth of 250 m from surface, and a spacing of 100 m down to a depth of 450 m below surface (Brousseau et al., 2017).

In 2016, drilling on Barkerville Mountain (Figure 10-6) consisted of 53 holes on the BC Vein and Bonanza Ledge deposit, totalling 8,605.5 m, and 10 holes on the KL Zone deposit, totalling 2,621.18 m. The BC Vein area was drilled to infill high-grade areas at 12.5 m to 25 m spacing (Brousseau et al., 2017) while the KL Zone was drilled to test an 800 m-long gold-in-soil ("Au-in soil") anomaly (Beausoleil and Pelletier, 2018). Cow Mountain drilling produced 233 drill holes on the Cow prospect, and drill holes on the Valley Zone prospect, totalling 31,157.07 m and 1,023.5 m, respectively. The Cow Mountain drilling program (Figure 10-4) was designed to upgrade areas of geological uncertainty as well as constrain the geological model in areas devoid of historical drilling on Cow Mountain. It also focused on confirming historical gold intersections using modern drilling techniques. The 2016 campaign tested depths of approximately 300 m. Drill holes were completed on approximately 50 m centres in selected areas (Beausoleil and Pelletier, 2018). Drilling in the Valley Zone tested the lateral extents of AP veins and refined the stratigraphic model. Results showed denser than expected vein occurrences. As a result, three more rigs were added to the program and collar locations were stepped out to expand the intersected vein corridors (Beausoleil and Pelletier, 2018). On Island Mountain, 33 holes were drilled on the Shaft Zone prospect, and 50 holes on the Mosquito Creek prospect, totalling 11,289.5 m and 16,026.75 m, respectively. Drilling on Island Mountain (Figure 10-2) was conducted in order to understand the structural and lithological controls on gold mineralization, as well as to test the down-plunge extent of sulphide replacement zones.

In 2017, drilling was again conducted on Barkerville Mountain (BC Vein and Bonanza Ledge, KL Zone, and Barkerville Mountain deposits), Cow Mountain (Cow and Valley Zone deposits), and Island Mountain (Shaft Zone and Mosquito Creek deposits) (Figure 10-6, Figure 10-4, and Figure 10-2, respectively). Barkerville Mountain drilling produced 25 holes at BC Vein, seven at Bonanza Ledge, and one drill hole at KL Zone, totalling 4,412.7 m, 3,388 m, and 530.15 m, respectively. It should be noted that the diamond drill holes ("DDH") on the BC Vein of Barkerville Mountain were drilled for geotechnical purposes only and were therefore not assayed or included in the resource estimate database (Beausoleil and Pelletier, 2018). The 2017 drilling program on Barkerville Mountain explored the Au-in-soil anomaly adjacent to the KL Zone, investigating the 2016 identified targets. Cow Mountain had a total of 17 drill holes at the Cow prospect, and 80 drill holes at the Valley Zone prospect, totalling 6,034.7 m, and 38,872.96 m, respectively. Cow Mountain drilling continued the goals of the 2016 drilling program. Island Mountain had a total of 211 holes at the Shaft Zone prospect, and 44 dill holes at the Mosquito Creek prospect, totalling 93,733.12 m and 13,455.7 m, respectively. Drilling on Island Mountain during 2017 was primarily designed to define the extent of recently discovered vein systems and to discover new vein corridors and sulphide replacement. Early in the program, holes were drilled on 100 m drill centres with dice-five infill patterns concentrated in the Shaft Zone. As the geologic understanding of the controls on mineralization improved, a tighter infill of approximately 25 m spacing began in August to expand known corridors (Beausoleil and Pelletier, 2018).

In 2018, drilling was conducted on Barkerville Mountain (BC Vein and Bonanza Ledge deposits), Cow Mountain (Cow and Valley Zone deposits), and Island Mountain (Shaft Zone and Mosquito Creek deposits) (Figure 10-6, Figure 10-4, and Figure 10-2, respectively). Barkerville Mountain had a total of ten drill holes on the BC Vein and Bonanza Ledge deposits totalling 1,683.8 m. The aim of the 2018 Program at Barkerville Mountain was to provide infill data on the BC Vein. In addition, the program expanded upon data collected in 2017 and also targeted vein mineralization concentrated within the hanging wall of the BC Vein.

Cow Mountain had a total of 246 drill holes on the Cow prospect, and two drill holes on the Valley Zone prospect, totalling 67,715.05 m and 401.9 m, respectively. The aim of the 2018 Program at Cow Mountain was to infill and expand the high-grade gold-bearing vein corridors (Beausoleil and Pelletier, 2018). Drilling on Island Mountain produced 168 drill holes on the Shaft Zone prospect, and 20 drill holes on the Mosquito Creek prospect, totalling 53,731.29 m and 4,597 m, respectively. The 2018 Program at Island Mountain focused on targets generated by underground mapping and sampling data, as well as historical data compiled from smaller scale mapping, trenching, soil sampling and drilling programs. The program aimed to demonstrate continuity and expand on known mineralized vein corridors. Infill drilling was designed to intercept modelled vein corridors with a 25 m spacing at depth in order to convert Inferred resources to the Indicated category (Beausoleil et al., 2019).

Also, in 2018, in addition to the main Cariboo Gold Project claim group detailed above, Grouse Creek had a total of 14 drill holes, totalling 4,903.2 m (Figure 10-8). The aim of the drilling program was to identify the potential source of a Au-in-soil anomaly and subsequent gold rich placer deposits in the Discovery Claim and Shy Robin Gulch. (Filgate, 2018).

In 2019, drilling was conducted on Barkerville Mountain (BC Vein and Bonanza Ledge, KL Zone, Williams Creek, and Lowhee Zone deposits), Cow Mountain (Cow prospect), and Island Mountain (Shaft Zone, Mosquito Creek, and Willow prospects) (Figure 10-6, Figure 10-4, and Figure 10-2, respectively). Barkerville Mountain had a total of 36 drill holes on the BC Vein and Bonanza Ledge deposit, 73 on the KL Zone, four on Williams Creek, and 24 holes on the Lowhee zone, totalling 7,974.2 m, 31,974.62 m, 1,572 m, and 8,422 m, respectively. The 2019 Program on Barkerville Mountain focused on exploration for mineralized vein corridors analogous to those on Cow Mountain and Island Mountain within the prospective sandstone unit, with drilling on BC Vein to increase confidence in the block model (Beausoleil et al., 2019). Cow Mountain had a total of 72 drill holes on the Cow prospect, totalling 16,136.6 m and was primarily focused on infill drilling and testing down dip extents of mineralized vein corridors. Island Mountain had a total of 26 drill holes on the Shaft Zone prospect, 15 on the Mosquito Creek prospect, and six on the Willow prospect, totalling 12,032.45 m, 8,258.89 m, and 3,078.9 m, respectively. The objective of the 2019 Program on Island Mountain was to infill high-grade areas currently classified as Inferred on the Mosquito and Shaft Zones and to test the strike and depth extent of the mineralized vein corridors. Exploration to the northwest of Mosquito Creek also occurred on what is known as the Willow Target, an Au-in-soil geochemical anomaly identified from 2018 soil sampling (Beausoleil et al., 2019). Additionally, the Proserpine property had a total of six holes drilled, totalling 2,676.25 m. This program was aimed at testing Au-in-soil anomalies and historical gold occurrences, as well as historical underground workings.

10.4. 2020 Drilling Program

The 2020 drilling program (the "2020 Program") was conducted between January 16, 2020, and December 14, 2020, by Smithers, B.C. based Hy-Tech Drilling Ltd. ("Hy-Tech") and its primary focus was delineating the Cow-Island-Barkerville corridor. A total of 57,078.8 m was drilled in 196 surface holes, as summarized in Table 10-1. The objective of this program was to delineate mineralized vein corridors further within all deposits and intercept veins with a 25 m spacing from previously drilled holes in order to convert Inferred resources to the Indicated category.

Table 10-1: Summary of BGM's 2020 Drilling Program

Deposit	Number of Drill Holes	Metres Drilled
BC Vein and Bonanza Ledge	3	560.60
Lowhee Zone	24	10,144.50
Cow Mountain	48	12,596.05
Valley Zone	56	17,558.85
Shaft Zone	15	3,909.00
Mosquito Creek	50	9,392.40
Proserpine	5	2,917.40
Total	**201**	**57,078.80**

The 2020 Program at Island Mountain focused on Shaft Zone with 3,909 m drilled in 15 holes and Mosquito Creek, totalling 9,392.4 m drilled in 50 holes (Figure 10-2), further continuing the category conversion work from Inferred to Indicated status within known vein corridors.

The 2020 Program at Cow Mountain (Figure 10-4) was primarily focused in the Valley Zone to continue category conversion work and expand known mineralized vein corridors, with a total of 12,596.05 m drilled in 56 holes. Target vein corridors are being drilled from surface to a maximum vertical depth of 600 m. Additional infill drilling on Cow Mountain was conducted (Figure 10-4), furthering category conversion on known vein corridors (Inferred to Indicated) and exploring the down-dip extent of selected targets. The targeted vein corridors were drilled from surface to a maximum vertical depth of 350 m with a 25 m intercept spacing at depth. A total of 12,596.05 m was drilled in 48 holes.

A bulk core sampling program to test the feasibility of the mineral sorter was conducted during the 2020 and 2021 drill program on both Cow Mountain and Island Mountain, totalling 168 m and 513 m, respectively. A total of 2,000 kilograms ("kg") of material was collected. Samples were selected based on modelled vein corridors hosting ore grades inferred to be representative of the overall deposit. Selected samples were then shipped to Société Générale de Surveillance ("SGS") for metallurgical analysis.

The aim of the 2020 Program at Barkerville Mountain (Figure 10-6) was to provide infill data on the BC Vein and to further define the Lowhee Zone prospect.

BC Vein drilling, totalling 560.6 m in three holes, improved block model confidence and further delineated the deposit. Drilling at the Lowhee Zone targeted mineralized vein corridors within the prospective sandstone unit analogous to those on Cow Mountain and Island Mountain. The targeted vein corridors were drilled from surface to a maximum vertical depth of 370 m with a 25 m intercept spacing at depth. A total of 10,144.5 m was drilled in 24 holes.

The intersections were visually compared in 3D to the mineralized zones 3D solids and interpolated block grades of the 2020 mineral resource estimate ("MRE").

Overall, visual inspection of the 2020 drilling results demonstrated that the thickness and the grade of the mineralized zones were in the same order of magnitude as the 2020 MRE. The 2020 drilling continued to confirm the geological and grade continuities that were demonstrated in the 2020 MRE (Beausoleil et al., 2019).

In addition, 2020 also saw drilling on the Proserpine prospect (Figure 10-8), with five drill holes totalling 2,917.4 m. The program consisted of one stratigraphic drill hole and four holes drilled orthogonal to known surface mineralization within the Proserpine prospect from September 13, 2020, to November 16, 2020. The objective of the stratigraphic hole was to constrain stratigraphy, understand F2 relationships, and target strike parallel shear structures, while the objective of the remaining holes was to explore for northeast-southwest-striking, axial planar oriented vein structures, and to create an Inferred resource by stepping out from 2019 drilling (Yao and Doyle, 2020).

10.5. 2021 Drilling Program

Table 10-2: Summary of BGM's 2021 Drilling Program

Deposit	Number of Drill Holes	Metres Drilled
Lowhee Zone	95	29,860.9
Cow Zone	6	1,988.5
Valley Zone	108	47,484.92
Shaft Zone	162	60,990.8
Mosquito Creek	42	10,710.65
Total	**413**	**151,035.77**

The 2021 drilling program (the "2021 Program") was conducted by Hy-Tech between January 4, 2021, and October 20, 2021. The 2021 Program also saw the addition of Paycore Drilling ("Paycore"), based in Valemount, British Columbia, between August 18, 2021, and October 16, 2021.

The 2021 Program at Island Mountain focused on Shaft Zone with 60,990.8 m drilled in 162 holes, and Mosquito Creek totalling 10,710.65 m drilled in 42 holes (Figure 10-2), further continuing the category conversion work from Inferred to Indicated status within known vein corridors.

The 2021 Program at Cow Mountain (Figure 10-4) was primarily focused in the Valley Zone to continue category conversion work and expand known mineralized vein corridors with a total of 47,484.92 m drilled in 108 holes. Minor drilling on Cow Mountain was conducted, totalling 1,988.5 m drilled in six holes (Figure 10-4). The purpose of this drilling was to conduct metallurgical testing of modelled vein corridors.

The 2021 Program at Lowhee Zone (Figure 10-6) continued to define the prospect, targeting mineralized vein corridors within the prospective sandstone unit analogous to those on Cow Mountain and Island Mountain. A total of 29,860.9 m was drilled in 95 holes. Drill hole spacing along the modelled vein corridors was kept to a distance of 25 m.

10.6. 2022 Drilling Program

Table 10-3: Summary of BGM's 2022 Drilling Program

Deposit	Number of Drill Holes	Metres Drilled
Lowhee Zone	27	6,563.9
Total	**27**	**6,563.9**

The 2022 drilling program (the "2022 Program") was conducted by Hy-Tech at the Lowhee Zone on Barkerville Mountain (Figure 10-6). The 2022 Program started on March 25, 2022, and was completed on of July 6, 2022.

The focus of the 2022 Program at the Lowhee Zone was the infill of a proposed underground bulk-sampling area, the continued category conversion from Inferred to Indicated status of modelled vein corridors, and the delineation of additional vein corridors.

10.7. QPs Comments

Assay results from 27 drill holes were received after April 6, 2022, representing 6,563.9 m of assays, and, as such, are excluded from the 2022 FS MRE. Overall, the visual inspection of the 2022 drilling results demonstrated that the thickness and the grade of the mineralized zones are in the same order of magnitude as the 2022 FS MRE. The 2022 drilling continues to confirm the geological and grade continuities that were demonstrated in the 2022 FS MRE.

For the purpose of this Report, the QP is of the opinion that the gains and the losses would balance each other, and the resulting difference would not be material to the overall resource. According to the drilling results in the extension of the known mineralized zones and with the discovery of new zones, there is a potential to increase the mineral resources.

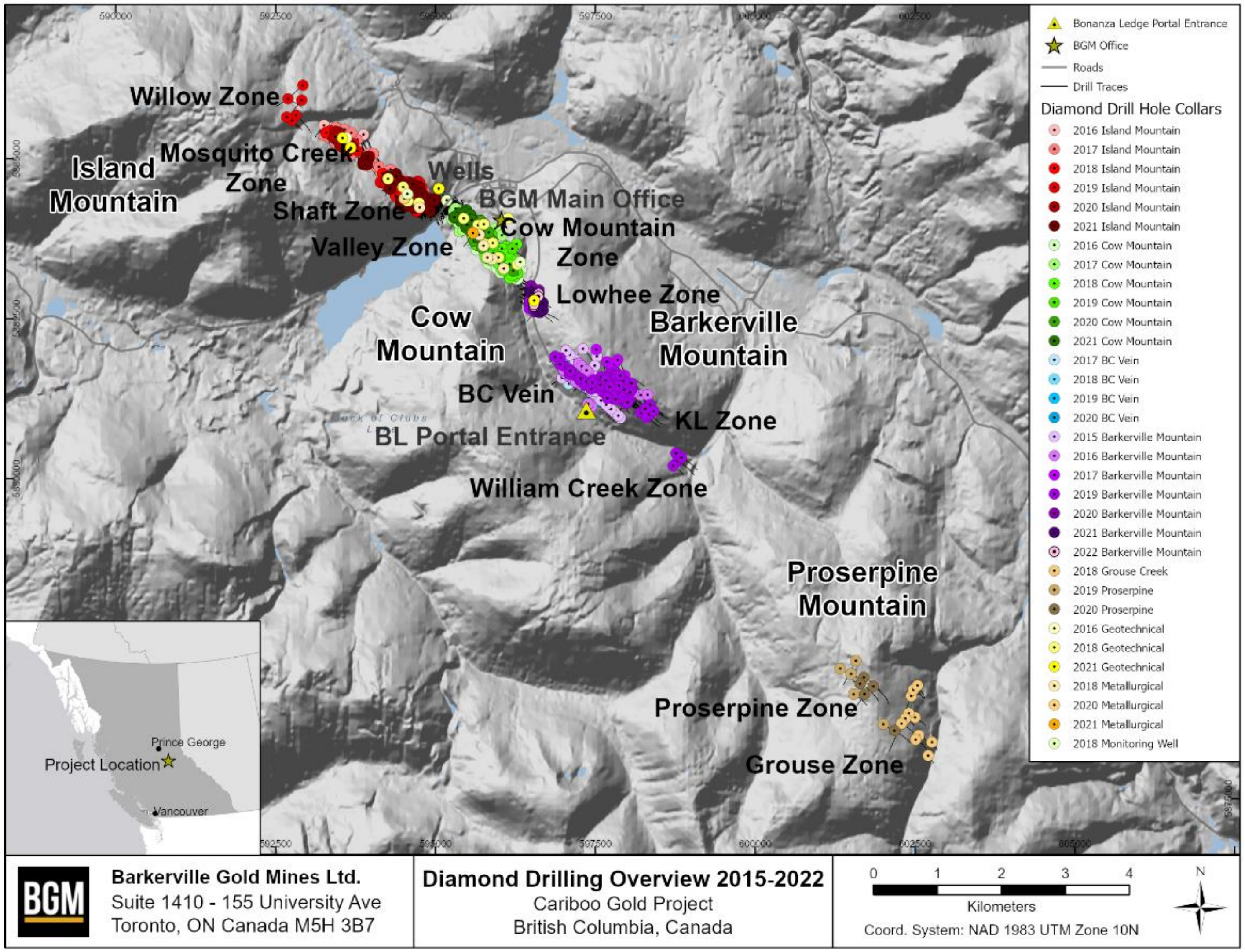


Figure 10-1: Cariboo Gold Project Diamond Drilling Program Overview

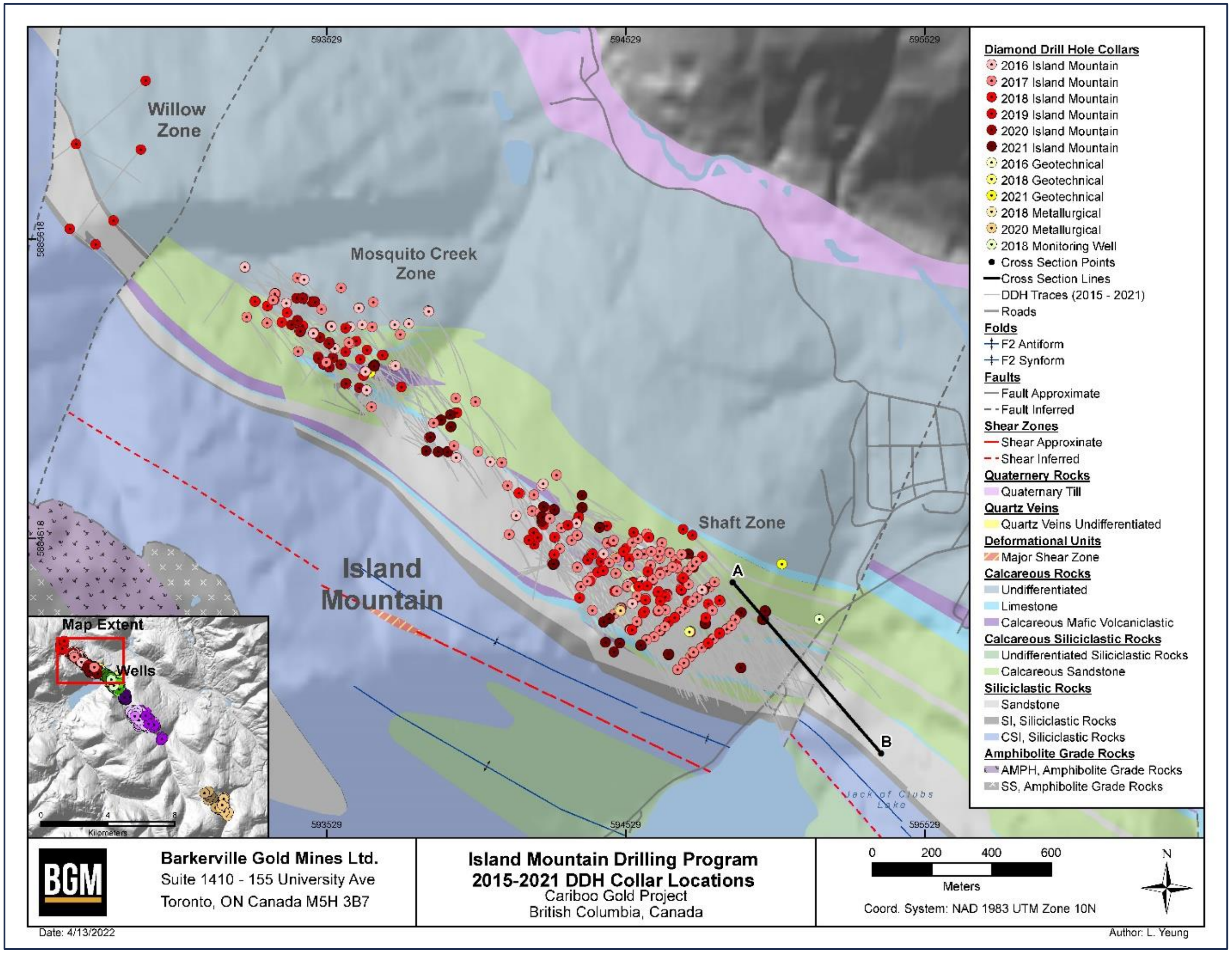


Figure 10-2: Island Mountain Drilling Program 2015–2021

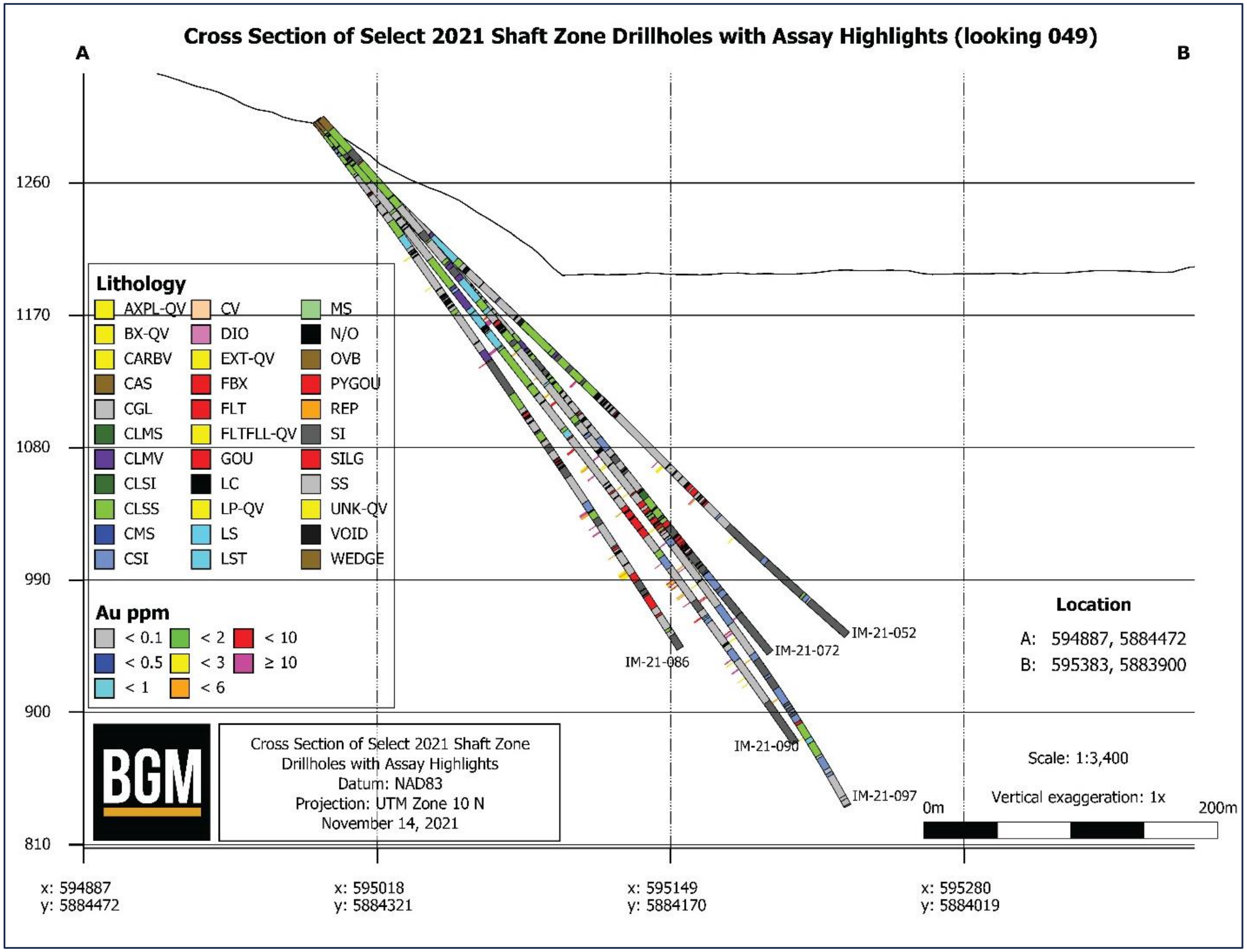


Figure 10-3: Cross-section of Shaft Zone diamond drill holes with gold assay highlights

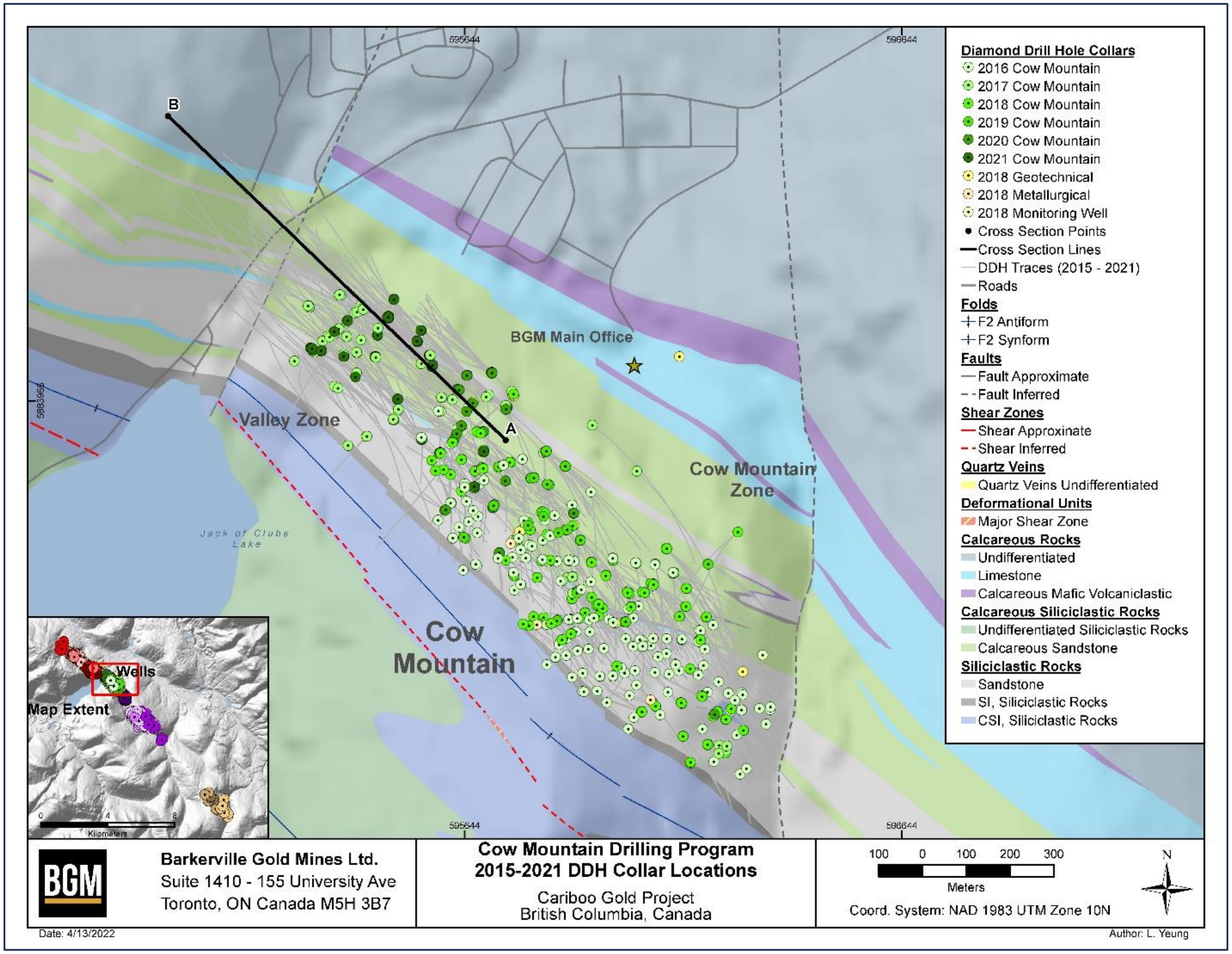


Figure 10-4: Cow Mountain Drilling Program 2015–2021

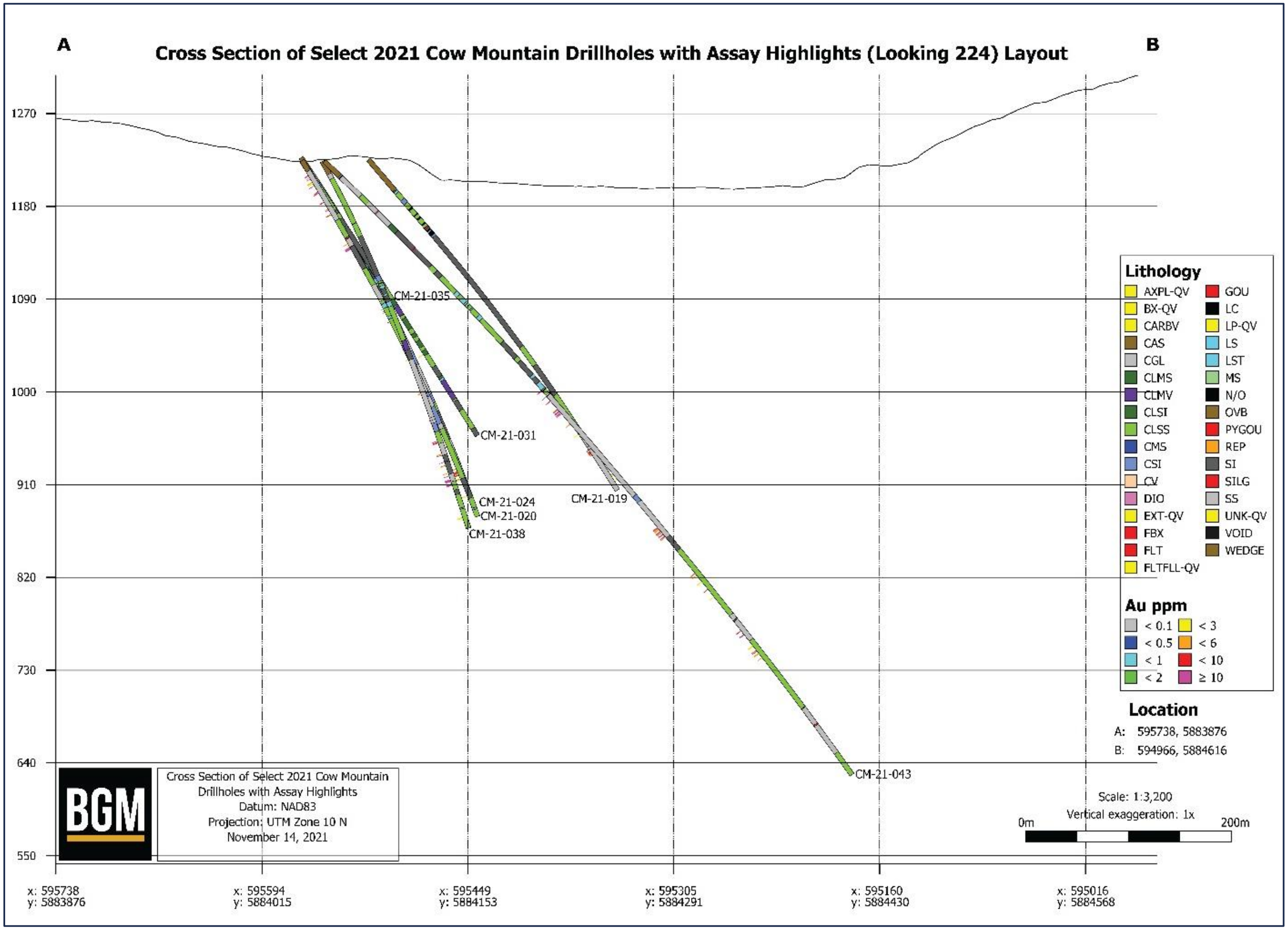


Figure 10-5: Cross-section of Cow Mountain diamond drill holes with gold assay highlights

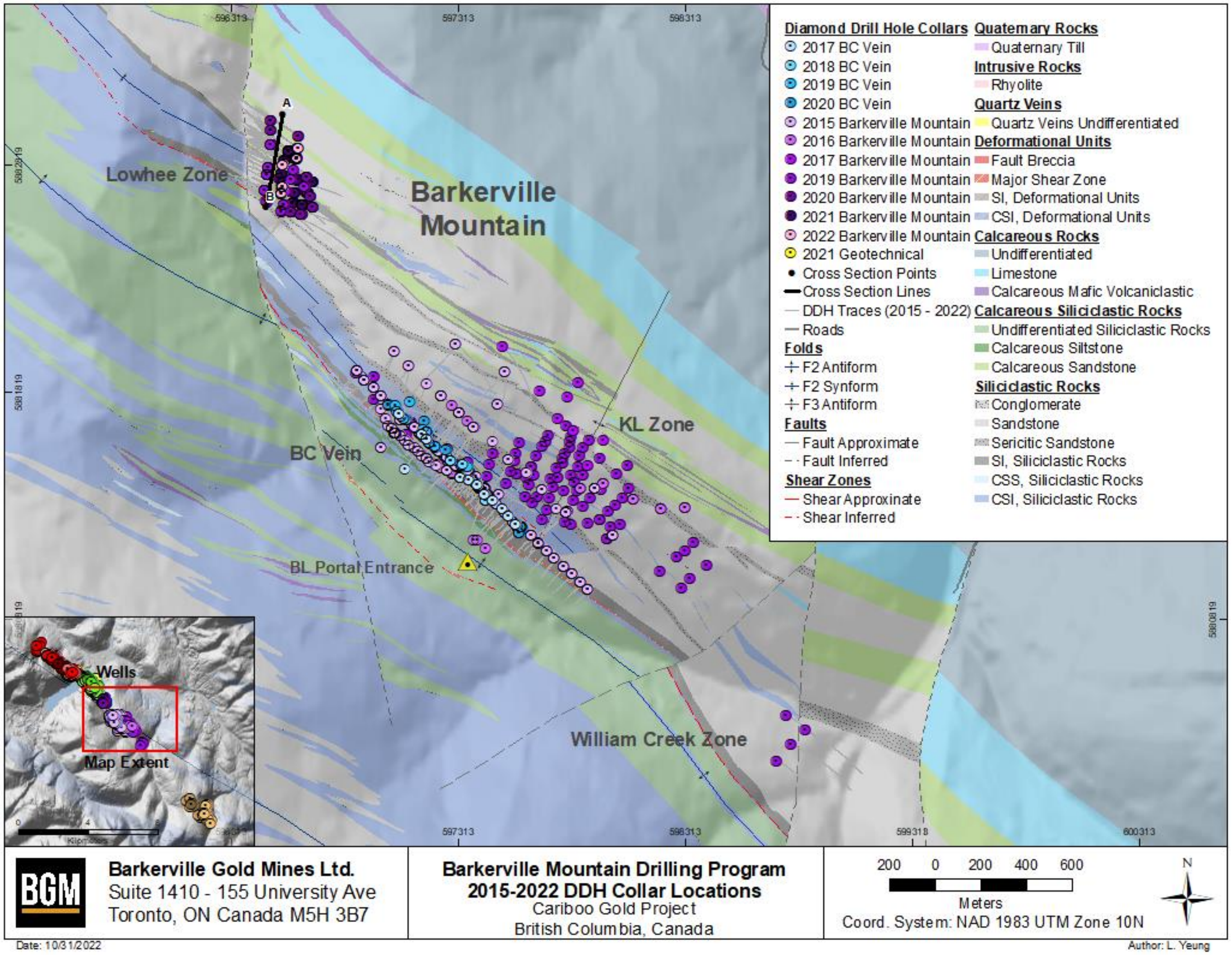


Figure 10-6: Barkerville Mountain Drilling Program 2015–2022

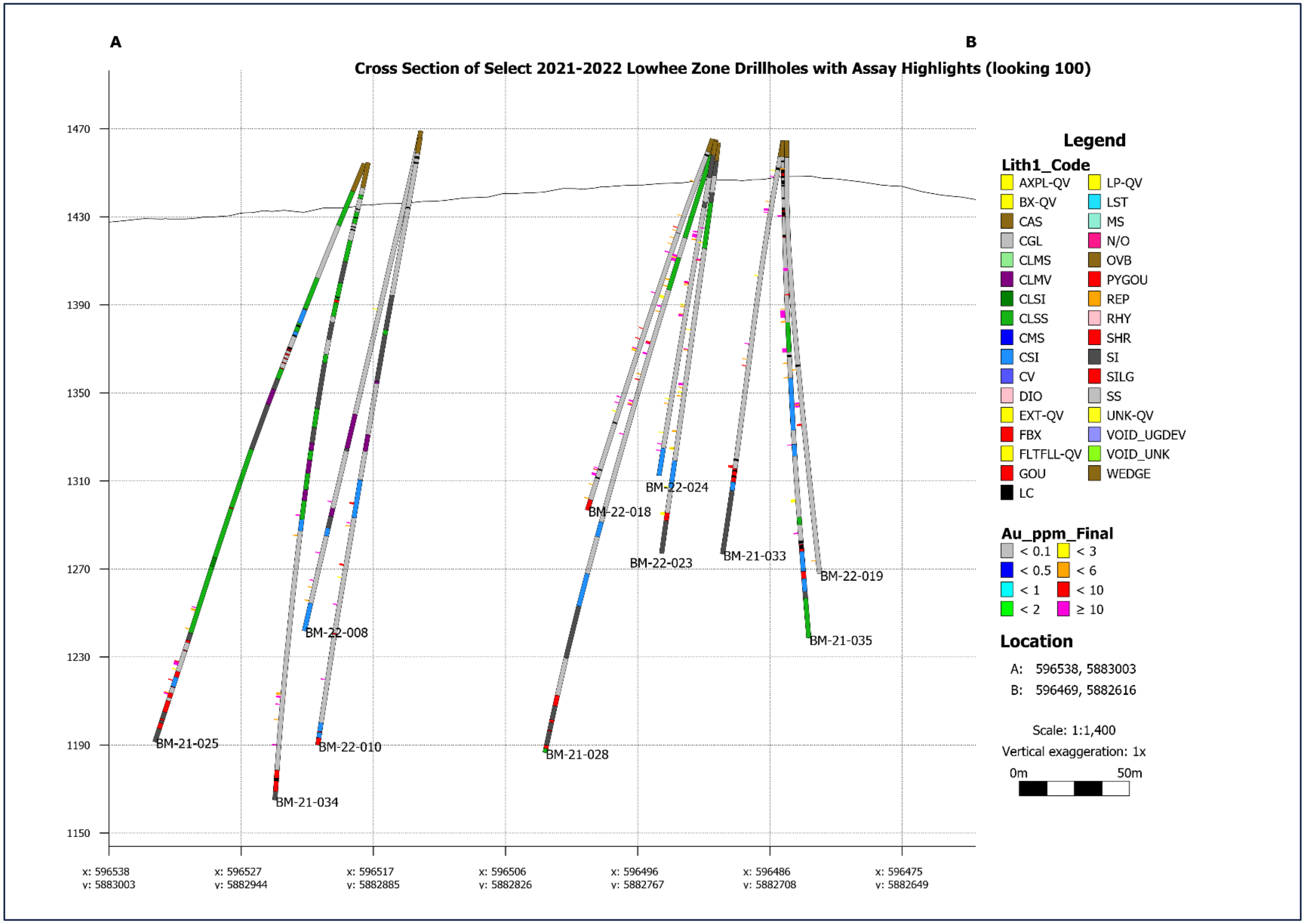


Figure 10-7: Cross-section of Barkerville Mountain diamond drill holes with gold assay highlights

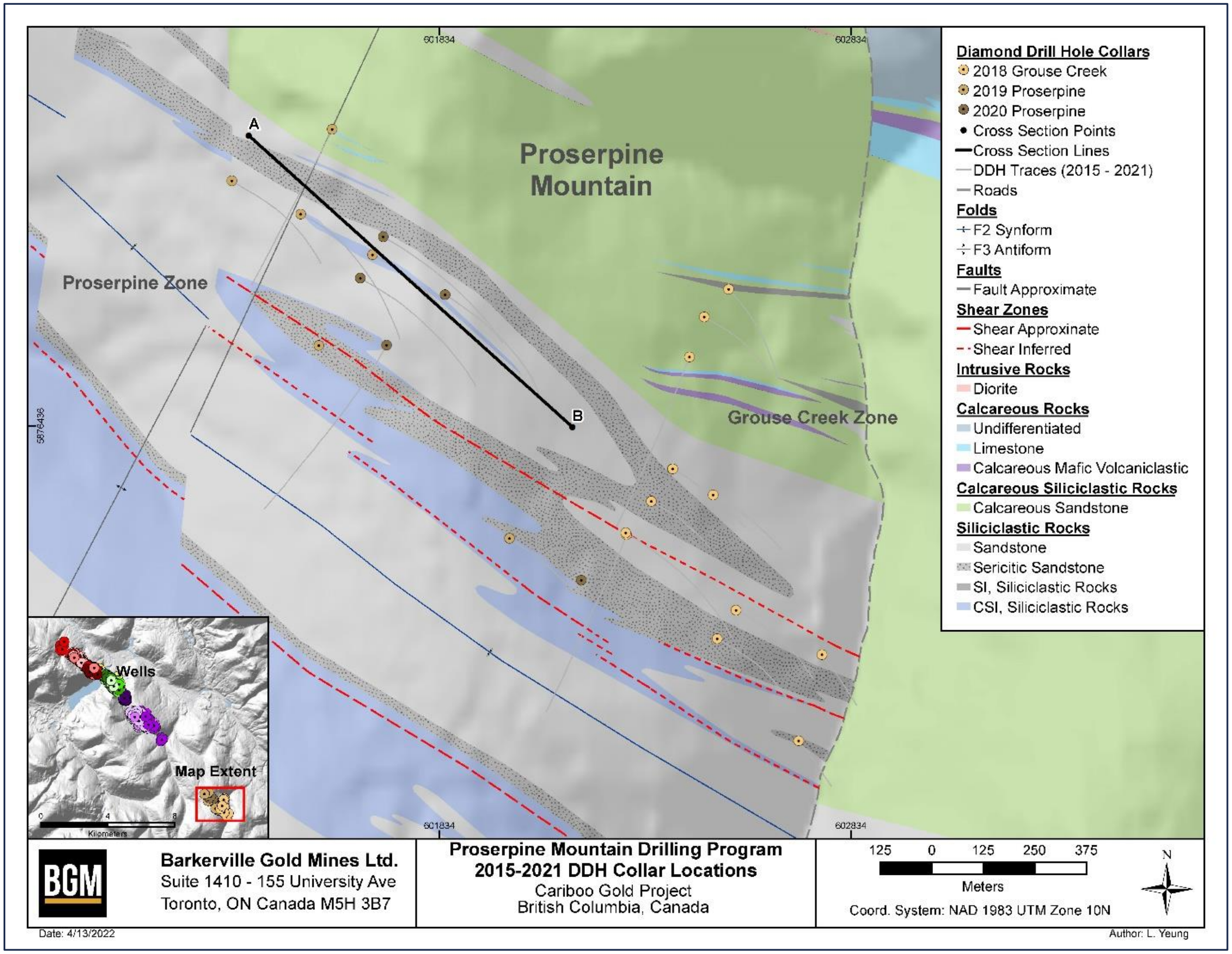


Figure 10-8: Proserpine Mountain Drill Program 2015–2021

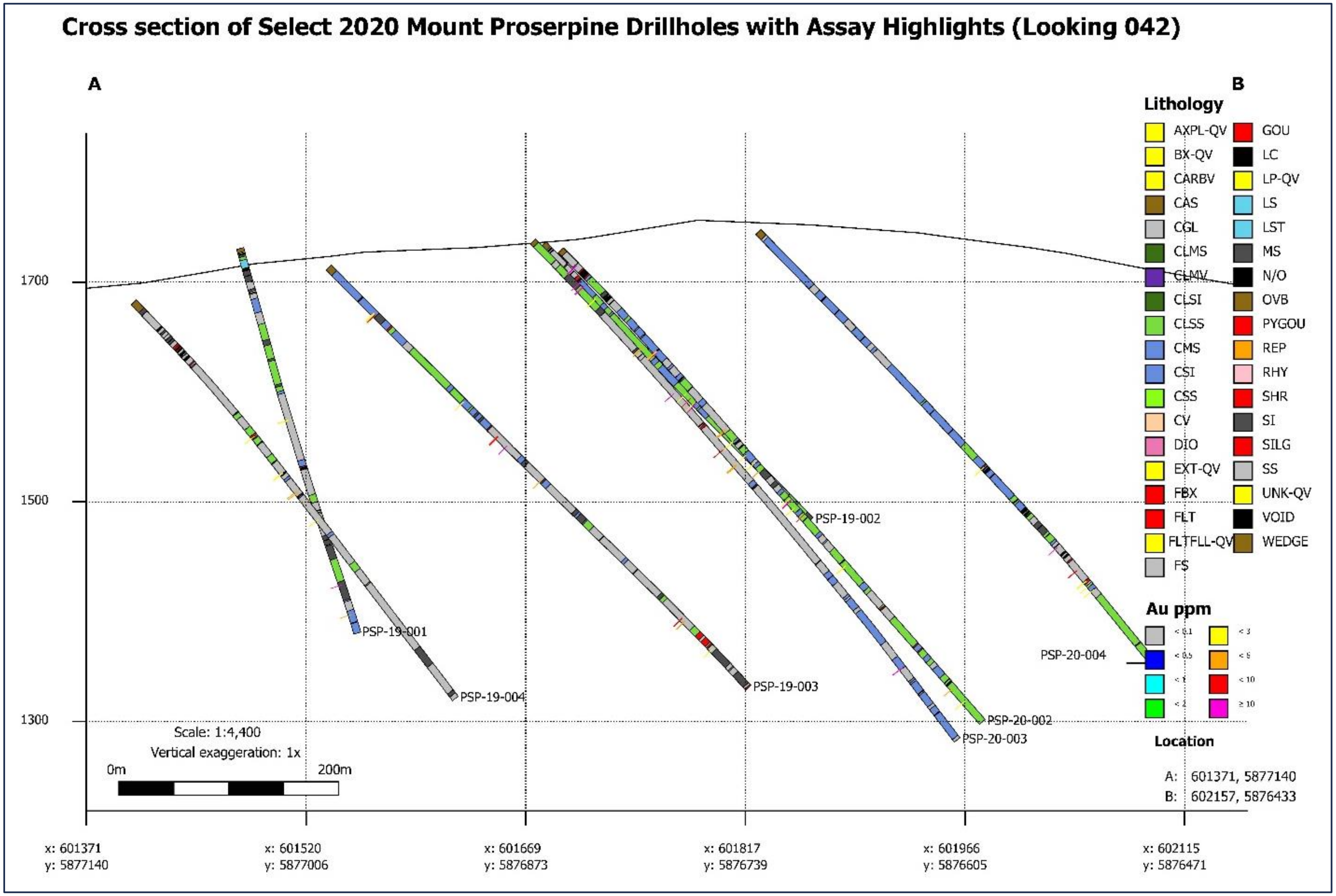


Figure 10-9: Cross-section of Proserpine Mountain diamond drill holes with gold assay highlights

11. Sample Preparation, Analyses, and Security

This chapter describes the sample preparation, analysis, and security procedures for the 2020 and 2021 diamond drill holes programs ("2020 and 2021 Programs") included in the current resource estimate. The qualified persons ("QP") reviewed the quality assurance-quality control ("QA/QC") procedures and results completed only on gold assay results. The reader is referred to Beausoleil and Pelletier (2020) for details of the 2019 drilling program, to Beausoleil and Pelletier (2019) for details of the 2018 drilling program, and to Beausoleil and Pelletier (2018) for the 2016 and 2017 programs.

11.1 Core Handling, Sampling, and Security

Core handling, sampling, and security procedures are managed by Osisko Development Corp. ("ODV") personnel. The procedures are described in detail below.

The drill core is placed into wooden core boxes at the drill site with the end of each drill run marked with a small wooden block displaying the depth of the hole. Box labels indicate the hole and box numbers. The boxes are racked and covered at the drill, secured with ratchet straps, and then transported daily from the drill site to ODV's core storage and logging facility in the District of Wells ("Wells"), British Columbia ("BC"). The boxes are labelled in permanent marker with the hole and box number (e.g., GR-15-01 Bx 1). The core is transported by truck during the drilling programs. There are two secure core storage areas, one in Wells near the core logging facility and a second is located near the Ballarat Camp, approximately 5 kilometres ("km") east of Wells.

Upon receiving a load of core from the drill crew, the core is brought into the logging room. Meterage blocks are checked for errors, the core is oriented in the box and cleaned, and the metre marks are drawn on the core before logging begins. The geological and geotechnical core logging data is collected with Datamine's DHLogger software.

The sample intervals are between 0.5 metres ("m") and 1.5 m in length and do not cross geological contacts. A line is drawn with a pencil along the length of the core to indicate where the core will be sawed. Each sampling ticket is divided into three tags. One tag is stapled to the core box at the beginning of the interval to record the drill hole number and sample interval recorded. The second tag is placed in the sample bag, which is sent to the laboratory; this tag does not reference the drill hole or meterage. The last tag remains in the sample ticket book with the hole number and recorded intervals. All samples are assigned a unique sample number.

After the core boxes with tags are photographed, the core boxes are moved to the cutting station. The core is cut lengthwise by diamond saw, with half the core submitted as the primary sample and the remaining half core retained in the core box for future reference.

The samples are individually bagged with the corresponding tag. The tag number is written on the bag and each bag is sealed. The bags are then placed in rice bags and the rice bags are sealed with numbered security tags for the chain of custody requirements. If any tampering with security tags is suspected, the laboratory will communicate with ODV. Samples are transported to the ALS Minerals ("ALS") laboratory in Vancouver, BC and the remaining drill core is subsequently stored on site at ODV's secure facilities in Wells and at a second location near the Ballarat Camp.

11.2 Laboratories Accreditation and Certification

The International Organization for Standardization ("ISO") and the International Electrotechnical Commission ("IEC") form the specialized system for worldwide standardization. ISO/IEC 17025 General Requirements for the Competence of Testing and Calibration Laboratories set out the criteria for laboratories wishing to demonstrate that they are technically competent, operating an effective quality system, and able to generate technically valid calibration and test results. The standard forms the basis for the accreditation of competence of laboratories by accreditation bodies. ISO 9001 applies to management support, procedures, internal audits, and corrective actions. It provides a framework for existing quality functions and procedures.

All the samples of the 2020, and 2021 Programs were submitted to the ALS laboratory in BC. The ALS laboratory is ISO 9001 certified and accredited (ISO/IEC 17025) for the analytical methods used routinely on the samples from Cow Mountain, Island Mountain, and Barkerville Mountain. The ALS facility is a commercial laboratory independent of ODV and has no interest in the Cariboo Gold Project ("the Project").

11.3 Sample Preparation and Assay

11.3.1 Sample Preparation

- Samples are sorted and logged into the ALS LIMS program;
- Samples are dried and weighed;
- Samples are crushed to +70% passing 2 millimetres ("mm") (CRU-31);
- The crushed sample split of up to 500 grams ("g") is pulverized to +85% passing 75 microns ("µm") screen (PUL 32m);
- Samples containing visible gold or cosalite mineralization are assayed by metallic screen method; a crushed sample split of 1,000 g is pulverized (method PUL-32) to pass 100 µm (Tyler 150 mesh) stainless steel screen to separate the oversize fractions (method SCR-21).

11.3.2 Gold Assaying

- A 50 g pulp aliquot is analyzed by Au-AA26: fire assay followed by aqua regia digestion (HNO_3-HCl) with an atomic absorption spectroscopy finish ("AAS");
- When assay results are higher than 100 grams per tonne ("g/t") gold ("Au"), a second 50 g pulp aliquot is analyzed by Au-GRA22: fire assay, parting with nitric acid (HNO_3) with a gravimetric finish;
- All samples containing visible gold or cosalite mineralization are assayed by the metallic screen method (method Au-SCR21). At the request of ODV, any sample exceeding 100 g/t Au (Au-AA26) is rerun with the screen method following the procedure below;
- For visible gold assays or cosalite mineralization, the +100 µm fraction (Au+) is analyzed in its entirety by fire assay ("FA") with gravimetric finish. The 100 µm fraction (minus) is homogenized and two subsamples are analyzed by FA with AAS (Au-AA25) or gravimetric finish (AuGRA21). The average of the two minus fraction subsamples are taken and reported as the Au-fraction result. The gold content is then determined by the weighted average of the Au+ and Au- fractions.

11.3.3 Multi-element Assaying

- Some samples are analyzed by trace-level multi-element method ME-MS61: a 0.25 g aliquot is digested by four-acid digestion (HNO_3-$HClO_4$-HF-HCl) and HCl leach (method GEO-4A01) and analyzed by ICP-AES;
- Following this analysis, the results are reviewed for high concentrations of bismuth, mercury, molybdenum, silver, and tungsten and diluted accordingly. Samples meeting these criteria are then analyzed by ICP-MS. Results are corrected for spectral interelement interferences.

11.3.4 Specific Gravity Measurements

- Before crushing and pulverizing, the specific gravity of selected samples is determined by the bulk sample method (water displacement, OA GRA08).

11.4 Quality Assurance and Quality Control

This section summarizes the reviews of ODV's 2020 and 2021 assay QA/QC program.

A total of 49,243 and 111,361 samples (including QA/QC samples) were assayed during 2020 and 2021, respectively. The 2020 and 2021 QA/QC programs included a routine insertion of standards and blanks to monitor gold assay results. ODV included one standard in every 20 samples and one blank in every 40 samples. The 2020 and 2021 QA/QC programs did not include field or coarse reject duplicates.

11.4.1 Certified Reference Materials (Standards)

Accuracy is monitored by adding standards at the rate of one certified reference materials ("CRM") for every 20 samples. Standards are used to detect assay problems with specific sample batches and any possible long-term biases in the overall dataset. ODV's definition of a quality control failure is when:

- Assays for a CRM are outside plus or minus three standard deviations (±3SD) or ±10%; or
- Assays for two consecutive CRMs are outside ±2SD, if one of them is outside ±3SD.

11.4.2 2020 Certified Reference Materials (Standards) Performance

A total of 2,458 standards were analyzed during the 2020 Program, for an insertion rate of 5.0%. Five different CRMs from Ore Research and Exploration Pty Ltd. ("OREAS") were used.

In 2020, a total of 22 QC failures were recognized, and reruns were requested in 17 cases. Reruns were not requested for the other five cases, as per ODV's protocol, because the surrounding samples were assayed at or below the lower detection limit (0.01 g/t Au). A total of 18 corrected certificates were issued, and the corrected assays were loaded into the database.

The 2020 average CRM results are all within ±0.4% of the expected values (Table 11-1). Most assays were within ±3SD of the accepted value (Figure 11-1).

Table 11-1: Results of standards used by ODV for the 2020 Program

CRM	Count	Expected Au (g/t)		Observed Au (g/t)		Percent of Expected (%)
		Average	SD	Average	SD	
OREAS 218	113	0.531	0.017	0.533	0.013	100.3%
OREAS 219	506	0.76	0.024	0.760	0.019	100.0%
OREAS 226	609	5.45	0.126	5.448	0.083	100.0%
OREAS 228b	612	8.57	0.199	8.583	0.134	100.2%
OREAS 237	618	2.21	0.054	2.219	0.044	100.4%
Total	**2,458**	**Weighted Average**				**100.15%**

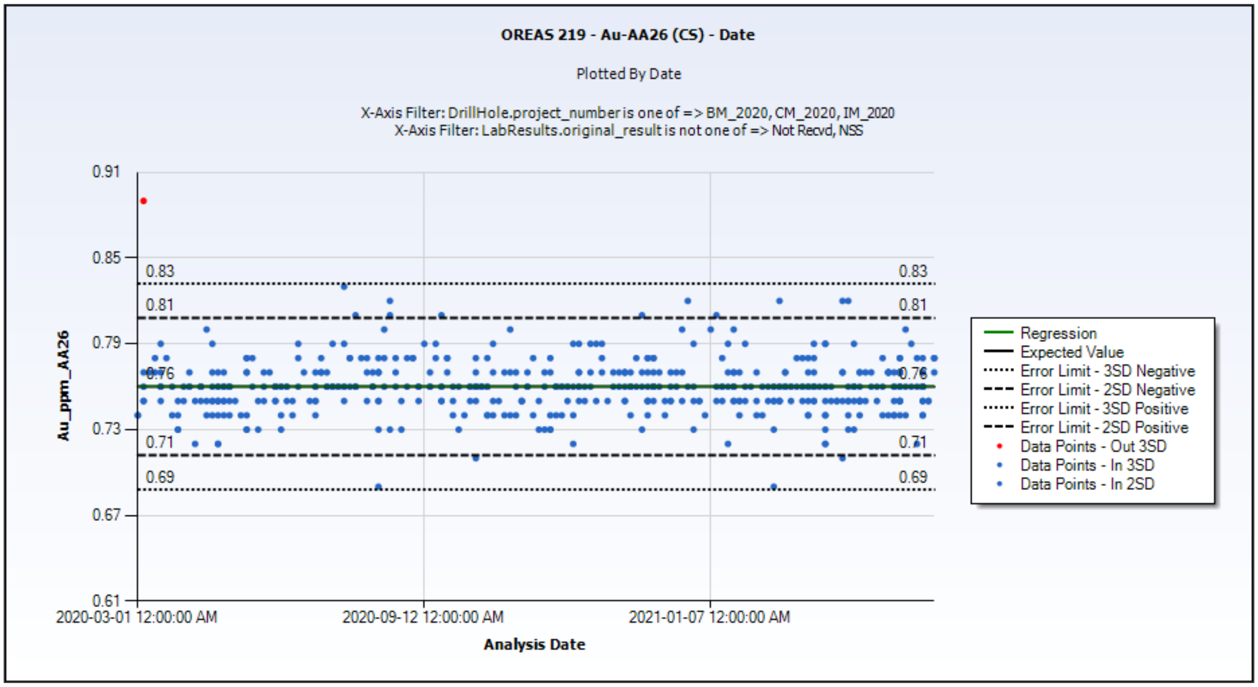


Figure 11-1: Example of results for standard OREAS 219 for the 2020 Program

11.4.3 2021 Certified Reference Materials (Standards) Performance

A total of 5,571 standards were analyzed during the 2021 Program, for an insertion rate of 5.0%. Eight different CRMs from OREAS were used.

In 2021, a total of 75 QC failures were recognized, and reruns were requested in 63 cases. Reruns were not requested for the other 12 cases, as per ODV's protocol, because the surrounding samples were assayed at or below the lower detection limit (0.01 g/t Au). A total of 50 corrected certificates were issued, and the corrected assays were loaded into the database. Two standards failed again on the rerun, but the samples that were rerun along with the standards were within 10% of the original values.

The 2021 average CRM results are all within ±1.8% of the expected values, except for OREAS 217 which had a small sample size (Table 11-2). Most assays were within ±3SD of the accepted value (Figure 11-2).

Table 11-2: Results of standards used by ODV for the 2021 Program

CRM	Count	Expected Au (g/t)		Observed Au (g/t)		Percent of Expected (%)
		Average	SD	Average	SD	
OREAS 217	2	0.338	0.010	0.345	0.007	102.1%
OREAS 219	1,207	0.76	0.024	0.758	0.019	99.7%
OREAS 226	1,083	5.45	0.126	5.417	0.101	99.4%
OREAS 228b	640	8.57	0.199	8.553	0.159	99.8%
OREAS 232	267	0.902	0.023	0.901	0.020	99.9%
OREAS 237	1,477	2.21	0.054	2.216	0.047	100.3%
OREAS 240	353	5.51	0.139	5.427	0.104	98.5%
OREAS 242	542	8.67	0.215	8.516	0.171	98.2%
Total	**5,571**	**Weighted Average**				**99.60%**

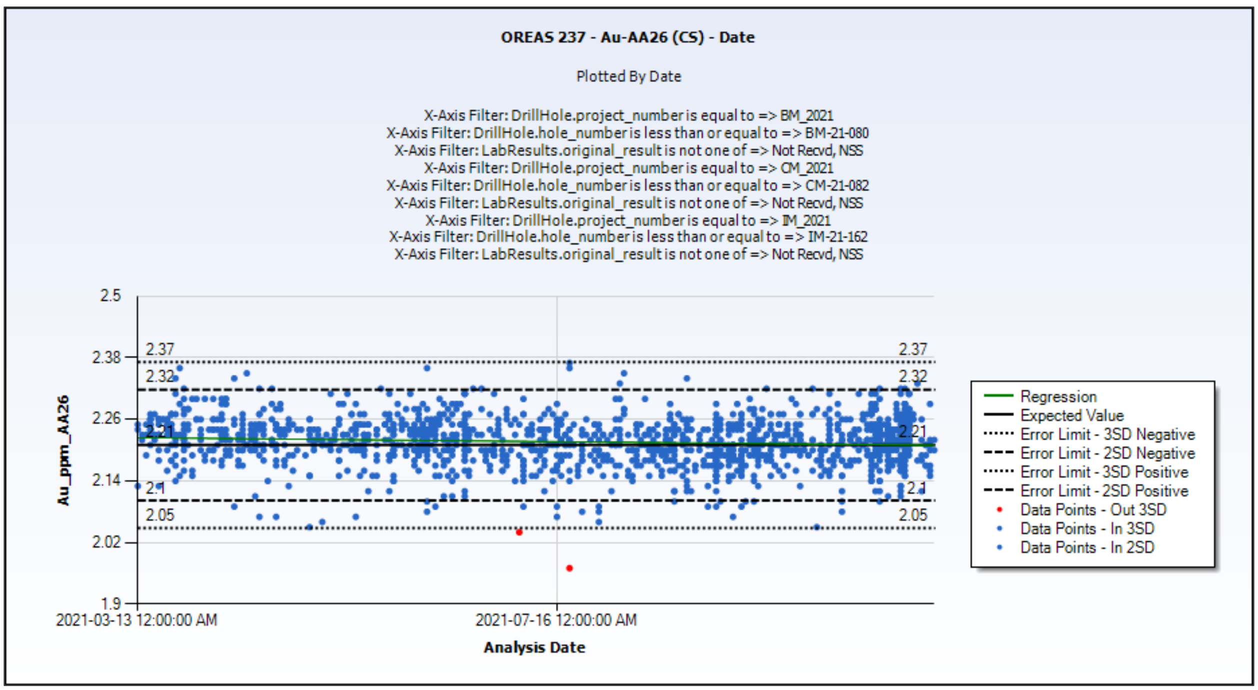


Figure 11-2: Example of results for standard OREAS 237 for the 2021 Program

11.4.3.1 Comment for Monitoring Accuracy

The QP is of the opinion that ODV's quality control program for monitoring accuracy using standards is reliable and valid based on the results presented by ODV personnel.

11.4.4 Blank Samples

Contamination during preparation is monitored by the routine insertion of coarse barren material (a "blank") that goes through the same sample preparation and analytical procedures as the core samples. Elevated values for blanks may indicate sources of contamination in the fire assay procedure (contaminated reagents or crucibles) or sample solution carry-over during instrumental finish.

11.4.5 2020 Blank Samples Performance

In 2020, 1,235 blanks were submitted to ALS with the core samples. ODV personnel identified two cases of contamination for gold in coarse blank material, and both cases were sent for repeat assaying. Both cases passed on the rerun. The corrected assay certificates were loaded into the database.

All the blanks analyzed at ALS assayed less than or equal to 0.1 g/t Au, which is 10 times the detection limit of 0.01 g/t Au and are thus considered acceptable. Table 11-3 summarizes the performance of the blanks. Figure 11-3 shows the results over the year.

Table 11-3: Results of blanks used by ODV for the 2020 Program

Total blanks	1,235
Minimum Au g/t	<0.01
Maximum Au g/t	0.09
Below detection limit (# and %)	1,073 (86.9%)
QC Failures (# and %)	2 (0.16%)

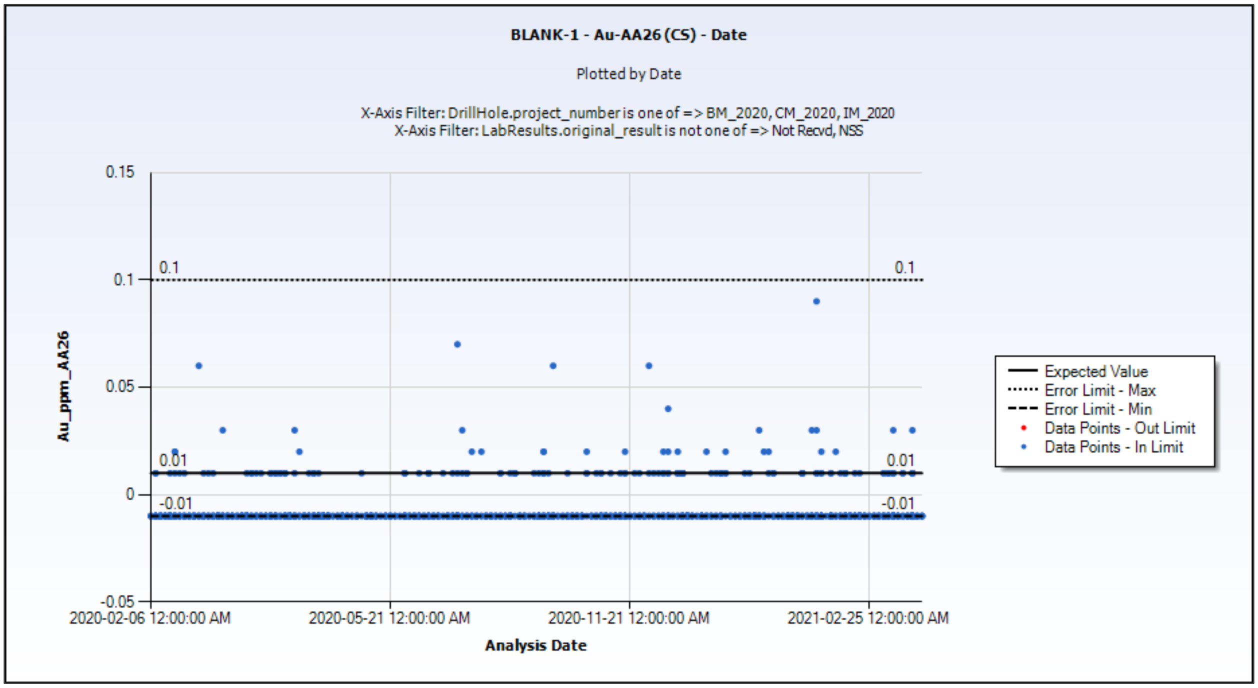


Figure 11-3: Results of blanks for the 2020 Program

11.4.6 2021 Blank Samples Performance

In 2021, 2,789 blanks were submitted to ALS with the core samples. ODV personnel identified two cases of contamination for gold in coarse blank material, and both cases were sent for repeat assaying. Both cases passed on the rerun. The corrected assay certificates were loaded into the database.

All the blanks analyzed at ALS, assayed less than or equal to 0.1 g/t Au, which is 10 times the detection limit of 0.01 g/t Au, and are thus considered acceptable. Table 11-4 summarizes the performance of the blanks. Figure 11-4 shows the results over the year.

Table 11-4: Results of blanks used by ODV for the 2021 Program

Total blanks	2,789
Minimum Au g/t	<0.01
Maximum Au g/t	0.09
Below detection limit (# and %)	2,315 (83.0%)
QC Failures (# and %)	2 (0.07%)

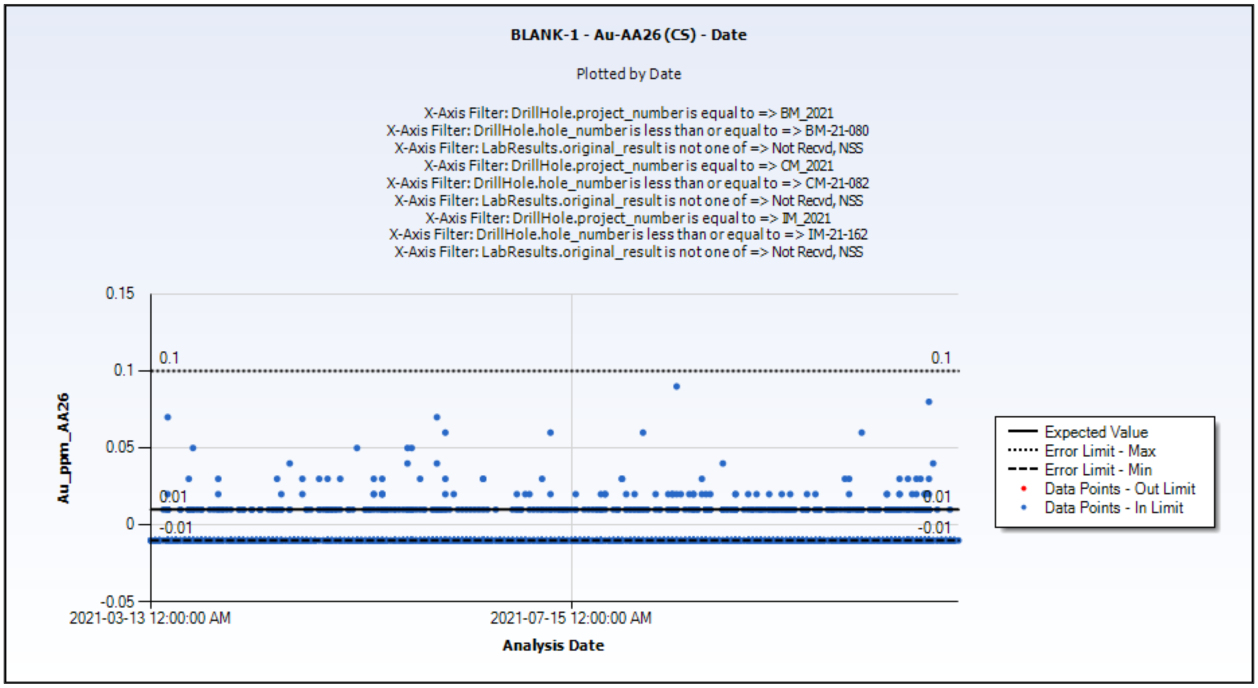


Figure 11-4: Results of blanks for the 2021 Program

11.4.6.1 Comment on Monitoring Contamination

The QP is of the opinion that ODV's quality control program for monitoring contamination using blanks is reliable and valid based on the results presented by ODV personnel.

11.5 Conclusions

A total of 564 holes from the 2020 and 2021 Programs were included in the current resource. The QP is of the opinion that the sample preparation, analysis, QA/QC, and security protocols used for the Project follow generally accepted industry standards, and that the data is valid. The QP recommends the implementation of QA/QC on the silver assay results for future programs.

12. Data Verification

This chapter covers the data verification of the Osisko Development Corp. ("ODV") diamond drill hole databases used for the 2022 mineral resource estimate ("MRE") (the "ODV Databases"), as well as the review and validation of the geological models of each deposit, and the review of information on mined-out areas and the data for selected drill holes (assays, quality assurance/quality control ["QA/QC"] program, downhole surveys, lithologies, alteration, and structures).

The Qualified Persons ("QP") also reviewed and validated the resource estimation process followed by Daniel Downton, P.Geo., of ODV, including all parameters, geological interpretation, basic statistics, variography, interpolation parameters, block model construction, scripts that run the model, volumetric report, and the validation process.

The ODV Databases contain the 4,064 completed and validated diamond drills holes ("DDH") used for the 2022 Feasibility Mineral Resource Estimate (the "2022 FS MRE") for the Project. They are divided among four databases covering the eight deposits as follows:

- Cow Mountain database for the Cow and Valley deposits (1,473 holes);
- Island Mountain database for the Shaft and Mosquito deposits (1,851 holes);
- Barkerville Mountain database for the BC Vein and Splays, the KL, and the Lowhee deposits (578 holes);
- Bonanza Ledge database (162 holes).

Since the 2020 MRE, no drilling has been carried out on the KL, BC Vein, and the Bonanza Ledge deposits. The block model completed for the 2020 MRE for the Bonanza Ledge deposit as published in the 2020 technical report (Beausoleil and Pelletier, 2020) remains current for the 2022 FS MRE. The block model completed for the BC Vein deposit for the 2022 Mineral Resource Estimate dated May 17, 2022 (the "2022 PEA MRE") remains current for the 2022 FS MRE. Other block models for the remaining six deposits were updated.

A site visit was conducted from November 1 to 5, 2021 by the QP, Vincent Nadeau-Benoit. The site visit included a visit and review of the core logging facilities, drill pads, and mineralized outcrops. The QP also examined core samples from drill holes from the 2020 Program and 2021 Program. Core logging and sampling procedures were discussed with ODV's geologists. Discussions covered collar locations, drilling protocols, downhole surveys, logging protocols, oriented core, structural measurements, sampling protocols and QA/QC protocols. Nadeau-Benoit, QP, is of the opinion that the site visit and validation exercises demonstrated the validity of the protocols in place and their use during the 2020 Program and 2021 Program.

Carl Pelletier, QP, also previously conducted site visits; from February 1 to 4, 2016, and from May 3 to 12, 2016. The first included the Bonanza Ledge pit, the Cow Mountain area, and the Island Mountain area. The second involved a visit to the core logging facilities and several drill hole collars.

12.1. Historical Work

Historical work subject to verification consisted of the holes used for the 2020 MRE (Beausoleil and Pelletier, 2020). Basic cross-check routines were performed between the current ODV Databases and the previously validated database for the 2020 MRE; i.e., collars, downhole surveys, assay fields. No discrepancies with the current database were found.

12.2. ODV Databases

The ODV Databases were verified for consistency against the Datamine DHLogger export.

The final databases are considered to be of good overall quality. The QPs consider the ODV Databases to be valid and reliable.

12.2.1. ODV Drill Hole Collar and Downhole

The 2020 and 2021 surface drill hole collars were surveyed using a Trimble DGPS unit.

The collar survey information was verified for 5% of the holes from the latest drilling programs, using the raw survey files. The QP verifications also included numerous field checks on collar location (using a handheld GPS). No discrepancies were found.

Downhole surveys (single shot and multi-shots) were conducted on the majority of surface holes. The Reflex survey information was verified for 5% of the holes from the latest drilling programs. No discrepancies were found.

12.2.2. Assays

The QPs had access to the assay certificates for all historical and current holes in the ODV Databases. All assays were verified for selected drill holes from the latest drilling programs, i.e., 5% of the 2020 and 2021 Program. The assays recorded in the databases were compared to the original certificates from ALS Minerals (North Vancouver, BC). The electronic transfer of the laboratory results via e-mail, followed by the electronic transfer directly into the databases by the issuer's staff, allowed for immediate error detection and prevented any typing errors.

No errors or discrepancies were found. The final databases are considered to be of good overall quality. The QPs consider the ODV Databases to be valid and reliable.

Discussions and reviews with the issuer's personnel convinced the QPs that the protocols and the QA/QC program in place are adequate.

12.3. Mined-out Voids

To date, only BC Vein has been mined by ODV. The resource for this deposit is depleted with a solid representing the latest surveyed underground workings (as of December 31, 2021) with a 5 metre ("m") buffer around them.

The 2021 voids model for Bonanza Ledge (all types of historical underground workings combined; see below) was used for the 2022 FS MRE.

The "buffer voids" are a combination of the historical underground workings (stopes, drifts and shafts) of the Cariboo Gold Quartz Mine (Cow Mountain), the Aurum Mine and Mosquito Creek Mine (Island Mountain), and the Barkerville Mountain Mine (Barkerville Mountain) with a 5 m buffer around them.

These "buffer voids" were used to deplete the final resource estimate.

For the Cow, Valley, Shaft, Mosquito, Lowhee, and BC Vein deposits, the drilling program continues to intercept undocumented voids. To reduce the associated risk, a spherical buffer with a 10 m radius was applied around the intercepts to represent a potential stope of 20 m in diameter. These spherical buffers were also used to deplete the final resource estimate and referred to the mining engineers (mining plan and dewatering program).

The QPs consider the level of detail in the void triangulation to be of good quality and reliable, despite some uncertainty related to previously undocumented voids.

12.4. ODV Logging, Sampling, and Assaying Procedures

The QP examined drill holes from the 2020 Program and 2021 Program.

All core boxes were labelled and properly stored on core racks or on pallets. Sample tags are present in the boxes and it was possible to validate sample numbers and confirm the presence of mineralization in the reference half-core samples from mineralized sections.

Independent resampling was also completed by the QP of mineralized intervals from the Cow deposit and Mosquito deposit. The results show that low-grade samples yielded grade that are consistent with the original results and more variable results for higher-grade samples (although gold ["Au"] values still considered high), reflecting a nugget effect commonly related to this type of deposit.

Table 12-1 shows the results of the independent resampling.

The pictures in Figure 12-1 document the site visit and core review.

Table 12-1: Results of the independent resampling of material from the Cow and Mosquito deposits

Hole Information			Original (ODV)		1/4-Split (InnovExplo)		Litho. Code (Deposit)
Hole ID	From	To	Sample Number	Au (ppm)	Sample Number	Au (AA26) (ppm)	
CM-21-010	94.80	95.85	B859968	0.03	2155817	0.03	SS (V8-Cow)
CM-21-010	95.85	96.85	B859969	4.05	2155818	5.78	SS (V8-Cow)
CM-21-010	96.85	97.65	B859971	1.18	2155819	0.66	SS (V8-Cow)
CM-21-010	97.65	98.85	B859972	1.20	2155820	0.75	SS (V8-Cow)
CM-21-010	98.85	100.00	B859973	3.02	2155821	1.51	SS (V8-Cow)
CM-21-010	100.00	101.50	B859974	0.12	2155822	0.08	SS (V8-Cow)
IM-21-005	204.00	205.40	C235583	Below DL	2155823	0.02	SS (V39-Mosquito)
IM-21-005	205.40	206.05	C235584	1.94	2155824	2.10	SS (V39-Mosquito)
IM-21-005	206.05	207.15	C235585	17.95	2155825	18.85	SS (V39-Mosquito)
IM-21-005	207.15	208.00	C235586	0.02	2155826	0.03	SS (V39-Mosquito)
IM-21-005	208.00	209.50	C235587	0.02	2155827	0.02	SS (V39-Mosquito)

12.5. Mineral Resource Estimation Process

The 2022 FS MRE for the Cow, Shaft, Valley, Mosquito, BC Vein, KL, and Lowhee deposits were prepared by Daniel Downton, P.Geo., of ODV. The geological interpretation and 3D geological model were also prepared by ODV. The QPs reviewed and validated all the parameters for the seven updated models including geological interpretation, basic statistics, variography, interpolation parameters, block model construction, scripts running the model, volumetric report, and the validation process.

The 2022 PEA MRE, for Shaft, Valley, and Lowhee Zones included new information from the end of the 2021 exploration program. The dilution halos and silver estimate additions include data from all previous drilling campaigns, including previously validated historic information. No new gold assay results were added to the databases for the Mosquito, Cow, and KL Zone deposits, but gold resources in a dilution halo and silver mineralization estimates in the vein corridors were added to the resource models. No changes are reported for Bonanza Ledge or BC Vein (Barkerville Mountain) deposits and remain as published in the 2022 FS MRE (Hardie et al., 2022).

The QPs reviewed the estimation process described in Chapter 14 for the eight deposits and considers these models to be acceptable.

12.6. Conclusion

Overall, the QPs data verification demonstrates that the data, protocols interpretation, and estimation process are acceptable. The QPs consider the ODV Databases to be valid and of sufficient quality to be used for the mineral resource estimate herein.

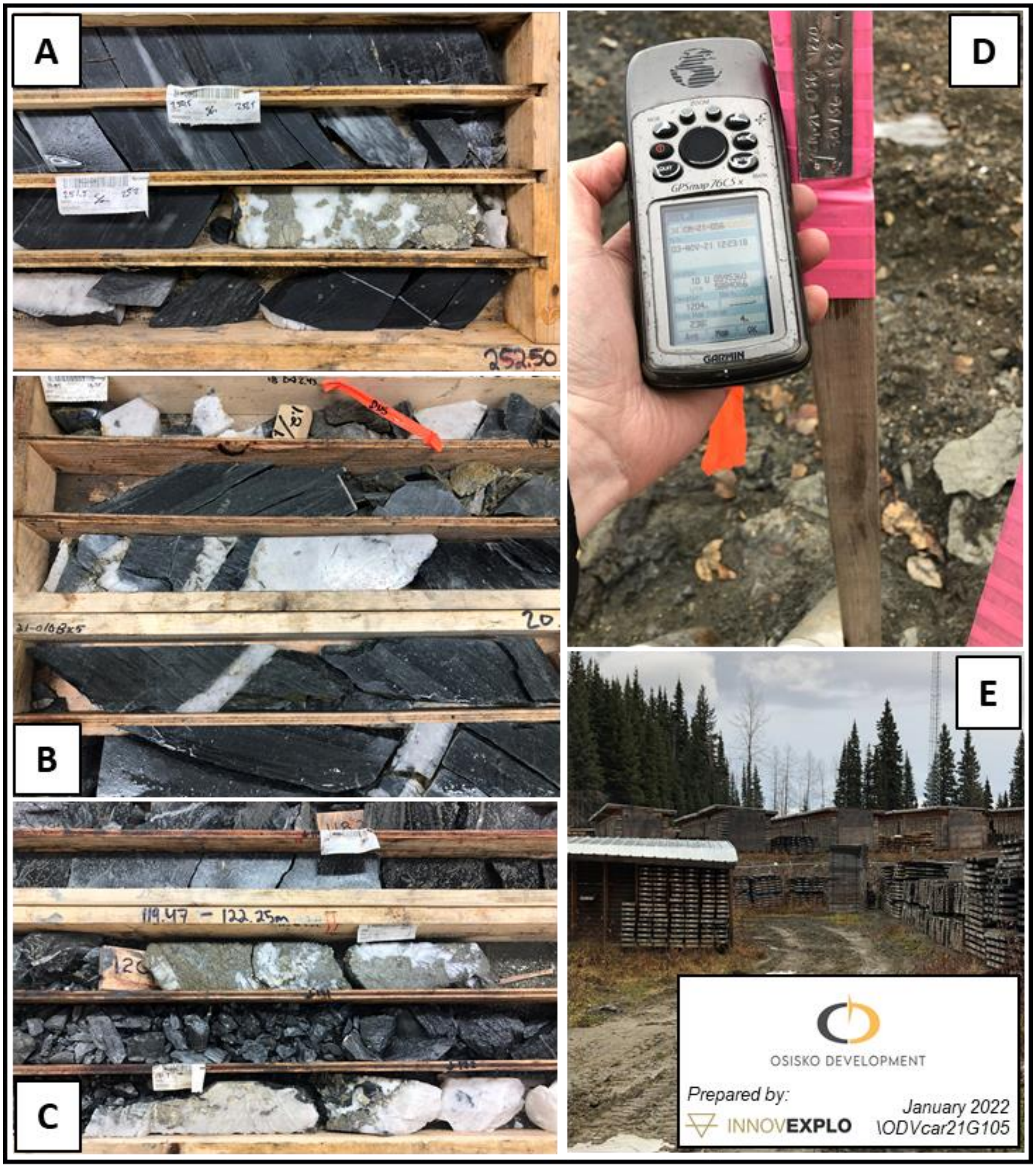


Figure 12-1: Site visit including core review (November 2021)
A) Review of hole BM-21-001 (Lowhee deposit); B) Review of hole CM-21-010 (Cow and Valley deposit); C) Review of hole IM-21-067 (Shaft deposit); D) Field check by QP on collar location; E) External core storage

13. Mineral Processing and Metallurgical Testing

The following chapter presents metallurgical testwork results for work conducted on the Cariboo deposit. The objective of the metarllurgical testing for the feasibility study was to evaluate the conformity of the Lowhee deposit that will be processed in the first years of the operation and complete the remaining test started during the latest PEA study.

The historical metallurgical testwork programs used in developing the process plant design at feasibility level were summarized in Table 13-1.

Table 13-1: Historical metallurgical testwork programs

Testing facility	Description of program	Material tested
2018-2019		
Steinert USA	Ore sorting testwork	Drill core variability samples from Shaft, Cow, Valley and Mosquito Zones and LOM composite
SGS, Burnaby	Sample characterization, mineralogical analysis, comminution tests, flotation, gravity separation, cyanide leaching and cyanide destruction tests	
Cyanco, Nevada	Cyanide leaching and cyanide destruction tests	LOM composite
Pocock, Utah	Sample rheology, thickening and filtration tests	LOM composite Flotation concentrate, Flotation tailings, pre-leach thickener, detoxed tailings
Golder	Paste fill testing and tailings characterisation	LOM composite Flotation tailings
2020-2021		
Tomra, Germany	Ore sorting testwork	Shaft zone bulk sample
SGS, Burnaby	Sample characterization, mineralogical analysis, comminution tests, flotation, gravity separation, cyanide leaching and cyanide destruction tests	
2022		
Steinert, USA	Ore sorting testwork	Drill core sample from Lowhee deposit
SGS, Burnaby	Sample characterization, mineralogical analysis, comminution tests, gravity separation, cyanide leaching and cyanide destruction tests	Drill core sample from Lowhee deposit and remaining Shaft zone bulk sample from 2021 test program
SGS, Lakefield	Rheology	Shaft zone bulk sample flotation concentrate, Detoxed tailings
FLS, Utah	Thickening and filtration tests	Shaft zone bulk sample flotaiton tailings
Cyanco, Nevada	Cyanide leaching and cyanide destruction tests	Shaft zone bulk sample
WSP Golder	Paste fill testing and tailings characterisation	Flotation tailings of Shaft zone bulk sample

13.1 PEA Testwork Campaign

The metallurgical testwork program was developed by BBA Engineering Ltd. ("BBA") and Osisko Development Corp. ("ODV") in order to characterize the Cariboo Gold Project ("the Project") mineralized material behaviour to mineral processing and extraction processes. The testwork program was designed to determine the mineralized material response to a pre-concentration process and subsequently to the cyanide leach process. The testwork was conducted at Steinert, SGS, Cyanco, and Pocock testing facilities.

13.1.1 Sample Selection and Compositing

The program included composite samples from four zones: Shaft Zone ("SZ"), Cow Zone ("CZ"), Valley Zone ("VZ"), and Mosquito Zone ("MZ"). The material for the composites was obtained from NQ drill core intervals from the diamond drill core of the drilling campaigns performed by ODV in 2016, 2017, and 2018. The spatial distribution of the selected intervals is represented in Figure 13-1 and Figure 13-2.

The selected mineralized intervals for the life of mine ("LOM") composite included wall rock/shoulder samples from quartered NQ drill core and were separated on site into two size fractions: coarse (-60 millimetres ["mm"]/+10 mm) sized material sent to Steinert in Kentucky, USA for ore sorting testwork; and (-25 mm) sized material called "fines" sent to SGS Burnaby, British Columbia ("BC"), for compositing for metallurgical testwork. The amount of material received by each is presented in Table 13-2.

A single composite of fines (-25 mm) fraction was prepared at SGS by blending the material from each zone to represent the expected LOM distribution. The testwork for the fines (-25 mm) fraction involved mineralized material characterization, grindability, gravity, and flotation. Ore sorting pre-concentration products received from Steinert were also blended to create composites, representing the expected LOM distribution and individual mineralized zones. Cyanide leaching response of pre-concentrates from both the ore sorting and flotation samples were tested individually. A bulk sample representing the Quesnel River ("QR") Mill feed blend of ore sorter concentrate and flotation concentrate was prepared for leach optimization.

Table 13-2: Material received for LOM composites

Zone	Weight (kg)	
	Fines	Coarse
Cow	257.8	365.2
Valley	59.4	172.4
Mosquito	81.0	33.2
Shaft	287.8	237.2
Shaft 2	411.8	590.8
Total	**1,097.8**	**1,398.8**

Drill core intervals for variability composites that represented gold ("Au") grade variation of each mineralized zone was selected by ODV and BBA and sent to SGS for a second metallurgical testwork campaign. The material received for the variability testwork program was 1,243 kilograms ("kg") from Shaft Zone, 728 kg from Cow Zone, and 180 kg from Valley Zone (Table 13-3). The drill core intervals received were crushed to -35 mm and screened. The coarse fraction (35+10 mm) of the material was sent to Steinert for ore sorting testwork. Material sized 10 mm was kept at SGS for metallurgical testwork. Ore sorting products received back from Steinert were assayed and prepared for metallurgical testwork at SGS. A map of the testwork program and samples produced for extended testwork is provided in Figure 13-3.

Table 13-3: Material received for variability composites

Zone	Composite Name	Weight (kg)		
		Fines	Coarse	Total
Shaft Zone	SZ-LOM	157	370	**527**
	SZ-High	89	160	**249**
	SZ-Low	87	174	**261**
	SZ-Deep	64	142	**206**
Cow Zone	CZ-LOM	58	167	**225**
	CZ-High	70	139	**209**
	CZ-Low	78	216	**294**
Valley Zone	VZ-LOM	18	38	**56**
	VZ-High	14	29	**43**
	VZ-Low	17	64	**81**

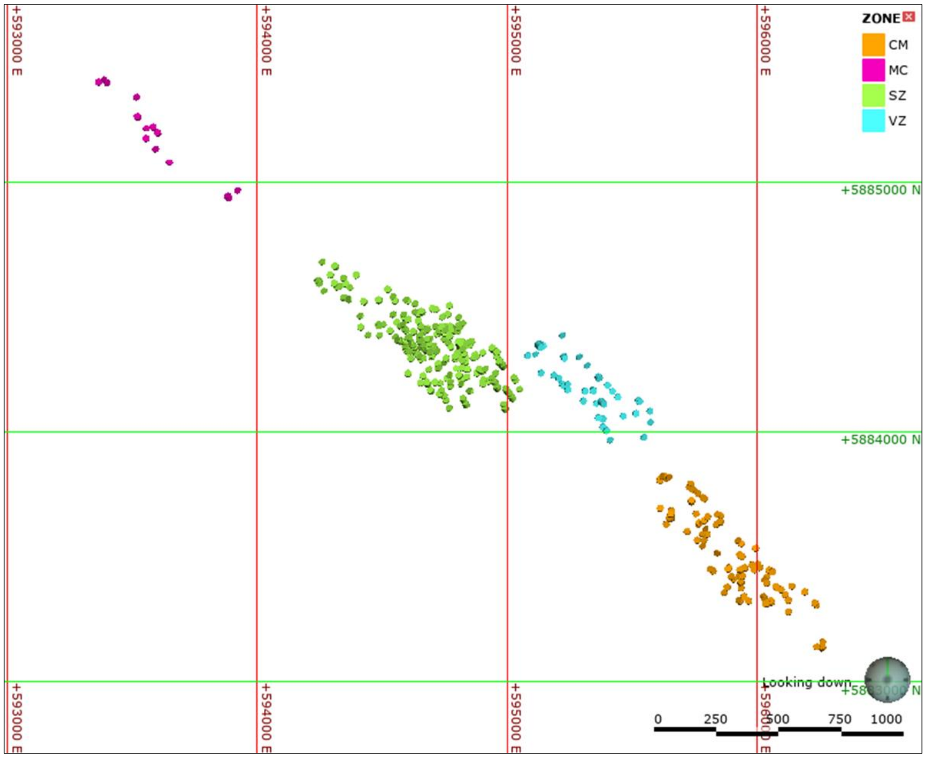


Figure 13-1: Sample locations – Plan view

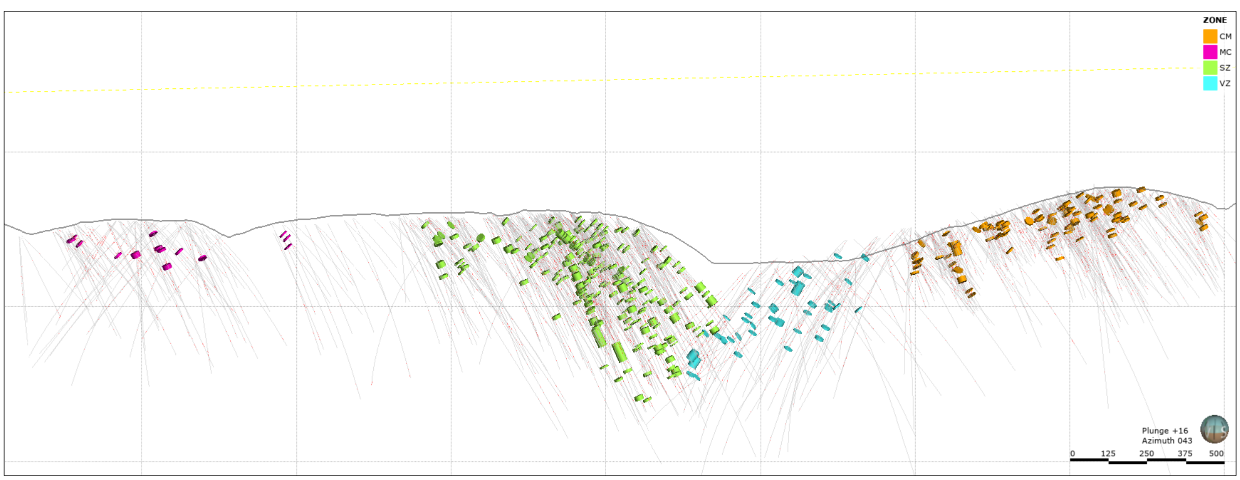


Figure 13-2: Sample locations – Section view

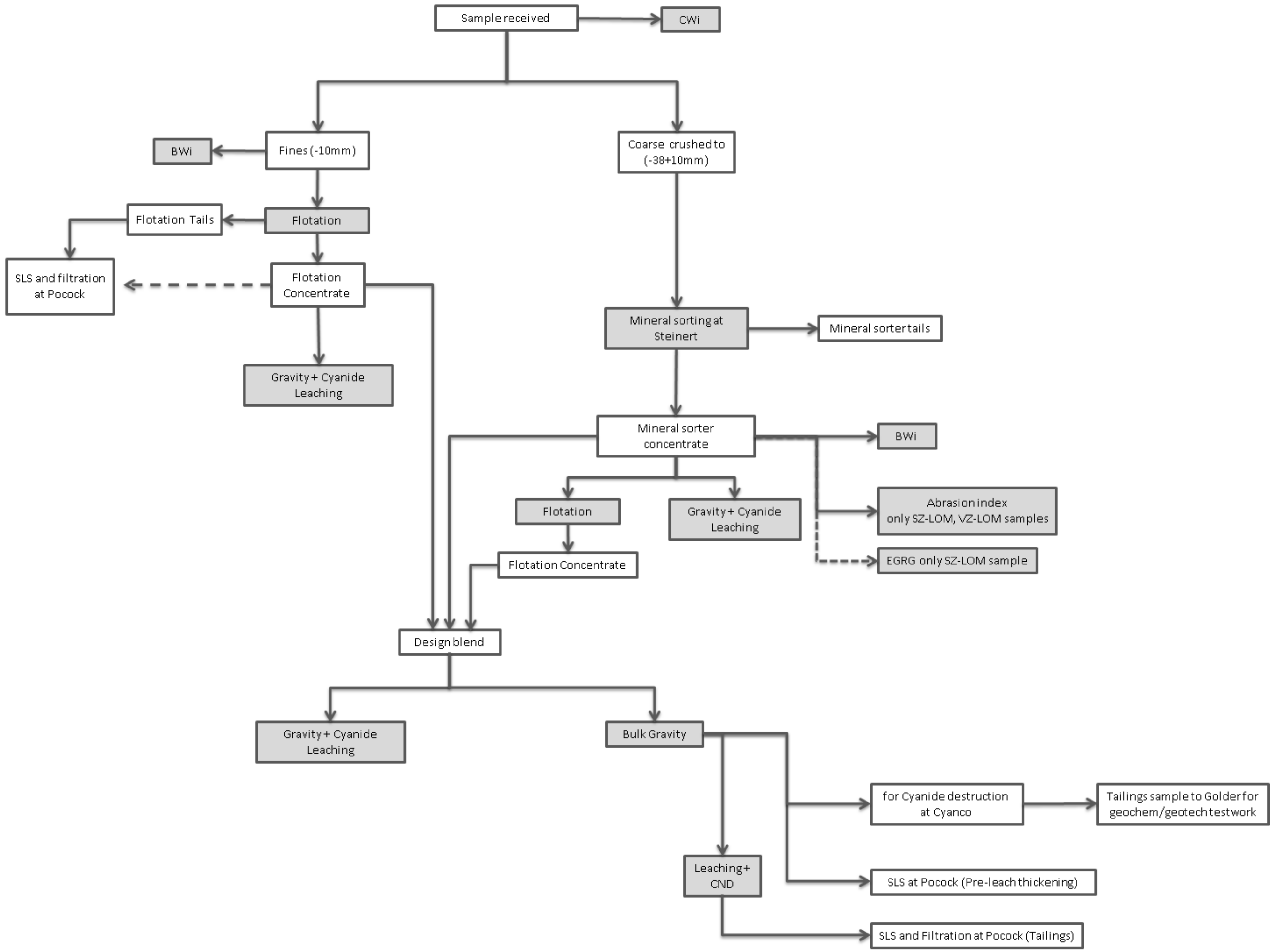


Figure 13-3: Testwork program map and samples produced for extended testwork

13.1.1.1 Composite Characterization

Head Assays

The composites were submitted to screened metallic analysis for gold at +150 (oversize) and -150 (undersize) meshes and subjected to semi-quantitative inductively coupled plasma ("ICP") scan for multi-element analysis. Table 13-4 summarizes the results of LOM composite fines and Table 13-5 summarizes the results of LOM composite ore sorting samples for major elements.

Table 13-4: LOM composite fines head assay

Sample	Oversize mass (%)	Undersize mass (%)	Au grade of oversize (g/t)	Au grade of undersize (g/t)	Calculated total Au grade (g/t)	Total S grade (%)
Fines composite	3.77	96.23	15.70	2.94	3.42	2.62

Table 13-5: LOM ore sorting samples head assays

Zone	Sample ID	Oversize mass (%)	Undersize mass (%)	Au grade of oversize (g/t)	Au grade of undersize (g/t)	Calculated total Au grade[(1)] (g/t)	Total S grade[(1)] (%)
Shaft	SZ1	3.5	96.5	24.29	6.88	7.48	4.38
Cow	CZ	3.6	96.4	40.62	3.31	4.67	2.28
Valley	VZ1	3.9	96.1	10.80	3.47	3.77	3.07
Mosquito	MC	5.1	94.9	5.36	4.93	4.91	4.93
Run of Mine	ROM 1-1	4.4	95.6	18.87	4.66	5.19	3.97
Shaft	SZ2	2.1	97.9	120.26	6.65	7.35	4.49
Run of Mine	ROM-2	2.4	97.6	24.76	4.85	5.30	4.31
Run of Mine	ROM 1-2	2.8	97.2	59.46	6.20	6.89	4.08
Valley	VZ2	2.3	97.7	28.31	3.24	3.77	3.23
Shaft	LOM-SZ	3.6	96.4	81.57	6.01	9.27	3.12
Shaft	SZ[(2)]	3.3	96.7	26.41	5.45	5.94	3.24
Cow	CZ[(2)]	4.3	95.7	62.15	4.41	7.10	2.76

(1) Head grades calculated using ore sorting product assays.

(2) Feed crushed to -38 mm.

The variability composites were also submitted to screened metallic analysis for gold at +150 (oversize) and -150 (undersize) meshes and subjected to semi-quantitative ICP scan for multi-element analysis. Table 13-6 summarizes the results of variability composite fines and Table 13-7 summarizes the results of variability ore sorting samples for major elements.

Table 13-6: Variability composites – Fines (-10 mm) head assays

Sample ID	Oversize mass (%)	Undersize mass (%)	Oversize Au (g/t)	Undersize Au (g/t)	Calculated Total Au grade (g/t)	Total TOC[1] grade (%)	Total S grade (%)	Total Cu (g/t)	Total Fe (g/t)
SZ LOM	3.7	96.3	10.9	9.3	9.4	0.1	7.4	<40	71,287
SZ High	3.6	96.4	30.0	20.5	20.9	0.1	10.4	140	102,439
SZ Low	3.7	96.3	79.5	8.2	10.8	0.2	7.8	<40	80,090
SZ Deep	3.9	96.1	7.0	2.7	2.9	0.5	2.3	121	35,611
CZ LOM	3.7	96.3	20.0	3.2	3.8	0.4	2.8	<40	50,877
CZ Low	3.9	96.1	46.9	5.7	7.4	0.5	6.7	<40	74,497
CZ High	2.3	97.7	283.0	14.9	21.2	0.7	8.1	<40	83,066
VZ LOM	2.9	97.1	89.7	5.1	7.7	1.4	3.5	87	89,018
VZ Low	96.9	3.1	14.9	3.5	3.9	0.7	5.4	162	43,225
VZ High	96.7	3.3	48.9	9.5	10.9	0.8	9.3	117	51,286

[1] TOC: Total organic carbon

Table 13-7: Variability composites – Ore sorting samples head assays

Sample ID	Oversize mass (%)	Undersize mass (%)	Oversize Au (g/t)	Undersize Au (g/t)	Calculated total Au grade[1] (g/t)	Total TOC grade (%)	Total S grade (%)	Total Cu (g/t)	Total Fe (g/t)
SZ LOM	3.1	96.9	9.4	6.4	6.5	0.2	4.2	105.6	46,736
SZ High	3.1	96.9	55.0	8.9	9.7	0.1	4.3	278.8	52,407
SZ Low	3.4	96.6	17.1	4.3	4.7	0.1	3.1	33.9	41,011
SZ Deep	3.0	97.0	88.4	1.5	3.4	0.5	1.4	49.8	29,508
CZ LOM	3.2	96.8	62.6	2.1	4.0	0.3	1.7	52.5	34,771
CZ Low	3.3	96.7	15.8	3.0	3.5	0.3	2.9	<40	37,368
CZ High	3.4	96.6	208.4	6.8	14.1	0.5	5.7	<40	57,561
VZ LOM	4.0	96.0	18.7	5.3	5.8	0.9	4.8	118.2	58,423
VZ Low	3.6	96.4	5.4	2.7	2.9	0.5	3.5	63.3	43,225
VZ High	5.4	94.6	14.6	5.7	6.0	1.2	3.2	108.7	48,112

[1] Head grades calculated using ore sorting product assays.

Gold Deportment

A sample of LOM fines composite was submitted for gold deportment analysis at SGS. The study reported 13.8% of total liberated gold (liberated and pure gold minerals) and 86.2% gold associated with other minerals. 59.9% of the gold was associated with pyrite, 7.3% with heavy silicates, and 2.5% with complex sulphides (Figure 13-4).

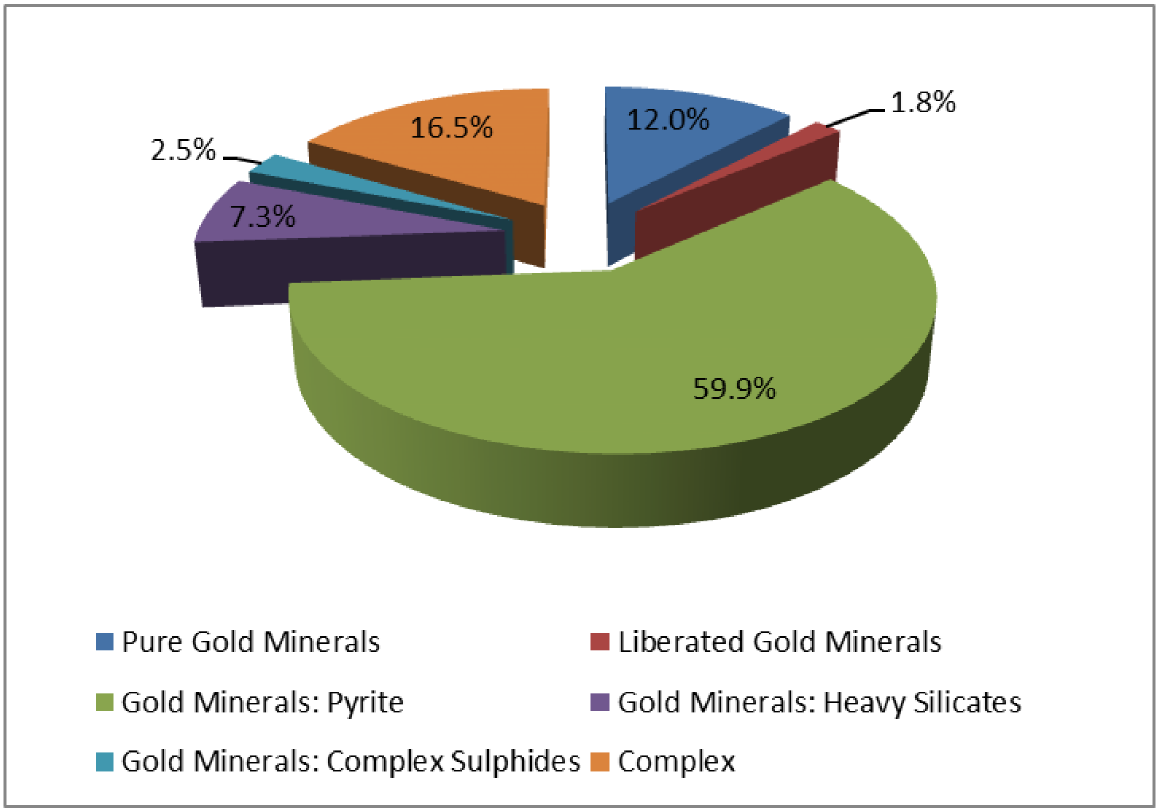


Figure 13-4: Mineralogical distribution of gold occurrences

The gold association by size is presented in Figure 13-5. Approximately 43% of pure gold was found in the coarse size range of 125-180 microns ("µm") and gold associated with heavy silicates was under 20 µm.

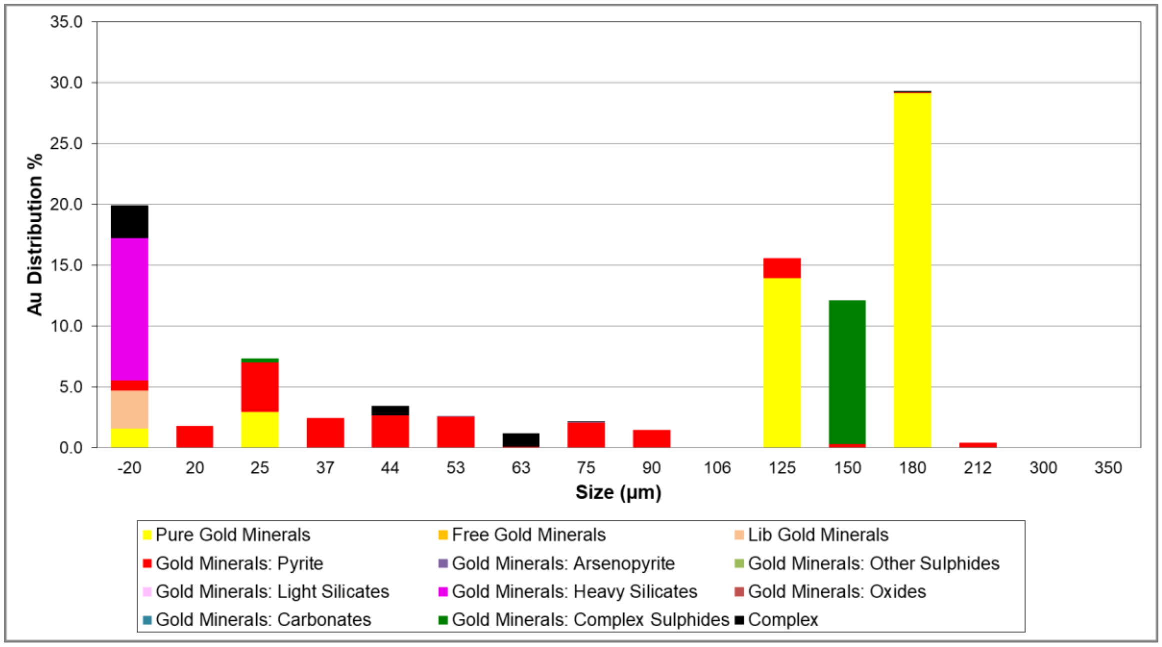


Figure 13-5: Gold association by size

13.1.2 Comminution Testwork

Samples were submitted to crusher work index ("CWi"), Bond ball mill work index ("BWi"), and abrasion index ("Ai") testing at SGS. The test results are presented in Table 13-8, Table 13-9, and Table 13-10. CWi and BWi results categorize the hardness of the mineralized material as medium, and the abrasiveness of the mineralized material is categorized as medium to moderately abrasive based on Ai.

Table 13-8: Crusher work index

Sample ID	CWi (kWh/t)
SZ-Deep OSC	6.9
SZ-High OSC	7.3
SZ-LOM OSC	5.7
SZ-Low OSC	6.5
CZ High	12.4
CZ Low	18.5
CZ LOM	15.8

Table 13-9: Abrasion index

Sample ID	Ai (g)	Ai Category
SZ-Deep OSC	0.227	Medium
SZ-High OSC	0.250	Medium
SZ-LOM OSC	0.283	Medium
SZ-Low OSC	0.229	Medium
CZ High	0.341	Moderately Abrasive
CZ Low	0.390	Moderately Abrasive
CZ LOM	0.309	Moderately Abrasive

Grindability testwork was performed on the fines and ore sorter concentrates ("OSC") individually.

Table 13-10: Bond ball mill work index

Sample ID	Mesh of grind	Bond Work index (kWh/t)
-25 mm (Sample #1) / Fines	150	10.7
-25 mm (Sample #1) / Fines	230	14.2
CZ Low Fine	150	12.0
CZ LOM Fine	150	11.2
CZ High Fine	150	11.4
SZ Low Fine	150	11.6
SZ High Fine	150	11.8
SZ Deep Fine	150	12.1
VZ-21 ROM	150	11.7
VZ-22 ROM	150	13.9
VZ-23 ROM	150	11.3
VZ-24 ROM	150	14.5
CZ Comp OSC	230	14.0
SZ Comp OSC	230	14.0
OSC LOM Comp	230	14.2
SZ LOM OSC	230	15.0
SZ High OSC	230	14.9
SZ Low OSC	230	15.7
SZ Deep OSC	230	14.7
CZ LOM OSC	230	15.4
CZ Low OSC	230	16.4
CZ High OSC	230	17.0

13.1.3 Ore Sorting Testwork

Ore sorting testwork was conducted at Steinert facilities in Kentucky, USA, in August 2018. The initial testwork program focused on 1,264 kg of drill core material, from all four deposits, crushed to -60 mm/+10 mm. The ore sorting products of two samples from Shaft Zone and Cow Zone were recombined to reproduce the previously tested -60 mm/+10 mm feed, crushed to -35 mm/+10 mm, and sent back to Steinert for ore sorting. A summary of these samples is presented in Table 13-11.

Table 13-11: Ore sorted LOM composites

Zone	Sample ID	Mass (kg)	Size fraction
Shaft	SZ1	239	-60 mm/+10 mm
Shaft	SZ2	252	
Cow	CZ	325	
Valley	VZ1	46	
Mosquito	MC	8	
Run of Mine[1]	ROM 1	30	
Run of Mine	ROM 2	70	
Run of Mine	ROM 1-2	62	
Valley	VZ2	70	
Shaft	LOM-SZ	178	
Shaft	SZ	66	-35 mm/+10 mm
Cow	CZ	58	

(1) Run of Mine = ("ROM")

The second ore sorting testwork program involved the variability samples from three mineralized deposits. Ten variability samples sized -35 mm/+10 mm were ore sorted at Steinert in January 2019. The summary of the variability samples is presented in Table 13-12.

Once the ore sorting tests were completed, the ore sorting products were sent to SGS for analysis along with the -8 mm fines generated during ore sorting due to sample handling.

Table 13-12: Ore sorted variability composites

Zone	Sample ID	Mass (kg)	Size fraction
Shaft	SZ LOM	330	-35 mm/+10 mm
	SZ High Grade	149	
	SZ Low Grade	158	
	SZ Deep	129	
Cow	CZ LOM	161	
	CZ Low Grade	208	
	CZ High Grade	134	
Valley	VZ LOM	36	
	VZ Low Grade	61	
	VZ High Grade	27	

13.1.3.1 Sensor Evaluation

In order to determine the best sensor suited to the Project material, hand-picked core samples representing mineralized rock and waste rock were prepared. The response of these two groups of rocks to X-Ray Transmission ("XRT"), colour camera, induction, and XRT/laser combination scanners were evaluated.

An XRT/laser combination was used for the testing based on the results of the evaluation.

13.1.3.2 Flowsheet Tests and Results

The tests on each sample were run in a five-stage process. The first four stages were "rougher" stages consisting of XRT only at different scanner settings. The purpose of the XRT scanner is to collect the sulphide minerals. The fifth stage was a laser scanner "scavenger" to collect quartz bearing particles.

The XRT rougher stage conditions were set up to be highly selective at first to produce the highest-grade concentrate with the least amount of mass pull. With each additional stage, the conditions became less selective, increasing recovery but decreasing concentrate grade. Conditions for maximum gold recovery and simultaneous waste rejection were selected based on the analysis of the results. A summary of the results for each sample tested is presented in Table 13-13. The "Fines" in the table refers to the fines generated during the sorting test manipulation. According to the ore sorter strategy, they can be combined with concentrate. The "grade vs. recovery" curves for each sample are illustrated in Figure 13-6.

Table 13-13: Ore sorting test results – LOM composites

Zone	Sample ID	Feed grade (Au, g/t)	Mass pull (%)			Au distribution (%)			Product grade (Au, g/t)		
			Conc.(1)	Waste	Fines	Conc.(1)	Waste	Fines	Conc.(1)	Waste	Fines
Shaft	SZ1	7.48	70.4	29.6	4.2	99.2	0.8	3.7	10.8	0.2	6.6
Shaft	SZ2	7.35	60.7	39.3	2.6	98.2	1.8	4.5	11.9	0.3	12.7
Cow	CZ	4.67	48.7	51.3	4.1	97.4	2.6	5.6	9.6	0.2	6.4
Valley	VZ1	3.77	78.1	21.9	3.1	99.0	1.0	7.9	4.6	0.2	9.7
Mosquito	MC	4.92	86.1	13.9	6.7	99.1	0.9	8.9	5.6	0.3	6.3
Run of Mine	ROM 1	5.19	82.2	17.8	3.8	99.2	0.8	7.9	6.0	0.2	10.7
Run of Mine	ROM 2	5.3	52.4	47.6	11.2	95.1	4.9	10.9	10.8	0.5	5.2
Run of Mine	ROM 1-2	6.89	42.4	57.6	0.1	96.9	3.1	0.2	15.8	0.4	9.6
Valley	VZ2	3.77	44.2	55.8	0.9	97.4	2.6	1.1	8.4	0.2	4.5
Shaft	LOM-SZ	9.27	65.2	34.8	1.9	98.9	1.1	1.4	14.3	0.3	6.8
Shaft	SZ (-35 mm/+10 mm)	5.94	44.2	55.8	0.9	96.6	3.4	1.2	13.1	0.4	7.8
Cow	CZ (-35 mm/+10 mm)	7.10	65.2	34.8	1.9	77.5	22.5	2.8	8.4	4.6	10.9
Global Average		**5.97**	**61.7**	**38.4**	**3.5**	**96.2**	**3.8**	**4.7**	**9.9**	**0.7**	**8.1**
Minimum		**-**	**42.4**	**13.9**	**0.1**	**77.5**	**0.8**	**0.2**	**4.6**	**0.2**	**4.5**
Maximum		**-**	**86.1**	**57.6**	**11.2**	**99.2**	**22.5**	**10.9**	**15.8**	**4.6**	**12.7**

(1) Concentrate mass recovery, gold distribution, and grade values include fines.

Table 13-14: Ore sorting test results – Variability composites

Zone	Sample ID	Feed grade (Au, g/t)	Mass pull (%)			Au distribution (%)			Product grade (Au, g/t)		
			Conc.(1)	Waste	Fines	Conc.(1)	Waste	Fines	Conc.(1)	Waste	Fines
Shaft	SZ LOM	6.47	33.6	66.4	0.1	86.8	13.2	0.2	16.73	1.28	9.66
	SZ High Grade	9.74	44.5	55.5	0.1	92.0	8.0	0.3	20.17	1.40	18.60
	SZ Low Grade	4.68	34.8	65.2	0.1	93.5	6.5	0.2	12.58	0.46	8.99
	SZ Deep	3.41	32.4	67.6	0.1	35.6	64.4	0.2	3.74	3.25	6.32
Cow	CZ LOM	3.95	65.7	34.3	6.8	64.0	36.0	5.6	3.85	4.14	3.24
	CZ Low Grade	3.45	65.6	34.4	4.7	96.2	3.8	7.1	5.06	0.38	5.21
	CZ High Grade	14.05	70.0	30.0	9.1	99.7	0.3	5.3	20.01	0.15	8.14
Valley	VZ LOM	5.77	61.2	38.8	5.8	98.4	1.6	11.1	9.27	0.24	5.77
	VZ Low Grade	2.90	56.3	43.7	5.4	95.5	4.5	7.3	4.92	0.29	3.86
	VZ High Grade	5.96	43.0	57.0	6.3	97.6	2.4	8.0	13.53	0.25	7.65
SZ Average		**6.07**	**36.3**	**63.7**	**0.1**	**77.0**	**23.0**	**0.2**	**13.30**	**1.60**	**10.89**
CZ Average		**7.15**	**67.1**	**32.9**	**6.9**	**86.6**	**13.4**	**6.0**	**9.64**	**1.56**	**5.53**
VZ Average		**4.88**	**53.5**	**46.5**	**5.8**	**97.2**	**2.8**	**8.8**	**9.24**	**0.26**	**5.76**
Global Average		**6.04**	**50.7**	**49.3**	**3.9**	**85.9**	**14.1**	**4.5**	**10.99**	**1.18**	**7.74**

(1) Concentrate mass recovery, gold distribution, and grade values include fines.

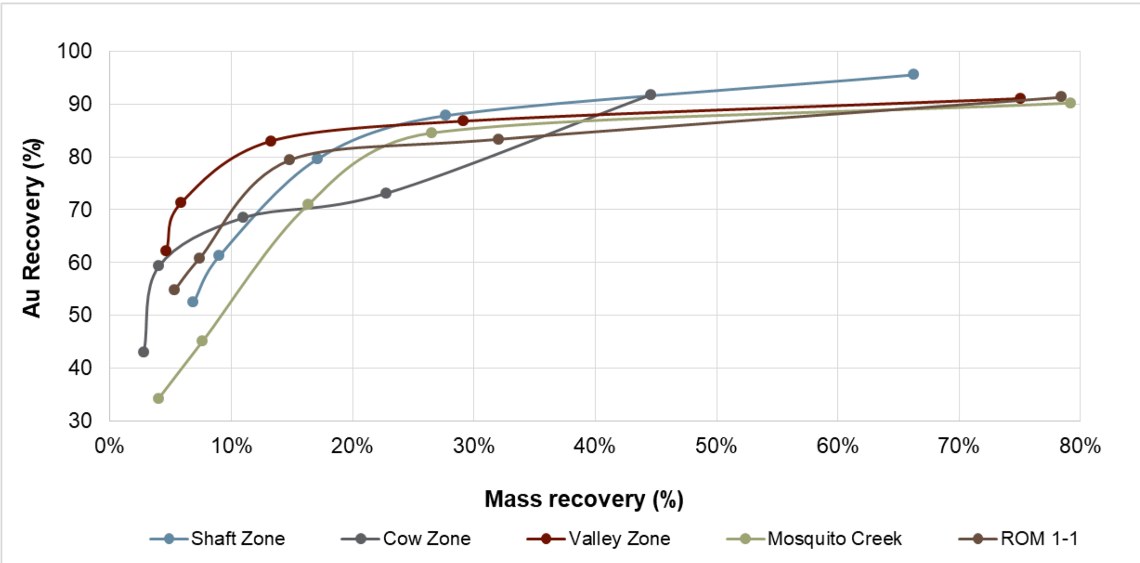


Figure 13-6: Ore sorting grade recovery curves

The XRT was successful in recovering 70% to 94% of the gold after four roughing stages targeting sulphide bearing rock with only 23% to 37% mass pull. The implementation of a laser scavenging step to collect quartz particles increased gold recovery on average by approximately 2% for Shaft Zone samples and approximately 9% for Cow Zone and Valley Zone samples. However, the associated mass recovery increased by 19% on average; ranging between 7% and 32%. In general, Shaft Zone samples had lower mass recoveries at the laser stage. With further testing, it may be possible to optimize the ore sorter setting for quartz recovery to maintain gold recovery and limit mass pull.

The samples prepared and sent to Steinert were screened to the designated feed sizes (-60 mm/+10 mm or -35 mm/+10 mm); however, there were fines generated during transport, material handling, and testing. The mass and gold recoveries of the generated fines (-8 mm) collected at the end of the tests were included in the total recovery and grade. It is critical to consider the fines during circuit design as they represent an average of 5% of the gold fed at the ore sorting stage. In the testwork, the concentrate was targeted for separation by air jet while the fines reported with the waste to the conveyor belt and then were screened out. In operations, the waste will be removed by air jetting and the fines will report with the concentrate (Steinert, 2019).

13.1.3.3 Ore Sorter Performance

Table 13-15: Summary – Average ore sorting recoveries

Zone	Feed grade (Au, g/t)	Mass recovery (%)	Au recovery (%)	Conc. grade (Au, g/t)	Waste grade (Au, g/t)
Shaft Zone	6.8	48.2	87.6	12.9	0.9
Cow Zone	6.6	63.0	87.0	9.4	1.9
Valley Zone	4.4	56.6	97.6	8.1	0.2

The average mass recovery of the Cow Zone and Valley Zone ore sorting concentrates were higher than the Shaft Zone ore sorting concentrates. Although gold recoveries for the majority of the tested samples were higher than 87%, Shaft Zone Deep, Cow Zone LOM, and Cow Zone (-35 mm/+10 mm) samples were outliers with lower recoveries. The global average recovery increases to 95.7% if these outlying data points are excluded. Further testwork is required to determine the response to mineralogical variation and to optimize the ore sorting settings.

13.1.3.4 Effect of Particle Size

The Shaft Zone and Cow Zone samples of -60 mm/+10 mm size fraction, which were outside the recommended top size to minimum size range of 3:1, were re-crushed to -35 mm/+10 mm and re-submitted to the ore sorting procedure. The results of re-runs are presented in Table 13-13. For the Shaft Zone, the mass recovery improved significantly from an average of 65% to 44% without compromising the gold recovery. However, for the Cow Zone, gold recovery dropped unexpectedly. Although the mass pull was higher, 4.6% of gold was reported to waste. The testwork on the -35 mm/+10 mm size range with the variability samples followed the same trend for Shaft Zone.

13.1.4 Flotation Testwork

13.1.4.1 Samples

Kinetic flotation tests were conducted on fine fraction gravity tails, fine fraction of whole rock composites, ore sorter concentrate, and a blend of ore sorter concentrate with fines.

The gravity tails composites were produced from bulk gravity concentration tests, while the whole rock samples consisted of the -25 mm fines. The effect of grind size on flotation performance at target P80 values of 200 µm, 150 µm, and 100 µm was tested on these samples. Whole rock variability composites (SZ1, SZ2, SZ3, and SZ4) were tested at two target P80 values of 200 µms and 400 µms. The results of the flotation tests on the fines are provided in Table 13-16. Variability fines of Cow Zone and Shaft Zone were also tested at 100 µm and 200 µm (Table 13-17).

Ore sorting concentrate of Cow Zone and Shaft Zone variability samples were tested at 100 µm and 200 µm. The same ore sorter concentrate samples were blended with their generated fines and tested at 100 µm and 200 µm. The results are provided in Table 13-18.

Table 13-16: Flotation test results – Fines

Test ID	Feed type	Grind size (P_{80}, µm)		Au grade (g/t)			Mass pull (%)		Au recovery (%)	
		Target	Actual	Head	Conc.[1]	Tails	9 min	20 min	9 min	20 min
F1	Gravity tails	200	248	2.11	13.5	0.04	15.4	21.0	98.4	98.9
F2	Gravity tails	150	205	2.56	14.0	0.05	18.0	23.9	98.5	98.8
F3	Gravity tails	100	131	2.57	11.2	0.04	22.7	31.0	98.9	99.2
F10	Whole rock	200	178	3.18	14.11	0.03	18.3	22.5	99.3	99.5
F11	Whole rock	150	123	3.58	16.42	0.04	17.2	21.6	99.1	99.3
F12	Whole rock	100	75	3.20	12.24	0.03	20.5	26.0	99.3	99.5
F-SZ1-A	Whole rock	200	221	12.04	47.24	0.06	22.9	25.4	99.6	99.8
F-SZ1-B	Whole rock	400	351	10.75	44.73	0.21	21.2	23.9	98.4	99.4
F-SZ2-A	Whole rock	200	131	15.46	35.42	0.10	37.7	43.5	99.6	99.6
F-SZ2-B	Whole rock	400	211	14.34	36.80	0.06	33.9	38.9	99.7	99.8
F-SZ3-A	Whole rock	200	144	7.01	30.23	0.06	19.1	23.1	99.3	99.5
F-SZ3-B	Whole rock	400	234	5.41	27.73	0.02	15.6	19.4	99.7	99.7
F-SZ4-A	Whole rock	200	89	2.74	9.61	0.01	21.7	28.4	99.6	99.7
F-SZ4-B	Whole rock	400	156	2.86	11.84	0.03	18.7	24.0	99.1	99.2
Minimum							**15.4**	**19.4**	**98.4**	**98.8**
Average							**21.2**	**26.1**	**99.1**	**99.4**
Maximum							**37.7**	**43.5**	**99.7**	**99.8**
Standard deviation							**6.3**	**6.7**	**0.5**	**0.3**

(1) Concentrate and tailings grades presented are at 9 min.

Table 13-17 Flotation test results – Variability composite fines

Test ID	Feed type	Grind size (P_{80}, µm)		Au grade (g/t)			Mass pull (%)		Au recovery (%)	
		Target	Actual	Head	Conc.[1]	Tails	9 min	20 min	9 min	20 min
CZ-LOM-F1	Fines	200	180	4.51	38.6	0.11	11.4	13.5	97.8	98.1
CZ-LOM-F2	Fines	100	205	4.07	18.5	0.29	20.8	25.0	94.3	95.2
CZ-Low-F1	Fines	200	131	6.90	33.5	0.07	20.4	23.8	99.2	99.4
CZ-Low-F2	Fines	100	178	6.27	22.2	0.05	28.1	31.8	99.5	99.6
CZ-High-F1	Fines	200	123	21.68	91.2	0.15	23.7	25.1	99.5	99.7
CZ-High-F2	Fines	100	75	13.60	40.6	0.15	33.2	38.9	99.3	99.6
SZ-LOM-F1	Fines	200	300	10.97	67.0	0.12	16.1	17.0	98.1	99.1
SZ-LOM-F2	Fines	100	133	9.74	44.6	0.08	21.7	24.3	99.3	99.4
SZ-Low-F1	Fines	200	182	7.35	34.3	0.04	21.3	23.4	99.4	99.6
SZ-Low-F2	Fines	100	124	7.54	27.9	0.09	26.8	30.3	99.1	99.2
SZ-High-F1	Fines	200	213	18.20	75.3	0.11	24.0	28.3	99.1	99.6
SZ-High-F2	Fines	100	128	19.78	67.2	0.08	29.3	32.9	99.7	99.7
SZ-Deep-F1	Fines	200	214	3.02	19.2	0.02	15.6	18.5	99.2	99.5
SZ-Deep-F2	Fines	100	127	3.08	13.3	0.04	22.9	26.4	98.9	99.0
						Minimum	**15.4**	**19.4**	**98.4**	**98.8**
						Average	**21.2**	**26.1**	**99.1**	**99.4**
						Maximum	**37.7**	**43.5**	**99.7**	**99.8**
						Standard deviation	**6.3**	**6.7**	**0.5**	**0.3**

(1) Concentrate and tailings grades presented are at 9 min.

13.1.4.2 Fines Flotation

As seen in Table 13-16 and Table 13-17, regardless of grind size, the average gold recovery of fines flotation achieved was approximately 99% after 9 minutes ("min") flotation. In general, an increase in mass pull was observed with decreasing grind size, with no discernible improvement in recovery. It is therefore recommended to use a flotation time of 9 min at a targeted grind size of 200 µm for fines fraction.

A graph of the gold recovery as a function of flotation time is presented in Figure 13-7. The plot illustrates that gold recovery reaches a plateau after 9 min beyond which additional flotation time does not improve recovery. While gold recovery is not improved, Figure 13-8 illustrates that increasing flotation time from 9 min to 20 min results in an average increase of approximately 5% in mass pull for an average 0.2% increase in gold recovery.

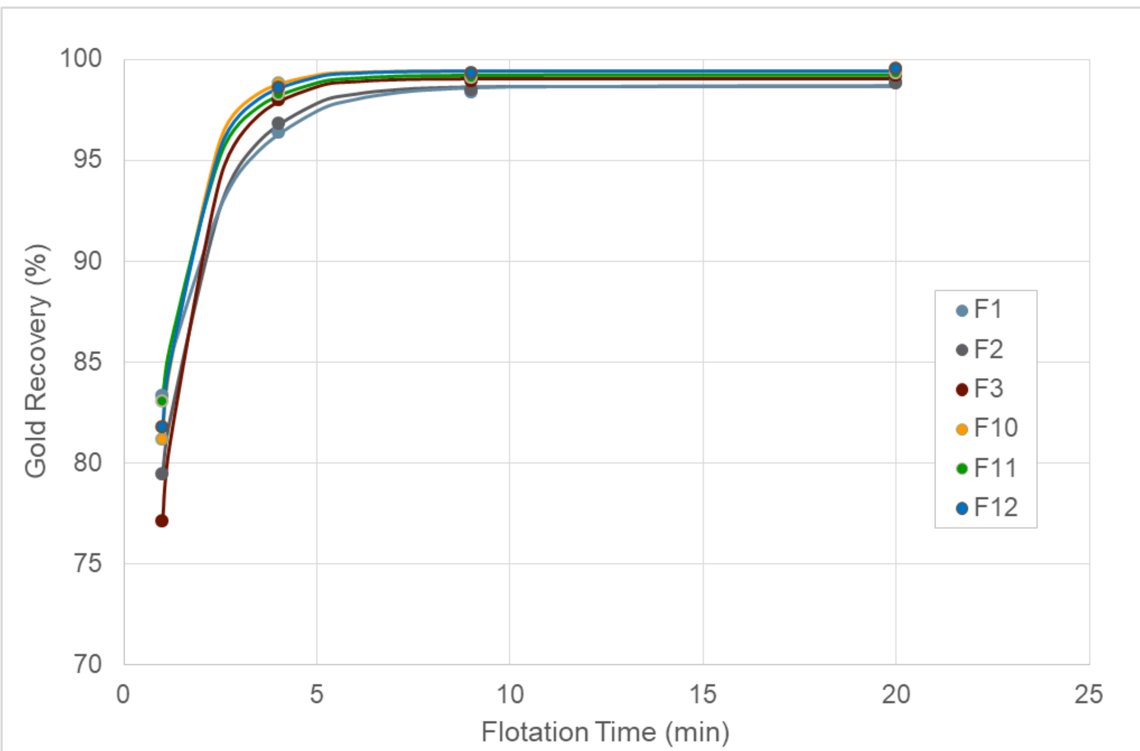


Figure 13-7: Gold recovery flotation kinetics (Hansuld and Gajo, 2019)

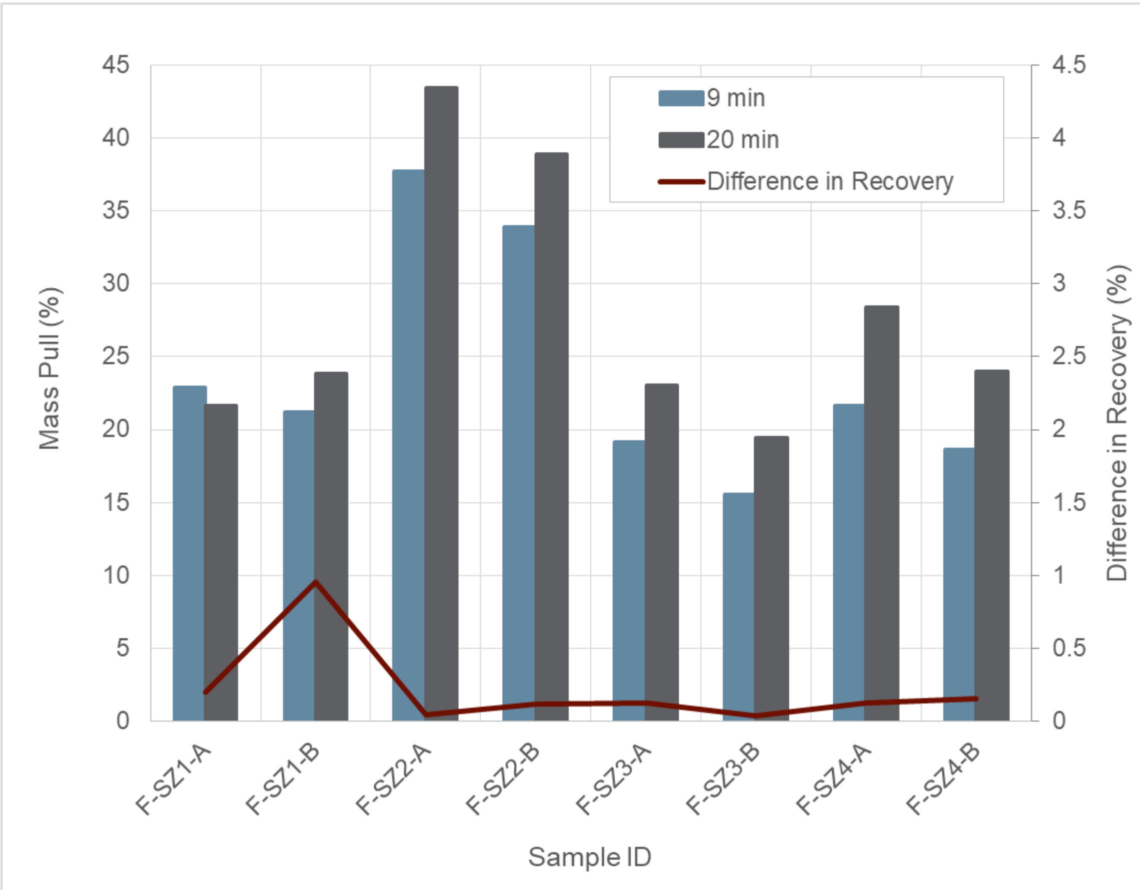


Figure 13-8: Impact of flotation time on mass pull and gold recovery

13.1.4.3 Ore Sorter Concentrate Flotation

Table 13-18 shows that the ore sorter concentrate flotation average gold recovery was higher than 98.6% after 9 min of flotation. In general, an increase in mass pull was observed with decreasing grind size, without any noticeable improvement in recovery. CZ-LOM blend of ore sorter concentrates, and fines achieved 72% and 78% at 9 min flotation and >99% at 15 min. Further testwork is recommended on ore sorter concentrate and fines blend.

Table 13-18: Flotation test results – Ore sorter concentrate

Test ID	Feed type	Grind size (P_{80}, µm)		Au grade (g/t)			Mass pull (%)		Au recovery (%)	
		Target	Actual	Head	Conc.[1]	Tails	9 min	15 min	9 min	15 min
CZ-LOM-OSC-F1	OSC	100	116	2.08	9.2	0.04	22.2	29.1	98.6	99.3
CZ-LOM-OSC-F2	OSC	200	200	2.06	14.1	0.03	14.4	19.6	98.6	98.8
CZ-LOM-Blend-F1	OSC + Fines	100	101	9.06	24.1	3.43	27.3	36.3	72.4	99.8
CZ-LOM-Blend-F2	OSC + Fines	200	174	4.76	18.3	1.32	20.2	26.0	77.9	99.7
VZ-LOM-OSC-F1	OSC	100	101	8.49	24.5	0.02	34.6	42.3	99.8	99.9
VZ-LOM-OSC-F2	OSC	200	197	10.15	32.9	0.04	30.8	34.7	99.7	99.8
VZ-LOM-Blend-F1	OSC + Fines	100	97	6.88	20.1	0.04	34.2	38.7	99.6	99.7
VZ-LOM-Blend-F2	OSC + Fines	200	201	1.21	3.1	0.06	37.9	43.4	96.9	97.7
						Minimum	**14.4**	**19.6**	**72.4**	**97.7**
						Average	**27.7**	**33.8**	**93.0**	**99.3**
						Maximum	**37.9**	**43.4**	**99.8**	**99.9**
						Standard deviation	**7.63**	**7.74**	**10.40**	**0.71**

[1] Concentrate and tailings grades presented are at 9 min.

13.1.5 Gravity Concentration

Gravity concentration tests were performed on the blend of ore sorter concentrate and flotation concentrate prior to leach tests. The samples were first subjected to gravity concentration using a lab scale Knelson concentrator and further concentrated with Mozley table. The average gold recovery was 28.1%.

13.1.6 Leaching Testwork

A leaching program was conducted and included flotation rougher concentrates, ore sorter concentrate, and blended flotation/ore sorter concentrates at 70:30, 50:50, and 30:70 of fines-to-coarse ratios. The fines-to-coarse proportion for operations had not been established when the tests were performed, the testwork program was designed to cover a range of scenarios. The samples were prepared to a pulp density of 45% (weight/weight ["w/w"]) solids, with the exception of the flotation rougher concentrate leach tests that were run at 35% (w/w) solids. All leaching tests were conducted at a target pH of 11 to 11.5 and dissolved oxygen levels of 6 parts per million ("ppm") to 8 ppm. A summary of the leaching conditions and results for individual tests are presented in Table 13-19 and averages by sample type are presented in Table 13-20.

Fines flotation concentrate, ore sorter concentrate flotation concentrate and ore sorter concentrate of variability composites were blended in proportions, which would represent the pre-concentrate production and leached at 45 µm and 75 µm with and without pre-treatment. Results of the leach tests are presented in Table 13-20 and the averages are presented in Table 13-22.

Table 13-19: Summary of leaching results

Test ID	Sample ID	Test conditions					Results							
		Feed K_{80}	Leach K_{80}	Leach time	$Pb(NO_3)_2$	NaCN	Adjusted NaCN cons.	CaO cons.	Au grade		Au recovery	Ag grade		Ag recovery
									Residue	Calc. head		Residue	Calc. head	
		µm	µm	h	g/t	g/L	kg/t	kg/t	g/t	g/t	%	g/t	g/t	%
CN-1	F4-G Rougher Conc.	75	~71	72	0	2.0	0.55	1.23	1.34	12.64	89.4	4.40	14.48	69.6
CN-2	F4-G Rougher Conc.	30	29.8	72	0	2.0	0.83	1.89	0.82	15.05	94.6	3.00	15.37	80.5
CN-3	F4-G Rougher Conc.	45	~45	72	0	2.0	0.48	1.72	1.13	15.94	92.9	3.30	16.22	79.7
CN-77A-1	77A OSC	45	53	48	0	0.5	0.28	2.40	0.64	15.84	96.0	1.53	12.47	87.7
CN-77A-2	77A OSC	45	52	48	200	0.5	0.32	1.48	0.72	17.02	95.8	1.60	13.39	88.1
CN-77A-3	77A OSC	45	54	48	200	0.5	0.35	1.34	0.65	15.92	95.9	1.50	12.36	87.9
CN-77B-1	77B OSC	45	46	48	0	0.5	0.20	0.87	0.34	7.77	95.7	0.65	6.03	89.2
CN-77B-2	77B OSC	30	35	48	0	0.5	0.19	0.93	0.17	7.92	97.8	0.73	6.43	88.6
CN-77C-1	77C OSC	45	47	48	0	0.5	0.10	0.67	0.06	2.38	97.3	0.50	2.14	76.7
CN-79A-1	79A OSC	45	44	48	0	0.5	0.22	0.97	0.31	12.67	97.6	0.50	9.46	94.7
CN-79B-1	79B OSC	45	43	48	0	0.5	0.16	0.79	0.20	7.70	97.5	0.55	5.69	90.3
CN-79B-2	79B OSC	30	32	48	0	0.5	0.21	0.83	0.14	7.27	98.1	0.63	5.88	89.2
CN-79C-1	79C OSC	45	49	48	0	0.5	0.09	0.61	0.05	1.46	96.8	0.50	1.49	66.4
CN-5050-1	Sample 1 (50:50)	45	48	48	0	0.54	0.24	0.85	0.40	9.30	95.7	1.50	2.80	46.4
CN-5050-2	Sample 1 (50:50)	45	45	48	0	0.35	0.18	0.79	0.41	9.42	95.7	1.50	2.74	45.3
CN-7030-1	Sample 2 (70:30)	45	42	48	0	0.64	0.33	0.83	0.44	9.12	95.1	1.67	3.12	46.5
CN-7030-2	Sample 2 (70:30)	45	43	48	0	0.45	0.23	0.83	0.45	9.28	95.1	1.67	3.01	44.6
CN-7030-3	Sample 2 (70:30)	45	42	48	0	0.35	0.17	0.90	0.46	9.18	95.0	1.63	2.99	45.4
CN-3070-1	Sample 3 (30:70)	45	49	48	0	0.47	0.21	0.74	0.27	8.43	96.8	1.20	2.17	44.8
CN-3070-2	Sample 3 (30:70)	45	51	48	0	0.35	0.16	0.74	0.28	8.58	96.7	1.13	2.14	47.2

Table 13-20: Leaching results of flowsheet blends

Test ID	Sample ID	Test conditions					Results				
		Feed K_{80}	Leach K_{80}	Pre-aeration time	Leach time	NaCN	Adjusted NaCN cons.	CaO cons.	Au grade		Au recovery
									Residue	Calc. head	
		µm	µm	h	h	g/L	kg/t	kg/t	g/t	g/t	%
CN-CZ-LOM-1	CZ-LOM Gravity Tails	45	51	10	30	0.50	0.13	1.4	0.15	2.0	92.7
CN-CZ-LOM-2		45	50	0	40	0.50	0.27	0.7	0.11	2.0	94.5
CN-CZ-LOM-3		75	64	0	40	0.50	0.22	0.6	0.18	2.3	92.3
CN-CZ-Low-1	CZ-Low Gravity Tails	45	52	10	30	0.50	0.22	1.3	0.21	3.0	93.0
CN-CZ-Low-2		45	51	0	40	0.50	0.30	0.8	0.32	4.4	92.7
CN-CZ-Low-3		75	77	0	40	0.50	0.33	0.9	0.42	4.3	90.3
CN-CZ-High-1	CZ-High Gravity Tails	45	51	10	30	0.50	0.26	1.5	0.50	8.0	93.8
CN-CZ-High-2		45	53	0	40	0.50	0.35	1.1	0.57	9.1	93.8
CN-CZ-High-3		75	75	0	40	0.50	0.21	0.8	0.56	6.7	91.6
CN-VZ-LOM-1	VZ-LOM Gravity Tails	45	51	10	30	0.50	0.20	1.3	0.34	8.1	95.8
CN-VZ-LOM-2		45	51	0	40	0.50	0.27	0.9	0.42	7.8	94.6
CN-VZ-LOM-3		75	71	0	40	0.50	0.21	0.8	0.51	8.3	93.9
CN-VZ-Low-1	VZ-Low Gravity Tails	45	52	10	30	0.50	0.18	1.3	0.26	4.9	94.7
CN-VZ-Low-2		45	55	0	40	0.50	0.25	0.8	0.24	4.2	94.3
CN-VZ-Low-3		75	73	0	40	0.50	0.23	0.7	0.39	5.0	92.3
CN-VZ-High-1	VZ-High Gravity Tails	45	52	10	30	0.50	0.18	1.2	0.85	12.7	93.3
CN-VZ-High-2		45	50	0	40	0.50	0.26	1.1	0.87	12.2	92.9
CN-VZ-High-3		75	65	0	40	0.50	0.28	1.0	1.07	12.8	91.6
CN-SZ-LOM-1	SZ-LOM Gravity Tails	45	48	10	30	0.50	0.55	3.0	0.62	21.8	97.2
CN-SZ-LOM-2		45	53	0	40	0.50	0.37	1.5	0.73	21.0	96.6
CN-SZ-LOM-3		75	71	0	40	0.50	0.36	1.4	0.87	20.3	95.7
CN-SZ-Low-1	SZ-Low Gravity Tails	45	47	10	30	0.50	0.29	2.6	0.56	15.3	96.4
CN-SZ-Low-2		45	51	0	40	0.50	0.28	1.6	0.29	8.8	96.7
CN-SZ-Low-3		75	66	0	40	0.50	0.32	1.3	0.56	13.6	95.9
CN-SZ-High-1	SZ-High Gravity Tails	45	51	10	30	0.50	0.25	1.7	1.15	26.4	95.7
CN-SZ-High-2		45	52	0	40	0.50	0.44	1.3	0.58	14.7	96.0
CN-SZ-High-3		75	62	0	40	0.50	0.50	1.2	1.46	28.7	94.9
CN-SZ-Deep-1	SZ-Deep Gravity Tails	45	49	10	30	0.50	0.17	1.5	0.15	3.4	95.6
CN-SZ-Deep-2		45	50	0	40	0.50	0.25	1.1	0.17	4.7	96.4
CN-SZ-Deep-3		75	64	0	40	0.50	0.23	1.1	0.36	18.5	98.1

13.1.6.1 Results

In general, excellent gold leaching recoveries between 95% and 98% were observed for all tests performed on OSC and blended OSC/flotation concentrate samples. A 3–4% decrease in recovery was observed for the rougher flotation concentrates when leached alone.

Silver (“Ag”) recoveries were quite variable, averaging 77% and 86% for the flotation concentrates and ore sorter concentrates respectively. While gold recoveries were excellent for the blended samples, silver recoveries for the same samples averaged 46%.

Table 13-21: Leach test result averages by sample type

Sample ID	Results								
	Feed K_{80}	Adjusted NaCN cons.	CaO cons.	Au grade		Au recovery	Ag grade		Ag recovery
				Residue	Calc. head		Residue	Calc. head	
	µm	kg/t	kg/t	g/t	g/t	%	g/t	g/t	%
Fines flotation Concentrate Average	50	0.62	1.61	1.1	14.54	92.3	3.57	15.4	76.6
Ore sorter Concentrate Average	42	0.21	1.09	0.33	9.59	96.8	0.87	7.53	85.9
50:50 Blend Average	45	0.21	0.82	0.40	9.36	95.7	1.50	2.77	45.9
70:30 Blend Average	45	0.24	0.85	0.45	9.20	95.1	1.66	3.04	45.5
30:70 Blend Average	45	0.19	0.74	0.28	8.51	96.8	1.17	2.16	46.0

Leaching of blended pre-concentrates at approximately 50 µm on average resulted in 94% gold recovery. A range of 0.8–2.4% decrease in recovery was observed for leaching at 75 µm compared to 45 µm. In general, the pre-aeration stage decreased cyanide consumption insignificantly; however, lime consumption increased 0.6 kilograms per tonne ("kg/t") on average.

Table 13-22: Leach test result averages for flowsheet blends

Sample ID	Targeted feed F_{80}	Results					
		Leach K_{80}	Adjusted NaCN cons.	CaO cons.	Au grade		Au recovery
					Residue	Calc. head	
	µm	µm	kg/t	kg/t	g/t	g/t	%
Pre-aeration Average	45	50	0.24	1.7	0.48	10.6	94.8
45 µm Average	45	51	0.30	1.1	0.43	8.9	94.8
75 µm Average	75	69	0.29	1.0	0.64	12.0	93.7

The fines flotation concentrates were leached at three grinding sizes: 75 µm, 45 µm, and 30 µm. With decreasing particle size, gold recovery improved, reagent consumption of lime (CaO) and cyanide (NaCN) increased as expected with the exposure of additional mineral surfaces produced by finer grinding. The flotation concentrates were leached for 72 hours, while the ore sorting products and blended samples were leached for 48 hours.

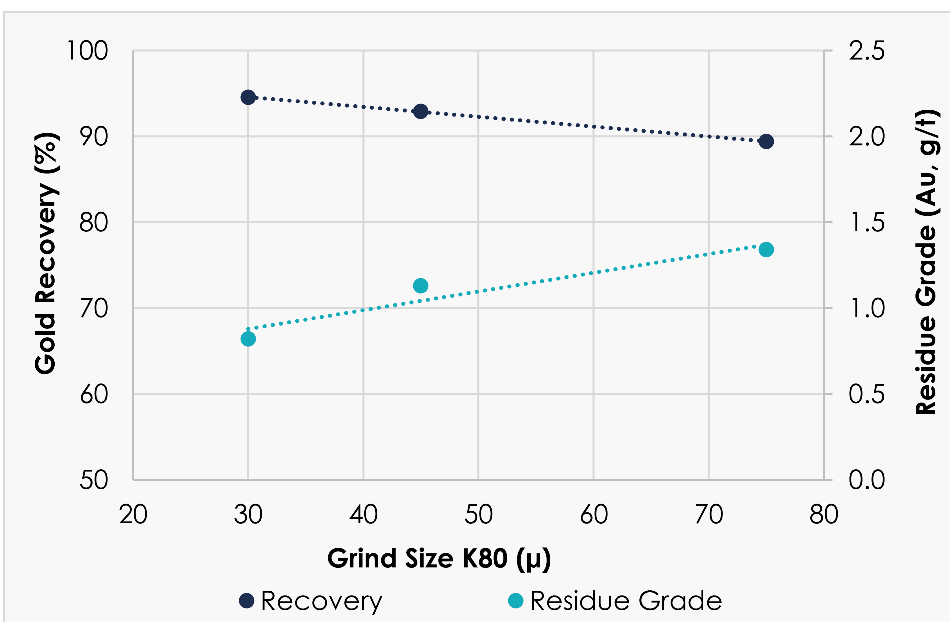


Figure 13-9: Leach recovery and residue grade as a function of grind size

13.1.6.2 Reagent Consumption

When comparing the tests conducted at a P80 of 45 µm, the highest lime and cyanide consumptions of 0.48 kg/t and 1.72 kg/t, respectively, were in the tests where the fines flotation concentrates were leached on their own. The average lime and cyanide consumptions when leaching the ore sorting concentrates were considerably lower at 0.21 kg/t and 1.09 kg/t respectively. The lime consumption of the blends was lower than the ore sorter concentrate and fines flotation concentrate consumptions. The cyanide consumption of the blends was equivalent to that of the ore sorter concentrates when leached on their own.

13.1.7 Cyanide Destruction Testwork

Cyanide destruction testwork was performed on a bulk gravity tailings sample of the 50:50 (fines to coarse ratio) blend of flotation concentrate and ore sorter concentrate at Cyanco following cyanidation. To reduce the reagent consumption rates, a pre-aeration step was added to leaching ahead of cyanide destruction. The addition of the pre-aeration step reduced the cyanide consumption and the amount of total cyanide in leach tails by reducing the formation of stable metal cyanide complexes, which were suspected to be cyanide consumers, and as a result, reduced the detox reagent consumption rates. Targeted cyanide levels were successfully achieved with both conditions.

13.1.8 Thickening, Filtration, and Rheology Testwork by Pocock Industrial

13.1.8.1 Samples Tested

Three samples were sent to Pocock Industrial in Salt Lake City, Utah for thickening, filtration, and rheology testing; these included flotation tailings, pre-leach thickener feed, and detoxed tailings. The characteristics of the as-received materials are summarized in Table 13-23.

Table 13-23: Sample characterization

Sample	Particle size (P_{80}, µm)	pH (as received)	SG for calculations
Flotation Tailings	105	7.8	2.76
Pre-leach Thickener Feed	41	10.9	2.88
Detoxed Tailings	36	9.2	2.97

13.1.8.2 Thickening

Flocculant Screening

All three samples were submitted to flocculant screening tests to identify the best reagent for flocculation of solids to promote rapid settling and reducing suspended solids concentration in overflow. The screening tests also provided an indication of the required reagent dosing. The selected flocculant for all three samples was a high molecular weight, 10% charge anionic polyacrylamide.

Once an appropriate flocculant was selected, static settling tests were conducted to provide an estimate of the optimized operating parameters, including feed slurry density and flocculant dosing, for dynamic testing. The recommended flocculant dosing for dynamic testing ranged between 24 grams per tonne ("g/t") and 36 g/t.

Dynamic Testing

Dynamic thickening tests were performed on each material to determine the recommended maximum hydraulic design basis for high-rate thickener design. Expected underflow solids concentrations and overflow suspended solids concentrations were also determined in testing. Table 13-24 provides high-rate thickener design criteria and operating parameters for each material.

Table 13-24: Recommended high-rate thickener operating parameters

Sample	Feed pulp density (%, w/w)	Flocculant dose (g/t)	Design net feed loading ($m^3/m^2/h$)	Predicted TSS (mg/L)	Predicted U/F density (%, w/w)
Flotation Tailings	14.8	24 – 26	3.7	150-250	71%
Pre-leach Thickener Feed	15.0	27 – 30	4.0	150-250	62%
Detoxed Tailings	17.2	32 – 36	3.8	150-250	64%

The overflow clarities achieved were shown to be in the range of what is generally acceptable. For further reduction of overflow suspended solids concentration, a polish filtration step may be required to treat the thickener overflow.

Each of the three thickening applications requires dilution of feed to between 13% and 17% (w/w) solids.

The suggested maximum design hydraulic loading rate is as follows:

- The flotation tailings material is 3.7 $m^3/m^2/h$, with a maximum recommended underflow density of 71% (w/w);
- The pre-leach thickener feed material is 4.0 $m^3/m^2/h$ with a maximum recommended underflow density of 62% (w/w);
- The detoxed tailings material is 3.8 $m^3/m^2/h$ with a maximum recommended underflow density of 64% (w/w).

13.1.8.3 Rheology

Rheological measurements were performed on thickened samples on each of the flotation tailings, pre-leach thickener feed, and detoxed tailings materials. A typical yield stress vs. percent solids is presented in Figure 13-10.

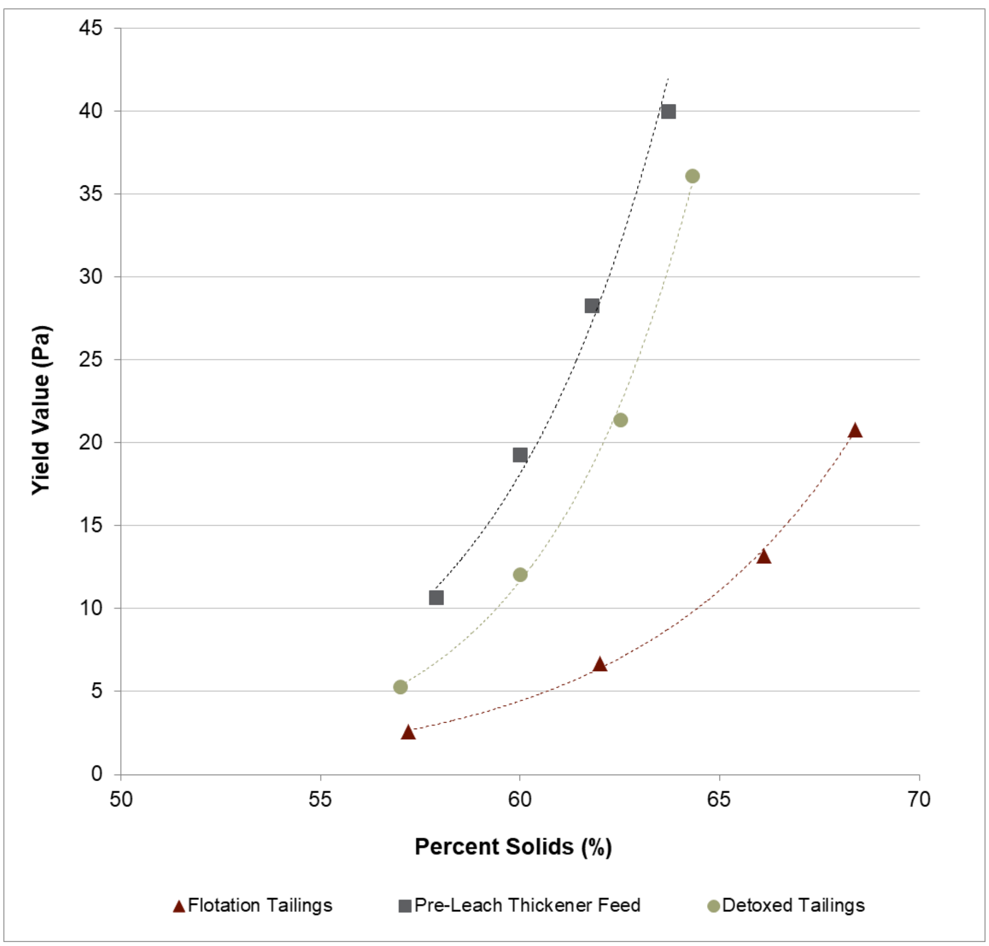


Figure 13-10: Yield value versus percent solids

(Source: Pocock Industrials, 2019)

Rheology results indicate that for each of the materials, the yield value was less than 30 pascals ("Pa") at the maximum thickened underflow density recommended from the thickening tests. For these materials, a heavy-duty thickener rake mechanism is recommended to minimize the thickener underflow density due to insufficient rake torque.

13.1.8.4 Filtration Tests

Pressure filtration tests were conducted on both flotation and detox tailings. The tests were done in a 60 mm chamber, using air blow with and without membrane squeeze. The test conditions and main filtration results are presented in Table 13-25.

Table 13-25: Pressure filtration results and design parameters

Sample	Membrane squeeze	Feed pulp density (%, w/w)	Dry bulk density (t/m3)	Cake thickness (mm)	Cycle time (min)	Cake moisture (%)
Flotation Tailings	N	68.3	1.49	60.0	12.0	8.5
Flotation Tailings	Y	68.3	1.53	58.3	12.5	8.0
Detoxed Tailings	N	62.7	1.50	60.0	12.0	13.9
Detoxed Tailings	Y	62.7	1.57	57.4	12.5	12.7

The results demonstrate that both with and without the membrane squeeze, both tailings materials dewatered well within an acceptable cycle time (12 min to 12.5 min). The cake moisture achieved for the flotation tailings and detoxed tailings ranged from 8.0% to 8.5% and from 12.7% to 13.9%, respectively. Obtained results for detoxed tailings are in the industry standard for tailings dry stacking (above 80% solid w/w).

13.1.9 Mass Pull Projection

The average recovery and mass pull results presented in this section were for the pre-concentrate blends prepared for the testwork program. The blends were prepared using a fixed proportion of each mineralized zone considering the preliminary mine plan at the time. Annual recovery projections are expected to differ from the average testwork results according to the final mine plan proportions of mineralized zones.

The average gold recovery and mass pull results from the testwork performed are summarized in Table 13-26. The projected pre-concentrate transferred to the QR Mill is 21.2% of the Mine Site Complex feed mass and the overall gold recovery is 92.2%.

Table 13-26: Average gold recovery and mass pull for each process step

Process step	Average stage mass pull (%)	Average Au stage recovery (%)
Crushing circuit fines	30.0	36.0
Crushing circuit coarse	70.0	64.0
Flotation concentrate	20.0	98.9
Coarse ore sorting concentrate	42.6	93.9
Pre-concentrate (QR Feed)	21.2	95.3
Gravity	N/A	28.1
Leaching of pre-concentrate	N/A	95.5
Overall Au Recovery		**92.2**

13.2 Shaft Zone Bulk Sample Test Campaign

The metallurgical testwork program was developed by BBA and ODV in order to further confirm ore sorter performance and mineralized material behaviour to mineral processing and extraction processes. This program included one bulk sample from Shaft Zone.

13.2.1 Ore Sorting Testwork

Ore sorting testwork was conducted in Wedel, Germany by Tomra in 2020. The initial sample was 2,213 kg from the Shaft Zone. The sample was screened, the undersize material (-10 mm) was removed, and two ranges of grain sizes, +10-25 mm and +25 mm, were generated. In Test Series 1, the material +25 mm was sorted, while in Test Series 2, the fine-grained material +10-25 mm was sorted. The sample preparation flowsheet is shown in Figure 13-11. Tomra used XRT sensors to detect sulphides, and laser sensors to detect quartz particles.

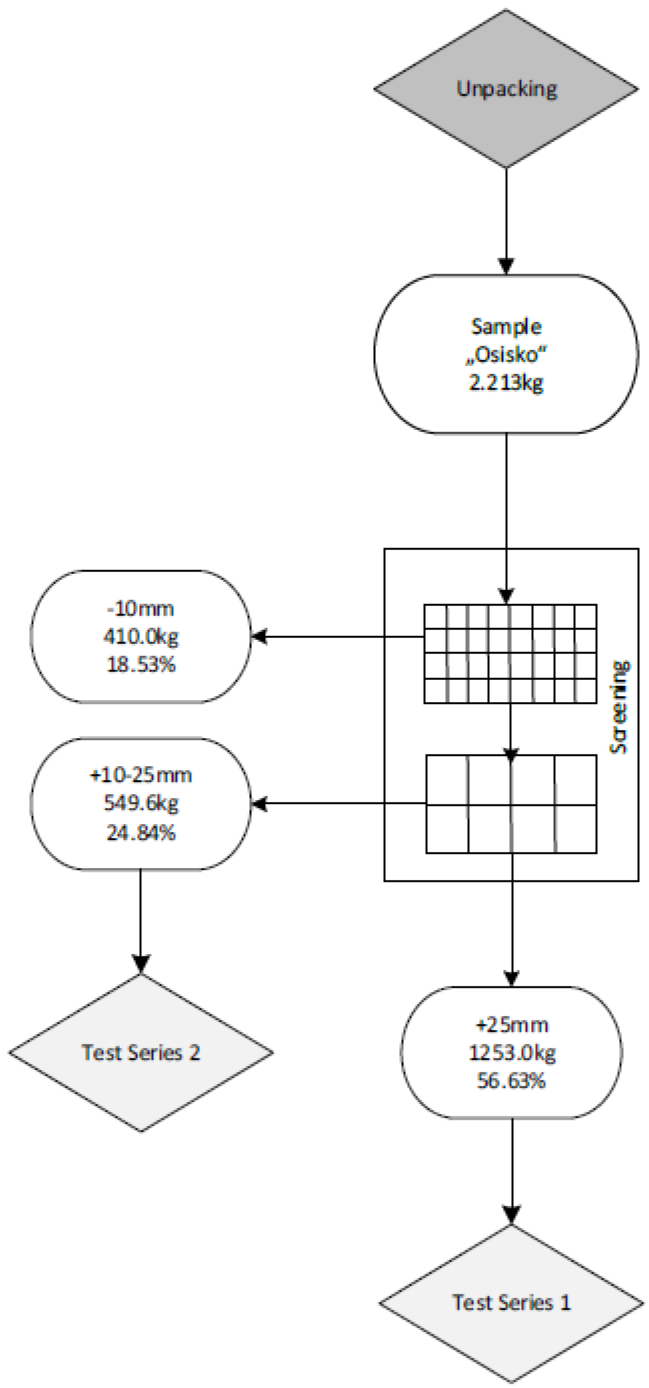


**Figure 13-11: Sample preparation flow diagram
(Source: Tomra, 2021)**

13.2.1.1 Flowsheet and Results

The flowsheet used to produce the ore sorter concentrates is a "cascade" method, where the sorting is conducted in series with increased sorting sensitivity. The first two sorting steps were performed with the XRT sensor to produce a high-medium grade concentrate and a low-grade concentrate. The waste from the XRT tests was sorted with the laser sensor in scavenger tests. The Series 1 sample underwent additional screening and a second laser sorting stage after the first scavenger test to produce a massive quartz and a quartz vein product. The flowsheet used can be seen in Figure 13-12.

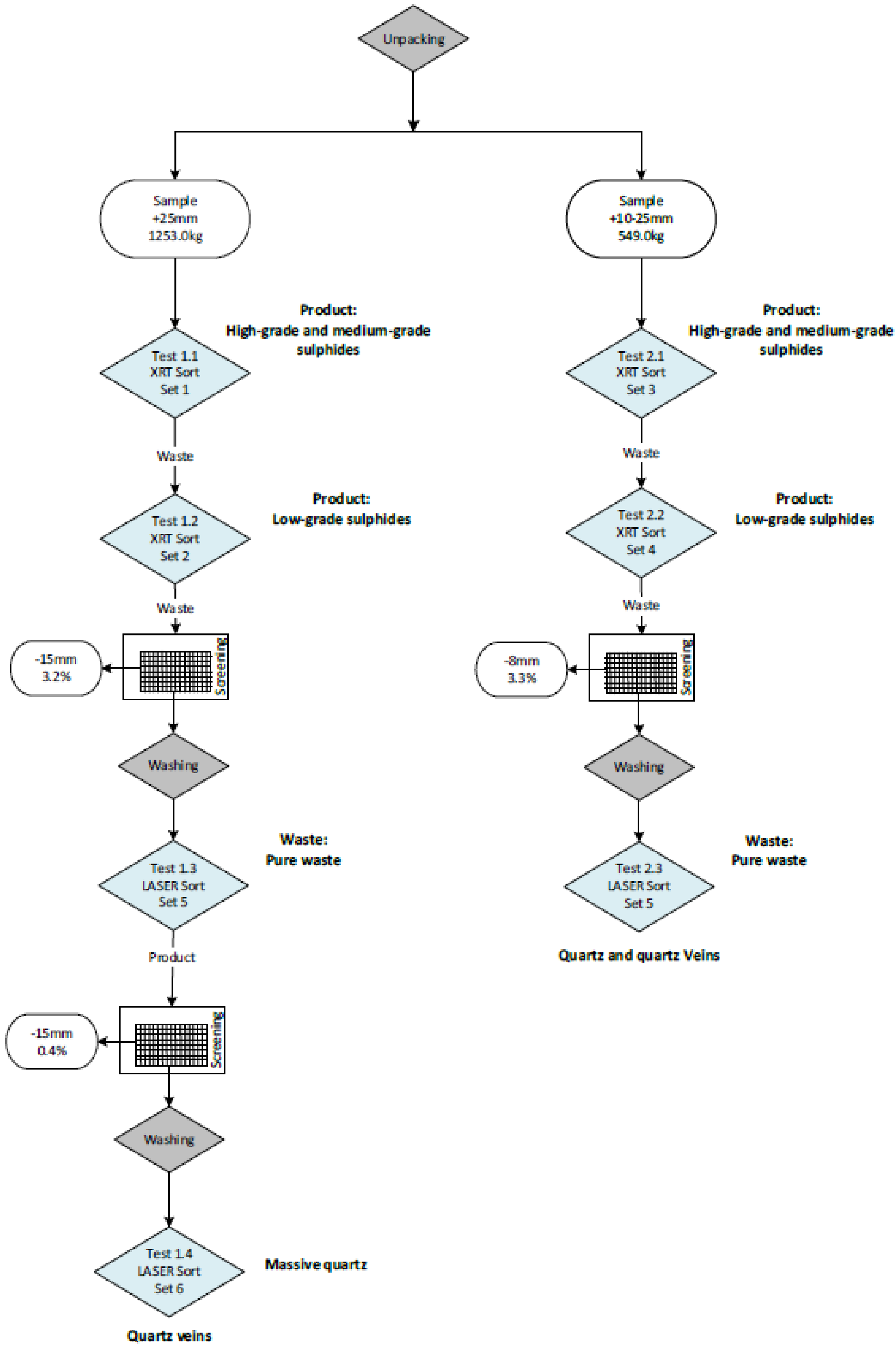


Figure 13-12: Ore sorting testwork flowsheet
(Source: Tomra, 2021)

The testwork results summarized in Table 13-27 showed that by using the XRT sorting significant upgrades as well as high recoveries were achieved. For the coarser sample +25mm, by using setting 1, a recovery of 96.4% with a mass pull of 35.5% was achieved. The feed grade 2.33g/t upgraded to 6.24g/t. Applying a more sensitive setting 2 increades the recovery up to 99.2% with a total mass pull of 47.5% including the screened fines. The results achieved by XRT showed no necessity in the application of additional techniques and contributed to the assumption that gold in the tested material mainly associated with sulfides.

Table 13-27: Ore sorting results

Product	Result	Sample +25 mm	Sample +10-25 mm
Screened fines - 10 mm	Au (g/t)	6.3	
	S (%)	5.6	
Feed	Au (g/t)	2.30	2.76
	S (%)	2.33	2.25
XRT Set 1-Waste	Au (g/t)	0.14	0.32
	S (%)	0.45	0.57
XRT Set 1- Product	Au (g/t)	6.24	6.07
	S (%)	5.75	4.54
	Mass pull %	35.5	42.4
	Recovery Au (%)	96.4	93.3
XRT Set 2-Waste	Au (g/t)	0.03	0.02
	S (%)	0.28	0.28
Screened fines	Au (g/t)	1.73	3.99
XRT Set 2-Product	Au (g/t)	0.08	0.61
	S (%)	0.64	0.59
Total mass pull (%)		47.5	52.7
Total Au Recovery (%)		99.2	99.6

13.2.2 Composite Development for SGS Program

Three composite samples were prepared by combining the undersize material ("Prep fines") with the ore sorter concentrate ("OSC") generated with sorting testwork at Tomra.The ratio of Prep fines to OSC varied for each blend.

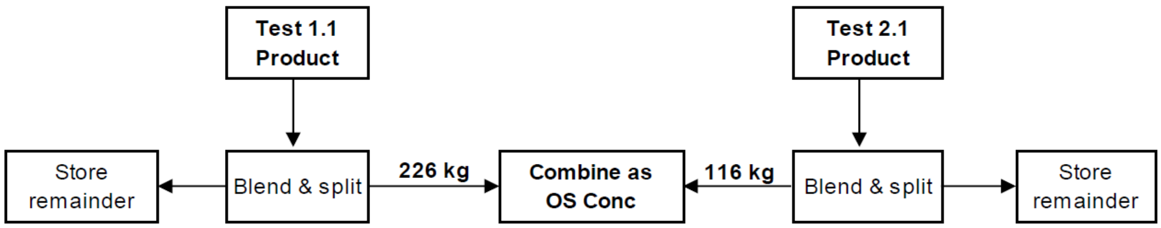


Figure 13-13: Sample preparation – Ore sorter concentrate
(Source: SGS, 2022)

Table 13-28: Recipes of composite samples

Sample ID	Weight, %		Total mass, kg
	Prep fines	OSC	
Blend 1	32.1	67.9	243.5
Blend 2	55.0	45.0	243.5
Blend 3	72.2	27.8	243.5

Blend head assays are presented in Table 13-29.

Table 13-29: Head assays results summary – Blend 1,2, and 3

Sample ID	Au g/t	Ag g/t	Cu %	Fe %	Zn %	S %	TC %	TOC %
Blend 1	8.81	4.28	0.02	5.90	0.14	5.48	0.54	0.11
Blend 2	6.22	4.61	0.02	6.21	0.13	6.22	0.49	0.12
Blend 3	6.95	4.42	0.02	6.79	0.11	6.38	0.47	0.12

13.2.3 Rougher Flotation Testwork Results

The samples, Blend 1, Blend 2 and Blend 3 were tested at three different grind sizes: 150 µm, 100 µm, and 75 µm. The effect of the grind size on rougher flotation was observed while keeping the reagent dosages, pH (natural) and flotation duration constant. These conditions are shown in Table 13-30.

Table 13-30: Rougher flotation test conditions

Test #	Grind size K_{80} (µm)	Reagent		pH	Rougher Stages	Time (min)
		Collector PAX(2) (g/t)	Frother MIBC(2) (g/t)			
F1	150	30	19	natural	4	8
F2	100	30	19	natural	4	8
F3	75	30	19	natural	4	8

(1) PAX: Potassium amyl xanthate.
(2) MIBC: Methyl isobutyl carbinol.

Figure 13-14, Figure 13-15, and Figure 13-16 present the flotation kinetics for each blend and each rougher flotation test condition. All samples achieve higher than 97% gold recovery at eighth minute of flotation regardless of the grind size.

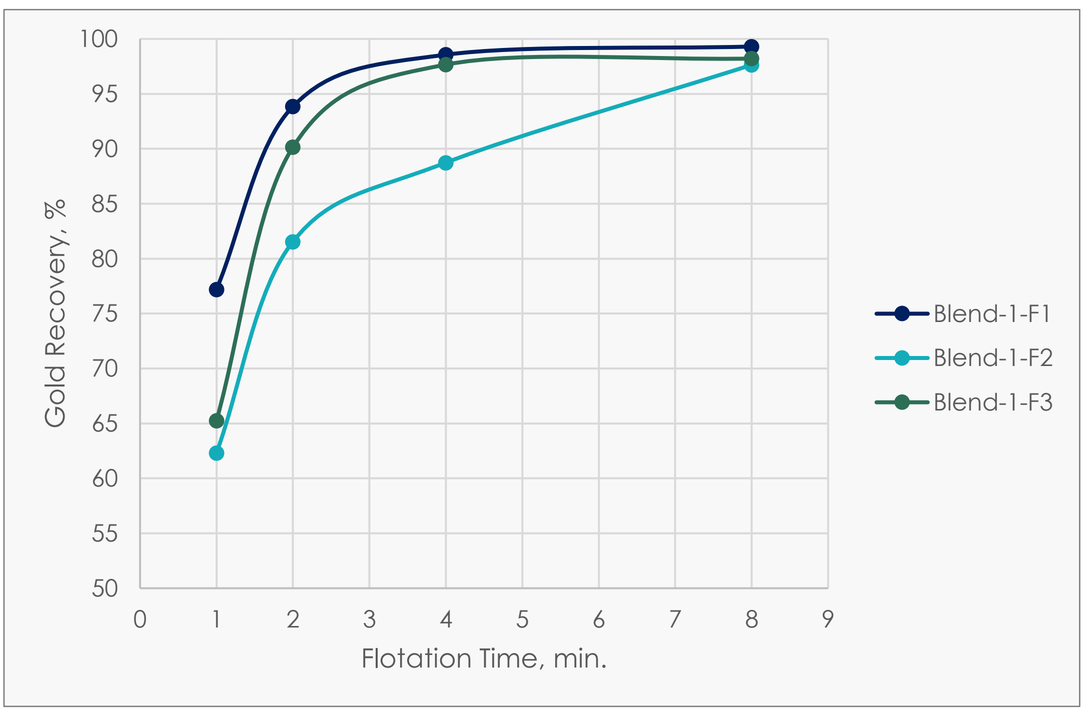


Figure 13-14: Flotation time versus gold recovery – Blend 1

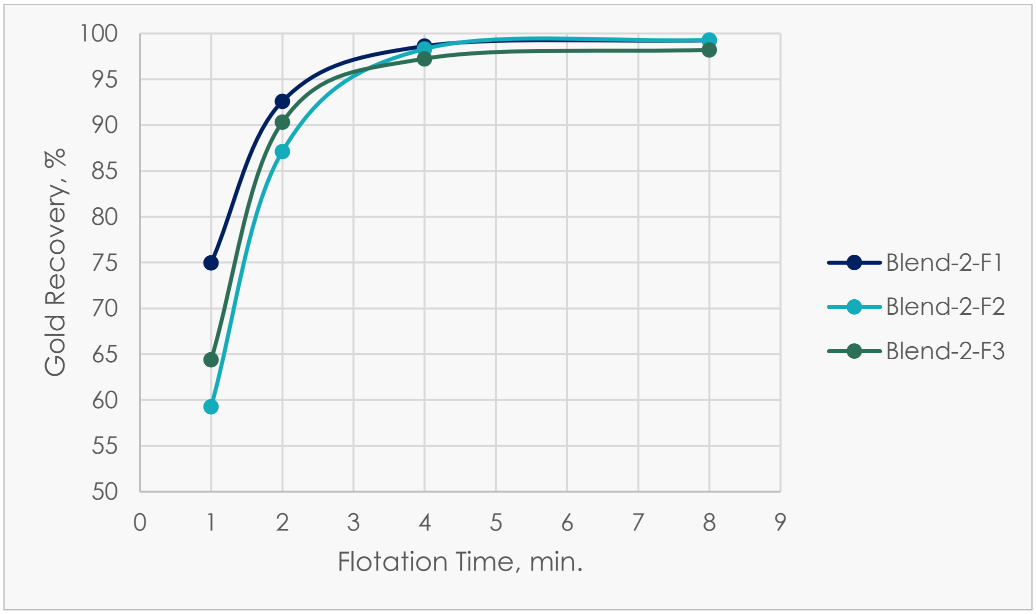


Figure 13-15: Flotation time versus gold recovery – Blend 2

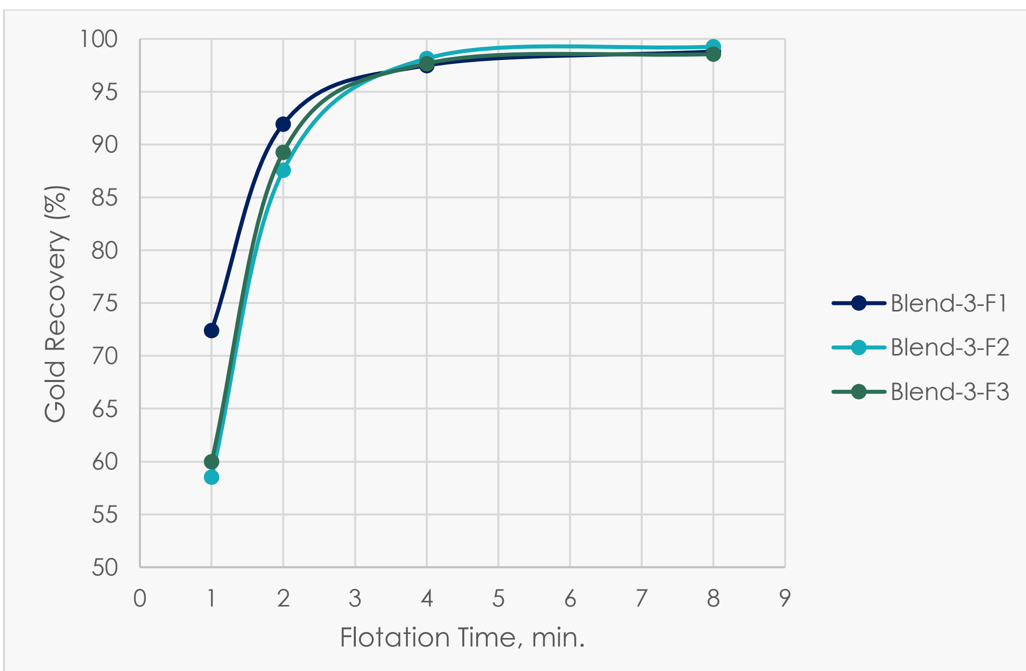


Figure 13-16: Flotation time versus gold recovery – Blend 3

Table 13-31presents the rougher flotation test results. For Blend 1, F1 (150 µm) has the highest gold recovery with 99.3%, while F2 (100 µm) has the lowest gold recovery with 97.6%. For blend 2, F2 (100 µm) has the highest gold recovery with 99.3%, while F3 (75 µm) has the lowest gold recovery with 98.2%. For blend 3, F2 (100 µm) has the highest gold recovery with 99.3%, while F3 (75 µm) has the lowest gold recovery with 98.6%. Based on these results, the design grind size is determined to be 100 µm.

Table 13-31: Rougher flotation test results

Test #	Sample ID	Primary Grind	Grade of Concentrate		Recovery	
		K80 µm	Au g/t	Ag g/t	Au %	Ag %
Blend1-F1 (ave)	Blend 1	100	42.2	25.5	99.3	95.0
Blend1-F2 (ave)		149	52.9	27.9	97.6	94.7
Blend1-F3 (ave)		79	40.8	24.3	98.2	95.1
Blend2-F1 (ave)	Blend 2	101	41.3	24.1	99.2	94.9
Blend2-F2 (ave)		149	44.3	26.4	99.3	95.0
Blend2-F3 (ave)		77	40.0	23.2	98.2	95.0
Blend3-F1 (ave)	Blend 3	100	47.5	23.5	98.8	95.0
Blend3-F2 (ave)		148	45.8	25.9	99.3	95.2
Blend3-F3 (ave)		78	40.6	21.4	98.6	94.8

The assays of rougher flotation concentrates at 100 µm grind size are shown in Table 13-32. Gold recovery ranged from 97.6–99.3% with grades from 44.3-52.8 g/t at mass pulls of 13.9-16.1%.

Table 13-32: Rougher flotation at 100micron - Concentrate composition

Test #	Grind Size µm	Concentrate Weight %	Assays, g/t, %						Recovery					
			Au	Ag	Cu	Fe	S	TOC	Au	Ag	Cu	Fe	S	TOC
			g/t	g/t	%	%	%	%	%	%	%	%	%	%
Blend-1-F2	100	13.9	52.8	27.9	0.06	32.8	38.4	0.34	97.6	94.7	64.3	82.0	98.1	36.3
Blend-2-F2	100	15.3	44.3	26.4	0.04	33.5	38.5	0.31	99.3	95.0	60.5	83.7	98.4	40.0
Blend-3-F2	100	16.1	45.8	25.9	0.04	34.7	39.9	0.28	99.3	95.2	62.2	85.8	98.4	44.5

13.2.4 Cleaner Flotation Testwork Results

The cleaner flotation samples were tested at three different grind sizes: 100 µm, 45 µm, and 25 µm. The effect of regrinding on cleaner flotation was observed while keeping the same reagent dosages, pH, cleaner stages, and flotation durations. These conditions are shown in Table 13-33.

Table 13-33: Cleaner flotation test conditions

Grind size K80 µm	Reagent		pH	Cleaner Stages	Time min
	PAX g/t	MIBC g/t			
No	5	2	Natural	2	8
45	5	2	Natural	2	8
25	5	2	Natural	2	8

Table 13-34 shows that regrinding has a negative effect on gold and silver recoveries for blend 1 and blend 2. However, for blend 3, regrinding the sample to 46 µm improved the gold recovery by 11.1% with little impact on the silver recovery.

Table 13-34: Cleaner flotation test results

Sample ID	Re-grind	Weight	Concentrate grade, g/t, %						Recovery					
			Au	Ag	Cu	Fe	S	TOC	Au	Ag	Cu	Fe	S	TOC
	K_{80}	%	g/t	g/t	%	%	%	%	%	%	%	%	%	%
Blend-1	-	10.8	62.3	34.6	0.06	39.4	46.0	0.32	96.4	86.2	41.5	75.5	91.9	23.0
Blend-1	40	8.65	76.7	39.2	0.07	41.4	48.0	0.27	95.3	83.1	39.3	63.5	77.6	17.1
Blend-1	24	3.62	153	89.0	0.14	36.7	43.3	0.57	88.4	76.1	33.8	23.8	29.5	14.8
Blend-2	-	11.8	58.6	31.1	0.06	39.9	47.0	0.31	97.1	87.2	44.6	78.6	93.6	25.0
Blend-2	40	9.43	66.0	34.0	0.07	42.6	49.2	0.23	92.6	80.3	40.9	66.8	79.1	17.2
Blend-2	22	2.97	190	107	0.15	38.2	44.6	0.47	79.4	73.2	30.1	19.1	22.6	10.4
Blend-3	-	12.4	53.1	31.1	0.05	40.7	47.1	0.25	82.0	89.0	41.3	76.5	90.1	23.7
Blend-3	46	10.7	77.9	34.6	0.06	43.4	49.0	0.21	93.3	87.5	39.0	70.5	81.5	18.8
Blend-3	24	4.64	136	68.0	0.11	38.7	44.6	0.37	85.9	76.4	33.7	27.3	31.9	13.8

13.2.5 Bulk Rougher Flotation Test

The three blend's rougher flotation samples were mixed and their test results of the 3 series of 22 tests were averaged. The blend mixes were used for the subsequent extended gravity recoverable gold ("E-GRG") test and leaching tests. Table 13-35 shows the average weight recovery, gold rougher concentrate grade, gold rougher tailings grade, and gold recovery for each blend average. The blend weight recovery averages vary between 16.9% and 18.5%; gold recovery averages vary between 98.2% and 99.5%; gold rougher concentrate grade averages vary between 37.4 g/t and 38.0 g/t.

Table 13-35: Bulk rougher flotation test results summary

Test #	Mass Pull	Au, g/t		Au Recovery
	%	Ro Conc	Ro Tailings	%
Blend -1-Average	16.9	38.0	0.04	99.5
Blend -2-Average	18.0	37.4	0.17	98.2
Blend -3-Average	18.5	37.8	0.05	99.4

13.2.6 Combined Flotation Concentrate Assay

The assay results of the combined flotation concentrate are shown below. In addition to having 39.2 g/t of gold and 26.7 g/t of silver, the combined concentrate has high amounts of iron, sulphur, and copper.

Table 13-36: Assay results summary – combined flotation concentrate

Elements	Assay Results
Au, g/t	39.2
Ag, g/t	26.7
Fe, %	30.9
Cl, g/t	<50
S, %	34.9
Hg, g/t	<0.3
F, %	0.074
Ca, g/t	1060
Cu, g/t	349

Elements	Assay Results
Mg, g/t	1840
Ni. g/t	<300
As, g/t	4490
Bi, g/t	51.1
Cd, g/t	85.9
Pb, g/t	4790
Sb, g/t	38.6
Se, g/t	<10
Te, g/t	<4

13.2.7 EGRG (Extended Gravity Recoverable Gold) Testing

The E-GRG test on the combined flotation concentrate sample was performed to determine the theoretical maximum amount of gold recovery. The test was done at two grind sizes (two stages) and the results are shown in Table 13-37. The overall gold and silver gravity recoveries for the combined flotation sample were 31.8% and 14.2%, respectively.

Table 13-37: E-GRG test results summary – gold and silver

Sample ID	P_{80}, µm		Mass, %		Cumulative Recovery, %		Concentrate grade, g/t	Head Grade, g/t	
	Stage 1	Stage 2	Stage 1	Stage 2	Stage 1	Stage 2		Direct	Calculated
Fconc - Gold	112	50	0.62	0.55	17.9	31.8	1,028	39.2	37.8
Fconc - Silver	112	50	0.62	0.55	9.4	14.2	291	26.7	23.9

13.2.8 Leaching Testwork

Standard cyanide bottle roll tests were performed on flotation concetrates from the three composite samples under the test conditions provided in Table 13-38.

Table 13-38: Cyanide leaching bottle roll test conditions

Grind Size, K_{80} µm	Slurry Density wt %	pH	Leach Time h	NaCN addition	Preconditioning
				g/L	
45	50	10.8 - 11	48	0.5 – 1.0 -1.5	No precondition or 12h

The overall leaching test results for various testing conditions are shown in Table 13-39. Regardless of the testing conditions, gold recoveries varied between 95.7% and 96.8%; silver recoveries varied between 44.8% and 55.5%. The highest gold recovery was observed for B2-Fconc-L6; the highest silver recovery was observed for B3-Fconc-L4; the lowest gold recovery was observed for B1-Fconc-L1; the lowest silver recovery was observed for B2-Fconc-L5. The effects of pre-conditioning, dissolved oxygen content, and NaCN concentration are compared in more detail in the following sections.

Table 13-39: Leaching test conditions and results

Test #	Sample ID	K_{80} µm	Pulp Density %	Precondition		pH	DO	NaCN Concentration		Retention Time h	Consumption		Extraction	
				Period h	Air/O_2			Added g/L	Maintained g/L		NaCN	CaO	Au	Ag
											kg/t	kg/t	%	%
B1-Fconc-L1	B1-FConc	54	50	12	O2	10.8-11	>20	0.5	0.5	48	1.47	1.64	95.7	49.6
B1-Fconc-L2	B1-FConc	54	50	12	O2	10.8-11	>20	1.0	1.0	48	1.76	1.62	95.9	52.4
B1-Fconc-L3	B1-FConc	54	50	12	O2	10.8-11	>20	1.5	1.5	48	1.80	1.58	96.0	51.6
B1-Fconc-L4	B1-FConc	54	50	-	-	10.8-11	6	1.0	1.0	48	1.79	0.92	96.3	52.0
B1-Fconc-L6	B1-FConc	54	50	12	Air	10.8-11	5	1.0	1.0	48	1.67	1.52	96.7	51.5
B2-Fconc-L1	B2-FConc	57	50	12	O2	10.8-11	15	0.5	0.5	48	1.40	1.92	95.7	48.4
B2-Fconc-L2	B2-FConc	57	50	12	O2	10.8-11	14	1.0	1.0	48	1.84	1.83	95.9	52.8
B2-Fconc-L3	B2-FConc	57	50	12	O2	10.8-11	13	1.5	1.5	48	1.69	1.60	96.5	54.7
B2-Fconc-L4	B2-FConc	57	50	-	-	10.8-11	5	1.0	1.0	48	1.81	1.06	96.5	52.7
B2-Fconc-L5	B2-FConc	57	50	12	Air	10.8-11	7	0.5	0.5	48	0.83	1.81	95.9	44.8
B2-Fconc-L6	B2-FConc	57	50	12	Air	10.8-11	5	1.0	1.0	48	1.55	1.63	96.8	50.5
B3-Fconc-L1	B3-FConc	53	50	12	O2	10.8-11	13	0.5	0.5	48	1.30	1.75	95.6	49.7
B3-Fconc-L2	B3-FConc	53	50	12	O2	10.8-11	13	1.0	1.0	48	1.45	1.62	96.0	48.0
B3-Fconc-L3	B3-FConc	53	50	12	O2	10.8-11	14	1.5	1.5	48	1.52	1.56	95.9	48.7
B3-Fconc-L4	B3-FConc	53	50	-	-	10.8-11	6	1.0	1.0	48	1.53	1.39	96.0	55.5
B3-Fconc-L5	B3-FConc	57	50	12	Air	10.8-11	6	0.5	0.5	48	0.92	2.01	96.7	49.6
B3-Fconc-L6	B3-FConc	57	50	12	Air	10.8-11	5	1.0	1.0	48	1.66	1.52	96.5	49.9

Average cyanide consumption values were between 1.07 kg/t and 1.74 kg/t and pre-conditioning increased cyanide consumption. Preconditioning stage did not have a significant impact on cyanide consumption. Average lime consumption values were between 1.4kg/t and 1.82kg/t. Preconditioning decreased lime consumption.

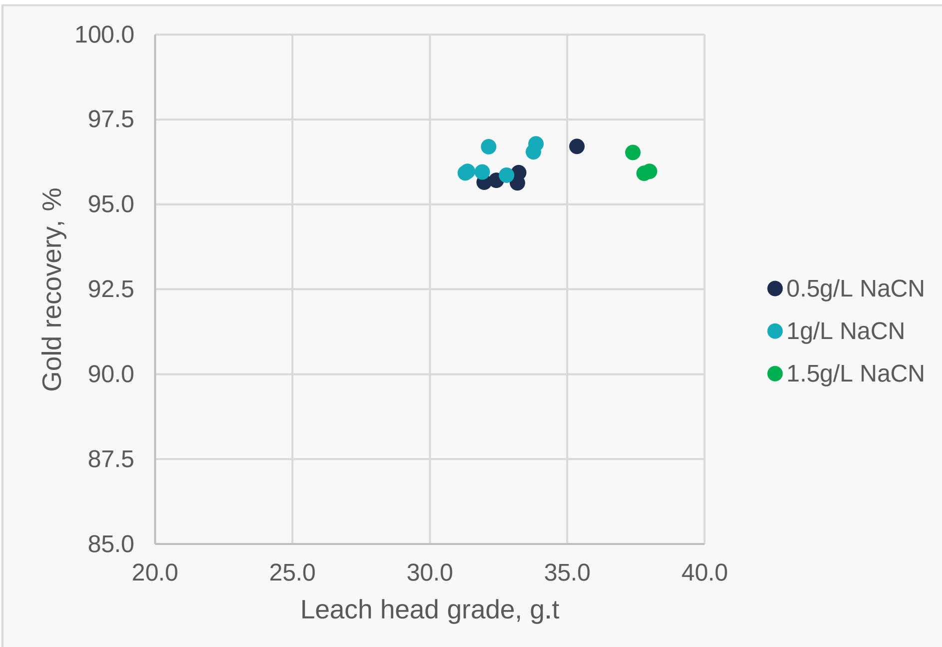


Figure 13-17: Effect of NaCN concentration on leaching gold recovery (48 h)

The effect of preconditioning on leaching kinetics for 1.0g/L NaCN tests are shown in Figure 13-18, Figure 13-19, and Figure 13-20. Preconditioinng stage did not have an impact on the final (48 hours) leaching gold recovery, higher than 96.0% gold recovery average 50% silver recovery achieved.

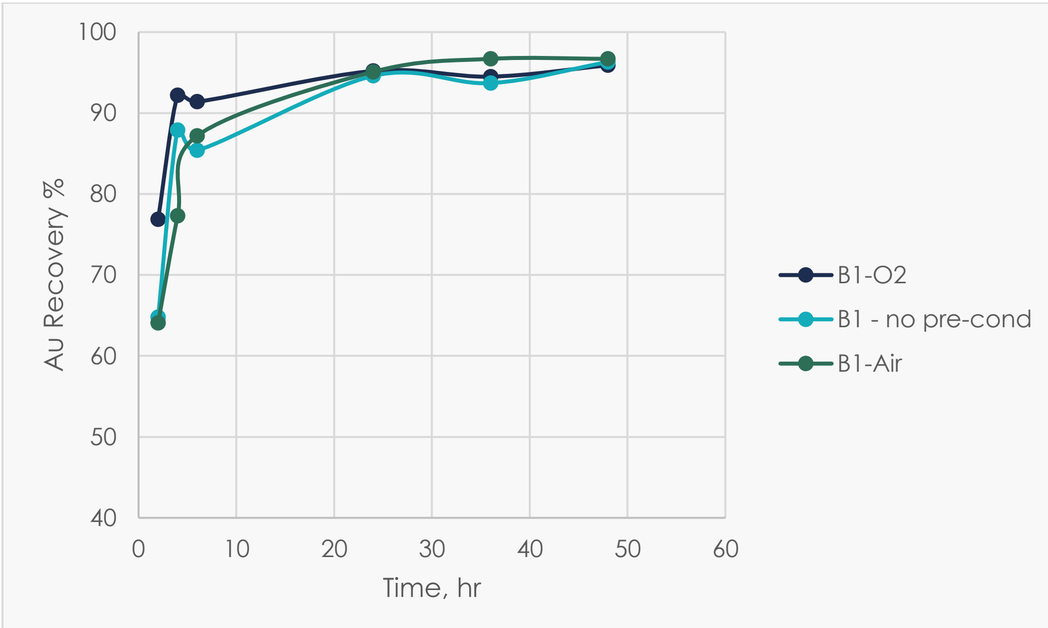


Figure 13-18: Leach kinetics for blend 1 at 1.0 g/L NaCN

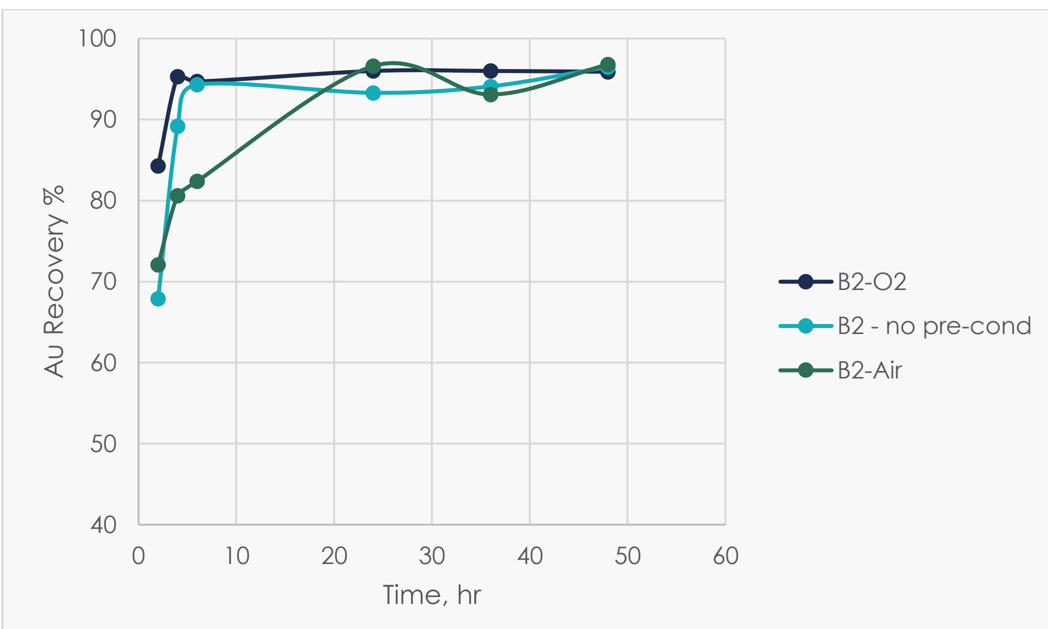


Figure 13-19: Leach kinetics for blend 2 at 1.0 g/L NaCN

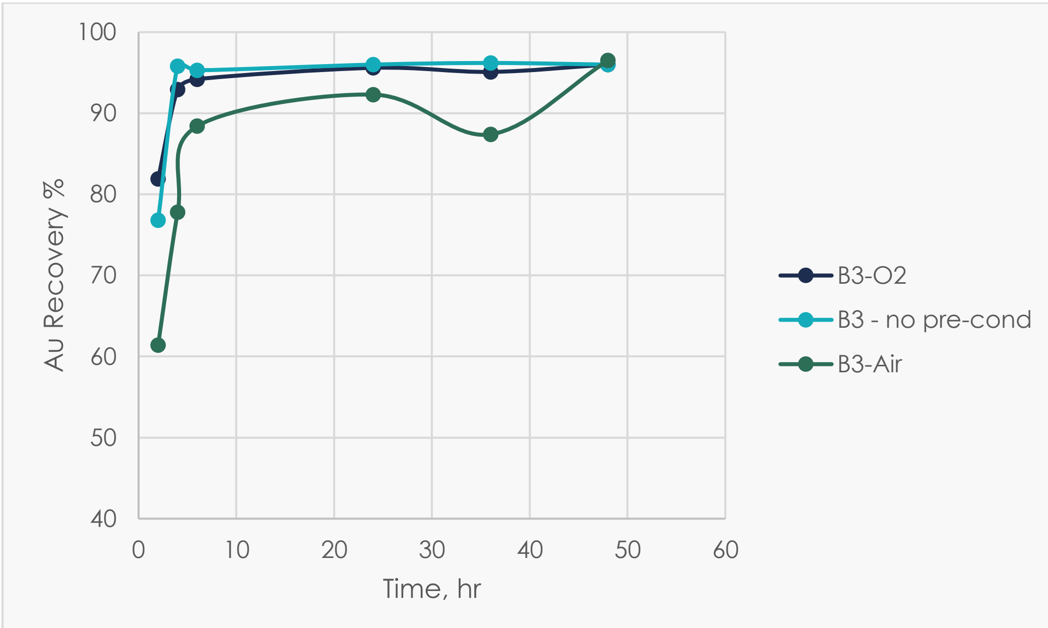


Figure 13-20: Leach kinetics for blend 3 at 1.0 g/L NaCN

13.2.9 Thickening and Filtration Tests

13.2.10 Thickening and Filtration Tests

The objective of the thickening, filtration and rheology testing is to measure solid-liquid separation rates to predict sizing and operating parameters for full-scale dewatering equipment. Tests were performed at FLS Laboratory in Midvale, Utah, on a flotation tailings composite. Process water from the flotation testing was used to represent full scale slurry sample. Characteristics are summarized in Table 13-40.

Table 13-40: As-received sample characteristic summary

Description	Flotation Tailings Solid Sample	Process Water
Suspended solids, wt %	84.0	-
Dissolved solids, wt %	0.00	0.01
Solids Specific Gravity	2.70	-
Liquor Specific Gravity	-	1.00
pH	-	8.1
D80, µm	101	-
D50, µm	37.5	-
D20, µm	11	-
D10, µm	5.7	-

13.2.10.1 Thickening Tests

As part of the thickening tests, five different flocculants were tested, and BASF Magnafloc MF10 was selected for the remaining tests, as it performed the best. All the tests generated clear overflow and good settling rates.

Table 13-41: Evaluated flocculants

Flocculant	Charge	Molecular Weight	Charge Density
AN 923 VHM	Anionic	Medium	Low
AN 910	Anionic	Low	Low
MF 351	Non-ionic	Medium	None
MF 1011	Anionic	High	Medium
MF 10	Anionic	High	Very low

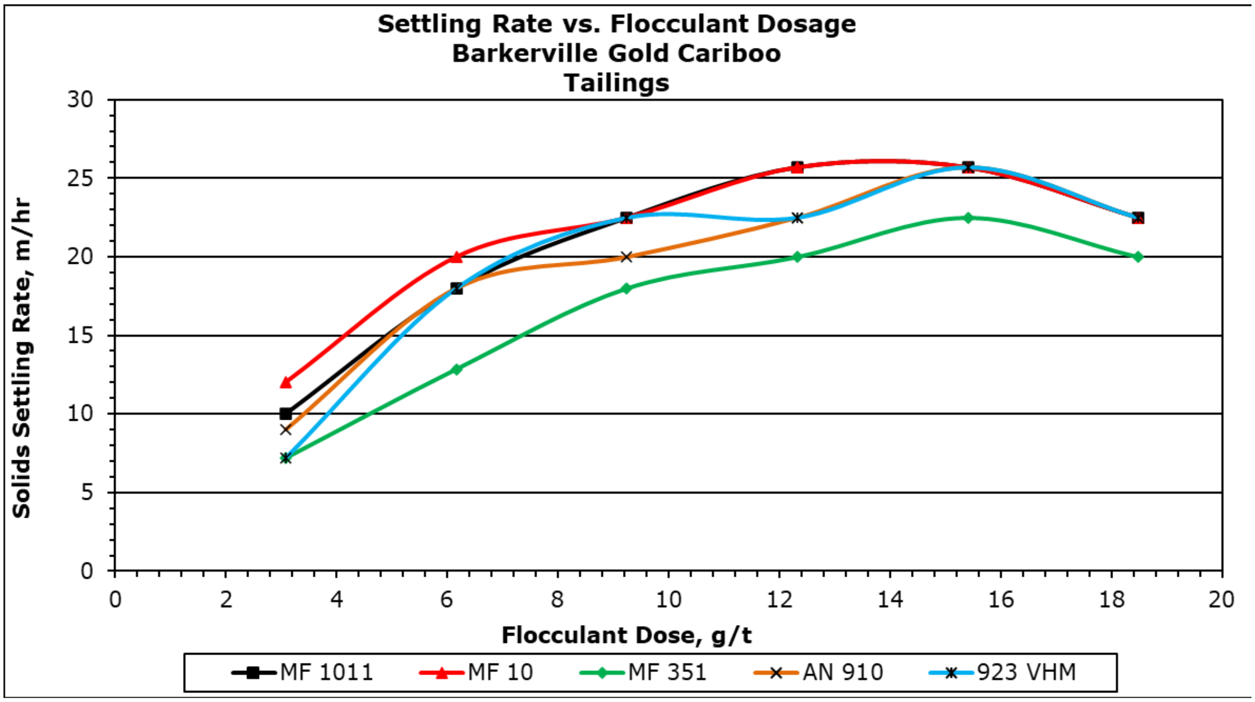


Figure 13-21: Settling rate vs Flocculant dosage
(Source: De Paula, 2022)

Additional tests were performed to determine the maximum flux rate and the corresponding percent solids, which were then used for the 2 litre ("L") static tests to represent a high-rate thickener, and continuous fill tests to determine the underflow density. These tests showed that at a feed percent solids of 12% and flocculant dosage of 12 g/t an underflow percent solids of 68% can be achieved. The recommended thickener operating parameters are shown in Table 13-42.

Table 13-42: Recommended thickener operating parameters

Description	Value
Recommended Feed Solids Density, wt %	12
Underflow Characteristics	
Design Underflow Solids, wt %	68
Minimum Mud Residence Time Required, min	60
Underflow Yield Stress, Pa	35
Overflow Characteristics	
Overflow Clarity, ppm	100

Description	Value
Flocculant	
Recommended Flocculant	MF 10
Recommended Total Flocculant Dose, g/t	12
Recommended Flocculant Concentration, g/L	0.1
Thickener Sizing	
Solids Unit Area (m^2/tpd)	0.03
Recommended Rise Rate (m/h)	12

13.2.10.2 Filtration Tests

There were two types of filtration tests conducted to simulate both a vacuum disc filter and pressure filter. Both filter tests were performed at 68% solids to represent flotation tailings thickener underflow. The vacuum filter was able to achieve a cake moisture of 18–22% with thicknesses ranging from 19–44 mm, in 14–126 seconds. The pressure filter was able to achieve a cake moisture of 10.4% at both 32 mm and 50 mm thicknesses, with a blow time of 8–10 minutes at a pressure of 10 Bar.

Table 13-43: Vacuum filtration test results

Process Parameter	Flotation Tailings
Filter Media	Paste Backfill
Feed Solids Density, wt %	68
Form Vacuum, kPa	68
Dry Vacuum, kPa	68
Cake Thickness, mm	34
Dry Cake Weight, kg/m^2	54
Formation Time, min	0.7
Dry Time, min	1.1
Cake Moisture, wt %	19
Filtration rate, kg/m^2/h	1,056

Table 13-44: Pressure filtration test results

Process Parameter	Flotation Tailings	
Test ID	1	2
Chamber Type	Recessed	
Filter Media	POPR 966	
Filter Feed Suspended Solids, wt%	68.0	
Chamber Thickness, mm	50	32
Feed Pressure, Bar	10.0	10.0
Drying Pressure, Bar	7.0	7.0
Fill Time, min	0.33	0.17
Air Blow Time, min	10.0	8.0
Ultimate Cake Moisture, wt%	10.4	10.4
Dry Cake Density, kg/m^3	1,543	1,521
Filtration Rate (kg/m^2/h)	168	123

13.3 Lowhee Zone Test Campaign

13.3.1 Sample Selection and Compositing

The program included a composite sample from Lowhee Zone. The material for the composite was obtained from NQ drill core intervals from the diamond drill core of the drilling campaign performed by ODV in 2021. 134.4 kg of Lowhee Zone material was sent to SGS Burnaby. At SGS, it was crushed under 35 mm. Minus 10 mm material was screened and saved as prep fines. Plus 10 mm material was sent to Steinert in Kentucky, USA, for ore sorting testwork. The gold content and mass distribution of the Lowhee composite is presented in Table 13-45.

Table 13-45: Lowhee composite gold content

Description	Au	Mass
	g/t	kg
Sorting feed (-35 +10 mm)	1.11	103.8
Prep Fines (-10mm)	5.68	30.6
Total – Lowhee head	2.15	134.4

13.3.2 Mineralogy

A subsample of the Lowhee head composite was sent for mineralogical analysis and the results are presented in Table 13-46. Lowhee sample was composed of 89% silicates and 3% pyrite.

Table 13-46: Summary of Quantitative Analysis X-Ray Diffraction

Mineral / Compound	Weight
	%
Pyrite	3.0
Quartz	68.5
Muscovite	20.7
Rutile	0.8
Magnetite	0.2
Ankerite	5.2
Siderite	1.3

13.3.3 Ore Sorting Testwork

Sorting testwork was performed on the (-35+10mm) size fraction of the Lowhee composite at Steinert using combination of Laser and XRT sensors. The sorting products obtained from the testwork were sent back to SGS Burnaby for assaying. The assay results of sorting products are presented in Table 13-47. The products 426.1.1, 426.2.1, and 426.3.2 (fine) were combined to create a sorting concentrate of 3.45 g Au/t with 91% gold recovery and 47% mass recovery.

Table 13-47: Lowhee sample sorting products - assay results

Sample ID	Au	Cu	Fe	Zn	S	C	TOC	Mass
	g/t	%	%	%	%	%	%	kg
426.1.1	3.45	< 0.01	4.42	< 0.01	3.10	1.11	0.38	26
426.2.1	0.49	< 0.01	2.08	0.012	0.78	0.8	0.22	47
426.3.1	0.17	< 0.01	1.85	< 0.01	0.58	0.81	0.25	69
426.3.2 (fine)	2.67	< 0.01	4.89	0.013	3.58	1.13	0.4	1.8
426.3.2 (coarse)	0.20	< 0.01	2.88	< 0.01	0.84	1.26	0.39	33

Table 13-48: Lowhee sorting test results

Sorting Product ID	Au grade	Mass distribution	Recovery Au
	g/t	%	%
426.1.1	3.45	25	78
426.2.1	0.49	20	9
426.3.1	0.17	21	3
426.3.2 (fine)	2.67	2	4
426.3.2 (coarse)	0.20	32	6
Sorting Feed	1.11	100	100

13.3.4 Comminution Testwork

Subsamples of Lowhee composite were submitted for Bond ball mill work index ("BWi"), and abrasion index ("Ai") testing at SGS. BWi result, 13.2 kWh/t, categorizes the hardness of the mineralized material as moderately soft, and the Ai result, 0.285, is categorized as medium abrasive.

13.3.5 Leaching Testwork

A blend of sorting concentrate and prep fines was created to conduct further gravity and leaching testwork. The recipe of the Lowhee blend is presented in Table 13-49.

Table 13-49: Lowhee blend recipe

Description	Mass Recovery		Au Grade	Recovery Au
	Kg	%	g/t	%
Sorting concentrate	48.8	36	3.45	36
Prep fines	30.6	23	5.68	60
Lowhee blend	**79.4**	**59**	**3.51**	**96**

A section of the Lowhee blend went through gravity concentration using a lab scale Knelson concentrator and further concentrated with Mozley table. Lowhee leaching testwork was performed on the gravity tails of the blend and directly on the blend. The tests were conducted at 50% solids using air and pH was kept at 10.5-11. A summary of testwork results are presented in Table 13-50 and leaching kinetics in Figure 13-22.

Table 13-50: Summary of Lowhee leach test results

Test #	Sample ID	K_{80}	DO	NaCN Concentration		Leach Retention Time	Consumption		Head Grade Calculated		Residue Grade		Recovery	
				Added	Maintained		NaCN	CaO	Au	Ag	Au	Ag	Au	Ag
		µm		g/L	g/L	h	kg/t	kg/t	g/t	g/t	g/t	g/t	%	%
LB-L1	Lowhee Blend	49	7.3	0.50	0.50	48	1.09	1.19	4.1	0.7	0.18	<0.5	95.7	66.2
LB-L2	Lowhee Blend	49	7.0	0.75	0.75	48	0.87	0.93	5.0	0.9	0.18	<0.5	96.4	71.1
LB-L3	Lowhee Blend	49	7.2	1.00	1.00	48	1.47	0.79	6.6	1.1	0.23	<0.5	96.5	77.0
LB-L4	LB-gravity tail	45	8.3	0.50	0.50	48	0.83	1.03	2.1	0.6	0.14	<0.5	93.5	58.0
LB-L5	LB-gravity tail	45	8.2	0.75	0.75	48	0.84	0.81	2.5	0.6	0.16	<0.5	93.9	60.9
LB-L6	LB-gravity tail	54	8.3	0.50	0.50	48	0.83	1.04	2.6	0.6	0.17	<0.5	93.5	61.2
LB-L6R	LB-gravity tail	78	7.8	0.50	0.50	48	0.32	0.98	2.8	0.7	0.24	<0.5	91.5	64.3

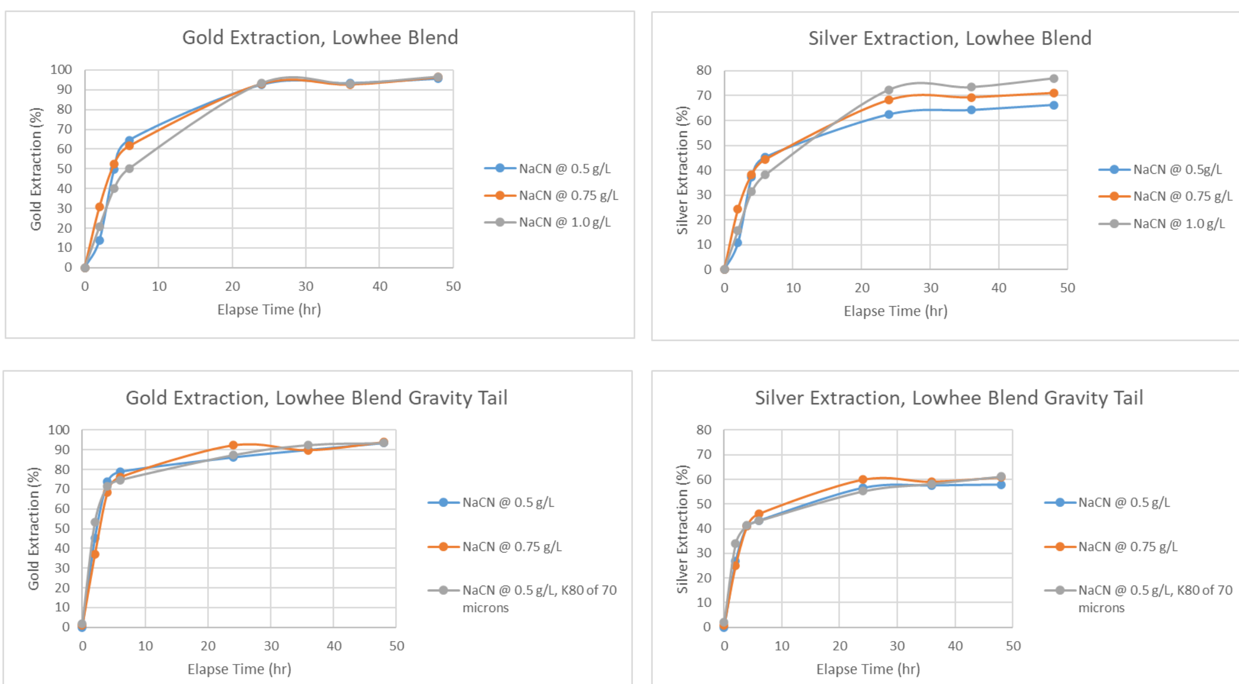


Figure 13-22: Lowhee leaching kinetics

13.4 Rheology Testwork by SGS

13.4.1 Samples Tested

Two samples were sent to SGS in Lakefield, Ontario, for rheology testing: one from the flotation concentrate thickener underflow and one from the CIP detoxified tailings. The characteristics of the as-received material are summarized in Table 13-51.

Table 13-51: Rheology sample characterization

Sample ID	Test Code	K_{80} µm	ASG	SG	a ASG/SG	Temp °C	Solids % w/w	Density g/L
Flotation Concentrate Underflow	T5	117	3.87	3.89	1.00	22	78.9	2402
	T1		3.86		0.99		78.1	2377
	T2		3.83		0.98		74.4	2231
	T3		3.91		1.01		70.5	2088
	T4		3.84		0.99		66.0	1966
CIP Detox Tailings Underflow	T7	52	3.76	3.71	1.00	21	71.1	2093
	T8		3.72		1.00		69.1	2021
	T9		3.58		0.97		67.1	1937
	T10		3.70		1.00		65.1	1906
	T11		3.70		1.00		62.6	1842
	T12		3.70		1.00		60.1	1782

13.4.2 Results

The results from the rheological testing show that for the flotation concentrate thickener underflow, a percent-solids of 75% could be expected, while for the detoxified tailings, a percent-solids of 68% could be expected from commercial thickeners. A summary of the results for the flotation concentrate is shown in Table 13-52 and Figure 13-23, and Table 13-53 and Figure 13-24 provide a summary for the detoxified tailings.

Table 13-52: Summary of rheology results – Flotation concentrate underflow

Test Code	Solids % w/w	Unsheared Sample			Unsheared Sample			Observations
		Shear Rate ϒ range, 1/s	Yield Stress τyB Pa	Plastic Viscosity ηP mPa.s	Shear Rate ϒ range, 1/s	Yield Stress τyB Pa	Plastic Viscosity ηP mPa.s	
T5	78.9	100-300	114	724	100-300	72	614	Thixotropic
T1	78.1	100-300	80	546	100-300	61	411	Thixotropic
T2	74.4	100-300	35	87	100-300	18	86	Thixotropic
T3	70.5	100-300	9.9	30	100-300	5.9	32	Minor Settling
T4	66.0	100-300	3.3	14	Not available			Fast Settling

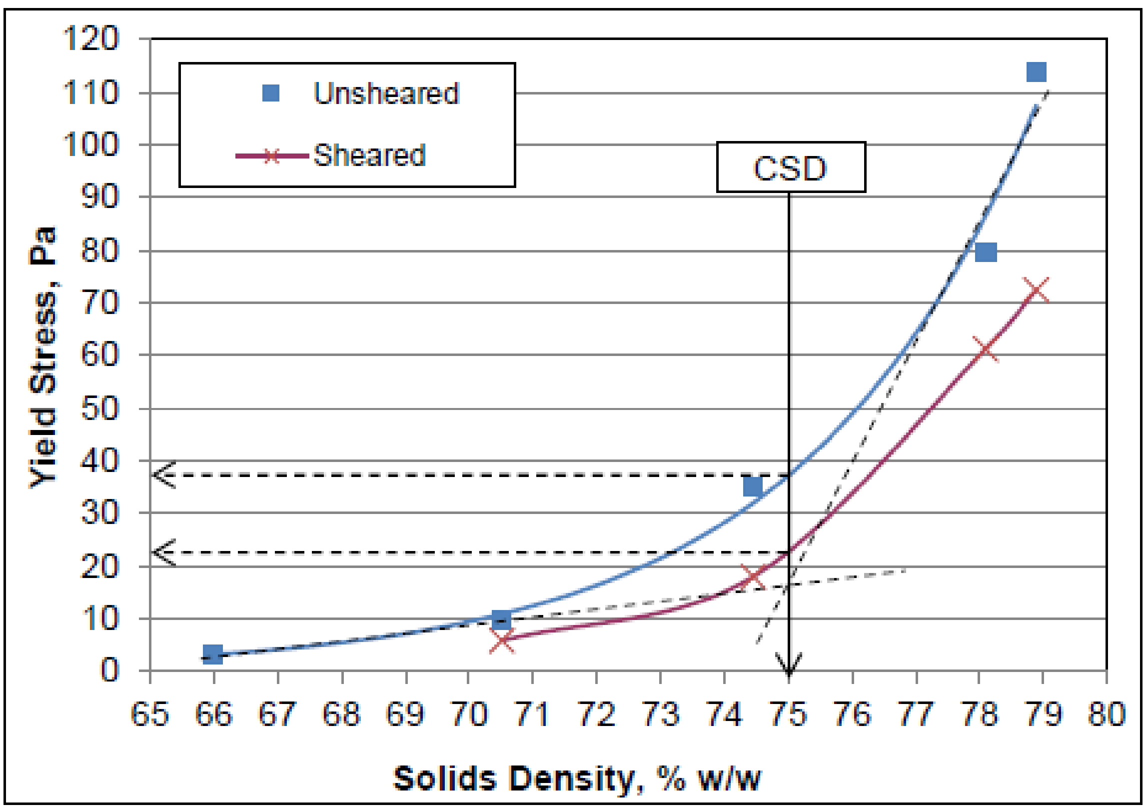


Figure 13-23: Yield stress versus solids density – Flotation concentrate underflow
(Source: Liu and Ashbury, 2022)

Table 13-53: Summary of rheology results – CIP detox tailings underflow

Test Code	Solids % w/w	Unsheared Sample			Unsheared Sample			Observations
		Shear Rate ϒ range, 1/s	Yield Stress τy_B Pa	Plastic Viscosity η_P mPa.s	Shear Rate ϒ range, 1/s	Yield Stress τy_B Pa	Plastic Viscosity η_P mPa.s	
T7	71.1	200-400	112	33	200-400	44	87	Thixotropic
T8	69.1	200-400	57	25	200-400	25	45	Thixotropic
T9	67.1	200-400	30	22	200-400	16	27	Thixotropic
T10	65.1	200-400	17	19	200-400	11	19	Thixotropic
T11	62.6	200-400	9.2	14	200-400	6.5	14	Minor Settling
T12	60.1	200-400	4.8	12	200-400	3.2	13	Settling

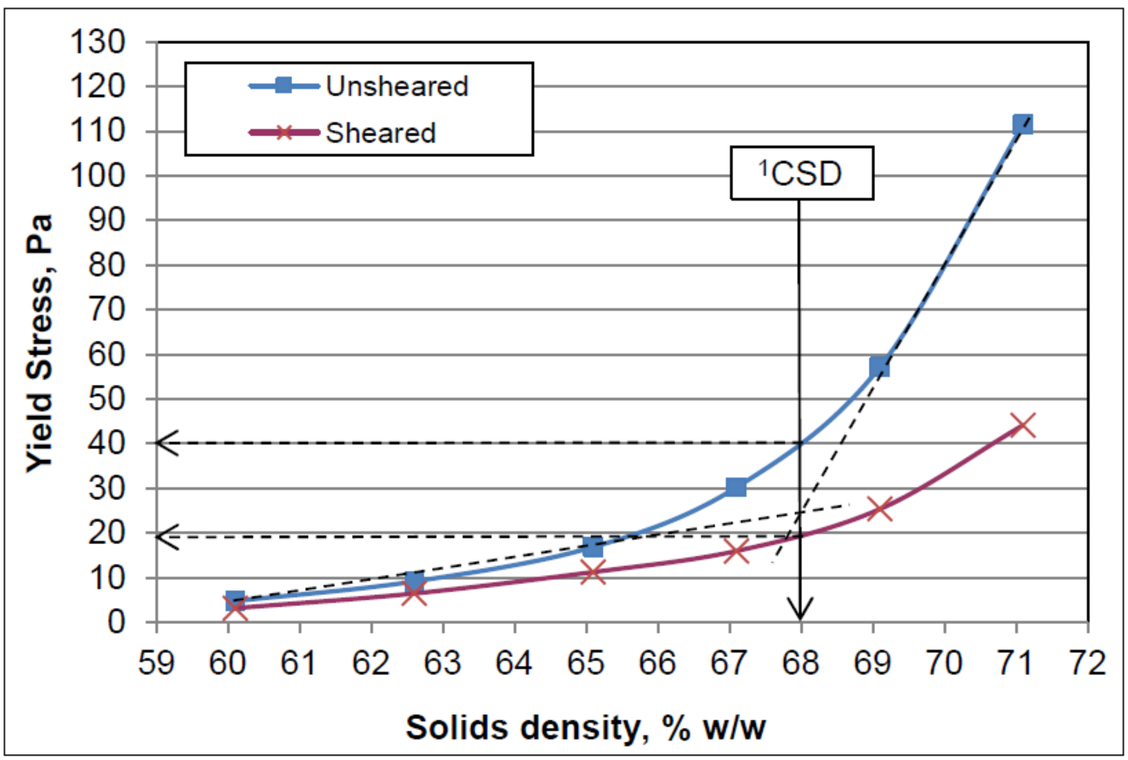


Figure 13-24: Yield stress versus solids density – CIP detox tailings underflow
(Source: Liu and Ashbury, 2022)

13.5 Paste Backfill

13.5.1 MineFill Services – Backfill Investigation

Two backfill alternatives were evaluated in the initial laboratory assessment: paste backfill generated from a rougher flotation tailings and the cemented rock backfill using ore sorter rejects from the underground facilities. Run-of-mine waste rock is another potential source of rock for this purpose.

The paste option was eliminated during the preparation of MineFill's report; however, the characterization testwork that was conducted is presented in their report.

13.5.2 Flotation Tailings Characterization

Particle sizing showed 40% passing 20 µm and 75% passing 75 µm. Top size for the flotation tailings was in the range of 250 µm. Specific gravity was tested on two samples and resulted in values of 2.782 and 2.799.

Cariboo flotation tailings were subjected to an ICP scan to determine the tailings' principal elements. The scan shows elevated levels of aluminum, calcium, iron, potassium, and magnesium, indicative of mineralogy with feldspars, and pyrite. The ICP scans did not record any sulphur values.

Yield stress was performed on cemented and uncemented samples. The cemented samples produced a paste-like consistency at much lower solids content than typical values for gold ores. Additionally, cemented samples showed lower yield stress than uncemented ones, under 50 Pa for both the 3% and 5% binder samples, while the uncemented samples reached nearly 150 Pa at the same solids content.

The paste samples were prepared at 65% solids with 3 and 5% cement for 7 and 28 days cure. The paste material showed considerable water bleed. Samples prepared with 3% binder yielded an average strength of 190 kPa, and at 5%, 275 kPa after 28 days.

13.5.3 Ore Sorter Tailings Characterization

Ore sorter rejects were graded from 100% passing 40 mm to 5% passing 10 mm. Samples of cemented rockfill (CRF) were batched in concrete molds with 3%, 5%, and 7% of Portland cement. Compression test results were below typical values. The lack of fine particles could explain the results. Despite these results, the CRF batched with 3% binder can achieve the desired strengths for longhole slopes.

However, results stemming from tests on both material sources cannot be considered, as operating granulometry has since changed, rendering these tests obsolete.

13.5.4 Paste and Solid-Liquid Investigation - Golder Associates 2019

The purposes of the laboratory program are to provide information on dewatering, rheological, and strength characteristics of flotation tailings for paste backfill mix design.

Samples were prepared and characterized before testing. The material for testing was dewatered and homogenized to be treated as a unique sample called 19124019 Cariboo Tailings. It was re-diluted with tap water, and the pH was adjusted to 7.8 with lime.

13.5.5 Sample Characterization

Particle size distribution was determined with a mechanical sieving and laser particle size analyzer.

Table 13-54: Tailings particle size distribution

Sample	D10 (µm)	D30 (µm)	D50 (µm)	D60 (µm)	D80 (µm)
19124019 Cariboo Tailings	10	37	85	116	201

Specific Gravity was determined to be 2.67, using de-aired water, after de-airing the sample itself.

Chemical and mineralogical analyses were performed using Whole Rock Analysis, by means of ICP and XRD methods. Sulphur analysis was performed by LECO method. Chemical composition, mineralogical composition, and sulphur content are shown respectively in Table 13-49 to Table 13-57.

Table 13-55: Chemical Composition of Sample (wt. %) – Golder Associates 2019

Sample	19124019 Cariboo Tailings
Al_2O_3	3.15
BaO	0.015
CaO	3.75
Cr_2O_3	0.032
Fe_2O_3	1.29
K_2O	0.881
LOI	4.13
MgO	0.469
MnO	0.072
Na_2O	0.057
P_2O_5	-
SiO_2	88.3
SrO	0.014
TiO_2	0.130
Total	102.0

Table 13-56: Mineralogical composition

Mineral SQ-XRD	Chemical formula	Wt%
Quartz	SiO_2	80.60
Muscovite	$H_2KAl_3SiO_{12}$	6.92
Calcite	$CaCO_3$	4.99
Orthoclase	$Al_2O_3.K_{20}.6SiO_2$	4.16
Ankerite	$Ca(Mg_{0.6}Fe_{0.33}^{2+})(CO_3)_2$	3.33

Table 13-57: LECO sulphur analysis

Sample	Sulphur (wt%)
19124019 Cariboo Tailings	0.166

13.5.6 Flocculant Selection and Vacuum Filtration Tests

Six types of flocculants were screened and tested. Several factors have been exanimated: initial settling velocity, overflow clarity, flocculant size, as well as underflow density. Based on results, AN 905 VHM flocculant was chosen for dewatering tests. Then, flocculant dosage and solid feeds were optimized using 1 L vessels. Optimal condition was carried in 4 L vessel to determine the underflow density. The results showed that a feed density of 12.5 wt% solids and a flocculant dosage of 25 g/t yield generate an underflow density of 69 wt% solids. The underflow of the settling tests was centrifuged to determine the maximal density achievable through gravimetric settling methods, which reached 77 wt% solids The vacuum disc filtration was not a viable option, the material was falling off the filter. Tests were therefore conducted to evaluate belt vacuum filtration. The sample was then filtered on an apparatus simulating a vacuum belt filter to determine a possible option for paste production. Summarized test results are shown in Table 13-58.

Table 13-58: Vacuum filtration test

Feed wt% solids	Average cake moisture (wt%)
75%	19.1%
70%	21%

13.5.6.1 Rheological Tests

Rheological testing was done to evaluate flow and handling properties. The test measured the slump in function of the solids content, where water was added in small increments. Figure 13-25 shows the relation of slump vs. solids content.

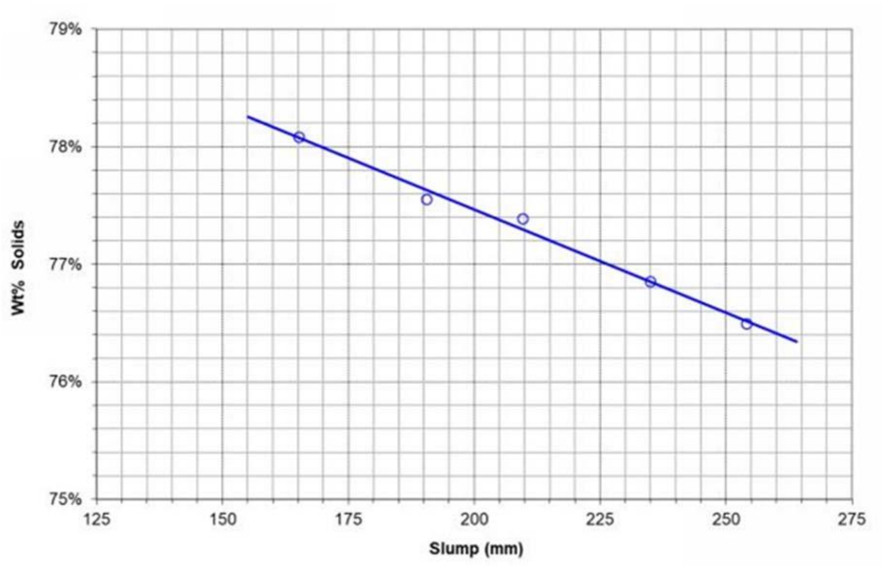


Figure 13-25: Slump vs. solids content

Static yield tests determined the minimum force required to initiate flow. Measurements were taken at various solids contents by using a vane spindle attached to a torque spring. Results are shown on Figure 13-26.

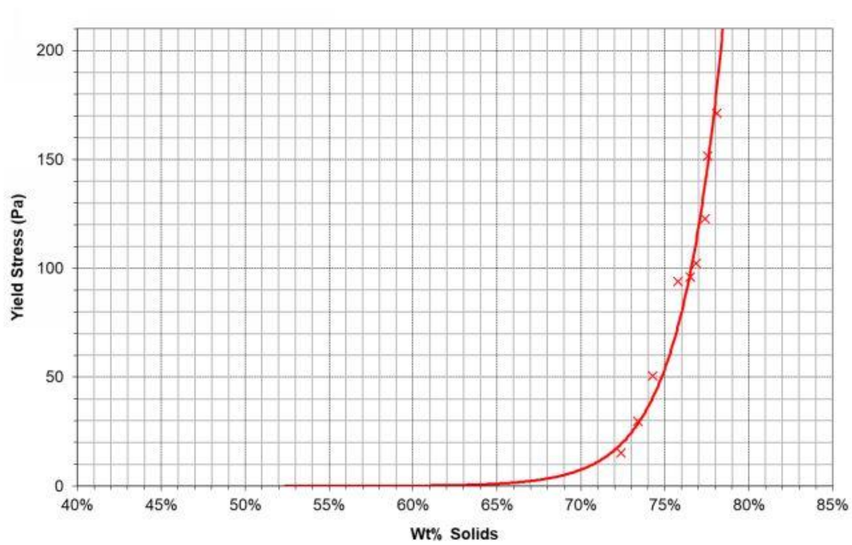


Figure 13-26: Yield stress versus solids density

Tests were carried out to determine water bleed properties of the paste while sitting idle in test beakers. Two slump consistencies were tested at four-time intervals. Water bleed and yield stress were measured, as shown on Figure 13-27.

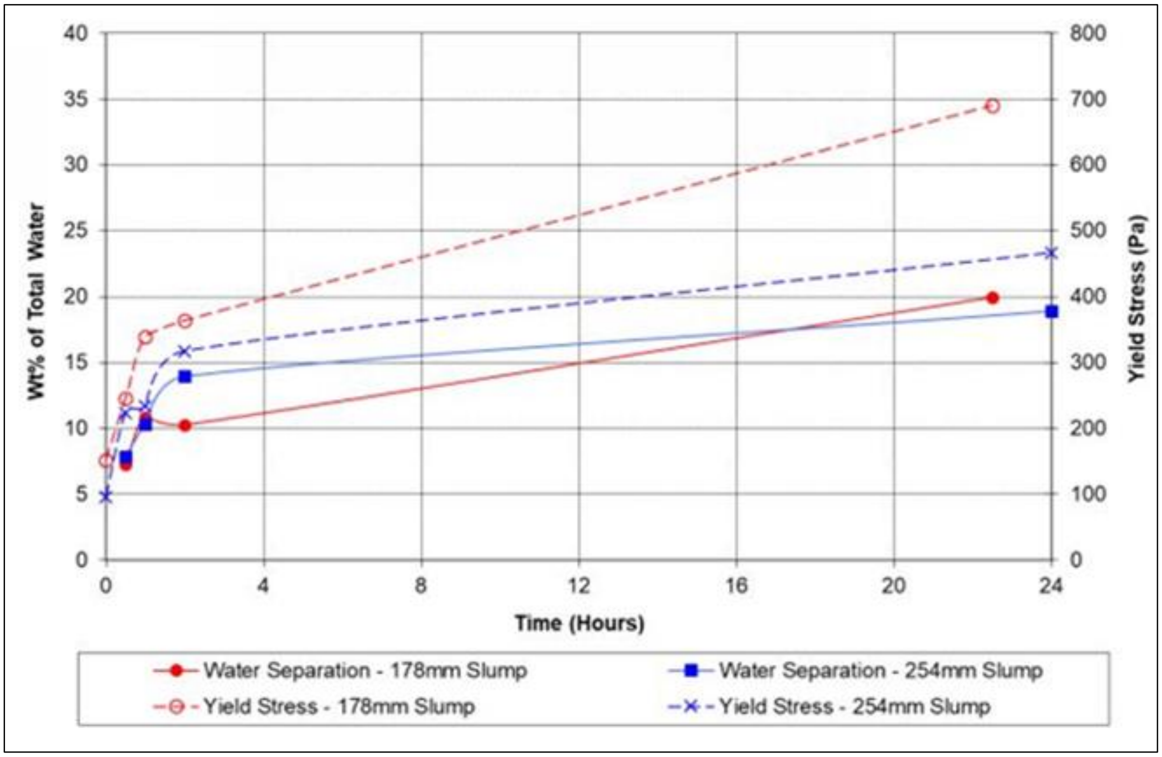


Figure 13-27: Water bleed vs. time

A plug yield stress analysis was performed to determine if consolidation had occurred through the idle paste material. Two slump consistencies sat idle for two hours and a special design vane spindle was immersed at three depths. The tests are summarized on Figure 13-28.

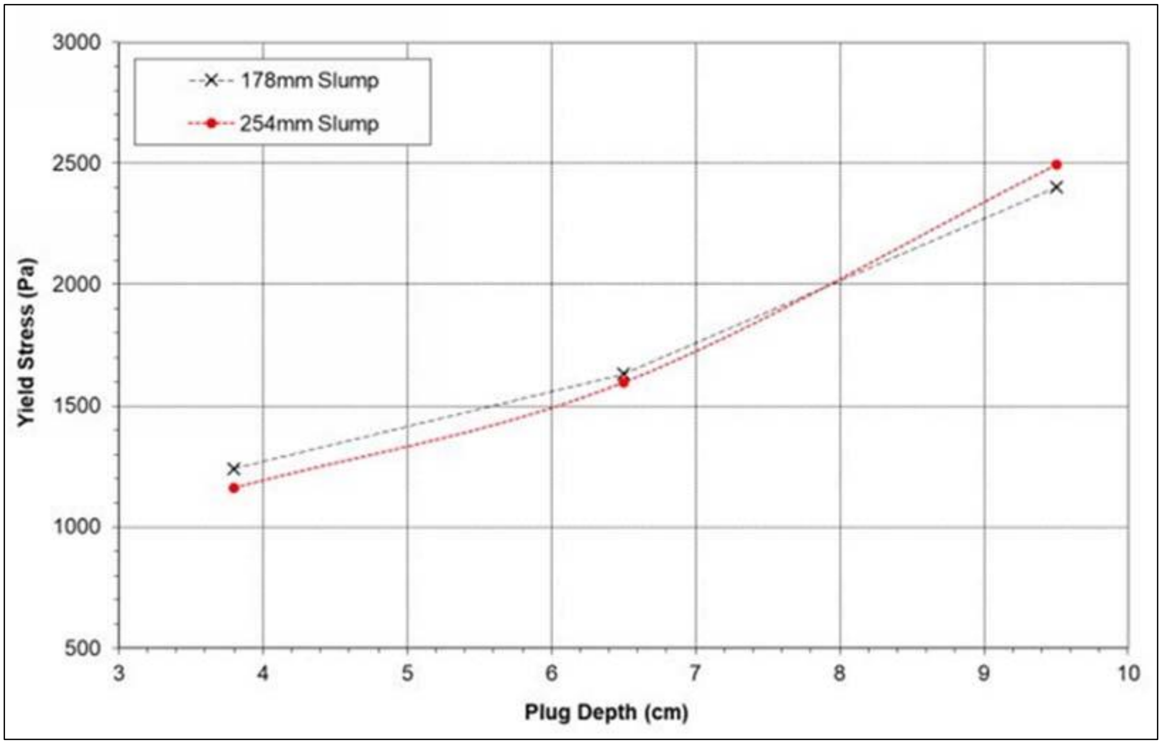


Figure 13-28: Plug depth vs. yield stress

Dynamic viscosity and dynamic yield stress are extrapolated from dynamic shear stress to zero shear. The measurement is made by a sensor rotated inside a cup which contains the sample. The torque measurements were recorded at several speeds or shear rates. Results from tests are presented in Table 13-59.

Table 13-59: Bingham viscosity and yield stress

Wt % solids	Bingham yield stress (Pa)		Bingham viscosity (PaS)	
	Ramp up	Ramp down	Ramp up	Ramp down
76.6	97	31	0.522	0.583
75.2	53	20	0.374	0.400
74.7	43	19	0.402	0.378
73.5	33	9	0.243	0.255
72.2	20	6	0.152	0.159
70.4	12	2	0.065	0.071

13.5.7 Unconfined Compressive Strength Testing

A series of unconfined compressive strength ("UCS") tests were performed for two different binder contents, two slumps, and three curing times to assess the backfill strength. The mixes were cast in triplicate into 2 inch ("in.") by 4 in. cylinders. The cylinders were cured in a high-humidity environment at 20°C to 25°C. The preliminary results are presented in Table 13-60.

Table 13-60: UCS tests results

Mix	Wt % Binder	Binder	Material	Slump mm (in.)	Average UCS (kPa)			Average bulk density (kg/m³)
					Curing 7 days	Curing 28 days	Curing 56 days	
1	3	Lafarge NPC	19124019 Cariboo Tailings	178 mm (7 in.)	203	305	332	2009
2	3	Lafarge NPC	19124019 ariboo Tailings	229 mm (9 in.)	195	247	283	2022
3	5	Lafarge NPC	19124019 Cariboo Tailings	178 mm (7in.)	358	634	715	2031
4	5	Lafarge NPC	19124019 Cariboo Tailings	229 mm (9in.)	359	619	695	2035

13.5.8 Conclusion: Paste and Solid-Liquid Investigation - Golder Associates 2019

The taillings sample tested, does not produce a truly stable paste. Based on the viscosity and dynamic yield stress data, it would be possible to pump the material horizontally and maintain the total pressure loss below 90 bar. There is a high risk of sanding out the distribution pipeline.

13.5.9 Feasibility Paste Fill Testing - WSP Golder – 2022

The 2019 Golder Associates Testwork results indicated that the tailings failed to form a stable paste. Therefore, a new test program was undertaken to confirm if a larger tailing sample could perform better as it would be more representative of the mill tailings. In addition, the tailings characteristics had changed best on the metallurgical test optimization program.

The test program was divided into two stages: i) the tailings characterization and rheology testing; and ii) the design of the underground distribution system and the optimization of the mix recipe.

13.5.10 Tailings Characterization

Particle size distribution ("PSD") was measured using a Malvern Mastersizer 3000 laser particle size analyzer and the results are presented in Table 13-61.

Table 13-61: Sample particle size distribution

Sample	D10, µm	D30, µm	D50, µm	D60, µm	D80, µm
177416001 Tailings	6	18	39	56	106

The specific gravity ("SG") measurement results are presented in Table 13-62.

Table 13-62: Specific gravity results

Sample	Trial 1	Trial 2	Average
177416001 Tailings	2.70	2.69	2.69

The semi-quantative mineralogical composition of the sample was measured with XRD and results are presented in Table 13-63.

Table 13-63: Semi-quantitative mineralogical composition

Sample	Chemical Formula	Wt%
Quartz	SiO_2	78.87
Muscovite	$(K,Na)(Al,Mg,Fe)_2Si_{3.1}Al0_{.9}O_{10}(OH)_2$	16.61
Dolomite	$Ca(Ca0_{.13}Mg_{0.87})(CO_3)_2$	4.52
Total		100

13.5.10.1 Rheological Tests

Rheological tests were carried out to evaluate flow and handling properties. In order to measure the sample's sensitivity to water additions, increments of water were added to the sample. After each addition, slump and solids contents were determined. The relationship between slump and solids content is presented in Figure 13-29.

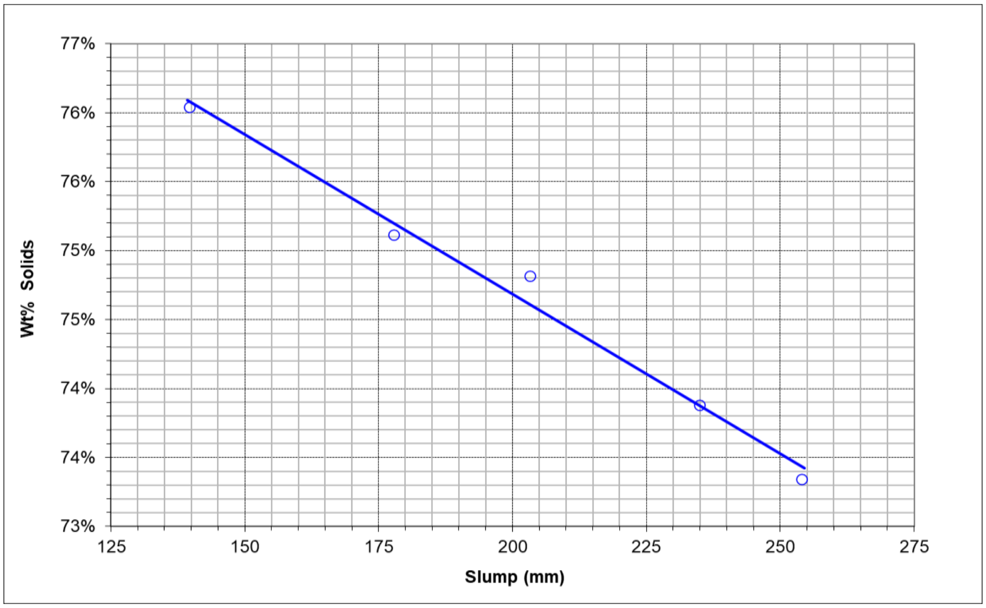


Figure 13-29: Solid content versus slump

Yield stress is the minimum force required to initiate flow. Static yield stress was determined by utilizing a slow-moving (0.2 RPM) vane spindle attached to a torque spring. Yield stress test results are presented in Figure 13-30.

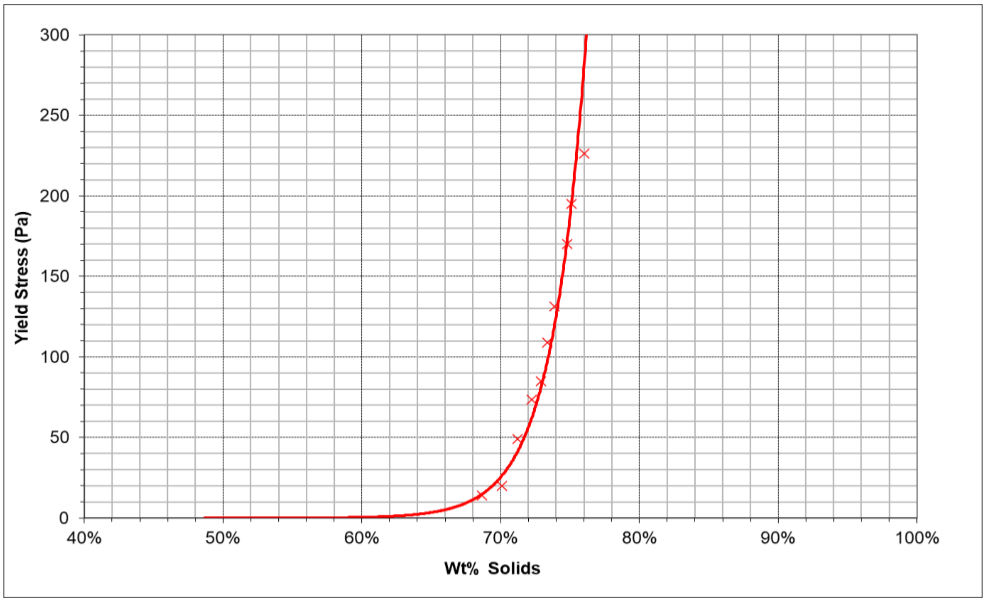


Figure 13-30: Yield stress versus solids density

Moisture retention testing was performed to analyze the water bleed properties of the paste while idling in test beakers. Two slump consistencies were tested at four-time intervals. At each time, interval the water bleed and yield stress were measured. The results are shown in Figure 13-31.

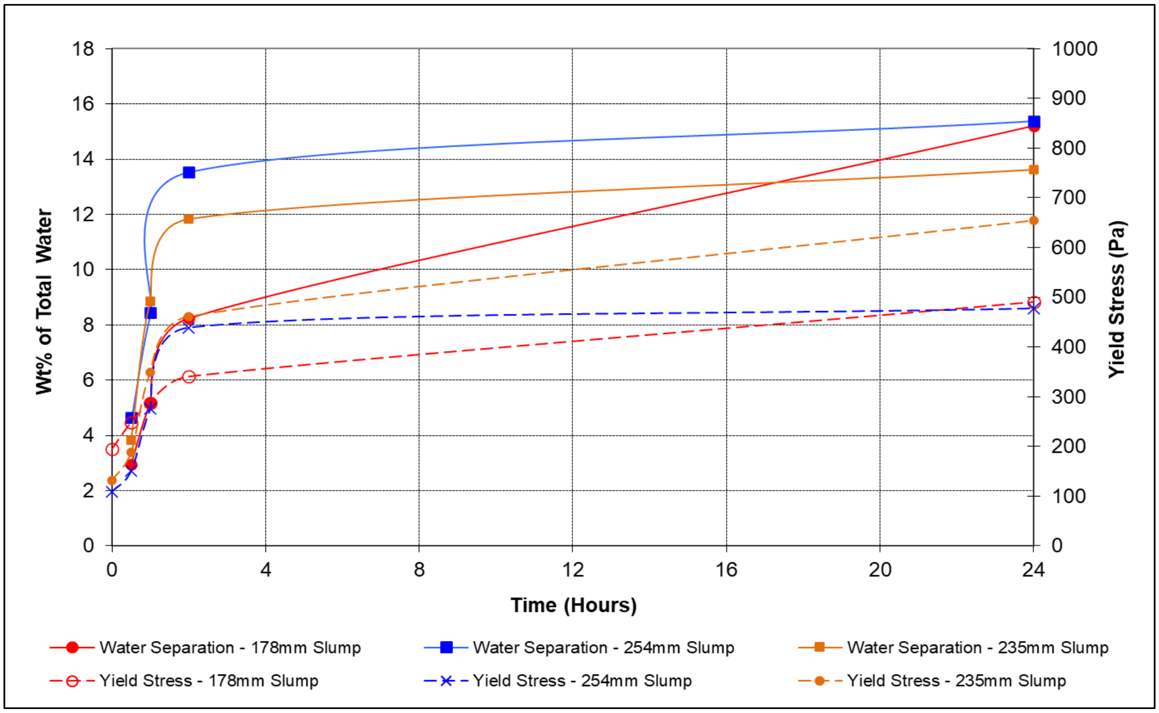


Figure 13-31: Water bleed and yield stress versus time

13.5.11 Flow Loop Testing

Pump selection and pipeline distribution systems design requires the data obtained from flow loop testing. The data provides viscosity and yield stress values essential to fluid characterization. The lab-scale flow loop system consisted of 50 mm (2 in.) and 75 mm (3 in.) schedule 40 steel piping, a progressive cavity pump, pressure transmitters, and a magnetic flow meter. A series of test runs were undertaken at each solid density to measure the pipeline friction loss at several flow rates. The relationship between the solid densities and pipeline yield stress is presented in Figure 13-32.

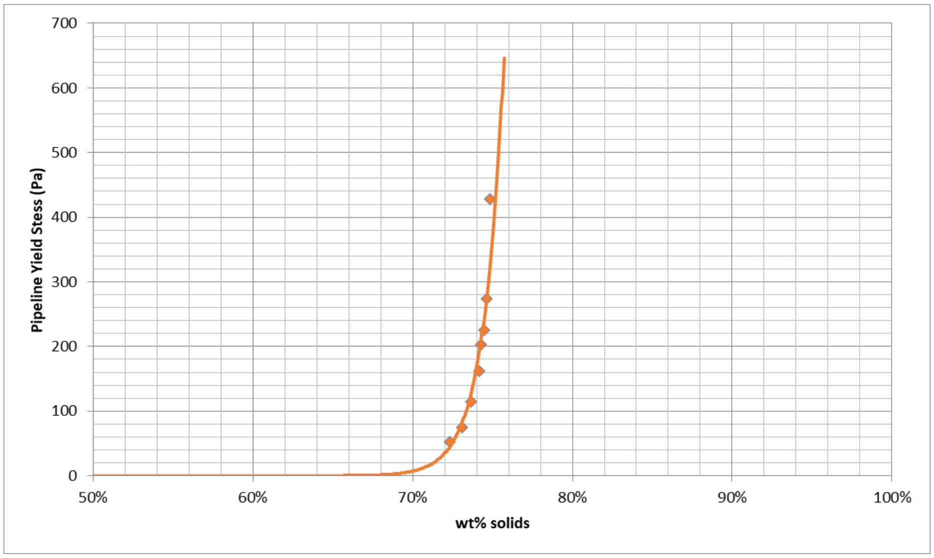


Figure 13-32: Pipeline yield stress vs solids density

From the flow loop data, the estimated pressure loss was measured for different pipeline diameters expected to be used for the underground distribution system (UDS). The results are presented in Figure 13-33 and Figure 13-34.

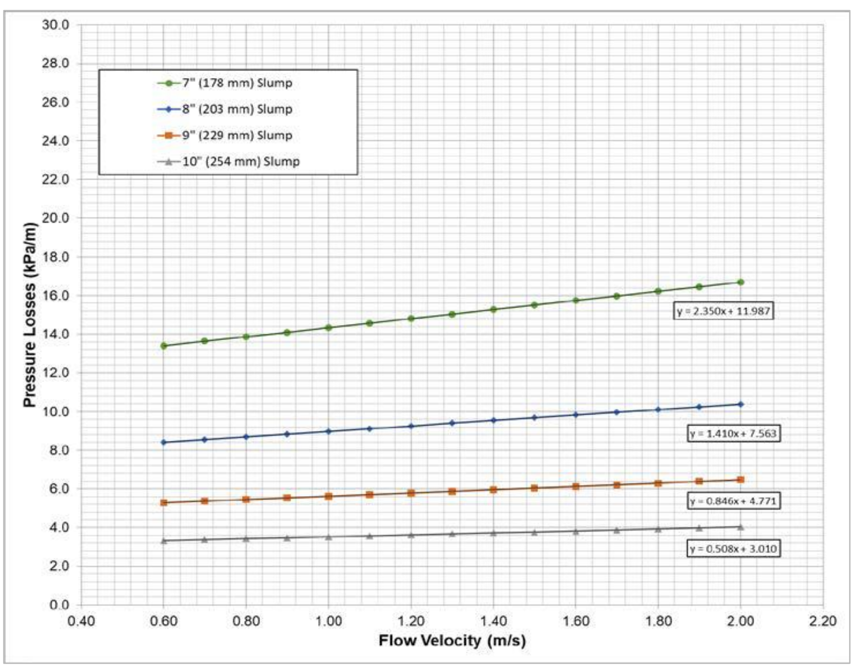


Figure 13-33: Estimated pressure losses in 6" SCH 80 pipeline

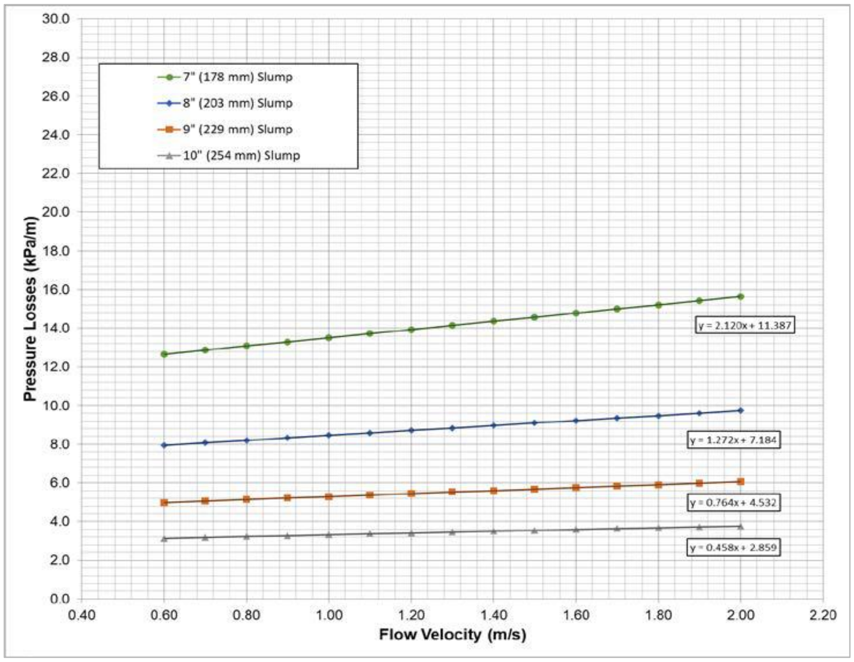


Figure 13-34: Estimated pressure losses in 6" SCH 40 pipeline

13.5.12 Unconfined Compressive Strength Testing

Unconfined compressive strength testing was conducted with a Humboldt HM2800 digital load frame. The load was measured using s-type load cells. Depending on strength, either a 10 kN or 45 kN (2,000 lb or 10,000 lb) load cell was utilized. The cured cylinder was placed between two platens, and during testing, the bottom platen advanced at a rate of 2 mm (0.08 in.) per minute. The load was continuously observed, and the maximum load was recorded automatically by the instrument.

The UCS program was undertaken to assess the backfill strength using 76 mm x 152 mm (3" x 6") cylinders. The cylinders were cured in a high humidity environment maintained at 20°C to 25°C. Three cylinders per curing period were cast and the results were averaged. The test results are presented in Table 13-64.

Table 13-64: UCS Testing Program results – WSP Golder

Mix	Wt% Binder	Binder	Material	Slump, mm	Average UCS, kPa			Average Bulk Density, kg/m³
					Curing Duration, 7 Days	Curing Duration, 14 Days	Curing Duration, 28 Days	
1	1.5	Lafarge Type 10	177416001 Tailings	178	108	114	114	1946
2				229	68	74	87	1929
3	2.5			178	143	147	150	1950
4				229	79	145	151	1940
5	4.0			178	190	187	239	1951
6				229	156	132	186	1921
4 (Redo)	2.5			229	116	170	155	1931
6 (Redo)	4.0			229	226	265	227	1918

Based on the UCS data, estimates of the required binder content for the backfill strength to reach 150 kPa in 7 days were determined. Figure 13-33 shows the measured backfill strength values as a function of the binder-to-water ratio. There is some variance in the 9" (178 mm) slump material data. Unusually, some of the strength results were found to be higher with the 9" (229 mm) sump than with the 7" slump for the same binder addition rate. Consequently, additional 9" slump cylinders were prepared. The second set of samples also resulted in unusual results.

The potential cause for this variance with the 9" slump is the high-water bleed level and the tailings consolidation observed during the rheology testing. Typically, much lower values are observed. Since the drain cylinders could result in binder loss and the cylinders are poured with a collar, higher densities and varying binder distribution within the cylinders may occur.

As a result, for the 7" slump and 9" slump, WSP Golder suggested a binder content of 2.75% and 4%, respectively.

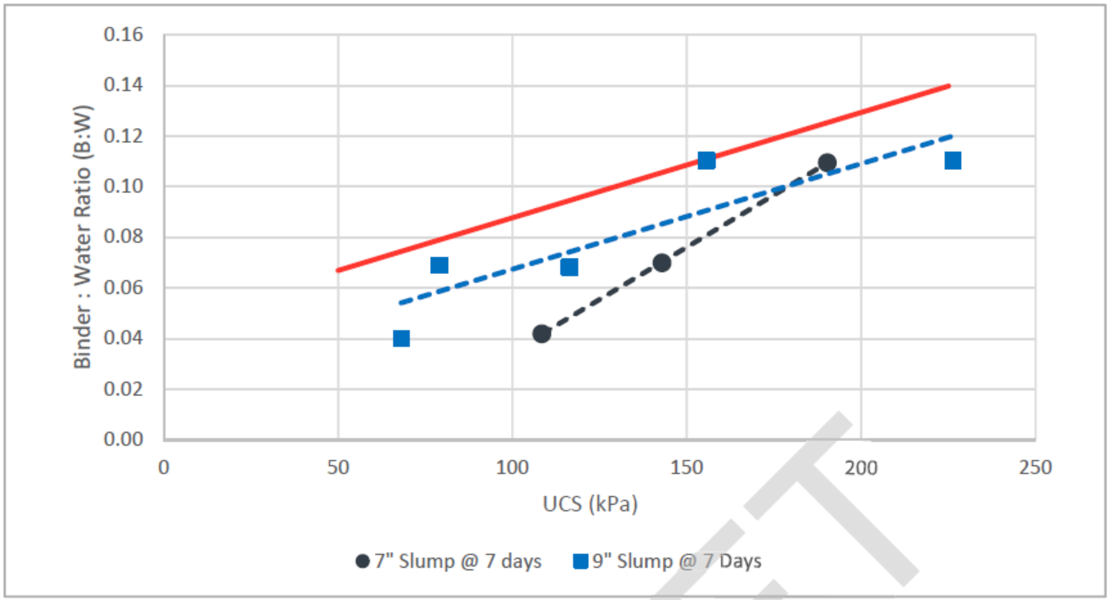


Figure 13-35: Backfill strength (kPa) as a function of the binder:water ratio for 7-day UCS Data

14. Mineral Resource Estimates

The 2022 Feasibility Mineral Resource Estimate (the "2022 FS MRE") for the Cariboo Gold Project ("Project") encompasses updated resources for the deposits of Cow Mountain (Cow Zone and Valley Zone), Island Mountain (Shaft Zone and Mosquito Zone), and Barkerville Mountain (Lowhee Zone and KL Zone). The updates were prepared by Daniel Downton, P.Geo., of Osisko Development Corp. ("ODV"), and reviewed and validated by Carl Pelletier, P.Geo., and Vincent Nadeau-Benoit, P.Geo., both of InnovExplo Inc. ("InnovExplo"), using all available information.

Since the 2022 Preliminary Economic Assessment Mineral Resource Estimate, dated May 17, 2022 (the "2022 PEA MRE"), no new gold assay results were added to the databases for the Mosquito, Cow, and KL Zone deposits, but gold ("Au") resources in a dilution halo and silver ("Ag") mineralization estimates in the vein corridors were added to the models. No changes are reported for the Bonanza Ledge or BC Vein (Barkerville Mountain) deposits.

To report the 2022 FS MRE for the Project, conceptual "potential mining shapes" were used as constraints to demonstrate mineralized continuity and to show that the "reasonable prospects for eventual economic extraction" criteria is met; as defined in the Canadian Institute of Mining ("CIM") Definition Standards on Mineral Resources and Reserves (CIM Definition Standards, 2014) and the CIM Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines (MRMR Best Practice Guidelines, 2019).

The Mineral Resource updates for Shaft, Valley, and Lowhee Zones include new information from the end of the 2021 exploration program. The dilution halos and silver estimate additions include data from all previous drilling campaigns, including previously validated historic information.

The effective date of the 2022 FS MRE is November 11, 2022.

14.1 Methodology

The 2022 FS MRE covers all the deposits in the Cow-Island-Barkerville Mountain Corridor. The Mineral Resource area for the Cow/Island segment covers a strike length of 3.7 kilometres ("km") and a width of approximately 700 metres ("m"), down to a vertical depth of 600 m below surface. The estimate for the Barkerville segment covers a strike length of 3 km and a width of approximately 700 m, down to a vertical depth of 500 m below surface.

The models for the Cow, Valley, Shaft, Mosquito, BC Vein, KL, and Lowhee deposits were prepared using LeapFrog GEO v.2021.2.4 ("LeapFrog") and Datamine Studio™ RM Pro 1.11.300.0 ("Datamine"). Leapfrog was used for the modelling, which included the construction of the dilution halos and 481 mineralized solids: 109 for Cow; 106 for Valley; 98 for Shaft; 75 for Mosquito; six for BC Vein, including five BC Vein splays; 40 for KL; and 47 for Lowhee. Datamine was used for the estimation, which consisted of 3D block modelling and the ordinary kriging ("OK") interpolation method. Statistical studies, capping and variography were completed using Datamine, Supervisor v.8.14.3 software ("Supervisor"), GSLIB, and Microsoft Excel. Capping and validations were carried out in Datamine, Supervisor, and Microsoft Excel.

The Bonanza Ledge model was prepared using GEOVIA GEMS™ software v.6.7 ("GEMS"). GEMS was used for the modelling, which included the construction of one mineralized solid, and for the estimation, which consisted of 3D block modelling and OK interpolation. Statistical studies and variography were done using Supervisor. Capping and several validations were conducted in Microsoft Excel and Supervisor.

The main steps in the methodology were as follows:

- Compile and validate the diamond drill hole databases used for Mineral Resource estimation;
- Validate the geological model and interpretation of the mineralized zones based on lithological and structural information, historical underground mapping and general orientation of stopes, and metal content;
- Validate the drill hole intercepts database, compositing database, and capping values, for the purposes of geostatistical analysis, and variography;
- Validate the block models and grade interpolation;
- Revise the classification criteria and validate the clipping areas for Mineral Resource classification;
- Assess the Mineral Resources with "reasonable prospects for economic extraction" and select appropriate cut-off grades and produce "resources-level" optimized underground potentially mineable shapes; and
- Generate a Mineral Resource statement.

14.2 Drill Hole Database

Two diamond drill hole databases cover the Project: Bonanza Ledge and BM-CM-IM (Barkerville Mountain, including the BC Vein, KL, and Lowhee deposits, Cow Mountain, including the Cow and Valley deposits, and Island Mountain, including the Shaft and Mosquito deposits).

These databases were filtered by deposit (Cow, Shaft, Valley, Mosquito, BC Vein, KL, or Lowhee) before working in Datamine. A subset of drill holes was used to generate the 2022 FS MRE database for each deposit (Table 14-1 and Figure 14-1).

- The close-out date for the Cow deposit is August 25, 2021. It contains 1,219 validated drill holes (1,067 surface DDH and 152 underground DDH).
- The close-out date for the Valley deposit is March 9, 2022. It contains 254 validated surface drill holes.
- The close-out date for the Shaft deposit is March 31, 2022. It contains 1,010 validated drill holes (851 surface DDH and 159 underground DDH).
- The close-out date for the Mosquito deposit is July 19, 2021. It contains 841 validated drill holes (590 surface DDH and 256 underground DDH).
- The close-out date for the Lowhee deposit is April 6, 2022. It contains 113 validated drill holes.
- The close-out date for the BC Vein and KL deposits is February 14, 2020. It contains 420 validated drill holes.
- The close-out date for the Bonanza Ledge GEMS database is July 18, 2016. It contains 213 validated holes, of which a subset of 162 was used as the Mineral Resource database (103 surface DDH and 59 underground DDH) (Table 14-1and Figure 14-2). The database also contains 7,432 blast holes that were used to guide the interpretation only.

All databases include lithological, alteration, and structural descriptions taken from drill core logs. Oriented core data have been available since the 2016 Program.

The databases cover the strike length of each Mineral Resource area at variable drill spacings, ranging from 10 m to 60 m for the Cow, Island, and Barkerville mountain deposits, and from 5–15 m for the Bonanza Ledge deposit.

In addition to the tables of raw data, each database includes several tables of calculated drill hole composites and wireframe solid intersections, which are required for the statistical evaluation and Mineral Resource block modelling.

Table 14-1: Number of drill holes in each database

Deposit	Validated Drill Holes used for the 2022 FS MRE		
	Surface	Underground	Total
Cow	1,067	152	1,219
Valley	254	0	254
Shaft	851	159	1,010
Mosquito	590	256	841
KL	113	0	113
Lowhee	158	0	158
BC Vein	307	0	307
Bonanza Ledge	103	59	162

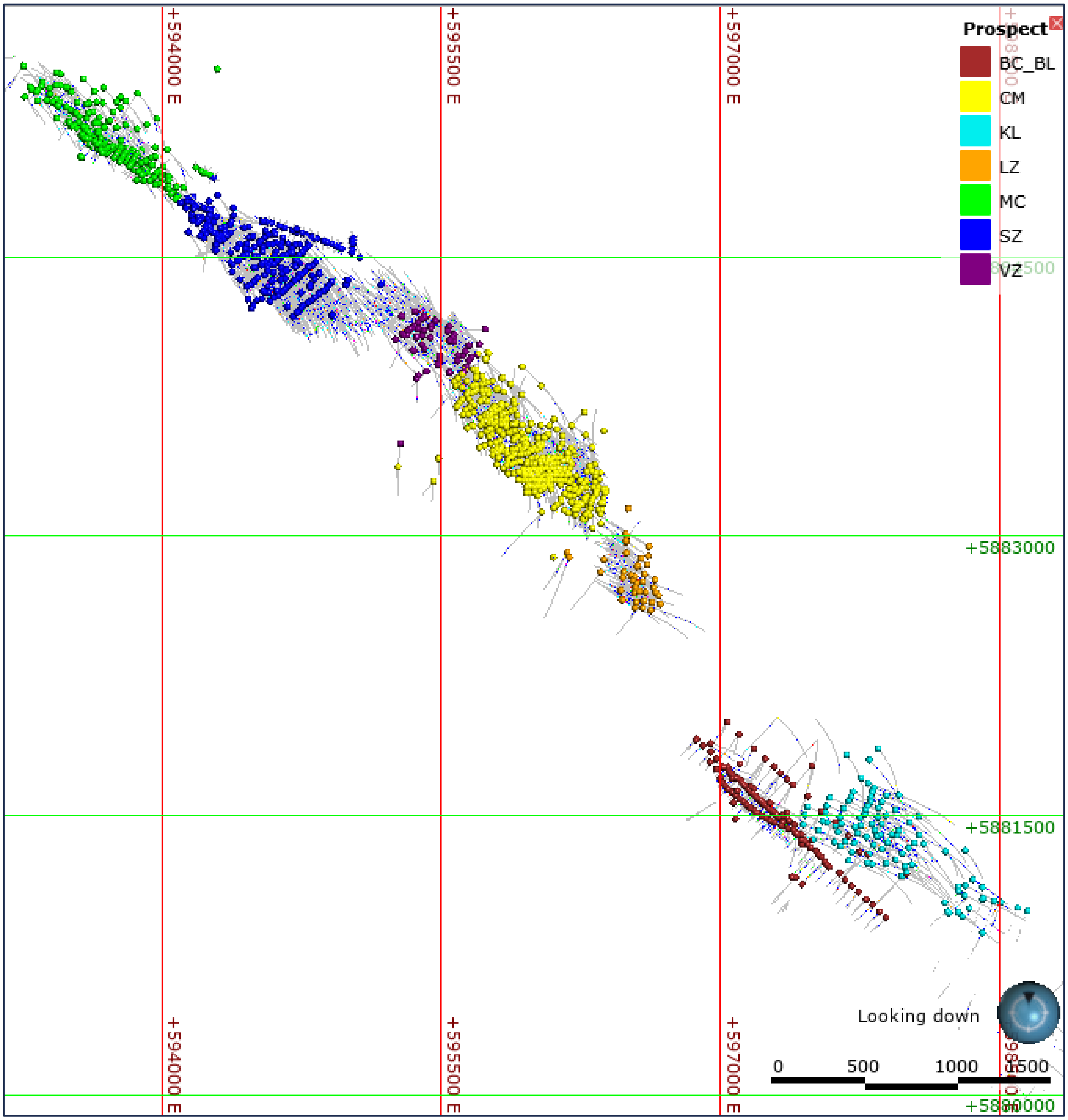


Figure 14-1: Surface plan view of the validated diamond drill holes used to in the 2022 FS MRE for the deposits of the Cow-Island-Barkerville Mountain Corridor

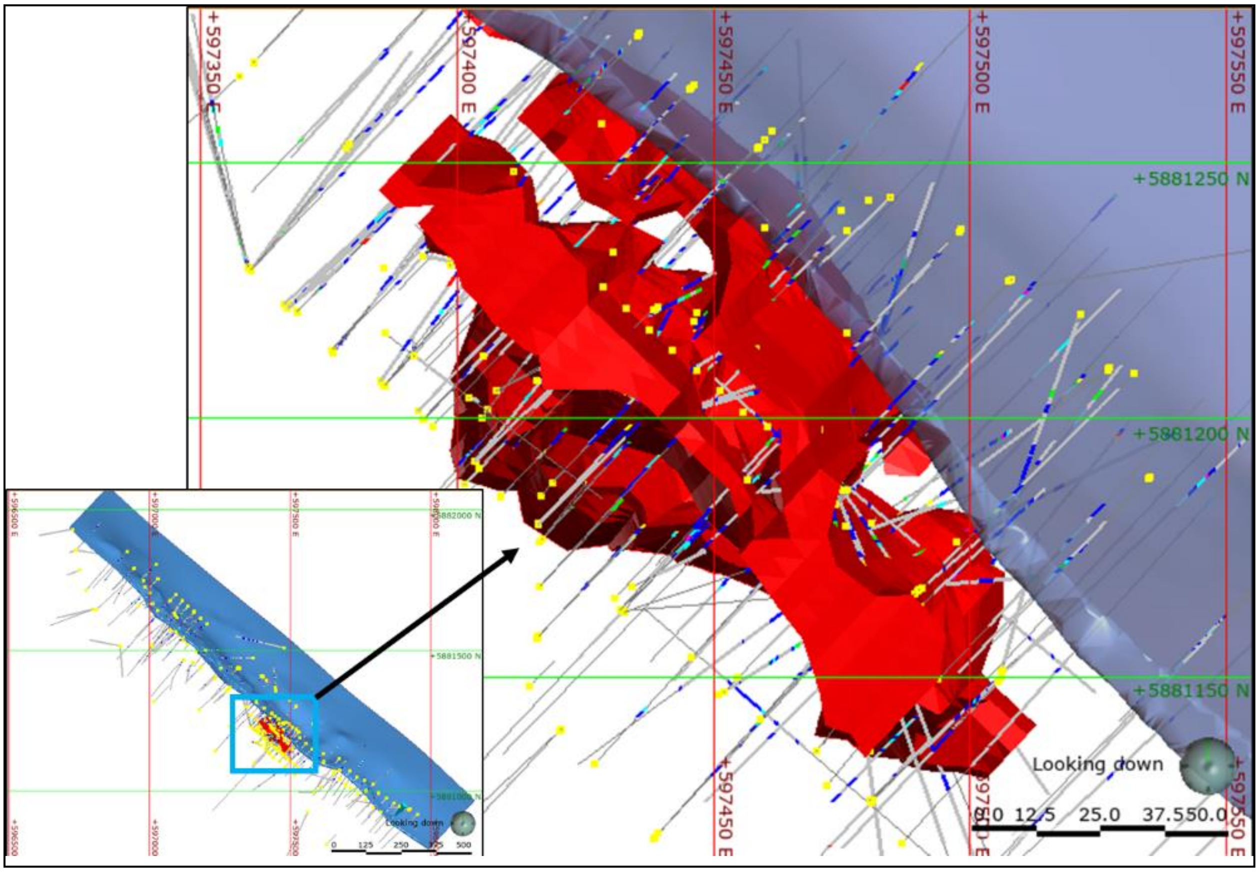


Figure 14-2: Surface plan view of the validated Bonanza Ledge diamond drill holes used for the 2022 FS MRE The inset figure shows the location of Bonanza Ledge (red) along the BC Vein (blue)

14.3 Geological Model

ODV updated, in 2022, the geological models for the Valley, Shaft, and Lowhee deposits using the new drill holes completed at the end of the 2021 drilling program.

The KL and BC Vein deposit were not drilled in 2021 and the Mosquito and Cow deposits had no new data since the May 17, 2022 update. The geological models were reviewed and validated by the Qualified Persons ("QP").

The Bonanza Ledge geological model, as documented in Brousseau et al. (2017), was reviewed and validated by the QPs. No new data have been acquired at Bonanza Ledge since the technical report of Brousseau et al. (2017).

The data used to update the geological models consists of drill hole data (including oriented core), underground mapping from historical level plans, and stope orientations. Oriented core data have been available since 2016 for all the deposits.

A total of 482 geological solids were created and/or updated for all the deposits.

The Cow, Valley, Shaft, Mosquito, Lowhee, and KL geological models consist of 475 mineralized solids representing axial planar ("AXPL") veins (Figure 14-3). All geological solids were modelled in Leapfrog. The solids were designed with a minimum thickness of 2 m and based on a cut-off grade of 2.0 grams per tonne ("g/t") gold. The solids veins extend to a radius of up to 50 m from the last selected intercept or are fixed at the mid-distance of an intercept that does not meet the minimum grade criterion. The solids were snapped to drill holes. The solids were created from the AXPL structural data using indicator interpolants.

Figure 14-4 shows an example of a modelled solid representing AXPL veins from the Shaft deposit model.

A solid representing a 5 m halo surrounding the AXPL vein corridors was also created for each of the Mosquito, Shaft, Valley, Cow, Lowhee, and KL deposits. These were created to limit and provide a halo of dilution around the AXPL mineralized veins. The halos were created using the numerical distance function around the combined AXPL solids in LeapFrog. An example of the dilution halo for the Lowhee Zone is presented in Figure 14-5. Dilution halos were not created for the BC Vein and Bonanza Ledge deposits.

The geological model for the BC Vein includes one sheared solid representing the mineralized Layer Parallel ("LP") vein, along with five solids representing mineralized LP splays (Figure 14-6). The solids were modelled in Leapfrog. The BC Vein and splays were modelled from geological logs and grade intervals. The BC Vein was designed with a minimum thickness of 2 m, controlled by the hanging and footwall of the shear, and was based on a cut-off grade of 1.0 g/t Au. Geological contacts were given precedent over grade. The splays were designed with a minimum thickness of 2 m and were based on a cut-off grade of 1.0 g/t Au. All solids were snapped to drill holes.

A geological structural contact was modelled between the BC Vein and the KL deposits. The surface is a major lithological contact between the brittle sandstone, which hosts the KL AXPL veins, and the more ductile carbonaceous mudstones and siltstones that host the BC Vein shear and LP veins. This contact was used as a hard boundary to limit the extent of the mineralized geological models (Figure 14-6).

In 2017, InnovExplo created one solid for the Bonanza Ledge deposit (Brousseau et al., 2017). Construction lines were created on cross-sections spaced 5 m to 25 m apart, which were snapped to drill hole intercepts. The solid was inspired by a sulphide shell defined in Brousseau et al. (2017) using a threshold of 3% pyrite and clipped to the Footwall Fault to the southwest, which was modelled from drill hole logs (Figure 14-7). The authors reviewed and validated the 2017 model and concluded that the model remains accurate for the 2022 FS MRE update.

Two surfaces were created for each deposit to define the topography and the overburden/bedrock contact. The topography was created using LIDAR data from 2016, except for Bonanza Ledge, which used LIDAR data from 2000 (before the test pit was excavated at the Bonanza Ledge mine). The overburden-bedrock contact was modelled using logged overburden intervals. A waste solid was also created for Bonanza Ledge corresponding to the block model limits.

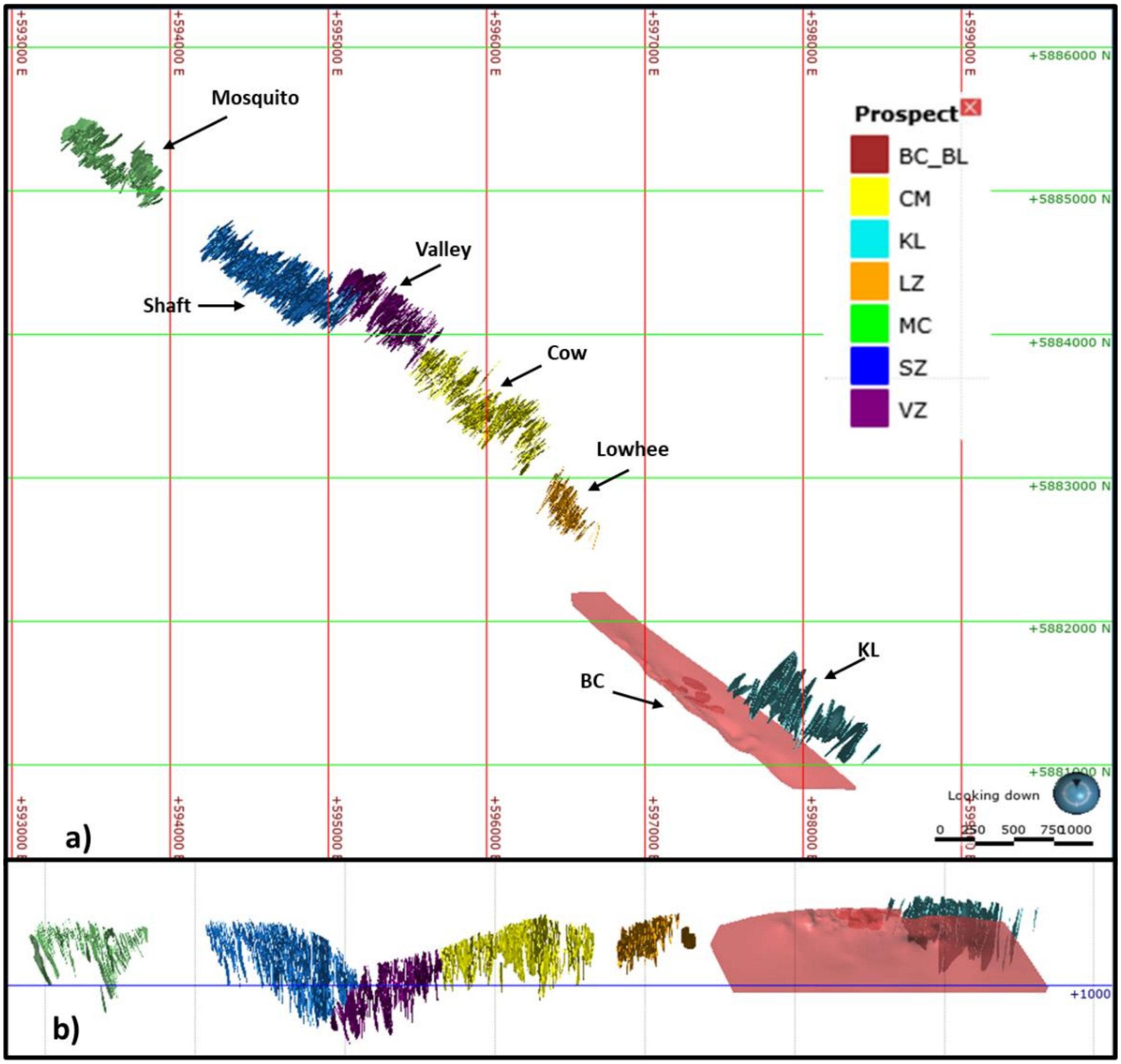


Figure 14-3: Mineralized solids of the Cow, Valley, Shaft, Mosquito, Lowhee, BC Vein, and KL models
a) Surface plan view; b) Section view looking north-northeast

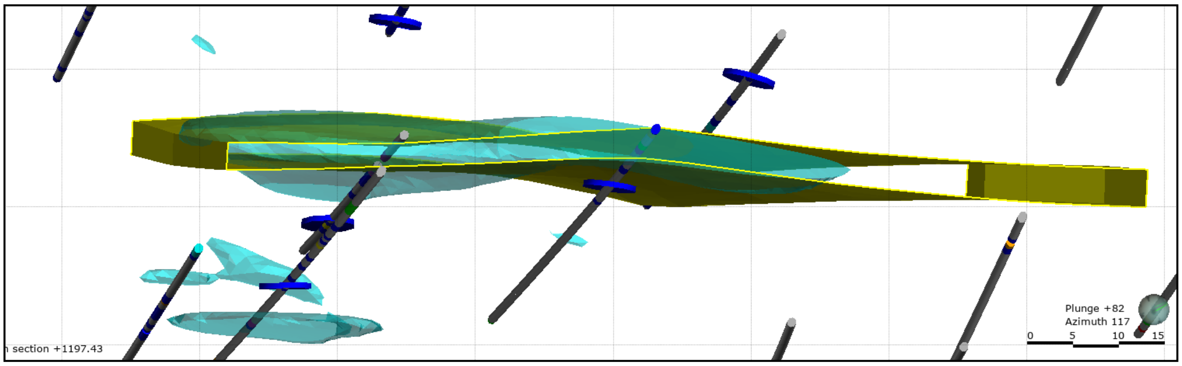


Figure 14-4: Example of data used for the 3D Shaft deposit model
Vein solid (yellow); 3.0-g/t Au indicator interpolant (cyan); oriented core AXPL veins (blue); 25-m-thick cross-section

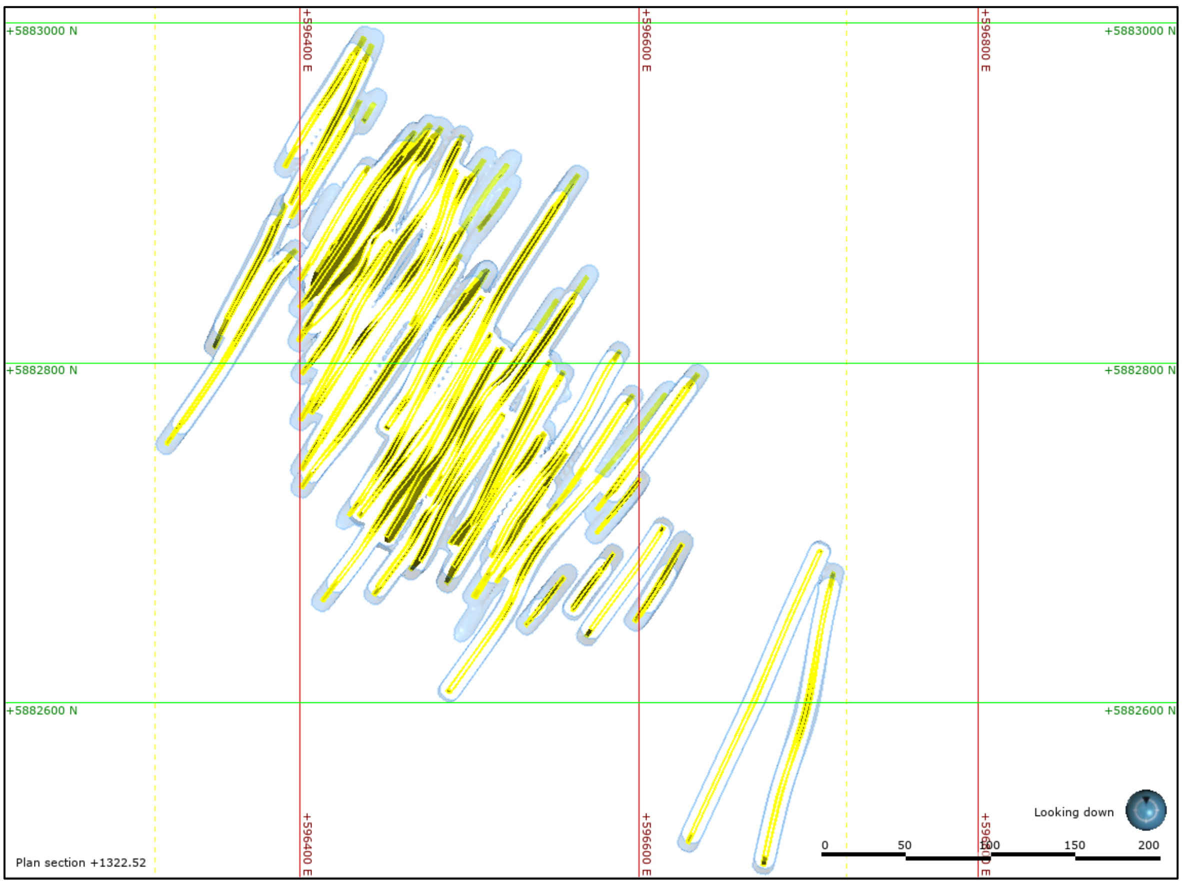


Figure 14-5: Plan view section of the Lowhee AXPL Veins and the surrounding 5 m dilution halo
Lowhee AXPL Veins (Yellow); 5 m dilution halo (pale blue)

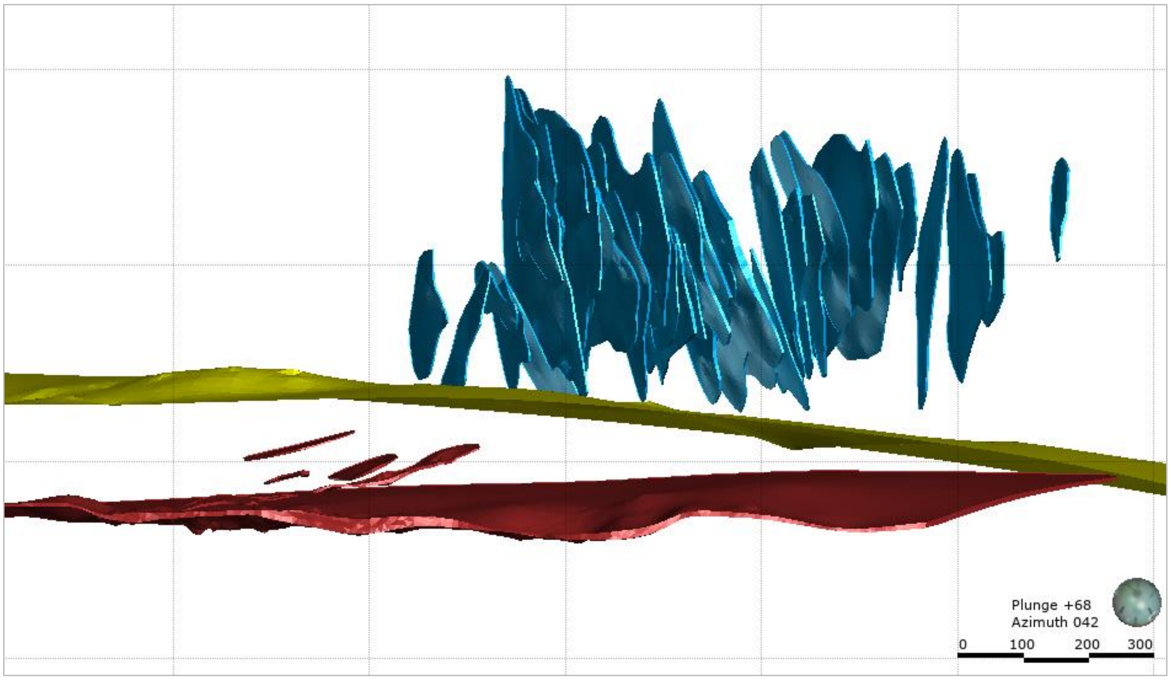


Figure 14-6: Isometric view of the BC Vein and KL deposit models, and the AXPL-LP contact surface BC Vein (dark red); KL (blue); AP-LP contact (yellow)

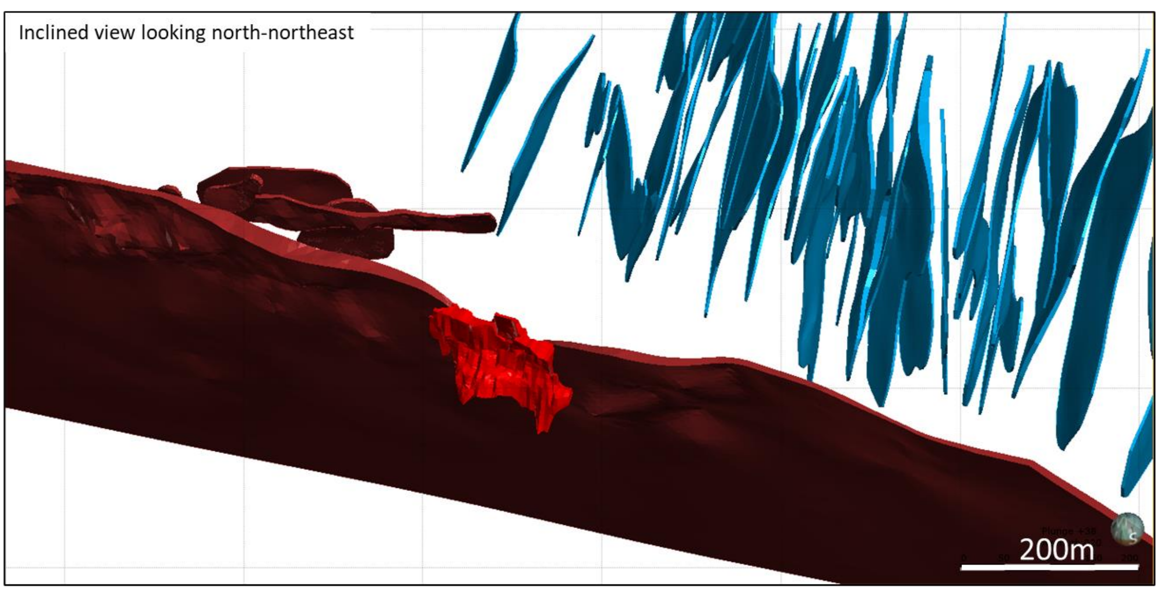


Figure 14-7: Isometric view of the BC Vein, Bonanza Ledge, and KL deposit models BC Vein (dark red); Bonanza Ledge (red); KL (blue)

14.4 Voids Model

Current drifts and stopes are mined at Bonanza Ledge and BC Vein by ODV. These voids are modelled and updated by ODV. The voids are used to deplete the final Mineral Resource for these deposits.

A 5 m buffer was applied to the modelled voids of the Cow, Valley, Shaft, Mosquito, Lowhee, and BC Vein deposits to compensate for the uncertainty in void locations.

Drilling continues to intercept undocumented voids. To reduce the associated risk, a spherical buffer with a 10 m radius was applied around the intercepts to represent a potential stope of 20 m in diameter. These "buffer voids" were used to deplete the final Mineral Resource Estimate only when the drilled void was not intersecting the stopes buffer.

In 2022, InnovExplo and ODV reviewed historical data and were able to model and recover additional historical stopes and other underground infrastructure that were added to the voids model prior to the 2022 PEA MRE. These historical infrastructure additions were mainly at the Cow deposit, but some were also added to the voids model of the Mosquito and Shafts deposits. Many voids interceptions (previously undocumented) are now explained by the updated voids model. Uncertainty in void locations remains, locally, as some voids intercepted remain unexplained by the void model.

Based on the available data, the voids in the Datamine and GEMS projects are considered accurate.

Figure 14-8 and Figure 14-9 show the voids used to deplete the current Mineral Resource Estimate.

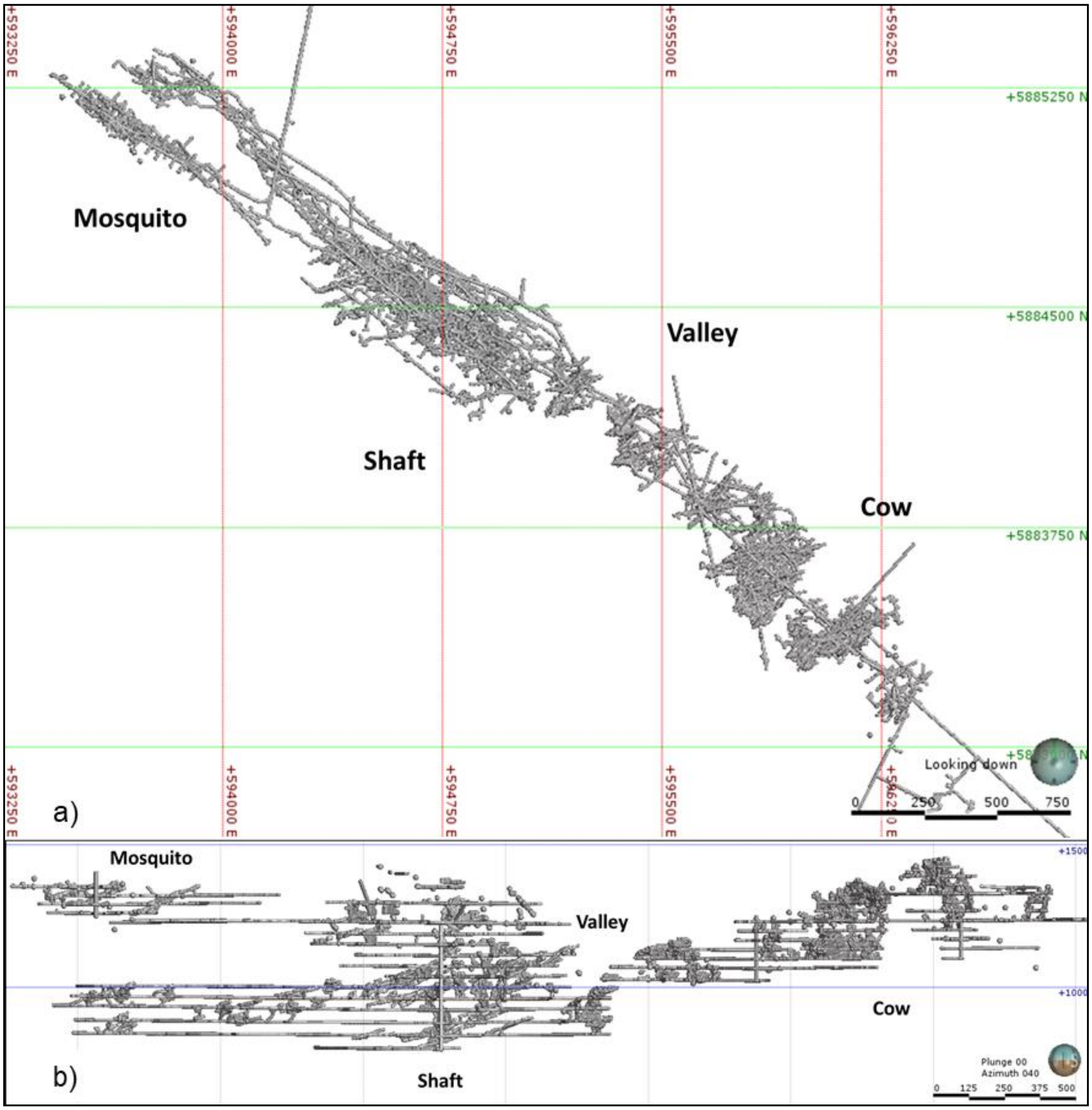


Figure 14-8: Plan and longitudinal view of the 5-m buffer voids for Cow Mountain and Island Mountain

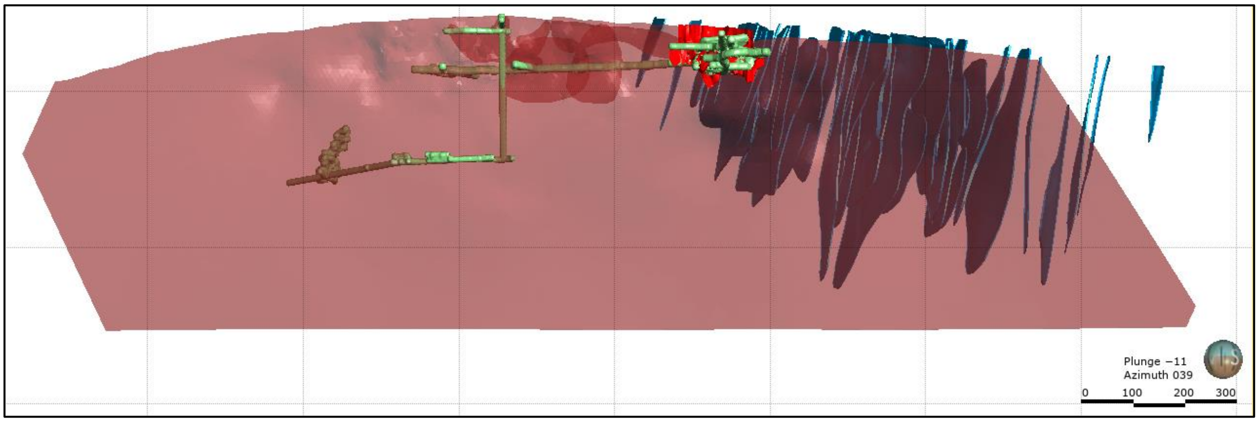


Figure 14-9: Longitudinal view of the 5-m buffer voids for the BC Vein, Bonanza Ledge, and KL deposits 5-m buffer voids (green); BC Vein (transparent red); Bonanza Ledge (red); KL (blue); looking north-northeast

14.5 Compositing

Codes were automatically attributed to DDH assay intervals intersecting the mineralized veins and dilution halos. Codes use the name of the corresponding 3D solid. The coded intercepts were used to analyze sample lengths and generate statistics for raw assays and composites. Table 14-2, Table 14-3, and Table 14-4 summarize the statistical analysis of the original (raw) assays for each deposit. The raw sample statistics used for composite length, capping, and variograms were defined by deposit and not individual veins due to the paucity of data.

Table 14-2: Summary statistics for the DDH raw gold assays from mineralized veins

Deposits	Number of samples	Max (Au g/t)	Mean (Au g/t)	Standard Deviation	Coefficient of Variation
Cow	14,876	6,590	4.31	56.54	13.12
Valley	12,982	1,870	3.37	24	7.12
Shaft	26,002	3,780	3.71	27.81	7.5
Mosquito	4,103	1,965	4.58	33.72	7.36
BC Vein	3,919	309	2.76	11.07	4.01
KL	2,413	145	1.88	6.09	3.23
Lowhee	5,450	2,420	3.61	36.28	10.07
Bonanza Ledge	3,062	234.5	7.08	15.35	2.17

Table 14-3: Summary statistics for the DDH raw gold assays from dilution halos

Deposits	Number of samples	Max (Au g/t)	Mean (Au g/t)	Standard Deviation	Coefficient of Variation
Cow	43,481	154.5	0.18	1.68	9.35
Valley	35,414	278	0.23	2.8	12.03
Shaft	78,184	192.5	0.15	1.42	9.2
Mosquito	13,470	78.1	0.15	1.16	7.93
KL	6,150	21.1	0.13	0.51	4.11
Lowhee	15,327	137.5	0.19	1.89	9.97

Table 14-4: Summary statistics for the DDH raw silver assays from mineralized veins

Deposits	Number of samples	Max (Ag g/t)	Mean (Ag g/t)	Standard Deviation	Coefficient of Variation
Cow	3,147	1,350	0.98	24.26	24.69
Valley	2,544	1,025	2.6	36.7	14.12
Shaft	2,283	691	2.11	22.21	10.52
Mosquito	894	330	4.23	21.28	5.04
KL	741	31.4	1.01	2.68	2.67
Lowhee	3,553	159	0.46	3.93	8.58

The DDH gold and silver assays were composited within each of the mineralized veins to minimize any bias introduced by variable sample lengths. DDH gold assays were also composited within the dilution halo. Vein thickness, proposed block size, and original sample length were taken into consideration when calculating the composite lengths. Original sample length populations were different between the gold and silver assays because not all drilling and sampling campaigns assayed for silver. Therefore, the composite lengths were calculated for each deposit and for each commodity:

- Silver: 1.5 m at Cow, 1.5 m at Valley, 1.5 m at Shaft, 1.5 m at Mosquito, 1.5 m at Lowhee, and 1.75 m at KL;
- Gold: 3.0 m at Cow, 1.5 m at Valley, 2.0 m at Shaft, 2.5 m at Mosquito, 2.0 m at BC Vein, 1.5 m at Lowhee 1.75 m at KL, and 2.0 m at Bonanza Ledge.

Tails were redistributed equally for all intervals that were smaller than half the composite length. A grade of 0.00 g/t Au was assigned to missing sample intervals from historical holes (pre-2016) within the solids. A few holes from the 2016–2021 programs were only partially sampled; a value of 0.00 g/t Au was assigned to these missing intervals. Samples not assayed for silver had values left ignored. Missing samples from the 2016–2019 drilling programs due to lost core, voids, or lost samples were ignored.

Table 14-5, Table 14-6, and Table 14-7 present the summary statistics of the capped composites by deposit.

Table 14-5: Summary statistics for capped gold composites from mineralized veins

Deposits	Number of samples	Max (Au g/t)	Mean (Au g/t)	Standard Deviation	Coefficient of Variation
Cow	5,811	50	2.76	5.99	2.17
Valley	7,807	40	2.31	5.2	2.25
Shaft	12,879	50	2.67	6.46	2.42
Mosquito	1,897	50	3.09	6.96	2.26
BC Vein	2,040	40	2.3	5.45	2.37
KL	1,294	20	1.39	2.66	1.91
Lowhee	3,217	40	2.08	5.13	2.47
Bonanza Ledge	2,602	70	5.98	10.77	1.8

Table 14-6: Summary statistics for capped gold composites from dilution halos

Deposits	Number of samples	Max (Au g/t)	Mean (Au g/t)	Standard Deviation	Coefficient of Variation
Cow	19,594	2.0	0.12	0.26	2.18
Valley	24,529	2.0	0.12	0.28	2.41
Shaft	43,870	2.0	0.09	0.25	2.64
Mosquito	7,450	2.0	0.10	0.25	2.54
KL	3,794	1.5	0.09	0.20	2.26
Lowhee	10,743	1.5	0.10	0.22	2.20

Table 14-7: Summary statistics for capped Silver composites from mineralized veins

Deposits	Number of samples	Max (Ag g/t)	Mean (Ag g/t)	Standard Deviation	Coefficient of Variation
Cow	2,180	3.5	0.31	0.61	1.94
Valley	1,450	3.5	0.39	0.78	2.00
Shaft	1,407	5.0	0.65	1.20	1.83
Mosquito	502	3.0	0.96	1.08	1.13
KL	355	3.0	0.61	0.84	1.38
Lowhee	2,086	2.6	0.23	0.45	1.95

14.6 High-grade Capping

Although the indicator variograms suggest that high-grade continuity ranges increase with decreasing grade, the lack of detailed underground mapping and sampling is an obstacle to defining the most suitable grade ranges in areas with wider drilling grids.

Multiple capping (capping at different ranges in each deposit) was selected as the capping methodology for the gold grades in the Cow, Valley, Shaft, Mosquito, KL, Lowhee, and BC Vein mineralized vein models (see below for Bonanza Ledge).

For these deposits, the highest selected capping value corresponds to the grade at 99% of the total variance on the indicator variograms. The highest grades vary from 20 g/t to 70 g/t Au. The second and third grades were selected based on the probability plot and vary from 7 g/t to 30 g/t Au. The Shaft deposit is shown as an example in Figure 14-10 and Figure 14-11.

The maximum range for high-grade connectivity was established using the indicator variograms, which suggests a loss of connectivity after 17 m to 33 m, depending on the mineralized zone. A range of 25 m was selected and applied to all zones as a general average, given the lack of detailed information for each deposit.

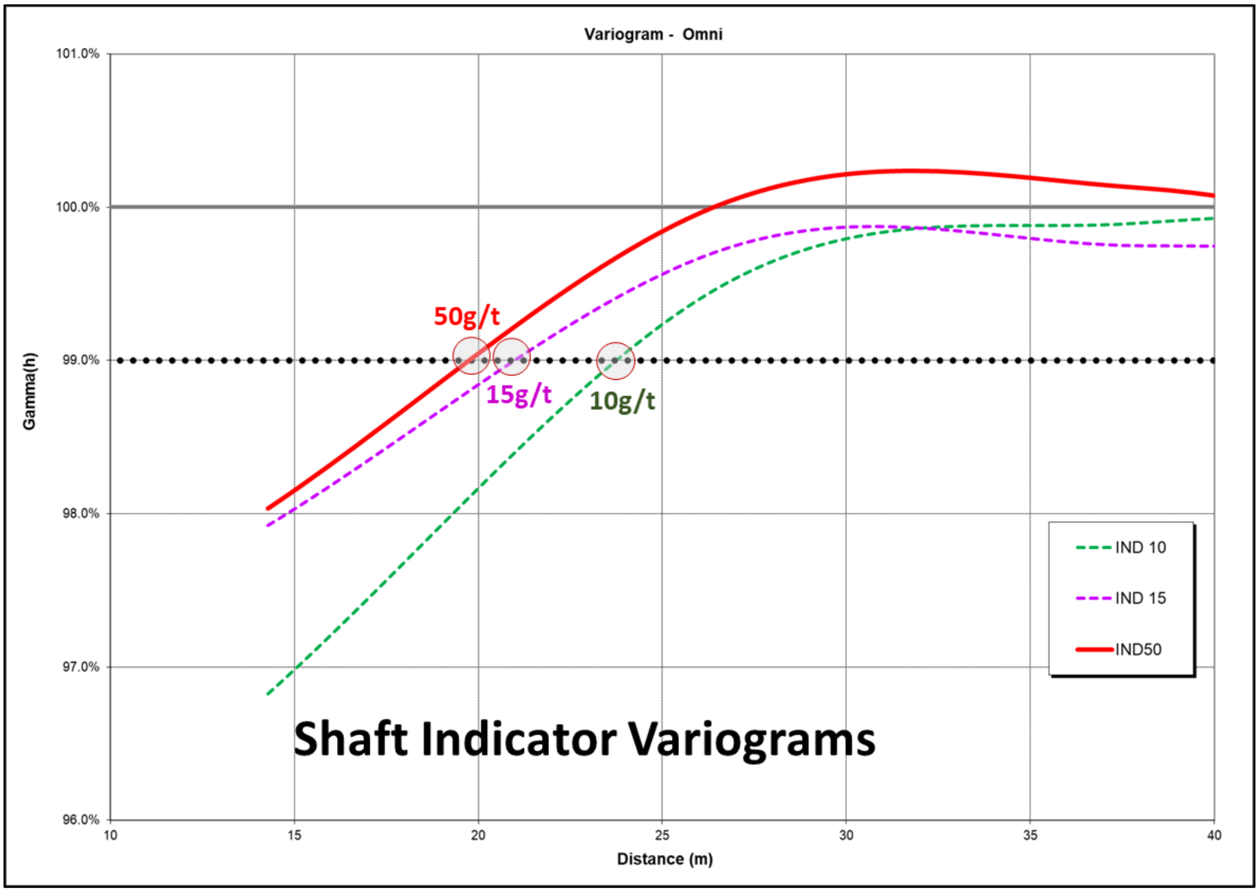


Figure 14-10: Indicator variograms for the Shaft deposit

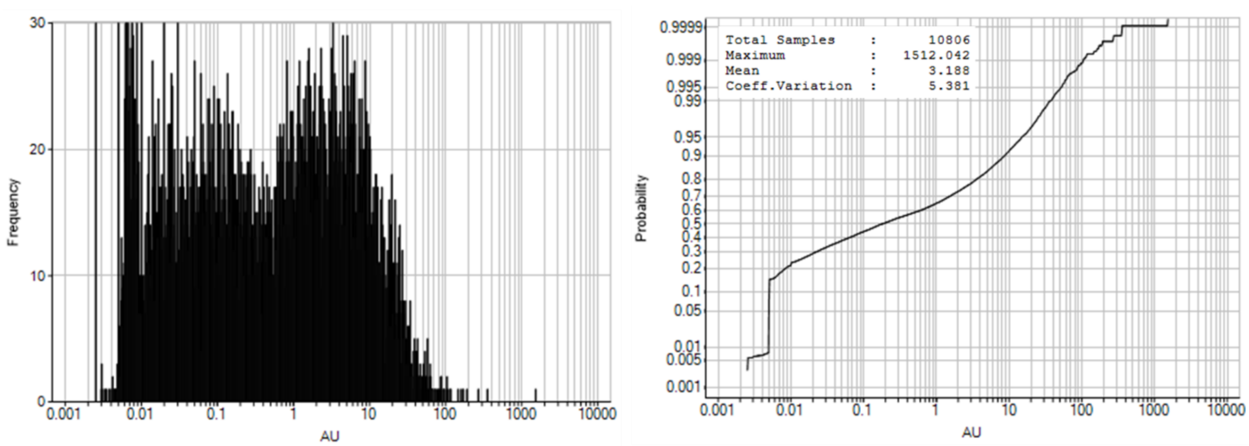


Figure 14-11: Grade log histogram and probability plot for the Shaft deposit

For Bonanza Ledge, basic univariate statistics were performed on individual composited gold assay datasets. The capping applied for Bonanza Ledge was a single top cap of 70 g/t Au on the composited data.16 samples were capped with this value, which was selected by combining the dataset analysis with the probability plot and log-normal grade distribution.

High-grade gold values in the dilution halos are primarily associated with AXPL veins that could not be modelled due to lack of continuity between drill holes. Basic univariate statistical analysis of the gold values within these halos indicates a change in the populations between 1.5 g/t Au (Lowhee and KL) and 2.0 g/t Au (Mosquito, Shaft, Valley, and Cow) on log probability and mean / variance plots.

Silver grades in Mosquito, Shaft, Valley, Cow, Lowhee, and KL deposits were also analyzed for high-grade outliers. Using primarily log probability plots for each deposit, and within each vein corridor, the capping values of silver range between 2.6 g/t and 5.0 g/t Ag.

14.7 Density

Bulk densities were determined by standard water immersion methods on half-core samples. ODV's Mineral Resource databases contain 8,584 measurements taken on samples from within the mineralized veins from all deposits. A combination of 21,006 measurements were used to determine the bulk density of the surrounding dilution from all deposit areas. Table 14-8 provides a breakdown of bulk density measurements in both modelled mineralized solids and the surrounding dilution by zone.

Table 14-8: Bulk density by mineralized zone

Deposit	Inside / Outside	Number of Samples	Median SG	Method
Cow	Inside Mineralized Veins	1,109	2.8	ID^2 and Median
Valley		1,835	2.81	Median
Shaft		2,881	2.78	ID^2 and Median
Mosquito		515	2.79	Median
BC Vein		323	2.69	ID^2 and Median
KL		437	2.81	Median
Lowhee		1,279	2.74	ID^2 and Median
Bonanza Ledge		205	3.2	Median

Deposit	Inside / Outside	Number of Samples	Median SG	Method
Cow	Surrounding Dilution	2,932	2.74	Median
Valley		4,488	2.76	Median
Shaft		6,627	2.74	Median
Mosquito		3,489	2.75	Median
KL		1,683	2.76	Median
Lowhee		1,787	2.72	Median

For the Cow, Shaft, Lowhee, and BC Vein models, the bulk density was estimated by the Inverse Distance Squared ("ID2") interpolation method in the block model. The median bulk density was applied to non-estimated blocks: 2.80 grams per centimetre cubed ("g/cm^3") at Cow, 2.78 g/cm^3 at Shaft, 2.74 g/cm^3 at Lowhee, and 2.69 g/cm^3 at BC Vein.

Due to the paucity of data, the median value of the bulk density measurements in the mineralized veins was applied to all blocks in the Valley (2.81 g/cm^3), Mosquito (2.79 g/cm^3), and KL (2.81 g/cm^3) deposits.

The median value of the bulk density measurements in the surrounding dilution was applied to all six deposit dilution halos: Cow (2.74 g/cm^3), Valley (2.76 g/cm^3), Shaft (2.74 g/cm^3), Mosquito (2.75 g/cm^3), KL (2.76 g/cm^3), and Lowhee (2.72 g/cm^3).

For Bonanza Ledge, the average value of 3.20 g/cm^3 from Sandefur and Stone (2006) was applied. In 2017, InnovExplo confirmed this value with 23 bulk density measurements during the independent resampling program, returning an average of 3.19 g/cm^3 (Brousseau et al., 2017).

A density of 2.00 g/cm^3 was assigned to the overburden, 2.70 g/cm^3 to any uncoded waste rock, and 0.00 g/cm^3 to the 5 m buffer voids (including underground drifts and stopes). The 3D mineralized zones and dilution halos were clipped at the overburden.

Bulk densities were used to calculate tonnages from the volume estimates in the block model.

14.8 Block Model

A block model was created for each of the deposits. They were last updated on September 8, 2022.

For the Cow, Valley, Shaft, Mosquito, Lowhee, KL, and BC Vein models, unrotated sub-block models were used in Datamine. The sub-blocks were created within each mineralized vein zone and dilution halo.

The Bonanza Ledge block model corresponds to an unrotated percent block model in GEMS. All blocks with more than 0.01% of their volume falling within a selected solid were assigned the corresponding block code for that solid in their respective folder. A percent block model was generated, reflecting the proportion of each block inside every solid (i.e., individual mineralized zones, overburden, voids and waste).

The origin of each block model is the lower-left corner. Block dimensions reflect the sizes of mineralized zones and plausible mining methods.

Table 14-9 shows the properties of each block model.

Table 14-9: Block model properties

Deposits	Description	Easting (m)	Northing (m)	Elevation (m)
Cow	Block Model Origin	595,500	5,883,000	850
	Parent Block Dimension	5	5	5
	Number of Parent Blocks	190	190	128
	Sub-block Dimension	0.625	0.625	0.5
Valley	Block Model Origin	595,000	5,883,700	600
	Parent Block Dimension	5	5	5
	Number of Parent Blocks	160	160	130
	Sub-block Dimension	0.625	0.625	0.5
Shaft	Block Model Origin	594,160	5,884,000	690
	Parent Block Dimension	5	5	5
	Number of Parent Blocks	212	164	154
	Sub-block Dimension	0.625	0.625	0.5
Mosquito	Block Model Origin	593,250	5,884,850	800
	Parent Block Dimension	5	5	5
	Number of Parent Blocks	150	140	130
	Sub-block Dimension	0.625	0.625	0.5
BC Vein	Block Model Origin	596,500	5,880,800	940
	Parent Block Dimension	5	5	5
	Number of Parent Blocks	370	284	118
	Sub-block Dimension	1.0	1.0	1.0
KL	Block Model Origin	597,500	5,880,900	1,000
	Parent Block Dimension	5	5	5
	Number of Parent Blocks	210	190	130
	Sub-block Dimension	0.5	0.5	0.5

Deposits	Description	Easting (m)	Northing (m)	Elevation (m)
Lowhee	Block Model Origin	596,300	5,882,450	1,000
	Parent Block Dimension	5	5	5
	Number of Parent Blocks	90	140	100
	Sub-block Dimension	0.5	0.5	0.5
Bonanza Ledge	Block Model Origin	596,700	5,880,800	1,600
	Block size	2	2	5
	Block extent (m)	1,300	1,200	620

14.9 Variography and Search Ellipsoids

For the Cow, Valley, Shaft, Mosquito, KL, Lowhee, and BC Vein models, the 3D directional-specific search ellipses were guided by the hanging wall and footwall of each vein for an anisotropic search. The search radii were determined by the indicator variograms in Section 14.6.

Variogram models were designed for both gold and silver using composited assay data. Spherical variograms were modelled for each of these deposits. Separate variograms were designed for the dilution halo domains along an orientation that corresponds to the strike and dip of the mineralized zones based on the assumption that any mineralization in the dilution is associated with AXPL veins.

Figure 14-12 shows an example of the variogram models used in the Mineral Resource estimation for the Cow model.

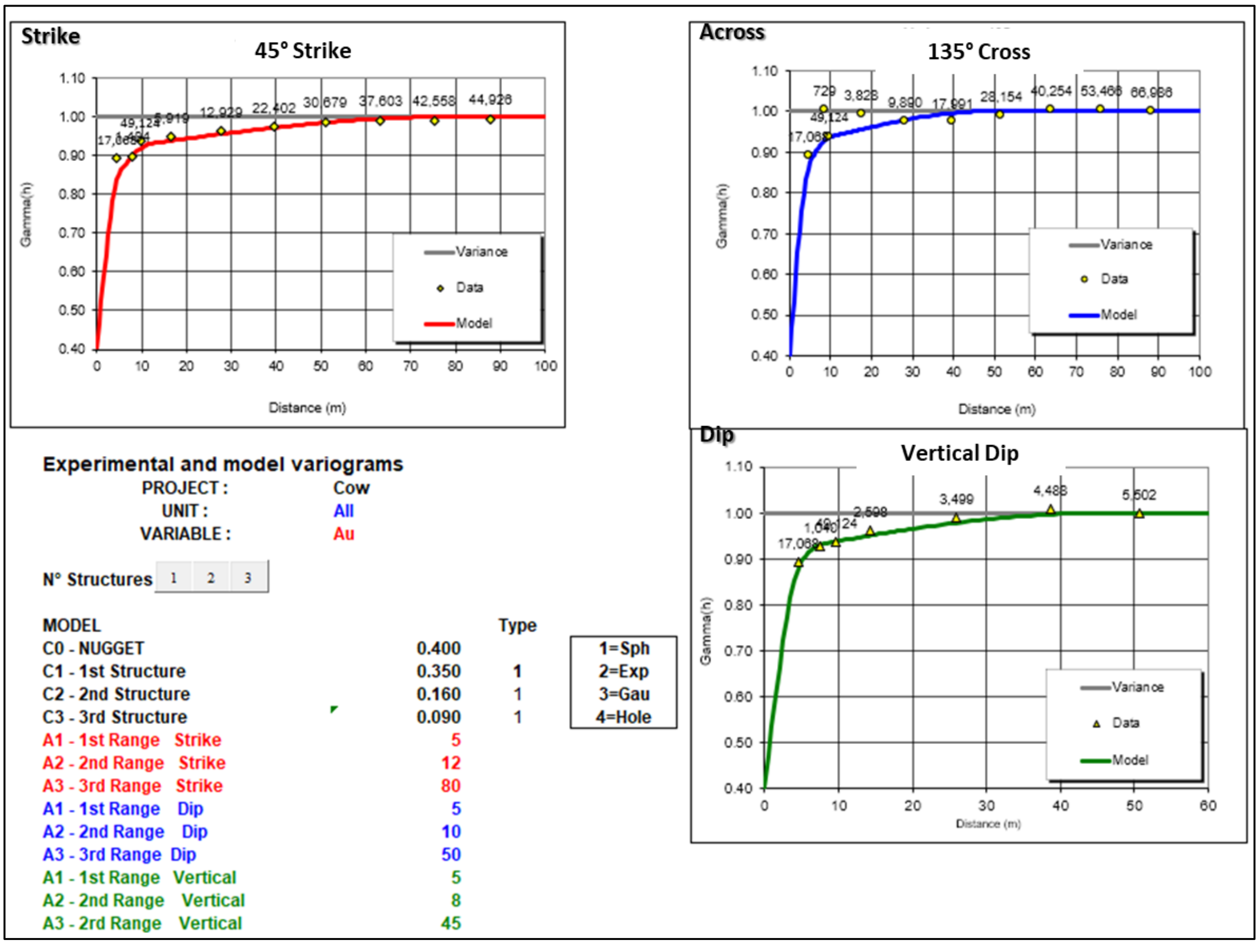


Figure 14-12: Variogram models of gold grade for the Cow deposit

For the Bonanza Ledge model, a 3D directional variography was completed on DDH composites of capped gold assay data. The study was carried out in the Supervisor software. The 3D directional-specific investigations yielded the best-fit model along an orientation that corresponds to the strike and dip of the mineralized zones.

The downhole variograms suggest a low nugget effect of 3% for the Bonanza Ledge zones. Two sets of search ellipsoids were built from the variogram analysis, corresponding to 1x the results and 1.5x the results.

14.10 Grade Interpolation

The interpolation profiles were customized for each vein of each deposit to estimate grades with hard boundaries.

For the Cow, Valley, Shaft, Mosquito, KL, Lowhee, and BC Vein deposits, the mineralized vein blocks were estimated independently. Although elevated gold and silver values are both associated spatially with the AXPL vein corridors, no correlation between grade distributions can be found. Gold was estimated with an anisotropic three-pass search to estimate all blocks within the veins. For each pass, the high-grades were restricted, as determined in Section 14.6. The first pass range and distance for the restricted search grade (high-grade capping) correspond to a maximum of 25 m, as determined in Section 14.6. For the second and third passes, the ranges increased (respectively 2x and 2.5x the previous pass ranges), but the restricted search grade values decreased. These grade values were determined from indicator variograms and the geological knowledge for each deposit. The fourth interpolation pass was used to fill the wireframes with gold grades. Silver was estimated with an anisotropic two-pass search to estimate blocks within the veins at Cow, Valley, Shaft, Mosquito, KL, And Lowhee. For each pass, the high-grades were restricted, as determined in Section 14.6. The first pass range for the silver grade correspond to a maximum of 25 m x 15 m x 15 m, as determined through variogram analysis in Section 14.9. For the second pass, the range increased 2x the first pass. No further search passes were interpolated for silver.

In the dilution halos, gold was estimated with a three-pass search relative to the continuity rotation orientations determined from variogram analysis in Section 14.9. For each pass, the high-grades were restricted, as determined in Section 14.6. The first pass range correspond to a maximum of 12.5 m x 12.5 m x 2.5 m, determined by variogram analysis in Section 14.6 and chosen to limit the influence of distal high-grade samples in the dilution interpolation. For the second and third passes, the ranges increased by 2x and 4x the first pass range, respectively.

For the Bonanza Ledge deposit, passes ranges were derived from the variography using capped composites. The interpolation was run on a point area workspace extracted from the DDH dataset in GEMS. A two-pass search was used for the Mineral Resource Estimate. The ellipsoid radii for Pass 1 were the same as the variography results (1x). The ellipsoid radii from Pass 2 were 1.5x the results for blocks not interpolated during Pass 1.

The OK method was selected for the final Mineral Resource estimation as it better honours the grade distribution for all the deposits.

The grade estimation parameters are summarized in Table 14-10, Table 14-11, and Table 14-12.

Table 14-10: Mineralized veins gold grade estimation parameters

Deposit	Pass	Min Cmp	Max Cmp	Min DDH	Orientation			Ranges			Au g/t Cap
					Azi (Z)	Dip (X)	Azi (Z)	X (m)	Y (m)	Z (m)	
Cow	1	4	12	2	Anisotropic			25	25	25	50
	2	4	12	2	Anisotropic			50	50	50	25
	3	4	12	2	Anisotropic			125	125	125	15
	4	3	12	2	Anisotropic			250	250	250	10
Valley	1	4	12	2	Anisotropic			25	25	25	40
	2	4	12	2	Anisotropic			50	50	50	25
	3	4	12	2	Anisotropic			125	125	125	15
	4	3	12	2	Anisotropic			250	250	250	10
Shaft	1	4	12	2	Anisotropic			25	25	25	50
	2	4	12	2	Anisotropic			50	50	50	30
	3	4	12	2	Anisotropic			125	125	125	15
	4	3	12	2	Anisotropic			250	250	250	10
Mosquito	1	4	12	2	Anisotropic			25	25	25	50
	2	4	12	2	Anisotropic			50	50	50	30
	3	4	12	2	Anisotropic			125	125	125	15
	4	3	12	2	Anisotropic			250	250	250	10
BC Vein	1	4	12	2	Anisotropic			25	25	25	40
	2	4	12	2	Anisotropic			50	50	50	30
	3	4	12	2	Anisotropic			125	125	125	10
	4	4	12	2	Anisotropic			250	250	250	5
KL	1	4	12	2	Anisotropic			25	25	25	20
	2	4	12	2	Anisotropic			50	50	50	10
	3	4	12	2	Anisotropic			125	125	125	7
	4	3	12	2	Anisotropic			250	250	250	7
Lowhee	1	4	12	2	Anisotropic			25	25	25	40
	2	4	12	2	Anisotropic			50	50	50	20
	3	4	12	2	Anisotropic			125	125	125	15
	4	NA – All blocks were estimated with the first 3 passes									
Bonanza Ledge	1	4	12	2	Anisotropic			25	12.5	25	50
	2	4	12	2	Anisotropic			50	25	50	30
	3	4	12	2	Anisotropic			100	50	100	15

Table 14-11: Mineralized veins silver grade estimation parameters

Deposit	Pass	Min Cmp	Max Cmp	Min DDH	Orientation			Ranges			Ag g/t Cap
					Azi (Z)	Dip (X)	Azi (Z)	X (m)	Y (m)	Z (m)	
Cow	1	4	12	2	Anisotropic		140	25	15	15	3.5
	2	4	12	2	Anisotropic			50	30	30	3.5
Valley	1	4	12	2	Anisotropic		-130	25	15	15	3.5
	2	4	12	2	Anisotropic			50	30	30	3.5
Shaft	1	4	12	2	Anisotropic		130	25	15	15	5.0
	2	4	12	2	Anisotropic			50	30	30	5.0
Mosquito	1	4	12	2	Anisotropic		90	25	15	15	3.0
	2	4	12	2	Anisotropic			50	30	30	3.0
KL	1	4	12	2	Anisotropic		90	25	15	15	3.0
	2	4	12	2	Anisotropic			50	30	30	3.0
Lowhee	1	4	12	2	Anisotropic		150	25	15	15	2.6
	2	4	12	2	Anisotropic			50	30	30	2.6

Table 14-12: Dilution halo gold grade estimation parameters

Deposit	Pass	Min Cmp	Max Cmp	Min DDH	Orientation			Ranges			Au g/t Cap
					Azi (Z)	Dip (X)	Azi (Z)	X (m)	Y (m)	Z (m)	
Cow	1	4	12	2	125	85	-130	12.5	12.5	2.5	2
	2	4	12	2				25	25	5	2
	3	4	12	2				50	50	10	2
Valley	1	4	12	2	125	80	-120	12.5	12.5	2.5	2
	2	4	12	2				25	25	5	2
	3	4	12	2				50	50	10	2
Shaft	1	4	12	2	130	75	-130	12.5	12.5	2.5	2
	2	4	12	2				25	25	5	2
	3	4	12	2				50	50	10	2
Mosquito	1	4	12	2	130	70	-130	12.5	12.5	2.5	2
	2	4	12	2				25	25	5	2
	3	4	12	2				50	50	10	2
KL	1	4	12	2	120	80	90	12.5	12.5	2.5	1.5
	2	4	12	2				25	25	5	1.5
	3	4	12	2				50	50	10	1.5
Lowhee	1	4	12	2	125	85	90	12.5	12.5	2.5	1.5
	2	4	12	2				25	25	5	1.5
	3	4	12	2				50	50	10	1.5

14.11 Block Model Validation

The block models were validated visually and statistically. The visual validation confirmed that each block model honours the drill hole composite data and justifies the multiple capping for the second, third and fourth passes (Figure 14-13).

ID2 and Nearest-Neighbor ("NN") models were produced to check for local bias in the models. The ID2 models matched well with the OK models, and the differences in the high-grade composite areas are within acceptable limits. The trend and local variation of the estimated ID2 and OK models were compared with the NN models and composite data using swath plots in three to five directions (north, east, elevation, along strike, and across strike) for the first pass. The ID2, NN and OK models show similar trends in grades with the expected smoothing for each method when compared to the composite data. Figure 14-14 shows the swath plot in the three-five principal directions of the Shaft deposit as an example.

The Bonanza Ledge model of Brousseau et al. (2017) was reviewed and validated, and a reconciliation exercise performed, but no changes were made to the block model. According to the reconciliation results of the 2018 development in the Bonanza Ledge mine, grade produced versus estimated is 87.5% for a combined dilution-recovery rate of 14.3%. No activities were carried out at the Bonanza Ledge mine in 2019–2021. The author believes that the Bonanza Ledge block model reconciliation results were acceptable for the 2019 MRE given the nature of the deposit, and the data can be used to update the 2022 FS MRE.

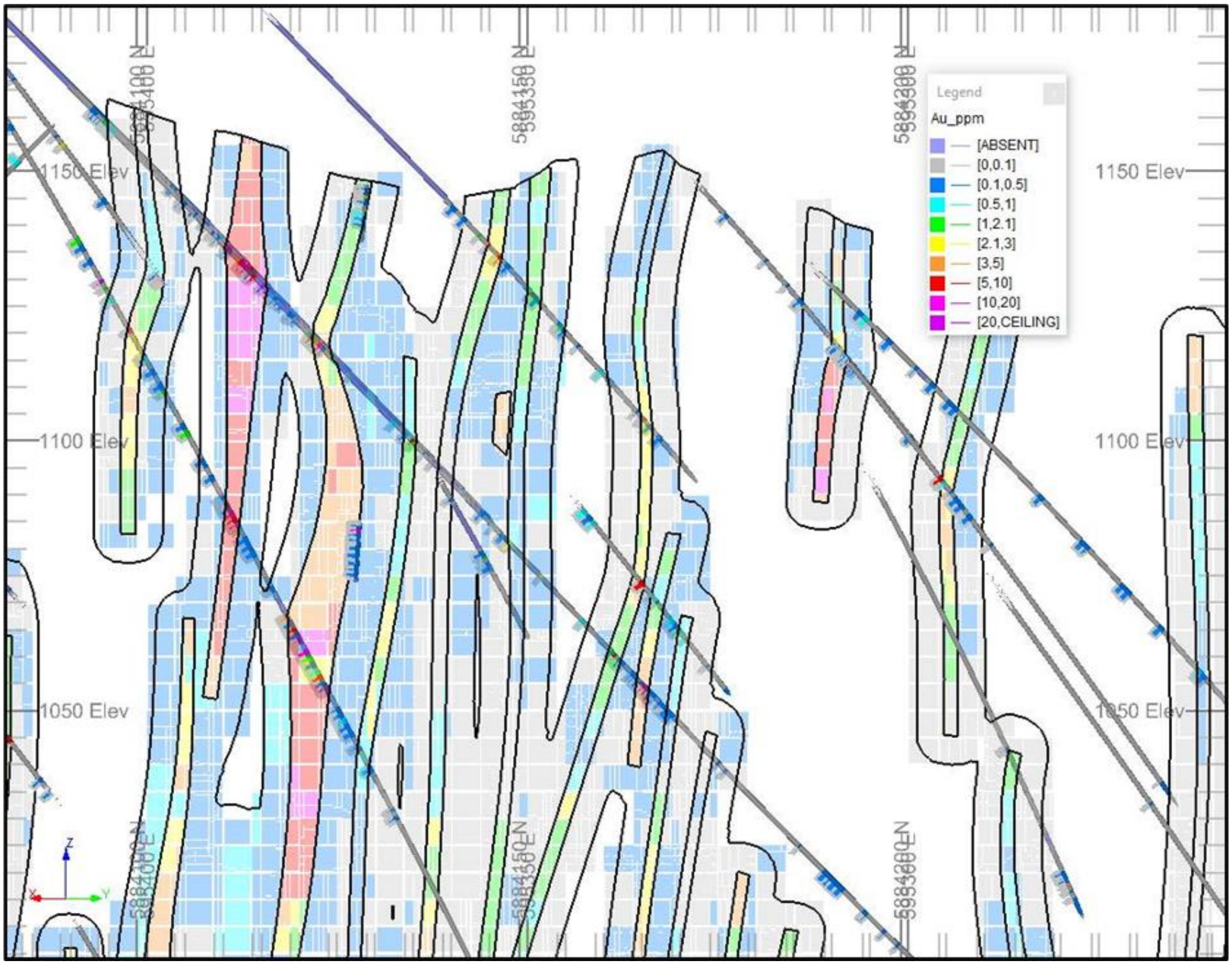
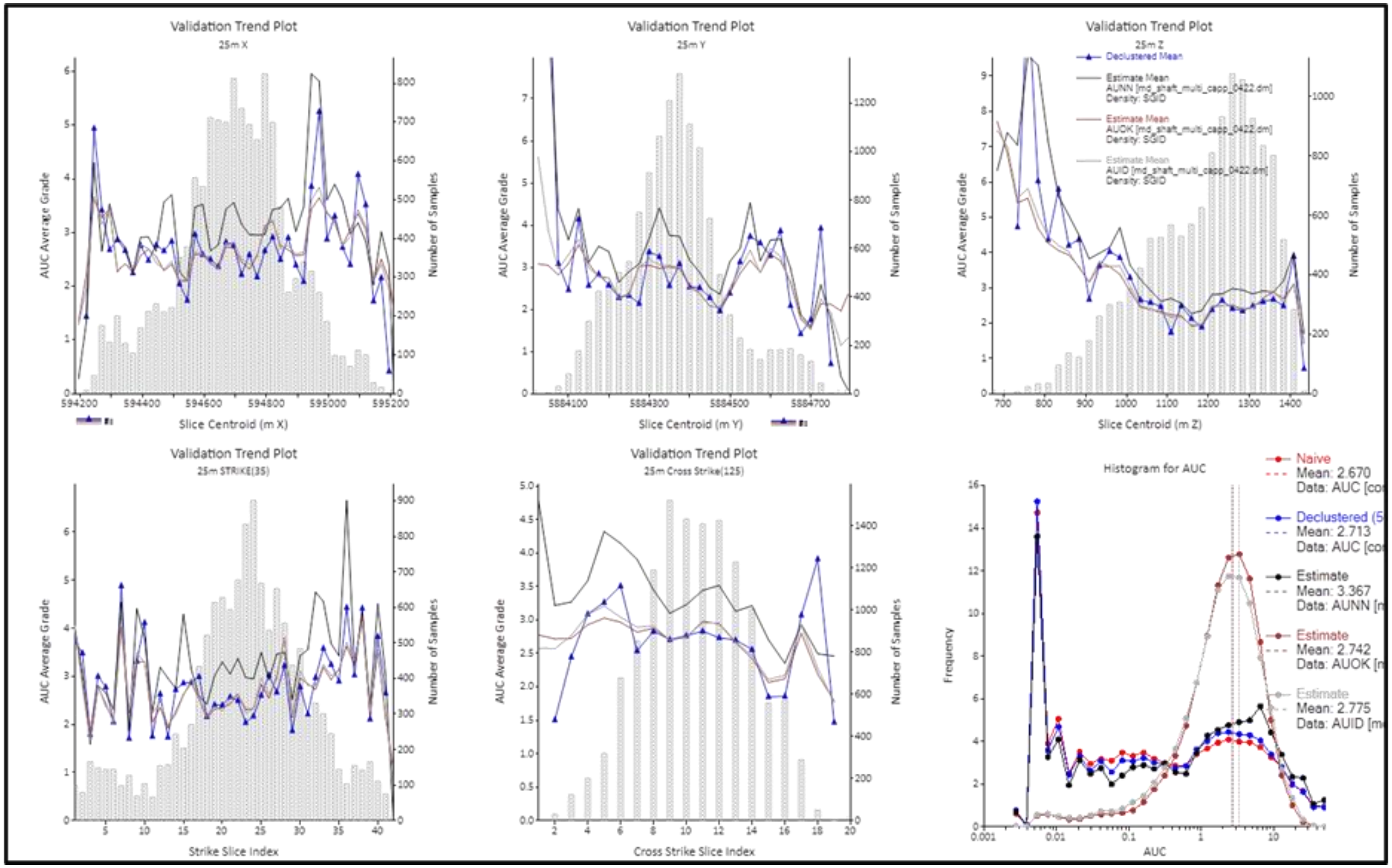
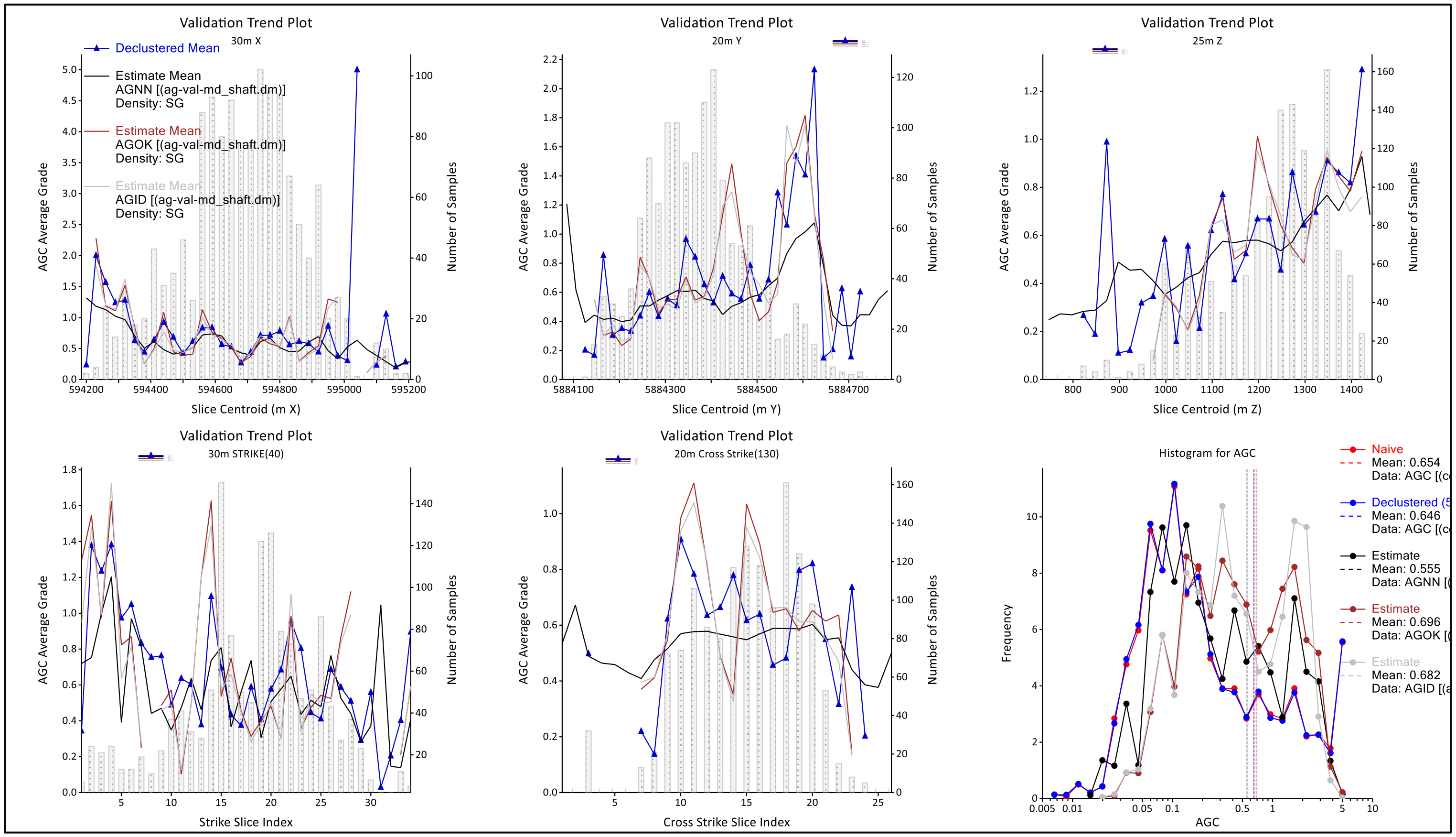
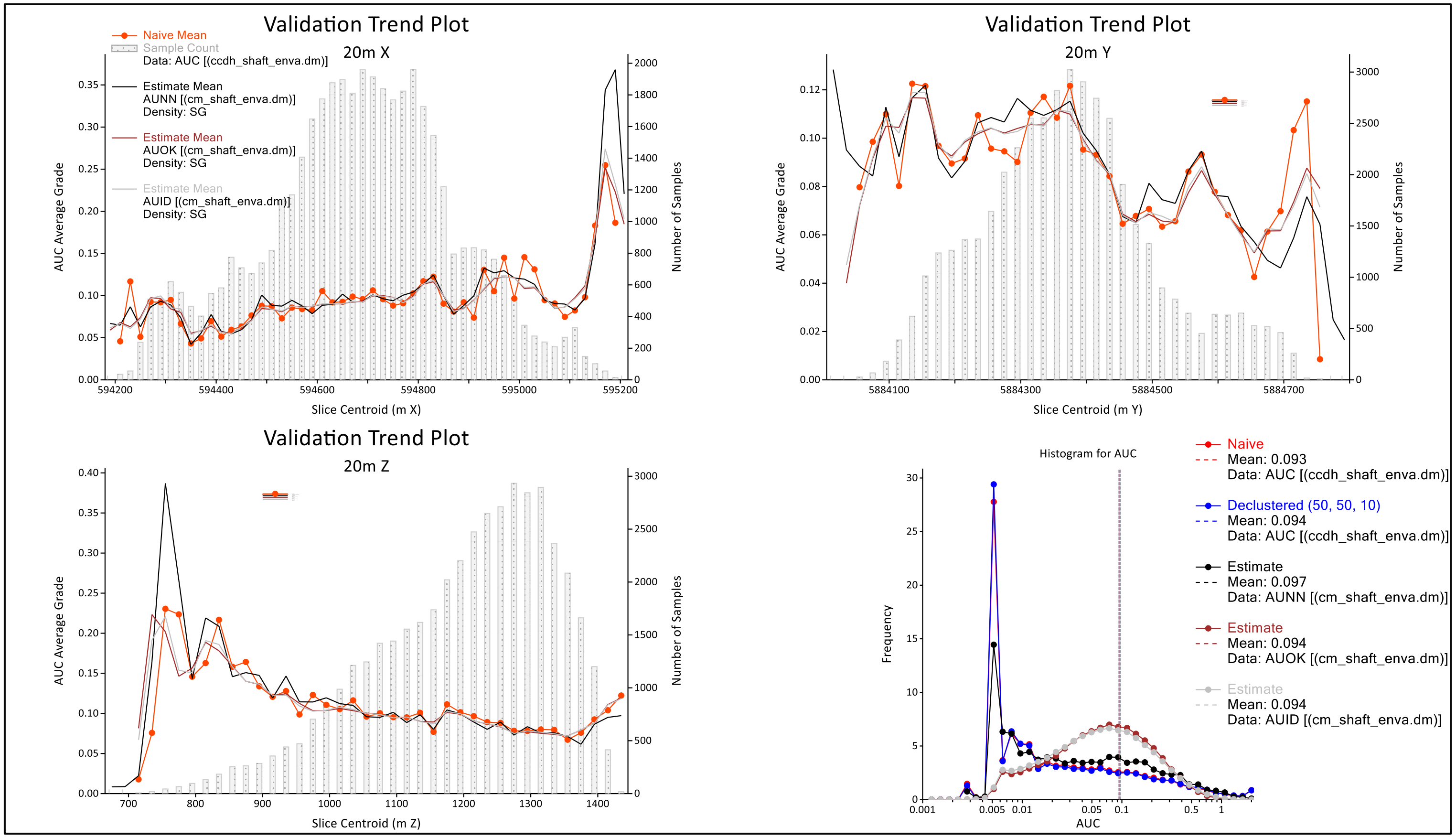


Figure 14-13: Validation of the Valley block model, comparing drill hole composites and block model gold grade values - Cross-section looking southwest (±5 m)


Validation Trend Plot
25m X
AUC Average Grade
Number of Samples
Slice Centroid (m X)
Validation Trend Plot
25m Y
Slice Centroid (m Y)
Validation Trend Plot
25m Z
Declustered Mean
Estimate Mean
AUNN [md_shaft_multi_capp_0422.dm]
Density: SGID
Estimate Mean
AUOK [md_shaft_multi_capp_0422.dm]
Density: SGID
Estimate Mean
AUID [md_shaft_multi_capp_0422.dm]
Density: SGID
Slice Centroid (m Z)
Validation Trend Plot
25m STRIKE(35)
Strike Slice Index
Validation Trend Plot
25m Cross Strike(125)
Cross Strike Slice Index
Histogram for AUC
Frequency
AUC
Naive
Mean: 2.670
Declustered
Mean: 2.713
Estimate
Mean: 3.367
Estimate
Mean: 2.742
Estimate
Mean: 2.775

a)


Validation Trend Plot
30m X
Declustered Mean
Estimate Mean
AGNN [(ag-val-md_shaft.dm)]
Density: SG
Estimate Mean
AGOK [(ag-val-md_shaft.dm)]
Density: SG
Estimate Mean
AGID [(ag-val-md_shaft.dm)]
Density: SG
AGC Average Grade
Number of Samples
Slice Centroid (m X)
Validation Trend Plot
20m Y
Slice Centroid (m Y)
Validation Trend Plot
25m Z
Slice Centroid (m Z)
Validation Trend Plot
30m STRIKE(40)
Strike Slice Index
Validation Trend Plot
20m Cross Strike(130)
Cross Strike Slice Index
Histogram for AGC
Naive
Mean: 0.654
Declustered
Mean: 0.646
Estimate
Mean: 0.555
Estimate
Mean: 0.696
Estimate
Mean: 0.682
Frequency
AGC
b)



c)

Figure 14-14: Shaft model validation using three or five-direction swath plots and log frequency plots comparing the different interpolation methods to the DDH composites
a) Gold in veins b) Silver in veins c) Gold in dilution

14.12 Economic Parameters and Cut-off Grade

Cut-off grade ("CoG") parameters were determined by QP, Éric Lecomte, using the parameters presented in Table 14-13 and Table 14-14. All deposits except for Bonanza Ledge are reported at a CoG of 2.0 g/t Au. Bonanza Ledge is reported at a CoG of 3.5 g/t Au.

Table 14-13: Input parameters used to calculate the underground cut-off grade for Cow, Valley, Mosquito, Shaft, Lowhee, KL, and BC Vein deposits

Input parameter	Value
Gold price (USD/oz)	1,700.00
Exchange rate (USD:CAD)	1.27
Gold Price ($/oz)	2,159
Royalty (%)	5.0%
Recovery (%)	92.1%
Global mining costs ($/t)	54.32
Processing and transport costs ($/t)	22.29
G&A plus environmental costs ($/t)	15.31
Sustaining CAPEX ($/t)	**31.19**
Total cost ($/t)	**123.12**
Mineral Resource cut-off grade (g/t Au)	2.0

Table 14-14: Input parameters used to calculate the underground cut-off grade for Bonanza Ledge

Input parameter	Value
Gold price (USD/oz)	1,700.00
Exchange rate (USD:CAD)	1.27
Gold Price ($/oz)	2,159
Royalty (%)	5.0%
Recovery (%)	86.0%
Global mining costs ($/t)	79.13
Processing and transport costs ($/t)	65
G&A plus environmental costs ($/t)	51.65
Total cost ($/t)	**195.78**
Mineral Resource cut-off grade (g/t Au)	3.5

The QP considers the selected cut-off grades of 2.0 g/t Au and 3.5 g/t Au to be adequate based on the current knowledge of the Project and to be instrumental in outlining Mineral Resources with reasonable prospects for eventual economic extraction for an underground mining scenario in each deposit.

The Deswik Stope Optimizer ("DSO") was used to demonstrate spatial continuity of the mineralized zones within "potentially mineable shapes". The DSO parameters used a minimum mining shape of 4.0 m for Mosquito and Shaft and 5.0 m for the remaining zone along the strike of the deposit, a height of 10.0 m and a width of 2.0 m. The maximum shape measures 30.0 m x 5.0 m x width of the mineralized zone. The typical shape was optimized first. If it was not potentially economical, smaller stope shapes were optimized until it reached the minimum mining shape. Only those blocks of the model constrained by the resulting conceptual mineable shapes are reported as resources.

The use of those conceptual mining shapes as constraints to report Mineral Resource Estimates demonstrate that the "reasonable prospects for eventual economic extraction" meet the criteria defined in the CIM Definition Standards (2014), and the MRMR Best Practice Guidelines (2019).

Economics of the resources were based solely on the gold content within the mineralized vein zones. Silver resources reported are contained in the resource blocks determined from the potential economic viability of the contained gold.

14.13 Mineral Resource Classification

14.13.1 Cow, Valley, Shaft, Mosquito, KL, Lowhee, and BC Vein Deposits

Mineral Resource Classification was determined through geometric criteria deemed reasonable for these deposits by the QP. The samples containing gold values were used for the geometric classification criteria.

No Measured Mineral Resources were defined.

Indicated Mineral Resources were defined for blocks estimated with a minimum of two DDH and within 25 m of a drill hole. The classification can extend up to 35 m if the mineralized trend is demonstrated by multiple adjacent holes.

Inferred Mineral Resources were defined for blocks estimated with a minimum of two DDH and within 50 m of a drill hole. The classification can extend to 60–65 m from a hole if the mineralized trend is demonstrated by multiple adjacent holes.

Based on the criteria described above, the final classification, for all deposits, was obtained after applying a series of outline rings (clipping boundaries) created in longitudinal views, keeping in mind that a significant cluster of blocks would be necessary to obtain an Indicated Mineral Resource. Within the Indicated category outlines, some Inferred blocks were upgraded into Indicated, whereas some Indicated blocks outside of these outlines were downgraded to the Inferred category. The QPs considered this a necessary step to homogenize (smooth out) the Mineral Resource volumes in each category and to avoid the inclusion of isolated blocks in the Indicated category.

Figure 14-15 shows an example of the Mineral Resource classification for the Cow deposit.

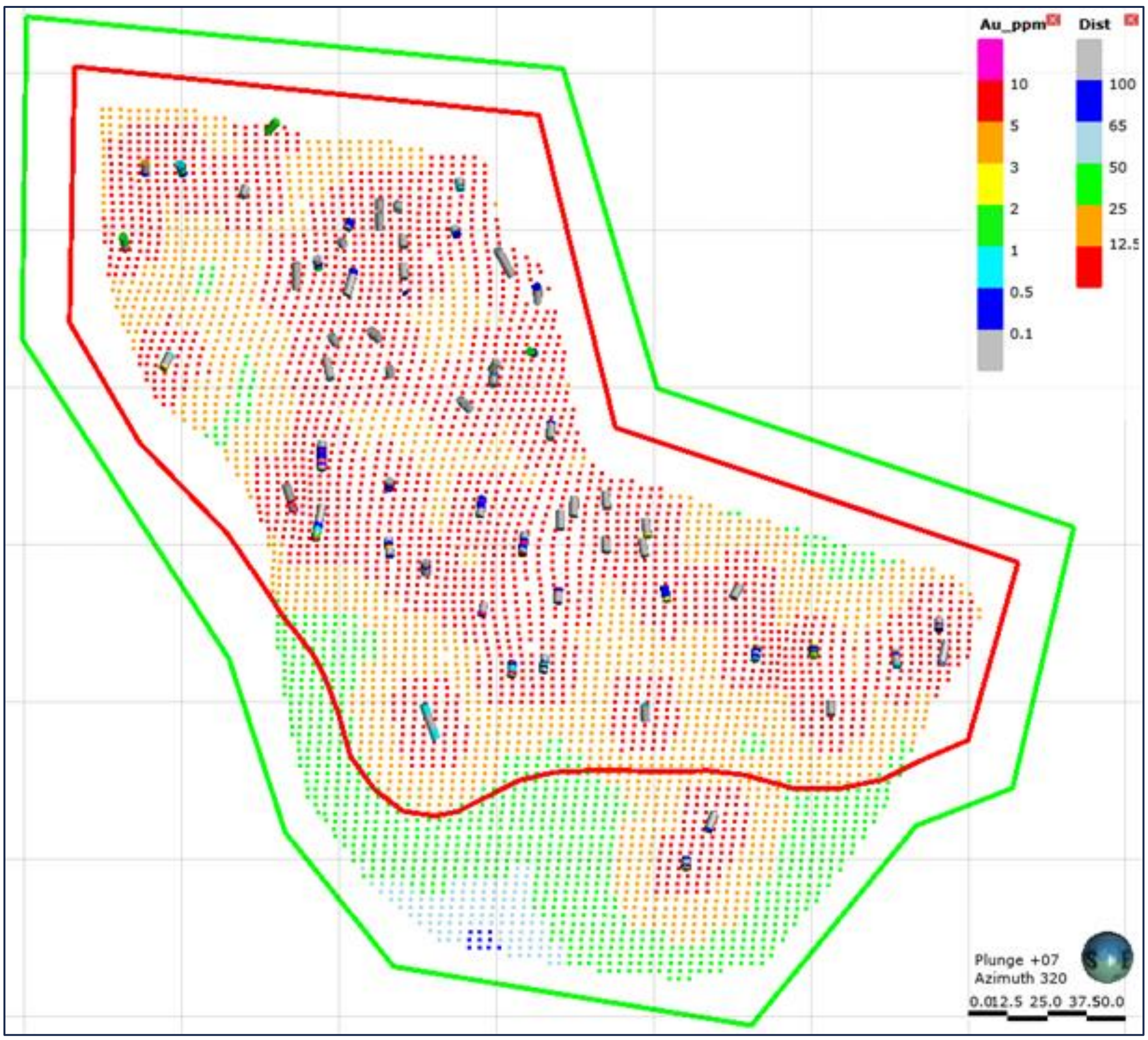


Figure 14-15: Example of a clipping boundary for classification
Indicated category clip (red); Inferred category clip (green) for the V11 vein of the Cow deposit

14.13.2 Bonanza Ledge Deposit

Measured Mineral Resources were defined for blocks showing geological and grade continuity interpolated during Pass 1 only, with a minimum of three drill holes and the closest distance at less than 10 m, and for blocks no more than 40 m below the pit.

Indicated Mineral Resources were defined for blocks showing geological and grade continuity interpolated with a minimum of two drill holes during Pass 1 and the closest distance at less than 20 m.

Inferred Mineral Resources were defined by the remaining blocks interpolated from Pass 1 and Pass 2.

Figure 14-16 shows the Mineral Resource classification for the Bonanza Ledge deposit.

In some areas, interpolated blocks remained unclassified due to the lack of confidence in grade and/or continuity; these are kept as exploration potential.

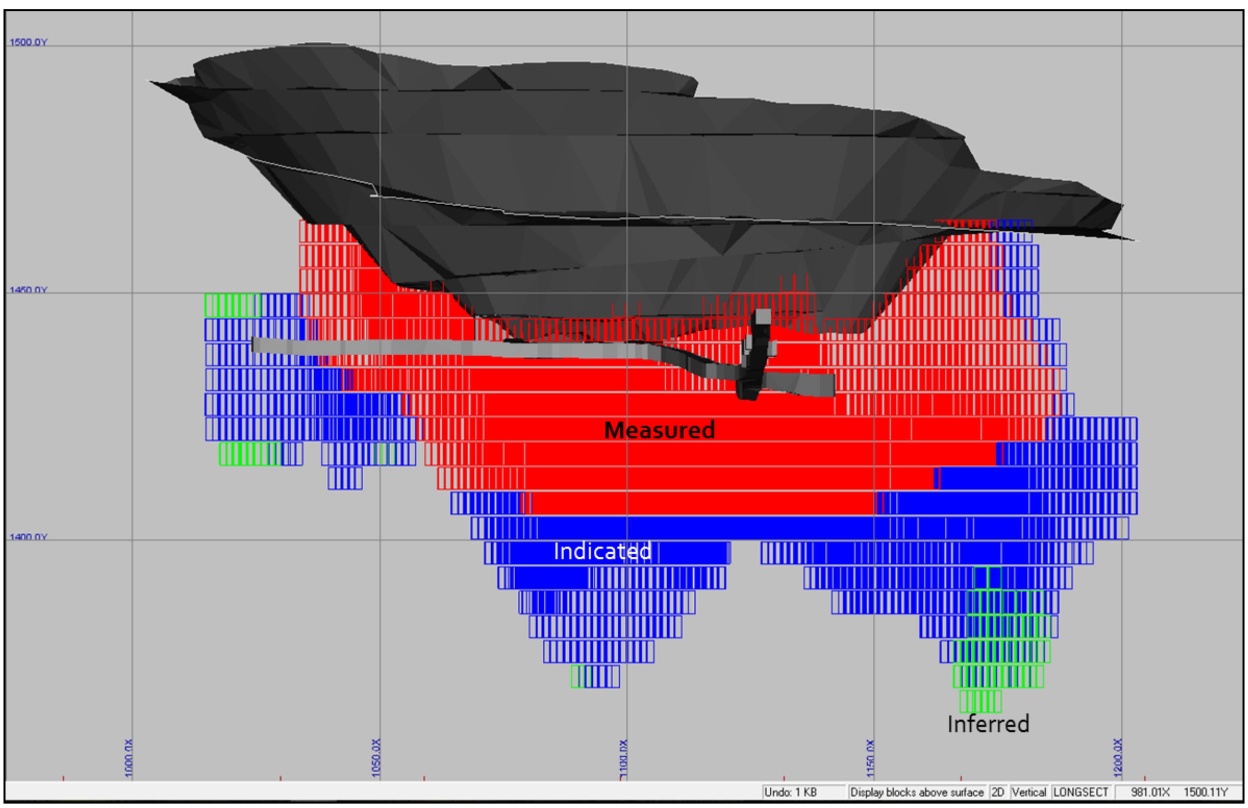


Figure 14-16: Longitudinal view showing the classified Mineral Resources of the Bonanza Ledge deposit

14.14 Mineral Resource Estimate

The QPs have classified the 2022 FS MRE as Measured, Indicated, and Inferred Mineral Resources based on data density, search ellipse criteria, drill hole density, and interpolation parameters. The 2022 FS MRE is considered to be reliable and based on quality data and geological knowledge. The Mineral Resource Estimate follows the 2014 CIM Definition Standards on Mineral Resources and Reserves.

Table 14-15 displays the results of the 2022 FS MRE exclusive of the reserves for the Project for all eight deposits: Cow, Valley, Shaft, Mosquito, KL, Lowhee, BC Vein and Bonanza Ledge.

Table 14-16 and Table 14-17 shows the cut-off grade sensitivity analysis on gold of the 2022 FS MRE, exclusive of the reserves. The reader should be cautioned that the figures provided in Table 14-16 and Table 14-17 should not be interpreted as a Mineral Resource statement. The reported quantities and grade estimates at different cut-off grades are presented for the sole purpose of demonstrating the sensitivity of the Mineral Resource model for gold to the selection of a reporting cut-off grade.

Table 14-15: Cariboo Gold Project 2022 FS MRE
Reported at a 2.0 g/t Au cut-off grade (except for Bonanza Ledge reported at a 3.5 g/t Au cut-off grade)

Category	Deposit	Tonne '000	Au Grade (Au g/t)	Au Ounce '000	Ag Grade (Ag g/t)	Ag Ounce '000
Measured	Bonanza Ledge	47	5.06	8		
Indicated	Bonanza Ledge	32	4.02	4		
	BC Vein	1,030	3.12	103		
	KL	386	3.18	39		
	Lowhee	1,368	3.18	140	0.23	10
	Mosquito	1,288	3.68	152	0.08	3
	Shaft	4,781	3.39	523	0.06	9
	Valley	2,104	3.14	213	0.09	6
	Cow	3,644	3.31	388	0.09	11
Total Indicated Mineral Resources		**14,635**	**3.32**	**1,564**	**0.09**	**39**
Inferred	BC Vein	461	3.55	53		
	KL	1,918	2.75	169		
	Lowhee	445	3.34	48	0.10	1
	Mosquito	1,290	3.55	147	0.01	0
	Shaft	6,468	3.84	800	0.01	1
	Valley	2,119	3.30	225	0.02	1
	Cow	2,769	3.03	270	0.00	0
Total Measured and Indicated Mineral Resources		**14,682**	**3.33**	**1,571**	**0.09**	**39**
Total Inferred Mineral Resources		**15,470**	**3.44**	**1,712**	**0.01**	**4**

Mineral Resource Estimate notes:

1. The independent and qualified persons for the Mineral Resource Estimates, as defined by NI 43-101, are Carl Pelletier, P.Geo., and Vincent Nadeau Benoit, P.Geo. (InnovExplo Inc.). The effective date of the 2022 Feasibility Study Mineral Resource Estimate is November 11, 2022.
2. These Mineral Resources, exclusive of the reserves, are not Mineral Reserves as they do not have demonstrated economic viability.
3. The Mineral Resource Estimate follows the 2014 CIM Definition Standards on Mineral Resources and Reserves and the 2019 CIM Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines.
4. A total of 481 vein zones were modelled for the Cow Mountain (Cow and Valley), Island Mountain (Shaft and Mosquito), Barkerville Mountain (BC Vein, KL, and Lowhee) deposits and one gold zone for Bonanza Ledge. A minimum true thickness of 2.0 m was applied, using the gold grade of the adjacent material when assayed or a value of zero when not assayed.

5. The estimate is reported for a potential underground scenario at a cut-off grade of 2.0 g/t Au, except for Bonanza Ledge at a cut-off grade of 3.5 g/t Au. The cut-off grade for the Cow, Valley, Shaft, Mosquito, BC Vein, KL, and Lowhee deposits was calculated using a gold price of US$1,700/oz; a USD:CAD exchange rate of 1.27; a global mining cost of $54.32/t; a processing and transport cost of $22.29/t; a G&A plus Environmental cost of $15.31/t; and a sustaining CAPEX cost of $31.19/t. The cut-off grade for the Bonanza Ledge deposit was calculated using a gold price of US$1,700/oz; a USD:CAD exchange rate of 1.27; a global mining cost of $79.13/t; a processing and transport cost of $65.00/t; and a G&A plus Environmental cost of $51.65/t. The cut-off grades should be re-evaluated in light of future prevailing market conditions (metal prices, exchange rate, mining cost, etc.).
6. Density values for Cow, Shaft, Lowhee, and BC Vein were estimated using the ID^2 interpolation method, with a value applied for the non-estimated blocks of 2.80 g/cm^3 for Cow, 2.78 g/cm^3 for Shaft, 2.74 g/cm^3 for Lowhee, and 2.69 g/cm^3 for BC Vein. Median densities were applied for Valley (2.81 g/cm^3), Mosquito (2.79 g/cm^3), and KL (2.81 g/cm^3). A density of 3.20 g/cm^3 was applied for Bonanza Ledge.
7. A four-step capping procedure was applied to composited data for Cow (3.0 m), Valley (1.5 m), Shaft (2.0 m), Mosquito (2.5 m), BC Vein (2.0 m), KL (1.75 m), and Lowhee (1.5 m). Restricted search ellipsoids ranged from 7 to 50 g/t Au at four different distances ranging from 25 m to 250 m for each deposit. High-grades at Bonanza Ledge were capped at 70 g/t Au on 2.0 m composited data.
8. The gold Mineral Resources for the Cow, Valley, Shaft, Mosquito, BC Vein, KL, and Lowhee vein zones were estimated using Datamine Studio™ RM 1.9 software using hard boundaries on composited assays. The silver Mineral Resources and the dilution halo gold mineralization were estimated using Datamine Studio™ RM Pro 1.11. The OK method was used to interpolate a sub-blocked model (parent block size = 5 m x 5 m x 5 m). Mineral Resources for Bonanza Ledge were estimated using GEOVIA GEMS™ 6.7 software using hard boundaries on composited assays. The OK method was used to interpolate a block model (block size = 2 m x 2 m x 5 m).
9. Results are presented in situ. Ounce (troy) = metric tons x grade / 31.10348. Calculations used metric units (metres, tonnes, g/t). The number of tonnes was rounded to the nearest thousand. Any discrepancies in the totals are due to rounding effects. Rounding followed the recommendations as per NI 43-101.
10. The qualified persons responsible for this section of the technical report are not aware of any environmental, permitting, legal, title, taxation, socio-economic, marketing, political, or other relevant factors that could materially affect the Mineral Resource Estimate.

Table 14-16: Cut-off grade sensitivity analysis on gold for the Cow, Valley, Shaft, Mosquito, BC Vein, KL, and Lowhee deposits of the Cariboo Gold Project

Cut-off Grade	Indicated			Inferred		
	Tonne ('000)	Grade Au g/t	Ounce ('000)	Tonne ('000)	Grade Au g/t	Ounce ('000)
1.8	17,269	3.1	1,707	17,663	3.2	1,835
1.9	15,879	3.2	1,632	16,510	3.3	1,771
2.0	14,603	3.3	1,560	15,470	3.4	1,712
2.2	12,396	3.6	1,422	13,547	3.6	1,588
2.3	11,155	3.8	1,360	12,673	3.7	1,527

Table 14-17: Cut-off grade sensitivity analysis on gold for the Bonanza Ledge deposit of the Cariboo Gold Project

Cut-off Grade	Measured			Indicated		
	Tonne ('000)	Grade Au g/t	Ounce ('000)	Tonne ('000)	Grade Au g/t	Ounce ('000)
3.2	65	4.5	9	38	3.6	4
3.5	47	5.1	8	32	4.0	4
3.7	43	5.2	7	21	4.3	3

15. Mineral Reserve Estimates

15.1. Introduction

Mineral Reserves were classified in compliance with the CIM Definition Standards for Mineral Resources and Mineral Reserves. As such, the Mineral Reserves are based on Measured and Indicated Mineral Resources and do not include any Inferred Mineral Resources. Measured and Indicated Mineral Resources are exclusive of proven and probable reserves. Mineral Reserves are the estimated tonnage and grade of ore that is considered economically viable for extraction.

Mineral Reserves for the Project deposit incorporate dilution and mining recovery factors based on the selected mining method and design. In addition, economic analyses were completed to validate the profitability of particular areas of the reserves.

The following sources of information were instrumental in the Mineral Reserve estimation process:

- The resource blocks model (last updated September 8, 2022);
- The previous 2022 Preliminary Economic Assessment Mineral Resource Estimate ("2022 PEA MRE") conducted by BBA in 2022 for Osisko Development Corporation ("ODV") (BBA, effective date May 20, 2022);
- The current 3D model of existing underground workings and historical stope outlines;
- The litho-structural model of the site.

15.2. Estimation Procedure

The Mineral Resource blocks model from the last update of September 8, 2022, was used as the basis for estimating the mineable tonnage considered in the mine plan. Cut-off grades for the different mining areas were first estimated, then the stope shapes were optimized according to various parameters, such as geometry and dilution. The final reserve estimate was obtained after completing the stope and underground mine designs, including the economic validation and considering additional factors, such as mine recovery.

15.2.1. Cut-Off Grades Calculations

The different cut-off grade calculations are based on parameters from benchmarks derived from the previous 2022 PEA MRE (Hardie et al, 2022), as well as ODV and InnovExplo estimates. Due to the variation in metallurgical recoveries along the deposit, four cut-off grades were used for the stope optimization. The parameters used in these calculations are summarized in Table 15-1.

Table 15-1: Cut-Off Grade Calculation Parameters

Input Parameters		Phase 1 (1,500 tpd)		Phase 2 (4,900 tpd)	
		General Economic Assessment	Marginal blocks at vicinity	General Economic Assessment	Marginal blocks at vicinity
Gold Price	$US/oz	1,700	1,700	1,700	1,700
Exchange Rate	$CAD/$US	1.27	1.27	1.27	1.27
Royalty	%	5.00%	5.00%	5.00%	5.00%
Refining Cost	$/oz	5.0	5.0	5.0	5.0
Processing Cost and transport	$/t treated	66.34	66.34	22.29	22.29
Metallurgical Recovery	%	92.30%	92.30%	92.10%	92.10%
Mining Recovery	%	94.00%	94.00%	94.00%	94.00%
Mining Dilution	%	5.00%	5.00%	5.00%	5.00%
Mining Cost	$/t treated	71.90	71.90	54.32	54.32
Sustaining Cost	$/t treated	50.00	0.00	31.19	0.00
Environment	$/t treated	14.45	14.45	4.93	4.93
General and Administration	$/t treated	17.35	17.35	10.38	10.38
Cut-Off Grade	g/t	4.00	3.10	2.30	1.70

15.2.2. Dilution Factor Calculation

Internal dilution was considered when optimizing stope shapes and converting them into planned mineable stope shapes. External dilution was also considered during stope optimization by using the appropriate estimated linear overbreak and sloughing ("ELOS") values (see Chapter 16) based on stope size and location and rock mechanics properties. Backfill dilution was added afterwards, based on the location of each stope and the mining sequence.

The following parameters were used to estimate stope dilution:

- Dilution is expected to come from the hanging wall and foot wall for most stopes. ELOS applied to the different stopes varies according to the strike length and the geotechnical classification (see section 16.2.3).
- A backfill dilution ranging from 2.5% to 5% by weight per wall in contact with backfill is assumed.
- A lower recovery is assumed for sill pillar stopes.
- No dilution is assumed for the stope floors.

- The grade of internal and external dilution is based on an ordinary kriging interpolation of the gold values in the vicinity of the mineralized zones (see Section 14.10).
- Backfill dilution assumed a dilution grade of 0 g/t.

In summary, the external waste dilution is estimated to be 6.4% by weight. When considering the backfill dilution, the average dilution of the Project is estimated to be 8.0% by weight.

15.2.3. Mining Losses

Mining loss (or mining recovery) is based on the material in the model that is left behind, for example, to provide structural support when facing blasting or operational challenges and rock mechanics issues.

Recovery varies mainly according to blasting method and the associated challenges, as well as rock mechanics conditions such as sill pillar recovery. Recovery values for stopes classified as geotechnical Class 1,2 and 3 are based on the proposed production drilling approach for dilution control, past experience and estimates for typical stopes. The mining recovery associated with Class 3L stopes was limited to 85% for stopes less than or equal to 5m in width using a two-phase mining method and 50% for widths greater than 5m. The factors seem reasonable given the selected mining method and the ground conditions.

The average mining recovery for the Project is 93.6%.

15.2.4. Stope Shape Optimization

The geological block model was the primary input in the Deswik Shape Optimizer ("DSO") version 2021.1, a Deswik software application used to optimize individual stope shapes from the block model using Stope Shape Optimizer algorithms from Alford Mining Systems and the following parameters:

Table 15-2: Stope Shape Optimization Parameters

Parameters	Value
Cut-off grade value	Presented in Table 15-1
Waste density	2.8 g/t
Typical sublevel interval	30 m
Typical stopes length	From 8 m to 16 m
Minimal Stope width	3.7 m
Minimum horizontal pillar between parallel lenses	10 m
External dilution included	Presented in Section 15.2.2
Minimum slope wall angle	43°

15.3. Mineral Reserve Statement

Table 15-3: Cariboo Gold Statement of Mineral Reserves as of December 6, 2022 (1)

Category	Tonnage	Grade	Contained Gold	Grade	Contained Silver
	(t)	Au (g/t)	(oz)	Ag (g/t)	(oz)
Proven					
-	-	-	-	-	-
Probable					
Cow	4 126 955	3.41	452 941	0.08	11 018
Valley	3 444 914	3.70	409 887	0.14	15 059
Shaft	7 962 448	3.87	989 757	0.02	4 473
Mosquito	602 591	4.93	95 479	0.03	619
Lowhee	566 547	4.56	83 088	0.21	3 786
Total P & P	**16,703,454**	**3.78**	**2,031,152**	**0.07**	**34,955**

Notes:

1. The Qualified Person for the Mineral Reserve Estimate is Eric Lecomte, P.Eng. (InnovExplo).
2. The Mineral Reserve Estimate has an effective date of December 6, 2022.
3. Estimated at US$1,700/oz Au using an exchange rate of US$1.27:CAD1.00, variable cut-off value from 1.70 g/t to 4.00 g/t Au.
4. Mineral reserve tonnage and mined metal have been rounded to reflect the accuracy of the estimate and numbers may not add due to rounding.
5. Mineral Reserves include both internal and external dilution along with mining recovery. The external dilution is estimated to be 8%. The average mining recovery factor was set at 93.6% to account for mineralized material left in each block in the margins of the deposit.

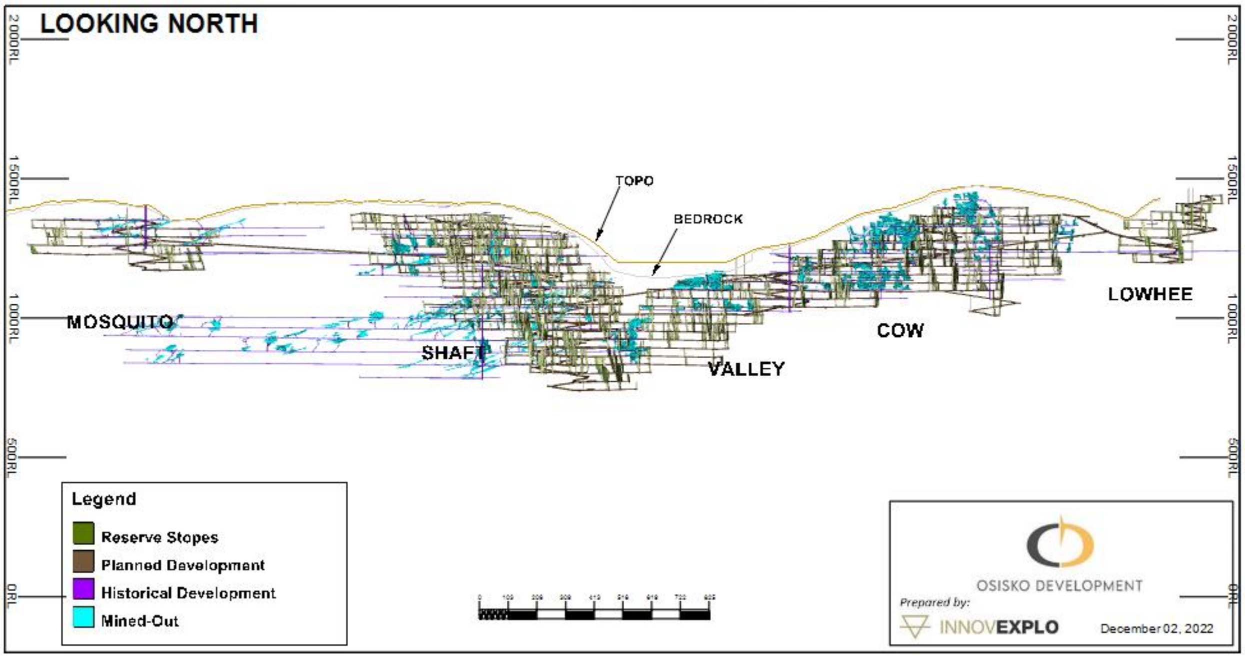


Figure 15-1: Illustration of reserves with planned development and stopes

15.4. Factors that May Affect the Mineral Reserves

Areas of uncertainty that may materially impact the Mineral Reserve Estimate include the following:

- Commodity prices, market conditions, and foreign exchange rate assumptions;
- Cut-off grade estimates;
- Capital and operating cost assumptions;
- Geological complexity and resource block modelling;
- Stope stability, dilution and mining recovery factors;
- Metallurgical recoveries and contaminants.

Rock mechanics (geotechnical) constraints and the ability to maintain constant underground access to all working areas.

16. Mining Methods

16.1 Introduction

The Cariboo Gold Project (the "Project") will be an underground operation using a longitudinal retreat stoping method for the majority (90% of tonnes) of the stopes. This method is very well adapted to the geometry of the deposit as the five mineralized zones, each comprising of several narrow veins, will ensure the exploitation of multiple mining fronts to support a maximum production of 4,900 tonnes per day ("tpd").

In addition, for Phase 2, a "modified" longitudinal longhole retreat mining method carried out in two stages was considered for stopes that are less than 5 m thick and located within poor ground conditions, classified as "Class 3L" (see Section 16.2.3). These stopes are found exclusively in the Shaft and Mosquito zones. This "modified" method, requiring paste backfill, was selected to increase the mining recovery of the stopes, which was estimated at approximately 85% using this method, compared to a 50% mining recovery that was considered for mining the Class 3L stopes by the longitudinal traditional longhole method. The chosen method has been tested at the Doyon mine (Williams and al, 2004) during the exploitation of stopes with similar characteristics located in poor grounds. The method consists of drilling and blasting the stope, as in the traditional method; however, only about half of the tonnage is removed. Afterwards, the upper part of the stope is backfilled with paste and a curing period is applied. When the curing period is complete, the remaining ore is removed from the stope. Two service holes are then drilled from the upper drift access to allow for backfilling of the lower part of the stopes with paste. Despite the additional costs and the fact that part of the ore is left in place at the paste/ore interface (considered to be 1 m), this method allows for minimization of the time of exposure of the open stope. For this Project, this mining method is applied to 10% of the total tonnage and those stopes are characterized by a maximum strike length of 10 m.

The Project has been optimized to limit the impact to the surrounding communities and reduce the economic risks associated with investing large amounts of capital in the early stages. The exploitation of the deposit will be carried out in two distinct phases.

The first phase will maximize the capacity of the existing Quesnel River ("QR") Mill and utilize ore sorting at the Bonanza Ledge site to achieve a production of 1,500 tpd from 2024 to 2027. The deposit will be accessed by the Cow Portal, which is already in place, and the production will target the satellite zones (Lowhee and Mosquito), as well as the upper portion of the Shaft Zone. During this period, the production will target stopes above the water table or at a safe distance from existing old working areas.

The progression of the second phase will follow the completion of the main surface infrastructure and the underground crushing facilities that will be completed in early 2027. A second portal, the Valley Portal, will be developed and will become the main access for the second phase, which will be used primarily for material supply and personnel transportation. Production is expected to reach 4,900 tpd by the end of 2027 and will continue until 2036. Production will primarily target the Shaft Zone, Valley Zone, and Cow Zone. Operations will take place in the vicinity of the existing old excavations and progressive dewatering will be carried out prior to the advancement of the development of the drifts at depth within the different zones.

In the first phase of mining, cemented rock fill (“CRF”) combined with uncemented rock fill (“URF”) will be used to fill mining voids, with a means of increasing mining recovery, providing stable rock conditions, and minimizing surface footprint.

In the second phase, a paste fill plant will be in place and paste fill will be the primary backfill product as all tailings produced on site will be returned underground. CRF and URF will still be used but at a slower pace. Paste fill will also be used to backfill the old working voids as the production progresses in their vicinity.

16.2 Rock Engineering

SRK Consulting (Canada) Inc. (“SRK”) performed a geotechnical evaluation of the Project that included data from two geotechnical field investigation programs designed to characterize the geotechnical conditions of the rock and support the underground mine and infrastructure design, structural geology review, a detailed evaluation of geotechnical design domains, and the development of geotechnical design guidelines within each of these domains. These guidelines included excavation design parameters, estimates of dilution, as well as ground support requirements. The various elements of the geotechnical evaluation and findings are discussed in detail in the following sections.

16.2.1 Geotechnical Programs

Two geotechnical field data acquisition programs were completed, the first taking place during late summer and fall of 2018, and the second taking place in the summer of 2021. Both programs involved quality assurance and quality control (“QA/QC”) by SRK to promote consistency and high-quality data collection.

The 2018 geotechnical field data acquisition/investigation program comprised of geotechnical logging of oriented triple tube HQ core. Thirteen geotechnical drill holes were logged using RMR89 and Q’ rock mass classification systems for a total length of 4,180.8 metres (“m”). This program focused on the Shaft, Cow, and Valley Zones, as well as the Valley (Main) Portal location.

Representative rock core samples from each geotechnical domain were collected from the geotechnical drill holes in the 2018 field program to complete 96 multi-stage triaxial compressive strength ("TCS") tests at the Queen's University laboratory.

The 2021 field program comprised of geotechnical logging of oriented triple tube HQ core from five geotechnical specific holes with a total length of 880.95 m using the same logging guidelines as 2018. This program focused on the expanded Mosquito Zone and new Lowhee Zone.

During the 2021 field program, core samples were collected to complete four unconfined compressive strength ("UCS") tests and nine TCS tests.

The results of the TCS tests are summarized in Table 16-1. The tests included Intact Elastic Modulus (Young's Modulus) data. The samples were referenced to each logged lithology as well as lithological facies and representative averages for the physical properties of the rock were determined for each facies. Poisson's ratio data was collected as part of the 2021 laboratory testing, but it is limited in quantity, and it is too variable to draw any definitive conclusions. Representative unit weights and Intact Elastic Modulus', based on laboratory testing, for each of the lithological facies are summarized in Table 16-2. Should numerical stress modelling be required for the Project, it is recommended that estimated values for the lithologies are benchmarked against values from similar rock types.

Table 16-1: TCS 2018 and 2021 test results

Confining Pressures		σ3 = 5 MPa		σ3 = 10 MPa		σ3 = 15 MPa		σ3 = 20 MPa		σ3 = 25 MPa	
Logged Lithology	Number of samples	Average σ1 (MPa)	Standard Deviation σ1 (MPa)	Average σ1 (MPa)	Standard Deviation σ1 (MPa)	Average σ1 (MPa)	Standard Deviation σ1 (MPa)	Average σ1 (MPa)	Standard Deviation σ1 (MPa)	Average σ1 (MPa)	Standard Deviation σ1 (MPa)
Calcareous Mafic Volcaniclastic ("CLMV")	7	59.9	19.3	73.6	24.8	83.7	33.0	90.0	36.0	110.4	37.5
Calcareous Siltstone ("CLSI")	1	42.4		59.4		72.7		88.5		100.3	
Calcareous Sandstone ("CLSS")	36	60.1	34.5	75.7	34.4	88.9	38.6	101.9	39.3	116.5	36.3
Carbonaceous Siltstone ("CSI")	9	43.4	15.4	57.6	18.6	71.9	19.8	80.5	20.8	95.2	18.5
Aurum Limestone ("LST")	6	48.2	28.6	63.0	30.3	75.8	33.1	84.7	35.1	104.5	35.8
Siltstone ("SI")	28	53.6	29.9	65.0	32.9	75.1	33.9	86.7	35.8	99.5	33.9
Lower Sandstone Facies ("SS")	9 ~~9~~	70.8	37.2	90.1	42.4	108.8	51.7	122.4	60.3	143.9	62.1

Table 16-2: Summary of Unit Weight, Intact Elastic Modulus, and Intact Poisson's Ratio based on 2018 and 2021 Laboratory Testing Results

Modelled Lithological Facies	Design Unit Weight, g (tonnes/m³)	Intact Rock Elastic Modulus (GPa)
Calcareous Siltstone Facies	2.80	25.74
Calcareous Sandstone Facies	2.78	43.3
Aurum Limestone	2.77	35.84
Upper Sandstone Facies	2.74	29.65
Mafic Volcanic Facies	2.80	25.74
Lower Sandstone Facies	2.81	27.47
Basal Transitional Facies	2.86	30.70
Basal Facies	2.77	45.14

TCS results were also used to extrapolate UCS values to allow for comparison to strengths obtained using direct UCS tests and estimated using point load tests ("PLT"). UCS estimates from TCS tests are summarized in Table 16-3. The limited UCS test results are summarized in Table 16-4.

Table 16-3: UCS estimates extrapolated from 2018 and 2021 TCS tests

Zone	Lithological Facies	Triaxial Testing Results (2018 & 2021)				
		No. Valid Tests	Extrapolated UCS (MPa)			
			Min	Average	Max	Standard Deviation
Cow	Calcareous Siltstone Facies	11	10	24	57	13
	Calcareous Sandstone Facies	2	32	33	34	1
	Aurum Limestone	3	32	37	45	6
	Upper Sandstone Facies	13	7	26	47	15
	Mafic Volcaniclastic	3	33	47	69	16
	Lower Sandstone Facies	7	21	45	97	27
	Basal Transitional	1	72	72	72	0
	Basal	3	20	38	68	21
Shaft	Calcareous Siltstone Facies	0	-	-	-	-
	Calcareous Sandstone Facies	3	23	66	102	33
	Aurum Limestone	0	--	-	-	-
	Upper Sandstone Facies	10	15	44	107	28
	Mafic Volcaniclastic	7	10	60	102	30
	Lower Sandstone Facies	13	12	36	114	27
	Basal Transitional	3	16	49	78	25
	Basal	0	-	-	-	-

Zone	Lithological Facies	Triaxial Testing Results (2018 & 2021)				
		No. Valid Tests	Extrapolated UCS (MPa)			
			Min	Average	Max	Standard Deviation
Valley	Calcareous Siltstone Facies	0	-	-	-	-
	Calcareous Sandstone Facies	1	46	46	46	0
	Aurum Limestone	1	32	32	32	0
	Upper Sandstone Facies	1	24	24	24	0
	Mafic Volcaniclastic	1	38	38	38	0
	Lower Sandstone Facies	0	-	-	-	-
	Basal Transitional	0	-	-	-	-
	Basal	0	-	-	-	-
Mosquito	Calcareous Siltstone Facies	2	4	12	21	8
	Calcareous Sandstone Facies	0	- -	- -	- -	-
	Aurum Limestone	2	39	42	45	3
	Upper Sandstone Facies	1	21	21	21	0
	Mafic Volcaniclastic	1	59	59	59	0
	Lower Sandstone Facies	0	-	-	-	-
	Basal Transitional	0	-	-	-	-
	Basal	0	-	-	-	-
Island Mountain Portal	Calcareous Siltstone Facies	0	18	20	22	2
	Calcareous Sandstone Facies	0	-	-	-	-
	Aurum Limestone	0	-	-	-	-
	Upper Sandstone Facies	0	-	-	-	-
	Mafic Volcaniclastic	0	-	-	-	-
	Lower Sandstone Facies	0	-	-	-	-
	Basal Transitional	0	-	-	-	-
	Basal	0	-	-	-	-

Table 16-4: Direct UCS test results from 2021 field program

	Unit	Count of UCS	Min of UCS	Average of UCS	Max of UCS	Standard Deviation of UCS
Mosquito	MPa	3	22	49	67	19
Calcareous Siltstone Facies	MPa	3	22	49	67	19
Island Mountain Portal	MPa	1	17	17	17	0
Calcareous Siltstone Facies	MPa	1	17	17	17	0
Total	**MPa**	**4**	**17**	**41**	**67**	**22**

Table 16-5 shows the total length of core by zone that was reviewed and assigned a rock mass quality rating.

Table 16-5: Summary of length of core photo logged, by Zone

Zone	Length of core quantified 2020 (m)	Length of core quantified 2021/22 (m)	Length of core quantified total (m)	Length of core quantified total (km)
Valley	2,332	774	3,106	3.1
Shaft	37,984	5,054	43,038	43.0
Cow	20,652	6,330	26,982	27.0
Mosquito	2,685	3,814	6,499	6.5
Lowhee	-	3,422	3,422	3.4

The location of the 2018 and 2021 dedicated geotechnical drill holes used for assessment of the Project deposit are shown in Figure 16-1.

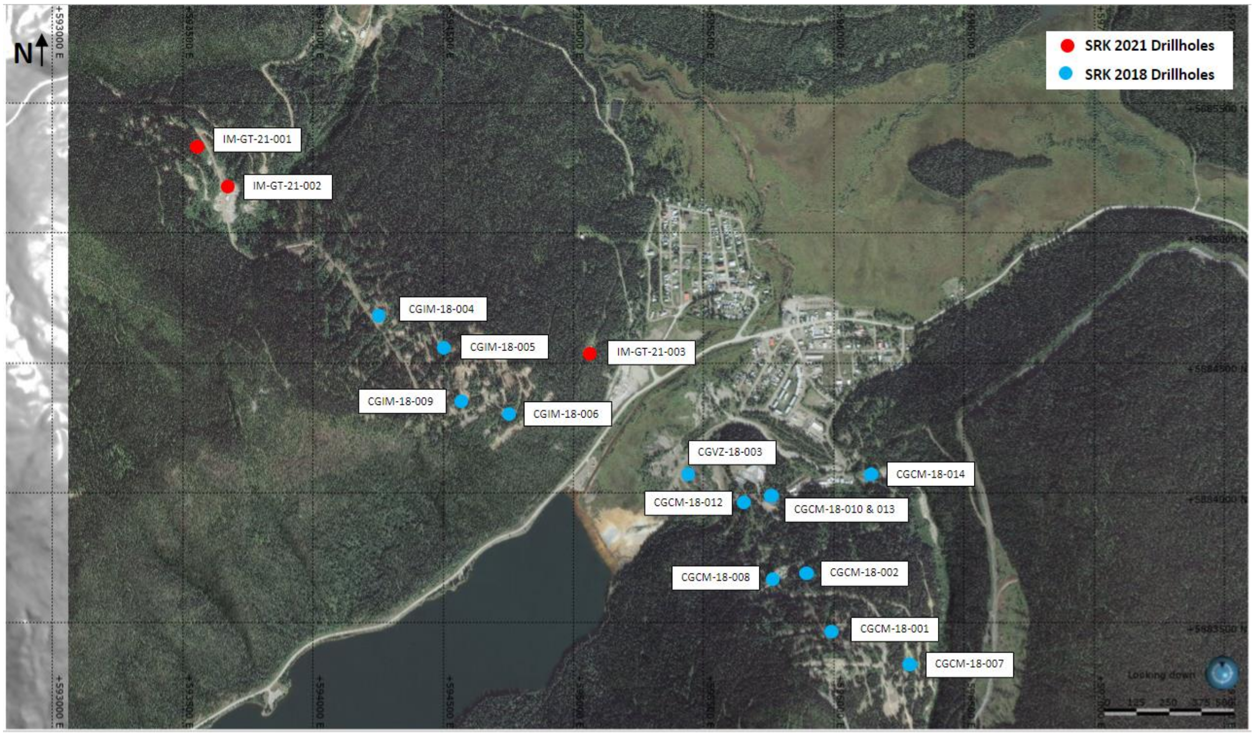


Figure 16-1: Plan view showing collar locations of 2018 and 2021 dedicated geotechnical drill holes for the Project

In addition to the detailed geotechnical data collected during these dedicated geotechnical field programs, basic geotechnical data (recovery, fracture count, rock quality designation ["RQD"], and estimated intact rock strength) were collected for the 2016 to 2021 resource exploration drill holes.

16.2.2 Structural Geology

A 3D structural model had already been created, by Osisko Development Corp. ("ODV"), to represent the major Regional Fault structures on the Project property. SRK provided a 3D fault model that was created for the secondary structures for the Project property, where information existed to extend these faults. This model was based on the integration of drill hole data and underground mapping in the old mine-workings. Each of the mineralized zones were modelled separately. Modelling of the secondary faults in the Cow, Valley, Shaft, and Mosquito Zones took place in 2019. Secondary faults in the Mosquito Zone were updated in 2021 and secondary faults in the Lowhee Zone were modelled in 2022.

16.2.3 Geotechnical Design

16.2.3.1 Geotechnical Design Classifications

A thorough evaluation of geotechnical parameters, laboratory strength testing, kinematic, and empirical analyses have been conducted to support the underground mine design. The lithological facies in the deposit have been modelled and initial assessments considered the geotechnical characteristics of the facies. The result of this assessment showed that the main indicator for rock mass quality on the Project site is the presence of faults and the width of the damage zones associated with each fault or fault intersection.

Based on this assessment, five rock mass classifications with unique geotechnical characteristics were defined. Due to the variability in the Shaft and Mosquito Zones Class 3 Lower was broken out from the upper end of the Class 4 to represent the site-specific ground conditions better. The geotechnical characteristics for these classes are:

- **Class 1 and 2**: Open Stoping – It represents the most competent rock mass in the deposit. It is massive, with high intact rock strength. Foliation parallel fractures are less pervasive in this class.
- **Class 3**: Open Stoping – Reduced Strike Length, characterized by moderately jointed rock mass. Foliation is well developed in this class.
- **Class 3 Lower ("Class 3L")**: Open Stoping – Further Reduced Strike Length, characterized by a jointed rock mass with a lower RQD. Foliation is well developed in this class, and the rock tends to break along the foliation planes.
- **Class 4**: Cut and Fill – It represents a rock mass that is not deemed suitable for massive mining due to increased fracture frequency and weak intact rock strength. Excavations in this class will require limited spans and appropriate support to maintain stability.
- **Class 5**: Cut-and-Fill – It represents the least competent rock mass that is not deemed suitable for massive mining due to increased fracture frequency and weak intact rock strength. Excavations in this class will require limited spans and appropriate support to maintain stability.

Stopes were reviewed individually and the anticipated distribution of the stopes in each geotechnical class was determined.

Rock mass properties for each zone are summarized in Table 16-6.

Table 16-6: Summary of rock mass properties for each qualitative geotechnical classification

Qualitative Geotechnical Classification	RMR_{89} (Bieniawski, 1989)	Q' (Grimstad and Barton, 1993)
Class 1 and 2	55 – 65 (Fair to Good rock mass)	6.67 to 25.00
Class 3	50 – 55 (Fair rock mass)	1.39 to 3.13
Class 3 Lower	35 – 50 (Fair rock mass)	0.37 to 1.67
Class 4	33 – 40 (Poor rock mass)	0.28 to 0.74
Class 5	14 – 33 (Very poor rock mass)	0.09 to 0.28

16.2.3.2 Geotechnical Design Approach

Excavation stability assessments have been completed using well-established empirical and semi-empirical relationships and engineering experience. These relationships enable estimates to be made of the expected mining conditions and support requirements based on a detailed description of the rock mass, excavation geometry, and prevailing stress conditions. The design procedure involves two steps: the quality of the rock mass is rated using a pre-defined classification system, and then the expected performance of the underground openings is predicted using an empirically derived stability correlation with the rock mass quality.

16.2.3.3 Geotechnical Design Criteria (Personnel Access)

Design spans (3 m to 5 m), for which personnel access is required, have been reviewed based on the critical span design curve presented by Ouchi et al. (2004). In the static stress condition, the excavations in the Class 1, Class 2, and Class 3 classifications are expected to remain stable with standard ground support (i.e., rock bolts and mesh). Additional ground support (i.e., rock bolts, mesh, and shotcrete) will be required in the Class 3L, Class 4, and Class 5 classifications to maintain a stable operating span. In some cases, shorter round lengths and spiling may be required in Class 4 and Class 5 ground, determining exact ground support specifications for such situations site specific assessments will be required by site rock mechanics personnel.

16.2.3.4 Geotechnical Design Criteria (Stope Design and Dilution)

For excavations in which personnel access is not required, such as longhole stopes, designs were assessed using the modified Matthews stability curve after Stewart and Forsyth (1995), and the failure iso-probability curves developed by Mawdesley and Trueman (2003). A range of stope dimensions were evaluated for stability and dilution. A fixed sub-level spacing of 30 m (floor to floor) was used for all mining zones with maximum strike length, stope span, and geotechnical dilution determined for each of the mining zones.

Empirical estimates using the estimated linear overbreak and sloughing ("ELOS") approach and benchmarking have been used to determine the dilution estimates for the various geotechnical domains in each zone considering the variation in stope heights (Clark, 1998).

Class 3L was created from a targeted assessment of stopes, which had initially been characterized as Class 4. The recommended mining of Class 3L stopes that are less than 4 m wide is a two-phase mining approach which leverages the use of paste backfill, discussed in section 16.8.

Based upon the rock mass conditions, the stope dimensions and geotechnical dilution estimations presented in Table 16-7 are considered appropriate for each of the mining zones.

In all cases, the stope lengths should be adjusted based on varying steepness of mineralized veins and acceptable hanging wall and footwall dilution. Open stoping mining methods are considered high risk in the Class 4 and Class 5 classifications for all zones and are not recommended. During the construction of underground development ongoing rock mass and geotechnical assessment has the potential to allow for the development of alternative mining methods as the geological and geotechnical understanding of the area improves.

16.2.3.5 Backfill Design

Longhole stoping requires backfill to manage stability and achieve the planned extraction. Paste fill produced from the processed tailings and binding agents is required in longitudinal stopes and closure areas where mining progresses towards previously mined areas. The closure areas will require placement of a higher strength plug or slab where the backfill will be undermined, with regular backfill in the rest of the stope. All excavations need to be tight-filled to minimize the space for potential failure and rock settlement that could result in surface subsidence. This requirement is especially critical in the shallow areas of the mine where stope failure is more likely to cause surface subsidence. Backfilling strategy for the Project is detailed in section 16.8 of this Report.

Table 16-7: Stope design summary by mining zone

<table>
<tr><th>Geotechnical Domain</th><th>Qualitative rock mass classification</th><th>Mosquito Zone</th><th>Shaft Zone</th><th>Valley Zone</th><th>Cow Zone</th><th>Lowhee Zone</th></tr>
<tr><td rowspan="4">Good Rock</td><td rowspan="2">Class 1</td><td rowspan="2">Strike length = 15 - 20m
Max width = 15m
Dilution[1] = 0.6 - 1.0m</td><td rowspan="2">n/a</td><td>Strike length = 15 - 20m
Max width = 10m
Dilution(1) = 0.6 - 1.0m</td><td>Strike length = 15 - 20m
Max width = 10m
Dilution(1) = 0.6 - 1.0m</td><td>Strike length = 15 - 20m
Max width = 10m
Dilution(1) = 0.6 - 1.0m</td></tr>
<tr><td>Strike length = up to 15 m
Max width = 22m
Dilution(1) = 0.6 - 1.2m</td><td>Strike length = up to 15 m
Max width = 22m
Dilution(1) = 0.6 - 1.2m</td><td>Strike length = up to 15 m
Max width = 22m
Dilution(1) = 0.6 - 1.2m</td></tr>
<tr><td rowspan="2">Class 2</td><td rowspan="2">Strike length = 15 - 20m
Max width = 15m
Dilution[1] = 0.6 - 1.0m</td><td rowspan="2">n/a</td><td>Strike length = 15 - 20m
Max width = 10m
Dilution(1) = 0.6 - 1.0m</td><td>Strike length = 15 - 20m
Max width = 10m
Dilution(1) = 0.6 - 1.0m</td><td>Strike length = 15 - 20m
Max width = 10m
Dilution(1) = 0.6 - 1.0m</td></tr>
<tr><td>Strike length = up to 15 m
Max width = 22m
Dilution(1) = 0.6 - 1.2m</td><td>Strike length = up to 15 m
Max width = 22m
Dilution(1) = 0.6 - 1.2m</td><td>Strike length = up to 15 m
Max width = 22m
Dilution(1) = 0.6 - 1.2m</td></tr>
<tr><td rowspan="5">Fair Rock</td><td rowspan="3">Class 3</td><td rowspan="3">Strike length = 10 - 15m
Max width = 15m
Dilution[1] = 0.8 - 1.5m</td><td>Strike length = 10 - 15m
Max width = 5m
Dilution[1] = 0.8 - 1.5m</td><td>Strike length = 10 - 15m
Max width = 5m
Dilution(1) = 0.8 - 1.8m</td><td>Strike length = 10 - 15m
Max width = 5m
Dilution(1) = 0.8 - 1.8m</td><td>Strike length = 10 - 15m
Max width = 5m
Dilution(1) = 0.8 - 1.8m</td></tr>
<tr><td rowspan="2">Strike length = up to 10m
Max width = 15m
Dilution[1] = 0.8 - 1.5m</td><td>Strike length = up to 10m
Max width = 22m
Dilution(1) = 0.8 - 2.5m</td><td>Strike length = up to 10m
Max width = 22m
Dilution(1) = 0.8 - 2.5m</td><td>Strike length = up to 10m
Max width = 22m
Dilution(1) = 0.8 - 2.5m</td></tr>
<tr><td>Strike Length = 15m
Max width = 12m
Dilution(1) = 1 – 2m</td><td>Strike Length = 15m
Max width = 12m
Dilution(1) = 1 – 2m</td><td>Strike Length = 15m
Max width = 12m
Dilution(1) = 1 – 2m</td></tr>
<tr><td rowspan="2">Class 3L</td><td>Strike length = 8 - 10m
Max width = 5m
Dilution[1] = 1.5 - 3.0m
Two Phase Mining with Paste Backfill = 85% recovery</td><td>Strike length = 8 - 10m
Max width = 5m
Dilution[1] = 1.5 - 3.0m
Two Phase Mining with Paste Backfill = 85% recovery</td><td rowspan="2">n/a</td><td rowspan="2">n/a</td><td rowspan="2">n/a</td></tr>
<tr><td>Strike length = 8 - 10m
Max width = 15m
Dilution[1] = 1.5 – 4.4m
Mining Factor[2] = 50 %, requires leaving rib pillar of 10m</td><td>Strike length = up to 8m
Max width = 15m
Dilution[1] = 1.5 - 4.0m
Mining Factor[2] = 50 %, requires leaving rib pillar of 8 - 10m</td></tr>
<tr><td rowspan="2">Poor to Very Poor Rock</td><td>Class 4</td><td colspan="5">No bulk mining – over hand cut and fill</td></tr>
<tr><td>Class 5</td><td colspan="5">No bulk mining – under hand cut and fill</td></tr>
</table>

Notes:
[1] Dilution; indicates the total dilution (hanging wall + footwall dilution).
[2] Mining Factor; indicates the percentage of stopes that are estimated to be recovered at this sub-level spacing and rock mass classification. This percentage is to be applied to the inventory in advance.

16.2.4 Ground Support Recommendations

16.2.4.1 Lateral Development

Ground support requirements have been determined using several widely accepted empirical design charts, including Barton et al. (1974), Grimstad and Barton (1993), Laubscher (1990), previous SRK experiences, and the experience gained in the Bonanza Ledge Mine, presently in operation, adjacent to the Project. The empirical design recommendations have been adjusted based on SRK's understanding of the expected rock mass conditions within the various geotechnical domains. Table 16-8 lists ground support recommendations for the anticipated range of conditions in geotechnical domains for varying development spans and orientations. Wider mining spans than those considered will require ground support designed on a case-by-case basis.

Table 16-8: Ground support recommendations for long-term access and short-term production excavations

Type of Excavation		Excavation Dimensions	Ground Support Classification (Geotechnical Domains)			
			Class 1 and 2	Class 3	Class 3L &4	Class 5
Long Life Excavati ons	Main Ramp, Ramp re-muck, Level access	5.3mH x 5.8mW	1.8 m resin rebar bolts on 1.5 m square pattern and #6 galvanized wire mesh to 1.5 m from the floor	2.4 m resin rebar bolts on 1.2 m square pattern and #6 galvanized wire mesh to 1.5 m from the floor	2.4 m coated Swellex bolts on 1.0 m square pattern, #6 galvanized wire mesh and 50 mm shotcrete to as close to the floor as possible.	2.4 m coated Swellex bolts on 1.0 m square pattern, #6 galvanized wire mesh and 100 mm shotcrete to as close to the floor as possible.
	Other service drifts	4.3mH x 4.3mW				
	Truck turnaround	7.5mH x 5.3mW	1.8m resin rebar in back and 2.4m resin rebar in walls on 1.5 m square pattern and #6 galvanized wire mesh to 1.5 m from the floor	Same as above	N/A	N/A
	Intersections, supplemental secondary support in addition to standard support.	Diameter up to 10.5m	4m single strand bulbed cable bolts on a 2.0 m square pattern.		N/A	

Type of Excavation		Excavation Dimensions	Ground Support Classification (Geotechnical Domains)			
			Class 1 and 2	Class 3	Class 3L &4	Class 5
Open Stoping	In the mineralized development	4.0mH x 3.7mW	1.8 m Swellex bolts on 1.5 m square pattern and #6 galvanized wire mesh to 1.5 m from the floor	1.8 m Swellex bolts on 1.2 m square pattern and #6 galvanized wire mesh to 1.5 m from the floor	1.8 m Swellex bolts on 1.0 m square pattern, #6 galvanized wire mesh and 50 mm shotcrete to as close to floor as possible	1.8 m Swellex bolts on 1.0 m square pattern, #6 galvanized wire mesh and 75 mm shotcrete to as close to floor as possible
	In the mineralized development, supple mental secondary support in addition to standard support.	Wide excavations (st ope spans >10m).	For development spans up to 15m: 6m connectable super swellex or single strand bulbed cable bolts on a 2.0 m square pattern.	For development spans up to 10m: 8 m connectable super swellex or single strand bulbed cable bolts on a 1.8 m square pattern.	N/A	N/A

Note: All development through the regional faults and Class 5 ground will require spiling.

16.2.4.2 Vertical Infrastructure

Existing nearby resource exploration drill holes were photo-logged and used as a guide to the potential local rock mass conditions. These data were used to develop the ground support requirements for the vertical infrastructure per rock mass classification. The McCracken and Stacey (1989) empirical method of assessing raise stability was used.

Based on the assessment of the planned locations, the raises are not expected to remain stable if left unsupported through the faults and weaker zones. Ground support is necessary for the raise development and long-term stability. Table 16-9 summarizes the support recommendations based on the planned ventilation raise locations and stability assessment.

It is considered essential to drill and log a diamond core geotechnical raise pilot hole at the location of each of the proposed raises to confirm the rock quality and unit thicknesses prior to excavation.

Table 16-9: Preliminary ground support recommendations for vertical infrastructure based on Alimak mining

Geotechnical Domain	Ventilation Raise Dimensions	
	Up to 3.0 m Diameter	3.0 to 4.0 m Diameter
Class 1-2	No support required.	1.5 m #8 resin rebar on a 1.2 m square pattern with wire mesh
Class 3	1.5 m #8 resin rebar on a 1.0 m square pattern with wire mesh	1.8 m #8 resin rebar on a 1.0 m square pattern with wire mesh
Class 3 Lower	1.8 m #8 resin rebar on a 1.0 m square pattern with wire mesh and 50 mm shotcrete	2.4 m #8 resin rebar on a 1.0 m square pattern with wire mesh and 50 mm shotcrete
Class 4	1.8 m #8 resin rebar on a 1.0 m square pattern with wire mesh and 50 mm shotcrete	2.4 m #8 resin rebar on a 1.0 m square pattern with wire mesh and 50 mm shotcrete
Class 5	Avoid development in Class 5 ground.	

16.2.4.3 Critical Infrastructure

The locations and dimensions of the excavations that comprise the crusher chamber complex, including the crusher chamber, the truck dump, main garage, the vertical conveyor raises, and the ore bins have been reviewed. Drill holes targeting the planned locations were not drilled as part of the geotechnical programs as the locations had not been confirmed at the time of the most recent geotechnical drilling program. The crusher chamber complex is currently planned to intersect the No.1 Fault, a major geologic structure modelled by ODV.

A review of the available data around the planned crusher chamber complex was undertaken with specific emphasis on rock mass conditions within and surrounding the modelled No. 1 Fault. The rock mass conditions in the fault zone are not considered to be favourable for long-term infrastructure; however, increased support can be used at this stage to mitigate the adverse risk posed by these ground conditions. The recommended ground supports for the components of the crusher chamber complex are presented in Table 16-10.

Table 16-10: Ground support recommendations for critical infrastructure excavations

Type of Excavation	Back Support	Wall Support
Crusher Chamber, Truck Dump and Main Garage	8 m long 0.7" bulbed cable bolts on a 2 m by 2 m pattern. Toe should be resin anchored and pre-tensioned to 5 t before cement grouting bolt column with non-shrink cable bolt grout. 150 mm square 6 mm thick domed plates. 3 m long #8 resin grouted rebar rock bolts on a 1.2 m spacing. #4 galvanized welded wire mesh 150 mm shotcrete	3 m long #8 resin grouted rebar rock bolts on 1.2 m spacing down to 1.5 m from floor of excavation. #4 galvanized welded wire mesh to within 1.5 m of floor 150 mm shotcrete to the floor
Other Large Openings	6 m long 0.7" bulbed cable bolts on a 2 m by 2 m pattern, toe should be resin anchored and pre-tensioned to 5 t before cement grouting bolt column with non-shrink cable bolt grout. 150 mm square 6 mm thick domed plates. 3 m long #8 resin grouted rebar rock bolts on a 1.2 m spacing. #4 galvanized welded wire mesh 150 mm shotcrete	3 m long #8 resin grouted rebar rock bolts on 1.2 m spacing down to 1.5 m from floor of excavation. #4 galvanized welded wire mesh to within 1.5 m of floor 150 mm shotcrete to the floor
Other Areas	2.4 m resin rebar bolts on 1.2 m square pattern and #4 galvanized welded wire mesh to 1.5 m from the floor	N/A
Vertical Conveyor Raises and Ore Bins	Shotcrete robot to spray 150 mm of fibre reinforced shotcrete. Ground support may be needed during installation of vertical conveyor infrastructure post shotcreting. To be determined once excavation complete.	

During construction, geotechnical drilling of the rock mass should be performed, and where possible, the locations of the critical infrastructure should be modified to areas of better ground. This geotechnical drilling should occur as the development gets closer to the planned crusher chamber complex area.

Associated silos and vertical raises in the crusher chamber complex will require to drill and log a diamond core geotechnical raise pilot hole at the location of each of the proposed raises. This is essential to confirm the rock quality and unit thicknesses prior to excavation and to finalize the silo lining thickness and ground support requirements.

16.2.4.4 Extraction Sequencing

The overall sequence of veins extraction is recommended to be broadly based on using a footwall to hanging wall approach retaining protection pillars on the cross-cuts, see Figure 16-2. These protection pillars would then be extracted on a hanging-wall-to-footwall approach, retreating out of the cross-cuts. The cross-cut protection pillars need to be of sufficient strike length to prevent over-stressing as the extent of extraction increases.

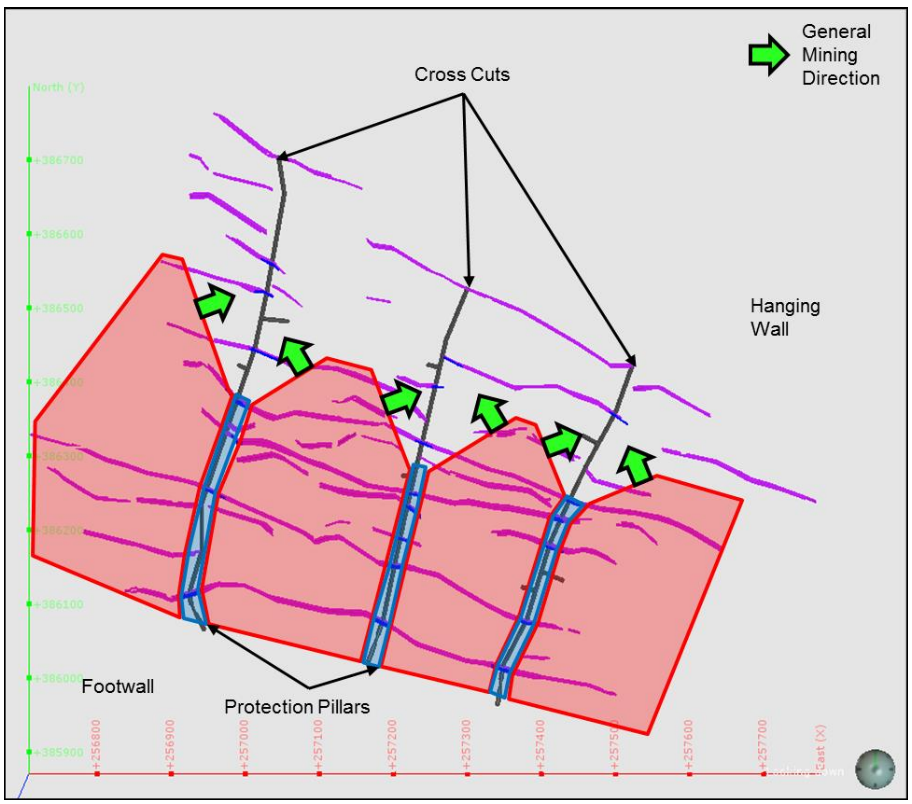


Figure 16-2: Schematic of the recommended general extraction sequence, with protection pillars being retained along the cross cuts

16.2.4.5 Crown Pillar Requirements

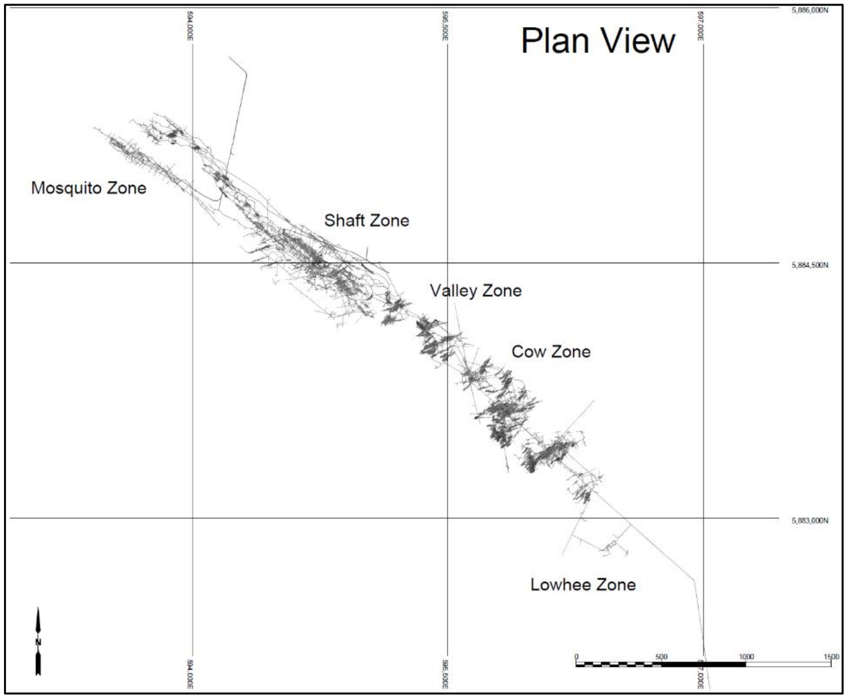
Crown pillar assessments have been completed using the Scaled Span method after Carter et al. (2008) for proposed excavation within 50 vertical metres from surface that consists of development drives (cross-cuts, strike drives), underground infrastructure (backfill chamber), and mining blocks (long hole stoping, cut-and-fill). Rock mass characteristics of the Class 3 for the Cow Zone, Valley Zone, and Lowhee Zone, and Class 3L for the Shaft Zone and Mosquito Zone were used. These parameters are not inclusive of fault zones and crown pillars within fault zones will require a further assessment specific to each fault.

The crown pillar is considered a quasi-permanent long-term crown pillar, Class F as per Carter et al. (2008). To achieve a crown pillar with this classification, a minimum rock crown pillar thickness of 15 m below the modelled overburden surface is required in the Cow Zone, Valley Zone, and Lowhee Zone, and 20 m below the modelled overburden surface in the Shaft Zone and Mosquito Zone. Stopes immediately below the crown pillar should be tight filled with CRF or paste to meet the Class F long-term crown pillar designation.

16.2.4.6 Existing Underground Infrastructure

Historic mine workings consist of decommissioned portals, decline ramps, drifts, and stopes. ODV has built a 3D model of these mine workings (

Figure 16-3). The model of historic workings has been incorporated into the assessment. Required stand-off distances from these workings have been set based on the rock mass quality surrounding these workings. When old workings are anticipated to be intersected, cover holes must be drilled in advance of the development to confirm their location and to determine if they are filled, what are their contents, and to establish if these excavations have been dewatered.



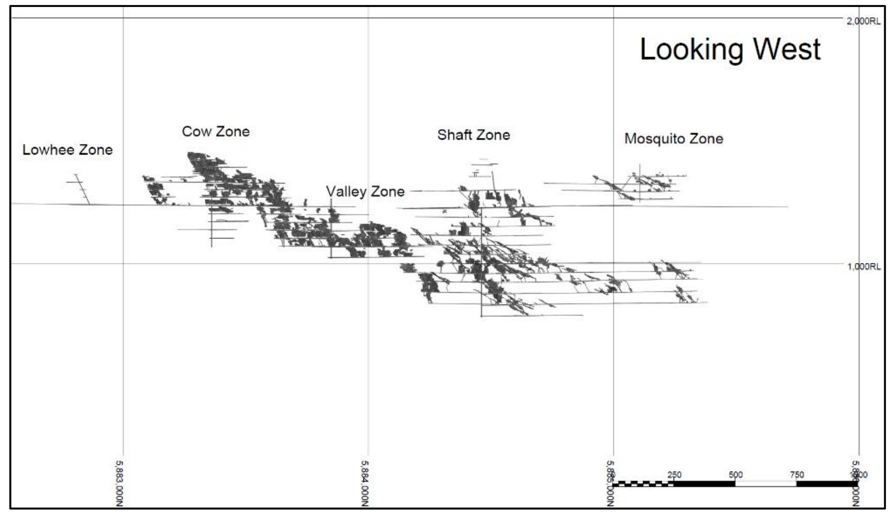


Figure 16-3: Existing underground workings - plan and section views
Solids provided by ODV, 2022

16.3 Mine Access

There will be two portals accessing underground ramps: the Cow Portal and the Valley (Main) Portal ("Valley Portal"). Figure 16-4 shows the location of these in relation to the District of Wells.

Figure 16-4: Cariboo Gold Project portal locations

16.3.1 Valley Portal

The preliminary portal box cut excavation slope design parameters and ground support recommendations for the Valley Portal have been provided based on data collected from two vertical geotechnical drill holes within the proposed box cut location and surface geotechnical investigations for the plant site and rock dumps near the portal.

The design basis includes:

- Permanent slopes in the overburden should be excavated at 2H:1V (30°);
- Slopes within weathered rock should be excavated at 1H:1V (45°);
- The slopes should be vegetated to manage water runoff and prevent erosion;

- A minimum 10 m rock face of Fair rock (Rock Mass Rating ("RMR") of 50 to 60) is recommended to establish a 10 m (vertical thickness) brow above the portal;
- A 3 m catch berm should be maintained at the overburden-weathered rock contact to protect equipment and personnel from local bench instability and loose rock;
- Cut-off and toe drains will be installed around the perimeter of box cut at the toe of overburden slope, and at the portal;
- The preliminary portal box cut excavation slope design parameters and ground support recommendations for the Valley Portal have been provided based on data collected from two vertical geotechnical drill holes within the proposed box cut location and surface geotechnical investigations for the plant site and rock dumps near the portal.

Figure 16-5 and Figure 16-6 show the proposed portal design for Valley.

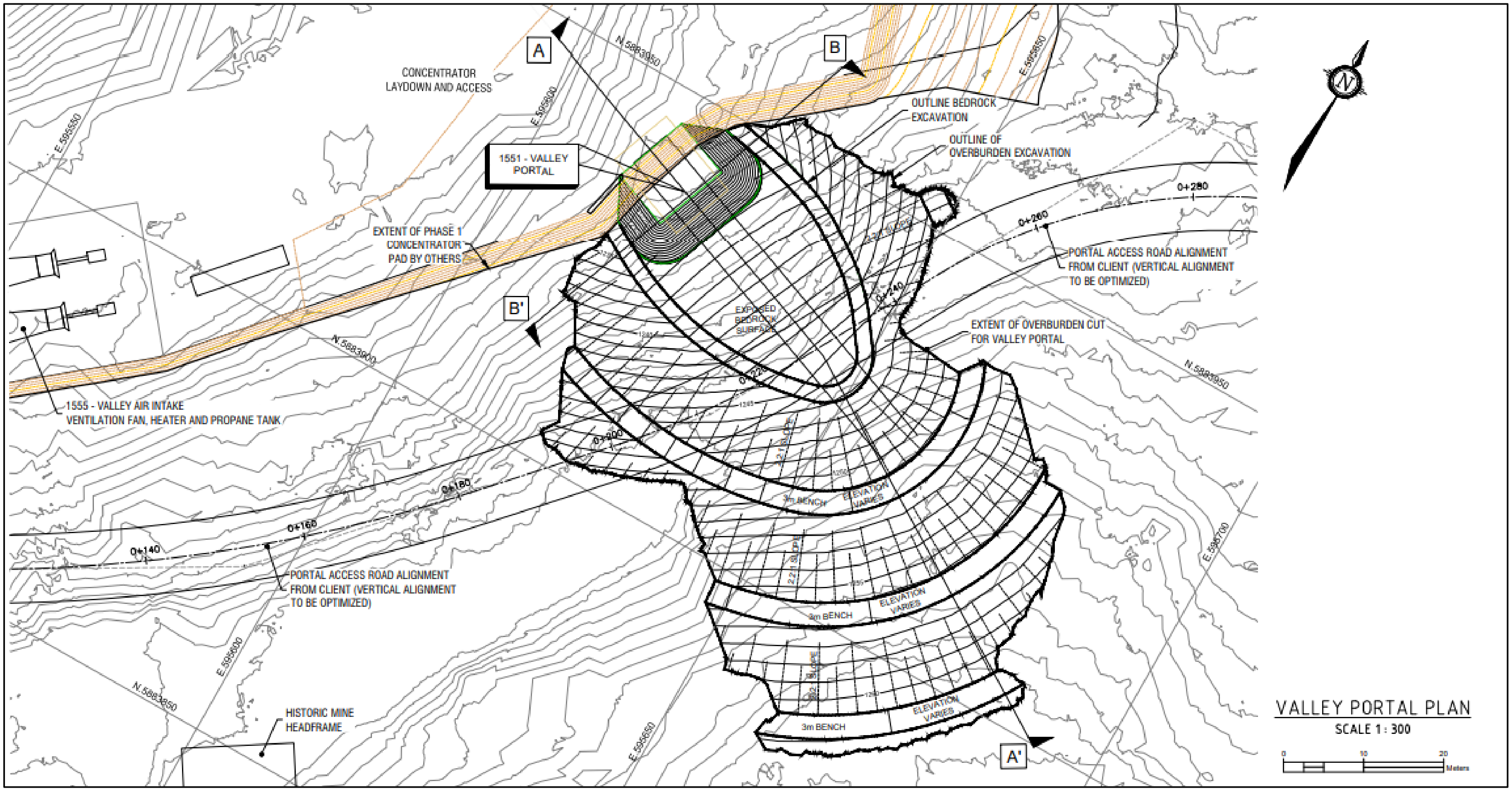


Figure 16-5: Plan view Valley proposed Portal

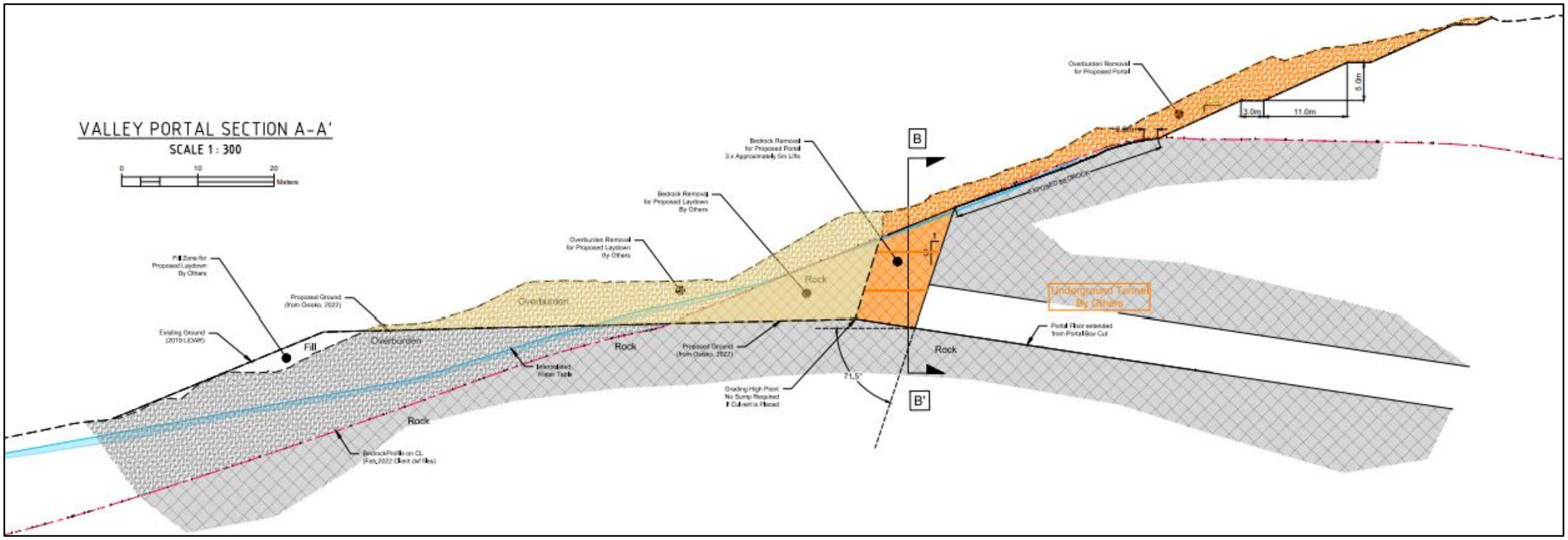


Figure 16-6: Valley Portal cross-section

Excavation support recommendations include self-drilling spiling, rebar, cables, and shotcrete in the brow area and at the start of the decline. Exposed benches will likely need to be shotcreted to maintain long term integrity.

A steel cover (corrugated culvert) will be installed to protect the access against weather conditions and potential falling boulders. Crushed rock around the culvert will stabilize the infrastructure in the long term.

16.3.2 Cow Portal

The Cow Portal is already in place for ODV's exploration Cow Mountain Bulk Sample and gives access to the underground ramp. No feature work is required on this existing portal.

Figure 16-7: Cow Portal shortly after construction

16.3.3 Access Ramps

The planned footwall access ramp locations should be further geotechnically assessed once the decline is developed close to the ore body. This will need to consider the location of the major structures in the footwall relative to the vein system.

16.4 Mine Hydrogeology

16.4.1 Mine Site Area Hydrogeology

The conceptual hydrogeology for the Mine Site area can be described as a mountain-valley hydrogeological system that has been altered by historical and current mining processes. The conceptual flow system for the MSC is shown on Figure 16-8 and the conceptual flow system for the historical tailings deposit area is shown on Figure 16-9.

The overburden of the Jack of Clubs Valley is a sequence of interlayered aquifers and aquitards deposited during previous glaciations. Overall, the Mine Site hydrostratigraphy has been sub-divided into 10 hydrostratigraphic units, consisting of:

- Four local or regional overburden aquifers (Fill, Placer Outwash, Alluvium / Alluvial Fans, and Wells Aquifer);
- Three local or regional overburden aquitards (Till/Lowlands, Historical Mill Tailings, Glaciolacustrine); and,
- Four bedrock units (Siltstone, Mine Area Bedrock, Regional Bedrock, and the Jack of Clubs Fault Zone).

In a broad sense, groundwater flow in the overburden near Jack of Clubs Valley can be classified into two systems: a deep groundwater system (i.e., Wells Aquifer hydrostratigraphic unit) and a shallow groundwater system (i.e., Alluvium / Alluvial Fans and Placer Outwash hydrostratigraphic units), which are separated by a thick package of low permeability clays and silts (Glaciolacustrine hydrostratigraphic unit). The Wells Aquifer is the principal groundwater source for municipal water supply for the District of Wells.

Groundwater elevations can generally be considered a subdued reflection of topography, with higher groundwater elevations in the upland areas and lower groundwater elevations in the lowland areas. Similarly, regional groundwater flow directions are generally from areas of high elevation to areas of low elevation. Both groundwater elevations and flow directions are locally influenced by underground mine workings.

Within the MSC area, there are over 180 km of historical underground mine workings that strike perpendicularly beneath the mountains that straddle the main Jack of Clubs Valley. These historical underground mine workings act as hydrogeological controls (local sinks), influencing the groundwater flow in the area and contributing to a downward hydraulic gradient near the underground workings. The historical underground mine workings are partially flooded, with the flooded water level controlled predominantly by adits in the valley walls, located approximately 5 m to 20 m above the surface of the valley floor. These adits connecting with the valley walls are free draining and discharge groundwater seepage locally to the margins of the valley. Historical mine workings above the adit elevations daylighting in the valley walls are assumed to be predominantly dry and contributing to localized depressurization of the surrounding bedrock. The extent of depressurization is interpreted to be small based on hydraulic head data that shows saturated bedrock at higher elevations, and in consideration of the low bedrock hydraulic conductivity.

Groundwater seepage from the mine openings is observed and it is greater in spring and early summer during the high-water freshet period and declining or ceasing during the drier summer and in the winter. The flooded workings are not known to have bulkheads and, therefore, will influence hydraulic heads by equalizing the hydraulic head across the flooded interconnected workings. Other groundwater seepages have been observed in the Wells Historical Tailings Deposit, in the area delineated as "Groundwater Seepage Area" on Figure 16-8. This seepage area is planned for investigation to evaluate if it is associated with an exploration hole that encountered artesian conditions.

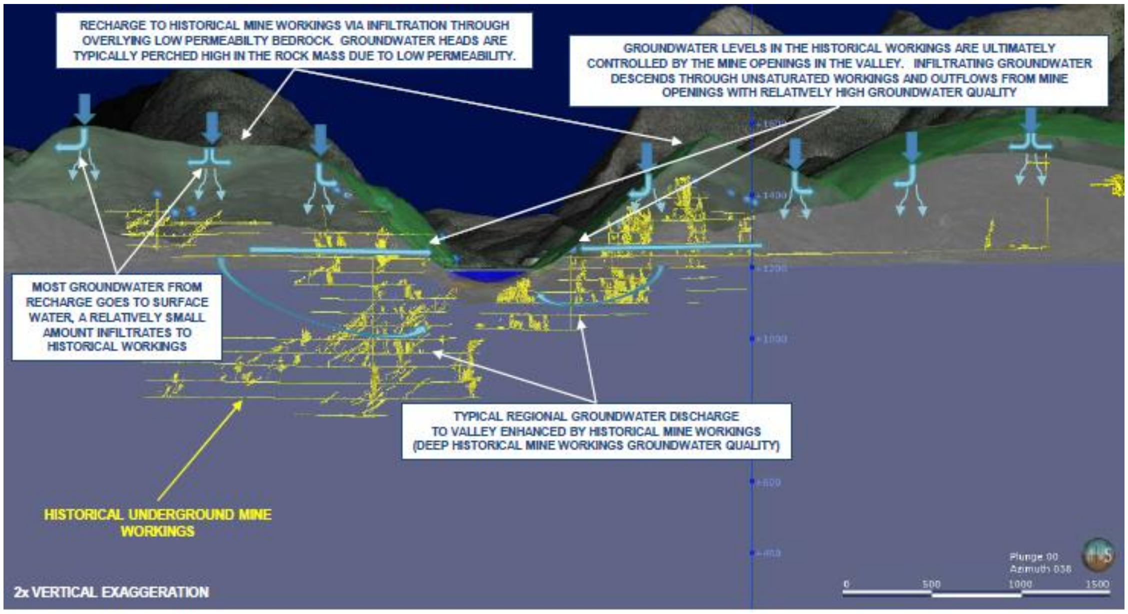


Figure 16-8: Groundwater recharge and discharge – Mine Site area (Golder, 2021a)

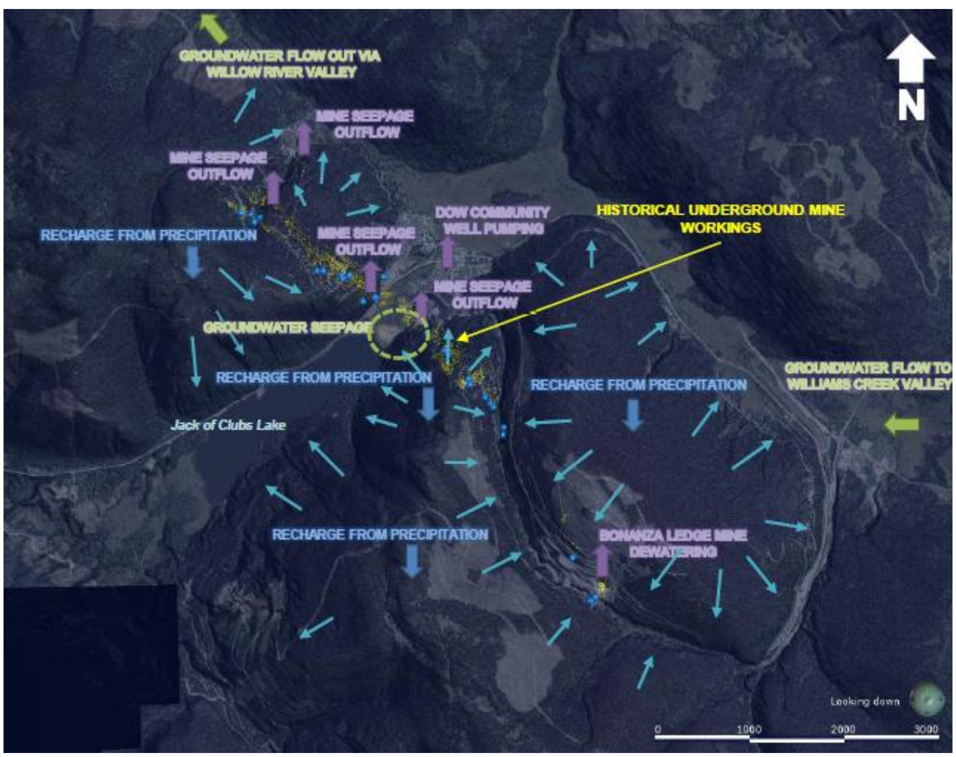


Figure 16-9: Inferred groundwater flow direction – Mine Site area (Golder, 2021a)

16.4.2 QR Mill Area Hydrogeology

The QR Mill area is located on a relatively exposed bedrock plateau, with a steep (greater than 300 m) topographic decline along the southern side, down to the Quesnel River. The plateau, being exposed during the period of the last glaciation, had much of its overburden eroded and removed by the glaciers, resulting in a relatively thin overburden layer, comprised predominantly of glacial till overlying bedrock. The thickest overburden is in a small, north-south oriented depression located to the east of the QR Mill. Historical and current mining activities have altered the area, with three small networks of historical underground mine workings, several small open pit mines, and the QR Mill tailings storage facility ("TSF"), which sits in the saddle of the north-south oriented depression between areas of higher elevation to the east and west.

The hydrostratigraphy of the QR Mill area has been separated into four hydrostratigraphic units:

- Thin overburden (glacial till);
- Shallow weathered bedrock (upper 35 m of bedrock);
- Deep Bedrock; and,
- Wally's Fault, located under the western portion of the QR TSF with an approximately north-south orientation.

The groundwater levels across the area are a subdued reflection of topography and are consistently close to the ground surface, with inferred preferential flow through the shallow weathered bedrock. The hydraulic properties of Wally's Fault are untested, but it is possible that the fault acts as a preferential flow zone. Groundwater recharge occurs primarily in upland areas of higher elevation and groundwater discharge occurs in areas of lower elevation. Shallow groundwater levels across the area vary seasonally and experience two groundwater peaks during the year: one during the snowmelt/freshet period and one in the fall. Figure 16-10 shows a conceptual interpretation of the groundwater recharge and discharge within the QR Mill area.

The pond levels of the QR TSF, which sits above the saddle of the north-south oriented topographic depression, provide a driver for groundwater flow. Seepage from the QR TSF is collected in ponds to the north and south of the dams, with further seepage to the north to the Rudy Creek Valley and to the south via water management infrastructure and ultimately to Creek #3. The Main Zone Pit ("MZP") acts as a local sink for groundwater and outflows to Creek #3 as part of the local water management. Two other flooded pits are present in the area (North Lobe Pit and Northwest), which may locally affect groundwater flow, though they have no defined outflow. Shallow groundwater quality downgradient of the QR TSF shows less influence of mine activities compared to shallow groundwater quality in closer vicinity to the QR TSF.

Three historical underground workings are present in the QR Mill area, with portals connected to surface (Midwest Portal, West Portal, and North Portal). Groundwater levels in the West and Midwest Portal are either near ground surface or there is observed seepage discharging to ground surface. The orientation of the underground connected to the North Portal suggests this underground is free draining, with discharge at the portal. The inferred groundwater flow directions within the QR Mill area are presented in Figure 16-11.

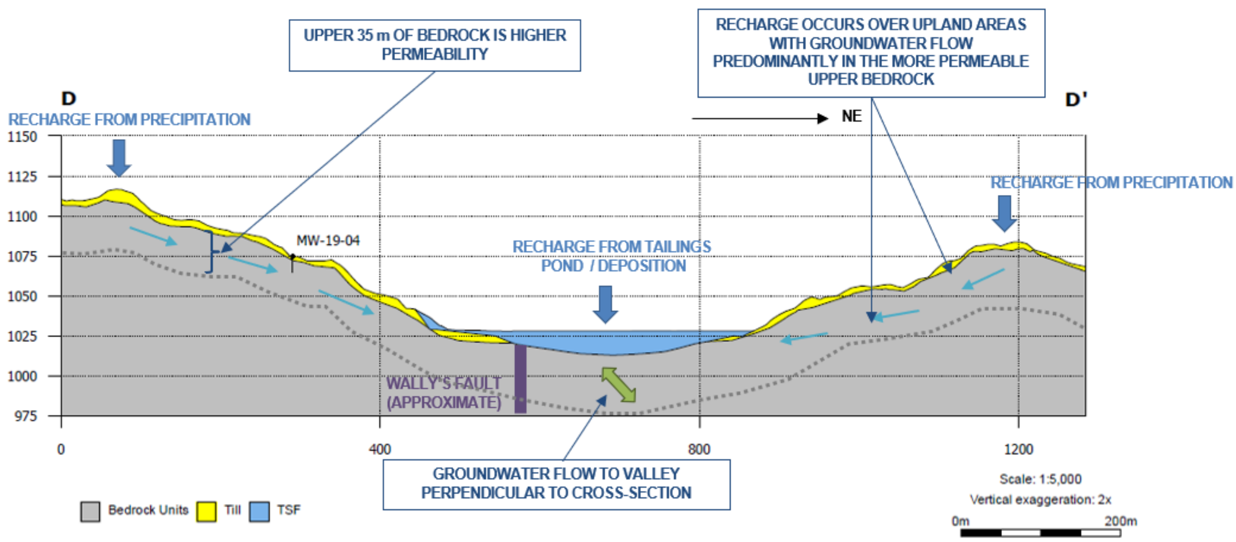


Figure 16-10: Groundwater recharge and discharge – QR Mill area (Golder, 2021a)

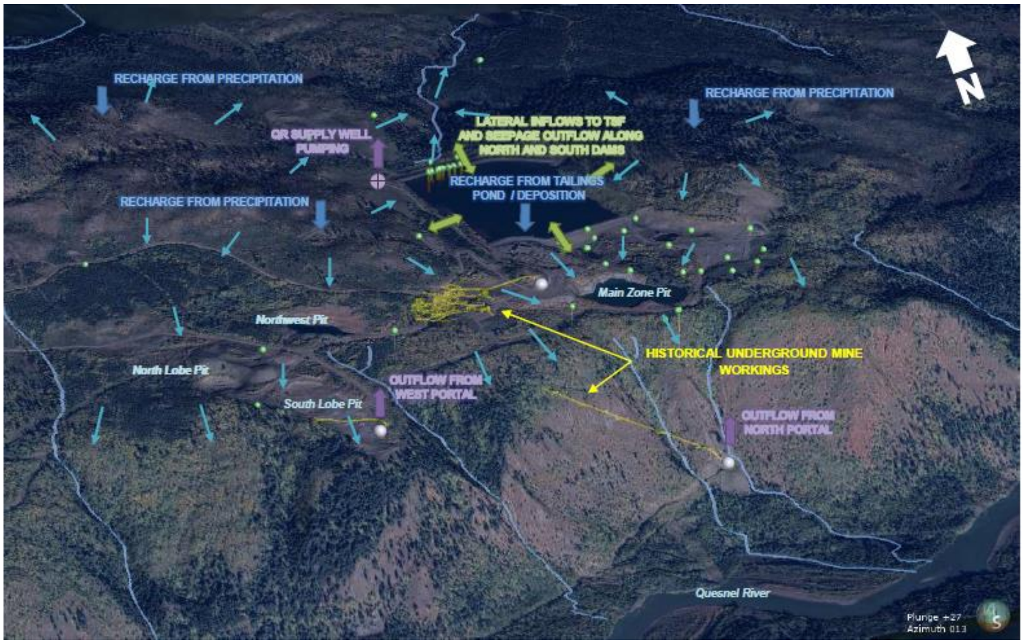


Figure 16-11: Inferred groundwater flow direction – QR Mill area (Golder, 2021a)

16.4.3 Groundwater Inflow Predictions – Mine Site Complex Area

Two groundwater numerical flow models were developed for the Project to quantify changes in groundwater quantity within the MSC area (Mine Site Model) and the QR Mill area (QR Model). The Mine Site Model (Golder 2022l), which was calibrated to hydraulic head and stream base flow estimates for existing conditions, was used to estimate groundwater discharge to the underground workings during the mine construction and operations.

Transient model simulations were prepared to simulate the progressive development of the underground mine over the life of mine ("LOM"), with the prediction results presented in Table 16-10. The predictions were made for two scenarios:

- Base Case – Model simulation with calibrated model values;
- Alternative Scenario – Hydraulic conductivity of bedrock increased by a factor of two.

Dewatering of the existing underground was assumed to start in 2026 with dewatering to an elevation of 990 m. The existing underground will be dewatered to its base in 2027. The mine plan development and changes in dewatering targets were implemented on an annual basis.

A summary of average dewatering rates for the mine workings (existing and new) is provided in Table 16-10 for each year of development. In years 2023 to 2025, dewatering of the existing workings is not occurring, and the predicted inflow is only from the new workings. Inflows ramp up quickly in 2026 as dewatering of the historical workings commences (inflow in Table 16-11 represent the combined groundwater inflow to the existing and new workings from 2026 on). Inflows after 2027 stabilize as the maximum depth of mining is reached and storage effects diminish.

Flow rates in Table 16-10 exclude the removal of water in the saturated void space of the existing workings. The annual average for year 2027 representing the highest inflows were predicted to be 6,000 cubic metres per day ("m^3/day") (250 cubic metres per hour ["m^3/h"]) for the base case and 8,700 m^3/day (363 m^3/h) for the alternative scenario with higher assumed bedrock hydraulic conductivity. An additional flow of 3,025 m^3/day (126m^3/h) was estimated by ODV for the two years in which the water level in the existing workings is lowered to the base of the existing underground (years 2026 and 2027) to account for this stored volume. With the inclusion of this additional water volume, peak inflows in 2028 are 9,025 m^3/day for the base case and 11,725 m^3/day for the alternative scenario (higher assumed bedrock hydraulic conductivity).

Table 16-11: Total predicted groundwater inflow to the existing and new underground workings

Year	Base Case (m³/day)	Alternative Scenario (Higher Bedrock Hydraulic Conductivity, m³/day)
2023	220	400
2024	500	900
2025	800	1,300
2026	5,800*	8,300*
2027	6,000*	8,700*
2028	6,000	8,700
2029	6,000	8,700
2030	6,000	8,700
2031	6,000	8,700
2032	6,000	8,700
2033	6,000	8,700
2034	6,000	8,700
2035	6,000	8,700
2036	6,000	8,700

Notes:
* Does not account for water removal from underground voids, which is estimated by ODV to 3025 m³/day.

The following is noted regarding the change in the simulated hydrogeological conditions because of the development of the Project:

- The dewatering of the historical workings and the dewatering of the new underground development are expected to lower hydraulic heads in the MSC area by up to 450 m near the workings. In the area of the Wells Aquifer, hydraulic head is predicted to change by 5 m or less and it is mitigated by the valley being a groundwater discharge zone, and recharge from Jack of Clubs Lake and Willow River;
- The underground workings will act as a hydraulic sink, reducing baseflow to some surface water features.

The presented seepage estimates are based on assumed conditions during development of the Project. However, the actual groundwater inflows could vary from those presented due to general uncertainty associated with the subsurface conditions in the MSC area, and recognized gaps in the data.

16.4.4 Limitations of Inflow Predictions

Key assumptions and limitations relevant to the numerical groundwater model of mine dewatering include the following:

- It is assumed that all mapped historical workings remain open, and water may flow unimpeded through the network, which represents a worst-case scenario in terms of dewatering.
- It is assumed that prior to year 2026, no dewatering of the existing workings occurs, and inflow only results from dewatering of the new workings to maintain a dry working environment. In year 2026, it is assumed that dewatering of the existing workings commences and reaches a depth of 990 m. From year 2027 on, it is assumed that existing workings will be maintained in a fully dewatered state, along with the new workings.

16.5 Underground Mining Method

The mining method consists of longitudinal retreat long-hole stoping using a combination of rockfill, cemented rockfill ("CRF") and paste fill. This decision was driven by the average vein width, contained metal (value), and ground conditions. See Figure 16-12 for an illustration of the selected method.

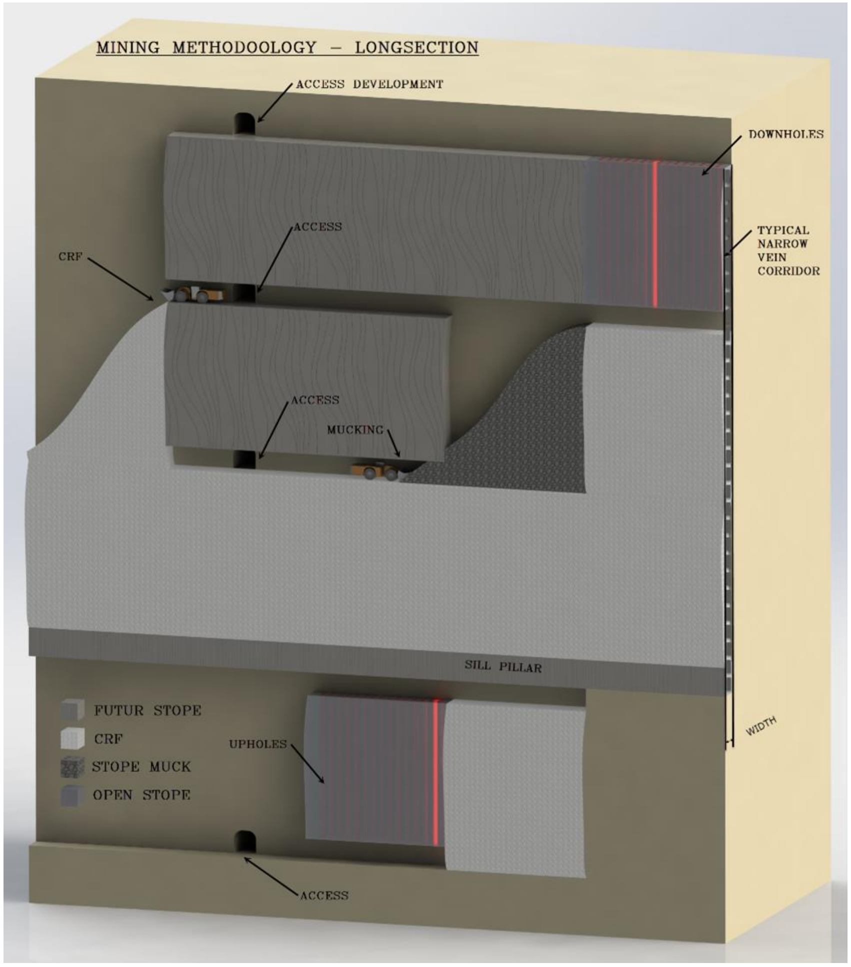


Figure 16-12: Longitudinal longhole retreat - long section

16.5.1 Selection of Economical Material for Life of Mine

Minable Shape Optimiser® ("MSO") was used to determine the correlation between cut-off grade and the resulting mineable envelope. The optimization is driven by the following inputs:

- Cut-off grade;
- Mining extents;
- Minimum and maximum stope width;
- Level spacing;
- Minimum and maximum dip angle;
- Dilution Parameters.

Table 16-12 illustrates the general input parameters used in the MSO runs.

Table 16-12: MSO input parameters

Parameters	Unit	Value
Cut-off grade	g/t Au	1.7
Min mining width	m	3.7
Level spacing	m	30
Minimum DSO Strike	m	8
Maximum DSO Strike	m	16
Side ratio	m	2.5
Minimum trans pillar width	m	5
Minimum dip angle	deg	43
Maximum dip angle	deg	137

16.5.2 Cut-off Grade Calculation

The following cut-off grades were used for the final mine design in Phase 1 and Phase 2.

Phase 1:

- 4.0 grams per tonne ("g/t") gold ("Au") ore envelopes for potential minable stopes design. These core envelopes were used for the main mine design (ramps, access, etc.);
- 3.1 g/t Au ore—included if only additional minor developments in ore were required.

Phase 2:

- 2.3 g/t Au ore envelopes for potential minable stopes design. These core envelopes were used for the main mine design (ramps, access, etc.);
- 1.7 g/t Au ore—included if only additional minor developments in ore were required.

16.6 Mine Design

The Project comprises five main zones:

- Shaft Zone;
- Valley Zone;
- Cow Zone;

- Mosquito Zone; and,
- Lowhee Zone.

The vertical extent of all mineable blocks is 630 m. The mineralized zone is comprised of discrete, parallel ore lenses. These lenses strike northwest and dip predominantly sub-vertically. The mine is accessed by two portals from surface directly connecting to Cow Zone and Valley Zone. A series of internal ramps connected to the main ramps provide access to all mining zones, as illustrated in Figure 16-13.

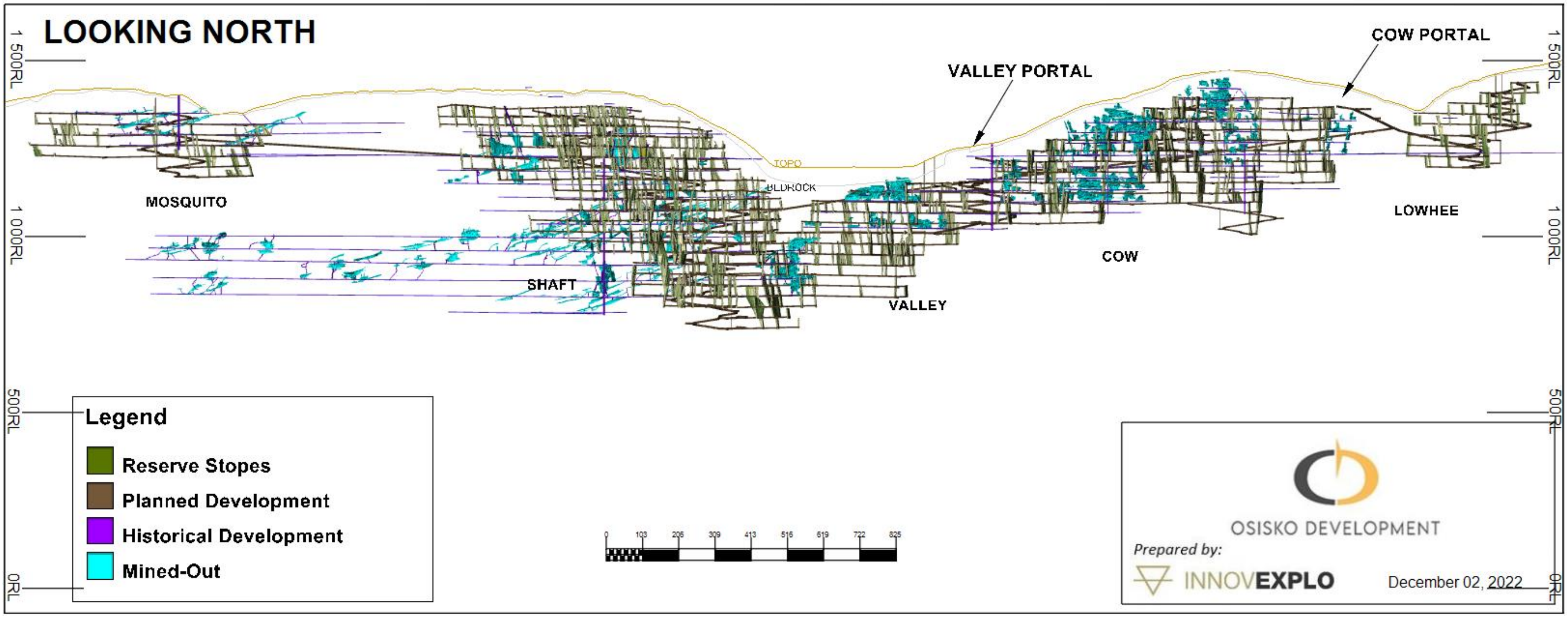


Figure 16-13:-Cariboo Gold Project – Longitudinal section looking north

16.6.1 Development Design

Level accesses and development will be excavated using conventional drill and blast techniques and decline, and inter-zone ramp development will be achieved with roadheaders.

Declines and inter-zone ramps linking the different portals to the five main mining zones are strategically placed throughout the mine to facilitate efficient material movement by trucks. The development profiles by type are listed below in Table 16-13.

Table 16-13: Lateral development dimensions and cost category

Development type	Development profile	Capital/ Operating
Main ramp	5.8mH x 5.3mW	Capital
Ramp re-muck	5.8mH x 5.3mW	Capital
Level access	5.8mH x 5.3mW	Capital
Truck Loading/Unloading Bay	7.5mH x 5.3mW	Capital
Level haulage	4.3mH x 4.3mW	Capital
Paste transfer bay	5.3mH x 5.3mW	Capital
Pump station	5.3mH x 5.3mW	Capital
Refuge station	5.3mH x 5.3mW	Capital
Level re-muck	5.3mH x 5.3mW	Capital
Sump	5.3mH x 5.3mW	Capital
Vent access	4.3mH x 4.3mW	Capital
Electrical sub station	5.3mH x 6.0mW	Capital
Ore drift	4.0mH x 3.7mW	Operating

16.6.2 Main Infrastructure

The main infrastructures for the Project include the main ramp, the maintenance shop, the battery service bay, the sumps and pumping stations, electrical substations, lunchroom, powder and cap magazines, rock breaker and crushing facility, and the ore sorter waste handling facility.

The crushing facility is designed to handle 4,900 t of ore per day. It is located along the main Valley ramp in the eastern extent of Valley Zone, as shown in Figure 16-14.

The MSC will include two tunnel portals to access the underground mine. Valley Portal is located on the southern limit of the MSC while the Cow Portal is located on the side of Barkerville Mountain, south-east of the Mine Site. The Cow Portal is already in place while the development of the Valley Portal will require excavation of overburden and rock and the removal of historic concrete structures including a foundation and tunnel portal.

The Cow Portal will be used for development in pre-production and during Phase 1. It will be the main hauling road for ore and waste material during that period. Once the Valley Portal is connected to Cow Portal via the underground ramp at the end of Phase 1, the Valley Portal will become the main access portal for production at Phase 2. The ramp progresses directly to the Cow Zone with a ninety-degree, three-way intersection leading to the Valley Zone. This layout allows for traffic alleviation after the intersection proceeding to the two zones. This ramp will be the main access ramp to access and provide the services to the different zones.

The associated infrastructure at each portal during the development period will include an electrical substation, temporary ventilation fans and heater, and water management infrastructure.

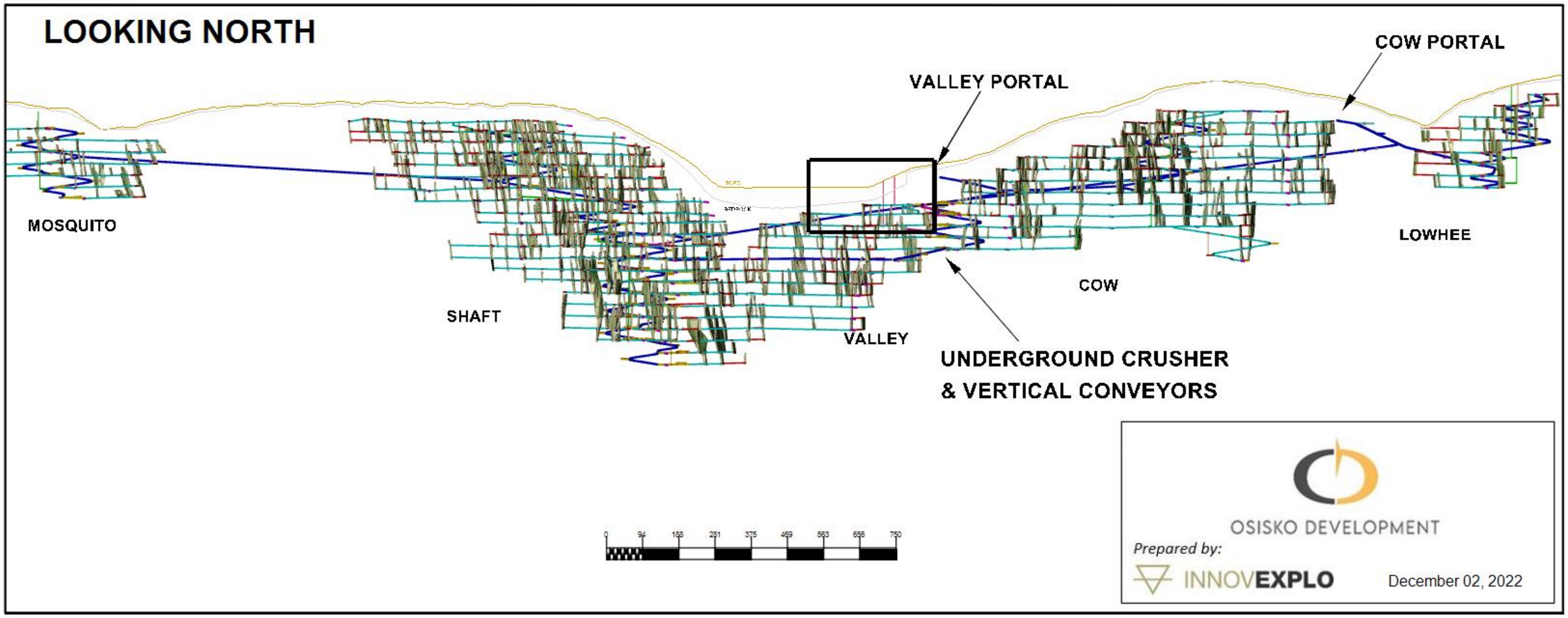


Figure 16-14: Location of crushing facility and vertical conveyor

16.6.3 Level Layout Design

The typical mine level layout consists of in the level access, ventilation access, loading bay, sump, electrical substation ("ESS"), refuge station, haulage drift, and ore drift. The typical mine level is shown in Figure 16-15. Minor variations exist between levels due to the trend of the ore veins, logistic, or required infrastructure.

Specific areas mainly pertaining in the vicinity of the level access will be capitalized as per Figure 16-15 (blue, green, and cyan), with remaining development categorized as operating development (pink).

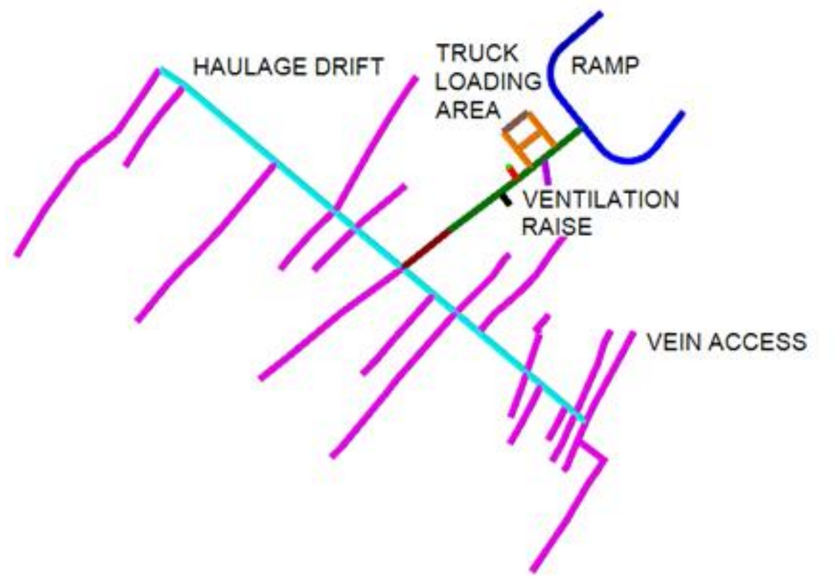


Figure 16-15: Plan view of typical level layout

The level access will be excavated to the same dimensions as the main ramp, 5.8 metres high ("mH") x 5.3 metres wide ("mW"), to allow for truck access. The typical electrical substation is located near the level entrance, with a sump located further into the level along the level access.

The level access typically intersects the haulage drift (4.3 mH x 4.3 mW), allowing for access of a 10 t capacity scooptram load haul dump ("LHD") into the ore drives. The smaller profile dimension serves as a safeguard restricting haul trucks to operating in the level access and truck loading area.

The haul drift is typically linked to ore drives (4.0 mH x 3.7 mW), providing access to the production stopes. These drifts are generally positioned in the centre of the veins to allow maximum stopes availability for production. The production drilling equipment has been selected to enable operation within the smaller profile dimensions and minimize dilution.

Operating development portions and the capital portions of levels were designed with 2% gradients. Sumps were placed at a low point along the access to facilitate drainage. Sumps will be 5.3 mH x 5.3 mW with a length of 12 m and a gradient of -15%; while the electrical substations will be 5.3 mH x 6.0 mW with an overall length of 18 m.

A truck loading and unloading area is planned for all levels that will produce ore. This area includes a 20 m long truck turnaround and waste storage (7.5 mH x 5.3 mW), with a parallel 33 m long loading access drift (5.3 mH x 5.3 mW) and one perpendicular drift (6.0 mH x 5.3 mW) serving as a loading bay.

The truck loading access drift will be excavated at a +2% gradient with the parallel loading access drift to be excavated at a 2% gradient. The loading bay will be excavated at a +8% gradient to provide an elevated offset allowing a loaded LHD to dump material directly into a truck from above. Figure 16-16 provides a typical truck loadout area:

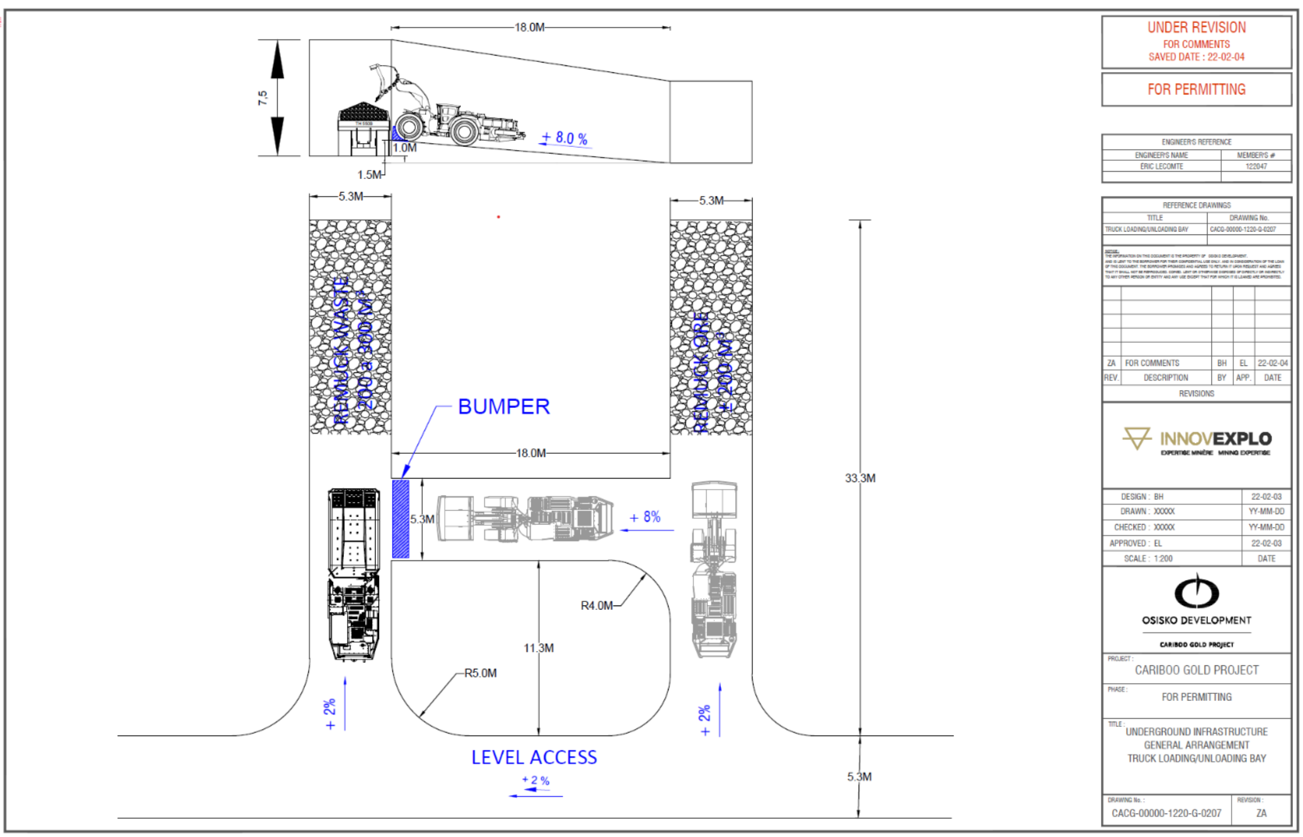


Figure 16-16: General arrangement Truck loading and unloading Bay)

16.6.4 Production Stopes

Production stopes will consist of a set of 89 millimetres ("mm") or 102 mm blasthole rings configured on a dice five or fan pattern depending on the width of the different veins in each zone. All blastholes will be loaded with emulsion along with detonator, booster, and stemming in each hole. A 30-inch diameter V30 slot raise with 102 mm blastholes around the perimeter will be positioned in the middle of the stope and will generate the opening necessary for the first blast. Blastholes will be drilled using a long hole drill from the top sill down to the undercut drift. Figure 16-17 and Figure 16-18 detail the specific drill configuration for production stopes in each zone. Typical stope blasting will be in two blasts: a primary opening to achieve 20% void indices and a final blast.

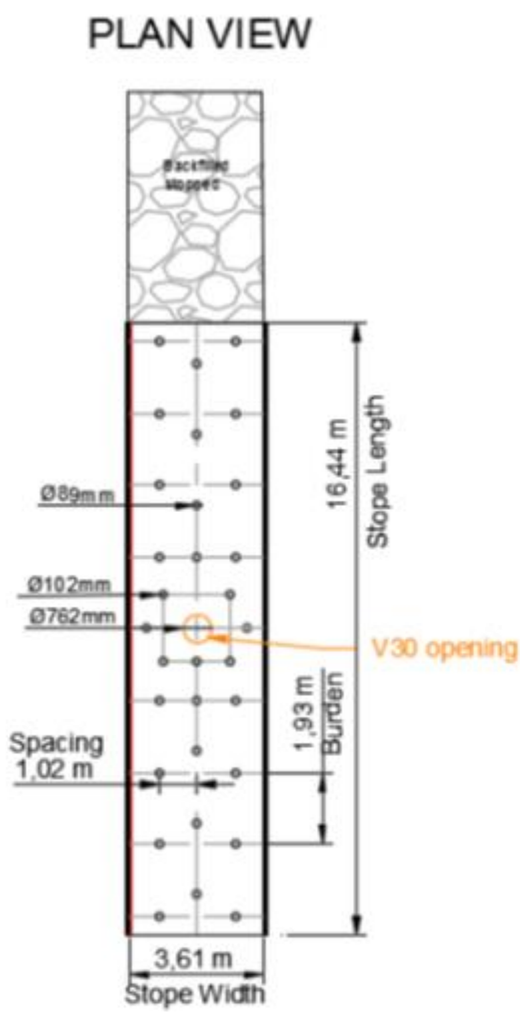


Figure 16-17: Typical drilling configuration for Valley Zone, plan view

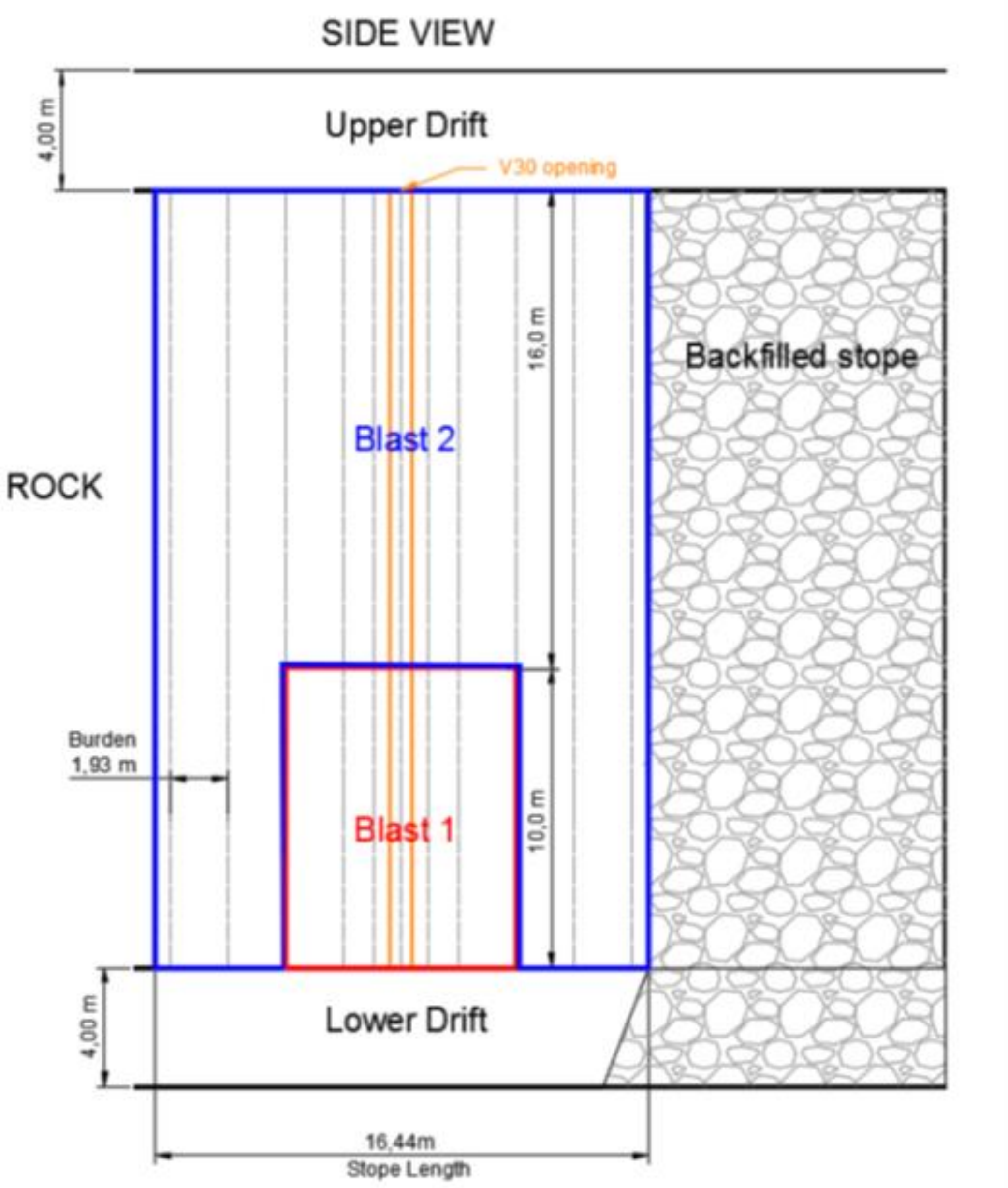


Figure 16-18: Typical drilling configuration for Valley Zone, side view

16.6.5 Shaft Zone

The largest zone of the Project (by inventory tonnage) is the Shaft Zone. This zone encompasses 20 levels from Level 810 to Level 1,380 at a sublevel spacing of 30 m floor-to-floor, with its lowest level currently reaching a mean sea level ("msl") depth of approximately 810 m. Given the mountainous terrain above the zone, the depth from the surface is highly variable. The zone's horizontal extent stretches approximately one kilometre ("km") along the strike.

The average stope width in this zone is 4.3 m with a length from 8 m to 15 m along the strike. Stope strike length refers to the length of the stope along the strike of the mineralized zone that can remain open for a certain period before being backfilled, due to geomechanical considerations. This is most often due to maximum hydraulic radius dictated by local ground conditions surrounding the stopes.

Shaft Zone is expected to contribute 8.0 million tonnes ("Mt") at an average grade of 3.87 g/t to the mine production over the life of mine. Additional information on stope dimensions can be found in Section 16.2. A longitudinal view of the zone is included in Figure 16-19 below. The Shaft Zone is intersected along strike by the Aurum Fault dipping approximately 50 degrees northeast, flanked by the Shaft Zone Fault 1 to the east, and the Jack of Clubs Fault to the southeast, as shown in Figure 16-20.

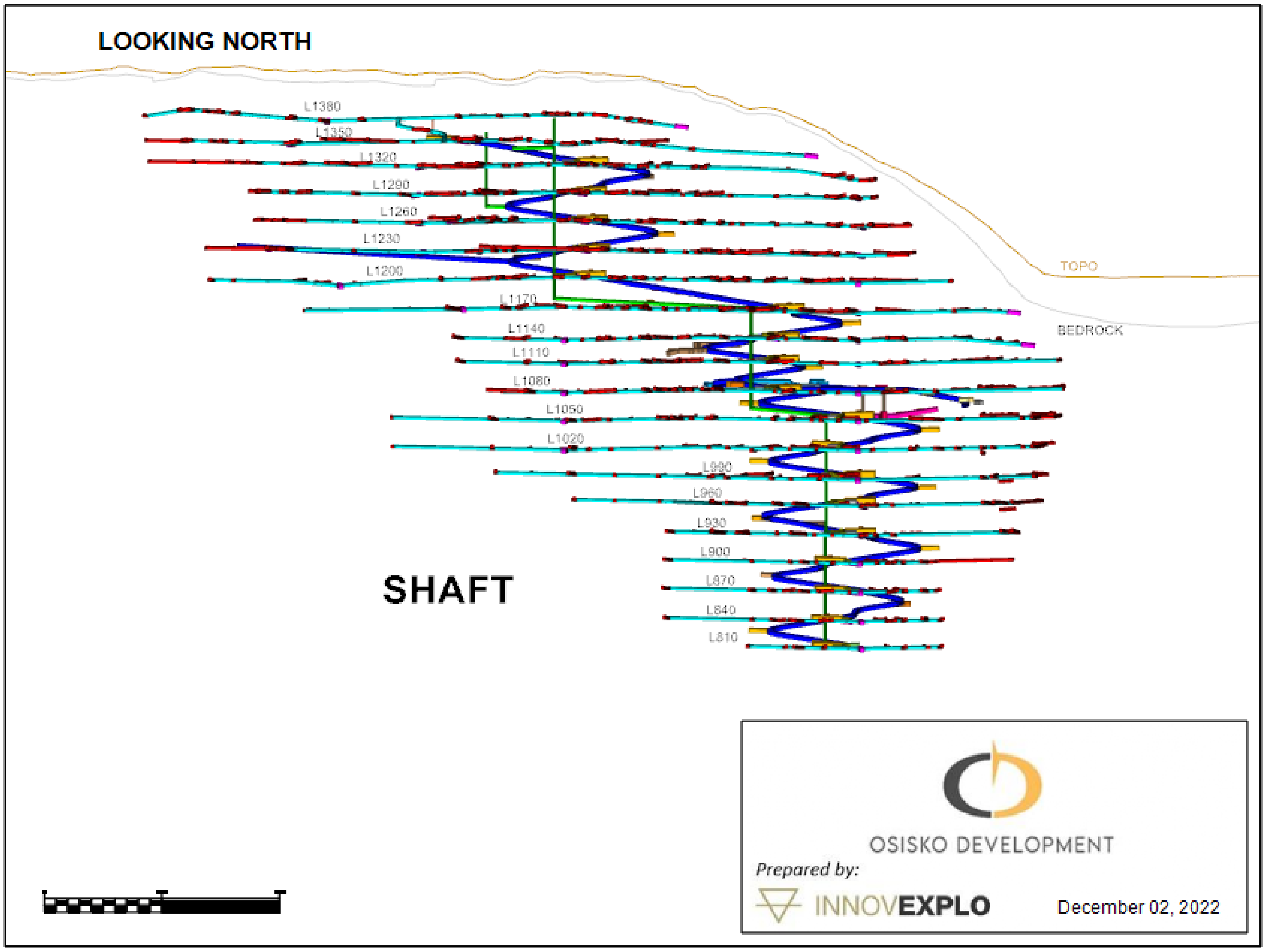


Figure 16-19: Longitudinal section of Shaft Zone looking north

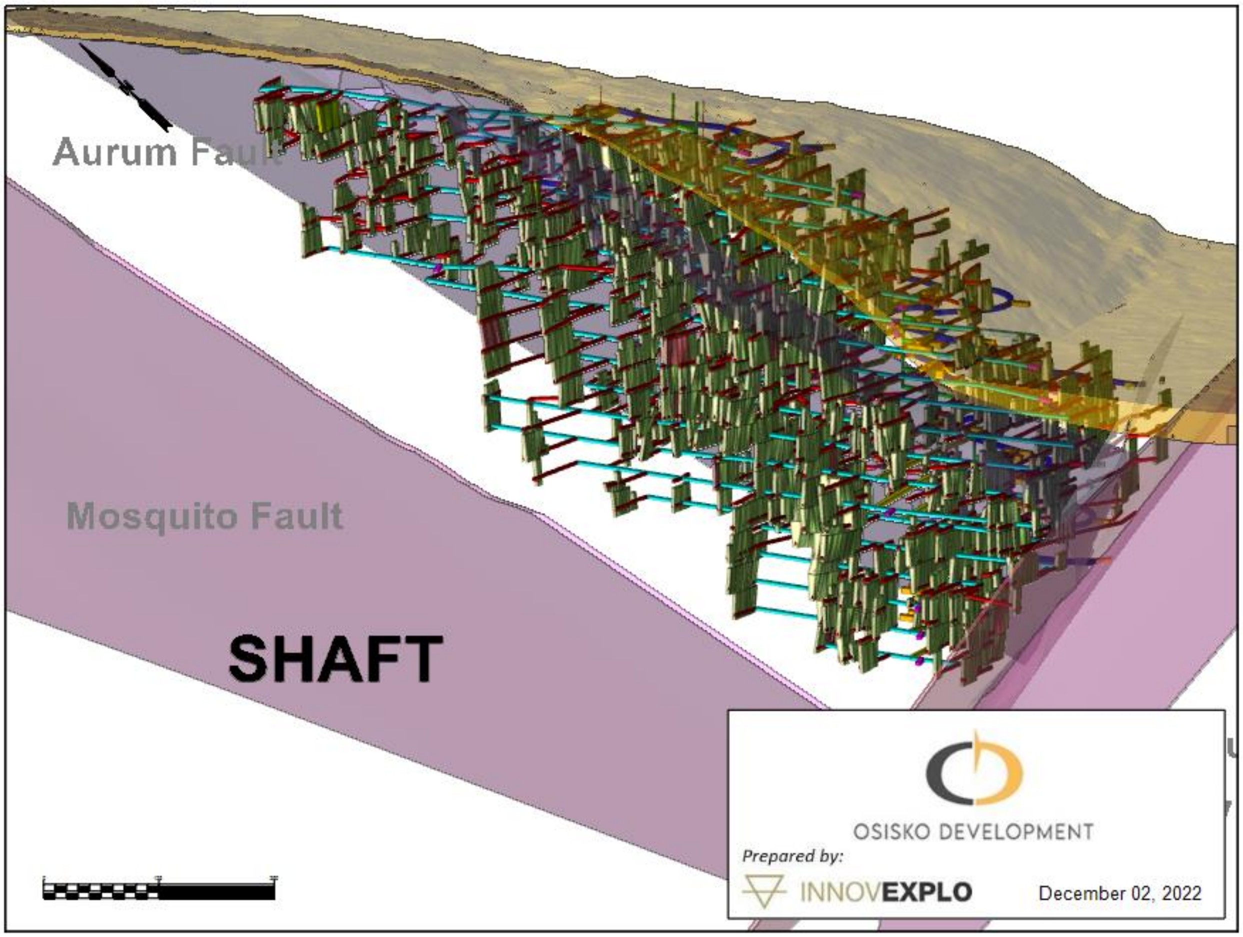


Figure 16-20: Perspective view of Shaft Zone showing traversing fault structures, looking north

16.6.6 Valley Zone

The Valley Zone comprises 15 levels from Level 750 to Level 1,170 at 30 m from floor-to-floor and reaches a depth of around 750 m msl. The Valley Zone spans 570 m along strike. Stope widths in the Valley Zone average 4 m in the upper section and average 4.4 m in the lower section. Stope length on strike averages 14.2 m for all veins in the zone. The Valley Zone is expected to contribute 3.4 Mt at an average grade of 3.7 g/t to production over the life of the mine. A longitudinal view of the zone is included in Figure 16-21.

The Valley Zone is bisected horizontally at its mid elevation by the Shaft Zone Fault 1 dipping at approximately 75 degrees east, and it has a minor intersection with the Jack of Clubs Fault Damage Zone on the western extent, while the Aurum Fault crosses the lower five levels of the zone. The fault structures are shown in Figure 16-22.

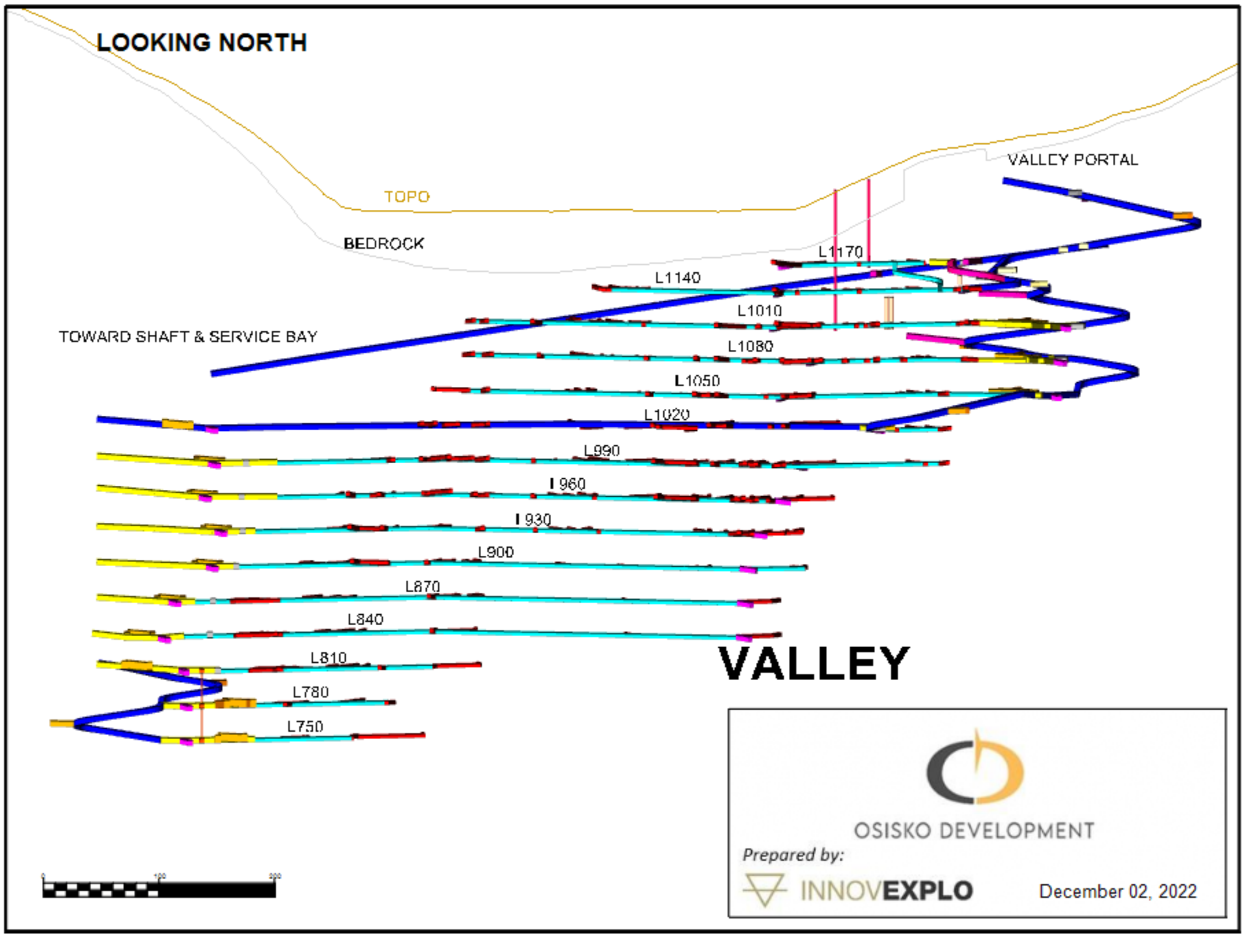


Figure 16-21: Longitudinal section of Valley Zone looking north

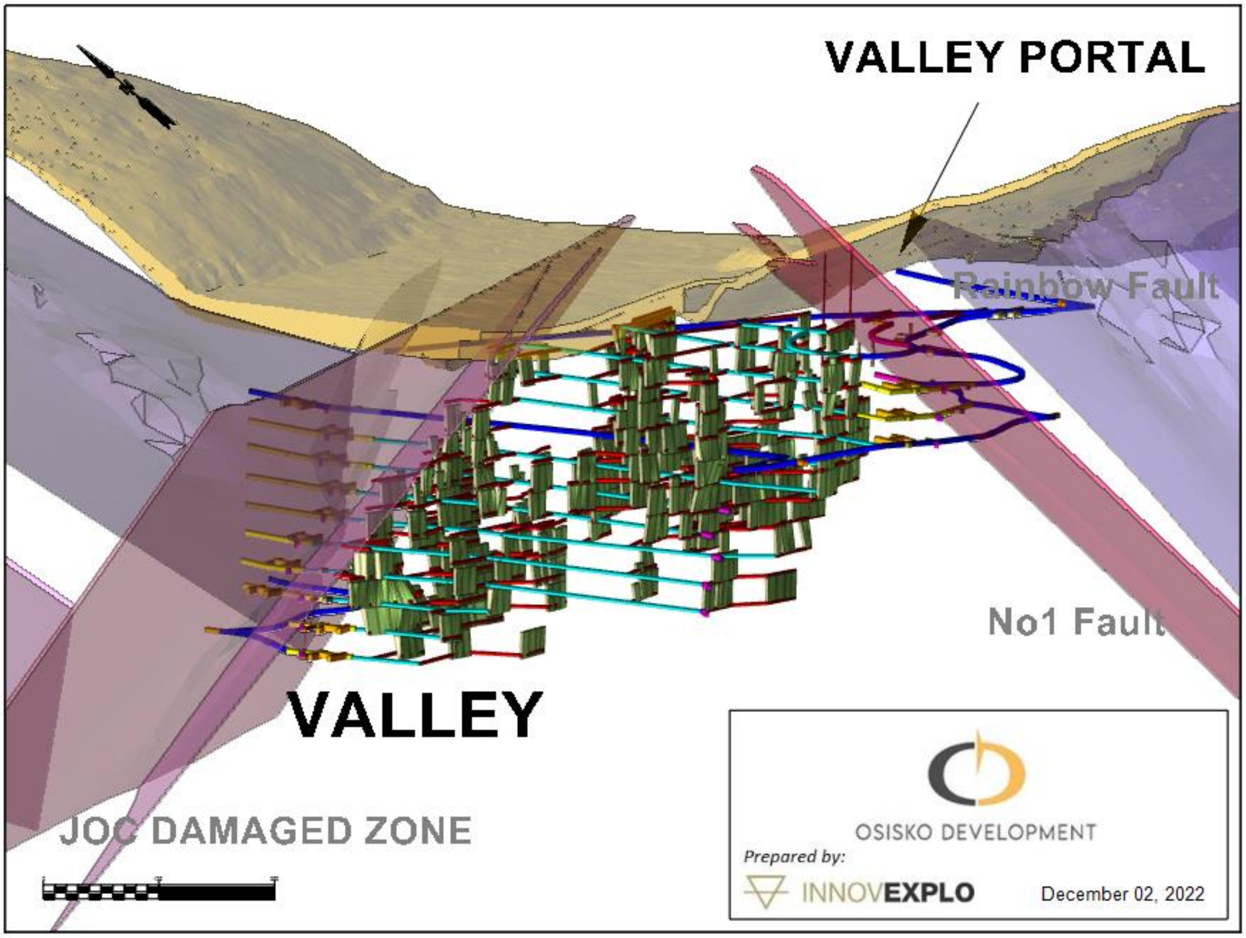


Figure 16-22: View of Valley Zone showing traversing fault structures, looking north

16.6.7 Cow Zone

The Cow Zone encompasses 14 levels from Level 1,020 to Level 1,410 at 30 m spacing floor-to-floor to a depth of approximately 1,020 m msl. The zone spans almost a kilometre along the strike, with stope widths averaging 4.5 m. The stope length on strike averages 15 m for all veins. The Cow Zone is expected to contribute 4.1 Mt at an average grade of 3.41 g/t to production over the life of mine. A longitudinal view of the zone is included in Figure 16-23.

The levels are intersected by four distinct faults striking offset by about 25 to 35 degrees from the zone axis as shown in Figure 16-24. The No. 1 Fault cuts across the northwest corner of the zone, intersecting the six lower levels of Cow North and creating the least amount of contact out of the four traversing faults. The Lowhee Fault, Sanders Fault, and Rainbow Fault cut across most of the zone and access ramp.

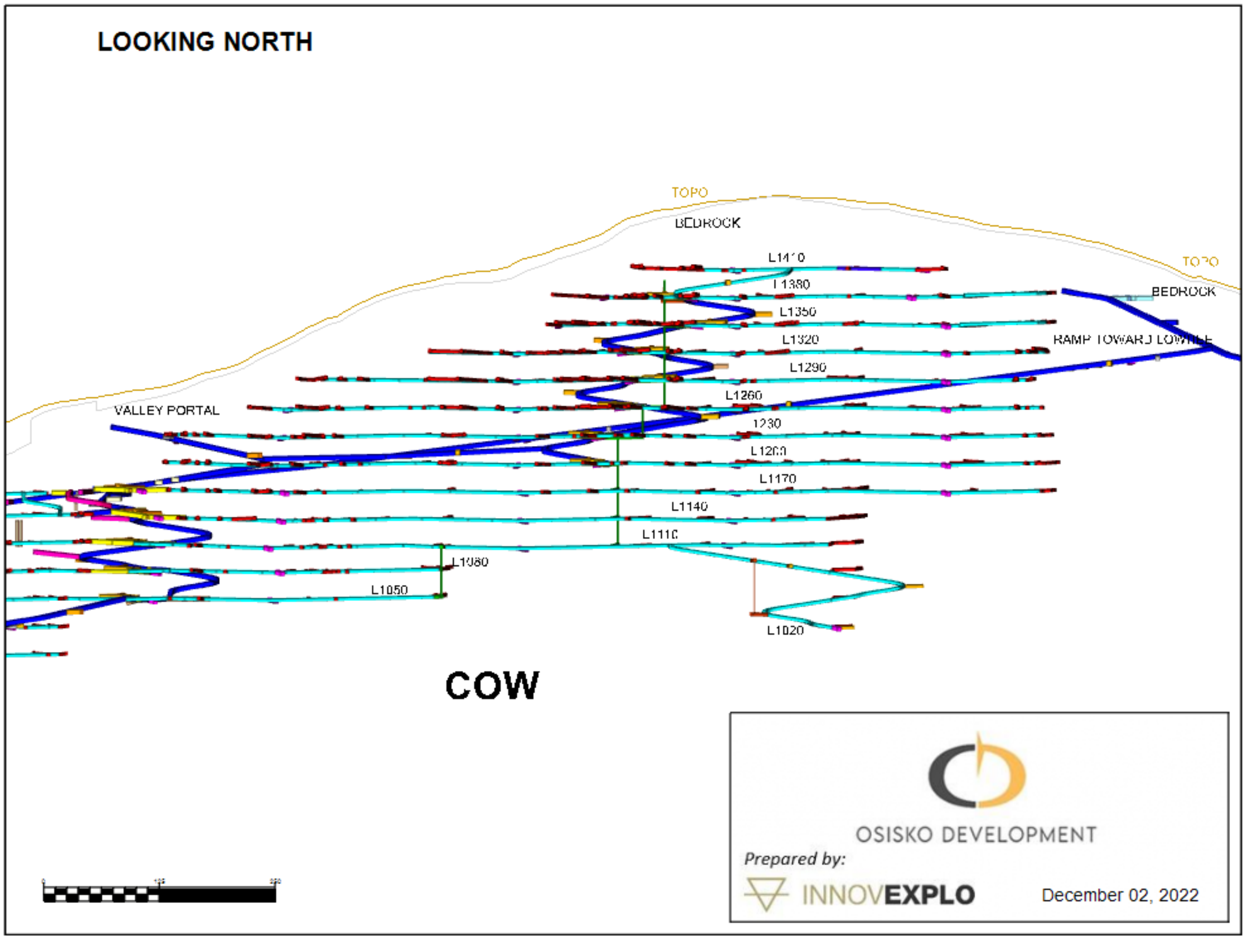


Figure 16-23: Longitudinal section of Cow Zone looking north

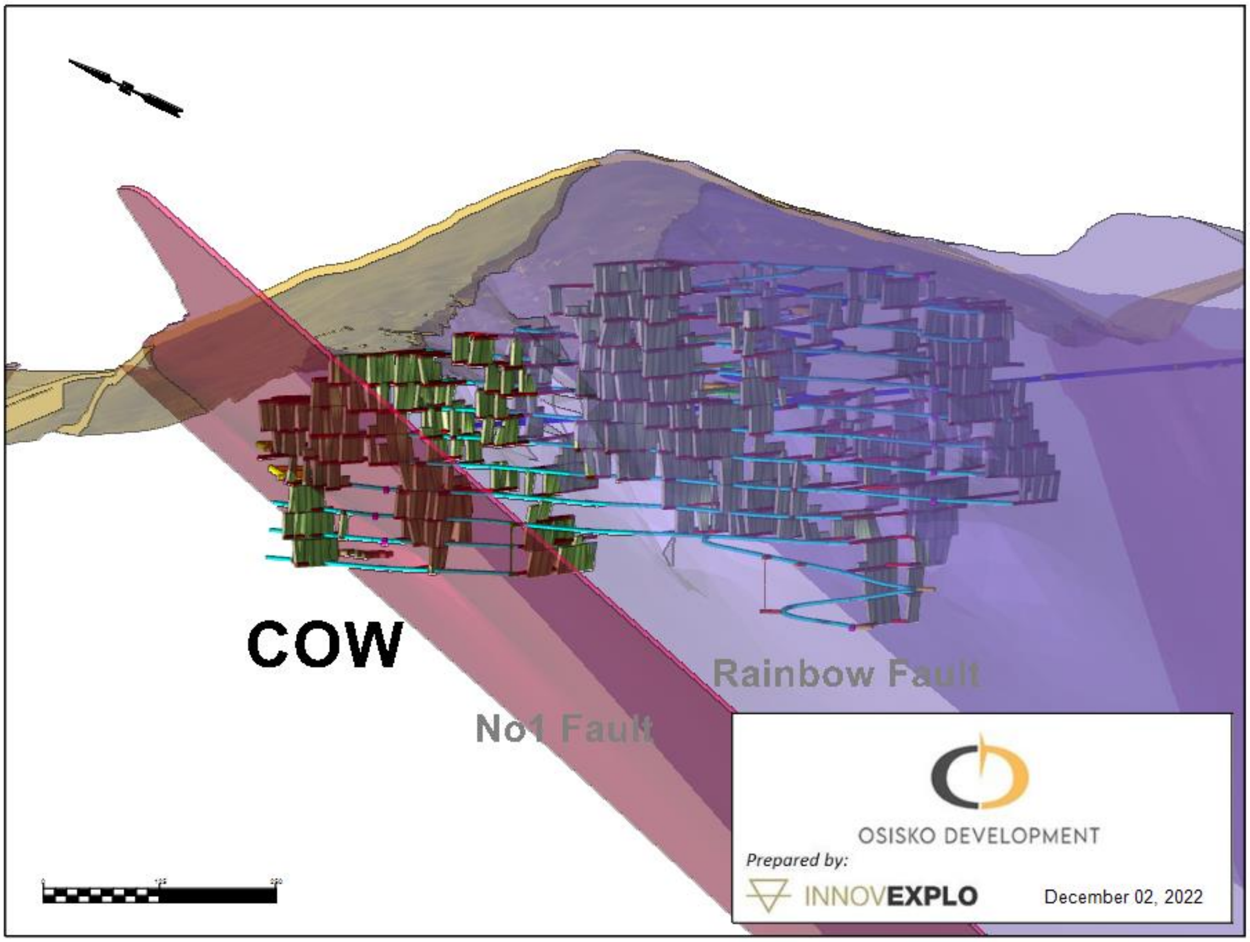


Figure 16-24: Perspective view of Cow Zone looking northeast showing fault structures

16.6.8 Lowhee Zone

The Lowhee Zone encompasses nine levels from Level 1,200 to Level 1,440 at 30 m spacing floor-to-floor, to a depth of approximately 1,200 m msl. The zone spans almost a kilometre along the strike, with stope widths averaging 4.3 m. The stope length on strike averages 15 m for all veins. The Lowhee Zone is expected to contribute 0.6 Mt at an average grade of 4.56 g/t to production over the life of mine (see Figure 16-25 and Figure 16-26).

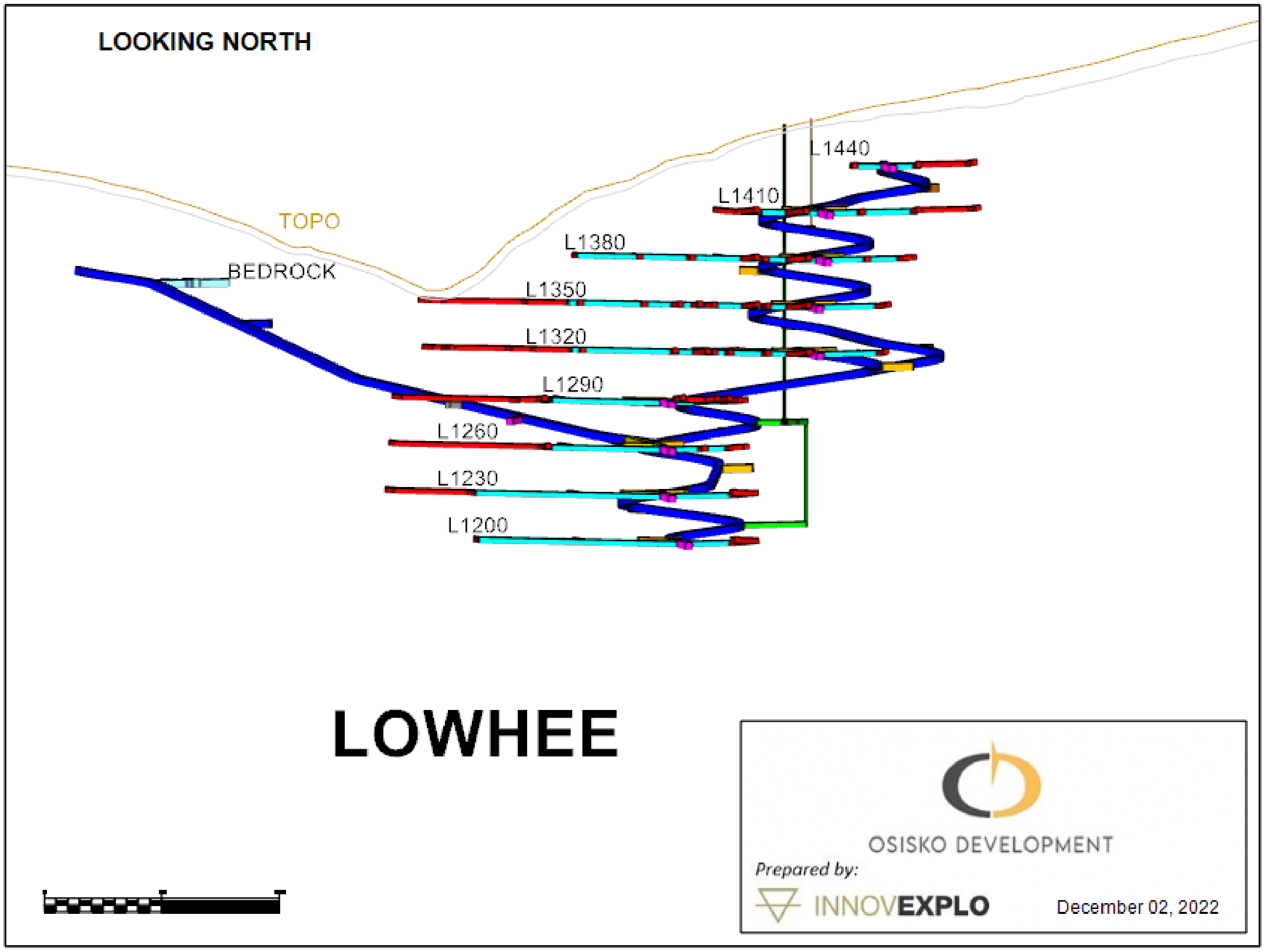


Figure 16-25: Longitudinal section of Lowhee Zone looking north

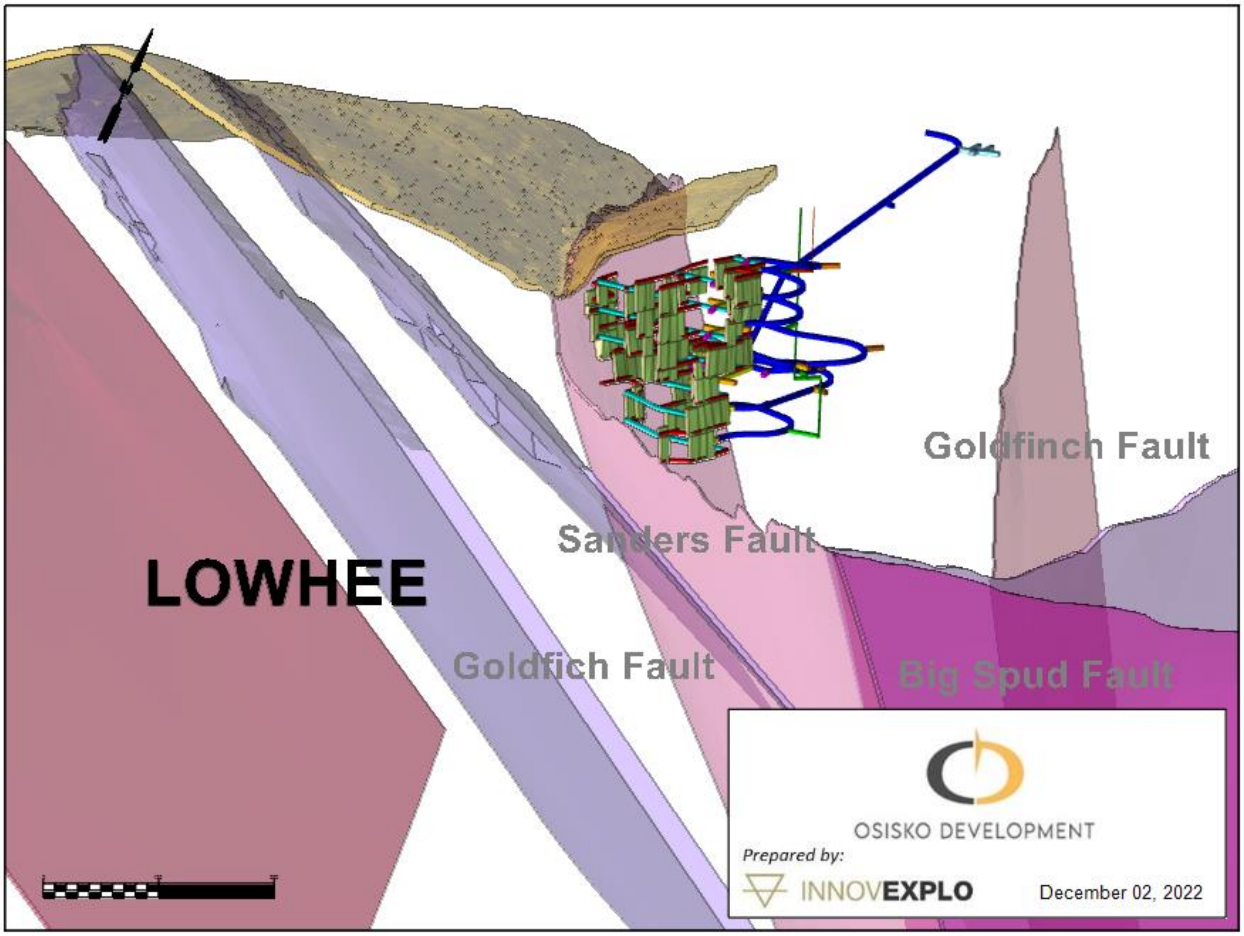


Figure 16-26: Perspective view of Lowhee Zone looking northeast showing fault structures

16.6.9 Mosquito Zone

The Mosquito Zone encompasses seven levels, from Level 1,170 to Level 1,350 at 30 m spacing floor-to-floor, to a depth of approximately 1,170 m msl. The zone spans over 700 m along the strike. Stope length on strike averages 13 m for all veins. The Mosquito Zone is expected to contribute 0.6 Mt at an average grade of 4.93 g/t to production over the life of mine. A longitudinal view of the zone is included in Figure 16-27. The zone is traversed diagonally along the strike by the Mosquito Fault running northwest to southeast. The fault dips approximately 45 degrees northeast as shown in Figure 16-28.

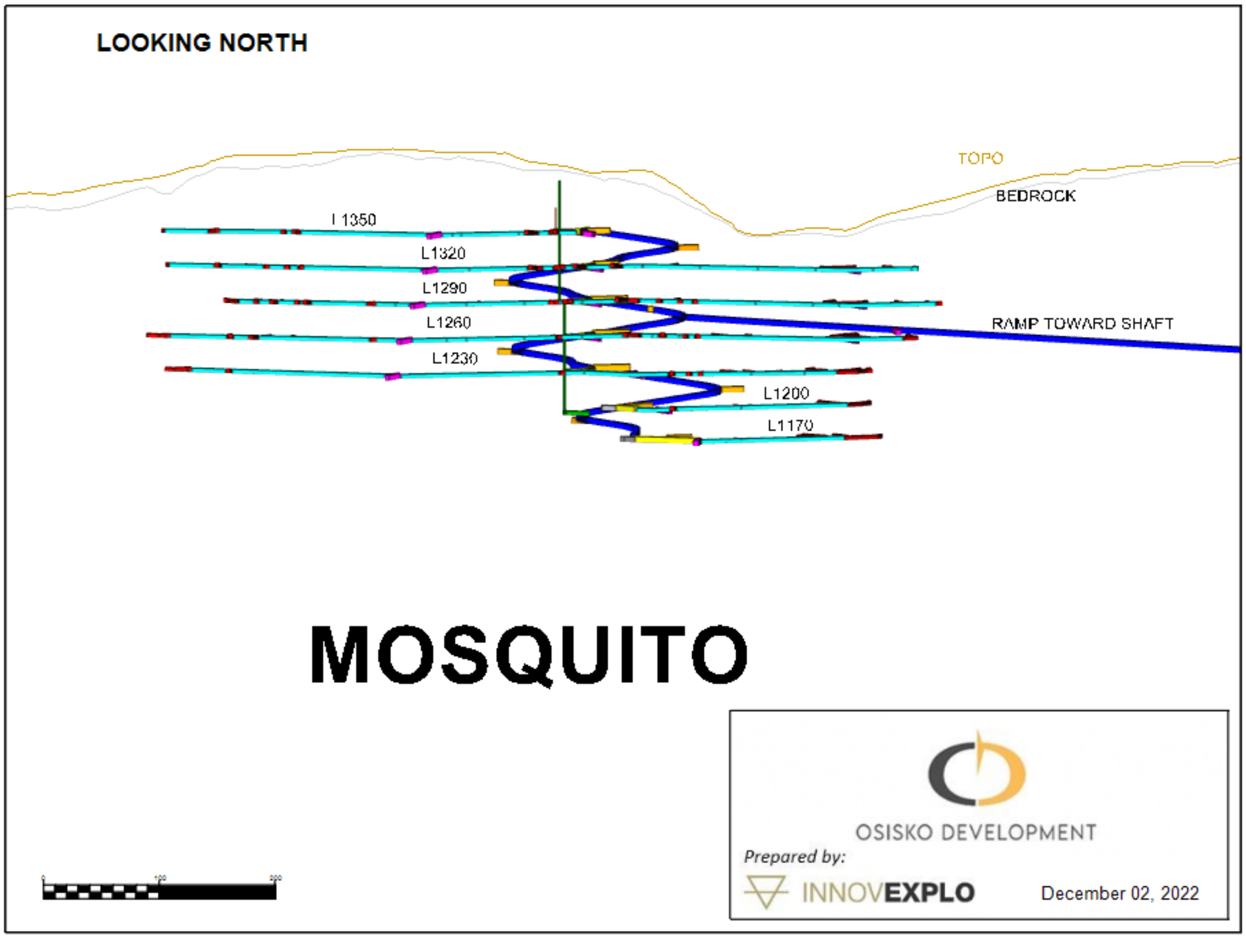


Figure 16-27: Longitudinal section of Mosquito Zone looking north

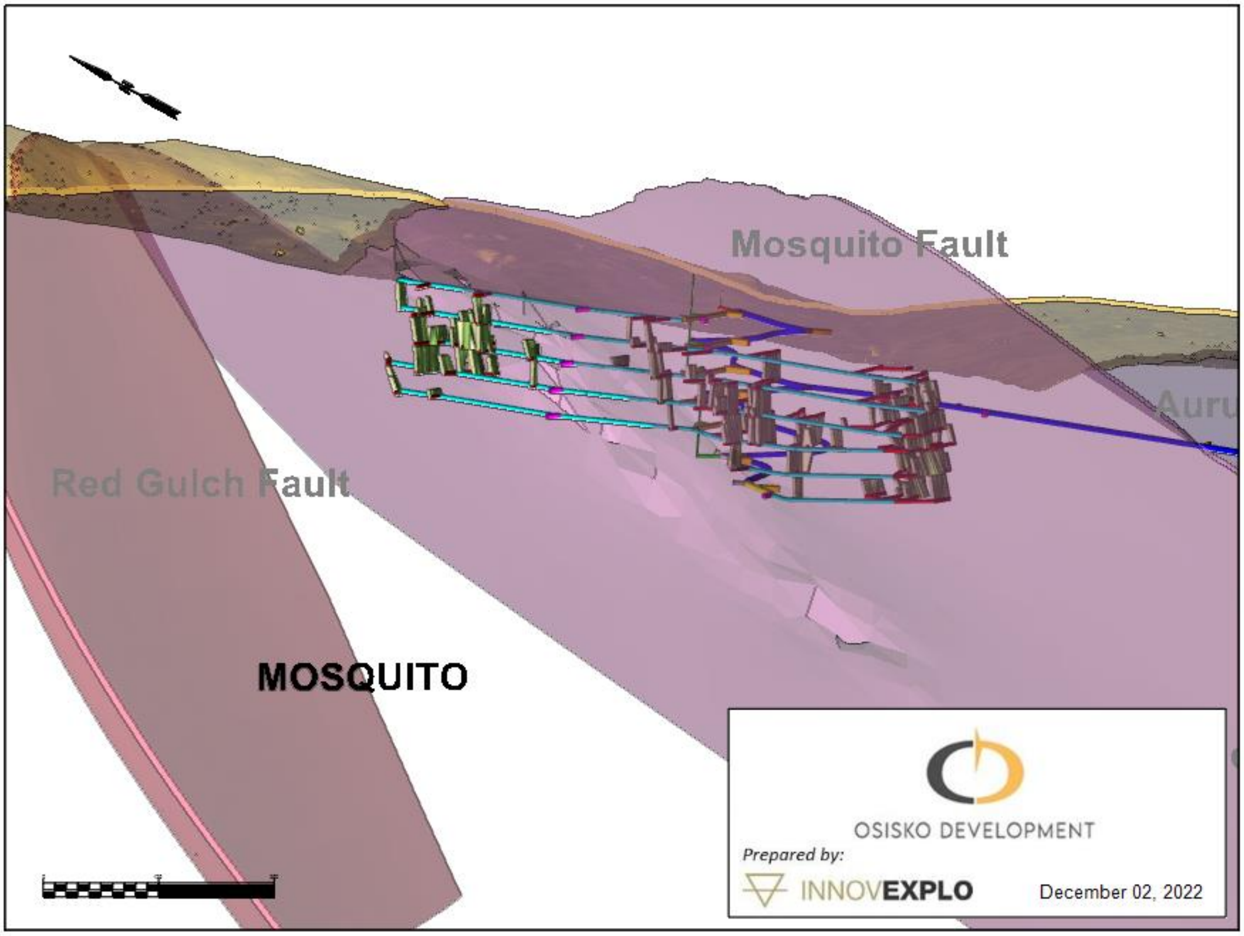


Figure 16-28: Perspective view of Mosquito Zone looking northeast showing fault structure

16.6.10 Mine Dilution and Recovery

In accordance with the geotechnical guidance developed by SRK (see Section 16.2), a strategy of under-drilling narrow stopes to experience "internal" dilution within mineralized zones (sloughage will be mineralized) as part of the "total" dilution will be pursued. External mining dilution has been evaluated for each zone and considered by adding a specific ELOS distance in metres on the hanging wall and footwall. This strategy can be seen in Figure 16-29.

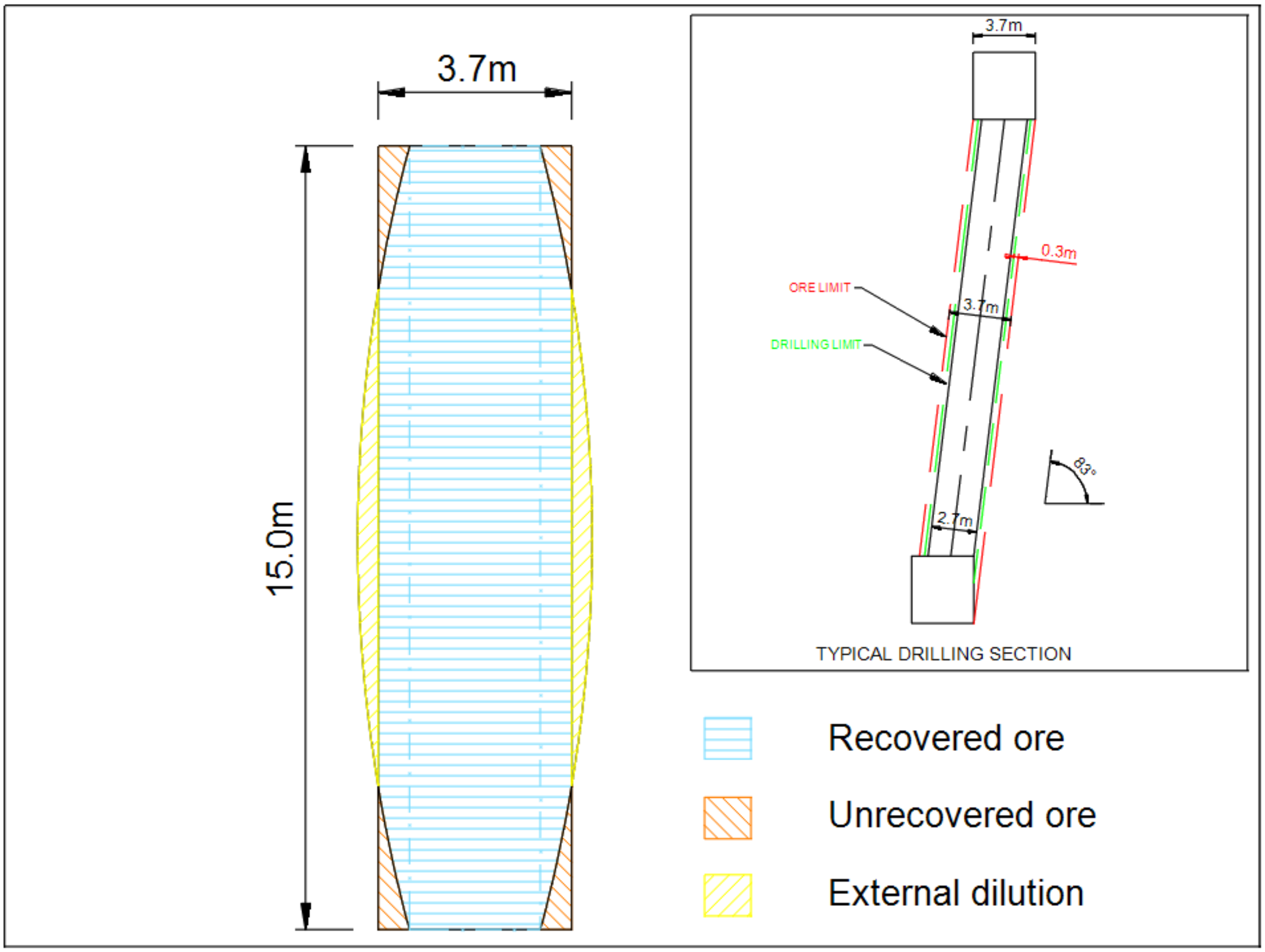


Figure 16-29: Internal dilutions strategy for stopes wider than the minimum mining width

16.6.11 Mine Physicals

The Project requires approximately 181 km of development, including 2 km of vertical development. Of this development, 110 km will be operational and distributed within the strike of the different veins of all zones and 69 km will be capitalized to sustain the production all along the Project. Overall waste lateral development metres by zone are shown in Table 16-14, as well as the lateral development metres occurring in material above cut-off grade ("CoG") shown in Table 16-17.

Table 16-14: Lateral development of waste by zone

Zone	Meter	Tonnes
Cow	30,952	1,631,132
Valley	25,754	1,455,714
Shaft	57,157	3,151,660
Mosquito	9,667	563,180
Lowhee	5,028	298,745
Total	**128,557**	**7,100,431**

Table 16-15: Summary of total lateral development in ore

Zone	Meter	Tonnes	G/t Au
Cow	13,284	533,682	3.75
Valley	9,228	367,303	3.82
Shaft	24,894	1,016,884	4.14
Mosquito	2,317	90,406	4.90
Lowhee	2,370	94,362	4.46
Total	**52,094**	**2,102,638**	**4.03**

The Project has approximately 16.7 Mt of ore. Of this material, approximately 14.6 Mt are from longhole production. The production distribution is illustrated in Table 16-16.

Table 16-16: Summary of total recovered production tonnes by zone

Zone	Tonnes	g/t Au
Cow	4,126,955	3.41
Valley	3,444,914	3.70
Shaft	7,962,448	3.87
Mosquito	602,591	4.93
Lowhee	566,547	4.56
Total	**16,703,454**	**3.78**

16.7 Material Handling

The Project Material handling is divided in two phases depending on the Life of Mine (LOM) and the process plant requirement.

A fleet of 50 t trucks and 10 t LHD will handle ore and waste rock material from stopes and development headings to surface. A truck loading station will be established on each level to facilitate material storage and transfer.

Phase 1

During Phase 1, from 2024 to 2027, the ore will be hauled to the surface crushing and screening plant located at the Bonanza Ledge mine site. The screened material will feed the ore sorter for a preconcentration before being transported to the QR Mill facility for final processing.

Underground, the Cariboo Ramp will connect Lowhee and Shaft mining zones together. Mosquito Zone, a satellite zone, will be accessed via the Shaft Zone. The Mosquito Zone will be mined at the end of Phase 1. Figure 16-30 shows the interactions between the ramps and production zones in Phase 1. The waste material will be used for underground stope filling or trucked to the Bonanza Ledge Waste Rock Storage Facility ("WRSF").

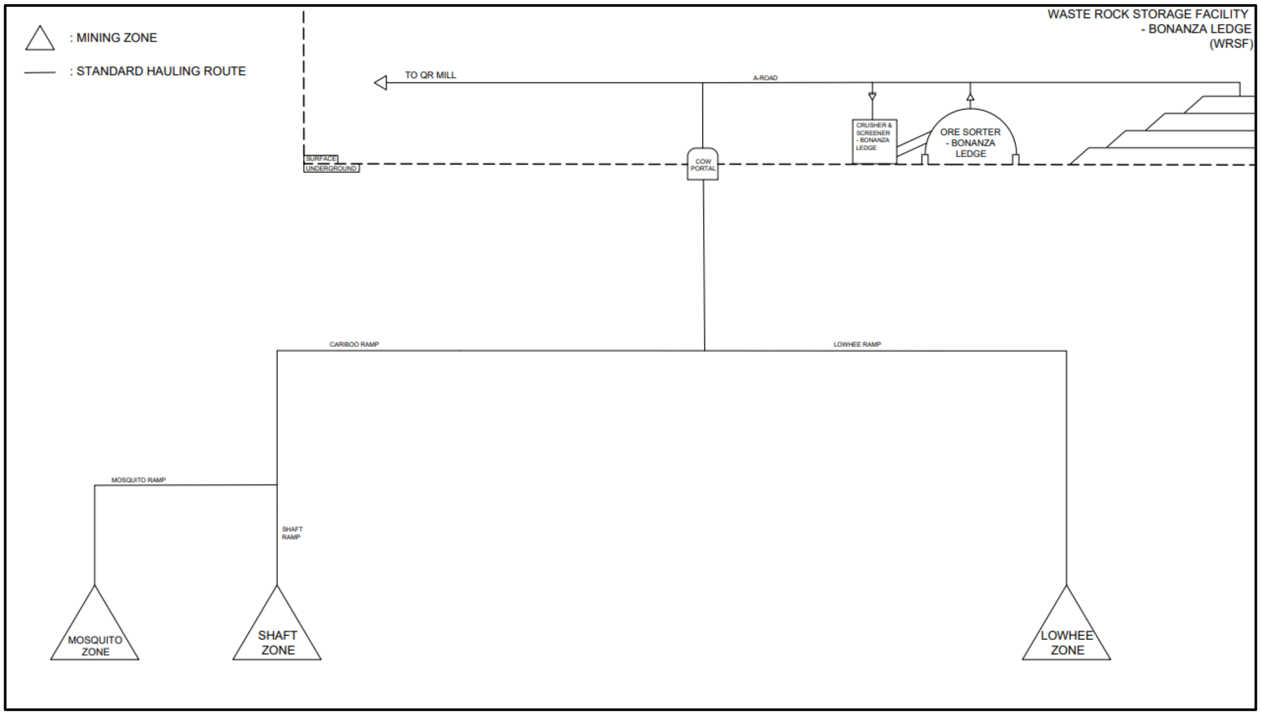


Figure 16-30: Ore and Waste Handling Flowsheet in Phase 1

Phase 2

Phase 2 will start by the third quarter of 2027. Production from Mosquito and Shaft Zones and the lower part of Valley Zone will be trucked to the Shaft rockbreaker station on Level 1,080. From there, an automated truck will haul ore on the Cariboo Ramp to the underground crushing facilities. The upper part of Valley and Cow ore zones will be hauled directly to the crushing facilities. Figure 16-31 illustrates the underground ore handing for phase 2. The crushing facilities will be described in the following subsection.

In phase 2, a preconcentration process, which is detailed in Chapter 17, will consist of an ore sorter that will generate waste. The waste generated will be redirected underground through to a waste pass inside the treatment plant from surface down to Level 1,170 close to the Cariboo Ramp. Finally, a fleet of 50-t automated trucks will haul the waste to the Bonanza Ledge WRSF. Figure 16-31 shows the ore and waste handling for Phase 2.

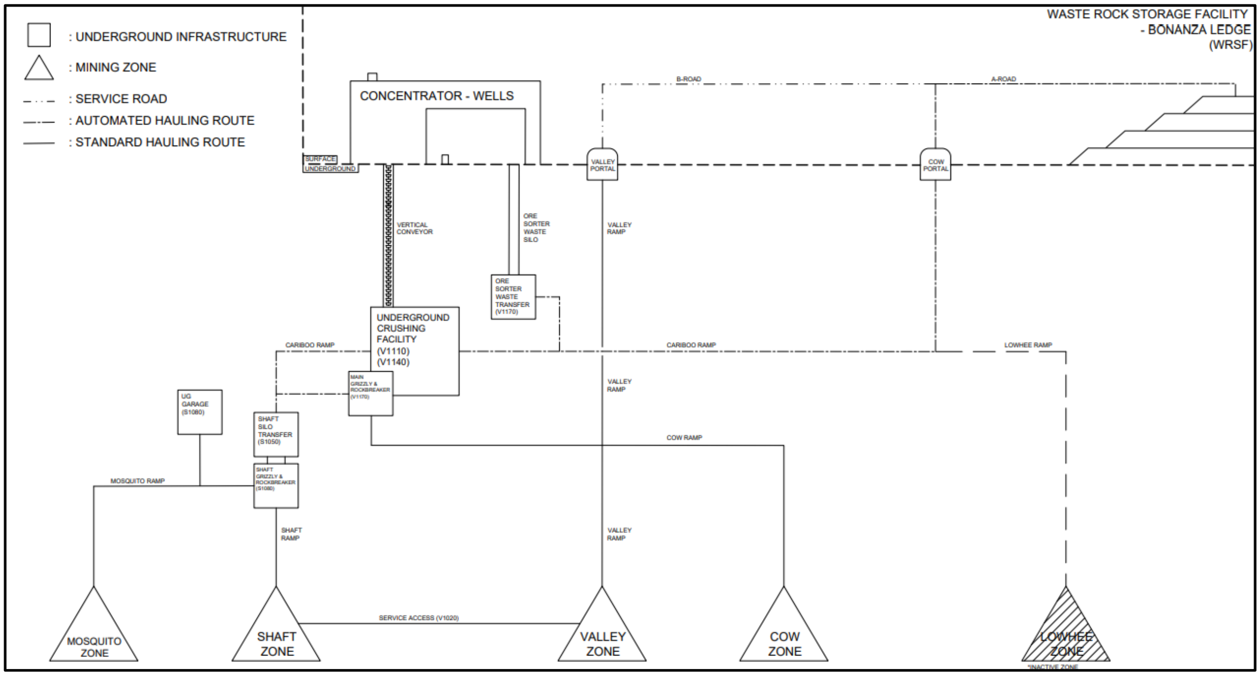


Figure 16-31: Ore and Waste Handling Flowsheet in Phase 2

16.7.1 Material Handling Infrastructure

Haulage distances between zones and crushing facilities are long and autonomous truck haulage will be used. Ore passes will store the feed for the crushing circuit. The system is designed to convey 4,900 tpd of ore to the vertical conveyor. The infrastructure required to support the processing rate and the overall material handling is listed below, but is not limited to:

- Grizzly and rock breaker station;
- Ore Silos;
- Ore Chutes;
- Waste pass;
- Waste Pass Chute;
- Vibrating grizzly feeders;
- Pan Feeders (2x);
- Belt Magnets;
- Dust Collectors;
- Electrical distribution and communication;
- One Fix Jaw crusher;
- One Mobile Cone crusher Unit;

- One Vibrating screen deck;
- Conveyors (x7);
- Vertical Conveyor.

Figure 16-32 shows a section view of the underground crushing and waste handling facilities.

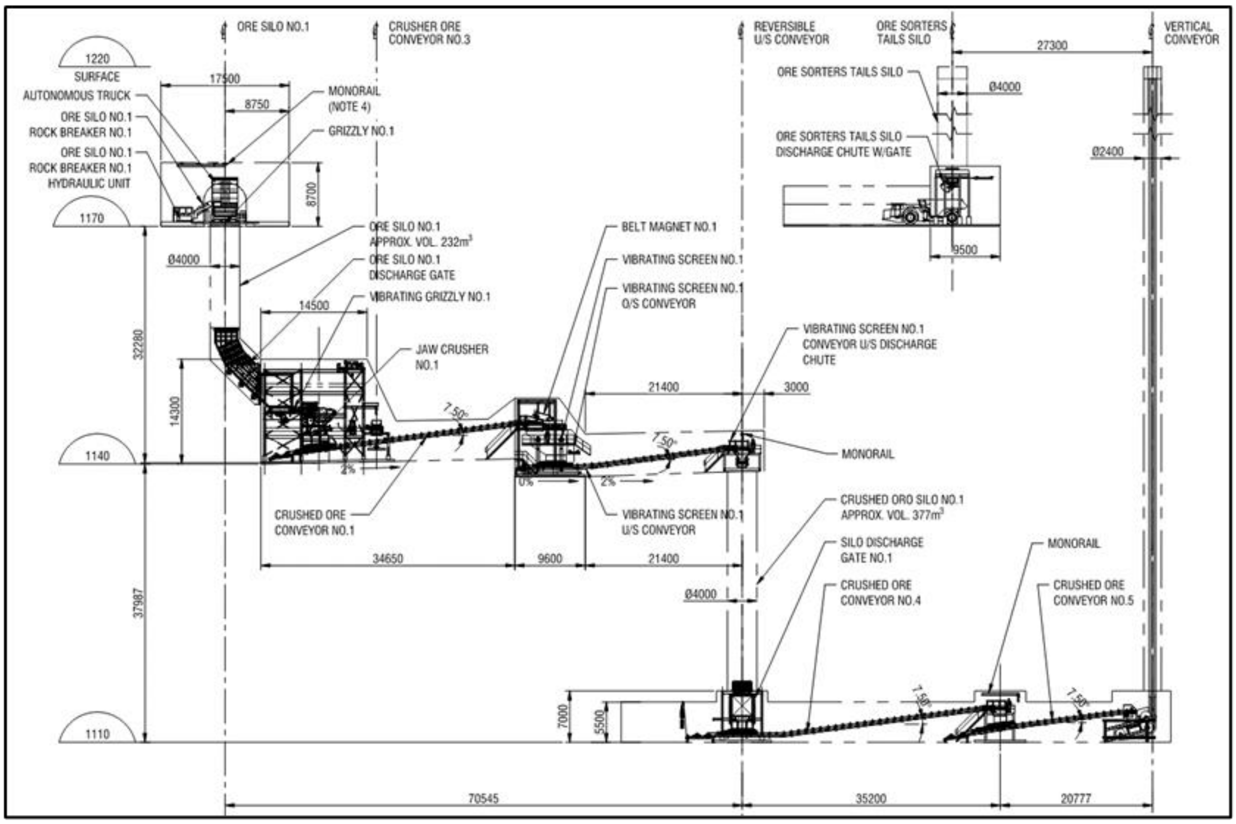


Figure 16-32: Section view of the U/G ore and waste handling

16.7.1.1 Grizzly and Rock Breaker Stations

The material handling infrastructure includes a grizzly and rock breaker stations with a total capacity of 4,900 tpd. Ore silos that are 4 m in diameter under the grizzly and rock breaker station will feed the fixed jaw crusher on the lower level. The grizzly and the rock breaker station is designed for simultaneously dumping two trucks, both being completely isolated from each other to allow for automated operation on one side. The station has a dimension of 300 mm x 300 mm. It is equipped with a hydraulic hammer designed to cover the station fully. The operator cabin will be installed to ensure the operator has an unobstructed view of the whole grizzly and rock breaker, as shown in the Figure 16-33.

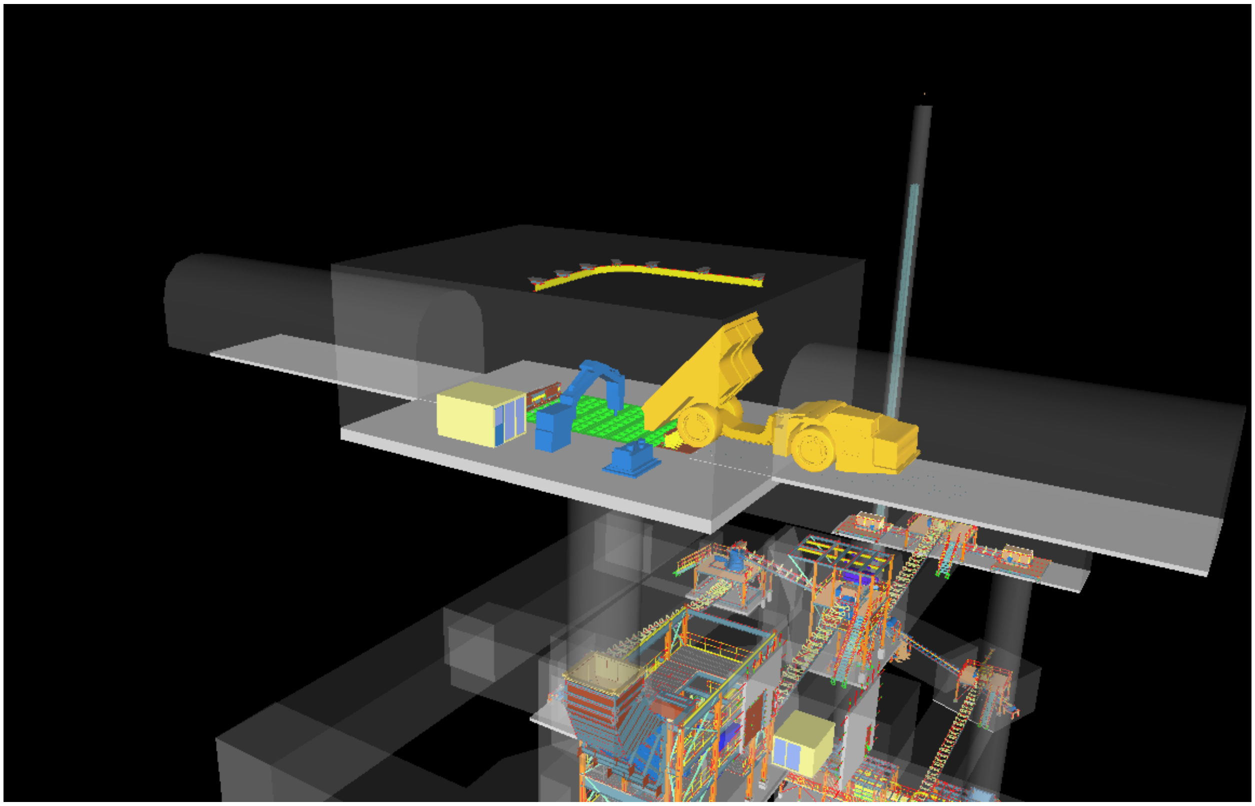


Figure 16-33: U/G Grizzly and Rock Breaker Station

The rock breaker power unit is fed by a 600 Volt ("V") power from the crusher electrical substation via boreholes. All electrical and control equipment will be in the workplace. The local loads are fed from a 400 Ampere ("A") distribution panel. The electrical loads in the area will be comprised of lighting, welding plugs and 120 V outlets. The programmable logic controller ("PLC") control system has a local human-machine interface ("HMI"), instrumentation, and fiber optic communication. A radar level transmitter provides the actual level of ore to the control system and operator. Communication infrastructure will have sufficient bandwidth to permit remote and fully autonomous rock breaker operation.

16.7.1.2 Crushing Circuit

The ore crushing system consists of a primary crushing station followed by a classification of the ore. The oversize ore goes through a closed loop secondary crushing system to downsize the ore further. The desired ore size then goes into the storage silos connected to the loading station. Figure 16-34 shows the crushing system circuit.

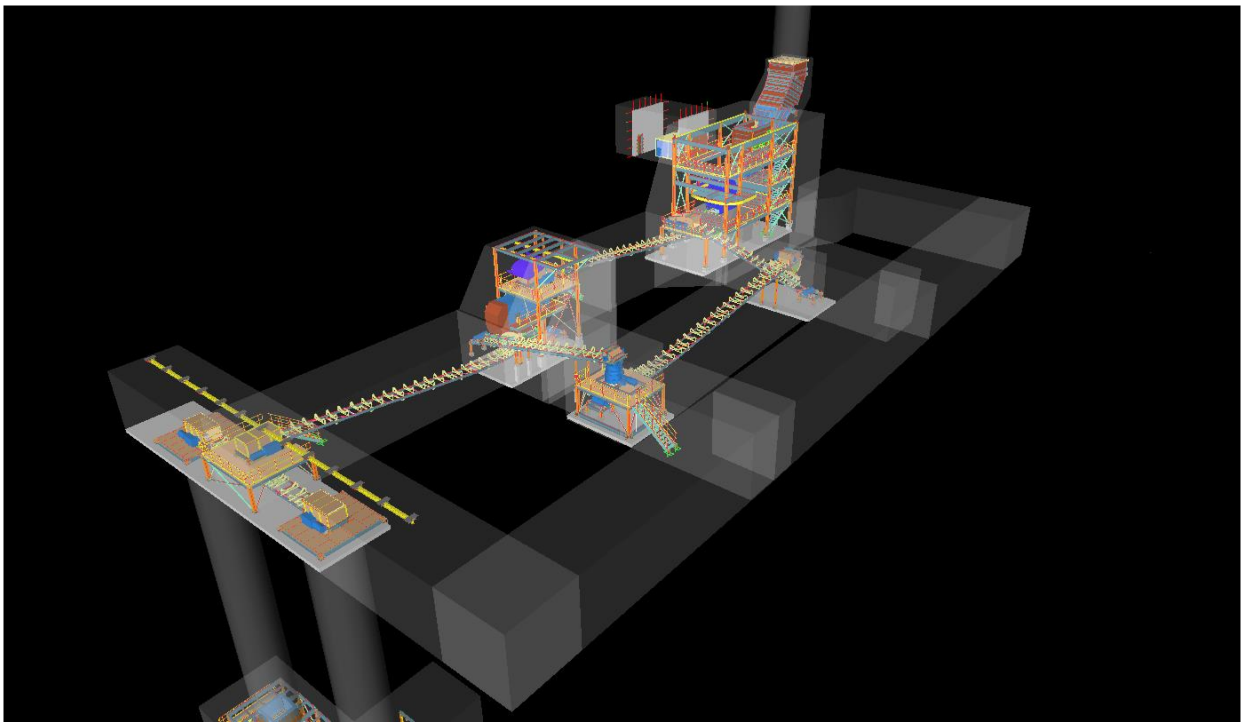


Figure 16-34: U/G Crushing System Circuit

16.7.1.3 Ore Feed Chute

The ore is fed by a chute located below the silo and ahead of the comminution circuits. A steel collar with a "finger" is planned downstream of the choke gate to prevent premature wear of press frame. The choke gates control the flow rate from the silo to the vibrating grizzly feeder.

16.7.1.4 Primary Crusher Station

The primary crusher consists of a jaw crusher that will reduce ore to less than 100 mm in size. The system is designed for 284 metric tonnes per hour ("tph") to achieve an average daily production of 4,900 tpd circuit. The crusher was designed to have a planned utilization of 75% over 24 h/day.

The crushed material is discharged onto a conveyor that delivers it to the screen decks. The material travels past a belt magnet to remove tramp steel while enroute to screening.

16.7.1.5 Sizing Station

After passing the primary crushing station, the ore enters a closed loop system, as shown in Figure 16-35. A vibrating multi-deck screen separates the ore into oversize and undersize fractions. The undersize fraction discharges into the top of the crushed ore feed conveyor. The oversize stream is conveyed to the secondary crushing stage for further size reduction. The stream flow is represented by the blue system on Figure 16-35.

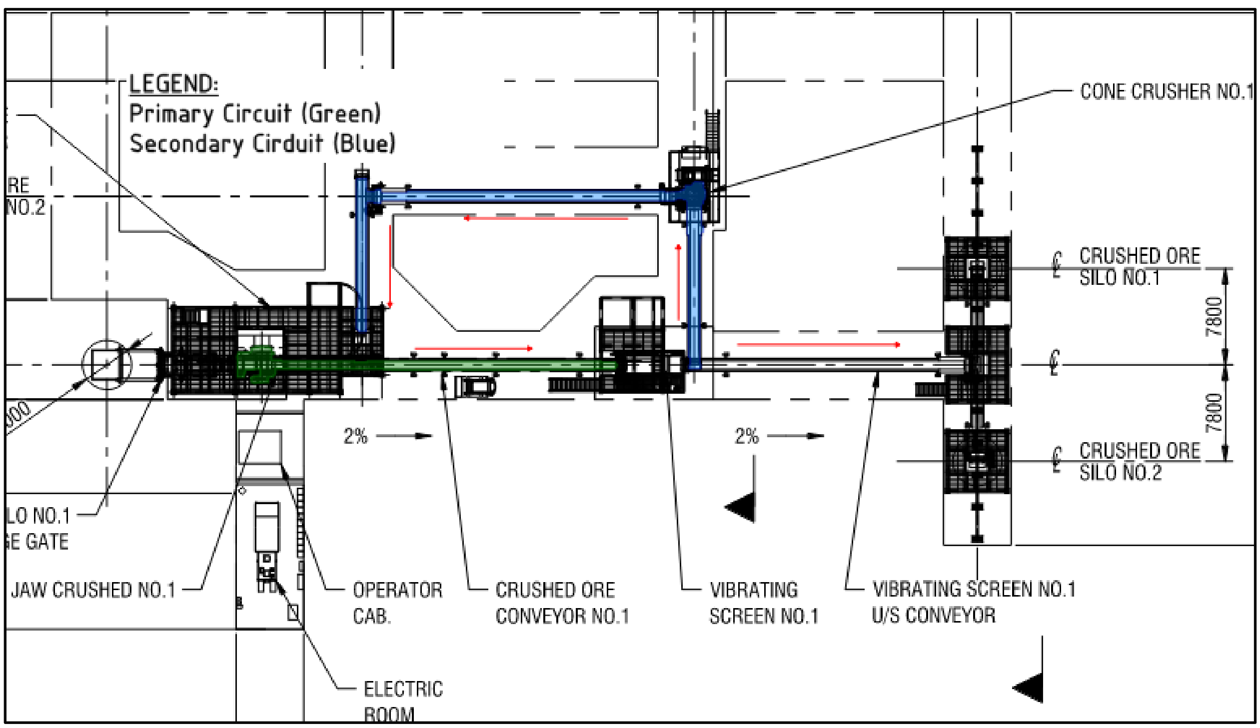


Figure 16-35: Plan view U/G ("underground") closed loop crushing station

16.7.1.6 Secondary Crushing Station

The secondary crushing station has a cone crusher to reduce the material size to 22 mm or less. The secondary crusher products are conveyed to the primary crusher product conveyor to undergo sizing once again.

16.7.1.7 Crushed Ore Bins

Once the wanted size reduction via the primary and secondary crushing is obtained, the material is conveyed onto a reversible conveyor, feeding two circular 4-m ore silos.

16.7.1.8 Loading Station

After being crushed, the ore undergoes the loading circuit feeding a vertical conveyor connected to the surface plant. Figure 16-36 illustrates a series of two-belt conveyor loading the vertical conveyor from the silos.

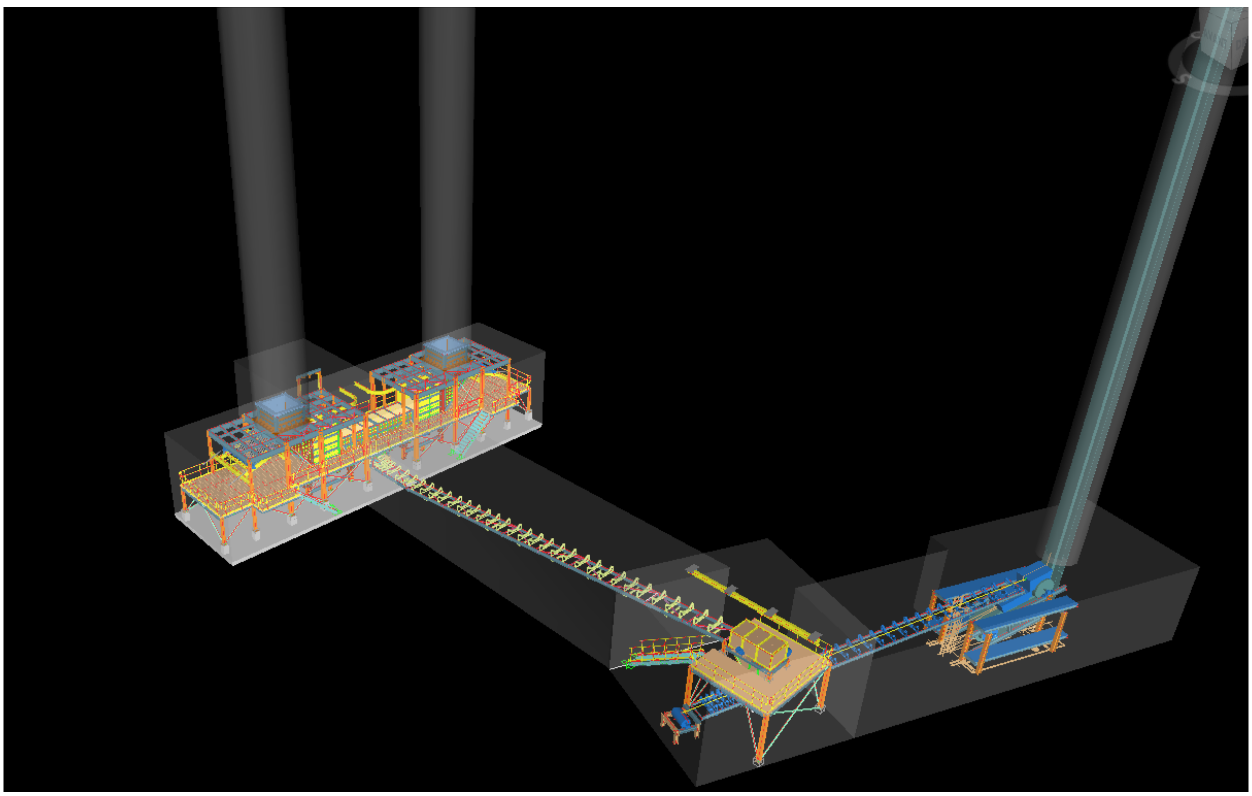


Figure 16-36: U/G Loading Station

16.7.1.9 Chutes Under the Silos

Chutes under the ore silos will feed a conveyor to a transfer point, as illustrated on Figure 16-36. Steel collars are planned at the bottom of each silo.

The press frame gate controls the material flow rate from the silo to the vibrating pan feeder. The vibrating pan feeder controls the feed rate onto the crushed conveyor. A trolley and hoist are planned at the chutes' location for maintenance.

16.7.1.10 Transfer Point and Transfer Conveyor

The transfer point will feed the transfer conveyor to the vertical conveyor, as illustrated on Figure 16-37.

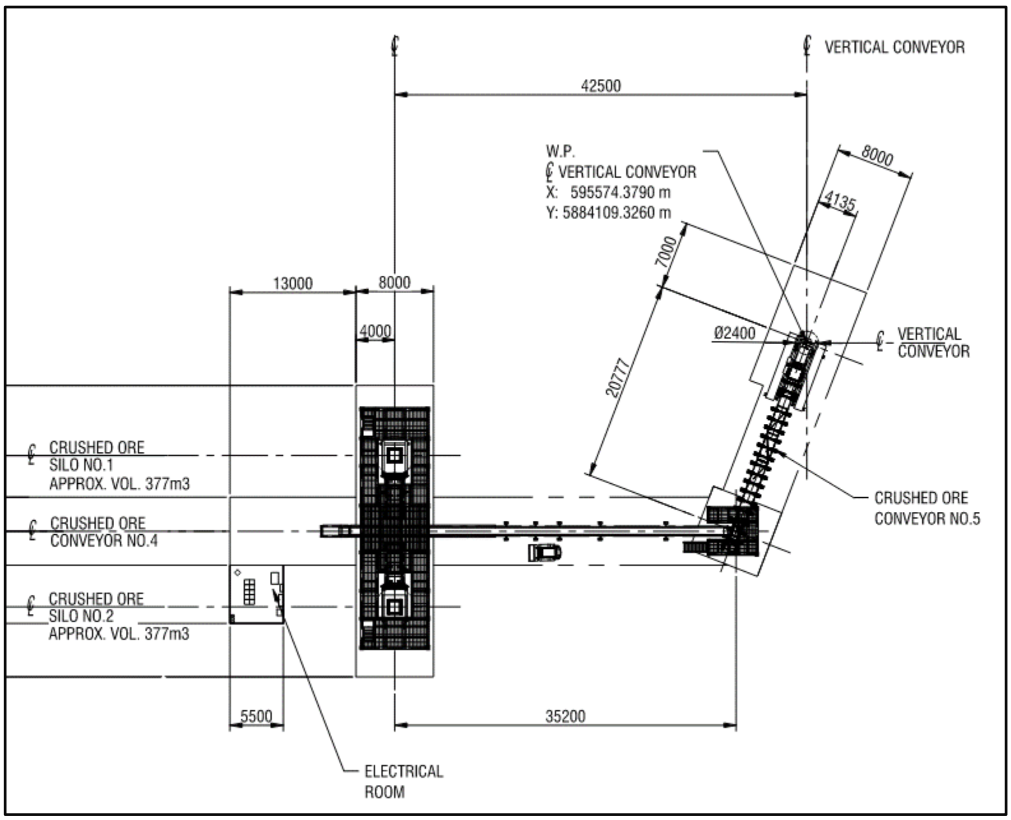


Figure 16-37: Transfer point and transfer conveyor plan view

16.7.1.11 Vertical Conveyor

The Vertical Conveyor will deliver the crushed ore directly inside the concentration plant on the surface. The vertical conveyor requires sized material of 22 mm passing, which explains the multiple crushing stages of the facility. The vertical conveyor loading point is located on Level 1,110 and the discharge is at surface, at 1222 masl. The vertical conveyor design and details can be found in Section 17.5.1.

16.7.1.12 Waste Truck Chute

The truck chute is located at the bottom of the waste silo, and it is used to load trucks transporting waste from the underground to the Bonanza Ledge WRSF for final disposal. Figure 16-38 shows the general arrangement at the bottom of the waste silo.

The truck chute will reduce the need for LHD to load trucks while increasing the waste haulage efficiency. The chute flow is regulated by a press-frame with an arc gate. The press-frame is mounted to the excavation roof to maintain ease of access to the loading station.

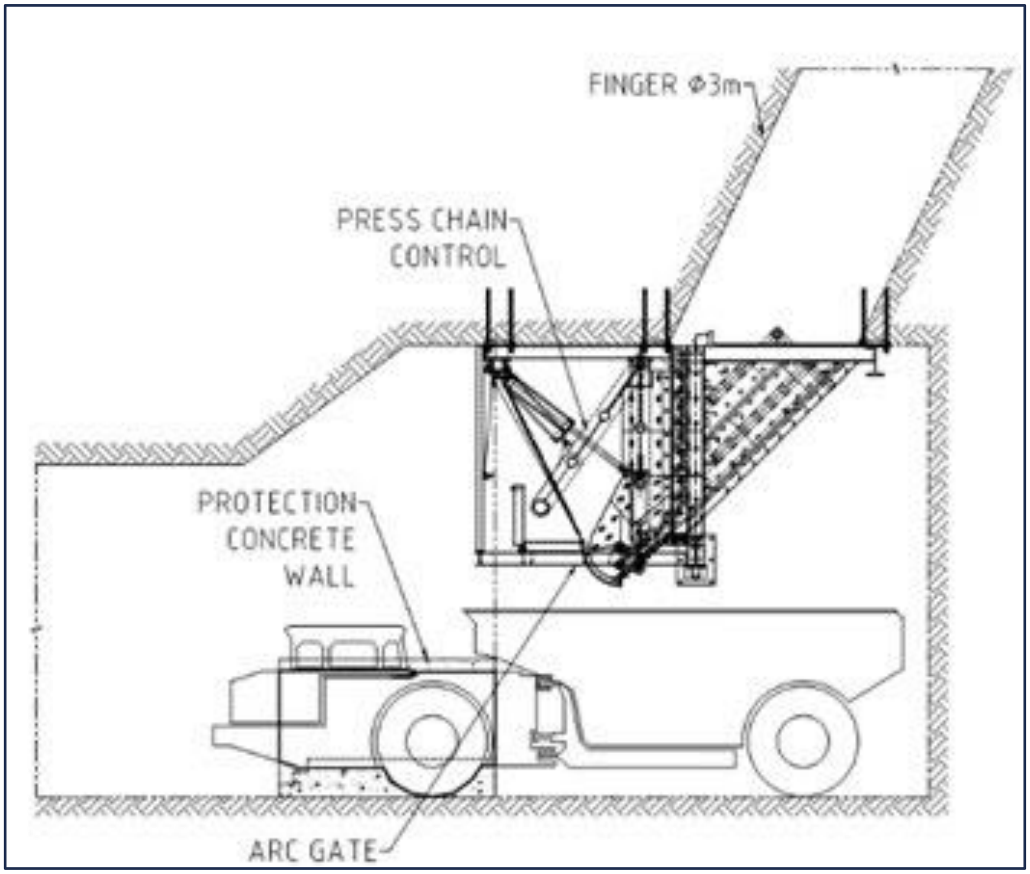


Figure 16-38: Waste truck chute

The waste chute is fed by a 600 V power pack from the local substation. The electrical loads in the area include lighting, welding plugs, and 120 V outlets. A PLC based control system will have local HMI, communication with fiber optic, and instrumentation. The HMI provides the truck operator information and chute control.

16.7.1.13 Fire Detection and Suppression

A fire protection and suppression system will be installed at critical points, such as in the head and tail pulleys of each conveyor and in the crushing station. The fire protection and suppression system will be connected to the mine LTE network for monitoring at all times.

16.7.1.14 Electrical Distribution and Communication

The rock breaker stations connection and main electrical distribution feed (13.8 kilovolt ["kV"]) and controls was not part of Golder's scope of work and was provided by InnovExplo. A 13.8 kV feeder and fiber optic communication cable will feed the main electrical station of the facility. It will be located on Level 1,140, near the control room, jaw crusher, cone crusher, conveyors, and other equipment. It will be equipped with a 2 megavolt ampere ("MVA"), 13.8 kV to 600 V transformer, a 600 V switch panel, a 600 V motor control center ("MCC"), a 120/208 V distribution panel, a PLC cabinet, a communication cabinet, and a small uninterruptable power supply ("UPS").

The second electrical room will be located at the bottom of both crushed ore silos on Level 1,110 and will be fed from the first one at 600 V. A fiber optic communication cable will also come from the first electrical substation. It will be equipped with a 600 V MCC, a 120/208 V distribution panel, a remote input/output ("I/O") cabinet, and a communication cabinet.

The control room will be equipped with two human machine interface computers.

The two electrical substations and control rooms will provide the sufficient electrical infrastructure to support the ore handling system and the communication system between the process plant and the underground crushing infrastructures.

Welding outlets, 600 V and 120 V service outlets, and general lighting will be deployed around equipment to facilitate operations and maintenance.

Provisions for instrumentation has been included in the estimate. Every chute or silo has a high/low level, and all pieces of equipment that feed the conveyors are outfitted with side travel, speed, and emergency pull cord switches. Cameras allow the operators to view the equipment remotely, basically constituting remote monitoring. All crushing systems can be operated manually (start-stop) or tele-operated, as they will be connected to the mine's LTE network.

16.8 Backfill Strategy

16.8.1 Paste Backfill

Work relating to paste backfill operations was completed by Golder Associates Ltd. ("Golder"). The design of the underground paste fill distribution system is directly influenced by the locations of the paste plant and the booster station. A booster station is utilized when greater than 90 bar are required to deliver the paste to the target stope locations. In this study, the objective was to minimize the number of booster stations underground while maximizing the reach of the paste network.

As part of this analysis, a flow model was developed by Golder to examine the paste distribution to the following underground areas: Shaft (below Level 1,260), Valley, and Cow. The flow model examined nine scenarios that covered the entirety of the target paste delivery zones and analyzed the extent of some of the high-pressure levels.

16.8.1.1 Design Criteria

It must be noted that a conservative approach has been considered at this stage of the Project for the paste plant design criteria. The test program targets lower level of compressive strength the results were used to develop a model to determine design binder concentration.

The paste plant equipment selections are covered in Section 17.5 as part of the MSC. The design criteria are provided in Table 16-17 below and paste binder concentration for the required paste strength are provided in Table 16-18:

Table 16-17: Paste plant design criteria

Description	Unit	Value
Tailing Production	Tpd	2 745
Paste Fill Plant Availability	%	94
Paste Solid Content	%	75
Average Binder Content	%	5.27
Paste Binder Type		Cement GU-10
Paste production	m^3/hr	83.3

Table 16-18: Paste plant receipt

Paste Strength after 7 Days (KPa)	Binder concentration (% of filter cake solids)
180	3.7
300	7.5
500	13.5

16.8.1.2 Primary Paste fill Distribution Network

The following subsections will describe the underground paste fill distribution for Valley, Shaft, and Cow Zones. The paste plant, located inside the Service Building, is detailed in Section 17.5. There are a total of three surface-to-underground boreholes, one operating, and two on standby. Figure 16-39 shows the entire underground paste fill distribution network.

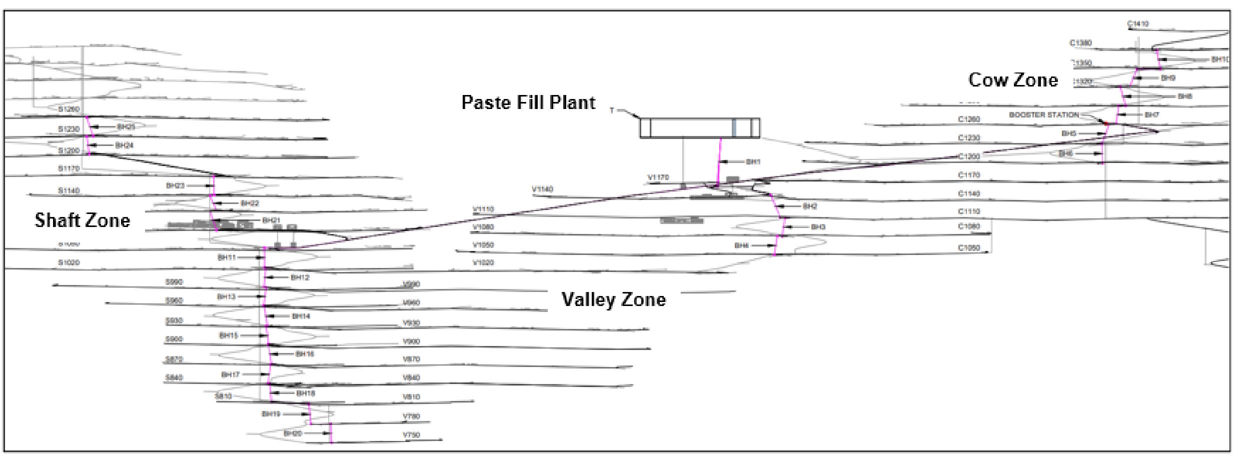


Figure 16-39: Cariboo Paste Fill Distribution Network

16.8.1.3 Valley Paste Fill Distribution Network

Valley Zone (Valley Zone levels are indicated with a "V") will be filled from two different locations. Levels V990–V750 will employ the same initial routing and interlevel boreholes ("BH") as the lower Shaft area, starting with BH11 and ending with BH20 at V750 level. Levels V1170–V1060 will be delivered from the paste plant directly. The paste will be routed through the surface borehole and will descend via a small ramp to V1140 level. From there, the BH2, BH3, BH4 are used to fill V1110, V1080, and V1050, respectively. Figure 16-40 and Figure 16-41 show the paste network for the Valley upper and lower part of the orebody. The Valley will be the underground central point for the distribution of paste fill for Shaft and Cow.

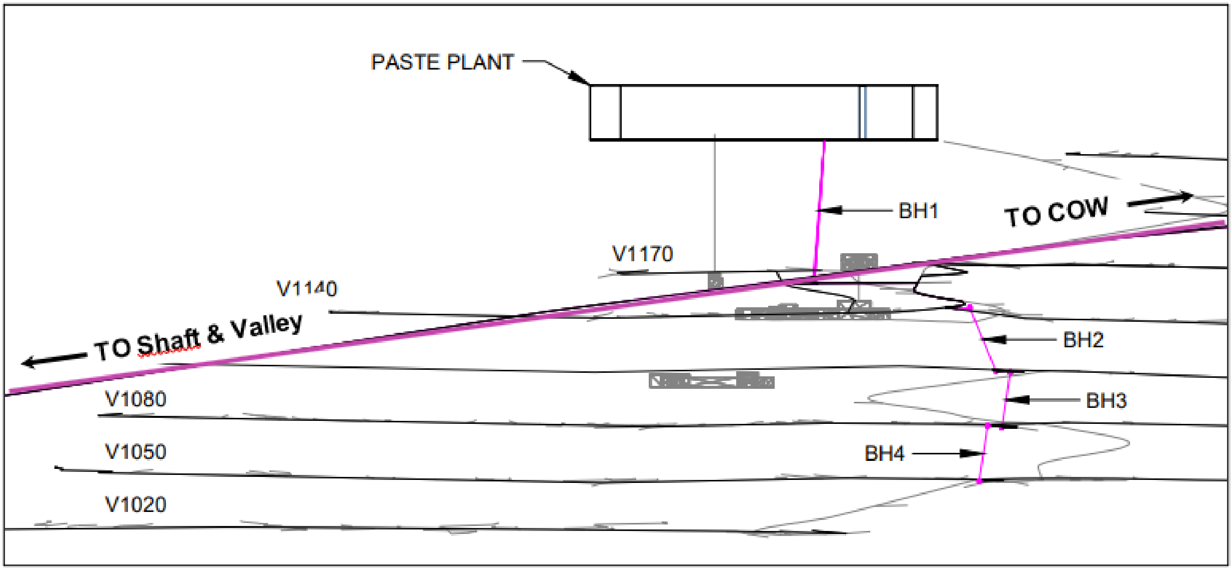


Figure 16-40: Paste Fill distribution network for upper part of Valley and in route for Shaft and Cow

16.8.1.4 Shaft Paste Fill Distribution Network

The desired extents of the Shaft area can be reached by delivering the paste from the surface borehole (BH1), towards the S1050 level (Shaft levels are indicated with "S") using the ramp that connects all three zones. The paste will be split vertically, for the upper portion using BH21 and successive interlevel boreholes to reach the extents of S1260 Level. The lower portions of the Shaft will be reached using the BH11 as a starting point through a series of interlevel boreholes to intersect the S810 level and the V750 level. The Shaft and Valley lower part pipe routing is illustrated on Figure 16-41.

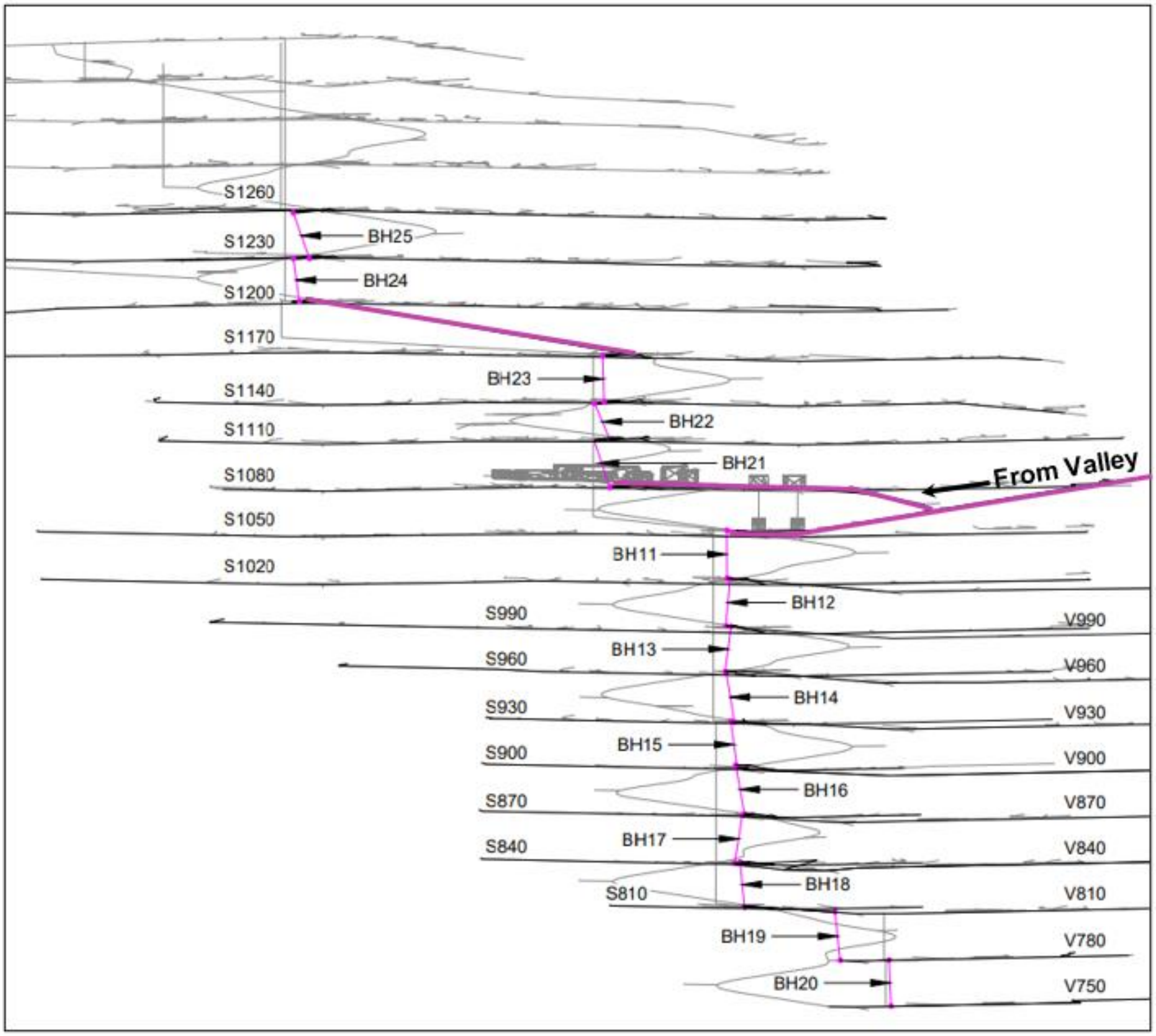


Figure 16-41: Pipe Routing for Upper and Lower Part of Shaft and lower part of Valley

16.8.1.5 Cow Paste Fill Distribution Network

Cow Area (Indicated with a "C") will also be delivered through two different routes. Levels C1170–C1050 will be filled by utilizing BH2, BH3, and BH4. The remainder of the Cow area will be filled from the booster station located on the C1260 level owing to the long lateral expanse at the Cow area. From the booster station there will be a split, with a pressure transducer installed at the base of each borehole as these locations are more susceptible to a build-up pressure build if a downstream blockage occurs. These items should be installed within 5 m of the downhole along the level piping. Pressure relief tees should be installed every 200 m to 250 m from the downhole along the piping. Figure 16-42 shows the paste fill network for Cow and the booster station location.

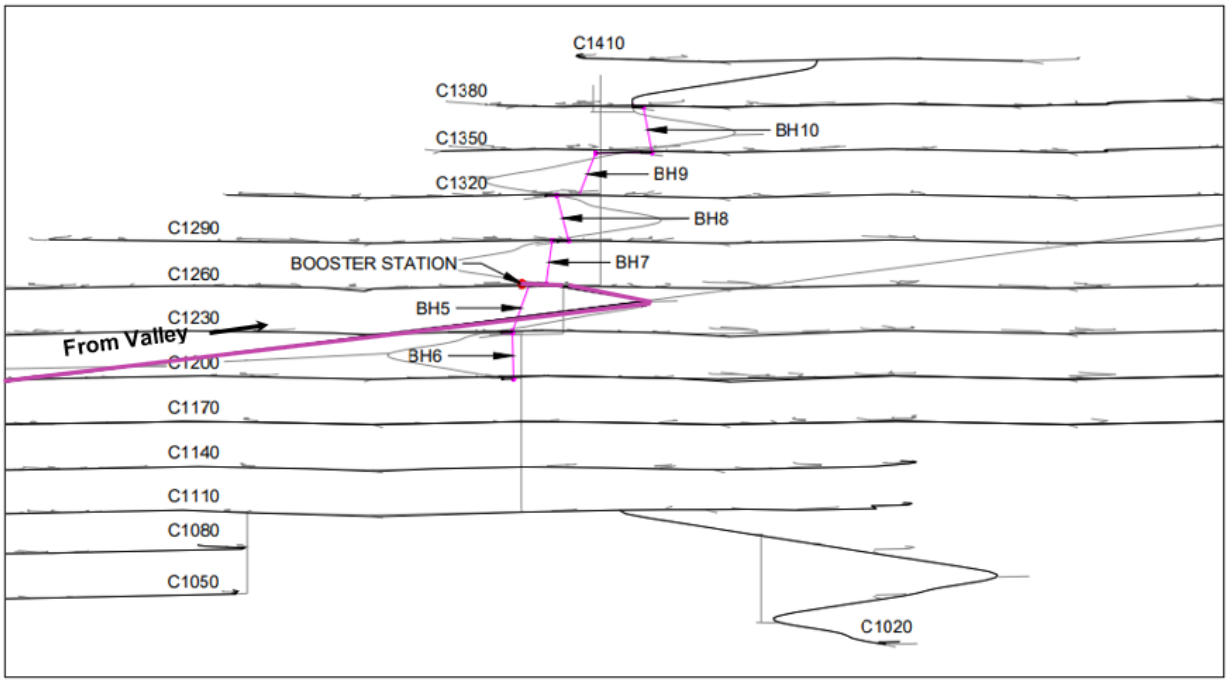


Figure 16-42: Cow paste fill network and booster station location

16.8.1.6 Typical Level Paste Fill Distribution Network

The piping system underground is comprised of 152 mm (6") Schedule 80 piping for the primary network and 152 mm (6") Schedule 80 piping for the Secondary Network, whereas the Tertiary Network (final pipe runs to stopes) will use 152 mm (6") HDPE DR9 pipe. Knowing that no tailings ponds are planned for the Project, paste productivity must be optimal. To facilitate paste fill operation readiness, the Tertiary Network will consist of HDPE DR9 pipes with Victaulic couplings. These pipes are easy to move and reinstall in the next sequenced stopes.

It is critical to ODV that a standby main paste trunkline is included in the design and incorporated into the material take-off. The main paste trunkline includes each borehole (Vertical Primary Network) and the level piping in between each borehole (Horizontal Primary Network) up to each service area where the piping turns into the Secondary Network Piping. Also included in the Horizontal Primary Network is the piping following the ramp to the Cow Zone and the Shaft Zone.

Figure 16-43 below details the different components of the paste pipe network. These standby paste lines have been included in the overall CAPEX of the Project.

Figure 16-43 shows a plan view of typical level paste line configuration with the Vertical Primary Network in green and red, the Secondary Network in cyan, and the Tertiary Network in magenta. Table 16-19 shows the quantity of paste fill pipes to be installed during the life of mine.

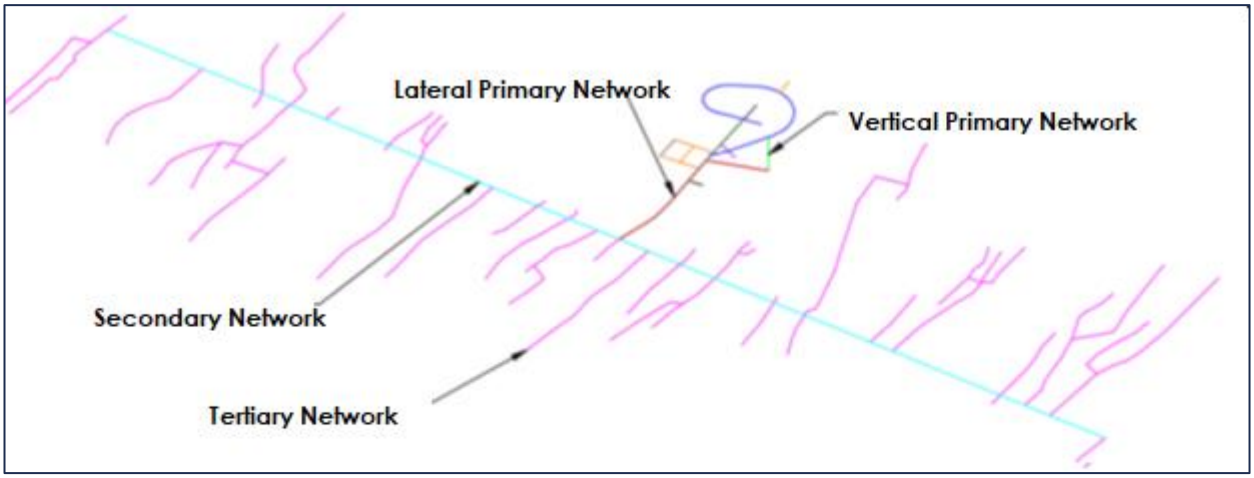


Figure 16-43: Typical paste fill-level distribution network

Table 16-19: Summary of the pipe lengths by zone in metres

Paste fill Network	Type	Backup Infr.	Valley	Shaft	Cow	Total
Principal paste fill network – Vertical	152 mm Schedule 80	Double line	375	800	590	1,765
Principal paste fill network – Lateral	152 mm Schedule 80	Double line	6,540	9,958	4,150	20,648
Secondary paste fill network	152 mm Schedule 80	Double line, >200 m	6,324	7,985	8,663	22,972
Tertiary paste fill network (in sills)	152 mm Schedule 80	Single line	20,812	33,646	26,916	81,374

16.8.1.7 Flow Model Inputs

The parameters used to perform the flow model are summarized in Table 16-20. The following aspects are considered in the analysis:

- Pipe specification; and,
- Pipeline profile information, including vertical distance and pipe or borehole length from the paste plant discharge point to the paste discharge point at the stope.

Table 16-20: Paste throughput information

Description	Unit	Slump			
		7"	8"	9"	10"
S.G. of Solids		2.76	2.76	2.76	2.76
Weight % Solids	%	74.9	74.4	72.1	71.7
S.G. of Slurry		1.92	1.92	1.92	1.92
Mass Flowrate	tph (dry solids)	85	85	85	85
Mass Flowrate	tph (paste)	113	113	113	113
Volume Flowrate	m^3/h	59	59	59	59
Friction Factor	kPa/m	14.4	9.0	5.6	3.5

Notes:
Specific gravity: ("SG")

The considered paste pump operating pressure and design pressure are 90 bar and 120 bar, respectively. The maximum allowable operating pressure used in this analysis is 90 bar.

Golder considered two options for piping. These options were as follows:

- Option 1, 152 mm (6") Schedule 80 pipe; and,
- Option 2, 200 mm (8") Schedule 80 pipe.

Ultimately, 152 mm (6") piping was selected for both, the main trunkline as well as the main/interlevel boreholes. This choice was selected based on the reduction of pipeline cost, as well as the reduction of total time needed to pump paste through the extents of the mine.

The pipeline friction loss for a 152 mm (6") Schedule 80 pipe was estimated from the flow loop data presented in the lab report (Golder, 2022m). The friction factor values used in the flow model are listed in Table 16-20.

Paste in 178 mm (7") to 254 mm (10") have been examined in the flow model. Paste throughput information are listed in Table 16-20.

An assumption was made to complete the flow model in that the weight % ("wt%") solids was assumed to be consistent for different slumps. The weight % solids changes slightly at different slumps. A 178 mm (7"), the slump has higher % solids (74.9 wt%) and a slightly slower velocity, whereas a 254 mm (10") slump has lower % solids (71.7 wt%) and faster velocity. For the flow model, velocity was assumed to be constant at 0.98 m/s regardless of the % solids. **The minor changes have a small impact on the pipeline friction loss.**

16.8.1.8 Flow Model Analysis

Golder performed the flow model analysis based on the 3D model (CACG_DesignFS_FINAL_v3) provided by ODV on September 19, 2022. The flow models examined the worst-case scenarios and the extents of high-pressure levels.

The flow model results are presented in Table 16-21. They show the highest slump that the paste could be to reach the extents of the analyzed level successfully, as well as the maximum pressure reached on that level.

Table 16-21: Slump and pumping summary

Originating location	Discharge Level	Slump (Inches)	Required Pumping Pressure (bar)
Paste Plant	C1050	8"	55
Paste Plant	C1170	8"	74
Booster Station	C1200	8"	55
Booster Station	C1410	9"	69
Paste Plant	V750	9"	93
Paste Plant	V840	9"	58
Paste Plant	V900	9"	60
Paste Plant	S1140	9"	84
Paste Plant	S1260	10"	92

The analysis shows that:

- The entire mine is reachable with a slump range of 203–245 mm (8-10"), as shown in Table 16-21;
- A booster station will be required at Level 1260 to reach the upper part of Cow;
- Mosquito Zone and Lowhee Zone cannot be reached with the current network arrangement.

16.8.1.9 Booster station C1260

The booster station will include the following equipment:

- 1x Paste pump with Hopper;
- 1x Hydraulic Power Pack;
- 1x Monorail and Hoist;
- 1x Air Receiver;
- 1x Water Tank;
- 2x Water Pump;
- 1x Sump Pump;
- 1x Flush Sump Pump; and,
- Electrical equipment (MCC, Control Panel and Transformer).

The typical booster station is illustrated on Figure 16-44:

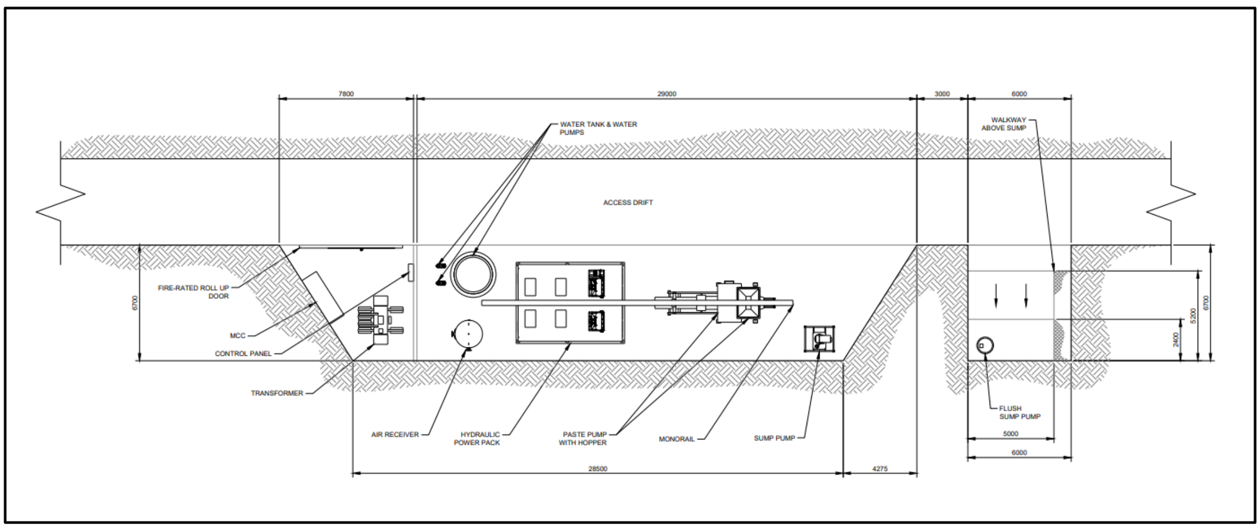


Figure 16-44: Typical Paste fill Booster Station

16.8.2 Cemented Rockfill

Cemented Rockfill ("CRF") will be used for all stope backfilling in Phase 1 and as complementary to the paste network in Phase 2.

The CRF operations will be carried out using LHDs to tram waste rock from the waste rock storage located on each level. These will be supplied with waste rock from the development operations or, if required, waste rock from the ore sorter using 50 t trucks. A mobile cement slurry unit operated by a specialist contractor will be positioned strategically in an intersection on the way to the active stope and will pour a measure of cement slurry equivalent to 4% by weight of the dry material contained within the bucket. The mixing process will sufficiently coat the waste material with cement, which will be delivered to the stopes. To minimize the costs associated with CRF operations, only the backfill of the first wedge of the stope that will be directly exposed during the mining of the adjacent stope will be cemented. The unexposed remaining wedge will be backfilled with uncemented rockfill ("URF") (see Figure 16-45).

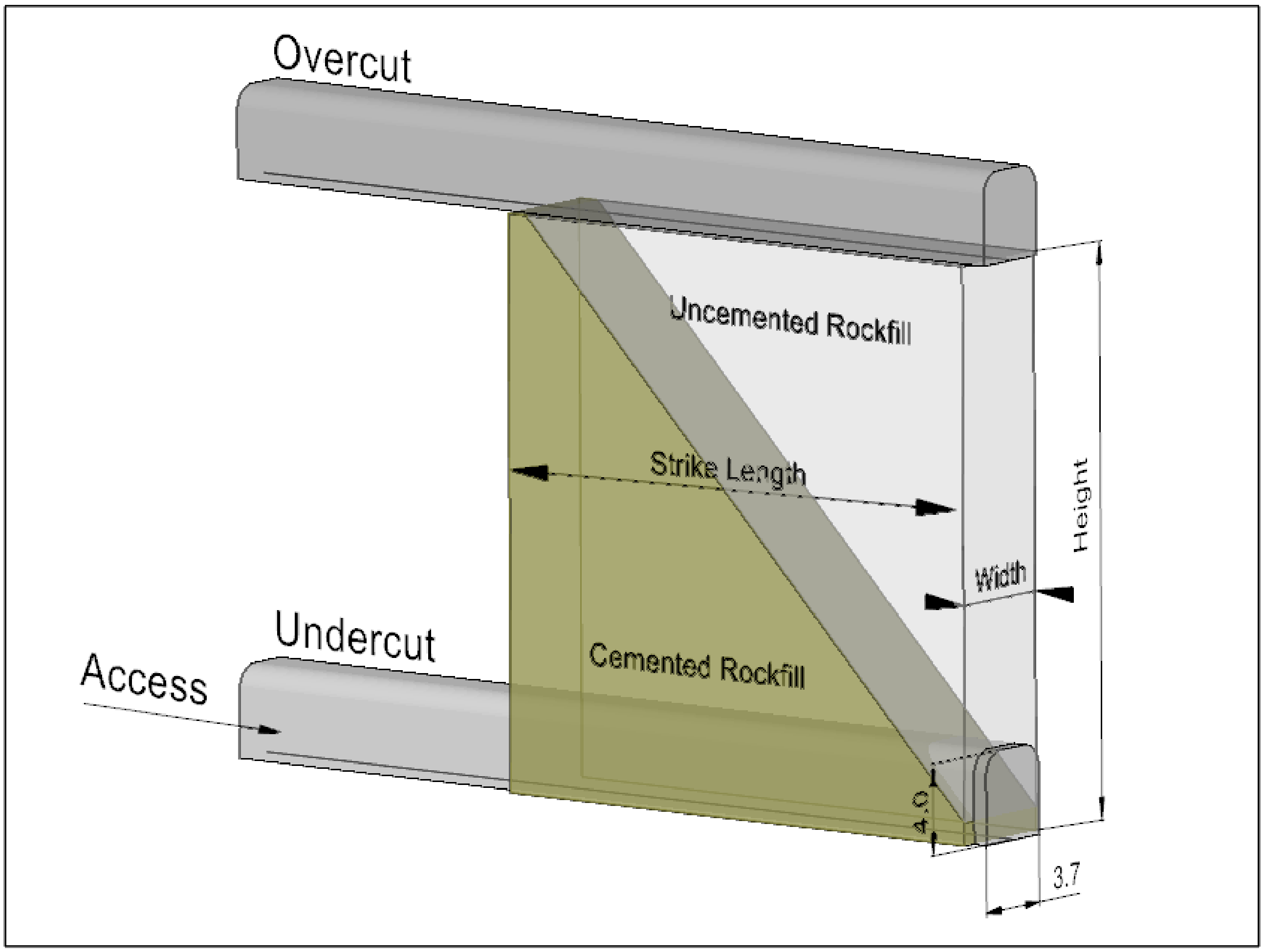


Figure 16-45: Backfilled stope layout

The choice for the mobile plant was supported by the forecasted demand for CRF; close to 17% of stopes will be backfilled using a CRF/ URF combination backfill. The Project is estimated to require approximately 892 tpd of CRF/URF in the early production years during Phase 1 and will decrease to an estimated 558 tpd in Phase 2, when the paste is fully available.

A sufficient curing time will be required for the CRF wedge prior to blasting an adjacent stope. This curing time has been assumed at seven days and incorporated into the final production schedule. It is planned, according to the estimated quantities, that the cement slurry will be produced using two dual-energy CRF-12 type mobile units supported by a semi-mobile cement plan combined with an underground silo with a capacity of 20 t. The mobile unit is shown in Figure 16-46.

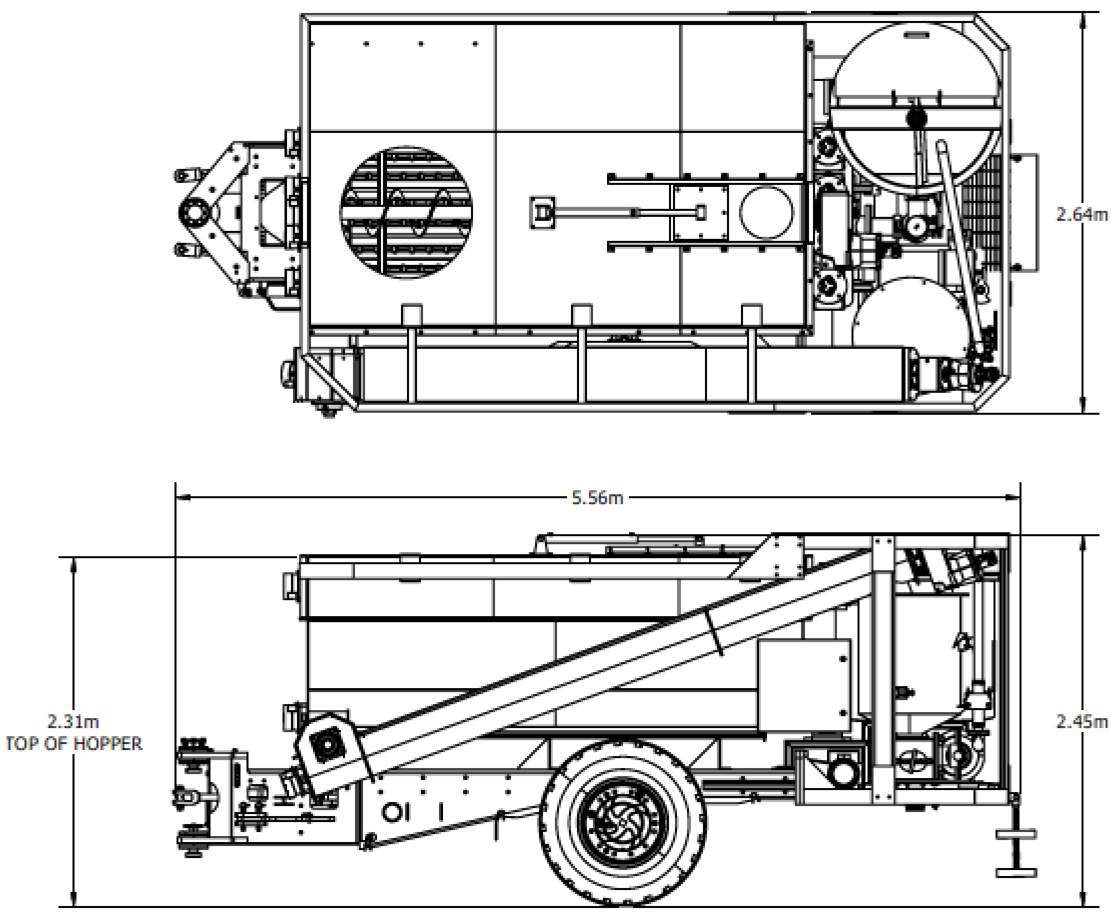


Figure 16-46: CRF-12 unit to be mounted on Mclean front carrier

16.9 Mine Schedule

16.9.1 Mine Sequence Methodology

The objectives of the mine sequencing were to establish a production rate in two distinct phases in order to minimize the capital investment in the first year of the Project and to benefit from the existing plant facilities and surface infrastructure.

For Phase 1, production targets the satellite zones as well as the upper part of the Shaft Zone above the water table, ensuring an appropriate distance is maintained from the old excavations. In order to accelerate the start-up, the Lowhee Zone, located near the Cow Portal is mined first and it provides sufficient time to reach and put in production the Upper Shaft Zone and the Mosquito Zone following the depletion of Lowhee in early 2026.

The production ramp-up to Phase 2 starts in Q3 2027 and it is triggered by the depletion of the Mineral Reserves of the Phase 1 areas. The development targets the Shaft and Valley ramps going at depth aiming high-grade areas and developing multiple mining fronts to ensure production flexibility. Early in phase 2, the sequence aims to balance extraction from Shaft and Valley Zones while maintaining a smooth and steady production. Later in the mine life, production will shift progressively, transiting towards the Cow Zone, which is a slightly lower grade.

All zones include multiple veins that extend to the surface, though the highly uneven topography causes this to be variable between and within zones. Veins do not reliably extend through the entire height of a zone. When a vein extends more than five sublevels, they are interrupted with a 5 m pillar for geotechnical stability that was considered in the mining recovery of sill stopes. The mining sequence within a vein is bottom-up, though along veins with pillars it is possible to open multiple mining fronts. Stopes along a vein on a level are universally mined in the retreat direction toward the main access and then retreat to the level access. Sill levels are mined with blind uppers on retreat after the stopes above and below have been mined, leaving a 5 m skin.

Stope sequencing per level is controlled by access constraints between veins. As far as possible, respecting the various constraints, veins with a higher grade were assigned a correspondingly higher priority.

Stopes are to be drilled from the top access, except for pillars, which applies to both production drilling and V30 slot raise. Therefore, the development on the top and bottom access is required to be completed before the initiation of production drilling tasks. For automation purposes, the development and production activities were not allowed in the same level at the same time.

16.9.2 Scheduling Rates

Daily production targets were specified at 1,500 tpd in the Phase 1 of production and at 4,900 tpd when the flotation circuit is available in the Phase 2 of the production. Therefore, the total economic material tonnage is targeted to satisfy this daily production rate. All scheduling rates are based on experienced mining contractor feedback or typical rates for similar operations. Task rates referred to the productivity rate at which any given task can complete its operational scenario. Table 16-22 summarizes the development task rates applied to the schedule.

Table 16-22: Schedule development rates

Development type	Task rate
Lateral jumbo development multi heading (5.3mx5.8m)	8.0 m/d
Lateral jumbo development multi heading (3.7m x 4.0m)	10.2 m/d
Lateral roadheader development single heading	6.6 m/d
Vertical development (average)	2.3 m/d

All main ramp and level access development are planned to be excavated with a roadheader equipment at a rate of 200 m per month per crew. All multi-heading development is planned to be excavated with jumbos at a rate of 242 m per month per crew for infrastructures and access and at a rate of 314 m per month per crew for haulage and ore drifts. This is illustrated in Table 16-23.

Tests conducted by the manufacturer have successfully demonstrated that the rock units associated with the excavations developed by the roadheader are adequate when using the right type of cutter (P.Cyr, personnal communication, March 8, 2019). In addition, a roadheader was used for some development in the operation of the Bonanza Ledge Mine.

Pre-production development operation during the first year will be conducted by a mining contractor. Thereafter, the internal teams will take over the development operations with the start-up of the Lowhee production in 2024. Between three and five standard jumbo crews and two roadheader crews per day will be needed over the course of the LOM.

Production tasks involving mucking, such as backfilling or mucking stopes, are based on the maximum rate a loader can achieve in a day depending on the size of the equipment, the hauling distance and the effective hours per day, which vary depending on the activity performed. In addition, for stope mucking activity, the effective hours vary considering the different mucking modes (manual, with between-shift, and fully automated). The rate is based on an LHD being assigned the singular task.

Production drilling and V30 slot raise are similarly based on the assignment of a single resource to complete a single task. The production rates are shown in Table 16-23.

Table 16-23: Summary of production rate tasks

Production task	Rate
Production drilling	194 m/d
Slot raising	10.9 m/d
Mucking (manual mode)	887 tpd
Mucking (remote between shift mode)	969 tpd
Mucking (automation mode)	1,027 tpd
Cemented rockfill	830 tpd
Uncemented rockfill	982 tpd
Paste fill backfill	2,916 tpd
Backfill curing time (CRF and paste)	7 days

16.9.3 Mine Production Schedule

The LOM production plan represents an 11.5-year mine life. Production ramp-up to a steady state of 4,900 tpd is achievable at the end of 2027, the fourth production year with completion of the flotation circuit. The average head grade for the LOM averages 3.8 g/t Au. All scheduled physicals and summary data presented in this section represent the mined and recovered values. Figure 16-47 show mined and recovered economic material tonnage and grade on an annual basis.

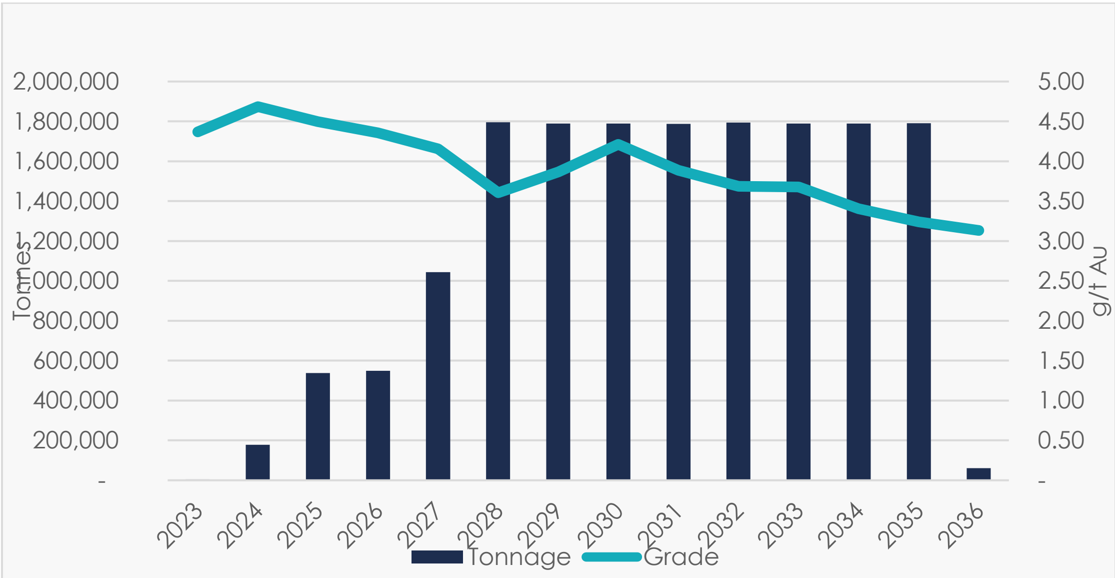


Figure 16-47: Annual total recovered tonnes of ore

Table 16-24 presents a summary of ore tonnage and grade by zone by year.

Table 16-24: Annual production of ore

Year	Unit	2023	2024	2025	2026	2027	2028	2029
Lowhee	t	4,823	178,373	382,498	854	-	-	-
	g/t	4.37	4.68	4.51	5.19	-	-	-
Cow	t	-	-	-	-	-	87,289	315,430
	g/t	-	-	-	-	-	3.55	4.05
Valley Upper	t	-	-	-	4,615	8,503	163,792	164
	g/t	-	-	-	3.09	4.00	3.16	1.70
Valley Lower	t	-	-	-	-	-	200	170,592
	g/t	-	-	-	-	-	4.36	4.11
Shaft	t	-	-	155,885	535,687	676,495	1,308,353	1,302,626
	g/t	-	-	4.48	4.37	3.54	3.53	3.79
Mosquito	t	-	-	-	8,368	358,879	235,344	-
	g/t	-	-	-	4.34	5.31	4.36	-
Year	**Unit**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**	**2036**
Lowhee	t	-	-	-	-	-	-	-
	g/t	-	-	-	-	-	-	-
Cow	t	102,785	108,332	111,743	424,534	1,431,941	1,520,129	24,774
	g/t	4.28	3.86	2.67	3.59	3.39	3.21	3.20

Year	Unit	2023	2024	2025	2026	2027	2028	2029
Valley Upper	t	73,178	55,075	401,230	333,481	-	-	-
	g/t	3.35	3.66	3.63	3.57	-	-	-
Valley Lower	t	413,547	733,222	670,563	307,727	86,442	22,581	-
	g/t	4.30	3.69	3.69	3.50	3.35	3.02	-
Shaft	t	1,200,306	891,828	611,251	723,113	271,700	248,599	36,605
	g/t	4.23	4.07	3.91	3.85	3.50	3.41	3.09
Mosquito	t	-	-	-	-	-	-	-
	g/t	-	-	-	-	-	-	-

Figure 16-48 shows the annual tonnes of ore extracted by zone by year, while Figure 16-49 shows the pre-production period of the mine colour-coded by year.

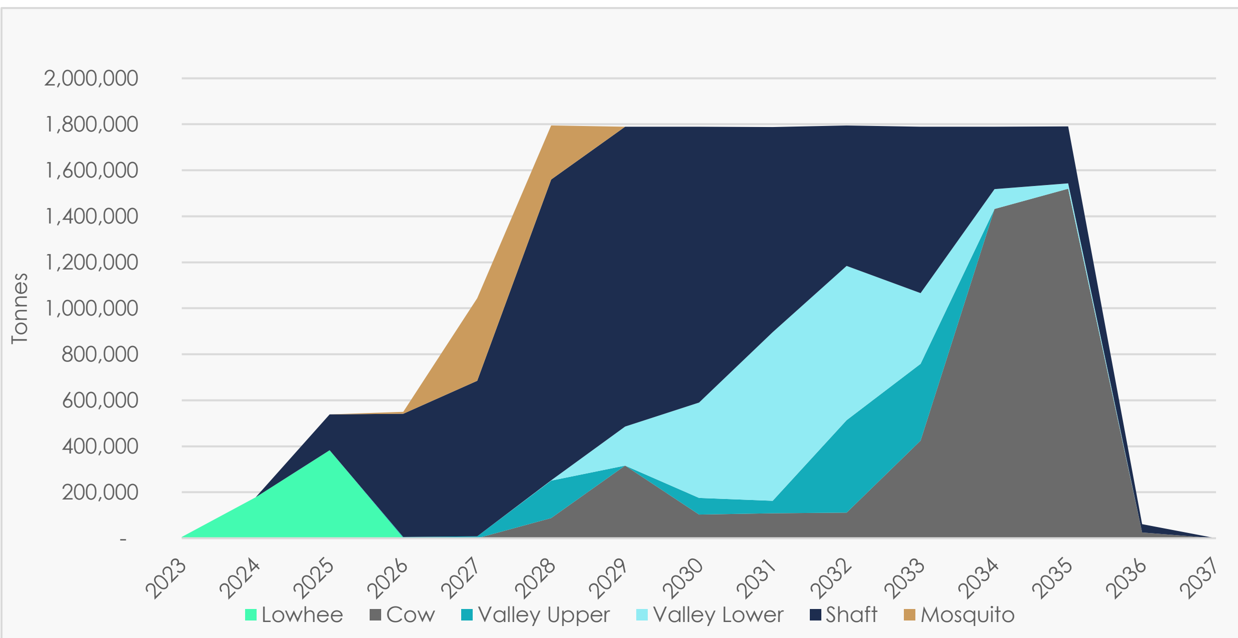


Figure 16-48: Annual production of ore

Approximately 14.6 Mt of ore is derived from the stoping activity, with the remaining 2.1 Mt is derived from the development activity (13% of material generated). Figure 16-49 shows the annual potentially economic material tonnage production versus development. Lateral development averages 1,200 m per month mine wide for the LOM. Figure 16-50 shows annual development per zone per annum for the LOM. Development metres per zone per time span changes throughout the LOM. Table 16-25 shows the development meter breakdown per zone from pre-production over the life of the mine.

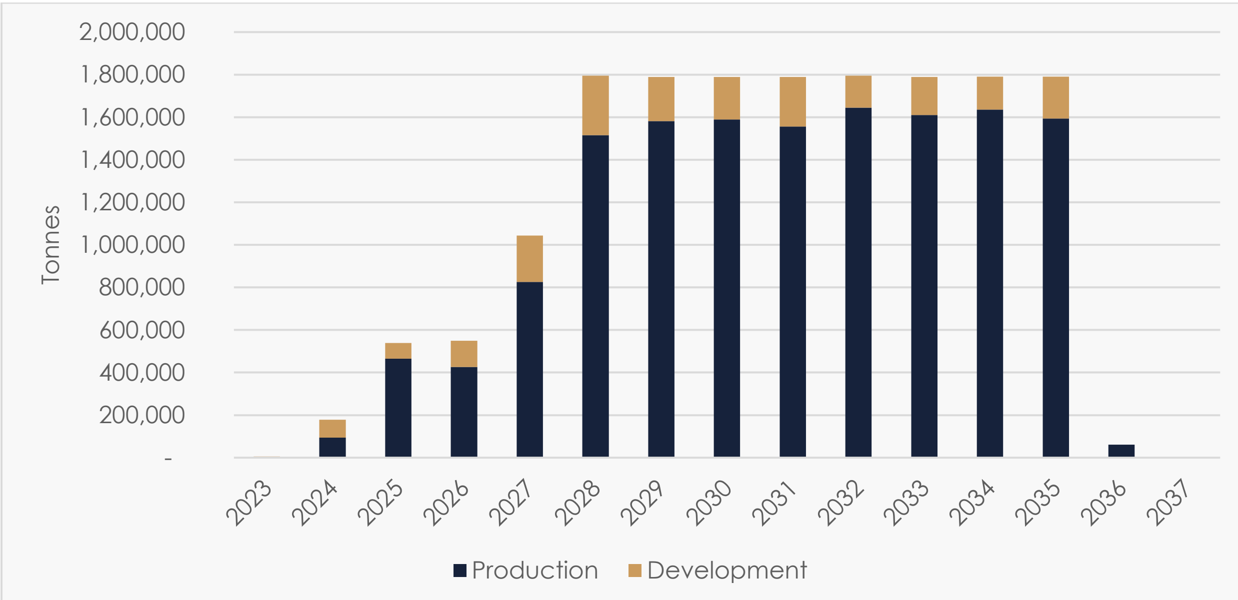


Figure 16-49: Recovered ore by year by extraction method

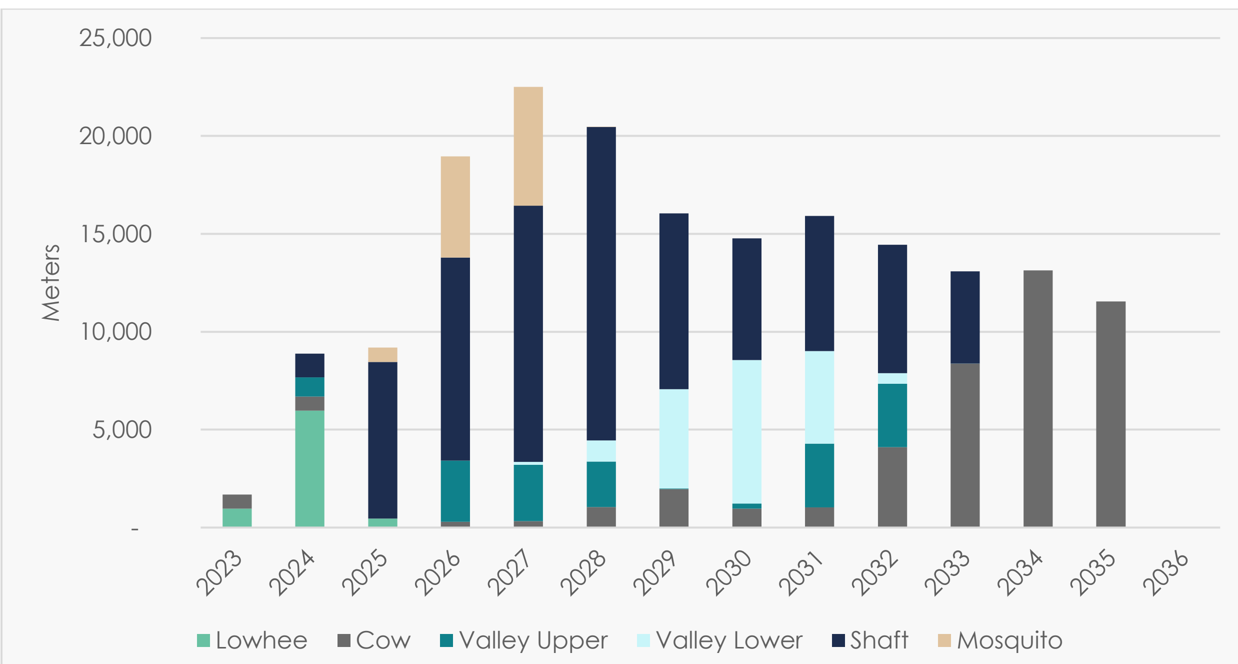


Figure 16-50: Total annual development by zone

Table 16-25: Development meter breakdown per zone per year

Year		2023	2024	2025	2026	2027	2028	2029
Lowhee	m	964	5,973	461	-	-	-	-
Cow	m	719	716	-	299	335	1,044	1,963
Valley Upper	m	-	982	-	3,124	2,865	2,321	35
Valley Lower	m	-	-	-	-	157	1,079	5,066
Shaft	m	-	1,219	7,992	10,363	13,087	16,016	8,987
Mosquito	m	-	-	737	5,175	6,069	3	-
Year		**2030**	**2031**	**2032**	**2033**	**2034**	**2035**	**2036**
Lowhee	m	-	-	-	-	-	-	-
Cow	m	964	1,031	4,108	8,372	13,130	11,556	-
Valley Upper	m	271	3,259	3,239	-	-	-	-
Valley Lower	m	7,314	4,724	539	7	-	-	-
Shaft	m	6,223	6,897	6,562	4,706	-	-	-
Mosquito	m	-	-	-	-	-	-	-

16.10 Mine Services

16.10.1 Ventilation

InnovExplo, in collaboration with ODV, was responsible for developing the strategy and for estimating the associated costs for an underground ("U/G") ventilation system. Dello Ventilation were engaged to assist InnovExplo with the ventilation design work.

The fresh air requirement has been established for each of the mining zones: Cow, Valley, Shaft, Mosquito, and Lowhee. The air requirement complies with the Canadian Standards Association ("CSA") prescribed ventilation rate. The minimum requirement to dilute emissions from the mobile machinery listed in Table 16-26 is 0.06 cubic metres per second per kilowatt ("$m^3/s/kW$") of diesel-powered equipment. The table shows the quantity of equipment required for Phase 1 and the additional quantity that will be added to the existing fleet for Phase 2. In estimating the aggregate rate of fresh airflow for the entire mine, a utilization rate has been applied to account when machines may be mechanically unavailable, or simply not in use. Phase 1 will utilize a full diesel fleet as the mine will not yet be connected to the electrical grid. However, electric trucks and LHD will be used in Phase 2, once the mine is connected to the electrical grid. This initiative enables the improvement of air quality underground while maintaining airflow requirements as per regulations.

Table 16-26: List of mobile equipment

Equipment Type	Power (kW)	Power (hp)	Quantity
Roadheader	Electric	Electric	2
Jumbo 2 booms	110	147	4
Bolter	93	125	4
Bolter	110	147	1
Scissor lift	110	147	4
Loading Unit	110	147	2
LHD 10 tm	235	315	6
LHD 10tm - Electric	Electric	Electric	3
Truck 50 tm	515	690	5
Truck 50 tm - Electric	Electric	Electric	6
Production Drill	74	99	4
Boom Truck	160	214	4
Personnel Carrier	170	228	2
Maintenance truck	170	228	2
Service truck	160	214	1
Fuel lube truck	110	147	1
Water Cannon truck	110	147	1
Grader	168	225	1
Light truck	126	169	7
Tractor	78	105	2

The utilization rates are, 80% for production equipment, 50% for most service equipment, and 25% for machinery that operates primarily with electricity. Based on this utilization rate, the fresh air requirement for Phase 1 has been established at 285 m^3/s (604 thousand cubic foot per minute ["kcfm"]) and 337 m^3/s (715 kcfm) for Phase 2. The required airflow capacity for each of the zones has been determined based on the production rate and with a contingency factor to account for leakages and system inefficiencies. For the fans supplying air to Shaft and Valley Zones, it was designed to meet two different operating points, one in Phase 1 where the total demand is higher as it will be sole supplier of fresh air for the whole mine, and in Phase 2, where the airflow requirement will be slightly lower as the production will shift to the other zones. Even though the airflow will be lower for Phase 2, the pressure will be greater as the air will have to reach the lower levels of the mine. The Lowhee and Mosquito Zones will share the same fan and heater as once Lowhee is mined out, the fan will be moved to Mosquito. The fan was sized based on Lowhee as it has the higher airflow and pressure requirements.

All main fans and heaters will be installed on surface. Cow and Shaft Zones will have their main fans installed in a horizontal parallel arrangement, while the Lowhee and Mosquito Zones will have a single fan horizontal arrangement. The heater for Lowhee and Mosquito will be the one that was initially purchased for the ramp development. All fans and heaters are equipped with the appropriate sound attenuation to maintain the adequate standards for the workers and nearby community.

The different fan operating points, nominal motor power, and heater power for each zone are shown in Table 16-27.

Table 16-27: Main fans and heaters specifications

Zone	Max fresh air requirement	Max. collar pressure requirement	Fan motor nominal power	Heaters capacity
	m3/s (kcfm)	Pa (in. w.g.)	kW (HP)	MW (Mbtu/hr)
Shaft/Valley Phase 1	285 (604)	2,100 (8.4)	2 x 816 (1,100)	12.9 (44.1)
Shaft/Valley Phase 2	236 (500)	3,975 (15.9)	2 x 816 (1,100)	12.9 (44.1)
Cow	132 (281)	2,825 (11.3)	2 x 322 (450)	6.3 (21.8)
Lowhee and Mosquito	113 (239)	1,100 (4.4)	1 x 286 (400)	3 (10.3)

The ventilation system layout consists of four independent air intakes for the five mining areas: Cow, Shaft and Valley, Mosquito, and Lowhee. An exhaust air raise will also be constructed in the Shaft Zone in order to avoid excessive airspeed in the ramp. Each zone is supplied with fresh air through a raise, breaking through each production level. Bulkheads with drop board regulators will control the fresh air entering the production levels. In addition to the exhaust raise in Shaft, the exhaust air will be directed towards the Cow and Valley Portals. The Valley Portal will be equipped with a manual door. It will be closed prior to blasts in order to direct the fumes towards the Cow Portal to avoid contaminating the ambient air at proximity of the community and mine surface installations.

Figure 16-51 shows a longitudinal view of the ventilation layout in 2032, when the Cow Fresh Air Raise will be commissioned. During that period, the Mosquito and Lowhee Zones will be used as a Return Air Raise. The underground airflow regulators will be used to regulate the air exhausted from those zones.

The ventilation raises have been sized as follows:

- Shaft Fresh Air Raise from surface to level S1050, 3.5 m (11.5 ft) diameter;
- Shaft Fresh Air Raise from level S1050 to S810, 3.5 m (11.5 ft) diameter with ladder tube inside;
- Shaft Return Air Raise from level S1260 to Surface, 3.0 m (9.8 ft) diameter;
- Cow Fresh air Raise from Surface to level C1050, 2.4 m (7.9 ft) diameter;
- Lowhee Fresh air Raise from Surface to level L1260, 2.4 m (7.9 ft) diameter;
- Lowhee Fresh air Raise from level L1260 to level L1200, 2.8 m (9.2 ft) diameter with ladder tube inside;
- Mosquito Fresh air Raise from Surface to level M1290, 2.4 m (7.9 ft) diameter;
- Mosquito Fresh air Raise from level M1290 to M1170, 2.8 m (9.2 ft) diameter with ladder tube inside.

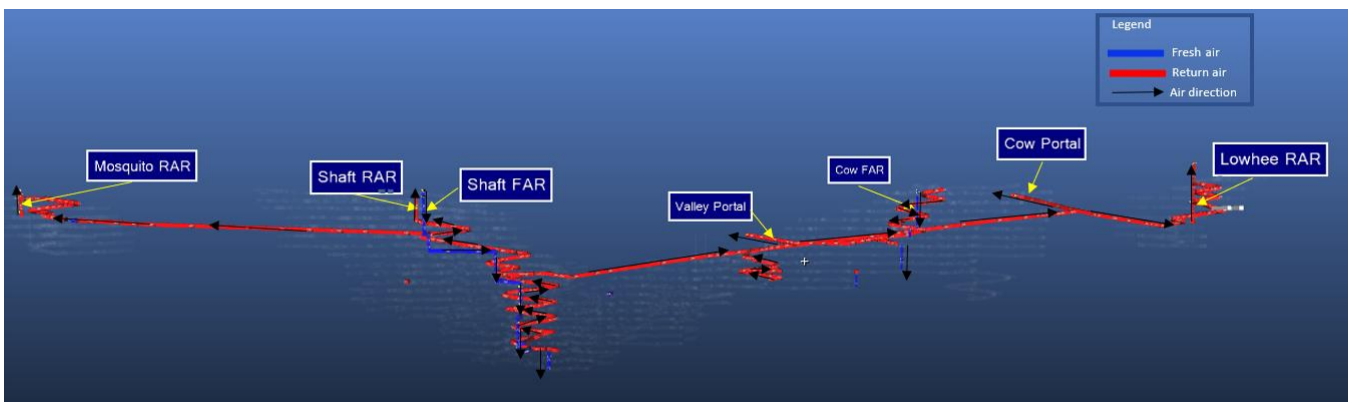


Figure 16-51: Ventilation Layout 2032

16.10.1.1 Ventilation Layout

The network was created to meet the total fresh air requirement. Given the shifting production profile from each zone, the total required airflow in each zone changes over time. Fans will, therefore, be equipped with variable speed drives to be able to accommodate advanced ventilation controls to optimize its speed and consequently reduce energy costs.

During pre-production and Phase 1, the ramp will be developed with the roadheader from the Cow Portal to Shaft level S1260 to access the initial ventilation raise. Rigid ducting in negative pressure will be installed to ventilate the face and collect the dust generated by the roadheader. An auxiliary fan will be installed every 500 m in a twin duct system to minimize leakage and the negative pressure that the duct will undergo. At the outlet of the duct, a de-dusting unit will be installed so that the air released to the atmosphere is free of dust.

The production levels will be ventilated with the use of the intake airflow regulator and an auxiliary fan of 150 horsepower ("hp") that will supply the fresh air at the extremity of the level. The auxiliary fans that were used for the ramp development will be re-used to ventilate the production levels. Smaller auxiliary fans (60 hp) will be used, as needed, to ventilate each heading. Based on the average maximum airflow on a level, a maximum of two LHD units were considered to be operating simultaneously on the same level.

The ventilation layout of a typical production level is shown in Figure 16-52.

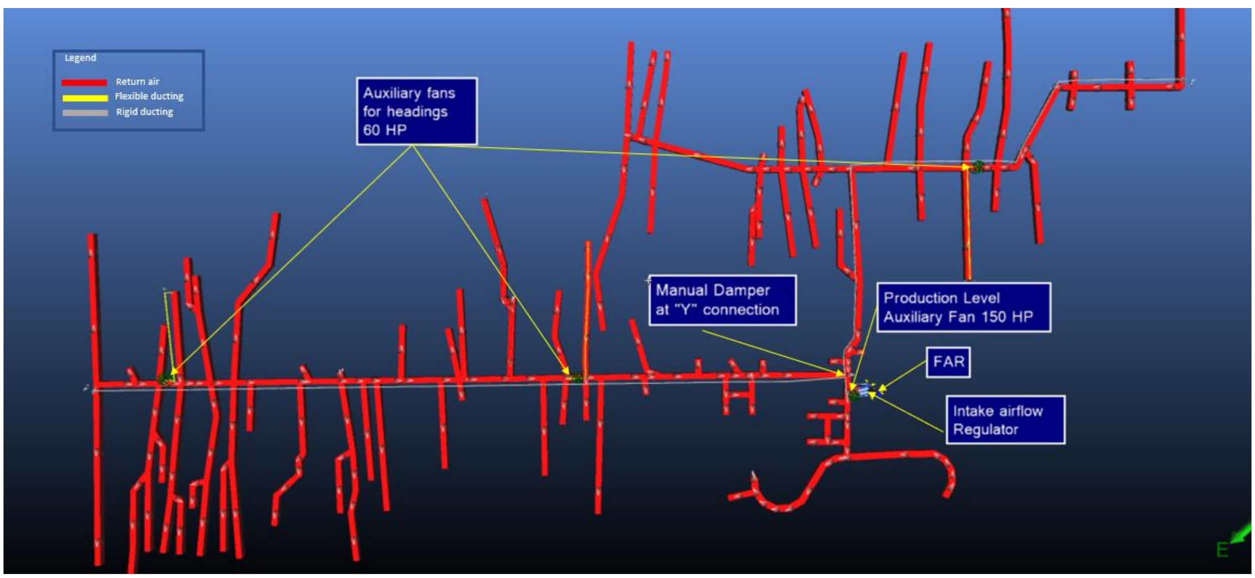


Figure 16-52: Production Level Ventilation Layout

16.10.2 Dewatering

InnovExplo, in collaboration with the pump distributor Technosub, and ODV, was responsible for establishing a dewatering strategy for the Project.

The design basis, assumptions, and work performed by InnovExplo as it relates to dewatering operations has been summarized as below. The dewatering solution must incorporate strategies for management of all sources of water:

- Flooded historic workings – It is assumed that all old workings are flooded below 1,226 m elevation ("EL"). It is estimated to contain a total of approximately 1,111,210 cubic meters ("m^3") of water based on water levels observed on the field (see Figure 16-53) Technosub, in collaboration with ODV, conducted a water level measurement in the historic Mosquito shaft (WSP, 2019a) and InnovExplo revised old working excavation volumes. InnovExplo assessed the excavation volumes of the old workings on the basis of the revised 3D model developed by ODV following a digitization by InnovExplo in 2016 of the old excavation plans provided by ODV. The model was subsequently enhanced with work done by ODV and with information gathered from the entire ODV DDH drilling database. Although the total volume associated with the 3D model is close to the reconciliation of the historical volumes mined, uncertainty remains as to the total volume of the actual voids;
- Groundwater inflow – All existing and new excavations are assumed to be drain cells into which groundwater can flow. These numbers are explained in detail in Section 16.4 of this report; and
- Process water – It includes all water required for mine operations, including water requirements for mobile equipment, backfilling, U/G crushing, and mineral sorting, dust suppression, etc.

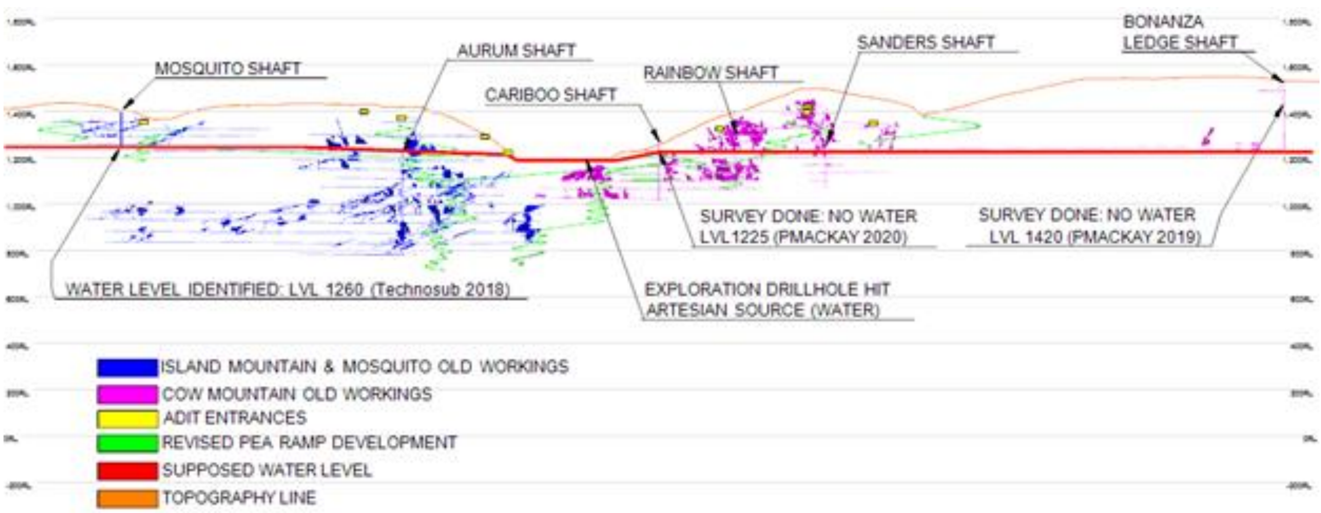


Figure 16-53: Flooded historic workings and water level

16.10.3 Historical Working Dewatering

Historical workings are scattered between the Project. Below 1,226 m EL, they are assumed to be completely flooded. In order to backfill them safely and work close to them, starting in early 2026, they will be gradually dewatered prior to the advance of development heading at depth until water is completely removed.

As the main ramp progresses downwards below 1,226 m EL, level accesses will be opened, remaining a safe distance away from the flooded workings. From there, specialty boreholes with pre-installed valve casings will be drilled to connect to the historical workings and allow for controlled pumping using the pressure from the water head. Water will be managed through the mine pumping network but will bypass the water clarification system (Mudwizard) and will be directly brought to the water treatment plant on surface.

It was estimated that the dewatering operation will take approximately 2 years at a maximum pumping rate of 126 m^3/hr sustained in 2026. This rate will slow down in 2027 to complete the dewatering of the lower levels of the mine, in the Shaft/Valley Zone once they are reached.

16.10.4 General Dewatering Design

16.10.4.1 Phase 1 Dewatering Design

During Phase 1, water coming from the mining operation will be pumped to the water clarification system (Lowhee Mudwizard) installed underground at the entrance at Cow Portal for treatment. The clear water that is not used for the operation will be pumped back to the surface using high pressure stationary pumps.

Depending on the configuration of the ramp, some levels have drain holes to reduce the use of pumps. Where drain holes cannot be drilled, submersible pumps in a Wilson sump configuration will be used to pump into another sump through the ramp. When the dirty water needs to be pumped on higher levels or along the main ramp, portable sumps with a tank on a skid, using Technoprocess pumps from 40hp to 60 hp, are used (see Figure 16-54).

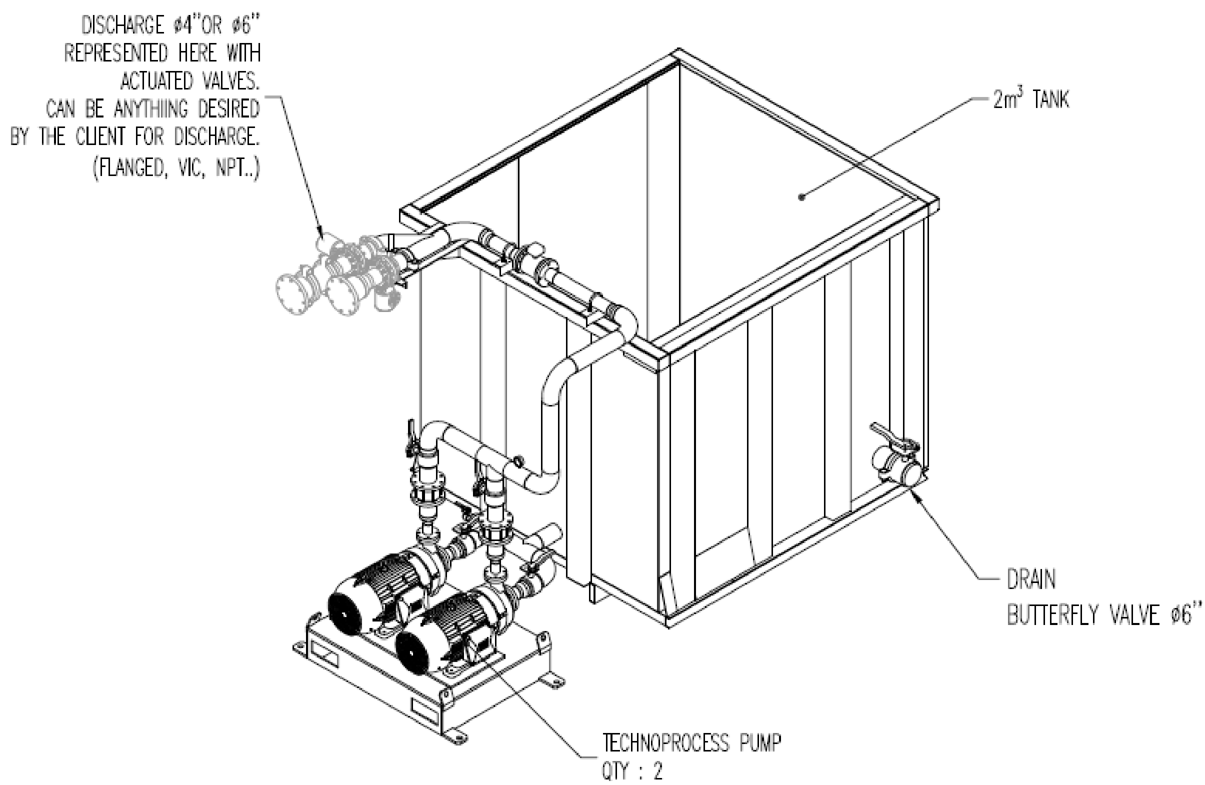


Figure 16-54: Typical drawing for the tank on skid and Technoprocess pump

To feed the operation in clear water during phase 1, a Grundfos centrifugal pump attached to a reservoir located at the water clarification station will pump into the service line until it reaches the level going up ramp. The water will then feed another small reservoir with a Tsurumi LH submersible pump that will feed three levels to ensure a pressure of approximately 100 psi. Once the pump has reached the higher level, it pumps into another tank with another LH submersible pump. This pump will then feed the next three levels in clear water.

16.10.4.2 Phase 2 Dewatering Design

Starting phase 2, dirty water will be pumped into the Lowhee Mudwizard until the construction of the Cow Mudwizard is completed. All Mudwizard components of Lowhee facility will be reused for the Shaft Mudwizard installation.

Depending on the configuration of the ramp, some levels have drain holes to reduce the use of pumps. Where drain holes cannot be drilled, submersible pumps in a Wilson sump will be used pumping into another sump through the ramp. When dirty water needs to be pumped on higher levels, portable sumps with tank on a skid using stationary pumps from 40 hp to 200 hp are used. Technoprocess are used for the low flow and Cornell stationary pump are used for the higher flow.

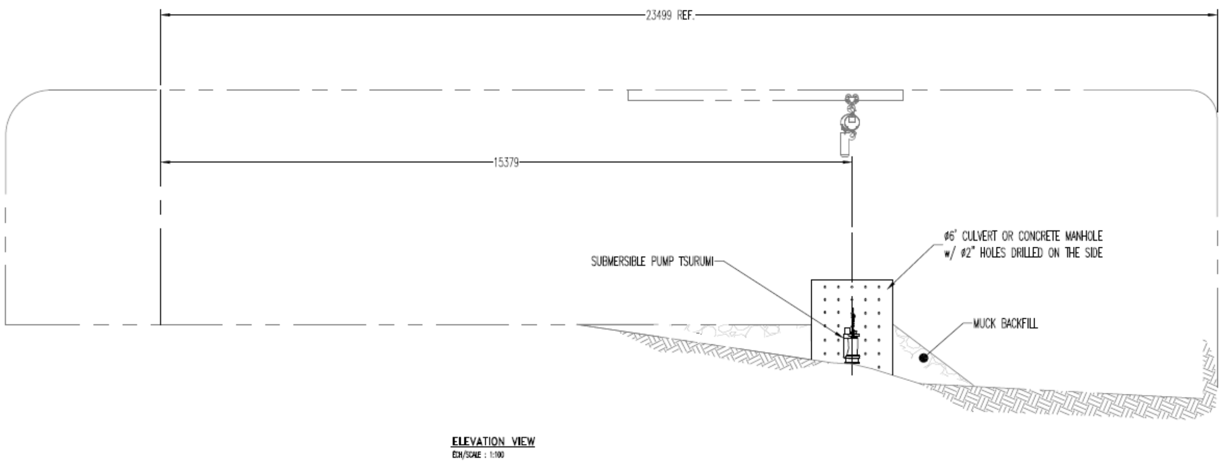


Figure 16-55: Typical sump using the Wilson sump principle

To feed the operation in clear water during phase 2, clear water coming from the Cow and Shaft Mudwizards will be pumped using a Tsurumi LH submersible pump. To maintain a constant pressure in the line of approximately 100 psi for the levels going up, each tank will feed three levels. Once the pump reaches the higher level, it pumps into another tank with another clear water pump. This pump will then feed the next three levels in clear water. For the lower levels, only one pump coming from the Mudwizard will be used. Along the ramp, a pressure-reducing valve will be installed to maintain a pressure of 100 psi in the line.

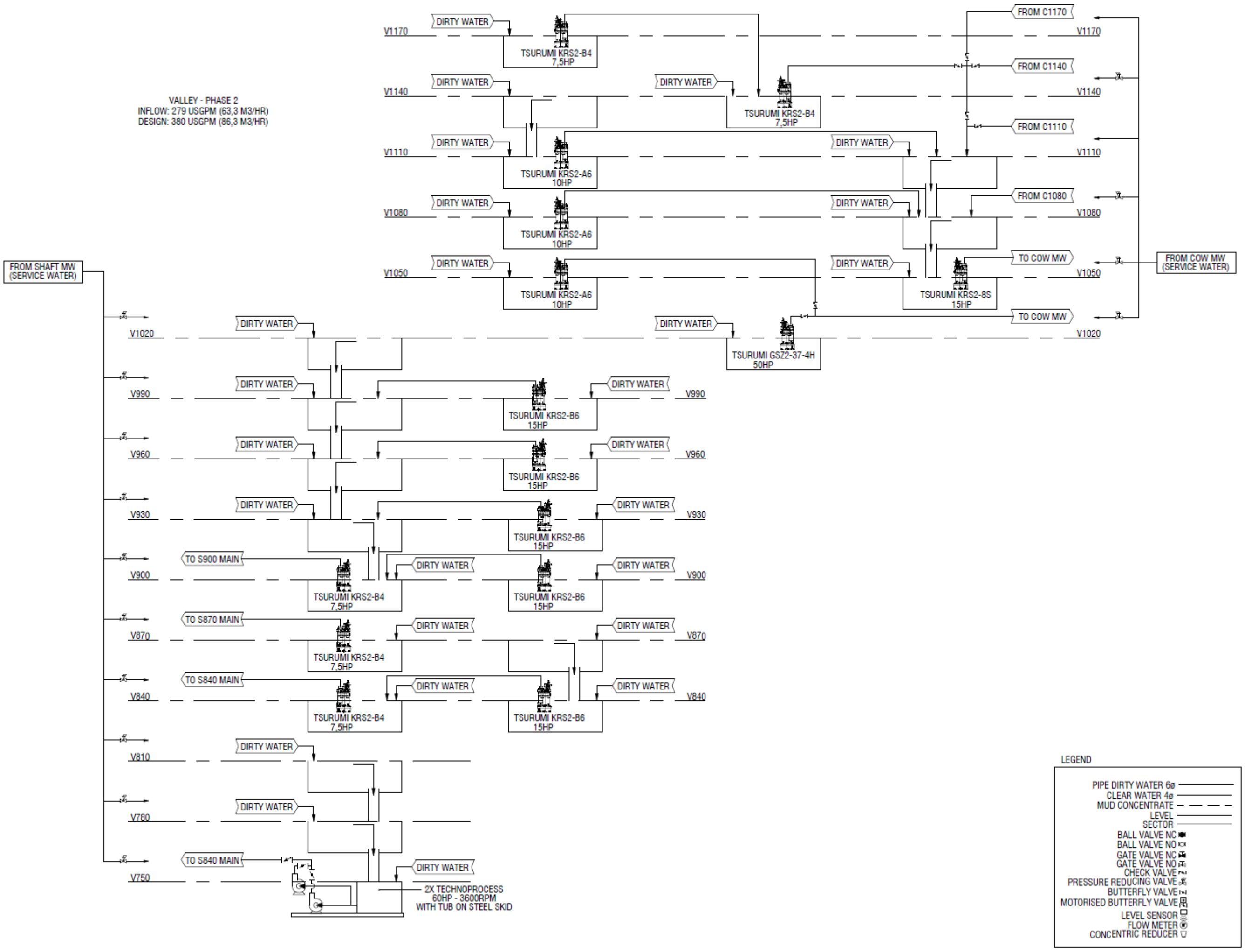


Figure 16-56: Typical water management flow sheet (Valley zone)

16.10.5 Water Clarification System

Dirty water coming from the different areas of the mine is pumped into a conditioning sump to keep the solid in suspension. A submersible pump able to pump big particles then feeds a set of Mudwizard dispensers containing polymer pucks. The flocculated water is then delivered to a set of settling cones where the clear water and mud is separated. This system is designed to reduce the ratio of mine sludge in the water by a factor of ten to one allowing water to be re-used in mine processes. The clear water coming out of the system will go into a clear water sump, where Tsurumi LH pumps feed the operation for the higher and lower levels. The remaining water not used by the operation will be pumped to the surface using a multistage centrifugal pump. From there, the discharge of the settling cones, which are equipped with peristaltic pumps, feed the slurry discharge. Decantation sump are used at the end of the process to thicken the slurry to be able to be handled with the LHD unit, which will be loaded and disposed under control in empty stopes as backfill.

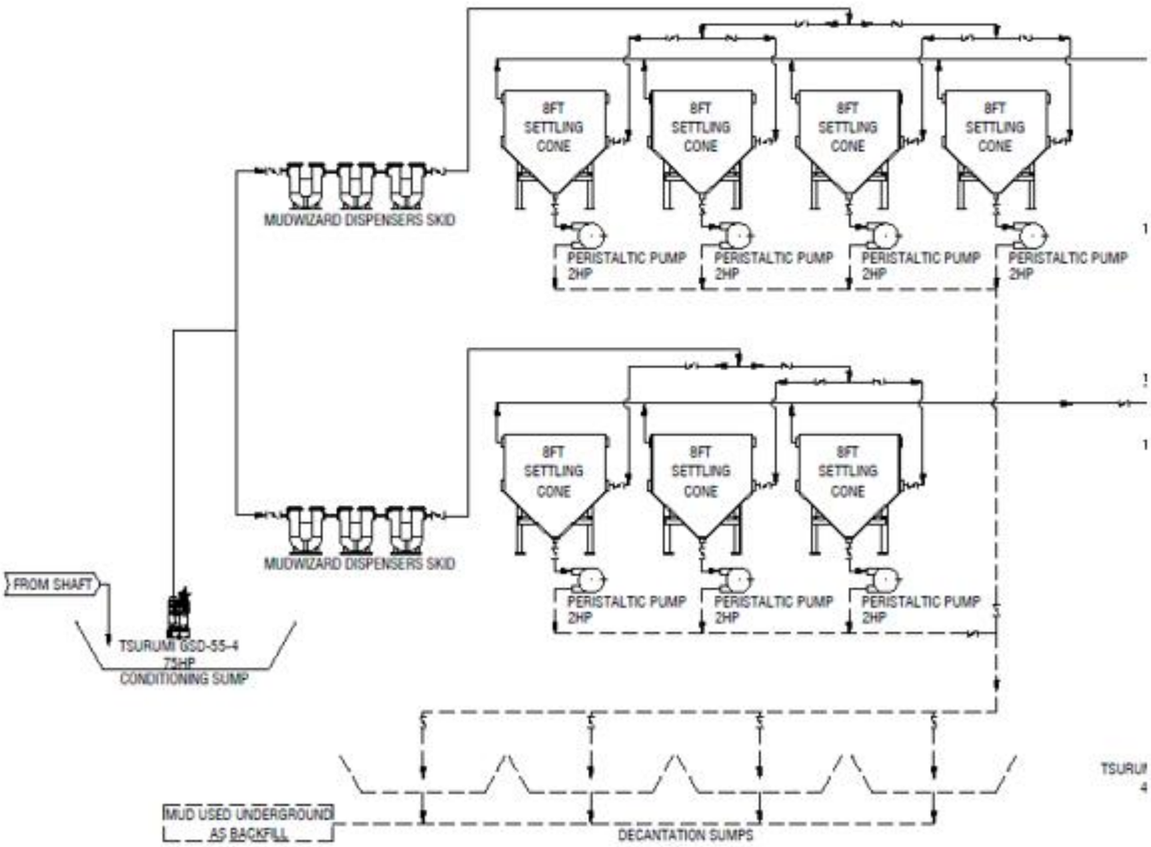


Figure 16-57: Mudwizard system schematic

16.10.6 Electrical Distribution

InnovExplo was responsible for developing the strategy for the underground electrical distribution system. Meglab Electronique was in charge of assisting InnovExplo with the electrical design work.

The Cariboo Gold Project site power distribution operates 13.8 kV. Two ways will be deployed from the surface by Valley Portal and Cow Portal to every underground level. Every zone can be powered by one sector or the other to allow redundancy and load balancing.

For the various equipment of the mine, the voltages used are 600 Volts and 1000 Volts. For low voltage, lighting and services, 120V/208 Volts was used. The project scope for the feasibility study included high-level single line drawings, load list, and bill of material ("BOM") listing the major equipment and major cabling with their associated costs.

The design basis for the underground mine electrical equipment and systems is the following:

- Underground main distribution voltage: 13.8 kV equipment;
- Underground equipment (fixed equipment, pumps, fans, mobile equipment, and charging station) utilization voltage: 600 V and 1 000 V;
- Underground services voltage: 120/208 V;
- Junction boxes, starters, variable frequency drive, grounding, cables and auxiliaries for the above;
- Load List, BOM, costs, and cable run distances for the above, as well as conformance to all applicable codes, standards, and regulations.

All the electrical equipment electrical loads are assembled into the electrical load list, assuming a reasonable amount of mining activity in all zones and most levels. The actual mining activity will be better defined as the mine production plan is developed and this will affect the load list moving forward to the next design stage. The actual electrical load list reflects a high, but not excessive activity level and it is a suitable model for moving forward with the design. Switchgears on surface and on levels were estimated. The feasibility study design includes 13.8kV-600/1000V, 1MVA, 1.5MVA or 2MVA mobile substations allocated for each level. As the mine development and production plan is further developed, the quantity and arrangement of the unit substations can be better defined. The reuse of mobile substations will also be possible depending on the progress of the mine development.

16.10.7 Underground Mine Equipment

Equipment selection was carried out based on the following criteria:

- Suitability for the planned size of the excavations;
- Ability to automate;
- Power output (kW) and associated ventilation requirements;
- Productivity;
- Average Mechanical Availability (%);
- Capital and operating costs.

InnovExplo, in collaboration with an independent, external consultant, Mr. Robert Hamilton, worked on the equipment selection. Mr. Hamilton has a background in maintenance and equipment supply.

A list, detailing the equipment selected, can be found in Table 16-26 in Section 16.9.1. Equipment quantities have been estimated to achieve the steady state mining rate of 4,900 tpd with allowances for spares of critical equipment types.

Five, two-boom jumbos will be used to drill all rounds less than 5.3 m wide, which will be mainly related to the haulage drift and ore access drift. Jumbo development headings were scheduled at 314 m per month total for multi-heading conditions. Decline development, for main haulage and level access will be handled by two roadheaders that will excavate at an average rate of 200 m/month, as provided by the contractor and equipment supplier quotations. Samples of different lithologies were sent to Sandvik laboratory in Austria to test and validate rock cutting performance with the road header. On that base, a conservative performance of 200 m per month was assumed for the project pending on validation performance on the adjacent Bonanza Ledge project, taking into account mucking, hauling, and ground support cycle.

Ore and waste material will be hauled using 50 t diesel trucks in the Phase 1 period and an electrical unit will be added to fulfill the increase production in the phase 2. Six diesel trucks will be in operation during Phase 1 and five electrical trucks will be progressively added at the beginning of phase 2. A fleet totalling 11 trucks will be required to satisfy material movement requirements. Four trucks will be used for development and three for production at the peak demand. Two fully automated trucks for ore and waste transfer between Shaft Zone and Valley Zone, and two fully automated trucks for ore material sorter waste handling to surface.

Given the size of the ore drifts, 10t LHD units, which will be ready to be operated in a fully automated mode, were selected to perform all mucking and backfilling tasks related to the stoping activities and the management of the waste material from the development heading. A total of 11 units are planned during the period of highest demand, including four units for development work, five units for stopes mucking and re-handling to the 50 t truck at loading bay, and three units for backfilling activities.

Stopes will be drilled using a top hammer longhole drill capable of drilling 89 mm blastholes up to 30 m and down the hole ("DDH") drill for V30 slot raises and adjacent square holes.

An effective productivity of 72% over a 10-hour shift was considered for the performance of equipment associated with the development activities. An effective productivity of 65% over a 10-hour shift was considered for load haul dump ("LHD") and trucks in manual mode, and a productivity of 63% and 66% over a 12-hour shift was considered for LHD unit for the addition of tele-remote between shifts and fully automated mode, respectively.

16.10.8 Communication Network Automation

As the Project is highly automated, the communication network is very important. Two master networks will be deployed from the surface by the Valley and Cow Portal to every underground level. The first one is the LTE network, which supports voice and data communication and will be deployed everywhere in the mine, where the second is the "FEMCO" security system deployed at every refuge and strategic site.

Fiber-optic network who will be brought in every electrical substation, pumping stations, crushing stations, and conveying site. Each level will have LTE distribution, with LTE radio head connected to high quality radiating cable (supporting till 2 GHz radio frequency). This one can support Channel Aggregation ("CA") LTE exceeding 40 Mbps upstream bitrate for data and voice communication. Many options can be deployed, such as cameras, tracking, blasting with "SMART BLAST", telemetry of heavy equipment and production, autonomous vehicles, teleoperated equipment, automation, and others. This could provide a full control of pump stations, ventilation on demand, electrical station remote control operation (LHD, Drill, haul trucks, etc.), and monitoring.

In addition, the security asset will be higher, with a tagging system that can provide the position of every equipment, worker, and visitor underground.

The main data network combined with the PLC and the LTE system brings all the information and control signals in both ways from the surface to everywhere underground. This can be realized to optimize the operation and cost.

The envisioned automation strategy for Load Haul Dump ("LHD") units at the mine encompasses teleoperated mucking from the stopes and level loading bay that includes a re-muck as transitional ore storage. The concept of the loading bay located in the access level separates the teleoperated equipment from the man operated equipment, thus respecting regulation and permitting teleoperation for extraction and also the loading of trucks at the load-out bays.

Based on discussions between equipment suppliers, ODV, and InnovExplo on the automated mode capabilities as well as based on automated mode operations currently underway in some operations, it has been considered that stopes loading operations will be fully performed in manual mode and tele-remote between shifts starting in 2026, and in fully automated mode, including control of two LHD's per operator, starting in 2028.

The transportation of ore and waste material between the Shaft Zone dumping points and the Valley/Cow Zone milling facilities will be carried out in a fully automated mode as soon as the facilities are commissioned in 2027. It is planned that one operator per shift will supervise the fleet of four trucks.

The operation's schedule was built around a production capacity averaging 4,900 tpd, out of which an average of 515 tpd is attributed to autonomous mucking and hauling over a 2-hour shift change period assuming optimal setup conditions.

The basis for automation places strict demands on a robust communications network. A sample mine communications system is shown in Figure 16-58.

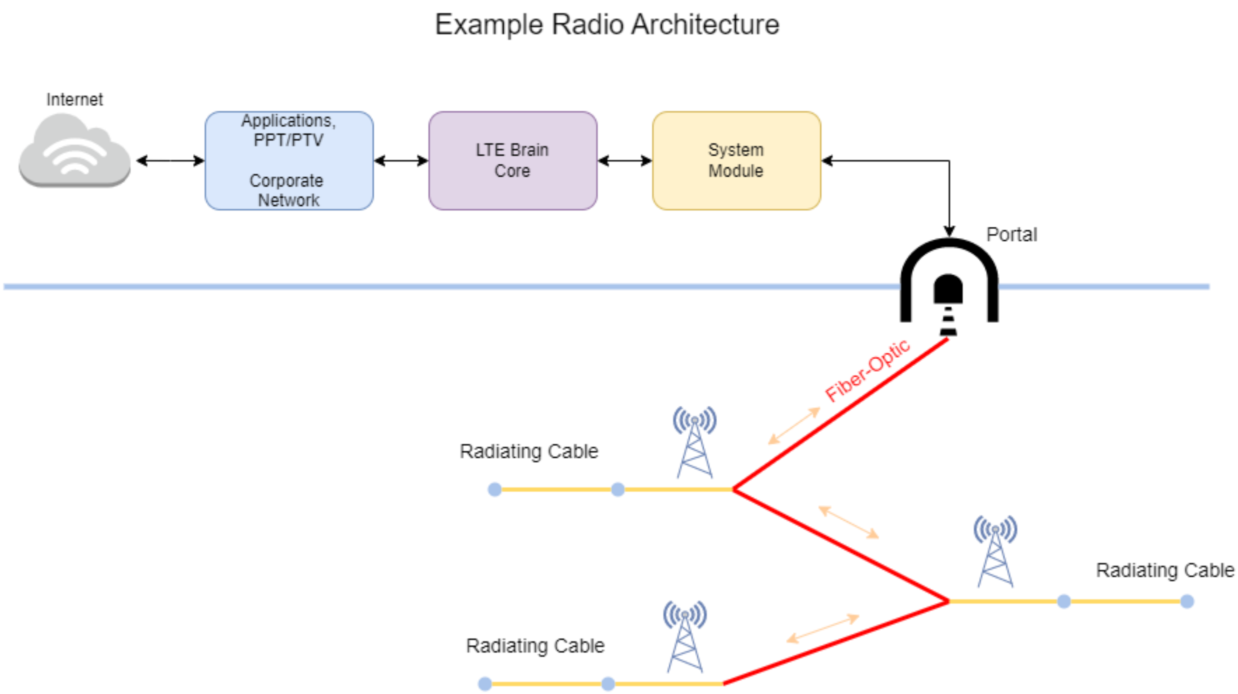


Figure 16-58: Example Mine Communications System

16.11 Mine Personnel

The MSC will operate on two 12-hour shifts per day for automated operations and two10-hr shift per day for other underground activities. Operations will be carried through 7 days a week, two shifts per day. It was assumed that the mine will operate 365 days per year.

The mine will be operated using three different rosters. A combination of a 4/3 and 5/2 (days working/days off) will be used for salaried personnel. Hourly employees are scheduled on a 14 days on, 14 days off roster on a fly-in fly-out ("FIFO") schedule. The workforce will consist of maintenance crews, operating personnel, and contractor personnel.

The salaried staff will consist of an average of 154 people per rotation in phase 2, including 22 office personnel, 93 operators, and 39 maintenance personnel. At the peak point in the life of mine, this results in 22 office personnel, 105 operators, and 43 maintenance personnel. This results in a maintenance: operator ratio of 41%. The contractor workforce will consist of 12 people per rotation, in a total of 24 people.

Table 16-28: Underground Manpower per rotation - Distribution in time

	2023	2024	2025	2026	2027	2028	2029
Mine services office personnel	3	4	6	6	6	8	8
Development operators	10	13	14	29	34	33	27
Drilling and blasting operators	-	0	6	6	5	17	17
Mucking and blasting operators	6	8	16	24	26	32	29
Services and construction operators	2	2	4	4	4	12	12
Mobile backfill unit and shotcrete (contractors)	-	3	3	3	6	6	6
Diamond drilling (contractors)	-	3	6	6	6	6	6
Total Underground Mine Services	**21**	**34**	**54**	**78**	**87**	**113**	**104**
Underground maintenance office personnel	4	5	8	8	8	14	14
Mobile mechanics	8	9	11	17	24	25	23
Fixed mechanics	2	2	2	2	3	3	3
Electrics	2	2	2	2	2	5	5
Others	3	3	5	5	6	9	9
Total Underground Maintenance	**19**	**21**	**28**	**34**	**43**	**57**	**54**
Total Underground	**40**	**55**	**82**	**112**	**129**	**170**	**158**
	2030	**2031**	**2032**	**2033**	**2034**	**2035**	**2036**
Mine services office personnel	8	8	8	8	8	8	4
Development operators	25	26	24	22	22	20	0
Drilling and blasting operators	16	16	17	17	17	16	1
Mucking and blasting operators	27	29	28	27	26	24	1
Services and construction operators	12	12	12	12	12	12	5
Mobile backfill unit and shotcrete (contractors)	6	6	6	6	4	4	4
Diamond drilling (contractors)	6	6	6	6	6	6	6

	2030	2031	2032	2033	2034	2035	2036
Total Underground Mine Services	**100**	**103**	**101**	**98**	**95**	**90**	**20**
Underground maintenance office personnel	14	14	14	14	14	14	7
Mobile mechanics	22	22	22	21	21	20	9
Fixed mechanics	3	3	3	3	3	3	2
Electrics	5	5	5	5	5	5	4
Others	9	9	9	9	9	9	7
Total Underground Maintenance	**53**	**54**	**54**	**52**	**52**	**51**	**29**
Total Underground	**153**	**156**	**154**	**150**	**147**	**141**	**49**

17. Recovery Methods

17.1 Introduction

The Cariboo Gold Project ("the Project") will ramp up tonnage in two phases: Phase 1, starting with a 1,500 tonnes per day ("tpd") mobile-crushing, ore sorting, grinding, leaching, adsorption, desorption, and recovery ("ADR"), and refining flowsheet, followed by Phase 2, a 4,900 tpd crushing, ore sorting, grinding, flotation, paste production, regrinding, leaching, ADR, and refining flowsheet.

In Phase 1, the ore will be processed at two sites. The Bonanza Ledge Site is located at the current Bonanza Ledge Mine, and the Quesnel River Mill ("QR Mill") is located 116 kilometres ("km") from the Bonanza Ledge Site.

For the initial throughput of 1,500 tpd, a pre-concentrator, including mobile crushing, screening, and ore sorting, will be built at the Bonanza Ledge Site. The crushing operation will consist of a mobile unit, and the crushed product will be processed in an ore sorting circuit. The concentrate from the sorted concentrate will be trucked to the QR Mill for further comminution, leaching, ADR, and refining.

The QR Mill is an existing plant with a daily capacity to treat 860 tpd of ore. The QR Mill will require modifications to improve operations and to process higher concentrate feed grades from the Project.

In Phase 2, the ore will be processed in two stages at two sites. The Mine Site Complex ("MSC"), located in the District of Wells, British Columbia ("Wells"), and the QR Mill located 111 km west of the MSC.

For the expanded throughput of 4,900 tpd, crushing will occur underground and will then be conveyed to the surface where ore sorting, grinding, and flotation will be conducted in a Concentrator Building at the MSC. The MSC, Concentrator Building, and underground facility will serve as a pre-concentration step to reduce the overall operation and transportation costs. The crushed product will be conveyed to the surface to feed a sizing screen. The sizing screen undersize will be discharged into a fine storage bin and the oversize will be sent to the ore sorting circuit. The ore sorter concentrate will be crushed and then combined with the fine storage bin material to feed a grinding and flotation circuit. The flotation concentrate will be trucked to the QR Mill for further comminution, leaching, and refining. The QR Mill in Phase 2 will have a throughput of 644 tpd.

17.2 Concentrator Process Design Criteria

The process design criteria are presented in Table 17-1.

Table 17-1: Process design criteria

Process design criteria	Unit	Design value	
		Phase 1	Phase 2
Bonanza Ledge Site			
Average feed grade	g Au/t	4.43	-
ROM tonnage	tpd	1,500	-
Crushing Design Factor	-	1.15	-
Fine ore abrasion index	g	0.26	-
Ore sorter concentrate abrasion index	g	0.34	-
Ore sorter concentrate specific gravity	-	2.87	-
Ore sorter tailings specific gravity	-	2.76	-
Crushing fines content	%	23.0	-
Ore sorter concentrate mass pull	%	40.0	-
Crushing and ore sorting circuit gold recovery	%	96.3	-
MSC			
Average feed grade	g Au/t	-	3.72
ROM tonnage	tpd	-	4,900
Fine ore abrasion index	g	-	0.26
Ore sorter concentrate abrasion index	g	-	0.34
Ore sorter concentrate specific gravity	-	-	2.87
Ore sorter tailings specific gravity	-	-	2.74
Crushing fines content	%	-	30.0
Ore sorter concentrate mass pull	%	-	50.0
Mill throughput	tpd	-	3,267
Milling Design Factor	-	-	1.10
Mill availability	%	-	94
Grind size to flotation	µm	-	125
Flotation concentrate mass pull	%	-	19
Flotation concentrate specific gravity	-	-	3.26
Flotation tailings specific gravity	-	-	2.75
Flotation Au recovery	%	-	98.0
MSC Au recovery	%	-	95.3

Process design criteria	Unit	Design value	
		Phase 1	Phase 2
QR Mill			
Mill throughput	tpd	859	644
Milling Design Factor	-	1.10	1.10
Mill Feed specific gravity	-	2.85	3.23
Mill availability	%	94.0	94.0
Grind size	µm	58	45
Gravity Au Recovery	%	28	-
Leach and CIP Au recovery	%	95.2	96.5
Carbon stripping, regeneration capacity	tonnes C	2	6
QR Au recovery	%	96.6	95.5
Overall Au recovery	%	93.0	91.9

17.3 Crushing Circuit and Pre-concentrator at the Bonanza Ledge Site – Phase 1

The following images show a simplified flowsheet of Phase 1 at Bonanza Ledge and an overall general arrangement ("GA") for Bonanza Ledge's crushing and ore sorting.

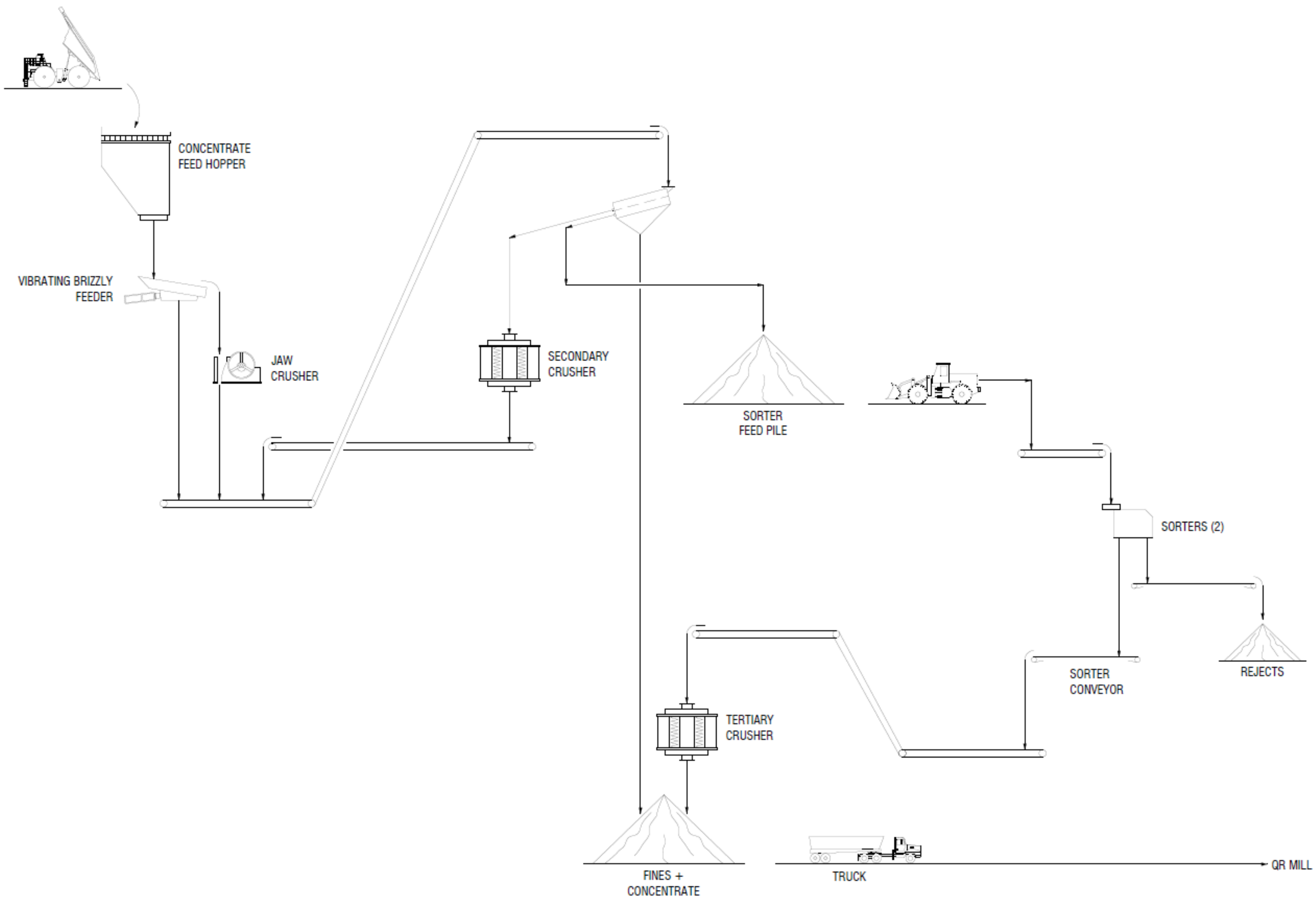


Figure 17-1: Simplified flowsheet of Phase 1 at Bonanza Ledge

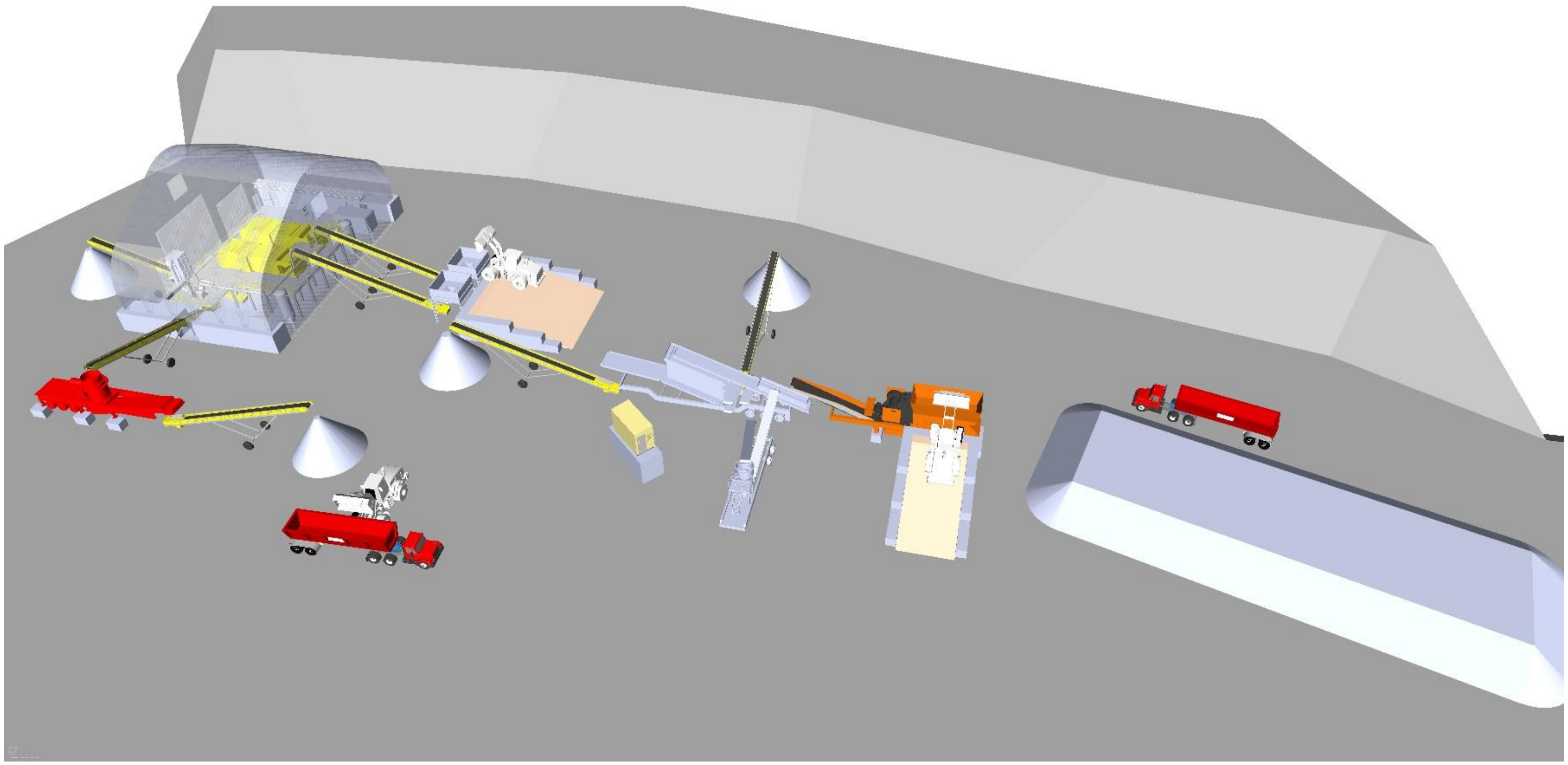


Figure 17-2: GA for crushing and ore sorting at Bonanza Ledge

17.3.1 Crushing and Screening

The crushing and dry screening circuit will be a mobile unit. The circuit will consist of a primary jaw crusher, a secondary cone crusher, a vibrating grizzly, a screen, and the associated conveyors. The crushing circuit will have a throughput of 300 tph and will operate 5 hours per day.

The run of mine ("ROM") material will be dumped into a hopper that will feed onto the vibrating grizzly. The grizzly oversize will feed the jaw crusher, which has a closed side setting of 60 mm. The product from the crusher and the grizzly undersize will be fed into a crusher classification screen. The screen consists of decks: the top deck with openings of 100 mm, the middle deck with openings of 50 mm, and the bottom deck with openings of 10 mm. The oversize material from the top and middle decks will feed the secondary cone crusher, while the oversize from the bottom deck, the middling stream, will be loaded and transferred to the ore sorter circuit. The bottom deck undersize fines will be stockpiled and transferred to the QR Mill. The classification screen will produce 23% fines material and 77% coarse material. The total middling solids tonnage is 231 tph, and the undersize solids tonnage is 69 tph. The secondary cone crusher will operate in a closed circuit with the classification screen with a recirculating load of 38%.

17.3.2 Ore sorting Circuit

One existing ore sorter and one new ore sorter will be used in Phase 1. The ore sorter technology will use a Combined Sensor, comprised of dual-energy X-ray transmission sensors ("XRT") sensor. Each ore sorter has a 2 m wide belt and they will be operated at a 85% availability. The classification screen middling stream is fed to ore sorters via a loader and a series of two belt feeders. Each belt feeder feeds and ore sorter. The ore sorting circuit will have a mass pull rate of 40%, recovering a total of 25 tph. The ore sorter concentrate will be taken to the tertiary crusher via a loader. The ore sorter tails will be placed in the waste rock storage facility.

The ore sorter concentrate will be stored in a stockpile. The concentrate will be loaded into transport trucks to the QR Mill site.

17.4 Quesnel River Mill – Phase 1

The QR Mill started operations in the mid-1990s, with an initial flowsheet using grinding, gravity concentration, cyanide leaching, and carbon-in-pulp adsorption. The QR Mill has run intermittently since then, and most recently until 2021. Some mill upgrades were completed in 2020 and 2021 and Phase 1 aims to reuse much of the existing equipment and upgrade the necessary circuits to improve operational efficiency. The simplified flowsheet is presented in Figure 17-3.

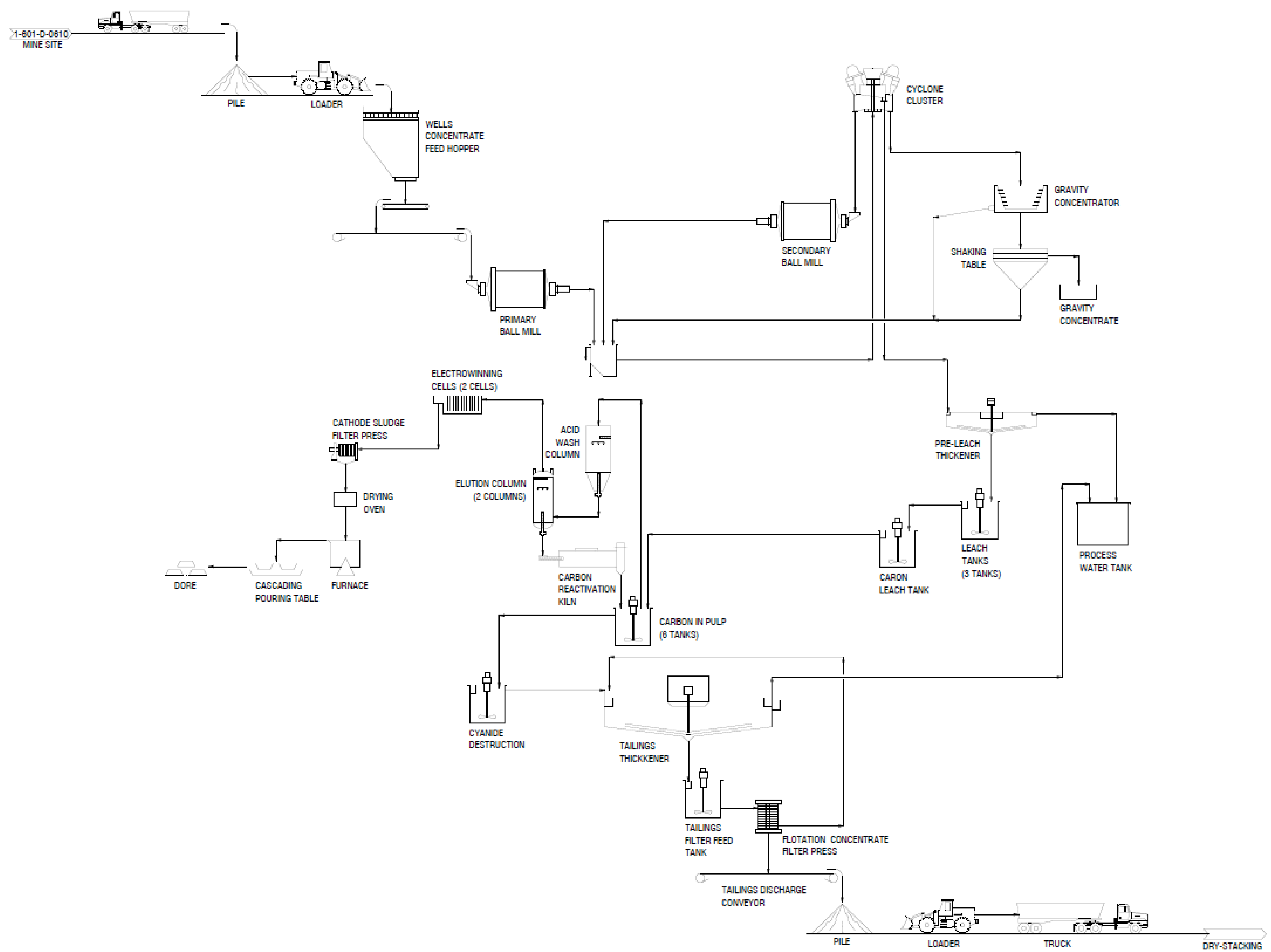


Figure 17-3: Simplified flowsheet of Phase 1 at QR

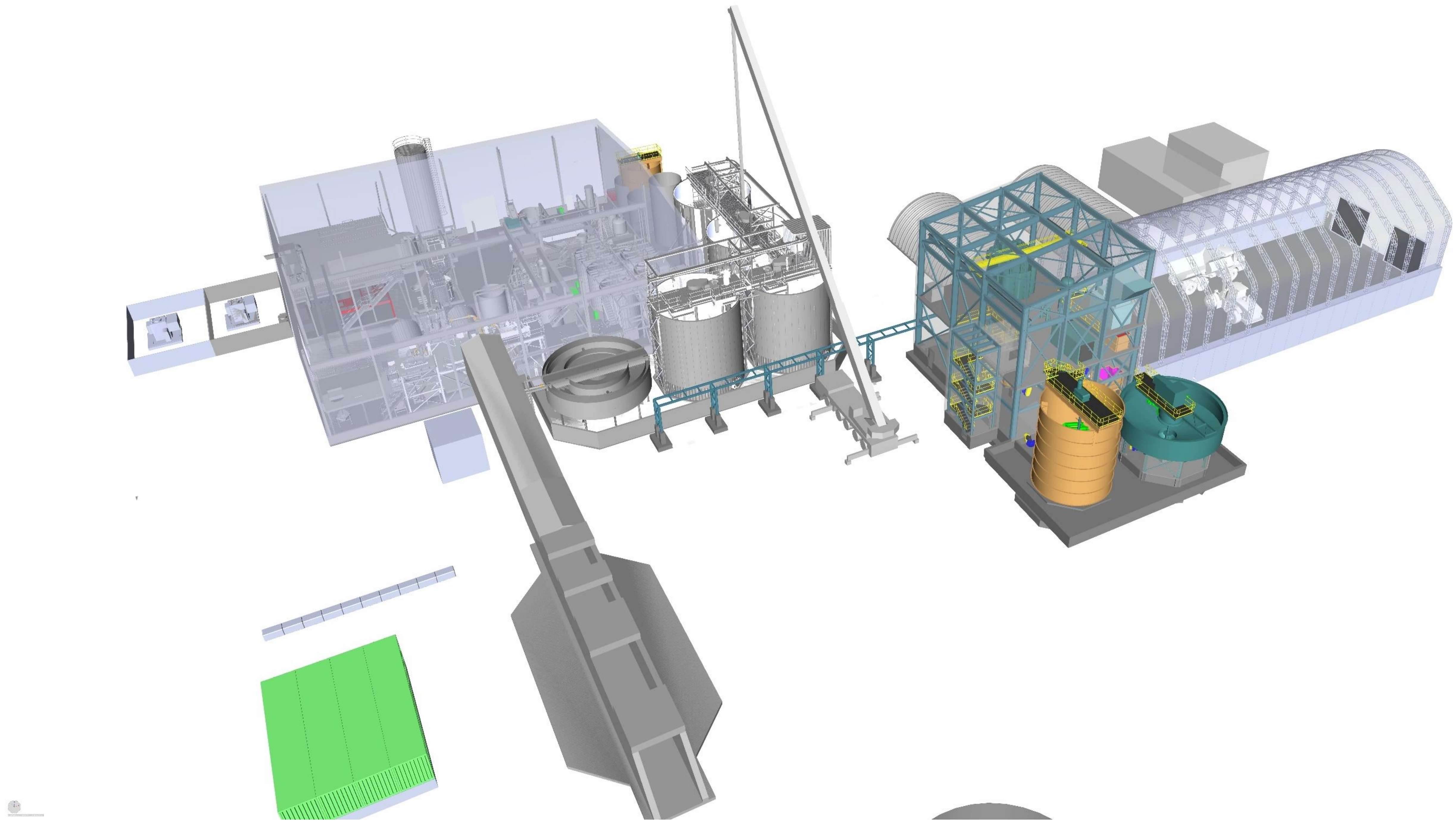


Figure 17-4: Process GA Phase 1 at QR

17.4.1 Grinding Circuit

The grinding circuit is composed of two existing mills running in series. They are identical 3.96 metres ("m") long by 3.05 m diameter ball mills with single-pinion 450 kilowatt ("kW") motors that will be replace and will operate with variable frequency drive speed, running in series. The grinding circuit will have a production and availability rate of 36 tph and 94%. The primary ball mill operates in open circuit and the secondary ball mill operates in closed circuit. The ball mill discharge is fed to the cyclone cluster, which consists of two operating cyclones with a 350 mm diameter, one standby and one spare.

The cyclone overflow product has a P80 of 58 microns ("µm") at a circulating load of 350% of fresh feed. The cyclone overflow flows by gravity to the pre-leaching thickener. The cyclone underflow will discharge in a 30% to 70% split between the gravity concentrator and the secondary ball mill.

17.4.2 Gravity Circuit

The gravity circuit is composed of an existing gravity concentrator operating in a semi-continuous mode and a shaking table. The gravity circuit operates in a closed circuit, fed from the cyclone underflow. The cyclone underflow passes over a new gravity scalping screen with a separation size of 1000 microns. The oversize is piped to the gravity tails pump box and the undersize flows to the gravity concentrator. The gravity circuit overall capacity is 32 tph.

Gravity concentrator tailings flows into the gravity tails pump box and the gravity concentrate goes through a pump box and hopper, feeding into the shaking table. The shaking table operates in batches, producing the final gravity gold concentrate. The gravity tailings stream flows into the gravity tails pump box, which pumps to the cyclone cluster feed pump box.

17.4.3 Thickening, Leaching, and Carbon-in-Pulp Circuits

The cyclone overflow flows to an existing vibrating trash screen, and the trash screen underflow flows into an upgraded 10 m diameter thickener. The thickener will upgrade to a high-rate unit by replacing the feed well, rakes, and drive unit. The drive will be supported by a new bridge structure. Flocculant is added to the thickener feed well. The thickener overflow will be used as process water. The thickener underflow will be pumped to the leaching circuit. The leaching circuit consists of four existing tanks where the first three tanks are solely for leaching and the last one is used for carbon-in-leach ("CIL"). Four tanks provide a total leaching time of 44 hours. The slurry will flow from one tank to the other by gravity with a provided height difference of 30 cm between each tank, which can be bypassed for maintenance. In addition, each tank is equipped with an agitator mechanism and compressed air lines.

The discharge of the leaching circuit will be fed by gravity into the conventional carbon-in-pulp ("CIP") circuit. The circuit is composed of six 30 m^3 tanks. The conventional CIP circuit allows one tonne of carbon to be removed per shift, for a total of two tonnes of carbon removal per day. The CIP tails flow over a vibrating safety screen to recover any carbon particles before proceeding to detoxification.

17.4.4 Elution and Carbon Regeneration Circuits

Most of the elution and carbon regeneration circuits will be refurbished to improve the circuit performance. This upgrade includes the installation of the following new major equipment: the loaded carbon screen, acid wash column with one-tonne capacity, , acid wash tank, and acid neutralization tank.

The loaded carbon from the CIL tank is pumped onto a screen, which returns the underflow slurry back to the CIL feed launder. The overflow carbon falls into a loaded carbon holding tank that feeds the acid wash column, which uses nitric acid to eliminate carbonates. The washed carbon is then transferred to one of two operating elution columns. The elution columns will be operated at different times on the same day.

The elution circuit will be operated in batch cycles using the ZADRA process, which utilizes a high-temperature, high-pressure solution of sodium cyanide and caustic soda to desorb gold from the carbon. The elution solution is prepared in the elution solution tank. The elution solution is pumped through a heating heat exchanger and fed to elution columns. Under the right temperature and pressure conditions in the elution column, gold desorbs from the loaded carbon, and dissolves in the elution solution. The pregnant solution flows out from the top of the elution column and it is cooled through the trim heat exchanger before being pumped to the electrowinning cells.

Carbon from the elution column is pumped to a dewatering screen, where the oversize feeds the regeneration kiln and the undersize flows to the carbon fines tank. The regenerating kiln burns off organic contaminants absorbed onto the carbon surface.

The regenerated carbon from the kiln is cooled in a quench tank and returned to the carbon sizing screen that feeds the CIL tank. Fresh carbon is then fed to an agitated carbon attrition tank and pumped to a carbon sizing screen as required. Carbon fines are collected in the fine carbon tank. Carbon fines are recovered at the bottom of the tank, filtered using a filter press, and bagged to be sold.

17.4.5 Refinery Circuit

The cooled pregnant solution from elution is pumped to the gold refinery into two electrolysis cells running in parallel. One of the two cells will be replaced by a new unit and the rectifier for both cells will be upgraded to improve circuit efficiency. The electrowinning cells will operate at 9 volts ("V"). A fan will be used to evacuate fumes from both electrowinning cells.

The gold sludge from the electrowinning cells will be removed from the cathodes in a wash booth and will be pumped to the new sludge filter press. The filter cake will be dried and melted with flux in a propane furnace to produce doré.

The doré will be stored in a vault and will be picked up by secure trucks as required.

17.4.6 Cyanide Destruction Circuit

The CIP tails from the safety screen underflow pump box is pumped to one new cyanide destruction tank. The new tank will be installed in the same location as the existing tanks and it will provide two hours of retention time.

SO_2/Air cyanide destruction method will be used to reduce cyanide concentrations to environmentally acceptable levels. Sodium metabisulphite ("SMBS") will be used as the SO_2 source, oxygen as oxidation agent, copper sulfate as a catalyst and lime to control pH. Once the cyanide levels are reduced, the tailings slurry will be pumped in the dry stacking circuit.

17.4.7 Tailings Dewatering Circuit

The new tailings dewatering circuit will be composed of one 10 m diameter high-rate thickener, one vertical filter press, one filter feed tank, and one filtrate tank. The filter is equipped with an air compressor and an air receiver.

The tailings from the cyanide destruction circuit is pumped to a high-rate thickener, which will increase the solids content to 62% by weight in the underflow. The thickener underflow will be pumped to the filter feed tank, which will pump to the filters. Filtration will further increase the solids content to 89% by weight.

Filter cake is discharged onto the floor directly and is picked up by a loader. The filtered cake is then loaded by a loader into trucks to be hauled to the filtered stack tailings storage facility.

Reclaim water will be used to wash the press filter cloths. The cloth wash and the manifold wash water will be provided via the reclaim water tank. All water used for manifold and cloth wash is returned to the filtrate tank.

17.4.8 Water and Air Services

The process water tank will collect water from the pre-leach thickener and tailings thickener overflow. Process water will be used for the grinding circuit, flocculant and thickener dilution, screen wash water, and carbon quench water.

The fire and reclaim water tank will receive water from the water treatment plant and the south seepage pond. It also currently receives water from the MZP. Reclaim water will be used in the tailings filter as manifold and cloth wash water, gland seal water, reagent mixing, acid dilution, and for spray bars.

One new air dryer and one instrument air receiver will be added to the existing process air system. A new process air compressor will also be added as an installed stand-by unit. The existing air system includes two air compressors and one air receiver.

17.4.9 Reagent Systems

The reagents used in the QR Mill include cyanide, lime, flocculant, copper sulphate, Sodium metabisulphite ("SMBS"), nitric acid, and anti-scalant. A combination of existing and new systems will be required. Appropriate safety systems, such as eye wash, safety showers, exhaust fans, and HCN monitors will be included in the reagent areas.

The existing lime, cyanide and copper sulphate circuits will be used. The existing lime circuit consists of a lime silo, a slaking mill, and storage tank. The existing cyanide circuit consists of a mixing tank and a distribution tank.

The flocculant and SMBS systems will include a preparation unit consisting of an agitated mixing tank, a transfer pump, a distribution tank, and two operating metering pumps; the flocculant system will include one standby pump. The flocculant system will be used for both the pre-leach thickener and the clarifier.

Nitric acid will be delivered in drums. Any fumes will be exhausted with a fan to the atmosphere and a dedicated spillage pump will pump any spills back into the storage tank. A single pump will pump the acid to the acid wash tank.

Anti-scalant will be received in totes and will be pumped by three pumps to the elution solution tank and the process and reclaim water tanks. The totes will be located near the delivery points to reduce the piping requirements.

17.5 Crushing Circuit and Concentrator at the Mine Site Complex – Phase 2

The Phase 2 process includes the addition of an underground crushing circuit and a MSC at Wells. The surface infrastructure at the MSC will be composed of four main areas: ore sorting, grinding-flotation, concentrate dewatering, and the paste plant.

The MSC concentrator simplified flowsheet is presented in Figure 17-6. The concentrate from the grinding-flotation circuits of MSC will be discharged into trucks and transported to the QR Mill.

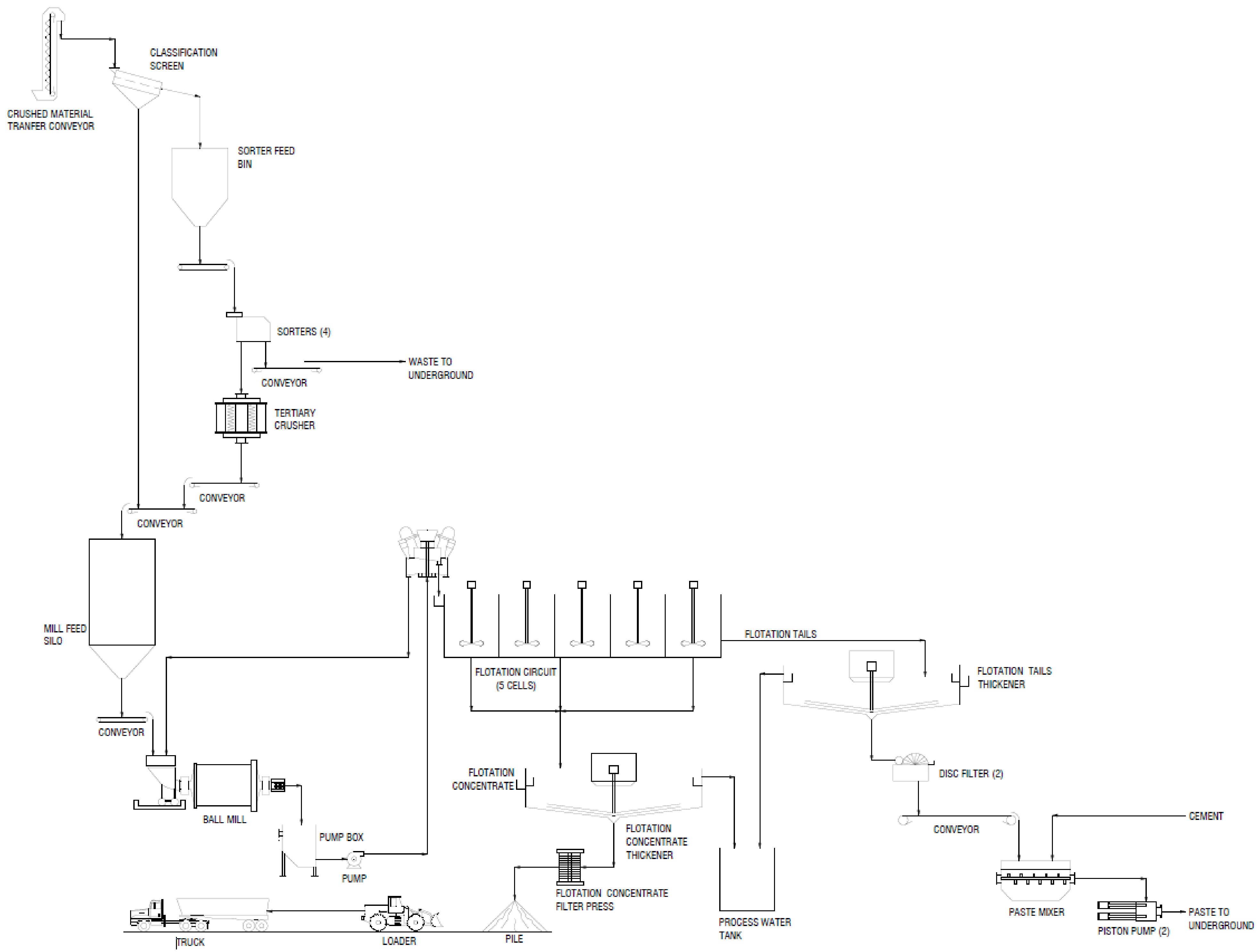


Figure 17-5: Simplified flowsheet of Phase 2 at Wells

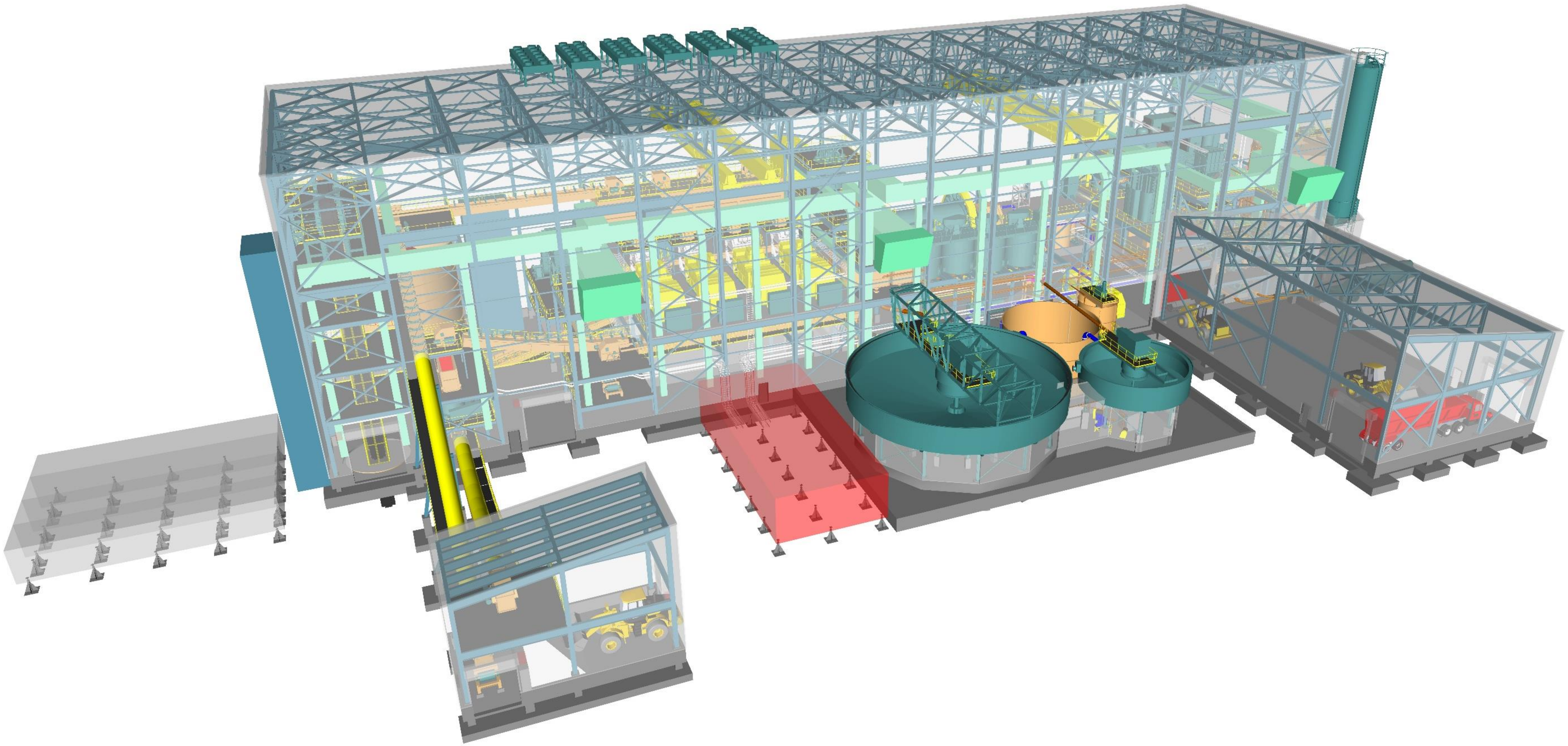


Figure 17-6: Concentrator GA Phase 2 at MSC

17.5.1 Crushing and Screening

The ROM material will be crushed to -58 mm, with the existing circuit located underground and the crushed material will be dry screened on the surface via a double-deck vibrating screen. The details of the crushing circuit are presented in Chapter 16.

The crushed material reaches the surface via a vertical conveyor and then it is fed to the crushed ore classification screen. The vertical conveyor solids tonnage is 292 tph at 70% utilization with an approximate vertical lift of 160 m. The top and bottom deck of the classification screen separation sizes of the crushed ore classification screen are 40 mm and 15 mm, respectively. The oversize material is fed to the ore sorting circuit, and the undersize material is piled before being blended with the ore sorting concentrate. Form the classification screen is expected to separate the feed in 30% fines material and 70% coarse material. The oversize solids tonnage is 168 tph and the undersize solids tonnage is 72 tph.

17.5.2 Ore Sorting Circuit

Two ore sorters will be repurposed from the Bonanza Ledge Site and two new ore sorters with the same capacity will be installed. The ore sorting technology used will be a twin sensor x-ray and laser technology. The ore sorting circuit will operate at 85% availability. The ore sorter feed bin will discharge into four chutes; each chute will discharge onto its own belt feeder into a head chute and into one of four ore sorters. The ore sorting mass pull is 50%, recovering 68.4 tph of concentrate.

The ore sorter concentrate will go through crushing prior to grinding. The ore sorter crushing circuit will consist of one operating and one stand-by tertiary crusher with an overall circuit availability of 85%, crushing 68 tph of material. The ore concentrate will then be conveyed to the fine storage bin and fed to the grinding circuit. The ore sorter tails will be piled and used for mine back fill.

An ore sorter concentrate discharge point is installs at the conveyer transfer tower feeding the fines storage bin. This discharge point allows to bypass the flotation circuit and transferred ore sorter concentrated to the QR mill.

17.5.3 Grinding Circuit

The grinding circuit will be composed of a 4.57-m diameter ball mill with a 2,450-kW single motor. The ball mill will be operated in closed circuit with three cyclones of 650 mm diameter (two cyclones operating and one spare cyclone).

The grinding circuit will be fed by the fines from the screening circuit and ore sorting concentrate. The production rate and availability are designed to be 127 tph and 94%.

The average cyclone overflow product is designed to have a cut size of 125 µm at a circulating load of 250% of fresh feed. The cyclone overflow will flow by gravity to a conditioning tank prior to the flotation circuit. The cyclone underflow will be returned to the ball mill.

17.5.4 Flotation Circuit

The flotation circuit consists of one conditioning tank, providing 4 minutes of conditioning time and five 20 m^3 flotation tanks, providing a total retention time of 19 minutes. MIBC (methyl isobutyl carbinol) as frother will be added and PAX (potassium amyl xanthate) will be added as collector. The flotation is performed at natural pH, which is between 7.5 to 8.5. The flotation circuit will have solid feed rate of 141 tph at 35% solids by weight. The concentrate will be pumped to the concentrate dewatering area and the tailings will be pumped to the paste backfill plant. The flotation circuit is designed to recover 20% of the feed mass, recovering 24 tph.

17.5.5 Flotation Concentrate Dewatering

The flotation concentrate will undergo two-stage dewatering. The first stage will occur in a 13 m diameter high-rate thickener that will thicken the concentrate to 62% solids by weight in the underflow. The underflow will then feed a single vertical filter press with 1.5 m x 4.0 m plate size via an agitated feed tank to dewater the concentrate further to 92% solids. The concentrate will be stockpiled and transferred to the QR mill.

17.5.6 Paste Production

The Paste Plant area will dewater the flotation tailings in two stages: thickening with an 18 m diameter high-rate thickener followed by filtration with two 3.81-meter diameter disc filters. The dewatered tailings will be mixed with cement and water into a high intensity paste mixer and then pumped to underground stopes by a positive displacement pump. The dry cement will be stored in a silo outside and will be conveyed into a cement mixing tank where process water is added to create the cement slurry. There will be a spare piston pump, increasing the circuit availability to 94%.

17.5.7 Water and Air Services

The process water tank will collect water from the paste plant and concentrate thickener overflow and supplement it with fresh water when required. Process water will be used for the grinding circuit (make-up water, trommel sprays), flotation launder water, flocculant dilution, filter press core and wash water, and paste plant (cement mix and make-up water). Any excess process water will be sent to the water treatment plant. The freshwater tank will receive water from the underground mine. Fresh water will be used in the concentrate filters as compression water, gland seal water, reagent mixing, and for washing in the paste mixer. One duty and one standby high-pressure air compressor will be installed to supply concentrator air. Instrumentation air will be supplied from the same air compressors connected to a common air dryer. Compressed air for each set of two ore sorters will be supplied by a dedicated air compressor, and dryer set, as well as one air receiver per ore sorter. Compressed air for each concentrate filter press will be supplied by a dedicated air compressor and receiver set. One duty and one standby air compressor will be installed to supply the tailings disc filter air receivers, and one air receiver will be installed for each disc filter. Flotation air will be supplied by one duty and one standby air blower.

17.5.8 Reagent System

Flocculant and PAX systems will include a preparation unit consisting of an agitated mixing tank, a transfer pump, a distribution tank, and three metering pumps (two operating and one standby). The Methyl isobutyl carbinol ("MIBC") will be received in totes and will be distributed to the flotation circuit by three metering pumps (two operating and one standby).

17.6 Quesnel River Mill – Phase 2

The QR Mill will be upgraded to process the pre-concentrated material from the MSC. The Phase 2 QR Mill concentrator simplified flowsheet is presented in Figure 17-7. The throughput for the QR Mill will be 26.8 tph, which is lower than in Phase 1 since the feed material will be further concentrated using flotation and resulting in a higher grade.

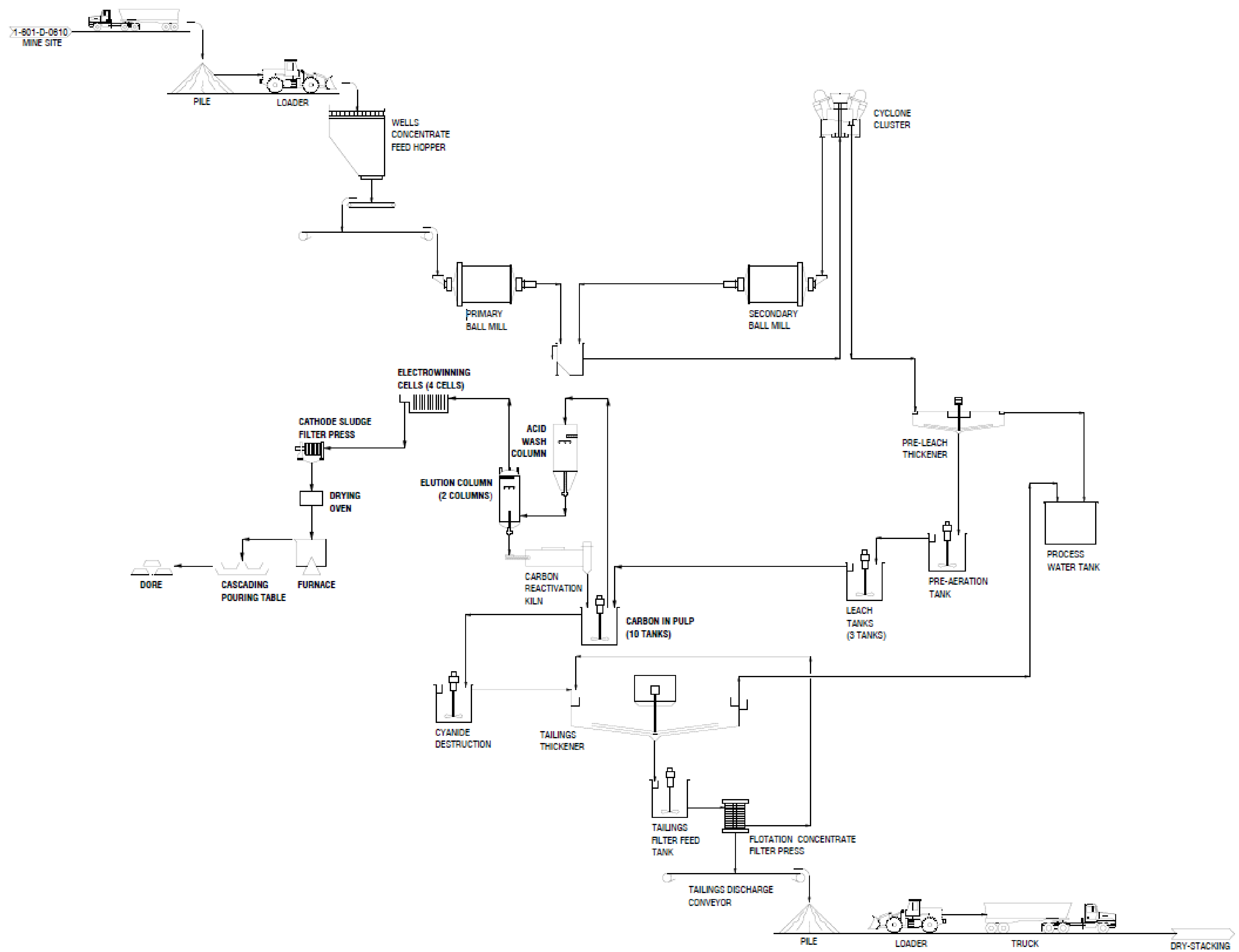


Figure 17-7: Simplified flowsheet of Phase 1 at QR

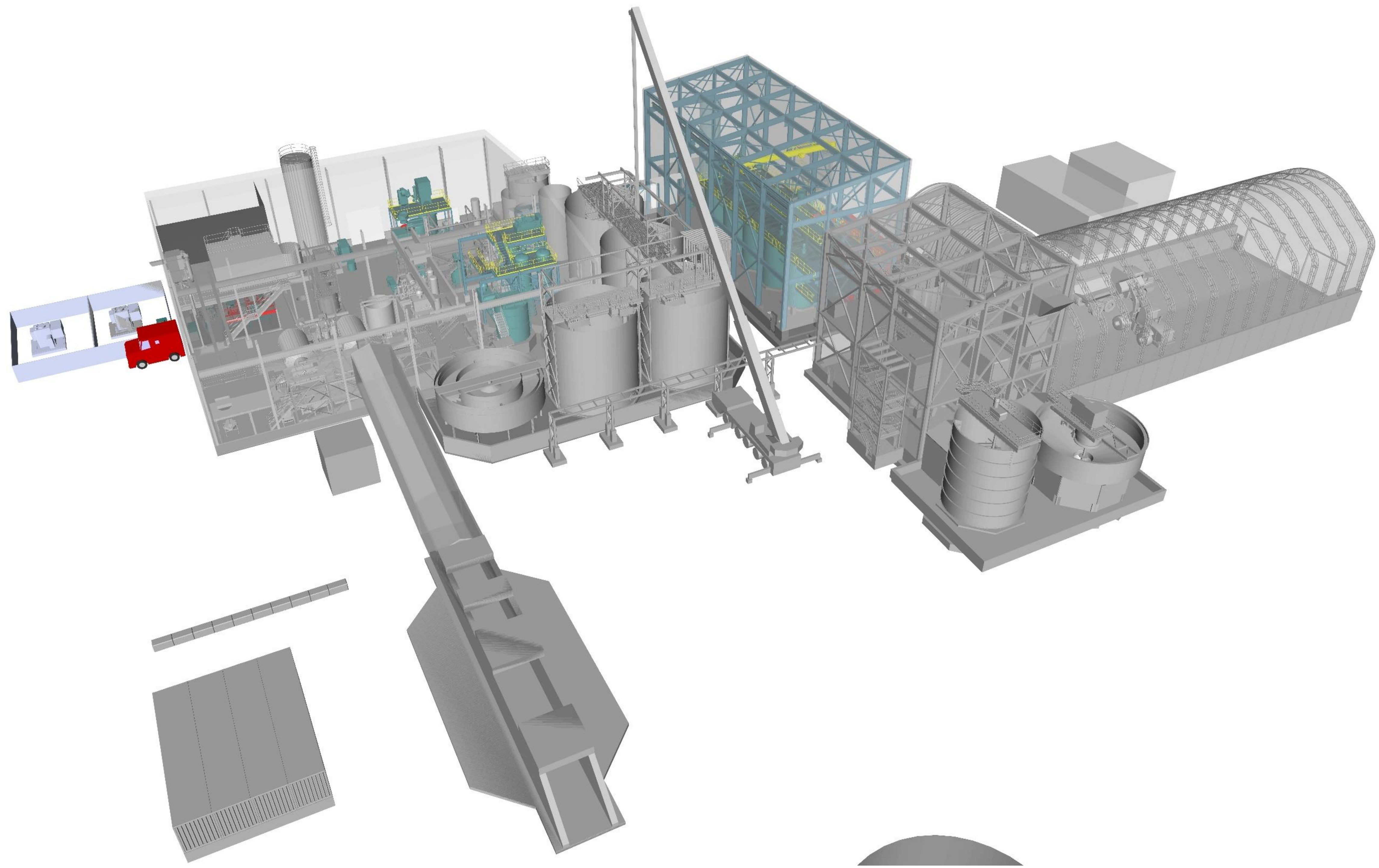


Figure 17-8: Overall GA Phase 1 at QR

17.6.1 Concentrate Unloading, Storage, and Handling

The pre-concentrated material from Bonanza Ledge will be dumped into a new storage shed . The material in the storage shed will be used to feed the QR Mill when the road between Wells and QR Mill is closed. A loader will be used to load the concentrate from the storage shed into the feed hopper. The existing hopper will discharge directly onto the existing belt conveyor that feeds the primary ball mill.

17.6.2 Grinding Circuit

The grinding circuit will remain the same as in Phase 1, utilizing the same two ball mills and cyclones from Phase 1. The grinding circuit production rate is 24 tph at 94% availability. The cyclone underflow is fed to the secondary ball mill, unlike in Phase 1, where the underflow is split for gravity concentration. The cyclone cut size in Phase 2 is 45 microns.

17.6.3 Thickening, Leaching, and Carbon-in-Pulp Circuits

The thickening and leaching circuits will remain mostly the same as in Phase 1; however, in Phase 2, pre-aeration takes place before leaching. There will be one pre-aeration tank and three leach tanks, all providing a total leaching time of 40 hours. These four tanks will be the same tanks used in Phase 1 but they will be repurposed for their new functionalities.

The discharge of the leaching circuit will feed into a new carousel-type carbon-in-pulp ("CIP") circuit. The circuit is composed of ten 50 m^3 tanks. The carousel-type circuit allows the carbon to be removed from one single tank once per shift, for a total of two carbon removals per day with a total of six tonnes of carbon. The advantage of the carousel-type CIP is that it will reduce carbon attrition and allow for lower gold losses.

The CIP tails flow over a vibrating safety screen to recover any carbon particles before proceeding to detoxification.

17.6.4 Elution and Carbon Regeneration Circuits

The entire elution and carbon regeneration circuit will be replaced to increase the gold treatment capacity to six tonnes per day, except for the regeneration kiln and heating skid, which were replaced in 2020 and 2021 respectively and can handle the new capacity.

This upgrade includes the following major equipment: the acid wash column, elution column, fine carbon tank, barren solution tank, acid wash tank, loaded carbon holding tank, carbon screens, and acid neutralization tank. Additionally, there is a cold stripping step, which takes place in the acid wash column after acid wash before elution. Therefore, a cold strip solution tank will be installed.

The remainder of the elution and carbon regeneration circuit remains the same as Phase 1, utilizing the same equipment and flowsheet.

17.6.5 Refinery Circuit

The refinery circuit will remain in the same location where it was in Phase 1. It will be extensively upgraded to measure the process higher golds grades. All major process equipment, including electrowinning cells, melting furnace, drying oven, and sludge filter will be replaced.

The cooled pregnant solution from elution is pumped to the gold refinery into four electrolysis cells running in parallel. The electrowinning cells will operate at 9 V. A fan will be used to evacuate fumes from both electrowinning cells.

The gold sludge from the electrowinning cells will be removed from the cathodes in a wash booth and will be pumped to the sludge filter press. The filter cake will be dried and melted with flux in a propane furnace to produce doré.

17.6.6 Cyanide Destruction Circuit

The cyanide destruction circuit will remain the same in Phase 2, utilizing the same cyanide destruction tank from Phase 1.

17.6.7 Tailings Dewatering Circuit

The tailings and dry stacking will remain the same in Phase 2, utilizing the tailings thickener and tailings filter from Phase 1. The tailings dewatering circuit feed will be 27 tph.

17.6.8 Water and Air Services

The water and air services management will remain the same as in Phase 1. The overall water consumption will decrease due to the reduced capacity.

17.6.9 Reagent System

The reagent systems will remain the same in both phases, except for a few minor changes to accommodate the process upgrades in Phase 2. These changes include the addition of new metering pumps for caustic and an additional cyanide distribution pump for cold stripping.

17.7 Concentrator Personnel

A list of the planned concentrator personnel for the two concentrators is provided in Table17-2.

The QR Mill will share staff with the MSC concentrator. The superintendent, general foreperson, metallurgist, and project engineers will be located at the QR Mill and will supervise the MSC team in their respective fields of expertise.

Table17-2: Concentrator personnel

Description	Total (Phase 1)	Total (Phase 2)	Bonanza Ledge Site	Wells Mill	QR mill
Mill Superintendent	1	2		1	1
Maintenance Superintendent	1	1		1	
General Foreman	2	1	2		1
Metallurgist	0	1		-	1
Metallurgical technician	2	4		2	2
Supervisor operation and maintenance	2	4		2	2
Mechanical project engineer	0	1			1
Electrical project engineer	0	1			1
Mechanical planner	1	3		1	2
Automation and control technician	2	3		2	1
Subtotal staff	**11**	**21**	**2**	**9**	**12**
Solution operator	0	4			4
Refiner	0	2			2
Sample bucker	0	0			
Assayer	0	0			
Chief assayer	0	0			
Ore sorter operator	8	4	4	4	
Grinding operator	0	4			4
Flotation operator	4	4		4	
Dewatering and paste plant operator	4	4		4	
Dewatering and tailings pond operator	0	4			4
Control Room operator	0	4			4
Mill helper	6	14		6	8
Loading station operator	6	6	4	2	4

Description	Total (Phase 1)	Total (Phase 2)	Bonanza Ledge Site	Wells Mill	QR mill
Subtotal operations	**28**	**50**	**8**	**20**	**30**
Mechanic	24	28	4	16	12
Electrician	6	8	2	4	4
Subtotal maintenance	30	36	6	20	16
Total	**69**	**107**	**16**	**49**	**58**

17.8 Power, Reagents and Consumables

17.8.1 Fuel

During Phase 1, the mobile crushing, mobile screening, and ore sorting circuits at the Bonanza Ledge site will be operated on self-sufficient power with LNG and will not be connected to the grid power. The fuel consumption has been estimated at 1,800 litres per day in Bonanza Ledge during Phase 1.

At the QR mill, the carbon regeneration kiln, furnace, and elution solution heat exchangers will be run with propane. QR mill and Wells pre-concentrator building will be heated using propane. The total propane consumption in Phase 1 of 2.0 million of liter per year and 3.7 million of liter per year in Phase 2 .

17.8.2 Power

Power requirements for QR mill, MSC in Phase 1 and 2 were derived from the equipment list in which expected motor sizes for all equipment and ancillaries have been provided. Each motorized item of equipment was assigned utilization, efficiency, and load factors to derive the data presented using the load list and the expected utilization factors. The power demand of 2.1 MW for Phase 1 and 10.1 MW Phase 2 were estimated.

17.8.3 Reagents, Cement, and Consumables

Estimated consumption rates of reagents and consumables are listed in Table 17-3. It should be noted that the consumption has been estimated based on laboratory testwork.

Table 17-3: Consumption of reagents and consumables

Reagent or Consumable	Unit	Phase 1	Phase 2
Grinding media (2 in)	kg/t	-	0.81
Grinding media (1 in)	kg/t	1.60	0.80
Sodium cyanide (100% NaCN)	kg/t	0.91	1.78
Lime (CaO)	kg/t	1.26	1.57
Flocculant	kg/t	0.05	0.08
Carbon	kg/t	0.04	0.04
Caustic soda (NaOH 50%)	kg/t	0.32	1.22
Sodium metabisulphite (SMBS) ($Na_2S_2O_5$)	kg/t	1.30	1.30
Nitric acid (HNO_3)	kg/t	0.16	0.66
Copper sulphate ($CuSO_4.5H_2O$)	kg/t	0.03	0.03
MIBC	kg/t	-	0.04
PAX	kg/t	-	0.10
Oxygen	kg/t	-	1.20
Anti-scalant	kg/t	0.02	0.02
Cement (paste backfill)	kg/t tailings	-	52.7

17.9 Phase 2 – Plant Control System

The following provides a broad overview of the control strategy that will be implemented for the plant in Phase 2.

17.9.1 Operating Philosophy

The operating philosophy for the processing circuits is based on the following fundamental concepts:

- Overall supervisory plant control is performed from an Integrated Operations Centre ("IOC"), where senior operators can control all systems and from where metallurgical personnel and supervisors can facilitate troubleshooting by monitoring on-line trended data and operating dashboards. The IOC will also contain analyst stations and engineering workstations to configure and enhance the process control system ("PCS").
- There are sector operators in the plant. Their main function is to provide the confirmation of the correct operating conditions, detect problems, make equipment checks. A local operation station located on an isolated cabin will be available for the operator to supervise

(alarms, statuses, controls) the process on this area. This will allow a local operation in a controlled dust and noise environment with an access to a telephone or other facilities.

- Local slave remote consoles at strategic locations on the plant floor are used to provide a window for operators in the field to check operational data and locally start/stop individual equipment during shutdown and start-up of the plant or while during normal plant operation.
- Local motor control stations will be located in the field in proximity to the relevant motors. These will, as a minimum, contain jog pushbutton for lockout procedure purpose, emergency stop, and local/remote selector, which will be hard-wired to the motor starter. Mandatory interlocks, such as conveyer pull cords and overload protection will also be hardwired.
- Plant motors will predominantly be started from the IOC.
- Indoor Wi-Fi coverage in all facilities will allow the use of portable HMI by operators and supervisors.
- Where no traditional instruments are available for monitoring critical processes or equipment, an analytic camera will be installed for providing a real time data to the control system for improving operation awareness and process optimization.
- The plant is highly automated and instrumented and Ethernet network is used for interfacing electrical equipment using modern industrial communication protocol like Ethernet/IP.
- The plant control philosophy is entirely integrated with the whole site control philosophy to enhanced communication and collaboration at all levels and provide rapidly data rapidly for analytic purposes and predictive maintenance.

17.9.2 Control System Topology

At each sites (QR and MSC), the overall plant operations will be supervised and controlled by a common Industrial Process Control Systems ("PCS"), enhancing the handling of analog and digital inputs and manipulation through calculation and interfacing with an expert system, while enabling fast exchange of digital data used for motor protection and status and handling sequences and batch operations.

Main Process controller cabinets will be located inside the different electrical rooms. Local Remote input/output ("I/O") panels will be installed in the field process area.

Where equipment is supplied as a packaged unit, the vendor packages have standardized process controllers that communicate with and are controlled by the plant network. The only functions provided internally to the Process controller from the vendor are limited to protection devices monitoring with associated alarm trigger and fail-safe mode programmed at the vendor factory. Vendor packages will generally be operated locally with limited control or set-point changes from the PCS system. Fault diagnostics and troubleshooting of vendor packages will be performed locally.

All measuring instruments, modulating valves, and appropriate components must support the HART or WirelessHART protocol to recover the maximum amount of information and allow it to be integrated in a plant asset management system for configuration, diagnostics, optimization, and predictive maintenance.

The process control system with an open architecture is used where activities such as control of the process, connections to external systems, I/O and field bus connections, information management, maintenance, and engineering configuration reside in one platform.

An information system and an information management system allow certain staff to monitor the process and the variables from their PCs connected to the management information platform.

Virtual machines will be used to host all control system software (e.g., historian, configuration tools, etc.) These virtual machines will be managed through redundant Virtual Machine ("VM") servers supporting rapid failover to minimize downtime.

The control system is divided into four zones:

1. Field – The sensors and signal transmitters are installed in the field. The transmitters are typically provided with local indicators mounted close to the equipment. A remote I/O cabinet is installed in the field to interface all local sensors and signal transmitters. The major equipment is supplied with all instrumentation necessary for correct operation. In general, a dedicated process controller is supplied with open protocol to interface with the plant-wide data network. Such dedicated process controllers are delivered pre-programmed by the vendor and are responsible for managing electrical interlocks and services for major equipment with the capability to accept remote setpoints from the plant network.
2. Electrical Rooms – The process controller cabinet is installed in the electrical rooms with communication cards that interface with the PCS servers, remote I/O cabinets, vendor package, Motor Control Centres ("MCC"), and the electrical systems.
3. Local operation stations and slave consoles – These stations will be installed on strategic field locations using features with less complexity but with more robust hardware to withstand the wet and dusty plant environment and vibrations compared to the console used with the IOC.
4. Integrated Operations Centre ("IOC") – The plant is monitored and controlled mainly from this zone. The latest-generation operating consoles will be used and display typical screens process graphics (mimics, trends, status, live data, historical data, and alarms).

Communications between the various parts of the system will be based on a Transmission Control Protocol/Internet Protocol ("TCP/IP") network and used industrial protocol like Ethernet/IP, Modbus/TCP, and IEC 61850.

A generic description of the proposed control system topology is presented in Figure 17-9 (MSC) and Figure 17-10 (QR).

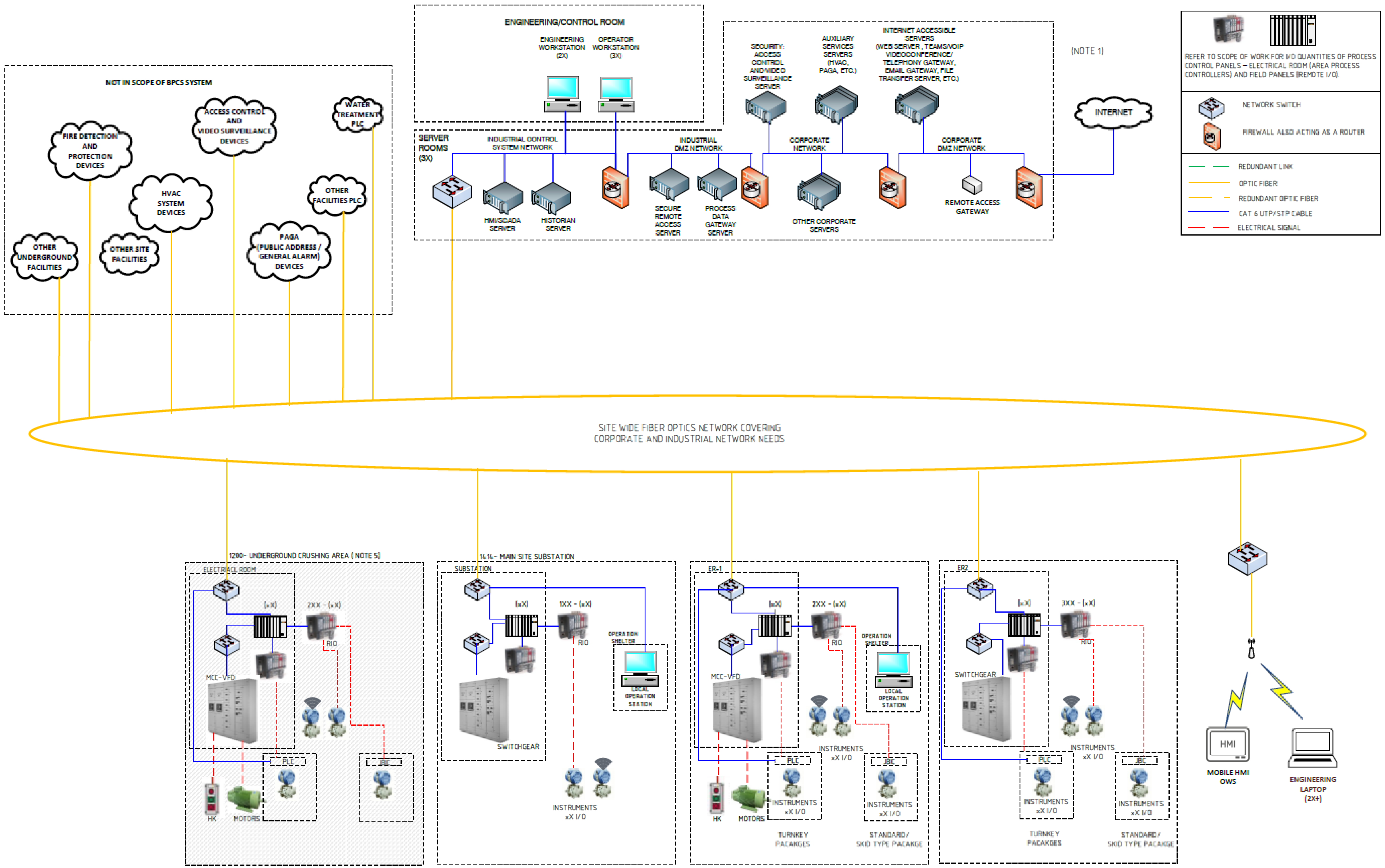


Figure 17-9: Control system Diagram – MSC

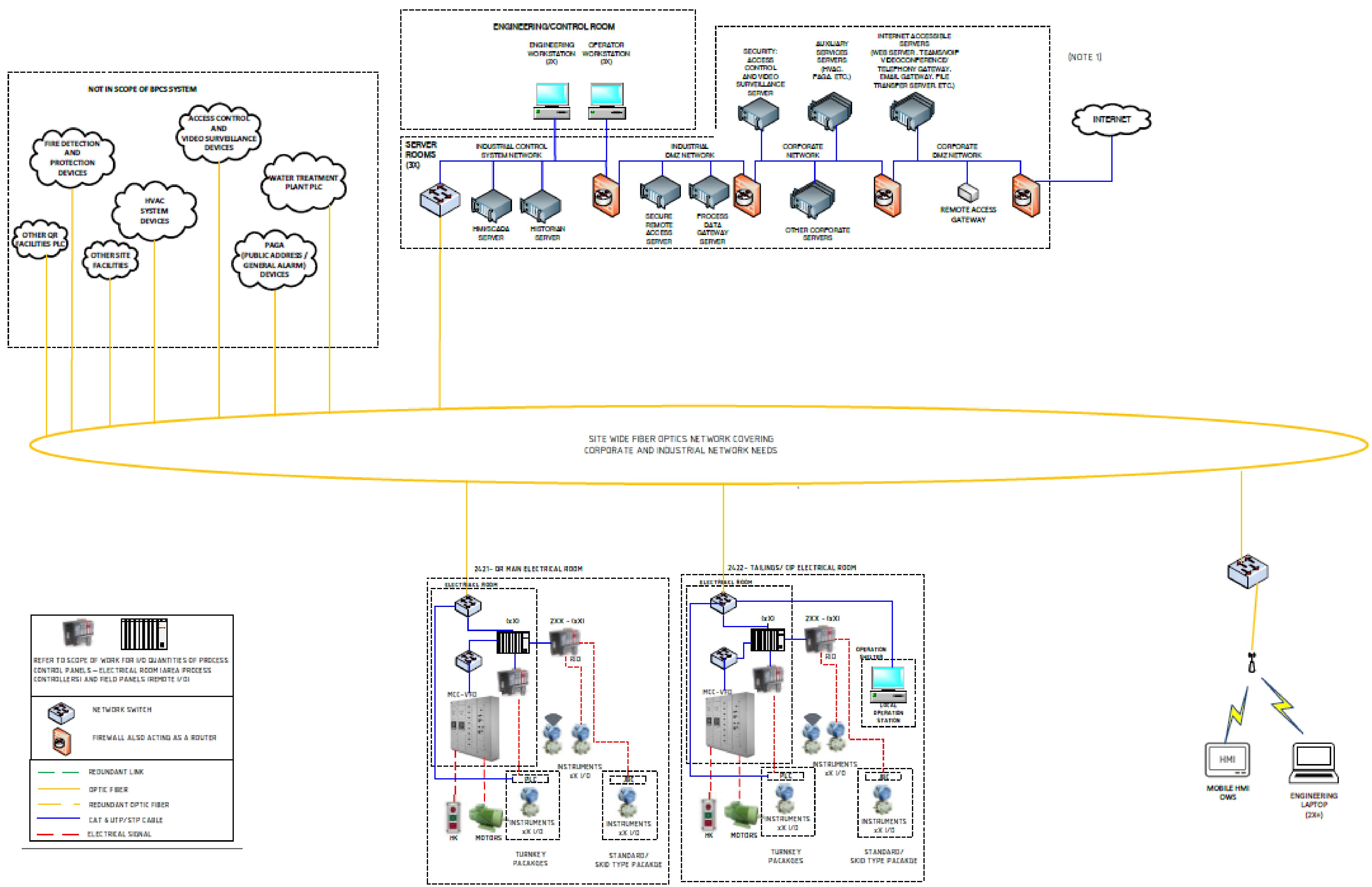


Figure 17-10: Control system Diagram – QR

17.9.3 Plant Control System implementation

The plant control system implementation will execute during the two phases of the Project:

Phase 1:

- Partial Installation of PCS and instrumentation at the existing QR mill.;
- Installation of PCS at Bonanza Ledge Ore Sorter;
- Upgrade of human machine interface ("HMI") in the control room at QR.

Phase 2:

- Completion of installation of PCS and Instrumentation at QR;
- Installation of PCS and instrumentation at MCS;
- Installation of the Integrated Operation Center ("IOC").

18. Project Infrastructure

Osisko Development Corp.'s ("ODV") Cariboo Gold Project ("the Project") surface infrastructure and services are designed to support the operations at the Mine Site Complex ("MSC") and Bonanza Ledge Site ("Bonanza Ledge"), and at the Quesnel River Mill ("QR Mill"). The Project also includes offsite infrastructure, such as a new 66 kV transmission line between the Barlow substation, near Quesnel, British Columbia ("BC"), and the MSC. Warehousing for major components and consumables will be provided by third parties in Quesnel and/or Prince George.

The Project will be comprised of four different areas: the Mine Site Complex, near the District of Wells, BC ("Wells"), the Bonanza Ledge Site, the QR Mill, and offsite infrastructure to support the operations of the Project shown in Figure 18-1. The MSC is located 111 kilometres east of the QR Mill and a distance of 3.5 km separates the Mine Site Complex from the Bonanza Ledge site.

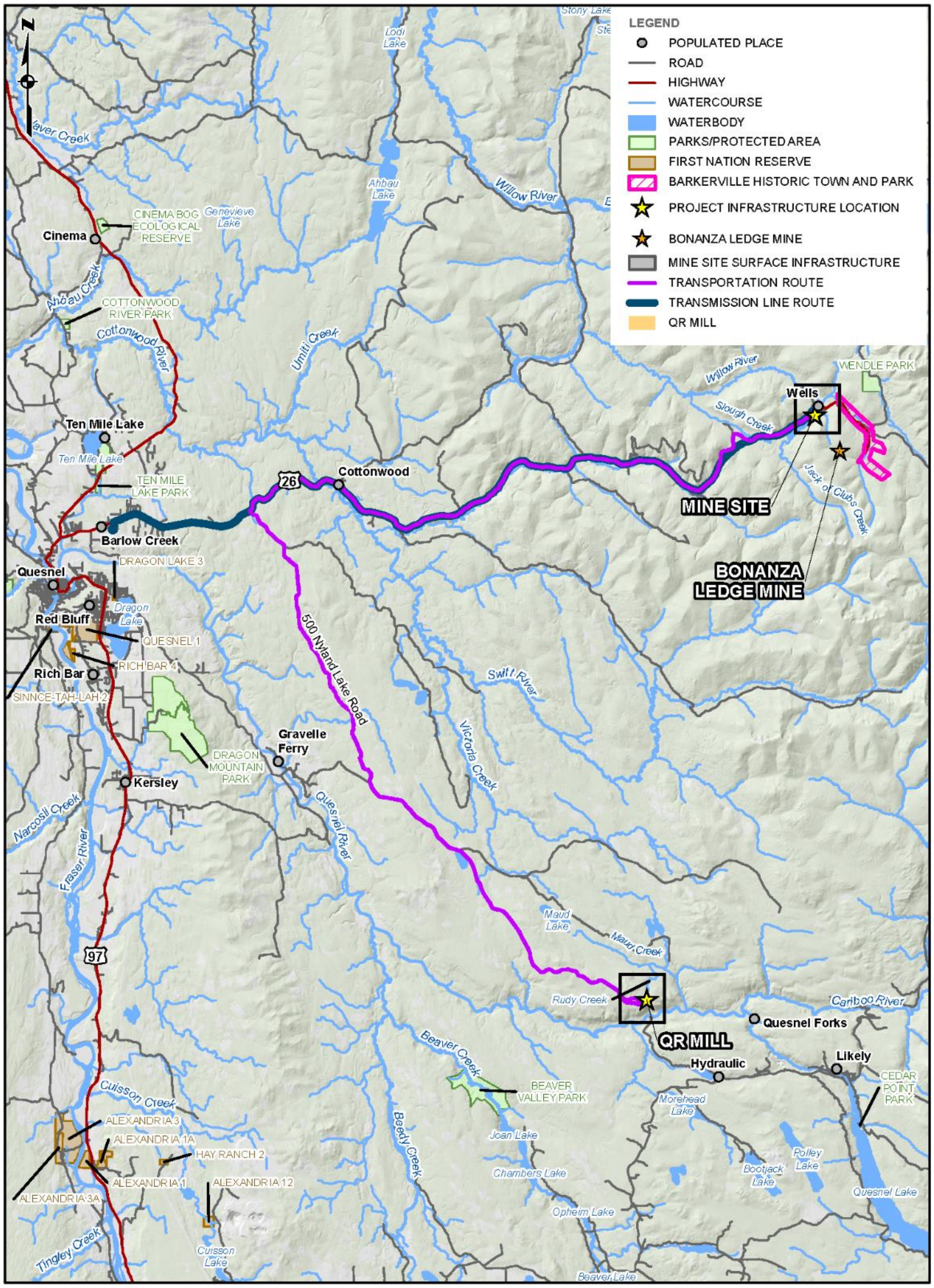


Figure 18-1: Regional setting

The Project's infrastructure will be deployed in phases, referenced to as Phase 1 and Phase 2, as presented in previous chapters. The sections below describe the infrastructure that will be deployed in Phase 1 and in Phase 2.

18.1 Overview Description

The Project envisions the construction and upgrades of the following key infrastructure items:

- Infrastructure required to support Phase 1 Operations:
  - Mine Site Complex (Wells):
    - No activities planned at the MSC for Phase 1.
  - Bonanza Ledge Site:
    - First phase of the waste rock storage facility ("WRSF");
    - Water management infrastructure – flood management reservoir, surface water diversion channels, collection channels, pumping stations, and pipelines;
    - Water treatment systems with appropriate upgrades, and revised water management plan;
    - Liquified natural gas ("LNG") storage, vaporizers and distribution;
    - Natural gas power plant;
    - Diesel fuel storage and distribution;
    - Ore crushing and sorting facility;
    - Run of mine ("ROM") loading/discharging stations, and ore sorting concentrate loadouts and scales;
    - Overburden storage facility;
    - Existing warehouse, workshop, and electrical distribution.
  - QR Mill:
    - Upgrade of the existing QR Mill to process the ore sorting concentrate from the Phase 1 operations at Bonanza Ledge;
    - Implement a tailings filtering plant;
    - Filtered stack tailings storage facility ("FSTSF");
    - Move and upgrade the propane storage system;
    - Water management – surface water diversion channels and collection channels, Main Zone Pit ("MZP"), South Seepage Collection Pond and North Seepage Collection Pond ("NSCP");
    - Improvement of fire protection system.

- Offsite Infrastructure:
  - Construction of an Integrated Remote Operations Centre ("IROC") in Quesnel.
- Infrastructure required to support Phase 2 Operations:
  - Mine Site Complex (Wells):
    - Access roads and parking areas;
    - Mine ventilation and mine heating infrastructure;
    - A concentrator building area including:
    - Vertical conveyor moving material from the underground crusher to surface;
    - Ore sorting and tertiary crushing;
    - Grinding;
    - A beneficiation circuit capable of producing a gold flotation concentrate;
    - Paste backfill;
    - Diesel fuel storage and handling facilities;
    - LNG storage facility, including vaporizers and natural gas distribution;
    - Office complex, including office space and mine dry facilities, located near the concentrator building;
    - 66 kiloVolt ("kV") / 13.8 kV electrical substation;
    - Security facilities and access gates;
    - Firewater pumping station and firewater distribution piping system;
    - Treated effluent discharge line from the mine site water treatment system ("WTS"), connecting to a diffuser in Jack of Clubs Lake;
    - New bridge over the Willow River ("Willow River Bridge");
    - Fiber optic network interconnecting the main areas of the MSC;
    - New potable water well and associated potable water treatment and distribution system;
    - Sewage treatment system;
    - Surface water diversion channels, collection channels, ponds, pumping stations, and pipelines;
    - Mine water treatment plant;
    - Site electrical distribution and lighting.
  - Bonanza Ledge site:
    - Dismantling and relocation of some of the facilities from Phase 1, such as the crushed ore sorting facility and the LNG storage;
    - Finalize the construction of the water management infrastructure;
    - Second phase of the WRSF.

- QR Mill:
  - Upgrade of the existing QR Mill to process the high-grade flotation concentrate from the concentrator at the MSC;
  - Information Technology ("IT") and Telecom upgrades to support remote process monitoring.
- Offsite Infrastructure:
  - The construction of a 66 kV power line connecting BC Hydro's Barlow substation and the site's 66 kV / 13.8 kV substation;
  - Ballarat camp facility expansion, from 76 to 150 rooms;
  - A final expansion of the Quesnel IROC in Quesnel.

18.2 Existing and Available Infrastructure

One of the rationales for the phased approach to the Project was to leverage the existing and available infrastructure on the various Project sites. The following subsections outline the existing infrastructure that will be essential for the full-scale development of the Cariboo Gold Project.

18.2.1 Bonanza Ledge Site

18.2.1.1 Waste Management

The Bonanza Ledge Site includes an existing overburden stockpile that will be used for the closure plan of the previous operations, ahead of the Project. In preparing the design for the foundation and liner system for the Bonanza Ledge WRSF, it has been assumed this existing overburden stockpile will be removed.

Similarly, the site has an existing waste rock storage facility that will be expanded and integrated into the Project. The potentially acid generating ("PAG") waste rock material from past operations will be removed prior to the execution of foundation preparation and liner system construction while the non-potentially acid generating ("NPAG") WRSF will be re-sloped and form the base for a portion of the new Project WRSF.

18.2.1.2 Water Management

The Bonanza Ledge Site is currently inactive in terms of mining and material handling, but still contains active and operating water management infrastructure:

- Non-contact water diversions (limiting surface water from non-impacted areas upstream of the site to enter the developed site);

- Contact water ditches and channels (collecting and directing surface water in contact with the developed site to ponds and ultimately the existing water treatment facility at Bonanza Ledge);
- A sediment control pond, located north of the site, in the Lowhee Creek valley, and constituted by a dam across the valley;
- A number of contact water ponds and sumps, located in the south portion of the site; and
- A water treatment plant located south of the existing waste rock storage facility.

A portion of the water management infrastructure of the previous operations will be reused for the Project as is, while some will be upgraded, and some new infrastructure will be constructed. Most non-contact water diversions will be reused as is. Some non-contact water diversions, the current sediment control pond and dam, and the water treatment plant will be upgraded and integrated in the new water management plan for the Project. Several new contact water ditches, a temporary sump and a new pond will be required through the life of mine ("LOM").

18.2.1.3 Water Treatment

Bonanza Ledge currently has an operating water treatment plant. However, a new Bonanza Ledge water treatment plant ("WTP") will be designed, procured, commissioned, and will be operational prior to the start of the Project. This is to be considered existing infrastructure prior to the start of the Project and is described below.

The proposed treatment strategy for the Bonanza Ledge site includes the WTP, which consists of a WTP for the underground mine water, the Bonanza Ledge underground WTP ("U/G WTP") and another WTP to treat surface contact water, the Bonanza Ledge surface WTP ("SWTP"). The critical differences between the two water sources that led to separate plants are the elevated concentrations of nitrogen species, lower flows, and the short-term treatment needs for the underground water.

The Bonanza Ledge U/G WTP is designed for a flow of 47.5 cubic metres per hour ("m^3/h") and will primarily remove nitrogen species from the underground water. This plant will be active during the Project until the MSC WTP is operational and until the end of the dewatering of historical mine workings. The Bonanza Ledge U/G WTP consists of a metal hydroxide precipitation reactor ahead of a conventional clarifier and multi-media filtration to reduce the risk of metals toxicity ahead of the biological treatment units. After metals removal, there will be a nitrifying moving bed biofilm reactor ("MBBR") for ammonia and nitrite removal and denitrifying packed bed reactors for nitrate and selenium removal.

The Bonanza Ledge SWTP will treat the combined flows of the treated underground water and surface contact water at a design flow of 180 m^3/h. Although the underground water treatment needs at Bonanza Ledge will stop soon after the start of Phase 2, the surface contact water treatment requirements will remain throughout the Project. Therefore, the Bonanza Ledge SWTP will be necessary for the life of mine and active closure phases. The Bonanza Ledge SWTP consists of several chemical precipitation steps such as iron co-precipitation to remove aluminum and arsenic, barite precipitation to remove sulphate, and hydroxide precipitation and sulphide precipitation for metals removal. The precipitated solids in the effluent from chemical precipitation steps will be separated out by a conventional clarifier and multi-media filtration. The separated solids will be dewatered by a conventional filter press system prior to disposal. The treated effluent from the Bonanza Ledge SWTP will go through a pH adjustment step prior to discharge to Lowhee Creek.

A water treatment building will house much of the WTP and will include space for chemical dosing skids and chemical storage tanks. The conventional clarifiers and nitrifying moving bed biofilm reactor will be placed outdoors with covers.

Additional details regarding the proposed Bonanza Ledge water treatment strategy are presented in the Bonanza Ledge Site Water Treatment Preliminary Process Design and Operating Cost Estimate to Support NI 43-101 Report (Golder, 2022c).

18.2.1.4 Water Treatment Conveyance Infrastructure (Pumping and Pipelines)

Prior to the start of the Project, Bonanza Ledge will be equipped with pumping stations and water pipeline systems to meet the water treatment conveyance requirements of the Project. The pumping stations and pipeline systems are designed to transfer water directly or indirectly to the water treatment plants from the Sediment Control Pond ("SCP"), and the flood management reservoir.

Two pumping stations will be installed at Bonanza Ledge prior to the start of the Project. A 450 m^3/h capacity pump station having 2 x 50% configuration will be installed to transfer water from the Bonanza Ledge Sediment Control Pond ("SCP") to the Bonanza Ledge Flood Management Reservoir ("FMR"). A 180 m^3/h capacity pump station having 2 x 50% configuration will be installed to transfer water from the FMR to the WTP.

Two water pipeline systems will be installed at the site, one for each pumping station described earlier. The water pipelines will be of high-density polyethylene ("HDPE") material of construction and will be installed above grade.

18.2.1.5 Surface Support Infrastructure

An existing modular office building will be moved during the current care and maintenance program and reused for the operation at Bonanza Ledge. Additionally, the existing workshop, warehouse, electrical distribution infrastructure, and fuel storages (diesel and propane) will be reused for the Project.

18.2.2 QR Mill Site

The QR Mill is located approximately 111 km from the Mine Site Complex and 58 km southeast of Quesnel.

Existing infrastructure related to this operation includes:

- Distribution Line: A 25 kV distribution line from BC Hydro supplies the QR Mill site with electrical power. The line was assessed and has sufficient capacity to service the QR Mill once upgraded. Site power distribution utilizes a 25 kV overhead transmission line.
- Offices: QR Mill offices are functional and used for current operations. They will continue to be used for the Project.
- IT and Telecommunication: the QR Mill has an existing IT and Telecommunication installation and services available, including internet, telephone and fibre optic. There will be upgrades to the IT and Telecommunication infrastructure to enable the deployment of faster data exchanges between sites, the corporate office and the potential development of remote operations in the future.
- Camp: The camp has 77 rooms, 38 of which were added in 2021. The camp will continue to be used for the Project.
- Fuel and Propane Storage: There are two diesel fuel tanks (4,200 litres ["L"] and 75,000 L), three propane tanks (75,700 L) and one gasoline tank (4,200 L) on site. These are all existing and are considered sufficient for the Project.
- Water Management Infrastructure: There are existing infrastructure from past operations that will be integrated in the Project, such as the NSCP, seepage collection wells and contact and non-contact water ditches.
- Fire Water: The QR Mill fire water system currently covers the process plant. This will be re-used for the Project.

18.2.2.1 Water Treatment

The QR Mill site will be equipped, prior to the start of the Project, with a water treatment system to meet the water treatment requirements of the Project. The water treatment system will involve replicating the existing membrane-based treatment plant from the current Bonanza Ledge operations to increase its design capacity to 50.5 litres per second ("L/s"), and provide additional treatment equipment upstream of the existing water treatment process (inside the water treatment plant), upstream of the water treatment plant (outside of the water treatment plant), and on the retentate stream generated by the membranes (inside of the water treatment plant). All modifications to the existing plant will be completed as part of the Bonanza Ledge operations.

Additional details regarding the proposed QR Mill water treatment strategy are presented in the Quesnel River Mill Site Water Treatment Preliminary Process Design and Operating Cost Estimate to Support NI 43-101 report (Golder, 2022d).

18.2.3 Mine Site Complex

ODV has an office complex at the Mine Site Complex across Lowhee Creek from the District of Wells. The facility was used in the past to support the previous operations at Bonanza Ledge and various exploration programs.

Existing infrastructure related to the Mine Site Complex includes:

- Access Road: In general, access to the site is from A Road, which is accessed from Highway 26 and located between Wells and the Ballarat Camp (see existing offsite infrastructure below).
- First Aid/Emergency Service: The existing first aid/emergency services office located on Ski Hill Road in Wells will be used during Phase 1 until the new office complex is operational during Phase 2.
- Bulk Explosive Storage and Magazines: ODV has an existing explosive storage with adequate capacity to support pre-production development during Phase 1. Once the underground storage is built, the existing explosive storage area will no longer be used for operations.
- IT and Telecommunication Services: ODV's Bonanza Ledge Mine operations has existing IT and telecommunication services available to support the activities at Bonanza Ledge during all phases of the Project, including internet, telephone, and fibre optic. Mine operating requirements and capacity have been defined and staged and will require new communications services as described in Section 18.5.1.11.

18.2.4 Offsite Infrastructure

ODV owns various lodging facilities, including an existing camp at Ballarat, approximately 6 km from the MSC at Wells. The Ballarat camp facility currently has a capacity of 76 rooms, with a kitchen, dining room, and a boot room.

The company also owns the following lodging facilities in the District of Wells:

- Camp A&B: 44 rooms;
- The Hubs Motel: 23 rooms; and,
- Various houses and apartments: 27 rooms.

18.3 Geotechnical Investigations

Geotechnical investigations were performed at the MSC site, Bonanza Ledge site, as well as QR Mill site. The investigations helped to inform the design of the following facilities:

- Site infrastructure;
- Water management structures;
- Waste rock storage;
- TSF and water management, and,
- The Mill site.

18.3.1 Mine Site Complex

18.3.1.1 Infrastructure

At the MSC site, a geotechnical site investigation was conducted, including a desktop study, and intrusive drilling and test pitting. Interpretation of results focused on overburden characterization and depth to bedrock to determine suitability as foundation material, and stability of both excavated and fill slopes. Geotechnical drilling and test pitting generally confirmed in situ surficial sediments are till. Historic waste rock is piled near the planned tunnel portal elevation. Beyond the toe of the pile, the low wetland area consists of deposited historic mill tailings.

18.3.1.2 Water Management Structure

Golder completed a geotechnical site investigation at the Mine Site Complex site in 2021 following a scope of work developed as part of a gap analysis completed for the feasibility design of the proposed bulk fill area and MSC sediment pond. The site investigation was conducted to collect additional information on the existing foundation conditions for the MSC sediment pond. The investigation included ten cone penetration tests, drilling 23 sonic boreholes, and carrying out large penetration testing, and excavating test pits. Samples were collected for laboratory testing. Standpipe piezometers and vibrating wire piezometers ("VWP") were installed in select boreholes.

18.3.2 Bonanza Ledge Site

18.3.2.1 Waste Rock Storage Facility

Golder completed a geotechnical site investigation at the Bonanza Ledge site in 2021 following a scope of work developed as part of a gap analysis completed for the feasibility design of the WRSF. The site investigation was conducted to collect additional information on the existing foundation conditions of the WRSF. The investigation included drilling thirteen boreholes and carrying out large penetration testing and excavating fifteen test pits. Samples were collected for laboratory testing Standpipe piezometers and VWP's were installed in select boreholes.

18.3.3 QR Mill

18.3.3.1 Mill Site

KCB conducted a geotechnical site investigation program at the QR Mill area in 2021 to characterize the foundation of the proposed QR Mill infrastructure expansion. The investigation included nine drill holes and four test pits at the QR Mill area. The foundation of the QR Mill area is characterized by glacial till with minor, isolated, glaciofluvial outwash deposits overlying bedrock.

18.3.3.2 TSF and Water Management Infrastructure

KCB conducted a geotechnical site investigation program of the existing tailings storage facility ("TSF") and surrounding area in 2021. Fourteen drill holes, nine cone penetration test ("CPT") soundings, and two electrical shear vane tests were conducted within the TSF pond to collect information to support the FSTSF design. Outside of the TSF pond, two drill holes, two monitoring wells, and four pumping wells were completed to verify the absence of glaciolacustrine sediments underlying the existing TSF dams and investigate the foundation conditions under the proposed water management infrastructure.

The existing TSF is characterized by an upper tailings layer (up to 4 metres ["m"] thick) located stratigraphically above waste rock (5 m to 15 m thick) and a lower tailings layer located stratigraphically below the waste rock. The foundation of the TSF and surrounding area is characterized by glacial till with minor, isolated, glaciofluvial outwash deposits overlying bedrock.

18.4 Infrastructure Required to Support Phase 1 Operations

18.4.1 Bonanza Ledge Site

Infrastructure at the Bonanza Ledge site will consist of a waste rock storage facility, associated water management and water treatment infrastructure and, during the Phase 1 of the Project, 1,500 tonne per day ("tpd") operation, a surface crushing and ore sorting facility, and a natural gas power generation facility. Once the concentrator building at the Mine Site Complex is operational for the Project's Phase 2 with production at 4,900 tpd, the surface crushing and ore sorting facility at Bonanza Ledge will be dismantled, with the ore sorters being re-deployed inside the concentrator building during the process plant's commissioning and ramp-up for Phase 2.

18.4.1.1 Ore Sorting Facility

For the initial mining production of 1,500 tpd, a pre-concentrator, including mobile crushing, screening, and ore sorting, will be built at the Bonanza Ledge Site. The crushing operation will consist of a mobile unit, and the crushed product will be processed in an ore sorting circuit. The concentrate from the sorted concentrate will be trucked to the QR Mill.

18.4.1.2 Waste Rock Storage Facility

For Phase 1, a WRSF with capacity for approximately 1,000,000 cubic metres ("m^3") of mine waste rock storage will be constructed in the northern limits of the Bonanza Ledge property, located approximately 3.5 km from the Mine Site Complex to the southeast.

Prior to Phase 1 construction, removal of some existing waste rock and overburden materials will be carried out. Phase 1 construction includes re-sloping and foundation preparation activities to support installation of a liner system up to elevation 1,470 m.

18.4.1.3 Surface Water Management Strategy

During Phase 1, the Bonanza Ledge site will include the main Bonanza Ledge WRSF pile with inner access road and rerouting of the existing C Road, the upgraded existing SCP with retention dike, and FMR located in the Bonanza Ledge underground workings, and a network of contact and non-contact water ditches. The water management at Bonanza Ledge will evolve through the operations.

The majority of the existing Bonanza Ledge mine site to the south of the proposed new WRSF is assumed to be reclaimed and diverted away into the Stouts Gulch watershed while the new WRSF is being developed and prepared.

Most non-contact water diversions will be reused as is. Some non-contact water diversions, the current SCP and dam, and the water treatment plant will be upgraded and integrated in the new water management plan for the Project (Golder, 2022n). Several new contact water ditches, a temporary sump and a new pond will be required through the LOM.

Contact water resulting from runoff over the developed Bonanza Ledge site (including the early Bonanza Ledge WRSF waste pile) will be collected in the existing SCP and treated at the WTP, prior to discharge to Lowhee Creek. The WTP will be treating the dewatering inflow from the Cow Portal area during this phase.

The FMR consists of a sector of the existing Bonanza Ledge underground openings that will be isolated to contain up to 64,000 m^3 of contact water, when required, during extreme precipitation events and freshet. A secondary emergency pumping line will be installed from the SCP to the FMR and will activate if the pond level becomes elevated beyond a critical threshold during a particularly wet event or period. This mechanism serves to temporarily store contact water in the FMR when the contact water inflow on site is greater than the WTP treatment rate. Once treatment capacity becomes available again, water will be pumped from the FMR to the WTP for treatment prior to discharge, in order to retrieve the full capacity of the FMR in prevision of the next flood event.

18.4.1.4 Water Management Infrastructure

This section summarizes the preliminary design basis for all the proposed water management infrastructure needed to support the Project at the MSC and Bonanza Ledge sites, as well as preliminary sizing for the main basins proposed.

Design Basis

Water Conveyance Structures Design Event

Both the British Columbia ("BC") Joint Application Information Requirements ("JAIR") guidance, which will be used in the permitting process, and the BC Ministry of Environment ("ENV") Sediment Pond Design Guidelines (BC ENV, 2015) identify the ability to convey the surface runoff from a 200-year return period storm event as a minimal design criterion for mine surface water infrastructure. For the Mine Site area (including the MSC and Bonanza Ledge) of the Project, Golder (2022a) compiled the maximum annual 24-hour precipitation depths from the Environment and Climate Change Canada ("ECCC") published data for the Barkerville station (ECCC, 2019) and ran a frequency analysis to determine return period events for several yearly periods. Rainfall on snowmelt statistics are typically greater than rainfall only statistics at the Barkerville station, thus the 200-year return period rain on snow 24-hour event was retained as the base criterion for the design of the surface water conveyance infrastructure.

Water Retention Structures Design Event

The selection of an appropriate Environmental Design Flood ("EDF") for contact water retention basins is site-specific according to the Canadian Dam Association ("CDA") dam safety guidelines (CDA, 2019). The EDF return periods should typically range from 50 years to 200 years with no hard guideline on the specific event duration to use; the design criteria ultimately chosen depends on the assimilative capacity of the receiving environment and the capacity of the water treatment system.

The EDF design criteria chosen for the Mine Site was a 200-year return period, rainfall on snowmelt event that will be managed within the Mine Site major retention basins without overflow to the environment (see Section 20.3.6 Water Management for the Mine Site flow diagram).

Historical Climate Considerations

Based on historical data, a synthetic 200-year / 30-day duration rain on snowmelt event was created using the 200-year sub-daily to 30-day statistics, to ensure the design would be based on the most critical event duration for each component of the water management system. Critical events duration for the three main ponds were found to be ranging from 3 to 15 days.

Climate Change Considerations

The climate resilience of the Project has been addressed by developing detailed, site-specific climate change projections for the Project (Golder, 2022h), given that some of the infrastructure may remain active for several decades through post-closure (Golder, 2022j). At this stage of the Project, the potential climate change impact on the design event for the Mine Site water conveyance structures was assessed by developing a series of site-specific deterministic climate projection timeseries for the Project (Golder, 2022i). A total of 72 climate scenarios resulting from different climate models and carbon emission profiles were generated for use at the feasibility and permitting stage. These projections were used to develop:

- Statistical events for surface water infrastructure design:
  - For the major water retention structures, the EDF criteria of 200-year / 30-day duration rain on snowmelt event using historical statistics was compared to the same event generated using the 75 percentile climate projections for precipitations and temperatures, as detailed in Golder(2022h). Both simulated events resulted in similar maximum basin storage capacities requirements for the Mine Site. Based on these results, the climate projections-derived synthetic runoff event for the design criteria was used for the design inflow as it was assumed, at the feasibility stage, to sufficiently test the Project water management infrastructure compared to historical climate records while accounting for climate resilience.

  - For the conveyance structures, a 20% increase to the base 200-year return period rain on snow 24-hour event criterion was ultimately used for the infrastructure design. This adjustment was determined following Engineers & Geoscientists British Columbia ("EGBC") Professional Practice Guidelines documentation for infrastructure design criteria influenced by climate change (EGBC, 2018).
- Climate scenarios for the water balance modelling required at the feasibility stage: Analysis of the full ensemble of projections is not practicable at the feasibility stage of the Project. Thus, a future climate scenario representing a fairly wide range of future climate conditions (Golder, 2022a) for further detail was evaluated in the current Mine Site water balance simulations to test the modelled infrastructure under precipitation elevated above established historical levels. This scenario, named the Surplus-10 Climate Year, was chosen primarily due to its wide range of precipitation conditions (i.e., dry to wet years) being imposed during the proposed Project duration. Additional details and sample water balance results are provided in Chapter 20.

Design Criteria

The following design criteria apply to the proposed collection ditches/channels, culverts, underdrain, sediment ponds and sumps for the Project at the MSC and Bonanza Ledge.

Contact Water Collection Ditches and Non-contact Water Diversions

The ditch and channel design criteria presented in Table 18-1 apply to both contact and non-contact water infrastructure.

The hydraulic capacity of all diversion and collection channels will safely convey the surface runoff reporting from the design storm event and follow the below criteria.

Table 18-1: Design requirements for sizing ditches and channels

Parameter	Unit	Value
Minimum base width	M	0.5
Minimum freeboard at the maximum water level during the design event	m	0.3
Minimum longitudinal slope	m/m	0.003
Maximum side slope (soil)	H:V	2.0:1
Maximum side slope (rock)	H:V	0.1:1
Maximum acceptable flow velocity	m/s	Erosion protection dependant

Culverts

Culverts for road crossings within the mine boundaries will be designed to pass the design event with the following hydraulic design criteria:

- All culverts will be flowing at a maximum of 70% of their diameter for the design event (instantaneous flow);
- Embedment will be 150 mm: upstream and downstream inverts shall be 150 mm lower than channel bed;
- Minimum culvert cover requirement to be evaluated based on maximum truck axle load design.

Contact Water Sumps

- The Mine Site contact water sumps will be designed to manage runoff from the 200-year, 24-hour storm event (i.e., rainfall on snowmelt) without overflowing to the environment;
- The sump pump system will be designed to dewater the sump over a maximum period of 24 hours following the end of the design event.

Sediment Pond and Spillway

- The ponds and emergency spillways will be designed to pass/retain the design event with the following hydraulic design criteria:
  - Nominal dead storage of 0.3 m for sediment accumulation; actual dead storage shall be determined in accordance with operational constraints during permitting design;
  - Inflow design flood ("IDF") for pond emergency spillway corresponding to an event of a return period of 1/3 between 1:1,000-year and the probable maximum flood ("PMF"), and of critical duration for the pond (this return period could be reviewed in a later stage of design depending on the dam classification, assumed as high at this stage, and according to the CDA guidelines); and,
  - Minimal freeboard of 0.5 m between the dam crest and the maximum water level during the IDF through the spillway.

Design Inflow Modelling

The maximum available basin storage volumes and outflow rates resulting from the preliminary design modelling are presented in Table 18-2 for the Bonanza Ledge Sediment Pond and the Bonanza Ledge flood management reservoir. Note that the base case U/G dewatering rate scenario (Section 16.4) for Phase 1 was used in the design flood event modelling scenario.

The modelled total inflow rates and basin/reservoir volumes for the simulated 200-year return period 30-day EDF event at the Bonanza Ledge SCP and Bonanza Ledge FMR are shown in Figure 18-2 and Figure 18-3, respectively. The simulations were run for each Operations year of the Project. Results for the most critical site operational conditions (i.e. conditions resulting in the greatest inflow and required capacity for the basins) are presented in the figures. The results confirm that the proposed capacities for the basins can contain the surface runoff volumes from the design event without overflowing.

Table 18-2: Maximum available retention basin storage volume and proposed design flood outflow capacity for the Bonanza Ledge site

Basin	Receiving Structure	Basin Dead Storage (m^3)	Basin Maximum Available Storage Volume (m^3)(1)	Design Flood Outflow Capacity (m^3/h)	Peak Modelled Storage Capacity (m^3)
Bonanza Ledge SCP	Bonanza Ledge WTP (Bonanza Ledge FMR)(2)	630	6,300	180(3) (450)(4)	6,185
Bonanza Ledge FMR	Bonanza Ledge WTP	10	64,000	180(3)	61,300

(1) Based on total available storage volume, including dead storage.

(2) Parentheses refer to the emergency receiving structure used during periods of increased precipitation/ runoff, to prevent basin overflowing.

(3) Refers to pumping capacity from the basins to the Bonanza Ledge WTP; the maximum treatment rate is shared by all Bonanza Ledge basins, and, in Phase 1, also by the underground dewatering rate – the set priorities for treatment management are: 1) U/G dewatering; 2) SCP; 3) Bonanza Ledge South Sump (during Phase 2 only); and 4) FMR up to a maximum treatment rate of 180 m^3/h.

(4) Parentheses refer to the maximum pumping rate of the pump line emergency receiving structure.

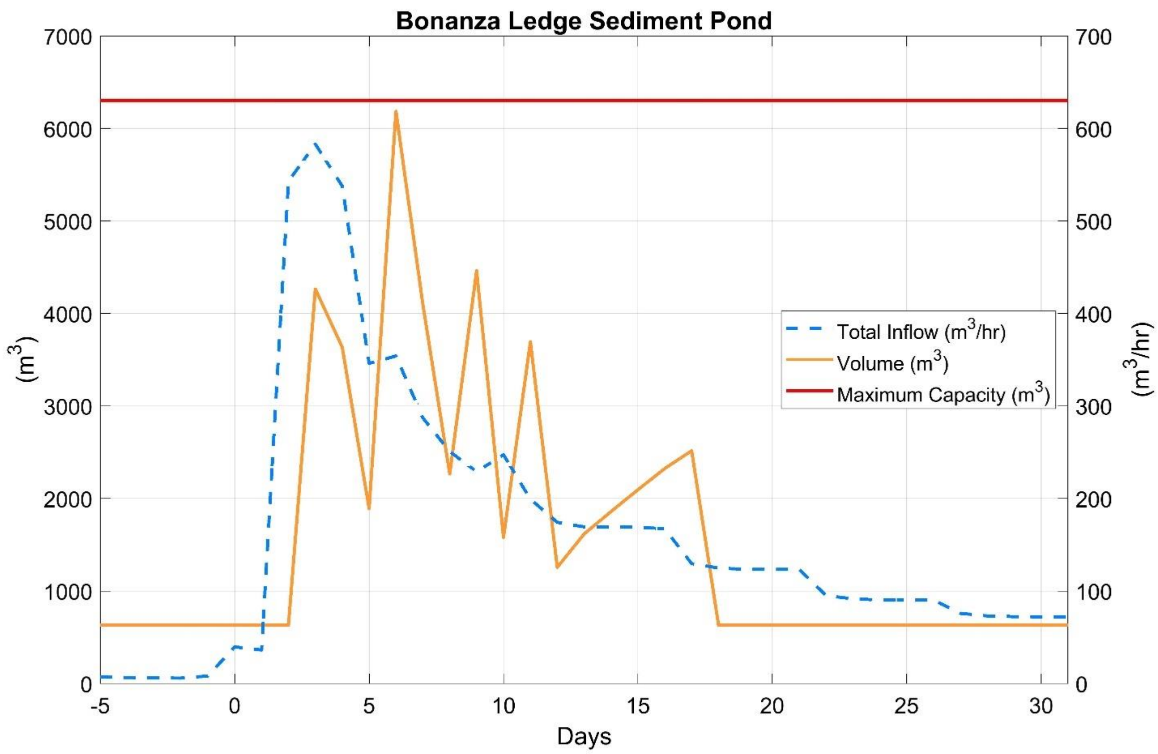


Figure 18-2: Design flood (200-year return) hydrologic modelling results for the Bonanza Ledge sediment pond water storage volume and total inflow

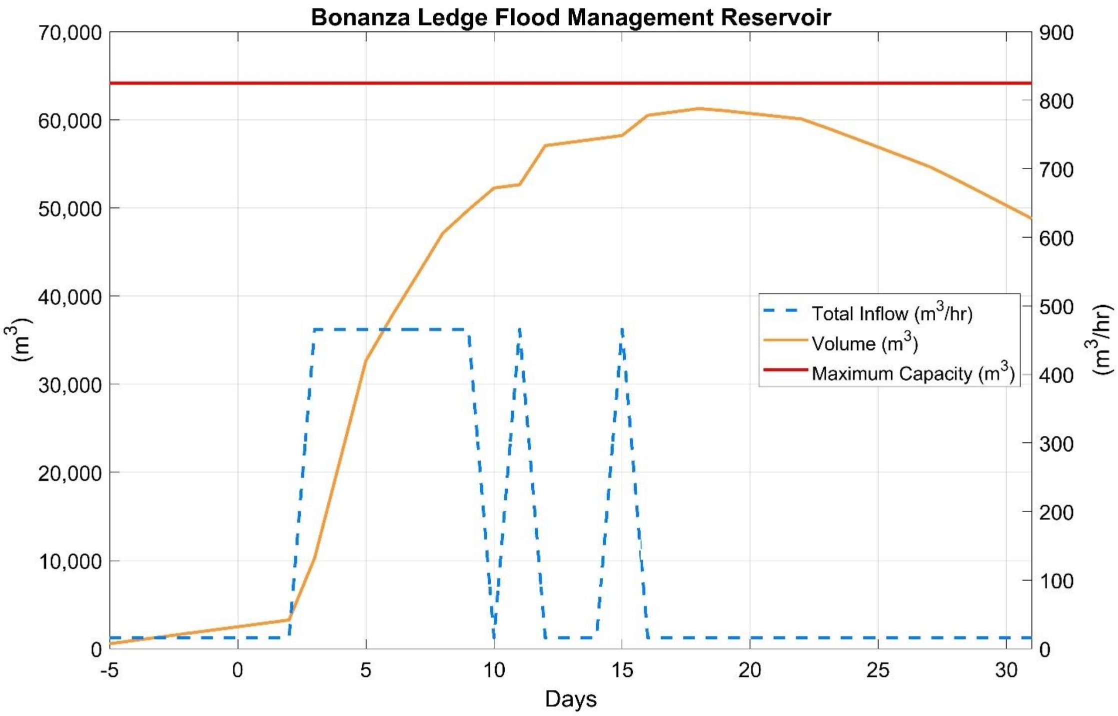


Figure 18-3: Design flood (200-year return) hydrologic modelling results for the Bonanza Ledge flood management reservoir water storage volume and total inflow

18.4.1.5 Water Treatment

The Bonanza Ledge site will be equipped, prior to the execution of the Project, with water treatment plants that will meet the water treatment requirements of the Project. The proposed water treatment strategy will involve a treatment plant with a design flow of 47.5 m^3/h to partially treat the underground mine water, and a separate treatment plant with a design flow of 180 m^3/h to treat the partially treated underground mine water and the surface contact water. Additional details regarding the proposed Bonanza Ledge water treatment strategy are presented in section 18.2.1.3 and in the Bonanza Ledge Site Water Treatment Preliminary Process Design and Operating Cost Estimate to Support NI 43-101 Report (Golder, 2022c).

18.4.1.6 Water Treatment Conveyance Infrastructure (Pumping and Pipelines)

Prior to the start of the Project, the Bonanza Ledge site will be equipped with pumping stations and water pipeline systems to meet the water treatment conveyance requirements of the Project. The pumping stations and pipeline systems are designed to transfer water directly or indirectly to the water treatment plants from the Sediment Control Pond and the Flood Management Reservoir. These systems were described in Section 18.2.1.4 and will be used for Phase 1 operations.

18.4.1.7 Fuel Storage (Diesel and LNG)

Diesel storage at Bonanza Ledge will reuse existing infrastructure from the past operation. The current installed capacity is sufficient to service the operation at Bonanza Ledge, mainly for surface mobile equipment and the diesel peak shavers (see below), and underground development at Phase 1.

LNG will be stored at Bonanza Ledge in four 40 m^3 cryogenic storage tanks. LNG will be delivered by a supplier using 1,200 and 1,600 gigajoules ("GJ") fuel trucks. The storage capacity will cover 3 days of consumption, and during winter season, the supplier will be able to cover for extra capacity using cryogenic isotainers. LNG is supplied solely to support power generation during Phase 1 operations. The LNG storage facility will have vaporizers to provide natural gas in gaseous form to the natural gas gensets, at the appropriate pressure.

18.4.1.8 Power Supply

Electrical power supply at Bonanza Ledge for Phase 1 will come from the construction of a natural gas power plant, while leveraging existing diesel generators from the past operations. As such, the natural gas power plant will consist of two natural gas generators of 2.4 megawatt ("MW") covering a base load of 3.5 MW. Two of the existing three 1.8 MW will be paralleled with the natural gas generators for peak shaving and backup power.

18.4.1.9 Surface Mobile Equipment

The Bonanza Ledge operations will require a select fleet of surface mobile equipment for the general maintenance of the site roads and operating areas, the material handling requirements for the operation of the ore sorting facility, the loading of ore sorting concentrate into concentrate trucks, the operations inside the WRSF, and for the other miscellaneous tasks in support of the U/G mining operations. The following equipment are considered to support the operations:

1. Front-end loader 966M;
2. Track Dozer D8;
3. Motor Grader 14M;
4. Forklift 5 tons;
5. Telehandler 5 tons;
6. Boom Lift 80 feet; and,
7. Ambulance.

18.4.2 QR Mill

18.4.2.1 Mill Upgrade

The QR Mill started operations in the mid-1990s, with an initial flowsheet consisting of grinding, gravity concentration, cyanide leaching, and carbon-in-pulp adsorption. The QR Mill has run intermittently since then, and most recently until 2021. Phase 1 aims to reuse much of the existing equipment and upgrade the necessary circuits to improve operational efficiency.

18.4.2.2 Filtered Stack Tailings Storage Facility for QR Mill

The filtered stack tailings methodology has been selected for the QR Mill, which will reduce the size of the required TSF footprint versus conventional slurry placement methods. Tailings produced from the QR Mill will be pressure-filtered to 89% solids content (mass of solids over total mass of solids and water). The filtered tailings will be deposited in lifts and compacted over the existing tailings and waste rock surface in the existing TSF, forming the FSTSF. The FSTSF has a design capacity of 1.69 million cubic metres ("Mm^3") of compacted filtered tailings.

The FSTSF will have 9H:1V slopes to the north, east, and south, and will tie into the natural slope on the west. At closure, the FSTSF will have a low-permeability closure cover to reduce infiltration, and ditches at the toe of the FSTSF will route runoff to the TSF Closure Spillway.

Prior to filtered tailings placement, the water in the existing TSF will be drained down, treated, and discharged. The FSTSF Ephemeral Pond will be excavated in waste rock within the existing TSF impoundment and be lined to manage contact water. The FSTSF Ephemeral Pond will also provide additional flood storage in the FSTSF during operations.

During operations, filtered tailings placement will begin on the south side of the facility and progress northward over the mine life. Temporary liners will be placed over the daily tailings placement area. The temporary liners will be removed when the next lift is placed. The temporary liners are intended to improve the water quality of runoff collected in the FSTSF Ephemeral Pond by intercepting surface runoff before it comes in contact with tailings. At all stages of tailings placement, the FSTSF will require proper grading to convey surface runoff to the lined collection ditches and to the lined Ephemeral Pond (KCB, 2022b).

18.4.2.3 Water Management Infrastructure - Ditches and Ponds

Water management infrastructure for the FSTSF will include (KCB, 2022a):

- The existing TSF East and West Diversion Ditches upslope of the FSTSF to divert non-contact runoff away from FSTSF;
- The proposed lined collection ditches and a lined FSTSF Ephemeral Pond to manage contact runoff within the FSTSF;
- A proposed South Seepage Collection Pond ("SSCP") to collect FSTSF seepage and to provide storage for flood and mill reclaim water;
- The existing North Seepage Collection Pond and proposed groundwater interception wells to manage FSTSF seepage;
- The existing Main Zone Pit ("MZP") to collect mine-influenced runoff from the surrounding area and pumped flows from the FSTSF Ephemeral Pond, SSCP, NSCP, and groundwater interception wells;
- A water treatment system ("WTS") to treat MZP water prior to discharging into Rudy Creek;
- A new sediment pond will be built later in the mine life to manage runoff from the lined outer FSTSF slopes prior to discharging into Creek No. 3.

The QR Mill water management plan during the Project is described in Chapter 20. The WTS, FSTSF Ephemeral Pond, SSCP, and MZP are sized to manage the 1 in 50-year return period 100-day duration Environmental Design Flood without offsite discharge.

Ditches and spillways at the QR Mill are sized to route the IDF that corresponds to their respective dam consequence and regulatory requirements. The IDF events for each water management structure are presented in Table 18-3. Climate change effects on the IDF event will be considered in the permitting stage.

Table 18-3 Water management structure IDF (KCB, 2022a)

Structure	IDF Event
TSF East and West Diversion Ditches	200-year 24-hour storm
Contact water ditches	200-year 24-hour storm
NSCP spillway	200-year 72-hour storm
SSCP spillway	72-hour PMF
TSF/FSTSF Ephemeral Pond spillway	72-hour PMF
MZP spillway	1/3 between the 1000-year and the PMF (72-hour duration)
Sediment Pond spillway	200-year 24-hour storm

18.4.2.4 Water Management Infrastructure - Pumps and Pipelines

New pumping and piping systems are required to move water around the QR site as per the requirements of the QR water management plan for the Project. New pumping and piping systems have been included for the following:

- Groundwater well pump-back to the FSTSF Ephemeral Pond;
- FSTSF Ephemeral Pond to MZP;
- SSCP to MZP;
- NSCP to MZP.

Pumping rates are in line with the QR water management plan. All pipes are considered to be HDPE and above ground.

18.4.2.5 Water Treatment

During Phase 1, water from the MZP requires treatment prior to discharge to Rudy Creek. The proposed treatment strategy for Phase 1, to be implemented prior to the start of the Project, is as follows:

- The existing WTP and associated modifications from the Bonanza Ledge Phase 2 project will continue to operate, except for one partial treatment train that will no longer be needed but can be used to provide redundancy due to the lower required design capacity of 35.1 L/s;
- A FSTSF Pre-treatment Plant becomes operational to raise the pH of surface water runoff from the FSTSF ephemeral pond that flows into the MZP. This plant consists of a quicklime storage and metering system with a design capacity of 45 L/s;
- A Mill Pre-treatment Plant becomes operational to remove ammonia from the QR Mill's reclaim water loop using an air stripper.

Once milling operations have ceased, the Mill Pre-treatment Plant will be shut down. The remaining treatment systems will continue to operate until the Project enters passive closure.

Additional details regarding the proposed QR Mill water treatment strategy are presented in the Quesnel River Mill Site Water Treatment Preliminary Process Design and Operating Cost Estimate to Support the NI 43-101 report (Golder, 2022d).

18.4.2.6 Surface Mobile Equipment

The QR Mill site operations will require a select fleet of surface mobile equipment for the general maintenance of the site roads and operating areas, the material handling requirements for feeding the mill with ore, the loading, hauling, and placement of filtered tailings in the FSTSF, and for the other miscellaneous tasks in support of the processing operations. The following equipment are considered to support the operations:

- Front-end loader 966M;
- Front-end loader 980;
- Track Dozer D6;
- Articulated Truck 745;
- Drum Compactor CS-56B;
- Steer Loader;
- Telehandler 5 tons;
- Boom Lift 80 feet; and,
- Ambulance.

18.4.2.7 Truckshop and Warehouse

It is planned that after a year of operation, a truckshop and warehouse facility will be built to support the maintenance of the fleet of mobile equipment required in the operations. The building will be a pre-engineered modular building, with two maintenance bays. The concrete slab in one maintenance bay will have embedded steel rails for tracked equipment.

18.4.2.8 Gate House

Once the Project reaches commercial production during Phase 1, a Gate House at the entrance of the QR Mill site will be installed to control access to the industrial site. The Gate House will be a modular, pre-fabricated building, with a powered sliding gate.

18.4.3 Offsite Infrastructure - Quesnel Integrated Remote Operations Centre

An Integrated Remote Operations Centre ("IROC") in Quesnel will also be set up to accommodate the general administrative workforce that will be sourced in Quesnel, and those who do not require an onsite presence.

18.5 Infrastructure Required to Support Phase 2 Operations

18.5.1 Mine Site Complex

In preparation for Phase 2 operations, surface infrastructure will be required at the MSC. The MSC is located in Wells, BC, approximately 80 km east of Quesnel, and approximately 350 metres ("m") west of the nearest permanent residences in Wells. Existing infrastructure that ODV owns in Wells will be used to accommodate the workforce required during the construction period. The following sections will describe the surface infrastructure that will be built at the MSC. Access to the MSC will be from Quesnel on Highway 26.

18.5.1.1 Site Preparation at the Mine Site Complex

The MSC is proposed to be constructed on the site of the historical Cariboo Gold Quartz Mine. The site is covered by vegetation with limited immature coniferous and deciduous trees. All infrastructure will be new and will require minimal clearing to establish the MSC footprint. Where possible, excavated material from the concentrator building, Valley Portal, and MSC water treatment plant pad will be placed as backfill for civil works, including the site access roads, the concentrator building pad, and water management infrastructure.

18.5.1.2 Roads

Main Access Road

Following the Willow River Bridge, the main access road will be capped with gravel and will span to reach the concentrator building area, where visitors and vehicles will go through a security check point before being granted access to the premises. Design of the main access road will account for on-highway rated traffic only; no off-road vehicle loading is expected. Additionally, access to the MSC will also be possible to the East by the Lowhee Creek bridge, at a crossing right next to the existing office complex.

The approximate total length of the main access road is approximately 1.1 km, from Highway 26 through the concentrator building area and ending at the MSC WTP.

Crossing Structure

The Willow River Bridge is designed as a single span bridge made of steel girders with precast concrete deck of approximately 24 m.

Additionally, a new bridge will be built during Phase 1 to allow heavier loads to cross towards the MSC over Lowhee Creek, close to the existing office complex.

Access Gates

Two access gates will be required at the MSC. One will be located near the concentrator building while the other will be located near the existing exploration office. The purpose of the access gates is to control incoming and outgoing traffic to/from the MSC.

Light Vehicle Roads

The MSC WTP Access Road from the concentrator building area will climb past the Valley Portal to the MSC WTP area. This portion of the main access road will be constructed as a local road for light vehicle traffic only.

Parking Area

Development of the concentrator building area will include provision for parking of personnel vehicles. The parking area will be constructed according to applicable BC provincial regulation and safety standards.

The parking area will be located outside of the perimeter fence next to the concentrator building.

18.5.1.3 Surface Mobile Equipment

With the addition of the Mine Site Complex operations during Phase 2, two skid steer loaders will be added to the surface mobile equipment fleet. It is important to note that the 966 M loader that was used in Phase 1 at the Bonanza Ledge ore sorting facility will be transferred to the concentrator for loading both the flotation and ore sorting concentrates into the concentrate trucks.

18.5.1.4 Mine Site Complex Operation Infrastructure

The MSC operation infrastructure will serve during mine construction and operations with sufficient area available for material receiving and storage, tools, and work areas. The principal infrastructure includes:

- Office complex (offices and mine dry facilities);
- Emergency response team garage;
- Gate houses;
- Valley Portal;
- Air intake raises;
- Fuel storage and distribution (diesel and LNG);

- Firewater for the MSC;
- Sewage treatment; and,
- Potable water treatment and distribution.

Office Complex

The office complex will be a two-storey, pre-engineered, and pre-fabricated modular building that will include site offices and mine dry facilities. The offices, located on the second floor, will have an overall surface area of 800 square metres ("m^2"). Process and Mining operations will be headquartered in this building and supported by other departments such as health and safety, maintenance, and security. The mine dry facilities, having a surface area of 800 square m^2, will be located on the first floor.

Emergency Response Team Garage

A pre-engineered modular building will be established on the concentrator pad to house the vehicles of the Emergency Response Team. The building will be heated and equipped with services to support the responsiveness of the emergency services on site.

Air Intake Raises

Ventilation raises will be installed for each of the underground zones. They will be built to follow the underground mine development schedule as they become required. Each raise will include a fresh air intake fan and heater, a concrete slab, and a connection to an underground natural gas pipeline, with the exception for the Lowhee air intake which will use propane with the appropriate propane storage and distribution facilities. .

Each ventilation raise area will be fenced for safety purposes. They will also serve as emergency egresses for the underground mine. Existing access roads will be used to access the ventilation raises.

Fuel Storage and Distribution

The MSC will be serviced by a 70,000 L diesel fuel tank. The tank will be equipped with a pumping skid and a fuel unloading / loading concrete area to contain minor spills. The tank will be double-walled and a fuel metering system will allow the dispatch of fuel by operation area. A small 1,000 L gasoline tank will also be installed.

Once electrical power is available at the MSC and at Bonanza Ledge, the LNG storage infrastructure at Bonanza Ledge that was used to supply natural gas to the natural gas power plant will be relocated to the MSC. LNG will be vaporized and distributed through an underground natural gas distribution network. Every infrastructure at the MSC, such the concentrator building, the Water Treatment plant will be connected to such supply. Additionally, heating requirements for the air intakes for the Mosquito, Shaft, and Cow mining zones will be connected to this buried natural gas distribution network.

Arrangement of fuel storage will consider applicable regulations, such as required offsets, tertiary containment, and be covered by a prefabricated structure to mitigate the accumulation of snow.

Firewater

A fire pump station will be located near the MSC water treatment plant building. The water source for the fire water protection system will be the effluent of the MSC WTP, which will feed a 900 m^3 steel tank that will be equipped with a mechanical overfill to ensure the tank is always full. The tank will be connected to an enclosed pumping system comprised of a jockey pump, an electrical fire pump, and a diesel fire pump. A buried pipeline will distribute water to all main buildings.

Sewage Treatment

The sewage treatment system will be located south of the concentrator building area. An underground sewage piping system will be established to collect sewage wastewater from the concentrator building and the offices and dry building for treatment. A buried equalization tank next to the modularized sewage treatment system will collect wastewater from the underground piping system as well as from a vacuum truck. A feed pump will then pump the contents of the equalization tank to the sewage treatment plant, which will employ the membrane biological reactor ("MBR") technology with submerged ultrafiltration membranes. The effluent will meet the effluent standard limits of British Columbia.

Potable Water Treatment and Distribution

The MSC will be serviced through an underground potable water distribution system. Raw water from a well located near the existing ODV exploration offices will provide the water source for the potable water requirements for the MSC. A submerged pump in the raw water well will pump raw water to a series of buffer tanks located in the potable water treatment plant. Water from the buffer tanks will then be treated with coagulant and sodium hypochloride, pressurized, and sent to vessels containing greensand media. Following treatment through the sand filter, water will then undergo an ultraviolet ("UV") reactor treatment before being stored as potable water in distribution tanks. A set of pumps will pressurize the system and distribute water throughout the site via the underground buried piping network.

18.5.1.5 Concentrator Building

The concentrator building area on the MSC houses the processing facilities and their auxiliary services.

Concentrator

The concentrator includes the following processing circuits: ore sorting, tertiary crushing, milling, flotation, concentrate dewatering, paste backfill, and concentrate storage and loading for transportation of ore sorter and flotation concentrate to the QR Mill.

Figure 18-4 shows the layout of the concentrator area of the concentrator building.

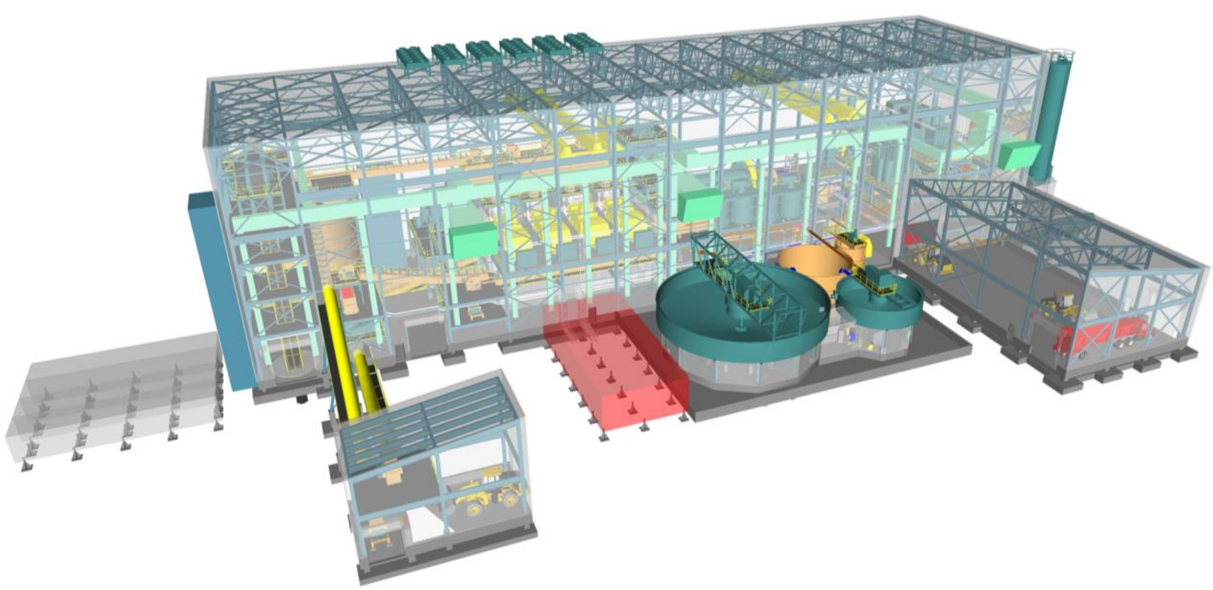


Figure 18-4: Concentrator building layout

Electrical Rooms

The concentrator building will be connected to two pre-engineered electrical rooms servicing all infrastructure at the MSC during Phase 2. The main electrical room, located near the ore sorting portion of the concentrator, will house the 13.8 kV main distribution system. The 66 kV/13.8 kV transformers in the main substation will have their secondaries connected to a main 13.8 kV Air Insulated Switchgear ("AIS"). Feeders in the 13.8 kV AIS will then interconnect with the Project's loads at the concentrator, MSC WTP and other auxiliary loads at the MSC, and all of the loads at the Bonanza Ledge site.

Another pre-engineered electrical room will be located close to the paste backfill area of the concentrator building and will be dedicated to supply power to process loads of the concentrator only. Two 13.8 kV feeders from the main AIS will supply power to that electrical room.

18.5.1.6 Water Management Strategy

The MSC is located south of the Barkerville Highway divide, between the town of Wells and Jack of Clubs Lake. It includes a concentrator building, an access road (the main access road), the Valley Portal mining area, a water treatment plant (the MSC WTP), a sediment pond (the Mine Site Complex Sediment Pond or "MSCSP") with its associated spillway channel, and all other related water management infrastructure. The majority of the proposed infrastructure for the Project at the MSC are located on brownfield sites, i.e., areas that have been previously disturbed by historical mining operations. The site will also include the WTP diffuser pipeline that discharges treated effluent into Jack of Clubs Lake. The water management layout is designed such that existing patterns of seepage for the historical mine tailings and waste rock will remain separated from the Project's proposed infrastructure as much as practical.

The MSC will include surface water management systems, including diversion channels to deflect upslope non-contact water from entering the site and collection channels to direct site contact water to the proposed MSCSP or other intermediary sumps prior to treatment. A Linear Low-Density Polyethylene ("LLDPE") liner will be installed at the contact between the existing ground and the proposed MSCSP, providing a low-permeability barrier as part of seepage and runoff management. The liner will extend to the sediment pond retention dam. The MSCSP will be constructed prior to the start of mining and processing operations at the MSC.

Contact water channels will be directed to the proposed MSCSP; a proportion of the runoff water will be monitored through smaller contact water sumps and may be discharged into the Willow River if relevant water quality criteria are met. For the purposes of this document, however, all contact water is assumed to be pumped to the proposed MSC sediment pond to be treated.

The contact water treatment infrastructure for the MSC will be a new proposed MSC WTP, which is described in Section 18.4.2.5. The MSCSP arrangement will include a pump station allowing water to be pumped to the MSC WTP for treatment. The MSC WTP will discharge treated water through a pipeline and a diffuser, entering approximately 200 m (offshore) into Jack of Clubs Lake. An emergency spillway channel will be constructed for the MSCSP to discharge flows safely to a dissipation pad northwest of the dam in the event of extreme conditions or unforeseen events where the pond storage capacity would be exceeded.

18.5.1.7 Water Management Infrastructure

The major water management structures at the MSC are summarized as follows:

Proposed Non-contact Water Diversion Structures

- North non-contact diversion located north of the proposed main access road, discharging to the Willow River;
- South non-contact diversion, starting above the south side of the Valley Portal and discharging to Jack of Clubs Lake.

Proposed Contact Water Collection Structures

- Access road contact water ditches, which drain into a contact water sump located south of the proposed bridge. The water in the ditch situated on the south side of the main access road will pass through a culvert under the road before reaching the sump. The water will be monitored in the sumps and may be directly discharged into Willow River if relevant water quality criteria are met, or else will ultimately be pumped to the MSCSP;
- Eastern contact water collection ditch, which flow south to the MSCSP via the proposed south contact water channel;
- The south contact water channel, which starts at the MSC WTP area and follows the northern toe of the side slope of the road to the Valley Portal and the southern concentrator building area before discharging to the MSCSP. This channel will collect excess contact water coming from the concentrator building location, Valley portal, and MSC WTP areas;
- The proposed MSCSP will be located directly at the toe of the concentrator building platform and will include a perimeter dike, a pumping station with pipeline to the MSC WTP and an armoured emergency spillway. A layer of free-draining granular fill placed under the entire footprint of the MSCSP liner will direct groundwater towards the spillway of the MSC SP, where it will collect in two sumps located on each side of the spillway and be pumped back into the MSCSP. This will require regrading of the original ground to promote drainage towards the sump.

Design Inflow Modelling

- The maximum available basin storage volume (i.e., the volume available at the spillway invert elevation) and outflow rate resulting from the preliminary EDF design modelling are presented in Table 18-4 for the MSCSP. It is important to note that the outflow pumping rate from the sediment pond to the MSC WTP was limited to 100 m^3/h for the current simulations (see Section 18.5.1.9);
- The modelled total inflow rate and basin volume for the simulated 200-year return period 30-day EDF event at the MSCSP is shown in Figure 18-5. The results confirm the proposed capacity for the basin can contain the surface runoff volumes from the design event without overflowing.

Table 18-4: Maximum available retention basin storage volume and design flood outflow capacity for the Mine Site Complex

Basin	Receiving Structure	Basin Dead Storage (m^3)	Basin Maximum Targeted Storage Volume (m^3)[(1)]	Design Flood Outflow Capacity (m^3/h)	Peak Modelled Storage Volume (m^3)
MSCSP	MSC WTP	6,300	30,000	100 [(2)]	27,800

(1) Based on total storage volume, including dead storage.

(2) Refers to pumping capacity from the MSCSP pond to the MSC WTP.

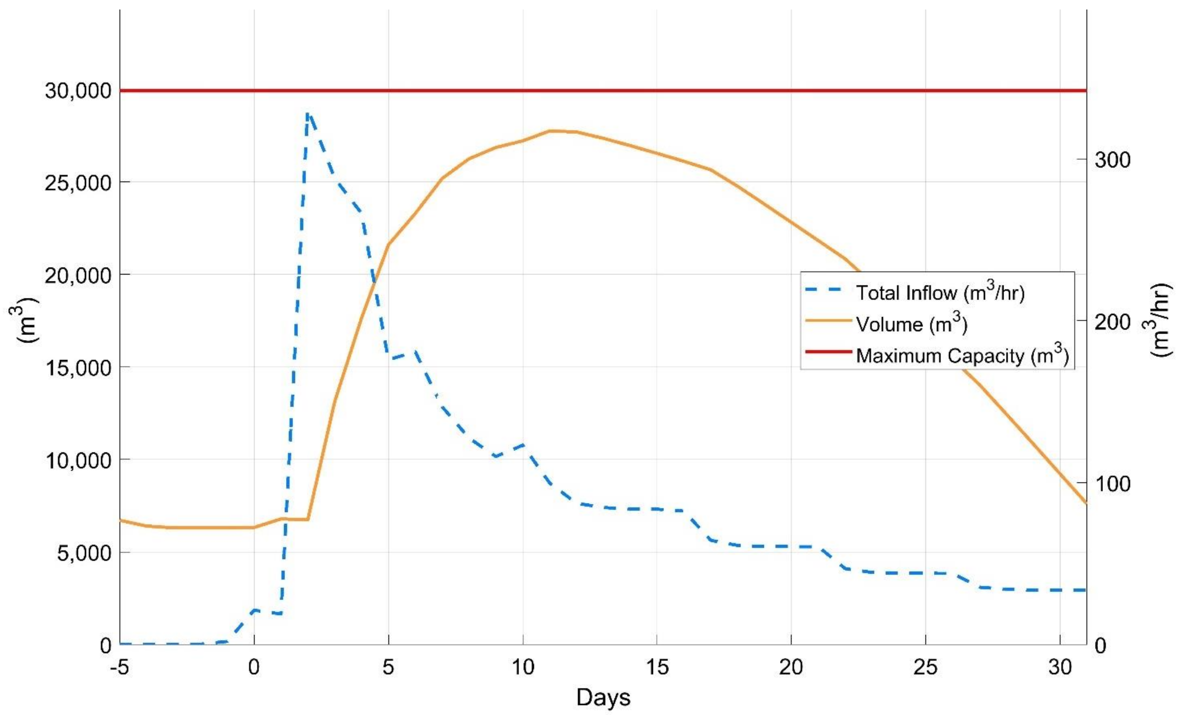


Figure 18-5: Design flood (200-year return) hydrologic modelling results for the MSC sediment pond water storage volume and total inflow

18.5.1.8 Water Treatment

At the beginning of site preparation at the MSC, a new water treatment plant will be required to accommodate higher underground water flow rates, enabling the mine development team to develop the mine below a certain elevation with reference to the groundwater table. Once surface infrastructure is constructed at MSC, this water treatment plant will also treat surface contact water.

The proposed water treatment strategy for the MSC includes a common WTP for the underground ("U/G") mine water and surface contact water. The design influent flow for the MSC WTP is 480 m^3/h based on water balance modelling. The MSC WTP will primarily remove metals and nitrogen species from the combined underground and surface water. This plant is intended to operate for 18 months prior to the start of mining and processing operations at MSC to allow for underground dewatering, through to the end of active closure activities. Upon the end of mining operations, underground flows will cease and the plant will be treating only surface contact water.

Construction will take place at MSC to build the surface infrastructure to support the mining operations of Phase 2. ODV intends to begin dewatering the historical underground workings during Phase 1 operations, while the surface infrastructure construction period at the MSC is ongoing. This underground water will be treated at the MSC WTP, and therefore, the MSC WTP must be fully constructed and commissioned to facilitate these activities. It is assumed that the dewatering flows during Phase 1 will not exceed the design flow of the MSC WTP, and that the quality of the water will be similar to the U/G water quality. The MSC WTP is designed for a maximum flow rate of 480 m^3/h, which allows for the underground dewatering flow from the fully developed mine and the attenuated contact surface water flows in a wet year.

The MSC WTP will consist of multiple precipitation steps for the removal of metals: ferric co-precipitation at neutral pH, conventional high-density sludge ("HDS") lime neutralization, and organosulphide precipitation. In addition to the aforementioned, the MSC WTP will include both nitrification and denitrification unit operations for the treatment of nitrogenous species.

The MSC WTP will include three agitated tank reactors. The first allows for the oxidation and precipitation of aluminum, iron, and arsenic species, the second allows for the neutralization of acidity and precipitation of metal hydroxides, and the third allows for the precipitation of organosulphide metals. The first precipitation reactor is followed by a Multimedia Filtration system ("MMF") for removal of precipitated solids. The second and third tank reactors are followed by a conventional clarifier to separate the precipitated materials from the treated water. The clarifier overflow will be directed to a continuous backflow sand filter for polishing of suspended solids prior to biological treatment. The filtrate is directed to a nitrifying MBBR, followed by a denitrifying Packed Bed Reactor system, which is then followed by a polishing MBBR to remove residual biochemical oxygen demand. The biosolids from the bioreactors will be removed by a final MMF. Settled sludge from the clarifier will be combined with backwash from the sand filter and final MMF, then dewatered with two conventional filter presses operating in parallel. The dewatered solids will be incorporated into paste backfill and/or trucked offsite for disposal.

A building will house much of the WTP and will include space for chemical dosing skids and chemical storage tanks. The HDS clarifier and two MBBRs will be placed outdoors with covers.

The final treated effluent will be discharged to the Jack of Clubs Lake.

Additional details regarding the proposed MSC water treatment strategy are presented in the Mine Site Complex Water Treatment Plant Process Preliminary Design to Support NI 43-101 report (Golder, 2022e).

18.5.1.9 Water Treatment Conveyance Infrastructure (Pumping and Piping Systems)

The MSC pumping stations and water pipeline systems will be installed to transfer the underground mine water and surface contact water to the MSC WTP and transfer treated water to Jack of Clubs Lake.

Five pumping stations will be installed at MSC. Three pumping stations, each having 108 m^3/h capacity and 1 x 100% configuration will be installed to transfer water from various sumps to the MSCSP. A pumping station having 100 m^3/h capacity and 2 x 50% configuration will be installed to transfer water from the MSC sediment pond to the MSC WTP. A pumping station having 479 m^3/h capacity and 2 x 100% configuration will be installed to transfer treated water from the MSC WTP to the Jack of Clubs Lake.

Six water pipeline systems will be installed at the MSC, one each for the five pumping stations described earlier and one to connect piping from the underground mine to the MSC WTP. The water pipelines will be of high-density polyethylene ("HDPE") material of construction and will be installed above-grade or below-grade.

18.5.1.10 Power Supply

The power demand at the MSC and Bonanza Ledge at Phase 2 is approximately 18 megawatts ("MW") on average, peaking at 22 MW..

Substations

At the MSC, the incoming transmission line will terminate on the structure within the main substation, located towards the north end of the concentrator building area. The outdoor substation will lower the incoming voltage from 66 kV to 13.8 kV through two 30/40/50 MVA transformers. During normal operation, both transformers will share the load, but during maintenance or repair work, one transformer will be capable of supplying the entire load of the Mine Site Complex, thus increasing the overall electrical supply reliability.

Power Distribution

The output of the two main transformers will go into a 13.8 kV AIS located in the main electrical room close to the Concentrator (see section above). All of the substation's metering and protection apparatus will be mounted in a modular building in the substation footprint.

Site Lighting

Road lighting will be limited to minimal requirements at intersections. Exterior lighting will be present in pedestrian areas and in working or storage areas, mostly installed on the buildings. For all exterior lighting, LED fixtures will be used to reduce maintenance time and increase energy savings. Photocells will also be installed to reduce power consumption.

Emergency Power

Emergency power generators are planned to supply the critical equipment and installations when the main power from the regional grid is unavailable. Critical loads for the concentrator, the water treatment plant, and the underground mine will be able to be partially powered to ensure safety of workers and integrity of critical equipment. The two 1.8 MW diesel generators installed at Bonanza Ledge during Phase 1 and acting as peak shavers and backup will be relocated to the MSC and tied to the main 13.8 kV switchgear. The main substation's switchgear will have key interlocks allowing the transfer of the main power source from the transmission grid to the emergency generators. The operators will have an emergency power protocol to effectively rationalize power and dedicate it to the critical loads without exceeding the emergency power capacity.

Construction Power

During the early construction stages of Phase 2, and before the energization of the transmission line, the MSC will be connected to the natural gas power plant at the Bonanza Ledge site through a 13.8kV overhead power line.

18.5.1.11 Telecommunication and IT Infrastructure

Public Internet access and telephony services will be provided to the Mine Site Complex via a primary WAN link composed of an aerial fibre optic cable running between Quesnel and the new Telus Telecommunication tower, which is situated near the MSC WTP.

For redundancy, a secondary WAN link will be implemented using a fibre optic cable running from Quesnel to BC Hydro Barlow substation (aerial on Highway 97, then buried on Highway 26) and then over the new 66 kV powerline that will be built between Quesnel and the MSC in Wells.

A redundant fibre optic campus area network will interconnect all facilities of the Mine Site Complex, including:

- Workers Accommodations;
- Security gate;
- Telecom tower;
- Main electrical substation;
- concentrator building area;
- U/G networks;
- Portals, exhaust raise and main intake raises;
- Water treatment plant and pumping stations;
- Fire water pumping station.

The fibre optic campus area network will be shared between the following systems:

- Process and electrical grid industrial control system;
- Corporate network (administration, maintenance, and telephony);
- Fire detection;
- Security video surveillance and access control system.

Remote areas on the site could be serviced via Point-to-Multipoint microwave links when more cost effective than through fibre optic.

IT and networking equipment and software required for the Project will be deployed to service the different areas via wired or wireless networks where appropriate for administrative and industrial systems.

The architecture of the Telecom and IT infrastructure will be designed with resilience and cybersecurity in mind.

An underground private 4G/5G LTE and fibre optic network will be deployed to service the mine personnel and vehicles. Supported applications should include personnel and equipment geolocation for safety and ventilation on demand, remote operation, two-way radio communication, mining equipment predictive maintenance, pumps, and electrical distribution network control.

A Digital Mobile Radio ("DMR") system will provide Two-Way radio service for surface communications. To complement the DMR, a Push-to-Talk over Cellular ("PoC"), that can be used also over Wi-Fi, will be deployed to allow authorized workers, consultants and contractors to communicate with each other and with the DMR system users.

The telecom and IT infrastructure have been designed to allow for the potential future implementation of remote-control operation with a low latency communication connection.

18.5.2 QR Mill

18.5.2.1 Mill Upgrade

The QR Mill will be enhanced to process the higher concentrate feed grades expected during Phase 2. The carbon in leach and ADR circuits will be replaced, and the refinery will be upgraded. The existing plant building will be extended to include the new carbon in leach circuit. Figure 18-6 shows the layout of the concentrator building.

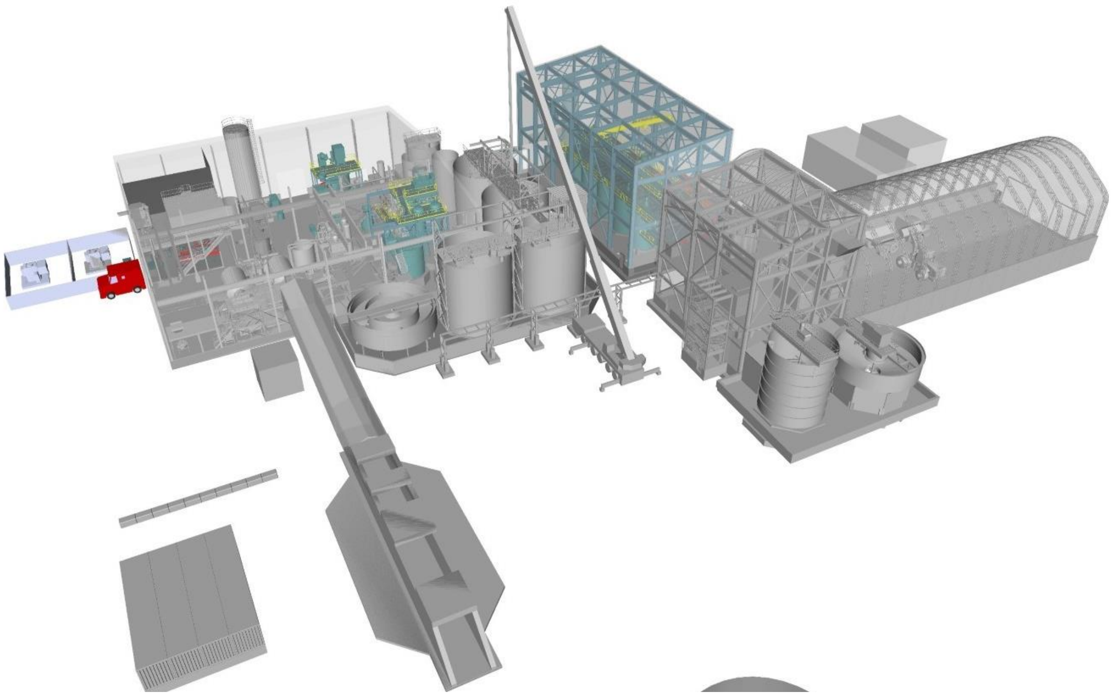


Figure 18-6: Concentrator building layout

18.5.2.2 Telecommunications and IT Infrastructure

Public Internet access and telephony services will be provided to the QR Mill site via a primary WAN link composed of a Microwave link between the ABC/Telus Morehead Tower and anew telecom tower to be installed at the QR Mille site.

For redundancy, a secondary WAN link will be provided via Starlink Premium Satellite service.

A redundant fibre optic campus area network will interconnect all facilities of the site such as:

- Security gates;
- Telecom tower;
- Main electrical substation;
- Process plant;
- Water treatment plant and pumping stations; and
- Fire water pumping station.

The fibre optic campus area network will be shared between the following systems:

- Process and electrical grid industrial control system;
- Corporate network (administration, maintenance, and telephony);
- Fire detection; and
- Security video surveillance and access control system.

Remote areas on the site could be serviced via Point-to-Multipoint microwave links when more cost effective than through fibre optic.

IT and networking equipment and software required for the Project will be deployed to service the different areas via wired or wireless networks where appropriate for administrative and industrial systems.

The architecture of the Telecom and IT infrastructure will be designed with resilience and cybersecurity in mind.

A DMR system will provide Two-Way radio service for surface communications. To complement the DMR, a PoC, that can be used also over Wi-Fi, will be deployed to allow authorized workers, consultants, and contractors to communicate with each other and with the DMR system users.

18.5.3 Bonanza Ledge

18.5.3.1 Power Supply

Once the MSC site is energized by grid power through the newly built 66 kV transmission line, power to the Bonanza Ledge site will be supplied through a 13.8kV overhead power line. At that point, the natural gas power plant operated during Phase 1 will no longer be required.

18.5.3.2 Fuel Storage

With the interconnection to grid power established during Phase 2, the LNG storage located at Bonanza Ledge to feed the natural gas generators will no longer be required. The facility will be dismantled and re-located to the MSC as natural gas was selected as the heating media for the MSC and underground mine during Phase 2.

A 70,000-L diesel storage tank with fuel unloading and distribution systems will also be implemented at the MSC for the requirements of both surface and underground operations.

18.5.3.3 Waste Rock Storage Facility

For Phase 2, the WRSF will be expanded to an elevation of 1,525 m for a final capacity for storage of approximately 4,250,000 m^3 for mine waste rock. Phase 2 construction includes foundation preparation for a liner system, insulation of a liner system above elevation 1,470 m to cover the final WRSF footprint.

18.5.3.4 Water Management Strategy

In addition to the water management structures in place for Phase 1 (Section 18.4.1.3), a south contact water retention basin, the Bonanza Ledge South Sump will be built on the southern side of the WRSF.

In Phase 2 of mining operations, the WRSF height will require the utilization of the Bonanza Ledge South Sump to properly capture all contact runoff on site. The Bonanza Ledge South Sump will operate in a similar way than the Bonanza Ledge SCP; collected contact water will be pumped and treated at the Bonanza Ledge WTP, with an emergency pump line to the Bonanza Ledge FMR available during periods of increased precipitation/runoff. Once treatment capacity becomes available again, water will be pumped from the Bonanza Ledge FMR to the Bonanza Ledge WTP for treatment before discharge. There will be no dewatering inflow from the Cow Portal treated at the Bonanza Ledge WTP for this phase.

The surface water management system for Bonanza Ledge will contain infrastructure that is currently existing, that will be built for Phase 1 of operations and proposed new diversion channels to restrict upslope non-contact water from entering the site, and contact water ditches to direct contact water within the site either to the proposed Bonanza Ledge SCP or to the Bonanza Ledge South Sump. Collection channels may need to be staged and raised as deposition within the new WRSF advances. The WRSF will be constructed on top of a low permeability LLDPE liner that will extend under the entire footprint of the pile and include the Bonanza Ledge SCP and the Bonanza Ledge South Sump, to limit the potential for water infiltration to the underground aquifer.

18.5.3.5 Water Management Infrastructure

The maximum required storage volumes and outflow rates for the Bonanza Ledge South Sump resulting from the preliminary EDF design modelling are presented in Table 18-5. The modelled total inflow rates and basin/reservoir volumes for the simulated 200-year return period 30-day EDF event at the Bonanza Ledge South Sump is shown in Figure 18-5. The simulations were run for each Operations year of the Project. Results for the site conditions resulting in the greatest inflow and capacity for the Bonanza Ledge South Sump are presented in the figure. The results confirm that the proposed capacities for the basins can contain the surface runoff volumes from the design event without overflowing.

Table 18-5: Maximum required pond storage volume and proposed design flood outflow capacity for the Bonanza Ledge site

Basin	Receiving Structure	Basin Proposed Dead Storage (m^3)	Basin Required Storage Volume (m^3)[1]	Design Flood Outflow Capacity (m^3/h)	Peak Modelled Storage Capacity (m^3)
Bonanza Ledge South Sump	Bonanza Ledge WTP (Bonanza Ledge FMR)[2]	960	5,100	180[3] (450)[4]	5,050

(1) Based on total available storage volume, including dead storage, to manage the EDF without overflowing.

(2) Parentheses refer to the emergency receiving structure used during periods of increased precipitation/runoff, to prevent basin overflowing.

(3) Refers to pumping capacity from the basins to the Bonanza Ledge WTP; the maximum treatment rate is shared by all Bonanza Ledge basins, and, in Phase 1, also by the underground dewatering rate – the set priorities for treatment management are: 1. U/G dewatering; 2. Bonanza Ledge sediment control pond; 3. Bonanza Ledge South Sump (during Phase 2 only) and 4. FMR up to a maximum treatment rate of 180 m^3/h.

(4) Parentheses refer to the maximum pumping rate of the pump line emergency receiving structure: (Bonanza Ledge Sediment Pond) plus (Bonanza Ledge South Sump) plus (Bonanza Ledge FMR).

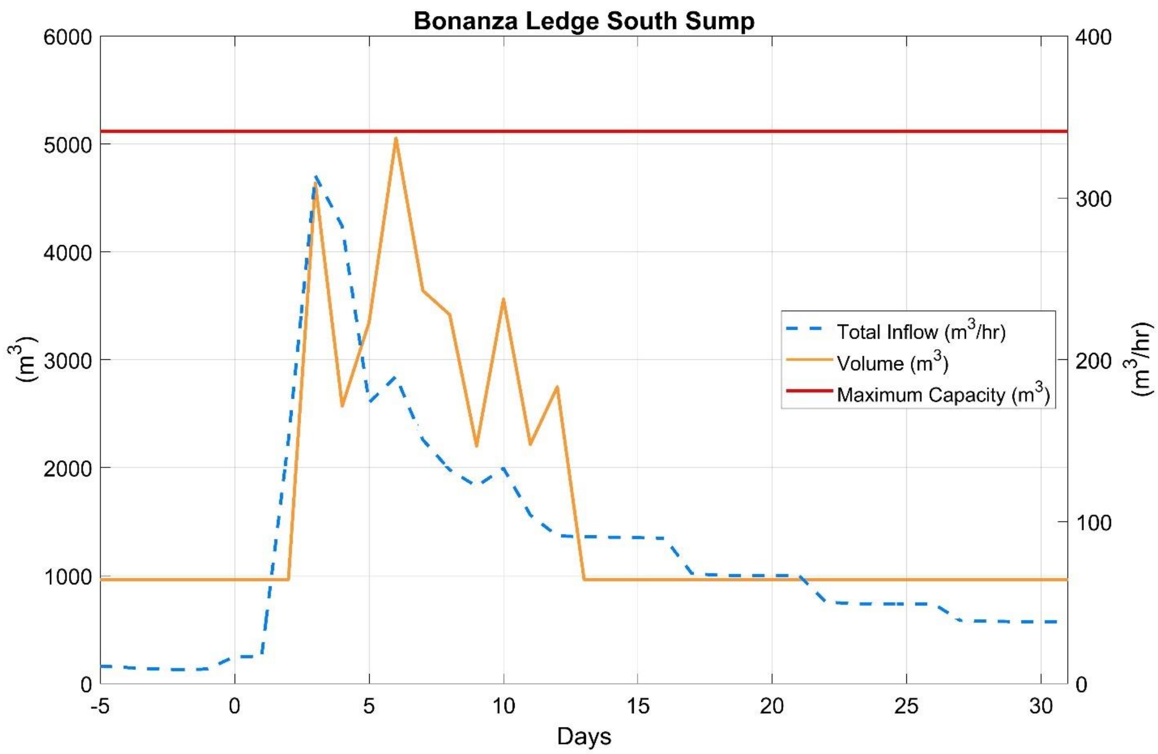


Figure 18-7: Design flood (200-year return) hydrologic modelling results for the Bonanza Ledge south sump water storage volume and total inflow

18.5.3.6 Water Treatment Conveyance Systems

During Phase 2 operations, with the construction of the Bonanza Ledge South Sump, additional Bonanza Ledge Pumping Stations and Water Pipeline Systems will be required.

Two new pumping stations will be installed during Phase 2 operations at Bonanza Ledge. A 450 m^3/h capacity pump station having 2 x 50% configuration will be installed to transfer water from the Bonanza Ledge South Sump to the Bonanza Ledge FMR. A 180 m^3/h capacity pump station having 2 x 50% configuration will be installed to transfer water from the Bonanza Ledge South Sump to the Bonanza Ledge Surface Water WTP.

Two water pipeline systems will be installed at the site, one for each pumping stations described earlier. The water pipelines will be of HDPE material of construction and will be designed to be installed above grade.

18.5.4 Offsite Infrastructure

18.5.4.1 66 kV Transmission Line

The infrastructure at Wells during Phase 2 will be supplied with electrical power via a new 66 kV transmission line approximately 70 km in length. It will be connected to BC Hydro's Barlow substation near Quesnel. The Northern Transmission Line routing, located primarily along existing forest service roads and forestry cut blocks north of Highway 26, was chosen for the Project.

18.5.4.2 Ballarat Camp

In preparation for Phase 2, the Ballarat Camp consisting of 76 rooms will be expanded to 150 rooms. The company's other lodging properties will be used as flow management facilities to cover for peak labour periods, especially during the construction of the MSC.

18.5.4.3 Quesnel IROC

The Quesnel IROC from Phase 1 will be increased in capacity to allow for more remote working spaces to support operations for the Project. In addition, a cold storage facility will be built for storage of critical components and parts, near the various Project sites.

19. Market Studies and Contracts

It was assumed in this Feasibility Study and Technical Report that the Cariboo Gold Project (the "Project") will produce gold and silver in the form of doré bars. The market for doré is well established and accessible to new producers. The doré bars will be refined in a certified North American refinery—of which there are many in the eastern United States and Canada—and the gold will be sold on the spot market.

19.1 Market Studies

No market studies have been conducted by Osisko Development Corp. ("ODV") or its consultants in relation to the gold and silver doré bars that will be produced by the Project. Terms and conditions included as part of the sales contracts are expected to be typical for this commodity. Gold and silver are bought and sold on many markets in the world, and it is not difficult to obtain a market price at any time. The gold and silver markets are very liquid with many buyers and sellers active at any given time.

19.2 Assumptions

The long-term price of gold, the long-term price of silver and exchange rates were estimated on the basis of discussions with experts, trailing averages, consensus analyst estimates, and recently published economic studies that were deemed to be credible. For this Report, a gold price of 1,700 USD/oz and a silver price of 20 USD/oz were assumed, and a CAD:USD exchange rate of 1.00 : 0.77 was used. Table 19-1 outlines the refining and pricing assumptions used in the economic analysis as described in Chapter 22.

Table 19-1: Refining and pricing assumptions

Assumption	Unit	Value
USD:CAD (CAD:USD)		0.77 (1.30)
Gold payable	%	99.97
Silver payable	%	99.00
Doré refining charge (including deductions, transportation and insurance costs)	USD/oz	2.00
Royalty payment	%	5.0
Gold price	USD/oz	1,700
Silver price	USD/oz	20

Figure 19-1 and Figure 19-2 show the historical month average for both gold and silver, respectively, since October 2019.

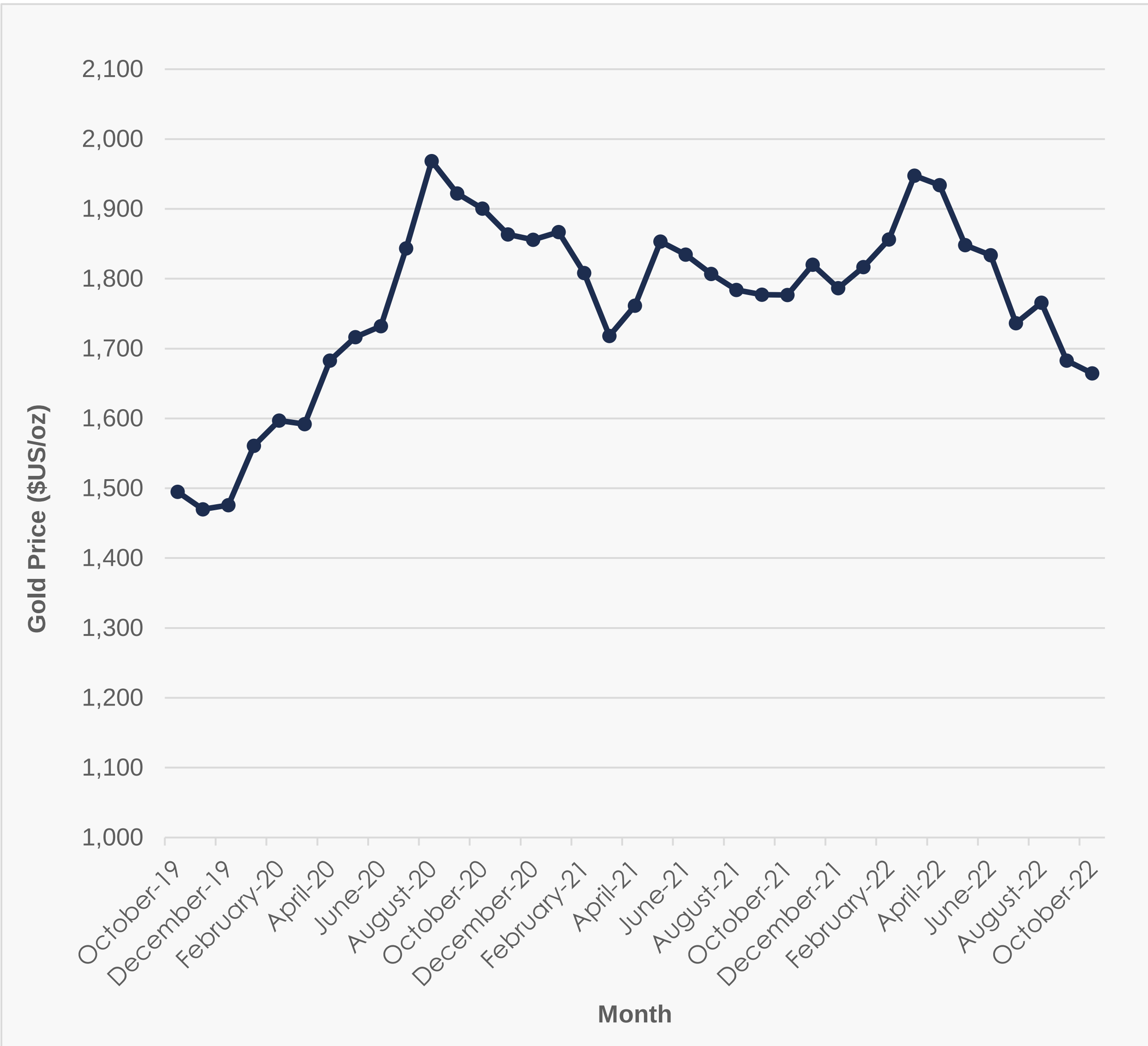


Figure 19-1: Historical average monthly gold price ($US/oz)

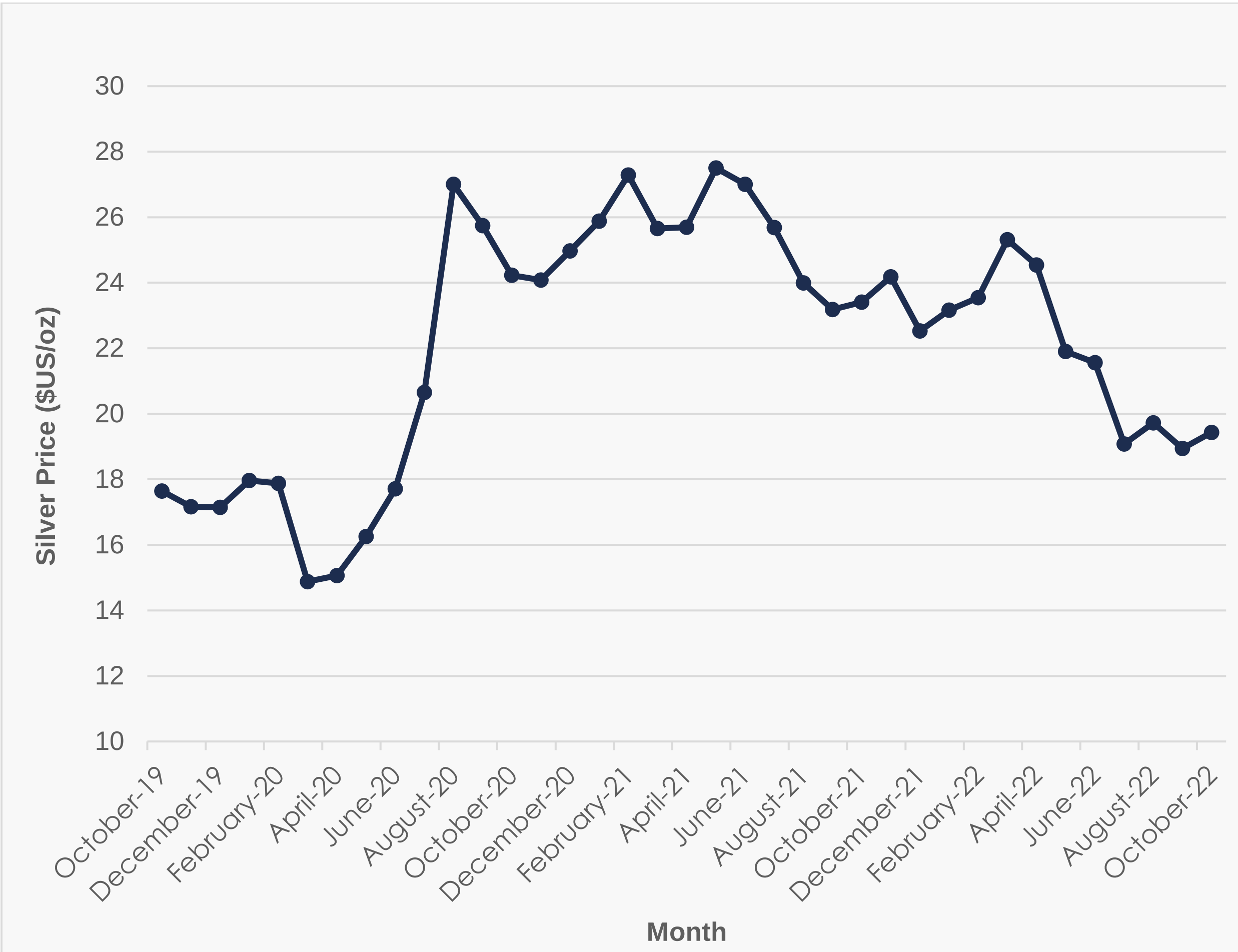


Figure 19-2 Historical average monthly silver price ($US/oz)

The forecasted exchange rate and precious metal prices are kept constant and are meant to reflect long-term expectations over the life of the Project. It should be noted that the exchange rate and precious metal prices can be volatile and that there is the potential for deviation from the LOM forecasts.

19.3 Royalties

On February 5, 2016, Osisko Gold Royalties ("OGR") completed the acquisition of a 1.5% net smelter return ("NSR") royalty on the Project for a cash consideration of $25 million, with an option for OGR to purchase an additional 0.75% NSR royalty for $12.5 million. On April 19, 2017, OGR exercised the option, bringing its total NSR royalty on the Project to 2.25%. On September 5, 2018, OGR announced the purchase of an additional 1.75% NSR royalty on the Project for a cash consideration of $20 million, with an option for OGR to purchase an additional 1.0% NSR royalty for $13 million. OGR announced it would exercise the option on October 5, 2020, bringing its NSR for the Project to 5.0%. OGR's 5.0% NSR royalty is the only royalty that applies to the Mineral Resources area of the Project.

19.4 Contracts

19.4.1 Gold and Silver Doré

Although, in the past, ODV's Barkerville Gold Mines was working with an American refiner, there are no refining agreements, sales contracts or other contracts currently in place that are relevant to this Technical Report. The doré produced by the Project will be shipped to a precious metals refinery for recovery of the gold into high purity bars meeting the minimum London Bullion Market Association ("LBMA") delivery standards.

19.4.2 Other Contracts

As of the effective date of this Report, ODV has signed agreements and awarded several equipment and service contracts as part of its operation of the Bonanza Ledge Mine and the Quesnel River Mill, as well as for pre-construction activities for the Cariboo Gold Project. The significant contracts and agreements are summarized in Table 19-2.

Table 19-2: Significant project contracts and agreements

Contract/Agreement	Supplier
Camp catering and janitorial services	Evolution Camp Services Inc.
Personnel ground transportation	Diversified Transportation Ltd
Valuables transport	Brink's Canada Limited
Roadheader capital lease	Sandvik Financial Services Canada

20. Environmental Studies, Permitting, and Social or Community Impact

This section summarizes the environmental studies conducted and the environmental management and monitoring efforts that may be required throughout the life of mine, as well as regulatory requirements and status presented in this study.

20.1. Environmental Studies

20.1.1. Introduction

The Cariboo Gold Project ("the Project") area is composed of a Transmission Line ("TL") and three main locations: the Mine Site Complex, the Quesnel River Mill ("QR Mill"), and the Bonanza Ledge Site. The Mine Site Complex and east portion of the transmission line route are located within the Columbia Highlands Ecoregion and Bowron Valley Ecosection. The QR Mill and the west portion of the transmission line route are located within the Fraser Plateau Ecoregion and Quesnel Lowlands Ecosection. The majority of the Project infrastructure at the Mine Site, including the Mine Site Complex (MSC"), Bonanza Ledge Waste Rock Storage Facility ("WRSF"), and at the QR Mill will be located on brownfield sites and lands previously disturbed by historical mining and recent mining at the Bonanza Ledge Mine (Morgan et al., 2019).

The development of a mining project in British Columbia requires various regulatory approvals. Project permitting is generally split into two phases, the Environmental Assessment ("EA") phase followed by the permitting phase.

Osisko Development Corp. ("ODV") has ensured that the EA has been supported by studies for the technical, environmental, and socio-economic components of the Project. Since 2016, through ongoing consultation and engagement, ODV has informed Indigenous nations, provincial government representatives and agencies, local and regional government representatives, community and economic organizations, adjacent permit/authorization holders, non-government organizations, local and regional businesses, and residents about the Project, and has considered their feedback throughout Project planning.

The following sections describe the environmental effects that the Project is expected to have on the area and the mitigation measures proposed to control those impacts.

20.1.2. Climate

The Cariboo Region experiences a dry continental climate due to the coastal mountains influencing the westerly flow of winds and moisture coming from the Pacific Ocean. The climate at the sites is characterized by relatively cold winters and mild summers. The annual precipitation is moderate and there is comparatively little variation over the year in monthly precipitation.

Historical trend analysis and climate change predictions were used to evaluate the likelihood of the historical measurements to represent future climate conditions. Climate existing condition studies for the Project were conducted by Golder. Table 20-1consolidates the main climate statistics obtained from the Mine Site and QR Mill existing conditions report (Golder, 2022a; Golder, 2022b).

Table 20-1: Summary of climate statistics

Variable	Mine Site (Golder, 2022a)	QR Mill (Golder, 2022b)
Mean annual total precipitation (mm)	1,034	671
Mean annual rainfall (mm)[1]	530	-
Mean annual snowfall (mm)[1]	504	-
Mean annual temperature for the LSA and RSA (°C)	1.7 (1,460 m mean elevation)	3.2 (949 m mean altitude)
Mean annual temperature lapse rate (°C change per 100 m altitude increase)	-0.38	-0.37
Average winter season (sub-zero mean monthly temperatures)	November to March	November to March
Mean annual relative humidity (%)	72	68.3
Mean annual solar radiation (W/m^2)	130	136
Mean annual shallow lake evaporation for the LSA and RSA[2] (mm)	630	676
Mean annual potential evapotranspiration for the LSA and RSA[2] (mm)	737	862
Difference in mean annual shallow evaporation and potential evapotranspiration between the LSA and RSA (%)[1]	2% to 3%	-
Mean snow depth for the month of March (cm)	96	63
Mean snow density for the month of March (g/cm^3)	0.29	0.30

Note: Statistics are based on reviewed historical records from multiple climate stations, and measured and derived data (where applicable).

[1] = data point only for the Mine Site.

[2] = data point only for the RSA of QR Mill.

To predict future regional climate changes, climate projection information obtained from ClimateData.ca was evaluated. Due to the lack of available historical data from the MSC and the QR Mill, data from Wells, BC and Quesnel Forks, BC were considered. In addition, research on climate change undertaken as part of the Wells-Barkerville Community Forest Mapping Project notes that climate projections will be warmer and wetter in the Wells area over the next 100 years (Morgan and Wright, 2020), with mean annual temperatures rising by five degrees from historical averages and the precipitation increasing by approximately 113 mm; however, the summers are expected to be dryer. The dryer summer will likely result in an increase in the number and severity of wildfires over the next several decades. The increased temperatures will likely decrease the length of time that ice and snow cover will occur during the winter months.

The climate resilience of the Project has been addressed by developing detailed, site-specific climate change projections for the Project (Golder, 2022h), given that some of the infrastructure may remain active for several decades through post-closure (Golder, 2022j). At this stage of the Project, the potential climate change impact on the design event for the Mine Site water conveyance structures was assessed by developing a series of site-specific deterministic climate projection timeseries for the Project (Golder, 2022i). A total of 72 climate scenarios resulting from different climate models and carbon emission profiles were generated for use at the feasibility and permitting stage. Further details on how the climate change projections have been used for the Project can be found in section 18.5.1.4.

20.1.3. Air Quality

Golder completed ambient air quality modelling for the Project and used Quesnel, British Columbia, as a conservative baseline. The primary Project effect on Air Quality is the potential for an increase in ambient Criteria Air Contaminants ("CACs") due to Project sources and activities, most notably nitrogen dioxide ("NO_2") and particulate matter.

To mitigate expected effects, a Waste (Refuse and Emissions) Management Plan, which includes a Fugitive Dust Control Plan will be implemented prior to the start of construction to ensure that measures are in place to minimize air contaminant emissions. ODV will consider approaches for reducing emissions of air contaminants, with a focus on dust emissions from surface activities at the Mine Site as well as road dust and fugitive dust mitigation and its impacts on air quality. Implementation of permanent air quality monitoring stations near the Mine Site or in the District of Wells are anticipated to be required as a means to provide feedback on the efficacy of air quality and dust control measures (WSP, 2021).

20.1.4. Land Capability and Use

The Project does not overlap any protected areas or parks.

The Project overlaps a few mineral occurrences ("MINFILE") with overlapping mining and exploration interests including tenure holders of mineral claims, client holdings, placer claims, and placer leases. ODV owns all 16 mineral claims within the Mine Site area as well as 17 of the 31 placer claims and nine of the ten placer leases.

The Project site also overlaps forestry and timber resources interests, including old-growth management areas, Tree Farm Licenses, and different tenures (active, pending, and retired) such as Occupant Licenses to Cut, and numerous forest sector resources roads.

Recreation and tourism are important activities for the area from both a recreational and economic perspective. In the winter, local residents enjoy snowmobiling, snowshoeing, cross-country skiing, back country skiing, and dog sledding opportunities. In summer, ATV use, mountain biking, hiking, canoeing, fishing, gold panning, wildlife viewing, and bird-watching are popular activities. Wells, Barkerville, and the neighbouring Bowron Lakes are popular tourist destinations. The Wells and Area Visitor Centre, located on Jack of Clubs Lake, provides tourists information about the area and rents pedal boats to go out on the lake.

Hunting, trapping, and fishing is another land use in the Project area and is reflected in five guide outfitter certificate areas that overlap with one or more Project Study Areas. A total of 15 traplines are overlapped by the Mine Site, Transmission Line, Transportation Route, and QR Mill local study areas ("LSA"), with an additional four traplines only overlapping the regional study area ("RSA"). Resident and non-resident anglers are provided with the opportunity to go fishing where and when they desire as long as they follow current fishing regulations. Regulations for Region 5 – Cariboo indicate that Lake trout over 45 cm in Jack of Clubs Lake may contain elevated mercury levels, and consumption should be limited (Government of BC, 2021).

The regional study area ("RSA") of the Project overlaps:

- Agricultural Land Reserves ("ALR") (two on the transportation route);
- Several agricultural crown tenures; and
- Eight range tenures.

The MSC's LSA and QR Mill LSA do not overlap any ALR. The Mine Site LSA, QR Mill LSA, and Transmission Line LSA do not overlap any range tenures.

Both the RSA and LSA display parcels with different owner types, tenures, and licenses (private and Crown).

20.1.5. Terrain and Soils

Soil characterization of existing conditions for the Project was conducted by Golder (ODV, 2021a), including field studies between 2016 and 2020, where information was collected from 740 sites regarding location, site characterization, and bioterrain information within the LSA. Of these sites, 490 included, at a minimum, a soil subgroup assignment. In addition, data from 17 points completed by GeoWest (2000) in 1996 was used to support bioterrain mapping (ODV, 2021a).

The majority of Project infrastructure will be located on brownfield sites that have been previously disturbed by historical mining operations that were not reclaimed after the closure of the mines. The Project is committed to minimization of surface disturbance and utilization of existing disturbed areas. ODV's Soil Management Plan, the Reclamation and Closure Plan ("RCP"), and industry standard Best Management Practices ("BMPs") for soil management will be implemented prior to the start of construction and throughout the Operation Phase of the Project to ensure that measures are in place to minimize loss and alteration of soil quantity and quality.

Efforts to conserve soil quality during stripping, transport, storage, and redistribution over reclaimed areas are discussed in a Soil Management Plan and the RCP and specify the volumes and types of salvaged soil and describe recommended procedures to decommission, reclaim, and remediate mine components during the Closure Phase.

A Mine Emergency Response Plan, Chemical and Materials Storage, Transfer and Handling Plan, and Fuel Management and Spill Control Plan will provide the management of hazardous materials and regulate prevention and response actions in the event of a release. Prevention of soil contamination by effective and sustainable management of waste generated by Project employees will be described in a Waste (Refuse and Emission) Management Plan.

20.1.6. Vegetation

The Project spans two biogeoclimactic zones:

- Sub-Boreal Spruce ("SBS"): occurs throughout the QR Mill site, lower elevations at the Mine Site Complex, and large portions of the transmission line route;
- Engelmann Spruce-Subalpine Fir ("ESSF"): occurs the higher elevations along the Transmission Line route, and at the Mine Site.

Due to historical anthropogenic use, much of the Mine Site Complex, Bonanza Ledge Site, and QR Mill are not vegetated and consist of anthropogenic infrastructure such as road surfaces, mine spoils, and historic mines (Morgan et al., 2019).

Golder Associates Ltd. ("Golder") investigated vegetation existing conditions. During 2016, 2018, 2019, and 2020 (Golder, 2021c) conducted ecosystem-based subcomponent-field studies including Terrestrial Ecosystem Mapping, identification of listed species, traditional use plants, invasive and non-native plant species, and forage species for wildlife. The more recent studies carried out by Golder do not affect the existing conditions described in this section.

20.1.7. Wildlife and Wildlife Habitat

Wildlife field surveys for the Project were initiated in the summer of 2016 by Golder and as of the effective date of this Report, are still ongoing as described for the MSC, QR Mill, and the Transmission Line. The Project area provides suitable habitat for several reptiles, birds, mammals, and invertebrate species, including federally and/or provincially listed species.

Waterbodies throughout the Project area provide suitable amphibian breeding habitat including Columbia spotted frog (*Rana luteiventris*), wood frog (*Lithobates sylvaticus*), western toad, and long-toed salamander (*Ambystoma macrodactylum*), while upland forested areas provide habitat for terrestrial amphibians.

Birds, such as passerines, raptors, and waterfowl, may utilize a variety of habitat types throughout the Project area, including forested habitat, riparian areas, clear-cuts, wetlands, and open waterbodies.

Shrub, forest, and wetland habitat provide suitable habitat for small mammals, ungulates, and small to large carnivores. Open waterbodies, wetlands, and rights-of-way throughout the Project area provide suitable foraging habitat for bats, while abandoned mine shafts and adits provide potential bat winter hibernacula. Suitable invertebrate habitat occurs throughout the Project area and includes wetlands, riparian areas, watercourses, forested habitat, and clear-cuts (Morgan et al., 2019).

In January 2022, the existing conditions report was updated (Golder, 2022k), to respond to comments on the Draft Environmental Assessment Application by the Technical Advisory Committee ("TAC") and Participating Indigenous nations to include the following:

- Boundaries of Barkerville caribou herd;
- Update to fisher – Columbia population provincial status;
- Inclusion of Habitat Stand structure Classification values for mule deer ungulate winter ranges ("UWR") in the Terrestrial RSA; and
- Updates to Barkerville herd status from stable to declining.

The Project has committed to mitigation measures to reduce the impacts to wildlife. New disturbances will be limited through the use of existing roads and brownfield sites. Project infrastructure will be designed to reduce the potential wildlife impacts, such as prevention measures to limit bat access to underground mine portals and reducing light pollution. A Wildlife Management Plan will be implemented with the aim to reduce impacts to wildlife and wildlife habitat during operations.

20.1.8. Fisheries and Aquatic Resources

Most recent fish and fish habitat surveys conducted between 2020 and 2021 by Golder include habitat reconnaissance for the TL, fish sampling and hydroacoustic survey on Jack of Clubs Lake ("JOC"), and review of Resources Information Standards Committee ("RISC") for TL and JOC, and a fish community survey in JOC (WSP, 2022).

Fish populations and fish habitat are found throughout the Project area near both the Mine Site Complex and QR Mill, with fish distribution typically limited by gradient, barriers and obstructions, flows, and habitat quality. The Mine Site Complex and Bonanza Ledge Site are located within the Willow River watershed and contain several tributaries, including Slough Creek, Mosquito Creek, Lowhee Creek, Williams Creek, and Jack of Clubs Creek. Twelve fish species have been recorded in watercourses within the Willow River watershed, including Bull Trout, which is a provincially blue-listed species (FIDQ, 2020; BC CDC, 2011).

The QR Mill is located within the Quesnel River watershed. Assessed watercourses in the vicinity of the QR Mill where fish are present are limited to Rudy Creek and Maud Creek, which flow into the nearby Quesnel River. Rainbow Trout, Northern Pikeminnow, Redside Shiner, and Longnose Sucker have been recorded in Maud Creek. Chinook salmon have been recorded in its lower reaches, near the confluence with the Quesnel River (FIDQ, 2020). Rainbow Trout, Lake Chub, and Sucker (General) have historically been identified in Rudy Creek (FIDQ, 2020). Quesnel River Chinook salmon were assessed as Endangered by the Committee on the Status of Endangered Wildlife in Canada. Twenty-two fish species are recorded in the Quesnel River watershed (FIDQ, 2020), with salmon species including Chinook, Coho, Sockeye, and Pink Salmon, although a canyon with a large cascade just outside the City of Quesnel was identified as a velocity barrier to Pink Salmon (FIDQ, 2020) (Morgan et al., 2019).

Implementation of BMPs and management plans during construction and operations are expected to be effective at avoiding instream and riparian habitat at the Mine Site. Therefore, effects on fish and fish habitat are not expected.

The Willow River watercourse crossing that will be constructed for the new Mine Site Road will be a clearspan bridge, which has no infrastructure in the watercourse, and has been designed to avoid impacts to instream fish habitat.

The proposed diffuser pipeline and installation of the Jack of Clubs Lake diffuser and the Willow River contingency diffuser will follow standard mitigation measures and best management practices. The diffuser pipeline and diffuser have been designed to avoid sensitive fish and fish habitat along the shoreline and within the lake, as well as littoral areas and river habitat that support spawning or rearing fish.

20.2. Environmental Liabilities

The Project has been designed to minimize short- and long-term environmental impacts, and to maximize lasting benefits to local communities, employees, and shareholders. ODV's goal is to create a sustainable operation that employs best available technology and practices in all aspects of the design and operation and considers both the short- and longer-term effect on the environment.

The government of BC will require that a security bond be provided to address expected environmental liabilities for the Project, which has been estimated at $17,341,000. This estimate does not include the current QR Mill and Bonanza Ledge Mine, which are currently approved under separate Mines Act permits, M-198 and M-238 respectively. Separate, detailed reclamation and closure plans and bonding estimates are maintained for those sites.

ODV is not aware of any significant factors and risks that may affect access, title, or the right or ability to perform the proposed work program on the Project Study Area.

20.3. Environmental Management and Monitoring

ODV has established environmental monitoring plans for a suite of valued components to respond to regulatory requirements and best management practices for the Project. The following subsections present management and monitoring activities connected to some of the key aspects of the Project such as waste rock, tailings, water, and other wastes.

20.3.1. Ore Sorter Waste and Waste Rock Geochemistry

The ore sorter waste and waste rock geochemical characterization program included static testing of 228 waste rock samples and 17 samples of ore sorter waste, and kinetic testing of a subset of six waste rock samples (complete) and four samples of ore sorter waste (ongoing). The geochemical testing program is discussed in detail in the Geochemical Existing Conditions Report (Golder, 2022f).

The objective of the geochemical characterization program is to quantify the acid rock drainage ("ARD") and metal leaching ("ML") potential of each material type. The acid generation potential of waste rock and ore sorter waste was quantified using the results of acid-base accounting ("ABA") and net acid generation ("NAG") testing, followed by kinetic tests (i.e., humidity cell tests ["HCT"]) on select samples. The results of ABA and NAG testing were used to quantify the proportion of potentially acid generating ("PAG") and non-potentially acid generating ("NPAG") samples, whereas HCT results were used to determine the rate of acid generation and ML in samples with specific geochemical characteristics. The overall ML potential of a sample was determined using the results of mineralogical analysis, bulk metal analysis and short-term leach tests (including shake flask extraction ["SFE"] and NAG leachate analysis). The rate of ML was then determined using kinetic test results from select samples.

The results of the geochemical tests outlined above were used to interpret ARD / ML potential by material type:

- Waste Rock:

  According to the results of ABA, 5% of the waste rock samples are classified as PAG. Overall, the waste rock is anticipated to be NPAG; although some lithologies have some minor potential to generate acidic conditions, there is sufficient neutralization potential within the bulk waste rock material. Results from the HCTs generally support the ARD classifications based on the static ABA data for the waste rock samples.

  The calcareous sandstone and sandstone samples contain the greatest ML potential among the waste rock types.

- Ore Sorter Waste:

  According to the results of ABA, 18% of the ore sorter waste samples were classified as PAG, 12% were classified as uncertain, and 71% were classified as NPAG. The kinetic test results for the ore sorter waste samples suggested a potential for acid generation from samples classified as NPAG based on the static testing, although the rate of neutralization depletion in the HCTs is likely being overestimated. Additional mineralogical analysis and continued HCT data collection may provide further understanding of the ARD potential of this material.

  Waste rock and ore sorter waste tested contain elevated solid-phase and leachable arsenic concentrations, and this element is anticipated to be a constituent of primary concern ("COPC") in leachate or seepage with neutral pH conditions. As for arsenic, leaching of aluminum, cobalt, copper, iron, lead, nickel, and zinc is pH dependent, and leaching of these constituents is expected to increase under acidic pH conditions. Results from the kinetic testing support that long-term ML of most constituents of concern under neutral pH conditions will be relatively low, except for arsenic. Metal leaching will continue to be evaluated within the water quality model.

20.3.2. Ore Material Management Strategy

In Phase 1, ore will be transported by trucks from the underground to the Bonanza Ledge ore sorter to be pre-concentrated before being shipped to the QR Mill for processing. The waste rejected from the ore sorter will be stored at the Bonanza Ledge waste stockpile.

In Phase 2, the ore sorter will be relocated close to the mill at the QR Mill. The waste material rejected from the ore sorter will be sent underground via a raise. Thereafter, the waste material will be transported by trucks from the underground to the Bonanza Ledge Waste Rock Storage Facility (WRSF).

The pre-concentrated ore will be sent and treated at the QR Mill.

20.3.3. Waste Rock Management Strategy

The waste rock will be transported and permanently stored at the Bonanza Ledge Waste Rock Storage Facility ("WRSF") or used for either underground construction or backfill material. Further milling, gold recovery, and tailings management will be undertaken at the QR Mill.

The following three streams of waste will be generated at the MSC:

- Mine development waste rock, to be used as construction fill material backfill during the construction and operations phases or stored in the WRSF at Bonanza Ledge;
- Ore sorter waste generated during operations; and,
- Flotation tailings produced at the Mine Site Complex through operations.

Based on the planned mining methods, significant portions of the mine waste streams will be used for underground backfilling materials throughout the operations of the Project. The use of flotation tailings for underground paste backfill, along with the use of other mine development waste rock materials for cemented rockfill ("CRF") and un-cemented rockfill ("URF"), will reduce the required footprint for the Project's surface mine waste storage requirements.

The Bonanza Ledge Site will have an approximate capacity of 9.5 Mt. The Bonanza Ledge Site will include non-contact water diversion structures, a liner beneath the facilities, and collection of contact water in sedimentation ponds (new Mine Sediment Pond at the MSC and an existing sediment pond and a future seepage pond at Bonanza Ledge prior to treatment and discharge (ODV, 2021b). The Bonanza Ledge Site is described thoroughly in Chapter 18.

20.3.4. Tailings Geochemistry

Two tailings streams will be generated from the Project:

1. Flotation tails from the milling in the Mine Site Concentrator Building, which will be returned underground as paste backfill; and
2. Process tailings from the QR Mill which will be stored at surface in the Filtered Stack Tailings Storage Facility ("FSTSF"). Tailings samples were submitted for ABA and NAG testing to confirm acid generation potential, and HCT to determine the rate of acid generation. Metal leaching potential was confirmed using the results of mineralogical analysis, bulk metal analysis, short term leach testing, and HCT.

The geochemical characteristics of the tailings are as follows:

- Flotation Tailings:

  Flotation tailings from the milling in the Mine Site Concentrator Building have a low potential for acid generation, due to a low sulphur content.

  These materials have a lower metal leaching potential than QR Mill tailings.

  Geochemical testing of cemented paste backfill, which will be created using the flotation tailings, is underway to confirm the long-term acid generation and metal leaching potential of cemented tailings (if any).

- QR Mill tailings:

  The QR Mill tailings samples have a high potential for acid generation.

  The greater potential for acid generation in these samples also corresponds to a greater potential for metal leaching from pH sensitive constituents such as aluminum, copper, cobalt, iron, lead, nickel, and zinc.

- Column test results suggest that initial leachate may be acidic, with elevated metals due to stored acidity within the tailings. In addition, the neutralization potential within the QR Mill tailings will be depleted within a few years once sulphide oxidation begins. The QR Mill tailings are considered likely to become PAG in the long-term (less than 50 years) (Golder, 2022b).

20.3.5. Tailings Management Strategy

20.3.5.1. QR Mill (Filtered Stack)

ODV completed an alternatives assessment to select the best way to manage the Project tailings at the QR Mill. For the alternatives assessment, "best" is defined as the feasible combination of technology, location, facility configuration, and operational practices that minimize the combined environmental, technical, social, and economic risks over the Project's life cycle. Potential tailings dewatering technologies, facility configurations, and facility locations were assessed as part of the pre-screening process. Three short-listed alternatives were developed to a conceptual level and evaluated against each other in a Multiple Accounts Analysis ("MAA"). The MAA identified Alternative C: Constructing a filtered stack tailings storage facility ("FSTSF") on the existing tailings storage facility ("TSF") as the preferred alternative for managing the Project tailings at the QR Mill (KCB, 2021).

Refer to Chapter 18 for the FSTSF design summary.

20.3.5.2. Mine Site Complex (Paste Backfill)

For the Mine Site Complex ("MSC"), the flotation tailings will be disposed of underground. As there is no tailings storage facility in Wells, the tailings will be used to make a paste slurry mixed with cement that will be sent underground to use as backfill in historical and new workings areas to allow safe production and operation. This process will minimise environmental impacts on surface, and will increase efficiency in underground stopes backfilling.

Refer to Chapter 13 for the Paste Backfill Plant details and Chapter 16 for the Underground Paste Network distribution and design.

20.3.6. Water Management

20.3.6.1. Water Management at Mine Site

The overall water management strategy for the Project, comprised of the MSC and the Bonanza Ledge Site, is to maximize diversion of non-contact water to the environment, while limiting the amount of contact water requiring collection, management, and treatment. The surface water management approach for the Project includes two elements:

- Water Management Plan ("WMP"): focuses on the assessment and design of the surface water management infrastructure at the MSC and Bonanza Ledge Site.

- Water Balance Modelling ("WBM"): quantifies flow rates between different Project components and estimates, in particular volumes of water requiring treatment prior to discharge to the environment.

The Mine Site WMP/WBM will integrate both the MSC and the Bonanza Ledge site, as displayed in the WBM flow diagram of Figure 20-1 and detailed in Golder (2022n).

20.3.6.2. Water Management Plan

The Water Management Plan ("WMP") for the Mine Site will consider best practices for water management, as well as erosion and sediment control, that will be put in place to manage runoff water from the Project infrastructure (see Chapter 18 for more details on the overall Project infrastructure). Water management infrastructure will be constructed to manage contact and non-contact runoff on and around the proposed main mining infrastructure surface areas, which include:

- **The Mine Site Complex main area**, which comprises the Concentrator Building, the Mine Site Complex Sediment Pond ("MSCSP"), the Water Treatment Plant ("WTP") area, the Main Access Road serviced by the northern access road contact water ditches, and the Valley Portal. This infrastructure will be developed on top of tailings and waste rock that were deposited in the Jack of Clubs Lake during historic mining operations. Most of the runoff from this area currently flows towards the Jack of Clubs Lake, except for the north-western area (where a segment of the access road is planned), that sees runoff flow towards the Willow River. A low permeability liner under the MSCSP will limit infiltration to ground while contact water runoff will be collected in lined contact water ditches. The majority of the contact water runoff will drain to the MSCSP, while contact water collected along the Main Access Road will drain into a collection sump for sediment settlement and monitoring. Water collected in the collection sump will be released into the Willow River if the water quality is appropriate or it will be pumped to the MSCSP and be treated prior to discharge. The MSC will be designed such that existing patterns of seepage for the historical mine tailings and waste rock will continue with minimal interaction with the proposed mine infrastructure. Starting in Phase 2 of operations, underground water will be pumped to dewater existing workings from previous mining operations, and to lower the groundwater level to an elevation suitable for starting mining activities. There is a provision to reuse water from the underground for the concentrator process needs. This will generate an excess of water (concentrator bleed) once the paste backfill plant becomes available. This excess water will be pumped to the water treatment plant before discharging to the environment. At the time of the WBM study, the concentrator bleed flow rate was undefined, therefore, it has not been included in the WBM and it is not included in the values presented in Table 20-1.

- **The Bonanza Ledge site area**, which includes the WRSF with inner access road and rerouting of the existing C Road, the existing Bonanza Ledge Sediment Pond with its retention dike, a new south contact water retention basin (i.e., the Bonanza Ledge South Sump, the Bonanza Ledge Water Treatment Plant ["WTP"], and the Bonanza Ledge Flood Management Reservoir ["FMR"], composed of underground galleries). Surface water from disturbed areas (i.e., around the Bonanza Ledge WRSF footprint) will be collected through a network of collection ditches and directed either to the Bonanza Ledge Sediment Pond or, later, to the Bonanza Ledge South Sump. Both basins will include operational outflow systems comprised of a primary pumping system and associated pipeline running to the Bonanza Ledge WTP, and a secondary emergency pumping line to the Bonanza Ledge FMR. The latter will serve to store temporarily contact water when the Bonanza Ledge WTP treatment rate is insufficient to treat the total contact water inflow on site and when the water level in the ponds reach a predefined trigger level. The majority of the existing Bonanza Ledge Mine property to the south of the proposed new Bonanza Ledge WRSF is assumed to be reclaimed while the new Bonanza Ledge WRSF is being developed and prepared. At the beginning of waste rock deposition in the new Bonanza Ledge WRSF, runoff from the southern portion of the existing site is assumed to be clean and diverted away into the Stouts Gulch watershed. Contact water resulting from runoff over the developed Bonanza Ledge Site (including the early Bonanza Ledge WRSF pile) will be collected in the existing Bonanza Ledge Sediment Pond and treated at the upgraded Bonanza Ledge WTP, prior to discharge to Lowhee Creek. This situation will continue in Phase 2 of operations, at which point the Bonanza Ledge South Sump will have been constructed and become operational. Contact water collected at the Bonanza Ledge South Sump will be conveyed via pumping to the Bonanza Ledge WTP, or to the Bonanza Ledge FMR in emergency situations, like the arrangement found at the Bonanza Ledge Sediment Pond.

20.3.6.3. Water Balance

The flow diagram for the integrated Mine Site water balance model is presented on Figure 20-1 for the Project operations phases (i.e., Phase 1 of operations only includes water management at the Bonanza Ledge Site, while Phase 2 includes both main Mine Site areas).

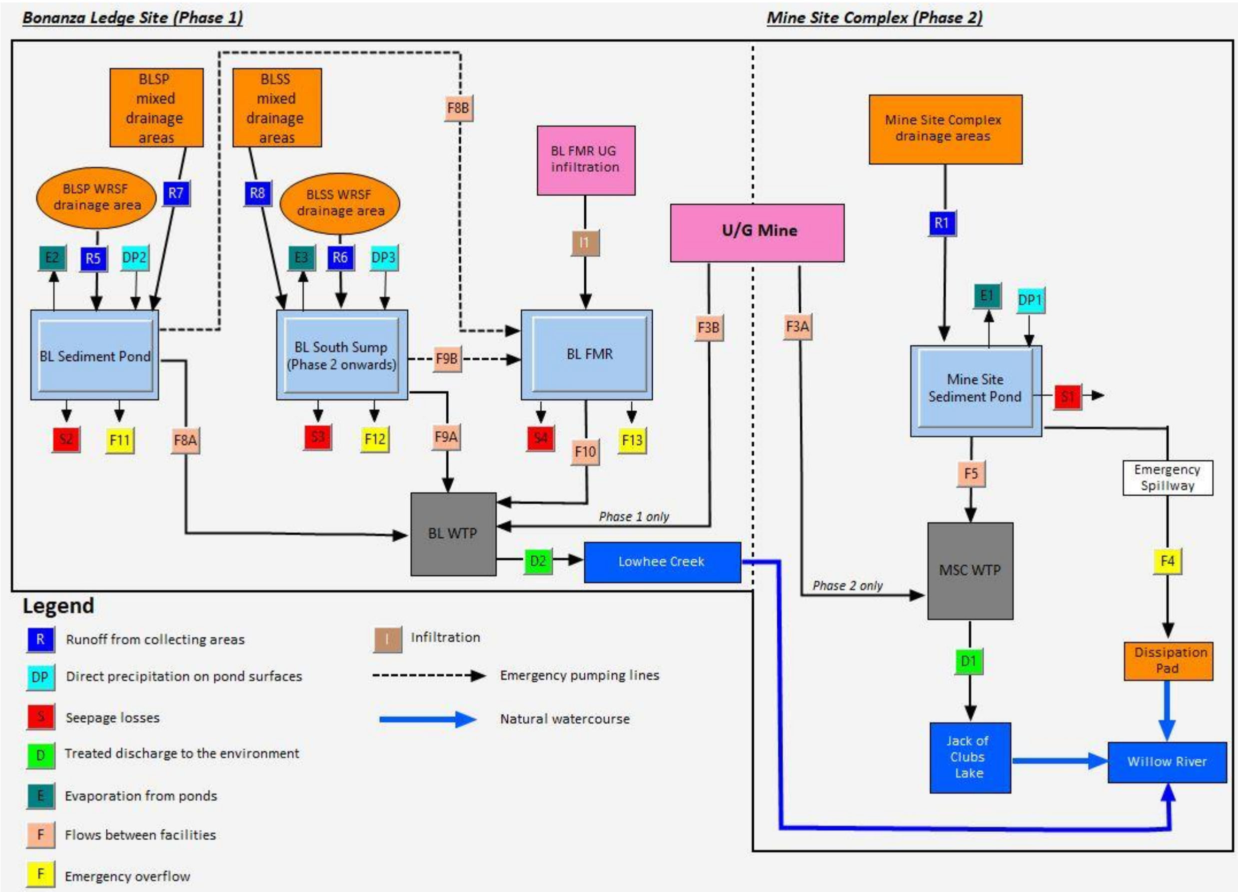


Figure 20-1: Flow diagram during Mine Site Complex operations

Average monthly water balance results for the Phase 1 and Phase 2 operations periods for the average climate year and the selected projected climate scenario (surplus-10 year; see section 18.5.1.4 for details) during operational year conditions (Figure 20-1) are provided in Table 20-1 for the base case underground dewatering scenarios (see Section 16.4 for information on the dewatering rates). It is important to note that the concentrator bleed is not included in the results presented in Table 20-1 below.

Table 20-1: Mine Site water balance results: Operations Phase 1 and Phase 2 average flows for the average and the selected future climate year scenarios

Month	Average Total Surface Inflow to MSC WTP				D1: Avg Discharge from MSC WTP‡				Average Total Surface Inflow to Bonanza Ledge WTP				D2: Avg Discharge from Bonanza Ledge WTP‡			
	Average Climate Year(1)		Selected Future Climate Year(2)		Average Climate Year(1)		Selected Future Climate Year(2)		Average Climate Year(1)		Selected Future Climate Year(2)		Average Climate Year(1)		Selected Future Climate Year(2)	
	Phase 1 (m^3/h)	Phase 2 (m^3/h)	Phase 1 (m^3/h)	Phase 2 m^3/h)	Phase 1 (m^3/h)	Phase 2 (m^3/h)	Phase 1 (m^3/h)	Phase 2 (m^3/h)	Phase 1 (m^3/h)	Phase 2 (m^3/h)	Phase 1 (m^3/h)	Phase 2 (m^3/h)	Phase 1(3) (m^3/h)	Phase 2(3) (m^3/h)	Phase 1(3) (m^3/h)	Phase 2(3) (m^3/h)
January	-	0.0	-	1.0	-	241.7	-	242.7	15.5	16.0	20.9	18.6	41.8	16.0	47.2	18.6
February	-	0.0	-	1.2	-	241.7	-	242.9	17.0	14.6	21.2	17.7	43.2	14.6	47.4	17.7
March	-	2.2	-	4.3	-	243.8	-	246.0	19.9	20.1	21.3	24.0	46.2	20.1	47.6	24.0
April	-	12.5	-	13.4	-	254.2	-	255.1	44.1	38.3	43.6	40.6	70.4	38.3	69.9	40.6
May	-	32.5	-	31.8	-	274.2	-	273.5	79.8	87.3	85.6	85.3	106.1	87.3	111.9	85.3
June	-	10.6	-	11.5	-	252.3	-	253.2	42.1	45.3	39.8	45.4	68.4	45.3	66.1	45.4
July	-	5.8	-	9.5	-	247.5	-	251.1	29.3	32.8	31.6	39.6	48.3	32.8	50.6	39.6
August	-	6.9	-	5.6	-	248.6	-	247.3	30.4	26.6	31.7	29.1	49.4	26.6	50.7	29.1
September	-	9.1	-	8.8	-	250.8	-	250.5	38.2	41.2	41.1	32.9	57.2	41.2	60.1	32.9
October	-	8.0	-	9.9	-	249.7	-	251.6	30.1	31.4	29.3	35.7	49.1	31.4	48.3	35.7
November	-	9.5	-	6.7	-	251.2	-	248.3	36.7	35.8	22.3	33.0	55.7	35.8	41.3	33.0
December	-	0.0	-	1.3	-	241.7	-	243.0	16.2	18.7	17.6	20.3	35.2	18.7	36.6	20.3
Annual Total (m^3)	**-**	**71,300**	**-**	**77,100**	**-**	**2,190,000**	**-**	**2,196,000**	**292,000**	**299,000**	**297,000**	**309,000**	**490,000**	**299,000**	**495,000**	**309,000**

Notes:

(1) The representative average year selected from the historical dataset was the October 1999 to September 2000 hydrologic year with an annual precipitation of 1,043 mm.

(2) The Selected Future Climate Year represents a climate change-influenced deterministic weather projection, which varies yearly during the Project.

(3) Average total discharge rate for Bonanza Ledge during Phase 1 is greater than Phase 2 due to the treated dewatering rates from the Cow portal.

20.3.6.4. Water Quality

The Mine Site water quality model ("WQM") was based on the Mine Site water balance model (WBM); the conceptual approach is described in Golder (2022g) and includes the Mine Site Complex, the Bonanza Ledge Site, and the underground mine workings.

Water quality model inputs were developed to represent the geochemical reactivity of materials defined in the overall water quality conceptual model. The datasets that were used to develop inputs to the WQM included:

- Mine site water quality monitoring data from the Bonanza Ledge Mine, including the Bonanza Ledge Sediment Pond and EG-0.25;
- Humidity cell test results for waste rock and/or ore sorter waste present at surface and/or as wall rock;
- Humidity cell test results for cemented backfill from the Bonanza Ledge WQM (Mavin Terra Solutions, 2020) to represent underground backfill materials;
- Nitrogen loadings estimated using nominal blasting and wastage rates to predict nitrate and total ammonia concentrations in mine water from the underground workings.

To bracket the range of uncertainty associated with the source terms and water quality predictions, the following was conducted:

- Eight scenarios were developed for the Mine Site Complex and the Bonanza Ledge Site: four precipitation scenarios (average, wet, dry, and surplus-10th percentile) and two water quality scenarios (base-case [median] and upper-case [95th percentile]);
- Four scenarios were developed for the underground workings: two groundwater inflow scenarios (base-case and upper-case) and two water quality scenarios (base-case [median] and upper-case [95th percentile]).

The predicted concentrations in the Bonanza Ledge Sediment Pond, South Sump, Flood Management Reservoir, and underground workings (from Phase 1) were compared to existing Bonanza Ledge Permit Limits (*EMA* Permit PE-17876). Predicted concentrations in the Mine Site Complex Sediment Pond and underground workings (from Phase 2) were compared to propose effluent limits for the Mine Site Complex Water Treatment Plant. In general, concentrations of chloride, sulphate, nitrate, total ammonia, and several metals were predicted to be higher than the effluent limits. The predicted water qualities were used in the design of the Bonanza Ledge and MSC Water Treatment System.

20.3.6.5. Water Management at the QR Mill Site

The general surface water management strategy at the QR Mill is as follows:

- Diverting non-contact water away from impoundments to minimize surplus water stored on site;
- Collecting disturbance-influenced contact water and implementing Surface Erosion and Sediment Control ("SESC") measures;
- Collecting and routing mine-influenced contact water that meets the permit criteria for discharge towards authorized discharge locations;
- Collecting and routing mine-influenced contact water that does not meet the permit criteria for discharge, to authorized storage locations prior to treatment and discharge towards authorized discharge locations.

The East and West TSF diversion channels will continue to divert non-contact runoff away from the FSTSF.

Runoff from the temporarily lined FSTSF surfaces will flow in lined ditches to the FSTSF Ephemeral Pond. Excess water from the FSTSF Ephemeral Pond will be pumped to a lime dosing station and then pumped to the Main Zone Pit ("MZP"). The non-contact water from the lined outer slopes of the closure cover on the FSTSF will be routed into the new Sediment Pond located east of the South Seepage Collection Pond ("SSCP"). The Sediment Pond will discharge into MZP Diversion and then into Creek No. 3 (via Weir 8), provided its water quality meets the permit criteria for discharge.

The SSCP will be enlarged to provide flood storage, for use as part of the mill circuit, and to collect FSTSF seepage that leaks through the Cross Dyke. A small amount of freshwater will be drawn from the Northwest Zone Pit ("NWP") for mill operations. Surplus water from the reclaim water tank / SSCP will be pumped and treated prior to discharge to the MZP.

The North Seepage Collection Pond ("NSCP") will collect FSTSF seepage, and this water will be pumped to the MZP. There will be groundwater interception wells downstream of the FSTSF and NSCP toe to intercept FSTSF seepage that bypasses the NSCP. This intercepted water will also be pumped back to the MZP.

The MZP will collect surface runoff from the QR Mill, camp, ore storage area, and loading areas, and collect excess water from the FSTSF, NSCP, groundwater interception wells, and SSCP. The MZP pond will be maintained near its Minimum Normal Operating Water Level ("Minimum NOWL") to maximize its flood storage capacity. The Minimum NOWL is 0.5 m above the top of the tailings in the MZP to provide a water cover for the tailings. The MZP spillway invert will be raised by 1 m to increase the flood storage capacity in the MZP. Excess MZP water will be pumped to the water treatment system for treatment prior to discharge into the Rudy Creek watershed. The water treatment retentate stream will be treated at a desaturation unit. The solid waste stream from the desaturation unit will be dewatered and stored within the FSTSF; the liquid overflow will report to the MZP (KCB, 2022a).

Typical MZP water balance inflows and outflows for an average climate year and a 1-in-30-year wet climate year are provided in Table 20-2.

Table 20-2: QR Mill site MZP water balance results

Flow Description	Average Climate Year		30-Year Wet Year	
	Average Rate (m^3/h)	Max Daily Rate (m^3/h)	Average Rate (m^3/h)	Max Daily Rate (m^3/h)
FSTSF Ephemeral Pond Limed Flow	18.7	162.0	26.6	162.0
Pumping from SSCP	5.8	90.0	10.1	90.0
Pumping from NSCP	3.2	37.8	3.6	38.2
WTS Retentate Flow	26.3	47.9	22.7	47.9
MZP Diversion Weir 8 Leakage	1.4	24.8	5.0	27.4
Groundwater Inflow	3.2	3.2	3.2	3.2
Leakage from MZP West Road	3.2	63.7	5.8	68.0
Precipitation over MZP Pond	2.2	29.5	2.9	34.9
Local Catchment Runoff	1.8	33.8	2.9	33.5
SSCP to MZP Seepage	1.1	1.1	1.1	1.1
Total Inflow to MZP	**67.0**	**493.9**	**83.9**	**506.2**
Spillway Discharge to Creek No. 3	0.0	0.0	7.9	1,000.1
Evaporation Losses	1.4	4.3	1.4	4.7
WTS Inflow	65.2	119.9	55.1	119.9
Seepage Losses	0.4	0.4	0.4	0.4
Pond Volume Change	0.0	369.4	19.1	-618.8
Total Outflow from MZP	**67.0**	**493.9**	**83.9**	**506.2**

20.3.6.6. Water Quality

The datasets that were reviewed or used in the QR Mill WQM (KCB, 2022b) included:

- QR SW1, MZP, TSF, NSCP, SSCP, and NWP monthly water quality sampling data from 2012 to 2021;
- North Portal water quality data from 2012 to 2020;
- Water quality data for the QR Mill effluent from 2021;
- Water quality data for the Project mill effluent after cyanide destruction, based on samples received in 2019;
- 2020 kinetic (laboratory) test result for the Project filtered tailings;
- Field leach barrel test results on the MZP waste rock pile ("WRP"), East WRP samples, MZP pit wall samples and NWP pit wall samples collected in 2020; and
- Kinetic (laboratory and field leach barrel) test result on the surface tailings samples collected from the MZP and TSF in 2020.

The predicted MZP and FSTSF Ephemeral Pond water qualities during the Project were compared with the British Columbia Water Quality Guidelines for Freshwater Aquatic Life (BCWQG-AL) to screen for COPCs. The constituents that exceeded BCWQG-ALs that would require water treatment are shown in Table 20-3.

Table 20-3 Potential constituents of concern

Based on Predicted MZP Water Quality during the Project	Based on Predicted FSTSF Ephemeral Pond Water Quality during the Project
Sulphate, nitrite, nitrate, ammonia, cyanide, antimony, chromium, cobalt, copper, manganese, molybdenum, nickel, selenium, and silver.	Sulphate, nitrite, nitrate, cyanide, antimony, cadmium, chromium, cobalt, copper, lead, manganese, molybdenum, nickel, selenium and silver, thallium, zinc.

20.3.7. Historical Waste Disposal Activities

As the Project consists of existing infrastructure that is both historical and operating, both the Mine Site Complex and the QR Mill are locations of historical waste disposal activities. In addition, historical waste rock associated with the 1500 Level adit is also located on the northeast end of Jack of Clubs Lake, adjacent to the proposed Valley Portal. The remediation associated with the Cariboo Gold Quartz Mine operation, for tailings and waste rock, is under the jurisdiction of the Provincial Government (Crown Contaminated Sites Branch in the Ministry of Forests[1] ("MOF") (ODV, 2021b.). ODV and the Province have signed a Memorandum of Understanding in 2022 that outlines collaboration on remediation.

20.4. Considerations of Social and Community Impacts

ODV is committed to meaningful and transparent engagement with Indigenous nations, the public, local community members, and other stakeholders. ODV has cultivated positive relationships with the three Participating Indigenous nations, within whose traditional territory the Project is located, and has developed relationship agreements and engagement protocols with them. ODV intends to maintain these relationships through all phases of the Project.

The nearest community to the Project is the District of Wells, where the Mine Site Complex is located, with the QR Mill located approximately 115 km from the Mine Site along Highway 26, and then the 500 Nyland Lake Forest Service Road ("FSR"). Other stakeholders include tenure holders (such as trapline holders, guide outfitters, and forestry proponents), local and regional governments, health authorities, and government regulatory agencies.

20.4.1. Social Setting

The Project is in the Wells-Barkerville area of the Cariboo Regional District ("CRD") in British Columbia ("BC"), with the nearest communities to the Project being the District of Wells ("Wells"), Barkerville Historic Town & Park, Quesnel, and Likely. A portion of the Mine Site and other Project components are outside of the District of Wells and are located in Electoral Areas C and F of the CRD. There are several unincorporated communities in the area, including New Barkerville and other settlements along Highway 26.

The Participating Indigenous nations for the EA for the Project are Lhtako Dené Nation, Xatśūll First Nation, and Williams Lake First Nation. Both Nazko First Nation and the Tsilhqot'in National

[1] Since the writing of this Report, the Ministry of Forests, Lands, Natural Resource Operations and Rural Development (MOF) has been divided into two ministries. MOF will continue to be used throughout this report where relevant to refer to either the Ministry of Forests ("MOF") or the Ministry of Land, Water, and Resource Stewardship.

Government decided not to participate in the Environmental Assessment ("EA") for the Project, however, are being notified and updated on the Project on a regular basis.

The primary employment industries in the area closest to the Project are Manufacturing and Construction, Wholesale and Retail Trade, and Accommodation and Food; however Other Services (repair and maintenance, personal and laundry services, private households, religious or social organizations, etc.) also comprise a large proportion of employment in the Project area (Statistics Canada, 2021).

Communities in the CRD, and more specifically the communities nearest to both the Mine Site Complex and the Quesnel River Mill have a history of resource development, and as a result have experienced the positive and negative effects of that development, arising from boom-and-bust cycles that can accompany resource development. The employment participation rate for the District of Wells in 2016 was 65.9%, which was higher than the provincial rate, and Electoral Areas C and F had a participation rate of 63.2%, 0.7% lower than the provincial rate. The employment rate in Wells and the CRD Electoral Areas C and F is 56.1% and 57.3%, respectively, with the provincial rate in 2016 at 59.6%. Unemployment in the Wells area is more than twice the provincial average while it is only 2.6% higher in the electoral areas closest to the Project. Between the 2001 and 2016 censuses, the population in the areas nearest the Project area has seen an overall decrease, distinct from population increase for the province as a whole.

Land and resource use within the broader Project area includes trapping, guided hunting, commercial recreation, outdoor and adventure tourism, including fishing, hunting, camping, hiking, cross-country skiing, snowmobiling, dog sledding, and all-terrain vehicle ("ATV") riding. There are mineral, water and range tenures, guide outfitters and traplines in the vicinity of the Project. The area is recognized as having visual landscapes associated with tourism, and over the years, Wells has attracted artists of all types and has encouraged arts creativity. The result is that art is now an essential part of Wells' identity and a major attraction to tourists who visit Wells to enjoy visits to art galleries, Island Mountain Arts, Sunset Theatre, community coffee houses, and restaurants/pubs. Wells is known as the Gateway to Barkerville Historic Town, the Bowron Lake Chain, and the Gold Rush Trail. Scenic areas management of the landscape surrounding the Project area is identified as an objective in current land and resource planning (i.e., Cariboo-Chilcotin Land-Use Plan ("CCLUP") Integration Report, and the Quesnel Sustainable Resource Management Plan; (Province of BC, 1998) (Province of BC, 2007)).

20.4.2. Engagement and Consultation

Consultation with Indigenous nations and the public are components of provincial and federal legislation for both EA processes and permitting activities. As the Province of BC strives to bring all its legislation into alignment with the recently passed Bill 41 - *Declaration on the Rights of Indigenous Peoples Act* ("*DRIPA*"; (Province of BC, 2019)), provisions for consultation with Indigenous nations will continue to be supported by proponents. The new *Environmental Assessment Act* (Province of BC, 2018) was revitalized to ensure the provincial government's commitment to *DRIPA* was met, and reconciliation could be advanced. As a result, the Environmental Assessment Office ("EAO") seeks consensus with participating Indigenous nations throughout the process.

As part of the initiation of the EA process for the Project, ODV submitted an Indigenous Nation Engagement and Collaboration Plan that details the company's approach to engagement, capacity funding, protocols, intentions to incorporate Indigenous knowledge through all phases of the Project, and opportunities identified through engagement. This plan, along with ODV's Public Engagement Plan will inform future consultation and engagement activities continuing throughout the EA process.

Ongoing and future engagement measures by ODV have been developed through collaboration and relationships with the Participating Indigenous nations during the EA, guidance from the EAO, and in response to community and public inquiries. These measures will, at a minimum, comply with federal and provincial regulations and requirements for consultation and engagement.

20.4.3. Indigenous Nations

ODV has been actively engaging with Indigenous nations to understand their Indigenous interests in the Project and the areas influenced by the Project. During the Early Engagement Phase of the Environmental Assessment, the EAO confirmed that the Project is in the asserted traditional territory of Lhtako Dené Nation, Xatśūll First Nation, and Williams Lake First Nation, and that each of these nations would be Participating Indigenous nations for the Environmental Assessment.

Engagement activities with Lhtako Dené Nation began in 2016, with Xatśūll First Nation in 2017, and with Williams Lake First Nation in 2018. The focus of preliminary engagement has been to establish consistent points of contact with the authorized representatives of each Indigenous nation, inform Indigenous nations about the next steps in the regulatory review, and respond to questions and concerns raised by Indigenous nations about the Project and associated studies. ODV will have ongoing engagement through all Project phases with these nations.

ODV has reached Project-specific agreements that provide capacity funding to Lhtako Dené Nation, Xatśūll First Nation, and Williams Lake First Nation to facilitate their participation in the Environmental Assessment and cover the costs of third-party technical review for each nation.

On October 02, 2020, ODV signed a life-of-project agreement to facilitate the development and full build-out of the Project with the ongoing consent and support of Lhtako Dené Nation during all stages of the Project. On June 10, 2022, a participation agreement was signed with Williams Lake First Nation. Discussions with Xatśūll First Nation are ongoing with the goal of having a signed agreement in the neat future.

20.4.4. Federal, Provincial and Municipal Governments

ODV has engaged with various provincial and local government agencies, to differing degrees and levels of engagement as part of the EA process for the Project. The District of Wells, City of Quesnel, City of Prince George, City of Williams Lake, CRD and the Regional District of Fraser Fort George ("RDFFG"), as well as the North-Central Local Governments Association have been engaged by ODV since 2016, when the Project Planning phase was initiated.

ODV will continue to engage and collaborate with federal, provincial, regional and municipal government bodies and representatives as necessary, with respect to the Project, land and resource management, heritage and protected areas, official community plans and associated priorities, infrastructure, land use and access, employment and training, and any other matters deemed relevant.

20.4.5. Public Stakeholders

Proactive engagement with the public and stakeholders was undertaken beginning in the Project Planning Phase initiated in 2016, to build awareness about the Project, understand the priorities of stakeholders and current conditions in their communities, and to understand interests and concerns around the Project as a means through which issues could be avoided through design or mitigation.

The following public and stakeholders regularly received Project information:

- Local Residents;
- Community and Environmental Organizations and Interest Groups;
- Community Service Providers;
- Business and Economic Development Organizations;
- Landowners along the Transmission Line and other Project components;

- Tenure holders, including traplines, guide outfitters, mineral, forestry companies and water license holders;
- Heritage and Cultural Stakeholders;
- Tourism-related and other Businesses;
- ODV Employees; and
- Arts Organizations.

Public and stakeholder engagement has included community meetings (in person and virtual), one-on-one meetings with particular groups, workshops and technical meetings, surveys and feedback forms, site visits, community events, industry events and public displays.

Presentations regarding the Project are regularly made to the public on mitigation efforts and proposed strategies are developed by ODV to improve community relations, promote sustainability, and improve quality of life in the community while developing the Project and advancing through the permitting and EA application process. Feedback from the community and stakeholders is sought and obtained throughout the planning process.

20.5. Mine Closure Requirements

20.5.1. Mine Reclamation and Closure Plan

ODV has prepared various Reclamation and Closure Plans ("RCP") for elements of the Project to detail how the sites will be reclaimed to a safe, stable, and non-polluting condition. An updated RCP for the Project was provided as an appendix to the EA Application for the Project. RCPs will continue to be updated as mine plans evolve, regulatory guidelines change, and as required by permit conditions. These RCPs provide the basis to develop an integrated RCP for the Project, including a reclamation cost estimate based on the most current assumptions regarding reclamation and closure of Project facilities and landforms.

20.5.2. Regulatory Framework

The Project mine closure is guided by several provincial acts and regulations:

- British Columbia *Mines Act* (Government of BC, 1996) and Health, Safety, and Reclamation Code for Mines in British Columbia (Government of BC, 2021);
- British Columbia *Environmental Management Act* (Government of BC, 2003);
- British Columbia *Water Sustainability Act* (Government of BC, 2014);

- Regional Regulations – The Project is located within the Cariboo Regional District Electoral Area C (the Mine) and Area F (QR Mill) and is subject to the CCLUP and CRD North Cariboo Area Rural Land Use Bylaw (CRD, 2000);
- Federal Requirements – Federal Acts and Regulations that apply to the Project include the *Fisheries Act* (Government of BC, 1985), the *Migratory Birds Convention Act* (Government of Canada, 1994), the *Seeds Act* (Government of Canada, 1985a), and the Metal and Diamond Mining Effluent Regulations (Government of Canada, 2002) of the *Fisheries Act*.

20.5.3. Mine Closure Planning Approach

The Project footprint at each site has been divided into Master Areas by ODV to reflect disturbance types and proposed end land uses. Master Areas are generally divided by facility/landform types with common approaches to reclamation. Detailed closure and reclamation prescriptions are provided for each Master Area consisting of the following components:

- Scope and Extent: Defines location and extent of the Master Area;
- Current Conditions: Describes the Master Area conditions during operations including progressive reclamation that has already been done;
- Future Conditions: Describes the plan for the Master Area for future development and use prior to closure;
- Closure Design Basis: Lists regulations, permits, and RCP that should be followed to design the closure activities for the Master Area;
- Closure Design Criteria/Constructability: Presents activities and/or requirements to implement closure such as site preparation, progressive reclamation if applicable, revegetation, and post-closure monitoring/maintenance, as well as infrastructure decommissioning, and equipment/materials removal.

20.6. Permitting and Required Approvals

20.6.1. Regulatory Context

Depending on the scope of a proposed project, and whether it is expected to exceed thresholds, it can be subject to concurrent review through impact and environmental assessment processes at both the federal and provincial levels. At the provincial level, mineral mining projects that require review under the new BC *Environmental Assessment Act* (BCEAA; (Province of BC, 2018) exceed the following threshold under Part 3 (Table Six) of the Reviewable Projects Regulation: "A new mine facility that, during operations, will have a production capacity of > 75,000 tonnes per year of mineral ore" (Government of BC, 2020). The Project is currently undergoing and EA under the new provincial act, however, is not subject to federal review under the *Impact Assessment Act* (Government of Canada, 2019) as it does not exceed the relevant threshold specified in the Schedule of Physical Activities specified in the federal Physical Activities Regulations (SOR/2019-285. S. 18(c); (Government of Canada, 2019a).

The Project will require several permits, approvals, and authorizations from provincial, federal, and municipal agencies, which are summarized in Sections 20.6.2, 20.6.3, 20.6.4, and 20.6.5, respectively.

20.6.2. BC Environmental Assessment Regulations

As the Project is currently undergoing an EA under the *BCEAA* (2018), a number of regulations establish the legal framework for the process and are detailed in Table 20-4 below. The intention is that the Project will receive an EA Certificate from the EAO, under the *BCEAA* (2018) following the prescribed process and assessment phases.

An EA is a planning tool designed to help inform decisions on projects and project effects that are in the public interest. The EA review process provides a framework to identify and evaluate potential project-related environmental, economic, social, cultural, and health effects, consider appropriate mitigation or enhancements, and characterize potential residual effects.

The assessment of potential project effects specifically targets the Valued Components ("VCs") of the environment that may be affected by the Project and priorities of participating Indigenous nations, the public, local governments, provincial and federal government agencies, and stakeholders. Valued components are defined as fundamental elements of the physical, biological, or socio-economic (human) environment, including the air, water, soil, terrain, vegetation, wildlife, fish, economy, health, heritage, and land use components that may be affected by a proposed project.

Table 20-4: Summary of regulations supporting the BCEAA (2018)

Regulation	Description
Reviewable Project Regulation (2020)	The Reviewable Projects Regulation sets out the criteria and thresholds for projects required to undergo the EA process (Government of BC. [2019b]). Reviewable proposed projects are primarily those with a higher potential for adverse environmental, economic, social, heritage, or health effects. Thresholds for both new projects and modifications to existing projects are provided.

Regulation	Description
Protected Areas Regulation (2019)	This regulation identifies prescribed protected areas (as defined in other enactments) for the purposes of the Reviewable Projects Regulation, which determines which projects must automatically undergo an EA. This regulation is also related to the Minister of Environment and Climate Change Strategy's authority to terminate a project from the EA process if it had extraordinarily adverse effects on a listed protected area.
Environmental Assessment Fees Regulation (Province of BC, 2019a)	The EAO charges fees for a range of services, from undertaking EAs, through to compliance inspections. The fees provide partial recovery of the costs incurred by the EAO in delivering high-quality and timely EAs. Revenue from fees allows the organization to maintain appropriate staffing levels. The funding is also used to support other provincial agencies in their participation in the EA process.
Violation Ticket Administration and Fines Regulation (Province of BC, 2019b)	This regulation enables EAO Compliance and Enforcement Officers to issue tickets with associated monetary penalties to proponents who are not in compliance with their certificate conditions, or their exemption order conditions.
Administrative Penalties Regulation (Province of BC, 2020a)	Administrative Monetary Penalties are financial penalties that can be issued for prescribed contraventions of the Act or failures to comply with the Act, including failing to comply with the requirements of an EAC or an exemption order made under the Act. Regulated parties will be given prior notice of the EAO's intention to issue an administrative penalty and will be provided with an opportunity to respond before an administrative penalty is issued.

In October 2019, the EA process for the Project commenced with the submission of Project Description and Engagement Plan to the EAO, under the former *BCEAA* (2002). Following guidance from the EAO, in collaboration with ODV, and following regulatory requirements, it was decided the Project would continue the EA process under the new *BCEAA* (2018). Subsequently, the Project Description submitted in October 2019 was accepted as fulfilling the requirements of the Initial Project Description as part of the new Act on May 14, 2020.

As the EA process continued, further exploration work and updates to the Mineral Resource Estimate ("NI 43-101 Technical Report and Mineral Resource Estimate for the Cariboo Gold Project" (October 5, 2020)) supported an increase in the proposed production rate to 4,750 tpd.

The Project, proposed at a production rate of 4,750 tpd, is currently undergoing review as per the *BCEAA* (2018). Submission of the revised application was completed in October 2022 initiating the assessment phase, with an expected issuance of an Environmental Assessment Certificate ("EAC") in early 2023.

20.6.3. Federal Permits, Approvals, Licences, and Authorizations

Federal permits, approvals and authorizations that could potentially be applicable to the Project are summarized in Table 20-5. As the Project proceeds, specific permit requirements will be determined based on discussions with federal agencies. ODV does not currently hold any federal permits in relation to their operations in the Project area.

Table 20-5: Federal permits and approvals potentially applicable to the proposed Project

Permit / Approval	Responsible Agencies	Federal Statute	Project Activity/Regulatory Context
Fisheries Act Authorization (Government of Canada, 1985b)	Fisheries and Oceans Canada ("DFO")	*Fisheries Act*	No person shall carry on any work, undertaking, or activity other than fishing that results in the death of fish. No person shall carry on any work, undertaking, or activity that results in the harmful alteration, disruption, or destruction (HADD) of fish habitat. If the death of fish or a HADD cannot be avoided during any part of the Project, an Authorization under Section 35 may be required.
Migratory Birds Convention Act Authorization (Government of Canada, 1994)	Environment and Climate Change Canada ("ECCC")	*Migratory Birds Convention Act*	*Deposit of substances harmful to migratory birds or vegetation clearing for the Project during the migratory bird nesting season as outlined by ECCC (May 1 to July 15, Zone A4).* Permits may be issued to eliminate dangerous conditions or damage to property caused by migratory birds or their nests.
Navigation Protection Program Notification and/or Approval	Transport Canada	*Canadian Navigable Waters Act*	Notification and information to the Minister for works that are in, on, over, under, through, or across any navigable water. Application for approval from the Minister is required for works (other than minor works) that are in, on, over, under, through, or across any navigable water and that may interfere with navigation.
Species at Risk Act Authorizations (if required; Government of Canada, 2002a)	ECCC, DFO, and Parks Canada	*Species at Risk Act* ("SARA")	The Competent Minister may issue a SARA permit authorizing activity that will affect a listed wildlife species, any part of its critical habitat, or the residences of its individuals.

Permit / Approval	Responsible Agencies	Federal Statute	Project Activity/Regulatory Context
Explosive Licences and Permits (Government of Canada, 1985a)	Natural Resources Canada	*Explosives Act*, and Regulations	Explosive Licence required for factories and magazines. Explosive Permit required for vehicles used for the transportation of explosives.
Transportation of Dangerous Goods Regulation (Government of Canada, 2001) (Government of Canada, 1982)	Transport Canada	*Transportation of Dangerous Goods Act*	This Act addresses the classification, documentation, marking, means of containment, required training, emergency response, accidental release, protective measures and permits required for the transportation of dangerous goods by road, rail or air.

20.6.4. Provincial Permits, Approvals and Licences

Provincial permits, approvals, authorizations, and licences that could potentially be applicable to the Project are summarized in Table 20-6. The Project will be located on Crown lands at the Mine Site Complex and the QR Mill, as well as on a parcel of private land owned by ODV at the Mine Site Complex. A *Mines Act* permit approving the mine plan and reclamation program will be required for the Project, as well as amendments to existing provincial permits (e.g., *Mines Act* and *Environmental Management Act*) for the QR Mill and Bonanza Ledge Site properties. As the Project proceeds, specific permit requirements will be determined based on discussions with provincial regulatory agencies.

Table 20-6: Provincial permits and approvals potentially applicable to the proposed Project

Permit / Approval	Responsible Agency	Provincial Statute
Mines Act Permit	Ministry of Energy, Mines, and Low Carbon Innovation ("EMLI")	*Mines Act*
Effluent Discharge Permit	BC Ministry of Environment and Climate Change Strategy ("ENV")	*Environmental Management Act*
Emissions Discharge Permit	ENV	*Environmental Management Act*
Refuse Permit and Waste Storage Approval	ENV	*Environmental Management Act*
Heritage Conservation Act Permit	Ministry of Forests ("MOF"), Archaeology Branch	*Heritage Conservation Act* (Government of BC, 1996a)
Heritage Conservation Act Concurrence letters	MOF, Archaeology Branch	*Heritage Conservation Act*
License of Occupation	MOF	*Land Act* (Government of BC, 1996b)

Permit / Approval	Responsible Agency	Provincial Statute
Statutory Right of Way	MOF, Surveyor Generals Office, MOTI	*Land Act*
Wildlife Act Permit	MOF, Resource Stewardship Division	*Wildlife Act* (Government of BC, 1996c)
Sewer System Regulation Approval	BC Ministry of Health, Interior Health Authority ("IHA"), Northern Health Authority ("NHA")	*Public Health Act* (Government of BC, 2008)
Construction Permit for a Potable Water Well	BC Ministry of Health, NHA	*Drinking Water Protection Act* (Government of BC, 2001)
Water System Construction Permit	BC Ministry of Health, NHA	*Drinking Water Protection Act*
Drinking Water System Operations Permit	BC Ministry of Health, NHA	*Drinking Water Protection Act*
Short Term Use of Water Permit *Water Sustainability Act* Section 10	MOF, Water Stewardship Branch	*Water Sustainability Act* (Government of BC, 2014)
Change Approval (for changes in and about a stream), *Water Sustainability Act* Section 11	MOF, Water Stewardship Branch	*Water Sustainability Act*
Water Licence (Diversion, storage, and use of water) *Water Sustainability Act* Sections 7 and 9 (Government of BC, 2014)	MOF, Water Stewardship Branch	*Water Sustainability Act*
Licences to Cut and Special Use Permit	MOF, Forest Tenures Branch	*Forest Act* (Government of BC, 1996d)
Industrial Access Permit	BC Ministry of Transportation and Infrastructure ("MOTI")	*Transportation Act* (Government of BC, 2004)
Permit for regulated activities	Ministry of Health	*Public Health Act*
Explosives Magazine Storage and Use Permit	EMLI	*Mines Act*

In addition, two pieces of provincial climate action legislation have direct impacts on the EAO review of the Project, and could impact the operation of the Project, should it be approved. The *Climate Change Accountability Act*, 2019 (Government of BC, 2019a) and the Greenhouse Gas *Industrial Reporting and Control Act*, 2016 (Government of BC, 2014) and associated reporting regulations. The Project is expected to have annual direct GHG emissions exceeding 25,000 tonnes of carbon dioxide equivalent ("tCO2e"), meaning that it would be subject to both the emissions reporting and verification requirements in the above acts.

20.6.5. Local Government Permits

The Project facilities include areas within the jurisdictions of the CRD and the District of Wells, for the Mine Site Complex specifically. Both jurisdictions have passed bylaws that may pertain to Project activities/operations and property ownership or business operations, including:

- CRD Invasive Plant Management Regulation Bylaw, No. 4949, 2015, regarding the management of invasive plants;
- CRD Untidy and Unsightly Premises Regulatory Bylaw, No. 4628, regarding the management of untidy/unsightly properties;
- District of Wells Noise Control Bylaw, No. 93, 2018 limiting hours of noise during operations/ construction; and
- District of Wells Traffic and Streets Bylaw, No. 68, addressing traffic and provides load and size restrictions.

Other Wells bylaws are applicable to utility connections and municipal service fees related to property development (water, sewer, garbage, etc.). These bylaws would be addressed through direct applications with the District of Wells.

21. Capital and Operating Costs

The capital and operating cost estimates presented in this Feasibility Study ("FS") for the Cariboo Gold Project (the "Project") are based on the construction of an underground mining operation with an average throughput of 1,500 tpd for the first phase of operations, and with an average throughput of 4,900 tpd for the second phase.

All capital and operating cost estimates cited in this Report are referenced in Canadian dollars ("CAD" or "$").

21.1 Capital Costs

21.1.1 Summary

The total initial capital costs for the Project are estimated to be $137.3M. The total expansion capital cost is estimated to be $451.1M. These estimates include the addition of certain contingencies and indirect costs. The cumulative life of mine ("LOM") capital expenditure ("CAPEX"), including initial, expansion, and sustaining capital is estimated to be $1,055.0M and is summarized in Table 21-1 and in Figure 21-1 on an annual basis. Not included in the LOM capital costs are $67.3M of project sunk and pre-permit costs, which are described in Section 21.1.2.

The main capital cost items are the following:

- A pre-concentrator, including a crushing circuit and ore sorting facility at the Bonanza Ledge site ("BL");
- The Quesnel River Mill ("QR Mill") and Tailings Management Facility ("TMF") upgrade at the QR Mill site;
- An underground mine, including a primary and secondary crushing circuit;
- A concentrator consisting of ore sorting, grinding, flotation, and a paste backfill plant at the Mine Site Complex ("MSC") in Wells;
- Ancillary infrastructure at the MSC to support operations, such as offices, a mine dry, and a water treatment plant;
- Off-site infrastructure to support operations, such as the transmission line and Integrated Remote Operational Centre ("IROC") centre in Quesnel; and
- Capitalized General and Administrative operating costs attributable to the construction and underground development activities and workforce.

Table 21-1: Project capital cost summary[1]

WBS	Cost area	Initial capital cost ($M)	Expansion capital cost ($M)	Sustaining capital cost ($M)	Total cost ($M)
000	Surface mobile equipment	-	0.1	9.3	9.4
200	Underground mine	53.8	110.8	313.3	478.0
300	Water and waste management	6.5	12.9	37.3	56.7
400	Electrical and communication	10.2	31.8	62.9	104.9
500	Surface infrastructure	1.8	33.0	2.7	37.5
600	Process Plant - Wells	5.2	114.5	4.4	124.1
600	Process Plant – QR Mill	17.5	25.7	-	43.2
700	Construction indirect costs	10.6	55.6	1.1	67.3
800	General services	8.7	30.0	27.0	65.7
900	Pre-production	12.7	-	-	12.7
999	Contingency	10.3	36.7	8.5	55.6
	Total	**137.3**	**451.1**	**466.6**	**1,055.0**
-	Site Reclamation and Closure	-	-	17.3	17.3
-	Salvage Value	-	-	(56.2)	(56.2)
	Project Total	**137.3**	**451.1**	**427.8**	**1,016.2**

Notes:
[1] Does not include sunk costs ($2.5 M) and pre-permit expenses ($64.8 M), which total $67.3M.

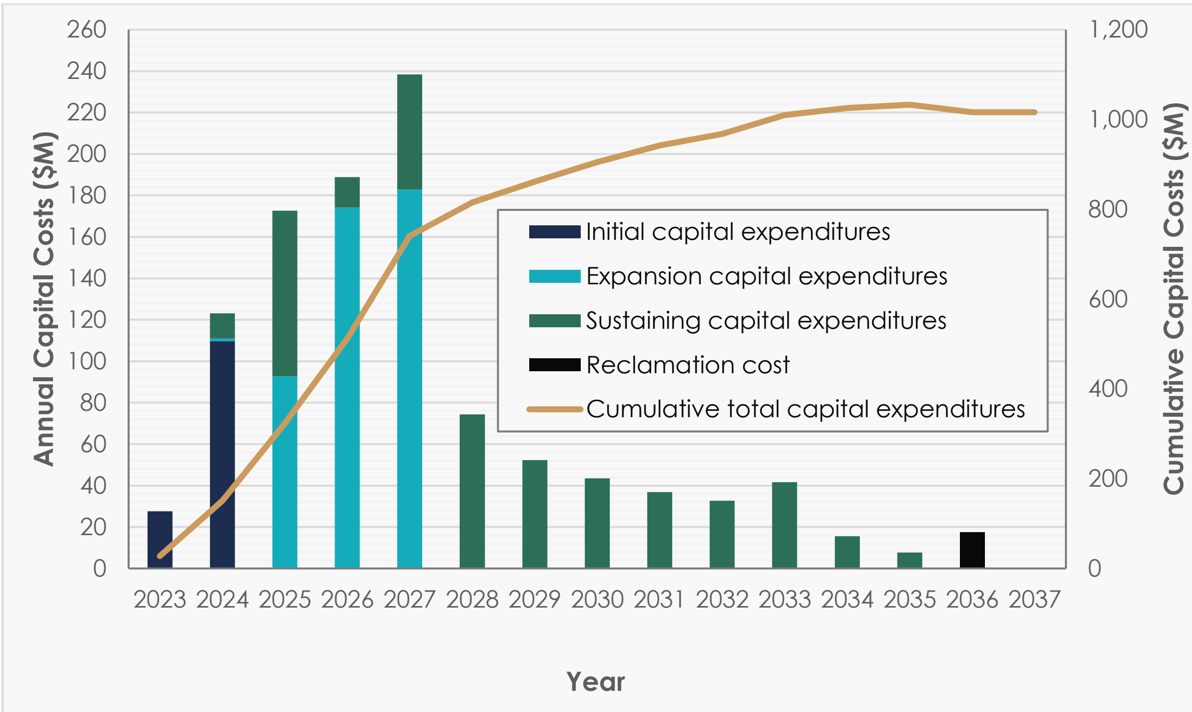


Figure 21-1: Overall Cariboo Gold Project capital cost profile

21.1.2 Scope and Structure of Capital Cost Estimate

The capital cost estimate pertaining to this 2022 Feasibility Study is meant to form the basis for an overall Project budget authorization and funding, and as such, it forms the "Control Estimate" against which subsequent phases of the Project will be compared and monitored. The estimate meets AACE International Class 3 requirements and has an accuracy range of between -10% and +15%.

The capital cost estimate abides by the following criteria:

- It is based on a measurable degree of engineering completion;
- It reflects general accepted practices in the cost engineering profession;
- It assumes that contracts will be awarded to reputable contractors on a cost reimbursable basis;
- Its labour costs are based on current British Columbia ("BC") rates;
- The capital costs are expressed in constant Q4 2022 Canadian dollars.
- All costs in US dollars were converted to Canadian using an exchange rate of 0.77 USD/CAD.

The Project schedule, from detailed engineering to start-up, was also used in the estimate preparation—refer to Chapter 24 for the execution plan and schedule. The initial construction phase is planned to begin in Q2 2023. The cost estimate was divided into the following elements:

- **Direct costs (WBS 000 to 600):** costs for productive works and permanent infrastructure. It includes production infrastructure, services, and equipment required;
- **Construction Indirect costs (WBS 700):** costs required to support the construction of the facilities included in the direct costs. It includes engineering, procurement, and construction management ("EPCM") services, EPCM temporary facilities, capital spares, and services;
- **General Services (WBS 800):** costs associated with the personnel, management, support infrastructure, safety and environmental, community relations, administration, finance, human resources and training not attributable to operations, freight, brokerage fees, and construction power;
- **Pre-production costs (WBS 900):** capital and operating costs incurred prior to commercial production being declared;
- **Contingency (WBS 999):** it includes variations in quantities and differences between estimated and actual equipment, material prices, labour costs, and site-specific conditions. In addition, it accounts for variations resulting from uncertainties that are clarified during detailed engineering, when basic engineering designs and specifications are finalized.

21.1.2.1 Work Breakdown Structure (WBS) and Estimate Responsibilities

The capital cost estimate was developed in accordance with ODV's work breakdown structure ("WBS") with the estimate responsibilities summarized in Table 21-2.

Table 21-2: Estimate responsibilities by WBS

Area	Cost area description	Responsible entity
000	Surface Mobile equipment	BBA
200	Underground Mine	InnovExplo, Golder
300	Waste and water Management	KCB, WSP, Golder, JDS
400	Electrical and communications	BBA
500	Surface infrastructure	Golder
600	Process plant	BBA
700	Construction indirects	BBA
800	General Services	BBA
900	Pre-production costs	BBA
999	Contingency	ODV

21.1.2.2 Exclusions

The following items were excluded from the capital cost estimate:

- Permitting, licensing, land acquisition, and financing costs;
- Costs and revenues associated with the bulk sample planned for the first half (H1) of 2023;
- Project preparation costs incurred to date, including studies, work programs, and early works;
- Sunk costs and pre-permit expenses;
- Upgrades to the existing QR mill water treatment plant;
- Taxes, including carbon taxes, which are included in the financial model;
- Operating costs;
- Changes to design criteria;
- Work stoppages;
- Scope changes;
- Hydrological, environmental, or hazardous waste issues.

21.1.2.3 Construction Labour

Crew Rates

Wage rates for craft are based on the Construction Labour Relations Association of BC ("CLR") industry labour agreement of hourly labour costs for industrial projects in accordance with the collective institutional/commercial and industrial sectors for 2022.

Installation labour rates are calculated on the assumption of 84 hours worked per week on a single shift, with a rotation of two weeks in, two weeks out. The first 40 hours are paid at the standard single rate, and the balance of hours are paid at one half (1½) times the base wage rate.

The direct component of the crew rate was benchmarked against budget quotations from multiple contractors covering all key trades.

Composite crew wage rates have been established for each commodity based on a craft mix comprised of foreman, journeymen, apprentices, and general labour across all construction trades. The composite crew rates include the following costs:

- Craft base rates fringe benefits and overtime;
- Mobilization and demobilization of contractor items;
- Non-manual labour (general foreperson, superintendent, project manager, etc.);
- Indirect manual labour;
- Small tools and consumables;
- Ownership and operational costs of construction equipment (excluding that supplied by the Owner);
- Health, safety, and environmental requirements;
- Site supervision and administration;
- Contractor temporary site facilities;
- Overhead and profit.

Contractor variable and fixed fees, and overhead and profit have been capped at a combined rate of 15% to reflect an open book construction strategy with potential contractors. Fuel costs are excluded from the construction equipment portion of the composite crew rates and were calculated separately in the indirect costs.

Construction Equipment is developed and assigned by specific crew. Hourly equipment costs include the material portion (depreciation, interest, cost of repair and maintenance, insurances permits, and taxes) and operating portion (lubricants and filters), excluding fuel. The cost of the operator is excluded from the hourly operating cost and included in the crew mix.

The composite crew rates exclude camp accommodations and camp catering for contractor manual and non-manual staff. These costs are captured separately in the indirects.

The following table provides a summary of hourly "all-in" crew rates by typical crew type.

Table 21-3: Blended rates per discipline summary

Typical crew	Labour rate ($/h)	Construction equipment ($/h)	Total ($/h)	
	Direct	Indirect	Direct	Indirect
Rock excavation	$83.77	$33.99	$96.31	**$214.05**
Heavy civil	$72.15	$29.60	115.18	**$216.95**
Light civil	$71.64	$29.26	$72.60	**$173.50**
Concrete works	$83.34	$38.36	$9.16	**$130.80**
Metal works	$68.22	$38.17	$7.06	**$113.45**
Architectural works	$82.07	$44.90	$2.58	**$129.55**
Mechanical	$89.06	$50.82	$4.86	**$144.75**
Piping	$85.23	$47.43	$4.31	**$136.95**
Electrical	$78.61	$44.21	$1.71	**$124.55**
Automation/telecom	$76.19	$43.03	$1.62	**$120.85**

Notes:
Crew Rates are based on 84 hours/work week.

Labour Hours and Productivity

Direct field labour is the skilled and unskilled labour required to install the permanent plant equipment and bulk materials at the Project site. Unit installation hours are exclusive of contractor non-manual labour (site supervisors, accountants, and clerks) and indirect manual labour, which are captured in the composite crew rates.

- Installation hours have been adjusted to take into consideration the following:
- Site location;
- Weather conditions;
- Extended overtime;
- Scattered items of work;
- Access to work area;
- Complexity;
- Height – scaffolding;

- Overcrowded/tight work areas;
- Availability of skilled workers;
- Efficiency;
- Labour turnover;
- Supervision.

Table 21-4 reflects the values affecting the labour productivity on all construction crews:

Table 21-4: Labour Productivity Loss Ratio

Activity	Factor
Site works – Civil	1.43
Concrete Works	1.59
Metal Works	1.47
Architectural Finishes	1.40
Mechanical Works	1.44
Piping/Insulation	1.48
Electrical	1.48
Automation/Telecom	1.48

21.1.3 Sunk and Pre-permit Costs

The Project capital cost estimate as summarised in Table 21-1 does not include sunk costs and pre-permit expenses, which total $67.3M. The Project's sunk costs were established at $2.5M and originate from past underground mine activities. The pre-permit expenditures are defined as costs not yet incurred or committed to, but which will be incurred before the reception of permits and a construction decision. Such costs will allow the project to progress during the permitting process. Pre-permit expenditures include the following main activities:

- Process Engineering for the upgrades of the QR Mill (Phase 1);
- Engineering for the water treatment plant at Bonanza Ledge;
- Part of the engineering for the water treatment plant at the MSC;
- Construction costs of the water treatment plant at Bonanza Ledge;
- Water management infrastructure required to support the operation of the water treatment plant at Bonanza Ledge;
- The construction of a sceptic field at the Ballarat Camp;
- Construction Indirects for the activities listed above.

In total, the pre-permit expenditures represent $64.8 M, including a $7.6M contingency, as summarized in the table below:

Table 21-5: Project Pre-permit capital costs summary

Area	Cost area description	Pre-permit Capital Cost ($M)	% of Pre-permit Capital Costs
000	Mobile Equipment	4.3	6.6%
200	Underground Mine	3.1	4.8%
300	Waste and Water Management	21.9	33.8%
400	Electrical and communications	7.4	11.4%
500	Surface Infrastructure	0.4	0.6%
600	Process Plant	8.1	12.5%
	Subtotal – Direct Costs	**45.2**	**69.8%**
700	Construction Indirects	12.0	18.5%
	Subtotal – Indirect Costs	**12.0**	**18.5%**
999	Contingency	7.6	11.7%
	Total	**64.8**	**100%**

21.1.4 Initial Capital Costs

The initial capital costs cover the activities associated with Phase 1 of the Project development. This includes the activities associated with construction and commissioning of the ore sorting facility at Bonanza Ledge, the start of underground development, and the construction and commissioning of the upgrades to the QR Mill. A summary of the initial capital costs is show in Table 21-6.

Table 21-6: Project initial capital cost summary

Area	Cost area description	Initial capital cost ($M)	% of Initial Capital
000	Surface mobile equipment	-	0%
200	Underground mine	53.8	39%
300	Waste and water management	6.5	5%
400	Electrical and communications	10.2	7%
500	Surface Infrastructure	1.8	1%
600	Process Plant - Wells	5.2	4%
600	Process Plant - QR	17.5	13%
	Subtotal – Direct Costs	**95.1**	**69%**
700	Construction indirects	10.6	8%
800	General services	8.7	6%
900	Pre-production costs	12.7	9%
	Subtotal – Indirect Costs	**32.0**	**23%**
999	Contingency (P50)	10.3	8%
	Total	**137.3**	**100%**

21.1.4.1 Surface Mobile Equipment (Area 000)

There are no initial capital costs associated with the surface mobile equipment for Phase 1.

21.1.4.2 Underground Mine (Area 200)

The total initial capital cost for the underground mine is $53.8M, as described in Table 21-7. All mining costs were provided by InnovExplo.

Table 21-7: Underground mine initial capital costs

Area	Cost area description	Total cost ($M)
200	U/G Mobile equipment	4.5
210	U/G Infrastructure	0.2
230	U/G Ventilation	1.3
240	U/G Water management	0.3
250	U/G Electrical	1.5
260	U/G Communication	0.8
270	U/G Backfill	0.0
280	U/G Development	28.0
290	U/G Material handling/processing	0.0
-	U/G Pre-production costs	17.3
	Total	**53.8**

21.1.4.3 Waste and Water Management (Area 300)

Table 21-8: Waste and Water Management initial capital costs

Area	Cost area description	Total cost ($M)
320	Tailings Management	0.7
340	Water Management Infrastructure	5.2
360	Fire Protection	0.6
	Total	**6.5**

Tailings Management

The initial capital cost for the preparation and construction of the filter stack tailings storage facility at the QR site is estimated to be $0.7M. Design and material quantities were provided by KCB and costs were provided by JDS.

Water Management Infrastructure

The initial capital cost for water management infrastructure comprises a total for both the Bonanza Ledge and QR sites.

The initial capital cost for the water management infrastructure at the Bonanza Ledge site is $1.3M. This cost consists of the preparation, construction, and upgrades to the contact and non-contact water management infrastructure. The contact and non-contact water infrastructure design and material quantities were provided by Golder and the costs were provided by JDS.

The initial capital cost for the water management infrastructure at the QR site is $2.2M. This value consists of the preparation and construction costs of contact water ponds and ditches. Design and material quantities were provided by KCB and the costs were provided by JDS.

The pumping and piping water conveyance systems at the QR Mill site are estimated to be $1.7M and were provided by Golder.

21.1.4.4 Fire Protection

The initial capital cost for fire protection at the QR Mill site is $0.6M and it consists of upgrades to the existing fire water pumping station and the new distribution piping on the site. The costs were provided by Golder.

21.1.4.5 Electrical and Communication (Area 400)

The electrical and communication initial capital costs were estimated by BBA. Power supply and distribution, as well as Information Technology (“IT”) and communication comprise the main initial capital costs. The estimates were based on other recent projects of similar size, power rating, and layout, as well as on pricing from suppliers for major electrical equipment.

Table 21-9 summarizes the initial capital costs for the electrical and communication facilities:

Table 21-9: Electrical and communication initial capital costs

Area	Cost area description	Total cost ($M)
410	Power supply and distribution	7.0
440	IT and communication	3.2
	Total	**10.2**

21.1.4.6 Surface Infrastructure (Area 500)

Surface infrastructure initial capital costs were estimated by Golder. The capital costs for all the surface infrastructure were determined by performing feasibility-level engineering design to generate material take-offs ("MTOs"), as well as factored estimates based on building surface area. The firm then used their existing project database for both material supply and labour costs—see Table 21-10 for the cost breakdown.

Table 21-10: Surface infrastructure initial capital costs

Area	Cost area description	Total cost ($M)
530	Service buildings	0.3
540	Camps	0.3
550	Mine surface infrastructure	0.3
560	Laboratories	0.0
570	Fuel systems	0.6
590	Surface infrastructure general	0.3
	Total	**1.8**

21.1.4.7 Process Plant (Area 600)

The process plant initial capital costs were estimated by BBA. The capital cost includes the crushing, ore sorting, and conveying equipment at Bonanza Ledge, as well as the upgrades to the QR Mill. The 3D model, general arrangement drawings, and site layouts were used to estimate quantities and generate MTOs for all commodities. Major mechanical and electrical equipment costs were estimated using budgetary proposals from the PEA and escalated to October 2022 prices. Equipment of lower monetary value were estimated based on BBA's recent project data.

Table 21-11 summarizes the initial capital costs for the process plant.

Table 21-11: Process plant initial capital costs

Area	Cost Area Description	Total Cost ($M)
600	Process plant general	4.4
610	Crushing, sorting and conveying	5.5
620	Grinding and classification	0.9
630	Leaching	0.9

Area	Cost Area Description	Total Cost ($M)
640	Tailings treatment	5.4
650	Acid wash, elution, carbon regeneration	1.2
660	Refining	0.4
670	Reagents	2.0
680	Plant services	2.0
	Total	**22.7**

Civil

Earthwork quantities were estimated from drawings, topographical data, and geotechnical information. Structural excavation and backfill volumes are based on a frost depth line of 2.1 m.

Concrete

Preliminary design sketches and a revised 3D model were used to develop the concrete and embedded steel quantities. Unit rates are based on assemblies per type of concrete elements, i.e. piers, mats, walls, footings, etc. Budget quotes were received for the concrete supply and installation hours were benchmarked with budget quotes from a local contractor.

Structural

Using the revised 3D model and general arrangement drawings prepared by BBA and representative equipment loads, a structural 3D model was developed for all areas of the process plant. The model was used to create MTOs. Material was priced from current steel market values and a budgetary proposal obtained from a supplier that was then benchmarked against similar projects.

Architectural

Sandwich wall panel has been assumed for siding and standard membrane for roofing. The quantities were estimated from general arrangement drawings and from an architectural 3D model. Fire resistant panels are included where required. Pricing is based on historical architectural data and budgetary proposals for major material items. The architectural firm supplied the direct labour hours and BBA applied the project unit architectural hourly rate.

Mechanical

An equipment list, including platework, was developed from the process flow diagrams. Budgetary quotes were received for all major mechanical equipment supply. The budgetary quotes for all other equipment and platework were received for typical platework types and applied throughout the process plant. They are identified with sizing and weights and include lining requirements.

Installation hours were estimated using BBA's internal database and benchmarked with historical installation hours for similar equipment. Installation prices were obtained from vendors who have recently worked on similarly-sized facilities, and have been compared with recent projects executed by BBA.

HVAC ducting and fire protection piping were estimated using BBA's internal database.

Piping

Complete piping diagrams were prepared. Pipe lining requirements were also categorized. Lengths for each line shown on the piping diagrams were determined from modelled 3D pipe runs for major lines in the concentrator while lengths were retrieved from layout drawings for minor lines in the concentrator and for all lines at the QR Mill. Material pricing was established based on BBA's actualized price database.

Electrical

An equipment list, including capacities and sizing, has been developed from the electrical single line diagram. MTOs for electrical bulk quantities were prepared by sub area based on similar installations designed by BBA. Major electrical equipment costs were estimated using budgetary proposals obtained from suppliers, and other equipment costs were estimated using budgetary proposals obtained from suppliers, while equipment of lower monetary value were estimated from BBA's recent project data. Electrical bulk material pricing was obtained from BBA's historical cost data and benchmarked with supplier budget pricing. Lighting has been estimated by factoring other projects based on surface area.

Automation/Telecommunications

An instrumentation list based on the process flow diagrams and a preliminary piping and instrumentation diagram using typical instrumentation assemblies was developed by BBA. A telecommunications components list was also created in a similar fashion. Pricing is based on BBA's historical data.

21.1.4.8 Construction Indirect Costs (Area 700)

WBS area 700 includes all the costs needed to conduct the engineering, procurement, and project and construction management services for the Project. Other construction indirect costs were estimated based on the Project Execution Plan (Chapter 24), and include:

- Construction office;
- Construction temporary facilities (washrooms, lunchrooms, etc.);
- Quality control and quality assurance ("QA/QC") and commissioning support;
- Vendor representatives;
- Shop inspections during the manufacturing of equipment;
- Construction equipment rental for surface support (cranes, telehandlers, etc.);
- Construction tools (e.g.: scaffoldings);
- Capital spares.

Table 21-12 summarizes the initial construction indirect costs for construction which are estimated to be $10.5M.

Table 21-12: Construction indirect costs initial capital costs

Area	Cost area description	Total cost ($M)
710	Engineering, project and construction management	4.6
720	Construction facilities	0.5
730	Construction services	5.0
790	Capital spares	0.4
	Total	**10.5**

21.1.4.9 General Services (Area 800)

The general services cost area represents a portion of the Project's capitalized general and administrative operating costs attributable to capital works. They are calculated as the general and administrative costs multiplied by the proportion of workers on site that are attributable to construction and underground mine development activities. Additionally, freight and customs/brokerage costs for the expediting of materials and equipment were included in these costs, along with the costs associated with temporary power to support construction activities.

The initial capital costs for general services were estimated at $8.7M as summarized in Table 21-13.

Table 21-13: Owner's costs initial capital costs

Area	Cost area description	Total cost ($M)
830	Freight and logistics	1.4
840	Operating expenses	0.5
880	Owner's costs	6.8
	Total	**8.7**

21.1.4.10 Pre-Production Costs (Area 900)

Pre-production costs represent the operating and capital expenditures necessary to achieve commercial production. As such, the following components are included in these costs:

- Mine development capitalized operating cost expenditures ("OPEX");
- Pre-staffing and training;
- Hot-commissioning and ramp-up.

The pre-production costs are estimated to be $12.7 M as summarised in Table 21-14.

Table 21-14: Pre-production initial capital costs

Area	Cost area description	Total Cost ($M)
980	Capitalized operating costs	12.7
	Total	**12.7**

21.1.4.11 Contingency (Area 999)

Contingency is an allowance included in the initial capital cost estimate that is expected to be spent to cover the known but undefined items within the scope of the estimate. These can arise due to currently undefined items of work or equipment, or to uncertainty in the estimated quantities and unit prices for labour, equipment, and materials. Contingency does not cover scope changes, project exclusions, or project risk reserve costs.

Contingency was calculated for the Project using a Monte Carlo probabilistic approach based on execution philosophy, historic data, level of project definition, and advancement of engineering as well as contributions from the various firms according to their scope of work. Mining capital costs were excluded from the contingency calculation as these costs already have a contingency included. Table 21-15 and Figure 21-2 shows the distribution of possible initial capital costs based on the Monte Carlo simulation performed.

Table 21-15: Initial capital cost contingency Monte Carlo simulation results

Percentile of simulation results	Simulated contingency ($M)	Simulated total initial capital cost ($M)	% of total initial CAPEX
5%	6.0	133.0	4.7%
10%	6.9	134.0	5.4%
15%	7.6	134.7	6.0%
20%	8.1	135.2	6.4%
25%	8.6	135.6	6.7%
30%	8.9	136.0	7.0%
35%	9.3	136.4	7.3%
40%	9.7	136.7	7.6%
45%	10.0	137.0	7.9%
50%	**10.3**	**137.3**	**8.1%**
55%	10.6	137.7	8.4%
60%	11.0	138.0	8.6%
65%	11.3	138.3	8.9%
70%	11.7	138.8	9.2%
75%	12.1	139.2	9.5%
80%	12.6	139.6	9.9%
85%	13.1	140.1	10.3%
90%	13.8	140.8	10.8%
95%	14.7	141.7	11.6%

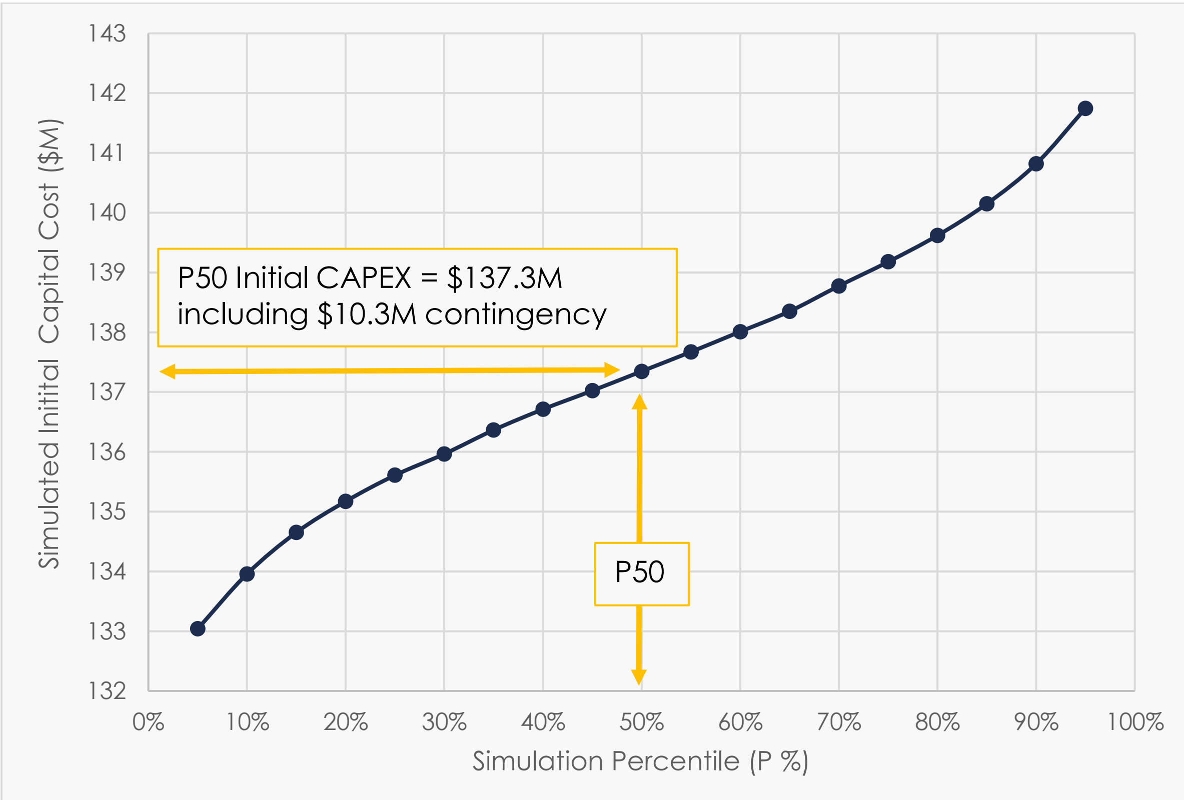


Figure 21-2: Monte Carlo initial capital cost estimate simulation results

ODV selected a contingency of $10.3M, which is the P50 of the Monte Carlo simulation. This represents approximately 8% of the initial capital costs.

It is expected that sufficiently developed engineering, adequate project management, and tight construction cost controls will be implemented to meet the budget for the Project.

21.1.5 Expansion Phase Capital Costs

Table 21-16: Project expansion capital cost summary

Area	Cost area description	Expansion Capital Cost ($M)	%
000	Surface Mobile Equipment	0.1	0%
200	Underground Mine	110.8	25%
300	Waste and Water Management	12.9	3%
400	Electrical and communications	31.8	7%
500	Surface Infrastructure	33.0	7%
600	Process Plant - Wells	114.5	25%
600	Process Plant - QR	25.7	6%
	Subtotal – Direct Costs	**328.8**	**73%**
700	Construction Indirects	55.6	12%
800	General Services	30.0	7%
900	Pre-Production Costs	0.0	0%
	Subtotal – Indirect Costs	**85.6**	**19%**
999	Contingency (P50)	36.7	8%
	Total	**451.1**	**100%**

21.1.5.1 Surface Mobile Equipment (Area 000)

The expansion capital costs for surface mobile equipment were provided by ODV and approved by BBA.

Table 21-17: Mobile Equipment expansion capital costs

Area	Cost area description	Total cost ($M)
020	Surface mobile equipment	0.1
	Total	**0.1**

21.1.5.2 Underground Mine (Area 200)

The total expansion capital cost for the underground mine is $110.8M. All mining costs were provided by InnovExplo, with the exception of the underground material handling/processing ($24.3M) and underground paste backfill network ($2.2M), which were provided by Golder.

Table 21-18: Underground mine expansion capital costs

Area	Cost Area Description	Total Cost ($M)
200	U/G Mobile Equipment	25.5
210	U/G Infrastructure	1.5
230	U/G Ventilation	3.3
240	U/G Water Management	1.0
250	U/G Electrical	2.7
260	U/G Communication	2.4
270	U/G Backfill	2.2
280	U/G Development	47.9
290	U/G Material Handling/Processing	24.3
	Total	**110.8**

21.1.5.3 Waste and Water Management (Area 300)

The total expansion capital cost for the waste and water management is $12.9M. Table 21-19 shows the cost breakdown:

Table 21-19: Waste and Water Management expansion capital costs

Area	Cost area description	Total cost ($M)
330	Water Systems	1.4
340	Water Management Infrastructure	6.8
350	Effluent Water Management	2.0
360	Fire Protection and Distribution	2.7
	Total	**12.9**

21.1.5.4 Water Systems

The expansion capital cost for the water systems at the MSC is estimated to be $1.4M. The costs cover the installation of a raw water pumping system and a potable water treatment plant. Quantities and costs were provided by Golder.

21.1.5.5 Water Management Infrastructure

The expansion capital cost for the preparation and construction of water management infrastructure at the MSC is estimated to be $6.8M. The design and material quantities for earthworks associated with water management infrastructure were provided by Golder and the costs of $5.7M were provided by JDS.

The pumping and piping water conveyance systems capital costs at the MSC are estimated to be $1.1M and were provided by Golder.

21.1.5.6 Effluent Water Management

The expansion capital cost for the construction of a sewage treatment water system at the MSC was estimated to be $2.0M. Design, material quantities, and costs were provided by Golder.

21.1.5.7 Fire Protection and Distribution

The expansion capital cost for the construction of a fire protection system and distribution at the MSC was estimated to be $2.7M. Design, material quantities, and costs were provided by Golder.

21.1.5.8 Electrical and Communications (Area 400)

The electrical and communication expansion capital costs were estimated by BBA. Power supply and distribution, as well as IT and communication, comprise the main expansion capital costs and are based on other recent projects of similar size, power rating and layout, as well as pricing from suppliers for major electrical equipment.

Table 21-20: Electrical and communication expansion capital costs

Area	Cost area description	Total cost ($M)
410	Power supply and distribution	25.8
440	IT and communication	6.0
	Total	**31.8**

21.1.5.9 Site Infrastructure (Area 500)

Surface infrastructure expansion capital costs were estimated by Golder. The expansion capital costs for all of the surface infrastructure were determined by performing feasibility level engineering design to generate MTOs, as well as factored estimates based on building surface area.

Table 21-21: Site infrastructure expansion capital costs

Area	Cost area description	Total cost ($M)
530	Service buildings	7.5
550	Mine surface infrastructure	0.9
570	Fuel systems	1.7
590	Surface infrastructure general	11.8
	Total	**33.0**

21.1.5.10 Process Plant (Area 600)

The process plant expansion capital costs were estimated by BBA. The capital costs include the concentrator at the MSC, as well as additional upgrades to the QR Mill. The 3D model, general arrangement drawings, and site layouts were used to estimate quantities and generate MTOs for all commodities. Major mechanical and electrical equipment costs were estimated using budgetary proposals from the PEA and escalated to October 2022 prices. Equipment of lower monetary value were estimated from BBA's recent project data.

Table 21-22 summarizes the initial capital costs for the electrical and communication facilities.

Table 21-22: Process plant expansion capital costs

Area	Cost area description	Total cost ($M)
600	Process plant general	54.5
610	Crushing, sorting and conveying	23.3
620	Grinding and classification	19.5
630	Leaching	9.1
640	Tailings treatment	17.3
650	Acid wash, elution, carbon regeneration	6.2
660	Refining	0.9
670	Reagents	2.4
680	Plants services	7.1
	Total	**140.2**

The same methods for estimating civil, concrete, structural, architectural, mechanical, piping, electrical, automation, and telecommunications in the initial capital costs were used for the expansion capital.

21.1.5.11 Construction Indirect Costs (Area 700)

Construction indirect costs were estimated for the expansion construction phase on the same basis as for the initial construction phase.

These indirect costs are estimated to be $55.6M and were calculated using various sources of information, including the construction execution plan and information provided by ODV. Table 21-23 summarizes these costs.

Table 21-23: Construction indirect costs expansion capital costs

Area	Cost Area Description	Total Cost ($M)
710	Engineering, Project and Construction Management	36.0
720	Construction Facilities	1.7
730	Construction Services	16.2
790	Capital Spares	1.7
	Total	**55.6**

21.1.5.12 General Services (Area 800)

The general services costs for the expansion capital phase were estimated on the same basis as for the initial phase.

The expansion capital costs for the general services were estimated at $30.0M, as summarised in Table 21-24:

Table 21-24: General services expansion capital costs

Area	Cost Area Description	Total Cost ($M)
830	Freight and Logistics	5.5
840	Operating Expenses	1.3
880	Owner's Costs	23.3
	Total	**30.0**

21.1.5.13 Pre-production Costs (Area 900)

There are no pre-production costs for the expansion phase.

21.1.5.14 Contingency (Area 999)

A contingency was calculated for the expansion capital cost estimate. Mining capital costs were excluded from the contingency calculation as these costs already have a contingency included. Table 21-25 and Figure 21-3 show the distribution of possible expansion capital expenditures based on the Monte Carlo simulation performed.

Table 21-25: Expansion capital cost contingency Monte Carlo simulation results

Percentile of simulation results	Simulated contingency ($M)	Simulated total expansion capital cost ($M)	% of total expansion CAPEX
5%	20.0	434.4	4.9%
10%	23.5	437.9	5.7%
15%	25.9	440.3	6.3%
20%	28.0	442.4	6.8%
25%	29.7	444.2	7.2%
30%	31.2	445.7	7.6%
35%	32.7	447.1	7.9%
40%	34.1	448.5	8.3%
45%	35.3	449.8	8.6%
50%	**36.7**	**451.1**	**8.9%**

Percentile of simulation results	Simulated contingency ($M)	Simulated total expansion capital cost ($M)	% of total expansion CAPEX
55%	38.0	452.4	9.2%
60%	39.4	453.9	9.6%
65%	40.7	455.2	9.9%
70%	42.3	456.8	10.3%
75%	44.0	458.4	10.7%
80%	45.8	460.2	11.1%
85%	47.9	462.3	11.6%
90%	50.6	465.1	12.3%
95%	54.5	469.0	13.2%

ODV selected a contingency of $36.7M, which is the P50 of the Monte Carlo simulation. This represents approximately 8% of the expansion capital costs, as per Figure 21-3

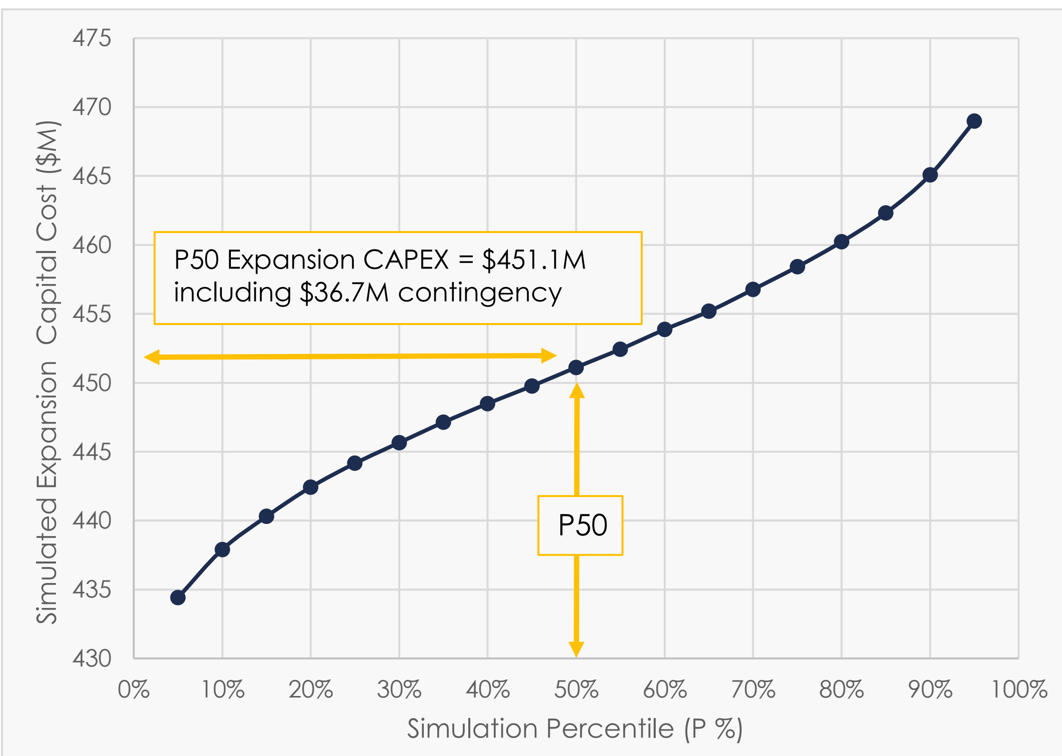


Figure 21-3: Monte Carlo expansion capital cost estimate

21.1.6 Sustaining Capital Cost

Sustaining capital costs were estimated using the same estimation basis as outlined for the initial and expansion direct costs. The sustaining capital is incurred to maintain a 1,500 tpd capacity throughout Phase 1 of the Project and of 4,900 tpd throughout Phase 2 of the Project. It consists mainly of underground mine development costs and operating lease costs for mobile equipment and the electrical transmission line. Total sustaining capital costs incurred over the approximate 12 years of production are $466.6M of project-related capital expenditures, excluding end-of-mine site reclamation and closure costs. The sustaining capital costs, including site closure, restoration, and net of salvage value is $427.8M. The breakdown of LOM sustaining capital expenditures by area is provided in Table 21-26, while a detailed sustaining capital cost schedule is provided in Table 21-27.

Table 21-26: Project sustaining capital cost summary

Area	Description	Sustaining Capital Cost ($M)	%
000	Surface Mobile Equipment	9.3	2%
200	Underground Mine	313.3	73%
300	Waste & Water Management	37.3	9%
400	Electrical & Communication	62.9	15%
500	Surface Infrastructure	2.7	1%
600	Process Plant - Wells	4.4	1%
700	Construction Indirect Costs	1.1	0%
800	General Services	27.0	6%
999	Contingency	8.6	2%
	Total	**466.6**	**109%**
	Site Reclamation and Closure	17.3	4%
	Salvage Value	(56.2)	-13%
	Total – Forecast to Spend	**427.8**	**100%**

Table 21-27: Sustaining capital costs by year summary

Area	Cost Area Description	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	Total	%
000	Surface Mobile Equipment	-	1.3	2.0	2.9	1.1	1.1	0.1	0.4	-	0.4	-	-	-	9.3	2%
200	Underground Mine	11.9	41.6	7.7	38.5	56.3	37.4	30.0	23.3	19.9	28.6	12.7	5.2	-	313.3	73%
300	Water and Waste Management	-	29.9	0.8	6.2	0.5	-	-	-	-	-	-	-	-	37.3	9%
400	Electrical & Communications	-	2.0	1.9	1.9	10.7	9.3	9.4	9.3	9.3	9.3	-	-	-	62.9	15%
500	Surface Infrastructure	-	1.5	0.5	0.3	-	-	0.3	0.0	-	-	-	-	-	2.7	1%
600	Process Plant	-	1.3	1.3	0.7	0.7	0.4	-	-	-	-	-	-	-	4.4	1%
700	Construction Indirect Costs	-	0.7	0.1	0.2	-	-	-	-	-	-	-	-	-	1.1	0%
800	General Services	-	-	-	3.6	3.7	3.2	2.9	3.1	2.9	2.7	2.6	2.3	-	27.0	6%
999	Contingency	0.2	1.5	0.3	1.0	1.4	1.0	0.8	0.7	0.6	0.8	0.3	0.1	-	8.6	2%
	Subtotal	**12.1**	**79.8**	**14.5**	**55.5**	**74.4**	**52.3**	**43.6**	**36.8**	**32.7**	**41.7**	**15.6**	**7.7**	**-**	**466.6**	**109%**
	Site Reclamation and Closure	-	-	-	-	-	-	-	-	-	-	-	-	17.3	17.3	4%
	Salvage Value	-	-	-	-9.5	-	-5.8	-	-	-6.9	-	-	-	-34.0	- 56.2	-13%
	Total	**12.1**	**79.8**	**14.5**	**46.0**	**74.4**	**46.5**	**43.6**	**36.8**	**25.8**	**41.7**	**15.6**	**7.7**	**-16.7**	**427.8**	**100%**

21.1.6.1 Surface Mobile Equipment (Area 000)

The sustaining capital costs associated with mobile equipment represent:

- Leasing costs on surface mobile equipment; and,
- Capital costs related to major overhauls.

Table 21-28: Mobile equipment sustaining capital costs

Area	Cost Area Description	Total Cost ($M)
020	Surface Mobile Equipment	9.3
	Total	**9.3**

The sustaining capital costs for surface mobile equipment were provided by ODV and approved by BBA.

21.1.6.2 Underground Mine (Area 200)

A large portion of sustaining capital costs is attributable to the underground mining operation. The sustaining capital costs related to the underground mine are estimated to be $313.3M. Significant sustaining capital is required as mining progresses, which includes drifts, ventilation raises, ramp extension, underground infrastructure, underground electrical and communications, underground material handling, paste backfill network, and mobile equipment. The underground mining sustaining capital costs are summarized in Table 21-29. InnovExplo provided the estimates for all underground mining sustaining capital costs, except for the paste network costs that were estimated by Golder.

Table 21-29: Underground sustaining capital costs

Area	Cost area description	Total cost ($M)
200	U/G Mobile Equipment	123.5
210	U/G Infrastructure	5.6
230	U/G Ventilation	10.0
240	U/G Water Management	7.8
250	U/G Electrical	17.7
260	U/G Communication	3.5
270	U/G Backfill	25.1
280	U/G Development	120.0
290	U/G Material Handling/Processing	0.0
	Total	**313.3**

21.1.6.3 Water and Waste Management (Area 300)

The sustaining capital costs for the waste and water management portion of the Project were as follows:

Table 21-30: Mine surface facilities sustaining capital costs

Area	Cost Area Description	Total Cost ($M)
310	Waste Management	1.9
330	Water Systems	0.8
340	Water Management Infrastructure	4.8
350	Effluent Water Management	29.9
	Total	**37.3**

21.1.6.4 Waste Rock Storage Facility at Bonanza Ledge

The sustaining capital costs for the Waste Rock Storage Facility ("WRSF") were $1.9M for the expansion of the WRSF at Bonanza Ledge from the initial footprint of the facility. The design and quantities were provided by Golder, while the costs were provided by JDS.

21.1.6.5 Water Systems at QR

During operations at QR, new water systems will be constructed to support the site. The costs of $0.8M associated with a new raw water pump and piping, as well as a potable water treatment plant were provided by Golder.

21.1.6.6 Water Management Infrastructure

With the expansion of the WRSF at the Bonanza Ledge Site, additional water management infrastructure will be required. The design and material quantities for earthworks related to this water management infrastructure were provided by Golder, while costs of $3.1M were provided by JDS.

The costs of $1.2M for water conveyance systems required at the Bonanza Ledge site were provided by Golder.

Several years into the operation at the QR site, a sedimentation pond south of the Filtered stack tailings storage facility ("FSTSF") will be constructed. The design and quantities were provided by KCB, while the costs of $0.5M were provided by JDS.

21.1.6.7 Water Management Plant

A water treatment plant ("WTP") at the MSC site will be required to sustain the mining activities as the mine development will occur below the water table and the dewatering of the historical mine workings near the mine will take place. The design, quantities, and costs of the MSC WTP ($25.0M) were provided by WSP.

21.1.6.8 Effluent Pumping and Piping

The design and cost of the treated effluent pumping station and pipeline ($1.5M) and the diffuser at the discharge location ($2.8M) were provided by Golder.

21.1.6.9 Sewage Treatment

At the QR Mill site, a sewage treatment system will be implemented to sustain the operation after the initial phase of the Project. The design and the costs in the total of $0.6M were provided by Golder.

21.1.6.10 Electrical and Communication (Area 400)

The sustaining capital costs of the Project for the electrical and communication portions were established by BBA, and are summarized in the table below:

Table 21-31: Electrical and communication sustaining capital costs

Area	Cost area description	Total cost ($M)
410	Power supply and distribution	62.9
	Total	**62.9**

The following costs are included in the table above:

- Leasing costs for the 66 kV power line;
- Leasing costs for the Wells 66 kV / 138 kV substation;
- Leasing costs for the natural gas generators; and,
- Capital costs related to the electrical distribution to sustain the operations.

21.1.6.11 Surface Infrastructure (Area 500)

Golder provided the sustaining costs related to surface infrastructure required to sustain the operation through the LOM, which are summarized in the table below:

Table 21-32: Site infrastructure sustaining capital costs

Area	Cost area description	Total cost ($M)
510	Roads	0.1
530	Service buildings	1.0
550	Mine surface infrastructure	1.1
590	Surface infrastructure general	0.5
	Total	**2.7**

21.1.6.12 Processing (Area 600)

The sustaining capital costs of the Project for the process plant are the costs associated with the leasing of the crushing system used at Bonanza Ledge during Phase 1.

Table 21-33: Processing sustaining capital costs

Area	Cost area description	Total cost ($M)
610	Crushing, sorting, and conveying	4.4
	Total	**4.4**

21.1.6.13 Construction Indirects (area 700)

Construction indirects for sustaining capital costs were produced by ODV and approved by BBA, as follows:

Table 21-34: Construction indirect sustaining capital costs

Area	Cost area description	Total cost ($M)
710	Engineering, project and construction management	0.7
730	Construction services	0.4
	Total	**1.1**

21.1.6.14 General Services (Area 800)

The sustaining capital costs of the Project for the general services for the sustaining capital was estimated at $27.0M as summarised in Table 21-35:

Table 21-35: General services sustaining capital costs

Area	Cost area description	Total cost ($M)
880	General services	27.0
	Total	**27.0**

21.1.6.15 Contingency (Area 999)

As for the initial capital and expansion capital cost estimates, a contingency was calculated for the sustaining capital cost estimate. ODV selected a contingency of $8.6M, which represents approximately 2% of the sustaining capital costs.

21.1.6.16 Rehabilitation and Site Closure

Site reclamation and closure costs are estimated to total $17.3M. This estimate includes the reclamation, dismantling and removal of surface infrastructure, and restoration of the waste rock and tailings management facilities, as well as the associated monitoring and engineering activities. These activities are expected to commence in 2036, coinciding with the termination of operations. Table 21-36 provides a breakdown of the costs associated with site rehabilitation and closure.

Table 21-36: Site rehabilitation and closure

Cost area description	Total cost ($M)
Site rehabilitation and closure	17.3
Total	**17.3**

21.1.6.17 Salvage Value

The salvage value of mechanical, electrical, and underground mobile equipment was estimated to total $56.2M. Table 21-37 provides a breakdown of the costs associated with the salvage value of equipment from the Project.

Table 21-37: Salvage value

Area	Cost area description	Total cost ($M)
000	Surface mobile equipment	1.2
200	Underground mobile equipment	28.1
400	Electrical and communications	6.1
600	Processing	20.8
	Total	**56.2**

21.2 Operating Costs

21.2.1 Summary

The average OPEX over the approximately 12-year mine life is estimated to be $102.6 per tonne ("$/t") mined or $917.0 per ounce ("$/oz"). Table 21-38 and Figure 21-4 provide the breakdown of the projected operating costs by phase and cost area for the Project.

Table 21-38: Cariboo Gold Project operating cost summary

Area	Cost area description	Phase 1 unit cost ($/t mined)	Phase 2 unit cost ($/t mined)	Average LOM unit cost ($/t mined)	LOM ($M)	Annual average cost ($M/year)	Average LOM ($/oz)	OPEX (%)
000	Material transport	17.3	3.5	4.8	79.5	7.0	42.5	5%
200	Underground mining	77.6	51.1	53.6	894.9	78.4	478.7	52%
300	Water and waste management[1]	18.4	6.1	7.2	120.7	10.6	64.6	7%
600	Processing - mine site complex and QR	37.1	25.3	26.4	440.4	38.5	235.6	26%
800	General and administration[1]	19.4	9.8	10.7	178.8	15.7	95.7	10%
	Total	**169.8**	**95.8**	**102.6**	**1,714.4**	**150.2**	**917.0**	**100%**

1- Water and Waste Management and G&A operating cost do not include a portion of the expenditures which have been capitalized – refer to Sections 21.2.6 and 21.2.7.

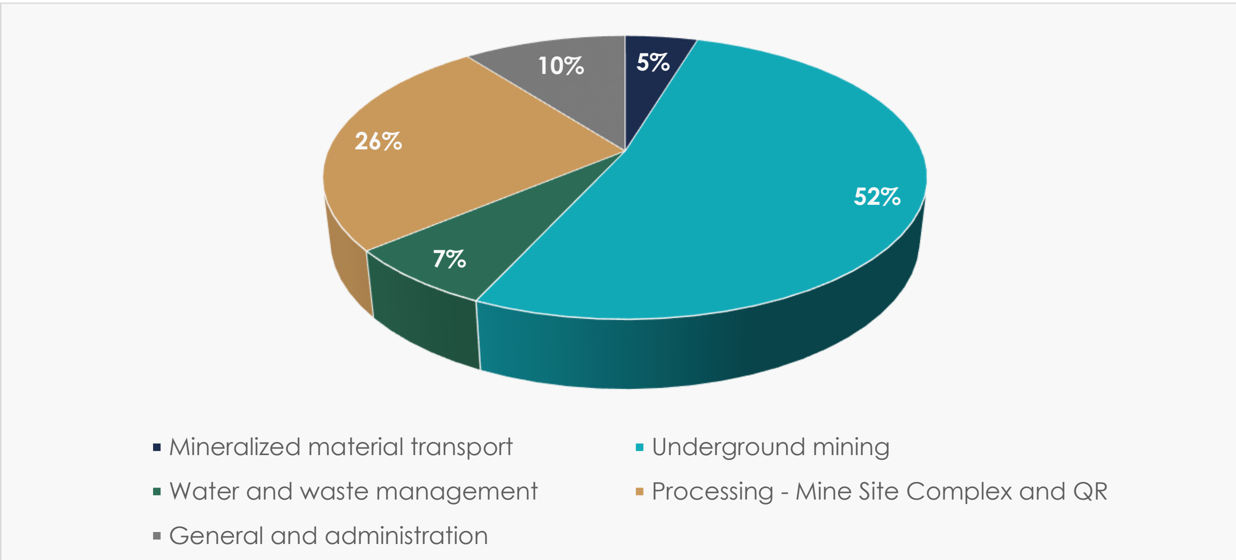


Figure 21-4: Project operating cost percentage by area

21.2.2 Basis of Operating Cost Estimate

The operating cost estimate was based on Q4 2022 assumptions. The estimate has an accuracy of ±10%. All operating cost estimates are in CAD. Costs were generally itemized in detail; however, some items of lesser significance are calculated estimates, or have been included as an allowance. Many items of the operating cost estimate are based on budget quotations; allowances are based on in-house data, and salaries are based on ODV's projected salary chart.

The operating cost estimate is based on the mine schedule indicative tonnage per time period that was produced by ODV and InnovExplo for the Feasibility Study and it is inclusive of site costs to the final Project close-out, including the waste management facilities—see Chapter 16 for more details related to the mine plan.

21.2.2.1 Assumptions and Exclusions

The following items were assumed:

- Some existing equipment and materials will be reused.
- The labour rate build-up will be based on the statutory laws governing benefits to workers that were in effect at the time of the estimate.
- No cost of commissioning assistance post C4 certificate issuance is included in the operating cost estimate.

- Freight estimates are based on vendor supplied freight quotations or in-house data. Freight for reagents is included in the price of those commodities. Freight for steel consumables is included in the price of that material. Freight for spare parts is calculated as a percentage of equipment cost expected to be used annually.
- No contingency is assumed.
- No cost escalation (or de-escalation) is assumed.

The following items were specifically excluded from the operating cost estimate, unless identified by the Owner's team and included in the General Services:

- Cost of financing and interest;
- Pre start-up operations and maintenance training;
- Pre-production OPEX related to the operation and maintenance of the water treatment system at QR;
- Pre-production OPEX prior to Q1 2024 related to the operation and maintenance of the water treatment and conveyance systems at Bonanza Ledge;
- Transport, insurance, and refining of doré from the plant (deducted from sales in calculating gross revenue).

21.2.2.2 Estimate Responsibilities

The overall operating cost estimate combined inputs from a number of sources, including InnovExplo, Golder, WSP, KCB, Falkirk, and BBA, as summarized in Table 21-39.

Table 21-39: Operating cost estimate responsibilities

Cost area description	Responsible entity
Mineralized material transport	BBA
Underground mining	InnovExplo, Golder
Water and waste management	WSP, Golder, KCB, JDS
Processing (MSC and QR Mill)	BBA
General and Administration	BBA

21.2.2.3 General Unit Rates

The general unit rates used in the operating cost estimate are summarized in Table 21-40. Propane, liquified natural gas and diesel unit prices do not consider the carbon tax, which was calculated separately along with mining taxes and corporate income taxes (Chapter 22).

Table 21-40: General rate and unit cost assumptions

Parameter	Unit	Value
Average daily LOM tonnage (Phase 1)	tpd	1,500
Average daily LOM tonnage (Phase 2)	tpd	4,900
Years of operation	years	12
LOM total tonnes mined	M tonnes	16.7
LOM average gold grade	Au g/t	3.8
LOM average silver grade	Ag g/t	0.1
LOM total gold recovered	koz	1,870
LOM total silver recovered	koz	16.8
BC Hydro grid power unit cost (MSC)	$/kWh	0.066
BC Hydro grid power unit cost (QR Mill)	$/kWh	0.078
Generator power unit cost	$/kWh	0.194
Liquified natural gas unit cost	$/GJ	17.75
Propane unit cost	$/litre	0.67
Diesel unit cost	$/litre	1.25

21.2.3 Mining

InnovExplo provided estimates for all underground mine operating costs. The total underground mine operating cost is $895M for the Project. The operating unit costs were calculated over the total ore mined from development and from production, including the marginal tonnages during pre-production. The unit cost is $53.6/t mined. Mining operating costs are mostly composed of wages, electric power, consumables, fuel, and equipment maintenance. Equipment lease payments have not been included in operating costs, as they have been included as sustaining capital expenditures. All stope access development has been allocated to the operating cost. A total of 94 and 155 employees per rotation related to underground mining for operation and maintenance are respectively anticipated for Phase 1 and Phase 2 in Wells. Table 21-41 and Table 21-42 summarize the underground operating costs for the Project and provide a breakdown per item and per phase.

Table 21-41: Phase 1 Mining Operating Cost

Cost area	Average Annual cost	Phase 1 cost	Cost per tonne mined	OPEX
	($M)	($M)	($/t)	(%)
Definition Drilling	0.8	2.2	1.44	2%
Mine Development	11.0	31.2	20.20	26%
Production - Stope Preparation	0.9	2.4	1.57	2%
Production - Drilling and Blasting	6.1	17.3	11.22	14%
Production - Mucking and Hauling	3.1	8.6	5.60	7%
Production - Backfill	7.6	21.4	13.86	18%
UG Services	3.9	11.1	7.20	9%
Maintenance	4.8	13.5	8.76	11%
Energy Cost	4.2	12.0	7.79	10%
Material Handling	0.0	0.0	0.00	0%
Total	**42.3**	**119.8**	**77.64**	**100%**

Table 21-42: Phase 2 Mining Operating Cost

Cost area	Average Annual cost	Phase 2 cost	Cost per tonne mined	OPEX
	($M)	($M)	($/t)	(%)
Definition Drilling	2.7	23.0	1.52	3%
Mine Development	21.3	183.4	12.10	24%
Production - Stope Preparation	2.9	24.9	1.65	3%
Production - Drilling and Blasting	22.0	189.4	12.49	24%
Production - Mucking and Hauling	12.5	107.8	7.11	14%
Production - Backfill	7.9	68.1	4.49	9%
Underground Services	7.4	63.4	4.18	8%
Maintenance	7.9	68.1	4.49	9%
Energy Cost	3.6	31.1	2.05	4%
Material Handling	1.9	15.9	1.05	2%
Total	**90.2**	**775.1**	**51.13**	**100%**

21.2.4 Material Transport

The cost to transport concentrate from the MSC in the District of Wells ("Wells") to the QR Mill, was estimated based on a quote from a potential supplier. An average of approximately 770 tpd of concentrate will be transported from the MSC to the QR Mill over a distance of 122 kilometres ("km") during Phase 1 of the Project, and an average of approximately 590 tpd over a distance of 111 km during Phase 2 of the Project. For the FS, it was assumed that the concentrate transport would be provided by a bulk transport company on a contracted basis using 46-tonne self-dumping trucks during Phase 1 and 49-tonne trucks with a stationary tipper at the QR Mill during Phase 2. The average operating costs for material transport (truck loading, transport, dumping, and administration) was calculated to be $4.76/t mined. The concentrate transport operating costs are presented in Table 21-43.

Table 21-43: Concentrate transport operating costs

Item	Total cost	Average annual cost	Cost per tonne mined	Percentage of total
	($M)	($M/year)	($/t)	(%)
Concentrate transport	79.5	6.6	4.8	100

21.2.5 Processing

The average processing operating costs were calculated over the LOM for both the MSC and QR Mill. The operating cost was estimated to be $37.1/t, mined during the Project's initial 1,500-tpd phase, and $25.3/t, which was mined during the Project's 4,900-tpd phase, resulting in a LOM cost of $26.4/t mined. The steady-state operating costs include reagents, grinding media, plant maintenance materials, laboratory operating fees, energy (electricity, propane, and LNG), and personnel required for operating both mills and the paste plant. A breakdown of the steady-state processing operating costs for both Phase 1 and 2, without contingency, is presented in Table 21-44 and in Table 21-45.

Table 21-44: Phase 1 mill operating costs

Cost area	Average Annual cost	Phase 1 cost	Cost per tonne mined	OPEX
	($M)	($M)	($/t)	(%)
Reagents	2.3	6.6	4.3	12
Cement	-	-	-	-
Maintenance, parts, and materials	2.1	6.0	3.9	10
Major equipment consumables	0.6	1.6	1.0	3
Grinding media	0.9	2.7	1.7	5
Personnel and contractors	8.9	25.1	16.3	44
Utilities	4.7	13.4	8.7	23
Miscellaneous	0.7	2.0	1.3	3
Total	**20.2**	**57.2**	**37.1**	**100**

Table 21-45: Phase 2 mill operating costs

Cost area	Average Annual cost	Phase 2 cost	Cost per tonne mined	OPEX
	($M)	($M)	($/t)	(%)
Reagents	3.6	30.5	2.0	8
Cement	12.4	106.4	7.0	28
Maintenance, parts, and materials	4.4	37.9	2.5	10
Major equipment consumables	1.0	8.8	0.6	2
Grinding media	1.9	16.5	1.1	4
Personnel and contractors	12.1	104.4	6.9	27
Utilities	8.5	72.8	4.8	19
Miscellaneous	0.7	6.0	0.4	2
Total	**44.6**	**383.3**	**25.3**	**100**

21.2.5.1 Reagents and Cement

Reagent and cement consumptions are reported in Section 17.8. Budget quotes were obtained from suppliers in 2022. A factor was added to the budgetary prices to cover transportation expenses. A summary of the average annual reagent and cement costs is presented in Table 21-46 for both phases. In Phase 1, the average annual cost of reagents is calculated to be $2.3M, or $4.3/t mined. In Phase 2, the average annual cost of reagents and cement is calculated to be $3.6M, or $2.0/t mined.

Table 21-46: Phase 1 and Phase 2 Reagent costs

Cost area	Phase 1				Phase 2			
	Average annual cost	Phase 1 cost	Cost per tonne mined	OPEX	Average annual cost	Phase 2 cost	Cost per tonne mined	OPEX
	($M)	($M)	($/t)	(%)	($M)	($M)	($/t)	(%)
PAX	0	0	0	0%	0.47	3.99	0.47	13%
MIBC	0	0	0	0%	0.17	1.42	0.17	5%
Flocculant – Wells	0	0	0	0%	0.05	0.45	0.03	1%
Sodium cyanide	0.81	2.23	2.87	35%	1.20	10.3	5.61	34%
Sodium hydroxide	0.10	0.27	0.34	4%	0.24	2.39	1.30	8%
Lime (CaO)	0.18	0.50	0.64	8%	0.17	1.44	0.80	5%
Flocculant	0.35	0.99	0.64	15%	0.07	0.60	0.04	2%
Sodium metabisulfite	0.61	1.73	2.16	26%	0.37	3.96	2.16	13%
Copper sulfate	0.05	0.13	0.16	2%	0.04	0.32	0.17	1%
Nitric acid	0.08	0.24	0.30	4%	0.26	2.25	1.22	7%
Carbon	0.07	0.19	0.23	3%	0.05	0.43	0.23	1%
Oxygen	0.00	0.00	1.28	0%	0.27	2.36	1.28	8%
Refinery reagents	0.05	0.14	0.28	2%	0.05	0.46	0.28	2%
Antiscalant	0.02	0.05	0.07	1%	0.01	0.12	0.07	0%
Total	**2.32**	**6.56**	**4.25**	**100%**	**3.55**	**30.5**	**2.01**	**100%**

21.2.5.2 Personnel and Contractors

A total of 69 workers are required for processing in Phase 1, including 11 salaried staff and 58 hourly workers divided amongst management and technical services, operations, and maintenance departments. For Phase 2, a total of 107 workers are required: 21 salaried staff and 86 hourly. Of the 107 workers 49 are associated to the MSC and 58 to QR Mill. The list of personnel, along with the salaries and benefits, including bonuses where applicable, associated with each position was provided by ODV. The contractor and consultant costs for processing include items such as special projects and research and development ("R&D"), which were added to the operation and maintenance personnel cost. The labour and contractor cost is estimated at an average of $11.3M per year or $7.8/t mined, which represents 29% of the processing operating costs.

21.2.5.3 Maintenance Materials and Consumables

QR Mill maintenance materials and consumables were estimated per previous operational experience with a percentage of new equipment capital cost and supplier data. Allowances were also added to cover miscellaneous expenses. Maintenance materials and consumables for Bonanza Ledge and the MSC concentrator were estimated based on the equipment capital cost per area and supplier data. Allowances were added for general materials, miscellaneous mechanical, piping, electrical, and instrumentation materials. The total cost for these items was estimated to average $3.8M per year or $2.6/t mined, which represents 10% of the processing operating costs.

21.2.5.4 Grinding Media

The Project process flowsheet requires two different sizes of steel media for the mills. For QR Mill it was calculated based on past operational data. The consumption rates for the media at the MSC was calculated based on similar operations, whereas budgetary quotations were obtained for each type of media used. The average annual cost of media was estimated to be $1.7M or $1.1/t mined, which represents 4% of the processing operating costs.

21.2.5.5 Energy

An estimate of the electrical energy consumption was reported in Section 17.7, and it is based on the load list. The cost of electricity was calculated based on BC Hydro average cost of 7.8 cents per kilowatt hour ("¢/kWh") for QR Mill, and an average cost of 6.6 ¢/kWh for the concentrator at the MSC. The propane consumption (used for heating) was estimated based on the historical billing at QR Mill. The LNG consumption for the crushing and ore sorting at the Bonanza Ledge site was estimated by converting the required total electricity demand at Bonanza Ledge into LNG consumption. The energy costs represent approximately 20% of the total process operating costs, at an average yearly cost of $7.5M or $5.2/t mined.

21.2.5.6 Mobile Equipment and Laboratory Fees

Mobile equipment will be required at all sites for operations and maintenance. The average of yearly laboratory fees is estimated at $0.6M. The samples collected include slurries from various stages of the flowsheet or the metallurgical laboratory, both high- and low-grade solution samples, carbon, bullion, and slag. The mobile equipment and laboratory costs represent approximately 2% of the total process operating costs, at an average yearly cost of $0.7M or $0.5/t mined.

21.2.6 Water and Waste Management

The water and waste management operating costs for the three sites were based on detailed estimates. The annual average operating costs (net of $5.4M of capitalised operating costs) were determined to be $10.2M per year or $7.2/t mined. A total of 9 employees are expected for both Phase 1 and Phase 2 of the Project. This cost area includes the following operating costs:

- Water treatment plant operations, maintenance, and consumables costs were provided by WSP;
- Water conveyance systems operating costs at Bonanza Ledge and MSC were provided by Golder;
- WRSF operating costs were provided by ODV and approved by JDS;
- FSTSF operating costs were provided by ODV and approved by JDS;
- Environmental department costs and monitoring fees were provided by ODV and approved by Falkirk;

A breakdown of the water and waste management costs is presented by activity in Table 21-47.

Table 21-47: Water and waste management operating costs by activity

Item	Total cost	Average annual cost	Cost per tonne mined	Percentage of total
	($M)	($M/year)	($/t)	(%)
Bonanza Ledge water treatment	14.1	1.2	0.8	12%
Mine Site Complex water treatment	22.6	1.9	1.4	19%
QR water treatment	35.9	3.0	2.1	30%
Water conveyance systems	2.8	0.2	0.2	2%
WRSF	11.1	0.9	0.7	9%
FSTSF	23.0	1.9	1.4	19%
Environmental department and monitoring	16.6	1.4	1.4	14%
Subtotal	**126.1**	**10.5**	**7.6**	**104%**
Transfer to capital expenditures	(5.4)	(0.4)	(0.3)	(4) %
Total	**120.7**	**10.2**	**7.2**	**100%**

21.2.7 General and Administration

General and Administrative ("G&A") costs are expenses not directly related to the production of goods and encompass items not included in the mining, processing, water and waste management, refining, and transportation costs of the Project. These costs were developed based on ODV and BBA's past project experience, and on that of similar sized operations.

The G&A cost area includes the following items:

- Site administration and management labour;
- Administration:
  - Insurance;
  - Quesnel office rental and maintenance;
  - Office supplies;
  - Camp and administration buildings electricity and heating;
  - Property taxes;
  - Mineral lease rental;
  - Legal and bank fees.

- Human resources and community support:
  - Training;
  - Community and Impact Benefit Agreement ("IBA") commitments;
  - Sponsorships and association fees.
- Information technology:
  - Communication service fees;
  - IT equipment and supplies.
- Health and safety:
  - Personal protective equipment and first aid supplies and industrial hygiene supplies;
  - Medical consultations;
  - Mine rescue team training.
- Technical services:
  - Equipment and software licenses;
  - Specialised consultants.
- Site services:
  - Roads and building maintenance;
  - Waste and sewage collection and disposal services;
  - Snow clearing;
  - Mobile equipment operations and maintenance.
- Camp and food services:
  - Management and maintenance;
  - Cleaning services;
  - Food supply.
- Employee land transport;
- Security services.

A portion of G&A operating costs ($65.1M) attributable to the construction and underground development workforce was capitalised and included in WBS area 800 within the Phase 1, 2 and sustaining capital cost estimates.

The overall G&A services labour will total approximately 48 employees during Phase 1 and 62 employees during Phase 2. At its peak in Phase 2 the headcount will includes three mine administration employees, three finance employees, three information technology employees, five logistics employees, seven site services employees, nine environmental department staff, two human resources employees, six health and safety employees, and twenty-four technical services employees (surveying, mining engineering, and geology).

In general, the management and administrative staff will work 40 hours per week on day shift. Some logistics, health and safety, and technical services personnel will work a 12-hour shift per day.

On an annual basis and net of G&A costs transferred to capital expenditures, the G&A operating costs are estimated to be $14.9M/year or approximately $178.8M over the LOM. The average G&A operating cost on a per tonne mined basis is $10.7/t. The operating costs within the G&A category are shown by activity in Table 21-48, The greatest cost within the G&A category is camp and food services representing approximately 25%, followed by administration, representing approximately 18%.

Table 21-48: General and administrative costs by activity

Item	Total cost	Average annual cost	Cost per tonne mined	Percentage of total
	($M)	($M/year)	($/t)	(%)
Administration	44.8	3.7	2.7	18%
Logistics	7.8	0.7	0.5	3%
Finance	4.0	0.3	0.2	2%
Human resources and community support	9.8	0.8	0.6	4%
Information technology	9.1	0.8	0.5	4%
Health and safety	14.5	1.2	0.9	6%
Technical services	39.5	3.3	2.4	16%
Site services	42.5	3.5	2.5	17%
Camp and food services	61.7	5.1	3.7	25%
Employee land transport	5.4	0.5	0.3	2%
Security services	4.9	0.4	0.3	2%
Subtotal	**243.9**	**20.3**	**14.6**	**100%**
Transfer to capital expenditures	(65.1)	(5.4)	-3.9	(27)%
Total	**178.8**	**14.9**	**10.7**	**73%**

21.3 Site Personnel Summary – All Areas

It is anticipated that 314 employees (staff and labour) will be required at the peak of operations during Phase 1, and that 488 employees will be required at the peak of operations during Phase 2. A summary of labour in all areas is shown in Table 21-49.

Table 21-49: Summary of maximum personnel per phase

Area	Activity	Phase 1	Phase 2
General and administration	Mine administration	3	3
	Logistics	5	5
	Finance	3	3
	Information technology	2	3
	Human resources	2	2
	Health and safety	5	6
	Technical services	17	24
	Environmental Services	6	9
	Site services	5	7
	Subtotal	**48**	**62**
Underground mine	Staff and supervision	9	12
	Operations	122	201
	Maintenance and services	57	97
	Subtotal	**188**	**310**
Process plant	Staff and supervision	11	16
	Operations	38	53
	Maintenance and services	20	38
	Subtotal	**69**	**107**
Water and waste management	Operations	9	9
	Subtotal	**9**	**9**
Total		**314**	**488**

22. Economic Analysis

22.1 Overview

The economic assessment of the Cariboo Gold Project (the "Project") for Osisko Development Corp. ("ODV") was carried out using a discounted cash flow approach on a pre-tax and after-tax basis, based on consensus equity research on long-term commodity price projections in United States dollars and cost estimates in the currency in which they are incurred. An exchange rate of USD 0.77 per CAD 1.00 was assumed to convert United States Dollar ("USD") projections and particular components of the capital cost estimates into Canadian Dollars ("CAD"). No provision was made for the effects of inflation. Current Canadian tax regulations were applied to assess the corporate tax liabilities, while the most recent provincial regulations were applied to assess the British Columbia mining and carbon tax liabilities.

The internal rate of return ("IRR") on total investment was calculated based on 100% equity financing, even though ODV may decide in the future to finance part of the Project with debt financing. The net present value ("NPV") was calculated from the cash flow generated by the Project, using a discount rate of 5%. The simple payback period and the payback period after the start of operations are based on the undiscounted annual cash flow of the Project and they are also indicated as a financial measure. Furthermore, a sensitivity analysis has been performed for the after-tax base case to assess the impact of variations in the Project capital costs, USD:CAD exchange rate, price of gold, and operating costs.

The economic analysis presented in this chapter contains forward-looking information with regards to the commodity prices, exchange rates, proposed mine production plan, projected metal recoveries, operating costs, construction costs, and the Project schedule. The results of the economic analysis are subject to a number of known and unknown risks, uncertainties, and other factors that may cause actual results to differ materially from those presented here.

Osisko Gold Royalties retains a 5.0% net smelter return royalty on the Project.

22.2 Assumptions and Basis

The economic analysis was performed using the following assumptions and basis:

- The Project Execution Schedule developed in Chapter 24, taking into consideration key Project milestones;
- The commercial production start-up is scheduled to begin in the fourth quarter (Q4) of 2024. The first full year of production at the initial capacity of 1,500 tonnes per day ("tpd") is, therefore, 2025. An expansion to 4,900 tpd shall be completed in the second quarter (Q2) of 2027. Operations are estimated to span a period of approximately twelve years ending in 2036;

- The base case gold price is USD 1,700 per ounce ("USD/oz");
- The long-term prices of gold and silver were estimated on the basis of discussions with experts, consensus analyst estimates, and recently-published economic studies. The forecasts used are meant to reflect the average metal price expectation over the life of the Project. No price inflation or escalation factors were taken into account. It is understood that commodity prices can be volatile and that there is the potential for deviation from the life of mine ("LOM") forecasts;
- The United States to Canadian dollar exchange rate has been assumed to be USD 0.77: CAD 1.00 over the life of mine (CAD:USD exchange rate of 1.30);
- All cost estimates are in constant Q4 2022 Canadian dollars with no inflation or escalation factors taken into account;
- All metal products are assumed to be sold in the same year that they are produced;
- Class specific Capital Cost Allowance rates are used for the purpose of determining the allowable taxable income;
- Final rehabilitation and closure costs are set to be incurred in 2036 (Year 13);
- An overall salvage value of $56.2M based on the estimated residual values of mobile equipment, processing equipment, and electrical equipment was considered;
- Project revenue is derived from the sale of gold and silver doré into the international marketplace. No contractual arrangements for doré smelting or refining exist at this time. This financial analysis was performed on both a pre-tax basis and after-tax basis. The general assumptions used for this financial model, LOM plan tonnage, and grade estimates are summarized in Table 22-1.

Table 22-1: Financial model parameters

Description	Unit	Value
Long Term Gold Price	USD/oz	1,700
Long Term Silver Price	USD/oz	20.00
Exchange Rate	USD:CAD	0.77
Discount Rate	%	5.0
Mine Life	years	12
Total Material Mined	Mt	16.7
Average Gold Grade	g/t	3.78
Average Silver Grade	g/t	0.07
Overall Gold Recovery	%	92.0
Overall Silver Recovery	%	48.1
Underground Mining	$/t	53.58

Description	Unit	Value
Processing	$/t	26.37
Concentrate Transportation	$/t	4.76
Waste and Water Management	$/t	7.23
General and Administrative	$/t	10.71
Royalties	% NSR	5.0
Initial Capital Cost[1]	$M	137.4
Expansion Capital Cost	$M	451.1
Sustaining Capital Cost	$M	466.6
Reclamation Cost	$M	17.3
Salvage Value	$M	56.2

Notes:

(1): Not including sunk costs ($2.5M) and pre-permit expenses ($64.8M) totalling $67.3M.

22.3 Metal Production

Over the life of the mine, a total of 1.87 million ounces ("Moz") of gold and 16,600 ounces ("koz") of silver will be recovered. Figure 22-1 provides an annual and cumulative production profile for gold.

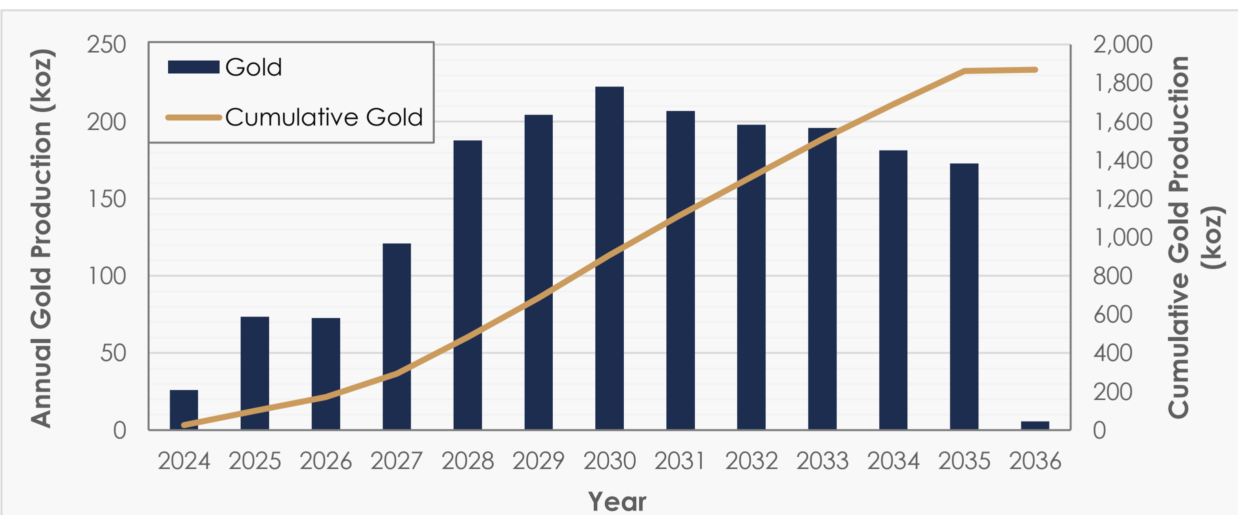


Figure 22-1: Annual and cumulative gold production

22.4 Capital Expenditures

All capital costs (pre-production, sustaining, reclamation, and closure) for the Project have been distributed against the Project schedule to support the economic cash flow model. Figure 22-2 presents the planned annual and cumulative LOM capital cost profile, excluding sunk costs and pre-permit expenses totalling $67.3M.

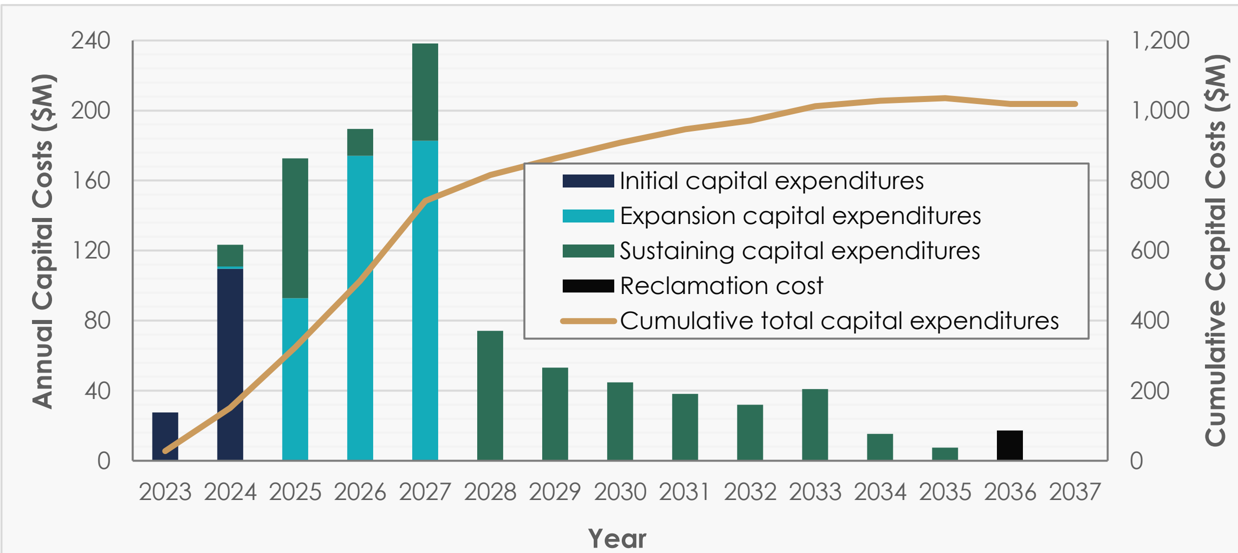


Figure 22-2: Overall Cariboo Gold Project capital cost profile

22.5 Royalties

Over the life of the Project, based on the agreement in place with Osisko Gold Royalties, a 5.0% net smelter return ("NSR") royalty is in place for the Project. It is estimated that approximately $206.3M in royalties are to be paid based on the base case metal prices and project assumptions.

22.6 Taxation

The taxation calculations for the Project were compiled with the assistance of ODV and their financial advisors. At the time of the effective date of this Report, the Project was subject to the following tax regimes:

- The Canadian Corporate Income Tax system, consisting of the federal income tax (modelled at a rate of 15%) and the provincial (British Columbia) income tax (modelled at a rate of 12%);

- The British Columbia Mineral Tax, which was modelled using a net current proceeds rate of 2% and a net revenue tax rate of 13%.

The tax calculations are underpinned by the following key assumptions:

- The calculations are based on the tax regimes valid at the date of the FS. Future changes in tax laws could impact the calculations;
- The tax attribute opening balances are based on information provided by ODV and include project related sunk costs and pre-permit expenses, which total $63.7M;
- The Project is held 100% by a corporate entity and the after-tax analysis does not attempt to reflect any future changes in corporate structure or property ownership;
- A total of 100% equity financing is assumed, and therefore, it does not consider interest and financing expenses;
- The BC carbon tax is deductible for BC mining tax purposes;
- The BC mineral and carbon taxes are deductible for federal and provincial income tax purposes;
- Payments projected relating to NSR royalties are allowed as a deduction for federal and provincial income tax purposes, but are added back for BC Mineral Tax purposes;
- Actual taxes payable will be affected by corporate activities and current and future tax benefits; however, these activities have not been considered.

The combined effect on the Project of the two levels of taxation, including the elements described above, is an approximate cumulative effective tax rate of 24%, based on Project earnings (earnings before interest and tax ["EBIT"]). It is anticipated, based on the Project assumptions, that ODV will pay approximately $70.0M in Canadian Corporate income tax, $56.0M in British Columbia Corporate income tax and $134.2M in British Columbia mineral tax over the life of the Project. Companies operating in British Columbia are subject to a carbon tax based on their annual greenhouse gas emissions. Carbon taxes for Scope 1 emissions have been applied to the tonnes of carbon dioxide equivalent ("t CO_2eq") amounts of the consumed fossil fuels such as diesel, gasoline, propane, and emulsion. The carbon tax rate is $50/t CO_2eq in 2022 and was assumed to escalate by $15 per year up to a maximum of $170/t CO_2eq. A total of 205,000 t CO_2eq will be produced over the LOM costing $30.4M in carbon taxes. The carbon tax amount is applied against the gross revenue when calculating federal and BC provincial income taxes, as well as when calculating the BC mining tax.

22.7 Financial Analysis Summary

A 5% discount rate was applied to the cash flow to derive the NPV for the Project on a pre-tax and after-tax basis. Cash flows have been discounted to the beginning of Q4 2023 under the assumption that the Project will be financed and its construction will be initiated at this time. The summary of the financial evaluation for the base case of the Project is presented in Table 22-2.

Table 22-2: Financial analysis summary (pre-tax and after-tax)

Description		Unit	Value
Pre-tax	Net Present Value (0% discount rate)	$M	1,191.7
	Net Present Value (5% discount rate)	$M	690.6
	Internal Rate of Return	%	24
	Simple Payback Period	year	6.7
	Payback Period (after start of operations)	year	5.8
After-tax	Net Present Value (0% discount rate)	$M	901.1
	Net Present Value (5% discount rate)	$M	502.4
	Internal Rate of Return	%	21
	Simple Payback Period	year	6.8
	Payback Period (after start of operations)	year	5.9

The pre-tax base case financial model resulted in an IRR of 24% and a NPV of $690.6M, based on a discount rate of 5%. The simple pre-tax payback period is 6.7 years. On an after-tax basis, the base case financial model resulted in an IRR of 21% and a NPV of $502.4M based on a discount rate of 5%. The simple after-tax payback period is 6.8 years. The summary of the Project discounted cash flow financial model (pre-tax and after-tax) is presented in Table 22-3.

Table 22-3: Summary of the Project discounted cash flow financial model

Year	Unit	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Total
		2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	
Production Summary																	
Total Tonnes Mined	kt	-	183.2	538.4	549.5	1,043.9	1,795.0	1,788.8	1,789.8	1,788.5	1,794.8	1,788.9	1,790.1	1,791.3	61.4	-	16,703.5
Total Tonnes Processed	kt	-	183.2	538.4	549.5	1,043.9	1,795.0	1,788.8	1,789.8	1,788.5	1,794.8	1,788.9	1,790.1	1,791.3	61.4	-	16,703.5
Head Grade Au	g/t	-	4.68	4.50	4.36	4.15	3.60	3.87	4.21	3.89	3.69	3.68	3.40	3.24	3.13	-	3.78
Head Grade Ag	g/t	-	0.11	0.18	0.04	0.03	0.03	0.02	0.04	0.08	0.10	0.06	0.09	0.08	0.09	-	0.07
Payable Gold	koz	-	26.0	73.5	72.7	121.1	187.9	204.3	222.7	206.9	198.0	196.0	181.3	172.8	5.7	-	1,868.9
Payable Silver	koz	-	0.3	1.7	0.4	0.4	0.9	0.6	1.2	2.2	2.7	1.7	2.4	2.0	0.1	-	16.6
Revenue																	
Exchange Rate	USD:CAD	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Net Smelter Return (NSR) Revenue	$M	-	57.4	162.4	160.6	267.3	414.7	450.9	491.5	456.8	437.1	432.6	400.3	381.6	12.6	-	4,125.7
Operating Expenditures																	
Mining	$M	-	8.7	38.5	46.7	80.4	94.7	86.6	89.3	99.1	93.9	95.9	80.0	78.3	2.7	-	894.9
Processing	$M	-	7.9	19.7	19.5	31.0	44.7	44.7	44.6	44.9	45.0	45.0	45.1	45.3	2.9	-	440.4
Material Transport	$M	-	3.3	9.5	9.2	7.4	6.2	6.1	6.2	6.2	6.3	6.3	6.3	6.3	0.2	-	79.5
Water and Waste Management(1)	$M	-	2.3	9.3	11.6	10.3	10.1	10.5	10.5	10.5	10.5	10.3	10.6	10.4	3.8	-	120.7
General and Administration(1)	$M	-	2.9	11.9	9.6	10.9	17.1	17.8	17.9	17.9	18.0	17.9	17.6	17.2	2.1	-	178.8
Operating Costs	**$M**	**-**	**25.1**	**88.9**	**96.8**	**140.0**	**172.7**	**165.7**	**168.5**	**178.7**	**173.6**	**175.4**	**159.7**	**157.6**	**11.7**	**-**	**1,714.4**
Royalty Payments	$M	-	2.9	8.1	8.0	13.4	20.7	22.5	24.6	22.8	21.9	21.6	20.0	19.1	0.6	-	206.3
Capital Expenditures																	
Initial	$M	27.6	109.7	-	-	-	-	-	-	-	-	-	-	-	-	-	137.3
Expansion	$M	-	1.3	92.8	174.2	182.8	-	-	-	-	-	-	-	-	-	-	451.1
Sustaining	$M	-	12.1	79.8	14.5	55.5	74.4	52.3	43.6	36.8	32.7	41.7	15.6	7.7	-	-	466.6
Reclamation and Closure	$M	-	-	-	-	-	-	-	-	-	-	-	-	-	17.3	-	17.3
Salvage Value	$M	-	-	-	-	-9.5	-	-5.8	-	-	-6.9	-	-	-	-34.0	-	-56.2
Total Capital Costs	**$M**	**27.6**	**123.0**	**172.6**	**188.8**	**228.8**	**74.4**	**46.5**	**43.6**	**36.8**	**25.8**	**41.7**	**15.6**	**7.7**	**-16.7**	**-**	**1,016.2**
Changes in Working Capital	$M	-	-0.7	-2.1	-0.4	-1.1	-0.2	0.7	0.3	-0.8	0.1	-0.1	0.5	-0.1	0.9	0.5	-2.8
Pre-Tax Cash Flow																	
Pre-Tax Cash flow	$M	-27.6	-93.0	-105.0	-132.6	-113.8	147.1	215.5	254.6	219.3	215.8	194.0	204.5	197.3	16.1	-0.5	1,191.7
Cumulative Pre-Tax Cash Flow	**$M**	**-27.6**	**-120.6**	**-225.6**	**-358.2**	**-472.1**	**-325.0**	**-109.5**	**145.1**	**364.5**	**580.3**	**774.3**	**978.8**	**1,176.1**	**1,192.1**	**1,191.7**	

Year	Unit	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Total
		2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	
Taxes and Duties																	
British Columbia Mining Duties	$M	-	0.6	1.4	1.2	2.5	4.8	5.6	6.4	5.5	21.8	27.6	28.8	27.7	-	-	134.2
Federal Corporate Income Tax	$M	-	-	-	-	-	-	-	-	7.8	22.2	21.9	20.6	19.9	-13.2	-9.1	70.0
British Columbia Corporate Income Tax	$M	-	-	-	-	-	-	-	-	6.3	17.7	17.5	16.5	15.9	-10.6	-7.3	56.0
Carbon Tax	$M	0.1	0.5	1.3	1.9	2.2	2.7	2.7	3.0	3.0	3.1	3.1	3.1	2.9	0.9	-	30.4
Total Taxes and Duties	**$M**	**0.1**	**1.2**	**2.7**	**3.1**	**4.7**	**7.5**	**8.4**	**9.4**	**22.6**	**64.8**	**70.1**	**69.0**	**66.5**	**-22.9**	**-16.4**	**290.7**
After-Tax Cash Flow																	
After-Tax Cash flow	$M	-27.7	-94.1	-107.8	-135.7	-118.6	139.6	207.1	245.2	196.7	151.0	123.9	135.5	130.8	39.0	15.9	901.1
Cumulative After-Tax Cash Flow	**$M**	**-27.7**	**-121.8**	**-229.6**	**-365.3**	**-483.8**	**-344.2**	**-137.1**	**108.1**	**304.8**	**455.8**	**579.7**	**715.3**	**846.1**	**885.1**	**901.0**	

(1) Water and Waste Management, and G&A operating costs do not include a portion of the expenditures, which have been capitalized – refer to Sections 21.2.6 and 21.2.7.

Figure 22-3 shows the cumulative cash flows for the Project as projected for the LOM on a pre-tax and after-tax basis.

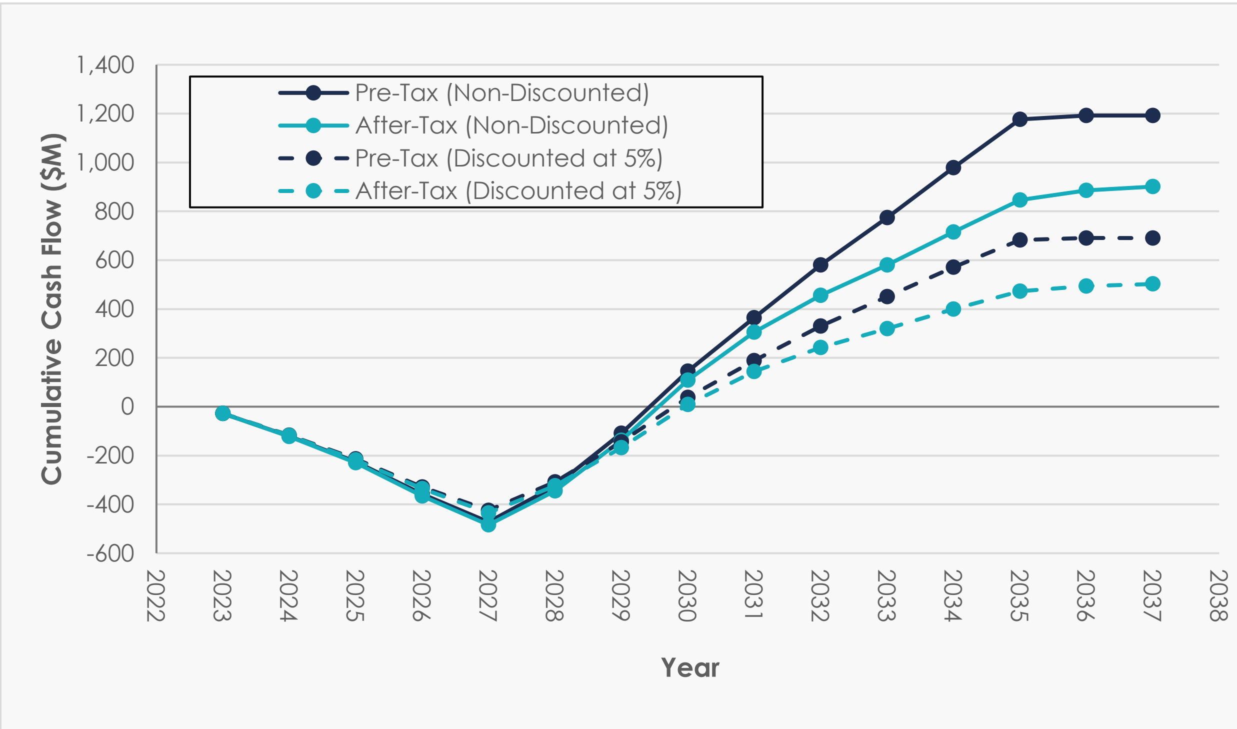


Figure 22-3: Life of mine cash flow projection (cumulative, pre-tax and after-tax)

22.8 Production Costs

A summary of the Project's production costs is provided in Table 22-4. All costs are in USD. Total cash costs are calculated per ounce on a payable basis using the costs of mining, material transport, processing, tailings, waste and water treatment, on-site general and administrative expenses ("G&A"), refining and smelting, and royalties. The LOM operating cash cost per ounce is USD 792.1 per ounce ("oz") gold ("Au"). The LOM all-in sustaining cost ("AISC"[1]) per ounce is USD 968.1/oz Au derived from the total cash costs plus sustaining capital, and closure costs. The operating margin over the LOM has been estimated to be USD 731.9/oz Au based on a gold price of USD 1,700/oz.

[1] All-in Sustaining Costs are presented as defined by the World Gold Council ("WGC") less corporate G&A costs.

Table 22-4: Production cost summary

Description	Unit	Value
Metal production		
Gold	koz	1,868.9
Silver	koz	16.6
Costs and Royalties		
Mining	USD M	688.4
Processing	USD M	338.8
Concentrate Transport	USD M	61.2
Waste and Water Management	USD M	92.9
General and Administration	USD M	137.6
Refining and Smelting	USD M	3.7
Royalties	USD M	158.7
Silver by-product credit	USD M	-0.3
Total Operating Cost (after credit)	USD M	1,480.8
AISC and Profit Margins (per oz payable)		
Gold Price	USD/oz	1,700
Cash Cost (Operating)	USD/oz	792.1
Sustaining and Closure Costs	USD M	329.1
Total Costs (Operating and Sustaining)	USD M	1,809.9
AISC	USD/oz	968.1
Operating Margin	USD/oz	731.9

22.9 Value Drivers

Figure 22-4 presents the primary Project value drivers in the form of a waterfall chart discounted at 5%. The main value drivers (over $250M) of the Project are processing recovery losses, mining operating expenses, processing operating costs, and mining capital expenditures.

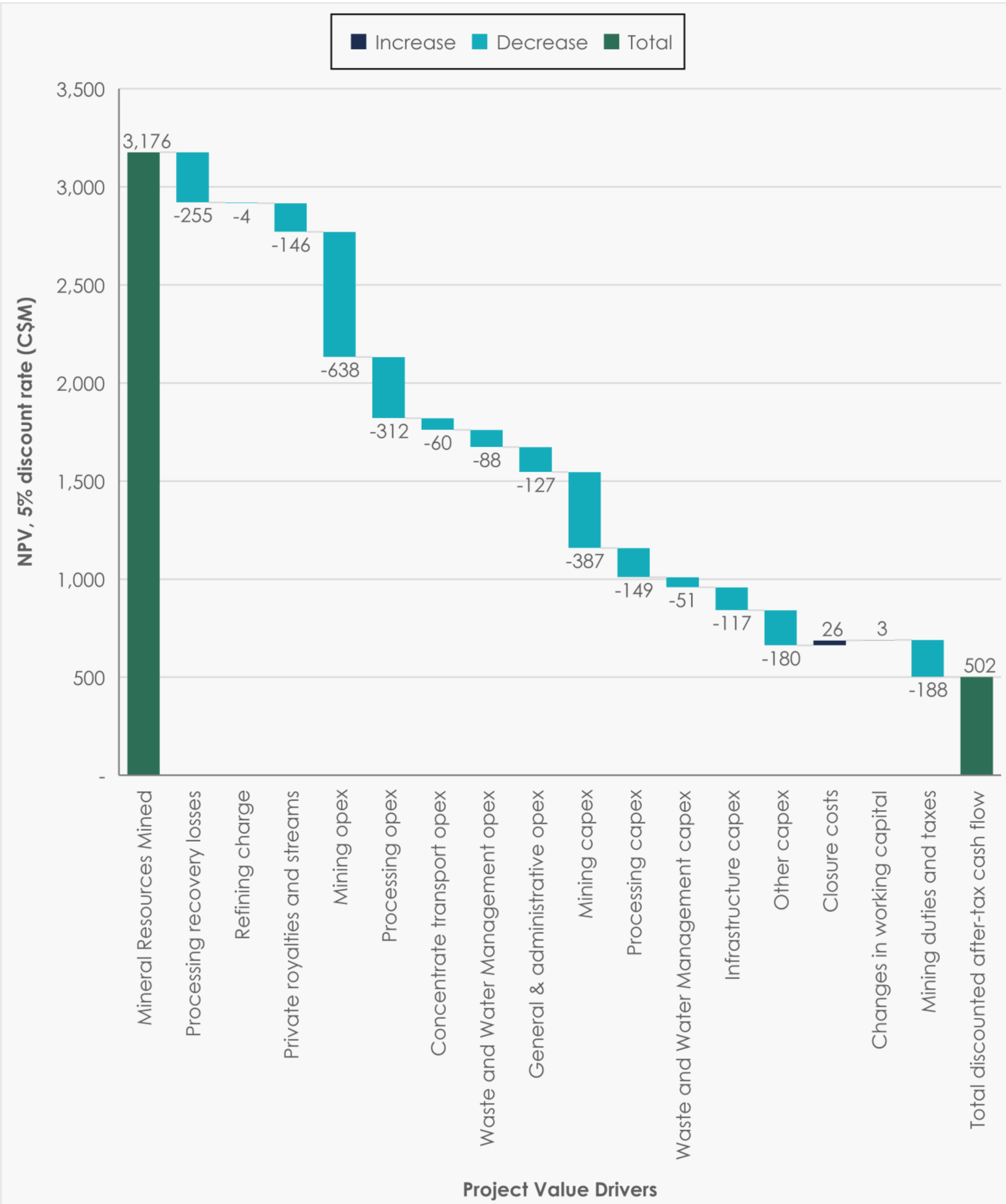


Figure 22-4: Main value drivers (discounted at 5%)

22.10 Sensitivity Analysis

A financial sensitivity analysis was conducted on the base case after-tax cash flow NPV ($M) and IRR of the Project, using the following variables: capital costs, operating costs, USD:CAD exchange rate, price of gold, and discount rate. The after-tax results for the Project IRR and NPV ($M) based on the sensitivity analysis are summarized in Table 22-5 through Table 22-9.

Table 22-5: NPV ($M) sensitivity results (after-tax) for metal price and exchange rate variations

USD:CAD	Gold Price (USD/ounce)							
	1,300	1,400	1,500	1,600	1,700	1,800	1,900	2,000
0.72	140.3	281.4	398.5	513.8	627.9	741.0	853.8	966.1
0.74	92.8	245.4	361.0	474.3	586.2	697.1	807.6	917.8
0.75	45.0	208.7	323.0	434.5	544.3	653.2	761.4	869.3
0.77	2.9	157.5	284.9	394.5	502.4	609.3	715.1	820.7
0.79	50.7	105.3	246.4	354.4	460.4	565.0	668.8	772.1
0.81	98.5	53.8	206.7	313.9	418.0	520.6	622.4	723.3
0.83	146.3	2.2	151.2	273.2	375.4	476.1	575.7	674.5

Table 22-6: IRR sensitivity results (after-tax) for metal price and exchange rate variations

USD:CAD	Gold Price (USD/ounce)							
	1,300	1,400	1,500	1,600	1,700	1,800	1,900	2,000
0.72	9%	14%	17%	21%	25%	29%	33%	37%
0.74	8%	12%	16%	20%	23%	27%	31%	35%
0.75	6%	11%	15%	18%	22%	26%	29%	33%
0.77	5%	10%	14%	17%	21%	24%	28%	31%
0.79	3%	8%	12%	16%	19%	23%	26%	30%
0.81	2%	7%	11%	15%	18%	21%	25%	28%
0.83	0%	5%	10%	13%	17%	20%	23%	26%

Table 22-7: NPV ($M) sensitivity results (after-tax) for capital (LOM) and operating costs variations

OPEX	CAPEX						
	-30%	-20%	-10%	0%	10%	20%	30%
-30%	922.9	863.6	803.9	744.0	683.9	623.7	562.7
-20%	843.6	783.7	724.0	663.8	603.6	542.6	481.5
-10%	763.6	703.8	643.8	583.4	522.5	461.4	399.5
0%	683.7	623.8	563.2	502.4	441.1	379.2	316.7
10%	603.8	543.1	482.2	420.8	358.9	296.1	233.0
20%	522.9	462.1	400.4	338.4	275.5	212.0	140.4
30%	441.8	380.1	317.8	254.8	190.4	100.2	11.3

Table 22-8: IRR sensitivity results (after-tax) for capital (LOM) and operating costs variations

OPEX	CAPEX						
	-30%	-20%	-10%	0%	10%	20%	30%
-30%	49%	41%	34%	29%	25%	22%	19%
-20%	44%	37%	31%	26%	23%	20%	17%
-10%	40%	33%	28%	24%	20%	17%	15%
0%	35%	29%	25%	21%	18%	15%	13%
10%	31%	26%	21%	18%	15%	13%	11%
20%	27%	22%	18%	15%	13%	10%	8%
30%	23%	19%	15%	13%	10%	8%	5%

Table 22-9: NPV sensitivity results (after-tax) for discount rate

	Discount rate				
	0%	3%	5%	8%	10%
NPV (M$)	901.1	638.1	502.4	342.9	259.5

The graphical representations of the financial sensitivity analysis are depicted in Figure 22-5 for the Project's NPV and Figure 22-6 for the Project's IRR.

The sensitivity analysis reveals that the USD:CAD exchange rate and gold price have the most significant influence on both NPV and IRR compared to the other parameters, based on the range of values evaluated. After the USD:CAD exchange rates and gold price, NPV was most impacted by changes in operating costs and then, to a lesser extent, capital costs. After the USD:CAD exchange rate and gold price, the Project's IRR was most impacted by variations in capital costs and to a lesser extent, by the operating costs. Overall, the NPV and IRR of the Project are positive over most of the range of values used for the sensitivity analysis except at 1,300 $/oz gold when analyzed individually.

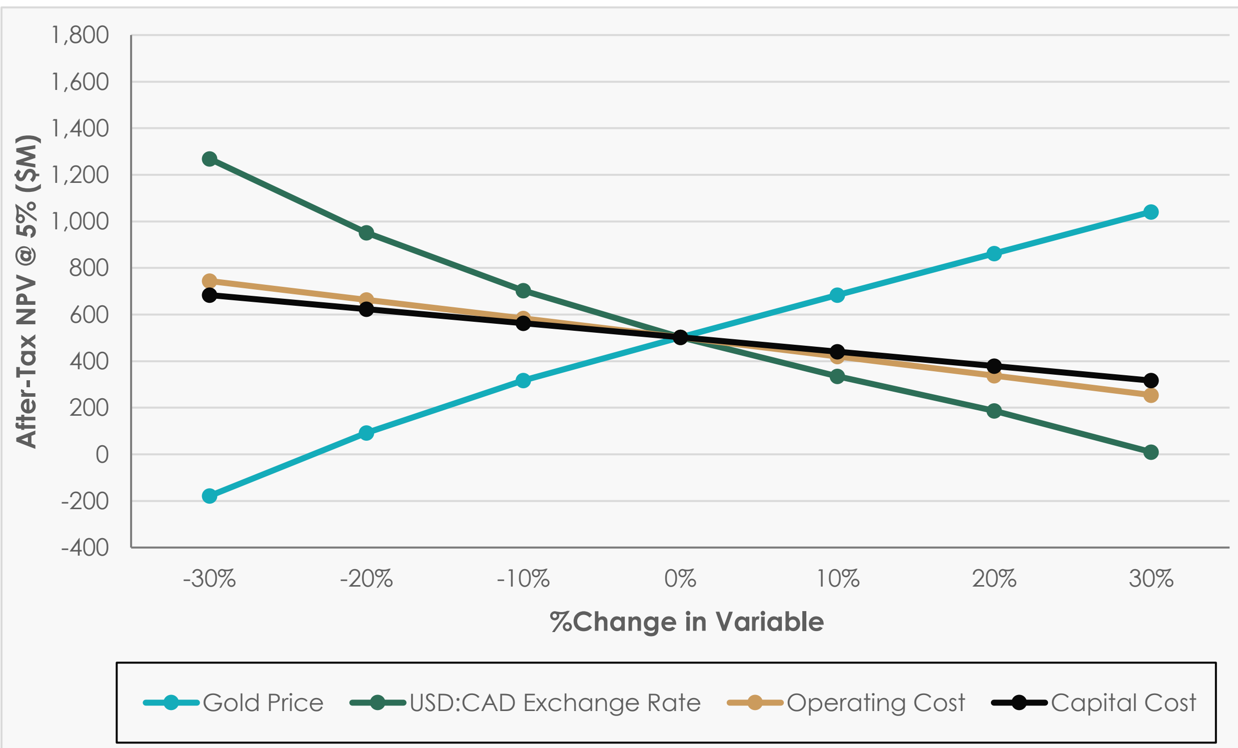


Figure 22-5: Sensitivity of the net present value (after-tax) to financial variables

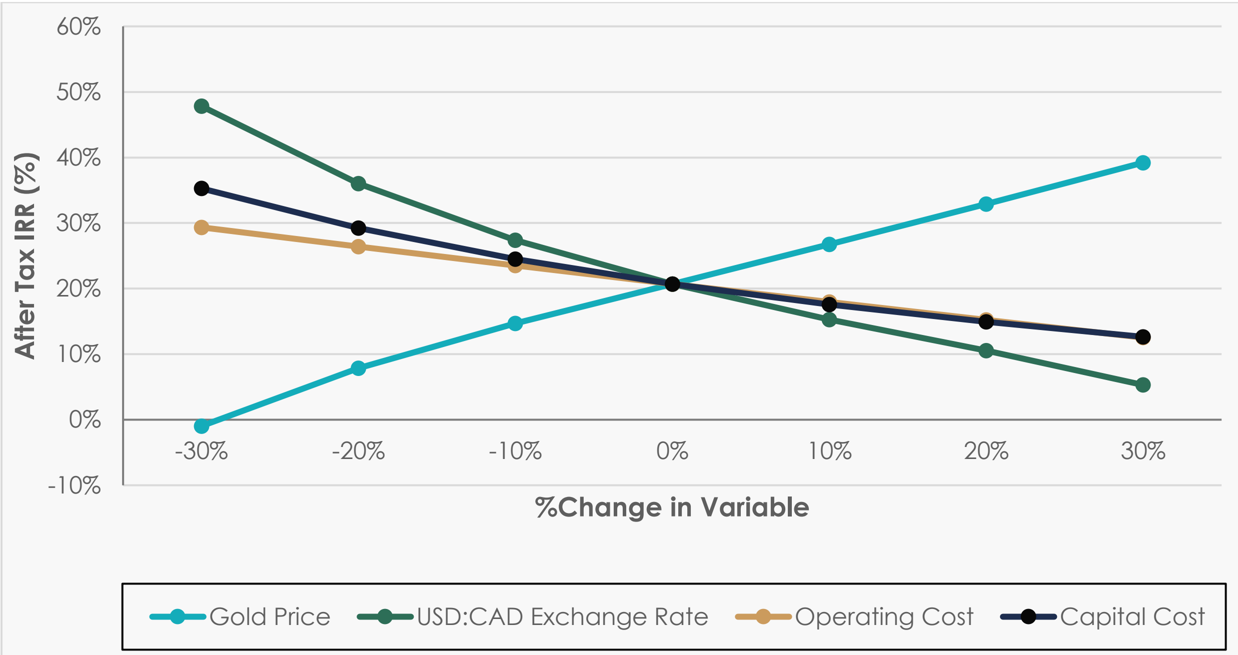


Figure 22-6: Sensitivity of the internal rate of return (after-tax) to financial variables

23. Adjacent Properties

There are no adjacent properties that would provide significant information relating to the Cariboo Gold Project ("the Project"). Osisko Development Corporation ("ODV") maintains a significant land position in the Cariboo Regional District ("CRD") of British Columbia ("BC"), and the District of Wells historical lode mines are located mainly within the boundaries of the Project.

24. Other Relevant Data and Information

24.1 Project Execution Plan

24.1.1 Introduction

The Cariboo Gold Project (the "Project") will be developed by Osisko Development Corp. ("ODV") using a two-phased approach to favour early production and reduce the initial financing requirements of the Project. Phase 1 will focus on upgrading the existing facility at the Bonanza Ledge Site and Quesnel River Mill ("QR Mill") to a 1,500 tonnes per day ("tpd") ore sorting and leaching operation, respectively, followed by Phase 2 at the Mine Site Complex ("MSC") in the District of Wells ("Wells"), with the construction of a 4,900 tpd concentrator producing ore sorting and gold flotation concentrates, which will then be transported to the QR Mill for final processing.

The Project's organization and construction execution philosophy benefits from the existing facilities and experience gained with the current operations at the Bonanza Ledge Mine and QR Mill.

24.1.2 Main Project Activities

The main activities associated with the technical development of the Project are:

- Lowhee Bulk Sample:
  - Collecting a bulk sample from the Lowhee Zone is one of the key activities which the Project Development Team ("PDT") is leading. The bulk sample will consist of approximately 10,000 t of mineralized material over 2,303 m of development. The bulk sample will be used to support advanced metallurgical testing and further validate geological and geotechnical modelling and studies, which will be used to support the Project after the feasibility study ("FS") and prior to the commencement of the Cariboo Gold Project.
- Pre-permit activities:
  - Various key components of the Project outside the scope of the FS will require planning resources to implement strategies that are critical, ahead of the execution phase. The pre-permit activities will require engineering, procurement, and construction activities to prepare the Bonanza Ledge Site and the QR Mill Site for the successful deployment of the Project's execution plan. Such activities are discussed in Section 24.3 below.
- Execution:
  - The execution stage will cover the detailed engineering, procurement, and construction management. Engineering will generate technical specifications and

increase the accuracy and definition of the requests for proposals ("RFP") issued during the FS for final and firm-price bids from vendors. Technical and economical evaluations of the firm-price quotations will be performed, and the procurement process for equipment, material, and services contracts will be finalized. Construction Management will then, with the support of the engineering and procurement teams, proceed with the installation of the materials and equipment, under the quality standards established in the engineering documents.

The main environmental and permitting activities associated with the Project are:

- Provincial Environmental Assessment ("EA") under the new BC *Environmental Assessment Act* (BCEAA; [Province of BC, 2018]):
  - The work will continue to advance the efforts of the EA until the EA Certificate for the proposed Project is received. This will involve continued work to address the concerns and effects flagged by reviewers and stakeholders of the Project.
- Federal and Provincial permits, approvals, authorizations, and licences:
  - The work will continue to gather information and data to optimize the design until all required permits, approvals, authorizations, and licenses have been obtained to operate the Project.

The main development and construction activities associated with the Project are:

- Bonanza Ledge Site:
  - As part of Phase 1, an expansion of the existing ore sorting concentrator facility will increase its capacity to treat 1,500 tpd run of mine ("ROM") material to produce a mineral pre-concentrate that will be trucked to the QR Mill. To support the expanded processing capacity at the Bonanza Ledge Site, there will be upgrades to the water management infrastructure and water treatment system, and the construction of a new waste rock storage facility ("WRSF").
- QR Mill:
  - As part of Phase 1, an upgrade to the existing QR Mill will support the processing capacity of 859 tpd. The upgraded QR Mill will be capable of processing the pre-concentrated material from the Bonanza Ledge Site ore sorting operation and, subsequently, the ore sorting and gold flotation concentrates from the operations of the MSC at Phase 2. To support the increased capacity, there will be upgrades to the surface water management infrastructures, and the construction of a filtered stack tailings storage facility ("FSTSF").

- Mine Site Complex:
  - As part of Phase 2, a new Concentrator Building will be constructed to process 4,900 tpd ROM material. To support the operation, new surface, and water management infrastructure will be required, as well as an upgrade of the existing Ballarat camp for the workforce. A main electrical substation and site electrical distribution will be constructed to support the operation.
- Transmission Line:
  - As part of Phase 2, a 66 kilovolt ("kV") transmission line from the Barlow Substation near Quesnel, BC, to the MSC will be constructed and will include the clearing of the right of way over a distance of 69 kilometres ("km"). The transmission line will connect into the MSC main electrical substation for transformation and distribution.

24.1.3 Project Organization

ODV has the personnel and experience to bring the Project from exploration to production. All upcoming Project activities, including detailed engineering, procurement, pre-production, and construction will be under the direction of the Chief Operating Officer ("COO") of ODV.

ODV will establish an Integrated Project Team ("IPT"), consisting of the ODV Project Development Team ("PDT"), the Construction Management Team ("CMT"), and the Site Services Team ("SST"). The PDT is responsible for the management, engineering, procurement, environment, permitting, and financing activities of the Project. The Project design and development strategy is under the PDT's supervision. The CMT will be responsible for the execution of construction activities on site, both underground and on surface. Finally, the SST will provide services during the execution phase on site, such as managing infrastructure maintenance, lodging, logistics, and personnel travelling. The SST will leverage the experience gained from existing operational personnel to support the PDT and the CMT.

Additional support will be provided by ODV's senior management, which benefits from an experienced technical and construction team that has successfully designed and built several projects in Canada, Latin America, Africa, and Europe. The IPT will be comprised of direct employees, contractors, and consultants overseeing the successful execution of the Project.

24.1.4 Project Development Team

The PDT will supervise all aspects of the Project, including engineering, procurement, and logistics, project controls, as well as overseeing the environmental assessment and permitting activities. The requirement for an early works program will be evaluated and planned during the early stages of the Project development. Specialized engineering firms will be selected for each portion of the Project to assemble a strong integrated design and execution team.

The PDT is responsible for the following activities in the respective phases:

- Detailed Engineering:
  - Management of engineering activities for all Project components.
- Procurement and Logistics:
  - RFPs for equipment and material;
  - Purchasing and contracting.
- Project Controls and Execution:
  - Cost control;
  - Scheduling and establishment of critical paths;
  - Earned Value Management for Project performance assessment.
- Permitting:
  - Early Works;
  - Project permits.
- Compliance:
  - Integration to operations;
  - Reporting.
- Environmental Assessment:
  - Application development;
  - Government relations;
  - Reception of EA Certificate;
  - Condition management.

24.1.5 Construction Management Team

In the detailed engineering phase of the Project, the CMT will contribute to the Project design with constructability reviews. The CMT will be responsible for the following services:

- Constructability reviews;
- Site supervision of construction activities;
- Reporting;
- Health, safety, and environment ("HSE");
- Contract administration.

It is recognized that an effective health and safety program during the Project is a necessity. The success of the Construction Safety Program is contingent upon its enforcement at all stages of the Project, including design, construction planning, construction execution, and start-up and commissioning. The CMT will work closely with each group to ensure proper implementation and functional results.

The CMT will also follow ODV's procedures and work methods to guarantee the protection of the environment. Furthermore, the CMT will work closely with each department of the operations group to ensure proper installation and functional results. During the construction phase, personnel from operations will be integrated into the construction team as coordinators and supervisors.

24.1.6 Site Services Team

The operations group at Bonanza Ledge and the QR Mill will support the CMT for the following services during the construction phase:

- Staff payroll;
- Accounting support;
- IT support;
- Site security;
- Integration of the QR Mill upgrade;
- Public relations;
- Environmental and permitting;
- Medical and first aid;
- Site Maintenance;
- Site logistics.

24.1.7 Pre-staffing and Training

Phase 1 of the Project will leverage the previous operations and exploration infrastructures as well as the current care and maintenance program to fast-track the deployment of the 1,500 tpd operation at Bonanza Ledge and QR Mill sites. The care and maintenance program still employs key personnel that were involved in the management of the previous operations, and their experience on site will be leveraged in the pre-staffing and training programs required before the start of commercial production. The objective will be to develop a comprehensive set of Standard Operating Procedures ("SOPs") and integrate the newly deployed automation infrastructure at QR Mill to achieve the key performance indicators set forth in the FS.

24.2 Key Project Execution Activities

The Project's Execution Schedule comprehensively integrates the various requirements of the closure plans of the previous operations as well as the phased approach of the deployment of the Project. More specifically, the implementation of Phase 2 will be undertaken in such a way as to turn over key process components of Phase 2 during Phase 1 progressively, so that the concurrent operation availability is not dramatically impacted.

As an example, at the QR Mill site, the schedule to implement the new carbon in pulp ("CIP") circuit will be undertaken ahead of time to enable the dismantlement of the existing CIP circuit of Phase 1 in the process building, and allow for enough time for the construction of the elution circuit at that same location.

Similarly during Phase 2, the ore sorters at Bonanza Ledge will be progressively dismantled and inserted in the services building at the MSC during ramp-up to minimize the downtime of operations at QR Mill and the downtime of commissioning and ramp-up at the MSC.

24.3 Project Execution Schedule

The Project execution plan and schedule have been developed to a FS level. The execution plan and schedule will be further advanced and detailed during the next stages of the Project development.

Major Project milestones emerging from the Project's master schedule are shown in Table 24-1.

Table 24-1: Project Key Milestones (preliminary)

Activity	Date
Pre-Permit Activities	
Detail engineering activities for Phase 1	Q1 2023
Start of bulk sample Lowhee Zone	Q1 2023
Start of engineering to support permitting	Q1 2023
End of bulk sample Lowhee Zone	Q4 2023
Water drawdown commencement at TMF – QR Mill Site	Q1 2023
New water treatment plant construction – QR Mill Site	Q2 2023
New water treatment plant operation – QR Mill Site	Q3 2023
Water management infrastructure – Bonanza Ledge Site	Q3 2023
New water treatment plant construction – Bonanza Ledge Site	Q3 2023
Sanitary upgrades at Ballarat Camp	Q3 2023
New water treatment plant operation– Bonanza Ledge Site	Q4 2023
Water drawdown Completion at TMF – QR Mill Site	Q2 2024

Activity	Date
Phase 1	
The Project's Environmental Assessment Certificate ("EAC") application and reception of certificate	Q1/Q2 2023
Construction of waste rock storage facility at Bonanza Ledge	Q2 2023
Commitment to equipment packages	Q3 2023
Start of dismantling activities as part of Care and Maintenance for Lowhee extraction	Q4 2023
Start of underground development	Q4 2023
Waste rock storage facility ready for storage at Bonanza Ledge Site	Q1 2024
Start of major construction at QR Mill – Phase 1	Q4 2023
Start construction of ore sorting facility at Bonanza Ledge	Q2 2024
Commissioning of ore sorting facility at Bonanza Ledge	Q3 2024
Commissioning of QR Mill – Phase 1	Q3 2024
Ramp-up to 1,500 tpd	Q4 2024
Phase 1 commercial production achieved	Q4 2024
Phase 2	
Transmission line license of occupation	Q3 2023
Expansion of Ballarat Camp	Q2 2025
Site preparation at MSC	Q2 2025
Start of transmission line clearing and construction	Q4 2025
BC Hydro grid tie-in	Q3 2026
Start of Major Construction at MSC	Q3 2025
Commissioning WTP at MSC	Q1 2026
Start of construction at QR Mill	Q3 2026
Commissioning of QR Mill new process components	Q3 2027
Commissioning process plant at the MSC	Q3 2027
Ramp up to 4,900 tpd	Q3 2027
Phase 2 commercial production achieved	Q4 2027

24.3.1 Critical Path

The Project's execution schedule and costs were based on front-end detail engineering activities, which are necessary to de-risk the Project's critical components, such as progressing the permitting requirements and allowing the company to purchase long lead items for Phase 1. Therefore, detail engineering for specific project components, such as the Crushing and Ore Sorting Facility at Bonanza Ledge, the QR Mill upgrades, waste rock storage facility at Bonanza

Ledge, dry tailings storage facility at QR Mill, and the water treatment plant at Bonanza Ledge and QR Mill sites will need to be initiated early in Q1 2023.

24.4 Construction Labour

The Project's construction labour requirements profile was derived from the Master Schedule, on a per-phase basis.

During Phase 1, the construction activities were planned in close coordination with pre-production activities and with the aim of respecting the existing lodging facilities of the Ballarat Camp in Wells and the existing camp at the QR Mill site. During Phase 2, given the substantially higher construction labour requirements at the MSC, the construction activities were planned to respect the new lodging capacity at Wells with the expansion of the Ballarat Camp to 150 rooms and the existing satellite facilities.

The following graphs summarize the lodging requirements and capacities at Wells and at the QR Mill Site during the two phases of operations:

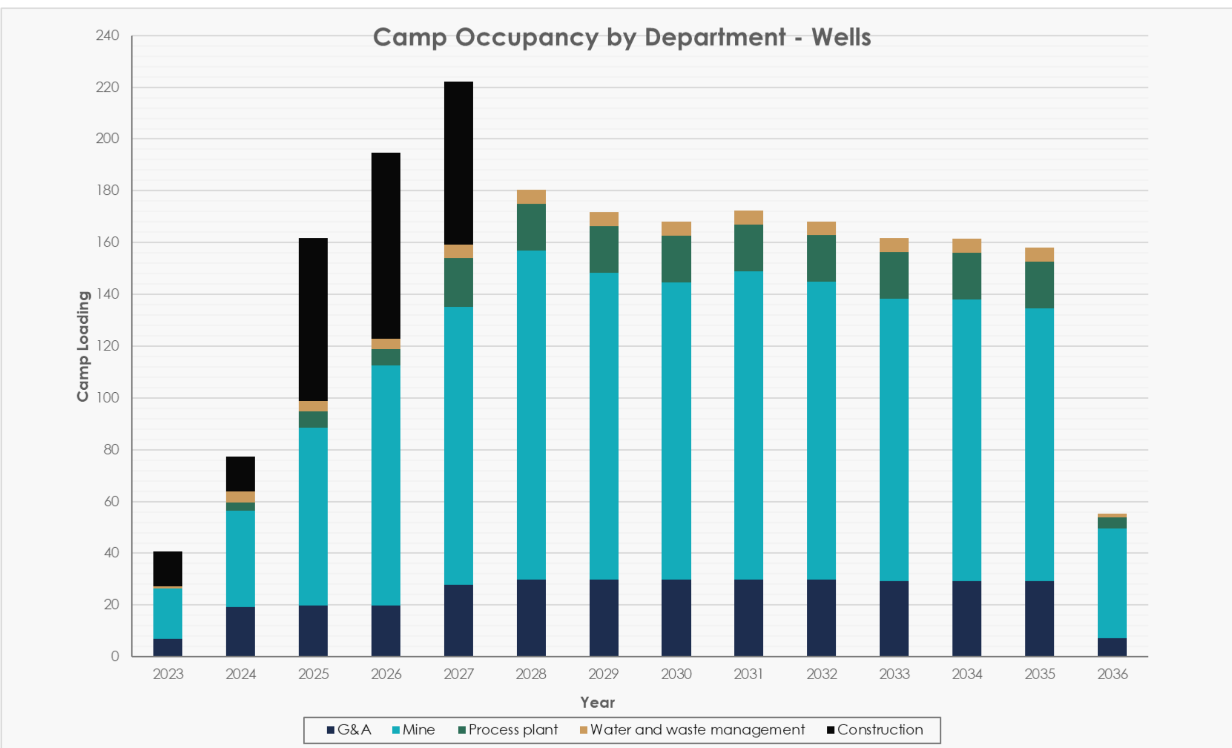


Figure 24-1: Wells Camp Lodging Requirements (by department)

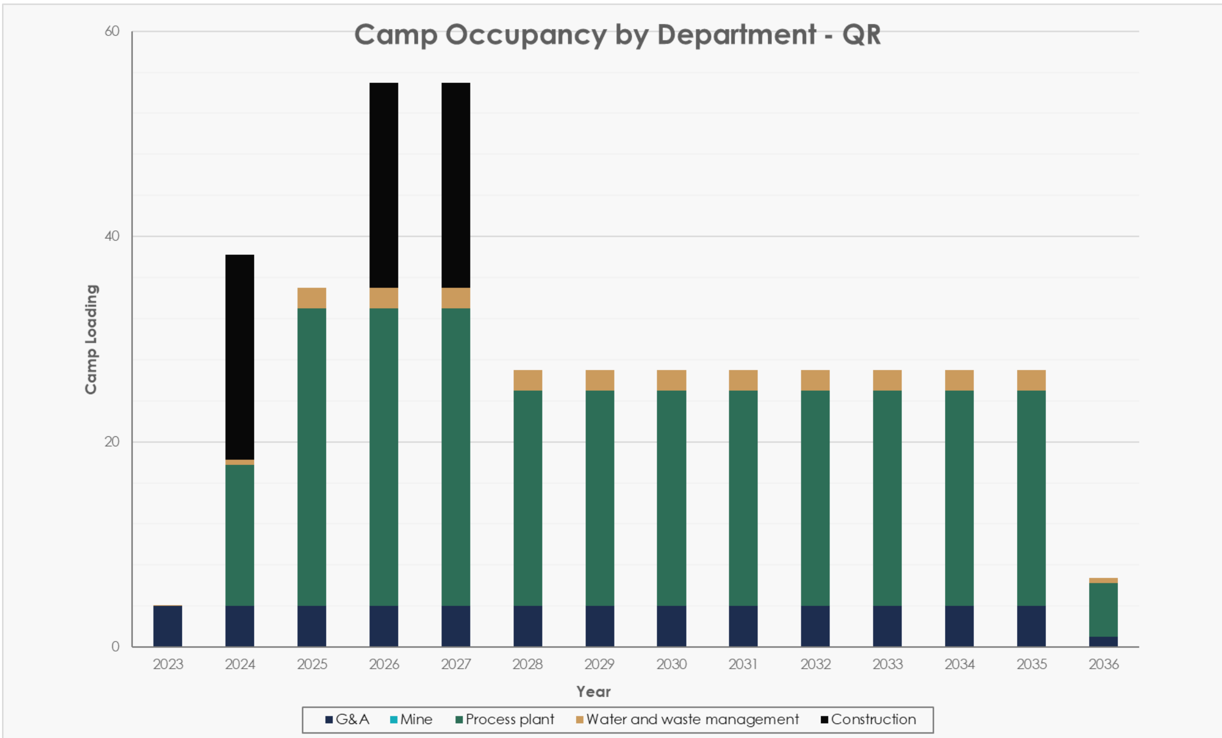


Figure 24-2: QR Mill Site Lodging Requirements (by department)

Construction labour will be sourced through established contractors on a regional level. When required, specific skills will be drawn from a wider area. The Project location benefits from its relative proximity to large industrial centres with known skilled labour, such as Prince George, Kamloops, and Alberta.

25. Interpretation and Conclusions

25.1. Data Verification and Mineral Resources

The Cariboo Gold Project (the "Project") combines the deposits of three contiguous mountains separated by valleys: Cow Mountain (Cow and Valley), Island Mountain (Shaft and Mosquito) and Barkerville Mountain (Bonanza Ledge, BC Vein, KL, and Lowhee). The Qualified Persons ("QP") consider the 2022 Feasibility Mineral Resource Estimate ("2022 FS MRE") to be reliable, thorough, and based on quality data, reasonable hypotheses, and parameters.

The following conclusions are based on the QPs detailed review of all pertinent information and the 2022 MRE results:

- The results demonstrate the geological and grade continuities for all eight gold deposits in the Cow-Island-Barkerville Mountain Corridor.
- In a potential underground scenario, the Project contains an estimated Measured resource of 8,000 ounces of gold, an Indicated resource of 1,564,000 ounces, and an Inferred resource of 1,712,000 ounces. These Resources are exclusive of the Reserves.
- The resource estimates for the Shaft, Valley, and Lowhee deposits were updated using the drill results from the end of the year 2021, received in 2022. Gold ("Au") resources in a dilution halo and silver ("Ag") mineralization estimates in the vein corridors were also added to the models.
- No new gold assay results were added to the databases for the Mosquito, Cow, and KL Zone deposits, but gold resources in a dilution halo and silver mineralization estimates in the vein corridors were added to the models.
- No changes were reported for the Bonanza Ledge or BC Vein (Barkerville Mountain) deposits.
- To report the 2022 FS MRE for the Project, conceptual mining shapes were used as constraints to demonstrate that the "reasonable prospects for eventual economic extraction" criteria is met.
- Additional diamond drilling on multiple zones would likely increase the Inferred Resources and upgrade some of the Inferred Resources to Indicated Resources.

25.2. Mineral Processing and Metallurgical Testing

Testwork data presented in "NI 43-101 Technical Report, Preliminary Economic Assessment of the Cariboo Gold Project, Effective date of May 24, 2022" was considered for the process design. Further testwork was completed in support of this study with an effective date of November 16, 2022. These testwork programs consisted of an investigation into the amenability of mineral sorting to pre-concentrate the run of mine ("ROM") prior to milling, chemical characterization, a preliminary evaluation of comminution characteristics, flotation and leaching tests, cyanide destruction testing, as well as preliminary thickening and rheology tests.

The selected flowsheet for processing material from the deposits includes mineral sorting, grinding, flotation, and leaching. The process at Bonanza Ledge produces a pre-concentrate consisting of mineral sorting concentrate in Phase 1, and the Mine Site Complex ("MSC") produces a pre-concentrate consisting of mineral sorting and flotation concentrate in Phase 2. Both phases' concentrates are transported to the QR Mill for further milling and leaching.

The average metallurgical recovery per site is reported in Table 25-1. Based on the testwork results and the proposed mine plan at the time, the overall projected Au recovery is 92.0%. The annual recovery projections are expected to differ from the average testwork results according to the final mine proportions of ore zones.

Table 25-1: Average gold recovery and process step

Process Step	Average Au Stage Recovery (%)
Bonanza Site	96.3
Mine Site Complex	95.3
QR Mill – Phase 1	96.6
QR Mill – Phase 2	96.5
Overall Au Recovery – Phase 1	**93.0**
Overall Au Recovery – Phase 2	**91.9**
Overall Au Recovery - LOM	**92.0**

25.3. Mining Methods

The Project is planned to begin production at 1,500 tonnes per day ("tpd") in 2024 and increase in Q3 2027 to produce approximately 4,900 tpd of ore from narrow vein gold mining utilizing a longitudinal retreat long hole extraction method at 30 metre ("m") sublevel spacing and using cemented rockfill ("CRF"), uncemented rockfill ("URF"), and paste fill backfill. The property has a history of active mining between 1877–1969 resulting in legacy excavations and potentially difficult ground conditions locally. The Project design encompasses a 4,400 m strike length and an average vertical extent of 660 m (depth from surface highly variable due to the topography), culminating in a total scheduled lateral development of 181 km. Total inventory of potentially mineable mineralized material has been estimated at 16.7 million tonnes ("Mt") at 3.8 g/t Au. The mineable inventory exists within 435 discrete mineralized lenses spread across five zones, each requiring development access to accommodate the longitudinal extraction method. The Project's mine layout demonstrates a development-intensive stope access requirement and, therefore, it has a high development metre per tonne of ore ratio.

These factors may pose a challenge to the successful implementation of the mine plan given the challenging geotechnical parameters and intrinsically lower productivities of the mining method. However, through diligent planning and adherence to proper work procedures, sufficient active headings and stoping areas should meet daily production requirements. Furthermore, the use of innovative technologies and techniques may improve productivity. One such example would be to extend the use of a roadheader. The roadheader mechanically excavates lateral development, with lower wear in poor ground conditions, and it is anticipated to have a higher monthly advance rate compared to traditional jumbo advance rates as stated by solicited contractors. A second example is the inclusion of automated truck hauling and mucking between shifts to achieve higher productivities per calendar day.

25.4. Environmental Studies

The environmental baseline work completed to date is sufficient to support a feasibility study. Further work is underway, as required, to support the Environmental Assessment process and permit applications for the Project.

25.5. Infrastructure

The key Project infrastructure construction and upgrades are described below:

Phase 1:

- Bonanza Ledge site: the infrastructure will consist of the first stage of the waste rock storage facility ("WRSF"), a water treatment system, and the construction of infrastructure related to ore crushing and sorting, water management, natural gas, fuel, and power supply.
- QR Mill: there will be a mill upgrade to process the ore sorting concentrate, a filtered stack tailings storage facility ("FSTSF"), and water management infrastructure.
- Offsite: the infrastructure will consist of an Integrated Remote Operational Centre (IROC).

Phase 2:

- Mine Site Complex (Wells): the infrastructure will be related to underground mining, concentrator building, natural gas, fuel, power supply, water treatment, and water management.
- Bonanza Ledge site: the infrastructure work will consist of dismantling and partial relocation of Phase 1 facilities, the second stage of the WRSF, and the water management infrastructure.
- QR Mill: there will be a mill upgrade to process high-grade flotation concentrate and telecommunication infrastructure will be provided.
- Offsite: the infrastructure will consist of power line construction and the expansion of the camp facility and IROC.

The information and assumptions used in the design of the MSC, Bonanza Ledge, QR Mill, and offsite infrastructure are sufficient to support a feasibility study. Further work is underway and recommended to support subsequent design phases.

25.6. Capital and Operating Costs

The total capital costs (initial, expansion, and sustaining) for the Project were estimated at $1,016.2 million ("M"). The initial capital costs were estimated at $137.3M. Expansion capital costs were estimated at $451.1M. Sustaining capital costs were estimated at $427.8M. Closure costs were evaluated at $17.3M, and the salvage value is estimated at $56.2M.

The overall capital cost estimate developed in this study meets the AACE class 3 requirements and has an accuracy range of -10% and +15%. Items such as sales taxes, land acquisition, permitting, licensing, feasibility studies, and financing costs are not included in the cost estimate.

The Project capital cost summary is outlined in Table 25-2.

Table 25-2: Project capital cost summary

Area	Cost area description	Initial capital cost ($M)	Expansion capital cost ($M)	Sustaining capital cost ($M)	Total cost ($M)
000	Surface mobile equipment	-	0.1	9.3	9.4
200	Underground mine	53.8	110.8	313.3	478.0
300	Water and waste management	6.5	12.9	37.3	56.7
400	Electrical and communication	10.2	31.8	62.9	104.9
500	Surface infrastructure	1.8	33.0	2.7	37.5
600	Process Plant – Wells	5.2	114.5	4.4	124.1
600	Process Plant – QR Mill	17.5	25.7	-	43.2
700	Construction indirect costs	10.6	55.6	1.1	67.3
800	General services	8.7	30.0	27.0	65.7
900	Pre-production	12.7	-	-	12.7
999	Contingency	10.3	36.7	8.6	55.6
	Total	**137.3**	**451.1**	**466.6**	**1,055.0**
-	Site Reclamation and Closure	-	-	17.3	17.3
-	Salvage Value	-	-	(56.2)	(56.2)
	Project Total	**137.3**	**451.1**	**427.8**	**1,016.2**

The average operating cost over the 12-year mine life is estimated to be $102.6 per tonne mined. Table 25-3 presents the breakdown of the projected per-tonne mined operating costs for the Project. Mining costs are presented inclusive of costs related to backfilling, including paste backfilling. Processing costs are presented inclusive of costs related to underground crushing and subsequent handling of ore during Phase 2 of the Project, as well as the costs related to mineral sorting for both phases of the Project.

Table 25-3: Project operating costs

Area	Cost area description	Phase 1 unit cost ($/t mined)	Phase 2 unit cost ($/t mined)	Average LOM unit cost ($/t mined)	LOM ($M)	Annual average cost ($M/year)	Average LOM ($/oz)	OPEX (%)
000	Mineralized material transport	17.3	3.5	4.8	79.5	7.0	42.5	5%
200	Underground mining	77.6	51.1	53.6	894.9	78.4	478.7	52%
300	Water and waste management	18.4	6.1	7.2	120.7	10.6	65.7	7%
600	Processing - Mine Site Complex and QR	37.1	25.3	26.4	440.4	38.5	235.6	26%
800	General and administration	19.4	9.8	10.7	178.8	15.7	94.5	10%
	Total	**169.8**	**95.8**	**102.6**	**1,714.4**	**150.2**	**917.0**	**100%**

25.6.1. Indicative Economic Results

The financial analysis performed as part of this feasibility study using the base case assumptions results in an after-tax NPV 5% of $502M and an internal rate of return of 20.7% (unlevered) (base case exchange rate of 0.77 CAD for 1.00 USD). There is a $901 million cumulative after-tax life-of-mine ("LOM") FCF, and the simple after-tax payback period is 6.8 years, over the planned mine life of 12 years.

25.7. Project Risks and Opportunities

As with most mining projects, there are risks that could affect the economic viability of the Project. Many of these risks are based on a lack of detailed knowledge and can be managed as more sampling, testing, design, and engineering are conducted at the next study stages. Table 25-4 identifies what are currently deemed to be the most significant internal project risks, potential impacts, and possible mitigation approaches that could affect the technical feasibility and economic outcome of the Project.

External risks are, to a certain extent, beyond the control of the Project proponents and are much more difficult to anticipate and mitigate, although, in many instances, some risk reduction can be achieved. External risks are factors such as the political situation in the Project's region, metal prices, exchange rates, and government legislation. These external risks are generally applicable to all mining projects. Negative variance to these items from the assumptions made in the economic model would reduce the profitability of the mine and the mineral resource estimates.

There are significant opportunities that could improve the economics, timing, and/or permitting potential of the Project. The major opportunities that have been identified at this time are summarized in Table 25-5, excluding those typical to all mining projects, such as changes in metal prices, exchange rates, etc. Further information and assessments are needed before these opportunities should be included in the Project economics.

Table 25-4: Project risks (preliminary risk assessment)

Area	Risk description and potential impact	Mitigation approach
Geology and Mineral Resources	1. If the geological interpretations and assumptions (geometry and continuity of mineralized zones) used to generate the estimation domains are inaccurate, then there is potential lack of gold grade continuity.	1. Continue infill drilling to upgrade a larger proportion of the mineral inventory to Indicated and Measured resources to have an overall better resolution of the deposits. Complete a bulk sample on the deposits (Cow, Mosquito, Shaft, Valley, Lowhee, and KL) to have reconciliation data to improve the confidence in the block model and the overall understanding of the deposits.
	2. If technical knowledge of the historic mine infrastructures is incomplete, then this deficiency could lead to local inaccuracy of the mineral resource.	2. Conduct drilling and underground surveying to validate void locations throughout the historic underground workings.
Underground Mine and Geotechnical	1. The two-phased mining approach for the Class 3 L stopes is not as effective as assumed. Mining recovery will be less than anticipated.	1. No mitigation approaches are suggested at this time.
	2. Difficult to obtain sufficient compressive strength for the paste backfill. Unproven strengths above 180 kilopascals ("kPa"). Increase in binder consumption for the same compressive strength to compensate.	2. Complete backfill strength testing and refine backfill recipes (especially for strengths greater than 180 kPa).
	3. Sections of the Main Ramp will be below the water table before the water treatment plant is commissioned. There is wet mining in sections of the ramp and elevated pore water pressures, which could result in more ground instabilities.	3. Use of cover drilling at regular intervals, as well as disciplined water management practices.
	4. Development and mining near old workings may result in intersecting unanticipated void, water inflow, or saturated backfill.	4. Use of cover/probe drilling at regular intervals when approaching known old workings. These procedures and other health and safety mitigations to be included in a Standard Operating Practice.
	5. Ground conditions are worse than anticipated based on the geotechnical model. The impact could be the stability of the production stopes being affected, significantly increasing the dilution, and potentially	5. Additional geotechnical data will be collected during the Lowhee bulk sample and the underground development of Phase 1, including geotechnical mapping and underground geotechnical core drilling.

Area	Risk description and potential impact	Mitigation approach
	decreasing the average mining recovery. In addition, the mucking of this additional material will lower the average grade and put additional pressure on gold production and the overall mining sequence. The development sequence could be delayed and require additional support.	
	6. There is a problem attracting and retaining experienced professionals and qualified hourly workers. The execution of the mining plan in relation to the planned production rate and costs could be significantly impacted. The cost to hire skilled hourly labour could increase significantly or the use of more expensive subcontractors could be retained for certain activities.	6. The early search for professionals and hourly workers will help identify and attract critical people. It may be necessary to provide accommodation for key people (not included in project costs). Recruitment of key persons will start with the bulk sample of Lowhee and during Phase 1 that will be at lower pace.
	7. Existing, unrecorded old workings excavations are encountered as a result of the development of planned drifts in the vicinity. Then, depending on the location of these voids, the schedule of the mining plan could be delayed, and those additional voids will have to be pasted, which will incur additional costs.	7. Review the old mine plans, and conduct probe drilling for open voids, water level, and saturated backfill in front of development heading. Monitor water level while dewatering. Add proper contingency in dewatering system.
	8. Problems related to achieving the production rate capacity of each zone occurs due to geotechnical problems, equipment interaction in each zone, or any slowdown in the mining cycle (related to dewatering, backfill placement/hardening, or dewatering time and material handling). The production rate will then be reduced, the grade could be lower following further dilution, and the mining cost will increase.	8. Development should be carried out sufficiently in advance of production work and a maximum of mining horizons should be opened to allow flexibility in case of difficulties in a specific sector.
	9. The performance of the roadheader is lower than estimated (lower reliability, longer cycle time, etc.). The performance, the costs and/or constraints (e.g., installation time and cost for safe and reliable operations in automated mode, closure of levels for other activities, one operator available for two LHD units, etc.), which are associated with operations in the fully automated mode	9. Validate and test roadheader performance on Lowhee bulk sample.

Area	Risk description and potential impact	Mitigation approach
	for the LHD loaders and trucks, do not allow the achievement of the estimated production rates. Then, there could be a significant delay in the development and production sequence of the different zones.	
	10. The performance, the costs and/or constraints (e.g., the installation time and cost for safe and reliable operation in the automated mode, closure of levels for other activities, one operator available for two LHD units, etc.), which are associated with operations in the fully automated mode for LHD loaders and trucks, do not allow the achievement of estimated production rates. Thus, the mucking and/or trucking works will have to be done in manual mode in certain areas in order to compensate for a lower production rate. The labour costs associated with the Phase 2 mucking and trucking operation will increase significantly.	10. Tests in fully automated mode must be carried out in dedicated sectors during phase 1 of the Project. the entire network allowing automation will be in place.
	11. The time to paste fill the voids of the old workings is much longer than expected. The development sequence in the critical path for the release of mining horizons could be significantly delayed, the ratio of cemented rockfill will increase, and there will be additional cost related to backfill activities.	11. Before the Project is carried out, it will be important to redo different mining sequences with different critical paths to have spare solutions if an important delay occurs. In addition, it is recommended to keep multiple work faces always during the development work to maximize flexibility and to monitor closely the few working faces that are in the critical paths.
	12. Difficulties arise related to the execution of a two-phased mining method for the 3 L geotechnical classification of the Shaft and Mosquito zones. The mining recovery of these stopes may be significantly lowered and/or some areas may need to leave a mineralized pillar in place.	12. Validate the methods that have been carried out at the Doyon mine and in other operations, and analyze the parameters and results obtained in order to establish a specific execution protocol for this method.
Mine Surface Infrastructure	1. Bedrock may not be near the surface beneath the overburden layer near the projected vent raises, thus causing additional work at surface.	1. Include the ventilation raise locations in the next phase of surface geotechnical investigation and adjust locations if required.

Area	Risk description and potential impact	Mitigation approach
Electrical and Communication	1. Electrical loads are based on capacity of underground and surface mechanical equipment. Changes to mechanical equipment may require changes to electrical equipment design. 2. Transmission line construction delays due to BC Hydro at the Barlow Substation, MOTI, environmental issues, or agreements with landowners in certain areas, etc. 3. The level of integration of IT systems needs developing to support the Integrated Remote Office Centre in Quesnel, BC.	1. Complete Mine Site area electrical system design, including connection and distribution. 2. Coordination with BC Hydro and MOTI. Complete the environmental assessment and be proactive in reaching agreements with landowners along the transmission line corridor. 3. Engage in more detailed discussions about the operational requirements of the IROC and establish a road map to implementation with the support of a key surface provider that is knowledgeable in deploying these solutions.
Site infrastructure	1. Inability to use cut material at the MSC or the construction of civil infrastructure. 2. Final potable water supply location to be confirmed and permitted. 3. MSC camp access road intersection at Highway 26 requires MOTI to approve location. A change in location will change road length and Willow River bridge location. 4. Willow River Bridge foundation: its abutment foundations consist of weak soils. 5. Site clearing and levelling may encounter historic contamination and will require removal of historic structures, including headframe, tanks, and concrete foundation material. 6. Surface water quality: MSC area foundation materials include historic waste rock and mill tailings and known groundwater contamination from metal leaching and	1. Further define geochemical characterization of the MSC materials. 2. Complete investigations to select final location and complete permit application. 3. Highway access permit application to be initiated to provide confirmation of intersection location and bridge foundation. 4. Consider bridge foundation using pilings. Artesian conditions encountered while executing geotechnical drilling on the north site of Willow River. Strategy to be developed to investigate this area without environmental issues. 5. Dismantle structural elements and disposal of materials. 6. Assess areas likely of contamination and existing structures, and establish a plan to: 6.1. Mitigate upwelling water in the historic tailings area;

Area	Risk description and potential impact	Mitigation approach
	upwelling of water in the historical tailings area. Construction activities may disturb historic materials and contribute to further groundwater contamination. 7. Foundations for heavy structures or large rotating equipment may require deep foundation or ground improvement to support loads due to compact foundation materials.	6.2. Mitigate disturbance of contamination or dispose or remediate disturbed contaminants. 7. Establish a comprehensive water management plan during construction, and integrate it in the final design of facilities and constructability reviews.
Water Management	**Bonanza Ledge site** 1. At the Bonanza Ledge site, due to limited available space for surface water storage, the designed retention ponds adequacy is quite sensitive to the departure from the design assumptions (due to factors such as climate conditions, collected catchment area, and pumping capacities). If these assumptions are not met, the overflow of ponds (through their spillway) may happen, leading to release of potentially contaminated water and increasing risks of dike failure 2. Underground storage of excess flood water may not be used (partially or entirely), because targeted galleries cannot be plugged efficiently or because the regulator does not accept this water management strategy. This may lead to the water management strategy (and potentially waste management schedule) to be revisited to reduce the amount of water to be managed or find additional storage capacities 3. Non-contact water diversion discharge structures (in the Lowhee Creek valley) fail or do not work as intended. This would possibly lead to major erosion in the Lowhee Creek valley slope and to sediment transport and trees falling in the creek bed. 4. Overtopping of the Bonanza Ledge sediment pond dam due to current spillway design (i.e., capacity less than the	1. A contingency plan will be prepared at the permitting stage to account for such situations departing from the design assumptions. Some mitigation may affect the design of the structures, while others will set some operational and maintenance practices to limit the risk. 2. Changes to the design with upgrade of the designed water treatment facility and/or construction of additional storage capacity (new pond within the Stouts Gulch valley or upgrade of Bonanza Ledge existing sediment pond) may be required. 3. Most care to be put in the design and construction of the diversion discharge structures into Lowhee Creek valley. 4. Upgrade the existing emergency spillway to an open water structure.

Area	Risk description and potential impact	Mitigation approach
	IDF; pipes may be blocked due to debris or trees, etc.), leading to dam failure. 5. Groundwater backup under the liner system leading to a higher phreatic surface than the design assumption due to lower drainage capacity of underdrain. **MSC** 6. Contaminated groundwater seepage may reappear during post-closure, leading to contamination of Jack of Clubs Lake. This would lead to an extended period during which water will have to be collected and treated after the end of operations of the site. **QR Mill site** 7. There is currently limited contingency storage if the water treatment system is unable to operate or meet discharge criteria.	5. The existing artesian flow will need to be plugged appropriately during construction and operation. **MSC** 6. Carry out field trials on the proposed underdrain materials to confirm drainage capacity after placement. **QR Mill site** 7. Consider additional contingency storage locations, maintain pumping system redundancy, develop a Trigger Action Response plan for in-pit treatment, maintain a supply of reagents to allow for maximum treatment, and automate pumping and treatment systems.
Mineral Processing and Metallurgy	1. The ore sorter mass pull is lower than the design value. The amount of ore waste sent to UG will then increase. 2. The concentrate filter is unable to reduce the moisture content to optimal levels at the MSC. There will be challenges with material handling and transportation of concentrate to the QR Mill. 3. The MSC plant is unable to move tailings underground.	1. A bulk sample has been collected and pilot scale testwork will help validate assumptions. Adjustments can be done in the first two years of production before starting full scale construction at the MSC. 2. Use standard operating procedures to help navigate freezing conditions at site. 3. Ensure that standard operating procedures ("SOPs") will address situations where tailings placement underground will be stopped. Ensure through proper mine-to-mill operation that there will be more than one stope available at all times for tailings placement.

Area	Risk description and potential impact	Mitigation approach
	4. Air is taken from the plant into the vertical conveyor shaft, which leads to the heat in the building going underground and the building freezing. 5. The QR mill feed rate is unstable, therefore, the mill availability and throughput will be reduced. 6. It is too difficult to obtain sufficient compressive strength for the paste backfill, and the binder consumption for the same compressive strength increases for compensation. 7. The vacuum filtration of the flotation tailings is less efficient than anticipated. The binder consumption for the lower tailings solid percentage will then increase for compensation.	4. Cover the openings as much as possible. Conduct a detailed ventilation study that includes the underground and the mill building. 5. Use SOPs to help ensure efficient material feed to the QR hopper. 6. Conduct a test program for paste backfill recipes. 7. Do a test program for paste backfill recipes. Use standard operating procedures to help ensure efficient operation.
Geochemistry and Water Quality Predictions	**General** 1. The source terms change due to changes in scaling factors, mine plan, and/or water management plan, which leads to the water quality model ("WQM") results needing to be modified and the water treatment design and closure cover design may have to be re-evaluated. 2. The underground mine water quality is not represented by groundwater samples collected from deep mine workings prior to 2021, and then the WQM predictions may not be representative, and the water treatment design may need to be re-evaluated. 3. The dewatering of the underground will result in the formation of downward hydraulic gradients, and then the existing contamination in the near surface aquifers might potentially migrate into the underlying aquifers, and the underground water quality model may require an update. 4. The reflooding of the underground at closure alters the quality of groundwater, including the discharge at the	**General** 1. Refine source terms through additional data collection/geochemical characterization, and/or use sensitivity analyses to account for uncertainties. 2. Collect deep mine water samples or use sensitivity analyses for the WQM. 3. Update the groundwater quality model and monitor groundwater level and quality as the mine is developed and the dewatering advanced. 4. Develop alternative groundwater source or treat groundwater.

Area	Risk description and potential impact	Mitigation approach
	historical openings in the Valley and Mosquito Creek area, discharge of water noted in the historical tailings area, and discharge to the overburden aquifers in the Wells valley, then the discharge to the valley may alter groundwater quality in the Wells aquifer, which is used by the community of Wells for drinking water. 5. Chloride levels predicted in Revision 14/15 model are used in water treatment design, which leads to the water treatment being overdesigned. **QR Mill Site** 1. The QR Mill water quality model prediction is based on laboratory kinetic testing results from a small sample of filtered tailings which may not represent actual tailings properties and field condition. This could lead to under-estimation of treatment influent water quality and higher treatment cost. 2. The QR Mill effluent water quality is based on one testwork sample. This one sample does not consider reagent usage and may not represent the actual variability in the mill effluent water quality. This could lead to under-estimation of treatment influent water quality and higher treatment cost.	5. Review chloride source terms and predictions. **QR Mill Site** 1. Construct laboratory and field scale geochemical tests during permitting stage and update source terms. Conduct model sensitivities to consider a range of source term inputs. 2. Improve programming and linkage of the mill components within the water quality model so that water treatment design basis can be refined. Conduct model sensitivities to consider a range of source term inputs.
Water Treatment	1. The discharge limits for any water treatment plant are lower than assumed for an NI 43-101 report, then additional or different treatment technology (e.g., reverse osmosis) may be required. Regulators have not confirmed the assumed treatment limits. 2. The water balance or water quality model is not in a form that adequately predicts the minimum and maximum concentrations of the water treatment plant influent streams, thus, the design basis will change again for the subsequent phase of work and rework may be required	1. Confirm treatment criteria as soon as possible. Incorporate flexibility into the process design, where practical. 2. Review each model update against the design basis used in this study. Conduct sensitivity analysis to assess impacts of changes in water quality and/or flow on the designs. Ongoing coordination with the water quality and water balance modelling teams.

Area	Risk description and potential impact	Mitigation approach
	for the process design. Water quality and water balance models are still being refined.	Finalize the water balance and water quality models. Use the maximum concentrations and flows from the modelled data wherever possible to prepare a conservative process design.
	3. The required bench and/or pilot scale testwork is not conducted or the process is not able to meet the treatment objectives, which leads to the discharge requirements not able to have been met by the technologies.	3. Select a process that requires less effort for bench or pilot scale testing.
	4. A disposal strategy for residuals generated by the water treatment plants has not yet been studied. The disposal strategy may be found to increase the overall capital and operating and maintenance costs prohibitively.	4. Investigate potential disposal options as part of the next Project stage.
	5. Best available technology ("BAT") assessment has not yet been conducted. There is a risk that the BAT assessment recommends a different treatment process than the one currently proposed, which will require significant rework.	5. Conduct the BAT assessment as soon as possible.
	6. Sufficient time is not made available to complete the water treatment studies and designs, which leads to conservative design decisions being made, resulting in higher costs and complex treatment processes.	6. Provide sufficient time to do the water treatment studies and designs.
	7. There are changes in the Project development plan or the water management plan/layout, which leads to changes to treatment processes, rework of the water treatment process, and pipeline and pumping station designs, and results in changes to the costs.	7. Confirm the Project development plan in the next Project stage.
Geotechnical (MSC)	1. A failure of the Mine Site Complex Sediment Pond ("MSCSP") dam through weaker foundation soil units (i.e., tailings or Glaciolacustrine Units ("GLU"), potentially liquefiable tailings) may be triggered by increased pore pressure generated during construction fill placement.	1. As part of the next stage of design, develop an instrumentation and monitoring plan to be followed during dam fill placement to avoid rapid loading and allow for increased foundation pore water pressure to dissipate.

Area	Risk description and potential impact	Mitigation approach
	2. Settlement of the glaciolacustrine foundation soil layer could result in differential deformations that impact the performance of the MSCSP liner system.	2. As part of the next stage of design, update the estimates of differential settlement by confirming thickness of glaciolacustrine foundation under the dam and pond and prepare an instrumentation and monitoring program for construction and operations.
Tailings Management Facility (TMF)	1. Covering the FSTSF and existing tailings storage facility ("TSF") tailings with temporary liner to minimize tailings infiltration and limit runoff from contacting the tailings is not a proven mitigation measure. Failure of this mitigation method could lead to more water quality exceedances and higher water treatment cost. 2. Once the TSF pond is dewatered, the existing tailings surface could vary from soft and non-trafficable to competent. The tailings surface will need to support placement of filtered tailings. 3. Achieving adequate compaction during storm events may be operationally difficult, particularly in snowstorms when snow must be removed from the placement surface before tailings are placed. 4. Tailings must be dewatered to a suitable moisture content for placement and compaction in the FSTSF. There are limited options for alternate placement areas if the moisture content from the filter plant is too high.	1. Conduct a liner field trial to simulate the covering and water management for a representative daily placement area (about 600 m^2). The trial will provide better understanding of the crew size, liner types and accessories, equipment type, covering sequence and potential constructability challenges that may arise; information from the trial will inform the construction designs and the Operations Manual for the FSTSF. 2. Conduct a constructability review for the initial years of the filtered tailings placement. Conduct a trial (construct small pads) on the existing tailings to inform constructability review. 3. Provide three to five days of covered storage for filtered tailings for periods of adverse weather when the placement to specification is operationally difficult to achieve. Identify areas within the FSTSF where off-spec placement is acceptable. 4. Filter plant design must consider the potential range of tailings that could be produced by the mill, and the potential contingencies in the event of upsets. Consider transitioning to filtered tailings before the MZP tailings capacity is exhausted to preserve the capacity in the MZP for periods when the filter plant is not achieving performance requirements or otherwise inoperable.
Construction (Costs and Schedule)	1. Supply chain challenges could impact sourcing schedule and increase material costs due to the inflationary environment.	1. Secure long lead items and bulk materials ahead of schedule to keep them out of the Project's critical path.

Area	Risk description and potential impact	Mitigation approach
Environmental, Permitting and Social License	1. Permitting delays may occur due to lack of capacity in consultants, Indigenous nations, or regulatory groups. This could cause scheduling delays impacting initiation of project construction. 2. There is failure to secure Project support from Indigenous nations, community and stakeholders. The impact would be Permit approval not granted, or significant restrictions within permits.	1. A dedicated team shall be in place to coordinate permitting, and project planning shall account for limited capacity in Indigenous nations and regulators. 2. Ensure critical issues raised by the community are appropriately understood, mitigations developed, and ongoing management and monitoring actions identified. If possible, specific agreements with commitments should be used as a vehicle to address issues not appropriate for inclusion in regulatory instruments. In the event they are suited for inclusion into regulatory requirements, discussions, and negotiations of permit language by ODV will assist in development of appropriate permit conditions.
Rehabilitation and Closure	1. Closure of MSC, Bonanza Ledge, and QR Mill area may require substantial grading of laydown area, adjustments to surface water management infrastructure, and capping of the WRSF depending on geochemistry and water management planning.	1. A water balance/water quality model has been developed and will be refined for permitting to assess closure concepts and their estimated efficiency appropriately.

Table 25-5: Project opportunities

Area	Opportunity Explanation	Benefit
Geology and Mineral Resources	1. Surface definition diamond drilling: Potential to upgrade Inferred resources to the indicated category. 2. Surface exploration drilling: Potential to identify additional Inferred resources.	1. Adding Indicated resources increases the economic value of the mining Project. 2. Adding Inferred resources increases the economic value of the mining Project.
Geotechnical and Underground Mine	1. The opportunity exists to examine alternative mining methods that could be considered in certain areas of the mine. In veins of sufficient width and continuity, the application of transverse longhole stoping could be considered. 2. Investigation is also ongoing of possibly mining high-value areas with ground conditions not suitable for longhole mining using a cut-and-fill method. 3. Ground conditions are better than anticipated based on the geotechnical model. This could impact schedule because of a reduction in additional support / rehab being required.	1. A higher productivity with more efficient mining sequence (primary and secondary stope) and lower mining cost. It could potentially add flexibility by generating additional mining front. 2. Ability to recover mineralized material in adverse ground conditions that are not included in actual mine plan. 3. Less ground support than estimated will be required, reducing cost and improving the schedule.
Geochemistry and Water Quality Predictions	1. Additional geochemical datasets have been collected for incorporation into the water quality model. 2. Refinement of the water quality model to include additional mine site components.	1. Refine water quality model inputs based on professional judgement or updated geochemical datasets (e.g., cemented mine backfill) to assist with water quality predictions and water treatment design basis. In addition, explore opportunities to collect water samples from deep mine workings for inclusion in the mine site water quality model. 2. Update the mine site water quality model to include the underground mine pool water component to provide an integrated model for water quality predictions and water treatment design basis.

Area	Opportunity Explanation	Benefit
	3. Refine water quality model approach (e.g., review scaling factors and include mineral solubility limits).	3. Update the water quality predictions through incorporation of geochemical modelling (i.e., PHREEQC) and refined scaling factors to assist with water treatment design basis.
Mineral Processing and Metallurgy	1. Perform a bulk sample on zones other than Cow. 2. Perform additional testwork to support equipment selection.	1. A bulk sample testwork will allow for a better understanding of the fine generation from the mining method and performing mineral sorting on a larger scale sample. 2. Gain better understanding of parameters affecting equipment sizing and select the correct sized equipment.
Concentrator and QR Mill	1. Perform additional testwork on the mineral sorter at the MSC to optimize recovery (grinding and leaching). 2. Optimize the use of existing mill building space for the QR Mill upgrade.	1. Delay capital in Phase 2 by delaying the requirement for flotation. 2. Reduce CAPEX at QR Mill by locating more equipment in the existing building.
Water Treatment	1. Conduct a high-level trade-off of water treatment, water conveyance, and water storage costs. 2. Further analysis of the modelling inputs, modelling predictions, and discharge limits to identify efficiencies and simplifications in the proposed treatment processes. 3. Conduct the options identification and assessment (i.e., BAT/water treatment pre-feasibility study). 4. Further analysis of the modelling predictions to identify mitigation measures at source. 5. Seek opportunities for staged installation of the treatment processes. 6. Consider replacing the treatment processes proposed in NI 43-101 with a more flexible process (i.e., membrane system).	1. Identify the most cost-effective strategy. 2. Lower CAPEX and OPEX. Improve treatment efficiency and lower operational complexity. 3. Lower CAPEX and OPEX. Improve treatment efficiency and lower operational complexity. 4. Lower CAPEX and OPEX. Improve treatment efficiency and lower operational complexity. 5. Defers the procurement and installation of certain equipment until the source water quality can be confirmed. 6. Simplify the treatment strategy, eliminate duplication of treatment equipment, and reduce the WTP footprint.

Area	Opportunity Explanation	Benefit
		Increase the flexibility of the treatment process to accommodate unforeseen changes in influent character and effluent criteria.
Tailings Management Facility (TMF)	1. The ultimate configuration of the FSTSF will be optimized to simplify the post-closure water management strategy.	1. Reduced post-closure maintenance costs.
Construction (Costs and Schedule)	1. Staged construction of the FSTSF is part of the concept and will be developed during the next phases.	1. Adjusted construction schedule and optimized water management for operational cost savings.
Environmental, Permitting and Social License	1. Community agreements, through negotiations with participating Indigenous nations, communities, and other stakeholders as warranted.	1. Direct and indirect benefits to the community through agreements.
Rehabilitation and Closure	1. Progressive reclamation of surfaces that are not active to limit areas and duration of periods during which contact water runoff needs to be managed.	1. Reduced OPEX and closure costs at the end of the operation.

26. Recommendations

26.1 Overview

This NI 43-101 Technical Report Feasibility Study ("FS") for the Cariboo Gold Project (the "Project") (the "Report") was prepared and compiled by BBA Engineering Ltd. ("BBA") at the request of Osisko Development Corp. ("ODV"), with the support of experienced and competent independent consultants using accepted engineering methodologies and standards. It provides a summary of the results and findings from each major area of investigation, including:

- Exploration;
- Geological modelling;
- Mineral Resource Estimate;
- Mine design;
- Mineral Reserves Estimate;
- Metallurgy;
- Process design;
- Infrastructure;
- Environmental management;
- Tailings and water management;
- Capital and operating costs;
- Economic analysis.

The mutual conclusion of the Qualified Persons ("QPs") is that the Project, as summarized in this FS, contains adequate detail and information to support the positive economic outcome. The results of this study indicate that the Project is technically feasible and has financial merit at the base case assumptions considered. Analysis of the results and findings from each major area of investigation completed as part of this FS suggests numerous recommendations for further investigations to mitigate risks and/or improve the base case designs.

In summary, the QPs recommend that the Phase 1 environmental and engineering work continue to support the completion of the Environmental Assessment ("EA") and permitting process already underway and expected to be completed in 2023. Concurrently, it is recommended that ODV execute the work planned in the Phase 1 pre-permitting schedule including the purchase of long lead time equipment and initiating detailed engineering.

26.2 Work Program Budget

A work program has been developed based on the Project needs and the QP recommendations as described in Sections 26.3 to 26.8, The work program including pre-permitting work, additional exploration drilling, an underground bulk sample, and a Mineral Resource Estimate ("MRE") update is summarized in Table 26-1 and is estimated to cost approximately $114.8 million ("M"), including a $12.1M contingency.

Table 26-1: Work program budget

Work Program	Cost Estimate ($M)
Infill and exploration drilling (130,000 m)	30.0
Surface mapping and sampling	0.5
Bulk sample	15.0
Pre-permitting work	57.2
000-Mobile equipment	4.3
200-Underground mine	3.1
300-Water and waste management	21.9
400-Electrical and communication	7.4
500-Surface infrastructure	0.4
600-Processing – Mine Site Complex	3.4
600-Processing – QR Mill	4.7
700-Construction indirect costs	12.0
Subtotal	**102.7**
Contingency	12.1
Total	**114.8**

26.3 Drilling and Geology

For the future drilling, geology, and resource estimation activities, the following is recommended:

- Based on the results of the 2022 FS MRE, it is recommended that the Project deposit be advanced to the next phase. Additional exploration and delineation drilling, as well as further geological and structural interpretation are recommended to determine the extents of the gold mineralization. The recommended geology work program is detailed below. Infill drilling in high-grade vein corridors (greater than 6.0 grams per tonne ["g/t"] gold ["Au"]) is recommended to convert resources currently categorized as Inferred to the Indicated category. A budget of 130,000 metres ("m") of drilling is recommended for this program;

- Exploration drilling is recommended to explore the true depth potential with 50 m step-outs downdip of high-grade vein corridors;
- Continuing geological mapping and surface sampling programs to define and identify new targets is recommended;
- An NI 43-101 MRE update on the Project is advised. It is recommended to update the MRE after completing the drilling program;
- Collecting an underground bulk sample to test geological and grade continuities, metallurgical, and geotechnical parameters is recommended.

26.4 Underground Mining

For rock engineering, it is recommended to:

- Collect additional geotechnical data to improve rock mass characterization in large infrastructure locations and in areas where no geotechnical logging was conducted. This should include geotechnical drilling from underground targeting critical areas of underground infrastructure such as the vent raise locations, the crusher chamber, the ore sorter, and the other large excavations. This core should be logged, and laboratory rock strength testing conducted in representative samples;
- Validate site in-situ stress assumptions once underground;
- Reassess crown pillar and ground support requirements and perform numerical modelling assessments once the mine layout is finalized. Numerical stress modelling of mining sequence and excavation interaction should be undertaken;
- Conduct geotechnical and geological mapping of the underground development as the development progresses. These data should be used to optimize and refine the geological and geotechnical understanding of the rock mass. Further geological and structural interpretation is recommended to understand the influence of faults on mining following the collection of additional drilling or mapping data.

Regarding the mine hydrogeology aspects, it is recommended to:

- Assess the requirement for additional investigative work, such as packer testing and/or installation of multilevel piezometers in the Mosquito Creek in consideration of an updated modelling in support of the environmental assessment and documentation of baseline conditions:
  - Obtain dewatering rates for the Bonanza Ledge Site operation to validate the groundwater model findings in this area and reduce uncertainty in predicted dewatering rates;

  - Obtain measurements of discharge quantity at existing mine openings in Valley and Mosquito Creek zones to validate the groundwater model findings in this area and reduce uncertainty in predicted dewatering rates.
  - Install multilevel piezometers in Cow, Valley, and Island Mountain zones to increase groundwater level monitoring coverage and to characterize vertical gradients better. These installations may be used in the future to verify and refine the model calibration, and to monitor the progress of mine dewatering;
  - Investigate the source of upwelling in the historical tailings area to support mitigation planning;
  - Assess the location of new and existing drinking water wells for use in the Project and by the community of Wells.

To support the mine planning, it is recommended to:

- Complete additional research and detailed mapping of the old working drift and stopes to gain a deeper understanding of the dewatering and improve the mine design;
- Complete additional engineering work to refine the mine design and production schedule:
  - Perform trade-off study(s) on ventilation raises to optimize the number of separate raises (with associated set up costs and increased ventilation costs) against greater schedule flexibility;
  - Perform trade-off study(s) on additional or different pillar locations; increased schedule flexibility or ability to access higher grade stopes sooner may offset a small overall reduction in tonnes;
  - Further optimization of development schedule late in the mine life; a potential reduction of manpower or deferral of development may benefit the Project's NPV.
- Complete the additional engineering work to detail the CAPEX and OPEX of the underground mine;
- Study material handling strategies further, both globally and in relation to automation assumptions;
- Perform detailed engineering work for the electrical, dewatering, and backfill systems;
- Investigate further the use and costs of dust collection systems tied to roadheader usage. Similarly, investigate the use of roadheaders to mine higher-grade material in adverse ground conditions using the cut and fill method and validate roadheader advancement rates for development;
- Investigate the feasibility of a top-down mining sequence with the use of up-hole drilling;
- Further study the distribution of the paste fill underground, and whether piping, trucking, or a combination of both would be optimal;
- Pursue discussions with various suppliers to negotiate agreements or precise submissions.

26.5 Mineral Processing and Metallurgical Testwork

It is recommended that the metallurgical test program continues in order to validate the results obtained from the feasibility study testwork campaigns. Additional testwork would allow for a more profound understanding of the lithological effect on metallurgical performance. The following tests are recommended:

- Additional mineral sorter testwork on each deposit, including life of mine ("LOM") composites and variability samples;
- Characterize the production of fines during crushing;
- Test the impact of dilution on mineral sorting performance as well as the impact on down-stream processes;
- Perform full flowsheet tests on any new deposits;
- Perform equipment specific testwork required to size key process equipment (settling, filtration, etc.);
- Perform a paste backfill UCS test program to confirm binder concentration and binder selection.

26.6 Geochemistry and Water Quality

26.6.1 MSC and BL Geochemistry and Water Quality

The work in progress related to geochemical testing and water quality predictions should be considered in the context of the water treatment design basis. The work in progress includes the following:

- Additional characterization of unconsolidated overburden samples located at the MSC to aid in the understanding of the potential for Acid Rock Drainage ("ARD") and Metal Leaching ("ML"), and subsequently, to inform the material handling during construction, at which time the materials will be disturbed onsite;
- Additional characterization of the mineralogical components of the rock types that may comprise the on-site waste streams (e.g., waste rock and ore sorter waste);
- Laboratory testing program for cemented paste tailings and cemented rockfill to understand the ARD / ML potential of these materials and refine water quality modelling ("WQM") source terms related to cemented materials stored in the underground;

- Refinement of the current WQM approach for the prediction of the underground water quality to include the updated source terms using site-specific datasets and temporal/ spatial information for mining operations. The predicted water quality of the underground mine water pool may be refined with the inclusion of updated water chemistry profiles from opportunistic sampling of the mine pool;
- Refinement of the current WQM approach to include geochemical modelling to assist in understanding geochemical controls on predicted water quality (e.g., mineral solubility, adsorption);
- Update the WQM to provide an integrated model for mine life phases;
- Review and/or refine lithological assignments within the WQM for the waste materials expected during the mine life.

26.6.2 QR Mill Geochemistry and Water Quality

The recommendations related to the QR Mill Geochemistry and WBWQM are as follows:

- Continue to validate model predictions against site monitoring data;
- The geochemical characterization for the 2021 field program samples is ongoing. Revise the model with updated source terms once the data is available;
- Conduct additional model sensitivities for a range of source terms;
- Improve linkage between mill components and the rest of the site-wide WBWQM components, such that water treatment design basis can be refined;
- Implement field leach barrel or large scale field pad testing for the FSTSF tailings to assess speciation and mineral saturation states under field conditions.

26.7 QR Mill Tailings Facility

The recommendations regarding the filtered stack tailings storage facility ("FSTSF") at QR Mill include:

- The staged development of the FSTSF should be assessed to provide a more accurate planning;
- The temporary covering of the FSTSF and existing TSF should be assessed and a liner field trial should be conducted;
- The trafficability of the existing tailings should be reviewed for its ability to support the Project tailings;
- The most appropriate closure scenario should be defined, including the identification of the most appropriate low-permeability cover system and borrow sources.

26.8 Water Treatment Facilities

Recommendations related to the next stages of Water Treatment design are as follows:

- Finalize the water balance and water quality models and mine plan to complete the design bases and selected processes for water treatment. Revise design bases and proposed treatment processes if needed, based on the finalized water quality and water balance models and/or mine plan;
- Conduct best achievable technology assessment to confirm whether the proposed designs are the recommended treatment approach to progress into permitting;
- Conduct bench or pilot testing on influent water to:
  - Validate that the treatment approach can achieve the proposed treatment targets;
  - Validate the design assumptions;
  - Refine estimates of the reagent consumption and sludge generation rates;
  - Generate water treatment solids for geochemical testing to support the development of waste disposal options.
- Confirm the proposed treatment limits with the regulator;
- Contact vendors for pricing on the major equipment to refine capital costs and confirm design assumptions.

26.9 Surface Infrastructure

Additional activities are recommended to complete the next development phase for the following infrastructure items:

- Mine Site Complex Access Road:
  - Complete highway access permit to confirm intersection of MSC Main Access Road at Highway 26;
  - Willow River Bridge foundations should be designed to clarify uncertainty in foundation design and capital cost. The geotechnical investigation should include Electronic Cone method, Seismic information ("CPTu"), review of lateral spreading and settlement, and the complete survey to confirm grade line. In addition, the environmental information/constraints should be well defined.
  - Evaluate bearing capacity of foundation materials along the length of the road to determine if soil reinforcement is required to establish a stable road prism, where poor subgrade conditions exist.

- Mine Site Complex Preparation:
  - Validate the requirements to dismantle and dispose of historic structures, if any;
  - Undertake further assessment on the geochemical characterization of the material to be excavated at the MSC to finalize the earthworks development strategy and assess potential and optional sources of structural backfill materials to ensure suitability for construction, improve certainty of unit cost, and initiate permitting or negotiation of rights of access to the source area.
- Mine Site Complex to Bonanza Ledge Site Roads:
  - Complete additional engineering work to optimize the construction and layout of on-site roads between the Mine Site Complex and Bonanza Ledge Site.
- Waste at Bonanza Ledge Site:
  - Further characterize the waste rock material geotechnical parameters to confirm stability and configuration and conduct further geochemical characterization;
  - Finalize the assessment of the suitability of using underground development waste as construction material for the waste rock storage facility.
- Structural Foundations at Mine Site Complex:
  - Undertake an additional geotechnical investigation to map the bedrock profile better and the assessment of volumes of overburden and historical waste material;
  - Conduct the additional assessment of the bearing capacity of the bedrock at the location of the concentrator.
- Overhead Transmission Line:
  - Finalize the process of permitting the Transmission Line as it is a critical component of the Project.
- Surface water management for the Mine Site Complex and Bonanza Ledge:
  - Surface water management concept is to be assessed according to results of environmental site assessment and compliance with the Project permitting or table of comments must be ensured;
  - Perform the detailed design of the sediment water pond, and diversion, collection, and spillway channels required to ensure stability and certainty of arrangement and material quantities;
  - Advance the design of the underground flood management reservoir (FMR) in order to confirm the viability and constraints associated with the concept;
  - For the MSC sediment pond construction, develop an instrumentation and monitoring plan to be followed during dam fill placement to avoid rapid loading and allow for increased foundation pore water pressure to dissipate;

  - For the MSC sediment pond construction, update estimates of differential settlement by confirming thickness of glaciolacustrine foundation under dam and pond and prepare an instrumentation and monitoring program for the construction and operations.
- QR Mill:
  - Identify and assess the borrow source for construction of the South Seepage Collection Pond ("SSCP") infrastructure, and related water management infrastructure.
- Lodging Capacity at QR Mill Site and in Wells:
  - Further develop the Project schedule to a Level 3 to gain deeper granularity on labour curves, and validate the lodging requirements versus the planned lodging capacity.

26.10 Environment and Permitting

The following are recommendations for environmental and permitting considerations:

- Conduct environmental monitoring and management for the Project, including updating existing environmental monitoring and management plans in alignment with regulatory requirements and best management practices;
- ODV shall continue its engagement with Indigenous nations, regulatory authorities, and community stakeholders. This effort facilitates the permitting process and reduces schedule risks. ODV has been engaged with Indigenous nations, regulatory authorities, and community stakeholders, and has sought to gain consent and support for the Project;
- ODV shall continue the engagement with the Participating Indigenous Nations in order to maintain sound relationships and incorporate their input.

26.11 Conclusion

Colin Hardie, QP, finds the recommendations and budgets to be reasonable and justified based on the studies and observations made to date. It is recommended that ODV conducts the planned activities subject to funding availability and any other matters that may cause the objectives to be altered in the normal course of Project development.

27. References

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APPENDIX 1: LIST OF MINERAL CLAIMS AND LEASES (AS OF SEPT 26, 2022)

Title #	Type	Property	Owner	Issue Date	Good to Date	Area (ha)	Royalties
203991	Mineral Claim	Cariboo Gold	BGM (50%) and Imperial Metals Corp. (50%)	9/7/1976	7/15/2025	75.00	Osisko Gold Royalties Ltd. (5%)
204177	Mineral Claim	Cariboo Gold	BGM (50%) and Imperial Metals Corp. (50%)	8/14/1979	7/15/2025	25.00	Osisko Gold Royalties Ltd. (5%)
204176	Mineral Claim	Cariboo Gold	BGM (50%) and Imperial Metals Corp. (50%)	8/14/1979	7/15/2025	25.00	Osisko Gold Royalties Ltd. (5%)
204755	Mineral Claim	Cariboo Gold	BGM (50%) and Imperial Metals Corp. (50%)	7/11/1983	7/15/2025	25.00	Osisko Gold Royalties Ltd. (5%)
204754	Mineral Claim	Cariboo Gold	BGM (50%) and Imperial Metals Corp. (50%)	7/11/1983	7/15/2025	25.00	Osisko Gold Royalties Ltd. (5%)
204753	Mineral Claim	Cariboo Gold	BGM (50%) and Imperial Metals Corp. (50%)	7/11/1983	7/15/2025	25.00	Osisko Gold Royalties Ltd. (5%)
205247	Mineral Claim	Cariboo Gold	BGM (50%) and Imperial Metals Corp. (50%)	8/19/1986	7/15/2025	500.00	Osisko Gold Royalties Ltd. (5%)
205267	Mineral Claim	Cariboo Gold	BGM (50%) and Imperial Metals Corp. (50%)	9/18/1986	7/15/2025	300.00	Osisko Gold Royalties Ltd. (5%)
320752	Mineral Lease	QR	BGM (100%)	4/30/1994	4/30/2023	3164.40	Osisko Gold Royalties Ltd. (5%), Foxcorp Holdings Ltd. (NOP) (whole) (2.5%), Revolution Technologies Inc. (NOP) (whole), 2.5%, Newmont Goldcorp Corp. (whole) (1%)
367955	Mineral Claim	Cariboo Gold	BGM (100%)	2/23/1999	4/18/2032	25.00	Osisko Gold Royalties Ltd. (5%), Melvin Lee Zeiler (2%) (whole)
367954	Mineral Claim	Cariboo Gold	BGM (100%)	2/23/1999	4/18/2032	25.00	Osisko Gold Royalties Ltd. (5%), Melvin Lee Zeiler (2%) (whole)
369917	Mineral Claim	Cariboo Gold	BGM (100%)	7/3/1999	4/18/2032	25.00	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (whole) (2.5%)
369918	Mineral Claim	Cariboo Gold	BGM (100%)	7/3/1999	4/18/2032	25.00	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (whole) (2.5%)
370028	Mineral Claim	Cariboo Gold	BGM (100%)	7/6/1999	4/18/2032	25.00	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (whole) (2.5%)
370011	Mineral Claim	Cariboo Gold	BGM (100%)	7/6/1999	4/18/2032	25.00	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (whole) (2.5%)
370029	Mineral Claim	Cariboo Gold	BGM (100%)	7/6/1999	4/18/2032	25.00	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (whole) (2.5%)
370012	Mineral Claim	Cariboo Gold	BGM (100%)	7/6/1999	4/18/2032	25.00	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (whole) (2.5%)
370013	Mineral Claim	Cariboo Gold	BGM (100%)	7/6/1999	4/18/2032	25.00	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (whole) (2.5%)
370014	Mineral Claim	Cariboo Gold	BGM (100%)	7/6/1999	4/18/2032	25.00	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (whole) (2.5%)
370015	Mineral Claim	Cariboo Gold	BGM (100%)	7/6/1999	4/18/2032	25.00	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (whole) (2.5%)
370030	Mineral Claim	Cariboo Gold	BGM (100%)	7/7/1999	4/18/2032	25.00	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (whole) (2.5%)
370010	Mineral Claim	Cariboo Gold	BGM (100%)	7/7/1999	4/18/2032	500.00	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (whole) (2.5%)
370016	Mineral Claim	Cariboo Gold	BGM (100%)	7/8/1999	4/18/2032	25.00	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (whole) (2.5%)
370230	Mineral Claim	Cariboo Gold	BGM (100%)	7/14/1999	4/18/2032	25.00	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (whole) (2.5%)
370234	Mineral Claim	Cariboo Gold	BGM (100%)	7/15/1999	4/18/2032	25.00	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (whole) (2.5%)
374231	Mineral Claim	Cariboo Gold	BGM (100%)	1/13/2000	4/18/2032	25.00	Osisko Gold Royalties Ltd. (5%)
374227	Mineral Claim	Cariboo Gold	BGM (100%)	1/13/2000	4/18/2032	25.00	Osisko Gold Royalties Ltd. (5%)
374233	Mineral Claim	Cariboo Gold	BGM (100%)	1/13/2000	4/18/2032	25.00	Osisko Gold Royalties Ltd. (5%)
374232	Mineral Claim	Cariboo Gold	BGM (100%)	1/13/2000	4/18/2032	25.00	Osisko Gold Royalties Ltd. (5%)
374234	Mineral Claim	Cariboo Gold	BGM (100%)	1/13/2000	4/18/2032	25.00	Osisko Gold Royalties Ltd. (5%)
374230	Mineral Claim	Cariboo Gold	BGM (100%)	1/13/2000	4/18/2032	25.00	Osisko Gold Royalties Ltd. (5%)
374229	Mineral Claim	Cariboo Gold	BGM (100%)	1/13/2000	4/18/2032	25.00	Osisko Gold Royalties Ltd. (5%)
374228	Mineral Claim	Cariboo Gold	BGM (100%)	1/13/2000	4/18/2032	25.00	Osisko Gold Royalties Ltd. (5%)
374225	Mineral Claim	Cariboo Gold	BGM (100%)	1/13/2000	4/18/2032	25.00	Osisko Gold Royalties Ltd. (5%)
374226	Mineral Claim	Cariboo Gold	BGM (100%)	1/13/2000	4/18/2032	25.00	Osisko Gold Royalties Ltd. (5%)

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374710	Mineral Claim	Cariboo Gold	BGM (100%)	3/8/2000	4/18/2032	25.00	Osisko Gold Royalties Ltd. (5%)
374713	Mineral Claim	Cariboo Gold	BGM (100%)	3/8/2000	4/18/2032	25.00	Osisko Gold Royalties Ltd. (5%)
374706	Mineral Claim	Cariboo Gold	BGM (100%)	3/8/2000	4/18/2032	25.00	Osisko Gold Royalties Ltd. (5%)
374707	Mineral Claim	Cariboo Gold	BGM (100%)	3/8/2000	4/18/2032	25.00	Osisko Gold Royalties Ltd. (5%)
374711	Mineral Claim	Cariboo Gold	BGM (100%)	3/8/2000	4/18/2032	25.00	Osisko Gold Royalties Ltd. (5%)
374708	Mineral Claim	Cariboo Gold	BGM (100%)	3/8/2000	4/18/2032	25.00	Osisko Gold Royalties Ltd. (5%)
374709	Mineral Claim	Cariboo Gold	BGM (100%)	3/8/2000	4/18/2032	25.00	Osisko Gold Royalties Ltd. (5%)
374712	Mineral Claim	Cariboo Gold	BGM (100%)	3/8/2000	4/18/2032	25.00	Osisko Gold Royalties Ltd. (5%)
375260	Mineral Claim	Cariboo Gold	BGM (50%) and Imperial Metals Corp. (50%)	4/9/2000	7/15/2025	400.00	Osisko Gold Royalties Ltd. (5%)
384113	Mineral Claim	Cariboo Gold	BGM (100%)	2/19/2001	4/18/2032	400.00	Osisko Gold Royalties Ltd. (5%), Melvin Lee Zeiler (2%) (whole)
384112	Mineral Claim	Cariboo Gold	BGM (100%)	2/19/2001	4/18/2032	300.00	Osisko Gold Royalties Ltd. (5%), Melvin Lee Zeiler (2%) (whole)
412065	Mineral Claim	Cariboo Gold	BGM (100%)	7/8/2004	4/18/2032	500.00	Osisko Gold Royalties Ltd. (5%), & Estate of Bryan Muloin (whole) (3% of 2% NSR)
412066	Mineral Claim	Cariboo Gold	BGM (100%)	7/8/2004	4/18/2032	375.00	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (97% of 2% NSR) & Estate of Bryan Muloin (whole) (3% of 2% NSR)
505927	Mineral Claim	Cariboo Gold	BGM (100%)	2/4/2005	4/18/2032	738.06	Osisko Gold Royalties Ltd. (5%)
505910	Mineral Claim	Cariboo Gold	BGM (100%)	2/4/2005	4/18/2032	1265.76	Osisko Gold Royalties Ltd. (5%)
505921	Mineral Claim	Cariboo Gold	BGM (100%)	2/4/2005	4/18/2032	914.78	Osisko Gold Royalties Ltd. (5%)
505916	Mineral Claim	Cariboo Gold	BGM (100%)	2/4/2005	4/18/2032	1164.10	Osisko Gold Royalties Ltd. (5%), Douglas Merrick & Harold Merrick (partial) (2%)
505901	Mineral Claim	Cariboo Gold	BGM (100%)	2/4/2005	4/18/2032	349.67	Osisko Gold Royalties Ltd. (5%)
505905	Mineral Claim	Cariboo Gold	BGM (100%)	2/4/2005	4/18/2032	972.78	Osisko Gold Royalties Ltd. (5%)
505914	Mineral Claim	Cariboo Gold	BGM (100%)	2/4/2005	4/18/2032	1399.53	Osisko Gold Royalties Ltd. (5%)
505922	Mineral Claim	Cariboo Gold	BGM (100%)	2/4/2005	4/18/2032	583.13	Osisko Gold Royalties Ltd. (5%)
505924	Mineral Claim	Cariboo Gold	BGM (100%)	2/4/2005	4/18/2032	543.58	Osisko Gold Royalties Ltd. (5%)
505925	Mineral Claim	Cariboo Gold	BGM (100%)	2/4/2005	4/18/2032	1066.31	Osisko Gold Royalties Ltd. (5%), Douglas Merrick & Harold Merrick (partial) (2%)
505917	Mineral Claim	Cariboo Gold	BGM (100%)	2/4/2005	4/18/2032	658.93	Osisko Gold Royalties Ltd. (5%), Douglas Merrick & Harold Merrick (partial) (2%)
505936	Mineral Claim	Cariboo Gold	BGM (100%)	2/4/2005	4/18/2032	426.62	Osisko Gold Royalties Ltd. (5%), Douglas Merrick & Harold Merrick (partial) (2%)
505926	Mineral Claim	Cariboo Gold	BGM (100%)	2/4/2005	4/18/2032	310.41	Osisko Gold Royalties Ltd. (5%), Douglas Merrick & Harold Merrick (partial) (2%)
506154	Mineral Claim	Cariboo Gold	BGM (100%)	2/7/2005	4/18/2032	155.56	Osisko Gold Royalties Ltd. (5%)
506315	Mineral Claim	Cariboo Gold	BGM (100%)	2/8/2005	4/18/2032	894.11	Osisko Gold Royalties Ltd. (5%)
506489	Mineral Claim	Cariboo Gold	BGM (100%)	2/9/2005	4/18/2032	388.47	Osisko Gold Royalties Ltd. (5%)
506436	Mineral Claim	Cariboo Gold	BGM (100%)	2/9/2005	4/18/2032	408.28	Osisko Gold Royalties Ltd. (5%)
506493	Mineral Claim	Cariboo Gold	BGM (100%)	2/9/2005	4/18/2032	1549.54	Osisko Gold Royalties Ltd. (5%)
506440	Mineral Claim	Cariboo Gold	BGM (100%)	2/9/2005	4/18/2032	972.35	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (partial) (2%)
506497	Mineral Claim	Cariboo Gold	BGM (100%)	2/9/2005	4/18/2032	853.84	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (partial) (2%)
506720	Mineral Claim	Cariboo Gold	BGM (100%)	2/10/2005	4/18/2032	1085.46	Osisko Gold Royalties Ltd. (5%), Charnobay/Wells Syndicate (partial) (3%)

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506620	Mineral Claim	Cariboo Gold	BGM (100%)	2/10/2005	4/18/2032	933.89	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (partial) (2%), Osisko Gold Royalties Ltd. (partial) (2%), Osisko Gold Royalties Ltd. (partial) (2%)
506658	Mineral Claim	Cariboo Gold	BGM (100%)	2/10/2005	4/18/2032	506.36	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (partial) (2%)
506630	Mineral Claim	Cariboo Gold	BGM (100%)	2/10/2005	4/18/2032	350.79	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (partial) (2%)
506614	Mineral Claim	Cariboo Gold	BGM (100%)	2/10/2005	4/18/2032	1167.70	Osisko Gold Royalties Ltd. (5%)
506721	Mineral Claim	Cariboo Gold	BGM (100%)	2/10/2005	4/18/2032	1070.04	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (partial) (2%), Osisko Gold Royalties Ltd. (partial) (2%)
506618	Mineral Claim	Cariboo Gold	BGM (100%)	2/10/2005	4/18/2032	622.63	Osisko Gold Royalties Ltd. (5%)
506637	Mineral Claim	Cariboo Gold	BGM (100%)	2/10/2005	4/18/2032	1131.33	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (partial) (2%), Osisko Gold Royalties Ltd. (partial) (2.5%)
506956	Mineral Claim	Cariboo Gold	BGM (100%)	2/11/2005	4/18/2032	1247.95	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (partial) (2%), Osisko Gold Royalties Ltd. (partial) (2.5%)
507132	Mineral Claim	Cariboo Gold	BGM (97.5%), Shane Morgan Williams (2.5%)	2/14/2005	4/18/2032	931.38	Osisko Gold Royalties Ltd. (5%), William G. Timmins (partial) (2.5%)
507136	Mineral Claim	Cariboo Gold	BGM (97.5%), Shane Morgan Williams (2.5%)	2/14/2005	4/18/2032	872.37	Osisko Gold Royalties Ltd. (5%), . & Osisko Gold Royalties Ltd. (partial) (2%)
507131	Mineral Claim	Cariboo Gold	BGM (85%), Starr Peak Exploration (12.5%), Shane Morgan Williams (2.5%)	2/14/2005	4/18/2032	562.74	Osisko Gold Royalties Ltd. (5%)
507133	Mineral Claim	Cariboo Gold	BGM (97.5%), Shane Morgan Williams (2.5%)	2/14/2005	4/18/2032	1339.02	Osisko Gold Royalties Ltd. (5%)
507135	Mineral Claim	Cariboo Gold	BGM (97.5%), Shane Morgan Williams (2.5%)	2/14/2005	4/18/2032	911.60	Osisko Gold Royalties Ltd. (5%)
507134	Mineral Claim	Cariboo Gold	BGM (97.5%), Shane Morgan Williams (2.5%)	2/14/2005	4/18/2032	543.03	Osisko Gold Royalties Ltd. (5%), William G. Timmins (partial) (2.5), Osisko Gold Royalties Ltd. (partial) (2%)
507260	Mineral Claim	Cariboo Gold	BGM (100%)	2/15/2005	4/18/2032	19.41	Osisko Gold Royalties Ltd. (5%)
507261	Mineral Claim	Cariboo Gold	BGM (100%)	2/15/2005	4/18/2032	620.63	Osisko Gold Royalties Ltd. (5%)
507247	Mineral Claim	Cariboo Gold	BGM (100%)	2/15/2005	4/18/2032	698.82	Osisko Gold Royalties Ltd. (5%)
507265	Mineral Claim	Cariboo Gold	BGM (100%)	2/15/2005	4/18/2032	542.59	Osisko Gold Royalties Ltd. (5%), . & Osisko Gold Royalties Ltd. (partial) (2%)
507264	Mineral Claim	Cariboo Gold	BGM (100%)	2/15/2005	4/18/2032	1026.62	Osisko Gold Royalties Ltd. (5%), Charnobay/Wells Syndicate (partial) (3%)
507248	Mineral Claim	Cariboo Gold	BGM (100%)	2/15/2005	4/18/2032	621.30	Osisko Gold Royalties Ltd. (5%)
507259	Mineral Claim	Cariboo Gold	BGM (100%)	2/15/2005	4/18/2032	252.33	Osisko Gold Royalties Ltd. (5%)
507288	Mineral Claim	Cariboo Gold	BGM (100%)	2/16/2005	4/18/2032	426.36	Osisko Gold Royalties Ltd. (5%), . & Osisko Gold Royalties Ltd. (partial) (2%)
507309	Mineral Claim	Cariboo Gold	BGM (100%)	2/16/2005	4/18/2032	1030.24	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (partial) (1%)
507304	Mineral Claim	Cariboo Gold	BGM (100%)	2/16/2005	4/18/2032	388.20	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (partial) (2%)
508778	Mineral Claim	Cariboo Gold	BGM (100%)	3/11/2005	4/18/2032	775.28	Osisko Gold Royalties Ltd. (5%), . & Osisko Gold Royalties Ltd. (partial) (2%)
508905	Mineral Claim	Cariboo Gold	BGM (100%)	3/14/2005	4/18/2032	871.72	Osisko Gold Royalties Ltd. (5%)
509015	Mineral Claim	Cariboo Gold	BGM (100%)	3/16/2005	4/18/2032	193.86	Osisko Gold Royalties Ltd. (5%), . & Osisko Gold Royalties Ltd. (partial) (2%)
509017	Mineral Claim	Cariboo Gold	BGM (100%)	3/16/2005	4/18/2032	639.85	Osisko Gold Royalties Ltd. (5%), William G. Timmins (partial) (2.5), Osisko Gold Royalties Ltd. (partial) (2%)
509179	Mineral Claim	Cariboo Gold	BGM (100%)	3/17/2005	4/18/2032	833.23	Osisko Gold Royalties Ltd. (5%), . & Osisko Gold Royalties Ltd. (partial) (2%)
511280	Mineral Claim	QR	BGM (100%)	4/20/2005	12/8/2024	588.13	Osisko Gold Royalties Ltd. (5%), Foxcorp Holdings Ltd. (NOP) (partial) (2.5%), Revolution Technologies Inc. (NOP) (partial) (2.5%), Newmont Goldcorp Corp. (partial) (1%)
512571	Mineral Claim	Cariboo Gold	BGM (85%), Starr Peak Exploration (12.5%), Shane Morgan Williams (2.5%)	5/14/2005	4/18/2032	484.93	Osisko Gold Royalties Ltd. (5%), William G. Timmins (partial) (2.5%)
512739	Mineral Claim	Cariboo Gold	BGM (100%)	5/16/2005	4/18/2032	877.72	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (partial) (2.5%), Roundtop Exploration Inc. (partial) (2%), Osisko Gold Royalties Ltd. (partial) (2%)

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512795	Mineral Claim	Cariboo Gold	BGM (97.5%), Shane Morgan Williams (2.5%)	5/17/2005	4/18/2032	155.22	Osisko Gold Royalties Ltd. (5%)
512957	Mineral Claim	QR	BGM (100%)	5/18/2005	12/8/2024	528.81	Osisko Gold Royalties Ltd. (5%)
512954	Mineral Claim	QR	BGM (100%)	5/18/2005	12/8/2024	607.40	Osisko Gold Royalties Ltd. (5%), Foxcorp Holdings Ltd. (NOP) (partial) (2.5%), Revolution Technologies Inc. (NOP) (partial) (2.5%), Newmont Goldcorp Corp. (partial) (1%)
513739	Mineral Claim	Cariboo Gold	BGM (100%)	6/1/2005	4/18/2032	484.88	Osisko Gold Royalties Ltd. (5%), William G. Timmins (partial) (2.5%)
514446	Mineral Claim	Cariboo Gold	BGM (100%)	6/13/2005	4/18/2032	291.87	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (partial) (2%)
514442	Mineral Claim	Cariboo Gold	BGM (100%)	6/13/2005	4/18/2032	155.75	Osisko Gold Royalties Ltd. (5%)
517433	Mineral Claim	Cariboo Gold	BGM (100%)	7/12/2005	4/18/2032	19.41	Osisko Gold Royalties Ltd. (5%)
517260	Mineral Claim	Cariboo Gold	BGM (100%)	7/12/2005	4/18/2032	38.87	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (partial) (1%)
517416	Mineral Claim	Cariboo Gold	BGM (100%)	7/12/2005	4/18/2032	58.28	Osisko Gold Royalties Ltd. (5%)
517423	Mineral Claim	Cariboo Gold	BGM (100%)	7/12/2005	4/18/2032	252.39	Osisko Gold Royalties Ltd. (5%)
519556	Mineral Claim	Cariboo Gold	BGM (100%)	8/31/2005	4/18/2032	485.01	Osisko Gold Royalties Ltd. (5%)
519563	Mineral Claim	Cariboo Gold	BGM (100%)	8/31/2005	4/18/2032	484.60	Osisko Gold Royalties Ltd. (5%)
519559	Mineral Claim	Cariboo Gold	BGM (100%)	8/31/2005	4/18/2032	484.79	Osisko Gold Royalties Ltd. (5%)
520330	Mineral Claim	QR	BGM (100%)	9/22/2005	12/8/2024	78.44	Osisko Gold Royalties Ltd. (5%)
521241	Mineral Claim	Cariboo Gold	BGM (100%)	10/15/2005	4/18/2032	485.66	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (partial) (1%)
521242	Mineral Claim	Cariboo Gold	BGM (100%)	10/15/2005	4/18/2032	486.17	Osisko Gold Royalties Ltd. (5%)
521346	Mineral Claim	Cariboo Gold	BGM (100%)	10/19/2005	4/18/2032	487.06	Osisko Gold Royalties Ltd. (5%)
521336	Mineral Claim	Cariboo Gold	BGM (100%)	10/19/2005	4/18/2032	487.79	Osisko Gold Royalties Ltd. (5%)
521358	Mineral Claim	Cariboo Gold	BGM (100%)	10/19/2005	4/18/2032	428.52	Osisko Gold Royalties Ltd. (5%)
521356	Mineral Claim	Cariboo Gold	BGM (100%)	10/19/2005	4/18/2032	487.43	Osisko Gold Royalties Ltd. (5%)
521352	Mineral Claim	Cariboo Gold	BGM (100%)	10/19/2005	4/18/2032	487.35	Osisko Gold Royalties Ltd. (5%)
521351	Mineral Claim	Cariboo Gold	BGM (100%)	10/19/2005	4/18/2032	487.17	Osisko Gold Royalties Ltd. (5%)
521350	Mineral Claim	Cariboo Gold	BGM (100%)	10/19/2005	4/18/2032	486.94	Osisko Gold Royalties Ltd. (5%)
521329	Mineral Claim	Cariboo Gold	BGM (100%)	10/19/2005	4/18/2032	486.72	Osisko Gold Royalties Ltd. (5%)
521348	Mineral Claim	Cariboo Gold	BGM (100%)	10/19/2005	4/18/2032	487.04	Osisko Gold Royalties Ltd. (5%)
521357	Mineral Claim	Cariboo Gold	BGM (100%)	10/19/2005	4/18/2032	487.19	Osisko Gold Royalties Ltd. (5%)
521342	Mineral Claim	Cariboo Gold	BGM (100%)	10/19/2005	4/18/2032	486.75	Osisko Gold Royalties Ltd. (5%)
521340	Mineral Claim	Cariboo Gold	BGM (100%)	10/19/2005	4/18/2032	487.96	Osisko Gold Royalties Ltd. (5%)
521339	Mineral Claim	Cariboo Gold	BGM (100%)	10/19/2005	4/18/2032	488.08	Osisko Gold Royalties Ltd. (5%)
521338	Mineral Claim	Cariboo Gold	BGM (100%)	10/19/2005	4/18/2032	486.69	Osisko Gold Royalties Ltd. (5%)
521337	Mineral Claim	Cariboo Gold	BGM (100%)	10/19/2005	4/18/2032	486.69	Osisko Gold Royalties Ltd. (5%)
521333	Mineral Claim	Cariboo Gold	BGM (100%)	10/19/2005	4/18/2032	487.63	Osisko Gold Royalties Ltd. (5%)
521349	Mineral Claim	Cariboo Gold	BGM (100%)	10/19/2005	4/18/2032	486.93	Osisko Gold Royalties Ltd. (5%)
521332	Mineral Claim	Cariboo Gold	BGM (100%)	10/19/2005	4/18/2032	487.40	Osisko Gold Royalties Ltd. (5%)
521353	Mineral Claim	Cariboo Gold	BGM (100%)	10/19/2005	4/18/2032	487.35	Osisko Gold Royalties Ltd. (5%)

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521331	Mineral Claim	Cariboo Gold	BGM (100%)	10/19/2005	4/18/2032	487.11	Osisko Gold Royalties Ltd. (5%)
521330	Mineral Claim	Cariboo Gold	BGM (100%)	10/19/2005	4/18/2032	486.84	Osisko Gold Royalties Ltd. (5%)
521880	Mineral Claim	Cariboo Gold	BGM (100%)	11/2/2005	4/18/2032	488.32	Osisko Gold Royalties Ltd. (5%)
521881	Mineral Claim	Cariboo Gold	BGM (100%)	11/2/2005	4/18/2032	488.65	Osisko Gold Royalties Ltd. (5%)
521877	Mineral Claim	Cariboo Gold	BGM (100%)	11/2/2005	4/18/2032	488.45	Osisko Gold Royalties Ltd. (5%)
521829	Mineral Claim	Cariboo Gold	BGM (100%)	11/2/2005	4/18/2032	488.14	Osisko Gold Royalties Ltd. (5%)
521839	Mineral Claim	Cariboo Gold	BGM (100%)	11/2/2005	4/18/2032	488.20	Osisko Gold Royalties Ltd. (5%)
521844	Mineral Claim	Cariboo Gold	BGM (100%)	11/2/2005	4/18/2032	488.43	Osisko Gold Royalties Ltd. (5%)
521852	Mineral Claim	Cariboo Gold	BGM (100%)	11/2/2005	4/18/2032	488.19	Osisko Gold Royalties Ltd. (5%)
521872	Mineral Claim	Cariboo Gold	BGM (100%)	11/2/2005	4/18/2032	488.16	Osisko Gold Royalties Ltd. (5%)
521883	Mineral Claim	Cariboo Gold	BGM (100%)	11/2/2005	4/18/2032	390.78	Osisko Gold Royalties Ltd. (5%)
522125	Mineral Claim	Cariboo Gold	BGM (100%)	11/8/2005	4/18/2032	581.01	Osisko Gold Royalties Ltd. (5%), Charnobay/Wells Syndicate (partial) (3%)
528996	Mineral Claim	Cariboo Gold	BGM (100%)	2/27/2006	4/18/2032	466.26	Osisko Gold Royalties Ltd. (5%)
529036	Mineral Claim	Cariboo Gold	BGM (100%)	2/27/2006	4/18/2032	19.41	Osisko Gold Royalties Ltd. (5%)
529715	Mineral Claim	Cariboo Gold	BGM (100%)	3/7/2006	4/18/2032	835.61	Osisko Gold Royalties Ltd. (5%)
529712	Mineral Claim	Cariboo Gold	BGM (100%)	3/7/2006	4/18/2032	330.14	Osisko Gold Royalties Ltd. (5%)
529719	Mineral Claim	Cariboo Gold	BGM (100%)	3/7/2006	4/18/2032	757.72	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (partial) (1%), Osisko Gold Royalties Ltd. (partial) (2%)
529721	Mineral Claim	Cariboo Gold	BGM (100%)	3/7/2006	4/18/2032	1615.57	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (partial) (2%), Osisko Gold Royalties Ltd. (partial) (2%)
529720	Mineral Claim	Cariboo Gold	BGM (100%)	3/7/2006	4/18/2032	603.80	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (partial) (2%)
529713	Mineral Claim	Cariboo Gold	BGM (100%)	3/7/2006	4/18/2032	720.92	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (partial) (2%), Osisko Gold Royalties Ltd. (partial) (2.5%), Osisko Gold Royalties Ltd. (partial) (2%)
529717	Mineral Claim	Cariboo Gold	BGM (100%)	3/7/2006	4/18/2032	545.68	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (partial) (2.5%)
529722	Mineral Claim	Cariboo Gold	BGM (100%)	3/7/2006	4/18/2032	507.38	Osisko Gold Royalties Ltd. (5%)
535526	Mineral Claim	Cariboo Gold	BGM (100%)	6/13/2006	4/18/2032	465.85	Osisko Gold Royalties Ltd. (5%)
535671	Mineral Claim	Cariboo Gold	BGM (100%)	6/14/2006	4/18/2032	953.05	Osisko Gold Royalties Ltd. (5%)
535855	Mineral Claim	Cariboo Gold	BGM (100%)	6/17/2006	4/18/2032	39.02	Osisko Gold Royalties Ltd. (5%)
536691	Mineral Claim	Cariboo Gold	BGM (100%)	7/7/2006	4/18/2032	467.11	Osisko Gold Royalties Ltd. (5%)
537354	Mineral Claim	Cariboo Gold	BGM (100%)	7/17/2006	4/18/2032	19.50	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (partial) (2.5%)
546306	Mineral Claim	Cariboo Gold	BGM (100%)	12/1/2006	4/18/2032	331.89	Osisko Gold Royalties Ltd. (5%)
546314	Mineral Claim	Cariboo Gold	BGM (100%)	12/1/2006	4/18/2032	1299.19	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (partial) (2%), Osisko Gold Royalties Ltd. (partial) (2%)
546311	Mineral Claim	Cariboo Gold	BGM (100%)	12/1/2006	4/18/2032	563.12	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (partial) (2%)
546309	Mineral Claim	Cariboo Gold	BGM (100%)	12/1/2006	4/18/2032	1438.50	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (partial) (1%), Osisko Gold Royalties Ltd. (partial) (2%)
546310	Mineral Claim	Cariboo Gold	BGM (100%)	12/1/2006	4/18/2032	854.59	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (partial) (1%)
546315	Mineral Claim	Cariboo Gold	BGM (100%)	12/1/2006	4/18/2032	1027.11	Osisko Gold Royalties Ltd. (5%), Charnobay/Wells Syndicate (partial) (3%)
546307	Mineral Claim	Cariboo Gold	BGM (100%)	12/1/2006	4/18/2032	815.89	Osisko Gold Royalties Ltd. (5%)

Title #	Type	Property	Owner	Issue Date	Good to Date	Area (ha)	Royalties
546617	Mineral Claim	Cariboo Gold	BGM (100%)	12/5/2006	4/18/2032	955.51	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (97% of 2% NSR) & Estate of Bryan Muloin (whole) (3% of 2% NSR)
546614	Mineral Claim	Cariboo Gold	BGM (100%)	12/5/2006	4/18/2032	619.46	Osisko Gold Royalties Ltd. (5%)
546613	Mineral Claim	Cariboo Gold	BGM (100%)	12/5/2006	4/18/2032	663.22	Osisko Gold Royalties Ltd. (5%)
546611	Mineral Claim	Cariboo Gold	BGM (100%)	12/5/2006	4/18/2032	604.62	Osisko Gold Royalties Ltd. (5%)
546612	Mineral Claim	Cariboo Gold	BGM (100%)	12/5/2006	4/18/2032	719.15	Osisko Gold Royalties Ltd. (5%)
546620	Mineral Claim	Cariboo Gold	BGM (100%)	12/5/2006	4/18/2032	954.67	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (97% of 2% NSR) & Estate of Bryan Muloin (whole) (3% of 2% NSR)
546727	Mineral Claim	Cariboo Gold	BGM (100%)	12/6/2006	4/18/2032	952.84	Osisko Gold Royalties Ltd. (5%)
546725	Mineral Claim	Cariboo Gold	BGM (100%)	12/6/2006	4/18/2032	953.60	Osisko Gold Royalties Ltd. (5%)
546724	Mineral Claim	Cariboo Gold	BGM (100%)	12/6/2006	4/18/2032	837.09	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (partial) (2%)
546723	Mineral Claim	Cariboo Gold	BGM (100%)	12/6/2006	4/18/2032	702.56	Osisko Gold Royalties Ltd. (5%)
546722	Mineral Claim	Cariboo Gold	BGM (100%)	12/6/2006	4/18/2032	1147.58	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (partial) (2%), Osisko Gold Royalties Ltd. (partial) (2%)
546726	Mineral Claim	Cariboo Gold	BGM (100%)	12/6/2006	4/18/2032	971.93	Osisko Gold Royalties Ltd. (5%)
554741	Mineral Claim	Cariboo Gold	BGM (100%)	3/20/2007	4/18/2032	484.16	Osisko Gold Royalties Ltd. (5%)
554735	Mineral Claim	Cariboo Gold	BGM (100%)	3/20/2007	4/18/2032	484.18	Osisko Gold Royalties Ltd. (5%)
554737	Mineral Claim	Cariboo Gold	BGM (100%)	3/20/2007	4/18/2032	484.18	Osisko Gold Royalties Ltd. (5%)
554740	Mineral Claim	Cariboo Gold	BGM (100%)	3/20/2007	4/18/2032	483.95	Osisko Gold Royalties Ltd. (5%)
554742	Mineral Claim	Cariboo Gold	BGM (100%)	3/20/2007	4/18/2032	483.93	Osisko Gold Royalties Ltd. (5%)
554743	Mineral Claim	Cariboo Gold	BGM (100%)	3/20/2007	4/18/2032	484.16	Osisko Gold Royalties Ltd. (5%)
554745	Mineral Claim	Cariboo Gold	BGM (100%)	3/20/2007	4/18/2032	483.70	Osisko Gold Royalties Ltd. (5%)
554747	Mineral Claim	Cariboo Gold	BGM (100%)	3/20/2007	4/18/2032	484.12	Osisko Gold Royalties Ltd. (5%)
554748	Mineral Claim	Cariboo Gold	BGM (100%)	3/20/2007	4/18/2032	483.96	Osisko Gold Royalties Ltd. (5%)
554749	Mineral Claim	Cariboo Gold	BGM (100%)	3/20/2007	4/18/2032	483.74	Osisko Gold Royalties Ltd. (5%)
554750	Mineral Claim	Cariboo Gold	BGM (100%)	3/20/2007	4/18/2032	483.99	Osisko Gold Royalties Ltd. (5%)
554739	Mineral Claim	Cariboo Gold	BGM (100%)	3/20/2007	4/18/2032	483.95	Osisko Gold Royalties Ltd. (5%)
554746	Mineral Claim	Cariboo Gold	BGM (100%)	3/20/2007	4/18/2032	483.98	Osisko Gold Royalties Ltd. (5%)
554802	Mineral Claim	Cariboo Gold	BGM (100%)	3/21/2007	4/18/2032	38.71	Osisko Gold Royalties Ltd. (5%)
564597	Mineral Claim	Cariboo Gold	BGM (100%)	8/15/2007	4/18/2032	19.52	Osisko Gold Royalties Ltd. (5%)
564598	Mineral Claim	Cariboo Gold	BGM (100%)	8/15/2007	4/18/2032	19.50	Osisko Gold Royalties Ltd. (5%)
567678	Mineral Claim	Cariboo Gold	BGM (100%)	10/9/2007	4/18/2032	19.50	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (partial) (2.5%)
567677	Mineral Claim	Cariboo Gold	BGM (100%)	10/9/2007	4/18/2032	39.00	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (partial) (2.5%)
572001	Mineral Claim	Cariboo Gold	BGM (100%)	12/15/2007	4/18/2032	19.51	Osisko Gold Royalties Ltd. (5%)
572011	Mineral Claim	Cariboo Gold	BGM (100%)	12/16/2007	4/18/2032	19.51	Osisko Gold Royalties Ltd. (5%)
572348	Mineral Claim	Cariboo Gold	BGM (100%)	12/21/2007	4/18/2032	19.51	Osisko Gold Royalties Ltd. (5%)
572437	Mineral Claim	Cariboo Gold	BGM (100%)	12/23/2007	4/18/2032	19.50	Osisko Gold Royalties Ltd. (5%)

Title #	Type	Property	Owner	Issue Date	Good to Date	Area (ha)	Royalties
573880	Mineral Claim	Cariboo Gold	BGM (100%)	1/16/2008	4/18/2032	38.98	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (partial) (2.5%)
577422	Mineral Claim	Cariboo Gold	BGM (100%)	2/28/2008	4/18/2032	349.90	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (partial) (2%)
581059	Mineral Claim	Cariboo Gold	BGM (100%)	4/12/2008	4/18/2032	468.39	Osisko Gold Royalties Ltd. (5%), Dustin Alsager Rivard (whole) (2%)
592159	Mineral Claim	Cariboo Gold	BGM (100%)	9/29/2008	4/18/2032	350.74	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (partial) (1%), Osisko Gold Royalties Ltd. (97% of 2% NSR) & Estate of Bryan Muloin (partial) (3% of 2 % NSR)
593162	Mineral Claim	Cariboo Gold	BGM (100%)	10/20/2008	4/18/2032	58.29	Osisko Gold Royalties Ltd. (5%)
593959	Mineral Claim	Cariboo Gold	BGM (100%)	11/6/2008	4/18/2032	485.28	Osisko Gold Royalties Ltd. (5%)
593960	Mineral Claim	Cariboo Gold	BGM (100%)	11/6/2008	4/18/2032	485.04	Osisko Gold Royalties Ltd. (5%)
593985	Mineral Claim	Cariboo Gold	BGM (100%)	11/6/2008	4/18/2032	484.87	Osisko Gold Royalties Ltd. (5%)
593961	Mineral Claim	Cariboo Gold	BGM (100%)	11/6/2008	4/18/2032	484.80	Osisko Gold Royalties Ltd. (5%)
593979	Mineral Claim	Cariboo Gold	BGM (100%)	11/6/2008	4/18/2032	485.22	Osisko Gold Royalties Ltd. (5%)
593988	Mineral Claim	Cariboo Gold	BGM (100%)	11/6/2008	4/18/2032	252.34	Osisko Gold Royalties Ltd. (5%)
593987	Mineral Claim	Cariboo Gold	BGM (100%)	11/6/2008	4/18/2032	485.19	Osisko Gold Royalties Ltd. (5%)
593986	Mineral Claim	Cariboo Gold	BGM (100%)	11/6/2008	4/18/2032	465.72	Osisko Gold Royalties Ltd. (5%)
593983	Mineral Claim	Cariboo Gold	BGM (100%)	11/6/2008	4/18/2032	484.62	Osisko Gold Royalties Ltd. (5%)
593984	Mineral Claim	Cariboo Gold	BGM (100%)	11/6/2008	4/18/2032	484.87	Osisko Gold Royalties Ltd. (5%)
593982	Mineral Claim	Cariboo Gold	BGM (100%)	11/6/2008	4/18/2032	484.62	Osisko Gold Royalties Ltd. (5%)
593962	Mineral Claim	Cariboo Gold	BGM (100%)	11/6/2008	4/18/2032	484.79	Osisko Gold Royalties Ltd. (5%)
593980	Mineral Claim	Cariboo Gold	BGM (100%)	11/6/2008	4/18/2032	485.00	Osisko Gold Royalties Ltd. (5%)
593975	Mineral Claim	Cariboo Gold	BGM (100%)	11/6/2008	4/18/2032	155.26	Osisko Gold Royalties Ltd. (5%)
593974	Mineral Claim	Cariboo Gold	BGM (100%)	11/6/2008	4/18/2032	77.64	Osisko Gold Royalties Ltd. (5%)
593967	Mineral Claim	Cariboo Gold	BGM (100%)	11/6/2008	4/18/2032	465.87	Osisko Gold Royalties Ltd. (5%)
593963	Mineral Claim	Cariboo Gold	BGM (100%)	11/6/2008	4/18/2032	485.03	Osisko Gold Royalties Ltd. (5%)
593981	Mineral Claim	Cariboo Gold	BGM (100%)	11/6/2008	4/18/2032	484.77	Osisko Gold Royalties Ltd. (5%)
593966	Mineral Claim	Cariboo Gold	BGM (100%)	11/6/2008	4/18/2032	466.03	Osisko Gold Royalties Ltd. (5%)
593973	Mineral Claim	Cariboo Gold	BGM (100%)	11/6/2008	4/18/2032	387.63	Osisko Gold Royalties Ltd. (5%)
593968	Mineral Claim	Cariboo Gold	BGM (100%)	11/6/2008	4/18/2032	465.68	Osisko Gold Royalties Ltd. (5%)
593969	Mineral Claim	Cariboo Gold	BGM (100%)	11/6/2008	4/18/2032	465.50	Osisko Gold Royalties Ltd. (5%)
593970	Mineral Claim	Cariboo Gold	BGM (100%)	11/6/2008	4/18/2032	465.21	Osisko Gold Royalties Ltd. (5%)
593971	Mineral Claim	Cariboo Gold	BGM (100%)	11/6/2008	4/18/2032	466.00	Osisko Gold Royalties Ltd. (5%)
593972	Mineral Claim	Cariboo Gold	BGM (100%)	11/6/2008	4/18/2032	465.34	Osisko Gold Royalties Ltd. (5%)
593965	Mineral Claim	Cariboo Gold	BGM (100%)	11/6/2008	4/18/2032	485.27	Osisko Gold Royalties Ltd. (5%)
594001	Mineral Claim	Cariboo Gold	BGM (100%)	11/7/2008	4/18/2032	58.18	Osisko Gold Royalties Ltd. (5%)
594002	Mineral Claim	Cariboo Gold	BGM (100%)	11/7/2008	4/18/2032	38.80	Osisko Gold Royalties Ltd. (5%)
594003	Mineral Claim	Cariboo Gold	BGM (100%)	11/7/2008	4/18/2032	38.81	Osisko Gold Royalties Ltd. (5%)
595164	Mineral Claim	Cariboo Gold	BGM (100%)	12/1/2008	4/18/2032	427.12	Osisko Gold Royalties Ltd. (5%)

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595167	Mineral Claim	Cariboo Gold	BGM (100%)	12/1/2008	4/18/2032	77.68	Osisko Gold Royalties Ltd. (5%)
595166	Mineral Claim	Cariboo Gold	BGM (100%)	12/1/2008	4/18/2032	38.83	Osisko Gold Royalties Ltd. (5%)
595165	Mineral Claim	Cariboo Gold	BGM (100%)	12/1/2008	4/18/2032	116.53	Osisko Gold Royalties Ltd. (5%)
595168	Mineral Claim	Cariboo Gold	BGM (100%)	12/1/2008	4/18/2032	58.23	Osisko Gold Royalties Ltd. (5%)
595151	Mineral Claim	Cariboo Gold	BGM (100%)	12/1/2008	4/18/2032	116.51	Osisko Gold Royalties Ltd. (5%)
595157	Mineral Claim	Cariboo Gold	BGM (100%)	12/1/2008	4/18/2032	388.25	Osisko Gold Royalties Ltd. (5%)
596023	Mineral Claim	Cariboo Gold	BGM (100%)	12/13/2008	4/18/2032	77.50	Osisko Gold Royalties Ltd. (5%)
596025	Mineral Claim	Cariboo Gold	BGM (100%)	12/13/2008	4/18/2032	58.13	Osisko Gold Royalties Ltd. (5%), Douglas Merrick & Harold Merrick (partial) (2%)
596024	Mineral Claim	Cariboo Gold	BGM (100%)	12/13/2008	4/18/2032	464.96	Osisko Gold Royalties Ltd. (5%), Douglas Merrick & Harold Merrick (partial) (2%)
596144	Mineral Claim	Cariboo Gold	BGM (100%)	12/16/2008	4/18/2032	350.60	Osisko Gold Royalties Ltd. (5%)
598430	Mineral Claim	Cariboo Gold	BGM (100%)	2/1/2009	3/8/2023	97.64	Osisko Gold Royalties Ltd. (5%)
600144	Mineral Claim	Cariboo Gold	BGM (100%)	2/28/2009	4/18/2032	19.41	Osisko Gold Royalties Ltd. (5%)
600143	Mineral Claim	Cariboo Gold	BGM (100%)	2/28/2009	4/18/2032	213.54	Osisko Gold Royalties Ltd. (5%)
600142	Mineral Claim	Cariboo Gold	BGM (100%)	2/28/2009	4/18/2032	135.93	Osisko Gold Royalties Ltd. (5%)
600145	Mineral Claim	Cariboo Gold	BGM (100%)	2/28/2009	4/18/2032	77.66	Osisko Gold Royalties Ltd. (5%)
600140	Mineral Claim	Cariboo Gold	BGM (100%)	2/28/2009	4/18/2032	38.82	Osisko Gold Royalties Ltd. (5%)
600141	Mineral Claim	Cariboo Gold	BGM (100%)	2/28/2009	4/18/2032	19.41	Osisko Gold Royalties Ltd. (5%)
600139	Mineral Claim	Cariboo Gold	BGM (100%)	2/28/2009	4/18/2032	155.27	Osisko Gold Royalties Ltd. (5%)
624892	Mineral Claim	Cariboo Gold	BGM (100%)	8/27/2009	4/18/2032	116.51	Osisko Gold Royalties Ltd. (5%)
624894	Mineral Claim	Cariboo Gold	BGM (100%)	8/27/2009	4/18/2032	38.84	Osisko Gold Royalties Ltd. (5%)
624895	Mineral Claim	Cariboo Gold	BGM (100%)	8/27/2009	4/18/2032	19.42	Osisko Gold Royalties Ltd. (5%)
625567	Mineral Claim	Cariboo Gold	BGM (100%)	8/29/2009	4/18/2032	19.42	Osisko Gold Royalties Ltd. (5%)
667163	Mineral Claim	Cariboo Gold	BGM (100%)	11/10/2009	4/18/2032	77.77	Osisko Gold Royalties Ltd. (5%)
675423	Mineral Claim	QR	BGM (100%)	11/27/2009	12/8/2024	489.58	Osisko Gold Royalties Ltd. (5%)
675448	Mineral Claim	QR	BGM (100%)	11/27/2009	12/7/2024	469.75	Osisko Gold Royalties Ltd. (5%)
675445	Mineral Claim	QR	BGM (100%)	11/27/2009	12/7/2024	469.74	Osisko Gold Royalties Ltd. (5%)
675443	Mineral Claim	QR	BGM (100%)	11/27/2009	12/8/2024	489.35	Osisko Gold Royalties Ltd. (5%)
675444	Mineral Claim	QR	BGM (100%)	11/27/2009	12/8/2024	450.24	Osisko Gold Royalties Ltd. (5%)
755402	Mineral Claim	Cariboo Gold	BGM (100%)	4/23/2010	4/18/2032	486.70	Osisko Gold Royalties Ltd. (5%)
755382	Mineral Claim	Cariboo Gold	BGM (100%)	4/23/2010	4/18/2032	467.64	Osisko Gold Royalties Ltd. (5%)
755442	Mineral Claim	Cariboo Gold	BGM (100%)	4/23/2010	4/18/2032	486.88	Osisko Gold Royalties Ltd. (5%)
755422	Mineral Claim	Cariboo Gold	BGM (100%)	4/23/2010	4/18/2032	486.94	Osisko Gold Royalties Ltd. (5%)
755362	Mineral Claim	Cariboo Gold	BGM (100%)	4/23/2010	4/18/2032	389.53	Osisko Gold Royalties Ltd. (5%)
755342	Mineral Claim	Cariboo Gold	BGM (100%)	4/23/2010	4/18/2032	389.34	Osisko Gold Royalties Ltd. (5%)
755462	Mineral Claim	Cariboo Gold	BGM (100%)	4/23/2010	4/18/2032	467.43	Osisko Gold Royalties Ltd. (5%)
780203	Mineral Claim	QR	BGM (100%)	5/27/2010	12/7/2024	19.58	Osisko Gold Royalties Ltd. (5%)

Title #	Type	Property	Owner	Issue Date	Good to Date	Area (ha)	Royalties
780562	Mineral Claim	Cariboo Gold	BGM (100%)	5/27/2010	4/18/2032	193.97	Osisko Gold Royalties Ltd. (5%)
835734	Mineral Claim	Cariboo Gold	BGM (100%)	10/12/2010	4/18/2032	487.72	Osisko Gold Royalties Ltd. (5%)
835729	Mineral Claim	Cariboo Gold	BGM (100%)	10/12/2010	4/18/2032	448.31	Osisko Gold Royalties Ltd. (5%)
835733	Mineral Claim	Cariboo Gold	BGM (100%)	10/12/2010	4/18/2032	390.22	Osisko Gold Royalties Ltd. (5%)
835731	Mineral Claim	Cariboo Gold	BGM (100%)	10/12/2010	4/18/2032	487.47	Osisko Gold Royalties Ltd. (5%)
835730	Mineral Claim	Cariboo Gold	BGM (100%)	10/12/2010	4/18/2032	487.49	Osisko Gold Royalties Ltd. (5%)
837502	Mineral Claim	QR	BGM (100%)	11/4/2010	12/7/2024	156.89	Osisko Gold Royalties Ltd. (5%)
838954	Mineral Claim	QR	BGM (100%)	11/25/2010	12/7/2024	391.86	Osisko Gold Royalties Ltd. (5%)
838953	Mineral Claim	QR	BGM (100%)	11/25/2010	12/7/2024	392.06	Osisko Gold Royalties Ltd. (5%)
850212	Mineral Claim	QR	BGM (100%)	3/31/2011	12/7/2024	489.54	Osisko Gold Royalties Ltd. (5%)
850217	Mineral Claim	QR	BGM (100%)	3/31/2011	12/7/2024	176.21	Osisko Gold Royalties Ltd. (5%)
853622	Mineral Claim	Cariboo Gold	BGM (100%)	5/5/2011	4/18/2032	116.56	Osisko Gold Royalties Ltd. (5%)
854573	Mineral Claim	QR	BGM (100%)	5/16/2011	12/7/2024	489.63	Osisko Gold Royalties Ltd. (5%)
855732	Mineral Claim	QR	BGM (100%)	5/26/2011	12/7/2024	391.87	Osisko Gold Royalties Ltd. (5%)
856509	Mineral Claim	Cariboo Gold	BGM (100%)	6/9/2011	4/18/2032	407.82	Osisko Gold Royalties Ltd. (5%)
856510	Mineral Claim	Cariboo Gold	BGM (100%)	6/9/2011	4/18/2032	155.41	Osisko Gold Royalties Ltd. (5%)
896709	Mineral Claim	Cariboo Gold	BGM (100%)	9/13/2011	4/18/2032	913.22	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (partial) (1%)
928311	Mineral Claim	Cariboo Gold	BGM (100%)	11/6/2011	4/18/2032	487.33	Osisko Gold Royalties Ltd. (5%)
1013935	Mineral Claim	QR	BGM (100%)	10/23/2012	12/8/2024	39.18	Osisko Gold Royalties Ltd. (5%)
1013933	Mineral Claim	QR	BGM (100%)	10/23/2012	12/8/2024	39.18	Osisko Gold Royalties Ltd. (5%)
1014607	Mineral Claim	Cariboo Gold	BGM (100%)	11/19/2012	4/18/2032	19.52	Osisko Gold Royalties Ltd. (5%)
1017340	Mineral Claim	QR	BGM (100%)	3/1/2013	12/8/2024	58.78	Osisko Gold Royalties Ltd. (5%)
1019158	Mineral Claim	QR	BGM (100%)	5/2/2013	12/8/2024	19.62	Osisko Gold Royalties Ltd. (5%)
1019149	Mineral Claim	QR	BGM (100%)	5/2/2013	12/8/2024	137.32	Osisko Gold Royalties Ltd. (5%), Foxcorp Holdings Ltd. (NOP) (partial) (2.5%), Revolution Technologies Inc. (NOP) (partial) (2.5%), Newmont Goldcorp Corp. (partial) (1%)
1019154	Mineral Claim	QR	BGM (100%)	5/2/2013	12/8/2024	78.47	Osisko Gold Royalties Ltd. (5%)
1019151	Mineral Claim	QR	BGM (100%)	5/2/2013	12/8/2024	294.36	Osisko Gold Royalties Ltd. (5%)
1019143	Mineral Claim	QR	BGM (100%)	5/2/2013	12/8/2024	470.94	Osisko Gold Royalties Ltd. (5%)
1019146	Mineral Claim	QR	BGM (100%)	5/2/2013	12/8/2024	157.01	Osisko Gold Royalties Ltd. (5%)
1019172	Mineral Claim	QR	BGM (100%)	5/2/2013	12/8/2024	156.93	Osisko Gold Royalties Ltd. (5%), Foxcorp Holdings Ltd. (NOP) (partial) (2.5%), Revolution Technologies Inc. (NOP) (partial) (2.5%), Newmont Goldcorp Corp. (partial) (1%)
1019141	Mineral Claim	QR	BGM (100%)	5/2/2013	12/8/2024	274.70	Osisko Gold Royalties Ltd. (5%)
1020349	Mineral Claim	QR	BGM (100%)	6/16/2013	12/8/2024	293.75	Osisko Gold Royalties Ltd. (5%)
1020538	Mineral Claim	QR	BGM (100%)	6/26/2013	12/8/2024	195.88	Osisko Gold Royalties Ltd. (5%)
1022111	Mineral Claim	QR	BGM (100%)	9/5/2013	12/8/2024	137.15	Osisko Gold Royalties Ltd. (5%)
1023288	Mineral Claim	QR	BGM (100%)	10/24/2013	12/8/2024	78.38	Osisko Gold Royalties Ltd. (5%)

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1027057	Mineral Claim	QR	BGM (100%)	3/31/2014	12/8/2024	78.47	Osisko Gold Royalties Ltd. (5%)
1027058	Mineral Claim	Cariboo Gold	BGM (100%)	3/31/2014	4/18/2032	77.66	Osisko Gold Royalties Ltd. (5%)
1027056	Mineral Claim	QR	BGM (100%)	3/31/2014	12/8/2024	117.57	Osisko Gold Royalties Ltd. (5%)
1033403	Mineral Claim	Cariboo Gold	BGM (100%)	4/16/2014	4/18/2032	97.64	Osisko Gold Royalties Ltd. (5%)
1033404	Mineral Claim	Cariboo Gold	BGM (100%)	4/16/2014	4/18/2032	136.67	Osisko Gold Royalties Ltd. (5%)
1028454	Mineral Claim	Cariboo Gold	BGM (100%)	5/23/2014	4/18/2032	78.08	Osisko Gold Royalties Ltd. (5%)
1028464	Mineral Claim	Cariboo Gold	BGM (100%)	5/23/2014	4/18/2032	175.33	Osisko Gold Royalties Ltd. (5%)
1028446	Mineral Claim	Cariboo Gold	BGM (100%)	5/23/2014	4/18/2032	19.52	Osisko Gold Royalties Ltd. (5%)
1028453	Mineral Claim	Cariboo Gold	BGM (100%)	5/23/2014	4/18/2032	19.52	Osisko Gold Royalties Ltd. (5%)
1029935	Mineral Claim	Cariboo Gold	BGM (100%)	7/30/2014	4/18/2032	19.49	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (partial) (2.5%)
1033303	Mineral Claim	Cariboo Gold	BGM (100%)	1/11/2015	4/18/2032	19.52	Osisko Gold Royalties Ltd. (5%)
1039381	Mineral Claim	Cariboo Gold	BGM (100%)	10/18/2015	4/18/2032	19.52	Osisko Gold Royalties Ltd. (5%)
1042345	Mineral Claim	Cariboo Gold	BGM (100%)	2/26/2016	4/18/2032	1798.94	Osisko Gold Royalties Ltd. (5%)
1042348	Mineral Claim	Cariboo Gold	BGM (100%)	2/26/2016	4/18/2032	1351.80	Osisko Gold Royalties Ltd. (5%)
1042347	Mineral Claim	Cariboo Gold	BGM (100%)	2/26/2016	4/18/2032	1932.17	Osisko Gold Royalties Ltd. (5%)
1042346	Mineral Claim	Cariboo Gold	BGM (100%)	2/26/2016	4/18/2032	1933.33	Osisko Gold Royalties Ltd. (5%)
1045261	Mineral Claim	Cariboo Gold	BGM (100%)	7/11/2016	4/18/2032	38.87	Osisko Gold Royalties Ltd. (5%)
1045698	Mineral Claim	Cariboo Gold	BGM (100%)	7/31/2016	4/18/2032	19.52	Osisko Gold Royalties Ltd. (5%)
1045814	Mineral Claim	Cariboo Gold	BGM (100%)	8/7/2016	4/18/2032	78.11	Osisko Gold Royalties Ltd. (5%)
1049349	Mineral Claim	Cariboo Gold	BGM (100%)	1/20/2017	4/15/2025	19.41	Osisko Gold Royalties Ltd. (5%)
1050442	Mineral Claim	Cariboo Gold	BGM (100%)	2/28/2017	4/18/2032	252.61	Osisko Gold Royalties Ltd. (5%)
1050437	Mineral Claim	Cariboo Gold	BGM (100%)	2/28/2017	4/18/2032	58.29	Osisko Gold Royalties Ltd. (5%)
1050434	Mineral Claim	Cariboo Gold	BGM (100%)	2/28/2017	4/18/2032	330.42	Osisko Gold Royalties Ltd. (5%)
1050747	Mineral Claim	Cariboo Gold	BGM (100%)	3/14/2017	4/18/2032	408.25	Osisko Gold Royalties Ltd. (5%)
1050754	Mineral Claim	Cariboo Gold	BGM (100%)	3/14/2017	4/18/2032	1186.57	Osisko Gold Royalties Ltd. (5%)
1050755	Mineral Claim	Cariboo Gold	BGM (100%)	3/14/2017	4/18/2032	641.95	Osisko Gold Royalties Ltd. (5%)
1050748	Mineral Claim	Cariboo Gold	BGM (100%)	3/14/2017	4/18/2032	525.22	Osisko Gold Royalties Ltd. (5%)
1050749	Mineral Claim	Cariboo Gold	BGM (100%)	3/14/2017	4/18/2032	583.41	Osisko Gold Royalties Ltd. (5%)
1050753	Mineral Claim	Cariboo Gold	BGM (100%)	3/14/2017	4/18/2032	291.72	Osisko Gold Royalties Ltd. (5%)
1050750	Mineral Claim	Cariboo Gold	BGM (100%)	3/14/2017	4/18/2032	233.36	Osisko Gold Royalties Ltd. (5%)
1050769	Mineral Claim	Cariboo Gold	BGM (100%)	3/15/2017	4/18/2032	116.65	Osisko Gold Royalties Ltd. (5%)
1050768	Mineral Claim	Cariboo Gold	BGM (100%)	3/15/2017	4/18/2032	680.35	Osisko Gold Royalties Ltd. (5%)
1052290	Mineral Claim	Cariboo Gold	BGM (100%)	6/1/2017	4/18/2032	78.13	Osisko Gold Royalties Ltd. (5%)
1055004	Mineral Claim	Cariboo Gold	BGM (100%)	9/19/2017	4/18/2032	19.53	Osisko Gold Royalties Ltd. (5%)
1055005	Mineral Claim	Cariboo Gold	BGM (100%)	9/19/2017	4/18/2032	58.60	Osisko Gold Royalties Ltd. (5%)
1055084	Mineral Claim	Cariboo Gold	BGM (100%)	9/21/2017	4/18/2032	214.87	Osisko Gold Royalties Ltd. (5%)

Title #	Type	Property	Owner	Issue Date	Good to Date	Area (ha)	Royalties
1055083	Mineral Claim	Cariboo Gold	BGM (100%)	9/21/2017	4/18/2032	195.30	Osisko Gold Royalties Ltd. (5%)
1057242	Mineral Claim	Cariboo Gold	BGM (100%)	12/26/2017	4/18/2032	58.28	Osisko Gold Royalties Ltd. (5%)
1060121	Mineral Claim	Cariboo Gold	BGM (100%)	4/18/2018	4/18/2032	1942.27	Osisko Gold Royalties Ltd. (5%)
1060160	Mineral Claim	Cariboo Gold	BGM (100%)	4/19/2018	4/18/2032	716.90	Osisko Gold Royalties Ltd. (5%)
1060157	Mineral Claim	Cariboo Gold	BGM (100%)	4/19/2018	4/18/2032	58.61	Osisko Gold Royalties Ltd. (5%)
1060183	Mineral Claim	Cariboo Gold	BGM (100%)	4/20/2018	4/18/2032	175.75	Osisko Gold Royalties Ltd. (5%)
1069588	Mineral Claim	Cariboo Gold	BGM (100%)	7/10/2019	4/18/2032	19.50	Osisko Gold Royalties Ltd. (5%)
1072306	Mineral Claim	Cariboo Gold	BGM (100%)	10/31/2019	4/18/2032	19.40	Osisko Gold Royalties Ltd. (5%)
1072307	Mineral Claim	Cariboo Gold	BGM (100%)	10/31/2019	4/18/2032	19.40	Osisko Gold Royalties Ltd. (5%)
1092808	Mineral Claim	QR	BGM (100%)	1/31/2022	1/31/2023	333.30	Osisko Gold Royalties Ltd. (5%)
1096262	Mineral Claim	Cariboo Gold	BGM (100%)	6/18/2022	6/18/2023	1930.40	Osisko Gold Royalties Ltd. (5%)
1096264	Mineral Claim	Cariboo Gold	BGM (100%)	6/18/2022	6/18/2023	1931.21	Osisko Gold Royalties Ltd. (5%)
1096265	Mineral Claim	Cariboo Gold	BGM (100%)	6/18/2022	6/18/2023	1932.05	Osisko Gold Royalties Ltd. (5%)
1096267	Mineral Claim	Cariboo Gold	BGM (100%)	6/18/2022	6/18/2023	1372.49	Osisko Gold Royalties Ltd. (5%)

APPENDIX 2: LIST OF PLACER CLAIMS AND LEASES (AS OF NOVEMBER 27, 2021)

Title #	Type	Property	Owner	Issue Date	Good to Date	Area (ha)	Royalties
367303	Placer Lease	Cariboo Gold	BGM (100%)	2/5/1999	2/5/2022	161.77	Osisko Gold Royalties Ltd. (5%)
370373	Placer Lease	Cariboo Gold	BGM (100%)	10/19/1999	10/19/2022	46.26	Osisko Gold Royalties Ltd. (5%)
384442	Placer Lease	Cariboo Gold	BGM (100%)	5/15/2001	5/15/2022	254.86	Osisko Gold Royalties Ltd. (5%)
394333	Placer Lease	Cariboo Gold	BGM (100%)	8/19/2002	8/19/2022	518.80	Osisko Gold Royalties Ltd. (5%)
395284	Placer Lease	Cariboo Gold	BGM (100%)	8/28/2002	8/28/2022	524.70	Osisko Gold Royalties Ltd. (5%)
396850	Placer Lease	Cariboo Gold	BGM (100%)	1/20/2003	1/20/2022	271.10	Osisko Gold Royalties Ltd. (5%)
401442	Placer Lease	Cariboo Gold	BGM (100%)	5/16/2003	5/16/2022	282.36	Osisko Gold Royalties Ltd. (5%)
401340	Placer Lease	Cariboo Gold	BGM (100%)	5/16/2003	5/16/2022	17.00	Osisko Gold Royalties Ltd. (5%)
401342	Placer Lease	Cariboo Gold	BGM (100%)	5/16/2003	5/16/2022	124.55	Osisko Gold Royalties Ltd. (5%)
404854	Placer Lease	Cariboo Gold	BGM (100%)	11/24/2003	11/24/2022	29.10	Osisko Gold Royalties Ltd. (5%)
514441	Placer Lease	Cariboo Gold	BGM (100%)	6/13/2005	6/13/2022	104.80	Osisko Gold Royalties Ltd. (5%)
541435	Placer Lease	Cariboo Gold	BGM (100%)	9/15/2006	9/15/2022	24.76	Osisko Gold Royalties Ltd. (5%)
545967	Placer Lease	Cariboo Gold	BGM (100%)	11/27/2006	11/27/2021	35.69	Osisko Gold Royalties Ltd. (5%)
560453	Placer Claim	Cariboo Gold	BGM (100%)	6/11/2007	11/15/2022	19.43	Osisko Gold Royalties Ltd. (5%)
606644	Placer Claim	Cariboo Gold	BGM (100%)	6/26/2009	11/15/2022	97.23	Osisko Gold Royalties Ltd. (5%)
839402	Placer Claim	Cariboo Gold	BGM (100%)	12/1/2010	12/31/2021	19.41	Osisko Gold Royalties Ltd. (5%)
1038243	Placer Claim	Cariboo Gold	BGM (100%)	8/28/2015	8/26/2022	213.66	Osisko Gold Royalties Ltd. (5%)
1042111	Placer Claim	Cariboo Gold	BGM (100%)	2/17/2016	10/13/2022	174.75	Osisko Gold Royalties Ltd. (5%)
1042112	Placer Claim	Cariboo Gold	BGM (100%)	2/17/2016	10/13/2022	58.26	Osisko Gold Royalties Ltd. (5%)
1045734	Placer Claim	Cariboo Gold	BGM (100%)	8/3/2016	8/3/2022	38.80	Osisko Gold Royalties Ltd. (5%)
1046530	Placer Claim	Cariboo Gold	BGM (100%)	9/8/2016	9/8/2022	19.40	Osisko Gold Royalties Ltd. (5%)
1048024	Placer Claim	Cariboo Gold	BGM (100%)	11/24/2016	11/24/2022	19.40	Osisko Gold Royalties Ltd. (5%)
1049379	Placer Claim	Cariboo Gold	BGM (100%)	1/22/2017	1/22/2022	38.82	Osisko Gold Royalties Ltd. (5%)
1049537	Placer Claim	Cariboo Gold	BGM (100%)	1/27/2017	1/27/2022	19.43	Osisko Gold Royalties Ltd. (5%)
1050158	Placer Claim	Cariboo Gold	BGM (100%)	2/20/2017	2/20/2022	19.42	Osisko Gold Royalties Ltd. (5%)
1052277	Placer Claim	Cariboo Gold	BGM (100%)	5/31/2017	5/31/2022	19.41	Osisko Gold Royalties Ltd. (5%)
1052361	Placer Claim	Cariboo Gold	BGM (100%)	6/4/2017	6/4/2022	38.80	Osisko Gold Royalties Ltd. (5%)
1052637	Placer Claim	Cariboo Gold	BGM (100%)	6/18/2017	6/18/2022	19.42	Osisko Gold Royalties Ltd. (5%)

Title #	Type	Property	Owner	Issue Date	Good to Date	Area (ha)	Royalties
1055510	Placer Claim	Cariboo Gold	BGM (100%)	10/13/2017	10/13/2022	38.80	Osisko Gold Royalties Ltd. (5%)
1055674	Placer Claim	Cariboo Gold	BGM (100%)	10/20/2017	10/20/2022	19.42	Osisko Gold Royalties Ltd. (5%)
1057397	Placer Claim	Cariboo Gold	BGM (100%)	1/2/2018	10/18/2022	174.78	Osisko Gold Royalties Ltd. (5%)
1058336	Placer Claim	Cariboo Gold	BGM (100%)	2/6/2018	2/6/2022	19.42	Osisko Gold Royalties Ltd. (5%)
1058337	Placer Claim	Cariboo Gold	BGM (100%)	2/6/2018	2/6/2022	19.43	Osisko Gold Royalties Ltd. (5%)
1063142	Placer Claim	Cariboo Gold	BGM (100%)	9/16/2018	9/16/2022	19.41	Osisko Gold Royalties Ltd. (5%)
1063186	Placer Claim	Cariboo Gold	BGM (100%)	9/19/2018	5/19/2022	38.83	Osisko Gold Royalties Ltd. (5%)
1063528	Placer Claim	Cariboo Gold	BGM (100%)	10/2/2018	10/2/2022	38.85	Osisko Gold Royalties Ltd. (5%)
1063975	Placer Claim	Cariboo Gold	BGM (100%)	10/22/2018	10/22/2022	19.41	Osisko Gold Royalties Ltd. (5%)
1064018	Placer Claim	Cariboo Gold	BGM (100%)	10/24/2018	10/24/2022	19.41	Osisko Gold Royalties Ltd. (5%)
1064017	Placer Claim	Cariboo Gold	BGM (100%)	10/24/2018	10/24/2022	19.42	Osisko Gold Royalties Ltd. (5%)
1064016	Placer Claim	Cariboo Gold	BGM (100%)	10/24/2018	10/24/2022	19.41	Osisko Gold Royalties Ltd. (5%)
1067277	Placer Claim	Cariboo Gold	BGM (100%)	3/17/2019	3/17/2022	19.41	Osisko Gold Royalties Ltd. (5%)
1067348	Placer Claim	Cariboo Gold	BGM (100%)	3/20/2019	1/10/2025	698.63	Osisko Gold Royalties Ltd. (5%)
1068909	Placer Claim	Cariboo Gold	BGM (100%)	6/4/2019	6/4/2022	58.31	Osisko Gold Royalties Ltd. (5%)
1072073	Placer Claim	Cariboo Gold	BGM (100%)	10/23/2019	7/17/2022	58.23	Osisko Gold Royalties Ltd. (5%)
1072333	Placer Claim	Cariboo Gold	BGM (100%)	11/1/2019	11/1/2022	19.44	Osisko Gold Royalties Ltd. (5%)
1072338	Placer Claim	Cariboo Gold	BGM (100%)	11/1/2019	11/1/2022	19.43	Osisko Gold Royalties Ltd. (5%)
1072336	Placer Claim	Cariboo Gold	BGM (100%)	11/1/2019	11/1/2022	19.44	Osisko Gold Royalties Ltd. (5%)
1072335	Placer Claim	Cariboo Gold	BGM (100%)	11/1/2019	11/1/2022	19.44	Osisko Gold Royalties Ltd. (5%)
1072331	Placer Claim	Cariboo Gold	BGM (100%)	11/1/2019	11/1/2022	58.32	Osisko Gold Royalties Ltd. (5%)
1072332	Placer Claim	Cariboo Gold	BGM (100%)	11/1/2019	11/1/2022	19.43	Osisko Gold Royalties Ltd. (5%)
1072334	Placer Claim	Cariboo Gold	BGM (100%)	11/1/2019	11/1/2022	19.43	Osisko Gold Royalties Ltd. (5%)
1072337	Placer Claim	Cariboo Gold	BGM (100%)	11/1/2019	11/1/2022	19.43	Osisko Gold Royalties Ltd. (5%)
1074530	Placer Claim	Cariboo Gold	BGM (100%)	2/11/2020	1/10/2025	1340.98	Osisko Gold Royalties Ltd. (5%)
1074531	Placer Claim	Cariboo Gold	BGM (100%)	2/11/2020	1/10/2025	873.86	Osisko Gold Royalties Ltd. (5%)
1076725	Placer Claim	Cariboo Gold	BGM (100%)	6/12/2020	12/12/2021	19.41	Osisko Gold Royalties Ltd. (5%)
1079815	Placer Claim	Cariboo Gold	BGM (100%)	11/29/2020	11/29/2021	19.41	Osisko Gold Royalties Ltd. (5%)

APPENDIX 3: CROWN-GRANTED MINERAL CLAIMS (AS OF NOVEMBER 27, 2021)

PID	Title #	CG #	Original grantee	Fee simple owner	UNDERSURFACE OWNER	Area (Acres)	Royalty
023-747-692	BB2009650	4215/55	ADA JANE BRUCE MASON	DAVID JORGENSON, BUSINESSMAN/RESTAURANT OWNER	BARKERVILLE GOLD MINES LTD.	0.20	OGR (5%)
023-747-676	PS36983	4215/55	ADA JANE BRUCE MASON	CHERYL KATHERYN MACARTHY, BUSINESSWOMAN	BARKERVILLE GOLD MINES LTD.	0.21	OGR (5%)
023-677-104	PL8364	4215/55	ADA JANE BRUCE MASON	THE CROWN IN RIGHT OF BRITISH COLUMBIA, AS REPRESENTED BY THE MINISTER OF ENVIRONMENT LANDS AND PARKS	BARKERVILLE GOLD MINES LTD.	0.52	OGR (5%)
023-677-091	PL8363	4215/55	ADA JANE BRUCE MASON	THE CROWN IN RIGHT OF BRITISH COLUMBIA, AS REPRESENTED BY THE MINISTER OF ENVIRONMENT LANDS AND PARKS	BARKERVILLE GOLD MINES LTD.	0.18	OGR (5%)
023-677-074	PL8361	4215/55	ADA JANE BRUCE MASON	THE CROWN IN RIGHT OF BRITISH COLUMBIA, AS REPRESENTED BY THE MINISTER OF ENVIRONMENT LANDS AND PARKS	BARKERVILLE GOLD MINES LTD.	0.14	OGR (5%)
023-677-066	PL8360	4215/55	ADA JANE BRUCE MASON	THE CROWN IN RIGHT OF BRITISH COLUMBIA, AS REPRESENTED BY THE MINISTER OF ENVIRONMENT LANDS AND PARKS	BARKERVILLE GOLD MINES LTD.	0.15	OGR (5%)
023-677-058	PL8359	4215/55	ADA JANE BRUCE MASON	THE CROWN IN RIGHT OF BRITISH COLUMBIA, AS REPRESENTED BY THE MINISTER OF ENVIRONMENT LANDS AND PARKS	BARKERVILLE GOLD MINES LTD.	0.20	OGR (5%)
023-677-031	PL8357	4215/55	ADA JANE BRUCE MASON	THE CROWN IN RIGHT OF BRITISH COLUMBIA, AS REPRESENTED BY THE MINISTER OF ENVIRONMENT LANDS AND PARKS	BARKERVILLE GOLD MINES LTD.	0.39	OGR (5%)
023-677-023	PL8356	4215/55	ADA JANE BRUCE MASON	THE CROWN IN RIGHT OF BRITISH COLUMBIA, AS REPRESENTED BY THE MINISTER OF ENVIRONMENT LANDS AND PARKS	BARKERVILLE GOLD MINES LTD.	0.30	OGR (5%)
023-677-015	PL8355	4215/55	ADA JANE BRUCE MASON	THE CROWN IN RIGHT OF BRITISH COLUMBIA, AS REPRESENTED BY THE MINISTER OF ENVIRONMENT LANDS AND PARKS	BARKERVILLE GOLD MINES LTD.	0.24	OGR (5%)

PID	Title #	CG #	Original grantee	Fee simple owner	UNDERSURFACE OWNER	Area (Acres)	Royalty
023-677-007	PM47667	4215/55	ADA JANE BRUCE MASON	BARKERVILLE GOLD MINES LTD.	BARKERVILLE GOLD MINES LTD. / THE CROWN IN RIGHT OF BRITISH COLUMBIA	1.25	OGR (5%)
023-207-655	CA1027296	4215/55	ADA JANE BRUCE MASON	STANDARD DRILLING & ENGINEERING LTD.	BARKERVILLE GOLD MINES LTD.	0.29	OGR (5%)
018-856-870	CA9850205	4215/55	ADA JANE BRUCE MASON	BARKERVILLE GOLD MINES LTD.	BARKERVILLE GOLD MINES LTD.	0.60	OGR (5%)
018-329-705	CA3679841	4215/55	ADA JANE BRUCE MASON	DARYLE WAYNE NESIMUIK, SECURITY GUARD	BARKERVILLE GOLD MINES LTD.	0.39	OGR (5%)
018-329-683	PT14010	4215/55	ADA JANE BRUCE MASON	567093 B.C. LTD. AS TO AN UNDIVIDED 1/2 INTEREST & 567102 B.C. LTD. AS TO AN UNDIVIDED 1/2 INTEREST	BARKERVILLE GOLD MINES LTD.	0.76	OGR (5%)
018-172-792	CA4250001	4215/55	ADA JANE BRUCE MASON	RICHARD THOMAS WRIGHT, AUTHOR	BARKERVILLE GOLD MINES LTD.	0.29	OGR (5%)
014-982-056	PD28740	4215/55	ADA JANE BRUCE MASON	THE LOWHEE MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	BARKERVILLE GOLD MINES LTD.	246.00	OGR (5%)
014-543-575	PC37299	4215/55	ADA JANE BRUCE MASON	ERNEST. H. BELLAVANCE & ORPHIR CHARLES BELLAVANCE (FORFEITED TO CROWN)	BARKERVILLE GOLD MINES LTD.	0.10	OGR (5%)
014-543-567	PC37298	4215/55	ADA JANE BRUCE MASON	ERNEST. H. BELLAVANCE & ORPHIR CHARLES BELLAVANCE (FORFEITED TO CROWN)	BARKERVILLE GOLD MINES LTD.	0.10	OGR (5%)
013-914-740	PC21461	4215/55	ADA JANE BRUCE MASON	THE SOUTH WELLS DEVELOPMENT COMPANY LIMITED (FORFEITED TO CROWN)	BARKERVILLE GOLD MINES LTD.	1.32	OGR (5%)
013-900-111	CA6737987	4215/55	ADA JANE BRUCE MASON	NESTEL CONTRACTING LTD.	BARKERVILLE GOLD MINES LTD.	0.12	OGR (5%)
013-900-064	CA6737986	4215/55	ADA JANE BRUCE MASON	NESTEL CONTRACTING LTD.	BARKERVILLE GOLD MINES LTD.	0.23	OGR (5%)
013-864-653	PS39105	4215/55	ADA JANE BRUCE MASON	ROBERT LISLE BUXTON, BUSINESSMAN	BARKERVILLE GOLD MINES LTD.	0.12	OGR (5%)
013-864-645	PS39106	4215/55	ADA JANE BRUCE MASON	ROBERT LISLE BUXTON, BUSINESSMAN	BARKERVILLE GOLD MINES LTD.	0.12	OGR (5%)
013-864-629	PS39104	4215/55	ADA JANE BRUCE MASON	ROBERT LISLE BUXTON, BUSINESSMAN	BARKERVILLE GOLD MINES LTD.	0.12	OGR (5%)
013-864-611	PS39103	4215/55	ADA JANE BRUCE MASON	ROBERT LISLE BUXTON, BUSINESSMAN	BARKERVILLE GOLD MINES LTD.	0.13	OGR (5%)
013-864-599	CA4717816	4215/55	ADA JANE BRUCE MASON	JACK O CLUBS GENERAL INC.	BARKERVILLE GOLD MINES LTD.	0.14	OGR (5%)

PID	Title #	CG #	Original grantee	Fee simple owner	UNDERSURFACE OWNER	Area (Acres)	Royalty
013-840-100	PM29333	4215/55	ADA JANE BRUCE MASON	THE CROWN IN RIGHT OF BRITISH COLUMBIA, AS REPRESENTED BY THE MINISTER OF ENVIRONMENT LANDS AND PARKS	BARKERVILLE GOLD MINES LTD.	51.14	OGR (5%)
013-840-088	PC20358	4215/55	ADA JANE BRUCE MASON	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	6.25	OGR (5%)
013-839-969	PC20351	4215/55	ADA JANE BRUCE MASON	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	0.17	OGR (5%)
013-839-951	PC20350	4215/55	ADA JANE BRUCE MASON	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	0.12	OGR (5%)
013-839-926	PC20184	4215/55	ADA JANE BRUCE MASON	THE SOUTH WELLS DEVELOPMENT COMPANY LIMITED (FORFEITED TO CROWN)	BARKERVILLE GOLD MINES LTD.	0.12	OGR (5%)
013-839-918	PS39107	4215/55	ADA JANE BRUCE MASON	ROBERT LISLE BUXTON, BUSINESSMAN	BARKERVILLE GOLD MINES LTD.	0.12	OGR (5%)
013-820-354	CA16656	4215/55	ADA JANE BRUCE MASON	BRENDAN MORRIS WOODMAN, BAKER & TERRY ANNE WOODMAN, COMPUTER TECHNICIAN AS JOINT TENANTS	BARKERVILLE GOLD MINES LTD.	0.12	OGR (5%)
013-820-346	CA16655	4215/55	ADA JANE BRUCE MASON	BRENDAN MORRIS WOODMAN, BAKER & TERRY ANNE WOODMAN, COMPUTER TECHNICIAN AS JOINT TENANTS	BARKERVILLE GOLD MINES LTD.	0.12	OGR (5%)
013-820-338	CA16654	4215/55	ADA JANE BRUCE MASON	BRENDAN MORRIS WOODMAN, BAKER & TERRY ANNE WOODMAN, COMPUTER TECHNICIAN AS JOINT TENANTS	BARKERVILLE GOLD MINES LTD.	0.12	OGR (5%)
013-820-320	CA16653	4215/55	ADA JANE BRUCE MASON	BRENDAN MORRIS WOODMAN, BAKER & TERRY ANNE WOODMAN, COMPUTER TECHNICIAN AS JOINT TENANTS	BARKERVILLE GOLD MINES LTD.	0.10	OGR (5%)
013-820-231	CA16652	4215/55	ADA JANE BRUCE MASON	BRENDAN MORRIS WOODMAN, BAKER & TERRY ANNE WOODMAN, COMPUTER TECHNICIAN AS JOINT TENANTS	BARKERVILLE GOLD MINES LTD.	0.55	OGR (5%)
013-817-931	PS39102	4215/55	ADA JANE BRUCE MASON	ROBERT LISLE BUXTON, BUSINESSMAN	BARKERVILLE GOLD MINES LTD.	0.13	OGR (5%)

PID	Title #	CG #	Original grantee	Fee simple owner	UNDERSURFACE OWNER	Area (Acres)	Royalty
013-817-680	27591M	4215/55	ADA JANE BRUCE MASON	FREDERICK THOMASSON (FORFEITED TO CROWN)	BARKERVILLE GOLD MINES LTD.	0.10	OGR (5%)
013-817-655	19149M	4215/55	ADA JANE BRUCE MASON	FREDERICK W. BECKER (FORFEITED TO CROWN)	BARKERVILLE GOLD MINES LTD.	0.10	OGR (5%)
013-817-647	11460M	4215/55	ADA JANE BRUCE MASON	JOSEPH HAROLD SMYTH (FORFEITED TO CROWN)	BARKERVILLE GOLD MINES LTD.	0.10	OGR (5%)
013-814-966	PS39101	4215/55	ADA JANE BRUCE MASON	ROBERT LISLE BUXTON, BUSINESSMAN	BARKERVILLE GOLD MINES LTD.	0.27	OGR (5%)
013-813-951	BA89358	4215/55	ADA JANE BRUCE MASON	CHERYL KATHERYN MACCARTHY, BUSINESSWOMAN & DAVID GORDON JORGENSON, BUSINESSMAN AS JOINT TENANTS	BARKERVILLE GOLD MINES LTD.	0.11	OGR (5%)
013-778-935	CA3662739	4215/55	ADA JANE BRUCE MASON	BRITISH COLUMBIA EMERGENCY HEALTH SERVICES	BARKERVILLE GOLD MINES LTD.	0.08	OGR (5%)
013-778-927	CA3662734	4215/55	ADA JANE BRUCE MASON	BRITISH COLUMBIA EMERGENCY HEALTH SERVICES	BARKERVILLE GOLD MINES LTD.	0.08	OGR (5%)
013-778-919	CA3662725	4215/55	ADA JANE BRUCE MASON	BRITISH COLUMBIA EMERGENCY HEALTH SERVICES	BARKERVILLE GOLD MINES LTD.	0.27	OGR (5%)
012-180-491	PT17982	4215/55	ADA JANE BRUCE MASON	GEORGE WILLIAM HARTFORD, DIAMOND DRILLER	BARKERVILLE GOLD MINES LTD.	0.24	OGR (5%)
008-466-424	PP6789	4215/55	ADA JANE BRUCE MASON	JOY MARGUERITE STEPAN, BUSINESSWOMAN	BARKERVILLE GOLD MINES LTD.	0.29	OGR (5%)
008-466-416	BB3013093	4215/55	ADA JANE BRUCE MASON	HER MAJESTY THE QUEEN IN RIGHT OF CANADA AS REPRESENTED BY THE MINISTER OF PUBLIC SAFETY AND EMERGENCY PREPAREDNESS C/O ROYAL CANADIAN MOUNTED POLICE	BARKERVILLE GOLD MINES LTD.	0.25	OGR (5%)
007-813-678	CA8737090	4215/55	ADA JANE BRUCE MASON	MERIDIAN VENTURES LTD., INC.NO. 1196928	BARKERVILLE GOLD MINES LTD.	0.17	OGR (5%)
007-530-692	BA142314	4215/55	ADA JANE BRUCE MASON	TIMOTHY JOHN HINDSON, PICKER TRUCK SWAMPER	BARKERVILLE GOLD MINES LTD.	1.43	OGR (5%)
007-527-331	CA7206272	4215/55	ADA JANE BRUCE MASON	CHRISTINA ROSE MARIA SCHIEN, SR. BUSINESS SYSTEMS ANALYST & EVELYN CAROLYN WATT, ASSOCIATE DIRECTOR HUMAN RESOURCES AS JOINT TENANTS	BARKERVILLE GOLD MINES LTD.	0.92	OGR (5%)
006-787-592	CA3322184	4215/55	ADA JANE BRUCE MASON	BARKERVILLE GOLD MINES LTD.	BARKERVILLE GOLD MINES LTD.	0.42	OGR (5%)
006-342-281	Y5870	4215/55	ADA JANE BRUCE MASON	METOD NOVAK, MILLWORKER & MARIA NOVAK, HIS WIFE AS JOINT TENANTS	BARKERVILLE GOLD MINES LTD.	0.33	OGR (5%)

PID	Title #	CG #	Original grantee	Fee simple owner	UNDERSURFACE OWNER	Area (Acres)	Royalty
010-403-060	PP20687	4215/55, 2517/101	ADA JANE BRUCE MASON (DL 131) / MARY AGNES MASON (TRANSFERRED TO LOWHEE MINING COMPANY LTD.) (DL 391)	DISTRICT OF WELLS	BARKERVILLE GOLD MINES LTD.	0.10	OGR (5%)
013-820-150	PC19612	1036/97, 2517/101	ARCHIBALD MCINTYRE	THE SOUTH WELLS DEVELOPMENT COMPANY LIMITED (FORFEITED TO CROWN)	BARKERVILLE GOLD MINES LTD.	0.08	OGR (5%)
013-820-125	PC19611	1036/97, 2517/101	ARCHIBALD MCINTYRE	THE SOUTH WELLS DEVELOPMENT COMPANY LIMITED (FORFEITED TO CROWN)	BARKERVILLE GOLD MINES LTD.	0.07	OGR (5%)
013-820-117	PC19610	1036/97, 2517/101	ARCHIBALD MCINTYRE	THE SOUTH WELLS DEVELOPMENT COMPANY LIMITED (FORFEITED TO CROWN)	BARKERVILLE GOLD MINES LTD.	0.06	OGR (5%)
031-410-839	CA9850175	1036/97	ARCHIBALD MCINTYRE	BARKERVILLE GOLD MINES LTD.	BARKERVILLE GOLD MINES LTD.	0.14	OGR (5%)
031-410-821	CA9850164	1036/97	ARCHIBALD MCINTYRE	BARKERVILLE GOLD MINES LTD.	BARKERVILLE GOLD MINES LTD.	0.14	OGR (5%)
031-410-812	CA9850203	1036/97	ARCHIBALD MCINTYRE	BARKERVILLE GOLD MINES LTD.	BARKERVILLE GOLD MINES LTD.	0.10	OGR (5%)
031-288-812	CA8702236	1036/97	ARCHIBALD MCINTYRE	DAWN MARIE LEROY, REVENUE CLERK & PHILLIP OLIVER LEROY, PLOW TRUCK DRIVER AS JOINT TENANTS	BARKERVILLE GOLD MINES LTD.	0.08	OGR (5%)
031-288-804	CA8702235	1036/97	ARCHIBALD MCINTYRE	DAWN MARIE LEROY, REVENUE CLERK & PHILLIP OLIVER LEROY, PLOW TRUCK DRIVER AS JOINT TENANTS	BARKERVILLE GOLD MINES LTD.	0.14	OGR (5%)
030-119-731	CA6363142	1036/97	ARCHIBALD MCINTYRE	DAVID GORDON JORGENSON, BUSINESSMAN	BARKERVILLE GOLD MINES LTD.	0.17	OGR (5%)
029-934-532	CA5512752	1036/97	ARCHIBALD MCINTYRE	DISTRICT OF WELLS	BARKERVILLE GOLD MINES LTD.	0.16	OGR (5%)
029-311-161	CA6501520	1036/97	ARCHIBALD MCINTYRE	CHRISTOPHER ROBERT RANDALL, MAINTENANCE-SECURITY	BARKERVILLE GOLD MINES LTD.	0.25	OGR (5%)
028-952-341	BB1500919	1036/97	ARCHIBALD MCINTYRE	MARILYN LEIGH TURNER, CASHIER-HOST	BARKERVILLE GOLD MINES LTD.	0.36	OGR (5%)
028-116-925	WX2103600	1036/97	ARCHIBALD MCINTYRE	KATHLEEN ANNE KINAKIN, PHOTOGRAPHIC RENTALS MANAGER	BARKERVILLE GOLD MINES LTD.	0.22	OGR (5%)
027-312-861	CA670439	1036/97	ARCHIBALD MCINTYRE	PAUL GUIGUET, SURVEYOR	BARKERVILLE GOLD MINES LTD.	0.08	OGR (5%)

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027-146-570	BB535428	1036/97	ARCHIBALD MCINTYRE	LYNDA JEAN MOON, BUSINESSWOMAN	BARKERVILLE GOLD MINES LTD.	0.29	OGR (5%)
026-468-891	WX2049866	1036/97	ARCHIBALD MCINTYRE	CAROLINE CONSTANCE BARBARA VON SCHILLING	BARKERVILLE GOLD MINES LTD.	0.07	OGR (5%)
026-468-883	CA6677331	1036/97	ARCHIBALD MCINTYRE	TIM GORDON ARTHUR HURLEY EXECUTOR OF THE WILL OF PATRICIA KATHLEEN CHAUNCEY, DECEASED (CA6677331)	BARKERVILLE GOLD MINES LTD.	0.07	OGR (5%)
025-268-902	PS32266	1036/97	ARCHIBALD MCINTYRE	BRIAN JAMES WEST, SECURITY PATROLMAN	BARKERVILLE GOLD MINES LTD.	0.28	OGR (5%)
024-815-781	PP20686	1036/97	ARCHIBALD MCINTYRE	DISTRICT OF WELLS	BARKERVILLE GOLD MINES LTD.	0.30	OGR (5%)
024-633-321	BV28062	1036/97	ARCHIBALD MCINTYRE	DISTRICT OF WELLS	BARKERVILLE GOLD MINES LTD.	0.53	OGR (5%)
024-633-313	BV280661	1036/97	ARCHIBALD MCINTYRE	DISTRICT OF WELLS	BARKERVILLE GOLD MINES LTD.	0.81	OGR (5%)
024-633-305	BV280660	1036/97	ARCHIBALD MCINTYRE	DISTRICT OF WELLS	BARKERVILLE GOLD MINES LTD.	2.09	OGR (5%)
024-577-961	PN30753	1036/97	ARCHIBALD MCINTYRE	GARY ANTHONY CIROTTO, GUIDE & BARBARA ANGELA CIROTTO, HOMEMAKER AS JOINT TENANTS	BARKERVILLE GOLD MINES LTD.	0.22	OGR (5%)
024-309-231	CA754311	1036/97	ARCHIBALD MCINTYRE	JANE MCDOUGAL ATKINSON, SELF EMPLOYED	BARKERVILLE GOLD MINES LTD.	0.12	OGR (5%)
024-238-635	PM37394	1036/97	ARCHIBALD MCINTYRE	WELLS HOTEL LTD.	BARKERVILLE GOLD MINES LTD.	0.45	OGR (5%)
023-612-428	CA7445575	1036/97	ARCHIBALD MCINTYRE	CARRIE-LEE DAWNE CHARD, PRODUCTION WORKER & TAMMY DOROTHY GAYLENE CHARD, CUSTODIAL & SPECIAL EVENTS AS JOINT TENANTS	BARKERVILLE GOLD MINES LTD.	0.22	OGR (5%)
023-544-970	PN32150	1036/97	ARCHIBALD MCINTYRE	BRADLEY KANE PETER CHUDIAK, BARRISTER AND SOLICITOR & PATRICIA LEAH SCHMIT, BARRISTER AND SOLICITOR AS JOINT TENANTS	BARKERVILLE GOLD MINES LTD.	0.38	OGR (5%)
023-437-545	CA589225	1036/97	ARCHIBALD MCINTYRE	PETER NORTH, MUSIC DIRECTOR	BARKERVILLE GOLD MINES LTD.	0.12	OGR (5%)
023-304-626	CA1276916	1036/97	ARCHIBALD MCINTYRE	PHILLIP LEROY, TRUCK DRIVER & DAWN LEROY, REVENUE CLERK	BARKERVILLE GOLD MINES LTD.	0.11	OGR (5%)
023-266-481	CA4347724	1036/97	ARCHIBALD MCINTYRE	DAVID JACOB HARDER, PRODUCER/CURATOR & CARLEIGH CHRISTIANE BRIDGE DREW, MARKETING OFFICER AS JOINT TENANTS	BARKERVILLE GOLD MINES LTD.	0.12	OGR (5%)

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023-242-281	CA2162580	1036/97	ARCHIBALD MCINTYRE	KARA ERMINA SONJA HAACK, RETAIL MANAGER	BARKERVILLE GOLD MINES LTD.	0.09	OGR (5%)
023-216-395	PJ39337	1036/97	ARCHIBALD MCINTYRE	THE CROWN IN RIGHT OF BRITISH COLUMBIA, AS REPRESENTED BY THE MINISTER OF ENVIRONMENT LANDS AND PARKS	BARKERVILLE GOLD MINES LTD.	0.14	OGR (5%)
023-216-387	PJ39336	1036/97	ARCHIBALD MCINTYRE	THE CROWN IN RIGHT OF BRITISH COLUMBIA, AS REPRESENTED BY THE MINISTER OF ENVIRONMENT LANDS AND PARKS	BARKERVILLE GOLD MINES LTD.	0.14	OGR (5%)
023-216-271	BB1350286	1036/97	ARCHIBALD MCINTYRE	BRIAN DOUGLAS RUMMEL, SELF EMPLOYED BUSINESSMAN & PATRICIA DONNA ANGELA RUMMEL, SALES CLERK AS JOINT TENANTS	BARKERVILLE GOLD MINES LTD.	0.11	OGR (5%)
023-213-833	PL42582	1036/97	ARCHIBALD MCINTYRE	S.L.R. DEVELOPMENTS LTD.	BARKERVILLE GOLD MINES LTD.	0.12	OGR (5%)
023-203-935	CA4715819	1036/97	ARCHIBALD MCINTYRE	MANDY DANIELLE KILSBY, CURATOR & DONALD ERNSET ALEXANDER NELSON, ACTOR/MAINTENANCE AS JOINT TENANTS	BARKERVILLE GOLD MINES LTD.	0.31	OGR (5%)
023-195-291	CA6750676	1036/97	ARCHIBALD MCINTYRE	JULIE ELLEN BOWLBY, RETIRED	BARKERVILLE GOLD MINES LTD.	0.10	OGR (5%)
023-189-941	CA3934472	1036/97	ARCHIBALD MCINTYRE	WAYNE RANDOLPH HOLMES, PURCHASER & VICKY LYNN HOLMES, HOMEMAKER AS JOINT TENANTS	BARKERVILLE GOLD MINES LTD.	0.11	OGR (5%)
023-080-817	PJ16775	1036/97	ARCHIBALD MCINTYRE	RODGER DAVID BOYCHUK, RETIRED	BARKERVILLE GOLD MINES LTD.	0.10	OGR (5%)
019-012-055	CA4109683	1036/97	ARCHIBALD MCINTYRE	ISLAND MOUNTAIN ARTS SOCIETY	BARKERVILLE GOLD MINES LTD.	0.38	OGR (5%)
018-968-635	CA7038884	1036/97	ARCHIBALD MCINTYRE	KARA ERMINA SONJA HAACK, RCMP DISPATCHER	BARKERVILLE GOLD MINES LTD.	0.13	OGR (5%)
018-962-327	CA9077660	1036/97	ARCHIBALD MCINTYRE	MATTHEW CRAWFORD LEES, HR MANAGER & KRISTA RAE WALLACE, SINGER AS JOINT TENANTS	BARKERVILLE GOLD MINES LTD.	0.11	OGR (5%)
018-959-911	CA5417040	1036/97	ARCHIBALD MCINTYRE	SHANE STEPHEN LARSON, BLACKSMITH & ANA MICHELLE LARSON, FLIGHT ATTENDANT AS JOINT TENANTS	BARKERVILLE GOLD MINES LTD.	0.10	OGR (5%)
018-959-903	CA5249337	1036/97	ARCHIBALD MCINTYRE	RICHARD ANTON WESTERN, SELF EMPLOYED	BARKERVILLE GOLD MINES LTD.	0.10	OGR (5%)
018-959-890	CA5249336	1036/97	ARCHIBALD MCINTYRE	RICHARD ANTON WESTERN, SELF EMPLOYED	BARKERVILLE GOLD MINES LTD.	0.10	OGR (5%)

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018-947-824	PJ4417	1036/97	ARCHIBALD MCINTYRE	JODY ANNE HUNTER, GOVERNMENT EMPLOYEE	BARKERVILLE GOLD MINES LTD.	0.14	OGR (5%)
018-847-421	BX202773	1036/97	ARCHIBALD MCINTYRE	KATHLEEN SHARON LANDRY, SELF-EMPLOYED	BARKERVILLE GOLD MINES LTD.	0.11	OGR (5%)
018-847-391	CA4483505	1036/97	ARCHIBALD MCINTYRE	JOHN DAVID PAGET, RETIRED & HEDY TAMLAY CONWRIGHT, NURSE AS JOINT TENANTS	BARKERVILLE GOLD MINES LTD.	0.14	OGR (5%)
018-847-374	CA5940055	1036/97	ARCHIBALD MCINTYRE	JOEY JAMES CONNOR, HEAVY EQUIPMENT OPERATOR & CANDICE ERIN CONNOR, OFFICE ADMINISTRATOR AS JOINT TENANTS	BARKERVILLE GOLD MINES LTD.	0.12	OGR (5%)
018-847-366	CA3715088	1036/97	ARCHIBALD MCINTYRE	IAN BRUCE MACDONALD, LOG HOME BUILDER	BARKERVILLE GOLD MINES LTD.	0.11	OGR (5%)
018-847-340	BX36213	1036/97	ARCHIBALD MCINTYRE	BARKERVILLE GOLD MINES LTD.	THE CROWN IN RIGHT OF BRITISH COLUMBIA	0.13	
018-847-331	CA6301440	1036/97	ARCHIBALD MCINTYRE	THOMAS EDWIN COOLEN, AUTOMOTIVE MECHANIC & JENNA MAUREEN COOLEN, HOMEMAKER AS JOINT TENANTS	BARKERVILLE GOLD MINES LTD.	0.13	OGR (5%)
018-847-323	BB1110089	1036/97	ARCHIBALD MCINTYRE	LINDA ETHEL DAVIS, TEACHER	BARKERVILLE GOLD MINES LTD.	0.19	OGR (5%)
018-847-129	CA4862227	1036/97	ARCHIBALD MCINTYRE	LINDSAY KAY READ, FINANCIAL DIRECTOR	BARKERVILLE GOLD MINES LTD.	0.16	OGR (5%)
018-685-056	CA6190280	1036/97	ARCHIBALD MCINTYRE	BARKERVILLE GOLD MINES LTD.	BARKERVILLE GOLD MINES LTD. / HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	0.36	OGR (5%)
017-971-403	PS7390	1036/97	ARCHIBALD MCINTYRE	ROBERT LISLE BUXTON, CHARTERED ACCOUNTANT	BARKERVILLE GOLD MINES LTD.	0.37	OGR (5%)
016-234-871	CA4986782	1036/97	ARCHIBALD MCINTYRE	JANET LYNN AITKEN, CUSTOMER SERVICE & JOHN BARRETT AITKEN, PUBLIC WORKS SUPERINTENDENT AS JOINT TENANTS	BARKERVILLE GOLD MINES LTD.	0.14	OGR (5%)
016-234-863	CA6887422	1036/97	ARCHIBALD MCINTYRE	SAMANTHA JOYCE ROGERS CONTRACTOR & GEORGE EDWARD ROGERS, MINER AS JOINT TENANTS	BARKERVILLE GOLD MINES LTD.	0.15	OGR (5%)
016-122-691	CA784202	1036/97	ARCHIBALD MCINTYRE	MARK DAVID DAWSON, PERFORMING ARTS	BARKERVILLE GOLD MINES LTD.	0.15	OGR (5%)

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015-810-194	PP20693	1036/97	ARCHIBALD MCINTYRE	DISTRICT OF WELLS	BARKERVILLE GOLD MINES LTD.	0.07	OGR (5%)
015-810-186	PP20694	1036/97	ARCHIBALD MCINTYRE	DISTRICT OF WELLS	BARKERVILLE GOLD MINES LTD.	0.14	OGR (5%)
015-332-438	8407M	1036/97	ARCHIBALD MCINTYRE	THE LOWHEE MINING COMPANY LIMITED (NON-PERSONAL LIABILITY) (FORFEITED TO CROWN)	BARKERVILLE GOLD MINES LTD.	205.72	OGR (5%)
014-998-211	PJ8473	1036/97	ARCHIBALD MCINTYRE	AMBRUS LOGGING LTD.	BARKERVILLE GOLD MINES LTD.	34.33	OGR (5%)
013-820-206	PC19614	1036/97	ARCHIBALD MCINTYRE	THE SOUTH WELLS DEVELOPMENT COMPANY LIMITED (FORFEITED TO CROWN)	BARKERVILLE GOLD MINES LTD.	0.19	OGR (5%)
013-820-184	PC19613	1036/97	ARCHIBALD MCINTYRE	THE SOUTH WELLS DEVELOPMENT COMPANY LIMITED (FORFEITED TO CROWN)	BARKERVILLE GOLD MINES LTD.	0.09	OGR (5%)
013-820-036	PC19616	1036/97	ARCHIBALD MCINTYRE	THE SOUTH WELLS DEVELOPMENT COMPANY LIMITED (FORFEITED TO CROWN)	BARKERVILLE GOLD MINES LTD.	1.50	OGR (5%)
013-817-817	CA8915858	1036/97	ARCHIBALD MCINTYRE	DANIEL MICHAEL LORNE SERVICE, MECHANIC	BARKERVILLE GOLD MINES LTD.	0.15	OGR (5%)
013-817-710	CA6668811	1036/97	ARCHIBALD MCINTYRE	TERESITA ESTRADA BOPP, TEACHER	BARKERVILLE GOLD MINES LTD.	0.08	OGR (5%)
013-816-098	PG32297	1036/97	ARCHIBALD MCINTYRE	ARTHUR JAMES OLSON, TRUCK DRIVER	BARKERVILLE GOLD MINES LTD.	0.08	OGR (5%)
013-789-571	PC19512	1036/97	ARCHIBALD MCINTYRE	VICTOR KARL BOPP, DISTRICT PARTS MANAGER & VICTOR KARL BOPP, DISTRICT PARTS MANAGER TERISITA BOPP, HIS WIFE AS JOINT TENANTS (FORFEITED TO CROWN)	BARKERVILLE GOLD MINES LTD.	0.07	OGR (5%)
013-789-546	CA4130472	1036/97	ARCHIBALD MCINTYRE	CATRINA ISABELL PENROSE, CHAMBERMAID & COLLEEN ISABELL PENROSE, RETIRED & BARRY WILLFORD, RETIRED AS JOINT TENANTS	BARKERVILLE GOLD MINES LTD.	0.15	OGR (5%)
013-789-520	CA4130471	1036/97	ARCHIBALD MCINTYRE	CATRINA ISABELL PENROSE, CHAMBERMAID & COLLEEN ISABELL PENROSE, RETIRED & BARRY WILLFORD, RETIRED AS JOINT TENANTS	BARKERVILLE GOLD MINES LTD.	0.07	OGR (5%)
013-779-281	PC19453	1036/97	ARCHIBALD MCINTYRE	MURIAL QUIRING, HEATHER CORNFIELD & FLORENCE IONE JONES (FORFEITED TO CROWN)	BARKERVILLE GOLD MINES LTD.	0.07	OGR (5%)

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013-779-265	PC19452	1036/97	ARCHIBALD MCINTYRE	MURIAL QUIRING, HEATHER CORNFIELD & FLORENCE IONE JONES (FORFEITED TO CROWN)	BARKERVILLE GOLD MINES LTD.	0.07	OGR (5%)
013-779-249	PC19451	1036/97	ARCHIBALD MCINTYRE	MURIAL QUIRING, HEATHER CORNFIELD & FLORENCE IONE JONES (FORFEITED TO CROWN)	BARKERVILLE GOLD MINES LTD.	0.07	OGR (5%)
013-779-133	CA1259383	1036/97	ARCHIBALD MCINTYRE	JOSEPH WILLIAM MARTIN JOHNSON, SOCIAL WORKER AS TO AN UNDIVIDED 1/3 INTEREST & LEAH MARTIN, SOCIAL WORKER AS TO AN UNDIVIDED 1/3 INTEREST & JOSHUA JEREMY TROTTER-WANNER, ENGINEER AS TO AN UNDIVIDED 1/3 INTEREST	BARKERVILLE GOLD MINES LTD.	0.25	OGR (5%)
013-779-117	CA1259384	1036/97	ARCHIBALD MCINTYRE	JOSEPH WILLIAM MARTIN JOHNSON, SOCIAL WORKER AS TO AN UNDIVIDED 1/3 INTEREST & LEAH MARTIN, SOCIAL WORKER AS TO AN UNDIVIDED 1/3 INTEREST & JOSHUA JEREMY TROTTER-WANNER, ENGINEER AS TO AN UNDIVIDED 1/3 INTEREST	BARKERVILLE GOLD MINES LTD.	0.25	OGR (5%)
013-778-374	BB419321	1036/97	ARCHIBALD MCINTYRE	HEDY TAMLAY CONWRIGHT, REGISTERED NURSE	BARKERVILLE GOLD MINES LTD.	0.15	OGR (5%)
013-778-366	CA9229300	1036/97	ARCHIBALD MCINTYRE	BARKERVILLE GOLD MINES LTD.	BARKERVILLE GOLD MINES LTD.	0.15	OGR (5%)
013-778-358	CA6779575	1036/97	ARCHIBALD MCINTYRE	KSENYA ANN DORWART, COMMUNITY OUTREACH MANAGER	BARKERVILLE GOLD MINES LTD.	0.15	OGR (5%)
013-778-340	CA3359504	1036/97	ARCHIBALD MCINTYRE	ERIN LEE DE ZWART, MENTAL HEALTH WORKER & MARY LEAH DE ZWART, RETIRED AS JOINT TENANTS	BARKERVILLE GOLD MINES LTD.	0.14	OGR (5%)
013-714-791	FB512633	1036/97	ARCHIBALD MCINTYRE	JACK O CLUBS GENERAL INC.	BARKERVILLE GOLD MINES LTD.	1.26	OGR (5%)
013-229-133	PJ19357	1036/97	ARCHIBALD MCINTYRE	WILLIAM HUGH ALEXANDER HORNE, ARTIST & CLAIRE MARIA KUJUNDZIC, ARTIST AS JOINT TENANTS	BARKERVILLE GOLD MINES LTD.	0.17	OGR (5%)
013-176-889	PC7350	1036/97	ARCHIBALD MCINTYRE	THOMAS CHARLES HATTON, PLACER MINER & JUDITH JEAN MOORING, FIRST AID ATTENDANT AS JOINT TENANTS	BARKERVILLE GOLD MINES LTD.	0.35	OGR (5%)

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013-176-871	PC7349	1036/97	ARCHIBALD MCINTYRE	THOMAS CHARLES HATTON, PLACER MINER & JUDITH JEAN MOORING, FIRST AID ATTENDANT AS JOINT TENANTS	BARKERVILLE GOLD MINES LTD.	0.08	OGR (5%)
013-176-854	PC7348	1036/97	ARCHIBALD MCINTYRE	THOMAS CHARLES HATTON, PLACER MINER & JUDITH JEAN MOORING, FIRST AID ATTENDANT AS JOINT TENANTS	BARKERVILLE GOLD MINES LTD.	0.35	OGR (5%)
012-572-306	PH30389	1036/97	ARCHIBALD MCINTYRE	SHARON PATRICIA STREICEK, HOMEMAKER (FORFEITED TO CROWN)	BARKERVILLE GOLD MINES LTD.	0.33	OGR (5%)
011-970-022	CA5969432	1036/97	ARCHIBALD MCINTYRE	EDWARD ALLAN TIPMAN, ENGINEER & MARIANNE TIPMAN, RETIRED AS JOINT TENANTS	BARKERVILLE GOLD MINES LTD.	0.15	OGR (5%)
011-279-192	BB783081	1036/97	ARCHIBALD MCINTYRE	THE BITRAD INTERNATIONAL GROUP CORPORATION	BARKERVILLE GOLD MINES LTD.	0.10	OGR (5%)
011-095-326	PB21723	1036/97	ARCHIBALD MCINTYRE	BRITISH COLUMBIA TELEPHONE COMPANY	BARKERVILLE GOLD MINES LTD.	0.10	OGR (5%)
011-095-300	PB21722	1036/97	ARCHIBALD MCINTYRE	BRITISH COLUMBIA TELEPHONE COMPANY	BARKERVILLE GOLD MINES LTD.	0.10	OGR (5%)
011-095-261	CA2913103	1036/97	ARCHIBALD MCINTYRE	DARYLE WAYNE NESIMUIK, SECURITY GUARD	BARKERVILLE GOLD MINES LTD.	0.27	OGR (5%)
011-095-245	CA2913104	1036/97	ARCHIBALD MCINTYRE	DARYLE WAYNE NESIMUIK, SECURITY GUARD	BARKERVILLE GOLD MINES LTD.	0.08	OGR (5%)
011-095-237	CA2913105	1036/97	ARCHIBALD MCINTYRE	DARYLE WAYNE NESIMUIK, SECURITY GUARD	BARKERVILLE GOLD MINES LTD.	0.07	OGR (5%)
011-095-211	PG34020	1036/97	ARCHIBALD MCINTYRE	RODGER DAVID BOYCHUK, BUSINESSMAN	BARKERVILLE GOLD MINES LTD.	0.06	OGR (5%)
011-095-199	PG34021	1036/97	ARCHIBALD MCINTYRE	RODGER DAVID BOYCHUK, BUSINESSMAN	BARKERVILLE GOLD MINES LTD.	0.03	OGR (5%)
011-095-181	PG34022	1036/97	ARCHIBALD MCINTYRE	RODGER DAVID BOYCHUK, BUSINESSMAN	BARKERVILLE GOLD MINES LTD.	0.15	OGR (5%)
011-095-148	CA1552305	1036/97	ARCHIBALD MCINTYRE	MARK RIMMINGTON NORMAN, BUSINESSMAN	BARKERVILLE GOLD MINES LTD.	0.09	OGR (5%)
011-095-113	CA1552304	1036/97	ARCHIBALD MCINTYRE	MARK RIMMINGTON NORMAN, BUSINESSMAN	BARKERVILLE GOLD MINES LTD.	0.19	OGR (5%)
011-094-630	BV270444	1036/97	ARCHIBALD MCINTYRE	KAREN JENNIFER JEFFERY, HOMEMAKER	BARKERVILLE GOLD MINES LTD.	0.09	OGR (5%)
011-094-613	BV270443	1036/97	ARCHIBALD MCINTYRE	KAREN JENNIFER JEFFERY, HOMEMAKER	BARKERVILLE GOLD MINES LTD.	0.07	OGR (5%)
011-094-583	BV270442	1036/97	ARCHIBALD MCINTYRE	KAREN JENNIFER JEFFERY, HOMEMAKER	BARKERVILLE GOLD MINES LTD.	0.22	OGR (5%)
011-094-532	PP20690	1036/97	ARCHIBALD MCINTYRE	DISTRICT OF WELLS	BARKERVILLE GOLD MINES LTD.	0.07	OGR (5%)

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011-094-516	PP20689	1036/97	ARCHIBALD MCINTYRE	DISTRICT OF WELLS	BARKERVILLE GOLD MINES LTD.	0.14	OGR (5%)
011-047-542	CA586990	1036/97	ARCHIBALD MCINTYRE	ROBERT ANDREW HAMILTON, SELF EMPLOYED	BARKERVILLE GOLD MINES LTD.	0.13	OGR (5%)
011-047-526	CA2340860	1036/97	ARCHIBALD MCINTYRE	FAITH MOOSANG, ARTIST	BARKERVILLE GOLD MINES LTD.	0.17	OGR (5%)
011-047-518	CA7014671	1036/97	ARCHIBALD MCINTYRE	SHAYNA DAWN FERGUSON, JANITOR & AUSTIN REED FREDERICK, EQUIPMENT OPERATOR	BARKERVILLE GOLD MINES LTD.	0.14	OGR (5%)
011-047-500	BW109803	1036/97	ARCHIBALD MCINTYRE	DISTRICT OF WELLS	BARKERVILLE GOLD MINES LTD.	0.32	OGR (5%)
011-047-470	PL47763	1036/97	ARCHIBALD MCINTYRE	BARBARA AUDREY SCHMODE, COOK	BARKERVILLE GOLD MINES LTD.	0.14	OGR (5%)
011-047-461	CA2024968	1036/97	ARCHIBALD MCINTYRE	KAREN JEFFERY, THEATRE PRODUCER AS TO AN UNDIVIDED 99/100 INTEREST & DAVID JEFFERY, RETIRED AS TO AN UNDIVIDED 1/100 INTEREST	BARKERVILLE GOLD MINES LTD.	0.08	OGR (5%)
011-047-453	PP20688	1036/97	ARCHIBALD MCINTYRE	DISTRICT OF WELLS	BARKERVILLE GOLD MINES LTD.	0.07	OGR (5%)
011-047-411	PJ47181	1036/97	ARCHIBALD MCINTYRE	THE CROWN IN RIGHT OF BRITISH COLUMBIA REPRESENTED BY THE MINISTER OF ENVIRONMENT, LANDS AND PARKS	BARKERVILLE GOLD MINES LTD.	0.09	OGR (5%)
011-047-399	CA8464066	1036/97	ARCHIBALD MCINTYRE	DONNA MERLE WILLIAMS, HEAD OF MUSIC	BARKERVILLE GOLD MINES LTD.	0.17	OGR (5%)
011-047-348	CA7065170	1036/97	ARCHIBALD MCINTYRE	IAN JAMES DOUGLAS, DISABLED & ELIZABETH CLAIRE ISAAC, RETIRED AS JOINT TENANTS	BARKERVILLE GOLD MINES LTD.	0.15	OGR (5%)
011-047-330	PB25618	1036/97	ARCHIBALD MCINTYRE	ISLAND MOUNTAIN ARTS SOCIETY	BARKERVILLE GOLD MINES LTD.	0.06	OGR (5%)
011-047-305	T11197, T9510	1036/97	ARCHIBALD MCINTYRE	ROBERT WALLACE ERIC NORTH, BUSINESSMAN AS TO AN UNDIVIDED 1/2 INTEREST (FORFEITED TO CROWN) & JAMES KENDALL SHIELDS, SHIPPER RECEIVER) AS TO AN UNDIVIDED 1/2 INTEREST (FORFEITED TO CROWN)	BARKERVILLE GOLD MINES LTD.	0.10	OGR (5%)
011-047-267	PN36895	1036/97	ARCHIBALD MCINTYRE	KAREN JENNIFER PLANDEN, EXECUTIVE ARTISTIC DIRECTOR	BARKERVILLE GOLD MINES LTD.	0.10	OGR (5%)
011-047-259	S27810	1036/97	ARCHIBALD MCINTYRE	TREVOR BRADLEY DAVIES, FALLER	BARKERVILLE GOLD MINES LTD.	0.06	OGR (5%)

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011-047-241	68931M	1036/97	ARCHIBALD MCINTYRE	SHELAGH CAROL MATHEWS (FORFEITED TO CROWN)	BARKERVILLE GOLD MINES LTD.	0.10	OGR (5%)
011-047-232	16118M	1036/97	ARCHIBALD MCINTYRE	GEORGE CHARNQUIST AS TO AN UNDIVIDED 1/2 INTEREST (FORFEITED TO CROWN)	BARKERVILLE GOLD MINES LTD.	0.08	OGR (5%)
011-047-224	27825M	1036/97	ARCHIBALD MCINTYRE	MAXWELL ARTHUR ANSLEY (FORFEITED TO CROWN)	BARKERVILLE GOLD MINES LTD.	0.08	OGR (5%)
011-047-208	R31537	1036/97	ARCHIBALD MCINTYRE	DARLEEN MARY MCLENNAN, HOUSEWIFE (FORFEITED TO CROWN)	BARKERVILLE GOLD MINES LTD.	0.07	OGR (5%)
011-047-194	17436M	1036/97	ARCHIBALD MCINTYRE	EDWARD PIKE (FORFEITED TO CROWN)	BARKERVILLE GOLD MINES LTD.	0.08	OGR (5%)
011-047-160	BB365920	1036/97	ARCHIBALD MCINTYRE	DISTRICT OF WELLS	BARKERVILLE GOLD MINES LTD.	0.04	OGR (5%)
011-047-151	CA10179	1036/97	ARCHIBALD MCINTYRE	WILLIAM IAN RUMMEL, SELF-EMPLOYED	BARKERVILLE GOLD MINES LTD.	0.07	OGR (5%)
011-047-143	BB629960	1036/97	ARCHIBALD MCINTYRE	GARY WAYNE FIEGEHEN, PHOTOGRAPHER	BARKERVILLE GOLD MINES LTD.	0.05	OGR (5%)
011-047-135	CA5807889	1036/97	ARCHIBALD MCINTYRE	PETER JOHN CORBETT, FISH BIOLOGIST	BARKERVILLE GOLD MINES LTD.	0.04	OGR (5%)
011-047-119	PC28252	1036/97	ARCHIBALD MCINTYRE	MICHAEL DUANE DEWEESE, MINER & MARION DEWEESE, SECRETARY AS JOINT TENANTS	BARKERVILLE GOLD MINES LTD.	0.08	OGR (5%)
011-047-101	PG47433	1036/97	ARCHIBALD MCINTYRE	CATHERINE GARNETT, SPEECH LANGUAGE PATHOLOGIST	BARKERVILLE GOLD MINES LTD.	0.06	OGR (5%)
011-025-514	CA425359	1036/97	ARCHIBALD MCINTYRE	ANTHONY JOSEPH MCDONALD, QUESNEL SR. GOLF CHAMPION & DEANNA JOAN WINDSOR, GIS ANALYST AS JOINT TENANTS	BARKERVILLE GOLD MINES LTD.	0.08	OGR (5%)
011-025-395	PM2898A	1036/97	ARCHIBALD MCINTYRE	THE CROWN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	0.08	OGR (5%)
011-025-361	BB225529	1036/97	ARCHIBALD MCINTYRE	NORMA ELIZABETH JEE, TEACHER & HELMUTH RUDOLF EWERT, SELF EMPLOYED BUSINESSMAN	BARKERVILLE GOLD MINES LTD.	0.09	OGR (5%)

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011-025-255	CA670589	1036/97	ARCHIBALD MCINTYRE	LORI ANN CARIFELLE, PROGRAM DIRECTOR & DWAYNE MICHAEL SALES, LOGGER AS TO AN UNDIVIDED 1/2 INTEREST AS JOINT TENANTS AND KARA TALULAH CARIFELLE, NURSERY WORKER & DARYL RAYMOND NELSON, MILLWORKER AS TO AN UNDIVIDED 1/2 INTEREST AS JOINT TENANTS	BARKERVILLE GOLD MINES LTD.	0.09	OGR (5%)
011-025-221	027726	1036/97	ARCHIBALD MCINTYRE	MARJORIE NEEDS, BUSINESSWOMAN (FORFEITED TO CROWN)	BARKERVILLE GOLD MINES LTD.	0.08	OGR (5%)
011-025-182	CA7139136	1036/97	ARCHIBALD MCINTYRE	BRENDAN JAMES BAILEY, SELF-EMPLOYED	BARKERVILLE GOLD MINES LTD.	0.08	OGR (5%)
011-024-941	R39682	1036/97	ARCHIBALD MCINTYRE	THOMAS NEIL VANT, CLERGYMAN	BARKERVILLE GOLD MINES LTD.	0.16	OGR (5%)
011-024-925	CA7413903	1036/97	ARCHIBALD MCINTYRE	CAROLINE RUTH ZINZ, ARCHIVIST	BARKERVILLE GOLD MINES LTD.	0.11	OGR (5%)
011-024-895	PN39701	1036/97	ARCHIBALD MCINTYRE	THOMAS NEIL VANT, MANAGER	BARKERVILLE GOLD MINES LTD.	0.08	OGR (5%)
011-024-887	CA2758497	1036/97	ARCHIBALD MCINTYRE	STEWART LLOYD SCOTT MOTTERAM, SILVACULTURIST	BARKERVILLE GOLD MINES LTD.	0.08	OGR (5%)
011-024-879	BB1341717	1036/97	ARCHIBALD MCINTYRE	ROBERT ANDREW HAMILTON, HISTORICAL INTERPRETER	BARKERVILLE GOLD MINES LTD.	0.07	OGR (5%)
011-024-861	BB1965670	1036/97	ARCHIBALD MCINTYRE	JOHN ROBERT RAINEY, MECHANIC & MELANIE ANN RAINEY, SELF EMPLOYED AS JOINT TENANTS	BARKERVILLE GOLD MINES LTD.	0.07	OGR (5%)
011-024-721	PG30879	1036/97	ARCHIBALD MCINTYRE	DOROTHEA LYNETTE FUNK, RADIO ANNOUNCER	BARKERVILLE GOLD MINES LTD.	0.08	OGR (5%)
011-024-712	CA562166	1036/97	ARCHIBALD MCINTYRE	RICHARD NESS EZOWSKI, BUSINESSMAN & NADIA EZOWSKI, BUSINESSWOMAN AS JOINT TENANTS	BARKERVILLE GOLD MINES LTD.	0.08	OGR (5%)
011-024-542	N22940	1036/97	ARCHIBALD MCINTYRE	JULES PAUL GUIGUET, MINING TECHNOLOGIST	BARKERVILLE GOLD MINES LTD.	0.08	OGR (5%)
011-023-180	BV280666	1036/97	ARCHIBALD MCINTYRE	DISTRICT OF WELLS	BARKERVILLE GOLD MINES LTD.	0.09	OGR (5%)
011-023-171	BV280665	1036/97	ARCHIBALD MCINTYRE	DISTRICT OF WELLS	BARKERVILLE GOLD MINES LTD.	0.08	OGR (5%)
011-023-163	BV280664	1036/97	ARCHIBALD MCINTYRE	DISTRICT OF WELLS	BARKERVILLE GOLD MINES LTD.	0.08	OGR (5%)
011-023-155	BV280663	1036/97	ARCHIBALD MCINTYRE	DISTRICT OF WELLS	BARKERVILLE GOLD MINES LTD.	0.06	OGR (5%)
011-022-922	PP20691	1036/97	ARCHIBALD MCINTYRE	DISTRICT OF WELLS	BARKERVILLE GOLD MINES LTD.	0.09	OGR (5%)

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010-450-092	64053M	1036/97	ARCHIBALD MCINTYRE	HENRY WANNER (FORFEITED TO CROWN)	BARKERVILLE GOLD MINES LTD.	0.08	OGR (5%)
008-406-766	CA6435401	1036/97	ARCHIBALD MCINTYRE	CAPRI MARIA ASPE, HEAVY EQUIPMENT OPERATOR & JEFFERY BERNARD WANNOP, GEOLOGIST AS JOINT TENANTS	BARKERVILLE GOLD MINES LTD.	0.11	OGR (5%)
008-406-723	CA6435387	1036/97	ARCHIBALD MCINTYRE	CAPRI MARIA ASPE, HEAVY EQUIPMENT OPERATOR & JEFFERY BERNARD WANNOP, GEOLOGIST AS JOINT TENANTS	BARKERVILLE GOLD MINES LTD.	0.13	OGR (5%)
007-789-939	CA1385835	1036/97	ARCHIBALD MCINTYRE	GREGORY NORMAN SOUW, CAMP GROUND ATTENDANT	BARKERVILLE GOLD MINES LTD.	0.08	OGR (5%)
007-789-891	Y25816	1036/97	ARCHIBALD MCINTYRE	RONALD MARTIN YOUNG, PHOTOGRAPHER	BARKERVILLE GOLD MINES LTD.	0.08	OGR (5%)
006-911-765	PM7978	1036/97	ARCHIBALD MCINTYRE	JULIA HENRIETTA WHEATLEY, ATTENDANT	BARKERVILLE GOLD MINES LTD.	0.23	OGR (5%)
006-816-118	CA9405747	1036/97	ARCHIBALD MCINTYRE	WELLS-BARKERVILLE COMMUNITY FOREST LTD.	BARKERVILLE GOLD MINES LTD.	1.30	OGR (5%)
006-816-070	CA1997684	1036/97	ARCHIBALD MCINTYRE	ISLAND MOUNTAIN ARTS SOCIETY	BARKERVILLE GOLD MINES LTD.	1.12	OGR (5%)
006-816-045	CA5970174	1036/97	ARCHIBALD MCINTYRE	MANDELA WANI, PRODUCTION WORKER	BARKERVILLE GOLD MINES LTD.	1.07	OGR (5%)
006-816-002	N12139	1036/97	ARCHIBALD MCINTYRE	RODGER BOYCHUK, HANDYMAN	BARKERVILLE GOLD MINES LTD.	1.12	OGR (5%)
006-773-931	CA9231853	1036/97	ARCHIBALD MCINTYRE	BARKERVILLE GOLD MINES LTD.	BARKERVILLE GOLD MINES LTD.	0.27	OGR (5%)
006-455-476	PL66224	1036/97	ARCHIBALD MCINTYRE	STEPHEN JOHN OLIVER, LAWYER & ANN BROOKS OLIVER, BOOKKEEPER AS JOINT TENANTS	BARKERVILLE GOLD MINES LTD.	0.08	OGR (5%)
006-455-468	PL66223	1036/97	ARCHIBALD MCINTYRE	STEPHEN JOHN OLIVER, LAWYER & ANN BROOKS OLIVER, BOOKKEEPER AS JOINT TENANTS	BARKERVILLE GOLD MINES LTD.	0.08	OGR (5%)
006-455-417	PL66222	1036/97	ARCHIBALD MCINTYRE	STEPHEN JOHN OLIVER, LAWYER & ANN BROOKS OLIVER, BOOKKEEPER AS JOINT TENANTS	BARKERVILLE GOLD MINES LTD.	0.30	OGR (5%)
006-455-395	PL66221	1036/97	ARCHIBALD MCINTYRE	STEPHEN JOHN OLIVER, LAWYER & ANN BROOKS OLIVER, BOOKKEEPER AS JOINT TENANTS	BARKERVILLE GOLD MINES LTD.	0.30	OGR (5%)
006-342-418	CA2925850	1036/97	ARCHIBALD MCINTYRE	CLIFFORD CECIL COLLINS, SELF-EMPLOYED & NORMA JEAN COLLINS, SELF-EMPLOYED AS JOINT TENANTS	BARKERVILLE GOLD MINES LTD.	0.15	OGR (5%)

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006-261-477	CA8221260	1036/97	ARCHIBALD MCINTYRE	JILLIAN LEAH MERRICK, MUSEUM MANAGER	BARKERVILLE GOLD MINES LTD.	0.23	OGR (5%)
005-856-931	PE30745	1036/97	ARCHIBALD MCINTYRE	WELLS RECREATION SOCIETY, INC.	BARKERVILLE GOLD MINES LTD.	1.00	OGR (5%)
005-761-620	CA6891406	1036/97	ARCHIBALD MCINTYRE	MIA ANGELA CIROTTO, EDUCATION ASSISTANT	BARKERVILLE GOLD MINES LTD.	1.00	OGR (5%)
005-657-512	PP20692	1036/97	ARCHIBALD MCINTYRE	DISTRICT OF WELLS	BARKERVILLE GOLD MINES LTD.	4.01	OGR (5%)
005-042-551	PM21600	1036/97	ARCHIBALD MCINTYRE	JOHN ROBERT BYRNS, BUSINESSMAN & ROBERT GIBB, BUSINESSMAN AS JOINT TENANTS	BARKERVILLE GOLD MINES LTD.	1.00	OGR (5%)
004-885-635	CA1552303	1036/97	ARCHIBALD MCINTYRE	MARK RIMMINGTON NORMAN, BUSINESSMAN	BARKERVILLE GOLD MINES LTD.	0.14	OGR (5%)
004-885-627	CA1552302	1036/97	ARCHIBALD MCINTYRE	MARK RIMMINGTON NORMAN, BUSINESSMAN	BARKERVILLE GOLD MINES LTD.	0.14	OGR (5%)
004-820-860	PK38330	1036/97	ARCHIBALD MCINTYRE	ROBERT BLAINE RUMMEL, SELF EMPLOYED & LINDA MADELINE RUMMEL, TEACHER AS JOINT TENANTS	BARKERVILLE GOLD MINES LTD.	0.08	OGR (5%)
004-820-851	PK38329	1036/97	ARCHIBALD MCINTYRE	ROBERT BLAINE RUMMEL, SELF EMPLOYED & LINDA MADELINE RUMMEL, TEACHER AS JOINT TENANTS	BARKERVILLE GOLD MINES LTD.	0.15	OGR (5%)
004-800-079	BB693105	1036/97	ARCHIBALD MCINTYRE	TYLER BRIAN DOERKSEN, FORESTRY TECHNICIAN	BARKERVILLE GOLD MINES LTD.	0.07	OGR (5%)
004-595-424	CA6719840	1036/97	ARCHIBALD MCINTYRE	DANIELLE LYNN CLOUTIER, GEOTECHNICIAN	BARKERVILLE GOLD MINES LTD.	0.14	OGR (5%)
004-595-416	CA6719839	1036/97	ARCHIBALD MCINTYRE	DANIELLE LYNN CLOUTIER, GEOTECHNICIAN	BARKERVILLE GOLD MINES LTD.	0.06	OGR (5%)
004-300-840	CA6335205	1036/97	ARCHIBALD MCINTYRE	ELLEN IRENE JOAN PARTNOY, HEAVY DUTY MECHANIC	BARKERVILLE GOLD MINES LTD.	0.10	OGR (5%)
004-187-041	CA5292798	1036/97	ARCHIBALD MCINTYRE	BRIAN CAMERON LEWIS, TECHNICIAN & MURRY RUSSEL KRAUSE, EXECUTIVE DIRECTOR AS JOINT TENANTS	BARKERVILLE GOLD MINES LTD.	0.07	OGR (5%)
004-183-878	PT14262	1036/97	ARCHIBALD MCINTYRE	TAMMY MICHELE BROWN, GRAPHIC DESIGNER	BARKERVILLE GOLD MINES LTD.	0.19	OGR (5%)
004-133-188	CA9149300	1036/97	ARCHIBALD MCINTYRE	ROCKY JAMES NENKA, COMMERCE LEAD & TYLER FRANCIS MACDONALD BURNSON, ADMINISTRATOR AS JOINT TENANTS	BARKERVILLE GOLD MINES LTD.	0.07	OGR (5%)

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004-133-170	CA9149299	1036/97	ARCHIBALD MCINTYRE	ROCKY JAMES NENKA, COMMERCE LEAD & TYLER FRANCIS MACDONALD BURNSON, ADMINISTRATOR AS JOINT TENANTS	BARKERVILLE GOLD MINES LTD.	0.15	OGR (5%)
003-834-085	CA5843285	1036/97	ARCHIBALD MCINTYRE	ANTHONY TRENT RADELET, LEAD CORE CUTTER & HOLLY ELIZABETH MCRAE, CORE CUTTER AS JOINT TENANTS	BARKERVILLE GOLD MINES LTD.	0.15	OGR (5%)
013-818-635	PC19615	1036/97, 2517/101	ARCHIBALD MCINTYRE (DL289), MARY AGNES MASON (TRANSFERRED TO LOWHEE MINING CO. LTD. (DL391)	THE SOUTH WELLS DEVELOPMENT COMPANY LIMITED (FORFEITED TO CROWN)	BARKERVILLE GOLD MINES LTD.	0.07	OGR (5%)
013-700-863	PC17214	8772/858	BARKERVILLE MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	33.76	OGR (5%)
013-700-847	PC17213	8771/858	BARKERVILLE MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	19.60	OGR (5%)
013-700-839	PC17212	8770/858	BARKERVILLE MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	47.37	OGR (5%)
013-700-812	PC17211	8769/858	BARKERVILLE MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	38.10	OGR (5%)
013-700-880	PC17216	8768/858	BARKERVILLE MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	27.08	OGR (5%)
013-700-871	PC17215	8767/858	BARKERVILLE MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	36.41	OGR (5%)
015-282-163	31938M	8766/858	BARKERVILLE MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	13.03	OGR (5%)
015-360-211	PD703	8765/858	BARKERVILLE MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	33.95	OGR (5%)
015-360-202	PD704	8764/858	BARKERVILLE MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	36.07	OGR (5%)

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015-360-172	PD705	8763/858	BARKERVILLE MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	25.30	OGR (5%)
015-359-891	PD706	8762/858	BARKERVILLE MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	42.64	OGR (5%)
015-359-786	PD707	8761/858	BARKERVILLE MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	26.53	OGR (5%)
013-699-709	PC17217	461/675	CARIBOO AMALGAMATED GOLD MINES LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	26.04	OGR (5%)
013-700-162	PC17222	428/675	CARIBOO AMALGAMATED GOLD MINES LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	24.80	OGR (5%)
013-699-903	PC17221	427/675	CARIBOO AMALGAMATED GOLD MINES LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	43.42	OGR (5%)
013-699-822	PC17220	426/675	CARIBOO AMALGAMATED GOLD MINES LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	32.23	OGR (5%)
013-699-784	PC17219	425/675	CARIBOO AMALGAMATED GOLD MINES LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	42.15	OGR (5%)
013-699-733	PC17218	424/675	CARIBOO AMALGAMATED GOLD MINES LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.64	OGR (5%)
013-699-695	PC17204	423/675	CARIBOO AMALGAMATED GOLD MINES LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.65	OGR (5%)

PID	Title #	CG #	Original grantee	Fee simple owner	UNDERSURFACE OWNER	Area (Acres)	Royalty
013-699-652	PC17203	422/675	CARIBOO AMALGAMATED GOLD MINES LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.65	OGR (5%)
013-699-598	PC17202	421/675	CARIBOO AMALGAMATED GOLD MINES LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	40.89	OGR (5%)
013-699-253	PC17191	420/675	CARIBOO AMALGAMATED GOLD MINES LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	9.50	OGR (5%)
015-360-971	PD718	1193/682	CARIBOO CONSOLIDATED MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	39.83	OGR (5%)
015-361-225	PD717	1192/682	CARIBOO CONSOLIDATED MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	18.66	OGR (5%)
015-361-233	PD716	1191/682	CARIBOO CONSOLIDATED MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	30.10	OGR (5%)
015-361-276	PD715	1190/682	CARIBOO CONSOLIDATED MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	45.17	OGR (5%)
015-361-322	PD714	1189/682	CARIBOO CONSOLIDATED MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	31.76	OGR (5%)
015-361-373	PD713	1188/682	CARIBOO CONSOLIDATED MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	7.02	OGR (5%)

PID	Title #	CG #	Original grantee	Fee simple owner	UNDERSURFACE OWNER	Area (Acres)	Royalty
015-361-403	PD712	1187/682	CARIBOO CONSOLIDATED MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	37.62	OGR (5%)
015-307-425	PC58826	3302/504	CHARLES JOHN SEYMOUR BAKER	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.21	OGR (5%), Franco Nevada (3%)
015-307-000	PC58825	3301/504	CHARLES JOHN SEYMOUR BAKER	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.14	OGR (5%), Franco Nevada (3%)
015-307-751	PC58829	3300/503	CHARLES JOHN SEYMOUR BAKER	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.30	OGR (5%), Franco Nevada (3%)
015-307-743	PC58828	3299/503	CHARLES JOHN SEYMOUR BAKER	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.19	OGR (5%), Franco Nevada (3%)
015-307-727	PC58827	3298/503	CHARLES JOHN SEYMOUR BAKER	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	48.92	OGR (5%), Franco Nevada (3%)
006-411-215	Y6523	2188/792	DALBY B. MORKILL	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	43.54	OGR (5%)
006-411-193	Y6522	2187/792	DALBY B. MORKILL	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	44.16	OGR (5%)
006-411-070	Y6521	2186/792	DALBY B. MORKILL	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	49.76	OGR (5%)
006-410-987	Y6520	2185/792	DALBY B. MORKILL	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	27.63	OGR (5%)
024-954-527	FB488576	3417/306	FRANK W. KIBBEE	BARKERVILLE GOLD MINES LTD.	BARKERVILLE GOLD MINES LTD.	2.56	OGR (5%)
015-939-375	PD15662	9497/665	FREDERICK JAMES TREGILLUS	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA C/O MINISTER	BARKERVILLE GOLD MINES LTD.	39.34	OGR (5%)

PID	Title #	CG #	Original grantee	Fee simple owner	UNDERSURFACE OWNER	Area (Acres)	Royalty
				RESPONSIBLE FOR THE HERITAGE CONSERVATION ACT			
015-939-324	PD15661	9497/665	FREDERICK JAMES TREGILLUS	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA C/O MINISTER RESPONSIBLE FOR THE HERITAGE CONSERVATION ACT	BARKERVILLE GOLD MINES LTD.	39.29	OGR (5%)
015-292-312	11510M	9496/665	FREDERICK JAMES TREGILLUS	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	35.78	OGR (5%)
015-939-197	11509M	9495/665	FREDERICK JAMES TREGILLUS	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	49.08	OGR (5%)
015-939-278	PD15660	9494/665	FREDERICK JAMES TREGILLUS	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA C/O MINISTER RESPONSIBLE FOR THE HERITAGE CONSERVATION ACT	BARKERVILLE GOLD MINES LTD.	29.90	OGR (5%)
015-939-251	PD15660	9494/665	FREDERICK JAMES TREGILLUS	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA C/O MINISTER RESPONSIBLE FOR THE HERITAGE CONSERVATION ACT	BARKERVILLE GOLD MINES LTD.	29.82	OGR (5%)
015-939-201	11508M	9493/665	FREDERICK JAMES TREGILLUS	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	31.72	OGR (5%)
015-291-481	12079M	389/674	FREDERICK JAMES TREGILLUS	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	21.68	OGR (5%)
015-291-413	12077M	388/674	FREDERICK JAMES TREGILLUS	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	33.15	OGR (5%)
015-291-391	12076M	387/674	FREDERICK JAMES TREGILLUS	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	31.39	OGR (5%)
015-292-509	12075M	386/674	FREDERICK JAMES TREGILLUS	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA C/O MINISTER	BARKERVILLE GOLD MINES LTD.	47.11	OGR (5%)

PID	Title #	CG #	Original grantee	Fee simple owner	UNDERSURFACE OWNER	Area (Acres)	Royalty
				RESPONSIBLE FOR THE HERITAGE CONSERVATION ACT			
015-289-681	CA4347921	385/674	FREDERICK JAMES TREGILLUS	BARKERVILLE GOLD MINES LTD.	BARKERVILLE GOLD MINES LTD.	20.22	OGR (5%)
013-614-941	PC17398	2882/799	FREDERICK JAMES TREGILLUS	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA MINISTER RESPONSIBLE FOR THE HERITAGE CONSERVATION ACT	BARKERVILLE GOLD MINES LTD.	26.14	OGR (5%)
013-724-541	PC18149	216/673	FREDERICK JAMES TREGILLUS	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA C/O MINISTER RESPONSIBLE FOR THE HERITAGE CONSERVATION ACT	BARKERVILLE GOLD MINES LTD.	47.78	OGR (5%)
013-724-631	PC18148	215/673	FREDERICK JAMES TREGILLUS	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	29.08	OGR (5%)
015-292-304	11956M	214/673	FREDERICK JAMES TREGILLUS	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA C/O MINISTER RESPONSIBLE FOR THE HERITAGE CONSERVATION ACT	BARKERVILLE GOLD MINES LTD.	35.46	OGR (5%)
015-939-243	PD15664	9498/665	FREDERICK JAMES TREGILLUS AND ALBERT JAMES BLAIR	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA MINISTER RESPONSIBLE FOR THE HERITAGE CONSERVATION ACT	BARKERVILLE GOLD MINES LTD.	4.61	OGR (5%)
015-939-235	PD15663	9498/665	FREDERICK JAMES TREGILLUS AND THOMAS ALBERT BLAIR	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA MINISTER RESPONSIBLE FOR THE HERITAGE CONSERVATION ACT	BARKERVILLE GOLD MINES LTD.	4.69	OGR (5%)
015-291-537	12080M	383/674	FREDERICK JAMES TREGILLUS AND THOMAS ALBERT BLAIR	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	2.16	OGR (5%)
015-384-586	12073M	382/674	FREDERICK JAMES TREGILLUS AND THOMAS ALBERT BLAIR	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA MINISTER	BARKERVILLE GOLD MINES LTD.	42.49	OGR (5%)

PID	Title #	CG #	Original grantee	Fee simple owner	UNDERSURFACE OWNER	Area (Acres)	Royalty
				RESPONSIBLE FOR THE HERITAGE CONSERVATION ACT			
004-056-710	CA6623323	1F/34	GEORGE TRUMAN, GEORGE W. ROBINSON, FELIX NEUFELDER, A. COUTTS, JOHN JORDAN, FREDERICK STERITRY AND P. MANETTA	BARKERVILLE GOLD MINES LTD.	BARKERVILLE GOLD MINES LTD.	36.20	OGR (5%)
004-086-872	PT5233, PC16246	20F/34	HILAIRE MOLLEUR, ANGELO PENDOLA, OLIVIER D'ARPENTIGNY AND ALEXANFDER GARANT	BARKERVILLE GOLD MINES LTD.	BARKERVILLE GOLD MINES LTD.	35.91	OGR (5%)
013-724-533	PC18150	8910/760	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	23.80	OGR (5%), Franco Nevada (3%)
015-292-096	19027M	8396/754	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	6.35	OGR (5%), Franco Nevada (3%)
013-699-326	PC17193	8323/654	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	14.16	OGR (5%)
015-292-045	12368M	790/678	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	49.17	OGR (5%), Franco Nevada (3%)
015-292-347	9756M	6437/635	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	19.16	OGR (5%), Franco Nevada (3%)
015-292-274	9758M	6436/635	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	43.33	OGR (5%), Franco Nevada (3%)

PID	Title #	CG #	Original grantee	Fee simple owner	UNDERSURFACE OWNER	Area (Acres)	Royalty
015-292-363	9757M	6435/635	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	31.78	OGR (5%), Franco Nevada (3%)
015-342-824	PD349	6434/635	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	49.36	OGR (5%), Franco Nevada (3%)
015-342-778	PD348	6433/635	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	44.60	OGR (5%), Franco Nevada (3%)
013-708-066	PC17251	5989/630	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	15.49	OGR (5%)
013-708-058	PC17250	5988/630	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	19.32	OGR (5%)
013-708-023	PC17249	5988/630	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	19.32	OGR (5%)
013-707-965	PC17248	5987/630	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	4.63	OGR (5%)
013-708-210	PC17246	5986/630	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	29.56	OGR (5%)
013-708-198	PC17244	5985/630	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	2.79	OGR (5%)

PID	Title #	CG #	Original grantee	Fee simple owner	UNDERSURFACE OWNER	Area (Acres)	Royalty
013-708-180	PC17243	5984/630	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	46.32	OGR (5%)
013-708-171	PC17242	5984/630	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	46.31	OGR (5%)
013-708-163	PC17241	5983/630	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	44.80	OGR (5%)
013-708-155	PC17240	5983/630	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	44.80	OGR (5%)
013-708-139	PC17239	5982/630	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	32.52	OGR (5%)
017-164-923	PC17236	5981/630	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.68	OGR (5%)
013-708-121	PC17235	5980/630	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	34.76	OGR (5%)
013-708-112	PC17234	5979/630	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	45.11	OGR (5%)
013-708-104	PC17233	5978/630	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	37.95	OGR (5%)

PID	Title #	CG #	Original grantee	Fee simple owner	UNDERSURFACE OWNER	Area (Acres)	Royalty
013-708-091	PC17232	5977/630	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	49.75	OGR (5%)
013-700-791	PC17210	5976/630	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	46.64	OGR (5%)
013-700-758	PC17209	5975/630	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	45.38	OGR (5%)
013-700-740	PC17208	5974/630	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	25.22	OGR (5%)
013-700-731	PC17207	5973/630	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	24.33	OGR (5%)
013-700-715	PC17206	5972/630	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	34.63	OGR (5%)
013-707-906	PC17231	5323/624	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	0.71	OGR (5%)
013-707-850	PC17230	5322/624	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	0.49	OGR (5%)
013-708-236	PC17238	5321/624	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	38.40	OGR (5%)

PID	Title #	CG #	Original grantee	Fee simple owner	UNDERSURFACE OWNER	Area (Acres)	Royalty
013-708-228	PC17237	5320/624	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	38.40	OGR (5%)
013-707-914	PC17247	5320/624	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	35.21	OGR (5%)
013-707-892	PC17229	5319/624	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	4.17	OGR (5%)
013-707-922	PC17228	5318/624	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	26.61	OGR (5%)
013-707-884	PC17227	5317/624	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	38.13	OGR (5%)
013-707-876	PC17226	5316/624	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.11	OGR (5%)
013-708-074	PC17225	5315/624	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	48.22	OGR (5%)
013-707-868	PC17224	5314/624	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.09	OGR (5%)
008-218-803	CA3393918	5313/624 (U), 5763/628 (S)	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	BARKERVILLE GOLD MINES LTD.	BARKERVILLE GOLD MINES LTD.	30.05	OGR (5%)

PID	Title #	CG #	Original grantee	Fee simple owner	UNDERSURFACE OWNER	Area (Acres)	Royalty
005-537-541	CA9850196	5313/624 (U), 5763/628 (S)	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	BARKERVILLE GOLD MINES LTD.	BARKERVILLE GOLD MINES LTD.	1.00	OGR (5%)
013-700-367	PC17223	5312/624	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.65	OGR (5%)
016-016-114	15203M	4609/717	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	13.37	OGR (5%), Franco Nevada (3%)
016-563-051	13460M	2686/697	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA C/O MINISTER RESPONSIBLE FOR THE HERITAGE CONSERVATION ACT	BARKERVILLE GOLD MINES LTD.	18.50	OGR (5%), Franco Nevada (3%)
016-562-895	13459M	2685/697	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	4.83	OGR (5%), Franco Nevada (3%)
015-291-839	13458M	2684/697	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	29.87	OGR (5%), Franco Nevada (3%)
015-343-634	PD456	2683/697	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA MINISTER RESPONSIBLE FOR THE HERITAGE CONSERVATION ACT	BARKERVILLE GOLD MINES LTD.	50.80	OGR (5%), Franco Nevada (3%)
010-422-862	PB12572	2683/697	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA MINISTER RESPONSIBLE FOR THE HERITAGE CONSERVATION ACT	BARKERVILLE GOLD MINES LTD.	50.80	OGR (5%), Franco Nevada (3%)
015-291-812	13456M	2682/697	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.62	OGR (5%), Franco Nevada (3%)

PID	Title #	CG #	Original grantee	Fee simple owner	UNDERSURFACE OWNER	Area (Acres)	Royalty
015-291-804	13455M	2681/697	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	20.29	OGR (5%), Franco Nevada (3%)
015-291-791	13454M	2680/697	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	20.31	OGR (5%), Franco Nevada (3%)
015-291-766	13453M	2679/697	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.65	OGR (5%), Franco Nevada (3%)
015-291-723	13452M	2678/697	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	46.66	OGR (5%), Franco Nevada (3%)
015-291-685	13451M	2677/697	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	48.47	OGR (5%), Franco Nevada (3%)
013-708-201	PC17245	5986/630	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	29.56	OGR (5%)
015-300-226	CA9850174	2099/1091	JAMES THOMAS WATT	BARKERVILLE GOLD MINES LTD.	NONE	1.60	
004-078-632	CA9850189	5F/34	JOHN BOWRON, DANIEL CAREY, ANDREW FLETCHER, WESLEY HALL, WILLIAM JEFFARES, JOHN MCALISTER, DONALD MCEWEN, ARCHIBALD MCNAUGHTON, JOHN MUNROE, ALEXANDER MUNROE AND FELIX NEUFELDER	BARKERVILLE GOLD MINES LTD.	BARKERVILLE GOLD MINES LTD.	47.30	OGR (5%)
004-086-902	PT5234, PC16247	30F/34	JOHN LAUYON, MICHAEL DRISCOLL AND WILLIAM P. WILLIAMS	BARKERVILLE GOLD MINES LTD.	BARKERVILLE GOLD MINES LTD.	5.32	OGR (5%)

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015-038-688	W21719	3268/154	JOHN PINKERTON	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	36.92	OGR (5%)
015-286-649	S28511	3925/510	LAURENT MULLER	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.07	OGR (5%)
005-910-595	Y1636	3922/510	LAURENT MULLER	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA C/O MINISTRY OF LANDS PARKS AND HOUSING	BARKERVILLE GOLD MINES LTD.	0.14	OGR (5%)
005-910-552	Y1635	3922/510	LAURENT MULLER	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA C/O MINISTRY OF LANDS PARKS AND HOUSING	BARKERVILLE GOLD MINES LTD.	0.14	OGR (5%)
005-910-412	Y1634	3922/510	LAURENT MULLER	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA C/O MINISTRY OF LANDS PARKS AND HOUSING	BARKERVILLE GOLD MINES LTD.	0.14	OGR (5%)
005-910-391	Y1633	3922/510	LAURENT MULLER	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA C/O MINISTRY OF LANDS PARKS AND HOUSING	BARKERVILLE GOLD MINES LTD.	0.14	OGR (5%)
005-910-293	Y1632	3922/510	LAURENT MULLER	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA C/O MINISTRY OF LANDS PARKS AND HOUSING	BARKERVILLE GOLD MINES LTD.	0.14	OGR (5%)
005-910-277	Y1631	3922/510	LAURENT MULLER	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA C/O MINISTRY OF LANDS PARKS AND HOUSING	BARKERVILLE GOLD MINES LTD.	0.01	OGR (5%)
005-910-188	Y1630	3922/510	LAURENT MULLER	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA C/O MINISTRY OF LANDS PARKS AND HOUSING	BARKERVILLE GOLD MINES LTD.	0.14	OGR (5%)
005-910-161	Y1629	3922/510	LAURENT MULLER	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA C/O MINISTRY OF LANDS PARKS AND HOUSING	BARKERVILLE GOLD MINES LTD.	0.14	OGR (5%)

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005-910-153	Y1628	3922/510	LAURENT MULLER	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA C/O MINISTRY OF LANDS PARKS AND HOUSING	BARKERVILLE GOLD MINES LTD.	0.14	OGR (5%)
005-910-137	Y1627	3922/510	LAURENT MULLER	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA C/O MINISTRY OF LANDS PARKS AND HOUSING	BARKERVILLE GOLD MINES LTD.	0.04	OGR (5%)
005-910-111	Y1626	3922/510	LAURENT MULLER	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA C/O MINISTRY OF LANDS PARKS AND HOUSING	BARKERVILLE GOLD MINES LTD.	0.14	OGR (5%)
005-910-099	Y1625	3922/510	LAURENT MULLER	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA C/O MINISTRY OF LANDS PARKS AND HOUSING	BARKERVILLE GOLD MINES LTD.	0.14	OGR (5%)
005-910-048	Y1623	3922/510	LAURENT MULLER	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA C/O MINISTRY OF LANDS PARKS AND HOUSING	BARKERVILLE GOLD MINES LTD.	0.14	OGR (5%)
005-910-021	Y1622	3922/510	LAURENT MULLER	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA C/O MINISTRY OF LANDS PARKS AND HOUSING	BARKERVILLE GOLD MINES LTD.	0.14	OGR (5%)
005-909-953	Y1609	3922/510	LAURENT MULLER	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA C/O MINISTRY OF LANDS PARKS AND HOUSING	BARKERVILLE GOLD MINES LTD.	0.14	OGR (5%)
005-909-911	Y1608	3922/510	LAURENT MULLER	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	0.14	OGR (5%)
005-909-881	Y1607	3922/510	LAURENT MULLER	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	0.14	OGR (5%)
005-909-864	Y1606	3922/510	LAURENT MULLER	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA C/O MINISTRY OF LANDS PARKS AND HOUSING	BARKERVILLE GOLD MINES LTD.	0.14	OGR (5%)

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005-909-813	Y1605	3922/510	LAURENT MULLER	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA C/O MINISTRY OF LANDS PARKS AND HOUSING	BARKERVILLE GOLD MINES LTD.	0.14	OGR (5%)
005-890-519	S28504	3922/510	LAURENT MULLER	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA C/O MINISTRY OF LANDS PARKS AND HOUSING	BARKERVILLE GOLD MINES LTD.	0.14	OGR (5%)
005-890-471	S28507	3922/510	LAURENT MULLER	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA C/O MINISTRY OF LANDS PARKS AND HOUSING	BARKERVILLE GOLD MINES LTD.	0.14	OGR (5%)
004-056-752	CA4347922	32F/34	LEWIS WINTRIP	BARKERVILLE GOLD MINES LTD.	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA, MINISTER RESPONSIBLE FOR THE HERITAGE CONSERVATION ACT	82.23	
026-025-906	BB1991819	2517/101	MARY AGNES MASON (TRANSFERRED TO LOWHEE MINING CO. LTD.)	BARKERVILLE GOLD MINES LTD.	BARKERVILLE GOLD MINES LTD.	0.38	OGR (5%)
024-317-497	PS24541	2517/101	MARY AGNES MASON (TRANSFERRED TO LOWHEE MINING CO. LTD.)	STEPHEN EMANUEL MARKS, CONSULTANT	BARKERVILLE GOLD MINES LTD.	0.44	OGR (5%)
019-209-495	PJ13778	2517/101	MARY AGNES MASON (TRANSFERRED TO LOWHEE MINING CO. LTD.)	ROYAL CANADIAN LEGION (PACIFIC) WELLS AND DISTRICT #128	BARKERVILLE GOLD MINES LTD.	0.37	OGR (5%)
019-184-204	PT15157	2517/101	MARY AGNES MASON (TRANSFERRED TO LOWHEE MINING CO. LTD.)	LEVERNE HELEN RAY, BUSINESSWOMAN	BARKERVILLE GOLD MINES LTD.	0.24	OGR (5%)
019-113-854	CA6881775	2517/101	MARY AGNES MASON (TRANSFERRED TO LOWHEE MINING CO. LTD.)	BARKERVILLE GOLD MINES LTD.	BARKERVILLE GOLD MINES LTD.	0.08	OGR (5%)

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019-065-612	PH49893	2517/101	MARY AGNES MASON (TRANSFERRED TO LOWHEE MINING CO. LTD.)	STEPAN BAZIUK, RETIRED & ROSE ELIZABETH BAZIUK, HOMEMAKER AS JOINT TENANTS	BARKERVILLE GOLD MINES LTD.	0.11	OGR (5%)
017-589-517	CA9850206	2517/101	MARY AGNES MASON (TRANSFERRED TO LOWHEE MINING CO. LTD.)	BARKERVILLE GOLD MINES LTD.	BARKERVILLE GOLD MINES LTD.	4.94	OGR (5%)
017-589-509	CA3473810	2517/101	MARY AGNES MASON (TRANSFERRED TO LOWHEE MINING CO. LTD.)	NUGGET HILL RV PARK LTD.	BARKERVILLE GOLD MINES LTD.	4.85	OGR (5%)
016-171-985	CA6255616	2517/101	MARY AGNES MASON (TRANSFERRED TO LOWHEE MINING CO. LTD.)	CASEY LEIGH ROBINSON, EARLY CHILDHOOD EDUCATOR & GABRIEL LAKOTA FOURCHALK, RESTAURANT MANAGER AS JOINT TENANTS	BARKERVILLE GOLD MINES LTD.	0.19	OGR (5%)
015-389-481	PT3046	2517/101	MARY AGNES MASON (TRANSFERRED TO LOWHEE MINING CO. LTD.)	GARY STEPHEN CHAMPAGNE, WELLS ADMINISTRATOR & LINDA MAE CHAMPAGNE, PRE SCHOOL TEACHER AS JOINT TENANTS	BARKERVILLE GOLD MINES LTD.	0.19	OGR (5%)
014-997-347	CA4769286	2517/101	MARY AGNES MASON (TRANSFERRED TO LOWHEE MINING CO. LTD.)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	43.60	OGR (5%)
014-385-732	CA3322183	2517/101	MARY AGNES MASON (TRANSFERRED TO LOWHEE MINING CO. LTD.)	BARKERVILLE GOLD MINES LTD.	BARKERVILLE GOLD MINES LTD.	6.58	OGR (5%)
014-018-853	M35643	2517/101	MARY AGNES MASON (TRANSFERRED TO LOWHEE MINING CO. LTD.)	RICHARD ALLAN CARPENTER, LANDSCAPER (FORFEITED TO CROWN)	BARKERVILLE GOLD MINES LTD.	0.02	OGR (5%)
014-018-829	M35643	2517/101	MARY AGNES MASON (TRANSFERRED TO LOWHEE MINING CO. LTD.)	RICHARD ALLAN CARPENTER, LANDSCAPER (FORFEITED TO CROWN	BARKERVILLE GOLD MINES LTD.	0.11	OGR (5%)

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014-004-721	19939M	2517/101	MARY AGNES MASON (TRANSFERRED TO LOWHEE MINING CO. LTD.)	NICHOLAS BIRD (FORFEITED TO CROWN)	BARKERVILLE GOLD MINES LTD.	0.09	OGR (5%)
013-853-503	PK41041	2517/101	MARY AGNES MASON (TRANSFERRED TO LOWHEE MINING CO. LTD.)	DORTHELO M. WHITE (FORFEITED TO CROWN)	BARKERVILLE GOLD MINES LTD.	0.10	OGR (5%)
013-853-481	PK41040	2517/101	MARY AGNES MASON (TRANSFERRED TO LOWHEE MINING CO. LTD.)	DORTHELO M. WHITE (FORFEITED TO CROWN)	BARKERVILLE GOLD MINES LTD.	0.19	OGR (5%)
013-818-597	PT14019	2517/101	MARY AGNES MASON (TRANSFERRED TO LOWHEE MINING CO. LTD.)	DOROTHY KATHLEEN JACOBSON, RETIRED	BARKERVILLE GOLD MINES LTD.	0.02	OGR (5%)
013-818-520	CA7037415	2517/101	MARY AGNES MASON (TRANSFERRED TO LOWHEE MINING CO. LTD.)	ALEXANDRA ROSEANN CLARKE, GEOTECHNICIAN	BARKERVILLE GOLD MINES LTD.	0.11	OGR (5%)
013-817-906	11837M	2517/101	MARY AGNES MASON (TRANSFERRED TO LOWHEE MINING CO. LTD.)	OLIVE ESTHER BRADSHAW (FORFEITED TO CROWN)	BARKERVILLE GOLD MINES LTD.	0.09	OGR (5%)
013-817-884	23986M	2517/101	MARY AGNES MASON (TRANSFERRED TO LOWHEE MINING CO. LTD.)	ALBERT JOHN TAYLOR (FORFEITED TO CROWN)	BARKERVILLE GOLD MINES LTD.	0.06	OGR (5%)
013-817-876	37991M	2517/101	MARY AGNES MASON (TRANSFERRED TO LOWHEE MINING CO. LTD.)	WILLIAM ALFRED FOSTER (FORFEITED TO CROWN)	BARKERVILLE GOLD MINES LTD.	0.08	OGR (5%)
013-817-868	24646M	2517/101	MARY AGNES MASON (TRANSFERRED TO LOWHEE MINING CO. LTD.)	EDWARD KENNETH INCH (FORFEITED TO CROWN)	BARKERVILLE GOLD MINES LTD.	0.11	OGR (5%)

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013-814-877	PH38121	2517/101	MARY AGNES MASON (TRANSFERRED TO LOWHEE MINING CO. LTD.)	MARGARET KEIBEL, REGISTERED NURSE	BARKERVILLE GOLD MINES LTD.	0.19	OGR (5%)
013-814-818	CA7841104	2517/101	MARY AGNES MASON (TRANSFERRED TO LOWHEE MINING CO. LTD.)	PATRICIA DONNA ANGELA RUMMEL, SALES CLERK &BRIAN DOUGLAS RUMMEL, RETAIL STORE OWNER AS JOINT TENANTS	BARKERVILLE GOLD MINES LTD.	0.19	OGR (5%)
013-814-796	CA49803	2517/101	MARY AGNES MASON (TRANSFERRED TO LOWHEE MINING CO. LTD.)	DANIEL PETER UNGER, ELECTRICIAN	BARKERVILLE GOLD MINES LTD.	0.29	OGR (5%)
013-814-745	CA7592468	2517/101	MARY AGNES MASON (TRANSFERRED TO LOWHEE MINING CO. LTD.)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA AS REPRESENTED BY THE MINISTER OF CITIZENS' SERVICES	BARKERVILLE GOLD MINES LTD.	1.65	OGR (5%)
013-814-478	U6752	2517/101	MARY AGNES MASON (TRANSFERRED TO LOWHEE MINING CO. LTD.)	HOWARD JAMES WEBER, RETIRED & HELEN MOLLAT WEBER, HIS WIFE AS JOINT TENANTS (FORFEITED)	BARKERVILLE GOLD MINES LTD.	0.08	OGR (5%)
013-814-338	CA3562944	2517/101	MARY AGNES MASON (TRANSFERRED TO LOWHEE MINING CO. LTD.)	NORTHWOODS INN RESTAURANT LTD.	BARKERVILLE GOLD MINES LTD.	0.11	OGR (5%)
013-814-125	PD43489	2517/101	MARY AGNES MASON (TRANSFERRED TO LOWHEE MINING CO. LTD.)	KATHLEEN FRANCIS WILLIAMS, ADMINISTRATIVE CLERK (FORFEITED TO CROWN)	BARKERVILLE GOLD MINES LTD.	0.10	OGR (5%)
013-807-137	S28189	2517/101	MARY AGNES MASON (TRANSFERRED TO LOWHEE MINING CO. LTD.)	VIRGINIA BARREDO FERRIER, MANAGERESS (FORFEITED TO CROWN)	BARKERVILLE GOLD MINES LTD.	0.33	OGR (5%)
013-789-759	PM17115	2517/101	MARY AGNES MASON (TRANSFERRED TO LOWHEE MINING CO. LTD.)	LEO NOEL LANDRIAULT, TRUCK DRIVER	BARKERVILLE GOLD MINES LTD.	0.10	OGR (5%)

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013-789-741	CA6852256	2517/101	MARY AGNES MASON (TRANSFERRED TO LOWHEE MINING CO. LTD.)	CASEY LEIGH ROBINSON, EARLY CHILDHOOD EDUCATOR	BARKERVILLE GOLD MINES LTD.	0.19	OGR (5%)
013-789-708	BA114340	2517/101	MARY AGNES MASON (TRANSFERRED TO LOWHEE MINING CO. LTD.)	LAUREEN CARRIE LIVINGSTONE, SCREENING OFFICER	BARKERVILLE GOLD MINES LTD.	0.10	OGR (5%)
013-789-651	BA127519	2517/101	MARY AGNES MASON (TRANSFERRED TO LOWHEE MINING CO. LTD.)	LAUREEN CARRIE LIVINGSTONE, SCREENING OFFICER	BARKERVILLE GOLD MINES LTD.	0.11	OGR (5%)
013-215-469	PP3825	2517/101	MARY AGNES MASON (TRANSFERRED TO LOWHEE MINING CO. LTD.)	BC TRANSPORTATION FINANCING AUTHORITY	BARKERVILLE GOLD MINES LTD.	0.33	OGR (5%)
013-100-572	CA6670546	2517/101	MARY AGNES MASON (TRANSFERRED TO LOWHEE MINING CO. LTD.)	BARKERVILLE GOLD MINES LTD.	BARKERVILLE GOLD MINES LTD. / THE CROWN IN RIGHT OF BRITISH COLUMBIA	0.16	OGR (5%)
011-186-330	CA1607931	2517/101	MARY AGNES MASON (TRANSFERRED TO LOWHEE MINING CO. LTD.)	JANET RUBY SAMSON, HOMEMAKER	BARKERVILLE GOLD MINES LTD.	0.10	OGR (5%)
009-497-463	CA6851547	2517/101	MARY AGNES MASON (TRANSFERRED TO LOWHEE MINING CO. LTD.)	BARKERVILLE GOLD MINES LTD.	BARKERVILLE GOLD MINES LTD.	0.29	OGR (5%)
008-942-994	BB1970531	2517/101	MARY AGNES MASON (TRANSFERRED TO LOWHEE MINING CO. LTD.)	BRITISH COLUMBIA BUILDINGS CORPORATION	BARKERVILLE GOLD MINES LTD.	1.29	OGR (5%)
008-466-386	BB3013092	2517/101	MARY AGNES MASON (TRANSFERRED TO LOWHEE MINING CO. LTD.)	HER MAJESTY THE QUEEN IN RIGHT OF CANADA AS REPRESENTED BY THE MINISTER OF PUBLIC SAFETY AND EMERGENCY PREPAREDNESS C/O ROYAL CANADIAN MOUNTED POLICE	BARKERVILLE GOLD MINES LTD.	0.24	OGR (5%)

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008-447-756	CA1598791	2517/101	MARY AGNES MASON (TRANSFERRED TO LOWHEE MINING CO. LTD.)	DARYL TERENCE BRACKETT, MILLWORKER & SURESH MITTER KERAM, STEAM PLANT OPERATOR	BARKERVILLE GOLD MINES LTD.	5.02	OGR (5%)
008-425-817	PC11498	2517/101	MARY AGNES MASON (TRANSFERRED TO LOWHEE MINING CO. LTD.)	VIRGINIA BARREDO FERRIER, PROPRIETOR (FORFEITED TO CROWN)	BARKERVILLE GOLD MINES LTD.	0.30	OGR (5%)
008-421-595	PB52550	2517/101	MARY AGNES MASON (TRANSFERRED TO LOWHEE MINING CO. LTD.)	VIRGINIA BARREDO FERRIER, PROPRIETOR (FORFEITED TO CROWN)	BARKERVILLE GOLD MINES LTD.	0.05	OGR (5%)
007-932-073	PK30489	2517/101	MARY AGNES MASON (TRANSFERRED TO LOWHEE MINING CO. LTD.)	LARMA HOLDINGS LTD.	BARKERVILLE GOLD MINES LTD.	1.34	OGR (5%)
007-486-421	CA3401899	2517/101	MARY AGNES MASON (TRANSFERRED TO LOWHEE MINING CO. LTD.)	PEGGY-ANNE LILLIAN CROTEAU, BUSINESSWOMAN & MARCEL CHARLES FENTON GUIGUET, MACHINE OPERATOR AS JOINT TENANTS	BARKERVILLE GOLD MINES LTD.	0.10	OGR (5%)
007-486-405	CA3401898	2517/101	MARY AGNES MASON (TRANSFERRED TO LOWHEE MINING CO. LTD.)	PEGGY-ANNE LILLIAN CROTEAU, BUSINESSWOMAN & MARCEL CHARLES FENTON GUIGUET, MACHINE OPERATOR AS JOINT TENANTS	BARKERVILLE GOLD MINES LTD.	0.19	OGR (5%)
005-363-900	PP3703	2517/101	MARY AGNES MASON (TRANSFERRED TO LOWHEE MINING CO. LTD.)	BC TRANSPORTATION FINANCING AUTHORITY	BARKERVILLE GOLD MINES LTD.	0.06	OGR (5%)
004-956-460	X29283	2517/101	MARY AGNES MASON (TRANSFERRED TO LOWHEE MINING CO. LTD.)	HERBERT WALTER KIEBEL, CONTRACTOR (FORFEITED TO CROWN)	BARKERVILLE GOLD MINES LTD.	0.10	OGR (5%)
004-956-451	X29282	2517/101	MARY AGNES MASON (TRANSFERRED TO LOWHEE MINING CO. LTD.)	HERBERT WALTER KIEBEL, CONTRACTOR (FORFEITED TO CROWN)	BARKERVILLE GOLD MINES LTD.	0.10	OGR (5%)

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004-933-206	CA71100	2517/101	MARY AGNES MASON (TRANSFERRED TO LOWHEE MINING CO. LTD.)	CLIFFORD CECIL COLLINS, SMALL ENGINE PROGRAM COORDINATOR & NORMA JEAN COLLINS, COMMUNITY SUPPORT WORKER AS JOINT TENANTS	BARKERVILLE GOLD MINES LTD.	1.88	OGR (5%)
004-426-142	CA879575	2517/101	MARY AGNES MASON (TRANSFERRED TO LOWHEE MINING CO. LTD.)	MARILYN LEIGH TURNER, BUSINESSWOMAN	BARKERVILLE GOLD MINES LTD.	0.19	OGR (5%)
003-902-170	PD14585	2517/101	MARY AGNES MASON (TRANSFERRED TO LOWHEE MINING CO. LTD.)	NORTHWOODS INN RESTAURANT LTD.	BARKERVILLE GOLD MINES LTD.	0.38	OGR (5%)
003-815-986	BB658631	2517/101	MARY AGNES MASON (TRANSFERRED TO LOWHEE MINING CO. LTD.)	ROBERT VERNON ST. JOHN, BUSINESSMAN	BARKERVILLE GOLD MINES LTD.	0.16	OGR (5%)
005-076-081	CA3473811	2517/101, 4215/55	MARY AGNES MASON (TRANSFERRED TO LOWHEE MINING CO. LTD.), ADA JANE BRUCE MASON	NUGGET HILL RV PARK LTD.	BARKERVILLE GOLD MINES LTD.	0.19	OGR (5%)
004-078-560	CA332187	42F/34	PHILIP RICHARD TAYLOR LEACY AND JOHN BUTTS	BARKERVILLE GOLD MINES LTD.	BARKERVILLE GOLD MINES LTD.	10.00	OGR (5%)
004-078-608	CA9850190	35F/34	ROBERT DRIUKALL	BARKERVILLE GOLD MINES LTD.	BARKERVILLE GOLD MINES LTD.	58.00	OGR (5%)
004-087-054	PT5232, PC16245	39F/34	ROBERT JOHUS AND GEORGE HENRY JOHUS	BARKERVILLE GOLD MINES LTD.	BARKERVILLE GOLD MINES LTD.	3.78	OGR (5%)
008-801-908	CA9850181	35/36 (B), 2672/597 (U)	THE BRITISH COLUMBIA MILLING AND MINING COMPANY (LIMITED)	BARKERVILLE GOLD MINES LTD.	BARKERVILLE GOLD MINES LTD.	20.60	OGR (5%)
014-982-013	CA3322181	35/36	THE BRITISH COLUMBIA MILLING AND MINING COMPANY (LIMITED)	BARKERVILLE GOLD MINES LTD.	BARKERVILLE GOLD MINES LTD.	20.00	OGR (5%)
015-306-992	PC58824	126/47	THE BRITISH COLUMBIA MILLING AND MINING COMPANY (LIMITED)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	20.53	OGR (5%), Franco Nevada (3%)

PID	Title #	CG #	Original grantee	Fee simple owner	UNDERSURFACE OWNER	Area (Acres)	Royalty
014-385-759	CA9850179	4614/617 (S), 35/36 (B)	THE BRITISH COLUMBIA MILLING AND MINING COMPANY LIMITED (CG 36/36); CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY) (CG 4614/617)	BARKERVILLE GOLD MINES LTD.	BARKERVILLE GOLD MINES LTD.	19.88	OGR (5%)
005-890-578	S28501	211/673	THE CARIBOO GOLD QUARTZ MINING COMPANY (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA C/O MINISTRY OF LANDS PARKS AND HOUSING	BARKERVILLE GOLD MINES LTD.	0.65	OGR (5%)
015-134-954	W21843	9418/665	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	12.19	OGR (5%)
015-134-971	W21841	9417/665	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.49	OGR (5%)
015-135-021	W21838	9416/665	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	37.87	OGR (5%)
015-135-004	W21840	9415/665	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	29.10	OGR (5%)
015-135-039	W21854	9414/665	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	30.50	OGR (5%)
015-134-792	W21849	9413/665	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.76	OGR (5%)
015-133-991	W21853	9412/665	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.65	OGR (5%)

PID	Title #	CG #	Original grantee	Fee simple owner	UNDERSURFACE OWNER	Area (Acres)	Royalty
015-134-806	W21842	9411/665	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	0.84	OGR (5%)
015-135-055	W21837	6969/640	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	0.03	OGR (5%)
015-152-049	PC54227	6968/640	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	34.57	OGR (5%)
015-151-450	PC54222	6967/640	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA C/O MINISTER RESPONSIBLE FOR THE HERITAGE CONSERVATION ACT	BARKERVILLE GOLD MINES LTD.	51.65	OGR (5%)
015-151-417	PC54221	6966/640	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA C/O MINISTER RESPONSIBLE FOR THE HERITAGE CONSERVATION ACT	BARKERVILLE GOLD MINES LTD.	32.43	OGR (5%)
015-151-301	PC54220	6965/640	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	49.74	OGR (5%)
015-151-174	PC54219	6964/640	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA C/O MINISTER RESPONSIBLE FOR THE HERITAGE CONSERVATION ACT	BARKERVILLE GOLD MINES LTD.	49.59	OGR (5%)
015-151-093	PC54218	6963/640	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA C/O MINISTER RESPONSIBLE FOR THE HERITAGE CONSERVATION ACT	BARKERVILLE GOLD MINES LTD.	47.52	OGR (5%)

PID	Title #	CG #	Original grantee	Fee simple owner	UNDERSURFACE OWNER	Area (Acres)	Royalty
015-151-999	PC54226	6962/640	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.66	OGR (5%)
015-151-930	PC54225	6961/640	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	19.96	OGR (5%)
015-151-905	PC54224	6960/640	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	43.99	OGR (5%)
015-134-911	W21839	6959/640	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	9.33	OGR (5%)
015-134-008	W21852	6958/640	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	12.65	OGR (5%)
015-151-859	PC54223	6957/640	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.04	OGR (5%)
015-133-702	W21889	6802/639	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	48.16	OGR (5%)
015-151-026	PC54212	6801/639	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.62	OGR (5%)
015-151-018	PC54211	6800/638	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.65	OGR (5%)

PID	Title #	CG #	Original grantee	Fee simple owner	UNDERSURFACE OWNER	Area (Acres)	Royalty
015-151-000	PC54210	6799/638	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	40.99	OGR (5%)
015-150-640	PC54209	6798/638	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.65	OGR (5%)
015-151-794	PC54232	6797/638	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.66	OGR (5%)
015-151-727	PC54231	6796/638	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.60	OGR (5%)
015-151-590	PC54229	6795/638	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	21.11	OGR (5%)
015-151-557	PC54228	6794/638	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	36.70	OGR (5%)
015-150-470	PC54208	6793/638	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA C/O MINISTER RESPONSIBLE FOR THE HERITAGE CONSERVATION ACT	BARKERVILLE GOLD MINES LTD.	49.59	OGR (5%)
015-152-405	PC54217	6792/638	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	39.16	OGR (5%)
015-152-367	PC54216	6791/638	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	37.01	OGR (5%)

PID	Title #	CG #	Original grantee	Fee simple owner	UNDERSURFACE OWNER	Area (Acres)	Royalty
015-152-341	PC54215	6790/638	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.58	OGR (5%)
015-152-294	PC54214	6789/638	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.65	OGR (5%)
015-152-103	PC54213	6788/638	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	49.59	OGR (5%)
015-151-697	PC54230	6712/638	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	17.73	OGR (5%)
013-699-563	PC17201	6527/636	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	38.89	OGR (5%)
013-699-539	PC17200	6218/633	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.50	OGR (5%)
013-699-491	PC17199	6217/633	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.65	OGR (5%)
013-699-440	PC17198	6216/633	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.65	OGR (5%)
013-699-415	PC17197	6215/633	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	31.67	OGR (5%)

PID	Title #	CG #	Original grantee	Fee simple owner	UNDERSURFACE OWNER	Area (Acres)	Royalty
013-699-393	PC17196	6214/633	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	40.02	OGR (5%)
013-699-385	PC17195	6213/633	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	43.95	OGR (5%)
013-699-369	PC17194	6212/633	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	35.94	OGR (5%)
015-287-131	U40874	6211/633	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	20.90	OGR (5%)
013-699-202	PC17190	6210/633	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	2.83	OGR (5%)
013-699-181	PC17189	6209/633	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	41.34	OGR (5%)
013-699-172	PC17205	6208/633	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	42.00	OGR (5%)
013-699-148	PC17188	6207/633	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	50.34	OGR (5%)
008-222-762	PD44700	6206/633, 5313/624 (U), 5763/628 (S)	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	WELLS HISTORICAL SOCIETY	BARKERVILLE GOLD MINES LTD.	0.23	OGR (5%)

PID	Title #	CG #	Original grantee	Fee simple owner	UNDERSURFACE OWNER	Area (Acres)	Royalty
013-699-288	PC17192	5448/625	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	9.78	OGR (5%)
015-193-845	U40887	5447/625	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.15	OGR (5%)
015-193-934	U40886	5446/625	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	44.89	OGR (5%)
015-193-942	U40885	5445/625	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	2.90	OGR (5%)
015-193-951	U40884	5444/625	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	39.80	OGR (5%)
015-193-969	U40883	5443/625	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	34.46	OGR (5%)
015-193-977	U40882	5442/625	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	35.77	OGR (5%)
015-193-985	U40881	5441/625	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	44.59	OGR (5%)
015-194-027	U40880	5440/625	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.33	OGR (5%)

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014-385-686	CA9850193	5439/625	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	BARKERVILLE GOLD MINES LTD.	BARKERVILLE GOLD MINES LTD.	23.02	OGR (5%)
015-194-116	U40879	5438/625	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	34.34	OGR (5%)
015-194-141	U40875	5437/625	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	32.09	OGR (5%)
014-385-643	CA3322188	5436/625	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	BARKERVILLE GOLD MINES LTD.	BARKERVILLE GOLD MINES LTD.	49.41	OGR (5%)
015-194-167	U40878	5435/625	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.65	OGR (5%)
015-194-183	U40877	5434/625	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	22.05	OGR (5%)
016-292-987	PD30176	5433/625	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	0.12	OGR (5%)
015-282-155	15499M	4883/719	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	0.56	OGR (5%)
013-724-509	PC18151	4882/719	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	0.30	OGR (5%)

PID	Title #	CG #	Original grantee	Fee simple owner	UNDERSURFACE OWNER	Area (Acres)	Royalty
015-282-147	15497M	4881/719	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	0.17	OGR (5%)
015-282-104	15496M	4880/719	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA C/O MINISTER RESPONSIBLE FOR THE HERITAGE CONSERVATION ACT	BARKERVILLE GOLD MINES LTD.	0.23	OGR (5%)
015-282-082	15495M	4879/719	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA C/O MINISTER RESPONSIBLE FOR THE HERITAGE CONSERVATION ACT	BARKERVILLE GOLD MINES LTD.	4.91	OGR (5%)
015-282-074	15494M	4878/719	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	0.05	OGR (5%)
015-289-800	W21851	211/673	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	16.49	OGR (5%)
014-385-741	CA3322182	535/92	THE ORIOLE SYNDICATE LIMITED	BARKERVILLE GOLD MINES LTD.	BARKERVILLE GOLD MINES LTD.	42.42	OGR (5%)
015-307-654	PC58844	2088/130	THE ORIOLE SYNDICATE LIMITED	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	29.87	OGR (5%)
015-307-662	PC58845	2087/130	THE ORIOLE SYNDICATE LIMITED	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	47.59	OGR (5%)
015-307-603	PC58843	2085/130	THE ORIOLE SYNDICATE LIMITED	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	49.63	OGR (5%)
015-291-448	12078M	384/674	THOMAS ALBERT BLAIR	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA C/O MINISTER RESPONSIBLE FOR THE HERITAGE CONSERVATION ACT	BARKERVILLE GOLD MINES LTD.	37.21	OGR (5%)
004-056-787	CA4347919	4B/35	UNKNOWN (PRE-TANTALIS)	BARKERVILLE GOLD MINES LTD.	BARKERVILLE GOLD MINES LTD.	10.00	OGR (5%)

PID	Title #	CG #	Original grantee	Fee simple owner	UNDERSURFACE OWNER	Area (Acres)	Royalty
004-056-582	BB1960681	41F/34	UNKNOWN (PRE-TANTALIS)	BARKERVILLE GOLD MINES LTD.	BARKERVILLE GOLD MINES LTD.	13.81	OGR (5%), Franco Nevada (3%)
004-086-627	CA9850166	2B/35	UNKNOWN (PRE-TANTALIS)	BARKERVILLE GOLD MINES LTD.	NONE ON TITLE (UNDERSURFACE RIGHTS GRANTED GMA 1873)	23.00	
004-056-736	CA6623292	1B/35	UNKNOWN (PRE-TANTALIS)	BARKERVILLE GOLD MINES LTD.	BARKERVILLE GOLD MINES LTD.	12.00	OGR (5%)
007-794-037	CA3322178	2460/595	WAYSIDE CONSOLOIDATED GOLD MINES (NON-PERSONAL LIABILITY)	BARKERVILLE GOLD MINES LTD. & AMAZON PETROLEUM CORP.	NONE	33.73	
007-794-029	CA3322177	1245/583 (U), 6228/633(S)	WAYSIDE CONSOLOIDATED GOLD MINES (NON-PERSONAL LIABILITY)	BARKERVILLE GOLD MINES LTD. & AMAZON PETROLEUM CORP.	NONE	51.65	
015-329-437	PD39	6295/633	WILLIAM A. SIMKINS	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.16	OGR (5%), Franco Nevada (3%)
015-329-411	PD38	6294/633	WILLIAM A. SIMKINS	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	0.50	OGR (5%), Franco Nevada (3%)
015-329-402	PD37	6293/633	WILLIAM A. SIMKINS	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	22.40	OGR (5%), Franco Nevada (3%)
015-329-399	PD36	6292/633	WILLIAM A. SIMKINS	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	25.07	OGR (5%), Franco Nevada (3%)
015-329-381	PD35	6291/633	WILLIAM A. SIMKINS	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	18.93	OGR (5%), Franco Nevada (3%)
015-329-372	PD34	6290/633	WILLIAM A. SIMKINS	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	39.78	OGR (5%), Franco Nevada (3%)

PID	Title #	CG #	Original grantee	Fee simple owner	UNDERSURFACE OWNER	Area (Acres)	Royalty
015-329-356	PD33	6289/633	WILLIAM A. SIMKINS	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	11.32	OGR (5%), Franco Nevada (3%)
015-329-330	PD32	6288/633	WILLIAM A. SIMKINS	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.52	OGR (5%), Franco Nevada (3%)
015-329-313	PD31	6287/633	WILLIAM A. SIMKINS	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.65	OGR (5%), Franco Nevada (3%)
004-078-543	CA3322186	2F/34	WILLIAM ANDREW MEACHAM AND ITHIEL BLAKE MASON	BARKERVILLE GOLD MINES LTD.	BARKERVILLE GOLD MINES LTD.	25.26	OGR (5%)
004-078-578	CA9850168	17F/34	WILLIAM BOSWELL STEELE, THOMAS BELL, ANGELO PENDOLA, PETER MANETTA, JOSEPH HUOT DE ST. LAURENT, WILLIAM H. THOMPSON, OLIVIER D'ARPENTIGNY, NICOLAS CUNIO, JAMES BOYCE, JOHN MCLEAN, ANGUS MCPHERSON AND ISAAC BIRCH FISHER	BARKERVILLE GOLD MINES LTD. & GOLDEN CARIBOO RESOURCES LTD.	NONE ON TITLE (UNDERSURFACE RIGHTS GRANTED GMA 1873)	125.00	
004-087-097	PT5235, PC16248	38F/34	WILLIAM SAUDERS AND EDWARD COLLINS NEUFELDER	BARKERVILLE GOLD MINES LTD.	BARKERVILLE GOLD MINES LTD.	3.18	OGR (5%)
013-614-959	24187M	213/673 (U), 2882/799 (S)	WILLIAMS CREEK GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	WILLIAMS CREEK GOLD QUARTZ MINING CO. LIMITED (FORFEITED TO CROWN L35148)	BARKERVILLE GOLD MINES LTD.	25.99	OGR (5%)