# A Mineral Resource Estimate Update for the Seel and Ox Deposits - Ootsa Property, August 2022

**Surge Copper Corp.**
Tahtsa Reach Area
British Columbia, Canada
**Latitude 53◦38’ N**
**Longitude 127◦05’ W**

**Prepared for**
**Surge Copper Corp.**
**By**
**Jacques R. Stacey, P.Geo.**
**James N. Gray, P.Geo.**
**August 5, 2022**

**Effective date for Ox deposit: February 18, 2022**
**Effective date for Seel deposit: February 18, 2022**

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# 1.0 Summary

The Ootsa Property is 100% owned by Surge Copper Corp. (TSX-V: SURG) or its subsidiary Ootsa Lake Resources Ltd. and is located in west-central British Columbia on the south side of Tahtsa Reach, an arm of Ootsa Lake (Figure 1-1). There is good access to the property via a network of well-maintained all season logging roads. The towns of Houston and Smithers, BC are the nearest populated centers that serve as local supply and logistic headquarters to the mineral exploration industry. The Ootsa claims are adjacent to and contiguous with the Huckleberry mine property (currently on Care and Maintenance, August 2022), located 8km northwest of the center of exploration activity on the Ootsa property.

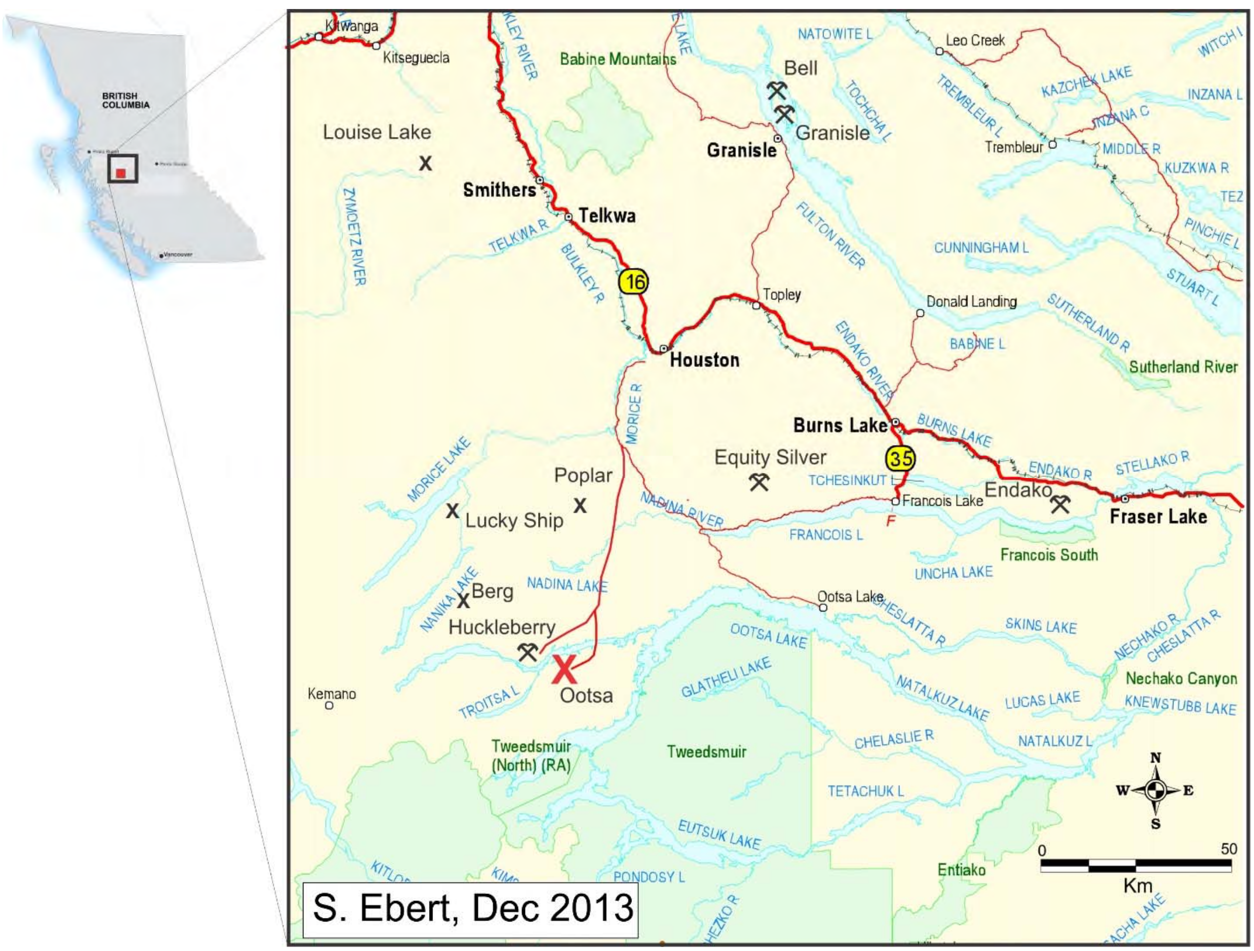



**Figure 1-1: Ootsa Property location in west central British Columbia. Mine locations are denoted by crossed hammers and deposit locations with an X.**

The Ootsa Property comprises 128 contiguous mineral claims that total 76,099.48 hectares (Ha) and contains 3 porphyry deposits, the adjacent East Seel, West Seel and Seel Breccia deposits, collectively referred to as the Seel deposit, and Ox, along with a high grade silver-base metal vein system at Damascus. Details of these deposits along with past exploration work can be found in this report, and in several historic assessment reports and technical reports supporting resource estimates on both Seel and Ox. This report is intended to support the most current resource update completed on the Seel and Ox deposits. The effective date for the Seel deposit data is February 18, 2022. The effective date for the Ox deposit data is February 18, 2022.

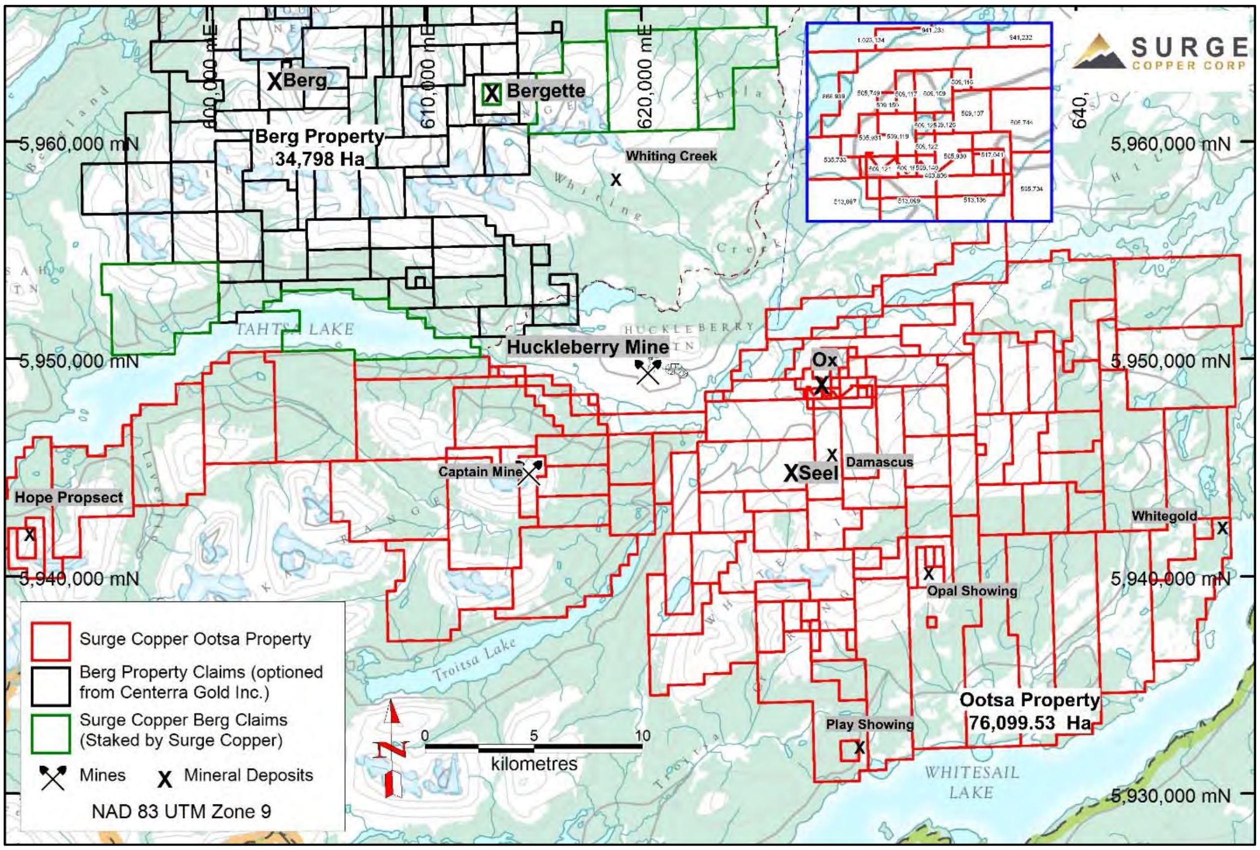



**Figure 1-2: Ootsa Property Overview.**

The Seel and Ox deposits are located at the southeast end of a southeast trending belt of porphyry deposits which includes the Huckleberry Mine, the Berg deposit, and Lucky Ship deposit (Figure 1-1). The Ootsa Property is underlain by a series of juxtaposed fault blocks containing tilted and locally folded strata of the Lower to Middle Jurassic Hazelton Group. These rocks are cut by multi-phase intrusive complexes that are correlative with the Late Cretaceous Bulkley Intrusive suite. Intrusive phases include diorite, granodiorite, quartz diorite, porphyritic quartz monzonite (aka quartz porphyry), porphyritic granodiorite, feldspar porphyry, and quartz feldspar porphyry. The youngest rocks on the property are gently dipping basaltic and rhyolitic flows of the Eocene Ootsa Lake Group that cap older strata in the Whitesail and Kasalka ranges.

Mineralization at the Seel deposit (East Seel, West Seel, and Seel Breccia) is largely hosted within various intrusive phases and to a volumetrically lesser extent in the altered sedimentary or volcanic rocks that host them. In contrast, mineralization at both Huckleberry and Ox formed in the hornfelsed wallrocks surrounding equigranular to porphyritic granodiorite stocks. The current level of erosion at Huckleberry is interpreted to be near the base of the Hazelton Group exposing the roots of a porphyry system (Christensen et al., 2011).

Geologic characteristics at the Ox deposit are similar to those of Huckleberry and both deposits have returned similar ages for mineralization of 83 +/-3 Ma at Ox (Richards, 1974) and 82.3 +/- 3 Ma at Huckleberry (Christensen et al., 2011). The intrusion at the Ox deposit was dated at 83.4 ± 3.2 Ma by K-Ar (Richards, 1974) and the Main Zone Stock at Huckleberry was dated at 83.5 ± 0.3 Ma by $^{206}Pb/^{238}U$ (Friedman and Jordan, 1997).

Age dating of the intrusive host rock at East Seel returned an interpreted $^{206}Pb/^{238}U$ crystallization age of 86.7 ± 0.4 Ma and an unaltered intrusive from West Seel returned an interpreted $^{206}Pb/^{238}U$ crystallization age of 152.4 ± 1.0 Ma (Ebert, 2020). A Rb-Sr age on feldspar and biotite from West Seel returned an age of 86.1 ± 1.1 Ma (Peterson, 2014), indicating that mineralization at West Seel has a similar age to East Seel, in the 86.1 to 86.7 Ma range. However, it is clear that an older intrusion occurs in the West Seel area.

## 1.1 Seel and Ox Deposit Resources

The Seel and Ox resource estimations (Section 14) were carried out by Advantage Geoservices of Osoyoos, British Columbia and Independent Qualified Person James N. Gray, P.Geo is responsible for the estimate. This resource estimate is an update of, and replaces, the most recent estimate documented in the NI 43-101 Technical Report by P & E Mining Consultants Inc., dated March, 2016. The methodology for the Seel and Ox estimates is essentially the same: generation of 0.1% copper equivalent (CuEq) domains within directional domains at each deposit area, followed by copper, molybdenum, gold and silver grade estimation inside and outside the mineralized domains by ordinary kriging (OK). Resource estimation was completed using Geovia GEMS® software using industry standard techniques. Both deposits were estimated using a 12 x 12 x 12 metre block size. The resource has been classified in accordance with the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Definition Standards for Mineral Resources and Mineral Reserves (CIM, 2014). The 2022 Ootsa Resource Estimate is presented in Table 1.1 below.

**Table 1.1: Ootsa Mineral Resource Estimate at CDN$8.27 NSR Cut-off**

| | | Grade | | | | | Gross Contained Metal | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Tonnage** (Mt) | **Cu** (%) | **Mo** (%) | **Au** (g/t) | **Ag** (g/t) | **CuEq** (%) | **Cu** (Mlbs) | **Mo** (Mlbs) | **Au** (Moz) | **Ag** (Moz) | **CuEq** (Mlbs) |
| ***Seel*** | | | | | | | | | | | |
| Measured | 103.7 | 0.19 | 0.014 | 0.15 | 2.6 | 0.36 | 440 | 32 | 0.5 | 8.7 | 823 |
| Indicated | 276.1 | 0.16 | 0.017 | 0.12 | 2.0 | 0.31 | 974 | 105 | 1.1 | 18.2 | 1,898 |
| **Total M+I** | **379.8** | **0.17** | **0.016** | **0.13** | **2.2** | **0.32** | **1,414** | **137** | **1.6** | **26.9** | **2,721** |
| Inferred | 135.4 | 0.15 | 0.015 | 0.10 | 2.0 | 0.28 | 455 | 45 | 0.4 | 8.8 | 847 |
| ***Ox*** | | | | | | | | | | | |
| Measured | 30.1 | 0.24 | 0.026 | 0.04 | 1.4 | 0.36 | 157 | 17 | 0.0 | 1.4 | 237 |
| Indicated | 28.7 | 0.19 | 0.020 | 0.03 | 1.3 | 0.29 | 122 | 12 | 0.0 | 1.2 | 181 |
| **Total M+I** | **58.8** | **0.22** | **0.023** | **0.03** | **1.4** | **0.32** | **280** | **29** | **0.1** | **2.6** | **419** |
| Inferred | 2.4 | 0.13 | 0.011 | 0.03 | 1.1 | 0.20 | 7 | 1 | 0.0 | 0.1 | 10 |
| ***Total*** | | | | | | | | | | | |
| Measured | 133.8 | 0.20 | 0.017 | 0.13 | 2.4 | 0.36 | 597 | 49 | 0.5 | 10.1 | 1,060 |
| Indicated | 304.8 | 0.16 | 0.018 | 0.11 | 2.0 | 0.31 | 1,097 | 118 | 1.1 | 19.4 | 2,079 |
| **Total M+I** | **438.6** | **0.18** | **0.017** | **0.12** | **2.1** | **0.32** | **1,694** | **167** | **1.6** | **29.5** | **3,139** |
| Inferred | 137.7 | 0.15 | 0.015 | 0.10 | 2.0 | 0.28 | 462 | 46 | 0.4 | 8.9 | 857 |

*Note: based on metal prices presented in Table 1.2, CuEq(%) = Cu(%) + 3.2208 x Mo(%) + 0.6630 x Au (g/t) + 0.0083 x Ag (g/t).*

The Seel estimate is based on 300 holes, 101 of which were drilled since the previous resource estimate. The Ox estimate is based on 133 holes all of which were available prior to the most recent estimate.

Control for grade estimation was based on directional domains at each project area as well as on the establishment of a 0.1% CuEq grade domain at Seel and Ox. Mineralized domains were generated through an indicator estimation approach. Cu, Mo, Au and Ag grades were subsequently estimated inside and outside the mineralized domains by OK.

Prior to compositing, assay grades were capped based on the evaluation of histograms and probability plots of data within directional and/or grade domain groupings. Grade capping lowered the average estimated Seel grades by: Cu-1.4%, Mo-0%, Au-0%, Ag-0.7% and estimated Ox grades by: Cu-0%, Mo-0%, Au-5.9%, Ag-4.7%.

Drill holes were composited to two metre intervals for use in indicator-shell and grade estimation. The choice of composite length was based on the fact that 90% of Seel drill hole samples and 75% of Ox samples, were two metres in length. Unassayed intervals were assigned very low (non-zero) values, for all metals, during the compositing process.

Based on available density measurements (4,081 at Seel and 1,054 at Ox), an average of 2.74 t/m$^3$ was used at Seel and 2.70 t/m$^3$ at Ox, as the basis for resource tonnage calculation. Overburden was assigned a density of 2.0 t/m$^3$.

Blocks were classified based on spatial parameters related to available drill data as well as on the generation of an optimized pit. At both deposits, measured resource blocks have a maximum nominal drill spacing of 40m and the third closest hole is within 60m of the block. Indicated blocks have a maximum drill spacing of 80m. Inferred blocks are the remainder estimated within the pit volume.

To ensure meeting the condition of reasonable prospects of eventual economic extraction, the resource was constrained by Whittle generated pit shells for which the optimization parameters used are listed in Table 1.2.

**Table 1.2: Pit Optimization Parameters**

| Metal | Metal Price | Process Recovery | Smelter Payable | Refining Charges |
|---|---|---|---|---|
| Cu | US$ 3.85/lb | 90% | 96% | US$ 0.05/lb |
| Mo | US$ 12.40/lb | 70% | 98.5% | $ 1,200/dmt Mo concentrate |
| Au | US$ 1,750/oz | 70% | 90% | US$ 5/oz |
| Ag | US$ 22/oz | 65% | 96% | US$ 0.50/oz |
| Exchange Rate: | 0.77 US$:CDN$ | | | |
| Mining Cost: | CDN$ 2.34 / tonne | | | |
| Process Cost: | CDN$ 8.11/ tonne - including G & A | | | |
| Pit slope: | 45° | | | |

# 2.0 Introduction

## 2.1 Introduction and Terms of Reference

This report on estimation of mineral resources for the Seel and Ox deposits was prepared by J. Stacey and James N. Gray on behalf of Surge Copper Corp. in order to comply with technical reporting and disclosure requirements set out under National Instrument 43-101. It is considered to be in accordance with Canadian Institute of Mining, Metallurgy and Petroleum Standards on Mineral Resources and Reserves Definitions and Guidelines (the CIM Standards). Authors Stacey and Gray are independent of Surge Copper. Some of the information and figures contained in this report have been taken from historic assessment and technical reports pertaining to the project and are noted in the References section and/or where directly cited in the body of this report. These reports are available as PDF documents on the SEDAR website (http://www.sedar.com).

Authors Stacey and Gray take responsibility for all of the information referenced in this report. Author J. Gray is responsible for Section 14, and author J. Stacey is responsible for updating all other sections in this report.

Terms of reference were established through discussions between Dr. Shane Ebert, President of Surge Copper, and James N. Gray of Advantage Geoservices between September 2021 and April 2022. It was subsequently determined that the estimate would be based upon validated results for all core drilling completed by Surge Copper during the 2006 through 2022 period. The Seel resource estimate is based on 300 holes totaling

134,349 metres. The Ox resource estimate is based on 133 historic and recent drill holes totaling 28,175 metres, details of which can be found in Section 14 and Appendix 1 & 2 of this report and in technical reports supporting the 2008 resource estimate (Arseneau et al, 2008), the 2012 resource update (McDowell and Giroux, 2013), the 2014 resource update (Boyce and Giroux, 2014), and the 2016 Resource Update and PEA report (Puritch et al, 2016). Au was analysed by fire assay while all other elements were analysed by inductively coupled plasma (ICP).

Hard copy and/or digital records of the 2006-2021 drilling data were delivered to Advantage Geoservices by Surge Copper personnel for purposes of the current resource estimate update. The latest round of drill data (2020-2021) was intended to augment previously supplied data from past programs and resource estimates which included digital elevation files, geologic reports, drill logs, drill plans, assay and laboratory records. Based on the preceding, Advantage Geoservices assembled and validated a digital drilling database upon which the three-dimensional resource estimate block model was developed.

Author J. Stacey was on site at the Ootsa project throughout the 2020-2021 drill programs. He supervised all aspects of the drill programs including core logging, data collection and digital data entry. Assay handling including QA/QC procedure auditing were performed by S. Ebert and C. McDowell of Surge Copper and independently verified by J. Stacey. Author J. Gray has not visited the property.

This Report is prepared in accordance with the requirements of NI 43-101 and in compliance with Form NI 43-101F1 of the British Columbia Securities Commission ("BCSC") and the Canadian Securities Administrators ("CSA"). The Resource Estimate is prepared in compliance with the CIM Definitions and Standards on Mineral Resources and Mineral Reserves that were in force as of the effective date of this Resource Update.

## 2.2 Units and Currency

Unless otherwise stated, all units used in this Report are metric. Gold ("Au") and silver ("Ag") assay values are reported in grams of metal per tonne ("g/t") unless ounces per ton ("oz/T") are specifically stated.

The Canadian dollar is used throughout this Report unless otherwise specified. All metal prices are stated is US dollars and converted to Canadian dollars in the economic analysis.

The coordinate system used by Surge Copper for locating and reporting drill hole information is the Universal Transverse Mercator coordinate system ("UTM"), the datum used is NAD 83, zone 9 north. The coordinates for the centre of the Property claim block are 627,000 E, 5,945,500 N. Maps in this Report use either the UTM coordinate system or latitude and longitude.

## 2.3 Glossary and Abbreviation of Terms

Table 2-1 below provides a list of abbreviations and terms used throughout this report.

**Table 2-1: Abbreviations and Terms**

| Abbreviation | Meaning |
|---|---|
| "3D" | Three Dimensional |
| “AA” | Atomic Absorption |
| "Ag g/t" | Grams Of Silver Per Tonne |
| "Ag" | Silver |
| “AISC” | All-In-Sustaining-Cost |
| “ASL” | Above Sea Level |
| "Au g/t" | Grams Of Gold Per Tonne |
| "Au" | Gold |
| “BCSC” | British Columbia Securities Commission |
| "CA" | Certificate of Authorization |
| "CDN" | Canadian |
| "CDN$" | Canadian Dollars |
| "CIM" | Canadian Institute Of Mining, Metallurgy And Petroleum |
| "cm" | Centimetre(s) |
| "Company" | Surge Copper Corp. (formerly Gold Reach Resources Ltd.) |
| “CRM” | Certified Reference Material |
| "CSA" | Canadian Securities Administrators |
| “CSR” | Corporate Social Responsibility |
| “Cu” | Copper |
| "Cum" | Cumulative |
| "DCF" | Discounted Cash Flow |
| "DDH" | Diamond Drill Hole |
| "DGPS" | Differential Global Positioning System |
| "E" | East |
| “EA” | Environmental Assessment |
| "EIA" | Environmental Impact Assessment |
| “EIS” | Environmental Impact Statement |
| "EPCM" | Engineering, Procurement, Construction and Management |
| “ERM” | Environmental Resources Management |
| "ESE | East-South-East |
| "E-W" | East-West |
| "ft" | Foot |
| "G&A" | General And Administration |
| "g/t" | Grams Per Tonne |
| "Gold Reach" | Gold Reach Resources Ltd. |
| "GPS" | Global Positioning System |
| "ha" | Hectare(s) |

| Abbreviation | Meaning |
| --- | --- |
| "HB" | Huckleberry Mine |
| "ICP-AES" | Inductively Coupled Plasma – Atomic Emission Spectroscopy |
| "IP" | Induced Polarization |
| "IRR" | Internal Rate Of Return |
| "ISO" | International Organization for Standardization |
| "k" | Thousands |
| "k$" | Thousands Of Dollars |
| "km" | Kilometre(s) |
| "km/h" | Kilometers per Hour |
| "kt" | Thousands of Tonnes |
| LiDAR | Light Detection and Ranging Survey |
| "LOM" | Life-Of Mine |
| "M" | Million |
| "m" | Metre(s) |
| "M$" | Millions Of Dollars |
| "Ma" | Millions Of Years |
| "MAG" | Magnetometer Survey |
| "MDA" | Gold Reach's Management Discussion and Analysis |
| "ML/ARD" | Metal Leaching/Acid Rock Drainage |
| "mm" | Millimeters |
| "Mo" | Molybdenum |
| "MZ" | Huckleberry Main Zone Pit |
| "N" | North |
| "N/A" | Not Applicable |
| "NAG" | Non-Potentially Acid Generating Rock |
| "NE" | North-East |
| "NI 43-101" | National Instrument 43-101 |
| "NN" | Nearest Neighbour |
| "NNW" | North-North-West |
| "NPV" | Net Present Value |
| "NSR" | Net Smelter Return |
| "NW" | Northwest |
| "OK" | Ordinary Kriging |
| "OP" | Open Pit |
| "opt" | Troy Ounces Per Ton |
| "OSC" | Ontario Securities Commission |
| "oz Au/T" | Troy Ounces Gold Per Ton |
| "PAG" | Potentially Acid Generating Rock |
| "P&E" | P&E Mining Consultants Inc. |
| "PEA" | Preliminary Economic Assessment |

| Abbreviation | Meaning |
|---|---|
| “Project” | The Ootsa Deposit |
| “Property” | The Ootsa Concessions |
| “PTP” | Permanent Transfer Point |
| “RC” | Reverse Circulation Drilling |
| "QA/QC" | Quality Assurance/Quality Control |
| "QC" | Quality Control |
| "QP" | Qualified Person as Defined By Canadian National Instrument NI 43-101 Standards Of Disclosure for Mineral Projects |
| "ROM" | Run-of-Mine Material produced during mining |
| "RQD" | Rock Quality Designation |
| "S" | South |
| “SAR” | Species At Risk |
| "SEDAR" | Website Developed by the CRA, that Provides Access to Public Securities Documents and Information Filed by Public Companies and Investment Funds in Canada |
| "Surge" | Surge Copper Corp. |
| "t" | Metric Tonne(s) |
| "t/m3" | Tonnes per Cubic Metre |
| “tph” | Tonnes per Hour |
| "tpd" | Tonnes per Day |
| "W" | West |
| “XRF” | X-Ray Fluorescence Spectrometer |

# 3.0 Reliance on Other Experts

## 3.1 General

Surge Copper Corp. has been relied upon with respect to confirmation of validity of mineral exploration titles, definition or assessment of environmental liabilities, details of mineral property agreements and identification of surface title issues. Author J. Stacey has reviewed the land tenure but has not independently verified the legal status of ownership of the property or the underlying agreements. All of Surge Copper’s mineral claims on the Ootsa Property are in good standing at the date of this Resource Update, and claim status, location, and “good to” dates have been verified by J. Stacey on the Province of British Columbia’s online claims management system.

## 3.2 Limitations

This report was prepared by authors Stacey and Gray for Surge Copper Corp. All information, conclusions and estimates contained herein are based upon information available at the time of report preparation. This includes data made available by Surge

Copper as well as from government and public record sources. Information contained in this report is believed reliable and no reason has been found to question the quality or validity of data used in this report. Comments and conclusions presented herein reflect the Authors best judgment at the time of report preparation. J. Gray takes responsibility for Section 14 of this report and parts of Sections 1, 25, and 26. J. Stacey takes responsibility for the remaining sections including the remainder of Sections 1, 25, and 26.

A draft copy of this Technical Report has been reviewed for factual errors by Surge Copper. Any changes made as a result of these reviews did not involve any alteration to the conclusions made. Hence, the statement and opinions expressed in this Report are given in good faith and in the belief that such statements and opinions are not false and misleading at the date of this Report.

# 4.0 Property Description and Location

## 4.1 Property Description

The Ootsa Property is located within the Omineca Mining Division approximately 120 km by gravel road from the town of Houston in west central British Columbia (Figure 1.1). The property is located on the south side of Tahtsa Reach, an arm of Ootsa Lake, an artificial lake created by the Kenney Dam which blocks the Nechako River. The property is immediately east-southeast of the Huckleberry Mine property (currently on Care and Maintenance in April 2022). The mineral claims are on National Topographic System sheet 093E 11E, centered at approximately Universe Transverse Mercator (UTM) coordinates 627000E, 5945500N using North American Datum (NAD) 83, or latitude 53°38’N longitude 127°05’W. Surge Copper Corp. in conjunction with its 100% wholly owned subsidiary Ootsa Lake Resources Ltd. owns 100% of the Ootsa Property. The Ootsa Property consists of 128 contiguous non-survey mineral claims totaling 76,099.48 hectares. There is some overlap within the claims, especially around the Ox deposit area as they represent some of the oldest claims in the area. A map showing the Ootsa Property with tenure numbers is presented in Figure 4-1 below.

In addition to the Ootsa property, Surge Copper has a separate but adjacent joint venture project with Thompson Creek Metals Company Inc. (a wholly-owned subsidiary of Centerra Gold Inc.) whereby Surge can acquire a 70% interest in the Berg copper-molybdenum-silver project located approximately 29 km northwest of the Ootsa property. The Berg property comprises 92 mineral claims totaling 34,798.19 hectares (Figure 4-1).

The Berg property is mentioned here as part of the description of Surge Copper’s land holdings in the region, but it is distinct and separate from the Ootsa property and is not a subject of this technical report. Details of the option agreement can be found in Section 4.2 below. Mineralized prospects on the Berg property are summarized in Section 23: Adjacent Properties.

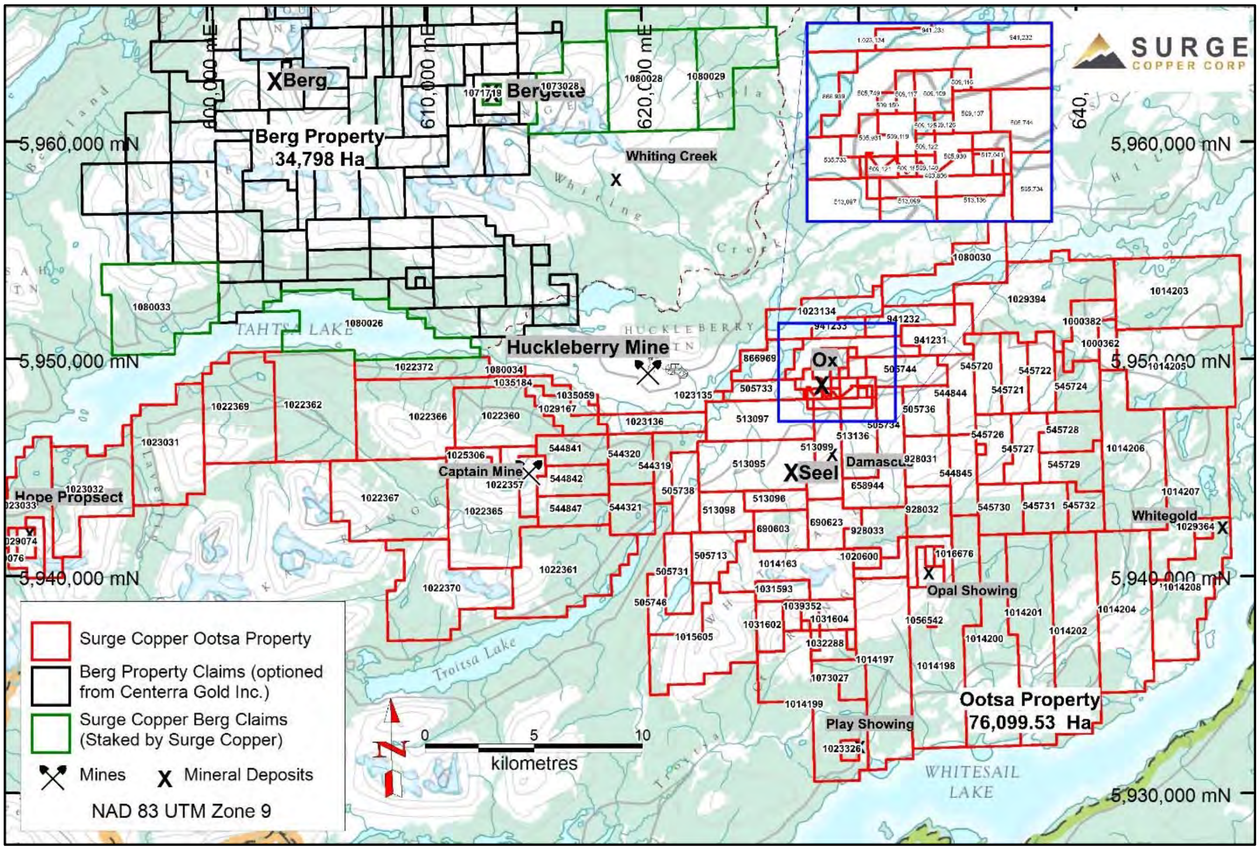



**Figure 4-1: Ootsa Property claims map with mineral tenure labels.**

In addition to the claims optioned from Thompson Creek Metals, Surge Copper has also staked 10 claims totaling 11,475.18 hectares around the periphery of the Berg property to cover several historical mineral occurrences, none of which have historic or current mineral resource estimates. These include the Bergette prospect (BC Minfile Number 093E 052), the Sylvia prospect (BC Minfile Number 093E 089), the Tara showing (BC Minfile Number 093E 091), and part of the "CS" showing (BC Minfile Number 093E 090).

The author undertook a search of the tenure data on the British Columbia government's Mineral Titles Online (MTO) web site which confirms the geospatial locations of the claim boundaries of the Ootsa Property. It is common practice in the mineral exploration industry in British Columbia to locate claim boundaries on the internet, since the advent of internet staking. The claims locations on the MTO website are assumed to be correct.

### Table 4-1: Tenure and Claim Information for the Ootsa Property

| Tenure # | Claim Name | Owner | Title Sub Type | Map Number | Issue Date | Good To Date | Status | Area (ha) |
|---|---|---|---|---|---|---|---|---|
| 403806 | SEEL 9 | 201965 (100%) | CLAIM | 093E | 20030720 | 20290630 | GOOD | 300 |
| 505713 | Seel 11 | 201965 (100%) | CLAIM | 093E | 20050203 | 20290630 | GOOD | 441.285 |
| 505731 | Seel 12 | 201965 (100%) | CLAIM | 093E | 20050203 | 20290630 | GOOD | 460.557 |
| 505733 | Seel 13 | 201965 (100%) | CLAIM | 093E | 20050203 | 20290630 | GOOD | 306.504 |
| 505734 | Seel 13 | 201965 (100%) | CLAIM | 093E | 20050203 | 20290630 | GOOD | 459.933 |
| 505736 | Seel 15 | 201965 (100%) | CLAIM | 093E | 20050203 | 20290630 | GOOD | 479.031 |
| 505738 | Seel 16 | 201965 (100%) | CLAIM | 093E | 20050203 | 20290630 | GOOD | 460.194 |
| 505744 | Seel 17 | 201965 (100%) | CLAIM | 093E | 20050203 | 20290630 | GOOD | 478.841 |
| 505746 | Seel 18 | 201965 (100%) | CLAIM | 093E | 20050203 | 20290630 | GOOD | 479.923 |
| 505749 | Seel 19 | 201965 (100%) | CLAIM | 093E | 20050203 | 20290630 | GOOD | 478.736 |
| 505930 | | 206087 (100%) | CLAIM | 093E | 20050204 | 20290630 | GOOD | 76.625 |
| 505931 | | 206087 (100%) | CLAIM | 093E | 20050204 | 20290630 | GOOD | 76.62 |
| 509107 | | 206087 (100%) | CLAIM | 093E | 20050317 | 20290630 | GOOD | 76.61 |
| 509109 | | 206087 (100%) | CLAIM | 093E | 20050317 | 20290630 | GOOD | 76.603 |
| 509116 | | 206087 (100%) | CLAIM | 093E | 20050317 | 20290630 | GOOD | 19.15 |
| 509117 | | 206087 (100%) | CLAIM | 093E | 20050317 | 20290630 | GOOD | 38.302 |
| 509119 | | 206087 (100%) | CLAIM | 093E | 20050317 | 20290630 | GOOD | 57.462 |
| 509121 | | 206087 (100%) | CLAIM | 093E | 20050317 | 20290630 | GOOD | 38.315 |
| 509122 | | 206087 (100%) | CLAIM | 093E | 20050317 | 20290630 | GOOD | 19.155 |
| 509125 | | 206087 (100%) | CLAIM | 093E | 20050317 | 20290630 | GOOD | 19.154 |
| 509126 | | 206087 (100%) | CLAIM | 093E | 20050317 | 20290630 | GOOD | 19.154 |
| 509140 | | 206087 (100%) | CLAIM | 093E | 20050317 | 202906300 | GOOD | 19.157 |
| 509150 | | 206087 (100%) | CLAIM | 093E | 20050317 | 20290630 | GOOD | 19.152 |
| 509151 | | 206087 (100%) | CLAIM | 093E | 20050317 | 20290630 | GOOD | 19.157 |
| 513095 | | 201965 (100%) | CLAIM | 093E | 20050519 | 20290630 | GOOD | 1226.884 |
| 513096 | | 201965 (100%) | CLAIM | 093E | 20050519 | 20290630 | GOOD | 268.474 |
| 513097 | | 201965 (100%) | CLAIM | 093E | 20050519 | 20290630 | GOOD | 919.762 |
| 513098 | | 201965 (100%) | CLAIM | 093E | 20050519 | 20290630 | GOOD | 421.93 |
| 513099 | | 201965 (100%) | CLAIM | 093E | 20050519 | 20290630 | GOOD | 613.375 |
| 513136 | | 201965 (100%) | CLAIM | 093E | 20050520 | 20290630 | GOOD | 613.303 |
| 517041 | SEEL 20 | 201965 (100%) | CLAIM | 093E | 20050712 | 20290630 | GOOD | 57.468 |
| 544319 | SEEL20 | 206087 (100%) | CLAIM | 093E | 20061024 | 20290630 | GOOD | 402.5396 |
| 544320 | | 206087 (100%) | CLAIM | 093E | 20061024 | 20290630 | GOOD | 479.2105 |
| 544321 | SEEL22 | 206087 (100%) | CLAIM | 093E | 20061024 | 20290630 | GOOD | 479.447 |
| 544841 | SEEL23 | 206087 (100%) | CLAIM | 093E | 20061103 | 20290630 | GOOD | 440.8315 |
| 544842 | SEEL24 | 206087 (100%) | CLAIM | 093E | 20061103 | 20290630 | GOOD | 440.9656 |
| 544844 | SEEL25 | 206087 (100%) | CLAIM | 093E | 20061103 | 20290630 | GOOD | 478.9541 |
| 544845 | SEEL26 | 206087 (100%) | CLAIM | 093E | 20061103 | 20290630 | GOOD | 460.1608 |
| 544847 | SEEL27 | 206087 (100%) | CLAIM | 093E | 20061103 | 20290630 | GOOD | 460.2722 |
| 545720 | SEEL28 | 206087 (100%) | CLAIM | 093E | 20061122 | 20290630 | GOOD | 478.8621 |
| 545721 | SEEL29 | 206087 (100%) | CLAIM | 093E | 20061122 | 202906300 | GOOD | 440.5673 |
| 545722 | SEEL30 | 206087 (100%) | CLAIM | 093E | 20061122 | 20290630 | GOOD | 440.573 |
| 545724 | SEEL31 | 206087 (100%) | CLAIM | 093E | 20061122 | 20290630 | GOOD | 478.9425 |
| 545726 | SEEL32 | 206087 (100%) | CLAIM | 093E | 20061122 | 20290630 | GOOD | 479.206 |
| 545727 | SEEL33 | 206087 (100%) | CLAIM | 093E | 20061122 | 20290630 | GOOD | 479.2168 |
| 545728 | SEEL34 | 206087 (100%) | CLAIM | 093E | 20061122 | 20290630 | GOOD | 479.1507 |
| 545729 | SEEL35 | 206087 (100%) | CLAIM | 093E | 20061122 | 20290630 | GOOD | 479.3192 |
| 545730 | SEEL36 | 206087 (100%) | CLAIM | 093E | 20061122 | 20290630 | GOOD | 479.4968 |
| 545731 | SEEL37 | 206087 (100%) | CLAIM | 093E | 20061122 | 20290630 | GOOD | 479.4962 |
| 545732 | SEEL38 | 206087 (100%) | CLAIM | 093E | 20061122 | 20290630 | GOOD | 326.0692 |
| 658944 | SEEL L1 | 201965 (100%) | CLAIM | 093E | 20091024 | 202906300 | GOOD | 460.2137 |
| 690603 | SEEL 40 | 206087 (100%) | CLAIM | 093E | 20091229 | 20290630 | GOOD | 460.3753 |

| Tenure # | Claim Name | Owner | Title Sub Type | Map Number | Issue Date | Good To Date | Status | Area (ha) |
|---|---|---|---|---|---|---|---|---|
| 690623 | SEEL41 | 206087 (100%) | CLAIM | 093E | 20091229 | 20290630 | GOOD | 460.3536 |
| 836962 | XE1 | 206087 (100%) | CLAIM | 093E | 20091229 | 20290630 | GOOD | 19.1687 |
| 866969 | | 201965 (100%) | CLAIM | 093E | 20110721 | 20290630 | GOOD | 421.3228 |
| 928031 | | 201965 (100%) | CLAIM | 093E | 20111103 | 20290630 | GOOD | 479.2657 |
| 928032 | | 201965 (100%) | CLAIM | 093E | 20111103 | 20290630 | GOOD | 479.5003 |
| 928033 | | 201965 (100%) | CLAIM | 093E | 20111103 | 20290630 | GOOD | 479.5794 |
| 941231 | | 201965 (100%) | CLAIM | 093E | 20120118 | 20290630 | GOOD | 478.6826 |
| 941232 | | 201965 (100%) | CLAIM | 093E | 20120118 | 20290630 | GOOD | 421.1675 |
| 941233 | | 201965 (100%) | CLAIM | 093E | 20120118 | 20290630 | GOOD | 172.3089 |
| 1000362 | OOTSA EAST | 206087 (100%) | CLAIM | 093E | 20120622 | 20290630 | GOOD | 191.5038 |
| 1000382 | OOTSA EAST2 | 206087 (100%) | CLAIM | 093E | 20120622 | 20290630 | GOOD | 478.69 |
| 1014163 | | 206087 (100%) | CLAIM | 093E | 20121101 | 20290630 | GOOD | 1132.1981 |
| 1014197 | | 206087 (100%) | CLAIM | 093E | 20121101 | 20290630 | GOOD | 1920.9074 |
| 1014198 | | 206087 (100%) | CLAIM | 093E | 20121101 | 20290630 | GOOD | 1901.7268 |
| 1014199 | | 206087 (100%) | CLAIM | 093E | 20121101 | 20290630 | GOOD | 1633.3828 |
| 1014200 | | 206087 (100%) | CLAIM | 093E | 20121101 | 20290630 | GOOD | 1882.3836 |
| 1014201 | | 206087 (100%) | CLAIM | 093E | 20121101 | 20290630 | GOOD | 1805.1373 |
| 1014202 | | 206087 (100%) | CLAIM | 093E | 20121101 | 20290630 | GOOD | 1901.1505 |
| 1014203 | | 206087 (100%) | CLAIM | 093E | 20121101 | 20290630 | GOOD | 1875.7549 |
| 1014204 | | 206087 (100%) | CLAIM | 093E | 20121101 | 20290630 | GOOD | 1823.982 |
| 1014205 | | 206087 (100%) | CLAIM | 093E | 20121101 | 20290630 | GOOD | 1915.4639 |
| 1014206 | | 206087 (100%) | CLAIM | 093E | 20121101 | 20290630 | GOOD | 1840.474 |
| 1014207 | | 206087 (100%) | CLAIM | 093E | 20121101 | 20290630 | GOOD | 1898.4272 |
| 1014208 | | 206087 (100%) | CLAIM | 093E | 20121101 | 20290630 | GOOD | 1343.8235 |
| 1015605 | | 201965 (100%) | CLAIM | 093E | 20130101 | 20290630 | GOOD | 1478.6809 |
| 1016676 | | 206087 (100%) | CLAIM | 093E | 20130204 | 20290630 | GOOD | 479.7155 |
| 1019938 | SWING NORTH | 201965 (100%) | CLAIM | 093E | 20130531 | 20290630 | GOOD | 115.0046 |
| 1020600 | | 206087 (100%) | CLAIM | 093E | 20130628 | 20290630 | GOOD | 115.1293 |
| 1020614 | | 206087 (100%) | CLAIM | 093E | 20130629 | 20290630 | GOOD | 211.0866 |
| 1022357 | SWING | 201965 (100%) | CLAIM | 093E | 20130916 | 20290630 | GOOD | 268.42 |
| 1022360 | | 206087 (100%) | CLAIM | 093E | 20130916 | 20290630 | GOOD | 1130.4696 |
| 1022361 | | 201965 (100%) | CLAIM | 093E | 20130916 | 20290630 | GOOD | 1880.5075 |
| 1022362 | | 206087 (100%) | CLAIM | 093E | 20130916 | 20290630 | GOOD | 1915.7592 |
| 1022365 | | 206087 (100%) | CLAIM | 093E | 20130916 | 20290630 | GOOD | 1668.5296 |
| 1022366 | | 206087 (100%) | CLAIM | 093E | 20130916 | 20290630 | GOOD | 1801.0273 |
| 1022367 | | 201965 (100%) | CLAIM | 093E | 20130916 | 20290630 | GOOD | 1917.5219 |
| 1022369 | | 206087 (100%) | CLAIM | 093E | 20130916 | 20290630 | GOOD | 1590.132 |
| 1022370 | | 206087 (100%) | CLAIM | 093E | 20130916 | 20290630 | GOOD | 1784.9319 |
| 1022372 | | 206087 (100%) | CLAIM | 093E | 20130916 | 20290630 | GOOD | 574.5308 |
| 1023031 | | 201965 (100%) | CLAIM | 093E | 20131013 | 20290630 | GOOD | 1590.7249 |
| 1023032 | | 201965 (100%) | CLAIM | 093E | 20131013 | 20290630 | GOOD | 1437.9473 |
| 1023033 | | 201965 (100%) | CLAIM | 093E | 20131013 | 20290630 | GOOD | 997.0918 |
| 1023134 | | 201965 (100%) | CLAIM | 093E | 20131017 | 20290630 | GOOD | 689.137 |
| 1023135 | | 201965 (100%) | CLAIM | 093E | 20131017 | 20290630 | GOOD | 38.3149 |
| 1023136 | | 201965 (100%) | CLAIM | 093E | 20131017 | 20290630 | GOOD | 440.7191 |
| 1023326 | | 206087 (100%) | CLAIM | 093E | 20131026 | 20290630 | GOOD | 76.8984 |
| 1025306 | | 201965 (100%) | CLAIM | 093E | 20140120 | 20290630 | GOOD | 134.1696 |
| 1029074 | | 201965 (100%) | CLAIM | 093E | 20140618 | 20290630 | GOOD | 115.0947 |
| 1029076 | | 201965 (100%) | CLAIM | 093E | 20140618 | 20290630 | GOOD | 268.5728 |
| 1029167 | | 201965 (100%) | CLAIM | 093E | 20140624 | 20290630 | GOOD | 364.0382 |
| 1029364 | WHITESAIL | 201965 (100%) | CLAIM | 093E | 20140702 | 20290630 | GOOD | 76.7391 |
| 1029394 | | 201965 (100%) | CLAIM | 093E | 20140704 | 20290630 | GOOD | 1914.1094 |
| 1031593 | | 201965 (100%) | CLAIM | 093E | 20141016 | 20290630 | GOOD | 230.3222 |

| Tenure # | Claim Name | Owner | Title Sub Type | Map Number | Issue Date | Good To Date | Status | Area (ha) |
|---|---|---|---|---|---|---|---|---|
| 1031602 | | 201965 (100%) | CLAIM | 093E | 20141016 | 20290630 | GOOD | 288.0143 |
| 1031604 | | 201965 (100%) | CLAIM | 093E | 20141016 | 20290630 | GOOD | 230.3911 |
| 1031607 | | 201965 (100%) | CLAIM | 093E | 20141016 | 20290630 | GOOD | 19.2012 |
| 1031609 | | 201965 (100%) | CLAIM | 093E | 20141016 | 20290630 | GOOD | 115.1952 |
| 1031610 | | 201965 (100%) | CLAIM | 093E | 20141016 | 20290630 | GOOD | 38.4079 |
| 1031613 | | 201965 (100%) | CLAIM | 093E | 20141016 | 20290630 | GOOD | 19.2011 |
| 1032288 | TROITSA PEAK | 201965 (100%) | CLAIM | 093E | 20141119 | 20290630 | GOOD | 211.2577 |
| 1032350 | | 201965 (100%) | CLAIM | 093E | 20141122 | 20290630 | GOOD | 249.4507 |
| 1032390 | | 201965 (100%) | CLAIM | 093E | 20141125 | 20290630 | GOOD | 38.3768 |
| 1035059 | | 201965 (100%) | CLAIM | 093E | 20150329 | 20290630 | GOOD | 95.7922 |
| 1035062 | | 201965 (100%) | CLAIM | 093E | 20150329 | 20290630 | GOOD | 19.1575 |
| 1035184 | | 201965 (100%) | CLAIM | 093E | 20150402 | 20290630 | GOOD | 19.1538 |
| 1035185 | | 201965 (100%) | CLAIM | 093E | 20150402 | 20290630 | GOOD | 19.1519 |
| 1035471 | | 201965 (100%) | CLAIM | 093E | 20150414 | 20290630 | GOOD | 114.9282 |
| 1036288 | | 201965 (100%) | CLAIM | 093E | 20150523 | 20290630 | GOOD | 153.5301 |
| 1039352 | | 201965 (100%) | CLAIM | 093E | 20151017 | 20290630 | GOOD | 76.7934 |
| 1045508 | | 201965 (100%) | CLAIM | 093E | 20160722 | 20290630 | GOOD | 38.4078 |
| 1045509 | | 201965 (100%) | CLAIM | 093E | 20160722 | 20290630 | GOOD | 38.3768 |
| 1056542 | | 206087 (100%) | CLAIM | 093E | 20171120 | 20290630 | GOOD | 19.2012 |
| 1073027 | PORPHYRY CREEK | 201965 (100%) | CLAIM | 093E | 20191130 | 20290630 | GOOD | 345.795 |
| 1080026 | TR | 201965 (100%) | CLAIM | 093E | 20201211 | 20290630 | GOOD | 1914.3299 |
| 1080030 | | 201965 (100%) | CLAIM | 093E | 20201211 | 20290630 | GOOD | 1071.5919 |
| 1080034 | | 201965 (100%) | CLAIM | 093E | 20201211 | 20290630 | GOOD | 57.4557 |

The Author is not aware of any environmental liabilities related to the Ootsa Property. Trenches and other surface disturbances do not appear to be acid generating and for the most part do not pose significant slope stability hazards. Most are dry, some are partially to completely filled with water and most have started to re-vegetate naturally. The Ootsa Property is on Crown land, and the area is open to mineral exploration and development.

## 4.2 Agreements

Surge Copper Corp. (formerly Gold Reach Resources Ltd.) acquired the Ootsa Property (Seel Claims 1-7) by way of an option agreement on January 31, 2003. On October 11, 2005, Grayd Resources Ltd staked additional claims 8-20 and included them in the option agreement. On October 15, 2007 Grayd Resources Ltd declined their back in right which allowed Gold Reach (Surge) to claim 100% ownership of the Seel Claims 1-20.

An underlying royalty agreement applies to legacy claims Seel 1 to 7, comprising 2600 hectares, covering the area of the Seel deposit. The previous option agreement of Grayd Resources with the initial claim owner Seel Enterprises and Rupert Seel subjects the optionee (now Surge Copper Corp.) to a 1% royalty on Net Smelter Return (NSR) payable to Seel Enterprises. Surge is entitled at any time to purchase half of the NSR royalty for

$1,000,000. The agreement applies to an associated Area of Interest which extends one kilometre outward from the external boundaries of the claims.

In November 2006, Gold Reach (Surge) staked 19 additional claims under its wholly owned subsidiary, Ootsa Lake Resources Ltd. and all of them remain in good standing. On January 7, 2007, Gold Reach (Surge) and its wholly owned subsidiary, Oosta Lake Resources Ltd., acquired a 100% interest in 14 claims totalling approximately 538 ha known as the “Ox Lake Mineral Property” from Silver Standard Resources Inc., in consideration of the issuance to Silver Standard of 2 million common shares of Gold Reach Resources Ltd. Silver Standard Resources Inc. holds a 2% net smelter royalty on these 14 claims. At any time Gold Reach (Surge) can repurchase the entire royalty by paying $500,000 for the first half (1% NSR) and $1,000,000 for the remaining half (1% NSR). In November 2011 and January 2012 Gold Reach (Surge) staked 5 additional claims under its wholly owned subsidiary, Ootsa Lake Resources Ltd. and all of them remain in good standing. In 2013 an additional 20 claims were added to the Ootsa property. Claim acquisition in the immediate area of the Ootsa Property continued up to November 2017.

In February 2018, Gold Reach Resources Ltd changed its name to Surge Copper Corp., listed on the TSX Venture Exchange under stock symbol “SURG”.

In December 2020, Surge Copper entered into a Joint Venture agreement with Thompson Creek Metals Company Inc., a wholly owned subsidiary of Centerra Gold, to earn up to a 70% interest in the Berg Property, located approximately 25 km to the north of the Seel and Ox resource areas. Under the terms of the Agreement, Surge issued to Centerra C$4 million in Surge common shares, and on each of the five anniversaries after the date of the Agreement, must issue a further C$0.2 million in Surge shares for total share payments equal to $5 million. During the five year earn in period, Surge must incur C$8 million in project related expenditures. The Berg property is mentioned here as part of the description of Surge Copper’s land holdings in the region, but it is distinct and separate from the Ootsa property and is not a subject of this technical report.

In British Columbia, the owner of a mineral claim acquires the right to the minerals which were available at the time of claim location and as defined in the Mineral Tenure Act of British Columbia. Surface rights and placer rights are not included. Claims are valid for one year and the anniversary date is the annual occurrence of the date of record (the staking completion date of the claim). To maintain a claim in good standing the claim holder must, on or before the anniversary date of the claim, either: (a) record the exploration and development work carried out on that claim during the current anniversary year; or (b) pay cash in lieu of work. The amount of work required in the year one and two is $5 per hectare per year, year 3 and 4 $10 per hectare, year 5 and 6 $15 per hectare, and $20 per hectare for each subsequent year. Only work and associated costs for the current anniversary year of the mineral claim may be applied toward that claim unit. If the value of work performed in any year exceeds the required minimum, the value of the excess work can be applied, in full year multiples, to cover work requirements for that claim for additional years (subject to the regulations). A report detailing work done and expenditures must be filed with, and approved by, the B.C. Ministry of Energy and Mines.

Portions of the area of the claim lie within areas of asserted title rights, interests and traditional territory by the Wet'suwet'en First Nation, Wet'suwet'en Nation, Cheslatta-Carrier First Nation,Carrier-Sekani, Skin Tyee, and Nee-Tahi-Buhn First Nations. On January 24 2013, Gold Reach Resources Ltd. (now Surge Copper Corp.) issued a press release to announce the signing of a letter of understanding (LOU) with the Cheslatta Carrier Nation. The LOU between Gold Reach (Surge) and Cheslatta outlines a guidance document to help the two parties establish a business relationship, understanding and open communication regarding the continuing mineral exploration and development work on the Ootsa Property. The parties have agreed to act in good faith in negotiating an Impact and Benefits Agreement should the Ootsa Project proceed to a positive feasibility study. The agreement remains in good standing at the time of writing. Cheslatta is a First Nations community located on the south side of Francois Lake near the community of Burns Lake, B.C., and has asserted rights and title over the area that the Seel and Ox Seel deposits are located. In addition, as of December 17, 2013, Gold Reach (Surge) has signed a Communications & Engagement Agreement (CEA) with the Office of the Wet'suwet'en in Smithers, BC and continues to operate under this agreement in good standing. This office represents the title, rights and interests of five Wet'suwet'en hereditary clans over an area of 22,000 km2 of traditional territory. The Ootsa Property lies within territory claimed by one of these clans, the Gilseyhyu. In August 2014, Surge Copper (Gold Reach Resources) signed a Cooperation Protocol Agreement with the Skin Tyee Nation.

# 5.0 Accessibility, Climate, Local Resources, Infrastructure, and Physiography

## 5.1 Accessibility

The Ootsa Property is located approximately 120 km south of the town of Houston in the west-central interior of British Columbia (Figure 1-1). Houston and the nearby community of Smithers, 63 km to the west, serve as major supply and industrial centres to the region. Both the CNR transcontinental railway and Trans-Canada Highway 16 pass through both centers. Smithers and Houston together claim over 9000 inhabitants while the surrounding Bulkley Valley region hosts an additional rural population of approximately 8000.

Smithers has an airport with daily scheduled flights to and from Vancouver, as well as charter air services with fixed-wing on wheels or floats, and helicopters. Smithers and Houston are home to several drilling and equipment contractors and host several mining and exploration services companies.

The Ootsa property is accessible by two-wheel drive vehicles and large industrial trucks via a network of well-maintained all weather gravel roads from Houston. The Morice Forest Service Road (FSR) network is accessed by a southbound turn from Highway 16 approximately 3km west of Houston. Travel south 56.5 km on the Morice FSR then veer southwest on the Morice-Nadina FSR for a further 33 kilometers (Figure 1-1). At km 89 turn south on the Tahtsa Reach FSR and follow to kilometre 103 to the site of the Tahtsa Reach barge landing. A logging camp exists at the north barge landing. Crossing of the 1.6 km reach can be achieved on the privately operated barge for a sailing fee. Once at the south barge landing follow the Troitsa Main FSR west to km 14 where the Surge Copper exploration camp is located.

## 5.2 Climate

The climate at the Ootsa Property is typical of the Coast Mountains and that of the Central Interior Plateau, with short cool summers, and long relatively mild winters. Annual temperature variation in the region is approximately -25°C to +25°C. During winter the snowpack generally ranges from 1 to 5 metres but has been known to reach a maximum of 12 metres at the adjacent Huckleberry Mine. The operating season for ground based activities such as geological mapping, surface sampling and geophysical surveys would extend from approximately early June to late October. With sufficient support some exploration activities such as diamond drilling can be conducted year-round as was proven in the winter of 2021.

## 5.3 Local Resources and Infrastructure

A network of logging roads that connect to the main transportation network from Houston transects the claim block and provide good access to most of the Ootsa Property. Drill specific roads have been constructed to access several areas around the Seel and Ox deposits. Gold Reach (Surge) resurfaced the main Seel drill access road with gravel in 2012 to ensure consistent access to the core of the deposit during wet conditions. In addition, a new bridge was installed to facilitate local creek crossing and minimize impact on the creek. In 2021, logging contractor Tahtsa Timber completed a large cut-block straddling the main Seel access road and installed a new steel-frame bridge over the adjacent creek. This bridge is capable of handling heavy loads including excavators and logging trucks.

Both Houston and Smithers contain rail facilities, while port facilities are located in Stewart, Prince Rupert, and Kitimat. The adjacent Huckleberry Mine (currently on Care and Maintenance in April 2022), 8 km NW of the Seel deposit, operates an open-pit mine, a 16,000 tonne per day mill and concentrator and a camp to house employees and contractors. A 138 KVA power line connects the Huckleberry Mine to the BC provincial grid at the Houston substation. Abundant water resource in Tahtsa Reach is readily accessible to identified mineral deposits for any mining or process operation. Sufficient low-relief terrain resides within the property for siting of infrastructure for mining or process operations, such as waste disposal facilities, haul roads and plant site.

### 5.4 Physiography

The property is located in the Tahtsa Ranges physiographic region of central British Columbia, part of the transition zone between the Coast Mountains and Interior Plateau. It lies astride the northern flank of the Whitesail Range on the southern shore of Tahtsa Reach. This range is an up-faulted, block-like mountain which rises abruptly along its north-western margin and slopes cuesta-like generally towards the south and east (Richards, 1974). It represents an uplifted portion of the Interior Plateau. Relief is moderate on the property, with elevations rising from a valley base of approximately 900 m to 1861 m. Terrain above 1550 m elevation is alpine in nature. Between 1350 and 1550 m, the area is forested with white spruce and pine and below 1350 m by white spruce and fir. Valley bottoms are U-shaped and filled with till and fluvioglacial debris. Outcrop is sparse except on steep slopes, in creek scours and mountain peaks. Logging development has progressed onto the property, and several clear cuts occur through the center of the property, with the closest one located about 1 km northwest of the Seel deposit.

## 6.0 Property History

### 6.1 Introduction

The following section on the history of the property is in part taken from previous technical reports by Ogryzlo (2004) and MacIntyre (2005) as summarized by Stubens and Veljkovic (2008). Section 6.4 on the exploration history of the Ox Deposit was taken from Arseneau et al., 2008. Figure 1-2 shows relative location of areas described in this section.

#### 6.1.1 Tahtsa Reach-Francois Lake Area Mining History

The Tahtsa Reach area has been actively explored since the early part of the 20$^{th}$century. Interest in mining the area began in 1915 in the Emerald Glacier Ag-Zn-Pb veins, on the Sibola Range, 9 km west of Huckleberry Mountain. Located approximately 20 km northwest of the Seel Claims, the Emerald Glacier Mine was one of the first mines developed in north central British Columbia. Underground exploration at Emerald Glacier commenced at the end of World War I and between 1951 and 1968 the property produced 8300 t of ore grading 311 g/t Ag, 9.2%Pb and 10.7% Zn.

The Tahtsa-Francois Area became a centre of intense exploration activity in the 1960's and 1970's when extensive stream sediment and soil sampling programs resulted in the discovery of several important porphyry copper and molybdenum deposits including the Berg and Ox porphyry deposits, located 29.5 km to the northwest and 3.5 km to the north of the Seel deposit respectively. The Ox porphyry copper deposit was found in 1968 by the ASARCO-Silver Standard joint venture. The initial mineral resource calculated on the Ox deposit was completed in 2008 by Wardrop Engineering. It outlined an inferred mineral resource of 16 million tons grading 0.3% Cu and 0.04% Mo. A resource update was completed in 2013 by Giroux Consultants at the request of Gold Reach Resources.

The Equity Silver Mine, located 90 km east of the property, was discovered in 1967 and commenced production in 1980. Between 1981 and 1994, 32,649,393 t of ore yielded 2194 t (70.5 million ounces) of silver, 15.6 t (500,000 ounces) of gold and 83,260 t of copper.

Between 1968 and 1970, Bethlehem Copper Corp. staked the REA and TL claims east of Kasalka Creek (over the Seel deposit area) to cover anomalous copper-silver soil geochemistry. In 1972, they built a tote-road and drilled eight percussion holes (454 m) to test the anomalies. The Bethlehem claims lapsed and were re-staked by Lansdowne Oil and Minerals Limited in 1980 as the LEANTO Group. Soil sampling outlined a moderately strong copper anomaly with attendant anomalous gold, silver, lead, and zinc east of the area tested by Bethlehem. In 1982, 38 shallow diamond drill holes (917 m) were completed and a mineralized breccia zone was discovered (Ager and Holland, 1983). The best intersection contained 18 m grading 1.59 % Cu and 42.2 g/t Ag.

Exploration in the 1960's and 1970's led to the discovery of the Huckleberry deposit. The Huckleberry Mine commenced production in 1997. The Huckleberry Mine is located approximately 7 km northwest of the Seel deposit on the northern shore of Tahtsa Reach, and 86 km southwest of Houston. The mine, which is under Care and Maintenance at the time of preparation of this report, is a modern mine and mill industrial complex producing copper, molybdenum and silver. The mine is exceptionally well located with respect to roads, electrical power, water, and other infrastructure.

## 6.2 History-Ownership

Between 1995 and 2000, different portions of the area enclosed by the Seel Mineral Claims were acquired at various times as the SEEL 1 to 29 two post claims by Seel Enterprises Ltd. These claims were all abandoned on June 25, 2001, and the area was restaked as the Seel #1 and Seel #2 Mineral Claims on June 28 and June 30, 2001 by the same owner. The Seel #3 to Seel #10 Mineral Claims were added at various time between June 30, 2001 and July 20, 2003.

The eastern portion of the area enclosed by the Seel #1 to Seel #10 Mineral Claims was previously held as the OX A, OX B, OX C, and OX-EAST Mineral Claims. These claims were staked between 1981 and 1982, and forfeited on October 1, 2002. The claims were held by Ravenhead Recovery Corporation of Vancouver, BC at the time of forfeiture. Gold Reach (Surge) acquired the Seel Claims 1-7 by way of an option agreement with Grayd Resources on January 31, 2003. On October 11, 2005, Grayd staked additional claims (8-20) and included them in the option agreement. On Oct. 15, 2007 Grayd declined their back in right and Gold Reach owned 100% of the Seel Claims 1-20. In November 2006, Gold Reach staked 19 additional claims under its wholly owned subsidiary, Ootsa Lake Resources Ltd. and all of them remain in good standing. On January 12, 2007 Gold Reach acquired 100% of the 14 claims known as the “Ox Lake Mineral Property” from Silver Standard Mines Ltd pursuant to an agreement dated January 3, 2007.

## 6.3 Previous Exploration -Seel (Lean-To) Project

The first recorded work on the Seel Claims was done on the REA group of mineral claims in the early 1970’s by Bethlehem Copper (Anderson, 1971). A widely spaced geochemical grid survey covered the middle and upper reaches of Seel Creek for copper and silver. The geochemical survey appears to have led to a diamond or percussion drilling program, but there is no public record of the drilling.

The Lean-To prospect was staked by Lansdowne Oil and Minerals in 1980. They actively explored the area around the Seel Breccia from 1980 to 1985. Surface work consisted of geochemical soil sampling, trenching, magnetometer, and VLF (Ager, 1981). An Induced Polarization geophysical survey in 1985 reported very high chargeabilities (to 80 milliseconds). The area of high (+20 msec) chargeabilities extends beyond the limits of the survey (Ager, 1985). The raw IP data was reprocessed in 2003 using modern geophysical inversion techniques, and revealed in cross section a zone of high chargeabilities in the form of an inverted bowl. These geochemical and geophysical surveys have also been included in the project compilation.

This work led to three drilling programs in 1982, 1983 and 1985. The main focus of this work was the Lean-To showing. This showing was first drilled by Lansdowne Oil and Minerals Ltd. in 1982 when they completed 38 diamond drill holes in two phases totalling 917.3 m (Ager et al, 1983). The first 19 holes were drilled by Seel Enterprises Ltd. of Burnaby B.C. using a Winkie IEXS drill rig. Drilling covered an area 650 m long by 550 m wide. Lansdowne drilled an additional 24 holes totalling 1,480.9 m of BQ core in 1983. No drilling was done in 1984 but 10 more holes totalling 2010 m were drilled in 1985. Select results from these drill programs were included in table format in a technical report filed in 2012 to support the previous Seel resource estimate (McDowell and Giroux, 2012). Most of these drill holes were shallow and drilled at a 45 degree angle to target the Seel breccia body. The best core intersections were split and sent to Acme Analytical Laboratories, Vancouver BC for standard assays for copper, silver, and gold and for geochemical analysis by ICP methods for copper, lead, zinc, silver and tungsten. Some of this core is stored on the property but only a few boxes remain intact. Of these, only a few boxes have readable labels on them. The surface exploration and drilling resulted in the delineation of an annular zone of sulphide cemented breccia. Highlights of the programs were DH82- 19 which reported 18 m of 1.59% Cu and 640 ppb Au; DH85-1 with 9.76 m of 2.08% Cu, 47 g/t Ag and 0.3 g/t Au; DH85-9 with 0.46m of 8.14% Cu, 112.7 g/t Ag and 6 g/t Au, and DH85-10 with 0.9 m of 8.26% Cu, 120 g/t Ag and 9.5 g/t Au. In general, the breccia has been intersected along an arc length of 450 m to a depth of approximately 40 m. Although the records as supplied are incomplete, the average width and grade as observed in core may be estimated at approximately 8.5 m at 1.7% Cu, 20 g/t Ag and 0.20 g/t Au. The author cautions that the above dimensions and grades should not be relied upon for a resource estimation, but are stated here as illustration of mineralization tenor as it was understood in 1985.

There is an indication that a minor drill program took place in 1987, but there are no public records to verify this. Core from the earlier drill programs has suffered considerable damage and salvageable core has been transported to the Gold Reach (Surge) core storage facility.

The property was revisited between 1995 and 2000 by Mr. Rupert Seel, who undertook a program of excavating trenches, and collecting rock and reconnaissance soil samples on the property. A limited program of stream sediment geochemical surveying and prospecting was performed in 2003 by Orgyzlo (2004).

## 6.4 Previous Exploration – Ox deposit

The Ox porphyry copper deposit was found in 1968 during a regional prospecting program carried out by Silver Standard Mines Limited and American Smelting and Refining Company. Attention was drawn to the Ox Lake area due to a prominent gossan associated with a lead, zinc and silver vein on a bluff overlooking Ox lake; and a nearby granodiorite porphyry that was recognized as being virtually identical to that of the Huckleberry porphyry deposit 8km to the west of the Ox Lake claims.

Between 1968 and 1981 work has included geological mapping, 32.2 km of magnetometer surveying, 14.3 km of I.P. surveying, 2.4km of VLF-EM surveying, 843 soil samples and 61km of bulldozer trenching all to investigate copper-molybdenum mineralization (Holtby, 1989).

Silver Standard drilled 4826.5 meters of BQ core from 35 drill holes between 1968 and 1969. Drilling identified a steep, westerly dipping crescent shaped mineralized zone on the west side of Ox Lake. An additional 333.5 m from two drill holes were completed by Asarco Exploration in 1981. Various government publications report historical mineral resources for the Ox deposit. None of these estimates could be verified and they are of unknown reliability and not deemed relevant as they have been superseded by the estimates conducted by Wardrop Engineering (Arseneau et al., 2008), Giroux Consultants Ltd. (McDowell and Giroux, 2013; Boyce and Giroux, 2014), and P&E Mining Consultants Inc. (Puritch et al., 2016).

## 6.5 Previous Exploration-Damascus Vein

Work on the Ox Property by International Damascus Resources Ltd. (Damascus Resources) began in 1981 when the current Ox-A, Ox-B and Ox-C Claims were staked. In 1981, an airborne VLF-EM survey was completed. Between 1981 and 1983, prospecting, soil geochemical, and ground magnetometer surveys were completed on the Property as well as diamond drilling on the Ox-C Claim and southern portion of the Ox-B Claim. This work led to the drilling of four diamond drill holes in 1982. None of the holes encountered mineralization and the location and records are not available. Thirty six holes (910 m) were completed in 1983. The Damascus Vein and the Hilltop Vein were discovered and explored during this phase. The best intersection encountered on the Damascus Vein was in drill hole Ox-21 where a 3.82 metre core length (2.83 m true width) returned assays averaging 1228.6 g/t Ag, 7.32% Pb and 5.76% Zn. The property was operated by Cominco Ltd. in 1984, which recognised similarities between the Ox Property and the newly commissioned Equity Silver Mine. They optioned the property and completed work on the Ox-C and adjacent portion of the Ox-B Claim to search for bulk-tonnage (Equity-type) mineralization which they thought might be associated with the Damascus Vein system. Both the Ox Property and the Equity Mine area are underlain by steeply-dipping Mesozoic and Tertiary volcanic and intrusive rocks which are clay and tourmaline-altered and have widespread veinlet pyrite-sphalerite mineralization (Blackwell, 1985). Of particular interest to Cominco was “a 2000 by 600 metre high contrast Ag-As-Pb-Zn soil geochemical anomaly upslope from previously tested massive sulphide veins” (Blackwell, 1985). The Cominco program included ground geophysical surveys (VLF-EM and induced polarization), geological mapping, trenching (backhoe, cat and Wajax-pump) and rock geochemical sampling. The K Vein was discovered by prospecting during the 1984 Cominco program. Later in 1984, and following the Cominco program, Ager Consultants supervised an exploration program for Damascus Resources on the Ox-C Claim, completing an additional seven holes on the Damascus Vein and two on the Hilltop Vein. No report is available on the results from this work. On the Ox-East Claim, line cutting (26.7 km.), magnetometer (22.2 km.), induced polarization (11.65 km.) and soil geochemical surveys (787 samples analysed for Ag, Pb, Zn and As) were completed (Kallock, 1984). Seven diamond drill holes (721.4 m) were subsequently completed to test Ag-Pb- Zn-As anomalies. Hole 844 intersected 0.4 m grading 92.2 g/t Ag, 6.45 % Pb and 10.97 % Zn. None of the other holes intersected any significant mineralization. In 1986, Hi-Tee Resource Management Ltd. (Smallwood and Sorbara, 1986) completed a program on behalf of Damascus Resources consisting of 36.25 km. of line cutting, 30 km. of induced polarization surveying and 10.6 km. of VLF-EM surveying on the Ox-East Claim. This work outlined a strong induced polarization anomaly near the east margin of the Claim. Some trenching and sampling was completed near the K Vein, which is located approximately 200 m south and above the Damascus Vein. A more extensive Induced Polarization survey covering 30 line km was completed in 1986 (Smallwood and Sorbara, 1986).

In 1989, Granges Inc. optioned the property, completing a total of 748.6 m of diamond drilling in eight holes. Six holes (561.4 m) tested depth extensions of the Damascus Vein on the Ox-C Claim and two (187.2 m) tested the induced polarization (IP) anomaly at the east margin of the Ox-East Claim. The results were encouraging and intersected significant mineralization at depth on the Damascus Vein, the best intersection being 4.5 m (1.5 m true width) grading 194.3 g/t Ag, 0.7 g/t Au, 2.7 % Zn and 1.1 % Pb at a depth of 88.0 m (DDH-OX51). Granges (Deveaux, 1989) concluded that the mineralized zone has a shallow plunge to the south of 28°, and is still open in that direction and at depth. Of the two holes which were designed to test the strong induced polarization anomaly on the east side of the Ox-East Claim only one tested part of the target, the other was lost due to bad ground conditions. The holes intersected an intensely fractured and altered zone containing disseminated pyrite but no base or precious metal mineralization - the cause of the silver and arsenic-in-soil geochemical anomaly remains unexplained. Granges subsequently dropped their option on the Ox Property because "values and width did not improve with depth" on the Damascus Vein (Deveaux, 1989).

### 6.5.1 Historical Resources Estimate

A historical resource estimate has been reported for the Damascus Vein containing resources of 196,000 tonnes at 411 g/t Ag, and 7% combined Pb + Zn to a down dip depth of 100 m (Goldsmith et al, 1984). This historical resource figure was determined before the implementation of NI 43-101, and does not comply with NI 43-101 standards.

The Author does not consider this historic resource estimate to be accurate and should not be relied upon.

There has been no recorded production from any portion of the Ootsa Property.

## 6.6 Exploration in 2003 and 2004

Reconnaissance exploration was undertaken on the Seel Property by Gold Reach/Grayd Resources between June 6 and June 13, 2003. Eight days were spent on the property by two prospectors under the direction of Peter Ogryzlo. The purpose of the program was to visit areas of anomalous gold and copper concentrations outside of the known occurrences; visit areas of high IP response revealed in previous geophysical surveys; and to explore the possibility for the existence of a large porphyry copper gold system on the property. The methods used were grass roots prospecting and stream sediment sampling, both directed by the extensive geochemical and geophysical database. Fortyfive rock and 38 stream sediment samples were collected. The Seel Breccia was examined, but only for instructional purposes to familiarize the prospectors with the breccia style (angular clasts cemented with pyrite and chalcopyrite) and with the ferricrete blanket. This proved useful, as both prospectors later identified mineralized breccias and ferricrete in float and in outcrop. The most important of the new occurrences are:

1. Radio (Breccia Creek) Breccia prospect. A single cobble of chalcopyrite cemented breccia was found in float near the south bank of the creek near the junction with Seel Creek at 625572E 5945118N (NAD 83). Examination of the creek revealed several hundred metres of outcrop with exposures of ferricrete and quartz-sericite-pyrite altered sedimentary and intrusive rocks. Sulphide contents were locally high. One enigmatic outcrop of chalcopyrite cemented breccia was discovered, which reported appreciable concentration of copper and gold. An exposure of “tight” breccia (well mineralized with pyrite, but with little porosity) was noted over several hundred meters in the creek. There is a strong possibility that an unidentified breccia pipe is located close to these exposures, most likely on the south bank of the creek.

2. Upper Damascus tourmaline zone. A single cobble of tourmaline and pyrite cemented breccia float was collected (628460, 5945652) from one of the upper trenches on the Damascus (Ox-C) showing. Tourmaline cemented breccias are of considerable importance in Chilean breccia pipes, and may be either barren or highly mineralized. The area lies within the Damascus IP anomaly, and warrants further work. The cobble reported 323 parts per million (ppm) Cu and 48 parts per billion (ppb) gold.

3. Breccia knoll. An occurrence of weathered breccia (with galena? cement) was collected at the top of the knoll (627236, 5945732) which contains the Seel Breccia. The occurrence is approximately 400 m northeast of the Seel Breccia. This area lies near the edge of a gap in the sampling between the Lean-To (Seel) and the Damascus historical work. The underlying lithology is QFP (quartz-feldspar porphyry) pervasively altered to quartz-sericite pyrite. The occurrence reported 7080 ppm Pb and 18.5 g/t silver.

4. Creek C: This drainage was visited and sampled by R. Seel in 1997, who reported a sample at 0+600 of around 2.3 g/t Au. The creek cuts through quartz-sericite-pyrite altered sandstone and felsic volcanics attributed to the Smithers Formation. Sandstones are decalcified and pyritized, giving a “sanded” texture. A sample of sandstone with around 30% pyrite was collected from an outcrop believed to be the same as the one sampled by R. Seel, and returned 1373 ppb gold.

A stream sediment survey was conducted to test the south-eastern portion of the property, which has no recorded sampling or ground geophysical surveying. Six orientation samples were collected, three regional samples and three samples from “mineralized” drainages. Six conventional silt samples were also collected at the same sites. Approximately five kilograms of sample were collected over 50 m of stream bed at each site. The sample was field sieved down to –20 mesh, with the collection of approximately 300 g of sieved sample. The orientation samples were further sieved to –80 mesh in the lab, and the –80 mesh fraction and the +80-20 mesh fraction were both analyzed by ICP-MS on a 30 g split for base and precious metals. The sample program successfully identified new areas with anomalous copper, gold, silver and zinc. This program was followed up in 2004 by the cutting of a new grid, IP and magnetometer surveys and geological mapping. This work is described in a previous technical report by MacIntyre (2005). The IP survey defined a large chargeability anomaly which was tested by 3370 m of diamond drilling in late 2004 and early 2005 under the direction of Gold Reach Resources, the current property operators (now Surge Copper Corp.). A description of exploration activities conducted by Gold Reach (Surge) from 2004 until current can be found in Section 9 of this report.

# 7.0 Geological Setting and Mineralization

The following section is compiled in part from earlier geological reports prepared by Ogryzlo (2004), MacIntyre (2005), Stubens and Veljkovic (2008), Christensen et al. (2011), and Ebert (2020).

## 7.1 Local Geology

The Ootsa project is located at the southeast end of a southeast trending belt of porphyry deposits which includes the Huckleberry Mine, the Berg, and Lucky Ship deposits (Figure 1-1). The Ootsa Property is underlain by a series of juxtaposed fault blocks containing tilted and locally folded strata of the Telkwa, Nilkitkwa, Whitesail and Smithers Formations of the Lower to Middle Jurassic Hazelton Group. These rocks are cut by multi-phase intrusive complexes that are correlative with the Late Cretaceous Bulkley Intrusive suite. Intrusive phases include diorite, granodiorite, quartz diorite, porphyritic quartz monzonite (aka quartz porphyry), porphyritic granodiorite, feldspar porphyry, and quartz feldspar porphyry. The youngest rocks on the property are gently dipping basaltic and rhyolitic flows of the Eocene Ootsa Lake Group that cap older strata in the Whitesail and Kasalka ranges. These units are described in more detail below.

Figure 7-1 shows a simplified geology map of the Tahtsa Reach area with geology derived and simplified from the 2006 BCGS Geoscience map. The most extensive rock unit in this region is the Telkwa Formation of the Lower to Middle Jurassic Hazelton Group. These rocks consist of lapilli tuff, lithic tuff, crystal tuff, tuff breccia and minor amounts of porphyritic augite andesite, dacite, tuffaceous siliceous argillite and pebble conglomerate. The Huckleberry Mine is located within the Whiting-Huckleberry horst with mineralization hosted in both hornfelsed Telkwa Formation and intrusive rocks. The Seel and Ox deposits are situated within the down dropped Sibola Creek Graben and are hosted in

Smithers Formation marine sedimentary rocks and intermediate to felsic porphyritic intrusive rocks.

The structural setting of Tahtsa Lake and Tahtsa Reach is one of dextral shear, compressional faulting, and crustal extension and rifting. The following structural description is taken from Christensen et al. (2011). Compressional stresses from the amalgamation of the Stikine Terrane with ancestral North America led to the development of deep seated faults in the region. Relaxation and extension following amalgamation were accompanied by the emplacement of calc-alkaline intrusive rocks with their accompanying zones of hydrothermal alteration and mineralization. Extension was characterized by the formation of northerly trending horsts and grabens. Further compression and dextral shear resulting from subsequent collisional events led to the dismemberment of the Huckleberry Main Zone and East Zone deposits along kilometre scale curved faults that dissect the mineralized zone.

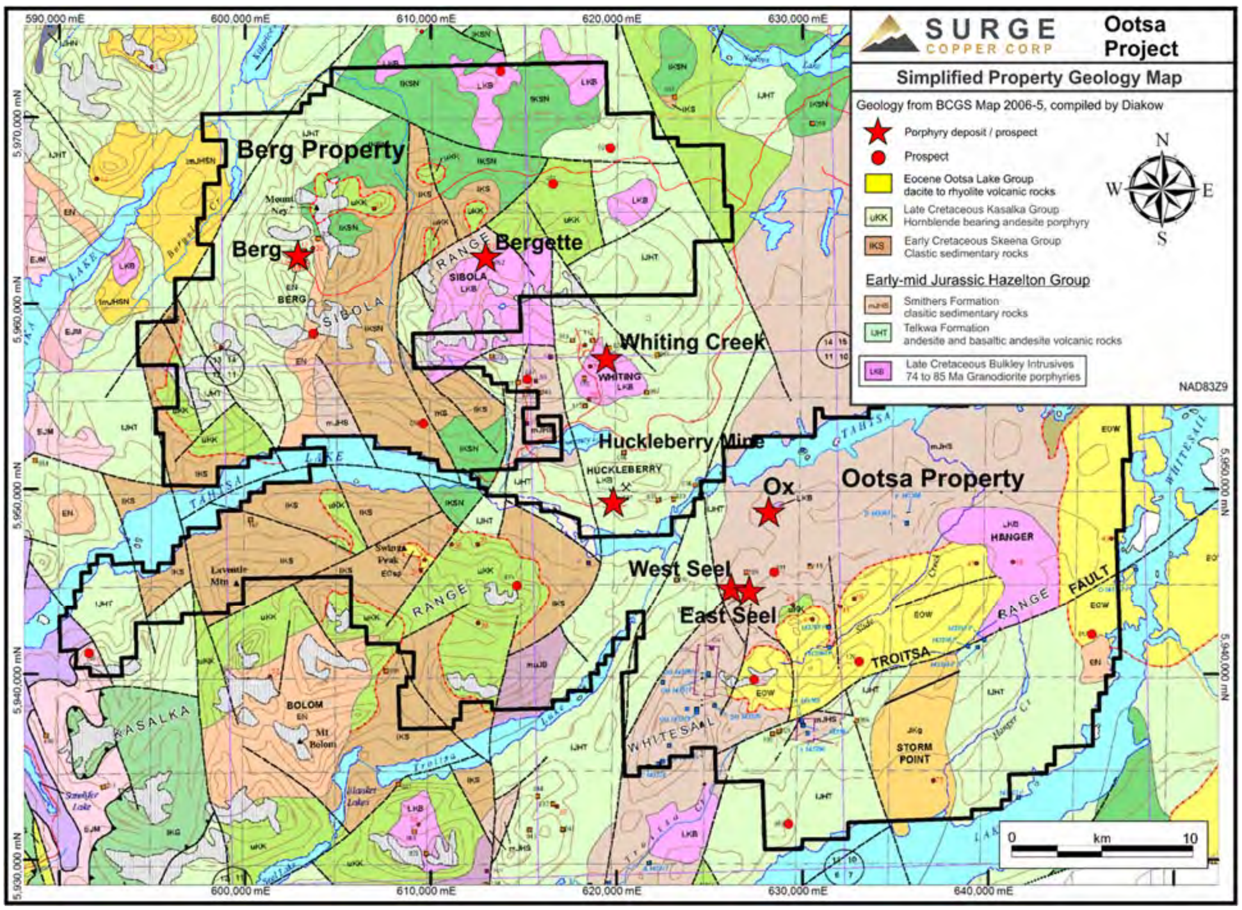



**Figure 7-1: Geology of Tahtsa Reach. Geology from BCGS geoscience map 2006-5.**

Mineralization at Huckleberry formed in the hornfelsed wallrocks surrounding equigranular granodiorite intrusions. The current level of erosion is interpreted to be near the base of the Hazelton Group exposing the roots of a porphyry system (Christensen et al., 2011). The stratigraphic level, equigranular intrusive rocks, and simple Cu +/- Mo with limited Au or Ag support the inference that the Huckleberry deposit exposes a fairly deep level porphyry system.

Geologic characteristics at the Ox deposit are similar to those of Huckleberry and both deposits have returned similar ages for mineralization of 83 +/-3 Ma at Ox (Richards, 1974) and 82.3 +/- 3 Ma at Huckleberry (Christensen et al., 2011). The intrusion at the Ox deposit was dated at 83.4 ± 3.2 Ma by K-Ar (Richards, 1974) and the Main Zone Stock at Huckleberry was dated at 83.5 ± 0.3 Ma by $^{206}Pb/^{238}U$ (Friedman and Jordan, 1997).

Age dating of the intrusive host rock at East Seel returned an interpreted $^{206}Pb/^{238}U$ crystallization age of 86.7 ± 0.4 Ma and an unaltered intrusive from West Seel returned an interpreted $^{206}Pb/^{238}U$ crystallization age of 152.4 ± 1.0 Ma (Ebert, 2020). A Rb-Sr age on feldspar and biotite from West Seel returned an age of 86.1 ± 1.1 Ma (Peterson, 2014), indicating that mineralization at West Seel has a similar age to East Seel, in the 86.1 to 86.7 Ma range. However, it is clear that an older intrusion occurs in the West Seel area.

**7.1.1 Telkwa Formation (LJT)**Widely spaced outcrops of maroon, purple, and red lapilli tuff with lesser crystal, lithic and ash tuff, volcanic breccia and agglomerate interbeds occur along the Troitsa Main Forest Service Road and at isolated localities throughout the property. These rocks, which typically contain 30-60% 1-2 mm feldspar crystal fragments, are lithologically identical to the lower Telkwa Formation elsewhere in central B.C. Therefore, these rocks are correlated with the Telkwa Formation (MacIntyre, 2005).

### 7.1.2 Nilkitkwa Formation (LMJS)

Medium to thin bedded, dark grey siltstones and mudstones crop out in a number of steep sided creek gullies that are part of the upper Seel Creek drainage system. Good exposures also occur along the banks of Seel Creek near the old Bethlehem Copper camp. These fine grained sedimentary rocks were mapped as unit 6 argillites by Bethlehem Copper (Anderson, 1971). The GSC assigned these rocks to the Middle to Upper Jurassic Ashman Formation (Woodsworth, 1980), but these rocks are sufficiently different in lithology and stratigraphic position that others consider them to be a separate and older unit. The primary differences between these rocks and the Smithers or Ashman formations is the lack of feldspar detritus and the more reduced, finer-grained and presumably deeper marine nature of these rocks. These features are similar to the Lower Jurassic Nilkitkwa Formation that is found further north in the Smithers-Babine Lake area. This correlation is supported by the apparent stratigraphic position of these rocks which suggest they overlie the Lower Jurassic Telkwa Formation. Similar marine sedimentary rocks occur near the mouth of Kasalka Creek but these rocks were either mapped as the Smithers or Ashman Formations (Woodsworth, 1980) or included in the Telkwa Formation (MacIntyre, 1985).

### 7.1.3 Whitesail Formation (LMJW)

A distinctive unit comprised of well bedded cream to light grey rhyolitic ash flow tuffs with lesser interbeds of chert, feldspathic wacke, felsic lapilli tuff and volcanic breccia crops out in creeks draining the steep north facing slope of the Whitesail range and in the area east of the Damascus vein. These rocks occur elsewhere in the Whitesail- Tahtsa Lake area and were mapped as the Lower to Middle Jurassic Whitesail Formation by the GSC (Woodsworth, 1980). These rocks grade upward and are in part interbedded with the lower part of the Middle Jurassic Smithers Formation. The best section where this transition is exposed is on the steep north facing slope of the ridge south of the Lean-To showing. Here outcrops exposed in creek gullies at the base of the ridge are mainly rhyolitic ash flows interbedded with feldspathic wackes and granule conglomerates and these grade up slope and up section into predominantly feldspathic wacke, siltstone and granule conglomerate of the Smithers Formation. A similar transition is observed in the area east of the Damascus vein where the section dips gently to the north. Rocks exposed near the top of the knoll are typical Whitesail Formation whereas those further down slope and up section are typical of the Smithers Formation (MacIntyre, 2005).

### 7.1.4 Smithers Formation (MJS)

Medium to thin-bedded feldspathic wackes, siltstones and heterolithic granule to pebble conglomerates are exposed on the steep north facing slope south of the Lean-To grid and along prominent cliffs, road cuts and trenches northeast and west of the Damascus vein. These rocks are assigned to the Smithers Formation based on lithology and apparent stratigraphic position. Some limy beds containing macrofossils are reported to occur at the base of cliffs east of the Damascus vein (Blackwell, 1985) but these could not be located.

### 7.1.5 Ootsa Lake Group

The southern boundary of the Seel Property overlaps the northern edge of the Whitesail Range. At higher elevations tilted and folded fault blocks of Hazelton Group rocks are uncomformably overlain by gently dipping feldspar-phyric basalt and lapilli tuff of the Eocene Ootsa Lake Group. Blackwell (1985) reports small outliers of these rocks in Poison Creek west of the Damascus vein. Two small stocks, one comprising coarse feldspar porphyry, the other biotite-feldspar porphyry intrude Eocene Ootsa Lake Group rocks south of the Seel property. These high level intrusions were probably feeders for Eocene flows that cap the Whitesail range.

### 7.1.6 Bulkley Intrusive Suite

Intrusive rocks on the Ootsa property crop out in trenches, road cuts, creeks, and along the crest of some ridges. Drilling at the Seel and Ox deposits has intersected large zones of highly altered, mainly feldspathic intrusive rocks. At least 7 distinct intrusive phases have been recognized at Seel within an intrusive complex that is at least 1.6 km long by 0.5 km wide and is elongate in a northeast direction. The oldest intrusives, determined by cross cutting relationships are an equigranular feldspar-quartz-biotite intrusive (locally dioritic) and a coarse crowded feldspar porphyry that varies somewhat in grain size and phenocryst abundance. The intrusive complex also contains a medium grained feldspar porphyry and a medium to coarse grained feldspar-quartz porphyry. All of the above intrusive units are observed to host porphyry Cu-Au-Mo mineralization. At the northeast end of the intrusive complex is coarse quartz porphyry along with a finer grained feldspar-quartz porphyry that is spatially related. A volumetrically minor set of relatively late felsic and mafic fine grained dikes have been intersected in some drill holes.

## 7.2 Geology and Mineralization of the Seel Deposit

The Seel deposits can be separated into four domains; East Seel, West Seel, Seel Breccia and the East Extension Zone (also called NE zone) (Figure 7-2).

The East Seel deposit hosts porphyry Cu-Au mineralization associated with quartz-chalcopyrite-magnetite-pyrite veins on the east side of the Seel mineralized trend. It is hosted mainly in altered coarse crowded porphyry intrusive rocks with some mineralization hosted in hornfelsed sedimentary rocks near its north and west margins.

The West Seel deposit is defined by porphyry Cu-Au-Mo-Ag mineralization hosted in fine grained clastic sedimentary rocks, with lesser sandstone to conglomerate beds, and undifferentiated porphyry intrusives associated with pyrite-pyrrhotite-chalcopyrite-molybdenite veins. At depth the West Seel deposit is hosted by a large weakly porphyritic intrusive containing strong biotite alteration (potassic) that does not outcrop at surface.

A late episode of structurally controlled veins and breccias containing quartz-carbonate + Cu-Zn-Pb-Ag mineralization occur at the Seel Breccia and along some of the more significant faults in the area. Carbonate associated with these zones consists of tan Fe-carbonate, pink Mn-carbonate, and local calcite. Sulfides consist mainly of chalcopyrite, pyrite, sphalerite and galena. In places these veins contain open spaces, drusy cavities, crustiform banding and cockade textures, indicating they are lower temperature and higher level than the earlier porphyry Cu-Au +/- Mo +/- Ag events.

The East Extension zone is characterized by mixed sediments and various porphyritic rocks that contain intermittent zones of weak to moderate Cu + Au + Ag mineralization. High grade Ag + base metal mineralization, characteristic of the Seel Breccia zone, has also been intersected by drilling in the East Extension, as well as occasional intervals of elevated gold associated with fault zones.

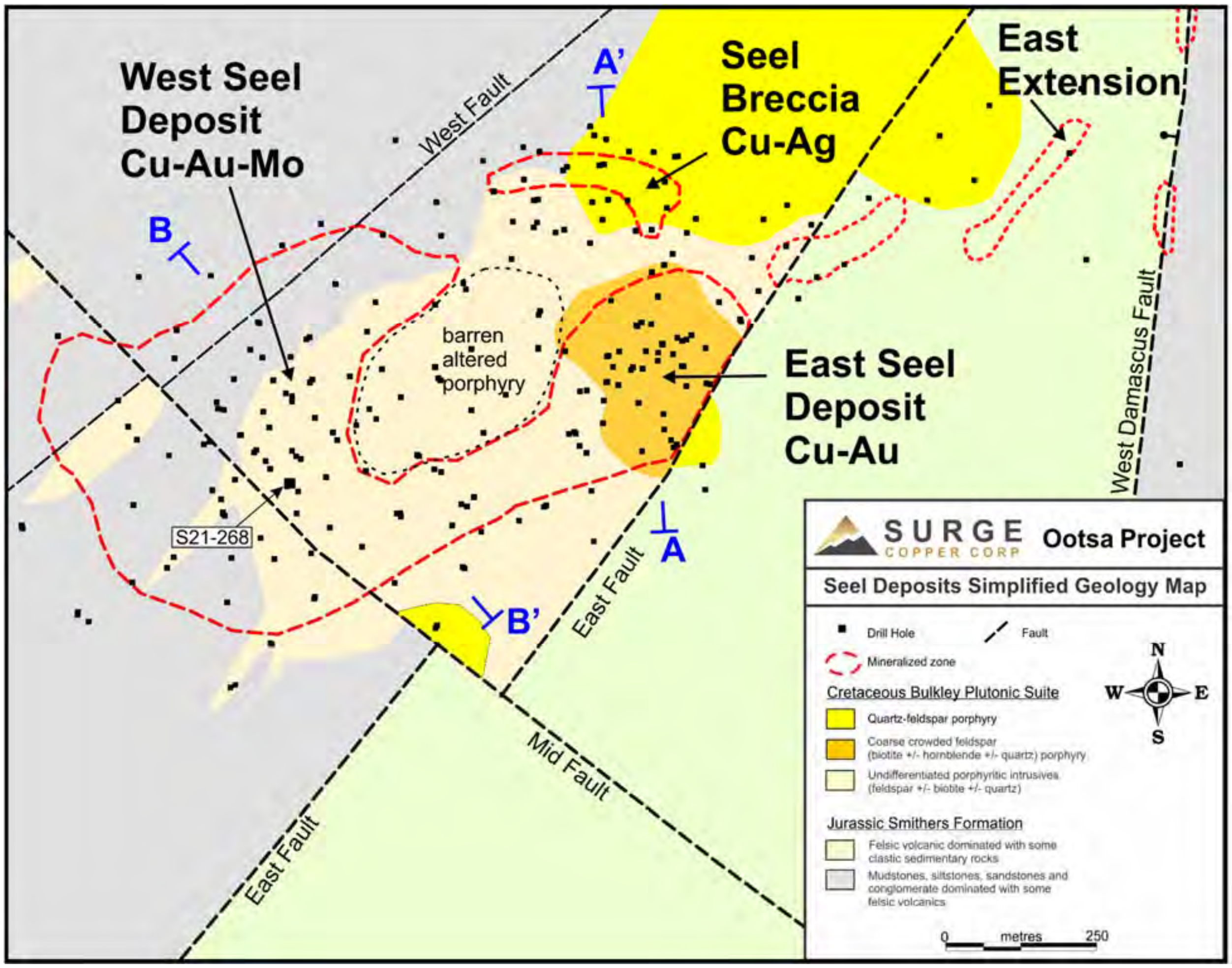



**Figure 7-2: Simplified Geology of the Seel deposit.**

Evidence of faulting is fairly common in drill holes at Seel. Three significant faults have been identified during the various drill programs and are labelled on Figure 7-2 as the East Fault, the West Fault, and the Mid Fault. These faults postdate the main episode of porphyry mineralization but locally host younger lower-temperature vein and breccia style mineralization and related alteration. The amount of displacements on the faults remains unconstrained and porphyry related alteration and mineralization occurs on either side of the structures. High grade gold-silver and local base metal mineralization can occur along the faults and are often associated with strong clay alteration which can be grade destructive in the surrounding porphyry. Cataclasite and brecciated textures, often accompanied by quartz-carbonate-sulfide veining, have been observed in drill core from the fault zones but often the fault location has been inferred through subtle criteria such as grade and changes in lithology or alteration.

Several zones of brecciation are recognized at the Seel deposit. The largest known zone occurs at the Seel Breccia which locally hosts high grade Ag-Cu-Zn-Pb mineralization.

Several linear, fault-controlled zones of brecciation occur throughout the Seel deposit and can often be well mineralized.

### 7.2.1 The East Seel Cu-Au zone

East Seel Cu-Au style porphyry mineralization is associated with early potassic alteration and quartz-chalcopyrite-magnetite-pyrite veining with a moderate to strong chloritic component. This style of mineralization forms a distinct airborne magnetic high. The main intrusive unit throughout the Cu-Au zone is a coarse crowded porphyry containing 40 to 60% phenocrysts in a fine grained aphanitic matrix. Feldspar is the dominant phenocryst consisting of euhedral and sub rounded crystals, 3 to 7mm in size. Biotite phenocrysts, 2 to 3mm in size make up about 2 to 5% of the rock but are often completely masked by alteration. This rock is termed “crowded feldspar porphyry” as the feldspar phenocrysts typically touch each other. Alteration causes the color and appearance of this rock to change considerably over short distances, however, the texture and phenocryst composition remains fairly constant. Locally, strong sericite alteration and matrix silicification within the crowded feldspar porphyry bleaches and masks any biotite that might have been present. In the mineralized zone the rock contains 2 to 4% finely disseminated pyrite and chalcopyrite in a variably silica flooded groundmass. Pyrite and chalcopyrite also occur along fractures, and pyrite-chalcopyrite-magnetite occurs in quartz veins, locally concentrated in the vein centers. Traces of bornite have been found in the higher grade zones of East Seel. There are generally 5 to 7 quartz veins per metre, 0.5 to 1cm in size, within the mineralized zone. Early high temperature quartz-chalcopyrite veins occur in this zone along with several episodes of later veining, including purple anhydrite veins that carry variable amounts of pyrite and chalcopyrite.

Two styles of alteration dominate in the Cu-Au zone, illustrated in Figure 7-3 below. The first is an early potassic alteration characterized by salmon to pink color K-feldspar within the crowded feldspar porphyry groundmass and as selvages to veins, along with biotite veins and zones, and quartz-pyrite-chalcopyrite-magnetite veins. Locally potassic alteration occurs with chlorite which has altered a large portion of the biotite crystals. The second alteration style seen in places features sericite alteration overprinting potassic alteration, where the rock is bleached to a light grey green or tan color, mafic minerals have been destroyed, and often the feldspar phenocrysts and porphyry groundmass are soft. In some zones there appears to be similar Cu and Au grades in both sericite altered zones and potassic altered zones, whereas in others chalcopyrite abundance is visibly reduced in the sericite altered zones indicating the sericite alteration is grade destructive. This is confirmed locally by assay values. Grade destructive sericite alteration, and locally grade destructive structurally controlled late argillic alteration are important features within parts of the Seel Cu-Au zone. Argillic alteration haloes occur around the faults that bound the zone on the south and east sides, and these haloes are grade-destructive.

Mineralization becomes patchy at depth largely due to an increase in grade-destructive sericitic and argillic alteration.

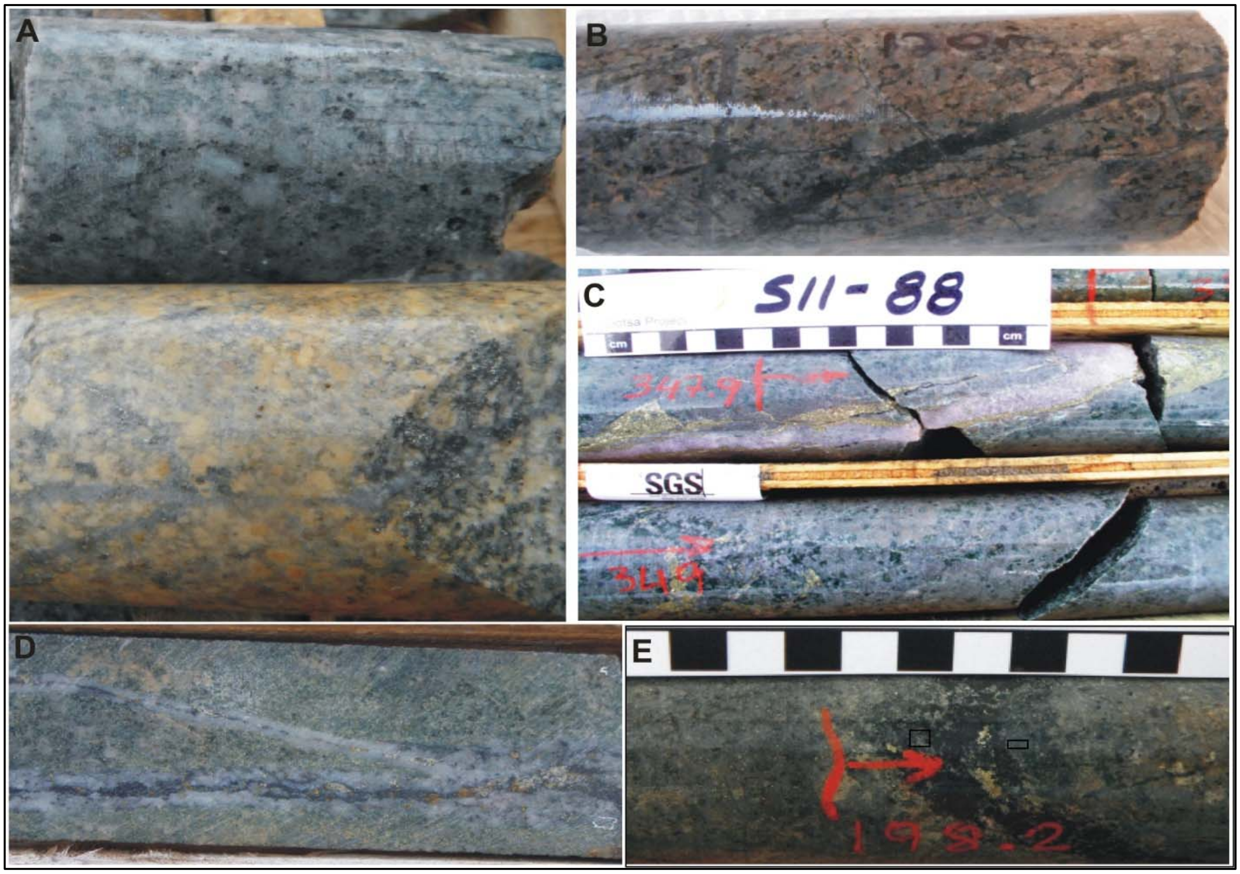



**Figure 7-3: Photos from East Seel drill core. A) top-Sericite dominated alteration, bottom-Potassic alteration B) Potassic alteration with fine grained disseminated chalcopyrite and pyrite, K-feldspar porphyry matrix, quartz-sulfide veinlets and black biotite + chalcopyrite veinlets. C) Potassic + chlorite altered feldspar porphyry with purple anhydrite vein. D) Mixed potassic and sericite altered porphyry with quartz-magnetite-chalcopyrite veins. E) Magnetite-chalcopyrite vein.**

Figure 7-4 shows a representative cross section (Section A-A') through the middle of the East Seel zone. A map illustrating the location and orientation of all Seel cross sections can be viewed in Figure 10-1. In the near surface the deposit contains a high-grade core with copper equivalent values above 1%; these values decrease outward and downward.

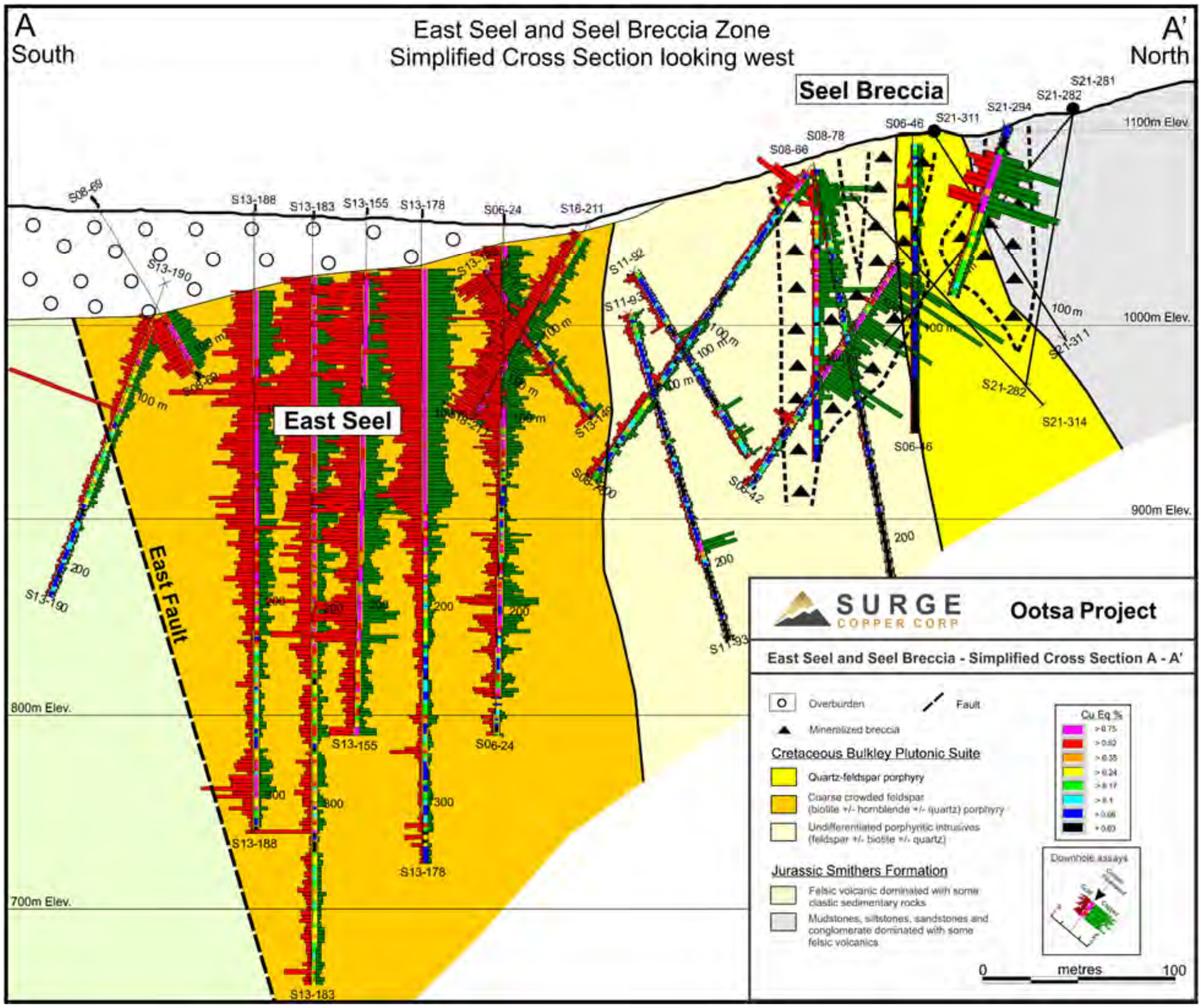



**Figure 7-4: Cross section A-A' through the East Seel zone and Seel Breccia.**

### 7.2.2 West Seel Cu-Au-Mo-Ag zone

The West Seel zone was discovered by drilling during the late 2011 field season when holes S11-91, 95, 97 and 100 all intersected Cu-Au-Mo-Ag bearing porphyry style mineralization. Since 2011, 104 drill holes have been completed in and around the West Seel deposit, for a total of 76,798 metres drilled. This has resulted in the definition of a large mineralized zone over a strike length of approximately 800 m in the NE-SW direction, widths of up to 800 m, and to depths exceeding 1000 m below surface. The zone remains open at depth to the south. A representative cross section of the West Seel deposit is provided in Figure 7-5 below.

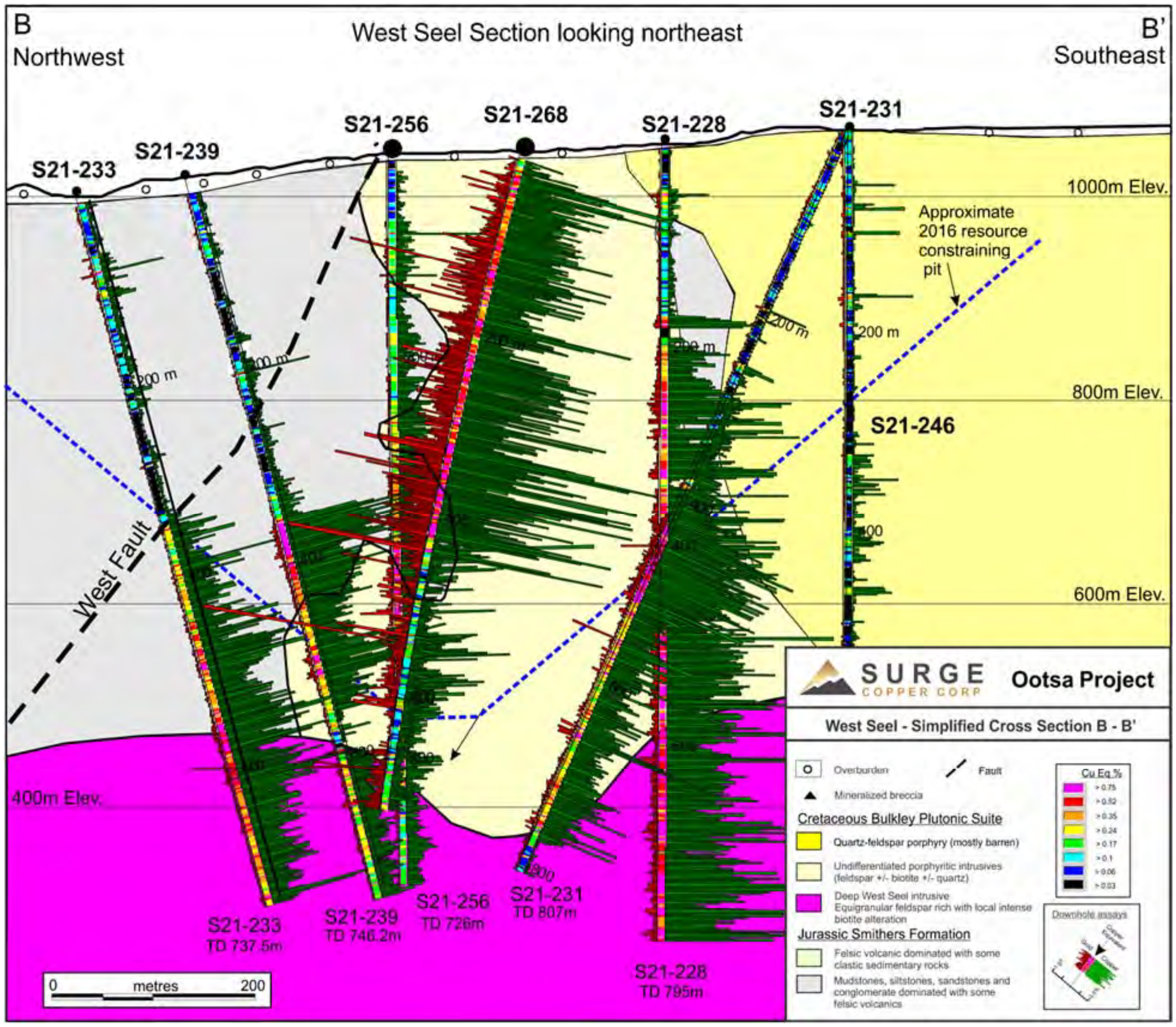



Figure 7-5: Section B-B' through the West Seel zone.

The West Seel deposit contains Cu-Au-Mo-Ag mineralization hosted in a variety of porphyritic intrusive rocks, breccias, and fine-grained clastic and volcanic rocks adjacent to the intrusive margins. The deposit contains a complex suite of feldspar-biotite-quartz porphyritic intrusive rocks containing phenocrysts of varying size and abundance that intrude a fine-grained clastic sedimentary and volcanic package containing variable biotite hornfelsing. A mineralized hydrothermal breccia pipe has been identified at depth and does not appear to extend to surface. The breccia pipe is roughly 100 x 150 m horizontally and has been traced over 400 m vertically, and remains open at depth. At depth, the West Seel deposit is hosted by a large, weakly porphyritic intrusion containing strong potassic (biotite) alteration, termed the West Seel intrusion. Higher-grade mineralization at West Seel appears to be concentrated around the contacts of this intrusion within the surrounding hornfelsed country rocks.

Mineralization at West Seel is associated with quartz-pyrite-chalcopyrite-molybdenite-pyrrhotite veins and potassic, locally sericitic alteration. Sericitic alteration is widespread in the upper parts of the deposit, while biotite-dominant potassic alteration is common at depth. In addition to quartz veins, sulfides also occur in fracture coatings and disseminations in the groundmass of the rock. The wall rocks to the intrusive complex comprise fine-grained sedimentary rocks, dominantly mudstone to siltstone with minor sandstone and occasional conglomerates that have been variably hornfelsed. On the north side of the deposit, intercalated volcanic rocks are common and have been altered to hornfels along with the sedimentary package. This hornfelsed contact zone is characterized by strong biotite alteration with vein-controlled and disseminated sulfide mineralization, and typically hosts the highest grades of mineralization at West Seel. Figure 7-6 below shows representative photographs of mineralization and alteration in various West Seel lithologies.

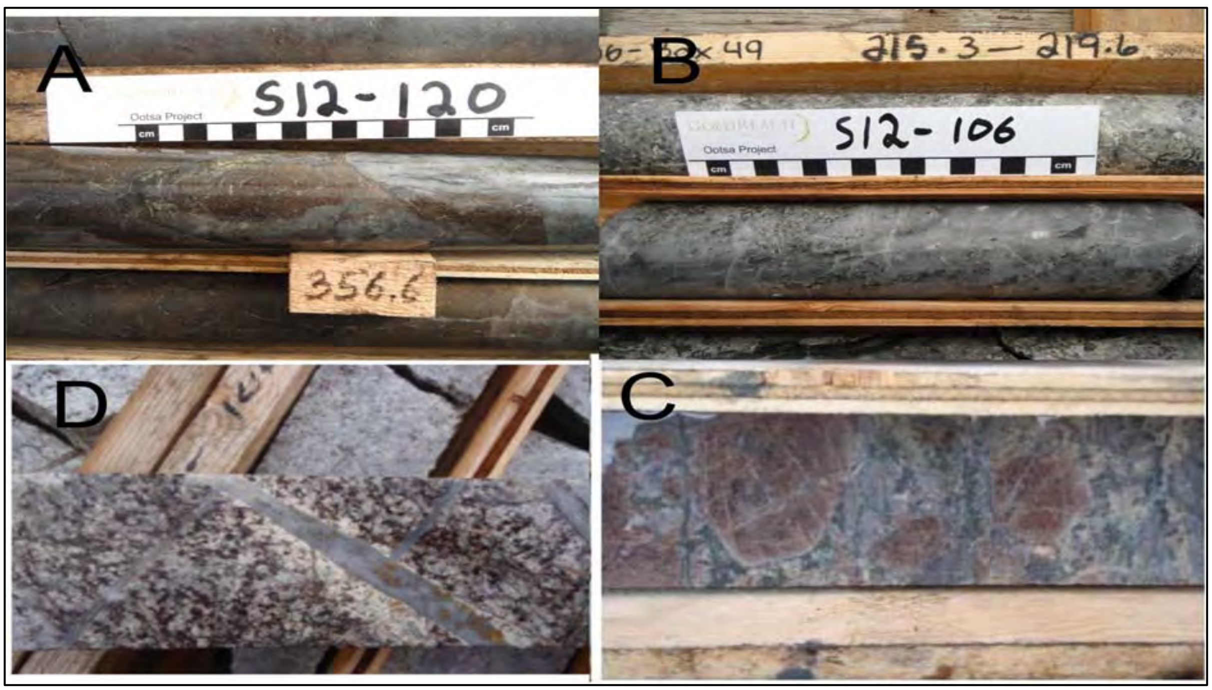



**Figure 7-6: Photos of representative lithologies from West Seel drill core. A) Biotite hornfels with strong silicic component. B) Sericite-silicic alteration of fine grain feldspar porphyry. C) Conglomeritic sedimentary rock with biotite alteration. D) Biotite altered equigranular intrusive with multi-generational quartz-sulfide veining from West Seel Intrusive.**

At depth, the West Seel intrusion is equigranular to weakly porphyritic with moderate to strong potassic (biotite) alteration, and is compositionally equivalent to granodiorite. This intrusion exerts a strong control on mineralization at West Seel. The sulfide assemblage is notably different from elsewhere at Seel due to the amount of pyrrhotite that appears with pyrite, chalcopyrite and molybdenite. Secondary biotite is abundant and widespread at depth in the West Seel zone, and largely masks the original intrusive texture. The intrusion contains up to 1% disseminated chalcopyrite and minor disseminated molybdenite, with anywhere from 3-12 quartz-pyrrhotite-chalcopyrite-pyrite-molybdenite veins per metre, each 1-2 mm wide. The rock averages 2-4% pyrrhotite and is strongly magnetic. Figure 7-7 below shows representative photographs of mineralization and alteration in the West Seel intrusive. The mineralized zone at West Seel is volumetrically large and remains open to the south at depth where it is 800-1000 m wide.

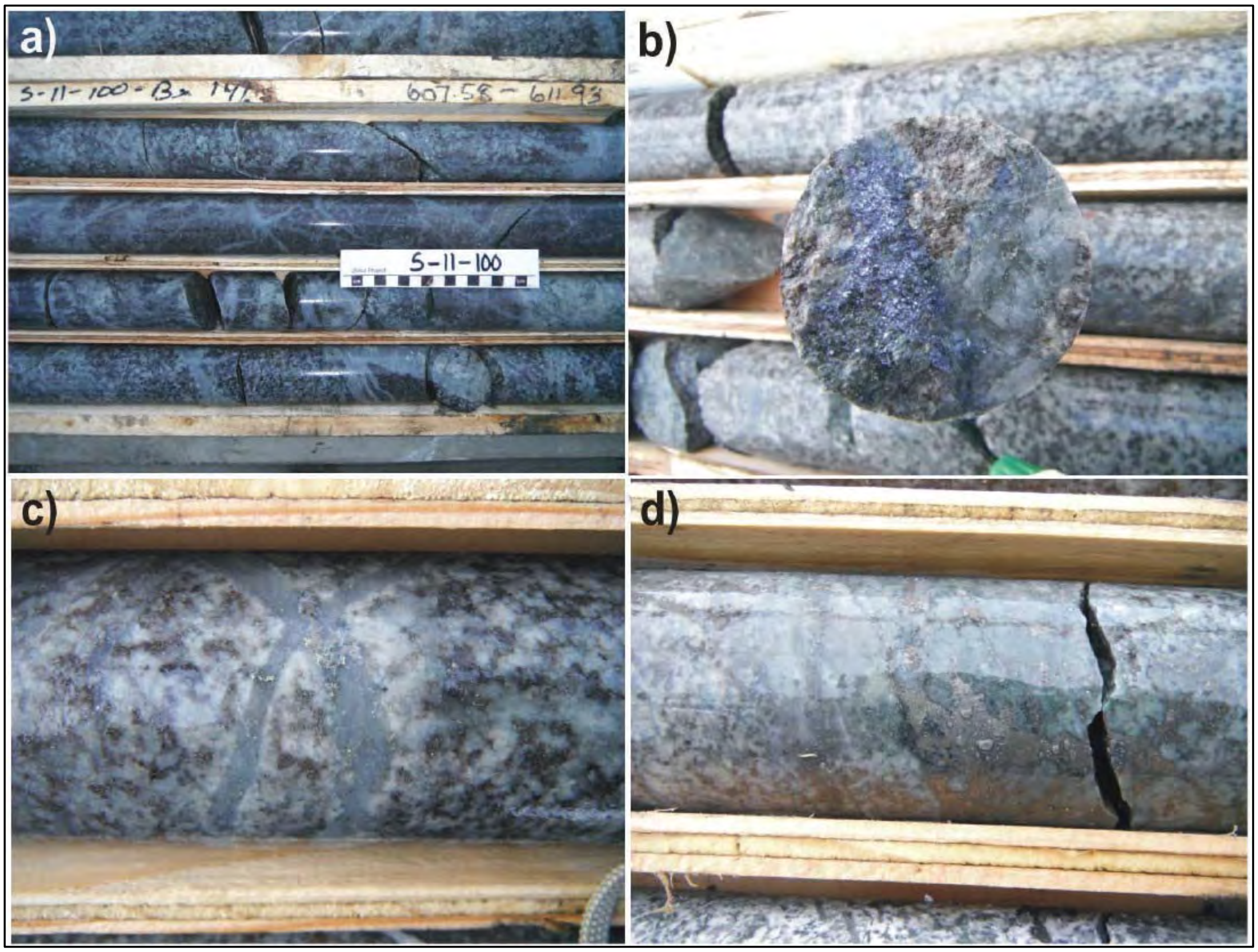



**Figure 7-7: Photographs of mineralized West Seel intrusion: a) biotite-altered West Seel intrusion with strong quartz veining and disseminated and vein controlled pyrrhotite-chalcopyrite-pyrite-molybdenite; b) fracture coated with molybdenite ± chalcopyrite; c) quartz veinlets containing pyrrhotite-chalcopyrite-pyrite; and d) large clots and zones of pyrrhotite**

Thus far, West Seel mineralization has been traced by drilling roughly 800 m along a northeast-southwest strike over widths of up to 800 m and to depths exceeding 1000 m below surface. West Seel mineralization comes to surface over an area approximately 300 m wide, but the highest grades (> 0.75% CuEq) start around 200 m below surface, focused around the contact of the West Seel intrusion. Mineralization forms a gradational contact on the west side but may be truncated by a fault on the east side. However, strong alteration and localized mineralization does occur to the east side of the East Fault. Late quartz-carbonate veins with precious and base metal sulfides are found in fault splays and sub-parallel structures and fractures near the fault. The sense of displacement along the East Fault remains poorly understood, so the east side of the fault remains a valid conceptual exploration target.

Representative photographs of the West Seel breccia pipe are shown in Figure 7-8 below. The breccia is located on the northeastern side of West Seel and has been traced by drilling over a horizontal area of 150 m long by 100 m wide, extending at least 400 m subvertically from a depth of approximately 400 m below surface. The zone remains open at depth. The breccia pipe contains rounded and milled to angular clasts and is variably matrix- to clast-supported. Clast types include sedimentary rocks, intrusive rocks, and quartz vein material in a hydrothermal-intrusive matrix. Pyrite, pyrrhotite, chalcopyrite, and molybdenite occur within the breccia matrix and locally within mineralized clasts.

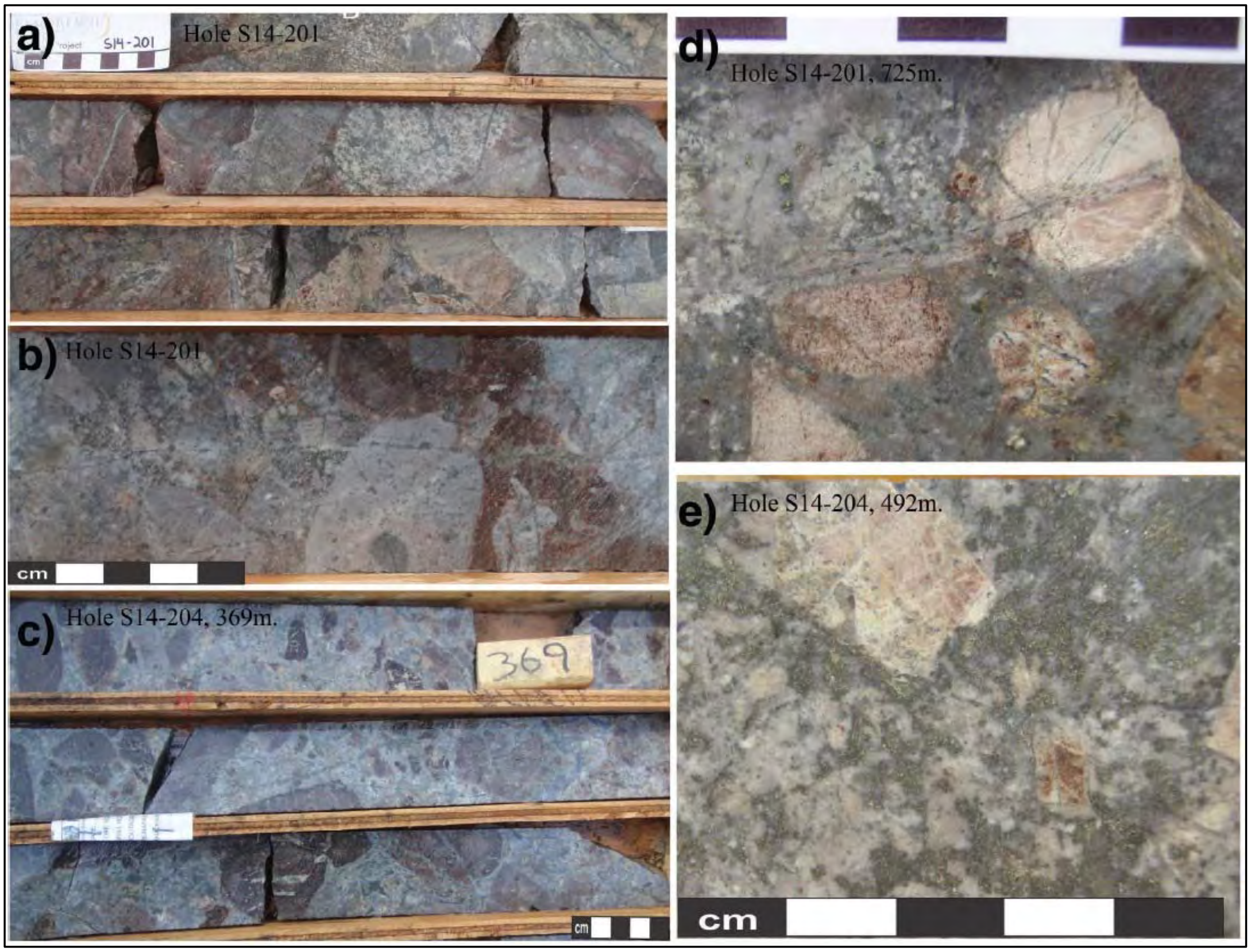



**Figure 7-8: Photographs of West Seel hydrothermal breccia: a) rounded polylithic clast-supported breccia with hydrothermal and intrusive matrix and sulfides; b) rounded and angular clasts in a brown, hydrothermal, biotite-rich matrix with pyrite-chalcopyrite-molybdenite; c) matrix-supported breccia with rounded and angular clasts in quartz and rock flour matrix; and d)-e) sulfide-rich hydrothermal and intrusive matrix breccia with chalcopyrite, pyrite, and minor molybdenite**

### 7.2.3 Seel Breccia Cu-Ag-Zn Zone

The Seel Breccia is located approximately 200 metres north of the East Seel deposit (Figures 7-2 and 7-9) and has been shown to contain high-grade copper and silver mineralization as well as minor gold and zinc. The breccia is an east-west trending, subvertical, south dipping breccia body ranging from 25-100 m wide over a strike length of 300+ m, extending to depths of up to 100 m below surface. Smaller parallel and irregular breccia bodies locally surround the main zone. Historical drilling prior to 2021 outlined a small resource of approximately 1.1 million tonnes grading 0.42% copper, 12.6 g/t silver, and 0.06 g/t gold near the eastern end of the zone. Drilling in 2021 resulted in significant expansion of the mineralized zone to the west and at depth with the completion of 45 drill holes totaling 9,054 metres drilled.

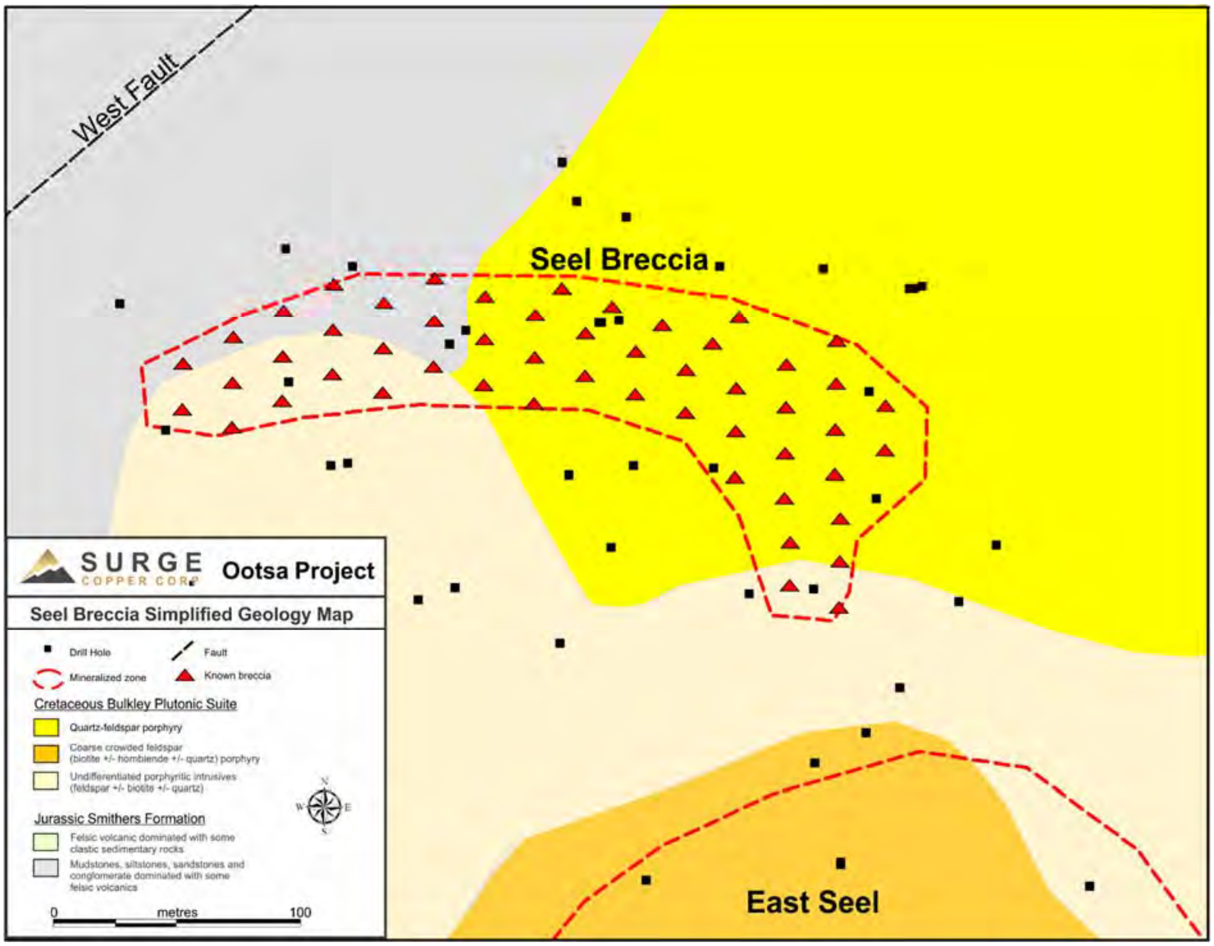



**Figure 7-9: Geology and mineralized zones of the Seel Breccia**

The Seel Breccia is hosted by fine- to medium-grained light grey feldspar porphyry and aphanitic to weakly porphyritic felsic volcanic rocks and minor sedimentary rocks (Figure 7-9). The feldspar porphyry typically contains 20-30% plagioclase phenocrysts averaging 2-3 mm in a very fine grained to aphanitic quartz-feldspar groundmass. Felsic volcanic rocks range from dacitic to rhyolitic composition and display a variety of primary volcanic textures ranging from aphanitic to fragmental with occasional lapilli textures. The northeastern side of the breccia zone is underlain by a bleached white coarse-grained quartz-feldspar porphyry ("QF-P") compositionally equivalent to quartz monzonite which is largely unmineralized. This unit has a distinctive "splotchy" texture imparted by coarse irregular patches of quartz, and is similar to quartz-feldspar porphyry observed on the eastern side of the East Seel deposit some 300 metres to the south. The central part of the breccia zone is intruded by a strongly magnetic post-mineral mafic dyke that extends roughly north-south and may have been emplaced along a fault zone.

In the mineralized zone, early silica alteration is overprinted by moderate to intense carbonate alteration associated with the brecciation and mineralization event. Pervasive iron carbonate accompanied by minor calcite infuses the rock around brecciated zones and imparts a buff to tan colour to the rock. In places, moderate to strong biotite hornfels was observed, especially in volcanic and sedimentary wall rock. In most cases the hornfels is overprinted by carbonate alteration. Clay alteration is present around faults and fractures. The bleached coarse-grained quartz-feldspar porphyry on the northeast side of the zone is extensively altered to clay and has a chalky appearance on surface and in drill core. In the rare occurrences where breccia-type mineralization is present in the QF-P, background clay alteration is overprinted by iron carbonate. Post-mineral dykes are largely unaltered except for minor clay alteration of feldspars and chlorite alteration of mafic minerals.

Several faults have been identified in drill core that offset the mineralized zone. In some cases the faults are filled by post-mineral mafic dykes. Other faults contain strong clay alteration which overprints earlier iron carbonate and sulfide mineralization. Fault geometry and the degree of offset within the zone is not well understood at present; however, one major structure on the east side of the zone is strongly mineralized and may be a controlling structure for mineralization in this part of the breccia. This fault trends northeast-southwest and has subvertical geometry. Strong mineralization associated with this fault extends over several tens of metres and was intersected by drill holes S06-42, S08-61, S21-313, and S21-314 (see Figure 7-4).

Mineralization within the zone is characterized by moderate to strong brecciation of the host rock (10-80% brecciation) and infill by veins composed of iron carbonate-pyrite-chalcopyrite-sphalerite with rare galena and/or arsenopyrite. Bornite has been observed in some of the higher-grade portions of the breccia zone. Calcite is also present, though the dominant carbonate species by far is iron carbonate (siderite and/or ankerite, possibly minor dolomite). Clasts within the breccia are typically angular and display a “mosaic” texture with little evidence of post-breccia milling except adjacent to faults. In some areas there is evidence for early barren chalcedonic or cherty quartz veining which was later brecciated and infilled with iron carbonate-sulfide veins. Sulfides form chunky masses up to several centimetres across within the veins and massive to semi-massive sulfides have been described in drill core over widths of up to several metres. The sulfide masses are mostly composed of pyrite and/or pyrrhotite containing blebs and irregular patches of chalcopyrite. Black euhedral sphalerite crystals up to several centimetres across occur within and alongside the iron sulfide masses and locally as isolated grains within the carbonate breccia fill. Figure 7-10 below provides an illustration of the various styles of brecciation and mineralization within the Seel Breccia.

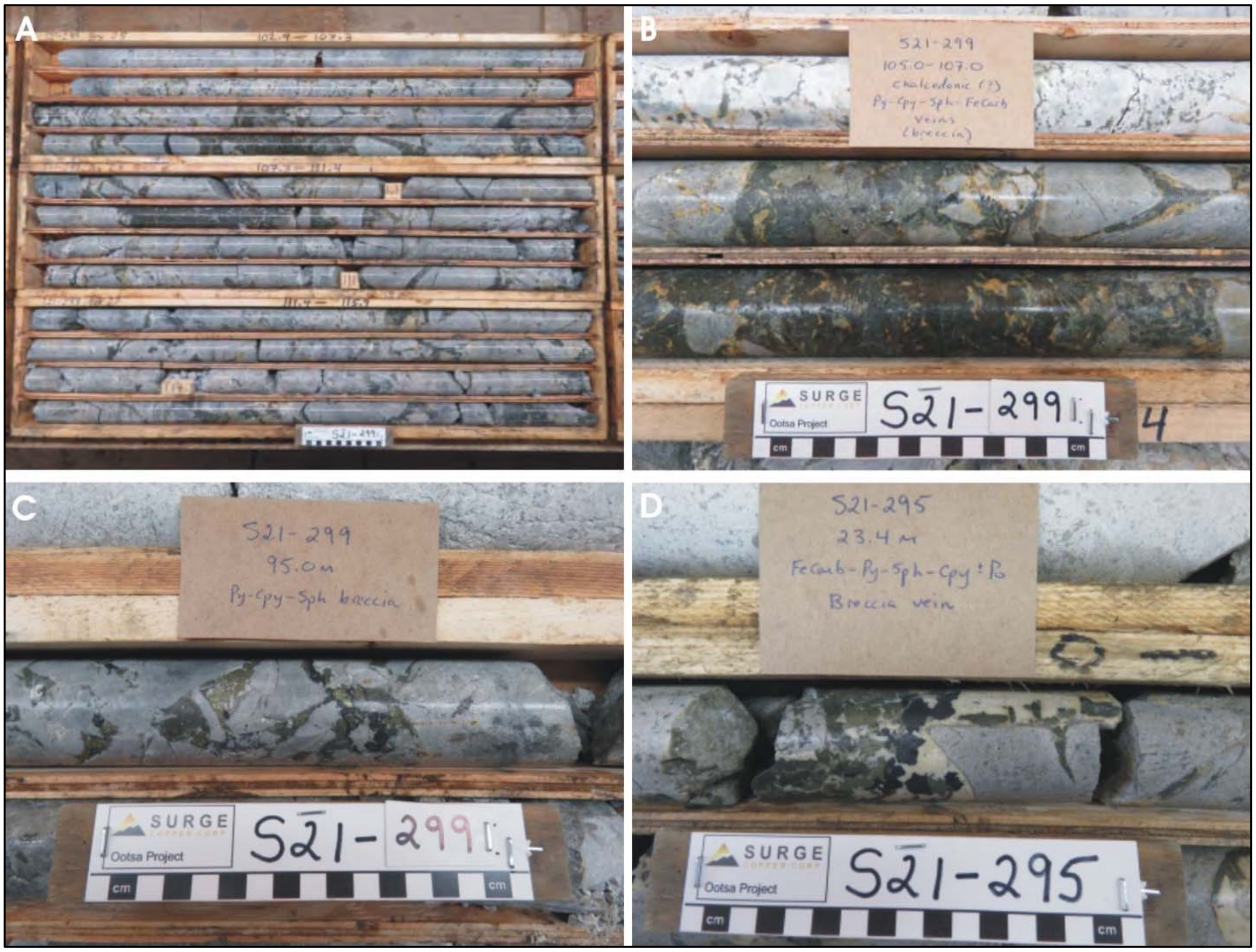



**Figure 7-10: Mineralization in the Seel Breccia: a) strongly brecciated core with carbonate-sulfide breccia fill; b) chalcedonic quartz-sulfide breccia fill; c) sulfide-rich breccia fill; and d) example of coarse black sphalerite crystals in iron-carbonate vein/breccia fill**

## 7.3 Geology and Mineralization of the Ox Deposit

The Ox deposit is located in the north-central portion of the Ootsa Property claim block, about 4km northeast of the Seel deposit and 7km east-southeast of the Huckleberry mine (Figure 7-1). The Ox deposit is roughly crescent shaped with some fault-controlled offsets and is characterized by disseminated and vein-controlled porphyry Cu + Mo mineralization. Mineralization contains pyrite, chalcopyrite, and molybdenite hosted in hornfelsed sedimentary rocks near the western margin of a granodiorite porphyry stock (Ox intrusive). Mineralization and the porphyry intrusion are truncated and offset on the east side by the Ox fault (Figure 7-11).

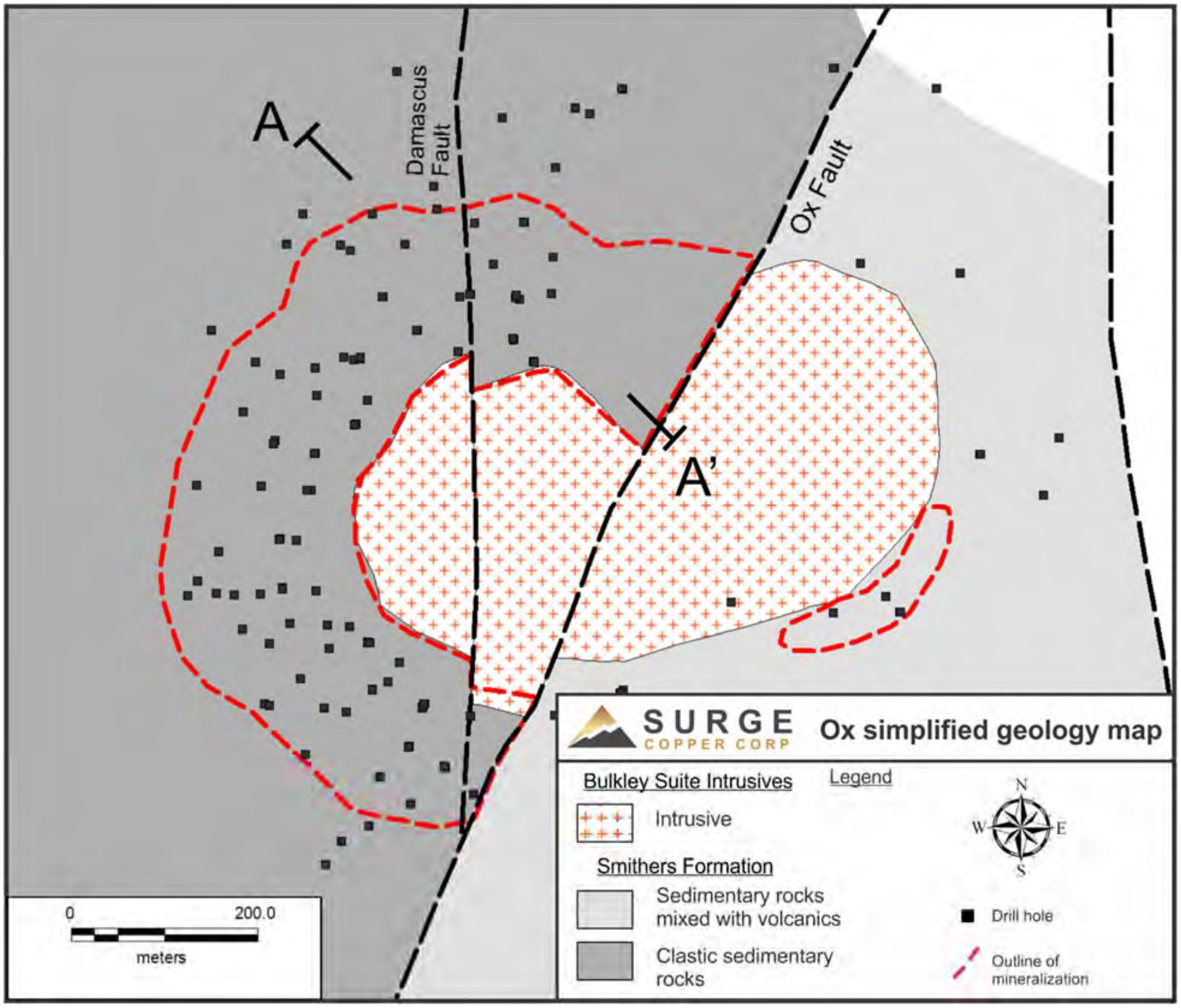



**Figure 7-11: Ox deposit-simplified geology map.**

Representative photographs of lithology, alteration, and mineralization at the Ox deposit are presented in Figures 7-12 and 7-13 below. The main host rock for mineralization is a hard siliceous fine grained clastic sedimentary rock with patchy zones of strong biotite hornfels, and zones with K-feldspar, biotite, sericite, chlorite, anhydrite, silicification and clay alteration. Blebs and patches of epidote occur throughout the zone. Quartz veining is weak to moderate but present within mineralized zones, comprising quartz with K-feldspar, and quartz with chalcopyrite and/or molybdenite. Minor magnetite can be found locally at Ox. Quartz-chalcopyrite veins generally cut molybdenite bearing veinlets. Pyrite veinlets and disseminated pyrite (2-3%) are widespread as are late calcite veinlets.

A fine grained feldspar porphyry occurs as dikes or sills within the mineralized zones and contains mineralization and alteration similar to the surrounding sedimentary rocks. A coarse crowded feldspar biotite porphyry forms an intrusive body on the east side of the

Ox mineralized zone. The porphyry contains 80-90% feldspar crystals 2 to 10mm in size (average 6mm), 5-10% biotite as books to 5mm, plus minor interstitial quartz, and is interpreted to have a granodiorite composition. The crowded porphyry does not contain significant zones of mineralization but does have variable K-feldspar, sericite, chlorite, pyrite, and clay alteration with weak copper and molybdenum locally. Quartz veining is typically weak. Several drill holes indicate the crowded porphyry is locally in fault contact with the adjacent mineralized sedimentary rocks.


**Figure 7-12: Photographs of drill core from the Ox deposit: a) brecciated sedimentary rock with strong chalcopyrite mineralization and late white calcite veins; b) altered fine-grained feldspar porphyry sill with sulfide mineralization; c) chalcopyrite and pyrite in dark biotite hornfels sedimentary rock; d) rubbly mineralized zone with inferred anhydrite dissolution; e) quartz vein with grey molybdenite in the vein centre and along the vein selvages; and f) coarse, crowded feldspar-biotite porphyry intrusion that occurs on the east side of the Ox deposit (note the pink K-feldspar vein in the middle row)**

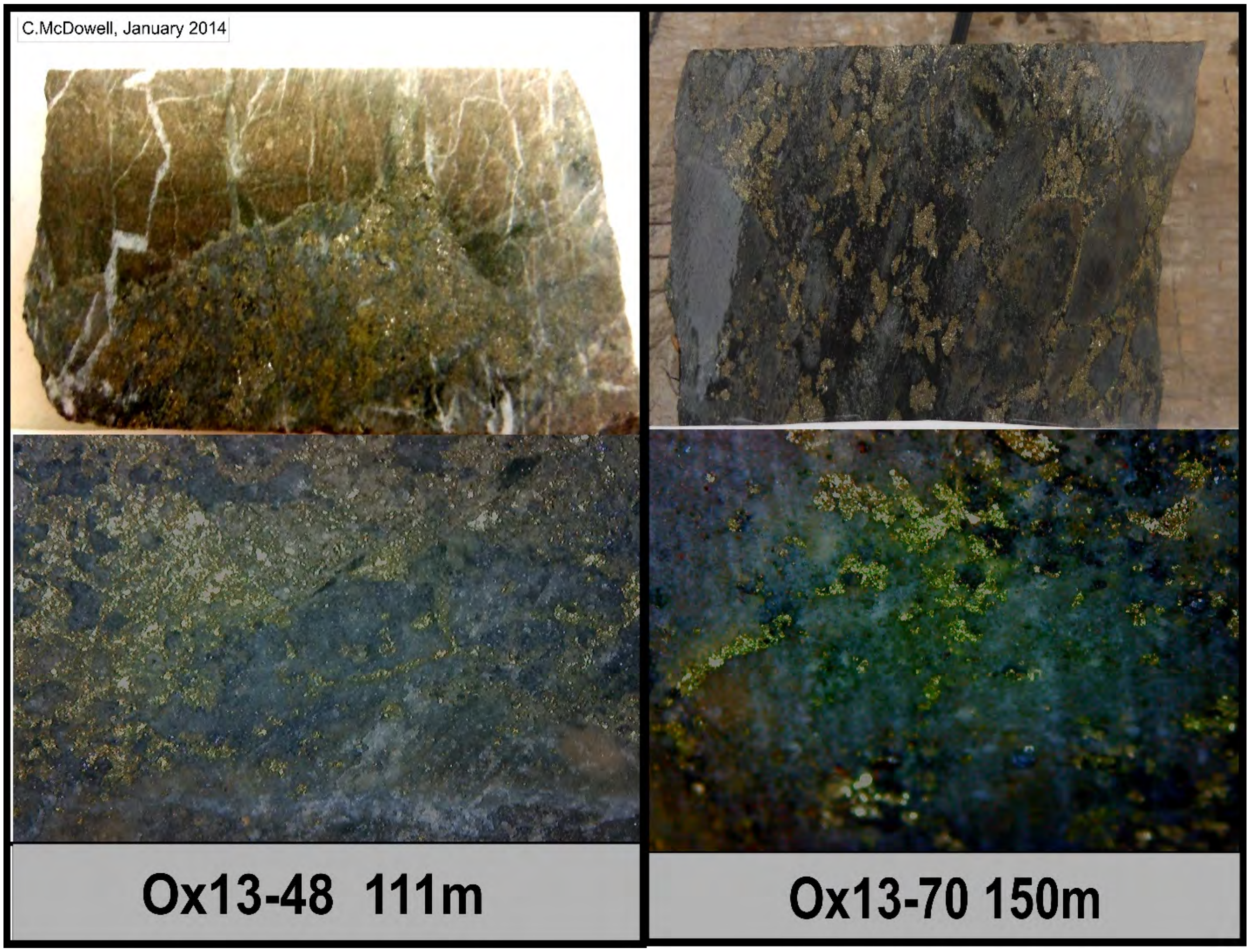



**Figure 7-13: Veining and mineralization in Ox drill core 2013. Left) Quartz veining with strong chalcopyrite + molybdenite mineralization. Right) Abundant sulfide mineralization in brecciated sediment**

A volumetrically minor episode of late unmineralized mafic dikes with quartz-carbonate veins and chlorite alteration occur locally, some controlled by late faults. The majority of the Ox zone is strongly fractured with several fractures per metre. Brecciated zones and thin 53ataclasite zones are common as faulting clearly plays a strong role in controlling and bounding mineralization at the Ox deposit.

A late episode of fault-controlled calcite-tan Fe-carbonate-quartz and base metal sulfide veins locally cut the Ox mineralization. Ten metres of quartz-carbonate veining (4m true width) with faint crustiform banding was encountered in Ox12-33. The vein returned 147 g/t Ag (4.3 ounces per tonne) and 11.1% combined lead and zinc from 246 to 256 meters, including 304 g/t Ag (8.7 ounces per tonne) and 23.2% combined lead and zinc over 4 meters from 246 to 250 meters depth.

A typical section through the north part of the deposit (Section A-A') is presented in Figure 7-14 below. To date the mineralized zone at Ox has been identified over a curved length of 1000m and typically has widths ranging from 175 to 200 meters and extends to depths between 150 and 250 metres below surface. Within this mineralized zone lies a higher grade core measuring 850m x 100m x 100m.

On all sections mineralization is hosted in the sedimentary (grey) rocks with variable amounts of fine to medium grained porphyry (pink). Mineralization has a gradational boundary on the west side whereas a crowded feldspar biotite porphyry (orange) bounds mineralization on the east side. In general, mineralization appears to be highest grade at or near surface and adjacent to the intrusive contact, with an apparent grade decrease with depth, with the main mineralized body extending 150 to 250 metres below surface. Significant alteration is still present in the rocks underlying the mineralized zone but Cu and Mo values are generally weak and patchy. It is possible that the Ox mineralized zone was originally east dipping and has been truncated along its length by the Ox Fault depicted in Figure 7-14.

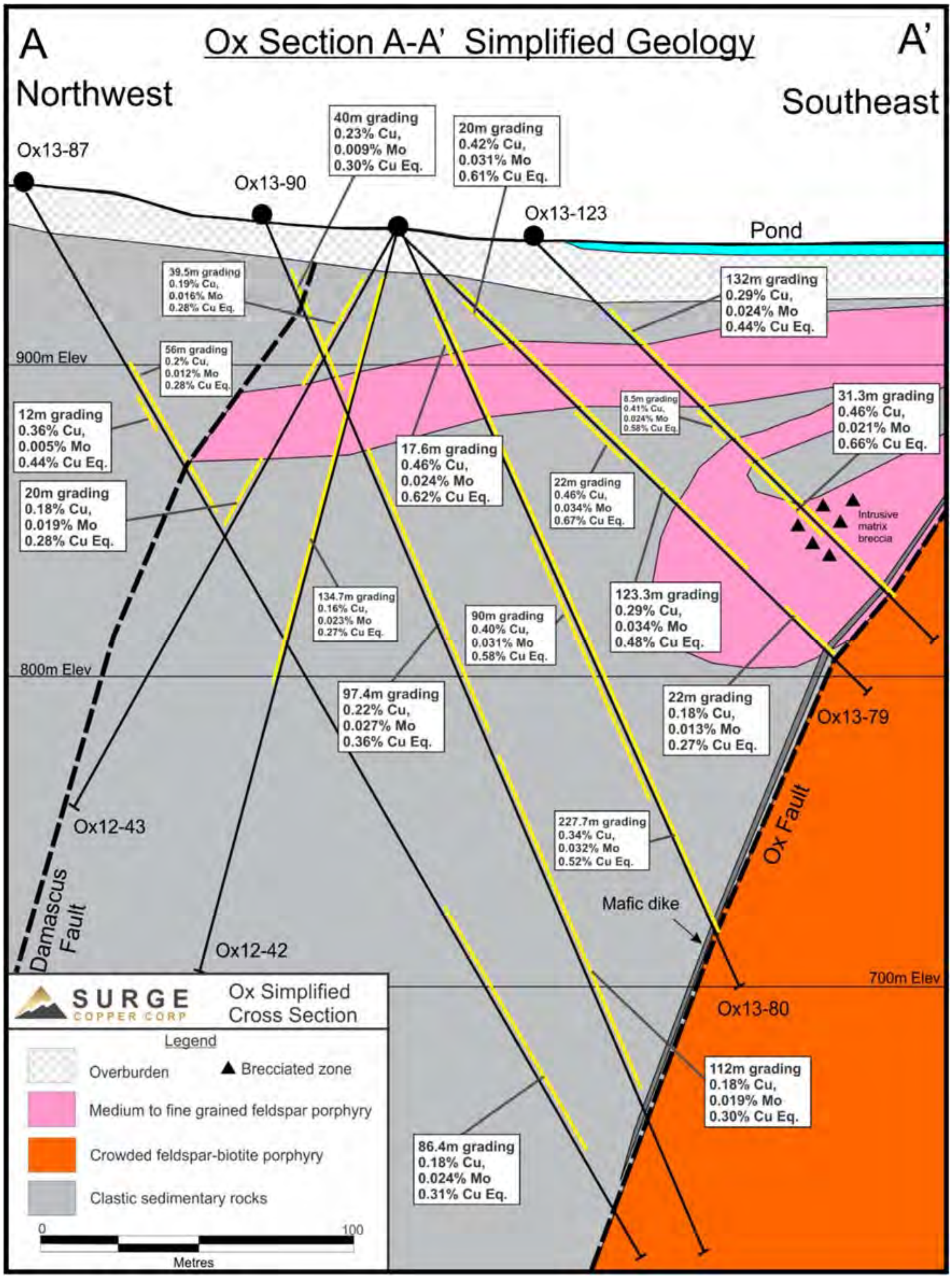



**Figure 7-14: Simplified cross-section A-A' through the northern part of the Ox deposit**

# 8.0 Deposit Type

The Ox deposit, along with the Seel deposit and the adjacent Huckleberry Mine, share features characteristic of porphyry copper systems based on their geometry, association with intrusive rocks, nature of disseminated and veinlet controlled mineralization, alteration assemblage and alteration zonation, and metal associations.

Roughly three-quarters of global Cu production, half of global Mo production, and around one-fifth of global Au production come from porphyry Cu systems (Sillitoe, 2010). Significant by-product metals from porphyry systems include Re, Ag, Pd, Te, Se, Bi, Zn, and Pb. Porphyry Cu systems form at convergent plate boundaries and include a wide range of mineralization types, including porphyry deposits centered on intrusions, deposits in wallrocks, and a range of vein and replacement style deposits that form at different depths and different distances from intrusions (e.g. Sillitoe, 2010). Porphyry deposits commonly occur along linear trends reflecting structural controls above large composite plutons which supply magmas, fluids, and metals that form porphyry deposits.

Porphyry Cu ± Au ± Mo deposits are generally centered on intrusions or their hornfelsed wallrocks. In non-carbonate bearing rocks structurally controlled base metal and Ag bearing veins can occur peripheral to porphyry Cu centres and high-sulfidation epithermal deposits may occur in strongly altered and leached rocks above porphyry Cu deposits.

Porphyry Cu deposits display a consistent, broad-scale alteration and mineralization zoning pattern that typically affects several cubic kilometers of rock. Porphyry mineralization typically occurs in quartz-bearing veinlets, and locally sulfide veinlets, as well as disseminated throughout the host rocks. Large pyrite halos are known to occur around mineralized zones in several porphyry districts. The deposits typically contain large alteration zones consisting of deep sodic-calcic alteration, centrally located potassic alteration, and higher level or peripheral chlorite-sericite, sericitic, argillic, and advanced argillic alteration. Younger alteration zones commonly overprint older alteration zones in porphyry systems.

The Seel and Ox deposits contain disseminated and veinlet controlled Cu-Au-Mo-Ag mineralization and large zones of potassic, sericitic, chlorite-bearing, and argillic alteration assemblage consistent with classification as a porphyry Cu system. Late base metal silver veins at the Seel Breccia and Damascus areas share characteristics with base metal Ag veins known to occur around porphyry deposits.

The large size of porphyry deposits and the large zones of associated sulfide mineralization make them especially amenable to geophysical exploration. Induced polarization surveys are routinely used in porphyry exploration to outline sulfide zones and associated pyrite halos. Resistivity surveys have also been used to successfully outline the large zones of hydrothermal alteration. Conventional soil geochemical exploration is also very effective for identifying drill targets in areas of thin cover.

# 9.0 Exploration

This section will summarize all surface work completed at the Seel and Ox properties by Surge Copper from 2004 until present. Brief summaries of exploration activities are provided as well as references to previous reports that provide additional details about the various surveys. Exploration prior to 2004 is described in Section 6: History. Diamond drilling activities and results are discussed in Section 10: Drilling. In addition to the geochemical and geophysical surveys summarized below, Surge Copper has also conducted physical work in the form of road-building, line-cutting, and camp improvements that supported and facilitated surface work. Baseline water sampling, fish studies, an Archaeological field reconnaissance study and a desktop wildlife study were conducted in 2014 by ERM Consultants Canada Ltd (Strickland, 2014; McDowell and Giroux, 2014).

## 9.1 Surface Geochemical Sampling

Since 2004, Surge Copper has collected over 9000 soil samples, 487 surface rock samples, and 251 stream sediment samples on the Ootsa property, adding to a property-wide surface geochemical database that now contains more than 10,300 soil samples, 551 rock samples, and 2,821 stream sediment samples.

The bulk of soil sampling took place in the period from 2011-2018, amounting to approximately 7,750 soil samples collected (Strickland, 2011, 2012, 2014, 2016, 2018; McDowell, 2020, 2021). In general, regional soil samples were taken on a grid spacing of 100 x 200 m, and anomalous areas were infilled on a grid spacing of 50 x 100 m. Soil samples were collected in the conventional manner from the B Horizon and analysed on site with a portable X-Ray Fluorescence (XRF) spectrometer. Selected samples (approximately 900 total samples) were sent for gold fire assay and multi-element ICP-MS assay as a comparison to XRF results. Surge personnel concluded that XRF data is comparable to ICP-MS laboratory assays with respect to base metals (Cu, Mo, As, Pb, Zn, Mn, and Sb) but differs significantly with respect to precious metals (Au and Ag). Given that the primary commodity in the area is copper, XRF results are considered to be adequate for targeting purposes. It should be noted that XRF results for copper-in-soil are only valid as a guide to follow-up field investigation and are not published nor utilized in any resource calculations.

The majority of soil samples were collected in the immediate areas of the Seel and Ox deposits as well as the Damascus vein system (Figure 9-1). The Ootsa area is covered by variable amounts of transported glacial gravel deposits which tend to mute potential soil anomalies. However, as shown in Figure 9-1 significant copper-in-soil anomalies exceeding 75-100 ppm Cu are present above the Seel and Ox deposits and show minimal dispersion along glacial transport directions. This suggests that copper-in-soil anomalies are valid exploration vectors when searching for porphyry-related mineralization in this area.

The Damascus vein system is a narrow, high-grade zinc-silver occurrence, and does not have an extensive soil geochemical anomaly. This may be in part due to its geographical setting on a steep hillside unlike the porphyry deposits which are located in a flatter lower-lying area. Local spikes in copper, zinc, silver, and arsenic occur adjacent to the Damascus vein but the degree of glacial dispersion seems to be minimal.

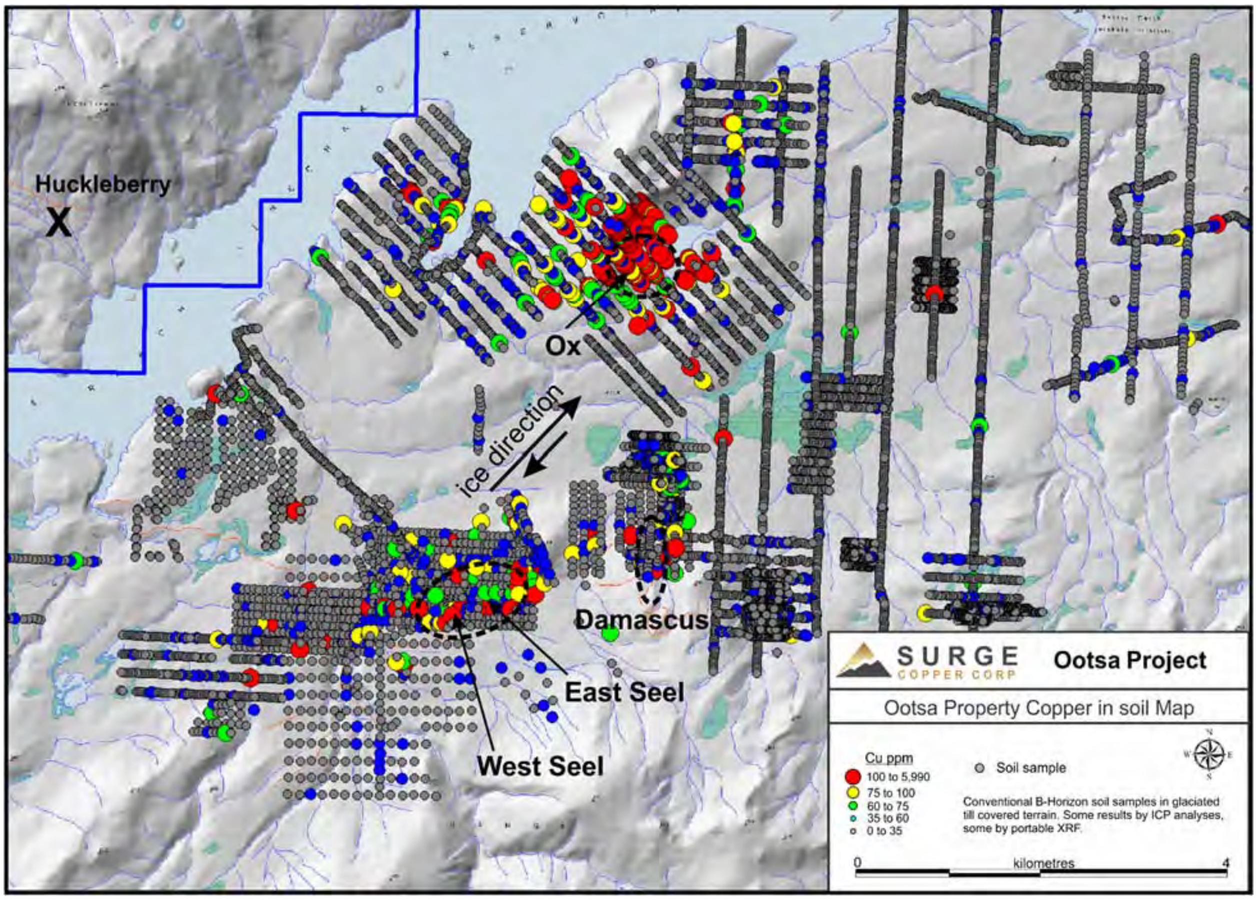



**Figure 9-1: compilation map of all soil samples from the Ootsa property showing copper values.**

Rock sampling took place in conjunction with geological mapping and prospecting throughout the property in the period from 2004-2018. See Figure 1-2 for the location of zones discussed below. In general, rock samples were taken whenever geologists or prospectors encountered altered, sulfide-mineralized, and/or veined outcrop or angular float rock. The majority of these are “grab samples”, taken wherever sulfide mineralization or veining was observed by prospectors on surface. In a few cases “chip samples” were taken in 1.0- to 2.5-metre intervals across a mineralized zone in order to estimate the distribution of mineralization on surface over a given width. Both of these sample types are only meant to provide general information on mineralized localities, and are not representative of true grade or width of mineralization.

Extensive rock sampling took place around the Seel and Ox deposits and the Damascus veins in 2004, 2011, 2014, and 2018 (Ogryzlo, 2004; Strickland, 2011, 2014, 2019). The Troitsa Peak and Slope areas were prospected and sampled in 2005, 2009, and 2016 (Daubeny and Smit, 2005; Strickland, 2009, 2016). Regional prospecting and sampling took place to the east, west, and south of the Seel deposits in 2010 (Strickland, 2010) as well as in 2013, 2014, and 2016 at the Captain Mine, Whitegold, and Play showings (Strickland, 2014A, 2014B, 2016).

Around the Seel and Ox deposits, surface rock sample assay results are fairly typical of weathered porphyry mineralization on surface, with Cu values ranging from trace to ~700 ppm Cu, Mo values from trace to 10 ppm Mo, and Ag values mostly < 5.5 g/t Ag. The Seel Breccia contains higher-grade material with assay results up to 6400 ppm Cu, 18 g/t Ag, and 7000 ppm Pb. The Damascus vein system returned some of the highest Ag, Pb, and Zn values in the area, with assay results exceeding 200 g/t Ag, 1% Pb, and 4.3% Zn in select samples.

The Troitsa Peak area returned some of the highest gold and silver assays returned to date on the property, with 12 out of 185 samples returning greater than 0.5 g/t Au, and 7 samples ranging from 1.43-5.897 g/t Au (Strickland, 2016). Silver assays range from trace to a maximum of 4,120 g/t Ag, showing a weak correlation with gold and a stronger correlation with copper, lead, and zinc.

Assay results from the Play showing were fairly weak with a maximum of 6.3 g/t Ag and 1070 ppm Cu returned in one sample (Sample No. 5623303). Another sample assayed 0.2 g/t Au and 2.2 g/t Ag (Sample No. 5623299); these were the maximum values returned from 20 samples collected in 2014 (Strickland, 2014). Assay results from the Whitegold showing were considerably stronger, with 12 out of 32 samples returning greater than 0.5 g/t Au, and 7 of these returning between 1.0 g/t Au and 4.6 g/t Au (Strickland, 2014). Silver, copper, lead, and zinc results from Whitegold were generally low and suggest that mineralization in this showing is mostly related to auriferous quartz veining with little to no base metal content.

Stream sediment sampling was designed to augment regional sampling performed by government and industry personnel dating back to 1969. In general the highest copper-in-sediment values on the Ootsa property are found in the immediate areas of the Seel and Ox deposits, with values ranging from ~30-119 ppm Cu. Similar values were returned from the Troitsa Peak area, but the anomalies are more localized than those at Seel.

Regionally, high copper-in-sediment values are typically found downstream of known porphyry deposits, including Huckleberry, Berg, Sylvia, Bergette, and Whiting Creek.

## 9.2 Geophysics

### 9.2.1 Induced-Polarization (IP) Geophysics

Since 2004, Surge Copper (Gold Reach) has completed approximately 348.7 line-kilometres of ground-based 2D/3D Induced-Polarization (IP) and Magnetic geophysical surveys on the Ootsa property. A compilation map showing IP Chargeability results is presented in Figure 9-2 below. The surveys were undertaken on behalf of Surge Copper (Gold Reach) by SJ Geophysics Ltd. of Delta, BC using their proprietary Volterra Geoimaging Distributed Acquisition System. From 2004-2006, modest surveys were completed in the immediate area surrounding the Seel deposits (Rastad, 2004; MacIntyre, 2005; Chen and Rastad, 2005; Welsh, 2007). IP coverage was extended to the Ox deposit in 2007 (Welsh, 2007; Strickland, 2008). Between 2001 and 2013, IP surveys were designed to expand the limits of coverage at Ox and Seel, and reconnaissance IP was conducted along road cuts through the property (Strickland, 2011, 2012, 2013; McDowell and Giroux, 2013). The latest round of IP geophysics was completed in 2021 and was designed to provide greater detail over the Seel deposits for 3-dimensional modeling purposes.

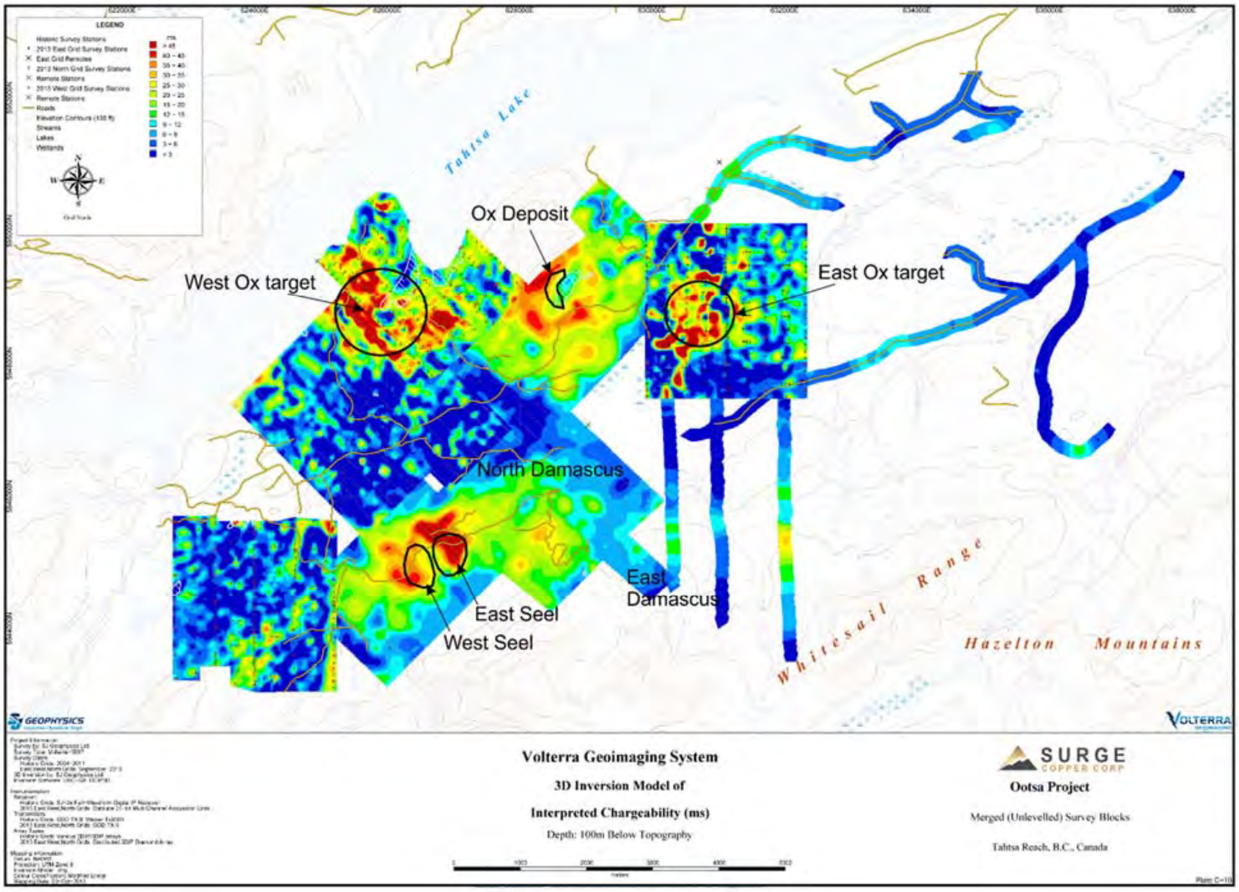



**Figure 9-2: Compilation map of IP surveys at the Ootsa project from 2004 to 2016.**

In general, detailed IP surveying took place on lines spaced 100 m apart with survey stations every 50 m along the lines. Regional surveys had line spacing of 200 m with survey stations every 100 m along the lines. Magnetic surveys run concurrently with IP geophysics typically used a station spacing of 50 m, with some areas receiving detailed magnetic coverage at a station spacing of 12.5 m.

### *2020 Seel IP Survey*

From June 13 to July 9, 2020, SJ Geophysics Ltd. completed a Volterra-3-Dimensional Induced Polarization (3DIP) survey over the Seel deposits. A total of 21 lines were surveyed amounting to 51.2 line-kilometres of data. The 2020 program was designed to build upon the results of the previous 2013 3DIP survey by expanding coverage to the north, east, south, and west, and to increase the depth of geophysical resolution.

Survey lines were oriented north-south, spaced at 200 metres, and varied from 2000-3400 metres in length with stations spaced every 100 m along the survey lines. Details of the survey are outlined in a September 2020 report by SJ Geophysics included in a BC Assessment Report by McDowell (2021).

Figure 9-3 below shows examples of chargeability and resistivity inversion maps for depth slices at 100 m, 300 m, and 500 m depth through the Seel deposits. For reference, the locations of the 2014 optimized pits for East and West Seel deposits are shown. In both sets of images, “warmer” colours (e.g. orange, red, pink) correspond to higher values of chargeability and resistivity, and “cooler” colours (e.g. yellow, green, blue) correspond to lower values.

The chargeability maps show a strong, vertically persistent chargeability anomaly that extends from surface to over 600 m depth. The strongest parts of the anomaly seem to correlate with the pyrite-rich alteration halo that surrounds and partially overlaps the West Seel deposit. Depth slices at 300 m and 500 m show the anomaly shifting toward the west with increasing depth. Drilling in this part of the system has intersected a blind intrusion (the West Seel Intrusive) which is rich in pyrite and pyrrhotite and is likely the cause of the strong chargeability anomaly at depth. This intrusion is well mineralized with respect to copper, indicating that IP geophysics is an appropriate exploration method in this area.

The East Seel deposit contains relatively less pyrite and more magnetite than West Seel, and consequently presents only a weak to moderate chargeability signature. The western side of East Seel has higher chargeability which may be related to the pyrite halo around the West Seel deposit. The eastern side of the East Seel deposit is truncated by a northeast-trending fault, and to date the offset east side of the deposit has not been found. Preliminary drilling on the west side of a moderate to strong chargeability anomaly to the northeast has so far been unsuccessful in intersecting Seel-style mineralization. This area is locally underlain by conductive graphitic sediments, so it is possible that at least some of the chargeability response is caused by disseminated graphite in the rocks.

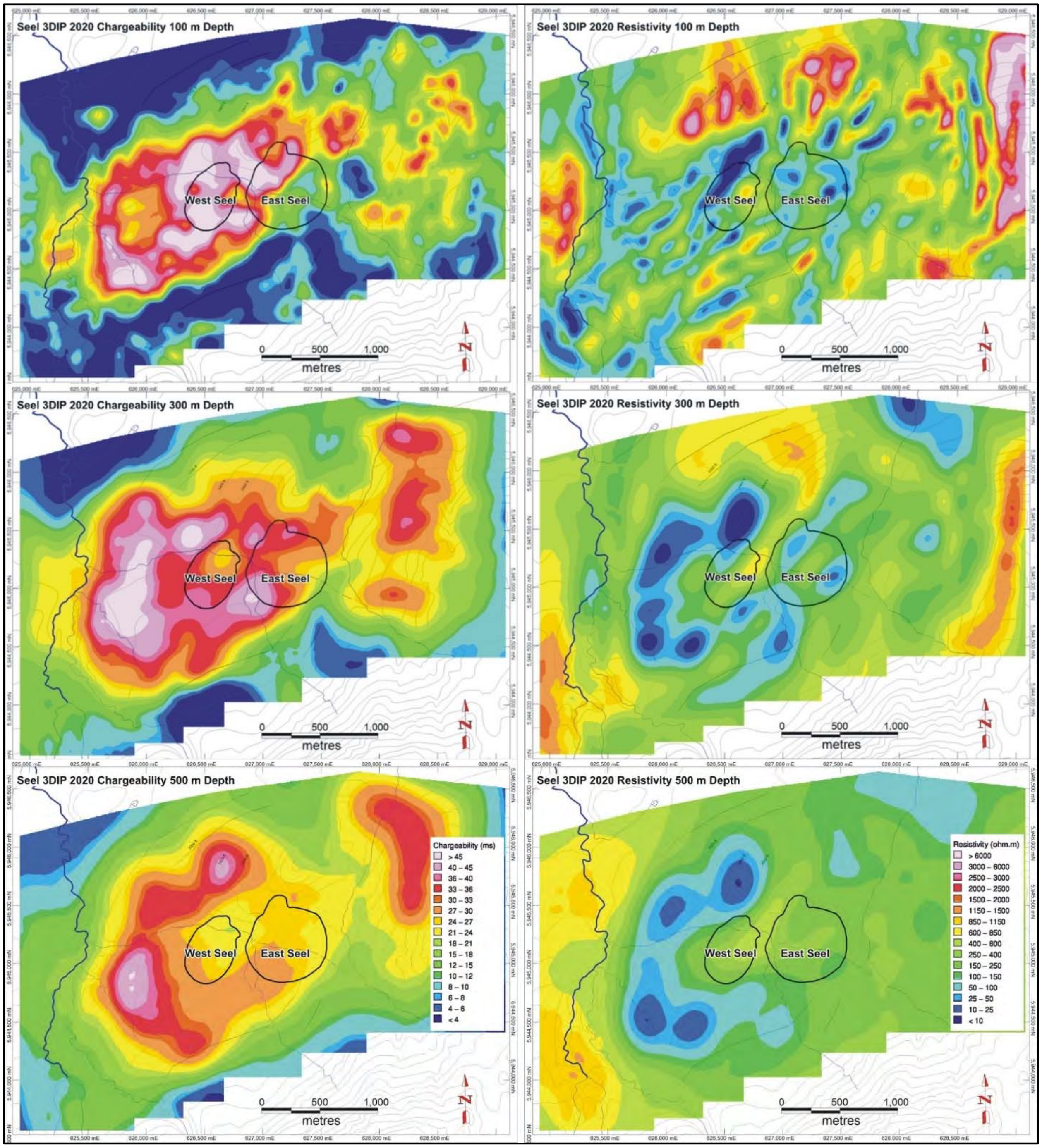



**Figure 9-3: 3D inversion maps of chargeability (left) and resistivity (right), 2020 3DIP survey. Depth slices at 100 m (top), 300 m (middle) and 500 m (bottom). Colour bars in the bottom image indicate relative strength of chargeability and resistivity.**

The resistivity maps generally agree with chargeability, in that areas of low resistivity (i.e. conductive zones) generally correspond with areas of higher chargeability. In some cases, narrow linear zones of low resistivity may correlate with fault zones, such as on the east side of the East Seel deposit. Intrusive bodies roughly correlate with zones of moderate to high resistivity, though this varies considerably depending on the amount of disseminated sulfide material contained.

### 9.2.2 Airborne Geophysics

In 2009, an airborne geophysical survey totalling 1,325 line kilometres was completed on the Ootsa Property between October 4 and 10, 2009. The survey consisted of Airborne Gamma Ray Spectrometer and a magnetometer survey over the entire Ootsa claim block (Strickland, 2010). The survey was flown at 200 metre spacing with the line direction of 90°/270°.

In 2021, airborne geophysical coverage was significantly expanded with the completion of a helicopter-borne ZTEM electromagnetic and magnetic survey over the entire Ootsa-Berg claim block (Figure 9-4). A total of 4,224 line-kilometres of geophysical data was surveyed over an area of 1,154 square kilometres. The survey area was flown on a north-south azimuth with line spacing at 300 m and perpendicular tie-line spacing at 3000 m. Principal geophysical sensors included a Z-Axis Tipper electromagnetic (ZTEM) system and a caesium magnetometer, and secondary equipment included a GPS navigation system and a radar altimeter. Details of the ZTEM survey, data processing, and final products are outlined in Geotech Ltd. Survey Report GL210011 (2021) which is available in a BC assessment report by McDowell (2022).

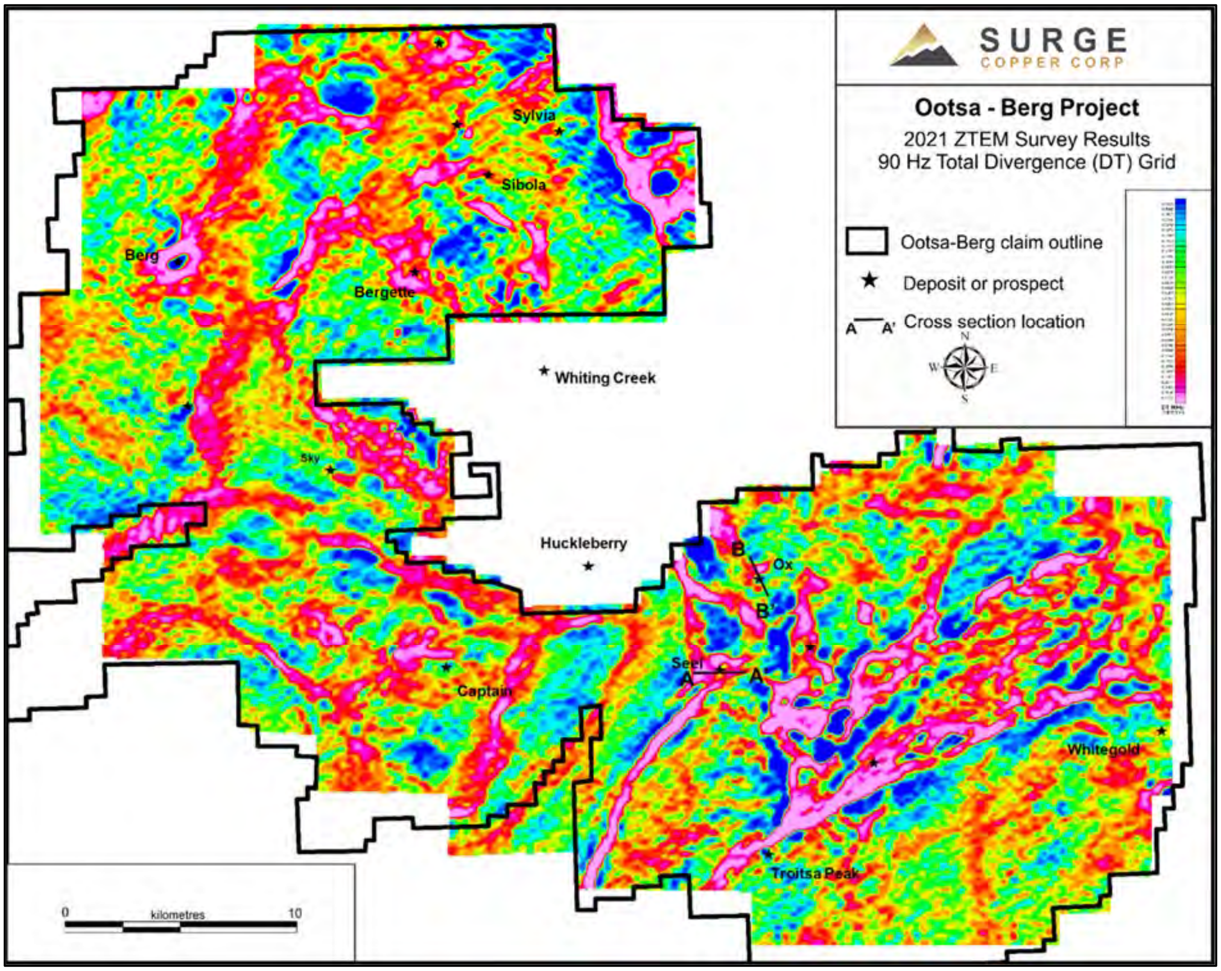



**Figure 9-3: ZTEM 90 Hz Total Divergence (DT) grid, processed from raw tipper data to convert conducter "crossover responses" to local maxima for easier visualization. Claim boundary, selected deposit and target locations shown.**

The ZTEM survey has imaged the electrical conductivity signatures of the known deposits in the district and has produced numerous comparable signatures in several regions within the district, highlighting the district exploration potential (see Surge Copper news release dated April 12, 2022). Deposits such as Seel and Berg display sub circular conductive features that appear to reflect intrusive geometry and large porphyry related alteration zones (Figure 9-3).

Figures 9-4 and 9-5 show vertical pseudosections through the inverted apparent resistivity model, showing the deposit scale signatures for the Seel and Ox deposits with drill traces superimposed. These pseudosections show a similar signature for the Seel and Ox deposits characterized by a broad resistivity low (relative conductor) directly associated with mineralization surrounded by one or more larger resistivity highs.

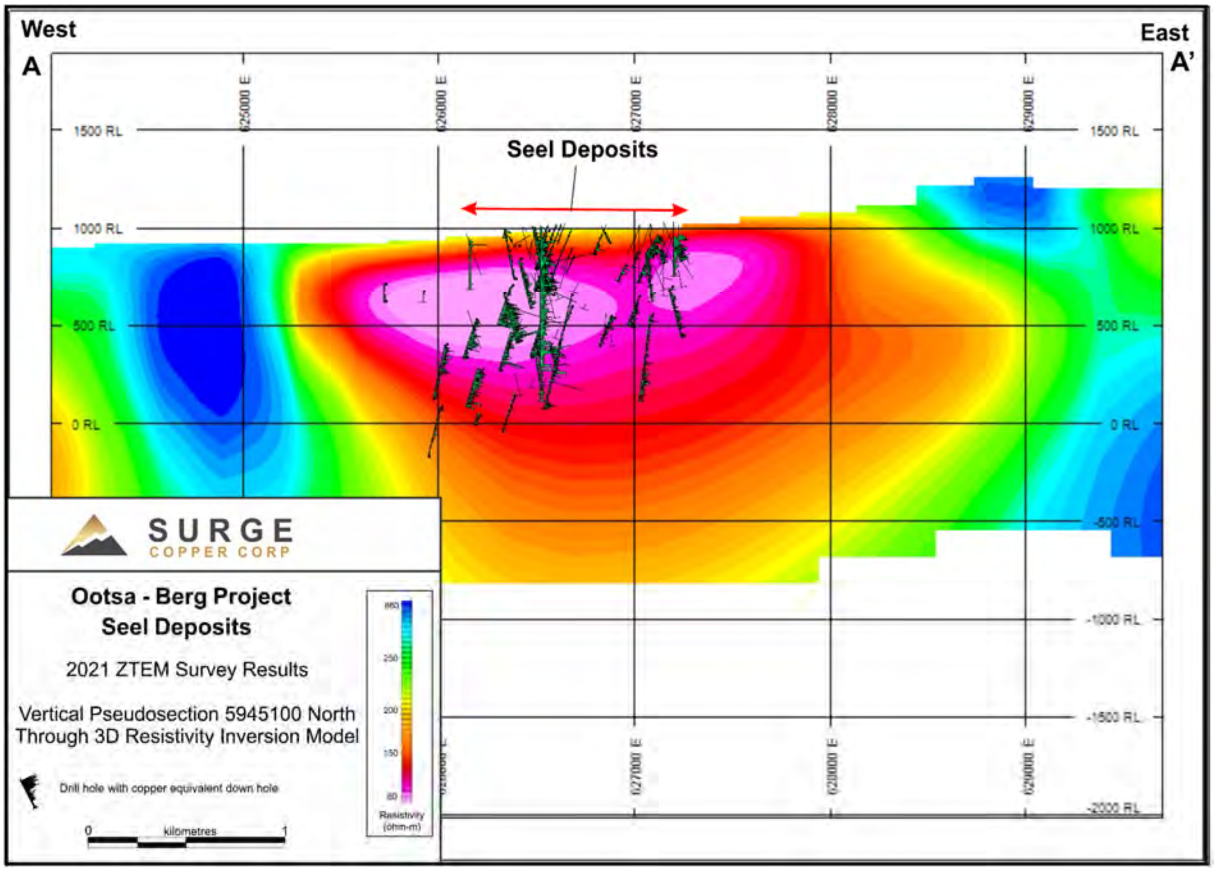



**Figure 9-4. West-East vertical pseudosection through the Seel deposit showing ZTEM 3D resistivity model results. Section location is shown on Figure 9-3.**

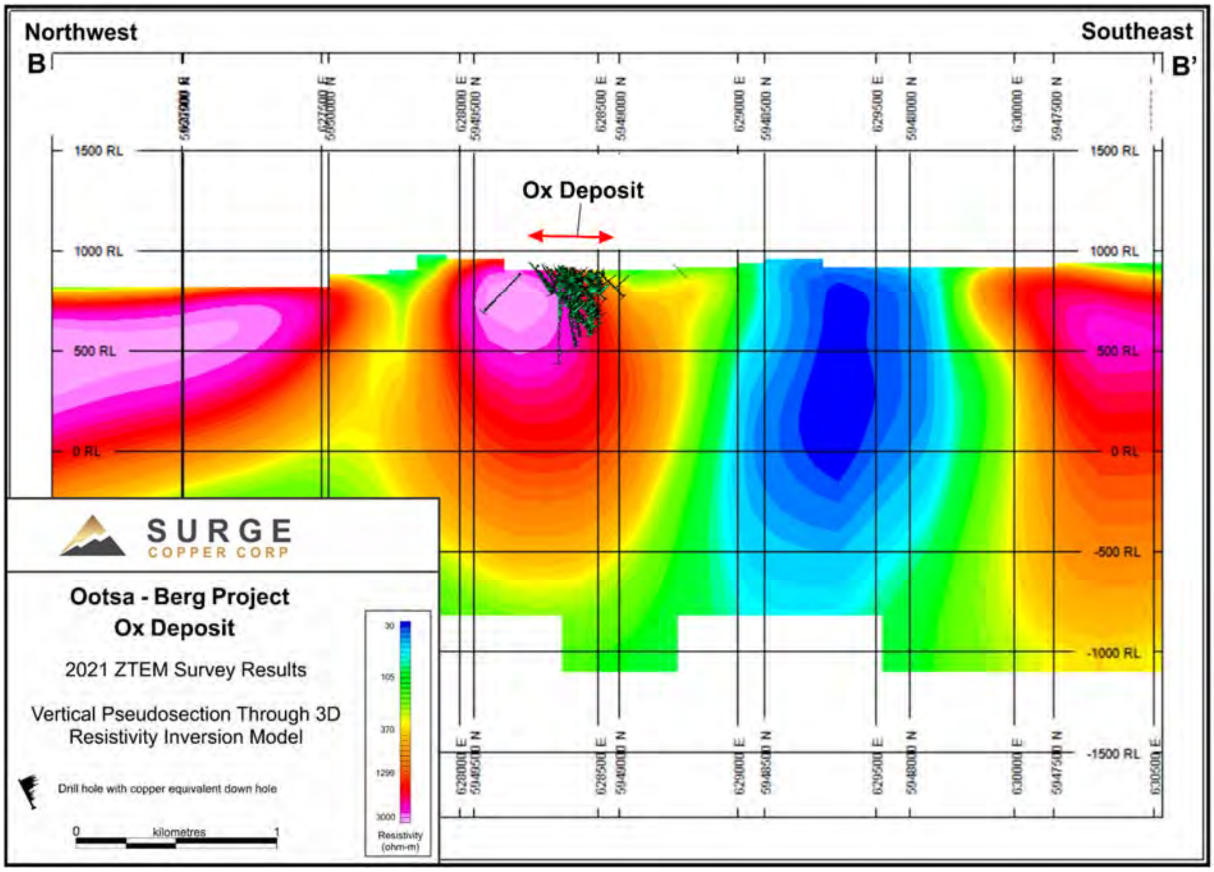



**Figure 9-5. West-East vertical pseudosection through the Ox deposit showing ZTEM 3D resistivity model results. Section location is shown on Figure 9-3.**

The 3D resistivity model data is currently being analysed by the Surge exploration team to identify priority exploration targets for the 2022 exploration season. Circular conductive features, such as those shown in Figure 9-6 showing the 100 ohm metre isosurface, are of particular exploration interest due to their possible relationship with intrusions. Surge Copper has indicated that they intend to evaluate as many of these circular conductive features as possible during the 2022 field season through IP geophysical surveys, prospecting, geochemical sampling, and geological mapping. Any targets which show positive indicators of porphyry-style mineralization will be further tested by diamond drilling.

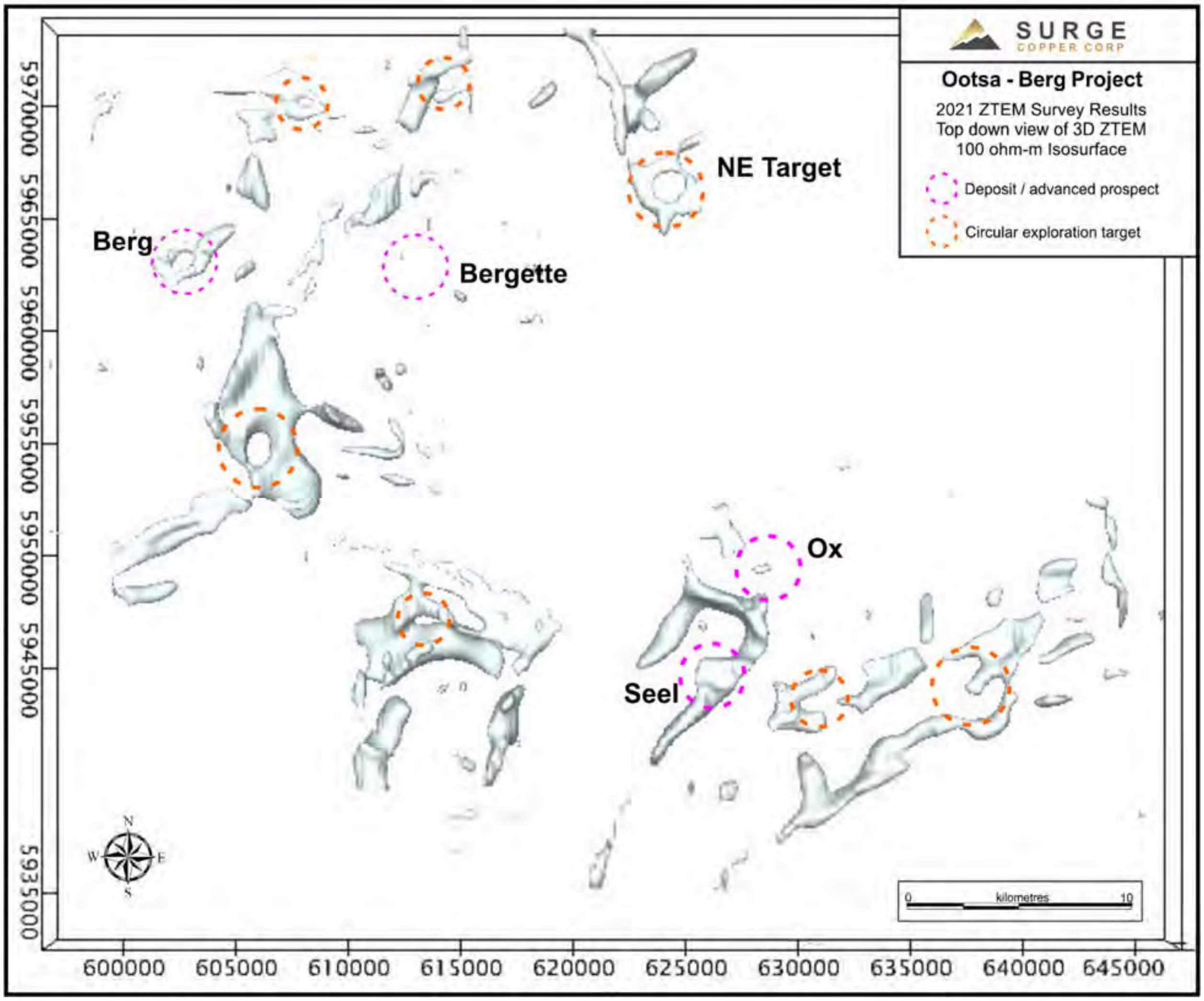



**Figure 9-6. 3D view of ZTEM 3D inversion results, 100 Ohm-metre isosurface.**

## 10.0 Drilling

The period of early exploration of the Ootsa Property prior to its acquisition by Gold Reach Resources (Surge Copper) is described in Section 6 History of this report. No data from this period has been used to generate the current resource estimate described in this report. Exploration activities conducted by Gold Reach (Surge Copper) from 2003 to present, other than drilling in 2012 and 2013, can be found in Section 9 Exploration.

Gold Reach Resources began exploration of Seel in 2003 and the first diamond drill holes were drilled in 2004. Successive drill campaigns proceeded from 2005 to present. The first Ox drill campaign directed by Gold Reach took place in 2007 with further drilling in 2012 and 2013. Yearly totals from both deposits are tabulated below in Table 10-1 and a list of drillholes used in the current resource calculation is presented in Table 10-2. A complete list of collar locations, elevations and total depths for the Seel and Ox deposits can be found in Appendix 1 and 2 respectively. A map showing the locations of all drill collars on the Ootsa property is presented in Figure 10-1 below.

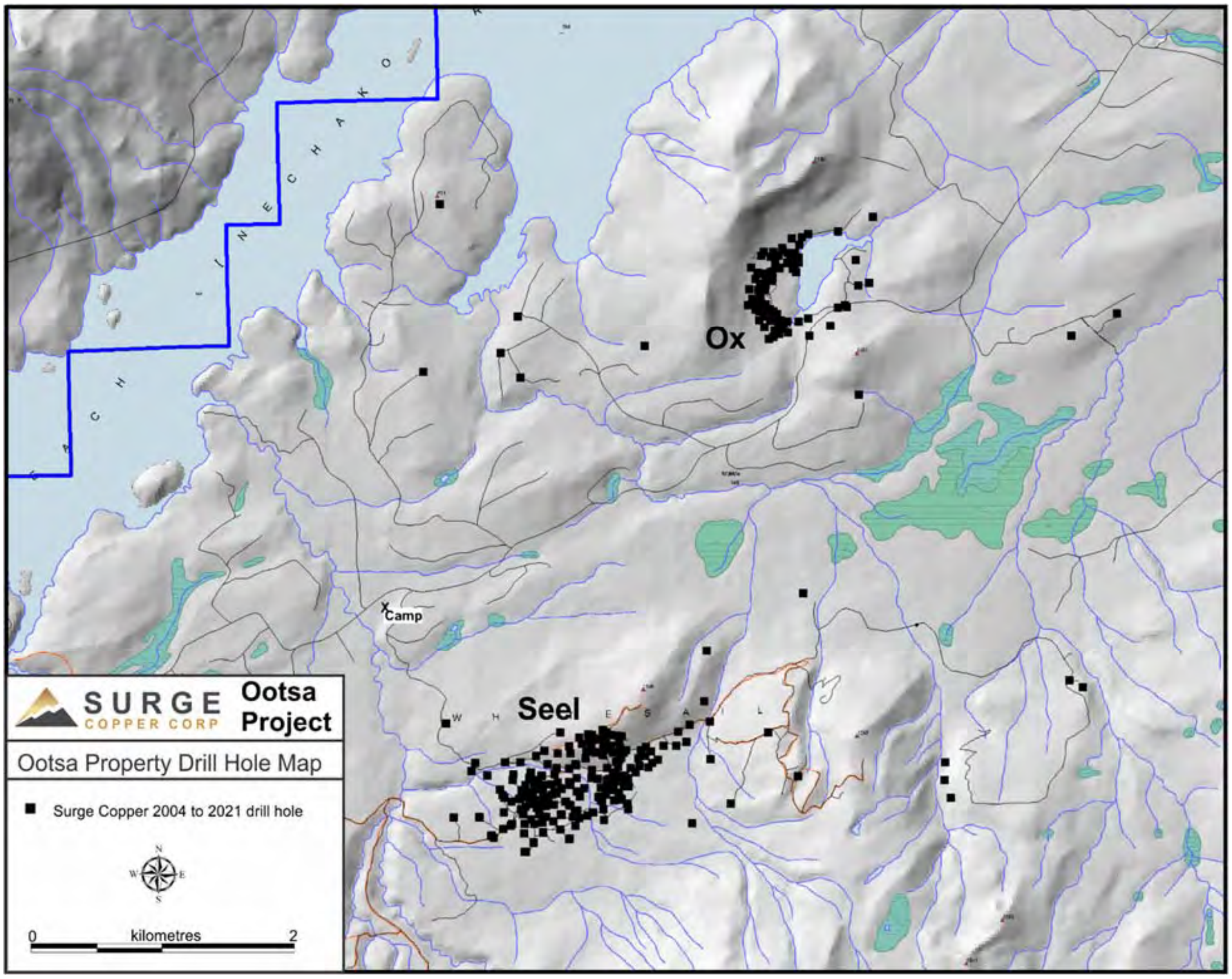



**Figure 10-1: Map showing holes drilled from 2004 to present.**

**Table 10-1: Drill Production since 2004 on Seel and Ox Deposits**

| Total Amount Drilled | | | |
|---|---|---|---|
| **Year** | **Number of Holes** | **Meterage** | **Location(s)** |
| 2004 | 6 diamond drill holes | 1096 | Seel, Seel Breccia |
| 2005 | 16 diamond drill holes | 3525 | Seel |
| 2006 | 25 diamond drill holes | 5641 | Seel, Seel Breccia |
| 2007 | 12 diamond drill holes | 9374 | Seel, Damascus |
| 2008 | 21 diamond drill holes | 4408 | Seel |
| 2011 | 20 diamond drill holes | 10393 | Seel |
| 2012 | 46 diamond drill holes | 38627 | Seel |
| 2013 | 53 diamond drill holes | 16887 | Seel |
| 2014 | 20 diamond drill holes | 9795 | Seel, Damascus |
| 2018 | 7 diamond drill holes | 2237 | Seel, East Target |
| 2020 | 10 diamond drill holes | 7904 | Seel, East Target |
| 2021 | 87 diamond drill holes | 37109 | Seel, Seel Breccia, Far East |
| **Total** | **323 diamond drill holes** | **146996** | |
| | | | |
| **Year** | **Number of Holes** | **Meterage** | **Location** |
| 2007 | 26 diamond drill holes | 6142 | Ox |
| 2012 | 18 diamond drill holes | 4947.4 | Ox |
| 2013 | 90 diamond drill holes | 17372.8 | Ox |
| 2021 | 2 diamond drill holes | 1215 | West Ox |
| **Total** | **136 diamond drill holes** | **29677.2** | |

Table 10-2: Drilling totals Utilized in Current 2022 Resource Estimates

| Seel | | |
|---|---|---|
| **Year** | **#Holes** | **Meterage** |
| 2004 | 6 | 1,096 |
| 2005 | 16 | 3,525 |
| 2006 | 25 | 5,641 |
| 2007 | 22 | 5,839 |
| 2011 | 20 | 10,393 |
| 2012 | 46 | 38,628 |
| 2013 | 53 | 16,887 |
| 2014 | 11 | 7,311 |
| 2018 | 7 | 2,237 |
| 2020 | 9 | 7,196 |
| 2021 | 85 | 35,595 |
| **Total:** | **300** | **134,349** |

| Ox | | |
|---|---|---|
| **Year** | **#Holes** | **Meterage** |
| 2007 | 25 | 5,854 |
| 2012 | 18 | 4,948 |
| 2013 | 90 | 17,373 |
| **Total:** | **133** | **28,175** |

## 10.1 Seel Deposit

### 2004-2018 Drilling

Drilling by Gold Reach at the Seel deposit began in 2004 when 6 diamond drill holes were completed in the vicinity of the Seel Breccia zone (MacIntyre, 2005). Figure 10-2 shows collar and zone locations at Seel. A second phase of drilling in 2005 followed up on mineralization encountered the previous year (Daubeny, 2005).

Two separate drill programs were completed in 2006 (Welsh, 2007). The first was designed to test the extent of potentially economic Cu-Au-Mo mineralization and to test IP and magnetic anomalies defined in previous surveys. The second program featured further testing of porphyry style mineralization across the Seel deposit and in the area adjacent to the Seel Breccia.

In 2007 and 2008, a total of 33 diamond drill holes were completed in an area encompassing the Seel Breccia and portions of the East Seel Cu-Au zone (Welsh, 2007 and Stubens & Veljkovic, 2008).

A large contribution to the Seel resource began in 2011 when the East Seel Cu-Au zone was the focus of activities (McDowell and Giroux, 2012). Late in the 2011 program the first hole into the West Seel Cu-Au-Mo bearing intrusive was completed. A total of four holes pierced the West Seel intrusive in 2011 and 45 of 46 holes drilled in 2012 targeted the new West Seel zone (McDowell and Giroux, 2013).

In 2013, a total of 53 diamond drill holes were completed at the Seel deposit. Twelve of the holes were drilled to define a core of near surface Cu-Au-Mo mineralization at West Seel. A further 37 holes were completed at East Seel as infill and expansion of the near surface Cu-Au zone. The remaining 4 holes were located at the eastern margin of the Seel deposit, in an area called East zone or NE zone (Figure 10-2).

Drilling in 2014 saw 11 holes (7,311 m) completed in the West Seel deposit, defining a high-grade core over an area of approximately 500 m long by up to 250 m wide, and extending to a depth of more than 600 m. In addition to drilling at West Seel, nine reconnaissance holes (2,404 m) were completed in the Damascus area located 2.5-3.5 km east of the Seel deposits (Strickland, 2014).

Table 10-3 below provides select drill hole intercepts for the Seel deposits for the period from 2006 to 2014. This table is sourced from the Preliminary Economic Assessment (PEA) completed in 2016 by P&E Mining Consultants Inc (Puritch et al, 2016). However, copper equivalent grades ("CuEq") have been updated to better reflect commodity prices in 2022. The 2016 PEA used metal prices of US$2.50/lb Cu, US$1200/oz Au, US$15/oz Ag, and US$10/lb Mo and the formula CuEq = Cu% + (Au g/t x 0.701) + (Ag g/t x 0.0087) + (Mo% x 4.01). This report uses metal prices of US$3.85/lb Cu, US$1750/oz Au, US$22/oz Ag, and US$12.40/lb Mo a and uses the formula:

$$CuEq\ (\%) = Cu\ (\%) + 3.2208 \times Mo\ (\%) + 0.6630 \times Au\ (g/t) + 0.0083 \times Ag\ (g/t)$$

For older assay results which do not contain Au and/or Mo and/or Ag, these elements have been assigned "null" values in the CuEq calculation.

**Table 10-3: Select drill hole results from the Seel deposit area, 2006-2014**

| Drill Hole | From (m) | To (m) | Width (m)* | Cu % | Au g/t | Mo% | Ag g/t | Cu Eq%** |
|---|---|---|---|---|---|---|---|---|
| S06-42 | 22 | 160 | 138 | 0.84 | 0.06 | - | 22.11 | 1.06 |
| S06-42 | 22 | 64 | 42 | 1.24 | 0.13 | - | 32 | 1.59 |
| S06-47 | 106 | 120 | 14 | 0.7 | - | - | 21.7 | 0.88 |
| S08-61 | 25 | 82.5 | 57.5 | 0.67 | 0.08 | - | 22.2 | 0.91 |
| S08-66 | 7.5 | 75 | 67.5 | 0.4 | 0.04 | - | 11.4 | 0.52 |
| S11-81 | 38.5 | 176 | 137.5 | 0.39 | 0.34 | - | - | 0.62 |
| S11-81 | 38.5 | 104.5 | 66 | 0.42 | 0.47 | - | - | 0.73 |
| S11-81 | 160.5 | 164 | 3.5 | 3.2 | 0.39 | - | 89.2 | 4.20 |
| S11-81 | 163 | 164 | 1 | 8.56 | 0.09 | - | 223 | 10.47 |

| Drill Hole | From (m) | To (m) | Width (m)* | Cu % | Au g/t | Mo% | Ag g/t | Cu Eq%** |
|---|---|---|---|---|---|---|---|---|
| S11-82 | 29.6 | 544 | 514.4 | 0.19 | 0.22 | - | - | 0.34 |
| S11-82 | 29.6 | 204 | 174.4 | 0.35 | 0.4 | - | - | 0.62 |
| S11-82 | 50 | 126 | 76 | 0.43 | 0.47 | - | - | 0.74 |
| S11-83 | 41.6 | 228 | 186.4 | 0.36 | 0.27 | - | - | 0.54 |
| S11-83 | 41.6 | 148 | 106.4 | 0.4 | 0.41 | - | - | 0.67 |
| S11-83 | 162 | 174 | 12 | 0.9 | 0.08 | - | 24 | 1.15 |
| S11-84 | 19.2 | 136 | 116.8 | 0.26 | 0.21 | - | - | 0.40 |
| S11-84 | 126 | 136 | 10 | 0.76 | 0.11 | - | 39.1 | 1.16 |
| S11-85 | 13.7 | 119 | 105.3 | 0.23 | 0.25 | - | - | 0.40 |
| S11-88 | 35.5 | 810.2 | 774.7 | 0.16 | 0.151 | 0.014 | - | 0.31 |
| S11-88 | 35.5 | 141 | 105.5 | 0.41 | 0.44 | - | - | 0.70 |
| S11-90 | 28 | 448 | 420 | 0.24 | 0.269 | - | - | 0.42 |
| S11-90 | 28 | 222 | 194 | 0.37 | 0.419 | - | - | 0.65 |
| S11-92 | 172 | 174 | 2 | 2.95 | - | - | 66.2 | 3.50 |
| S11-93 | 186 | 196 | 10 | 0.46 | 0.052 | - | 18.7 | 0.65 |
| S11-95 | 241 | 437 | 196 | 0.29 | 0.194 | 0.022 | 4.4 | 0.53 |
| S11-97 | 162 | 539.5 | 377.5 | 0.25 | 0.161 | 0.026 | 4.1 | 0.47 |
| S11-98 | 406 | 623.9 | 217.9 | 0.22 | 0.144 | 0.03 | 3.6 | 0.44 |
| S11-99 | 66 | 609.9 | 543.9 | 0.18 | 0.12 | 0.016 | 3.6 | 0.34 |
| S11-99 | 352 | 578 | 226 | 0.22 | 0.175 | 0.022 | 3.5 | 0.44 |
| S11-100 | 170 | 736.7 | 566.7 | 0.25 | 0.173 | 0.028 | 3.4 | 0.48 |
| S11-100 | 374 | 510 | 136 | 0.29 | 0.204 | 0.033 | 4 | 0.56 |
| S11-100 | 548 | 672 | 124 | 0.27 | 0.299 | 0.051 | 2.5 | 0.65 |
| S12-101 | 262 | 1079 | 817.0m | 0.2 | 0.21 | 0.026 | 2.24 | 0.44 |
| S12-101 | 308 | 829.8 | 521.8 | 0.23 | 0.3 | 0.032 | 2.63 | 0.55 |
| S12-101 | 584 | 778 | 194 | 0.22 | 0.47 | 0.04 | 1.85 | 0.68 |
| S12-102 | 6.1 | 653 | 649.9 | 0.17 | 0.09 | 0.013 | 3.1 | 0.30 |
| S12-102 | 353 | 505 | 152 | 0.27 | 0.13 | 0.026 | 4.2 | 0.47 |
| S12-103 | 24.4 | 170 | 145.6 | 0.34 | 0.4 | 0.001 | 1.34 | 0.62 |
| S12-104 | 4.8 | 966 | 961.2 | 0.16 | 0.11 | 0.019 | 2.04 | 0.31 |
| S12-104 | 368 | 768 | 400 | 0.24 | 0.19 | 0.03 | 2.76 | 0.49 |
| S12-104 | 368 | 482 | 114 | 0.4 | 0.43 | 0.039 | 5.4 | 0.86 |
| S12-106 | 120 | 892 | 772 | 0.23 | 0.14 | 0.028 | 3.31 | 0.44 |
| S12-106 | 400 | 816 | 416 | 0.25 | 0.16 | 0.038 | 2.45 | 0.50 |
| S12-106 | 478 | 578 | 100 | 0.36 | 0.3 | 0.061 | 2.92 | 0.78 |
| S12-106 | 889.4 | 890.1 | 0.7 | 7.07 | 3.97 | 0.039 | 131 | 10.92 |

| Drill Hole | From (m) | To (m) | Width (m)* | Cu % | Au g/t | Mo% | Ag g/t | Cu Eq%** |
|---|---|---|---|---|---|---|---|---|
| S12-108 | 24 | 340 | 316 | 0.28 | 0.23 | 0.018 | 5.28 | 0.53 |
| S12-108 | 74 | 104 | 30 | 0.43 | 0.54 | 0.023 | 11.15 | 0.95 |
| S12-108 | 236 | 312 | 76 | 0.45 | 0.19 | 0.017 | 6.94 | 0.69 |
| S12-108 | 528 | 530 | 2 | - | 8.75 | - | 3 | 5.83 |
| S12-109 | 262 | 554 | 292 | 0.23 | 0.21 | 0.03 | 2.8 | 0.49 |
| S12-109 | 372 | 492 | 120 | 0.29 | 0.31 | 0.046 | 3.7 | 0.67 |
| S12-110 | 458 | 664 | 206 | 0.21 | 0.18 | 0.028 | 1.71 | 0.43 |
| S12-113 | 186 | 274 | 88 | 0.26 | 0.1 | 0.012 | 4.1 | 0.40 |
| S12-114 | 266 | 298 | 32 | 0.32 | 0.08 | 0.017 | 2.06 | 0.44 |
| S12-116 | 394 | 796 | 402 | 0.25 | 0.16 | 0.023 | 2.04 | 0.45 |
| S12-116 | 494 | 658 | 164 | 0.32 | 0.24 | 0.024 | 2.54 | 0.58 |
| S12-117 | 98 | 774.9 | 676.9 | 0.18 | 0.12 | 0.022 | 2.38 | 0.35 |
| S12-117 | 361 | 513 | 152 | 0.25 | 0.14 | 0.024 | 3.62 | 0.45 |
| S12-118 | 350 | 887 | 537 | 0.27 | 0.19 | 0.055 | 2.69 | 0.60 |
| S12-118 | 356 | 660 | 304 | 0.33 | 0.24 | 0.065 | 3.41 | 0.73 |
| S12-118 | 356 | 484 | 128 | 0.43 | 0.33 | 0.076 | 4.65 | 0.93 |
| S12-119 | 234 | 807.7 | 573.7 | 0.24 | 0.13 | 0.026 | 2.62 | 0.43 |
| S12-119 | 254 | 696 | 442 | 0.27 | 0.14 | 0.028 | 2.92 | 0.48 |
| S12-120 | 220 | 530 | 310 | 0.23 | 0.31 | 0.021 | 2.73 | 0.53 |
| S12-120 | 344 | 496 | 152 | 0.31 | 0.54 | 0.034 | 3.84 | 0.81 |
| S12-120 | 494 | 496 | 2 | 0.99 | 13 | 0.036 | 19.7 | 9.89 |
| S12-121 | 234 | 987.5 | 753.5 | 0.24 | 0.12 | 0.024 | 2.26 | 0.42 |
| S12-121 | 270 | 602 | 332 | 0.32 | 0.2 | 0.039 | 3.58 | 0.61 |
| S12-121 | 270 | 400 | 130 | 0.39 | 0.25 | 0.051 | 5.35 | 0.76 |
| S12-122 | 200 | 480 | 280 | 0.21 | 0.12 | 0.027 | 1.92 | 0.39 |
| S12-122 | 260 | 378 | 118 | 0.31 | 0.17 | 0.034 | 2.76 | 0.56 |
| S12-124 | 126 | 466 | 340 | 0.22 | 0.18 | 0.019 | 3.22 | 0.43 |
| S12-125 | 344 | 719.3 | 375.3 | 0.3 | 0.27 | 0.032 | 2.58 | 0.60 |
| S12-125 | 374 | 572 | 198 | 0.37 | 0.39 | 0.047 | 3.35 | 0.81 |
| S12-127 | 742 | 874.8 | 132.8 | 0.21 | 0.19 | 0.017 | 2.18 | 0.41 |
| S12-129 | 380 | 594 | 214 | 0.21 | 0.23 | 0.032 | 1.91 | 0.48 |
| S12-130 | 346 | 658 | 312 | 0.29 | 0.17 | 0.035 | 3.3 | 0.54 |
| S12-130 | 444 | 582 | 138 | 0.38 | 0.22 | 0.057 | 3.99 | 0.74 |
| S12-130 | 856 | 868.7 | 12.7 | 0.33 | 0.22 | 0.016 | 0.29 | 0.53 |
| S12-133 | 332 | 594 | 262 | 0.21 | 0.35 | 0.046 | 2.14 | 0.61 |
| S12-133 | 374 | 504 | 130 | 0.29 | 0.31 | 0.055 | 2.82 | 0.70 |

| Drill Hole | From (m) | To (m) | Width (m)* | Cu % | Au g/t | Mo% | Ag g/t | Cu Eq%** |
|---|---|---|---|---|---|---|---|---|
| S12-133 | 548 | 550 | 2 | - | 15 | - | - | |
| S12-133 | 736 | 744 | 8 | - | 4.18 | - | - | |
| S12-134 | 330 | 530 | 200 | 0.26 | 0.15 | 0.03 | 2.74 | 0.48 |
| S12-136 | 140 | 494 | 354 | 0.23 | 0.28 | 0.031 | 3.01 | 0.54 |
| S12-136 | 298 | 444 | 146 | 0.32 | 0.38 | 0.044 | 4.37 | 0.75 |
| S13-147 | 32 | 142 | 110 | 0.33 | 0.38 | - | 1.54 | 0.59 |
| S13-147 | 32 | 106 | 74 | 0.4 | 0.45 | - | 1.88 | 0.71 |
| S13-148 | 31.7 | 178 | 146.3 | 0.51 | 0.59 | - | 2.33 | 0.92 |
| S13-148 | 31.7 | 76 | 44.3 | 0.94 | 1.12 | - | 3.46 | 1.71 |
| S13-148 | 256 | 277.1 | 21.1 | 0.3 | 0.31 | - | 3.87 | 0.54 |
| S13-149 | 37.6 | 92 | 54.4 | 0.33 | 0.37 | - | 1.53 | 0.59 |
| S13-151 | 32.9 | 193 | 160.1 | 0.33 | 0.38 | - | 2.01 | 0.60 |
| S13-151 | 67.2 | 151 | 83.8 | 0.42 | 0.51 | - | 2.53 | 0.78 |
| S13-151 | 113 | 133 | 20 | 0.64 | 0.84 | - | 3.65 | 1.23 |
| S13-152 | 60 | 104.3 | 44.3 | 0.46 | 0.54 | - | 2.5 | 0.84 |
| S13-152 | 96 | 104.3 | 8.3 | 0.68 | 0.87 | - | 3.62 | 1.29 |
| S13-153 | 64 | 188 | 124 | 0.37 | 0.37 | - | 1.63 | 0.63 |
| S13-153 | 68 | 84 | 16 | 0.81 | 0.76 | - | 3.63 | 1.34 |
| S13-154 | 18 | 32 | 14 | 0.41 | 0.09 | 0.129 | 12.86 | 0.99 |
| S13-154 | 60 | 356 | 296 | 0.23 | 0.22 | 0.016 | 4.44 | 0.46 |
| S13-154 | 60 | 82 | 22 | 0.33 | 1.19 | 0.021 | 9.94 | 1.27 |
| S13-154 | 218 | 340 | 122 | 0.3 | 0.17 | 0.016 | 4.7 | 0.50 |
| S13-155 | 30 | 268 | 238 | 0.38 | 0.47 | - | 1.93 | 0.71 |
| S13-155 | 30 | 190 | 160 | 0.44 | 0.53 | - | 1.98 | 0.81 |
| S13-155 | 42 | 86 | 44 | 0.62 | 0.67 | - | 2.76 | 1.09 |
| S13-155 | 140 | 156 | 16 | 0.64 | 0.8 | - | 2.74 | 1.19 |
| S13-157 | 31.7 | 218 | 186.3 | 0.37 | 0.41 | - | 1.82 | 0.66 |
| S13-157 | 31.7 | 158 | 126.3 | 0.42 | 0.45 | - | 2.07 | 0.74 |
| S13-157 | 36 | 56 | 20 | 0.51 | 0.5 | - | 2.67 | 0.86 |
| S13-159 | 45.7 | 143.6 | 97.9 | 0.39 | 0.49 | - | 2.41 | 0.73 |
| S13-159 | 45.7 | 110 | 64.3 | 0.44 | 0.58 | - | 2.64 | 0.85 |
| S13-159 | 45.7 | 66 | 20.3 | 0.52 | 0.65 | - | 2.61 | 0.97 |
| S13-160 | 72.7 | 177 | 104.3 | 0.34 | 0.42 | - | 1.54 | 0.63 |
| S13-160 | 77 | 151 | 74 | 0.41 | 0.47 | - | 1.67 | 0.74 |
| S13-160 | 121 | 149 | 28 | 0.47 | 0.55 | - | 1.85 | 0.85 |
| S13-163 | 56.3 | 82.1 | 25.8 | 0.33 | 0.31 | - | 1.66 | 0.55 |

| Drill Hole | From (m) | To (m) | Width (m)* | Cu % | Au g/t | Mo% | Ag g/t | Cu Eq%** |
|---|---|---|---|---|---|---|---|---|
| S13-163 | 92.6 | 185 | 92.4 | 0.52 | 0.2 | - | 11.89 | 0.75 |
| S13-163 | 139 | 177 | 38 | 0.84 | 0.13 | - | 25.39 | 1.14 |
| S13-164 | 44.1 | 163 | 118.9 | 0.38 | 0.42 | - | 2.17 | 0.68 |
| S13-164 | 44.1 | 93 | 48.9 | 0.45 | 0.54 | - | 2 | 0.82 |
| S13-166 | 61 | 179 | 118 | 0.33 | 0.42 | - | 2.4 | 0.63 |
| S13-166 | 61 | 107 | 46 | 0.4 | 0.51 | - | 2.74 | 0.76 |
| S13-170 | 59.4 | 70.4 | 15.5 | 0.26 | 0.23 | - | 1.5 | 0.42 |
| S13-170 | 76.3 | 81.1 | 4.8 | 0.49 | 0.53 | - | 2.21 | 0.86 |
| S13-170 | 87.5 | 122 | 34.5 | 0.36 | 0.39 | - | 1.92 | 0.63 |
| S13-170 | 144 | 208 | 64 | 0.26 | 0.18 | 0.005 | 1.26 | 0.41 |
| S13-172 | 39.2 | 135 | 95.8 | 0.3 | 0.35 | - | 1.07 | 0.54 |
| S13-172 | 39.2 | 75 | 35.8 | 0.45 | 0.54 | - | 1.64 | 0.82 |
| S13-172 | 201 | 209 | 8 | 0.52 | 0.12 | - | 15.75 | 0.73 |
| S13-174 | 36.5 | 128 | 91.5 | 0.36 | 0.35 | - | 1.45 | 0.60 |
| S13-174 | 36.5 | 90 | 53.5 | 0.43 | 0.45 | - | 1.6 | 0.74 |
| S13-175 | 73 | 85.1 | 12.1 | 0.22 | 0.32 | - | 1 | 0.44 |
| S13-175 | 91.4 | 98 | 6.6 | 0.41 | 0.54 | - | 2.56 | 0.79 |
| S13-175 | 101.7 | 148 | 46.3 | 0.33 | 0.56 | - | 2.08 | 0.72 |
| S13-177 | 26.8 | 213 | 186.2 | 0.39 | 0.53 | - | 1.86 | 0.76 |
| S13-177 | 26.8 | 109 | 82.2 | 0.56 | 0.81 | - | 2.43 | 1.12 |
| S13-177 | 61 | 107 | 46 | 0.68 | 1.05 | - | 2.73 | 1.40 |
| S13-177 | 261 | 283 | 22 | 0.24 | 0.23 | - | 1.17 | 0.40 |
| S13-178 | 26.5 | 170 | 143.5 | 0.46 | 0.55 | - | 2.43 | 0.84 |
| S13-178 | 26.5 | 110 | 83.5 | 0.53 | 0.64 | - | 2.45 | 0.97 |
| S13-181 | 26.3 | 124 | 97.7 | 0.26 | 0.27 | - | 1.2 | 0.45 |
| S13-181 | 32 | 60 | 28 | 0.32 | 0.33 | - | 1.54 | 0.55 |
| S13-182 | 39.2 | 185 | 145.8 | 0.27 | 0.3 | - | 1.25 | 0.48 |
| S13-182 | 39.2 | 125 | 85.8 | 0.32 | 0.39 | - | 1.52 | 0.59 |
| S13-183 | 30.5 | 210 | 179.5 | 0.43 | 0.5 | - | 1.93 | 0.78 |
| S13-183 | 38 | 134 | 96 | 0.58 | 0.62 | - | 2.75 | 1.01 |
| S13-183 | 76 | 100 | 24 | 1.11 | 1.22 | - | 4.98 | 1.96 |
| S13-186 | 53.1 | 131 | 77.9 | 0.24 | 0.21 | 0.003 | 1.35 | 0.40 |
| S13-188 | 40.6 | 154 | 113.4 | 0.32 | 0.4 | - | 1.37 | 0.60 |
| S13-195 | 154 | 214 | 60 | 0.3 | 0.28 | - | 1.27 | 0.50 |
| S13-198 | 86 | 214 | 128 | 0.26 | 0.26 | 0.002 | 1.27 | 0.45 |
| S13-198 | 92 | 118.4 | 26.4 | 0.3 | 0.26 | 0.004 | 1.35 | 0.50 |

| Drill Hole | From (m) | To (m) | Width (m)* | Cu % | Au g/t | Mo% | Ag g/t | Cu Eq%** |
|---|---|---|---|---|---|---|---|---|
| S14-200 | 324 | 531 | 207 | 0.31 | 0.24 | 0.034 | 4.45 | 0.62 |
| S14-200 | 366 | 439 | 73 | 0.45 | 0.31 | 0.059 | 6.32 | 0.90 |
| S14-201 | 76 | 828 | 752 | 0.2 | 0.1 | 0.027 | 3.22 | 0.38 |
| S14-208 | 283 | 591 | 308 | 0.28 | 0.26 | 0.046 | 3.5 | 0.63 |
| S14-208 | 431 | 591 | 160 | 0.38 | 0.41 | 0.056 | 4.29 | 0.87 |
| S14-208 | 485 | 537 | 52 | 0.44 | 0.64 | 0.067 | 5.58 | 1.13 |
| S14-210 | 199 | 867 | 668 | 0.28 | 0.17 | 0.033 | 3.34 | 0.53 |
| S14-210 | 361 | 533 | 172 | 0.39 | 0.29 | 0.062 | 4.99 | 0.82 |
| S14-210 | 361 | 415 | 54 | 0.47 | 0.38 | 0.047 | 6.89 | 0.93 |
| S14-210 | 483 | 517 | 34 | 0.48 | 0.36 | 0.058 | 5.45 | 0.95 |

**Width refers to drill hole intercepts, true widths have not been determined. EOH = end of hole.*

***Cu Eq. (copper equivalent) has been used to express the combined value of copper, molybdenum, gold and silver as a percentage of copper, and is provided for illustrative purposes only. No allowances have been made for recovery losses that may occur should mining eventually result. Calculations use metal prices of US$3.85/lb Cu, US$1750/oz Au, US$22/oz Ag, and US$12.40/lb Mo and the formula CuEq (%) = Cu (%) + 3.2208 x Mo (%) + 0.6630 x Au (g/t) + 0.0083 x Ag (g/t).*

No drilling took place on the property in the period from 2015-2017. Instead, Gold Reach Resources (later Surge Copper Corp. after February 2016) conducted surface sampling and geological mapping around the Seel deposits and on several regional prospects. See Section 9: Exploration for details.

In 2018, Surge Copper drilled one hole into the East Seel deposit (ddh S18-211, total 210 m) and 6 holes in the East Extension Zone (S18-212 to S18-217, total 2,027m). Hole S18-211 encountered continuous mineralization from bedrock at 7.8m to the end of hole at 210 m, amounting to 202 m grading 0.26% Cu, 0.31 g/t Au, and 1.32 g/t Ag, including 138 m grading 0.37% Cu, 0.37 g/t Au, and 1.53 g/t Ag from 44-182 m, and 52 m grading 0.42% Cu, 1.73 g/t Au, and 1.73 g/t Ag from 124-176 m depth (Strickland, 2018).

Drill holes S18-212 to S18-217 targeted the East Extension Zone, approximately 500 metres northeast of the East Seel deposit. Holes S18-212 and S18-214 both intersected sulfide breccia mineralization over drill intercepts of 22 m, as well as broad zones of elevated silver, lead, and zinc. S18-212 returned 0.29% Cu, 23.5 g/t Ag, and 0.26% Zn over 22 metres from 372-394 m depth. S18-214 returned 0.5% Cu, 17.6 g/t Ag, and 0.4% Zn over 22 metres from 89-137 m depth. Hole S18-213 was abandoned at 120.7 m due to difficult drilling conditions in a fault zone. Hole S18-215 intersected a long interval of elevated silver, zinc, and lead, amounting to 191.5 metres grading 7.25 g/t Ag, 0.43% Zn, and 0.16% Pb from 160-351.5 m (end of hole).

Drill holes S18-216 and S18-217 were collared approximately 800 m east of the East Seel deposit and targeted the West Damascus fault zone. S18-217 intersected high-grade gold mineralization at a depth of 130 m, returning 9.4 g/t Au over two metres. S18-216 intersected the same fault zone about 150 m down-dip of S18-217 and returned 0.6 g/t Au over two metres. Both holes also intersected narrow zones of elevated copper and gold mineralization associated with altered porphyritic intrusive dykes. This includes 6 m grading 0.26% Cu, 0.15 g/t Au and 0.87 g/t Ag from 280-286 m in S18-216, and 6 m grading 0.34% Cu, 0.16 g/t Au, and 1.83 g/t Ag from 152-158 m in S18-217.

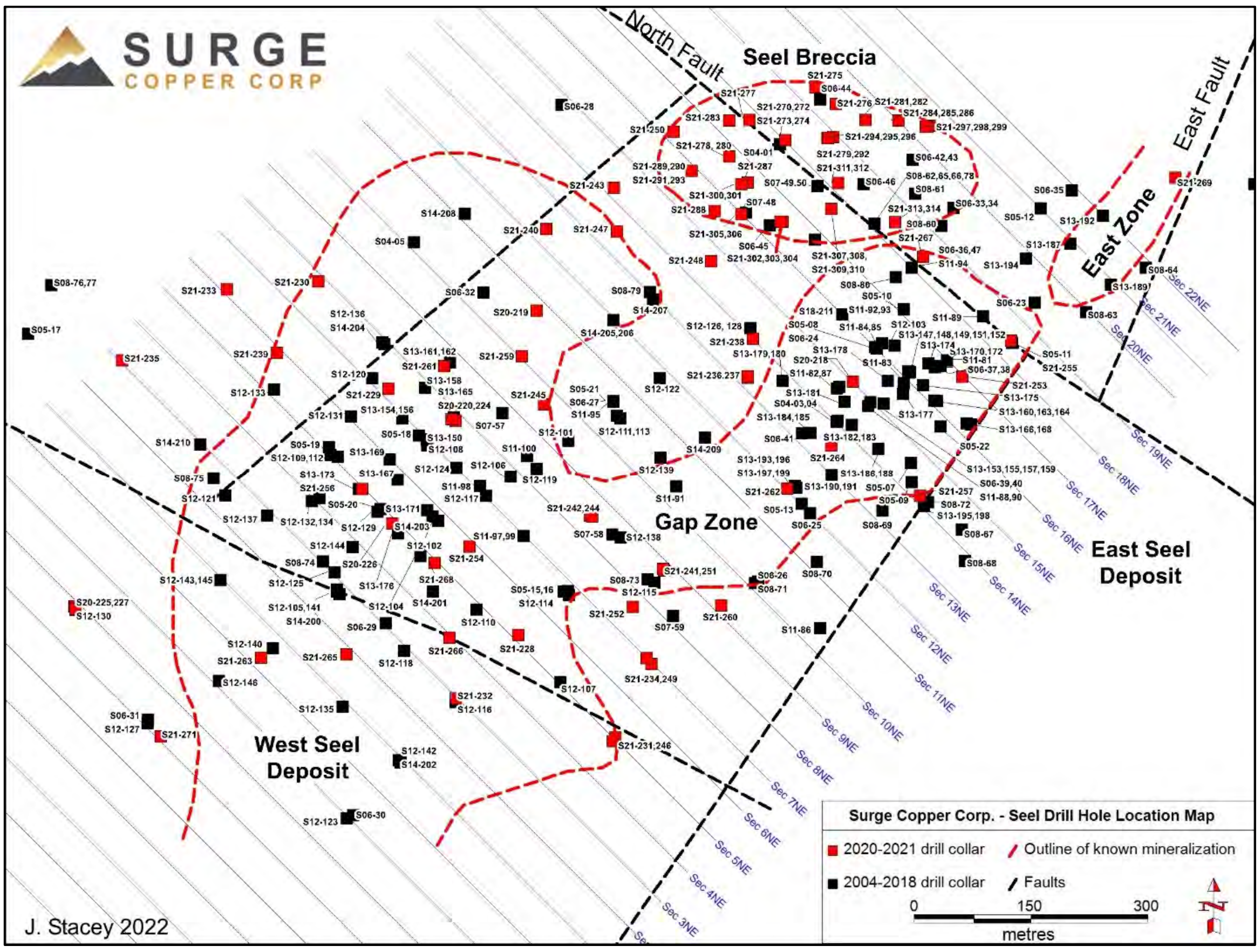



**Figure 10-2: Collar and Zone locations at the Seel Deposit. 2020-2021 drill collars indicated by red squares.**

No drilling took place on the Ootsa property in 2019.

## 2020-2021 Drilling

From late October 2020 to late September 2021, Surge Copper undertook a major drilling campaign on the Seel deposits. Two diamond drill rigs supplied by Full Force Drilling Ltd.

out of Smithers, BC were on site until early September 2021, at which point one of the rigs was shifted to Surge Copper's Berg project. The other rig stayed at Ootsa and finished out the season drilling in the Seel Breccia area. During this time, Surge completed a total of 45,015 metres of drilling on the Seel deposits and peripheral targets. Figure 10-2 above shows collar and zone locations and Table 10-4 below provides a breakdown of drilling on the various zones in 2020-2021. In addition to drilling at Seel, Surge Copper also completed two holes in the West Ox area (Ox21-279 and Ox21-292) which amounted to 1,215 m drilled (see Section 10.2, Ox Deposit).

**Table 10-4: Breakdown of 2020-2021 drilling by zone in the Seel area**

| Zone | Number of Drill Holes | Total Meterage |
|---|---|---|
| East Seel | 10 | 4,611 |
| West Seel | 36 | 26,802 |
| East Target | 3 | 1926 |
| Far East | 1 | 366 |
| West Target | 1 | 621 |
| Far South | 1 | 807 |
| South of West Seel | 1 | 738 |
| Seel Breccia | 44 | 9,144 |
| **TOTAL** | **97** | **45,015** |

The 2020-2021 Seel drill campaign was designed to fill in some gaps left by previous drilling, to expand and further define the limits of the resource, to calculate a new resource estimate for Seel and Ox deposits, and to test a number of peripheral targets outside of the previous area of drilling at Seel and Ox.

### *East Seel and Gap Zone*

Ten drill holes were completed in and around the East Seel deposit, for a total of 4,611 metres drilled (Figure 10-3). The holes were designed to provide further definition on the limits of mineralization at East Seel and to fill in some gaps left by previous drilling. A table of drill results in presented in Table 10-4 below.

Holes S20-218, S21-253, S21-255, and S21-257 tested the east and southeast sides of East Seel. All four holes intersected the East Fault, which bounds mineralization on the southeast side of the deposit. Hole S20-218 was collared in the heart of the deposit and intersected continuous copper-gold mineralization over 176.1 m from the top of bedrock at 34.5 m until mineralization was cut off by the East Fault at a depth of 210.6 m (Figure 10-4). Hole 218 continued past the East Fault to test an IP Chargeability anomaly on the east side of the fault, which returned weak copper and modest gold and silver results amounting to 154 metres of 0.11% CuEq from 312 m to 466 m depth. Hole S21-253 was collared near the southeast side of East Seel and returned 26 metres grading 0.22%

CuEq from 82-108 m depth before passing through the East Fault. Holes 255 and 257 intersected the East Fault near surface and did not encounter any significant mineralization below the fault.

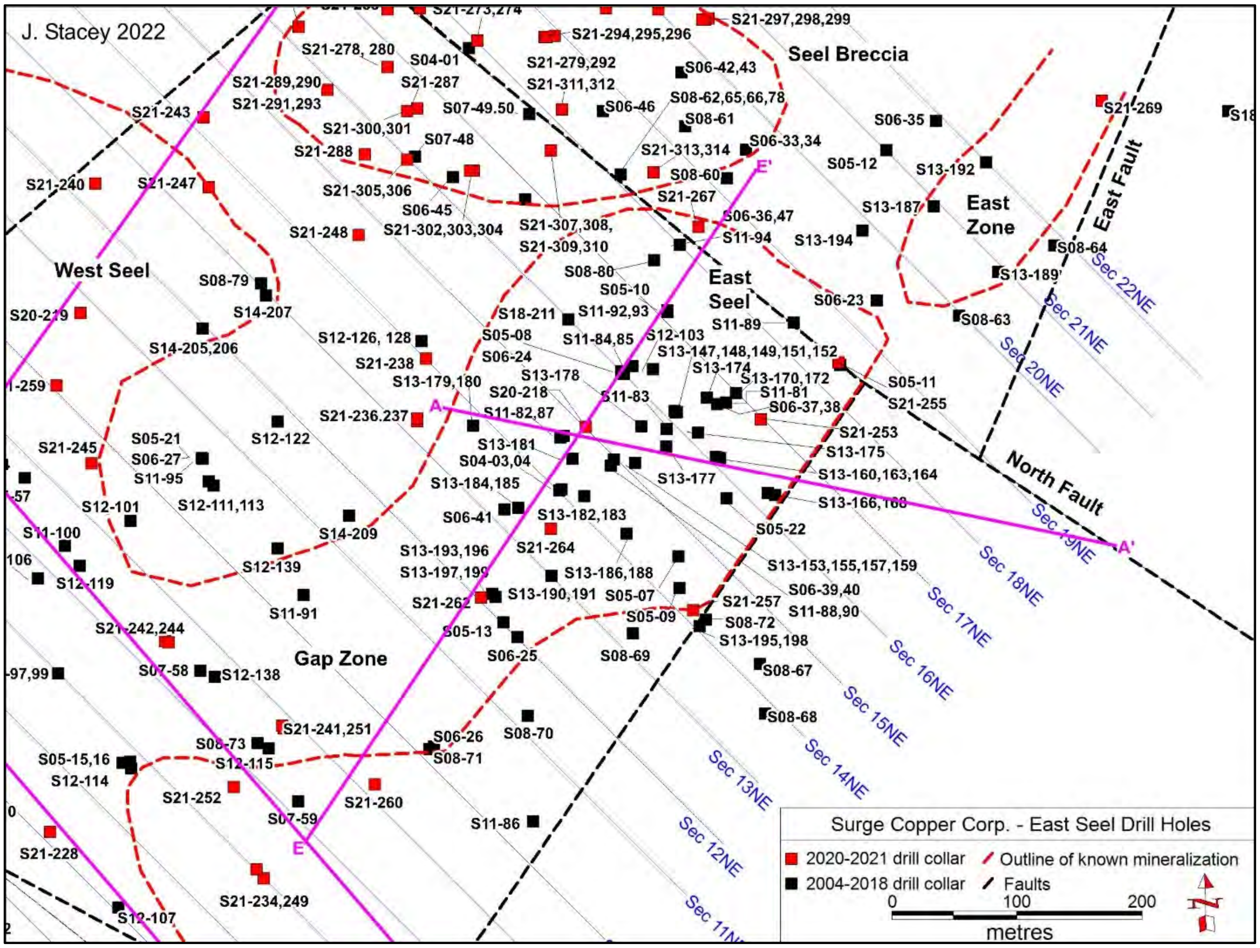



**Figure 10-3: East Seel drill collars and cross-section lines**

Three infill holes (S21-236, 237, and 238) were completed on the west side of the East Seel deposit. They encountered widespread alteration and localized Cu-Mo anomalies, but no significant intervals of mineralization were returned from assay results.

Hole S21-262 and S21-264 were collared on the west side of East Seel in an area known as the “Gap Zone” between the East and West Seel deposits. These two drill holes were successful in defining near-surface low-grade mineralization as well as a large, well-mineralized zone at depth (Figure 10-5), with S21-262 returning 130 metres grading 0.44% CuEq from 700 m depth to the end of hole at 830 m, and S21-264 returning 296 metres grading 0.47% CuEq from 448 m depth to the end of hole at 744 m (Table 10-5 and Figure 10-4).

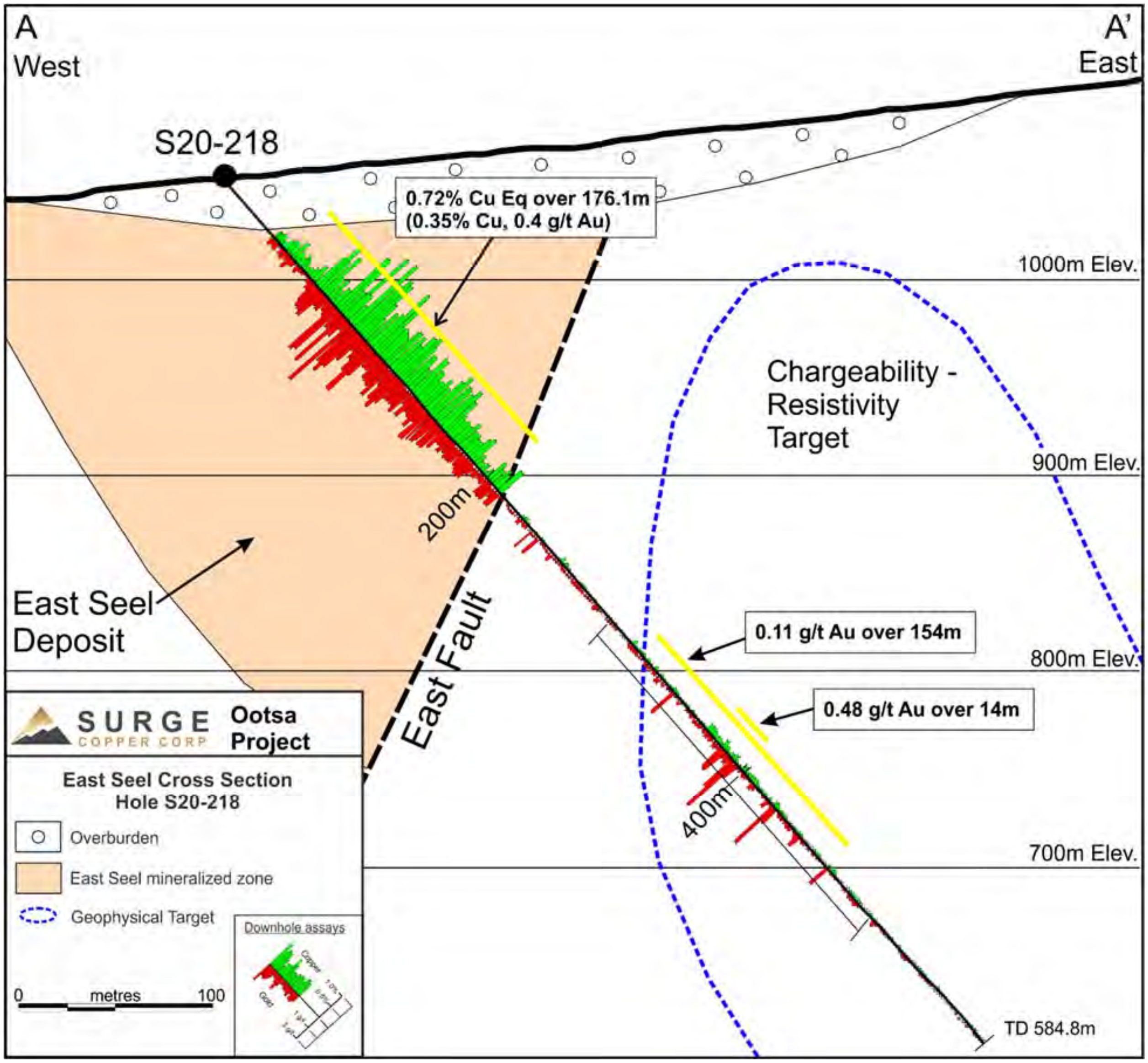



Figure 10-4: East Seel cross-section A-A' showing 2020-2021 drill results

**Table 10-5: Selected drill results, East Seel 2020-2021**

| Drill Hole | From (m) | To (m) | Width (m)* | Cu % | Au g/t | Mo % | Ag g/t | Cu Eq. %** |
|---|---|---|---|---|---|---|---|---|
| S20-218 | 34.5 | 210.6 | 176.1 | 0.35 | 0.40 | 0 | 1.7 | 0.63 |
| including | 64.0 | 190.0 | 126.0 | 0.43 | 0.50 | 0 | 2.0 | 0.78 |
| S20-218 | 312.0 | 466.0 | 154.0 | 0.03 | 0.11 | 0 | 0.5 | 0.11 |
| including | 392.0 | 394.0 | 2.0 | 0.03 | 1.13 | 0 | 0.7 | 0.79 |
| S21-236 | no significant intervals (max 1400 ppm Cu over 2 m) | | | | | | | |
| S21-237 | no significant intervals (max 1890 ppm Cu over 2 m) | | | | | | | |
| S21-238 | no significant intervals (max 2860 ppm Cu over 2 m) | | | | | | | |
| S21-253 | 82 | 108 | 26 | 0.13 | 0.08 | 0.012 | 0.6 | 0.22 |
| S21-255 | no significant intervals (max 1680 ppm Cu over 2 m) | | | | | | | |

| Drill Hole | From (m) | To (m) | Width (m)* | Cu % | Au g/t | Mo % | Ag g/t | Cu Eq. %** |
|---|---|---|---|---|---|---|---|---|
| S21-257 | no significant intervals (max 2090 ppm Cu over 2 m) | | | | | | | |
| S21-262 | 40 | 64 | 24 | 0.14 | 0.08 | 0.026 | 0.9 | 0.28 |
| S21-262 | 74 | 118 | 44 | 0.12 | 0.05 | 0.018 | 1.1 | 0.22 |
| S21-262 | 392 | 406 | 14 | 0.15 | 0.14 | 0.012 | 1.0 | 0.30 |
| S21-262 | 700 | 830 EOH | 130 | 0.26 | 0.19 | 0.012 | 2.2 | 0.44 |
| S21-264 | 74 | 104 | 30 | 0.11 | 0.09 | 0.003 | 0.7 | 0.18 |
| S21-264 | 136 | 164 | 28 | 0.13 | 0.08 | 0.005 | 1.0 | 0.21 |
| S21-264 | 210 | 296 | 86 | 0.08 | 0.04 | 0.027 | 0.7 | 0.20 |
| S21-264 | 386 | 408 | 22 | 0.15 | 0.18 | 0.014 | 0.9 | 0.32 |
| S21-264 | 448 | 744 EOH | 296 | 0.23 | 0.24 | 0.020 | 1.7 | 0.47 |
| S21-267 | 52 | 357 EOH | 305 | 0.21 | 0.26 | 0.001 | 1.2 | 0.40 |
| including | 124 | 230 | 106 | 0.26 | 0.34 | 0.001 | 1.1 | 0.50 |
| S21-269 | 34 | 124 | 90 | 0.16 | 0.10 | 0.005 | 1.2 | 0.25 |
| including | 38 | 66 | 28 | 0.23 | 0.10 | 0.004 | 1.2 | 0.32 |

**Width refers to drill hole intercepts, true widths have not been determined. EOH = end of hole.*

*** Cu Eq. (copper equivalent) has been used to express the combined value of copper, molybdenum, gold and silver as a percentage of copper, and is provided for illustrative purposes only. No allowances have been made for recovery losses that may occur should mining eventually result. Calculations use metal prices of US$3.85/lb Cu, US$1750/oz Au, US$22/oz Ag, and US$12.40/lb Mo and the formula CuEq (%) = Cu (%) + 3.2208 x Mo (%) + 0.6630 x Au (g/t) + 0.0083 x Ag (g/t).*

Hole S21-267 was collared on the northeast side of East Seel and ended in known East Seel mineralization (Figure 10-5). The hole expanded near-surface mineralization, returning 305 metres grading 0.40% CuEq from 52 m depth to the end of hole at 357 m. This interval includes 106 m grading 0.50% CuEq from 124-230 m depth.

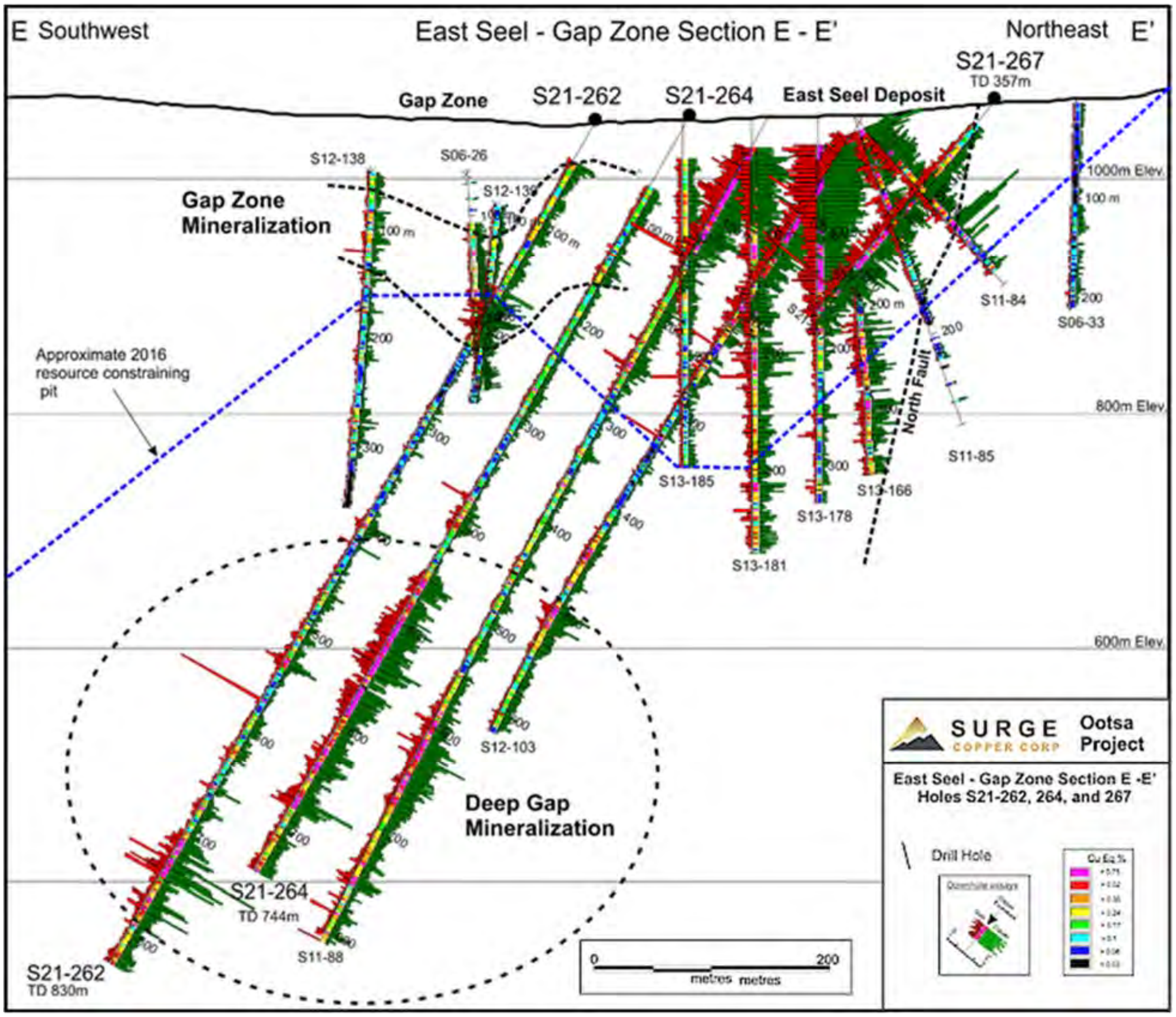



**Figure 10-5: East Seel and Gap Zone drilling, Section E-E' showing 2020-2021 drill results**

## *West Seel*

A total of 36 drill holes were completed in and around the West Seel deposit (Figure 10-6), for a total of 26,802 metres drilled. The holes were designed to provide infill data in areas of low drill density, to provide better definition of grade distribution within the deposit, to expand and confirm the limits of West Seel mineralization, and to test for additional mineralization at depth. A plan map and representative sections highlighting 2020-2021 drilling are presented in figures 10-6, 10-7, 10-8, and 10-9, and composited drill assay results are found in Table 10-6 below.

**Table 10-6: Selected drill results, West Seel 2020-2021**

| Drill Hole | From (m) | To (m) | Width (m)* | Cu % | Au g/t | Mo % | Ag g/t | Cu Eq. %** |
|---|---|---|---|---|---|---|---|---|
| S20-219 | 15 | 1028 EOH | 1013 | 0.2 | 0.13 | 0.025 | 2.9 | 0.39 |
| including | 204 | 904 | 700 | 0.23 | 0.16 | 0.031 | 3.1 | 0.46 |
| including | 294 | 716 | 422 | 0.25 | 0.20 | 0.042 | 3.3 | 0.55 |
| including | 436 | 546 | 110 | 0.33 | 0.20 | 0.061 | 4.8 | 0.70 |
| S20-220 | 46 | 602 | 556 | 0.19 | 0.13 | 0.017 | 3.7 | 0.36 |
| including | 46 | 116 | 70 | 0.26 | 0.26 | 0.019 | 7.1 | 0.55 |
| including | 452 | 530 | 78 | 0.27 | 0.20 | 0.039 | 3.5 | 0.56 |
| S20-224 | 34 | 434 | 400 | 0.18 | 0.11 | 0.018 | 3.3 | 0.34 |
| including | 102 | 152 | 50 | 0.25 | 0.17 | 0.018 | 6.2 | 0.47 |
| including | 298 | 330 | 32 | 0.30 | 0.19 | 0.027 | 3.6 | 0.54 |
| S20-225 | no significant results (max 992 ppm Cu over 4 m) | | | | | | | |
| S20-226 | 3 | 16 | 13 | 0.22 | 0.20 | 0.017 | 10.2 | 0.49 |
| S20-226 | 342 | 462 | 120 | 0.19 | 0.08 | 0.022 | 2.5 | 0.33 |
| S20-227 | 486 | 596 | 110 | 0.10 | 0.03 | 0.007 | 1.6 | 0.16 |
| S21-228 | 172 | 184 | 12 | 0.24 | 0.20 | 0.011 | 1.3 | 0.41 |
| S21-228 | 210 | 795 EOH | 585 | 0.25 | 0.25 | 0.023 | 2.2 | 0.51 |
| including | 272 | 436 | 164 | 0.29 | 0.30 | 0.029 | 2.9 | 0.60 |
| including | 726 | 770 | 44 | 0.35 | 0.26 | 0.047 | 2.5 | 0.69 |
| S21-229 | no significant results (max 1145 ppm Cu over 4 m) | | | | | | | |
| S21-230 | 478 | 878 | 400 | 0.13 | 0.05 | 0.022 | 1.1 | 0.24 |
| including | 478 | 706 | 228 | 0.17 | 0.06 | 0.014 | 1.4 | 0.27 |
| including | 598 | 670 | 72 | 0.27 | 0.09 | 0.013 | 1.6 | 0.38 |
| S21-231 | 386 | 764 | 378 | 0.18 | 0.17 | 0.013 | 2.1 | 0.36 |
| including | 412 | 528 | 116 | 0.28 | 0.25 | 0.020 | 3.5 | 0.54 |
| S21-232 | no significant results (max 760 ppm Cu over 2 m) | | | | | | | |
| S21-233 | 342 | 737.5 | 395.5 | 0.17 | 0.08 | 0.028 | 1.8 | 0.33 |
| including | 444 | 662 | 218 | 0.21 | 0.09 | 0.036 | 2.0 | 0.40 |
| including | 544 | 598 | 54 | 0.23 | 0.13 | 0.055 | 2.4 | 0.52 |
| S21-234 | 206 | 408 | 202 | 0.20 | 0.19 | 0.015 | 1.7 | 0.39 |
| including | 312 | 398 | 86 | 0.27 | 0.28 | 0.023 | 2.7 | 0.55 |
| S21-235 | 88 | 96 | 8 | 0.02 | 0.71 | 0.000 | 1.3 | 0.50 |
| S21-235 | 380 | 886 | 506 | 0.20 | 0.11 | 0.030 | 2.2 | 0.39 |
| including | 438 | 460 | 22 | 0.26 | 0.10 | 0.040 | 3.5 | 0.49 |
| including | 622 | 662 | 40 | 0.32 | 0.19 | 0.046 | 3.9 | 0.63 |
| S21-239 | 354 | 544 | 190 | 0.23 | 0.13 | 0.025 | 2.0 | 0.42 |
| including | 356 | 422 | 66 | 0.31 | 0.18 | 0.044 | 3.0 | 0.60 |
| including | 486 | 518 | 32 | 0.30 | 0.21 | 0.011 | 2.2 | 0.48 |
| S21-240 | 248 | 1078 | 830 | 0.18 | 0.12 | 0.022 | 2.1 | 0.35 |
| including | 350 | 506 | 156 | 0.22 | 0.13 | 0.018 | 3.0 | 0.39 |

| Drill Hole | From (m) | To (m) | Width (m)* | Cu % | Au g/t | Mo % | Ag g/t | Cu Eq. %** |
|---|---|---|---|---|---|---|---|---|
| including | 658 | 828 | 170 | 0.19 | 0.15 | 0.041 | 1.7 | 0.43 |
| including | 850 | 942 | 92 | 0.22 | 0.10 | 0.021 | 2.1 | 0.37 |
| S21-241 | 94 | 216 | 122 | 0.14 | 0.11 | 0.020 | 0.6 | 0.28 |
| including | 184 | 210 | 26 | 0.20 | 0.19 | 0.029 | 0.7 | 0.42 |
| S21-242 | 26 | 68 | 42 | 0.12 | 0.08 | 0.012 | 0.8 | 0.22 |
| S21-242 | 420 | 717 EOH | 297 | 0.22 | 0.27 | 0.025 | 2.3 | 0.50 |
| including | 542 | 666 | 124 | 0.30 | 0.31 | 0.044 | 2.9 | 0.67 |
| S21-243 | 274 | 706 | 432 | 0.29 | 0.20 | 0.035 | 3.0 | 0.56 |
| including | 468 | 624 | 156 | 0.37 | 0.23 | 0.044 | 3.5 | 0.70 |
| S21-244 | 32 | 90 | 58 | 0.10 | 0.06 | 0.013 | 0.8 | 0.19 |
| S21-244 | 98 | 266 | 168 | 0.14 | 0.09 | 0.017 | 0.8 | 0.26 |
| including | 152 | 202 | 50 | 0.19 | 0.09 | 0.021 | 0.9 | 0.33 |
| S21-244 | 404 | 432 | 28 | 0.19 | 0.17 | 0.089 | 0.7 | 0.60 |
| S21-245 | 180 | 346 | 166 | 0.16 | 0.09 | 0.017 | 2.0 | 0.29 |
| including | 200 | 234 | 34 | 0.23 | 0.16 | 0.016 | 3.6 | 0.42 |
| S21-246 | no significant results (max 1168 ppm Cu over 8 m) | | | | | | | |
| S21-247 | 52 | 88 | 36 | 0.12 | 0.14 | 0.029 | 1.4 | 0.32 |
| S21-248 | no significant results (max 1343 ppm Cu over 22 m) | | | | | | | |
| S21-249 | no significant results (max 1330 ppm Cu over 2 m) | | | | | | | |
| S21-250 | 440 | 804 | 364 | 0.24 | 0.19 | 0.036 | 2.3 | 0.51 |
| including | 560 | 754 | 194 | 0.32 | 0.29 | 0.045 | 3.2 | 0.69 |
| including | 574 | 666 | 92 | 0.38 | 0.35 | 0.046 | 3.9 | 0.79 |
| S21-251 | no significant results (max 1600 ppm Cu over 2 m) | | | | | | | |
| S21-252 | 82 | 94 | 12 | 0.30 | 0.09 | 0.004 | 0.8 | 0.38 |
| S21-252 | 176 | 256 | 80 | 0.15 | 0.10 | 0.012 | 0.6 | 0.26 |
| S21-254 | 9 | 170 | 161 | 0.21 | 0.11 | 0.016 | 1.5 | 0.34 |
| including | 92 | 144 | 52 | 0.32 | 0.21 | 0.020 | 1.6 | 0.54 |
| S21-254 | 204 | 218 | 14 | 0.22 | 0.17 | 0.013 | 1.0 | 0.38 |
| S21-256 | 244 | 312 | 68 | 0.12 | 0.06 | 0.005 | 1.7 | 0.18 |
| S21-256 | 314 | 558 | 244 | 0.17 | 0.23 | 0.030 | 2.1 | 0.44 |
| including | 388 | 504 | 116 | 0.19 | 0.26 | 0.041 | 2.2 | 0.51 |
| S21-256 | 590 | 610 | 20 | 0.08 | 1.46 | 0.013 | 1.2 | 1.11 |
| including | 606 | 608 | 2 | 0.13 | 9.25 | 0.023 | 3.0 | 6.36 |
| S21-259 | 66 | 192 | 126 | 0.13 | 0.03 | 0.007 | 3.0 | 0.20 |
| S21-259 | 198 | 199 | 1 | 0.17 | 4.44 | 0.016 | 11.4 | 3.26 |
| S21-259 | 350 | 392 | 42 | 0.12 | 0.17 | 0.007 | 1.9 | 0.27 |
| S21-260 | 142 | 172 | 30 | 0.12 | 0.11 | 0.009 | 0.6 | 0.22 |
| S21-260 | 248 | 300 | 52 | 0.16 | 0.16 | 0.018 | 0.7 | 0.33 |
| S21-261 | 34 | 68 | 34 | 0.15 | 0.08 | 0.007 | 4.2 | 0.26 |

| Drill Hole | From (m) | To (m) | Width (m)* | Cu % | Au g/t | Mo % | Ag g/t | Cu Eq. %** |
|---|---|---|---|---|---|---|---|---|
| S21-261 | 104 | 380 | 276 | 0.20 | 0.11 | 0.021 | 2.8 | 0.37 |
| including | 142 | 174 | 32 | 0.23 | 0.15 | 0.021 | 4.6 | 0.44 |
| including | 310 | 374 | 64 | 0.28 | 0.12 | 0.034 | 2.7 | 0.49 |
| S21-263 | 190 | 818 | 628 | 0.16 | 0.06 | 0.014 | 2.5 | 0.26 |
| including | 308 | 376 | 68 | 0.25 | 0.08 | 0.028 | 5.2 | 0.43 |
| S21-265 | 342 | 744 EOH | 402 | 0.25 | 0.16 | 0.025 | 2.7 | 0.45 |
| including | 342 | 480 | 138 | 0.23 | 0.23 | 0.027 | 3.1 | 0.49 |
| S21-266 | 198 | 693 EOH | 495 | 0.25 | 0.21 | 0.021 | 3.4 | 0.48 |
| including | 338 | 693 EOH | 355 | 0.28 | 0.25 | 0.026 | 3.3 | 0.55 |
| including | 382 | 508 | 126 | 0.34 | 0.39 | 0.034 | 4.6 | 0.75 |
| including | 620 | 693 EOH | 73 | 0.32 | 0.28 | 0.023 | 2.5 | 0.60 |
| S21-268 | 20 | 442 | 422 | 0.26 | 0.17 | 0.015 | 5.4 | 0.47 |
| including | 226 | 426 | 200 | 0.32 | 0.20 | 0.016 | 5.3 | 0.54 |
| S21-271 | no significant results (max 1695 ppm Cu over 2 m) | | | | | | | |

**Width refers to drill hole intercepts, true widths have not been determined. EOH = end of hole.*

*** Cu Eq. (copper equivalent) has been used to express the combined value of copper, molybdenum, gold and silver as a percentage of copper, and is provided for illustrative purposes only. No allowances have been made for recovery losses that may occur should mining eventually result. Calculations use metal prices of US$3.85/lb Cu, US$1750/oz Au, US$22/oz Ag, and US$12.40/lb Mo and the formula CuEq (%) = Cu (%) + 3.2208 x Mo (%) + 0.6630 x Au (g/t) + 0.0083 x Ag (g/t).*

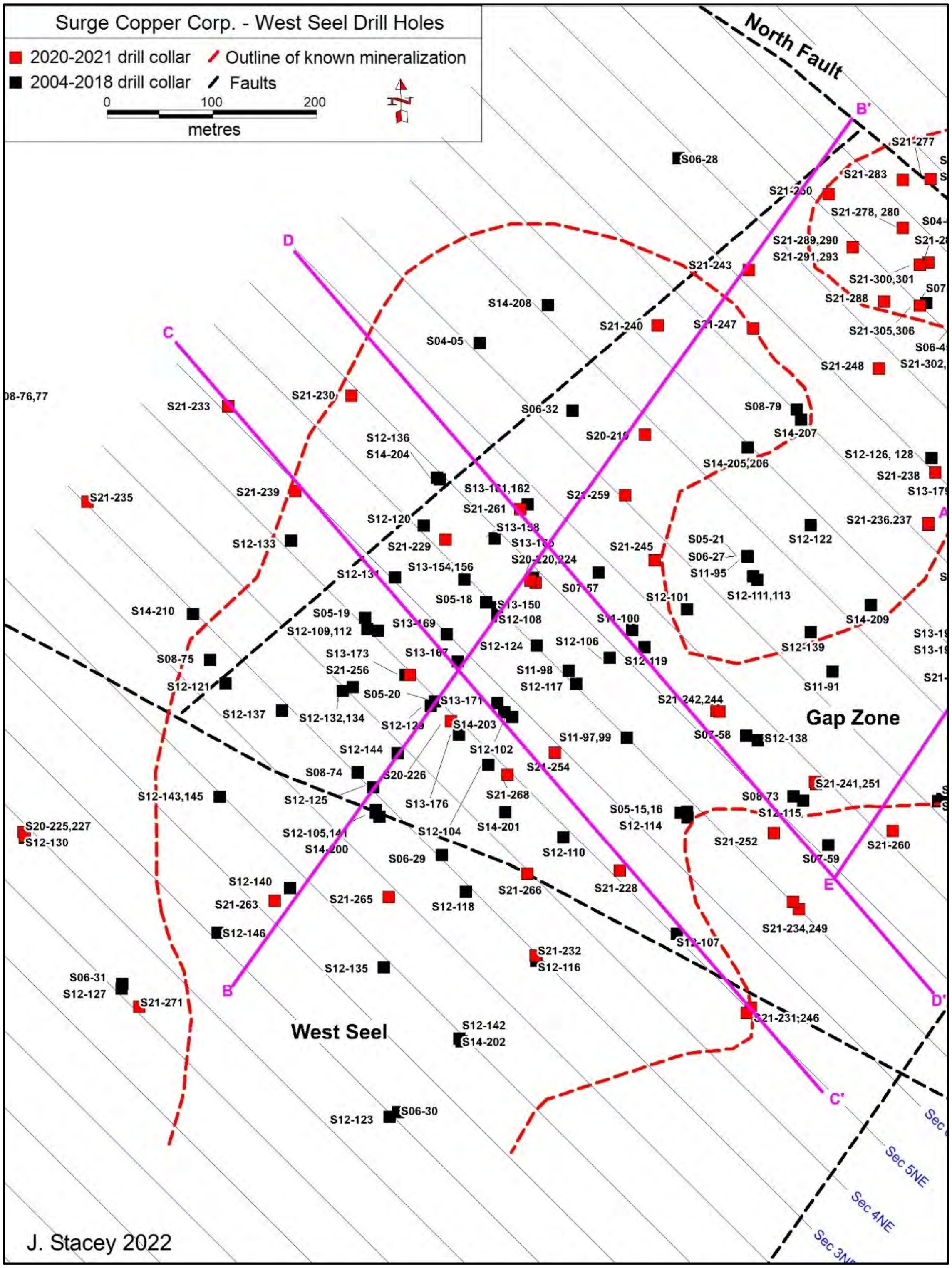



**Figure 10-6: West Seel drill collars and cross-section lines**

Nine holes were drilled along a northeast-southwest long section through the middle of the West Seel deposit, including (from southwest to northeast) S21-263, S21-265, S20-

226, S20-220, S20-224, S20-219, S21-240, S21-243, and S21-250 (Figure 10-7). Six holes were drilled toward the southwest at angles of -50 to -60 degrees, two were drilled vertically, and one hole was drilled toward the northeast at an angle of -50 degrees.

Several of these holes returned some of the longest continually-mineralized intervals recorded to date on the Seel property, most notably hole S20-219, which assayed 0.39% CuEq over 1013 m from the top of bedrock to the end of hole, including a high-grade core which assayed 0.70% CuEq over 110 m from 436 m depth. Hole S21-240 was collared 100 m north of S20-219 and returned 830 m grading 0.35% CuEq from 248 m to the end of hole at 1078 m, including 170 m grading 0.44% CuEq starting at a depth of 658 m down-hole. These two holes extended known mineralization over 220 m further down-dip to the southwest than was previously understood, and the zone remains open at depth.

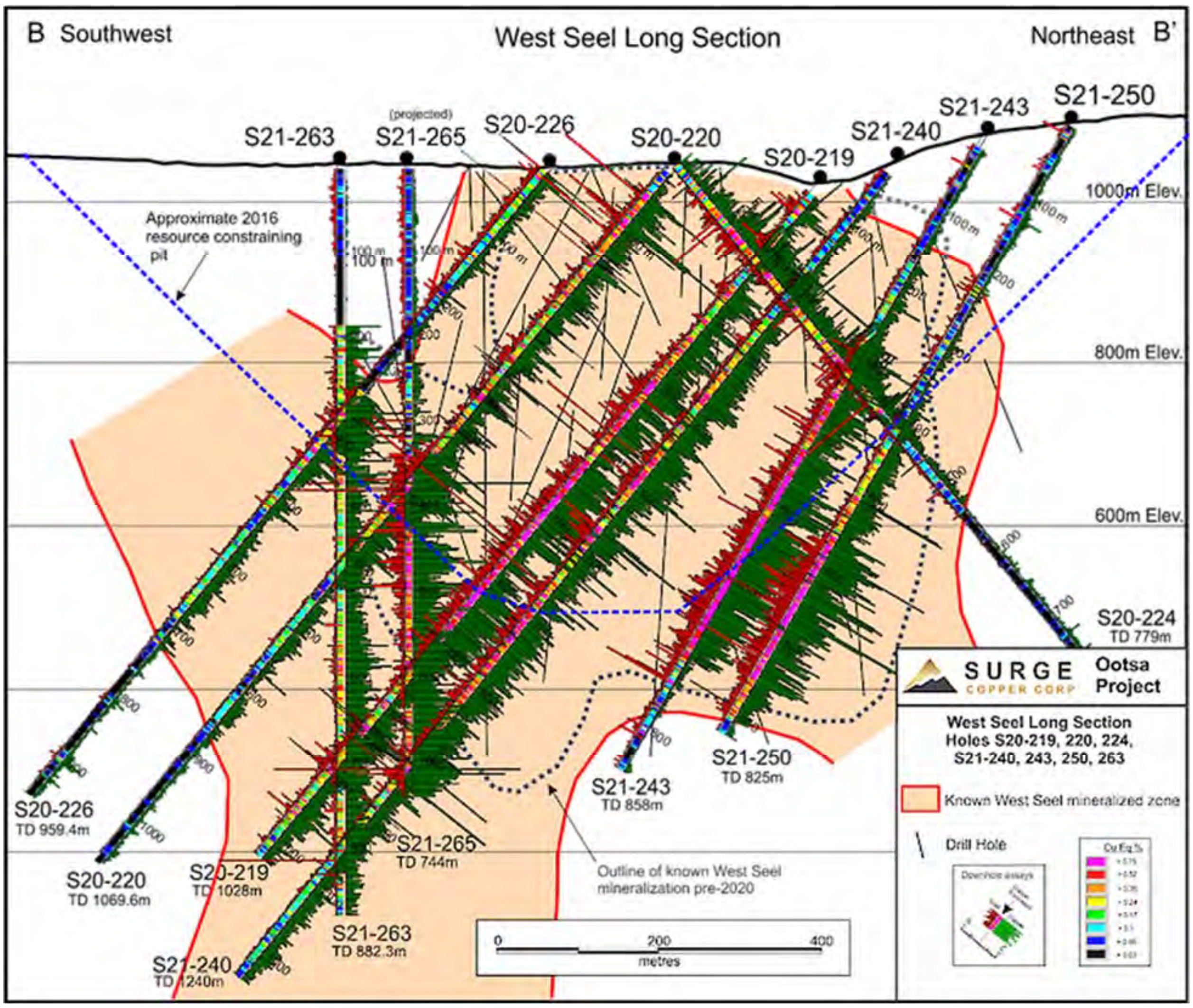



**Figure 10-7: West Seel deposit long section B-B' showing 2020-2021 drill results**

Holes S21-243 and S21-250 were collared 180 m and 280 m northeast of S20-219 respectively, and both returned long intervals of high-grade mineralization. S21-243 returned 432 m grading 0.56% CuEq starting at 274 m depth, including 156 m grading 0.69% CuEq starting at 468 m depth. S21-250 returned 364 m grading 0.50% CuEq from 440-804 m, including 194 m grading 0.68% CuEq starting at 560 m depth.

Near-surface mineralization weakens toward the southwest, with the top 200-300 m of drill holes S20-226, S21-263, and S21-265 returning spotty copper assays mostly less than 0.1% Cu. At depth mineralization picks up again, with S21-226 returning 142 m grading 0.33% CuEq from 342-462 m depth. S21-263 returned 628 m grading 0.27% CuEq from 190 m depth, including 68 m grading 0.44% CuEq from 308-376 m depth, and S21-265 returned 402 m grading 0.46% CuEq from 342 m depth, including 138 m grading 0.50% CuEq from 342-480 m depth.

Twenty-three holes were drilled along northwest-southeast sections through the West Seel deposit. Line spacing was approximately 50 metres and drilling took place over a strike length of 850 m. A total of 15,918 m were drilled at dip angles of -60 to -90 degrees toward the northwest and southeast. The drill holes were designed to provide infill data to better understand grade distribution within the deposit, and to delineate the outer boundaries of mineralization.

Drill holes S21-230, 231, 233, 234, 235, 239, 246, 249, and 252 were collared around the northwest and southeast margins of West Seel (Figure 10-6). On the northwest side, holes S21-230, 233, 235, and 239 encountered several hundred metres of variably hornfelsed volcanic and sedimentary country rock before passing through a fault and into the West Seel deposit (Figures 10-8 and 10-9). Below the fault, S21-230 returned 400 m grading 0.24% CuEq from 478-878 m, including 72 m grading 0.38% CuEq starting at 598 m depth. Hole S21-233 returned 395.5 m grading 0.33% CuEq from 342 m depth to the end of hole at 737.5 m, including 218 m grading 0.40% CuEq starting at 444 m depth. Hole S21-235 returned 506 m grading 0.39% CuEq from 380 m to the end of hole at 886 m, including 22 m grading 0.48% CuEq from 438-460 m depth, and 40 m grading 0.63% CuEq from 622-662 m depth. Hole S21-239 returned 190 m grading 0.41% CuEq from 354 m to the end of hole at 544 m, including 66 m grading 0.60% CuEq from 356-422 m and 32 m grading 0.49% CuEq from 486-518 m depth.

On the southeast side of West Seel, drill holes S21-231 and S21-246 were collared from the same setup; S21-231 was drilled toward the northwest at a dip angle of -65 degrees and S21-246 was drilled vertically (Figure 10-8). The top 386 m of S21-231 is composed of barren quartz-feldspar porphyry intrusive rocks and felsic volcanic country rocks with no significant assays returned from this interval. A mafic dyke from 383.3-385.6 m likely occupies a fault zone, as evidenced by an abrupt lithological change below the dyke to mineralized volcanic-sedimentary hornfels and feldspar porphyry intrusive rocks. Below the fault, S21-231 returned 378 m grading 0.35% CuEq from 386-764 m, including 116 m grading 0.54% CuEq from 412-528 m depth. Hole S21-246 did not return any significant assay results and showed that the southeastern margin of the West Seel deposit consists of barren quartz-feldspar porphyry intrusive rocks underlain by felsic volcanics.

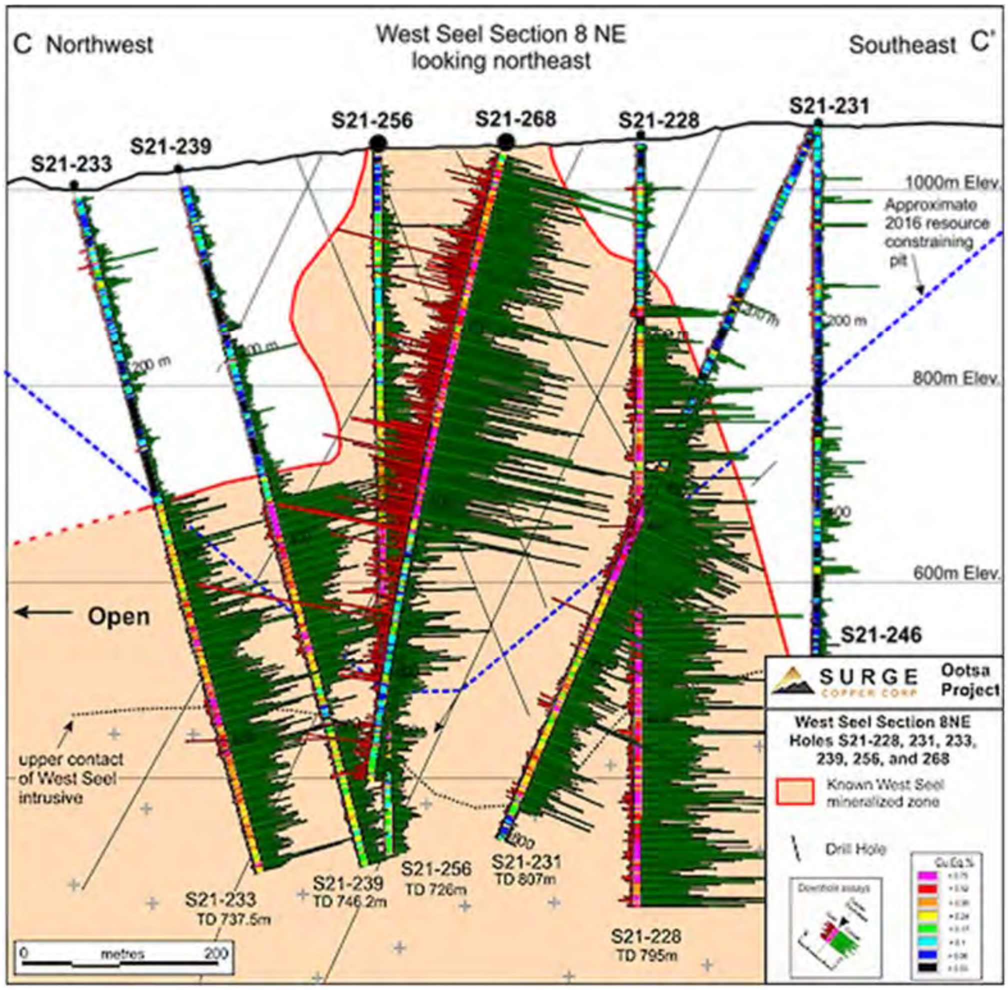



**Figure 10-8: West Seel cross section C-C' showing 2020-2021 drill results**

Approximately 100-160 m to the northeast, holes S21-234 and S21-252 were drilled toward the northwest at dip angles of -65 degrees and -60 degrees respectively (Figure 10-7). The top 206 m of S21-234 contains poorly mineralized quartz-feldspar porphyry intrusive rocks. Below this level, the rock changes to feldspar porphyry and hornfelsed volcanic-sedimentary country rock and mineralization picks up significantly. S21-234 assayed 0.39% CuEq over 202 m from 206-408 m depth, including 86 m grading 0.55% CuEq starting at 312 m depth. Hole S21-252 was composed mostly of feldspar porphyry, and assayed 0.26% CuEq over 80 m starting at 176 m depth. This hole was successful in filling a data gap and further expanding the mineralized zone on the southeast side of West Seel.

Hole S21-249 was collared from the same setup as S21-234 and drilled toward the southeast at a dip angle of -75 degrees. No significant mineralization was encountered in this hole, constraining the West Seel deposit in this area.

The southeastern edge of the West Seel deposit was further constrained by drill holes S21-241 and S21-251, collared from the same setup 60 metres northeast of S21-252 (Figure 10-5). S21-241 was drilled toward the northwest at a dip angle of -60 degrees and encountered poorly mineralized near-surface intrusive rocks passing into mineralized feldspar porphyry at a depth of 106 m. S21-241 assayed 0.28% CuEq over 122 m from 94-216 m depth, including 26 m grading 0.43% CuEq from 184 m depth. Hole S21-251 was drilled toward the southeast at a dip angle of -65 degrees and encountered near-surface feldspar porphyry intrusive rocks underlain by volcanic country rocks. No significant assay results were returned from this drill hole.

Drilling within the West Seel deposit returned mineralized intervals consistent with previous drilling in the area, and expanded mineralization at depth. The representative cross sections shown in Figures 10-8 and 10-9 provide an illustration of 2020-2021 assay results and the distribution of mineralization in the central and northeastern parts of West Seel respectively.

In the central part of the West Seel deposit (Figure 10-8), hole S21-228 encountered poorly mineralized near-surface intrusive rocks and volcanic country rocks to a depth of approximately 194 metres, where it passed into mixed feldspar porphyry intrusive rocks and hornfelsed volcanics. A 9-metre wide mafic dyke from 185.1-194.1 m may occupy a fault zone separating country rocks from the mineralized porphyry below. From a depth of 210 m to the end of hole at 795 m, S21-228 assayed 0.51% CuEq over 585 m, including 164 m grading 0.61% CuEq from 272-436 m, and 44 m grading 0.69% CuEq from 726-770 m depth.

Hole S21-268 was collared 140 m northwest of S21-228, directly into mineralized feldspar porphyry. This hole assayed 0.47% CuEq over 422 metres from the top of bedrock at 20 m to 442 m depth, including 200 m grading 0.55% CuEq from 226-426 m depth. Mineralization weakens in the deep West Seel intrusive below 442 m.

Hole S21-256 was collared 130 m northwest of S21-268 at -90 degrees. The upper 244 m of this hole encountered poorly mineralized felspar porphyry and volcanic country rocks. Below this level, stockwork veining increases in both felspar porphyry intrusive rocks and variably hornfelsed volcanics. From 244-312 m depth, S21-256 assayed 0.19% CuEq over 68 m. Mineralization strengthens from 314-558 m, assaying 0.44% CuEq over 244 m, including 116 m grading 0.51% CuEq from 388-504 m depth. Below 558 m mineralization weakens again, except for one 20 metre section from 590-610 m depth that assayed 1.10% CuEq and 1.46 g/t Au. This interval contains several structurally-controlled gold-bearing veins which assayed 1.22 g/t Au over 6 m from 590-596 m depth, and a higher-grade vein which assayed 9.25 g/t Au over 2 m at 606 m depth.

Section D-D' (Figure 10-9) is located approximately 150 m northeast of Section C-C' (Figure 10-6), and illustrates how West Seel mineralization bifurcates around a barren intrusive body in this area. Hole S21-242 collared into mineralized feldspar porphyry to a depth of approximately 68 m, assaying 0.22% CuEq over 42 m from 26-68 m depth. From 68-381 m, S21-242 passed through a barren multi-phase intrusion comprising coarse-grained plagioclase-rich feldspar porphyry which displays pervasive argillic alteration. Few porphyry-style veins were noted through this interval, possibly suggesting that these intrusive rocks were emplaced after the main mineralizing event. Below 381 m, the rock changes to a medium-grained feldspar porphyry and stockwork veining picks up again. From 420 m to the end of hole at 717 m, S21-242 assayed 0.50% CuEq over 297 m, including 124 m grading 0.67% CuEq from 542-666 m depth.

Hole S21-244, collared from the same setup as S21-242, was drilled toward the southeast at a dip angle of -70 degrees. This hole encountered mineralized feldspar porphyry from surface to a depth of 266 m, assaying 0.19% CuEq over 58 m from 32-90 m depth, and 0.26% CuEq over 168 m from 98-266 m depth. The lower mineralized zone includes a 50 m interval that assayed 0.32% CuEq from 152-202 m depth. Below 260 m, S21-244 encountered a zone of poorly-mineralized intrusive rocks then passed into volcanic country rocks at a depth of 429 m which persisted to the end of hole at 600 m. The best assay results from this section occur around the lower intrusive-volcanic contact, which assayed 0.60% CuEq over 28 m from 404-432 m depth. Mineralization in this interval is contained mostly within the intrusive phase and dies out rapidly in the underlying country rocks.

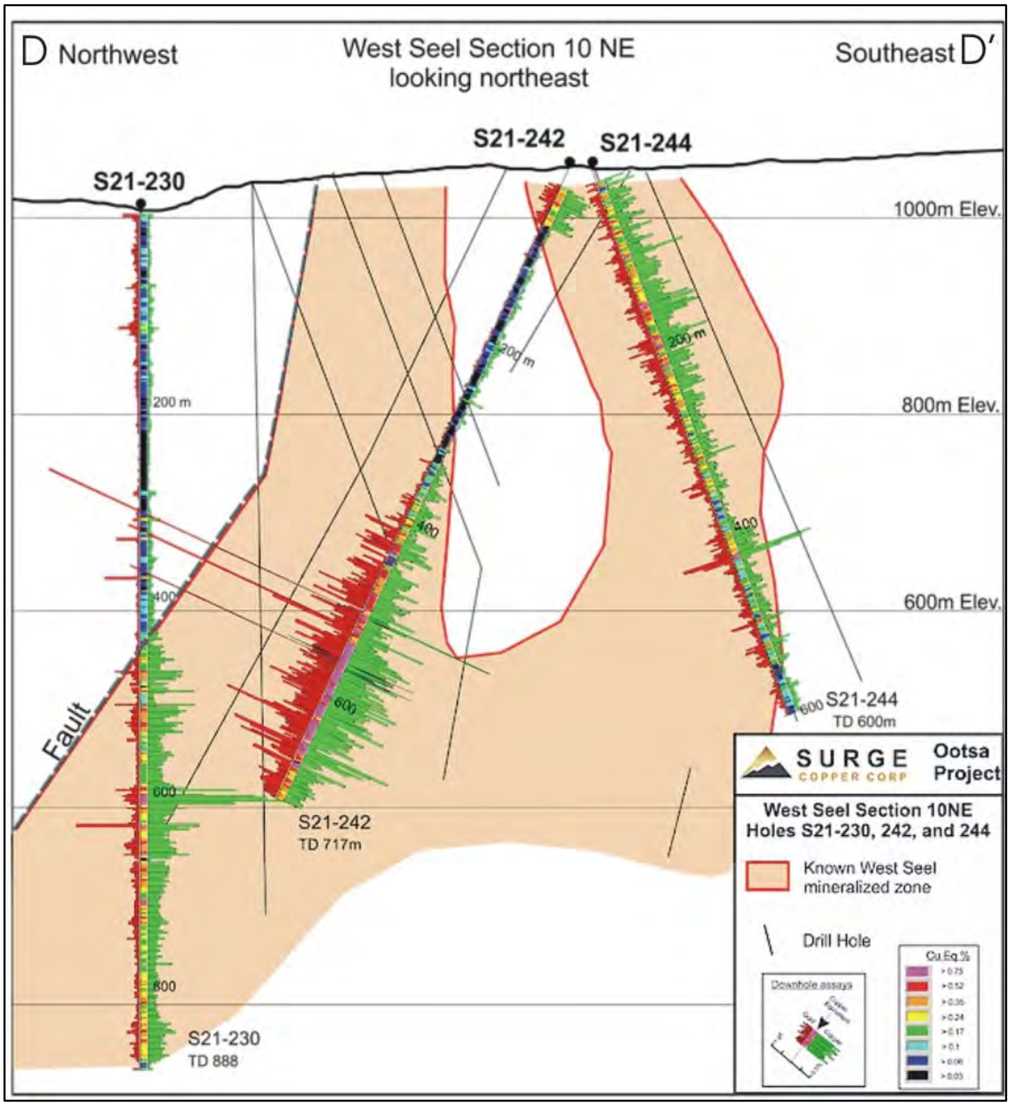



**Figure 10-9: West Seel cross section D-D' showing 2020-2021 drill results**

### *Seel Breccia*

At the end of the 2021 drilling season, Surge Copper completed 44 drill holes in the Seel Breccia, located just north of the East Seel deposit (Figures 10-2 and 10-10). A total of 9,144 m of drilling was completed in this area, defining a significant high-grade mineralized zone over a width of 25-100 m and a strike length of 300+ m, extending to depths of up to 100 m below surface. Drilling in 2021 significantly expanded the known extents of the breccia, which previously had been defined over a surface area of approximately 100 x 30 m (Figure 10-10).

Figure 10-10 below shows a plan map of drill collars in the Seel Breccia area. These holes were drilled at various azimuths and dips in order to determine the overall geometry of the breccia zone. In general, holes drilled along north-south and northeast-southwest azimuths successfully intersected the breccia while holes on east-west azimuths did not encounter significant mineralization. Representative sections through the breccia are shown in Figures 10-11 and 10-12 below, and a table of significant assay results can be found in Table 10-7.

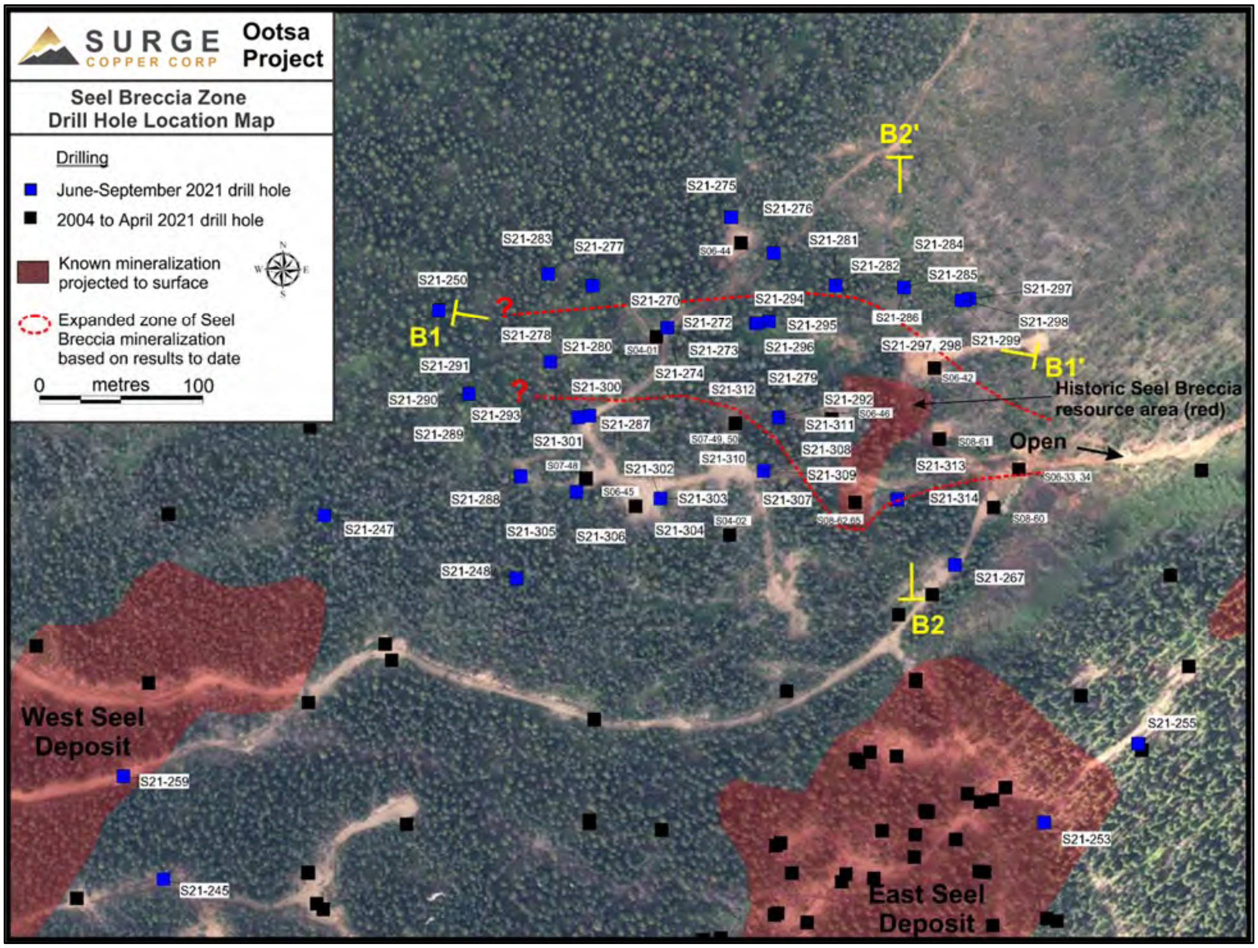



**Figure 10-10: Seel Breccia drill collars and cross-section lines**

**Table 10-7: Selected drill results, Seel Breccia 2021**

| Drill Hole | From (m) | To (m) | Width (m)* | Cu % | Au g/t | Mo % | Ag g/t | Cu Eq. %** |
|---|---|---|---|---|---|---|---|---|
| S21-270 | 5 | 26 | 21 | 0.30 | 0.06 | 0.000 | 7.7 | 0.40 |
| including | 10 | 16 | 6 | 0.62 | 0.10 | 0.000 | 13.1 | 0.79 |
| S21-272 | 12 | 46 | 34 | 0.32 | 0.03 | 0.000 | 8.8 | 0.41 |
| including | 32 | 38 | 6 | 0.89 | 0.05 | 0.000 | 23.2 | 1.11 |
| S21-272 | 68 | 88 | 20 | 0.23 | 0.02 | 0.000 | 6.5 | 0.29 |
| S21-273 | 3 | 18 | 15 | 0.16 | 0.06 | 0.000 | 4.1 | 0.23 |
| S21-273 | 42 | 60 | 18 | 0.11 | 0.03 | 0.000 | 3.6 | 0.16 |
| S21-274 | 3.5 | 14 | 10.5 | 0.17 | 0.07 | 0.000 | 4.7 | 0.25 |
| S21-274 | 28 | 72 | 44 | 0.12 | 0.01 | 0.000 | 3.1 | 0.15 |
| S21-275 | 82 | 116 | 34 | 0.15 | 0.05 | 0.000 | 4.5 | 0.21 |

| Drill Hole | From (m) | To (m) | Width (m)* | Cu % | Au g/t | Mo % | Ag g/t | Cu Eq. %** |
|---|---|---|---|---|---|---|---|---|
| S21-276 | 76 | 88 | 12 | 0.49 | 0.02 | 0.000 | 10.3 | 0.60 |
| including | 76 | 80 | 4 | 1.01 | 0.03 | 0.000 | 20.4 | 1.20 |
| S21-277 | 28 | 48 | 20 | 0.27 | 0.03 | 0.000 | 7.5 | 0.35 |
| including | 28 | 38 | 10 | 0.43 | 0.04 | 0.000 | 11.0 | 0.55 |
| S21-278 | no significant results (max 1290 ppm Cu over 2 m) | | | | | | | |
| S21-279 | 10 | 26 | 16 | 0.14 | 0.08 | 0 | 3.9 | 0.22 |
| S21-279 | 58 | 70 | 12 | 0.18 | 0.00 | 0 | 5.0 | 0.22 |
| S21-279 | 78 | 108 | 30 | 0.11 | 0.02 | 0 | 3.7 | 0.16 |
| S21-280 | 3 | 26 | 23 | 0.84 | 0.11 | 0.000 | 19.9 | 1.08 |
| including | 12 | 24 | 12 | 1.23 | 0.18 | 0.000 | 20.5 | 1.52 |
| S21-280 | 38 | 48 | 10 | 0.19 | 0.06 | 0.000 | 3.3 | 0.26 |
| S21-281 | 24 | 70 | 46 | 1.24 | 0.12 | 0.000 | 34.0 | 1.60 |
| including | 38 | 66 | 28 | 1.50 | 0.10 | 0.000 | 40.7 | 1.91 |
| including | 38 | 48 | 10 | 2.66 | 0.21 | 0.000 | 73.1 | 3.40 |
| S21-282 | no significant results (max 545 ppm Cu over 2 m) | | | | | | | |
| S21-283 | 62 | 74 | 12 | 0.18 | 0.03 | 0.000 | 4.6 | 0.24 |
| S21-283 | 70 | 118 | 48 | 0.06 | 0.01 | 0.000 | 1.8 | 0.08 |
| S21-284 | 120 | 124 | 4 | 0.11 | 0.08 | 0.000 | 9.8 | 0.24 |
| S21-285 | 56 | 66 | 10 | 0.73 | 0.06 | 0.000 | 20.9 | 0.94 |
| S21-285 | 76 | 94 | 18 | 0.42 | 0.02 | 0.000 | 9.9 | 0.52 |
| including | 88 | 92 | 4 | 0.94 | 0.03 | 0.000 | 24.0 | 1.16 |
| S21-286 | no significant results (max 637 ppm Cu over 2 m/8.9 ppm Ag over 2 m) | | | | | | | |
| S21-287 | 76 | 94 | 18 | 0.14 | 0.12 | 0.000 | 3.5 | 0.25 |
| S21-288 | no significant results (max 1315 ppm Cu over 2 m) | | | | | | | |
| S21-289 | 14 | 20 | 6 | 0.22 | 0.06 | 0.000 | 4.7 | 0.30 |
| S21-290 | no significant results (max 829 ppm Cu over 2 m) | | | | | | | |
| S21-291 | no significant results (max 1545 ppm Cu over 2 m) | | | | | | | |
| S21-292 | 146 | 164 | 18 | 0.34 | 0.02 | 0.000 | 12.2 | 0.46 |
| including | 146 | 152 | 6 | 0.70 | 0.01 | 0.000 | 26.6 | 0.93 |
| S21-293 | 36 | 42 | 6 | 0.09 | 0.40 | 0.000 | 2.9 | 0.38 |
| S21-294 | 18 | 60 | 42 | 0.62 | 0.09 | 0.000 | 16.9 | 0.81 |
| including | 20 | 40 | 20 | 1.17 | 0.16 | 0.000 | 32.1 | 1.54 |
| S21-294 | 142 | 160 | 18 | 0.19 | 0.05 | 0.000 | 6.0 | 0.27 |
| S21-295 | 8 | 60 | 52 | 0.51 | 0.04 | 0.000 | 15.1 | 0.67 |
| including | 10 | 30 | 20 | 1.09 | 0.10 | 0.000 | 33.1 | 1.43 |
| S21-296 | 18 | 54 | 36 | 0.62 | 0.04 | 0.000 | 16.5 | 0.78 |
| including | 24 | 42 | 18 | 0.78 | 0.03 | 0.000 | 20.9 | 0.97 |
| S21-296 | 108 | 120 | 12 | 0.10 | 0.02 | 0.000 | 2.7 | 0.13 |
| S21-297 | no significant results (max 371 ppm Cu over 2 m) | | | | | | | |

| Drill Hole | From (m) | To (m) | Width (m)* | Cu % | Au g/t | Mo % | Ag g/t | Cu Eq. %** |
|---|---|---|---|---|---|---|---|---|
| S21-298 | 80 | 110 | 30 | 0.73 | 0.03 | 0.000 | 21.2 | 0.92 |
| including | 90 | 110 | 20 | 1.04 | 0.03 | 0.000 | 27.8 | 1.29 |
| S21-299 | 94 | 142 | 48 | 0.40 | 0.03 | 0.000 | 11.1 | 0.51 |
| including | 94 | 110 | 16 | 0.48 | 0.03 | 0.000 | 13.1 | 0.60 |
| S21-300 | 88 | 116 | 28 | 0.65 | 0.09 | 0.000 | 16.9 | 0.84 |
| including | 90 | 106 | 16 | 0.94 | 0.07 | 0.000 | 25.3 | 1.19 |
| S21-301 | 134 | 144 | 10 | 0.07 | 0.01 | 0.000 | 5.5 | 0.12 |
| S21-301 | 200 | 204 | 4 | 0.64 | 0.47 | 0.000 | 11.0 | 1.05 |
| S21-302 | 152 | 154 | 2 | 0.36 | 0.01 | 0.000 | 12.8 | 0.47 |
| S21-303 | 232 | 240 | 8 | 0.22 | 0.01 | 0.000 | 6.7 | 0.28 |
| S21-303 | 290 | 296 | 6 | 0.12 | 0.02 | 0.000 | 3.7 | 0.16 |
| S21-304 | 122 | 130 | 8 | 0.27 | 0.01 | 0.000 | 6.3 | 0.32 |
| S21-305 | 164 | 166 | 2 | 0.90 | 0.01 | 0.000 | 26.6 | 1.13 |
| S21-306 | 212 | 214 | 2 | 0.29 | 0.00 | 0.000 | 5.9 | 0.34 |
| S21-307 | 158 | 170 | 12 | 0.13 | 0.00 | 0.000 | 6.3 | 0.18 |
| S21-308 | no significant results (max 1585 ppm Cu over 2 m) | | | | | | | |
| S21-309 | 44 | 70 | 26 | 0.42 | 0.05 | 0.003 | 10.3 | 0.55 |
| including | 46 | 50 | 4 | 0.74 | 0.03 | 0.004 | 20.0 | 0.93 |
| S21-310 | 72 | 106 | 34 | 0.56 | 0.07 | 0.004 | 9.7 | 0.69 |
| including | 72 | 78 | 6 | 1.32 | 0.01 | 0.003 | 22.0 | 1.51 |
| including | 96 | 106 | 10 | 0.88 | 0.15 | 0.001 | 15.4 | 1.11 |
| S21-311 | 82 | 122 | 40 | 0.59 | 0.04 | 0.000 | 16.9 | 0.76 |
| including | 86 | 96 | 10 | 1.08 | 0.06 | 0.000 | 28.8 | 1.35 |
| including | 112 | 122 | 10 | 1.05 | 0.05 | 0.000 | 30.6 | 1.34 |
| S21-312 | 10.7 | 44 | 33.3 | 0.78 | 0.04 | 0.001 | 21.6 | 0.98 |
| including | 22 | 44 | 22 | 1.00 | 0.03 | 0.001 | 25.0 | 1.23 |
| S21-313 | 10 | 58 | 48 | 1.06 | 0.26 | 0.000 | 24.7 | 1.44 |
| including | 18 | 42 | 24 | 1.74 | 0.50 | 0.000 | 42.3 | 2.42 |
| S21-314 | 22 | 102 | 80 | 0.89 | 0.03 | 0.000 | 22.8 | 1.10 |
| including | 30 | 62 | 32 | 1.58 | 0.03 | 0.000 | 39.1 | 1.92 |
| including | 78 | 84 | 6 | 1.25 | 0.02 | 0.000 | 32.2 | 1.52 |

**Width refers to drill hole intercepts, true widths have not been determined. EOH = end of hole.*

*** Cu Eq. (copper equivalent) has been used to express the combined value of copper, molybdenum, gold and silver as a percentage of copper, and is provided for illustrative purposes only. No allowances have been made for recovery losses that may occur should mining eventually result. Calculations use metal prices of US$3.85/lb Cu, US$1750/oz Au, US$22/oz Ag, and US$12.40/lb Mo and the formula CuEq (%) = Cu (%) + 3.2208 x Mo (%) + 0.6630 x Au (g/t) + 0.0083 x Ag (g/t).*

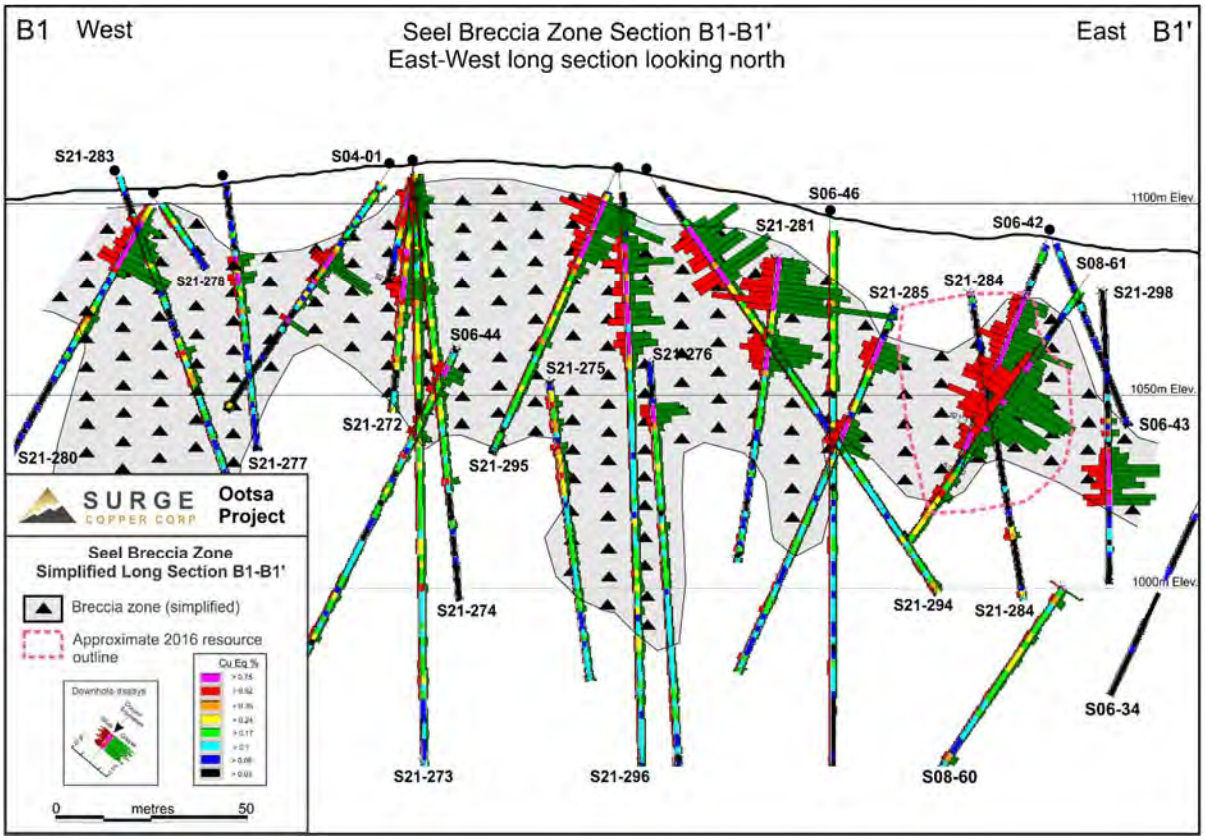



Figure 10-11: Seel Breccia Long Section B1-B1' showing 2021 drill results.

The eastern side of the breccia zone (Figures 10-10 and 10-11) contains some of the strongest mineralization and widest intersections of high-grade copper and silver so far identified in the area.

Drill holes S21-313 and S21-314 (Figure 10-12) were drilled toward the northwest and north respectively and were designed to follow up on high-grade mineralization first identified in 2006 (hole S06-42) and 2008 (hole S08-61). Hole S21-313 intersected 48 metres grading 1.06% Cu and 24.7 g/t Ag (1.44% CuEq) from 10-58 m, including 24 m grading 1.74% Cu and 42.3 g/t Ag (2.42% CuEq) from 18-42 m depth. Hole S21-314, the final hole of the 2021 season, intersected 80 metres grading 0.89% Cu and 22.8 g/t Ag (1.10% CuEq) from 22-102 m, including 32 m grading 1.58% Cu and 39.1 g/t Ag 1.92% CuEq) from 30-62 m depth, and 6 m grading 1.25% Cu and 32.2 g/t Ag (1.52% CuEq) from 78-84 m depth.

Drill hole S21-299, drilled from the north side of the zone on a southwest azimuth, returned 48 m grading 0.4% Cu and 11.1 g/t Ag (0.51% CuEq) from 94-142 m, including 16 m grading 0.48% Cu and 13.1 g/t Ag (0.60% CuEq) from 94-110 m depth.

Drill holes S21-284 and S21-286 were drilled subparallel to the zone and did not return any significant mineralized intervals.

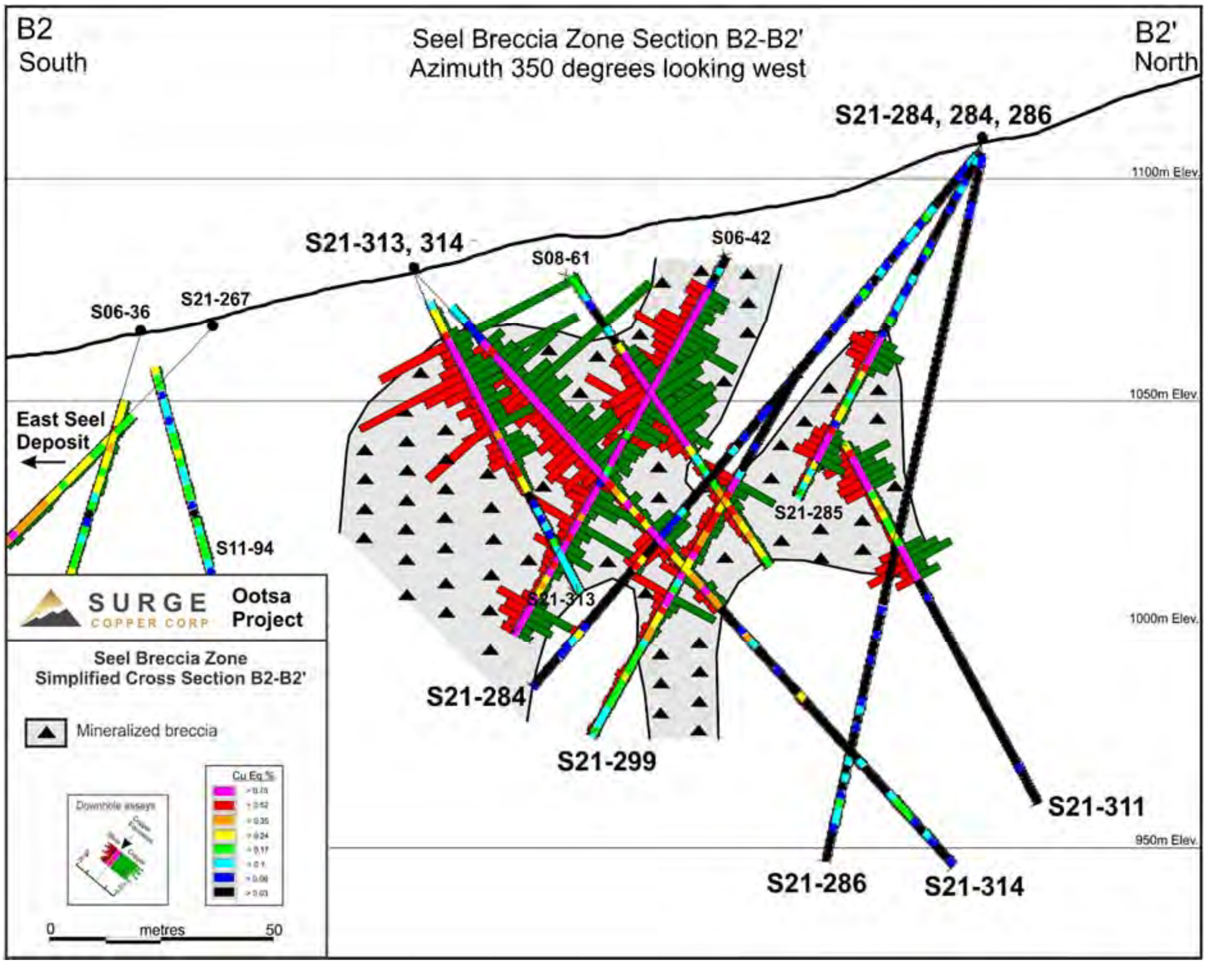



**Figure 10-12: Seel Breccia cross-section B2-B2’ showing 2021 drill results. Drill holes S21-285 and S21-311 projected into section.**

The central part of the Seel Breccia is approximately 50-70 m wide near surface and appears to offset or pinch out around 100 m below surface. The breccia is constrained on the north side by drill holes S21-281, S21-282, and S21-276. Hole S21-282 was drilled subparallel to the zone and did not intersect any significant mineralization. Hole S21-281 encountered the north edge of the breccia at a depth of 24 m and returned an intercept of 46 m grading 1.24% Cu and 34 g/t Ag (1.60% CuEq) from 24-70 m, including 28 m grading 1.5% Cu and 40.7 g/t Ag (1.91% CuEq) from 38-66 m depth, and also including 10 m grading 2.66% Cu and 73.1 g/t Ag (3.40% CuEq) from 38-48 m depth.

Drill hole S21-276 was also collared on the north side of the zone and drilled toward the south. This hole returned 12 m grading 0.49% Cu and 10.3 g/t Ag (0.60% CuEq) from 76-88 m, including 4 m grading 1.01% Cu and 20.4 g/t Ag (1.20% CuEq) from 76-80 m depth.

Drill holes S21-295 and S21-296 were collared in the heart of the breccia zone and drilled toward the southwest and south respectively. Hole S21-295 returned 52 m grading 0.51% Cu and 15.1 g/t Ag (067% CuEq) from 8-60 m, including 20 m grading 1.09% Cu and 33.1

g/t Ag (1.43% CuEq) from 10-30 m depth. Hole S21-296 returned 36 m grading 0.62% Cu and 16.5 g/t Ag (0.78% CuEq) from 18-54 m, including 18 m grading 0.78% Cu and 20.9 g/t Ag (0.97% CuEq) from 24-42 m depth.

Hole S21-311 was drilled obliquely to the breccia zone and returned 40 m grading 0.59% Cu and 16.9 g/t Ag (0.76% CuEq) from 82-122 m, including 10 m grading 1.08% Cu and 28.8 g/t Ag (1.35% CuEq) from 86-96 m depth, and 10 m grading 1.05% Cu and 30.6 g/t Ag (1.34% CuEq) from 112-122 m depth.

Hole S21-292 was collared from the same setup as S21-311 at a dip angle of -60 degrees and failed to intersect the zone near surface. However, this hole encountered a deeper zone of mineralization that appears to be offset from the main zone, which assayed 0.34% Cu and 12.2 g/t Ag (0.46% CuEq) from 146-164 m, including 6 m grading 0.7% Cu and 26.6 g/t Ag (0.93% CuEq) from 146-152 m depth. This deeper offset zone was also intersected in hole S21-307, which assayed 0.13% Cu and 6.3 g/t Ag (0.18% CuEq) over 12 m from 158-170 m depth.

Hole S21-308 failed to intersect any significant breccia mineralization and suggests that the zone pinches out around 100 m below surface in the central part of the breccia body.

The western side of the Seel Breccia narrows considerably relative to the central and eastern parts of the zone. On surface the zone appears to be approximately 20 m wide, increasing to around 30 m wide at a depth of 50 m, and narrowing to 10 m or less at 100-150 m below surface.

The zone is well constrained on its northern and southern boundaries by drill holes S21-277 and S21-300. Hole S21-277 was drilled from the north and returned 20 m grading 0.27% Cu and 7.5 g/t Ag (0.35% CuEq) from 28-48 m, including 10 m grading 0.43% Cu and 11.0 g/t Ag (0.55% CuEq) from 28-38 m depth. Hole S21-300 was drilled from the south and returned 28 m grading 0.65% Cu and 16.9 g/t Ag (0.84% CuEq) from 88-116 m, including 16 m grading 0.94% Cu and 25.3 g/t Ag (1.19% CuEq) from 90-106 m depth.

Hole S21-301 was drilled underneath S21-300 and returned a weak interval of 10 m grading 0.07% Cu and 5.5 g/t Ag (0.12% CuEq) from 134-144 m depth. Narrowing of the zone at depth is further supported by holes S21-305 and S21-306, which assayed a maximum of 2 m grading 0.9% Cu and 26.6 g/t Ag (1.13% CuEq) from 164-166 m in S21-305 and 2 m grading 0.29% Cu and 5.9 g/t Ag (0.34% CuEq) from 212-214 m in S21-306.

#### *East Geophysical Target*

Holes S20-221, 222, and 223 tested the East Geophysical Target, located approximately 800 metres northeast of the East Seel deposit (Figure 10-2). The holes did not intersect any significant porphyry-style mineralization. However, they did encounter zones of clay and sericite alteration showing some gold potential with several zones showing slightly elevated gold, silver, copper, and/or zinc (see Table 10-8). The best result was obtained from S21-222, which intersected 8.54 g/t Au over 2 metres at a depth of 50 m. This interval occurs within a broader zone of anomalous gold grading 0.19 g/t Au over 38 metres, from 40-78 m depth (weighted average with the high-grade assay capped at 2 g/t Au). The high-grade interval has potential to be part of a larger gold vein target controlled by a north-south trending extensional fault. Wide-spaced drilling over a strike length of 590 metres on the East Geophysical Target shows increasing alteration and intrusive activity toward the south end of the anomaly. The south end remains largely untested and likely warrants additional drill testing.

**Table 10-8: Selected assay results, East Geophysical Target**

| Drill Hole | From (m) | To (m) | Width (m)* | Au g/t | Ag g/t | Cu % | Pb % | Zn % |
|---|---|---|---|---|---|---|---|---|
| S20-221 | 142 | 144 | 2 | 0.03 | 30.10 | 0.01 | 0.48 | 0.31 |
| S20-221 | 148 | 150 | 2 | 0.16 | 19.20 | 0.05 | 0.25 | 0.47 |
| S20-221 | 182 | 184 | 2 | 0.04 | 21.70 | 0.04 | 0.20 | 0.27 |
| S20-221 | 354 | 360 | 6 | 0.04 | 2.07 | 0.02 | 0.03 | 0.37 |
| S20-221 | 424 | 426 | 2 | 0.02 | 15.20 | 0.02 | 0.08 | 0.50 |
| S20-221 | 500 | 508 | 8 | 0.01 | 4.93 | 0.01 | 0.06 | 0.13 |
| including | 500 | 502 | 2 | 0.00 | 9.70 | 0.01 | 0.09 | 0.20 |
| S20-221 | 534 | 536 | 2 | 0.05 | 3.90 | 0.02 | 0.03 | 0.10 |
| S20-221 | 548 | 550 | 2 | 0.01 | 0.80 | 0.01 | 0.01 | 0.28 |
| S20-222 | 40 | 78 | 38 | 0.19 | 0.45 | 0.07 | 0.01 | 0.03 |
| including | 50 | 52 | 2 | 8.54 | 5.10 | 0.60 | 0.00 | 0.00 |
| S20-222 | 58 | 60 | 2 | 0.13 | 0.50 | 0.10 | 0.00 | 0.00 |
| S20-222 | 76 | 78 | 2 | 0.38 | 1.50 | 0.16 | 0.00 | 0.00 |
| S20-222 | 182 | 184 | 2 | 0.02 | 2.20 | 0.02 | 0.03 | 0.11 |
| S20-222 | 272 | 276 | 4 | 0.01 | 3.05 | 0.00 | 0.04 | 0.19 |
| S20-222 | 298 | 300 | 2 | 0.15 | 3.60 | 0.01 | 0.05 | 0.46 |
| S20-222 | 374 | 376 | 2 | 0.30 | 13.50 | 0.02 | 0.40 | 0.07 |
| S20-222 | 486 | 488 | 2 | 0.02 | 22.60 | 0.01 | 0.34 | 0.01 |
| S20-222 | 608 | 610 | 2 | 0.02 | 3.70 | 0.03 | 0.05 | 0.16 |
| S20-223 | 98 | 108 | 10 | 0.01 | 6.56 | 0.01 | 0.13 | 0.32 |
| including | 106 | 108 | 2 | 0.02 | 22.30 | 0.01 | 0.48 | 0.80 |
| S20-223 | 178 | 180 | 2 | 0.01 | 1.40 | 0.01 | 0.05 | 0.28 |
| S20-223 | 222 | 224 | 2 | 0.02 | 3.30 | 0.03 | 0.05 | 0.13 |
| S20-223 | 482 | 484 | 2 | 0.00 | 0.80 | 0.02 | 0.00 | 0.31 |
| S20-223 | 500 | 508 | 8 | 0.04 | 4.33 | 0.01 | 0.05 | 0.07 |
| including | 504 | 506 | 2 | 0.04 | 8.60 | 0.02 | 0.08 | 0.11 |
| S20-223 | 528 | 530 | 2 | 0.03 | 7.50 | 0.01 | 0.16 | 0.52 |
| S20-223 | 640 | 642 | 2 | 0.06 | 7.20 | 0.01 | 0.09 | 0.08 |

### *Peripheral Targets*

Holes S20-225 and S20-227 tested the “West Target”, an IP chargeability high located near the southwest edge of the West Seel deposit (Figure 10-2). S20-225 was drilled toward the southwest at an angle of -60 degrees to a depth of 620.2 m, and S20-227 was drilled toward the southeast at an angle of -60 degrees to a depth of 936.3 m. Hole S20-227 intersected a 110 m zone of anomalous porphyry style mineralization grading 0.1% Cu, 0.03 g/t Au, and 0.007% Mo from 486-596 m depth (see Table 10-6), with no other significant zones of mineralization encountered in either hole.

Hole S21-258 tested a regional target (the “Far South” target) located approximately 600 metres southeast of the Seel deposits and 870 m south of drill hole S20-222. It encountered one strong but narrow zone of mineralization at a depth of 755 m, comprising a one-metre-wide base- and precious metal vein that assayed 0.18% Cu, 4.75 g/t Au, 69.7 g/t Ag, and 2.44% Zn over 1 m. The vein occurs within a north-south trending structural zone that is also intruded by late mafic dykes. Regional magnetic patterns indicate that this structure may be persistent over a strike length of more than 2.3 km and may correspond to the West Damascus fault zone encountered in S20-222. The presence of high-grade gold and silver mineralization in drill holes S20-222 and S21-258 provides encouragement that additional mineralization may be found along strike between these two widely-spaced drill holes.

Hole S21-269 tested the Far East target approximately 460 metres northeast of the East Seel deposit. This hole was a 100 metre step-out to the northeast on the Far East target and expanded a modest zone of near-surface mineralization, returning 90 metres grading 0.25% CuEq from near the top of bedrock at 34 metres to a depth of 124 m, including 28 m grading 0.32% CuEq from 38-66 m depth (see Table 10-5).

Hole S21-271 tested an IP chargeability high located to the south of the West Seel deposit (“South of West Seel” target) and encountered “pyrite halo-type” sulfide mineralization with no significant intervals of copper/gold/silver/molybdenum returned from assays.

## 10.2 Ox Deposit

After the discovery of the Ox deposit in 1968 several drill programs by various operators were carried out including the first by Gold Reach in 2007. A more detailed compilation of historic drill programs across the Ootsa Property can be read in Section 6 History of this report. This section will focus on drilling completed at the Ox deposit in 2013. No drilling was completed on the Ox deposit in 2021; however two holes (S21-279 and S21-292) totaling 1,215 m were drilled at the West Ox prospect to test IP chargeability anomalies and coincident copper-in-soil anomalies identified by geophysical and geochemical surveys in 2013.

An initial 43-101 compliant resource for the Ox deposit was calculated in 2008 by Wardrop Engineering Inc. (Arsenau et al, 2008). Subsequently, Giroux Consultants were contracted by Gold Reach to complete a resource update for the Ox deposit after a further 18 drill holes were completed in 2012. This resource, released in February 2013, was based on a total of 31 drill holes completed between 2007 and 2012. Giroux Consultants again provided the resource update following 2013 drilling. A new resource calculation was completed by Advantage Geoservices Limited in 2022 and is included in this report.

The 2013 Ox drill program was focused on infilling and expanding known zones of higher grade near-surface mineralization. As a result the north end of Ox was extended over 200m to the East and a much better understanding of structural control was gleaned from the subsurface data (relevant drill cross sections can be viewed in Section 7 Geologic Setting and Mineralization in this report). To date drilling has defined a high grade core measuring 850m long x 100m wide x 100m deep within a larger mineralized zone of 1000m long x 185m wide x 200m deep (dimensions are approximate averages).

A total of 90 infill and stepout holes were drilled in 2013, for a total of 17,372.8 metres. Of the 90 holes, a total of 78 holes (15,255m) were used in the resource calculation, while the remaining 12 holes (2117m) were stepout holes that were collared immediately to the east of the Ox deposit and did not pierce the mineralized zone. An additional four holes (1878m) were collared about 2km west of the Ox deposit as a first pass investigation of coincident soil and geophysical anomalies. Table 10-1 lists the number of drill holes and meterage drilled by year and Table 10-2 lists the number of drill holes and meterage used in the updated Ox resource included in this technical report. A map showing drill collars at the Ox deposit is presented in Figure 10-13 below.

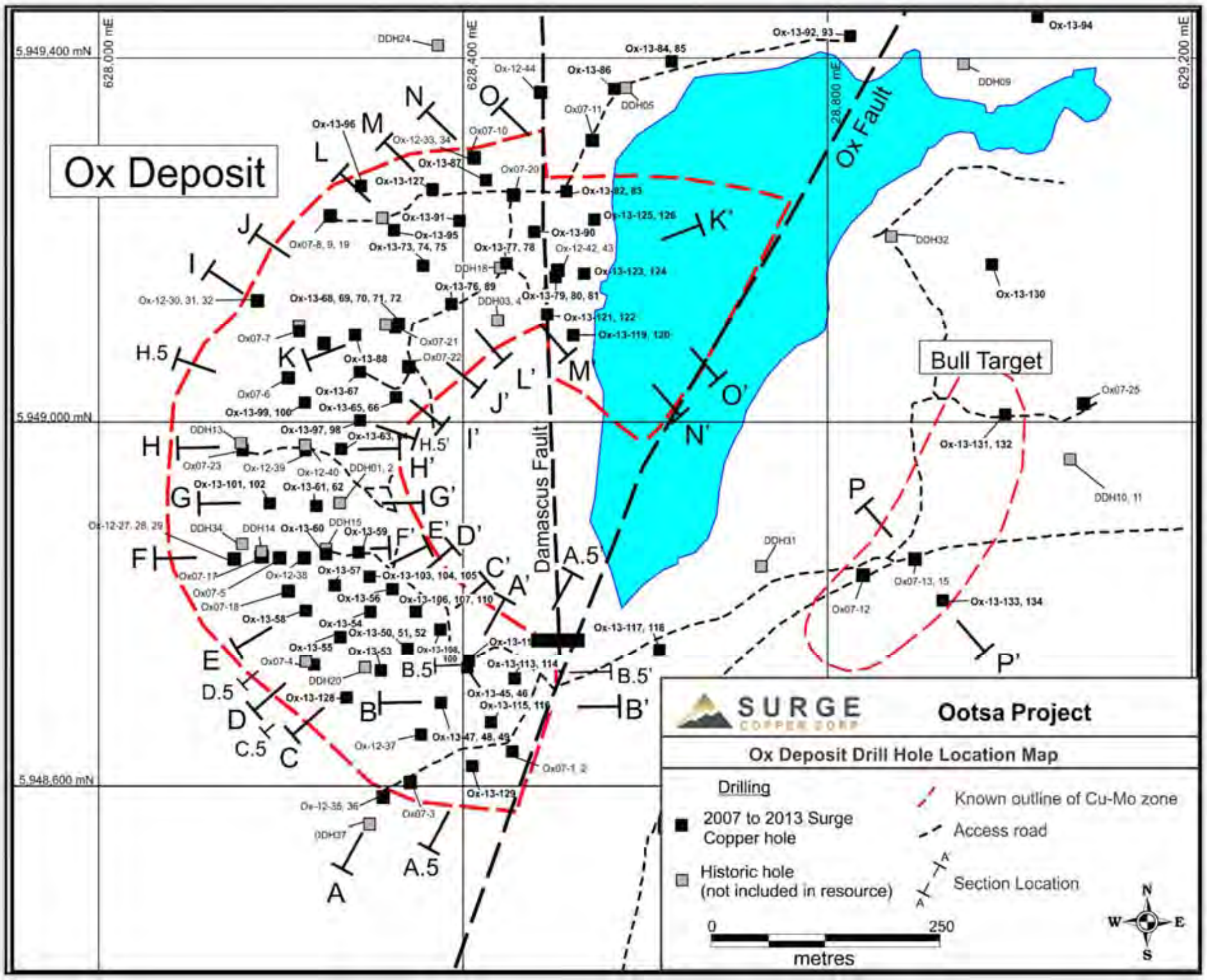



**Figure 10-13:Ox deposit drill hole location map with mineralized outline and major structures.**

In 2021, two drill holes totaling 1,215 metres were completed at the West Ox prospect located approximately 2 km west of the Ox deposit. Hole Ox21-279 (681 m depth) was collared approximately 1000 m west of the Ox deposit near the southeastern end of the West Ox chargeability anomaly, and hole Ox21-292 (534 m depth) was collared approximately 2500 m west-northwest of the Ox deposit near the northwestern end of the anomaly (Figure 10-14). Both holes were collared immediately northeast of moderate to strong copper-in-soil anomalies and drilled toward the southwest at a dip angle of -50 degrees.

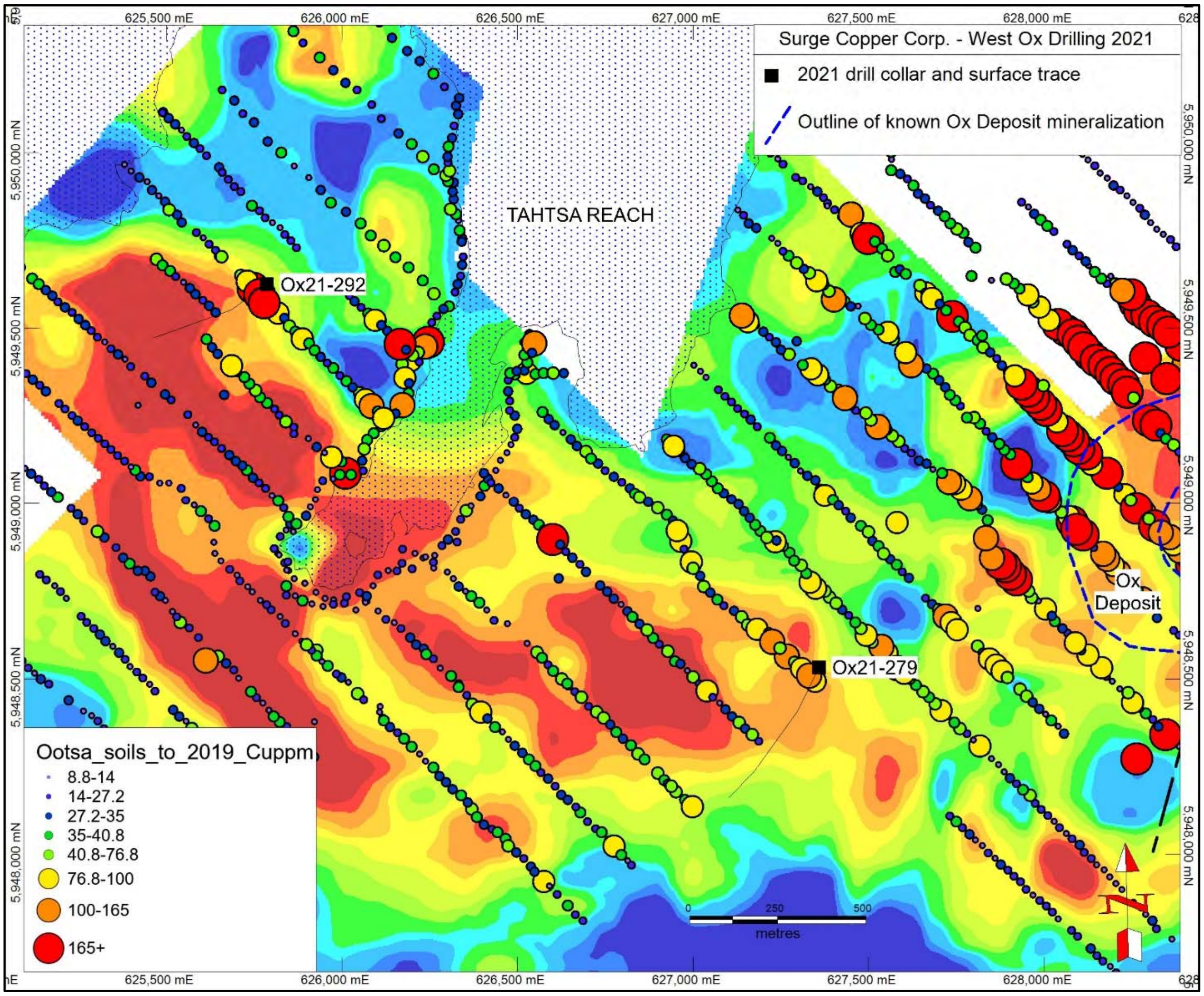



**Figure 10-14: West Ox drilling 2021 with IP chargeability underlay at 150 m depth. Copper-in soil values indicated by graduated circles. Ox deposit indicated by dashed outline on right-hand side of image**

Both drill holes intersected long intervals of fine-grained graphitic shale and sandstone punctuated by narrow (1-3 m) fine-grained felsic dykes and/or sills and occasional feldspar porphyry dykes of similar width. Hydrothermal alteration in Ox21-279 is minimal, comprising minor argillic alteration around faults and weak to moderate sericite-silica adjacent to intrusive dykes. Much of the sedimentary rock mass is unaltered. Alteration in hole Ox21-292 is more widespread, with patches of weak to moderate biotite hornfels and silica flooding around intrusive dykes, as well as moderate to strong argillic alteration around faults.

Sulfide mineralization in hole Ox21-279 comprises widespread disseminated, fracture-hosted, and vein-hosted pyrite, but little to no chalcopyrite was observed in drill core and no significant assays were returned from the lab. Much of the disseminated pyrite is probably formational as it occurs in ferruginous and graphitic black shale. Vein-hosted pyrite occurs in quartz veins as well as iron carbonate veins and may be related to distal “pyrite halo” mineralization associated with the Ox deposit.

Hole Ox21-292 contains similar mineralization to hole 279 with widespread disseminated and vein- and fracture-hosted pyrite. Minor chalcopyrite associated with quartz veins was noted here and there, resulting in spotty copper assays ranging from <500 to 1795 ppm Cu over 2-4 metre intervals. The best assay result was obtained from a 2-metre interval from 404-406 m depth containing slightly stronger quartz-sulfide veining that assayed 1245 ppm Cu, 8.5 g/t Ag, and 524 ppb Au with greater than 1% arsenic. The spike in silver, gold, and arsenic may suggest that mineralization in this interval is related to later structurally-controlled hydrothermal activity rather than porphyry-type mineralization.

The strong IP chargeability anomaly in the West Ox area can be explained by the abundance of disseminated graphite and pyrite in both drill holes. The IP anomaly is relatively large compared to that of the Ox deposit and suggests that an extensive package of ferruginous graphitic sediments underlies the area. Soil geochemical anomalies at West Ox are weak and highly localized unlike the Ox deposit which has a strong copper dispersion halo on the northwest side. Additionally, the Ox deposit has a well-defined strong magnetic high associated with an intrusion that is not apparent at West Ox, and no intrusive bodies of any significant size have yet been identified in the West Ox area. At this time, it seems unlikely that West Ox contains any significant porphyry copper mineralization associated with intrusive activity.

## 11.0 Sample Handling, Preparation, Analysis and Security

All drill core from the 2021 exploration program at Ootsa was handled within the guidelines of best industry practices, similar to methods employed by Surge Copper Corp. during previous exploration programs. The drill crew delivered core to the camp site at the end of each shift. Surge personnel would then photograph, measure, log and mark the core for sampling. Both gas-powered and electric core saws were used to split the core in half with one half placed in marked polyurethane sample bags with corresponding sample tags and sealed with plastic zip ties. Individual core samples were typically 2 metres in length and 100% of the drill core was sampled. Half of the drill core is archived and stored on site for verification and reference purposes. Four to five sample bags were inserted into each rice sack and subsequently marked and sealed with plastic zip ties.

All halved drill core was transported to Smithers by Surge personnel or a licensed expediting company and dropped off to Bandstra Transport, a Smithers based bonded carrier, who would transport the samples to the lab prep facilities. Two labs handled the analytical requirements for Surge Copper in 2020-2021. Activation Laboratories LTD. (Actlabs) from Kamloops, British Columbia was utilized for the winter drill program

(January through March), while ALS Chemex provided analytical requirements for the summer drill program (June through October).

At the Activation Laboratories Ltd. (ISO/IEC 17025 accredited) facility in Kamloops, British Columbia gold was assayed using a 30g fire assay method and 37 additional elements were analyzed by Inductively Coupled Plasma (ICP) utilizing a 4-acid digestion. At the ALS Geochemistry (ISO/IEC 17025 accredited) facility in Kamloops, British Columbia gold was assayed using a 30g fire assay method and 33 additional elements were analyzed by Inductively Coupled Plasma (ICP) utilizing a 4-acid digestion.

## 11.1 Quality Assurance and Quality Control—Seel Deposit

An independently monitored quality control program was established and implemented for all of the 2020-2021 drilling at the Seel deposit, which was the same as the methods employed by Surge Copper during previous exploration programs. Control samples including blanks, duplicates, and certified reference standards were inserted into the sample stream with a frequency of 1 control sample for every 9 core samples, for a nominal total of 10% controls. A minimum of two certified reference standards were inserted for every drill hole, and holes longer than 500-1000+ m received 3 or 4 total standards. Blanks were alternated with duplicates, so that every 10$^{th}$ sample was one of these controls, except when a standard was inserted.

Upon receipt of assay results from the analytical lab, the QA/QC samples were scrutinized to ensure that standards were within acceptable limits (e.g. <2 standard deviations from the mean), and that blank samples did not return elevated levels of Cu/Mo/Au/Ag. Any assay batches that were deemed to be out of compliance, either through imprecise standard assays or blanks with elevated results, were re-run at the lab. The same pulps were used for the re-run as were analysed in the original batch.

During 2020-2021 a total of 18,686 samples were submitted to the lab for assay of which 2136 were blanks, duplicates or certified standards, which equates to just over 11.4 % of all Seel core sampling dedicated to QA/QC purposes. Of these control samples 1023 were blanks, 189 were lab-certified standards and 924 were duplicate pairs.

Blanks and duplicates were inserted into the sample stream at a rate of one each for every twenty samples for an overall rate of one QA/QC sample per ten core samples.

Duplicates were taken by sawing 2m core samples in half and then quartering one of the halves. Each quarter was inserted into a separate sample bag with a unique sample number and independently listed in the Surge Copper database. Surge Copper utilized six different certified reference standards (Table 11-1) during 2020-2021 drilling at Seel. A minimum of two reference standards were included with every drill hole, and three standards were inserted into the sample stream for drill holes longer than 500 m.

### 11.1.1 Blanks

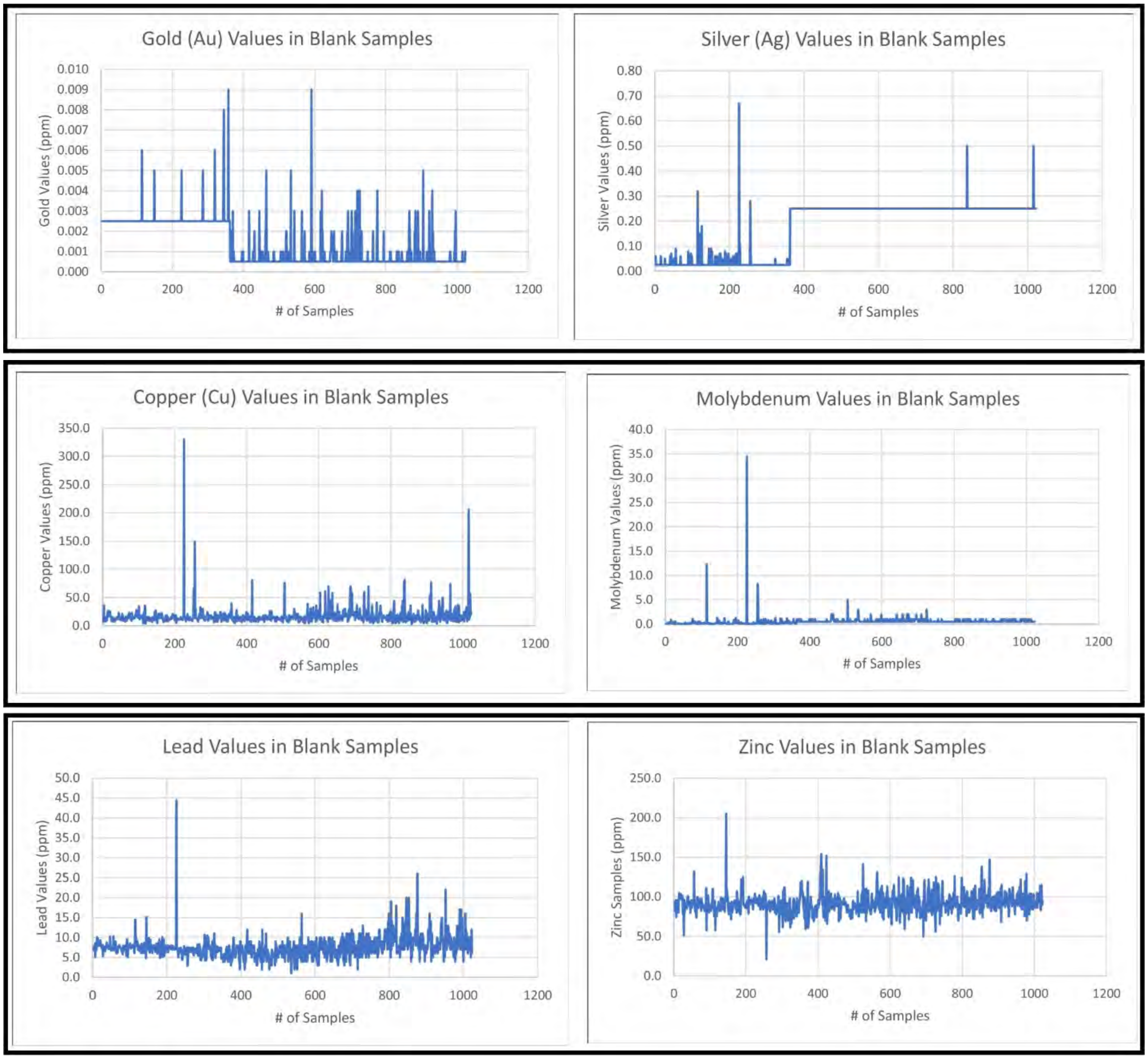
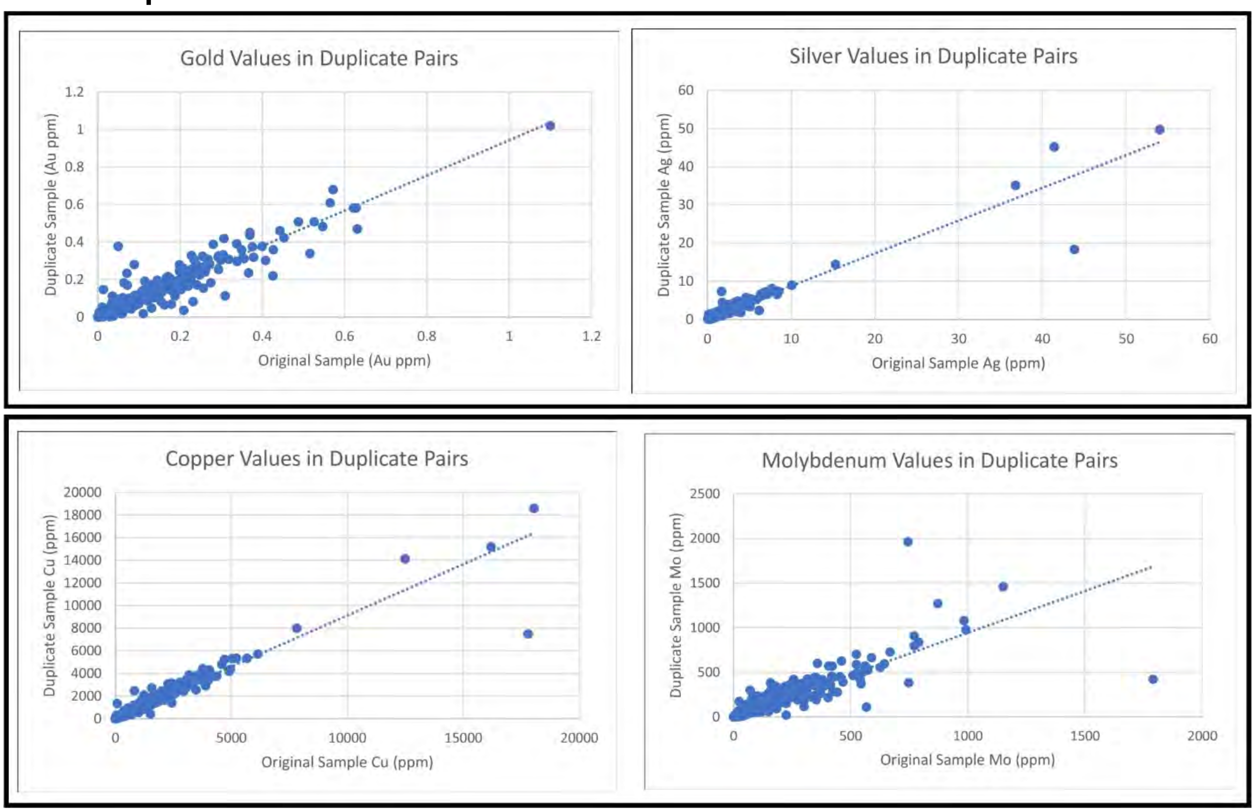



**Figure 11-1: Results for 6 elements in 1023 field blank samples.**

The results for the analysis of 1023 field blanks are presented in Figure 11-1 above. The blank material was sourced from a blast pit located near the 15 km marker on the Troitsa Forest Services Road, about two kilometers beyond the Ootsa exploration camp and outside of the alteration zone that surrounds the Seel & Ox deposits. The blank material is described as a reddish to tan-coloured crystal lithic tuff from the Telkwa formation, roughly dacitic to rhyolitic in composition. It is composed of up to 30% reddish to greenish angular lithic clasts ranging in size from <1mm to ~10mm in a very fine-grained to aphanitic crystal-ash matrix. No sulfide minerals are evident in hand sample and the rock appears to be relatively fresh and unaltered.

The graphs above show that the blank material generally tests within acceptable limits with a few outliers. Sample 8090, which is immediately visible next to the 200 horizontal graduation, shows anomalously high values in silver, copper, molybdenum and lead. The received weight for this sample was 2.41 kg, double of the average blank weight of 1.20 kg, and very close in weight and analytical results to the preceding sample 8089. This most likely represents a mis-label of these two samples, which should have been labeled as duplicates. Other moderate outliers visible in the above graphs likely represent low-level contamination in the core shack or at the laboratory. The blank material displays a consistent average value around 100 ppm for Zinc (Zn). Given the large sample size (1023) and the relatively low number of outliers the blank material utilized by Surge Copper is deemed acceptable by the author. An additional note to the graphs above is the stepped nature of the base levels on the gold (Au) and silver (Ag) graphs. This is a result of utilizing two different laboratories for the analytical requirements and reflects the differing 'lowest detection limits' between the two labs.

### 11.1.2 Duplicates



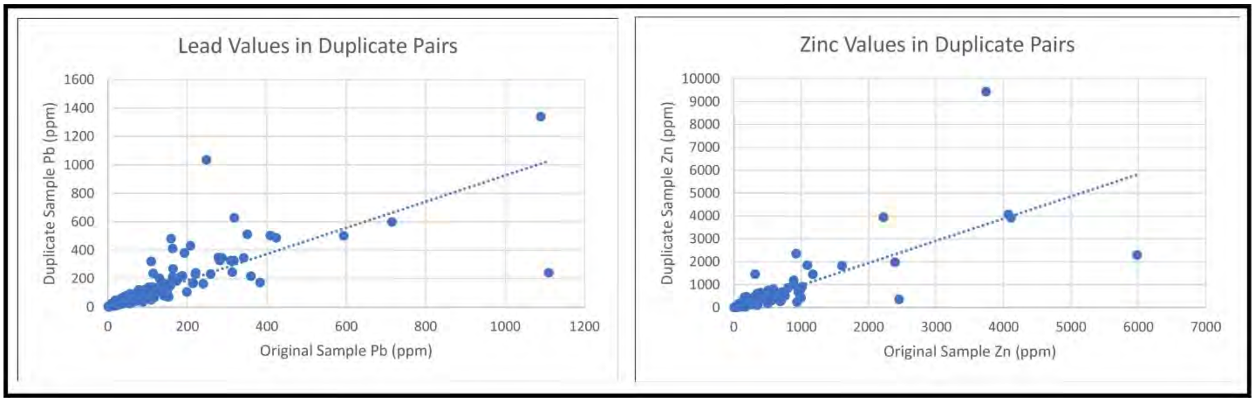



**Figure 11-2: Duplicate pairs analysis for 6 economic elements.**

The graphs in Figure 11-2 above show scatter plots comparing the results for the six main economic elements from the original and duplicate samples. Each duplicate pair (924 in total) represents one half of the core over the given interval, generally 2 metres, as the core is cut in half then one of the halves is subsequently split to render one quarter core in each sample bag. Duplicate samples are most useful in characterizing the repeatability of the mineralization within the host rock. At the Ootsa Project, some of the copper mineralization is disseminated throughout the rock (easily repeatable) but the vast majority is vein-hosted, which is more difficult to repeat uniformly between the duplicate samples. In general, the scatter plots show tight clustering about the trendline indicating a similar analytical result between the original and duplicate samples. The elements that show the greatest variability (Pb & Zn) are dominantly vein-hosted and of lesser economic significance in the Seel and Ox deposits as compared with the other 4 economic elements.

### 11.1.3 Standards

Six different lab-certified standards were utilized during the 2020-2021 drill program at Seel. These were purchased from Canadian Resource Laboratories Ltd. of Langley, BC, a recognized supplier of reference materials. The expected mean and one standard deviation values for Au, Cu and Mo are given below in Table 11-1. The mean and standard deviation values were determined after a 10 round-robin analysis by 15 Labs.

A total of 189 standards were sent for analysis over the course of the 2020-2021 drill campaign.

**Table 11-1: Expected values for Certified Standards used on Ootsa Project 2020-2021**

| Canadian Resource Laboratories Certified Standards | | | |
|---|---|---|---|
| **CDN-CM-43** | | | |
| | | lower range | upper range |
| Gold | 0.309 +/- 0.04 g/t | 305 ppb | 349 ppb |
| Copper | 0.233 +/- 0.012% | 2210 ppm | 2450 ppm |
| **CDN-CM-39** | | | |
| | | lower range | upper range |
| Gold | 0.687 +/- 0.064 g/t | 623 ppb | 751 ppb |
| Copper | 0.538 +/- 0.024% | 5140 ppm | 5620 ppm |
| Moly | 0.0135 +/-0.0013% | 122 ppm | 148 ppm |
| **CDN-CM-40** | | | |
| | | lower range | upper range |
| Gold | 1.31 +/- 0.12 g/t | 1180 ppb | 1430 ppb |
| Copper | 0.561 +/- 0.032% | 5280 | 5930 ppm |
| Moly | 0.060 +/-0.004% | 560 ppm | 640 ppm |
| **CDN-CM-29** | | | |
| | | lower range | upper range |
| Gold | 0.720 +/- 0.068 g/t | 652 ppb | 788 ppb |
| Copper | 0.742 +/- 0.030% | 7198 ppm | 7642 ppm |
| Moly | 0.053 +/-0.004% | 520 ppm | 550 ppm |
| **CDN-ME-1201** | | | |
| | | lower range | upper range |
| Gold | 0.125 +/- 0.03 g/t | 95 ppb | 155 ppb |
| Silver | 37.6 +/- 3.4 g/t | 34.2 ppm | 41 g/t |
| Copper | 1.572 +/- 0.086% | 14860 ppm | 16580 ppm |
| Lead | 0.465 +/- 0.032% | 4330 ppm | 4970 ppm |
| Zinc | 4.99 +/- 0.29% | 47000 ppm | 52800 ppm |
| **CDN-CM-34** | | | |
| | | lower range | upper range |
| Gold | not certified for Au | | |
| Silver | 3.7 +/- 0.4 g/t | 3.3 ppm | 4.1 ppm |
| Copper | 0.578 +/- 0.022% | 5560 | 6000 |
| Moly | 0.030 +/- 0.002% | 280 | 320 |
| Sulfur | 3.01 +/- 0.15% | | |

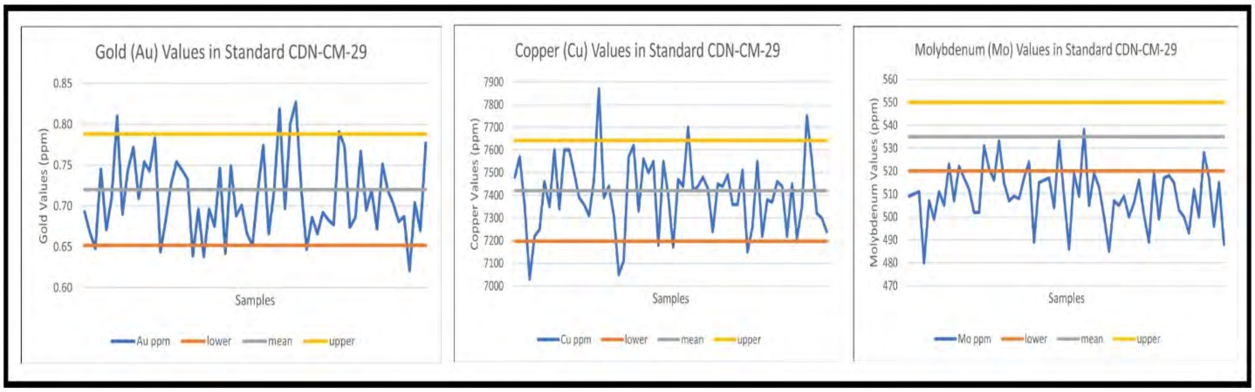



**Figure 11-3: Gold, copper and molybdenum results compared with expected results for Standard CDN-CM-29.**

The results for standard CDN-CM-29 are shown in Figure 11-3 above with limit lines depicted for the expected lower, upper and mean values. This standard tested within the expected ranges for gold and copper but consistently returned low values for molybdenum.

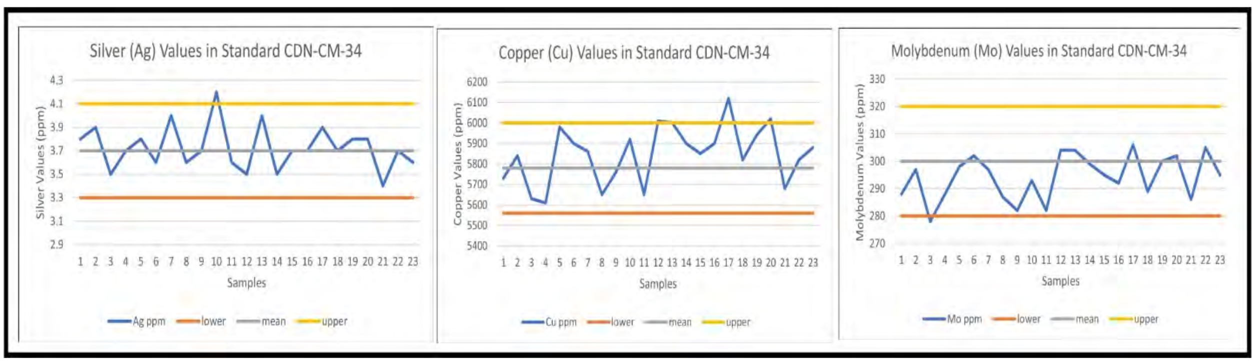



**Figure 11-4: Silver, copper and molybdenum results from Standard CDN-CM-34 samples**

Standard CDN-CM-34 (figure 11-4) was used 23 times and tested within expected ranges for most of the silver, copper and molybdenum results.

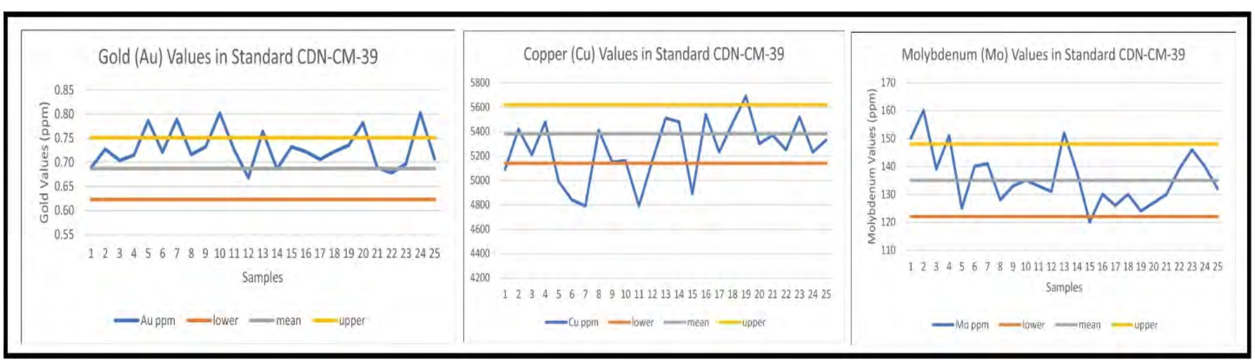



**Figure 11-5: Gold, copper and molybdenum results from Standard CDN-CM-39.**

Standard CDN-CM-39 was used 25 times and the graphs in Figure 11-5 show the variable results received for gold, copper and molybdenum. Gold results tested above the upper expected value in 25% of the samples while copper tested below the lowermost limit 20% of the time.

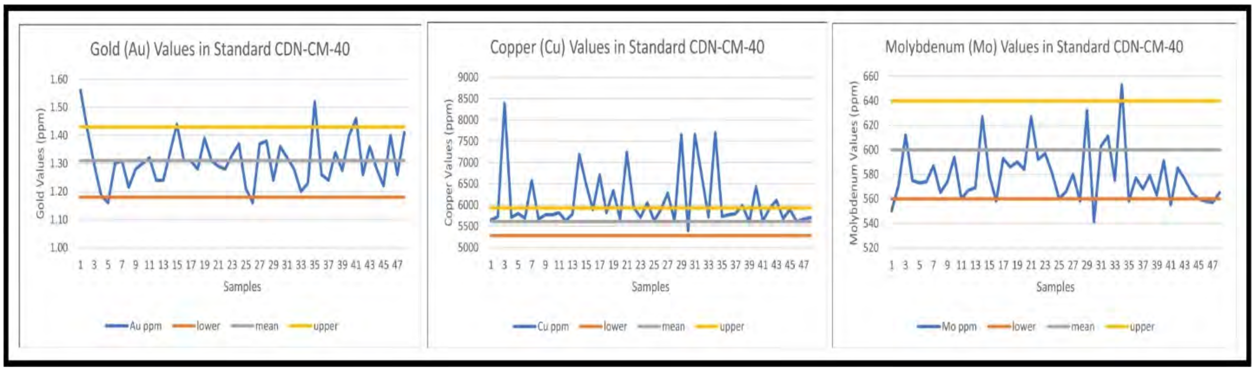



**Figure 11-6: Gold, copper and molybdenum results from Standard CDN-CM-40 samples.**

Standard CDN-CM-40 (Figure 11-6) was used 48 times during the 2021 drill programs. Received results for gold and molybdenum were acceptably within range. Copper results were erratic with 27 % of the results testing well above the expected maximum.

The majority of results from standards CDN-CM-39 and 40 are within acceptable ranges and almost all (71%) are within 3 standard deviations of the certified values and considered reliable. The larger variations seen in Cu and Au values in these two standards stand out relative to the other certified standards used, and it is unclear if this signals an issue with the standards or an increase in lab variability for those samples. Given that the assay results for the other standards were within acceptable ranges, it seems likely that the variability seen in CM-39 and CM-40 result from the standards themselves rather than lab variability. Surge Copper has indicated that standards CDN-CM-39 and 40 will not be used in future QAQC programs at Ootsa.

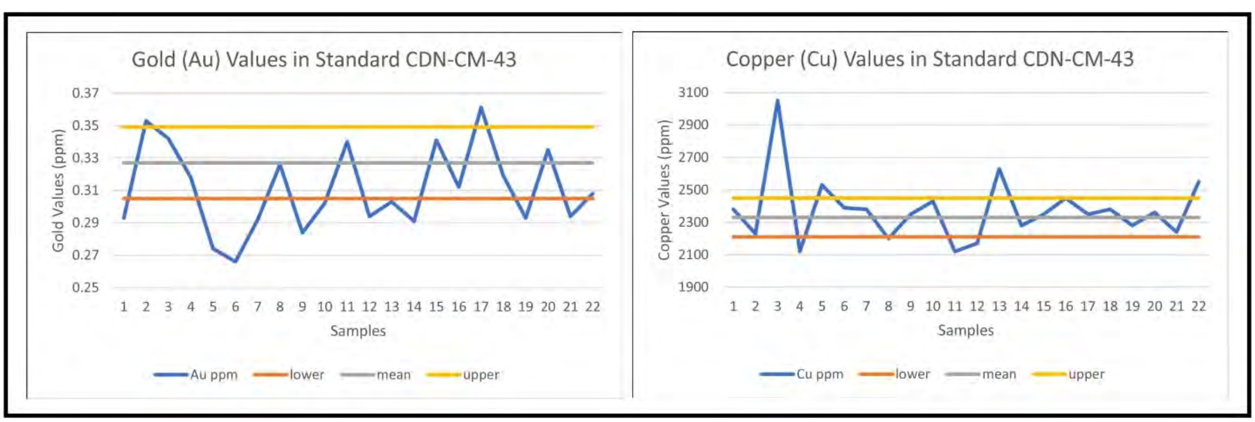



**Figure 11-7: Gold and copper values from Standard CDN-CM-43 samples.**

Standard CDN-CM-43 (Figure 11-7) was used on 22 occasions during 2021 with acceptable results.

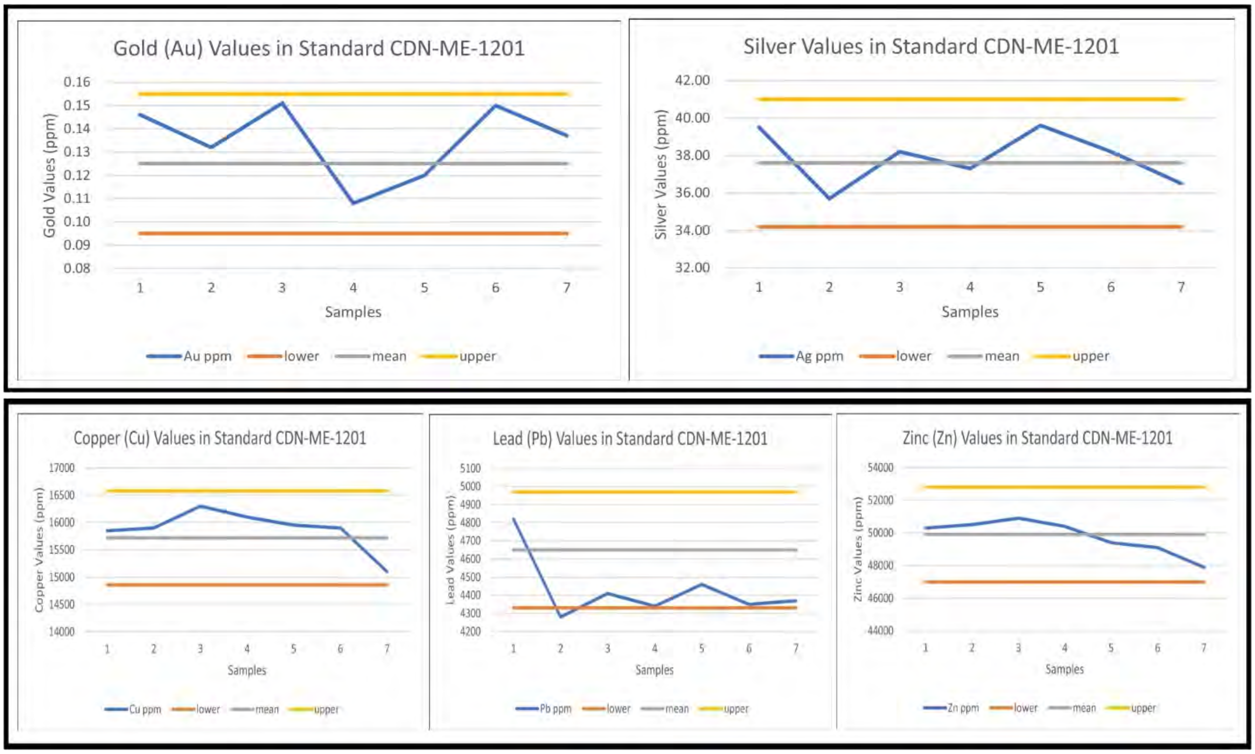



**Figure 11-8: Gold, silver, copper, molybdenum, lead and zinc values from Standard CDN-ME-1201 samples.**

Standard CDN-ME-1201 was inserted into the sample stream 7 times and returned acceptable values for all 5 elements that it is certified for. This standard is described as a Multi-Element standard by Canadian Resource Laboratories and was the only 'multi-element' standard used in 2021.

The authors of this technical report conclude that, at the Ootsa project during 2020-2021, quality control for sample preparation, analysis and security are suitable and adequate for the purpose of generating quality data for the purpose of resource estimation of the Seel deposit.

## 11.2 Quality Assurance and Quality Control - Ox Deposit

An independently monitored quality control program was established and implemented for all of the 2013 drilling at the Ox deposit. A total of 8997 samples were submitted to the lab for assay of which 884 were blanks, duplicates or certified standards, which equates to 10.9 % of all Ox core sampling dedicated to QA/QC purposes.

Blanks and duplicates were inserted into the sample stream at a rate of one each for every twenty samples for an overall rate of one QA/QC sample per ten core samples.

Blank material was sourced from a road quarry located at km 21 on the Whitesail road. Duplicates were taken by sawing 2 m core samples in half and then quartering one of the halves. Each quarter was inserted into a separate sample bag with a unique sample number and independently listed in the Gold Reach database. Gold Reach utilized three different certified reference standards (Table 11-2) during 2013 drilling at Ox. Three reference standards were included with each sample shipment to the lab.

All QA/QC charts and statistics were generated in 2013 by C. McDowell with GeoSpark Core software, an Access based database management software available from GeoSpark Consulting.

In 2021, control samples including standards, blanks, and duplicates were inserted into the sample stream for the two holes drilled at West Ox (Ox21-279 and Ox21-292, see Section 10.2 above). A total of 669 samples (including QAQC samples) were analysed from these holes, including 2 standards (0.3%), 32 blanks (4.8%), and 33 duplicates (4.9%) for a total of 10% QAQC samples. Results are combined with the 2021 Seel QAQC program in Section 11.1 above and were deemed to be acceptable for reporting purposes. No new drill holes were completed in the main Ox deposit in 2020-2021, and the 2013 QAQC results are considered to be valid for the current resource calculation detailed in this report.

### 11.2.1 Blanks

A total of 385 field blanks were inserted into the sample stream from the 2013 Ox drilling for a ratio of 4.8:100 samples submitted. Gold Reach geologists attempt to insert the blanks into a sample range that is moderately to strongly mineralized as means to ensure that the preparation lab is properly cleaning their equipment between samples. The majority of blanks tested at acceptably low levels with the exception of a few samples. The two largest outliers in Figure 11-9 (Cu values) below may have been caused by a sample number recording error at the sampling/cutting stage or possibly at the sample preparation stage. This conclusion has been reached after consultation with original assay reports that show discrepancies between expected sample weights and assay values for adjacent samples. It is the author's opinion that the most likely cause was a sample switching error and not a result of sample contamination. The author does not feel that this potential sample error materially affects the conclusion of mineralization tenor at the Ox deposit. The third outlier in Figure 11-9, which tested just above the +3 SD level, returned expected values for Au, Mo and sample weight, but had a Cu value of 0.022%. This anomaly may be a result of low-level contamination at the sampling stage.

The highest value in the Mo chart (Figure 11-10) corresponds to one of the samples that also tested high for Cu. The cause of elevated Mo levels in the group of samples on the extreme right of page are more difficult to explain. These 12 samples correspond to holes Ox13-45 to Ox13-48, which were drilled at the onset of the 2013 drill program, and included with the first two shipments to the lab. During the 2012 drill program at Ootsa, Gold Reach had used blank material from two separate locations, but after receiving assays reports with consistently elevated Cu and Mo values from one of the blanks (“10km Blank”), its use was discontinued. It is possible that some of this blank material was found in camp and mistakenly used to begin the 2013 drill program. This explanation is plausible, due to the fact that later-used blanks did not show consistent elevated values, in either the Ox or the later Seel program. However, these samples do not show the elevated Cu which had been recorded in the “10km Blank”. It is also possible that some form of contamination in sampling, preparation or testing existed only at the beginning of the program. Confidence is lent to the assay values for core samples in these holes as the Cu and Au levels for these blanks are not elevated. As the Mo values fall between 0.0023 and 0.0043%, lower than significant values, the author believes this potential sample error or potential contamination does not materially affect the conclusion of mineralization tenor at the Ox deposit.

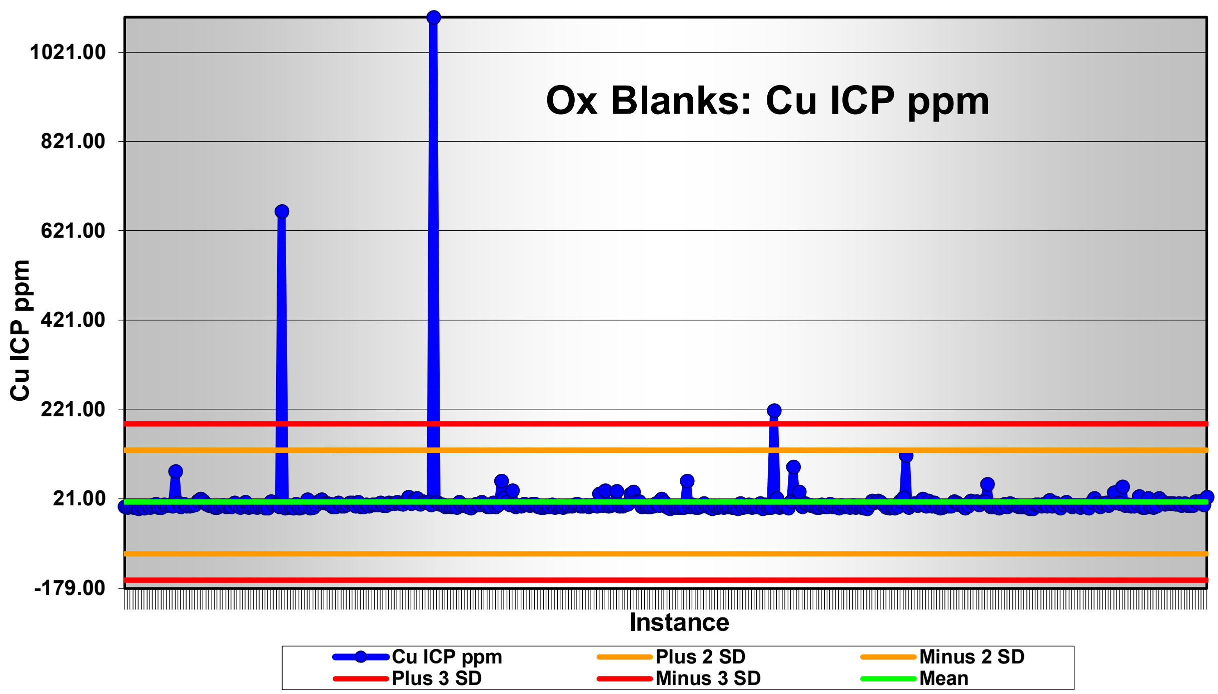



**Figure 11-9: Copper values in blank material from 2013 Ox drilling.**

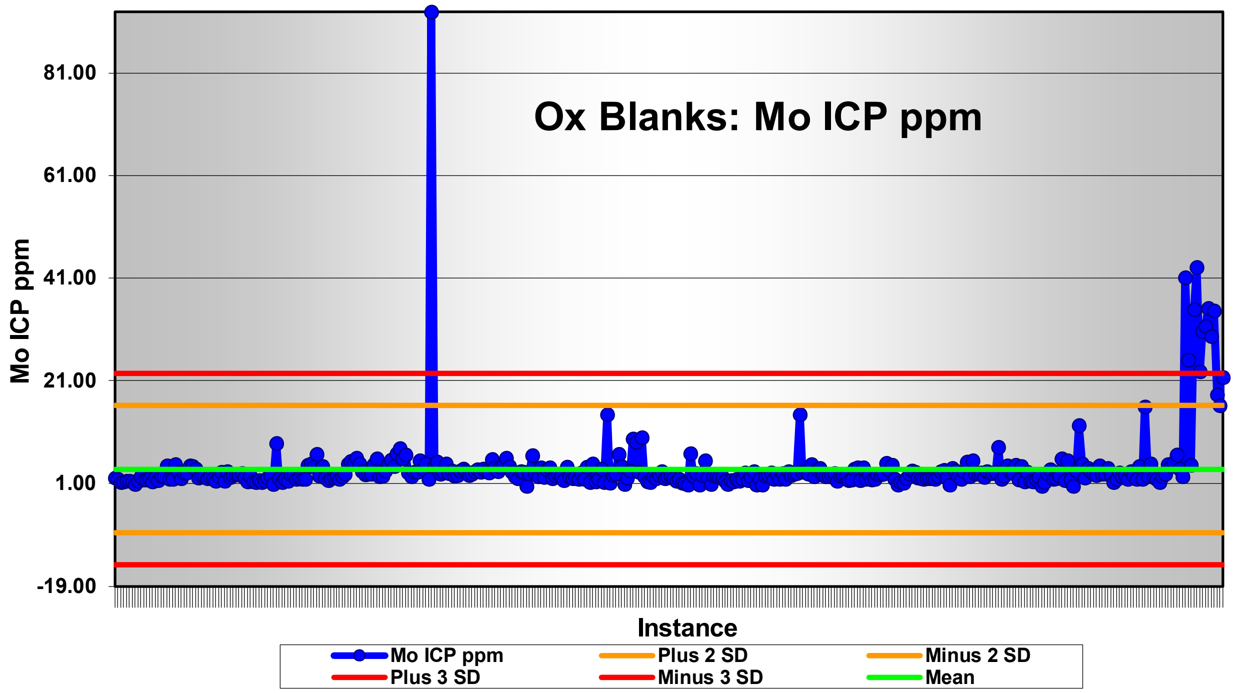



**Figure 11-10: Molybdenum values in blank material from 2013 Ox drilling.**

Figure 11-11 below shows graphical representation of Au values in the 385 blanks submitted. 10 samples tested above the +3 Standard Deviation (SD) level and 8 more fell within a range between +2 and +3 Standard Deviation levels. The outlier with the highest Au value corresponds to a sample that also displayed unusually high Cu values. The other outliers in Figure 11-11 that returned Au values at or above the +2 SD level may be a result of low-level contamination at the sampling, preparation or testing stage, or low background gold value in the blank material. Given that the total number of samples that tested above the +2 SD represent less than 4% of the blanks submitted, and taking into account the low absolute Au value (<0.03 ppm) of the samples, the overall suitability of the blank material is deemed acceptable.

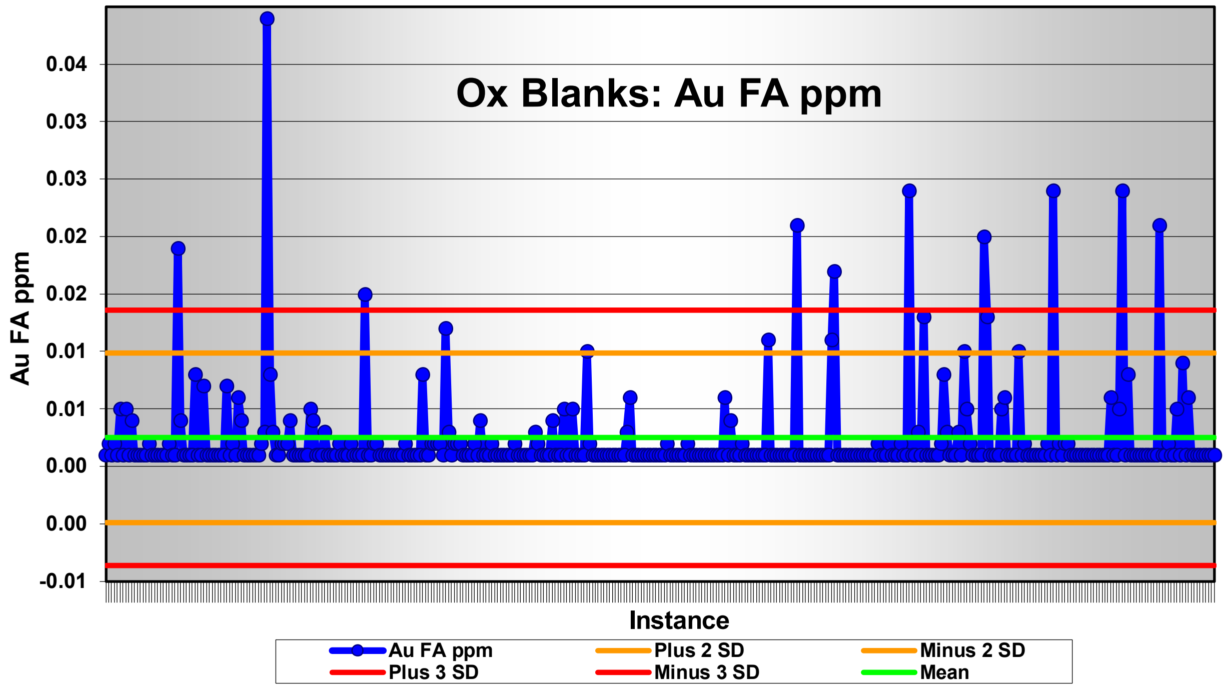



**Figure 11-11: Gold values in blank material from 2013 Ox drilling.**

### 11.2.2 Duplicates

A total of 401 Ox samples were duplicated by quartering one of the core halves and attaching a unique sample number to each sample, a ratio of 4.9:100 samples submitted. This method of quality control can check assay precision but is more likely to provide information about the continuity of mineralization in the rocks. The following charts are XY scatter plots that compare the original values to those of their duplicates. The Cu chart (Figure 11-12) shows good overall correlation with the majority of samples landing between the +/- 20% thresholds. By comparison the Mo and Au charts (Figures 11-13 and 11-14) show a greater discrepancy of values that may reflect the vein hosted nature of molybdenum and gold mineralization versus the tendency for Cu to be disseminated throughout the rock.

**Table 11-1: Statistics for Copper and Molybdenum in duplicated samples.**

| Percentage of samples in each category | | |
|---|---|---|
| **Category** | **Cu** | **Mo** |
| <10% difference | 59.0 | 29.1 |
| 10-20% difference | 26.6 | 20.8 |
| 20-30% difference | 8.6 | 18 |
| >30% difference | 5.8 | 32.1 |

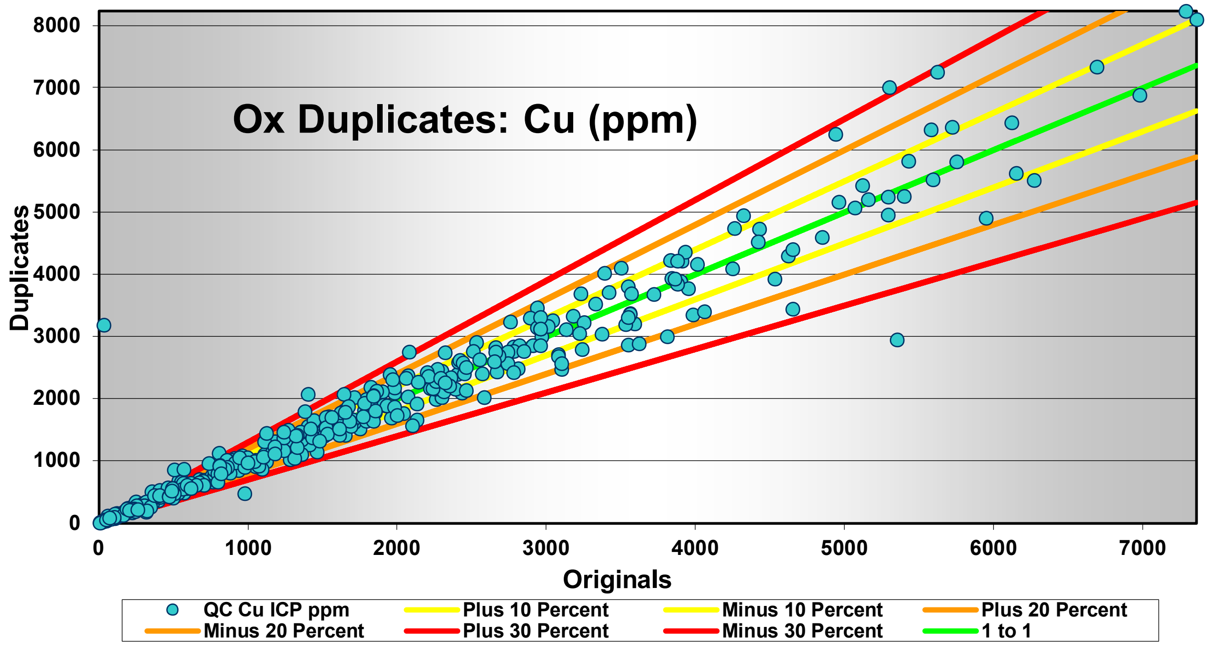



**Figure 11-12: Comparison of copper values in duplicate samples from 2013 Ox drilling.**

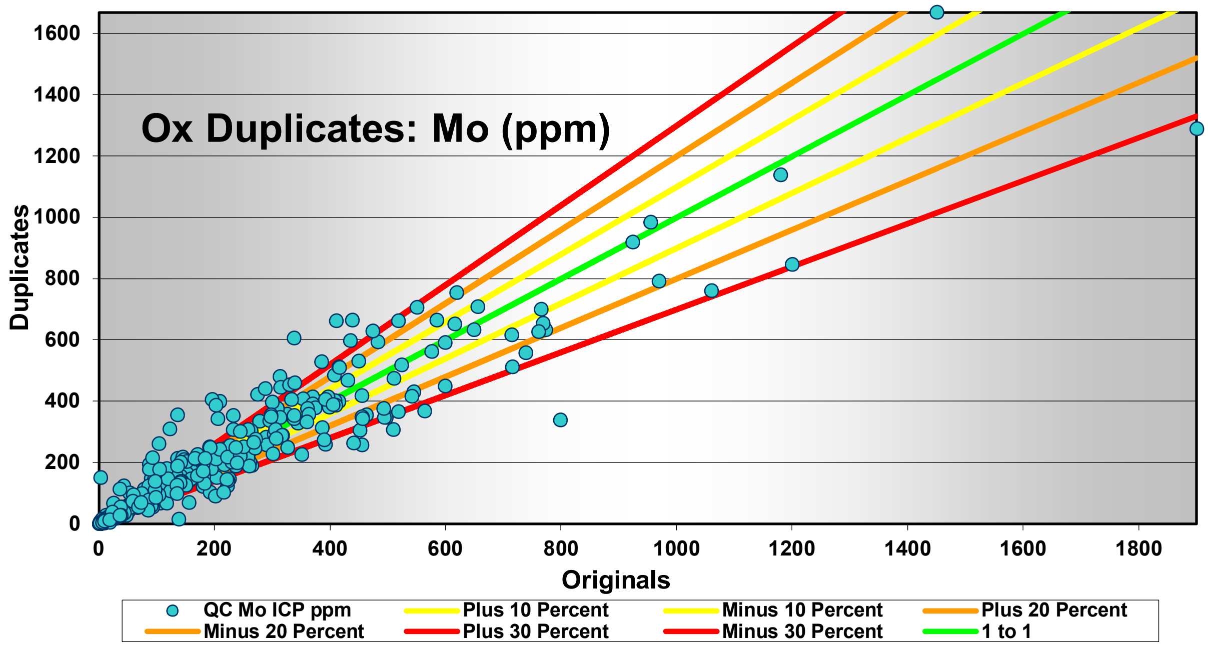



**Figure 11-13: Comparison of molybdenum values in duplicate samples from 2013 Ox drilling.**

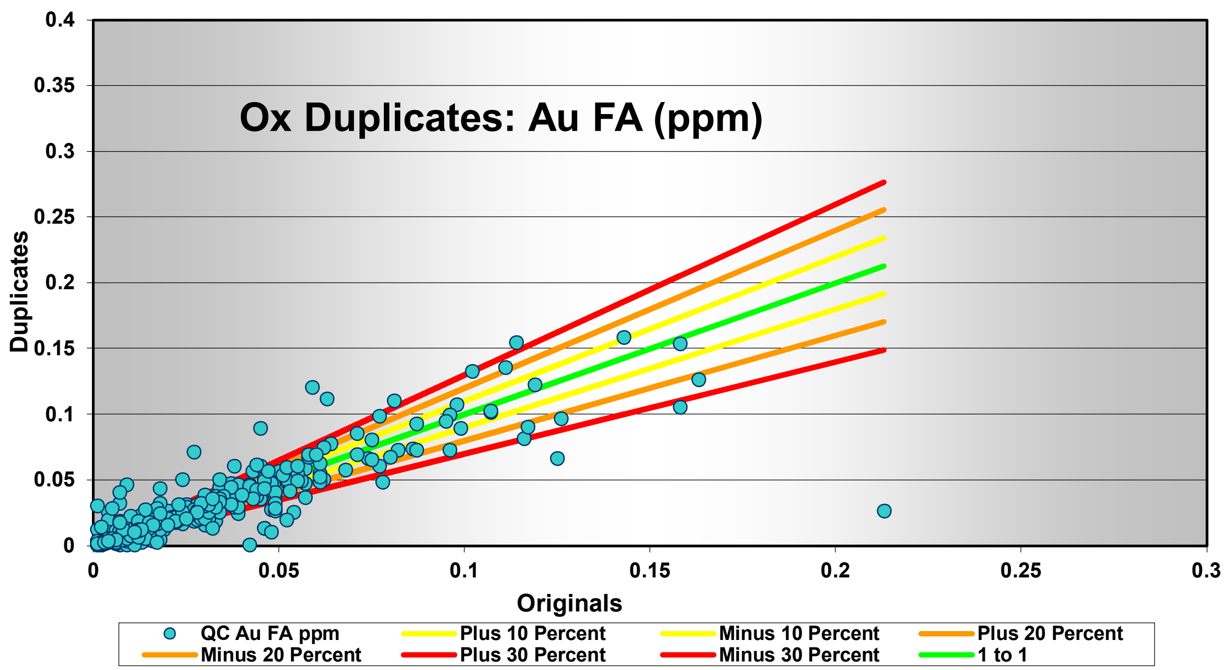



**Figure 11-14: Comparison of gold values in duplicate samples from 2013 Ox drilling.**

### 11.2.3 Standards

Three distinct lab-certified standards were utilized during the 2013 drill program at Ox, purchased from CDN Resource Laboratories Ltd. CDN-CM-13, CDN-CM-23 and CDN-CM-25 represented high, moderate and low grade standards respectively. The expected mean and one standard deviation values for Au, Cu and Mo are given below in Table 11-3. The mean and standard deviation values were determined after a 10 round-robin analysis by 15 Labs.

**Table 11-3: Expected values for Certified Standards used on the Ox Deposit in 2013.**

Canadian Resource Laboratories Certified Standards

| CDN-CM-13 | | | CDN-CM-25 | | |
|---|---|---|---|---|---|
| Element | Mean | SD | Element | Mean | SD |
| Au (FA/AA) | 0.74 | 0.047 | Au (FA/AA) | 0.228 | 0.015 |
| Cu (4 acid/ICP) | 7860 | 180 | Cu (4 acid/ICP) | 1910 | 30 |
| Mo (4 acid/ICP) | 440 | 20 | Mo (4 acid/ICP) | 190 | 10 |
| CDN-CM-23 | | | CDN Labs references | | |
| Au (FA/AA) | 0.549 | 0.03 | Further information regarding standard preparation, source and round-robin analyses can be found at www.cdnlabs.com | | |
| Cu (4 acid/ICP) | 4720 | 130 | | | |
| Mo (4 acid/ICP) | 250 | 10 | | | |
| *all values ppm | | | | | |

A total of 98 lab-certified standards were included with the twice weekly sample shipments during Ox drilling. Standards are helpful in determining the accuracy and/or precision of the lab assay equipment. Standard CDN-CM-13 was submitted 35 times and showed good results for both Au and Cu with a slightly high bias for Mo. Standard CDN-CM-23 was tested on 23 occasions and showed good results for all three elements although a slightly high bias can be detected for Cu and Mo in holes Ox76—81(extreme right-hand side of Figures 11-15 and 11-16). Standard CDN-CM-25 returned the most inaccurate results from the 40 instances in which it was used with good results for Au, erratic values for Cu and somewhat high bias for Mo. The use of this standard was discontinued after the scattered results were noted. Table 11-4 below shows some statistics for the various standards.

Table 11-4: Statistics for Certified Standards from Ox drilling 2013.

| Number of times Certified Standard failed 2 Standard Deviation test | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | Au | | Cu | | Mo | |
| **Standard ID** | **# of tests** | +2SD | -2SD | +2SD | -2SD | +2SD | -2SD |
| CDN-CM-13 | 35 | 0 | 1 | 5 | 0 | 2 | 0 |
| CDN-CM-23 | 23 | 0 | 0 | 0 | 1 | 2 | 0 |
| CDN-CM-25 | 40 | 2 | 4 | 9 | 7 | 2 | 0 |

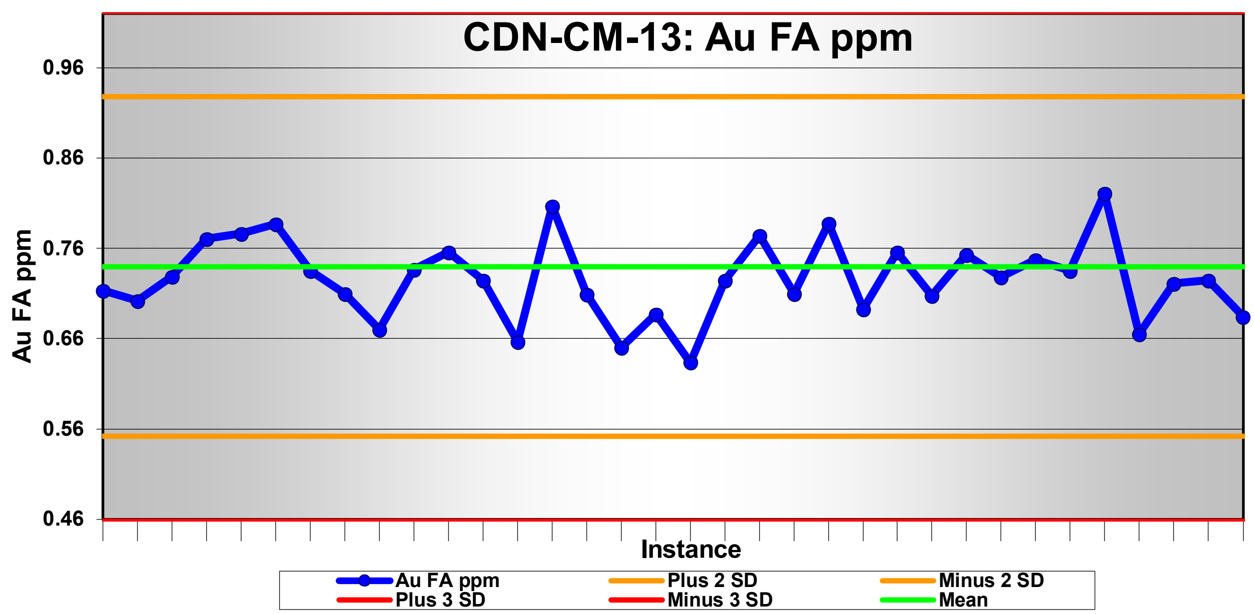



**Figure 11-15: Gold values in Standard CDN-CM-13 from 2013 Ox drilling.**

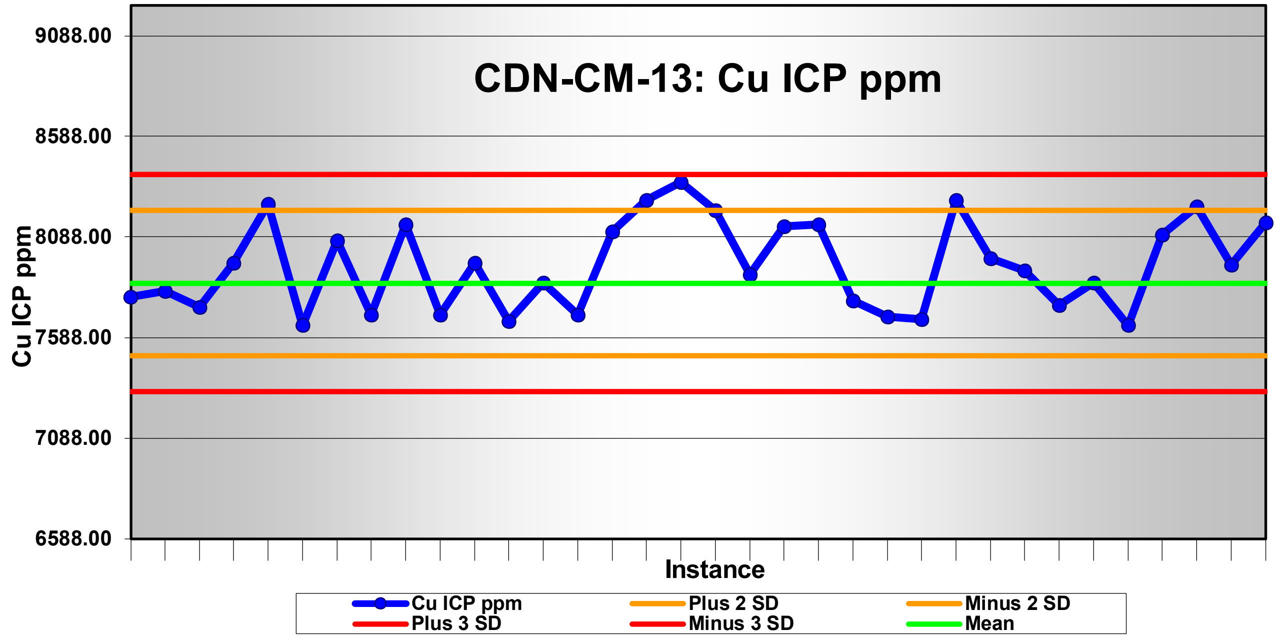



**Figure 11-16: Copper values in Standard CDN-CM-13 from 2013 Ox drilling.**

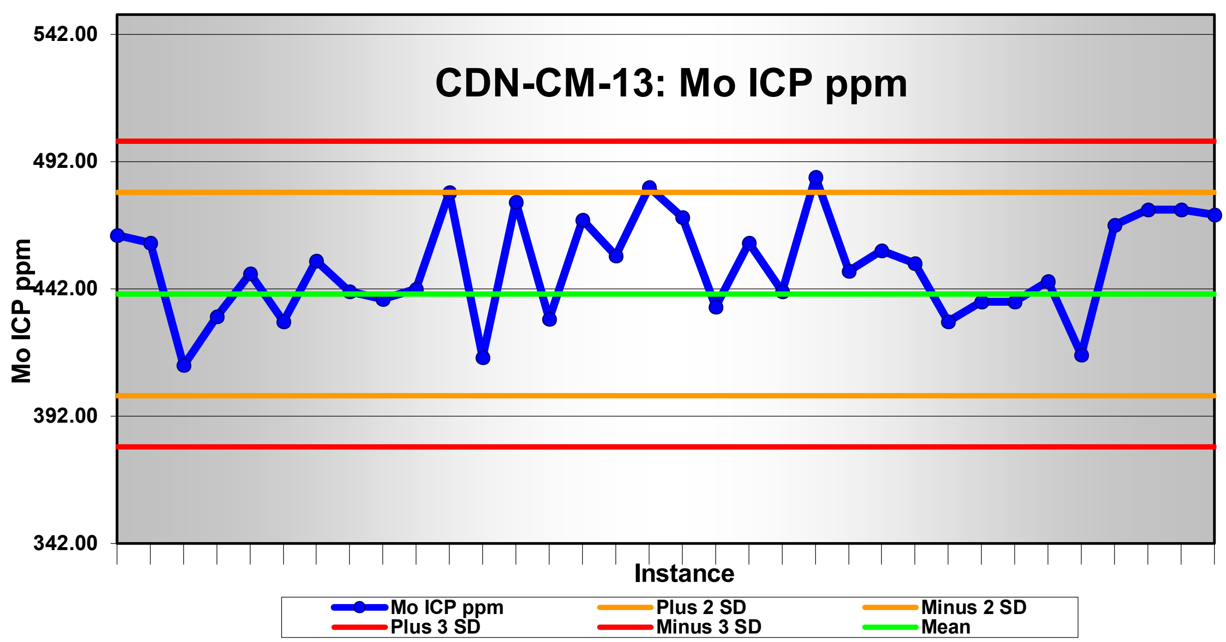



**Figure 11-17: Molybdenum values in Standard CDN-CM-13 from 2013 Ox drilling.**

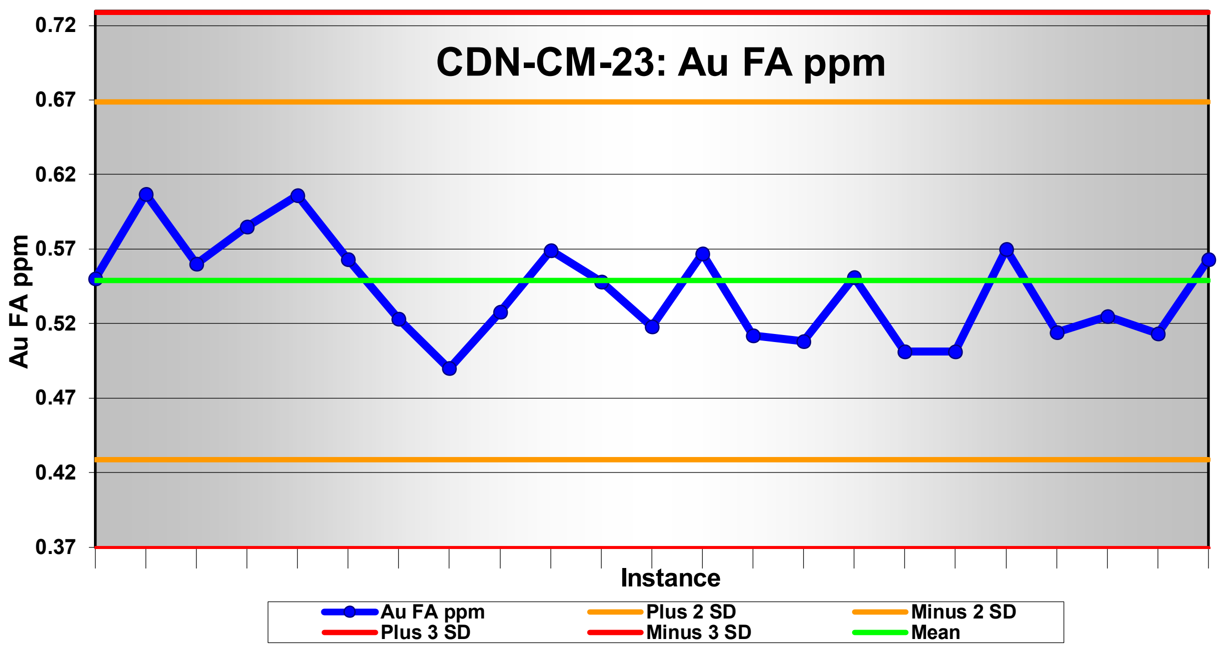



Figure 11-18: Gold values in Standard CDN-CM-23 from 2013 Ox drilling.

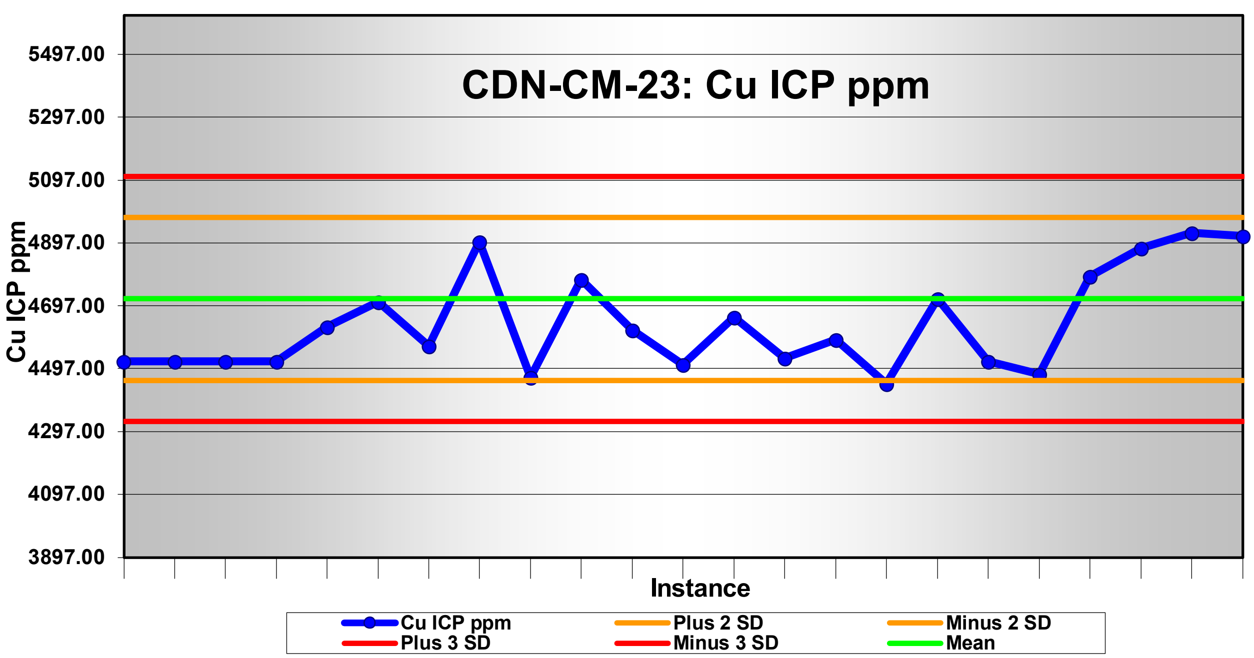



Figure 11-19: Copper values in Standard CDN-CM-23 from 2013 Ox drilling.

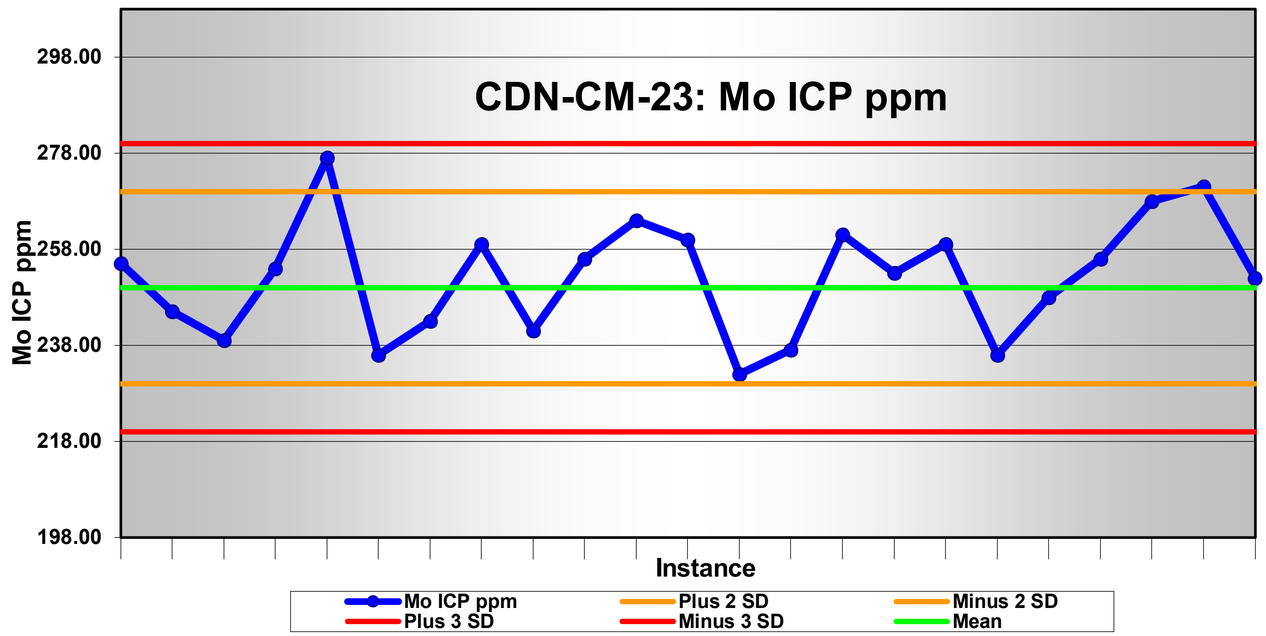



**Figure 11-20: Molybdenum values in Standard CDN-CM-23 from 2013 Ox drilling.**

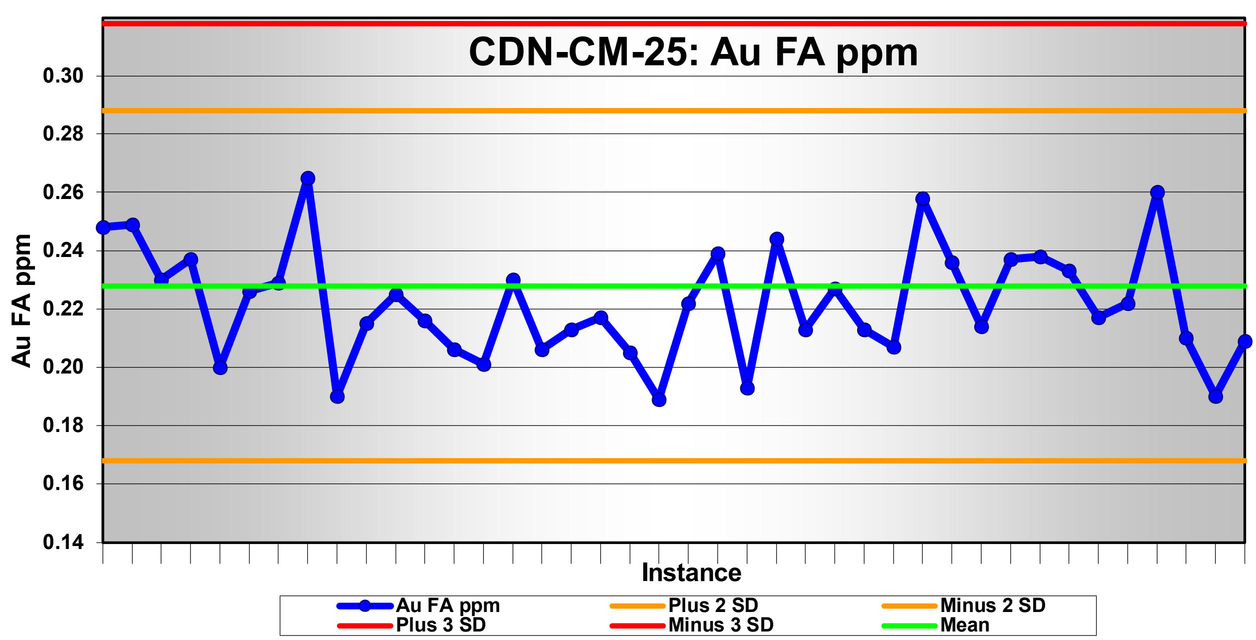



**Figure 11-21: Gold values in Standard CDN-CM-25 from 2013 Ox drilling.**

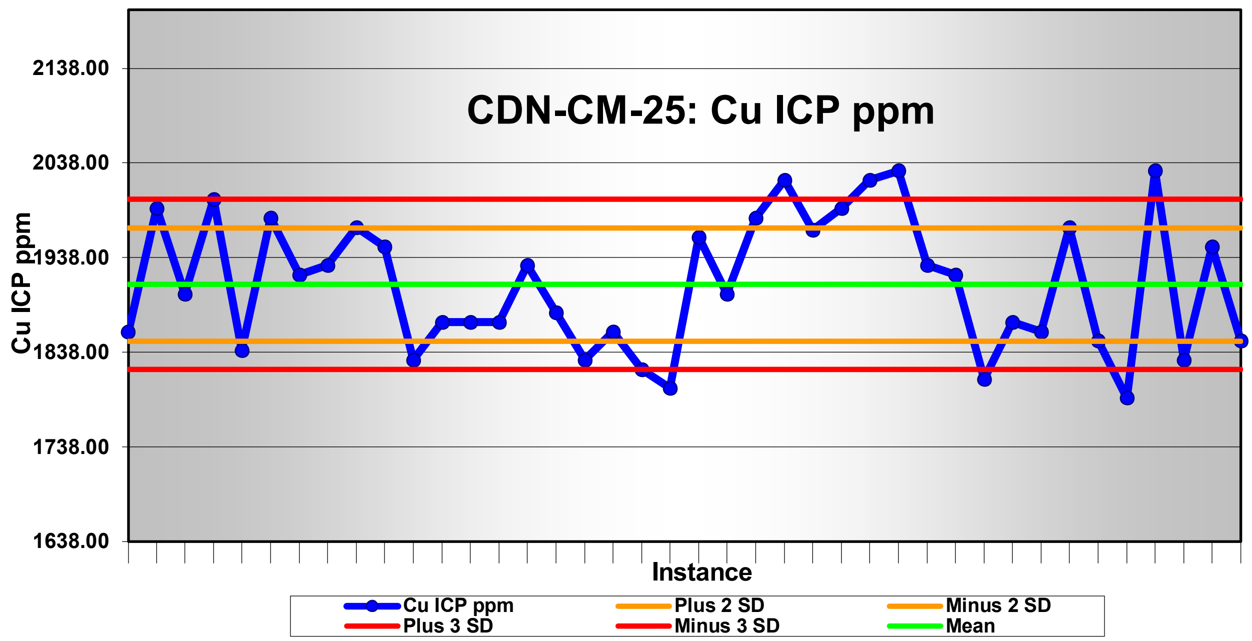



Figure 11-22: Copper values in Standard CDN-CM-25 from 2013 Ox drilling.

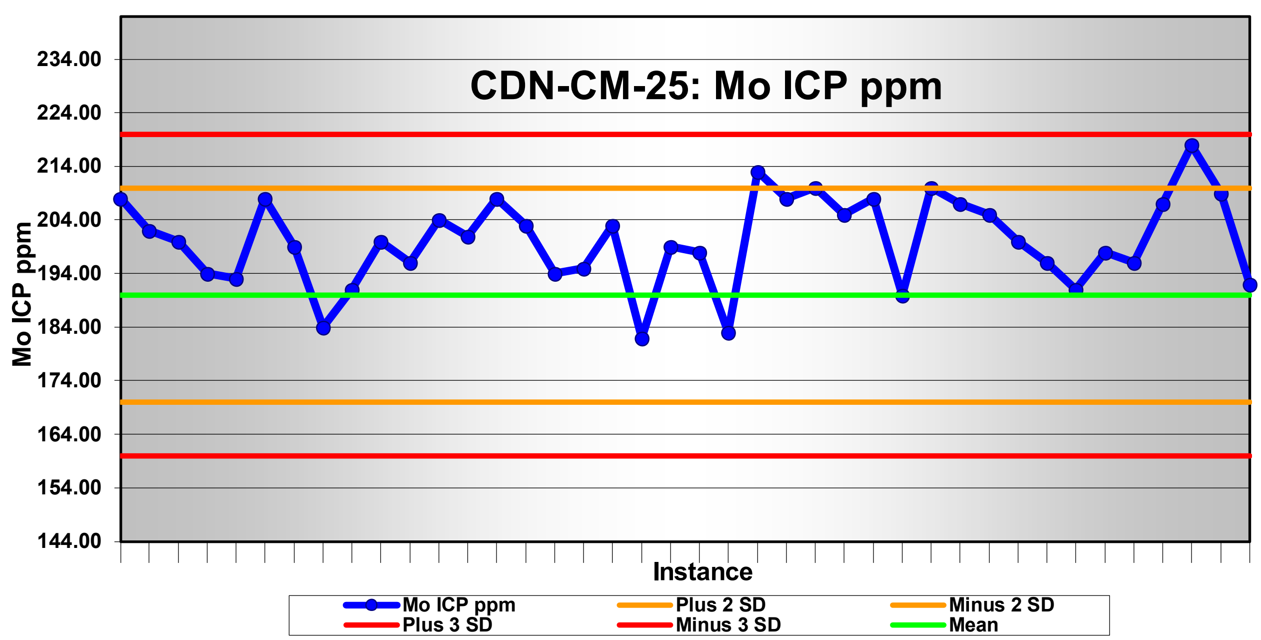



Figure 11-23: Molybdenum values in Standard CDN-CM-25 from 2013 Ox drilling.

The author of this technical report concludes that, at the Ootsa project during 2013, quality control for sample preparation, analysis and security are suitable and adequate for the purpose of generating quality data for the purpose of resource estimation of the Ox deposit.

# 12.0 Data Verification

Drill core is logged and the samples are marked by geologists who act as consultants to Surge Copper Corp. Geotechnical information recorded includes recovery, rock quality designation (RQD) including details of fractures, and specific gravity (SG). Geological data recorded includes lithology, alteration, structures, veining and mineralization, as well as sample location and intervals. Drill hole data is entered into the database by the geologist that logged and sampled the hole. Microsoft Excel software was utilized to handle all data in 2020-2021. Assay data is received directly from the lab by the Qualified Person ("QP") for the Ootsa Project (note: this is a different person from the QP author of this report). The data is merged and proofread by the Project QP. Proofreading the data involves checking to make sure the QA/QC samples have acceptable values and that the assay values match descriptions in the drill logs as well as maintain consistency with adjacent lithologies and grades. If discrepancies or irregularities are found the core is re-examined and compared with the assay data. If the core and the assay data cannot be reconciled, the sample interval will be resampled and sent for testing. Once the drilling data has been made available to the public via a press release the original assay files are forwarded to the field geologists for assimilation into the field database. Data proofreading and reconciliation is performed by the field geologists.

A minimum of two reference standards are inserted into the sample stream for every drill hole to monitor the accuracy of the lab analysis. In general, two standards were inserted for drill holes up to 500 m length, and 3 or more standards were inserted for holes exceeding 500 m length. Blanks are inserted at a rate of 1 blank for every 20 samples to ensure sample contamination is not a factor during sample collection, preparation and analysis. One in every 20 samples are duplicated by quartering the core then inserting two quarters in two separate sample bags with unique sample numbers and retaining half the core on site. Sample duplicates can help to determine the precision of lab analytical techniques. During the 2020-2021 drilling at Seel, sample duplicates represented 4.94% (924 samples), blanks 5.47% (1023 samples) and certified standards 1.01% (189 samples) of the total of all samples sent to the lab (18,686 total samples). During the 2013 drilling at Ox, sample duplicates represented 4.9%, blanks 4.8% and certified standards 1.1% of the total of all samples sent to the lab. This translates into a grand total of 11.4% of all samples from the Ootsa (Seel and Ox) drilling programs being QA/QC specific.

Drill hole collars are laid out using handheld GPS, or by chain and compass from a nearby previously-surveyed collar. At each drill setup, the azimuth of the hole is checked by a geologist and corrected before drilling begins. Downhole surveys are conducted by drill personnel using a Reflex Easy-shot instrument. At least three surveys are taken downhole, near collar, mid-depth, and near bottom.

Completed drill hole collars are marked with a pressure-treated fence post that is labelled with an aluminum tag. Collar locations are professionally DGPS surveyed by a third party survey contractor hired by Surge Copper. Maps of drill hole locations are supplied to the surveyors by Surge and a representative of the company accompanies the surveyors to the applicable area as a means of orientation.

The Qualified Persons of this report believe the data verification procedures utilized in Ootsa project in 2020-2021 are adequate to ensure data quality for the purpose of resource estimation.

# 13.0 Mineral Processing and Metallurgical Testing

The following descriptions of metallurgical testing results were initially reported in the 2014 Resource Update (Boyce and Giroux, 2014). These results are considered to be adequate for the purposes of the new resource calculation detailed in this report. Additional metallurgical testing was initiated by Surge Copper in 2022, however the testwork program was not complete and results were not available for inclusion in this resource update or this report. As such the resource estimate relied solely on the previous testwork completed as described herein.

## 13.1 Mineral Processing and Metallurgical Testing – Seel Deposit

Initial-stage metallurgical testing was completed in April 2013 on three composite samples totalling 406 kg by Inspectorate Exploration and Mining Services Ltd. located in Richmond, British Columbia. The samples were obtained from 2012 drill core from the Seel deposit. Two variants of West Seel mineralized domain were represented (composites #1 & #2) as well as one from East Seel (composite #3). The primary objective of the testing was to investigate copper recovery and molybdenum separation using flotation.

A total of 30 batch tests, followed by three locked cycle tests were conducted on the copper circuit to produce a bulk Cu-Mo concentrate. Varying test parameters were utilized to help optimize the flotation process. A bulk test on 100 kg of Composite 2 was processed to provide sufficient copper concentrate to conduct a single Cu-Mo separation test followed by one molybdenum cleaning stage. Table 13-1 below summarizes results of six rougher flotation tests conducted at various grind sizes and test conditions on three composites. Results suggest very little difference in metallurgy due to the grind size.

**Table 13-1: Seel Rougher Circuit Results at Varying Grind Sizes and Conditions**

| Sample Test | Comp | Grind Size microns | Feed Grade % Cu | Rougher Circuit Recovery % Cu | Au | Mo |
|---|---|---|---|---|---|---|
| F1 | 1 | 128 | 0.28 | 96.6 | 90.8 | 90.0 |
| F2 | 1 | 102 | 0.28 | 97.6 | 81.3 | 91.4 |
| F3 | 2 | 128 | 0.29 | 93.6 | 73.1 | 92.9 |
| F4 | 2 | 101 | 0.29 | 94.9 | 72.9 | 92.3 |
| F5 | 3 | 127 | 0.42 | 95.6 | 91.1 | |
| F6 | 3 | 96 | 0.42 | 96.9 | 92.6 | |

Molybdenum separation from the bulk copper concentrate produced an acceptable 1st cleaner concentrate grade of 38.5% Mo, with a Rhenium (Re) content of 144 ppm, based on a single test. No optimization was attempted at this stage of investigation. These early-stage results demonstrate that excellent recoveries and concentrate grades are attainable.

Results of cleaner circuit tests show a decrease in recovery, but significant gain in concentrate grade with the use of a regrind. Loss in recovery can be overcome with adjustments to the cleaner flotation circuit.

Three locked cycle flotation tests were conducted on the 3 composites. The tests were run for six cycles, simulating actual plant operation. The predicted metallurgy for cycle 6 of each test is summarized in Table 13.2. Further testing of the Cu-Mo separation circuit and subsequent molybdenum up-grading circuit would be required to establish firm metallurgical figures.

**Table 13.2: Summarized Predicted Metallurgy for Seel Composites**

| | Cu 3rd Cleaner Concentrate | | | % Recovery | | |
|---|---|---|---|---|---|---|
| Comp | % Cu | % Mo | g/t Au | Cu | Mo | Au |
| 1 | 26.4 | 2.5 | 12.6 | 88.9 | 85.8 | 59.1 |
| 2 | 23.1 | 4.4 | 9.2 | 86.4 | 91.6 | 47.0 |
| 3 | 31.4 | | 28.1 | 89.5 | | 69.0 |

Assaying of the final concentrate products shows they are ‘clean’ with very low trace element concentrations that can pose problems or penalties at smelters (such as As, Sb, Bi or Hg).

The rougher flotation results approach the maximum metal recoveries obtainable using standard flotation methods for typical porphyry Cu systems. The actual recoveries from a mine scale flotation plant will be lower than the rougher concentrate, as subsequent steps are taken to remove unwanted materials and increase the grade of the final concentrates.

Subsequent investigation by Inspectorate (Beland & Redfearn, 2013), as supplement to a report on Ox deposit, tested centrifugal gravity recovery of gold in 48 kg of Seel core reject samples. Results indicate negligible recoverable free gold, as gold reports to flotation concentrate.

### 13.1.1 Description of Methodology for Metallurgical Testing

The following description of methodology was summarized from the draft metallurgy report produced by Inspectorate Exploration and Mining Services Ltd. (Redfearn, 2013).

A shipment consisting of 22 pails containing 85 bags of half-core, with a total weight of 405.99 kg was received July 18, 2012 via Bandstra Transportation. The samples were received into inventory, air dried and separated into three (3) composites. Each composite was separately crushed to 6 mesh, mixed and split into the required samples for testing. The three samples were described:

- composite 1: Hole S12-101, 308 to 378m - West Seel Zone, weight 163.8 kg
  - Cu-Au-Mo-Ag mineralization with dominant pyrite
- composite 2: Hole S12-101, 646 to 714m – West Seel Zone, weight 156.4 kg
  - Cu-Au-Mo-Ag mineralization with dominant pyrrhotite
- composite 3: Hole S12-103, 54 to 88m – East Seel Zone, weight 83.0 kg
  - Cu-Au mineralization with insignificant Mo

Representative head samples of the three composites were analysed for Cu, Mo Fe, Au, Ag, whole rock analysis (WRA) and ICP-MS. Results for economic metals are shown in Table 13-3 below.

**Table 13-3: Seel Head Sample Analyses**

| | Composite Analysis | | |
|---|---|---|---|
| Element | 1 | 2 | 3 |
| Cu % | 0.28 | 0.29 | 0.42 |
| Mo % | 0.028 | 0.047 | 0.0007 |
| Au g/t | 0.17 | 0.20 | 0.47 |
| Ag g/t | 4.09 | 2.12 | 1.94 |

A brief optical mineralogical review was conducted by Dr. R. W. Lehne of Lehne & Associates of Germany, on samples representing the three composites, to characterize mineral grain species and association. It was noted that sample #1 carries predominant pyrite in association with chalcopyrite, while sample #2 contains significant pyrrhotite and magnetite in addition to pyrite and chalcopyrite. Both samples contain accessory molybdenite. The locking textures of the West Seel ore minerals rarely exceed 150 microns. A substantial amount of chalcopyrite and most molybdenite are locked in dimensions below 50 microns. Sample #3 from East Seel represents pyrite-magnetite-chalcopyrite mineralization in which magnetite is often replaced by presumably hypogene hematite. Ore textures tend to be coarser than West Seel samples, possibly due to higher portion of vein mineralization.

Three 2 kg samples were ground at 65% solids in a #4 stainless steel mill for varying times from 12.5 to 19.0 minutes in order to establish a grind size versus time curve.

The flotation program consisted of 30 batch tests, 3 locked cycle tests performed on all three composites, and a bulk 100kg float to produce copper 3rd cleaner concentrate for molybdenum separation using composite 2. The objective was to identify the various parameters for each stage of flotation and compile a comparison among the three ore types. Two rougher circuit flotation tests were conducted on each composite at different grinds to identify the effect of grind size and particle liberation on the grade and recovery. Four stages of rougher concentrate were pulled and analysed separately. All tests were run at a natural pH of 8.2 - 8.6 using potassium ethyl xanthate and Aeropromoter 3302 as collectors, along with frother methyl isobutyl carbinol (MIBC). Flotation time over the four stages totaled 22 minutes. Metallurgical results are detailed in Table 13.1 above. At these grinds, typical for porphyry copper ores, there was very little difference in metallurgy due to the grind size. Based on these results, subsequent testing was conducted at grinds in the range of 120-130 microns. The difference in Cu recovery between composites 1 and 2 is due to the difference in rougher concentrate pull weights.

The next set of three tests on each composite consisted of i) increasing the collector, ii) changing one collector and iii) raising the pH from natural to 10.0. The increased collector dosage in the first two rougher stages showed negligible effect when the weight pull of rougher concentrate is taken into account. Replacing the A3302 collector with MX5140 had a negative effect on all three ore types. Similarly, a raise in pH to 10.0 either had no effect as in Composite 3 or negative effect as in Composites 1 and 2.

Two cleaner circuit kinetics tests were conducted on each composite, one with regrinding, and the other without a regrind. As indicated in Table 13.4, the results show a decrease in recovery, but significant gain in concentrate grade with the use of a regrind to a P80 in the range of 25 - 30 microns. The loss in recovery can be overcome with adjustments to the cleaner flotation circuit. However, the low concentrate grades cannot be improved sufficiently to produce a marketable product without a regrind in the circuit.

**Table 13-4: Seel Cleaner Circuit Kinetics vs Grind**

| Test | Comp | Primary Grind P80=µ | Feed Grade % Cu | Ro. Con. Wt % | Ro. Con. % Cu | Regrind P80=µ | 3rd CC Wt % | 3rd Cleaner Con Cu % | Au g/t | Mo % | Cleaner Circuit % Recovery Cu | Au | Mo | Total Circuit % Recovery Cu | Au | Mo |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| F 16 | 1 | 127 | 0.28 | 16.4 | 1.44 | No RG | 3.40 | 5.61 | 3.38 | 0.68 | 81.1 | 78.9 | 87.3 | 75.0 | 61.3 | 85.1 |
| F 17 | 1 | 124 | 0.28 | 18.0 | 1.33 | 25 | 1.35 | 12.92 | 11.14 | 1.56 | 72.9 | 66.5 | 68.7 | 66.9 | 48.8 | 65.8 |
| F 18 | 2 | 126 | 0.29 | 11.7 | 1.93 | No RG | 2.20 | 8.72 | 4.96 | 2.48 | 85.4 | 76.2 | 96.0 | 76.5 | 55.6 | 89.5 |
| F 19 | 2 | 127 | 0.29 | 11.5 | 2.19 | 23 | 1.00 | 20.67 | 9.50 | 5.18 | 82.3 | 63.3 | 91.0 | 73.8 | 43.1 | 78.6 |
| F 20 | 3 | 134 | 0.42 | 17.4 | 2.18 | No RG | 4.52 | 6.84 | 8.82 | | 81.6 | 82.0 | | 76.7 | 73.3 | |
| F 21 | 3 | 132 | 0.42 | 17.0 | 2.17 | 32 | 3.34 | 8.89 | 15.68 | | 80.5 | 85.7 | | 75.1 | 80.2 | |

Three complete tests on each composite were conducted varying a number of test parameters. This included replacing the A3302 collector with kerosene, a scavenger pyrite circuit, varying the rougher weight pull and variations of the primary grind.

Aeropromotor 3302 was found to produce superior molybdenum recovery to that using kerosene as the primary moly promotor. A pyrite scavenger circuit, following the four rougher flotation stages, was tried in tests F22 and F23, in which the pH was decreased from 8.3 to 6.0. This extra stage had no effect on the Cu-Mo flotation results.

Three locked cycle (LCT) flotation tests were conducted, one on each composite. The tests were run for six (6) cycles, in which the three recycle products were returned to the previous stage for processing, simulating actual plant operation. The predicted metallurgy for cycle 6 of each test is summarized in Table 13.2. The difference in recoveries between the ore types appears to be closely related to the feed grades and weight pull of the final concentrate. Overall, all three ore types can be expected to produce similar copper recoveries. Further testing will be required to increase the copper concentrate grade of Composite 2.

The 3rd cleaner concentrates from all three locked cycle tests were analysed for minor element content.

In order to generate sufficient Cu 3rd cleaner concentrate on which to conduct a molybdenum separation test, 100 kg of Composite 2 was floated in 5 x 20 kg lots for the rougher flotation stage. After three stages of copper cleaning, 977 grams of Cu 3rd cleaner concentrate was available for the separation test. Sodium hydrosulphide (NaHS) was used to depress the chalcopyrite while kerosene was added as the molybdenum collector. $CO_2$ gas was used to control pH at 9.5 in the rougher and 10.0 in the 1st cleaner stage. A good acceptable grade of molybdenum was produced into a 1st cleaner concentrate. However, recovery of the moly at this point is low with only 49% of the molybdenum being separated out of the 3rd cleaner concentrate. No optimization or variation of parameters was performed in this single test. The separation and molybdenum cleaning circuit require additional testing to properly optimize the metallurgy.

The molybdenum 1st cleaner concentrate at a grade of 38.5% Mo, assayed 144 ppm rhenium (Re).

Weighted head assays for all tests were calculated as a check to ensure overall consistency and no major errors. All are well within the normal variation for such a testing program.

## 13.2 Mineral Processing and Metallurgical Testing -- Ox Deposit

The following descriptions of metallurgical testing results were initially reported in the 2014 Resource Update (Boyce and Giroux, 2014). These results are considered to be adequate for the purposes of the new resource calculation detailed in this report. No additional drilling was completed on the main Ox deposit in 2020-2021, and no new material from this deposit was sent for additional metallurgical testing in 2022.

Metallurgical testing was completed in November 2013 on a single 323 kg composite sample by Inspectorate Exploration and Mining Services Ltd. located in Richmond British Columbia. The sample was obtained from 2013 drill core from the Ox deposit and is considered to be representative of the type of mineralization found in the deposit. The primary objectives of the testing were to determine the optimal flotation conditions for the Ox deposit material and to produce high-grade copper and molybdenum concentrates with acceptable recoveries of gold and silver.

A total of four batch rougher and four batch rougher-cleaner tests were completed with varying test parameters to help optimize the flotation process. Table 13-5 below shows the results of 4 rougher flotation tests conducted at various grind sizes and test conditions. These results show excellent copper recoveries are attainable at varying grind sizes. Molybdenum, gold, and silver also show strong recoveries over varying test conditions.

**Table 13-5: Ox Sample Rougher Circuit Results at Different Grind Sizes and Varying Conditions**

| Sample Test | Grind Size microns | Feed Grade % Cu | Feed Grade % Mo | Rougher Circuit Recovery % | | | |
|---|---|---|---|---|---|---|---|
| | | | | Cu | Mo | Au | Ag |
| F1 | 146 | 0.33 | 0.043 | 93.1 | 78.4 | 91.2 | 82.9 |
| F2 | 125 | 0.33 | 0.043 | 95.1 | 84.7 | 70.9 | 80.3 |
| F3 | 97 | 0.33 | 0.043 | 96.3 | 88.3 | 81.9 | 81.9 |
| F4 | 99 | 0.33 | 0.043 | 97.1 | 82.6 | 83.8 | 75.2 |

Following rougher optimization two bulk flotation tests (BF1 and BF2) utilizing 100 kg samples at optimized test conditions were performed and are shown in Table 13-6 below. This testing resulted in recoveries of 94.1 to 94.5% for copper, 91.7 to 93.1% for molybdenum, 62.1 to 79.2% for gold, and 78.0 to 90.1% for silver.

**Table 13-6: Ox Rougher Circuit Bulk (100kg) Floatation Tests at Optimized Conditions**

| Sample Test | Grind Size microns | Feed Grade % Cu | Feed Grade % Mo | Rougher Circuit Recovery % | | | |
|---|---|---|---|---|---|---|---|
| | | | | Cu | Mo | Au | Ag |
| BF1 | 95 | 0.33 | 0.043 | 94.5 | 91.7 | 79.2 | 90.1 |
| BF2 | 95 | 0.33 | 0.043 | 94.1 | 93.1 | 62.1 | 78 |
| | | | Average | 94.3 | 92.4 | 70.7 | 84.1 |

Copper concentrates were produced from samples BF1 and BF2 based on only 4 open-circuit cleaner stages. Sample BF1 produced a copper concentrate grading 24.5% copper, 4.0 g/t gold, and 107.1 g/t silver. Sample BF2 produced a copper concentrate grading 23.6% copper, 3.3 g/t gold, and 97.7 g/t silver. A molybdenum separate was made from the BF2 concentrate producing a second cleaner concentrate grading 51.6% molybdenum along with 113.3 ppm rhenium.

Assaying of the final concentrate products shows they are 'clean' with very low trace element concentrations that can pose problems or penalties at smelters (such as As, Sb, Bi, Hg).

The rougher flotation results represent the maximum metal recoveries obtainable using standard flotation methods for typical porphyry Cu systems. The actual recoveries from a mine scale flotation plant will be lower than the rougher concentrate, as subsequent steps were taken to remove unwanted materials and increase the grade of the final concentrates.

### 13.2.1 Description of Methodology for Metallurgical Testing

The following description of methodology was summarized from the final metallurgy report produced by Inspectorate Exploration and Mining Services Ltd. (Beland & Redfearn, 2013).

A shipment consisting of 17 pails containing 71 bags of half core samples, with a total weight of 323 kg was received July 31, 2013 via Bandstra Transportation. The samples were received into inventory, air dried and combined into one primary composite, designated as Composite 1 for this test campaign. The core samples were crushed to 6 mesh, blended and split into the required samples for testing. A representative head sample of the combined composite was analysed for Cu, Mo, Fe, Au, Ag, whole rock analysis (WRA) and ICP-MS.

A 2 kg sample of the composite was ground at 65% solids in a #3 stainless steel mill for varying times in order to establish a grind size versus time curve. The test grind curve was used to estimate the grinding time required for preparing the 2kg samples for the batch tests and was used as a basis to estimate grind time required in the larger 25kg mill for the bulk flotation tests.

A QEMSCAN Bulk Mineral Analysis (BMA) and the standard chemical analysis protocols were conducted on a sample of composite 1. The sample was assayed at 0.33 % copper and about 0.04% molybdenum, equivalent to about 0.9 percent by weight chalcopyrite and 0.05 percent by weight molybdenite. No other copper sulphide minerals were observed in the sample composite. The pyrite was measured at about 2.4 percent by weight, and accounted for almost three quarters of the total sulphides in the sample. The ratio of chalcopyrite to pyrite was estimated close to 1 to 3. In order to assist the flotation tests, the fragmentation and association between chalcopyrite and pyrite or chalcopyrite and gangue minerals should be determined. This information can be achieved by performing QEMSCAN Particle Mineral Analysis (PMA) on the sized samples of the feed and intermediate products. The sulphide minerals were embraced in silicon-rich non-sulphide gangue host. Majority of the non-sulphide gangue comprised quartz, feldspar group minerals, micas, kaolinite, as well as carbonates. It is important to note that kaolinite and carbonates were elevated in the composite 1.

A series of rougher and cleaner open-circuit flotation tests were completed on composite 1 to determine the optimal conditions for the bulk float and Mo separation tests. The primary objectives were to determine the optimal flotation conditions for the Ox deposit material to produce both high-grade copper and moly concentrates with high recoveries of gold and silver. The results would help to produce a flowsheet from which project economics could be studied.

Open-cycle rougher kinetic tests were conducted on composite 1 using the best baseline conditions that were determined from past work on samples from the Seel deposit. Three grind sizes were compared: 150, 125 and 95 microns (F1 to F3 respectively). The test was run at a natural pH, using potassium ethyl xanthate (PEX) and Aeropromoter 3302 as collectors, along with frother methyl isobutyl carbinol (MIBC). Each rougher kinetic test was run for 4 stages at 5 minutes each, for a total of 20 minutes of flotation. At a constant rougher concentrate grade of 1.6% Cu and mass pull rate of 20%, both copper and molybdenum recoveries increased with finer grinds. At a P80 grind of 97 microns, recoveries were 96.3% Cu and 88.3% Mo respectively after 20 minutes of flotation. A fourth rougher test (F4) was conducted at the target P80 95 micron grind size using Aeropromoter 3418 collector instead of PEX to compare the flotation performance. The A3418 collector appeared to be a more aggressive collector by increasing mass yields, however both collectors produced similar copper and molybdenum recoveries at a given mass pull. For this reason it was decided to use PEX in subsequent testing as it is the more economical collector.

**Table 13-7: Cleaner Flotation Circuit Conditions for F5 to F8**

| Test # | Primary Grind P80 (microns) | Regrinding size P80 (microns) | Reagent |
|---|---|---|---|
| F5 | 95 | no regrind | PEX, A3302 |
| F6 | 95 | 30 | PEX, A3302 |
| F7 | 95 | no regrind | PEX, kerosene |
| F8 | 95 | 30 | PEX, kerosene |

A series of open-circuit cleaner flotation tests (F5 to F8, see table 13-7) were conducted on the Ox composite sample, using the optimized rougher conditions discussed in the previous section. The tests involved examining the effects of regrinding to target P80 of 30 microns as well as comparing the flotation performance of A3302 and Kerosene as Mo collectors. Each cleaner test involved cleaning of the four (4) combined rougher concentrates by three cleaner stages, the first of which was followed by one stage of scavenging. Re-grinding of the rougher concentrates resulted in higher Cu concentrate grades at equal or higher Cu recoveries. It was similarly found to have a positive effect on both the molybdenum recovery and grade. Although the tests conducted using kerosene (F7 and F8) reported superior metal grades in each cleaning stage, the overall recoveries were significantly lower as a result of poor selectivity relative to A3302. For this reason it was recommended to use A3302 in subsequent testing. Based on test observations, it is recommended that a higher dosage of PEX is to be added in the first two bulk rougher stage to improve froth quality. To help further improve Cu and Mo grades, a 4th cleaner stage was also recommended to be included in the subsequent tests which, will be based on the F6 procedure.

In order to generate sufficient bulk cleaner concentrate on which to conduct two molybdenum separation tests, two 100 kg bulk samples of Composite 1 were each floated in 5 x 20 kg lots for the rougher flotation stage using the optimized parameters previously discussed in this report. After four stages of copper cleaning, just over 2kg of total bulk 4th cleaner concentrate was available to conduct the two separation tests. The primary variables which were examined between both tests was the pulp density in the Mo rougher separation stage, using 20 wt% and 30 wt% densities in BF1 and BF2 respectively, as well as the depressant dosages. NaHS was used to depress the chalcopyrite while A3302 was added as the molybdenum collector. $CO_2$ gas was used to control pH at 9.5 in the rougher and 10.0 in the 1st and 2nd cleaner stages.

The results of the moly separation tests indicate that final copper concentrate gradings of 25.5% and 24.3% were achieved in tests BF1 and BF2, respectively. Test BF1 conducted at 20 wt% solids resulted in better froth quality and consequently a higher mass pull rate, but due to the lower initial dosage of NaHS, more Cu reported to the Mo rougher concentrate compared to BF2. The addition of NaHS to the scavenger stage in BF1 resulted in a Cu concentrate containing only 0.019% Mo. Test BF2 benefited from a higher initial dosage of NaHS in the rougher as well as both cleaning stages, producing the highest Mo concentrate grades with very good Mo separation. The 2nd cleaner concentrate Mo grade for test BF2 was 51.57% at a recovery rate of 56.4% relative to Mo separation circuit feed. Based on the findings of both tests, it is recommended in future testing to operate the Mo rougher circuit at 20 wt% solids density with a target of 12% mass pull to Mo rougher concentrate with an initial NaHS dosage of 400g/t accompanied by a 45g/t dosage to the rougher-scavenger cell. It is also recommended that a higher depressant dosage be added to each cleaning stage to improve cleaning efficiency and maximize Mo grade. The molybdenum 2nd cleaner concentrate from BF1 and BF2 assayed 97.8 and 113.3 ppm rhenium (Re), respectively.

Weighted head assays for all tests were calculated as a check to ensure overall consistency and no major errors. Tabulated results were all well within the normal variation for such a testing program.

# 14.0 MINERAL RESOURCE ESTIMATE

## 14.1 Introduction

This resource estimate is an update of, and replaces, the most recent estimate documented in the NI 43-101 Technical Report by P & E Mining Consultants Inc., dated March, 2016 (Puritch et al., 2016). The estimation of both the Seel and Ox Deposits are described here; methodology for the two estimates is essentially the same: generation of 0.1% copper equivalent (CuEq) domains within directional domains at each deposit area, followed by copper, molybdenum, gold and silver grade estimation, inside and outside the mineralized domains by ordinary kriging (OK).

Resource estimation was completed using Geovia GEMS® software using industry standard techniques. The resource has been classified in accordance with the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Definition Standards for Mineral Resources and Mineral Reserves (CIM, 2014).

## 14.2 Available Drill Data and Model Setup

The Seel resource estimate is based on assays from 300 holes. One hundred and one Seel holes have been drilled since the 2016 estimate. The Ox resource is based on 133 holes, all of which were drilled prior to 2014.

Figure 14-1 and Figure 14-2 show drillhole locations in plan view along with the extents of the resource block models, the limits of the optimized resource pit shells as well as the locations of directional domains used for estimation all projected to surface. The block model setup information is listed in Table 14.1. For both deposits the block size is 12 x 12 x 12 metres – a size deemed appropriate for likely mine production rates.

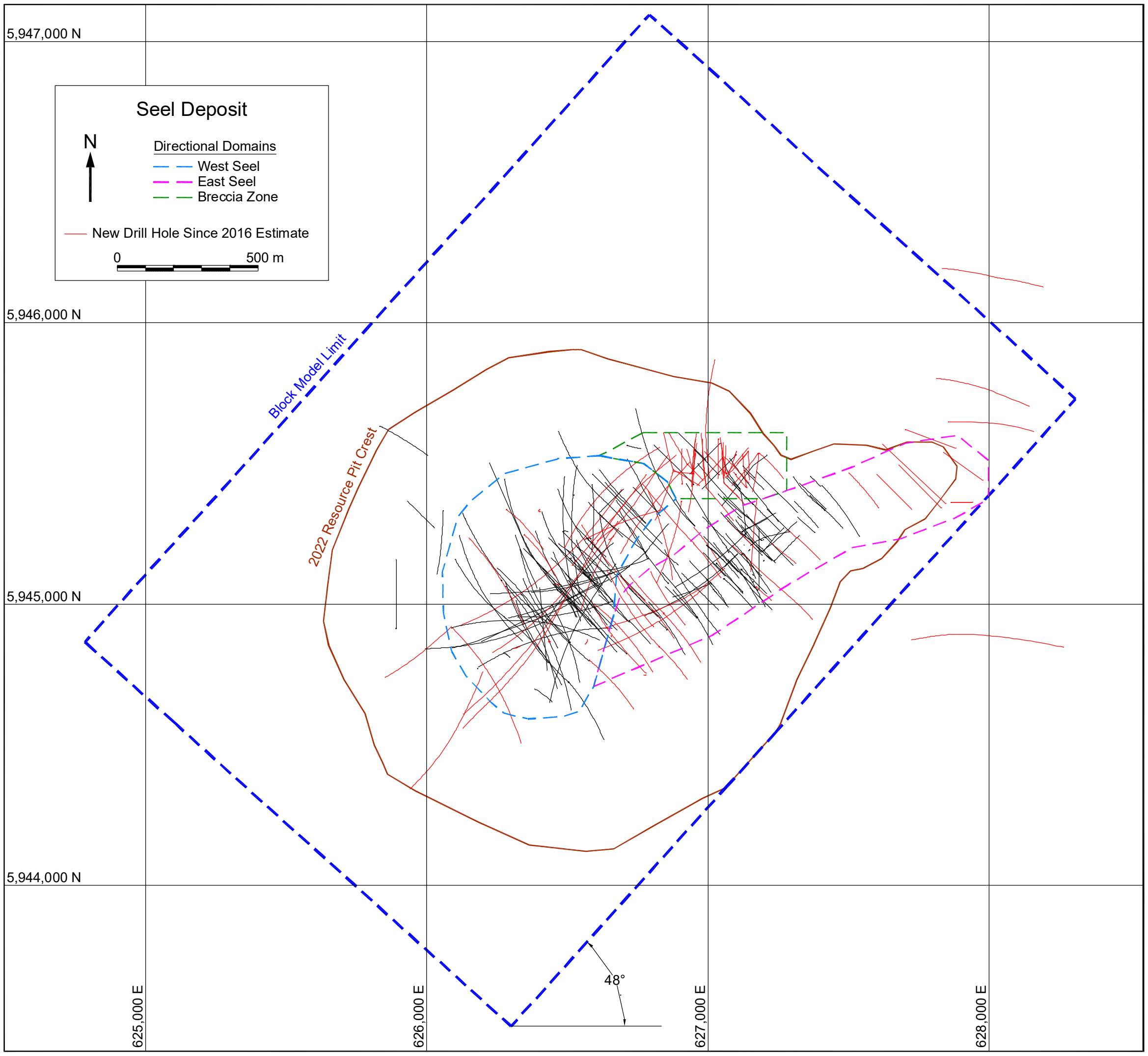



**Figure 14-1: Seel: Available Drilling, Block Model Limits and Resource Pit Crest**

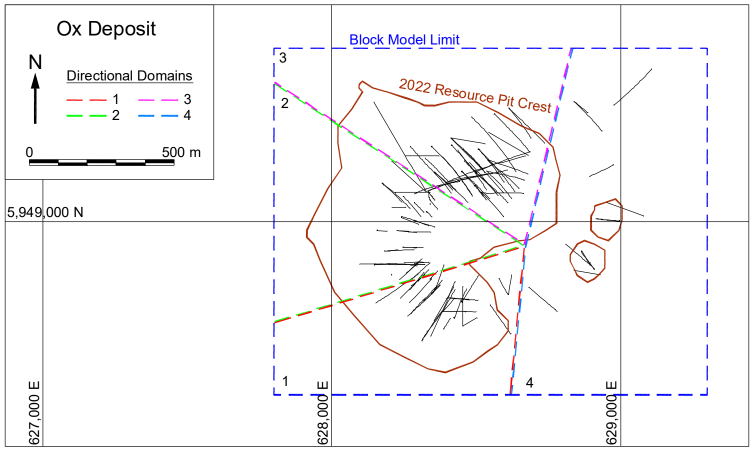



Figure 14-2: Ox: Available Drilling, Block Model Limits and Resource Pit Crest

**Table 14-1: Block Model Setups**

**Seel**

| Block: | X | Y | Z |
|---|---|---|---|
| origin(1) | 626,300 | 5,943,500 | 1,300 |
| size (m) | 12 | 12 | 12 |
| no.blocks | 250 | 170 | 110 |
| 48° rotation; 4,675,000 blocks | | | |
| (1) SW model top, block edge | | | |

**Ox**

| Block: | X | Y | Z |
|---|---|---|---|
| origin(1) | 627,800 | 5,948,400 | 1,300 |
| size (m) | 12 | 12 | 12 |
| no.blocks | 125 | 100 | 70 |
| no rotation; 875,000 blocks | | | |
| (1) SW model top, block edge | | | |

## 14.3 Geologic Model

Metal grades were not clearly correlated with logged lithology and alteration, as is typical in porphyry copper systems. Rather than use a mix of hard and soft boundaries across geologic contacts, domaining by 0.1% CuEq grade was used as control in estimation. Initially, maps of copper (Cu), molybdenum (Mo), gold (Au) and silver (Ag) assays were reviewed to ensure that overall distribution of all metals was spatially similar, such that the generation of 'shells' based on CuEq would provide appropriate control for individual metal grade estimation. For this purpose, CuEq was based on metal prices and recoveries from the 2016 Technical Report (Cu:US$3.25/lb & 90%, Mo:US$12/lb & 70%, Au:US$1,350/oz & 70% and Ag:US$22/oz & 65%).

The 0.1% CuEq domain at Seel and Ox was used to separate mineralized material from the background host rock and was generated through an indicator interpolation process.

All 2 metre composites within the block model volumes were coded as indicators at the 0.1% CuEq threshold value; indicator variograms were calculated and modeled using Supervisor® software for each of the directional domains at Seel. At Ox, due to the size and arcuate shape of the deposit, an omnidirectional variogram was calculated and modelled for the 0.1% CuEq indicator.

Indicators were interpolated by ordinary kriging (OK) to generate values ranging between zero and one – effectively, the probability that blocks are inside or outside the 0.1% CuEq grade domain. Indicator interpolation used a minimum of eight composites, a maximum of 32 and a maximum of six composites per hole. At Seel, searches were spherical with distances of 100 m in Seel West and East and 75 m in the Breccia Zone. The indicator interpolation search at Ox was anisotropic (60 x 60 x 24 m) oriented to best fit mineralization in the four directional domains. Indicator variogram models are listed in Table 14-2.

**Table 14-2: Indicator Variogram Models**

| 0.1% CuEq Indicators | Axis | Direction (dip/azimuth) | Nugget Effect | Spherical Component 1 | | Spherical Component 2 | |
|---|---|---|---|---|---|---|---|
| | | | | Sill | Range(m) | Sill | Range(m) |
| Seel West | X | 65/174 | 0.19 | 0.08 | 65 | 0.73 | 420 |
| | Y | -25/187 | | | 40 | | 350 |
| | Z | -05/095 | | | 50 | | 125 |
| Seel East | X | 54/036 | 0.24 | 0.20 | 65 | 0.56 | 490 |
| | Y | 34/237 | | | 200 | | 270 |
| | Z | 10/140 | | | 100 | | 135 |
| Breccia Zone | X | 62/232 | 0.22 | 0.17 | 15 | 0.61 | 65 |
| | Y | 19/102 | | | 40 | | 75 |
| | Z | 20/005 | | | 35 | | 40 |
| Ox - All | X | Omnidirectional | 0.31 | 0.30 | 15 | 0.39 | 45 |
| | Y | | | | 15 | | 45 |
| | Z | | | | 15 | | 45 |

In order to designate blocks as inside or outside the targeted volume, a probability threshold must be chosen to separate blocks into the two groups. Thresholds were determined, in the different areas, by back-tagging composite data with the estimated indicator probabilities and then selecting the probability level that resulted in the fewest composites being assigned to the wrong grade bin (above and below the indicator threshold); the selected probability thresholds were: 0.490 in Seel West, 0.495 in Seel East, 0.395 in the Breccia Zone and 0.497 at Ox. An example bench plan cutting through the resultant indicator 'shell' at Seel, is shown in Figure 14-3.

The combination of directional domain and CuEq shell designation (inside or outside) was used to establish a code (DomShell) for use in estimation control at Seel (see Table 14-3). At Ox, grade estimation was controlled only by directional domain – blocks inside and outside the CuEq domain were kriged separately.

**Table 14-3: Seel DomShell Coding**

| Directional Domain | | CuEq Shell | | DomShell Code |
|---|---|---|---|---|
| 0 | gaps | 1 | outside | 1 |
| 1 | Seel West | 1 | outside | 11 |
| | | 2 | inside | 12 |
| 2 | Seel East | 1 | outside | 21 |
| | | 2 | inside | 22 |
| 3 | Bx. Zone | 1 | outside | 31 |
| | | 2 | inside | 32 |

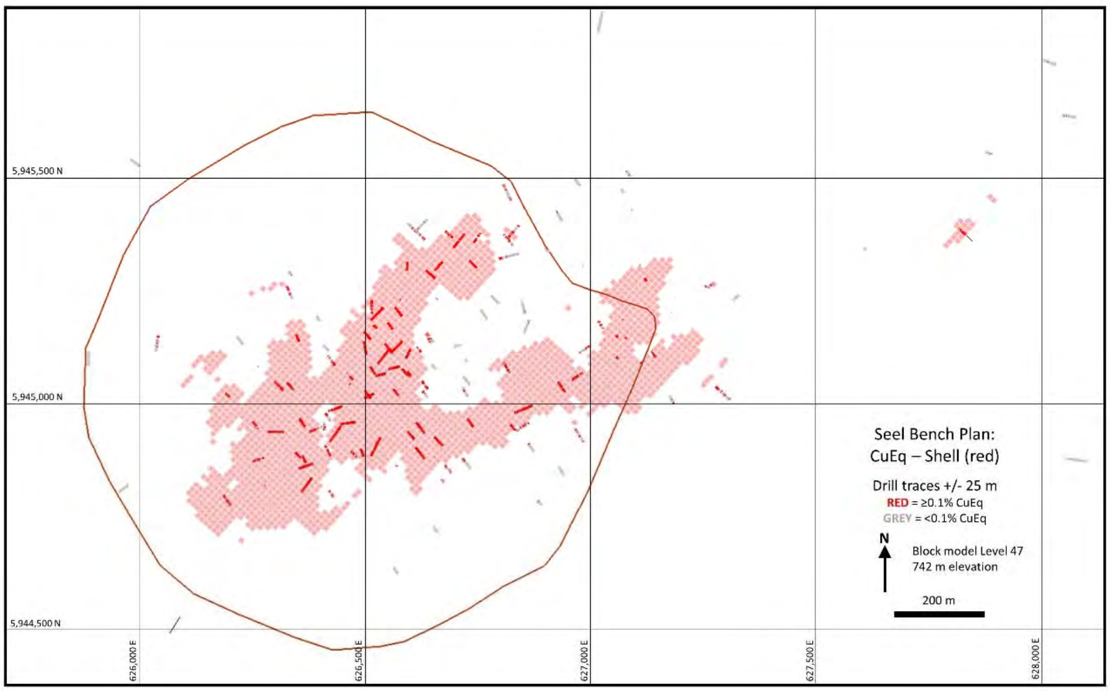



**Figure 14-3: Example Bench Plan - Indicator Grade Shell Interpolation**

A bottom of overburden (top of bedrock) surface was generated at Seel and Ox based on available drill results. The 3D location of points marking the bottom of overburden was used to generate an inverse distance cubed (ID3) estimate of the vertical depth of overburden into a 2D grid covering the XY extents, and at the same 12 m XY resolution, as the resource block model. A total of 301 points were used for the estimation of the Seel bedrock surface and 131 points for Ox. In order to estimate all blocks in the grid, a 1,600 m isotropic search was used for Seel and a 600 m search for Ox. Blocks were estimated by a minimum of one and a maximum of 12 points. The interpolated and actual points were then used to create the top of bedrock surfaces.

## 14.4 Grade Capping

Grade capping is used to control the impact of extreme, outlier high-grade samples on the overall resource estimate. Assay data was back-tagged by the grade shell variable, and directional domain at Seel, prior to assessing capping requirements. Histograms and probability plots were examined to determine levels at which values are deemed outliers to grade populations for the various assay groupings. Cap levels are presented in Table 14-4 and uncapped and capped assay statistics in Table 14-5. (CV=coefficient of variation=standard deviation÷mean value.)

The impact of grade capping on the estimation of grades can be measured by comparing uncapped and capped estimated block grades above a zero cut-off. At the capping levels listed in Table 14-4, grade capping lowered the average Seel grades by: Cu-1.4%, Mo-0%, Au-0%, Ag-0.7% and at Ox: Cu-0%, Mo-0%, Au-5.9%, Ag-4.7%.

**Table 14-4: Assay Capping Values**

**Seel**

| DomShell | Cu (%) | Mo (%) | Au (g/t) | Ag (g/t) |
|---|---|---|---|---|
| 1 | 0.3 | 0.043 | 1 | 17 |
| 11 | 0.6 | 0.13 | 1.7 | 17 |
| 12 | 2.8 | 0.27 | 6 | *uncap* |
| 21 | 0.6 | 0.13 | 1.7 | 17 |
| 22 | 2.8 | 0.27 | 6 | *uncap* |
| 31 | 0.4 | 0.013 | 0.52 | 17 |
| 32 | 3.1 | 0.013 | 1.2 | 100 |

**Ox**

| 0.1 CuEq Shell | Cu (%) | Mo (%) | Au (g/t) | Ag (g/t) |
|---|---|---|---|---|
| Outside | *uncap* | 0.06 | 0.3 | 20 |
| Inside | *uncap* | *uncap* | 1.0 | 50 |

**Table 14-5: Assay Statistics**

**Seel**

| DomShell | Count | Cu (%) | | | CuCap (%) | | | |
|---|---|---|---|---|---|---|---|---|
| | | Mean | Max | CV | #Cap | Mean | Max | CV |
| 1 | 7,172 | 0.02 | 1.20 | 1.8 | 13 | 0.02 | 0.30 | 1.3 |
| 11 | 10,750 | 0.03 | 1.24 | 1.2 | 4 | 0.03 | 0.60 | 1.1 |
| 12 | 23,077 | 0.18 | 7.07 | 0.7 | 1 | 0.18 | 2.80 | 0.7 |
| 21 | 6,122 | 0.04 | 0.94 | 1.4 | 4 | 0.04 | 0.60 | 1.4 |
| 22 | 10,492 | 0.19 | 8.56 | 1.0 | 1 | 0.19 | 2.80 | 0.9 |
| 31 | 4,200 | 0.04 | 2.95 | 1.9 | 16 | 0.04 | 0.40 | 1.1 |
| 32 | 1,224 | 0.32 | 6.64 | 1.7 | 4 | 0.31 | 3.10 | 1.6 |
| | 63,037 | 0.06 | | | 43 | 0.06 | | |

| DomShell | Count | Mo (%) | | | MoCap (%) | | | |
|---|---|---|---|---|---|---|---|---|
| | | Mean | Max | CV | #Cap | Mean | Max | CV |
| 1 | 7,172 | 0.001 | 0.076 | 2.6 | 5 | 0.001 | 0.043 | 2.5 |
| 11 | 10,750 | 0.003 | 0.607 | 3.3 | 10 | 0.003 | 0.130 | 2.4 |
| 12 | 23,077 | 0.019 | 0.471 | 1.2 | 7 | 0.019 | 0.270 | 1.2 |
| 21 | 6,122 | 0.003 | 0.196 | 2.3 | 4 | 0.003 | 0.130 | 2.2 |
| 22 | 10,492 | 0.007 | 0.452 | 2.1 | 3 | 0.007 | 0.270 | 1.9 |
| 31 | 4,200 | 0.001 | 0.089 | 2.6 | 7 | 0.001 | 0.013 | 1.7 |
| 32 | 1,224 | 0.001 | 0.074 | 4.4 | 8 | 0.001 | 0.013 | 2.3 |
| | 63,037 | 0.005 | | | 44 | 0.005 | | |

| DomShell | Count | Au (g/t) | | | AuCap (g/t) | | | |
|---|---|---|---|---|---|---|---|---|
| | | Mean | Max | CV | #Cap | Mean | Max | CV |
| 1 | 7,172 | 0.03 | 8.54 | 4.8 | 8 | 0.02 | 1.00 | 2.4 |
| 11 | 10,750 | 0.04 | 8.75 | 3.1 | 7 | 0.04 | 1.70 | 1.8 |
| 12 | 23,077 | 0.13 | 23.00 | 2.5 | 8 | 0.12 | 6.00 | 1.9 |
| 21 | 6,122 | 0.05 | 9.93 | 3.0 | 3 | 0.05 | 1.70 | 1.6 |
| 22 | 10,492 | 0.19 | 3.90 | 1.1 | 0 | 0.19 | 3.90 | 1.1 |
| 31 | 4,200 | 0.01 | 0.79 | 2.2 | 3 | 0.01 | 0.52 | 2.0 |
| 32 | 1,224 | 0.04 | 5.00 | 3.7 | 1 | 0.04 | 1.20 | 2.0 |
| | 63,037 | 0.05 | | | 30 | 0.05 | | |

| DomShell | Count | Ag (g/t) | | | AgCap (g/t) | | | |
|---|---|---|---|---|---|---|---|---|
| | | Mean | Max | CV | #Cap | Mean | Max | CV |
| 1 | 7,172 | 0.80 | 94.00 | 2.4 | 18 | 0.77 | 17.00 | 1.5 |
| 11 | 10,750 | 0.92 | 27.90 | 1.0 | 6 | 0.92 | 17.00 | 0.9 |
| 12 | 23,077 | 2.56 | 131.00 | 1.0 | 0 | 2.56 | 131.00 | 1.0 |
| 21 | 6,122 | 1.02 | 46.20 | 1.9 | 15 | 1.00 | 17.00 | 1.5 |
| 22 | 10,492 | 1.51 | 223.00 | 2.6 | 0 | 1.51 | 223.00 | 2.6 |
| 31 | 4,200 | 1.16 | 66.20 | 1.8 | 11 | 1.13 | 17.00 | 1.4 |
| 32 | 1,224 | 8.81 | 200.00 | 1.8 | 4 | 8.61 | 100.00 | 1.6 |
| | 63,037 | 0.90 | | | 54 | 0.89 | | |

**Ox**

| 0.1% CuEq IndicatorDomain | Count | Cu (%) | | | CuCap (%) | | | |
|---|---|---|---|---|---|---|---|---|
| | | Mean | Max | CV | #Cap | Mean | Max | CV |
| Outside | 4,425 | 0.04 | 1.00 | 1.3 | 0 | 0.04 | 1.00 | 1.3 |
| Inside | 8,234 | 0.22 | 1.78 | 0.7 | 0 | 0.22 | 1.78 | 0.7 |
| | 12,659 | 0.16 | | | 0 | 0.16 | | |

| 0.1% CuEq IndicatorDomain | Count | Mo (%) | | | MoCap (%) | | | |
|---|---|---|---|---|---|---|---|---|
| | | Mean | Max | CV | #Cap | Mean | Max | CV |
| Outside | 4,425 | 0.003 | 0.225 | 2.4 | 8 | 0.003 | 0.060 | 2.0 |
| Inside | 8,234 | 0.023 | 0.325 | 1.0 | 0 | 0.023 | 0.325 | 1.0 |
| | 12,659 | 0.016 | | | 8 | 0.016 | | |

| 0.1% CuEq IndicatorDomain | Count | Au (g/t) | | | AuCap (g/t) | | | |
|---|---|---|---|---|---|---|---|---|
| | | Mean | Max | CV | #Cap | Mean | Max | CV |
| Outside | 4,425 | 0.01 | 2.55 | 4.6 | 16 | 0.01 | 0.30 | 2.3 |
| Inside | 8,234 | 0.04 | 4.73 | 1.8 | 2 | 0.04 | 1.00 | 1.2 |
| | 12,659 | 0.03 | | | 18 | 0.03 | | |

| 0.1% CuEq IndicatorDomain | Count | Ag (g/t) | | | AgCap (g/t) | | | |
|---|---|---|---|---|---|---|---|---|
| | | Mean | Max | CV | #Cap | Mean | Max | CV |
| Outside | 4,425 | 0.9 | 91.7 | 3.0 | 10 | 0.8 | 20.0 | 1.8 |
| Inside | 8,234 | 1.5 | 370.0 | 4.0 | 8 | 1.4 | 50.0 | 1.7 |
| | 12,659 | 1.3 | | | 18 | 1.2 | | |

## 14.5 Assay Compositing

A composite length of two metres was chosen as most appropriate based on the fact that 90% of sample intervals at Seel and 75% of intervals at Ox, are two metres in length. Composites of less than one metre length, at the ends of holes, were removed from the estimation dataset – for a total of 125 composites removed at Seel and 62 composites removed at Ox. Composite intervals were back-tagged with [directional] domain from block values and with CuEq-Shell values based on the indicator probability. Unassayed intervals were assigned very low (non-zero) values, for all metals, during the compositing process. Uncapped and capped composites, used for grade estimation, are listed in Table 14-6.

**Table 14-6: Composite Statistics**

**Seel**

| DomShell | Count | Cu (%) | | | CuCap (%) | | | |
|---|---|---|---|---|---|---|---|---|
| | | Mean | Max | CV | #Cap | Mean | Max | CV |
| 1 | 7,643 | 0.02 | 0.82 | 1.6 | 19 | 0.02 | 0.58 | 1.2 |
| 11 | 11,149 | 0.03 | 1.18 | 1.2 | 6 | 0.03 | 0.57 | 1.1 |
| 12 | 22,868 | 0.18 | 2.66 | 0.7 | 2 | 0.18 | 1.57 | 0.7 |
| 21 | 6,522 | 0.03 | 1.12 | 1.5 | 8 | 0.03 | 1.11 | 1.4 |
| 22 | 10,459 | 0.19 | 4.68 | 0.9 | 1 | 0.19 | 2.66 | 0.9 |
| 31 | 4,341 | 0.04 | 2.68 | 1.8 | 26 | 0.03 | 0.61 | 1.1 |
| 32 | 1,243 | 0.32 | 6.64 | 1.6 | 9 | 0.31 | 3.10 | 1.5 |
| | 64,225 | 0.06 | | | 71 | 0.06 | | |

| DomShell | Count | Mo (%) | | | MoCap (%) | | | |
|---|---|---|---|---|---|---|---|---|
| | | Mean | Max | CV | #Cap | Mean | Max | CV |
| 1 | 7,643 | 0.001 | 0.069 | 2.4 | 9 | 0.001 | 0.039 | 2.3 |
| 11 | 11,149 | 0.003 | 0.577 | 2.9 | 17 | 0.003 | 0.130 | 2.1 |
| 12 | 22,868 | 0.019 | 0.344 | 1.1 | 16 | 0.019 | 0.256 | 1.1 |
| 21 | 6,522 | 0.003 | 0.167 | 2.1 | 8 | 0.003 | 0.111 | 2.0 |
| 22 | 10,459 | 0.007 | 0.384 | 1.8 | 4 | 0.007 | 0.270 | 1.8 |
| 31 | 4,341 | 0.001 | 0.067 | 2.2 | 14 | 0.001 | 0.012 | 1.5 |
| 32 | 1,243 | 0.001 | 0.061 | 4.1 | 10 | 0.001 | 0.013 | 2.2 |
| | 64,225 | 0.004 | | | 78 | 0.004 | | |

| DomShell | Count | Au (g/t) | | | AuCap (g/t) | | | |
|---|---|---|---|---|---|---|---|---|
| | | Mean | Max | CV | #Cap | Mean | Max | CV |
| 1 | 7,643 | 0.02 | 6.43 | 4.0 | 16 | 0.02 | 0.91 | 2.1 |
| 11 | 11,149 | 0.04 | 7.88 | 2.8 | 12 | 0.04 | 1.70 | 1.7 |
| 12 | 22,868 | 0.13 | 17.35 | 2.1 | 14 | 0.12 | 6.00 | 1.6 |
| 21 | 6,522 | 0.04 | 5.67 | 2.1 | 4 | 0.04 | 1.51 | 1.4 |
| 22 | 10,459 | 0.19 | 3.90 | 1.1 | 0 | 0.19 | 3.90 | 1.1 |
| 31 | 4,341 | 0.01 | 0.47 | 1.8 | 6 | 0.01 | 0.47 | 1.7 |
| 32 | 1,243 | 0.04 | 2.73 | 2.8 | 2 | 0.04 | 0.83 | 1.8 |
| | 64,225 | 0.05 | | | 54 | 0.05 | | |

| DomShell | Count | Ag (g/t) | | | AgCap (g/t) | | | |
|---|---|---|---|---|---|---|---|---|
| | | Mean | Max | CV | #Cap | Mean | Max | CV |
| 1 | 7,643 | 0.75 | 79.96 | 2.0 | 24 | 0.72 | 17.00 | 1.4 |
| 11 | 11,149 | 0.89 | 26.56 | 1.0 | 10 | 0.89 | 17.00 | 0.9 |
| 12 | 22,868 | 2.54 | 71.49 | 0.9 | 1 | 2.54 | 71.49 | 0.9 |
| 21 | 6,522 | 0.96 | 42.30 | 1.7 | 26 | 0.94 | 23.04 | 1.5 |
| 22 | 10,459 | 1.49 | 122.85 | 2.2 | 0 | 1.49 | 122.85 | 2.2 |
| 31 | 4,341 | 1.13 | 60.10 | 1.6 | 19 | 1.10 | 18.29 | 1.3 |
| 32 | 1,243 | 8.78 | 167.00 | 1.6 | 9 | 8.55 | 100.00 | 1.5 |
| | 64,225 | 0.87 | | | 89 | 0.86 | | |

**Ox**

| 0.1% CuEq IndicatorDomain | Count | Cu (%) | | | CuCap (%) | | | |
|---|---|---|---|---|---|---|---|---|
| | | Mean | Max | CV | #Cap | Mean | Max | CV |
| Outside | 5,549 | 0.04 | 0.78 | 1.3 | 0 | 0.04 | 0.78 | 1.3 |
| Inside | 8,539 | 0.22 | 1.78 | 0.7 | 0 | 0.22 | 1.78 | 0.7 |
| | 14,088 | 0.15 | | | 0 | 0.15 | | |

| 0.1% CuEq Indicator Domain | Count | Mo (%) | | | MoCap (%) | | | |
|---|---|---|---|---|---|---|---|---|
| | | Mean | Max | CV | # Cap | Mean | Max | CV |
| Outside | 5,549 | 0.003 | 0.181 | 2.4 | 9 | 0.003 | 0.060 | 2.1 |
| Inside | 8,539 | 0.023 | 0.276 | 1.0 | 2 | 0.023 | 0.276 | 1.0 |
| | 14,088 | 0.015 | | | 11 | 0.015 | | |

| 0.1% CuEq Indicator Domain | Count | Au (g/t) | | | AuCap (g/t) | | | |
|---|---|---|---|---|---|---|---|---|
| | | Mean | Max | CV | # Cap | Mean | Max | CV |
| Outside | 5,549 | 0.01 | 2.55 | 4.4 | 26 | 0.01 | 0.30 | 2.3 |
| Inside | 8,539 | 0.04 | 2.39 | 1.4 | 6 | 0.04 | 0.84 | 1.1 |
| | 14,088 | 0.03 | | | 32 | 0.03 | | |

| 0.1% CuEq Indicator Domain | Count | Ag (g/t) | | | AgCap (g/t) | | | |
|---|---|---|---|---|---|---|---|---|
| | | Mean | Max | CV | # Cap | Mean | Max | CV |
| Outside | 5,549 | 0.7 | 73.5 | 2.6 | 15 | 0.7 | 20.0 | 1.8 |
| Inside | 8,539 | 1.5 | 370.0 | 4.0 | 9 | 1.4 | 50.0 | 1.6 |
| | 14,088 | 1.2 | | | 24 | 1.1 | | |

## 14.6 Grade Variography

Analysis of the spatial continuity, of the composited data, was carried out using Supervisor® software. For Seel, directions of continuity were determined from variogram maps. The nugget effect and sill contributions were derived from down-hole experimental variograms followed by final model fitting on directional variogram plots. At Ox omnidirectional variograms were utilized due to the smaller dataset and the arcuate shape of the deposit. Again, nugget effect and sill contributions were derived from down-hole experimental variograms.

Initially all Seel and Ox, composites were used to generate variogram models of 0.1% CuEq grade indicators (Table 14-2). A second round of variography evaluated metal grade continuity inside and outside the interpolated 0.1% CuEq shells using capped composite data. Grade variogram models used for the Seel estimate are listed in Table 14-7.

**Table 14-7: Seel Grade Variogram Models**

| Metal | DomShell | Axis | Direction (dip/azimuth) | Nugget Effect | Spherical Component 1 | | Spherical Component 2 | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Sill | Range(m) | Sill | Range(m) |
| Cu | 1 | X | 50/290 | 0.24 | 0.52 | 70 | 0.24 | 215 |
| | | Y | 00/200 | | | 45 | | 145 |
| | | Z | 40/110 | | | 10 | | 45 |
| | 11 | X | 68/139 | 0.16 | 0.39 | 20 | 0.45 | 325 |
| | | Y | -20/169 | | | 40 | | 175 |
| | | Z | -10/075 | | | 30 | | 190 |
| | 12 | X | 75/160 | 0.14 | 0.36 | 50 | 0.50 | 255 |
| | | Y | -15/160 | | | 25 | | 110 |
| | | Z | 00/070 | | | 25 | | 75 |
| | 21 | X | -18/326 | 0.12 | 0.45 | 75 | 0.43 | 245 |
| | | Y | 58/024 | | | 55 | | 250 |
| | | Z | -25/065 | | | 15 | | 125 |
| | 22 | X | 28/351 | 0.13 | 0.33 | 50 | 0.54 | 190 |
| | | Y | 54/129 | | | 30 | | 90 |
| | | Z | -20/070 | | | 25 | | 120 |
| | 31 | X | 83/140 | 0.22 | 0.35 | 25 | 0.43 | 200 |
| | | Y | -05/095 | | | 20 | | 125 |
| | | Z | 05/005 | | | 20 | | 135 |
| | 32 | X | 74/189 | 0.14 | 0.40 | 20 | 0.46 | 90 |
| | | Y | 05/081 | | | 20 | | 90 |
| | | Z | 15/350 | | | 20 | | 60 |

| Metal | DomShell | Axis | Direction (dip/azimuth) | Nugget Effect | Spherical Component 1 | | Spherical Component 2 | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Sill | Range(m) | Sill | Range(m) |
| Mo | 1 | X | 63/055 | 0.20 | 0.41 | 10 | 0.39 | 175 |
| | | Y | 25/260 | | | 20 | | 80 |
| | | Z | 10/165 | | | 85 | | 175 |
| | 11 | X | 85/260 | 0.22 | 0.29 | 30 | 0.49 | 275 |
| | | Y | 00/170 | | | 10 | | 170 |
| | | Z | 05/080 | | | 35 | | 135 |
| | 12 | X | 45/190 | 0.26 | 0.24 | 10 | 0.50 | 250 |
| | | Y | -45/190 | | | 20 | | 230 |
| | | Z | 00/100 | | | 35 | | 165 |
| | 21 | X | 80/055 | 0.14 | 0.29 | 5 | 0.57 | 85 |
| | | Y | 00/145 | | | 20 | | 220 |
| | | Z | -10/055 | | | 50 | | 275 |
| | 22 | X | 83/355 | 0.15 | 0.18 | 15 | 0.67 | 700 zonal |
| | | Y | 05/130 | | | 20 | | 120 |
| | | Z | -05/040 | | | 30 | | 160 |
| | 31 | X | 15/119 | 0.12 | 0.38 | 45 | 0.50 | 105 |
| | | Y | -74/138 | | | 40 | | 115 |
| | | Z | -05/030 | | | 10 | | 85 |
| | 32 | X | 80/015 | 0.27 | 0.33 | 20 | 0.40 | 170 |
| | | Y | 00/105 | | | 10 | | 160 |
| | | Z | -10/015 | | | 15 | | 60 |

| Metal | DomShell | Axis | Direction (dip/azimuth) | Nugget Effect | Spherical Component 1 | | Spherical Component 2 | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Sill | Range(m) | Sill | Range(m) |
| Au | 1 | X | 74/053 | 0.23 | 0.48 | 50 | 0.29 | 215 |
| | | Y | 15/214 | | | 50 | | 210 |
| | | Z | -05/125 | | | 55 | | 100 |
| | 11 | X | 60/245 | 0.30 | 0.36 | 24 | 0.34 | 240 |
| | | Y | -04/162 | | | 70 | | 310 |
| | | Z | 30/075 | | | 35 | | 105 |
| | 12 | X | 72/198 | 0.28 | 0.43 | 30 | 0.29 | 400 |
| | | Y | -15/162 | | | 35 | | 240 |
| | | Z | 10/075 | | | 15 | | 200 |
| | 21 | X | -21/317 | 0.24 | 0.48 | 120 | 0.28 | 185 |
| | | Y | 52/017 | | | 45 | | 245 |
| | | Z | -30/060 | | | 65 | | 105 |
| | 22 | X | 54/006 | 0.14 | 0.29 | 25 | 0.57 | 235 |
| | | Y | 28/144 | | | 55 | | 175 |
| | | Z | -20/065 | | | 10 | | 175 |
| | 31 | X | 65/168 | 0.22 | 0.41 | 20 | 0.37 | 105 |
| | | Y | -05/088 | | | 50 | | 100 |
| | | Z | 25/000 | | | 15 | | 80 |
| | 32 | X | -05/108 | 0.19 | 0.49 | 40 | 0.32 | 75 |
| | | Y | -65/008 | | | 20 | | 65 |
| | | Z | 25/020 | | | 20 | | 40 |

| Metal | DomShell | Axis | Direction (dip/azimuth) | Nugget Effect | Spherical Component 1 | | Spherical Component 2 | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Sill | Range(m) | Sill | Range(m) |
| Ag | 1 | X | 69/048 | 0.19 | 0.57 | 40 | 0.24 | 90 |
| | | Y | 20/213 | | | 20 | | 50 |
| | | Z | -05/125 | | | 20 | | 40 |
| | 11 | X | 68/319 | 0.21 | 0.34 | 10 | 0.45 | 195 |
| | | Y | 20/169 | | | 10 | | 130 |
| | | Z | 10/075 | | | 15 | | 110 |
| | 12 | X | 72/051 | 0.18 | 0.40 | 15 | 0.42 | 250 |
| | | Y | 10/172 | | | 30 | | 255 |
| | | Z | -15/085 | | | 15 | | 95 |
| | 21 | X | 72/329 | 0.16 | 0.33 | 30 | 0.51 | 375 |
| | | Y | 10/208 | | | 10 | | 145 |
| | | Z | 15/115 | | | 20 | | 100 |
| | 22 | X | 79/048 | 0.29 | 0.39 | 25 | 0.32 | 200 |
| | | Y | 05/164 | | | 20 | | 90 |
| | | Z | -10/075 | | | 5 | | 30 |
| | 31 | X | 00/120 | 0.12 | 0.40 | 45 | 0.48 | 95 |
| | | Y | -75/210 | | | 60 | | 155 |
| | | Z | 15/030 | | | 15 | | 60 |
| | 32 | X | 70/020 | 0.10 | 0.43 | 25 | 0.47 | 100 |
| | | Y | 00/110 | | | 15 | | 65 |
| | | Z | -20/020 | | | 25 | | 50 |

At Ox, omnidirectional variograms were calculated and modelled inside and outside the CuEq indicator shell. The choice of variography method was based on the smaller size of the deposit, and corresponding smaller number of samples, as well on the curved orientation of Ox mineralization around the intrusive body making directional variography difficult to effectively implement. Ox variogram models are listed in Table 14-8.

**Table 14-8: Ox Grade Variogram Models**

| 0.1% CuEq Shell | Metal | Axis | Nugget Effect | Spherical Component 1 | | Spherical Component 2 | |
|---|---|---|---|---|---|---|---|
| | | | | Sill | Range(m) | Sill | Range(m) |
| Outside | Cu | X | 0.40 | 0.20 | 20 | 0.40 | 80 |
| | | Y | | | 20 | | 80 |
| | | Z | | | 20 | | 80 |
| | Mo | X | 0.39 | 0.29 | 10 | 0.32 | 60 |
| | | Y | | | 10 | | 60 |
| | | Z | | | 10 | | 60 |
| | Au | X | 0.34 | 0.27 | 10 | 0.39 | 35 |
| | | Y | | | 10 | | 35 |
| | | Z | | | 10 | | 35 |
| | Ag | X | 0.50 | 0.20 | 15 | 0.30 | 55 |
| | | Y | | | 15 | | 55 |
| | | Z | | | 15 | | 55 |

| 0.1% CuEq Shell | Metal | Axis | Nugget Effect | Spherical Component 1 | | Spherical Component 2 | |
|---|---|---|---|---|---|---|---|
| | | | | Sill | Range(m) | Sill | Range(m) |
| Inside | Cu | X | 0.27 | 0.47 | 20 | 0.26 | 85 |
| | | Y | | | 20 | | 85 |
| | | Z | | | 20 | | 85 |
| | Mo | X | 0.38 | 0.29 | 10 | 0.33 | 50 |
| | | Y | | | 10 | | 50 |
| | | Z | | | 10 | | 50 |
| | Au | X | 0.46 | 0.22 | 30 | 0.32 | 90 |
| | | Y | | | 30 | | 90 |
| | | Z | | | 30 | | 90 |
| | Ag | X | 0.50 | 0.20 | 10 | 0.30 | 55 |
| | | Y | | | 10 | | 55 |
| | | Z | | | 10 | | 55 |

## 14.7 Grade Interpolation

Grades for all metals were estimated by OK using Geovia GEMS® software. At Seel, sample selection for estimation was based on the modelled variogram directions. Ranges were proportional to the variogram long ranges, with the shortest search range set to 100 m. This ensured estimation of the majority of blocks within each DomShell (see Table 14-9). Seel grades were estimated by a minimum of six, a maximum of 16 and a maximum of six samples per hole. Grade interpolation, for all metals, was hard-bounded by the CuEq-shell and soft across directional domain boundaries.

**Table 14-9: Seel Grade Estimation Search Parameters**

| Metal | DomShell | Search Direction (dip/azimuth) | | | Axis Radii (m) | | |
|---|---|---|---|---|---|---|---|
| | | X | Y | Z | X | Y | Z |
| Cu | 1 | 50/290 | 00/200 | 40/110 | 480 | 320 | 100 |
| | 11 | 68/139 | -20/169 | -10/075 | 185 | 100 | 110 |
| | 12 | 75/160 | -15/160 | 00/070 | 245 | 125 | 100 |
| | 21 | -18/326 | 58/024 | -25/065 | 195 | 200 | 100 |
| | 22 | 28/351 | 54/129 | -20/070 | 210 | 100 | 135 |
| | 31 | 83/140 | -05/095 | 05/005 | 160 | 100 | 110 |
| | 32 | 74/189 | 05/081 | 15/350 | 150 | 150 | 100 |

| Metal | DomShell | Search Direction (dip/azimuth) | | | Axis Radii (m) | | |
|---|---|---|---|---|---|---|---|
| | | X | Y | Z | X | Y | Z |
| Mo | 1 | 63/055 | 25/260 | 10/165 | 220 | 100 | 220 |
| | 11 | 85/260 | 00/170 | 05/080 | 205 | 125 | 100 |
| | 12 | 45/190 | -45/190 | 00/100 | 150 | 140 | 100 |
| | 21 | 80/055 | 00/145 | -10/055 | 100 | 260 | 325 |
| | 22 | 83/355 | 05/130 | -05/040 | 585 | 100 | 135 |
| | 31 | 15/119 | -74/138 | -05/030 | 115 | 135 | 100 |
| | 32 | 80/015 | 00/105 | -10/015 | 285 | 265 | 100 |

| Metal | DomShell | Search Direction (dip/azimuth) | | | Axis Radii (m) | | |
|---|---|---|---|---|---|---|---|
| | | X | Y | Z | X | Y | Z |
| Au | 1 | 74/053 | 15/214 | -05/125 | 215 | 210 | 100 |
| | 11 | 60/245 | -04/162 | 30/075 | 230 | 295 | 100 |
| | 12 | 72/198 | -15/162 | 10/075 | 200 | 120 | 100 |
| | 21 | -21/317 | 52/017 | -30/060 | 175 | 235 | 100 |
| | 22 | 54/006 | 28/144 | -20/065 | 135 | 100 | 100 |
| | 31 | 65/168 | -05/088 | 25/000 | 130 | 125 | 100 |
| | 32 | -05/108 | -65/008 | 25/020 | 195 | 165 | 100 |

| Metal | DomShell | Search Direction (dip/azimuth) | | | Axis Radii (m) | | |
|---|---|---|---|---|---|---|---|
| | | X | Y | Z | X | Y | Z |
| Ag | 1 | 69/048 | 20/213 | -05/125 | 225 | 125 | 100 |
| | 11 | 68/319 | 20/169 | 10/075 | 175 | 120 | 100 |
| | 12 | 72/051 | 10/172 | -15/085 | 265 | 270 | 100 |
| | 21 | 72/329 | 10/208 | 15/115 | 375 | 145 | 100 |
| | 22 | 79/048 | 05/164 | -10/075 | 665 | 300 | 100 |
| | 31 | 00/120 | -75/210 | 15/030 | 160 | 260 | 100 |
| | 32 | 70/020 | 00/110 | -20/020 | 200 | 130 | 100 |

At Ox the estimation search was oriented to best-fit mineralization in the four directional domains (Figure 14-2); Ox search orientations and dimensions are listed in Table 14-10. Ox grades were estimated by a minimum of eight, a maximum of 24 and a maximum of six samples per hole. Grade interpolation, for all metals, was hard-bounded by the CuEq-shell and soft across directional domain boundaries.

**Table 14-10: Ox Grade Estimation Search Parameters**

| Metal | Directional Domain | Search Direction (dip/azimuth) | | | Axis Radii (m) | | |
|---|---|---|---|---|---|---|---|
| | | X | Y | Z | X | Y | Z |
| All | 1 | 00/117 | 68/027 | -22/027 | 120 | 120 | 48 |
| | 2 | 00/019 | -57/289 | 33/289 | 120 | 120 | 48 |
| | 3 | 00/090 | 84/000 | -06/000 | 120 | 120 | 48 |
| | 4 | 00/004 | -77/274 | 13/274 | 120 | 120 | 48 |

## 14.8 Density Assignment

Density values were assigned to Seel and Ox based on an average of available measurements. At Seel there were 4,081 density measurements that ranged between 1.96 and 4.51 and averaged 2.75 t/m$^3$. Removing spurious values resulted in 4,038 measurements ranging from 2.45 to 3.48 and averaging 2.74 t/m$^3$. A nearest neighbour model confirmed 2.74 t/m$^3$ as the (declustered) mean value at Seel.

For Ox, there were 1,054 density measurements ranging in value from 2.03 to 3.45 and averaging 2.69 t/m$^3$. Removing outlier values trimmed 10 entries from the data set and ranged from 2.50 to 3.02 with a mean of 2.69 t/m$^3$. Estimation of a nearest neighbour density model yielded an average rock density of 2.70 t/m$^3$ at Ox – the value this resource estimate used for density at Ox.

Overburden was assigned a density of 2.0 t/m$^3$. Final density was applied to blocks based on the weighted average rock and overburden volume, using the interpolated overburden surface described earlier in this section.

## 14.9 Model Validation

Estimated metal grades were validated using a variety of approaches. Block grades were compared visually to supporting drill data on section and plan maps. Results compared well; an example section through the Seel resource pit shows Cu block grades and assay data (see Figure 14-4).

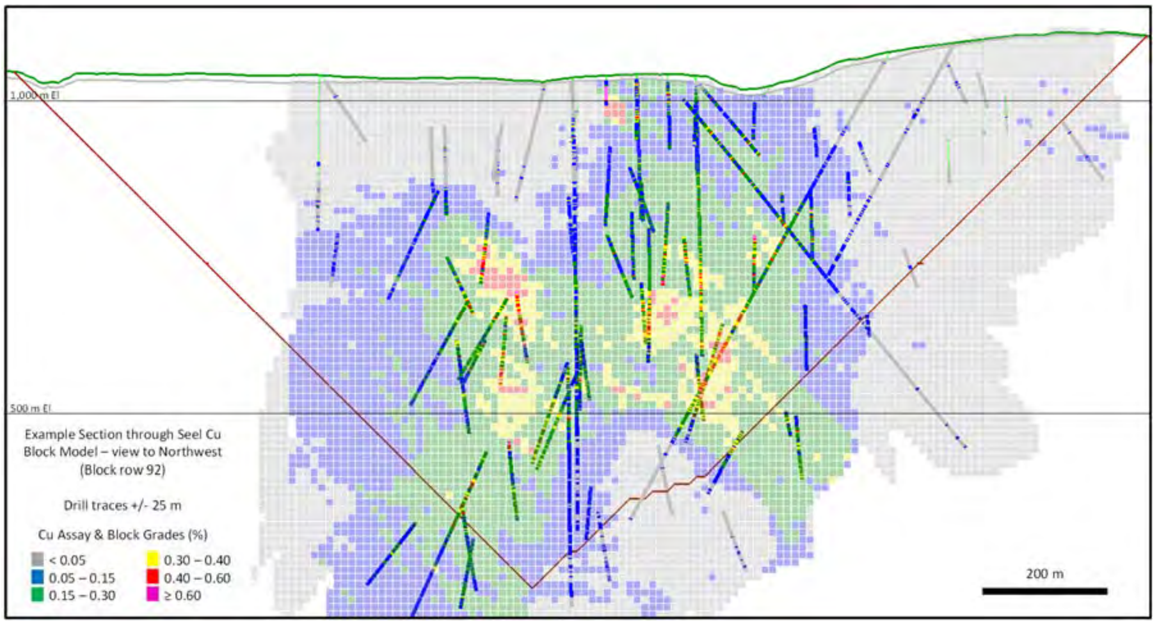
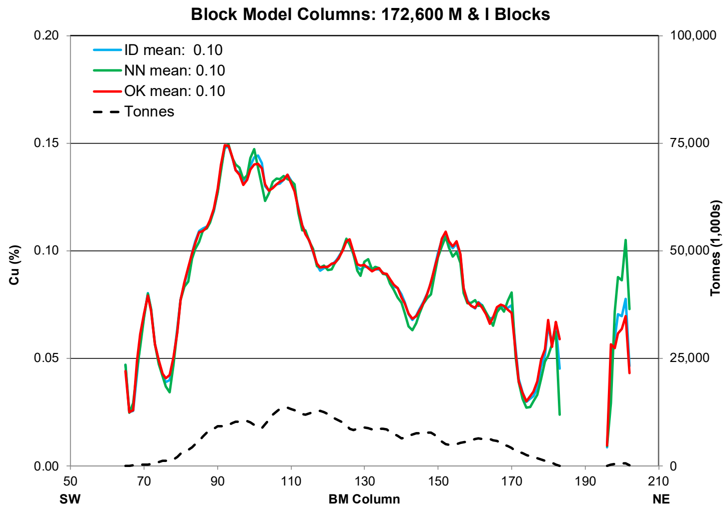
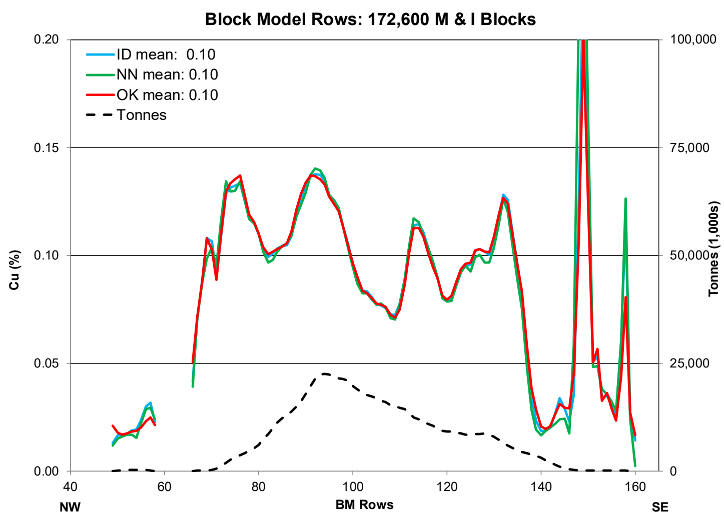



**Figure 14-4: Seel Example Section - Drill Hole Cu Assay and Block Grades**

Grades were also estimated by two other methods and results were compared globally and spatially by generating swath plots along rows, columns and levels of the block model. A nearest neighbour (NN) model was estimated using the same search strategy as the OK interpolation. To appropriately match block size and composite length, a set of bench composites was used for the Seel NN estimate. At Ox, where the block model extents are much smaller, the NN blocks were reduced in size to 6 x 6 x 2 m and the 2 metre composites were used.

Inverse distance squared models (ID2) were also estimated, using sample selection and search parameters consistent with the OK estimate, for all metals at Seel and Ox. All check model average grades agreed closely, at zero cut-off, indicating no bias. Example swath plots, comparing the Seel measured plus indicated kriged copper estimate to NN and ID2 results, are included as Figure 14-5. Review of all swath plots showed metal grades by OK estimation to be appropriately smooth as compared to the NN estimate.



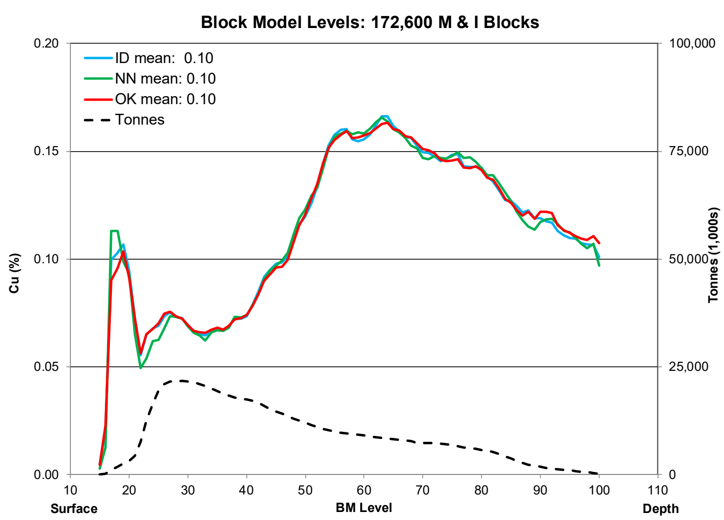




**Figure 14-5: Seel Cu Grade Swath Plots Comparing OK, ID and NN Estimates**

## 14.10 Resource Classification and Tabulation

Blocks were classified based on spatial parameters related to available drill data as well as on the generation of an optimized pit. At both deposits, measured resource blocks have a maximum nominal drill spacing of 40m and the third closest hole is within 60m of the block. Indicated blocks have a maximum drill spacing of 80m. Inferred blocks are the remainder estimated within the pit volume. The average distance to three holes was used to calculate the nominal drill spacing as: Spacing (m) = average distance to 3 holes x √2. A section showing drilling, relative to block classification, is included as Figure 14-6.

To ensure the resource meets the condition of "reasonable prospects of eventual economic extraction" the resource was constrained by a Whittle generated (3DS Geovia) pit for which the optimization parameters used are listed in Table 14-11. Including 2% dilution the resource NSR cut-off is C$8.27/t.

**Table 14-11: Pit Optimization Parameters**

| Metal | Metal Price | Process Recovery | Smelter Payable | Refining Charges |
|---|---|---|---|---|
| Cu | US$ 3.85/lb | 90% | 96% | US$ 0.05/lb |
| Mo | US$ 12.40/lb | 70% | 98.5% | $ 1,200/dmt Mo concentrate |
| Au | US$ 1,750/oz | 70% | 90% | US$ 5/oz |
| Ag | US$ 22/oz | 65% | 96% | US$ 0.50/oz |
| Exchange Rate: | 0.77 US$:CDN$ | | | |
| Mining Cost: | CDN$ 2.34 / tonne | | | |
| Process Cost: | CDN$ 8.11/ tonne - including G & A | | | |
| Pit slope: | 45° | | | |

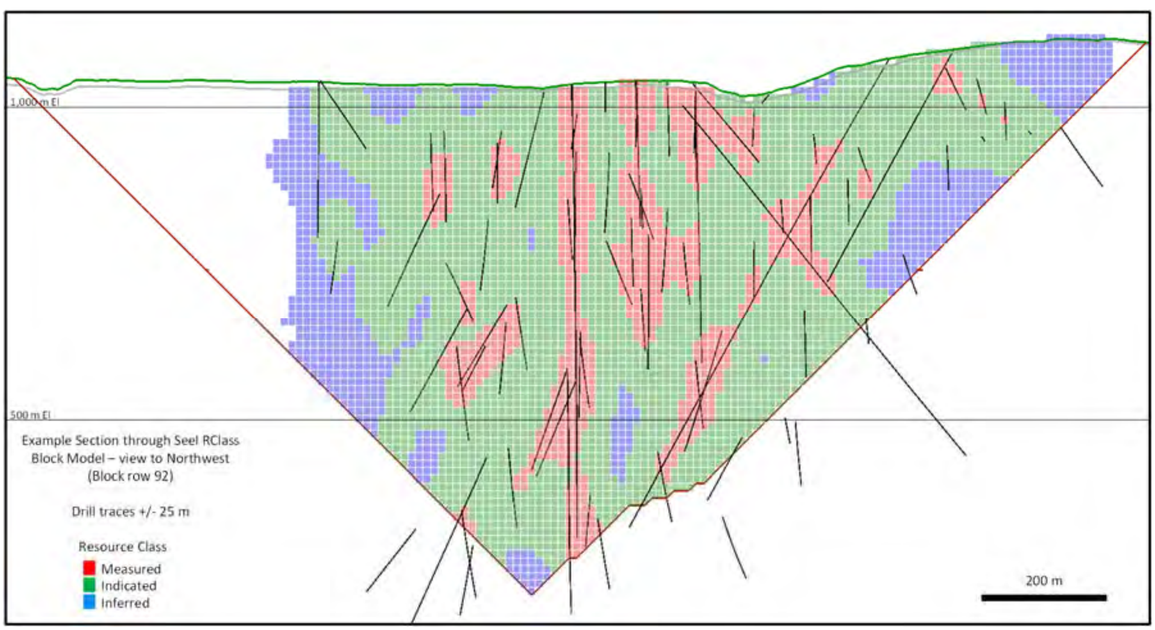



**Figure 14-6: Seel Example Section - Resource Classification**

The Ootsa Mineral Resource Estimate at a CDN$8.27 cut-off is presented in Table 14-12. Based on metal prices listed in Table 14-11 CuEq can be calculated and is used in resource tabulation below.

$$CuEq(\%) = Cu(\%) + 3.2208 \times Mo(\%) + 0.6630 \times Au (g/t) + 0.0083 \times Ag (g/t).$$

**Table 14-12: Ootsa Mineral Resource Estimate at CDN$8.27 NSR Cut-off**

| | | Grade | | | | | Gross Contained Metal | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Tonnage (Mt) | Cu (%) | Mo (%) | Au (g/t) | Ag (g/t) | CuEq (%) | Cu (Mlbs) | Mo (Mlbs) | Au (Moz) | Ag (Moz) | CuEq (Mlbs) |
| ***Seel*** | | | | | | | | | | | |
| Measured | 103.7 | 0.19 | 0.014 | 0.15 | 2.6 | 0.36 | 440 | 32 | 0.5 | 8.7 | 823 |
| Indicated | 276.1 | 0.16 | 0.017 | 0.12 | 2.0 | 0.31 | 974 | 105 | 1.1 | 18.2 | 1,898 |
| **Total M+I** | **379.8** | **0.17** | **0.016** | **0.13** | **2.2** | **0.32** | **1,414** | **137** | **1.6** | **26.9** | **2,721** |
| Inferred | 135.4 | 0.15 | 0.015 | 0.10 | 2.0 | 0.28 | 455 | 45 | 0.4 | 8.8 | 847 |
| ***Ox*** | | | | | | | | | | | |
| Measured | 30.1 | 0.24 | 0.026 | 0.04 | 1.4 | 0.36 | 157 | 17 | 0.0 | 1.4 | 237 |
| Indicated | 28.7 | 0.19 | 0.020 | 0.03 | 1.3 | 0.29 | 122 | 12 | 0.0 | 1.2 | 181 |
| **Total M+I** | **58.8** | **0.22** | **0.023** | **0.03** | **1.4** | **0.32** | **280** | **29** | **0.1** | **2.6** | **419** |
| Inferred | 2.4 | 0.13 | 0.011 | 0.03 | 1.1 | 0.20 | 7 | 1 | 0.0 | 0.1 | 10 |
| ***Total*** | | | | | | | | | | | |
| Measured | 133.8 | 0.20 | 0.017 | 0.13 | 2.4 | 0.36 | 597 | 49 | 0.5 | 10.1 | 1,060 |
| Indicated | 304.8 | 0.16 | 0.018 | 0.11 | 2.0 | 0.31 | 1,097 | 118 | 1.1 | 19.4 | 2,079 |
| **Total M+I** | **438.6** | **0.18** | **0.017** | **0.12** | **2.1** | **0.32** | **1,694** | **167** | **1.6** | **29.5** | **3,139** |
| Inferred | 137.7 | 0.15 | 0.015 | 0.10 | 2.0 | 0.28 | 462 | 46 | 0.4 | 8.9 | 857 |

To illustrate sensitivity to NSR cut-off, a range of higher NSR cut-offs are included in Table 14-13. Table 14-13 also provides a resource breakdown by spatial domain within the Seel Deposit; locations of the Seel domains are illustrated in Figure 14-7.

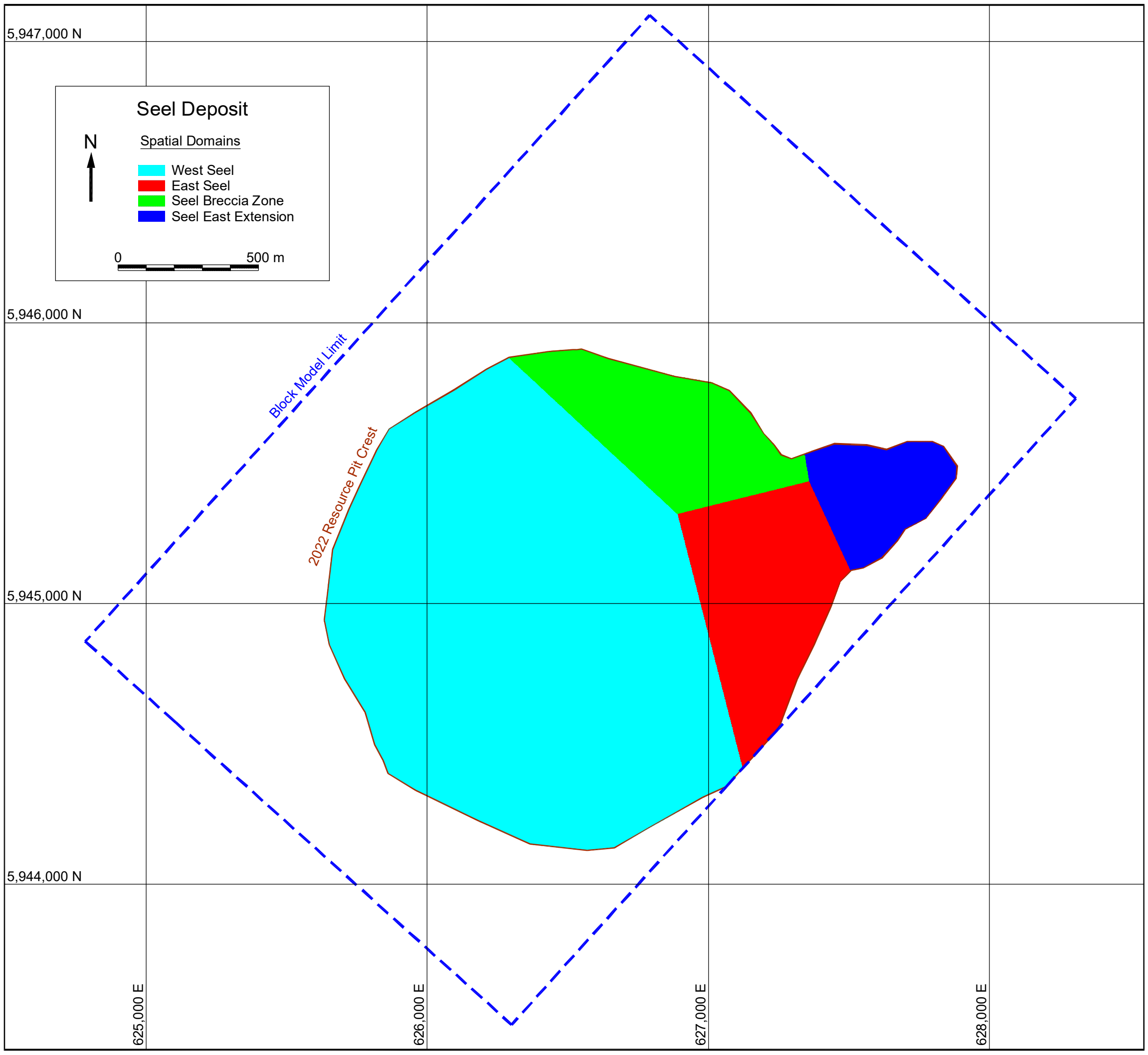



**Figure 14-7: Seel Spatial Domains**

**Table 14-13: Total Ootsa Estimate at Range of NSR Cut-offs**

Seel West

| Cut-off ($ NSR) | Seel West - Measured | | | | | | Seel West - Indicated | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Tonnes (Mt) | Cu (%) | Mo (%) | Au (g/t) | Ag (g/t) | CuEq (%) | Tonnes (Mt) | Cu (%) | Mo (%) | Au (g/t) | Ag (g/t) | CuEq (%) |
| 8.27 | 70.9 | 0.18 | 0.020 | 0.13 | 2.7 | 0.35 | 247.8 | 0.16 | 0.019 | 0.12 | 2.1 | 0.32 |
| 10.00 | 68.8 | 0.18 | 0.020 | 0.13 | 2.8 | 0.36 | 239.4 | 0.17 | 0.019 | 0.12 | 2.1 | 0.33 |
| 12.00 | 65.6 | 0.19 | 0.020 | 0.14 | 2.8 | 0.37 | 225.1 | 0.17 | 0.020 | 0.13 | 2.2 | 0.34 |
| 15.00 | 59.2 | 0.20 | 0.021 | 0.15 | 3.0 | 0.39 | 197.8 | 0.18 | 0.021 | 0.14 | 2.3 | 0.36 |

| Cut-off ($ NSR) | Seel West - Measured + Indicated | | | | | | Seel West - Inferred | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Tonnes (Mt) | Cu (%) | Mo (%) | Au (g/t) | Ag (g/t) | CuEq (%) | Tonnes (Mt) | Cu (%) | Mo (%) | Au (g/t) | Ag (g/t) | CuEq (%) |
| 8.27 | 318.7 | 0.17 | 0.019 | 0.12 | 2.2 | 0.33 | 123.2 | 0.15 | 0.016 | 0.10 | 2.0 | 0.29 |
| 10.00 | 308.3 | 0.17 | 0.019 | 0.13 | 2.3 | 0.33 | 118.0 | 0.16 | 0.016 | 0.10 | 2.0 | 0.29 |
| 12.00 | 290.7 | 0.18 | 0.020 | 0.13 | 2.3 | 0.35 | 109.2 | 0.16 | 0.017 | 0.11 | 2.1 | 0.31 |
| 15.00 | 257.0 | 0.19 | 0.021 | 0.14 | 2.4 | 0.37 | 93.1 | 0.18 | 0.018 | 0.12 | 2.1 | 0.33 |

**Seel East**

| Cut-off | Seel East - Measured | | | | | | Seel East - Indicated | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ($ NSR) | Tonnes (Mt) | Cu (%) | Mo (%) | Au (g/t) | Ag (g/t) | CuEq (%) | Tonnes (Mt) | Cu (%) | Mo (%) | Au (g/t) | Ag (g/t) | CuEq (%) |
| 8.27 | 28.2 | 0.21 | 0.003 | 0.22 | 1.5 | 0.37 | 24.6 | 0.13 | 0.007 | 0.10 | 1.7 | 0.24 |
| 10.00 | 27.0 | 0.21 | 0.003 | 0.23 | 1.5 | 0.38 | 22.1 | 0.14 | 0.007 | 0.11 | 1.8 | 0.25 |
| 12.00 | 25.1 | 0.22 | 0.003 | 0.24 | 1.5 | 0.40 | 18.6 | 0.15 | 0.007 | 0.12 | 1.9 | 0.27 |
| 15.00 | 21.7 | 0.24 | 0.002 | 0.26 | 1.6 | 0.44 | 12.9 | 0.18 | 0.007 | 0.13 | 2.2 | 0.31 |

| Cut-off | Seel East - Measured + Indicated | | | | | | Seel East - Inferred | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ($ NSR) | Tonnes (Mt) | Cu (%) | Mo (%) | Au (g/t) | Ag (g/t) | CuEq (%) | Tonnes (Mt) | Cu (%) | Mo (%) | Au (g/t) | Ag (g/t) | CuEq (%) |
| 8.27 | 52.8 | 0.17 | 0.005 | 0.17 | 1.6 | 0.31 | 5.2 | 0.09 | 0.017 | 0.07 | 0.8 | 0.20 |
| 10.00 | 49.2 | 0.18 | 0.005 | 0.17 | 1.6 | 0.32 | 4.2 | 0.10 | 0.018 | 0.07 | 0.8 | 0.22 |
| 12.00 | 43.7 | 0.19 | 0.005 | 0.19 | 1.7 | 0.35 | 3.2 | 0.11 | 0.021 | 0.08 | 0.9 | 0.24 |
| 15.00 | 34.6 | 0.22 | 0.004 | 0.21 | 1.8 | 0.39 | 1.6 | 0.15 | 0.023 | 0.09 | 0.9 | 0.29 |

**Seel Breccia Zone**

| Cut-off | Seel Breccia Zone - Measured | | | | | | Seel Breccia Zone - Indicated | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ($ NSR) | Tonnes (Mt) | Cu (%) | Mo (%) | Au (g/t) | Ag (g/t) | CuEq (%) | Tonnes (Mt) | Cu (%) | Mo (%) | Au (g/t) | Ag (g/t) | CuEq (%) |
| 8.27 | 4.5 | 0.31 | 0.001 | 0.04 | 8.2 | 0.41 | 2.2 | 0.13 | 0.007 | 0.06 | 3.4 | 0.21 |
| 10.00 | 3.9 | 0.34 | 0.001 | 0.05 | 9.1 | 0.45 | 1.5 | 0.15 | 0.008 | 0.06 | 4.1 | 0.25 |
| 12.00 | 3.5 | 0.38 | 0.001 | 0.05 | 9.9 | 0.50 | 0.9 | 0.21 | 0.008 | 0.07 | 5.7 | 0.33 |
| 15.00 | 2.9 | 0.42 | 0.001 | 0.05 | 10.9 | 0.55 | 0.5 | 0.31 | 0.005 | 0.07 | 8.3 | 0.44 |

| Cut-off | Seel Breccia Zone - Measured + Indicated | | | | | | Seel Breccia Zone - Inferred | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ($ NSR) | Tonnes (Mt) | Cu (%) | Mo (%) | Au (g/t) | Ag (g/t) | CuEq (%) | Tonnes (Mt) | Cu (%) | Mo (%) | Au (g/t) | Ag (g/t) | CuEq (%) |
| 8.27 | 6.7 | 0.25 | 0.003 | 0.05 | 6.7 | 0.35 | 0.7 | 0.07 | 0.002 | 0.09 | 1.1 | 0.14 |
| 10.00 | 5.5 | 0.29 | 0.003 | 0.05 | 7.7 | 0.40 | 0.4 | 0.07 | 0.002 | 0.10 | 1.4 | 0.16 |
| 12.00 | 4.3 | 0.35 | 0.002 | 0.05 | 9.1 | 0.46 | 0.1 | 0.08 | 0.003 | 0.11 | 2.3 | 0.18 |
| 15.00 | 3.4 | 0.41 | 0.001 | 0.05 | 10.5 | 0.53 | 0.0 | 0.07 | 0.004 | 0.21 | 1.2 | 0.22 |

**Seel East Extension**

| Cut-off | Seel East Ext. - Measured | | | | | | Seel East Ext. - Indicated | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ($ NSR) | Tonnes (Mt) | Cu (%) | Mo (%) | Au (g/t) | Ag (g/t) | CuEq (%) | Tonnes (Mt) | Cu (%) | Mo (%) | Au (g/t) | Ag (g/t) | CuEq (%) |
| 8.27 | 0.1 | 0.13 | 0.005 | 0.09 | 0.8 | 0.22 | 1.5 | 0.17 | 0.004 | 0.15 | 3.2 | 0.31 |
| 10.00 | 0.1 | 0.14 | 0.005 | 0.10 | 0.8 | 0.23 | 1.3 | 0.20 | 0.004 | 0.15 | 3.6 | 0.34 |
| 12.00 | 0.1 | 0.16 | 0.005 | 0.10 | 0.8 | 0.25 | 1.2 | 0.21 | 0.004 | 0.15 | 3.9 | 0.36 |
| 15.00 | 0.0 | 0.19 | 0.005 | 0.11 | 0.8 | 0.29 | 0.9 | 0.25 | 0.004 | 0.17 | 4.9 | 0.42 |
| | 0.0 | 0.00 | 0.000 | 0.00 | 0.0 | | 0.0 | 0.00 | 0.000 | 0.00 | 0.0 | |

| Cut-off | Seel East Ext. - Measured + Indicated | | | | | | Seel East Ext. - Inferred | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ($ NSR) | Tonnes (Mt) | Cu (%) | Mo (%) | Au (g/t) | Ag (g/t) | CuEq (%) | Tonnes (Mt) | Cu (%) | Mo (%) | Au (g/t) | Ag (g/t) | CuEq (%) |
| 8.27 | 1.6 | 0.17 | 0.004 | 0.14 | 3.0 | 0.30 | 6.3 | 0.20 | 0.003 | 0.11 | 4.1 | 0.31 |
| 10.00 | 1.4 | 0.19 | 0.004 | 0.15 | 3.4 | 0.33 | 5.7 | 0.22 | 0.003 | 0.11 | 4.4 | 0.34 |
| 12.00 | 1.2 | 0.21 | 0.004 | 0.15 | 3.8 | 0.36 | 4.8 | 0.24 | 0.003 | 0.11 | 4.9 | 0.37 |
| 15.00 | 0.9 | 0.25 | 0.004 | 0.17 | 4.7 | 0.41 | 3.8 | 0.28 | 0.004 | 0.12 | 5.7 | 0.42 |

**Ox**

| Cut-off | Ox - Measured | | | | | | Ox - Indicated | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ($ NSR) | Tonnes (Mt) | Cu (%) | Mo (%) | Au (g/t) | Ag (g/t) | CuEq (%) | Tonnes (Mt) | Cu (%) | Mo (%) | Au (g/t) | Ag (g/t) | CuEq (%) |
| 8.27 | 30.1 | 0.24 | 0.026 | 0.04 | 1.4 | 0.36 | 28.7 | 0.19 | 0.020 | 0.03 | 1.3 | 0.29 |
| 10.00 | 29.6 | 0.24 | 0.026 | 0.04 | 1.5 | 0.36 | 27.5 | 0.20 | 0.020 | 0.03 | 1.3 | 0.29 |
| 12.00 | 28.5 | 0.25 | 0.027 | 0.04 | 1.5 | 0.37 | 25.0 | 0.21 | 0.021 | 0.03 | 1.4 | 0.31 |
| 15.00 | 26.3 | 0.26 | 0.028 | 0.04 | 1.5 | 0.39 | 21.1 | 0.22 | 0.023 | 0.04 | 1.5 | 0.33 |

| Cut-off | Ox - Measured+Indicated | | | | | | Ox - Indicated | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ($ NSR) | Tonnes (Mt) | Cu (%) | Mo (%) | Au (g/t) | Ag (g/t) | CuEq (%) | Tonnes (Mt) | Cu (%) | Mo (%) | Au (g/t) | Ag (g/t) | CuEq (%) |
| 8.27 | 58.8 | 0.22 | 0.023 | 0.03 | 1.4 | 0.32 | 2.4 | 0.13 | 0.011 | 0.03 | 1.1 | 0.20 |
| 10.00 | 57.1 | 0.22 | 0.023 | 0.04 | 1.4 | 0.33 | 2.1 | 0.14 | 0.011 | 0.03 | 1.1 | 0.21 |
| 12.00 | 53.6 | 0.23 | 0.024 | 0.04 | 1.4 | 0.34 | 1.7 | 0.15 | 0.013 | 0.03 | 1.2 | 0.22 |
| 15.00 | 47.5 | 0.24 | 0.026 | 0.04 | 1.5 | 0.36 | 0.9 | 0.17 | 0.017 | 0.04 | 1.3 | 0.26 |

Total

| Cut-off ($ NSR) | Total - Measured | | | | | | Total - Indicated | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Tonnes (Mt) | Cu (%) | Mo (%) | Au (g/t) | Ag (g/t) | CuEq (%) | Tonnes (Mt) | Cu (%) | Mo (%) | Au (g/t) | Ag (g/t) | CuEq (%) |
| 8.27 | 133.8 | 0.20 | 0.017 | 0.13 | 2.4 | 0.36 | 304.8 | 0.16 | 0.018 | 0.11 | 2.0 | 0.31 |
| 10.00 | 129.4 | 0.21 | 0.017 | 0.13 | 2.4 | 0.37 | 291.9 | 0.17 | 0.018 | 0.11 | 2.0 | 0.32 |
| 12.00 | 122.8 | 0.21 | 0.018 | 0.13 | 2.5 | 0.38 | 270.8 | 0.18 | 0.019 | 0.12 | 2.1 | 0.33 |
| 15.00 | 110.2 | 0.23 | 0.019 | 0.14 | 2.6 | 0.40 | 233.2 | 0.19 | 0.020 | 0.13 | 2.2 | 0.35 |

| Cut-off ($ NSR) | Total - Measured+Indicated | | | | | | Total - Indicated | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Tonnes (Mt) | Cu (%) | Mo (%) | Au (g/t) | Ag (g/t) | CuEq (%) | Tonnes (Mt) | Cu (%) | Mo (%) | Au (g/t) | Ag (g/t) | CuEq (%) |
| 8.27 | 438.6 | 0.18 | 0.017 | 0.12 | 2.1 | 0.32 | 137.7 | 0.15 | 0.015 | 0.10 | 2.0 | 0.28 |
| 10.00 | 421.4 | 0.18 | 0.018 | 0.12 | 2.1 | 0.33 | 130.3 | 0.16 | 0.016 | 0.10 | 2.1 | 0.29 |
| 12.00 | 393.6 | 0.19 | 0.018 | 0.12 | 2.2 | 0.35 | 119.0 | 0.17 | 0.016 | 0.10 | 2.1 | 0.30 |
| 15.00 | 343.4 | 0.20 | 0.020 | 0.13 | 2.3 | 0.37 | 99.5 | 0.18 | 0.018 | 0.11 | 2.2 | 0.33 |

## 15.0: Mineral Reserve Estimates

Not applicable to this report.

## 16.0: Mining Methods

Not applicable to this report.

## 17.0: Recovery Methods

Not applicable to this report.

## 18.0: Project Infrastructure

Not applicable to this report.

## 19.0: Market Studies and Contracts

Not applicable to this report.

## 20.0: Environmental Studies, Permitting and Social or Community Impact

Not applicable to this report.

## 21.0: Capital and Operating Costs

Not applicable to this report.

## 22.0: Economic Analysis

Not applicable to this report.

# 23.0 ADJACENT PROPERTIES

The Ootsa property is located in a region that is well endowed with metallic resources and contains several mineral deposits and past-producing mines dating back to the early part of the 20th century. Notable past producers include the Huckleberry Mine (active from 1997-2016) and the Emerald Glacier Mine (active from 1951-1968). Refer to Figures 1-2 and 23-1 for locations of mineral occurrences. A summary of early mineral exploration in the region can be found in Section 6: History.

## 23.1 Past-Producing Mines

### Huckleberry Mine

The Huckleberry Mine property is located adjacent to the Ootsa Property to the northwest. It is an open pit copper/molybdenum mine owned by Huckleberry Mines Ltd., a wholly owned subsidiary of Imperial Metals Corporation. The mine produced copper and molybdenum, with accessory but lesser quantities of silver and gold from an open pit mine-mill complex. Production started in 1997 and was expected to produce 40 million pounds of copper in 2013. Mining operations at Huckleberry ceased in August of 2016, and the mine remains on Care and Maintenance status as of the effective date of this report.

In 2013, the Main Zone Pit at Huckleberry contained a measured plus indicated mineral resource containing 180.7 million tonnes with grades of 0.315% copper and 0.006% molybdenum, plus an inferred mineral resource of 48.0 million tonnes with grades of 0.263% copper and 0.003% molybdenum (Christensen et al., 2011). Within these resources Huckleberry Mines has defined a reserve of 39.7 million tonnes at a grade of 0.343% copper and 0.009% molybdenum (using a 0.20% copper cutoff grade) that is contained with a pit shell known as the Main Zone Optimization (MZO) Pit. The MZO was originally projected to extend the mine life from 2014 to 2021 prior to the 2016 decision to suspend production at the mine (https://www.imperialmetals.com/our-operations/huckleberry-mine/overview). The Authors have not verified the mineral resources or reserves for the Huckleberry mine. The information is taken from a Technical Report by Christensen et al. (2011) and is stated here for reference only.

### Emerald Glacier Mine

In 1915 Ag-Zn-Pb veins were discovered at Emerald Glacier, with underground exploration commencing at the end of World War I. The mine was active between 1951 and 1968, producing 8,300 t of ore grading 311 g/t Ag, 9.2% Pb and 10.7% Zn (https://minfile.gov.bc.ca/report.aspx?f=PDF&r=Minfile_Detail.rpt&minfilno=093E++001). These figures are historical in nature, predate the implementation of NI43-101, and therefore cannot be relied upon and are presented for information purposes only.

The last reported work in the Emerald Glacier area occurred in 2012, involving excavator trenching and the completion of 30 diamond drill holes. Twenty-six drill holes in the targeted the Miya vein, two holes targeted the Marmot Zone, and two holes targeted the gap between the two zones. Drilling yielded elevated values in gold, silver, copper, lead and zinc. Significant assay results from drill core values that ranged up to 7.03 grams per tonne gold, with 37 results greater than 1 gram per tonne gold; silver ranged to a maximum of 1180 grams per tonne silver, with 19 results of greater than 200 grams per tonne silver (BC Assessment Report 34241). Excavator trenching was undertaken on the "Marmot Zone" where drusy quartz veining with pyrolusite coating had previously been observed in the debris pile. Sheared, broken, limonitized quartz veining was exposed, striking 125 degrees, surrounded by strongly altered wallrock. About 8 metres of vein length was exposed.

## 23.2 Berg Property

The Berg property is contiguous with the Ootsa property and comprises 92 mineral claims totaling 34,798 hectares (Figure 23-1). In December of 2020, Surge Copper Corp. entered into a joint venture project with Thompson Creek Metals Company Inc. (a wholly-owned subsidiary of Centerra Gold Inc.) whereby Surge can acquire a 70% interest in the Berg property.

The Berg property contains several advanced prospects, Including the Berg deposit (BC Minfile No. 093E 046), the Bergette prospect (BC Minfile No. 093E 052), and the Sylvia prospect (BC Minfile No. 093E 089). Documented mineral showings on the property include polymetallic veins at Tahtsa Range (BC Minfile No. 093E 007), the Sky showing (BC Minfile No. 093E 098), and Lead Empire (BC Minfile No. 093E 008), which is located adjacent to the Berg deposit. Porphyry Cu-Mo showings include the Tara (BC Minfile No. 093E 091) and "CS" (BC Minfile No. 093E 090) showings located near the Sibola Forest Service Road in the northern part of the Berg claim block.

**Berg Deposit**

The Berg deposit is located approximately 29 km northwest of the Seel deposit and 22 km northwest of the Huckleberry Mine. Mineralization at the Berg deposit forms an annular shape around a broadly cylindrical, multi-phase intrusive stock known as the Berg Stock. The historic resources comprise two highly fractured mineralized zones in the northeast and southern portions of the annulus. Hypogene mineralization is characterized by several generations of veining, and a well-developed supergene enrichment blanket is superimposed on the hypogene mineralization (Surge Copper news release dated December 15, 2020).

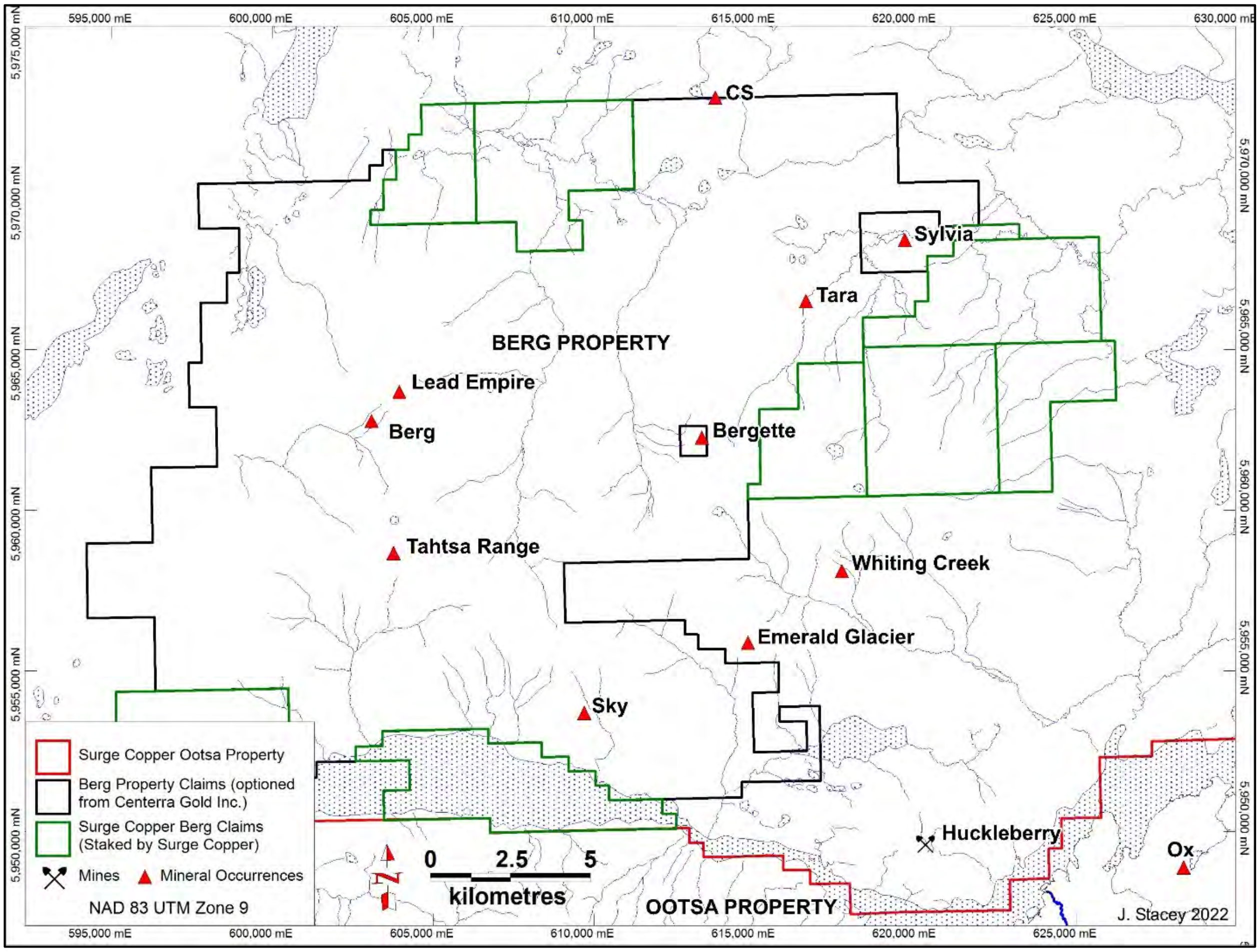



Figure 23-1: Berg Property and significant mineral occurrences.

A total of 53,754 metres over 215 holes have been completed on the Berg deposit by prior operators including Kennecott, Placer Dome, Terrane Metals, and Thompson Creek Metals. Drilling in most areas of the Berg deposit remains wide-spaced and mineralization is open to depth and outward from the Berg Stock. The deposit has been shown to have excellent vertical continuity with significant mineralization intersected greater than 550m below surface.

In September of 2021, Surge Copper completed 9 diamond drill holes at the Berg deposit for a total of 2,722 m drilled. The holes were designed to verify historical drill results and to confirm geological features identified by previous operators. In general, geological information including lithology, alteration, and mineral tenor was comparable with historical results, and Surge personnel were able to verify the presence of a supergene enrichment zone in the upper part of the deposit and hypogene mineralization below this level.

On March 17, 2021, Surge Copper announced an updated independent resource estimate prepared by Tetra Tech for the Berg deposit. Highlights of the resource estimate include:

- Total Measured and Indicated resources of 610.0 million tonnes grading 0.38% copper equivalent (see Table 23-1, Note 1)
- Measured resource containing 207.2 million tonnes grading 0.45% copper equivalent
- Pit constrained resource with total strip ratio of 1.85:1
- High-quality resource estimate with 96% contained within the Measured and Indicated categories
- Deposit remains open with good expansion potential laterally and at depth

**Table 23-1: Mineral Resource Estimate for the Berg Deposit with Effective Date of March 9, 2021**

| Material Type | Resource Category | Cut-Off (CuEq %) | Tonnes | Cu | Mo | Ag | CuEq | | Cu | Mo | Ag | CuEq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | (Mt) | (%) | (%) | (g/t) | (%) | | (Mlbs) | (Mlbs) | (Moz) | (Mlbs) |
| | | | | | | | | | | | | |
| Supergene | Measured | 0.2 | 86.9 | 0.41 | 0.03 | 2.46 | 0.50 | | 789 | 52 | 6.9 | 960 |
| | Indicated | 0.2 | 88.5 | 0.29 | 0.02 | 2.67 | 0.37 | | 572 | 43 | 7.6 | 724 |
| | Measured & Indicated | 0.2 | 175.4 | 0.35 | 0.02 | 2.57 | 0.44 | | 1,362 | 95 | 14.5 | 1,685 |
| | Inferred | 0.2 | 7.2 | 0.23 | 0.01 | 4.26 | 0.29 | | 37 | 2 | 1.0 | 47 |
| | | | | | | | | | | | | |
| Hypogene | Measured | 0.2 | 120.3 | 0.28 | 0.04 | 3.42 | 0.41 | | 752 | 97 | 13.2 | 1,098 |
| | Indicated | 0.2 | 314.1 | 0.22 | 0.03 | 3.10 | 0.34 | | 1,537 | 226 | 31.3 | 2,343 |
| | Measured & Indicated | 0.2 | 434.3 | 0.24 | 0.03 | 3.19 | 0.36 | | 2,289 | 323 | 44.6 | 3,441 |
| | Inferred | 0.2 | 20.8 | 0.22 | 0.02 | 3.57 | 0.30 | | 101 | 8 | 2.4 | 138 |
| | | | | | | | | | | | | |
| Leachate | Measured | 0.2 | 0.0 | 0.04 | 0.09 | 5.62 | 0.21 | | 0 | 0 | 0.0 | 0 |
| | Indicated | 0.2 | 0.2 | 0.14 | 0.12 | 2.37 | 0.25 | | 1 | 1 | 0.0 | 1 |
| | Measured & Indicated | 0.2 | 0.2 | 0.13 | 0.12 | 2.41 | 0.25 | | 1 | 1 | 0.0 | 1 |
| | Inferred | 0.2 | 0.1 | 0.11 | 0.09 | 6.13 | 0.21 | | 0 | 0 | 0.0 | 0 |
| | | | | | | | | | | | | |
| Total | Measured | 0.2 | 207.2 | 0.34 | 0.03 | 3.0 | 0.45 | | 1,541 | 149 | 20.1 | 2,058 |

| Material Type | Resource Category | Cut-Off (CuEq %) | Tonnes | Cu | Mo | Ag | CuEq | | Cu | Mo | Ag | CuEq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Indicated | 0.2 | 402.8 | 0.24 | 0.03 | 3.0 | 0.35 | | 2,110 | 270 | 39.0 | 3,069 |
| | Measured & Indicated | 0.2 | 610.0 | 0.27 | 0.03 | 3.0 | 0.38 | | 3,651 | 419 | 59.1 | 5,126 |
| | Inferred | 0.2 | 28.1 | 0.22 | 0.02 | 3.8 | 0.30 | | 138 | 11 | 3.4 | 185 |

Notes:

1) Copper Equivalent (CuEq) calculated using metal prices of $3.10/lbs Cu, $10.00/lb Mo, and $20/oz Ag. Recoveries were applied to correspond with estimated individual metal recoveries based on limited metallurgical testwork for production of a copper and molybdenum concentrate: supergene zone (Cu = 73%, Mo = 61%, and Ag = 52%), hypogene zone (Cu = 81%, Mo = 71%, and Ag = 67%), leachate zone (Cu = 0%, Mo = 61%, and Ag = 52%). Smelter loss was not applied.

2) A cut-off value of 0.2% CuEq was used as the base case for reporting mineral resources that are subject to open pit potential. The resource block model has been constrained by a conceptual open pit shell, however, economic viability can only be assessed through the completion of engineering studies defining reserves including PFS and FS. The CIM Definition Standards (May 10, 2014) were followed for classification of Mineral Resources. It cannot be assumed that all or any part of Inferred Mineral Resources will be upgraded to Indicated or Measured as a result of continued exploration.

3) Dry bulk density has been estimated based on 2,996 in situ specific gravity measurements collected between 2007 and 2011. Values were applied by geology model domain (n = 18) representing the weathering profiles and major lithological units; values ranged from 2.38 t/m$^3$ to 2.74 t/m$^3$.

4) There are no known legal, political, unnatural environmental, or other risks that could materially affect the potential development of the mineral resources.

5) All numbers are rounded. Overall numbers may not be exact due to rounding.

Numerous metallurgical test programs have been conducted on mineralization at Berg, with a focus on developing a flowsheet to produce copper and molybdenum concentrates from both supergene and hypogene composite samples. Historical work has demonstrated that conventional flotation processes, comprised of primary grinding, rougher flotation, bulk rougher concentrate regrind, and three stage bulk cleaner flotation followed by conventional copper and molybdenum separation, can be used to produce marketable copper and molybdenum concentrates.

The Authors have not independently verified the updated resource estimate for the Berg deposit. The data presented here is derived from a Surge Copper news release dated March 17, 2021, and a Technical Report by Norton, Huang, and Lui (2021) which is available on the SEDAR website (www.sedar.com) and is presented for information purposes only.

**Bergette Prospect**

The Bergette prospect is located 10 kilometres east of Berg and 14 km northwest of the Huckleberry Mine. Prior exploration work has outlined a 2 km by 2 km copper-in-soil anomaly straddling the interior margins of an intrusive magnetic anomaly that remains open to the east. Historical shallow drilling in the southwestern and northwestern corners of the soil anomaly intercepted porphyry mineralization, including 0.29% Cu, 0.011% Mo, and 0.6 g/t Ag over 70 metres and 0.32% Cu and 0.010% Mo over 64 metres with both potassic alteration and grades appearing to increase with depth. An AeroTEM survey completed over the area in 2010 also shows an EM geophysical anomaly comparable in magnitude and scale to the signature over the Berg deposit area.

One type of mineralization is associated with a breccia zone in the Sibola Stock where molybdenite bearing quartz occurs between breccia fragments and vugs contain calcite, pyrite, chalcopyrite, magnetite, epidote, biotite, chalcocite, and zeolites. The other type of mineralization is widespread on the west side of the stock and is comprised of pyrite, chalcopyrite, and minor molybdenite filling fractures with quartz and adularia. Sericitic alteration envelopes these fractures and the zone, approximately 6.5 square kilometres, is pervasively oxidized (https://minfile.gov.bc.ca/Summary.aspx?minfilno=093E%20%20052).

The Authors have not independently verified the historical results of drilling at Bergette, nor have they visited the property. The information is presented for reference only. Surge Copper has indicated they intend to complete a program of soil sampling, geological mapping, and diamond drilling on the Bergette prospect in the summer of 2022.

**Sylvia Prospect**

The Sylvia prospect is located 17 kilometres east-northeast of the Berg deposit and 19 km north of the Huckleberry Mine. The mineralization has been essentially identified by a single 1974 drillhole (S-8). The drillhole is at the inside edge of a crescent-shaped pyritic zone that has a maximum width of 400 to 500 metres and an arc length of approximately 2000 metres. This zone, which contains 1 to 10 per cent pyrite as fracture fillings and disseminations, straddles the south contact of the granodiorite stock. Volcanics adjacent to the stock are variably hornfelsed and locally cut by numerous fine-grained monzonite/quartz monzonite dikes. Porphyry-style copper-molybdenum mineralization occurs on the south edge of a hornblende-biotite granodiorite ± quartz monzonite stock, within medium-grained granodiorite and fine-grained quartz monzonite and up to 10 per cent secondary felted biotite. Thin sections of this material show feldspars partly altered to clay and sericite. In outcrop, approximately 1.2 kilometres east of the original drillhole, chalcopyrite occurs as disseminations and fracture fillings within an epidote-rich tuff adjacent to a grey, feldspar porphyry dike.

(https://minfile.gov.bc.ca/Summary.aspx?minfilno=093E%20%20089)

The Authors have not independently verified the results of historical drilling at Sylvia, nor have they visited the property. The information is presented for reference only. Surge Copper has indicated they intend to complete a program of soil sampling, geological mapping, Induced-Polarization (IP) geophysics, and diamond drilling on the Sylvia prospect in the summer of 2022.

## 24.0 Other Relevant Data and Information

The Authors are not aware of any environmental liabilities related to exploration activities on the Ootsa Property. Trenches and other surface disturbances do not appear to be acid generating and for the most part do not pose significant slope stability hazards. Most are dry, some are partially to completely filled with water and most have started to re-vegetate naturally. Similarly, roads, campsite and drill sites are regularly rehabilitated when no longer needed as per the regulatory permit as described below and do not pose environmental risk.

Portions of the area of the claim lie within areas of interest claimed by the Wet'suwet'en First Nation, Wet'suwet'en Nation, Cheslatta-Carrier First Nation and Carrier-Sekani First Nation, Skin Tyee First Nation, and Nee-Tahi-Buhn First Nation. On January 24 2013, Gold Reach Resources Ltd. (now Surge Copper Corp.) issued a press release to announce the signing of a letter of understanding (LOU) with the Cheslatta Carrier Nation. The LOU between Gold Reach (Surge) and Cheslatta outlines a guidance document to help the two parties establish a business relationship, understanding and open communication regarding the continuing mineral exploration and development work on the Ootsa Property. The parties have agreed to act in good faith in negotiating an Impact and Benefits Agreement should the Ootsa Project proceed to a positive feasibility study. Cheslatta is a First Nations community located on the south side of Francois Lake near the community of Burns Lake, B.C., and has asserted rights and title over the area that the Seel and Ox Seel deposits are located. In addition, as of December 17, 2013, Gold Reach (Surge) has signed a Communications & Engagement Agreement (CEA) with the Office of the Wet'suwet'en in Smithers, BC. This office represents the title, rights and interests of five Wet'suwet'en hereditary clans over an area of 22,000 $km^2$ of traditional territory. The Ootsa Property lies within territory claimed by one of these clans, the Gilseyhyu. In August 2014, Surge Copper (Gold Reach Resources) signed a Cooperation Protocol Agreement with the Skin Tyee Nation.

Prior to conducting an exploration program that will cause a physical disturbance, Surge Copper must first apply for and receive approval of a Notice of Work and Reclamation (NOW) as required by section 10 of the BC Mines Act. Surge Copper is operating its exploration activities under a 5-year Multi-year Area-based exploration approval (MYAB) for the Ootsa Property from the BC Ministry of Energy and Mines that is valid until March 31, 2023. The current MYAB enables the company to maintain and operate its on-site exploration camp, and allows for 150 ground supported drill sites (6 hectares of ground disturbance), 180 line-kilometres of geophysical surveys, 7 trenches and/or test pits (0.35 hectares of ground disturbance), 10 km of new excavated trails and 7 km of modifications to existing access trails (total 18.5 hectares of ground disturbance). Surge Copper may apply to amend the current MYAB in order to permit additional physical disturbance of an approved type within the permit's 5-year time frame. The MYAB may be renewed near the end of the time frame for the permit.

Surge Copper has posted a $169,900 reclamation bond that is held in trust by the province of British Columbia to cover any future reclamation obligations. To date a limited amount of reclamation work has been completed on trenches, drill sites and access roads. This reclamation will be ongoing concurrent with exploration.

As part of Surge Copper's Cultural Resources Management program a preliminary field reconnaissance for assessment of Archaeological potential was completed on June 21, 2013. The visit was conducted by Frank Craig, a Registered Professional Consulting Archaeologist (RPCA) representing Archer CRM Partnership of Vanderhoof, BC. Mr. Craig was assisted by one member of the Cheslatta First Nation and one member from the Office of the Wet'suwet'en, both of whom were working for contractors on the Ootsa Project. Three distinct areas within the Ootsa claim block were visited; the Ox deposit, the West Ox target and an area adjacent to the Seel deposit. The visit resulted in the issuance of a preliminary field report and subsequent Archaeological Overview Assessment (AOA), summarized details of which follow.

The Seel deposit was traversed via the road and deemed to have low archaeological potential throughout including at the constructed bridge crossing. No further work was recommended for this area.

The West Ox target was traversed and no landforms or areas containing archaeological potential were observed. It was noted that the West Ox target is located near the shore of Tahtsa Reach, a water reservoir, where changing water levels can affect the archaeological buffering zones. The zone contains mature pine trees that could contain historical markings, termed Culturally Modified Trees (CMTs). Three CMTs were identified and marked with yellow flagging, denoting a 10 metre no work clearance zone. The West Ox target was considered to represent low potential for other archaeological resources.

There were seven areas of archaeological potential (AOP) identified in the area surveyed near the Ox deposit. Each of the areas were marked with yellow flagging and surficial disturbance was avoided within the noted zones. If future exploration work is deemed necessary within any identified AOPs then further archaeological assessment work is recommended. The AOA notes that the measure of archaeological potential is relative and not absolute. Continued vigilance on the part of the operator and all contractors is required should any archaeological resource or heritage remains be identified.

# 25.0 Interpretation and Conclusions

## 25.1 Geology and Resources

The Ootsa Project, as made up of both the Seel and Ox Deposits lie in a highly prospective area and represent several porphyry deposits alongside numerous other exploration targets across the property.

Since the previous 2016 resource estimate 104 holes and 47,250 metres have been drilled in a successful effort to increase confidence in the mineral resource estimate. Further to this confidence, the drilling and updated resource represent a significant increase in overall contained metal particularly in the growth of the Seel East and Seel Breccia zones with a nearly 70% overall increase to more than 3.1 billion pounds CuEq.

The current Seel resource was derived from 134,349 metres from 300 drill holes that were drilled and sampled using industry standard techniques. The global Seel drill hole database contains 146,996 metres from 323 drill holes, including 136,734 metres from 276 holes that were drilled since 2007 under the supervision of Gold Reach Resources (Surge Copper Corp.).

The current Ox resource was based on 28,175 metres from 133 drill holes, of which the great majority have been completed in 2012 and 2013 that were drilled and sampled using industry standard techniques. The global Ox drill hole database contains 33,608 metres from 171 drill holes, which includes 28,361 metres from the 134 holes drilled since 2007 under the supervision of Gold Reach (Surge Copper).

At both deposits, measured resource blocks have a maximum nominal drill spacing of 40m and the third closest hole is within 60m of the block. Indicated blocks have a maximum drill spacing of 80m. Inferred blocks are the remainder estimated within the pit volume.

Resources are constrained within pit shells of approximately 2200 metres length, 1700 metres width and 900 metres depth for Seel and 900 metres length by 800 metres width, and 350 metres depth for Ox.

Drilling to date on both resources has created a high level of confidence in the resource as shown by the high portion of Measured and Indicated resources in the estimates, 76% and 98% of contained CuEq lbs in Measured and Indicated categories for Seel and Ox respectively.

The Authors consider that core logging data currently being collected by Surge contractors is adequate for the purposes of geological modeling. Core data should be incorporated into geologic models on an ongoing basis during drill operations so that the model can evolve in real time as drilling progresses. An updated geologic model may streamline the interpretation of assay results as they arrive from the analytical lab.

The Seel resource remains open at depth and on strike and would warrant further expansion drilling in areas for the eastern extension that could produce near surface high grade zone giving potential for early years of production mining.

Metallurgical testing has shown positive results and metallurgical recoveries sufficient for the stage of development of the Seel and Ox deposits and Surge is continuing with additional testwork as it pertains to further level of details and study.

### 25.2 Risks and Opportunities

The challenges facing the Seel and Ox deposits for further development are considered normal to low risk in that the deposits lie within a well known mining jurisdiction, have infrastructure and access currently in place and the company has maintained positive relationships with the surrounding communities. Both the Seel and Ox deposits are located at relatively low elevations in areas of moderate to gentle topography that would allow for potential infrastructure development.

Opportunities for the Seel and Ox deposits include growth by exploration drilling within and adjacent to the current resources to potentially expand the resource constraining pit shells. Both deposits have near surface resources that appear to be amenable to open pit mining and further studies should focus on providing details of such mining plans. The deposits are relatively close to each other and would allow for efficiencies during operation and future studies. Additionally, regional exploration across the Ootsa property should be considered an opportunity in that additional resources found would add to the scale and potential efficiencies across all projects to extend any potential mine life.

## 26.0 Recommendations

The increase in estimated contained metal in this resource estimate represents significant potential to revaluate the economics of the Ootsa project as a whole. Near surface resources at higher grade continue to signify the potential for material to act as a starter pit in the early years of potential mining operations. At the same time large tonnages at relatively lower grades and greater depths represent economies of scale for potential longer term mining operations utilizing larger equipment and techniques for more efficient cost basis.

With the completion of approximately 47,250 metres drilled since the last resource estimate in 2016, the Authors consider that the quantity of drill data for the Seel and Ox deposits is sufficient for the continued development of the Ootsa project and for use in further economic studies.

The authors recommend that the Ootsa project, made up of the Seel and Ox deposits, be advanced to a further study that would evaluate the economics of a staged approach to mining to efficiently use near surface high grade resources along with deeper resources to extend mine life.

A potential path for the advancement of studies would be the completion of a Preliminary Economic Assessment. Such a study would include detailed mine schedules, Capital and Operating costs and work plans that would form the basis for a greater detailed Preliminary Feasibility Study to better inform a construction decision.

In conjunction with any new resource estimates or economic assessments, the Authors recommend that updated geologic wireframe models, using all drill data, be constructed to better delineate lithology, alteration zones, and relevant structural surfaces. The completion of these interpreted models will provide higher confidence of subsurface geology and will be useful as potential geologic control for future resource modeling.

The current practise of specific gravity (density) measurements should be maintained and run concurrently with drilling. The current practice of one SG measurement every 50 m down-hole is considered adequate for the purposes of bulk tonnage calculations, but care should be taken to measure core that is representative of the various lithologies and alteration assemblages encountered throughout the deposit. Additional measurements of mineralized core at various apparent grades should be taken when possible.

Given the large area of the Ootsa Property and the number of prospective targets contained therein, a continued program of regional prospecting, soil and rock sampling, and geophysics (IP, Electromagnetic, and Magnetic surveys) is recommended to classify and rank outlying targets by priority. Any targets which show favourable conditions for mineralization should be tested by diamond drilling.

Continued drilling of targets proximal to the Seel deposit, including the high-grade Seel Breccia and East Breccia, and the Northeast Extension Zone porphyry target is recommended. Emphasis should be placed on finding the offset or faulted-off portions of the East Seel and Ox deposits. Careful interpretation of IP geophysics, taking into account the results of drill holes around the margins of the deposits may help guide future drilling.

Recent exploration work has highlighted the potential for both bulk tonnage and high grade gold mineralization adjacent to the Seel Deposits and in other areas on the property. These warrant further investigation and favourable zones should be tested by diamond drilling.

Continued environmental studies, including fish and wildlife studies, aquatic studies, and acid-rock drainage studies, that provide the basis for further environmental permitting activities for future mine development, are recommended.

Advanced metallurgical studies are recommended in order to determine the optimal methods for recovery of contained metals in the Seel and Ox deposits. Surge Copper has indicated that metallurgical test work continues in 2022 and incorporates material drilled during the 2020-2021 drill campaigns.

A tentative budget for recommended exploration activities, environmental studies, and metallurgical test work is provided in Table 26-1 below.

**Table 26-1: Recommended Exploration Activities and Estimated Cost**

| Activity | Estimated Cost in CDN$ |
|---|---|
| 15,000 m drill program (all in costs) | 2,700,000.00 |
| Engineering and geotechnical studies—pit slope design | 250,000.00 |
| Preliminary Economic Assessment | 400,000.00 |
| Aquatic and wildlife studies | 250,000.00 |
| Advanced metallurgical testing | 200,000.00 |
| IP survey | 100,000.00 |
| subtotal | 3,900,000.00 |
| 10% Contingency | 390,000.00 |
| **Grand Total** | **4,290,000.00** |

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# 28.0 Authors Statement of Qualification

## Certificate – J.R. Stacey

I, Jacques Rémi Stacey, of 1235 Columbia Street in the Town of Smithers in the Province of British Columbia, Canada, do hereby certify that:

1. I am a Consulting Geologist with the firm of North Mountain Geosciences, registered in the province of British Columbia, Canada with offices at 1235 Columbia Street, PO Box 4702, Smithers, BC V0J 2N0.
2. I was responsible for on-site drill supervision as a Certified Mine Supervisor in British Columbia, as well as core logging, supervision of core sampling, and Quality Assurance/Quality Control protocol for Surge Copper Corp's exploration programs on the Seel Property in the period from 2020-2022.
3. I am a graduate of Saint Francis Xavier University, BSc. Geology (1999), and the University of Calgary, MSc. Geology (2006), and I have practiced my profession continuously since before graduation.
4. Over the last eighteen (18) years, I have acquired considerable experience with porphyry and vein-hosted gold, silver, copper, molybdenum, and other commodities in British Columbia. During the last fifteen (15) years I have designed and supervised numerous exploration programs, including, but not limited to: geochemical and geophysical surveys, geological and structural mapping programs, diamond drilling programs, and core logging.
5. I am registered as a Professional Geologist (P.Geo.) in good standing with Engineers and Geoscientists British Columbia (Member No. 185998).
6. I have read the definition of "qualified person" set out in National Instrument 43-101 ("NI43-101") and certify that by reason of my education, affiliation with professional associations (as deemed in NI43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
7. I have read National Instrument 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form
8. I was present on the Ootsa Property from September 2020 to July 2022 and beyond. During this time I supervised drill activities on the property and completed core logging, QA/QC protocols, and core sampling as described above.
9. I am the co-author of this report, entitled "A Mineral Resource Estimate Update for the Seel and Ox Deposits, Ootsa Property, August 2022" and am responsible for all parts excluding Section 1.1, Section 14, and parts of Sections 25 and 26.
10. I am independent of the Issuer, Surge Copper Corp., and the Ootsa Property, as set out in Section 1.5 of NI 43-101, and currently own no shareholding in the company. I do not expect to receive any interest (direct, indirect, or contingent) in the property described herein nor in the securities of or any related companies in respect of services rendered in the preparation of this report.
11. I had no involvement with Surge Copper Corp. or the Ootsa Property prior to the 2020-2021 drill program, but I have been involved with Surge and the Property since September, 2020.
12. As of August 5, 2022, the effective date of this report, to the best of my knowledge, information, and belief, this assessment report contains all scientific and technical information pertaining to Surge Copper Corp's 2020-2021 diamond drill program on the Ootsa Property that is required to be disclosed to make the report not misleading, and,
13. I consent to the filing of the Technical Report with any stock exchange and other regulatory authority and any publication by them for regulatory purposes, including electronic publication in the public company files on their websites accessible by the public, of the Technical Report.

DATED at Smithers, British Columbia, this 5th day of August, 2022.

Signed and Sealed by,

PROFESSIONAL PROVINCE OF J. R. STACEY # 41084 BRITISH COLUMBIA GEOSCIENTIST

Jacques R. Stacey, MSc., P.Geo.

## Certificate – J.N. Gray

I, James N. Gray, P. Geo., do hereby certify that:

1. This certificate applies to the technical report (Report) entitled "A Mineral Resource Estimate and Update for the Seel and Ox Deposits, Ootsa Property, August 2022" prepared for Surge Copper Corp. with an effective date of February 18, 2022;
2. I am a consulting geologist with Advantage Geoservices Limited, residing at 1051 Bullmoose Trail, Osoyoos, BC, Canada V0H 1V6.
3. I graduated from the University of Waterloo in 1985 where I obtained a B.Sc. in Geology. I have practiced my profession continuously since 1985. My experience includes resource estimation work at operating mines as well as base and precious metal projects in North and South America, Europe, Asia and Africa. I am a Professional Geoscientist, registered and in good standing with the Engineers & Geoscientists of British Columbia (#27022).
4. I have read the definition of "qualified person" set out in National Instrument 43-101 ("NI43-101") and certify that by reason of my education, affiliation with professional associations (as deemed in NI43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
5. I have not personally inspected the Ootsa Project site.
6. I am responsible for Section 14, and contributions to Sections 1, 25 and 26, of this technical report entitled "A Mineral Resource Estimate and
   Update for the Seel and Ox Deposits, Ootsa Property, August 2022" with an effective date of February 18, 2022.
7. As a qualified person, I am independent of Surge Copper Corp. as defined in Section 1.5 of NI 43-101.
8. I have had no prior involvement with the Ootsa Project.
9. I have read National Instrument 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form; and
10. As of the report date, and to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.
11. I consent to the filing of the Technical Report with any stock exchange and other regulatory authority and any publication by them for regulatory purposes, including electronic publication in the public company files on their websites accessible by the public, of the Technical Report.

Dated this 26th day of July, 2022 in Osoyoos, BC, Canada.

"*signed and sealed"*

____________________________

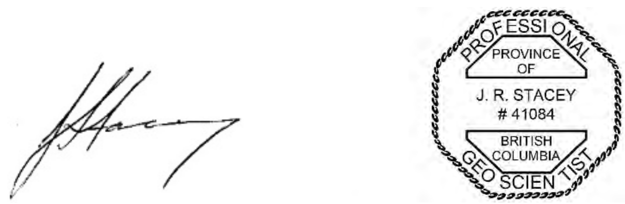
James N. Gray, P. Geo
Advantage Geoservices Limited

## 29.0 Date and Signature Page

This document, **A MINERAL RESOURCE UPDATE FOR THE SEEL AND OX DEPOSITS, OOTSA PROPERTY, AUGUST 2022**, has been prepared for Surge Copper Corp. by

Jacques R. Stacey, MSc., P.Geo

Dated at Smithers, BC, this 5th day of August, 2022

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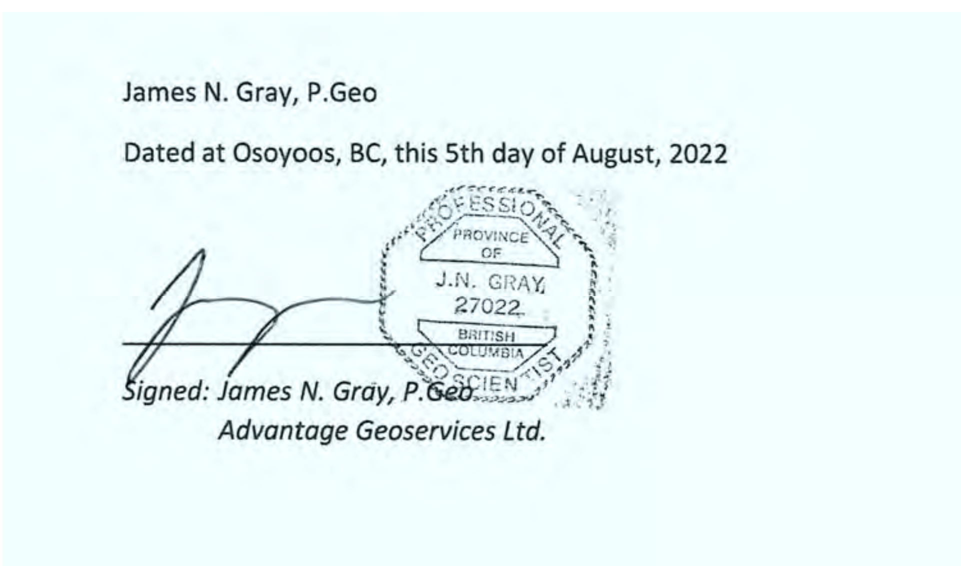
*Signed: Jacques R. Stacey, MSc., P.Geo*

*And*


James N. Gray, P.Geo

Dated at Osoyoos, BC, this 5th day of August, 2022

PROFESSIONAL
PROVINCE OF
J.N. GRAY
27022
BRITISH COLUMBIA
GEOSCIENTIST

*Signed: James N. Gray, P.Geo*
*Advantage Geoservices Ltd.*

# Appendix 1: Seel Drilling

Highlighted holes were not used for resource estimation.

| Hole-ID | Collar - X | Collar - Y | Collar - Z | Azimuth | Dip | Length | Comments |
|---|---|---|---|---|---|---|---|
| EastRecon14-01 | 628573.00 | 5946638.00 | 1020.00 | 88 | -70 | 435.0 | Outside, Unassayed, Historic |
| EastRecon14-02 | 630718.00 | 5945912.00 | 1128.00 | 75 | -55 | 240.0 | Outside, Unassayed, Historic |
| EastRecon14-03 | 630614.00 | 5945967.00 | 1104.00 | 80 | -50 | 275.8 | Outside, Unassayed, Historic |
| EastRecon14-04 | 629664.00 | 5945339.00 | 1204.00 | 90 | -45 | 264.0 | Outside, Unassayed, Historic |
| EastRecon14-05 | 629659.00 | 5945199.00 | 1221.00 | 90 | -45 | 201.0 | Outside, Unassayed, Historic |
| EastRecon14-06 | 629659.00 | 5945199.00 | 1221.00 | 270 | -45 | 294.0 | Outside, Unassayed, Historic |
| EastRecon14-07 | 629659.00 | 5945199.00 | 1221.00 | 270 | -65 | 279.0 | Outside, Unassayed, Historic |
| EastRecon14-08 | 629707.00 | 5945066.00 | 1251.00 | 270 | -45 | 288.0 | Outside, Unassayed, Historic |
| EastRecon14-09 | 629664.00 | 5945339.00 | 1204.00 | 270 | -45 | 207.0 | Outside, Unassayed, Historic |
| S04-01 | 626991.30 | 5945512.40 | 1110.00 | 315 | -50 | 210.3 | |
| S04-02 | 627036.00 | 5945391.00 | 1090.80 | 135 | -50 | 182.9 | |
| S04-03 | 627065.50 | 5945159.00 | 1051.57 | 315 | -50 | 178.3 | |
| S04-04 | 627063.50 | 5945158.00 | 1051.20 | 135 | -70 | 182.9 | |
| S04-05 | 626522.70 | 5945387.50 | 1020.48 | 0 | -90 | 155.4 | |
| S04-06 | 626611.20 | 5945322.90 | 1025.00 | 135 | -50 | 185.9 | |
| S05-07 | 627159.00 | 5945105.00 | 1063.20 | 0 | -90 | 73.9 | |
| S05-08 | 627113.30 | 5945253.50 | 1053.19 | 135 | -60 | 222.6 | |
| S05-09 | 627159.90 | 5945079.50 | 1064.01 | 0 | -90 | 239.9 | |
| S05-10 | 627150.00 | 5945302.20 | 1057.07 | 135 | -60 | 218.5 | |
| S05-11 | 627288.60 | 5945258.90 | 1068.65 | 315 | -60 | 218.5 | |
| S05-12 | 627325.20 | 5945430.50 | 1072.53 | 135 | -50 | 212.5 | |
| S05-13 | 627018.80 | 5945052.10 | 1052.77 | 135 | -70 | 221.0 | |
| S05-14 | 626607.20 | 5945074.90 | 1050.00 | 315 | -60 | 270.4 | |
| S05-15 | 626719.90 | 5944940.40 | 1051.47 | 135 | -50 | 178.9 | |
| S05-16 | 626714.20 | 5944939.50 | 1051.30 | 315 | -50 | 219.6 | |
| S05-17 | 626028.30 | 5945269.80 | 995.00 | 315 | -50 | 200.3 | |
| S05-18 | 626528.90 | 5945140.20 | 1045.00 | 315 | -60 | 253.6 | |
| S05-19 | 626413.60 | 5945125.40 | 1035.00 | 135 | -50 | 306.9 | |
| S05-20 | 626479.80 | 5945045.60 | 1041.18 | 135 | -50 | 245.1 | |
| S05-21 | 626777.70 | 5945184.20 | 1045.00 | 225 | -50 | 242.9 | |
| S05-22 | 627197.40 | 5945151.70 | 1065.00 | 0 | -90 | 200.0 | |
| S06-23 | 627317.50 | 5945310.30 | 1069.57 | 135 | -60 | 172.8 | |
| S06-24 | 627115.30 | 5945251.50 | 1053.44 | 0 | -90 | 264.3 | |
| S06-25 | 627030.10 | 5945040.10 | 1054.42 | 315 | -70 | 203.3 | |
| S06-26 | 626963.40 | 5944952.60 | 1055.46 | 315 | -60 | 270.4 | |
| S06-27 | 626777.70 | 5945184.20 | 1045.00 | 45 | -50 | 206.4 | |
| S06-28 | 626711.80 | 5945563.60 | 1061.75 | 90 | -70 | 175.9 | |
| S06-29 | 626486.50 | 5944898.90 | 1046.82 | 315 | -50 | 111.9 | |
| S06-30 | 626444.80 | 5944653.40 | 1059.90 | 315 | -60 | 152.4 | |
| S06-31 | 626181.30 | 5944771.30 | 1042.84 | 0 | -90 | 249.0 | |
| S06-32 | 626611.20 | 5945322.90 | 1025.00 | 45 | -50 | 188.1 | |
| S06-33 | 627213.30 | 5945431.00 | 1070.00 | 135 | -58 | 288.7 | |
| S06-34 | 627213.30 | 5945431.00 | 1070.00 | 315 | -60 | 112.8 | |
| S06-35 | 627364.90 | 5945453.80 | 1075.00 | 135 | -75 | 204.5 | |
| S06-36 | 627160.30 | 5945354.60 | 1065.31 | 135 | -70 | 340.5 | |
| S06-37 | 627189.80 | 5945227.20 | 1061.27 | 315 | -68 | 325.2 | |
| S06-38 | 627189.80 | 5945227.20 | 1061.27 | 0 | -90 | 212.5 | |
| S06-39 | 627107.50 | 5945183.10 | 1055.46 | 135 | -55 | 206.4 | |
| S06-40 | 627107.50 | 5945183.10 | 1055.46 | 315 | -60 | 343.5 | |
| S06-41 | 627019.70 | 5945142.90 | 1050.00 | 135 | -80 | 343.5 | |
| S06-42 | 627161.50 | 5945493.00 | 1092.64 | 218 | -50 | 280.7 | |
| S06-43 | 627161.50 | 5945493.00 | 1092.64 | 53 | -60 | 121.0 | |
| S06-44 | 627043.00 | 5945570.40 | 1113.42 | 225 | -50 | 233.8 | |
| S06-45 | 626978.50 | 5945408.80 | 1094.72 | 45 | -50 | 267.3 | |
| S06-46 | 627098.60 | 5945461.90 | 1099.30 | 0 | -90 | 154.5 | |
| S06-47 | 627160.30 | 5945354.60 | 1065.31 | 315 | -50 | 211.8 | |
| S07-48 | 626948.10 | 5945425.50 | 1098.14 | 315 | -55 | 344.4 | |
| S07-49 | 627039.70 | 5945459.20 | 1103.75 | 315 | -55 | 216.4 | |
| S07-50 | 627039.70 | 5945459.20 | 1103.75 | 50 | -55 | 182.9 | Unassayed |

| Hole-ID | Collar - X | Collar - Y | Collar - Z | Azimuth | Dip | Length | Comments |
|---|---|---|---|---|---|---|---|
| S07-51 | 625890.90 | 5944913.30 | 1013.43 | 360 | -55 | 426.7 | |
| S07-52 | 625890.90 | 5944913.30 | 1013.43 | 290 | -55 | 320.0 | Unassayed |
| S07-53 | 625890.90 | 5944913.30 | 1013.43 | 165 | -55 | 210.0 | Unassayed |
| S07-54 | 628535.00 | 5945232.00 | 1304.00 | 0 | -90 | 225.0 | Outside, Unassayed |
| S07-55 | 628020.00 | 5945020.00 | 1184.00 | 0 | -90 | 316.1 | Outside, Unassayed |
| S07-56 | 628303.00 | 5945565.00 | 1215.00 | 0 | -90 | 358.8 | Outside, Unassayed |
| S07-57 | 626635.90 | 5945168.30 | 1048.82 | 315 | -55 | 303.9 | |
| S07-58 | 626776.50 | 5945013.10 | 1050.12 | 315 | -60 | 246.0 | |
| S07-59 | 626854.60 | 5944908.70 | 1057.84 | 315 | -60 | 81.4 | |
| S08-60 | 627198.00 | 5945408.00 | 1069.23 | 315 | -50 | 151.2 | |
| S08-61 | 627164.60 | 5945449.70 | 1081.61 | 315 | -50 | 90.0 | |
| S08-62 | 627112.90 | 5945411.20 | 1084.40 | 315 | -50 | 99.4 | |
| S08-63 | 627383.70 | 5945298.00 | 1074.00 | 315 | -55 | 39.3 | Unassayed |
| S08-64 | 627460.00 | 5945354.50 | 1078.00 | 315 | -55 | 38.4 | Unassayed |
| S08-65 | 627112.90 | 5945411.20 | 1084.40 | 315 | -77 | 498.7 | |
| S08-66 | 627112.90 | 5945411.20 | 1084.40 | 0 | -90 | 154.2 | |
| S08-67 | 627224.20 | 5945018.80 | 1072.00 | 315 | -65 | 91.4 | Unassayed |
| S08-68 | 627228.20 | 5944978.90 | 1072.99 | 315 | -65 | 263.0 | |
| S08-69 | 627122.70 | 5945043.10 | 1061.18 | 315 | -50 | 315.8 | |
| S08-70 | 627038.50 | 5944977.30 | 1060.60 | 315 | -55 | 313.0 | |
| S08-71 | 626959.50 | 5944950.50 | 1055.18 | 315 | -60 | 313.0 | |
| S08-72 | 627181.10 | 5945054.30 | 1066.57 | 360 | -50 | 339.0 | |
| S08-73 | 626821.80 | 5944955.10 | 1052.81 | 315 | -60 | 294.7 | |
| S08-74 | 626406.50 | 5944978.30 | 1020.52 | 315 | -60 | 12.2 | Unassayed |
| S08-75 | 626265.90 | 5945085.00 | 997.67 | 0 | -90 | 232.9 | |
| S08-76 | 626057.80 | 5945332.70 | 997.67 | 180 | -50 | 375.0 | |
| S08-77 | 626057.80 | 5945332.70 | 998.00 | 0 | -90 | 218.5 | |
| S08-78 | 627112.90 | 5945411.20 | 1084.40 | 165 | -50 | 303.9 | |
| S08-79 | 626824.90 | 5945323.90 | 1038.33 | 315 | -60 | 258.2 | |
| S08-80 | 627139.60 | 5945342.40 | 1065.00 | 315 | -70 | 6.1 | Unassayed |
| S11-81 | 627197.10 | 5945228.60 | 1061.85 | 0 | -90 | 694.9 | |
| S11-82 | 627064.40 | 5945200.60 | 1050.59 | 135 | -70 | 731.5 | |
| S11-83 | 627149.80 | 5945207.30 | 1058.28 | 50 | -50 | 237.2 | |
| S11-84 | 627122.10 | 5945257.70 | 1054.04 | 53 | -48 | 198.1 | |
| S11-85 | 627122.10 | 5945257.70 | 1054.04 | 53 | -70 | 281.6 | |
| S11-86 | 627042.70 | 5944892.70 | 1064.29 | 318 | -60 | 740.7 | |
| S11-87 | 627067.30 | 5945202.10 | 1050.86 | 315 | -50 | 414.5 | |
| S11-88 | 627104.60 | 5945178.30 | 1055.36 | 225 | -60 | 810.2 | |
| S11-89 | 627251.20 | 5945292.40 | 1063.86 | 321 | -46 | 423.7 | |
| S11-90 | 627104.60 | 5945178.30 | 1055.36 | 225 | -80 | 792.5 | |
| S11-91 | 626858.80 | 5945074.20 | 1047.04 | 315 | -60 | 661.4 | |
| S11-92 | 627150.00 | 5945301.20 | 1056.97 | 313 | -50 | 411.5 | |
| S11-93 | 627150.00 | 5945301.20 | 1056.97 | 313 | -65 | 292.6 | |
| S11-94 | 627160.30 | 5945354.60 | 1065.31 | 315 | -70 | 325.2 | |
| S11-95 | 626777.90 | 5945183.70 | 1045.00 | 315 | -60 | 557.8 | |
| S11-96 | 625833.00 | 5945632.30 | 974.25 | 110 | -50 | 310.0 | |
| S11-97 | 626662.60 | 5945010.90 | 1050.00 | 315 | -60 | 539.5 | |
| S11-98 | 626607.60 | 5945075.00 | 1050.00 | 243 | -60 | 623.9 | |
| S11-99 | 626662.60 | 5945010.90 | 1050.00 | 238 | -55 | 609.9 | |
| S11-100 | 626667.90 | 5945113.60 | 1055.00 | 244 | -66 | 736.7 | |
| S12-101 | 626720.30 | 5945133.60 | 1054.16 | 244 | -65 | 1079.0 | |
| S12-102 | 626553.80 | 5945030.70 | 1045.91 | 244 | -60 | 951.0 | |
| S12-103 | 627138.50 | 5945255.20 | 1055.00 | 225 | -60 | 618.0 | |
| S12-104 | 626530.80 | 5944985.00 | 1045.00 | 315 | -65 | 1067.8 | |
| S12-105 | 626423.50 | 5944939.50 | 1043.35 | 244 | -60 | 929.6 | |
| S12-106 | 626646.40 | 5945087.20 | 1053.60 | 244 | -64 | 1146.0 | |
| S12-107 | 626710.50 | 5944823.70 | 1063.17 | 315 | -65 | 1045.5 | |
| S12-108 | 626539.50 | 5945127.10 | 1046.00 | 135 | -75 | 606.0 | |
| S12-109 | 626415.70 | 5945114.90 | 1035.00 | 135 | -75 | 748.1 | |
| S12-110 | 626602.40 | 5944916.30 | 1049.25 | 315 | -65 | 945.1 | |
| S12-111 | 626787.00 | 5945161.60 | 1045.59 | 246 | -75 | 832.3 | |

| Hole-ID | Collar - X | Collar - Y | Collar - Z | Azimuth | Dip | Length | Comments |
|---|---|---|---|---|---|---|---|
| S12-112 | 626425.40 | 5945113.10 | 1035.00 | 315 | -65 | 841.2 | |
| S12-113 | 626782.90 | 5945165.00 | 1045.59 | 339.6 | -48.6 | 774.2 | |
| S12-114 | 626720.80 | 5944934.80 | 1051.74 | 319.6 | -64.7 | 825.6 | |
| S12-115 | 626830.90 | 5944951.10 | 1052.88 | 315 | -65 | 938.8 | |
| S12-116 | 626576.50 | 5944797.80 | 1054.89 | 311.3 | -64.9 | 972.3 | |
| S12-117 | 626614.60 | 5945062.20 | 1050.00 | 315 | -65 | 774.9 | |
| S12-118 | 626509.50 | 5944863.90 | 1050.00 | 315 | -65 | 887.0 | |
| S12-119 | 626679.70 | 5945097.50 | 1052.65 | 315 | -65 | 807.7 | |
| S12-120 | 626469.50 | 5945213.40 | 1036.34 | 135 | -78 | 742.5 | |
| S12-121 | 626280.60 | 5945063.10 | 1023.79 | 135 | -65 | 987.5 | |
| S12-122 | 626837.90 | 5945213.50 | 1041.04 | 315 | -65 | 829.1 | |
| S12-123 | 626436.60 | 5944649.00 | 1059.95 | 15 | -50 | 789.4 | |
| S12-124 | 626577.20 | 5945099.00 | 1048.14 | 0 | -90 | 769.6 | |
| S12-125 | 626421.10 | 5944964.00 | 1040.60 | 0 | -90 | 719.3 | |
| S12-126 | 626953.20 | 5945277.60 | 1043.97 | 315 | -55 | 713.4 | |
| S12-127 | 626182.00 | 5944775.80 | 1042.39 | 60 | -55 | 874.8 | |
| S12-128 | 626953.20 | 5945277.60 | 1043.97 | 315 | -75 | 430.7 | |
| S12-129 | 626475.90 | 5945041.60 | 1040.97 | 0 | -90 | 850.5 | |
| S12-130 | 626089.20 | 5944915.70 | 1024.73 | 75 | -50 | 868.7 | |
| S12-131 | 626441.80 | 5945164.20 | 1036.02 | 135 | -70 | 621.8 | |
| S12-132 | 626392.30 | 5945055.60 | 1030.63 | 135 | -70 | 606.6 | |
| S12-133 | 626343.10 | 5945198.80 | 1019.84 | 135 | -70 | 835.2 | |
| S12-134 | 626401.70 | 5945059.60 | 1032.54 | 175 | -70 | 862.6 | |
| S12-135 | 626431.40 | 5944791.80 | 1050.67 | 320 | -70 | 957.3 | |
| S12-136 | 626482.10 | 5945259.00 | 1035.52 | 135 | -70 | 664.5 | |
| S12-137 | 626334.30 | 5945037.10 | 1027.21 | 135 | -60 | 947.9 | |
| S12-138 | 626787.80 | 5945008.50 | 1050.28 | 135 | -70 | 573.0 | |
| S12-139 | 626838.10 | 5945111.50 | 1047.54 | 135 | -55 | 527.3 | |
| S12-140 | 626341.70 | 5944867.20 | 1044.13 | 315 | -70 | 1082.0 | |
| S12-141 | 626427.00 | 5944936.10 | 1043.92 | 315 | -65 | 981.5 | |
| S12-142 | 626505.50 | 5944721.20 | 1058.90 | 315 | -70 | 999.7 | |
| S12-143 | 626274.90 | 5944954.70 | 1033.40 | 135 | -70 | 993.7 | |
| S12-144 | 626444.20 | 5944996.40 | 1039.61 | 135 | -70 | 816.9 | |
| S12-145 | 626274.90 | 5944954.70 | 1033.40 | 315 | -72 | 850.4 | |
| S12-146 | 626273.00 | 5944825.00 | 1040.84 | 0 | -90 | 941.8 | |
| S13-147 | 627156.00 | 5945222.00 | 1058.70 | 315 | -60 | 249.9 | |
| S13-148 | 627157.70 | 5945221.20 | 1058.90 | 0 | -90 | 277.1 | |
| S13-149 | 627156.00 | 5945222.00 | 1058.70 | 315 | -45 | 207.3 | |
| S13-150 | 626539.20 | 5945135.60 | 1045.71 | 135 | -65 | 354.0 | |
| S13-151 | 627156.80 | 5945220.70 | 1058.80 | 135 | -65 | 231.6 | |
| S13-152 | 627156.80 | 5945220.70 | 1058.80 | 135 | -45 | 161.5 | |
| S13-153 | 627124.40 | 5945180.60 | 1057.45 | 315 | -70 | 265.2 | |
| S13-154 | 626508.00 | 5945161.90 | 1042.69 | 135 | -70 | 423.0 | |
| S13-155 | 627124.40 | 5945180.60 | 1057.45 | 0 | -90 | 268.2 | |
| S13-156 | 626508.00 | 5945161.90 | 1042.69 | 0 | -90 | 231.0 | |
| S13-157 | 627124.40 | 5945180.60 | 1057.45 | 135 | -70 | 298.7 | |
| S13-158 | 626536.90 | 5945201.10 | 1043.34 | 135 | -70 | 432.0 | |
| S13-159 | 627124.40 | 5945180.60 | 1057.45 | 135 | -50 | 256.0 | |
| S13-160 | 627189.20 | 5945184.90 | 1063.67 | 315 | -60 | 289.6 | |
| S13-161 | 626568.50 | 5945233.50 | 1040.69 | 135 | -70 | 351.0 | |
| S13-162 | 626568.50 | 5945233.50 | 1040.69 | 0 | -90 | 449.2 | |
| S13-163 | 627192.30 | 5945184.30 | 1064.06 | 45 | -50 | 253.0 | |
| S13-164 | 627192.30 | 5945184.30 | 1064.06 | 45 | -70 | 362.7 | |
| S13-165 | 626573.30 | 5945163.40 | 1046.63 | 135 | -70 | 345.0 | |
| S13-166 | 627230.50 | 5945156.00 | 1068.33 | 315 | -60 | 362.7 | |
| S13-167 | 626501.70 | 5945083.50 | 1043.56 | 135 | -60 | 410.0 | |
| S13-168 | 627236.60 | 5945154.30 | 1069.14 | 45 | -70 | 371.9 | |
| S13-169 | 626491.30 | 5945109.50 | 1042.41 | 135 | -70 | 504.0 | |
| S13-170 | 627205.10 | 5945236.10 | 1062.30 | 135 | -60 | 277.4 | |
| S13-171 | 626539.30 | 5945044.20 | 1045.00 | 135 | -60 | 387.0 | |
| S13-172 | 627205.10 | 5945236.10 | 1062.30 | 315 | -65 | 253.0 | |

| Hole-ID | Collar - X | Collar - Y | Collar - Z | Azimuth | Dip | Length | Comments |
|---|---|---|---|---|---|---|---|
| S13-173 | 626452.00 | 5945070.90 | 1039.33 | 135 | -50 | 405.0 | |
| S13-174 | 627182.00 | 5945232.30 | 1060.23 | 0 | -90 | 350.5 | |
| S13-175 | 627174.60 | 5945204.40 | 1060.85 | 0 | -90 | 353.6 | |
| S13-176 | 626502.70 | 5945014.20 | 1044.14 | 135 | -50 | 384.0 | |
| S13-177 | 627149.30 | 5945193.70 | 1059.02 | 0 | -90 | 347.5 | |
| S13-178 | 627129.50 | 5945209.60 | 1055.91 | 0 | -90 | 332.2 | |
| S13-179 | 626994.50 | 5945210.00 | 1045.00 | 135 | -58 | 329.2 | |
| S13-180 | 626994.50 | 5945210.00 | 1045.00 | 135 | -74 | 317.0 | |
| S13-181 | 627074.20 | 5945183.60 | 1052.41 | 0 | -90 | 371.9 | |
| S13-182 | 627083.60 | 5945153.40 | 1055.00 | 135 | -60 | 368.8 | |
| S13-183 | 627083.60 | 5945153.40 | 1055.00 | 0 | -90 | 402.3 | |
| S13-184 | 627030.80 | 5945143.80 | 1050.00 | 135 | -60 | 283.5 | |
| S13-185 | 627030.80 | 5945143.80 | 1050.00 | 0 | -90 | 296.0 | |
| S13-186 | 627117.40 | 5945123.20 | 1058.71 | 135 | -60 | 246.9 | |
| S13-187 | 627363.30 | 5945385.60 | 1072.02 | 135 | -50 | 252.0 | |
| S13-188 | 627117.40 | 5945123.20 | 1058.71 | 0 | -90 | 320.0 | |
| S13-189 | 627415.00 | 5945333.40 | 1075.41 | 315 | -65 | 333.0 | |
| S13-190 | 627057.50 | 5945089.60 | 1054.72 | 135 | -60 | 307.8 | |
| S13-191 | 627057.50 | 5945089.60 | 1054.72 | 0 | -90 | 323.1 | |
| S13-192 | 627405.20 | 5945421.00 | 1075.00 | 135 | -50 | 330.0 | |
| S13-193 | 627012.50 | 5945072.30 | 1050.85 | 315 | -60 | 228.6 | |
| S13-194 | 627306.30 | 5945366.30 | 1068.78 | 135 | -60 | 243.0 | |
| S13-195 | 627175.80 | 5945049.40 | 1065.98 | 315 | -65 | 318.0 | |
| S13-196 | 627012.50 | 5945072.30 | 1050.85 | 135 | -70 | 286.5 | |
| S13-197 | 627010.00 | 5945075.00 | 1050.51 | 240 | -60 | 292.6 | |
| S13-198 | 627175.80 | 5945049.40 | 1065.98 | 315 | -50 | 339.0 | |
| S13-199 | 627010.00 | 5945075.00 | 1050.51 | 0 | -90 | 253.0 | |
| S14-200 | 626423.72 | 5944942.16 | 1042.90 | 40 | -50 | 594.0 | |
| S14-201 | 626546.98 | 5944939.89 | 1045.93 | 350 | -58 | 951.0 | |
| S14-202 | 626503.37 | 5944723.62 | 1058.45 | 135 | -70 | 738.0 | |
| S14-203 | 626546.21 | 5945035.48 | 1045.19 | 345.2 | -58.79999924 | 876.0 | |
| S14-204 | 626484.56 | 5945257.22 | 1035.79 | 0 | -90 | 747.0 | |
| S14-205 | 626777.83 | 5945288.07 | 1030.00 | 315 | -65 | 495.0 | |
| S14-206 | 626777.83 | 5945288.07 | 1030.00 | 319.9 | -43 | 342.0 | |
| S14-207 | 626828.88 | 5945314.05 | 1036.49 | 325 | -45 | 327.0 | |
| S14-208 | 626587.86 | 5945423.67 | 1045.00 | 175.1 | -69.09999847 | 639.0 | |
| S14-209 | 626895.37 | 5945137.48 | 1045.00 | 315 | -65 | 735.0 | |
| S14-210 | 626249.34 | 5945128.72 | 1013.52 | 131 | -65 | 867.0 | |
| S18-211 | 627071.00 | 5945295.00 | 1053.00 | 135 | -50 | 209.9 | |
| S18-212 | 627619.21 | 5945569.22 | 1077.39 | 133 | -50 | 483.4 | |
| S18-213 | 627864.00 | 5945362.00 | 1117.00 | 90 | -50 | 120.7 | |
| S18-214 | 627677.00 | 5945495.00 | 1073.00 | 135 | -50 | 337.1 | |
| S18-215 | 627599.00 | 5945462.00 | 1077.00 | 135 | -60 | 356.2 | |
| S18-216 | 627702.14 | 5945619.85 | 1075.53 | 110 | -60 | 383.1 | |
| S18-217 | 627836.00 | 5945540.00 | 1073.00 | 125 | -60 | 346.6 | |
| S20-218 | 627085.00 | 5945209.00 | 1053.00 | 130 | -48 | 584.8 | |
| S20-219 | 626678.51 | 5945292.94 | 1022.89 | 215 | -50 | 1028.0 | |
| S20-220 | 626569.30 | 5945158.43 | 1046.50 | 208 | -50 | 1069.6 | |
| S20-221 | 627855.80 | 5945647.72 | 1060.89 | 90 | -60 | 576.0 | |
| S20-222 | 627813.00 | 5945802.00 | 1065.00 | 95 | -58 | 642.0 | |
| S20-223 | 627832.00 | 5946193.00 | 1061.00 | 100 | -60 | 708.0 | Outside |
| S20-224 | 626569.42 | 5945158.34 | 1046.58 | 28 | -50 | 779.0 | |
| S20-225 | 626088.00 | 5944921.00 | 1024.00 | 225 | -60 | 621.0 | |
| S20-226 | 626495.00 | 5945027.00 | 1042.00 | 208 | -50 | 959.4 | |
| S20-227 | 626089.00 | 5944917.00 | 1024.00 | 135 | -60 | 936.3 | |
| S21-228 | 626656.00 | 5944884.00 | 1052.00 | 0 | -90 | 795.0 | |
| S21-229 | 626490.00 | 5945200.00 | 1040.00 | 28 | -50 | 798.0 | |
| S21-230 | 626404.02 | 5945337.43 | 1008.03 | 0 | -90 | 888.0 | |
| S21-231 | 626781.00 | 5944753.00 | 1065.00 | 315 | -65 | 807.0 | |
| S21-232 | 626577.80 | 5944801.26 | 1054.02 | 135 | -70 | 756.0 | |
| S21-233 | 626283.85 | 5945335.76 | 1003.24 | 135 | -75 | 737.5 | |

| Hole-ID | Collar - X | Collar - Y | Collar - Z | Azimuth | Dip | Length | Comments |
|---|---|---|---|---|---|---|---|
| S21-234 | 626827.24 | 5944848.41 | 1064.60 | 315 | -65 | 795.0 | |
| S21-235 | 626149.00 | 5945236.00 | 1000.00 | 135 | -65 | 891.5 | |
| S21-236 | 626950.00 | 5945214.00 | 1041.00 | 135 | -60 | 303.1 | |
| S21-237 | 626950.00 | 5945216.00 | 1041.00 | 315 | -55 | 504.0 | |
| S21-238 | 626950.61 | 5945271.37 | 1042.83 | 135 | -70 | 495.0 | |
| S21-239 | 626347.00 | 5945246.00 | 1019.00 | 135 | -75 | 746.2 | |
| S21-240 | 626691.21 | 5945405.64 | 1057.72 | 215 | -51 | 1240.5 | |
| S21-241 | 626843.00 | 5944967.00 | 1053.00 | 315 | -60 | 348.0 | |
| S21-242 | 626748.31 | 5945036.94 | 1050.92 | 315 | -65 | 717.0 | |
| S21-243 | 626779.85 | 5945459.46 | 1079.34 | 215 | -60 | 858.0 | |
| S21-244 | 626751.08 | 5945034.76 | 1050.82 | 135 | -70 | 600.0 | |
| S21-245 | 626689.00 | 5945180.00 | 1048.00 | 28 | -50 | 660.0 | |
| S21-246 | 626778.99 | 5944748.54 | 1065.85 | 0 | -90 | 744.0 | |
| S21-247 | 626787.57 | 5945403.26 | 1067.65 | 161 | -60 | 636.0 | |
| S21-248 | 626905.20 | 5945364.36 | 1073.47 | 190 | -60 | 588.0 | |
| S21-249 | 626823.99 | 5944849.88 | 1064.72 | 135 | -75 | 591.0 | |
| S21-250 | 626857.66 | 5945528.90 | 1094.12 | 215 | -60 | 825.0 | |
| S21-251 | 626842.77 | 5944966.58 | 1052.54 | 135 | -65 | 519.0 | |
| S21-252 | 626806.39 | 5944919.87 | 1053.33 | 315 | -65 | 555.0 | |
| S21-253 | 627228.82 | 5945214.61 | 1065.57 | 135 | -65 | 273.0 | |
| S21-254 | 626595.80 | 5945000.26 | 1045.86 | 135 | -60 | 612.0 | |
| S21-255 | 627286.61 | 5945263.08 | 1067.94 | 135 | -60 | 300.7 | |
| S21-256 | 626454.42 | 5945070.54 | 1038.77 | 0 | -90 | 726.0 | |
| S21-257 | 627171.72 | 5945061.20 | 1066.08 | 135 | -70 | 219.0 | |
| S21-258 | 627722.65 | 5944872.35 | 1137.97 | 80 | -50 | 807.0 | Outside |
| S21-259 | 626664.35 | 5945242.86 | 1034.08 | 0 | -90 | 663.0 | |
| S21-260 | 626918.20 | 5944927.09 | 1055.16 | 315 | -60 | 435.0 | |
| S21-261 | 626563.37 | 5945230.42 | 1041.74 | 65 | -50 | 453.0 | |
| S21-262 | 627001.00 | 5945072.00 | 1050.00 | 225 | -60 | 830.0 | |
| S21-263 | 626331.03 | 5944849.55 | 1044.40 | 0 | -90 | 882.3 | |
| S21-264 | 627058.93 | 5945127.54 | 1054.17 | 225 | -60 | 744.0 | |
| S21-265 | 626438.16 | 5944866.19 | 1046.33 | 0 | -90 | 744.0 | |
| S21-266 | 626571.41 | 5944873.34 | 1050.06 | 0 | -90 | 693.0 | |
| S21-267 | 627174.13 | 5945372.74 | 1066.04 | 190 | -45 | 357.0 | |
| S21-268 | 626549.34 | 5944976.57 | 1044.63 | 0 | -65 | 729.0 | |
| S21-269 | 627500.98 | 5945465.44 | 1076.18 | 135 | -65 | 366.0 | |
| S21-270 | 626998.00 | 5945518.00 | 1111.00 | 0 | -50 | 531.0 | |
| S21-271 | 626199.77 | 5944760.39 | 1044.98 | 205 | -50 | 738.0 | Unassayed |
| S21-272 | 626998.00 | 5945518.00 | 1111.00 | 0 | -70 | 90.0 | |
| S21-273 | 626998.00 | 5945518.00 | 1111.00 | 0 | -90 | 282.0 | |
| S21-274 | 626998.00 | 5945518.00 | 1111.00 | 180 | -70 | 198.0 | |
| S21-275 | 627037.00 | 5945586.00 | 1112.00 | 180 | -50 | 216.0 | |
| S21-276 | 627063.00 | 5945564.00 | 1113.00 | 180 | -60 | 213.0 | |
| S21-277 | 626952.00 | 5945544.00 | 1108.00 | 180 | -50 | 340.0 | |
| S21-278 | 626926.00 | 5945497.00 | 1102.00 | 135 | -50 | 126.0 | |
| S21-279 | 627066.00 | 5945463.00 | 1103.28 | 335 | -45 | 180.0 | |
| S21-280 | 626926.00 | 5945497.00 | 1102.00 | 325 | -50 | 189.0 | |
| S21-281 | 627101.00 | 5945544.00 | 1109.00 | 195 | -50 | 153.0 | |
| S21-282 | 627101.00 | 5945544.00 | 1109.00 | 195 | -80 | 141.0 | |
| S21-283 | 626924.87 | 5945551.25 | 1109.49 | 170 | -50 | 144.0 | |
| S21-284 | 627143.00 | 5945543.00 | 1108.00 | 176 | -50 | 159.0 | |
| S21-285 | 627143.00 | 5945543.00 | 1108.00 | 218 | -50 | 195.0 | |
| S21-286 | 627143.00 | 5945543.00 | 1108.00 | 218 | -70 | 171.0 | |
| S21-287 | 626950.00 | 5945464.00 | 1106.00 | 270 | -50 | 111.0 | |
| S21-288 | 626908.00 | 5945427.00 | 1095.00 | 360 | -50 | 192.0 | |
| S21-289 | 626876.10 | 5945477.44 | 1094.81 | 345 | -50 | 207.0 | |
| S21-290 | 626876.10 | 5945477.44 | 1094.81 | 0 | -90 | 111.0 | |
| S21-291 | 626876.10 | 5945477.44 | 1094.81 | 185 | -50 | 288.0 | |
| S21-292 | 627066.00 | 5945463.00 | 1103.28 | 335 | -60 | 222.0 | |
| S21-293 | 626876.10 | 5945477.44 | 1094.81 | 125 | -50 | 168.0 | |
| S21-294 | 627060.00 | 5945522.00 | 1109.00 | 135 | -50 | 192.0 | |

| Hole-ID | Collar - X | Collar - Y | Collar - Z | Azimuth | Dip | Length | Comments |
|---|---|---|---|---|---|---|---|
| S21-295 | 627052.00 | 5945521.00 | 1109.00 | 220 | -50 | 207.0 | |
| S21-296 | 627053.00 | 5945521.00 | 1109.00 | 180 | -75 | 225.0 | |
| S21-297 | 627183.00 | 5945536.00 | 1105.00 | 135 | -50 | 195.0 | |
| S21-298 | 627180.00 | 5945535.00 | 1105.00 | 180 | -50 | 210.0 | |
| S21-299 | 627178.00 | 5945535.00 | 1105.00 | 220 | -50 | 225.0 | |
| S21-300 | 626943.15 | 5945463.02 | 1105.07 | 0 | -45 | 204.0 | |
| S21-301 | 626943.15 | 5945463.02 | 1105.07 | 0 | -60 | 243.0 | |
| S21-302 | 626993.56 | 5945413.59 | 1095.94 | 0 | -45 | 273.0 | |
| S21-303 | 626993.56 | 5945413.59 | 1095.94 | 0 | -60 | 342.0 | |
| S21-304 | 626993.56 | 5945413.59 | 1095.94 | 135 | -50 | 240.0 | |
| S21-305 | 626942.05 | 5945417.51 | 1096.18 | 0 | -50 | 235.6 | |
| S21-306 | 626942.05 | 5945417.51 | 1096.18 | 0 | -65 | 275.7 | |
| S21-307 | 627057.00 | 5945430.00 | 1099.00 | 0 | -50 | 214.5 | |
| S21-308 | 627057.00 | 5945430.00 | 1099.00 | 0 | -65 | 297.0 | |
| S21-309 | 627057.00 | 5945430.00 | 1099.00 | 135 | -45 | 147.0 | |
| S21-310 | 627057.00 | 5945430.00 | 1099.00 | 135 | -60 | 150.3 | |
| S21-311 | 627066.00 | 5945463.00 | 1103.28 | 40 | -50 | 187.2 | |
| S21-312 | 627066.00 | 5945463.00 | 1087.00 | 300 | -45 | 159.0 | |
| S21-313 | 627139.00 | 5945413.00 | 1079.46 | 300 | -60 | 141.0 | |
| S21-314 | 627139.00 | 5945413.00 | 1079.46 | 335 | -45 | 180.0 | |

# Appendix 2: Ox Drilling

Highlighted holes were not used for resource estimation.

| Hole-ID | Collar - X | Collar - Y | Collar - Z | Azimuth | Dip | Length | Comments |
|---|---|---|---|---|---|---|---|
| DDH01 | 628264.39 | 5948910.18 | 972.46 | 85 | -45 | 73.2 | Historic Drilling - Not used |
| DDH02 | 628264.39 | 5948910.18 | 972.46 | 265 | -45 | 177.4 | Historic Drilling - Not used |
| DDH03 | 628437.69 | 5949112.43 | 950.67 | 115 | -45 | 51.2 | Historic Drilling - Not used |
| DDH04 | 628437.69 | 5949112.43 | 950.67 | 275 | -45 | 178.3 | Historic Drilling - Not used |
| DDH05 | 628578.70 | 5949366.92 | 944.47 | 105 | -45 | 167.6 | Historic Drilling - Not used |
| DDH06 | 628362.88 | 5948758.92 | 961.15 | 225 | -45 | 198.7 | Historic Drilling - Not used |
| DDH07 | 628362.88 | 5948758.92 | 961.15 | 45 | -45 | 53.6 | Historic Drilling - Not used |
| DDH08 | 628614.26 | 5948750.62 | 953.95 | 165 | -45 | 121.9 | Historic Drilling - Not used |
| DDH09 | 628949.72 | 5949394.09 | 949.11 | 180 | -45 | 189.6 | Historic Drilling - Not used |
| DDH10 | 629063.82 | 5948959.15 | 961.70 | 290 | -45 | 185.3 | Historic Drilling - Not used |
| DDH11 | 629063.82 | 5948959.15 | 961.70 | 110 | -45 | 47.2 | Historic Drilling - Not used |
| DDH12 | 628220.70 | 5949100.45 | 977.11 | 90 | -50 | 243.8 | Historic Drilling - Not used |
| DDH13 | 628157.80 | 5948969.57 | 984.01 | 95 | -50 | 179.8 | Historic Drilling - Not used |
| DDH14 | 628178.74 | 5948853.03 | 983.41 | 90 | -50 | 143.3 | Historic Drilling - Not used |
| DDH15 | 628249.85 | 5948859.89 | 970.70 | 90 | -50 | 76.2 | Historic Drilling - Not used |
| DDH16 | 628226.72 | 5948968.79 | 974.60 | 95 | -50 | 137.2 | Historic Drilling - Not used |
| DDH17 | 628315.07 | 5949105.99 | 968.24 | 92 | -50 | 134.1 | Historic Drilling - Not used |
| DDH18 | 628439.55 | 5949170.55 | 949.78 | 90 | -50 | 302.1 | Historic Drilling - Not used |
| DDH19 | 628311.99 | 5949226.62 | 967.73 | 90 | -50 | 175.9 | Historic Drilling - Not used |
| DDH20 | 628294.48 | 5948730.72 | 966.05 | 90 | -50 | 232.6 | Historic Drilling - Not used |
| DDH21 | 628400.01 | 5948732.65 | 956.98 | 90 | -50 | 112.8 | Historic Drilling - Not used |
| DDH22 | 628053.12 | 5948276.29 | 991.99 | 165 | -50 | 76.5 | Historic Drilling - Not used |
| DDH23 | 628534.46 | 5948329.31 | 981.78 | 165 | -70 | 76.2 | Historic Drilling - Not used |
| DDH24 | 628372.54 | 5949411.70 | 978.06 | 270 | -50 | 76.2 | Historic Drilling - Not used |
| DDH25 | 628896.78 | 5949655.50 | 952.98 | 90 | -50 | 76.2 | Historic Drilling - Not used |
| DDH26 | 629151.11 | 5949919.68 | 935.25 | 165 | -50 | 76.8 | Historic Drilling - Not used |
| DDH27 | 629400.00 | 5949560.00 | 931.71 | 0 | -90 | 127.1 | Historic Drilling - Not used |
| DDH28 | 629280.00 | 5949300.00 | 959.12 | 165 | -70 | 76.2 | Historic Drilling - Not used |
| DDH29 | 629420.00 | 5948820.00 | 973.99 | 165 | -45 | 92.4 | Historic Drilling - Not used |
| DDH30 | 629870.00 | 5949070.00 | 950.00 | 165 | -45 | 76.5 | Historic Drilling - Not used |
| DDH31 | 628729.58 | 5948843.57 | 970.18 | 165 | -45 | 127.1 | Historic Drilling - Not used |
| DDH32 | 628868.04 | 5949206.49 | 946.97 | 60 | -45 | 152.4 | Historic Drilling - Not used |
| DDH33 | 628454.47 | 5948638.13 | 960.15 | 0 | -45 | 157.6 | Historic Drilling - Not used |
| DDH34 | 628159.10 | 5948866.87 | 987.11 | 0 | -90 | 246.9 | Historic Drilling - Not used |
| DDH35 | 628230.52 | 5948735.27 | 973.08 | 90 | -50 | 211.8 | Historic Drilling - Not used |
| DDH36 | 628454.47 | 5948638.13 | 960.15 | 90 | -51 | 93.6 | Historic Drilling - Not used |
| DDH37 | 628296.50 | 5948562.70 | 980.72 | 0 | -90 | 239.9 | Historic Drilling - Not used |
| Ox07-1 | 628454.47 | 5948638.13 | 960.15 | 60 | -60 | 112.5 | |
| Ox07-2 | 628454.47 | 5948638.13 | 960.15 | 0 | -45 | 194.2 | |
| Ox07-3 | 628342.25 | 5948603.99 | 970.78 | 25 | -50 | 212.5 | |
| Ox07-4 | 628236.27 | 5948733.93 | 972.04 | 45 | -50 | 175.9 | |
| Ox07-5 | 628198.10 | 5948852.06 | 979.21 | 90 | -50 | 194.2 | |
| Ox07-6 | 628207.67 | 5949048.68 | 978.64 | 90 | -75 | 186.2 | |
| Ox07-7 | 628220.70 | 5949100.45 | 977.11 | 90 | -60 | 239.9 | |
| Ox07-8 | 628253.90 | 5949227.40 | 975.98 | 330 | -45 | 303.9 | |
| Ox07-9 | 628253.90 | 5949227.40 | 975.98 | 90 | -50 | 182.0 | |
| Ox07-10 | 628411.69 | 5949290.05 | 958.33 | 100 | -50 | 188.1 | |
| Ox07-11 | 628541.97 | 5949309.70 | 943.88 | 120 | -50 | 249.0 | |
| Ox07-12 | 628839.00 | 5948832.00 | 981.02 | 100 | -50 | 142.3 | |
| Ox07-13 | 628895.00 | 5948850.00 | 980.93 | 310 | -65 | 288.7 | |
| Ox07-14 | 628620.00 | 5948610.00 | 980.57 | 0 | -90 | 303.9 | |
| Ox07-15 | 628895.00 | 5948850.00 | 980.93 | 0 | -90 | 306.9 | |
| Ox07-16 | 628620.00 | 5948610.00 | 980.57 | 325 | -65 | 306.9 | |
| Ox07-17 | 628179.00 | 5948853.00 | 983.35 | 270 | -70 | 270.4 | |
| Ox07-18 | 628207.30 | 5948814.64 | 976.28 | 0 | -90 | 303.9 | |
| Ox07-19 | 628253.90 | 5949227.40 | 975.98 | 149 | -60 | 303.9 | |
| Ox07-20 | 628455.04 | 5949249.94 | 953.03 | 135 | -60 | 200.3 | |
| Ox07-21 | 628325.58 | 5949103.78 | 965.98 | 312 | -48 | 236.8 | |
| Ox07-22 | 628341.01 | 5949060.65 | 959.64 | 0 | -90 | 100.6 | |

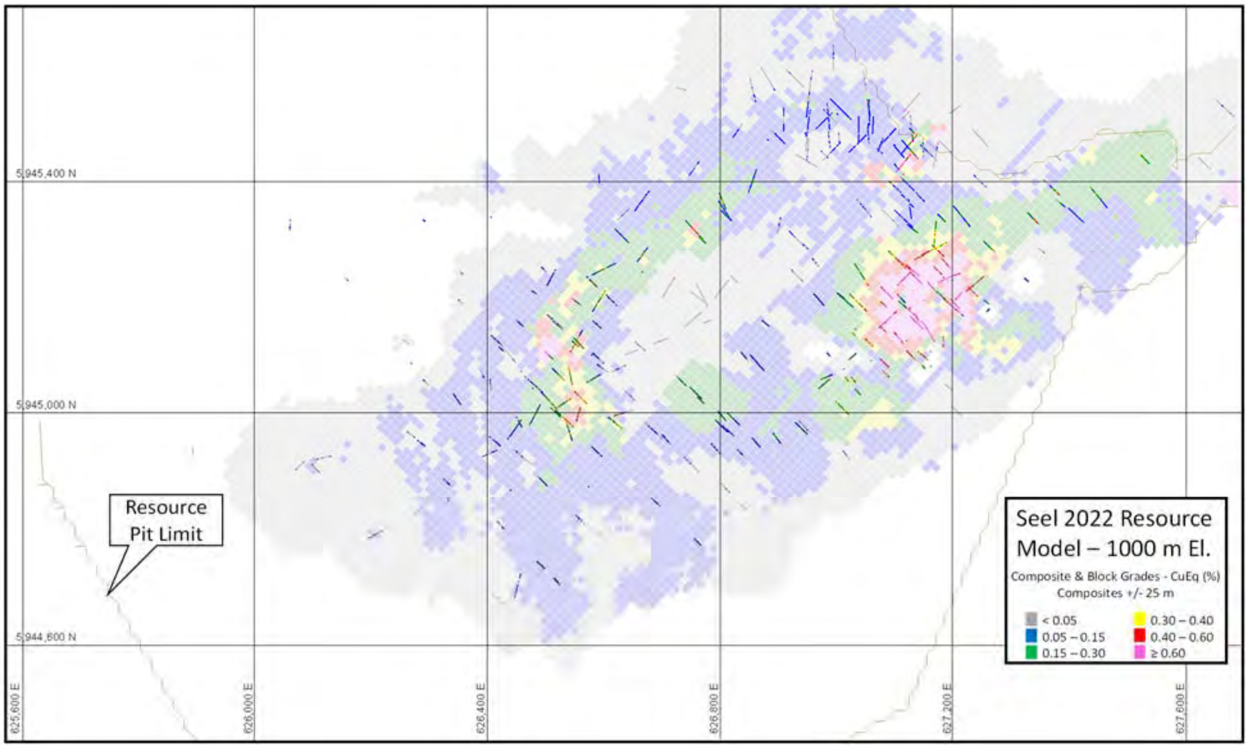
| Hole-ID | Collar - X | Collar - Y | Collar - Z | Azimuth | Dip | Length | Comments |
|---|---|---|---|---|---|---|---|
| Ox07-23 | 628157.80 | 5948969.57 | 984.01 | 95 | -80 | 194.0 | |
| Ox07-24 | 628780.00 | 5948690.00 | 997.96 | 310 | -65 | 322.6 | |
| Ox07-25 | 629080.00 | 5949020.00 | 961.52 | 290 | -65 | 334.4 | |
| Ox07-26 | 629000.00 | 5948160.00 | 1027.57 | 0 | -90 | 288.7 | Outside |
| Ox12-27 | 628148.11 | 5948850.39 | 988.79 | 90 | -50 | 228.6 | |
| Ox12-28 | 628148.11 | 5948850.39 | 988.79 | 90 | -70 | 204.3 | |
| Ox12-29 | 628148.11 | 5948850.39 | 988.79 | 0 | -90 | 372.0 | |
| Ox12-30 | 628173.84 | 5949134.67 | 985.52 | 135 | -50 | 201.3 | |
| Ox12-31 | 628173.84 | 5949134.67 | 985.52 | 135 | -70 | 262.2 | |
| Ox12-32 | 628173.84 | 5949134.67 | 985.52 | 0 | -90 | 356.7 | |
| Ox12-33 | 628411.69 | 5949290.05 | 958.33 | 135 | -50 | 405.4 | |
| Ox12-34 | 628411.69 | 5949290.05 | 958.33 | 130.8 | -69.1 | 472.6 | |
| Ox12-35 | 628312.43 | 5948587.94 | 976.82 | 30 | -60 | 365.9 | |
| Ox12-36 | 628312.43 | 5948587.94 | 976.82 | 30 | -75 | 442.1 | |
| Ox12-37 | 628353.74 | 5948656.36 | 965.00 | 30 | -55 | 237.9 | |
| Ox12-38 | 628226.08 | 5948852.20 | 971.56 | 90 | -55 | 164.6 | |
| Ox12-39 | 628226.72 | 5948968.79 | 974.60 | 95 | -50 | 103.6 | |
| Ox12-40 | 628226.72 | 5948968.79 | 974.60 | 95 | -70 | 118.9 | |
| Ox12-41 | 628247.15 | 5949087.36 | 975.01 | 135 | -60 | 186.0 | |
| Ox12-42 | 628503.52 | 5949167.81 | 944.02 | 315 | -75 | 247.0 | |
| Ox12-43 | 628503.52 | 5949167.81 | 944.02 | 315 | -60 | 213.6 | |
| Ox12-44 | 628484.88 | 5949361.98 | 954.00 | 135 | -50 | 365.9 | |
| Ox13-45 | 628399.70 | 5948731.78 | 956.31 | 30 | -55 | 115.8 | |
| Ox13-46 | 628399.40 | 5948730.84 | 956.52 | 0 | -90 | 179.8 | |
| Ox13-47 | 628384.82 | 5948689.31 | 961.00 | 30 | -55 | 152.4 | |
| Ox13-48 | 628384.82 | 5948689.31 | 961.00 | 90 | -45 | 158.5 | |
| Ox13-49 | 628385.63 | 5948689.54 | 961.00 | 90 | -65 | 192.0 | |
| Ox13-50 | 628346.01 | 5948751.23 | 961.84 | 40 | -45 | 149.4 | |
| Ox13-51 | 628346.01 | 5948751.23 | 961.84 | 40 | -65 | 137.2 | |
| Ox13-52 | 628345.79 | 5948750.62 | 961.89 | 40 | -65 | 158.5 | |
| Ox13-53 | 628318.38 | 5948726.25 | 967.00 | 40 | -65 | 161.5 | |
| Ox13-54 | 628300.05 | 5948794.61 | 964.00 | 40 | -50 | 82.3 | |
| Ox13-55 | 628269.02 | 5948762.27 | 966.45 | 40 | -50 | 121.9 | |
| Ox13-56 | 628321.40 | 5948817.12 | 964.86 | 220 | -65 | 140.2 | |
| Ox13-57 | 628258.07 | 5948821.02 | 968.00 | 45 | -50 | 115.8 | |
| Ox13-58 | 628235.49 | 5948799.62 | 970.00 | 45 | -50 | 140.2 | |
| Ox13-59 | 628286.14 | 5948856.21 | 967.70 | 90 | -50 | 79.2 | |
| Ox13-60 | 628250.04 | 5948857.97 | 963.00 | 90 | -50 | 109.7 | |
| Ox13-61 | 628247.27 | 5948911.54 | 974.77 | 90 | -45 | 97.5 | |
| Ox13-62 | 628246.74 | 5948911.52 | 974.49 | 90 | -65 | 109.7 | |
| Ox13-63 | 628280.35 | 5948964.67 | 968.40 | 90 | -50 | 97.5 | |
| Ox13-64 | 628275.79 | 5948964.51 | 968.70 | 270 | -80 | 164.6 | |
| Ox13-65 | 628328.44 | 5949035.29 | 962.00 | 135 | -50 | 51.8 | |
| Ox13-66 | 628326.69 | 5949034.32 | 961.38 | 0 | -90 | 94.5 | |
| Ox13-67 | 628286.15 | 5949065.69 | 971.01 | 135 | -60 | 94.5 | |
| Ox13-68 | 628332.62 | 5949104.03 | 964.46 | 135 | -45 | 106.7 | |
| Ox13-69 | 628332.62 | 5949104.03 | 964.46 | 135 | -65 | 106.7 | |
| Ox13-70 | 628332.67 | 5949103.96 | 964.40 | 0 | -90 | 225.6 | |
| Ox13-71 | 628333.20 | 5949105.86 | 964.40 | 70 | -45 | 384.0 | |
| Ox13-72 | 628332.52 | 5949105.64 | 964.31 | 70 | -65 | 445.0 | |
| Ox13-73 | 628356.99 | 5949170.73 | 964.56 | 135 | -45 | 219.5 | |
| Ox13-74 | 628357.45 | 5949170.48 | 964.00 | 135 | -65 | 195.5 | |
| Ox13-75 | 628356.45 | 5949171.16 | 964.58 | 0 | -90 | 423.7 | |
| Ox13-76 | 628394.37 | 5949134.59 | 955.00 | 70 | -45 | 423.7 | |
| Ox13-77 | 628450.13 | 5949173.73 | 948.17 | 135 | -45 | 192.0 | |
| Ox13-78 | 628450.56 | 5949173.22 | 947.85 | 135 | -65 | 262.1 | |
| Ox13-79 | 628498.83 | 5949169.52 | 943.89 | 135 | -45 | 213.4 | |
| Ox13-80 | 628498.83 | 5949169.52 | 943.89 | 135 | -60 | 268.2 | |
| Ox13-81 | 628499.92 | 5949172.76 | 943.75 | 70 | -45 | 277.4 | |
| Ox13-82 | 628508.57 | 5949251.06 | 943.32 | 135 | -45 | 268.2 | |
| Ox13-83 | 628507.64 | 5949250.98 | 944.18 | 135 | -65 | 332.2 | |

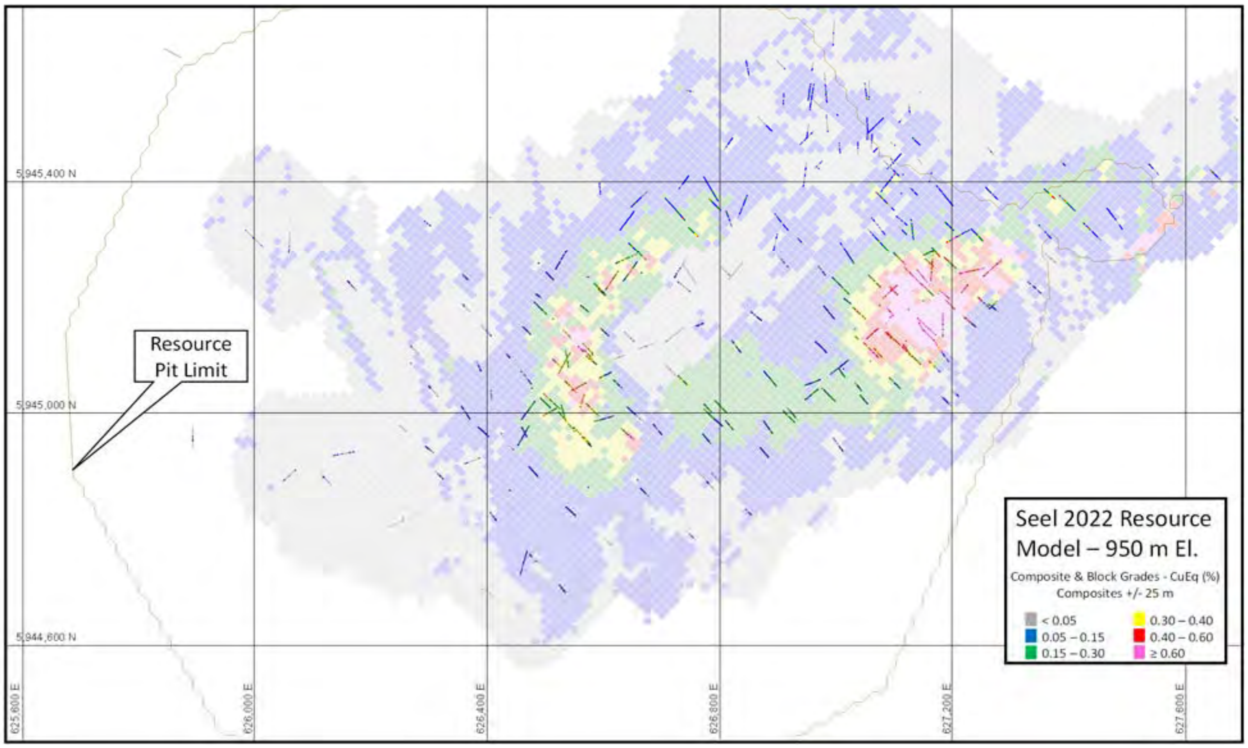
| Hole-ID | Collar - X | Collar - Y | Collar - Z | Azimuth | Dip | Length | Comments |
|---|---|---|---|---|---|---|---|
| Ox13-84 | 628613.28 | 5949393.09 | 944.56 | 135 | -45 | 237.7 | |
| Ox13-85 | 628612.73 | 5949393.59 | 944.62 | 135 | -65 | 283.5 | |
| Ox13-86 | 628563.24 | 5949372.60 | 946.18 | 135 | -45 | 262.1 | |
| Ox13-87 | 628414.89 | 5949264.73 | 957.00 | 135 | -60 | 393.2 | |
| Ox13-88 | 628284.61 | 5949094.99 | 970.14 | 70 | -65 | 393.2 | |
| Ox13-89 | 628393.68 | 5949134.49 | 956.15 | 70 | -65 | 423.7 | |
| Ox13-90 | 628475.61 | 5949205.99 | 945.48 | 135 | -67 | 362.1 | |
| Ox13-91 | 628380.78 | 5949227.25 | 960.00 | 135 | -55 | 301.8 | |
| Ox13-92 | 628839.62 | 5949415.18 | 941.81 | 135 | -45 | 195.1 | |
| Ox13-93 | 628839.16 | 5949415.70 | 942.07 | 135 | -65 | 204.2 | |
| Ox13-94 | 629107.00 | 5949528.00 | 944.00 | 221 | -45.4 | 253.0 | |
| Ox13-95 | 628322.43 | 5949220.67 | 967.00 | 131.8 | -49.2 | 243.8 | |
| Ox13-96 | 628271.44 | 5949260.21 | 977.61 | 135 | -50 | 323.1 | |
| Ox13-97 | 628284.87 | 5949003.47 | 966.43 | 105 | -45 | 106.7 | |
| Ox13-98 | 628284.17 | 5949003.79 | 966.36 | 105 | -90 | 161.5 | |
| Ox13-99 | 628242.20 | 5949017.32 | 975.50 | 105 | -45 | 137.2 | |
| Ox13-100 | 628240.34 | 5949014.43 | 978.00 | 105 | -65 | 158.5 | |
| Ox13-101 | 628181.95 | 5948898.04 | 980.62 | 90 | -50 | 158.5 | |
| Ox13-102 | 628181.95 | 5948898.04 | 980.62 | 90 | -70 | 140.2 | |
| Ox13-103 | 628297.86 | 5948818.98 | 964.85 | 45 | -45 | 82.3 | |
| Ox13-104 | 628297.86 | 5948818.98 | 964.85 | 225 | -75 | 131.1 | |
| Ox13-105 | 628297.99 | 5948819.15 | 964.85 | 225 | -60 | 353.6 | |
| Ox13-106 | 628341.02 | 5948801.86 | 959.67 | 40 | -45 | 51.2 | |
| Ox13-107 | 628340.37 | 5948801.01 | 959.52 | 0 | -90 | 79.2 | |
| Ox13-108 | 628374.96 | 5948780.00 | 958.62 | 224 | -65 | 173.7 | |
| Ox13-109 | 628374.60 | 5948779.65 | 958.65 | 224 | -45 | 218.2 | |
| Ox13-110 | 628343.79 | 5948800.82 | 959.32 | 220 | -60 | 216.4 | |
| Ox13-111 | 628401.80 | 5948735.29 | 955.98 | 90 | -45 | 152.4 | |
| Ox13-112 | 628401.44 | 5948735.33 | 955.97 | 90 | -65 | 173.7 | |
| Ox13-113 | 628450.90 | 5948722.79 | 952.85 | 30 | -45 | 152.4 | |
| Ox13-114 | 628450.53 | 5948721.86 | 952.92 | 0 | -90 | 146.3 | |
| Ox13-115 | 628424.02 | 5948666.49 | 953.50 | 30 | -45 | 158.5 | |
| Ox13-116 | 628423.01 | 5948667.86 | 953.34 | 0 | -90 | 167.6 | |
| Ox13-117 | 628610.81 | 5948746.55 | 953.00 | 335 | -45 | 91.4 | |
| Ox13-118 | 628611.53 | 5948747.54 | 952.90 | 10 | -45 | 100.6 | |
| Ox13-119 | 628518.58 | 5949101.68 | 942.33 | 135 | -45 | 164.6 | |
| Ox13-120 | 628519.13 | 5949101.15 | 942.41 | 105 | -44 | 195.1 | |
| Ox13-121 | 628496.93 | 5949125.57 | 943.52 | 135 | -55 | 109.7 | |
| Ox13-122 | 628496.47 | 5949125.87 | 943.37 | 0 | -90 | 280.4 | |
| Ox13-123 | 628537.15 | 5949174.63 | 940.65 | 135 | -45 | 179.8 | |
| Ox13-124 | 628537.15 | 5949174.63 | 940.65 | 105 | -45 | 192.0 | |
| Ox13-125 | 628539.37 | 5949213.40 | 942.00 | 105 | -45 | 207.3 | |
| Ox13-126 | 628539.37 | 5949213.40 | 942.00 | 135 | -45 | 207.3 | |
| Ox13-127 | 628345.67 | 5949259.80 | 964.00 | 135 | -55 | 368.8 | |
| Ox13-128 | 628274.43 | 5948681.55 | 973.62 | 40 | -65 | 173.7 | |
| Ox13-129 | 628387.14 | 5948628.01 | 961.47 | 30 | -70 | 130.8 | |
| Ox13-130 | 628974.82 | 5949195.95 | 949.50 | 240 | -45 | 130.0 | |
| Ox13-131 | 628995.60 | 5949002.55 | 959.27 | 270 | -45 | 107.3 | |
| Ox13-132 | 628996.13 | 5949002.59 | 959.16 | 270 | -65 | 194.2 | |
| Ox13-133 | 628910.11 | 5948833.64 | 982.62 | 330 | -45 | 112.8 | |
| Ox13-134 | 628910.41 | 5948833.20 | 982.56 | 330 | -65 | 182.9 | |

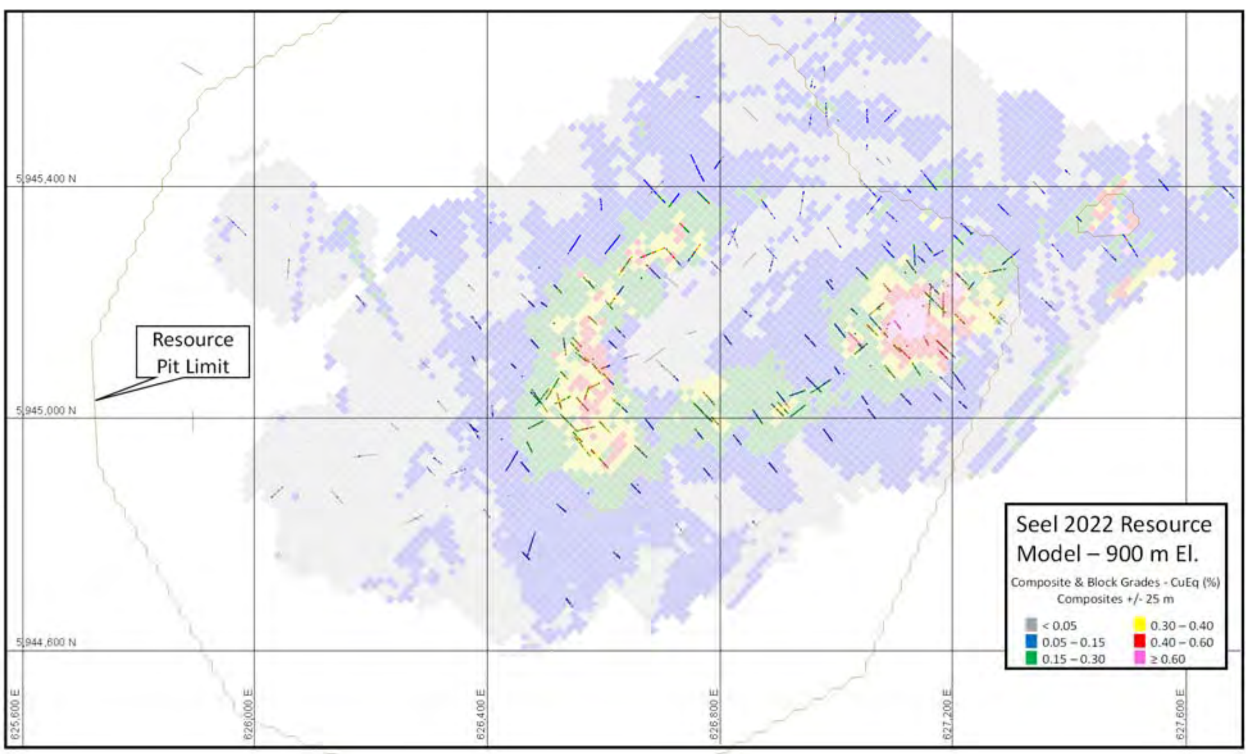
# Appendix 3: Seel Level Plans (50 m spacing)

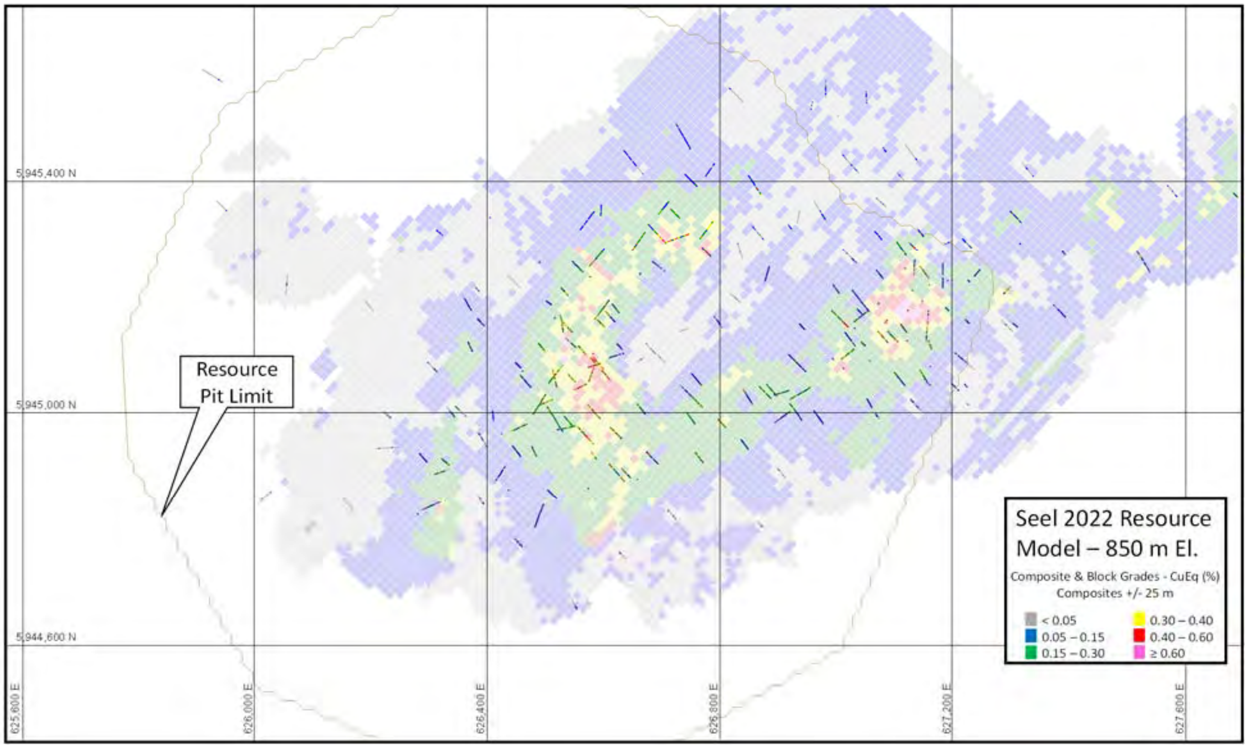
CuEq(%) Calculated from Estimated Block Grades

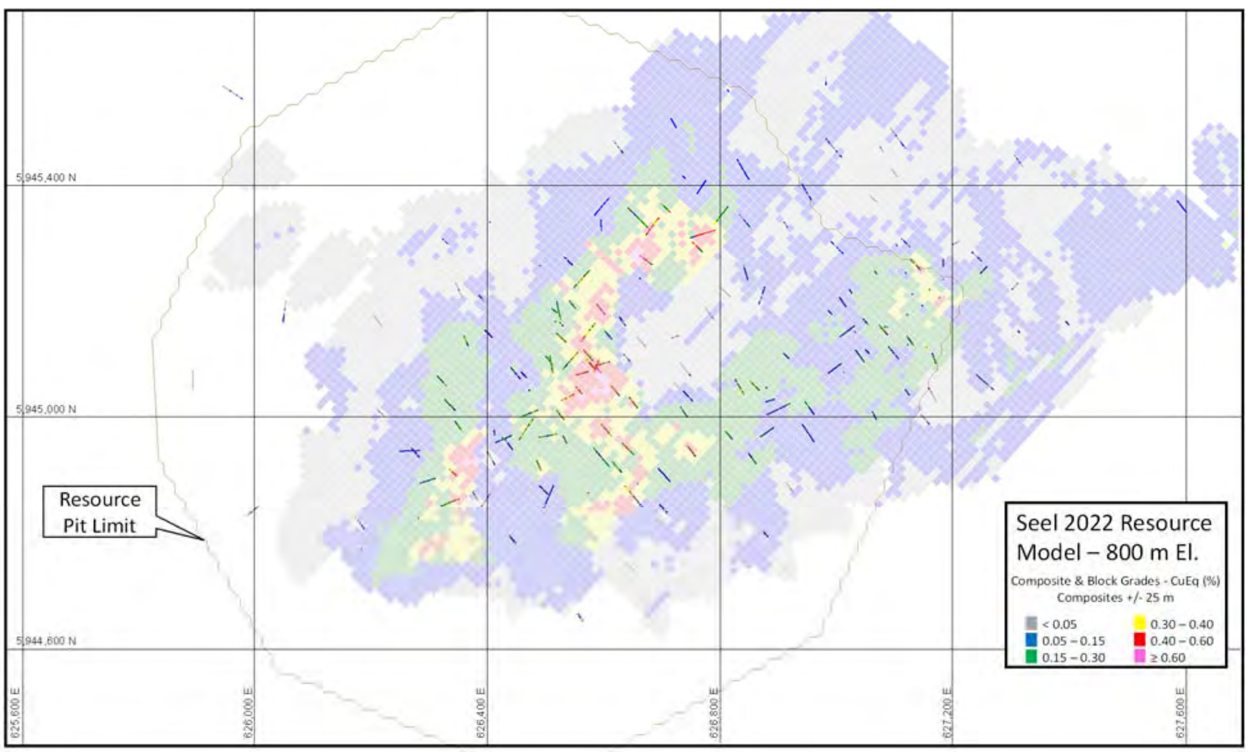
$$CuEq(\%) = Cu(\%) + 3.221 \times Mo(\%) + 0.663 \times Au(g/t) + 0.008 \times Ag(g/t)$$

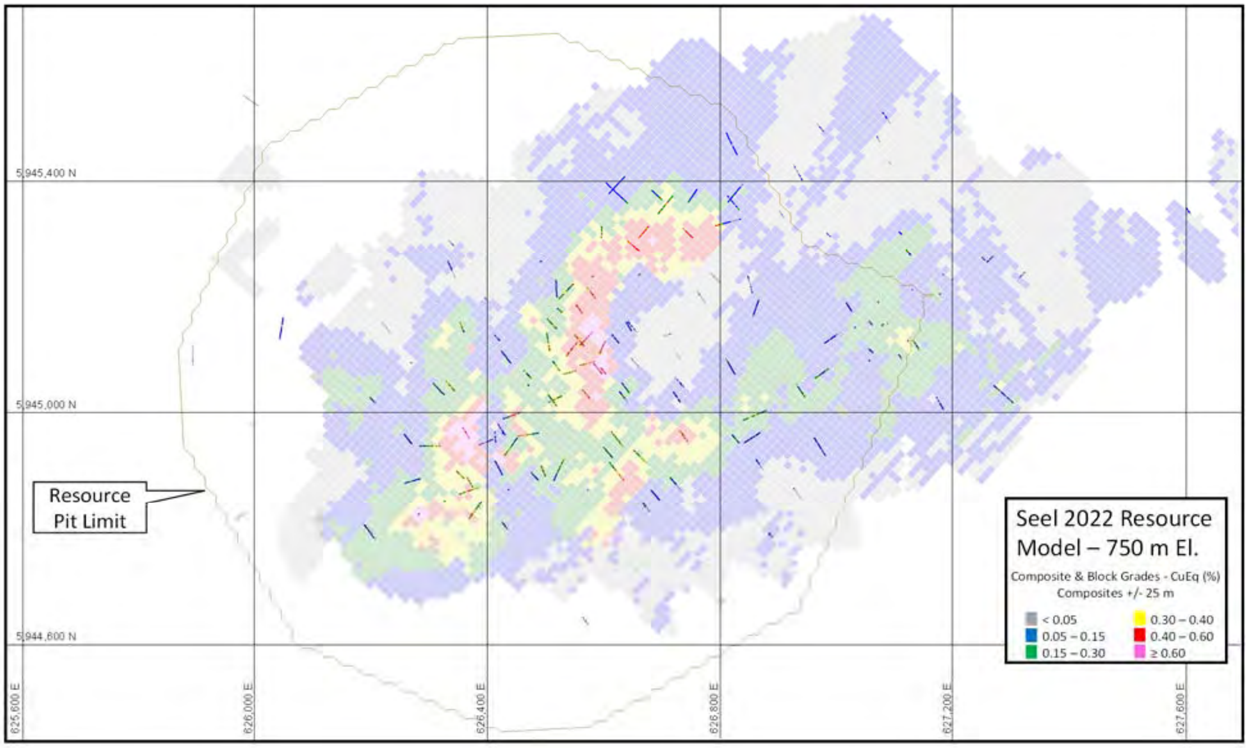


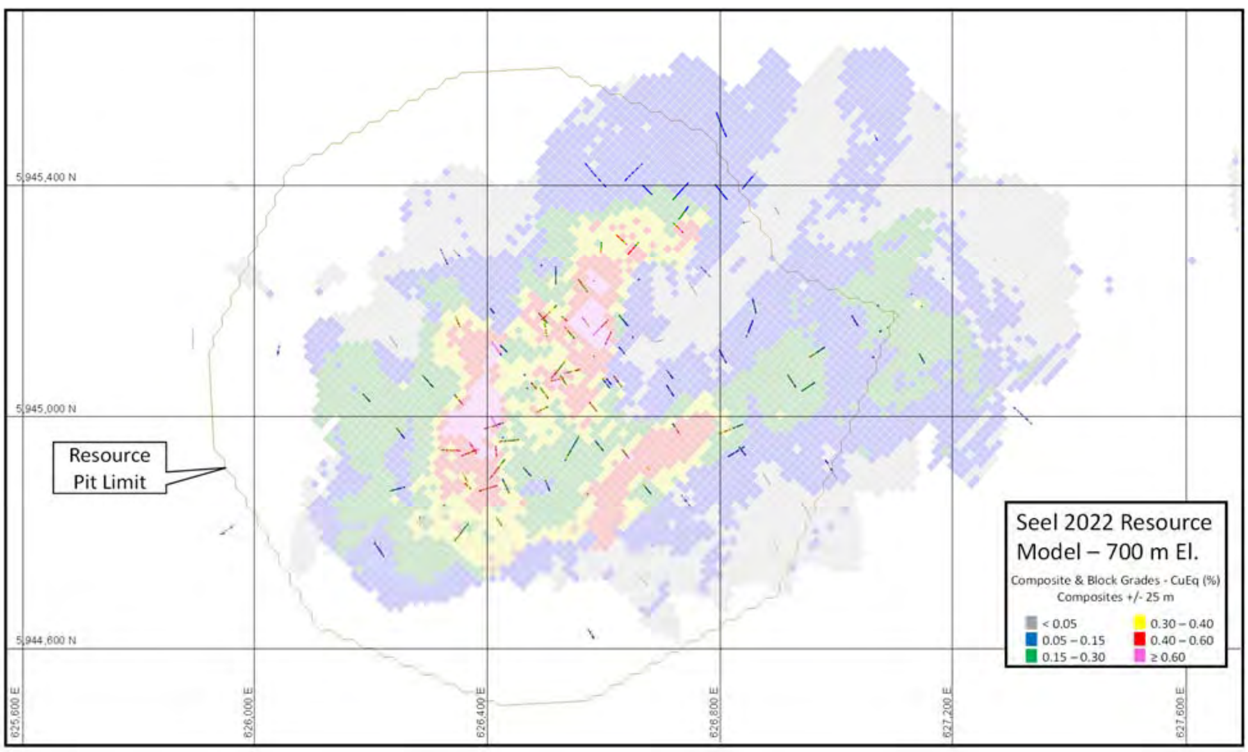

5,945,400 N
5,945,000 N
5,944,600 N
625,600 E
626,000 E
626,400 E
626,800 E
627,200 E
627,600 E
Resource Pit Limit
Seel 2022 Resource Model – 950 m El.
Composite & Block Grades - CuEq (%)
Composites +/- 25 m
< 0.05
0.05 – 0.15
0.15 – 0.30
0.30 – 0.40
0.40 – 0.60
≥ 0.60

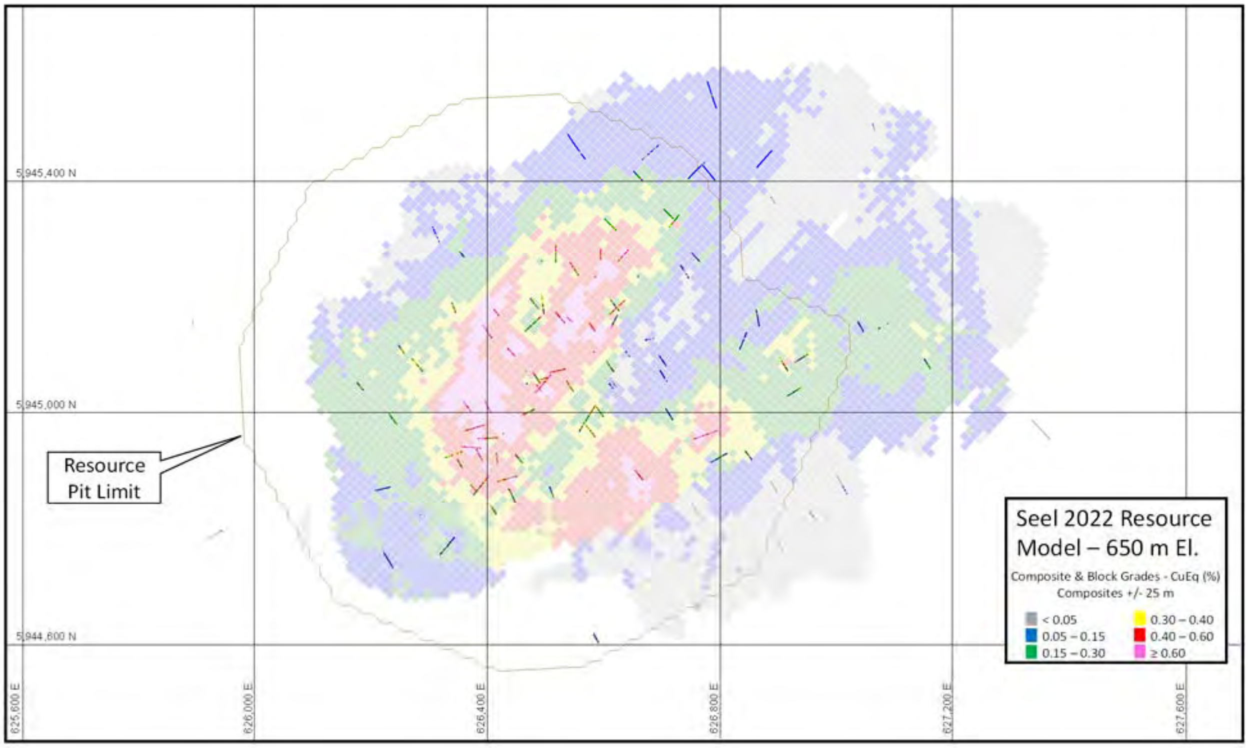

5,945,400 N
5,945,000 N
5,944,600 N
625,600 E
626,000 E
626,400 E
626,800 E
627,200 E
627,600 E
Resource Pit Limit
Seel 2022 Resource Model – 900 m El.
Composite & Block Grades - CuEq (%)
Composites +/- 25 m
< 0.05
0.05 – 0.15
0.15 – 0.30
0.30 – 0.40
0.40 – 0.60
≥ 0.60

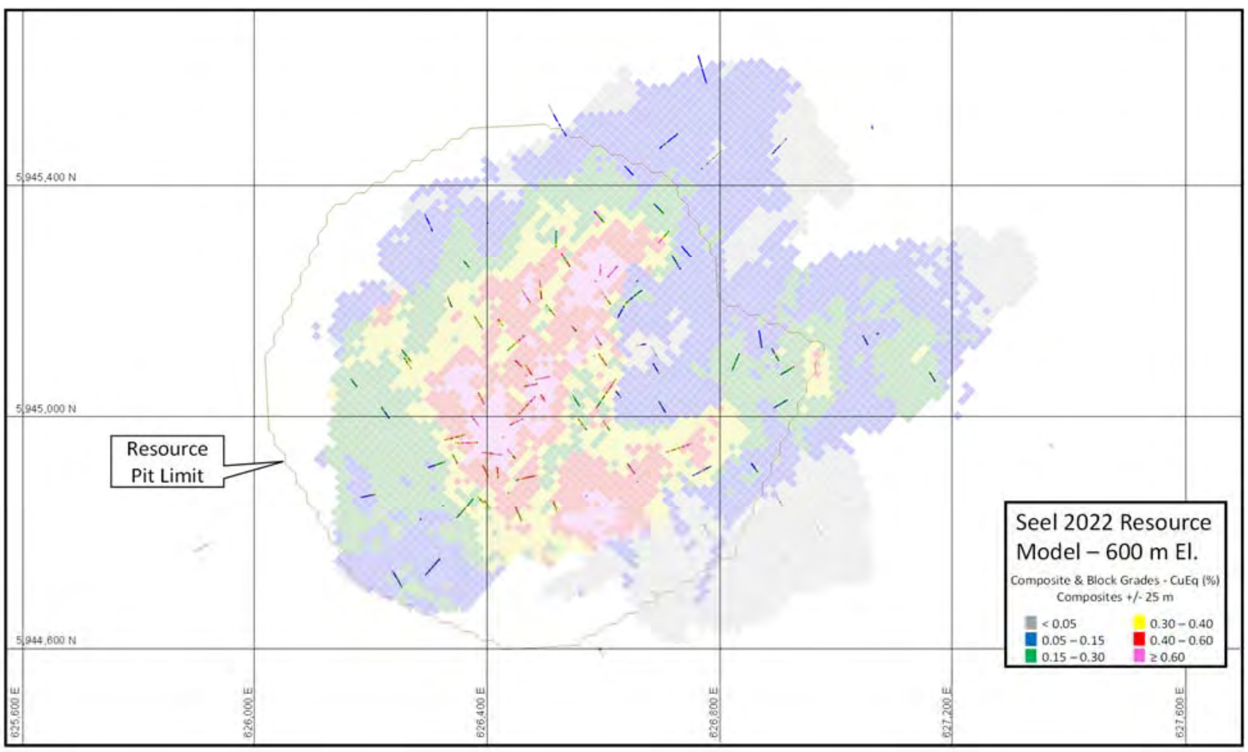

Resource
Pit Limit
5,945,400 N
5,945,000 N
5,944,600 N
625,600 E
626,000 E
626,400 E
626,800 E
627,200 E
627,600 E
Seel 2022 Resource
Model – 850 m El.
Composite & Block Grades - CuEq (%)
Composites +/- 25 m
< 0.05
0.05 – 0.15
0.15 – 0.30
0.30 – 0.40
0.40 – 0.60
≥ 0.60

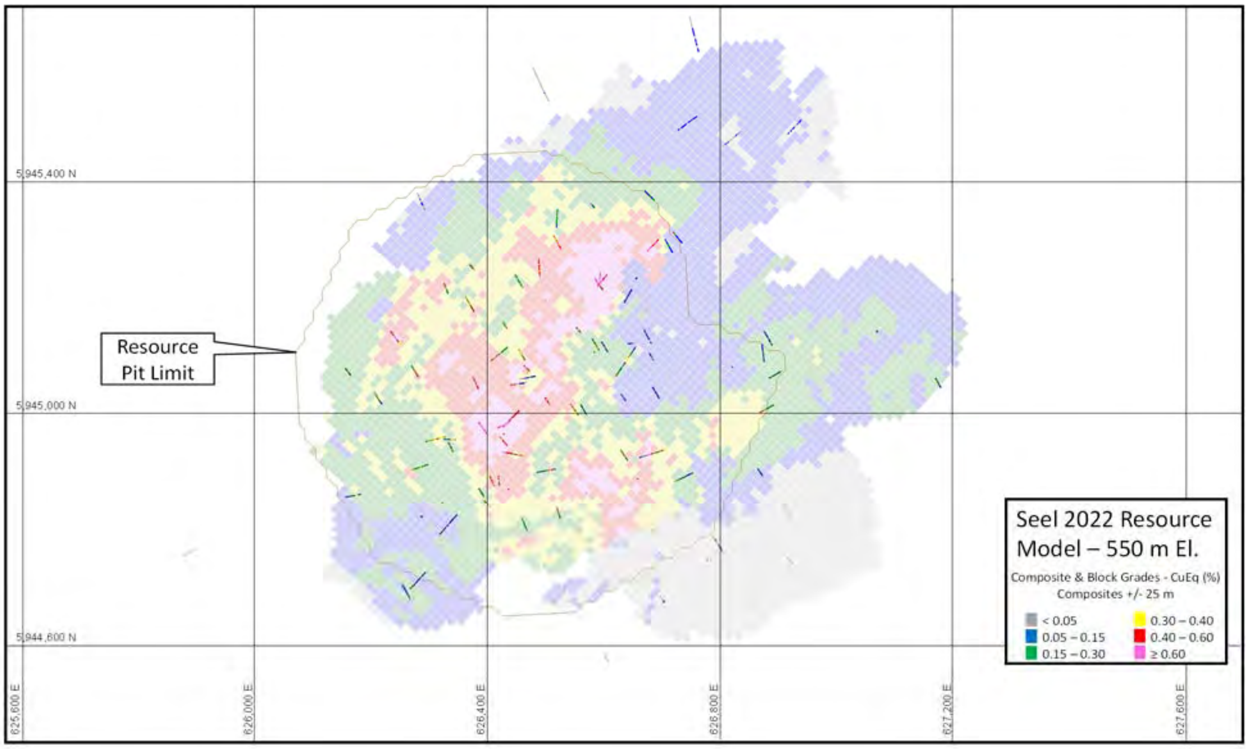

Resource
Pit Limit
5,945,400 N
5,945,000 N
5,944,600 N
625,600 E
626,000 E
626,400 E
626,800 E
627,200 E
627,600 E
Seel 2022 Resource
Model – 800 m El.
Composite & Block Grades - CuEq (%)
Composites +/- 25 m
< 0.05
0.05 – 0.15
0.15 – 0.30
0.30 – 0.40
0.40 – 0.60
≥ 0.60

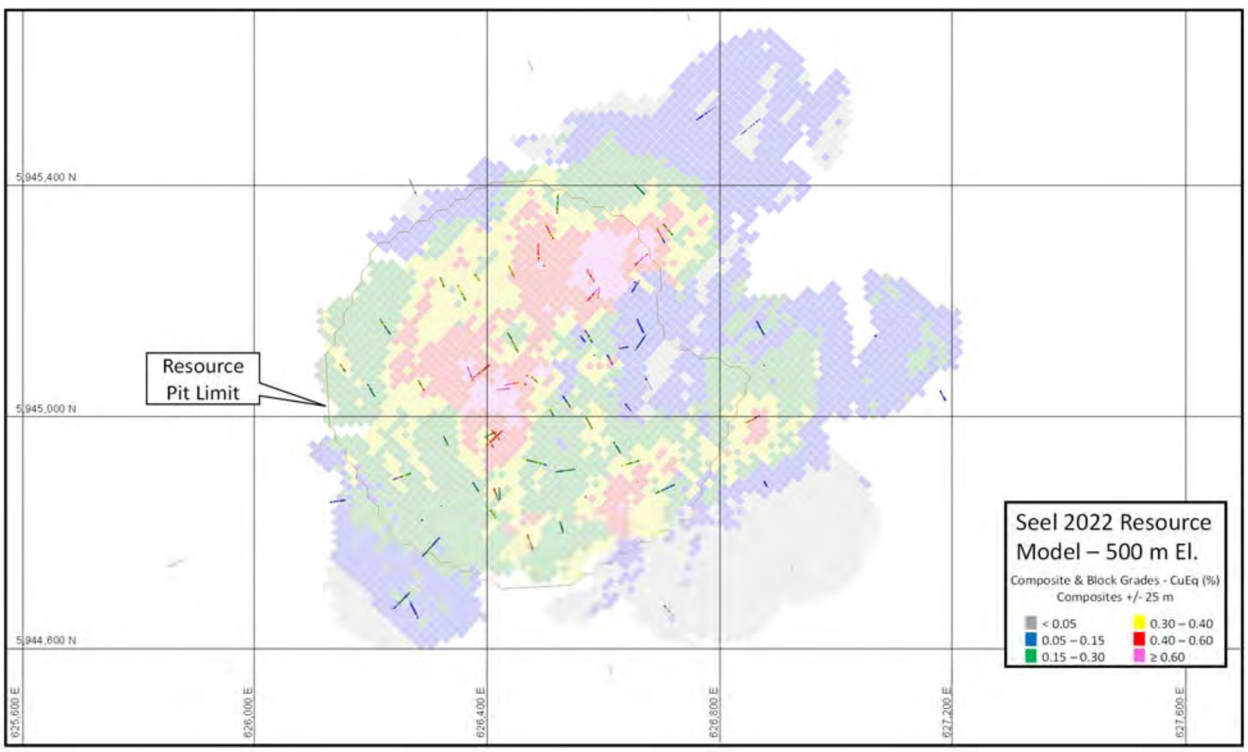

5,945,400 N
5,945,000 N
5,944,600 N
625,600 E
626,000 E
626,400 E
626,800 E
627,200 E
627,600 E
Resource Pit Limit
Seel 2022 Resource Model – 750 m El.
Composite & Block Grades - CuEq (%)
Composites +/- 25 m
< 0.05
0.05 – 0.15
0.15 – 0.30
0.30 – 0.40
0.40 – 0.60
≥ 0.60

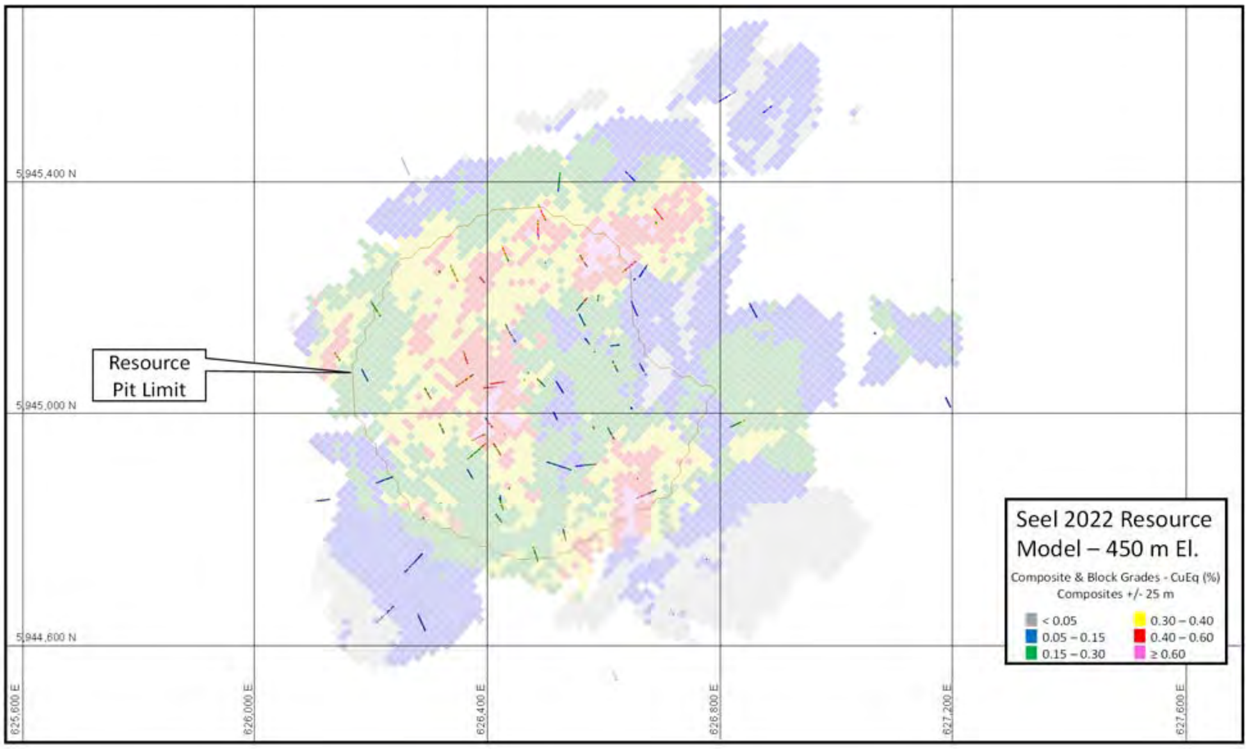

5,945,400 N
5,945,000 N
5,944,600 N
625,600 E
626,000 E
626,400 E
626,800 E
627,200 E
627,600 E
Resource Pit Limit
Seel 2022 Resource Model – 700 m El.
Composite & Block Grades - CuEq (%)
Composites +/- 25 m
< 0.05
0.05 – 0.15
0.15 – 0.30
0.30 – 0.40
0.40 – 0.60
≥ 0.60

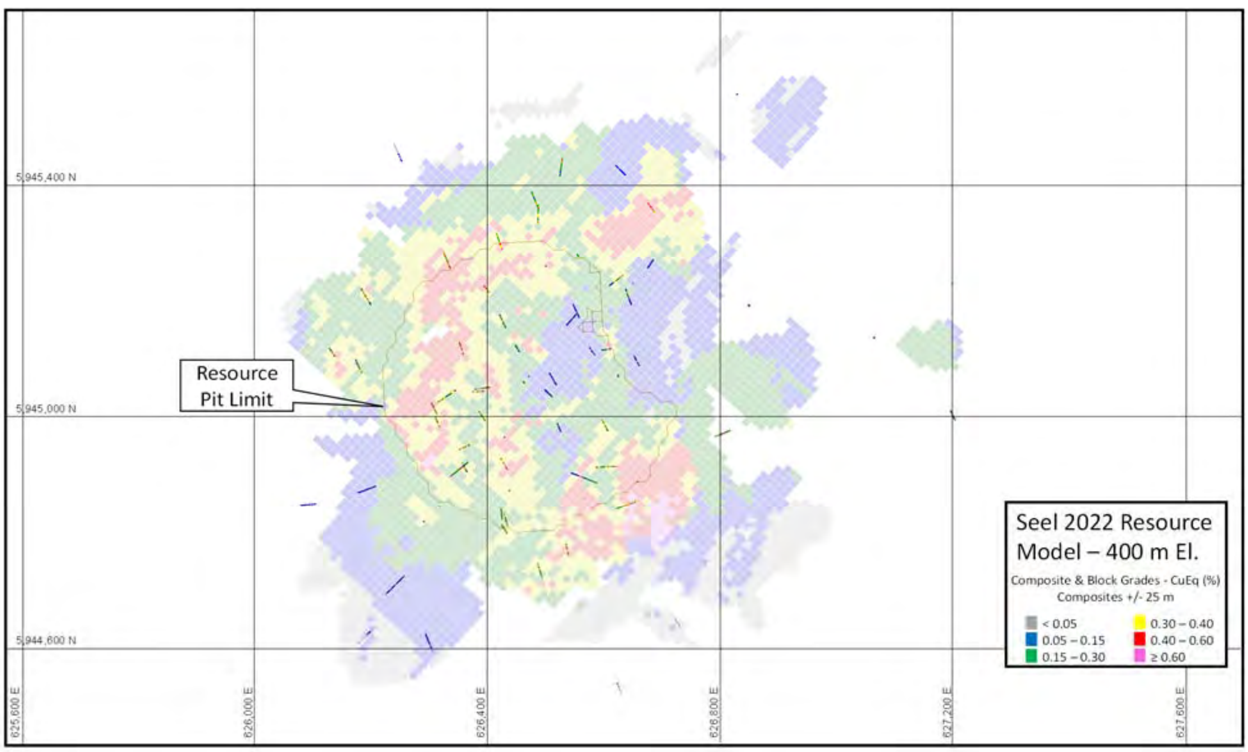

5,945,400 N
5,945,000 N
5,944,800 N
625,600 E
626,000 E
626,400 E
626,800 E
627,200 E
627,600 E
Resource Pit Limit
Seel 2022 Resource Model – 650 m El.
Composite & Block Grades - CuEq (%)
Composites +/- 25 m
< 0.05
0.05 – 0.15
0.15 – 0.30
0.30 – 0.40
0.40 – 0.60
≥ 0.60

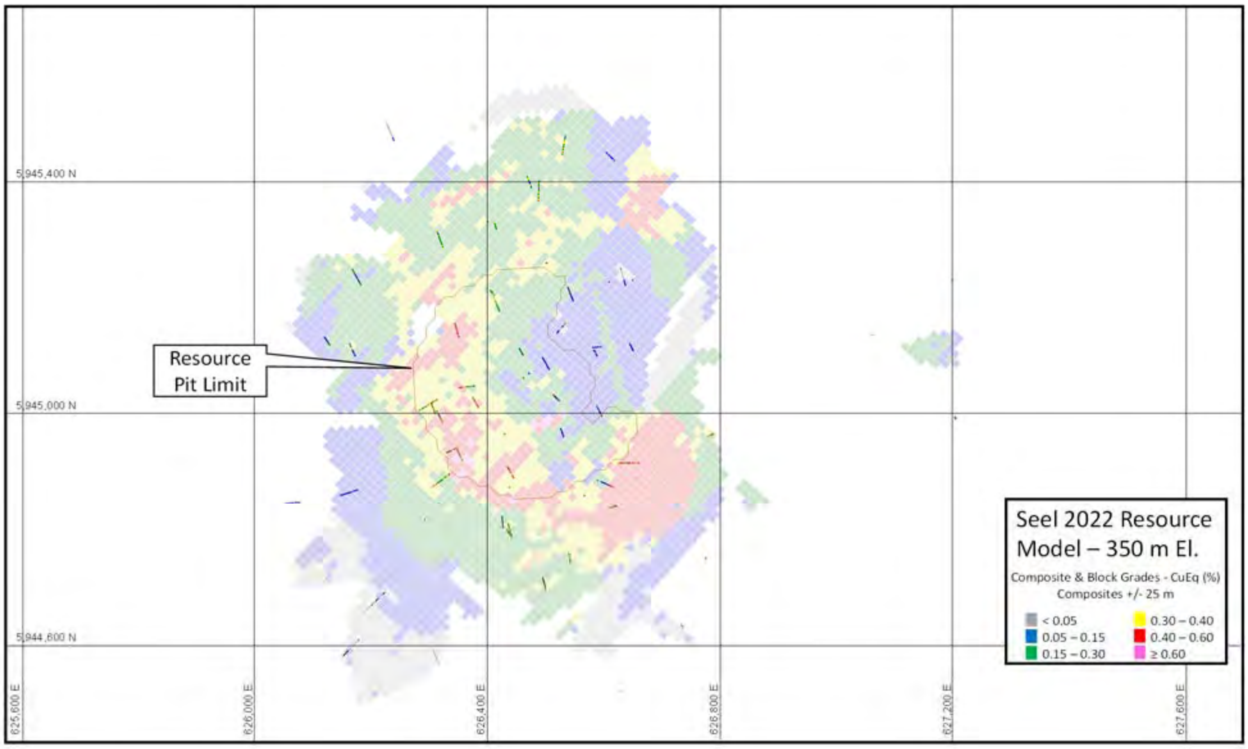

5,945,400 N
5,945,000 N
5,944,800 N
625,600 E
626,000 E
626,400 E
626,800 E
627,200 E
627,600 E
Resource Pit Limit
Seel 2022 Resource Model – 600 m El.
Composite & Block Grades - CuEq (%)
Composites +/- 25 m
< 0.05
0.05 – 0.15
0.15 – 0.30
0.30 – 0.40
0.40 – 0.60
≥ 0.60

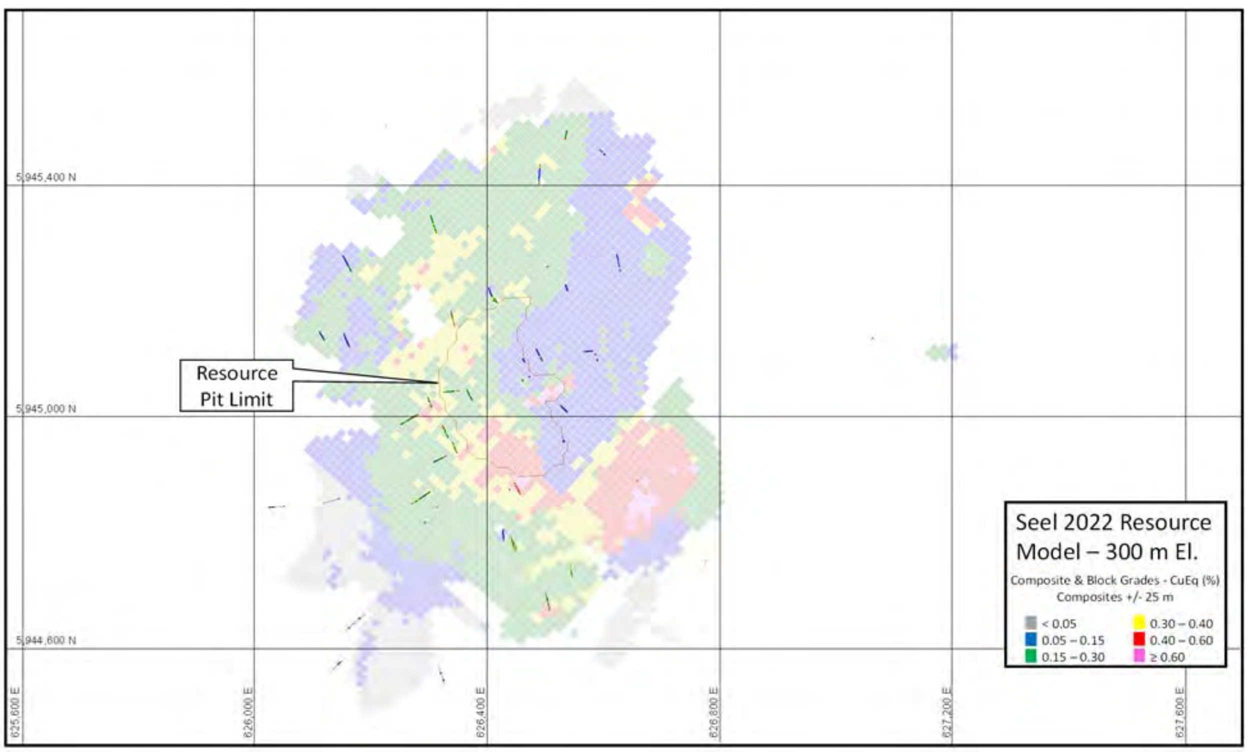

Resource Pit Limit
Seel 2022 Resource Model – 550 m El.
Composite & Block Grades - CuEq (%)
Composites +/- 25 m
< 0.05
0.05 – 0.15
0.15 – 0.30
0.30 – 0.40
0.40 – 0.60
≥ 0.60
5,945,400 N
5,945,000 N
5,944,600 N
625,600 E
626,000 E
626,400 E
626,800 E
627,200 E
627,600 E

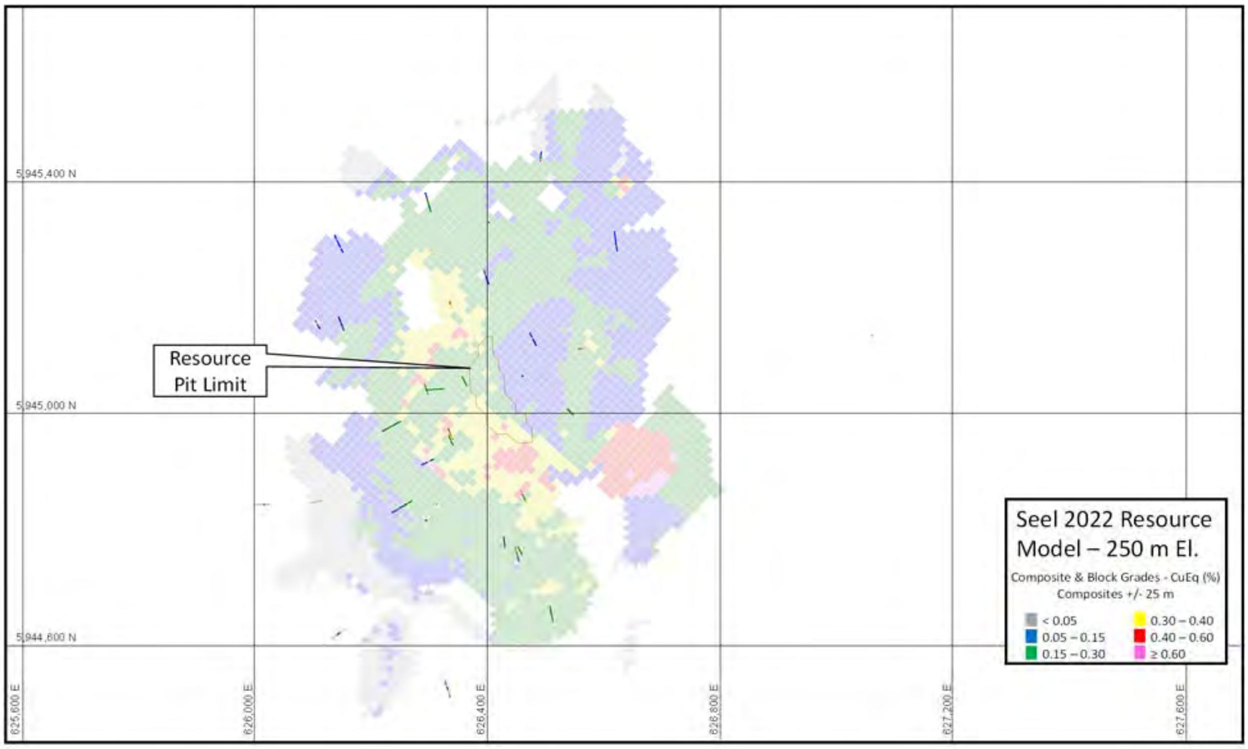

Resource Pit Limit
Seel 2022 Resource Model – 500 m El.
Composite & Block Grades - CuEq (%)
Composites +/- 25 m
< 0.05
0.05 – 0.15
0.15 – 0.30
0.30 – 0.40
0.40 – 0.60
≥ 0.60
5,945,400 N
5,945,000 N
5,944,600 N
625,600 E
626,000 E
626,400 E
626,800 E
627,200 E
627,600 E


5,945,400 N
5,945,000 N
5,944,600 N
625,600 E
626,000 E
626,400 E
626,800 E
627,200 E
627,600 E
Resource Pit Limit
Seel 2022 Resource Model – 450 m El.
Composite & Block Grades - CuEq (%)
Composites +/- 25 m
< 0.05
0.05 – 0.15
0.15 – 0.30
0.30 – 0.40
0.40 – 0.60
≥ 0.60


5,945,400 N
5,945,000 N
5,944,600 N
625,600 E
626,000 E
626,400 E
626,800 E
627,200 E
627,600 E
Resource Pit Limit
Seel 2022 Resource Model – 400 m El.
Composite & Block Grades - CuEq (%)
Composites +/- 25 m
< 0.05
0.05 – 0.15
0.15 – 0.30
0.30 – 0.40
0.40 – 0.60
≥ 0.60


Resource
Pit Limit
Seel 2022 Resource Model – 350 m El.
Composite & Block Grades - CuEq (%)
Composites +/- 25 m
< 0.05
0.05 – 0.15
0.15 – 0.30
0.30 – 0.40
0.40 – 0.60
≥ 0.60
5,945,400 N
5,945,000 N
5,944,600 N
625,600 E
626,000 E
626,400 E
626,800 E
627,200 E
627,600 E


Resource
Pit Limit
Seel 2022 Resource Model – 300 m El.
Composite & Block Grades - CuEq (%)
Composites +/- 25 m
< 0.05
0.05 – 0.15
0.15 – 0.30
0.30 – 0.40
0.40 – 0.60
≥ 0.60
5,945,400 N
5,945,000 N
5,944,600 N
625,600 E
626,000 E
626,400 E
626,800 E
627,200 E
627,600 E

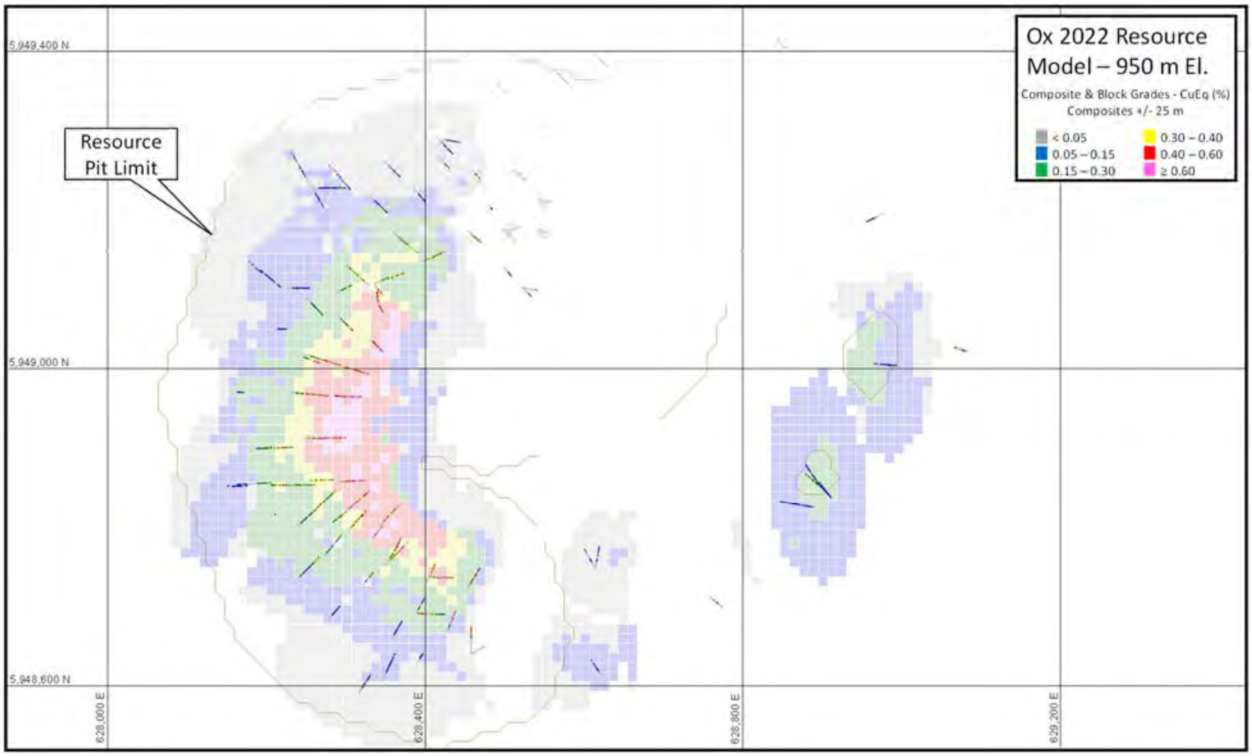


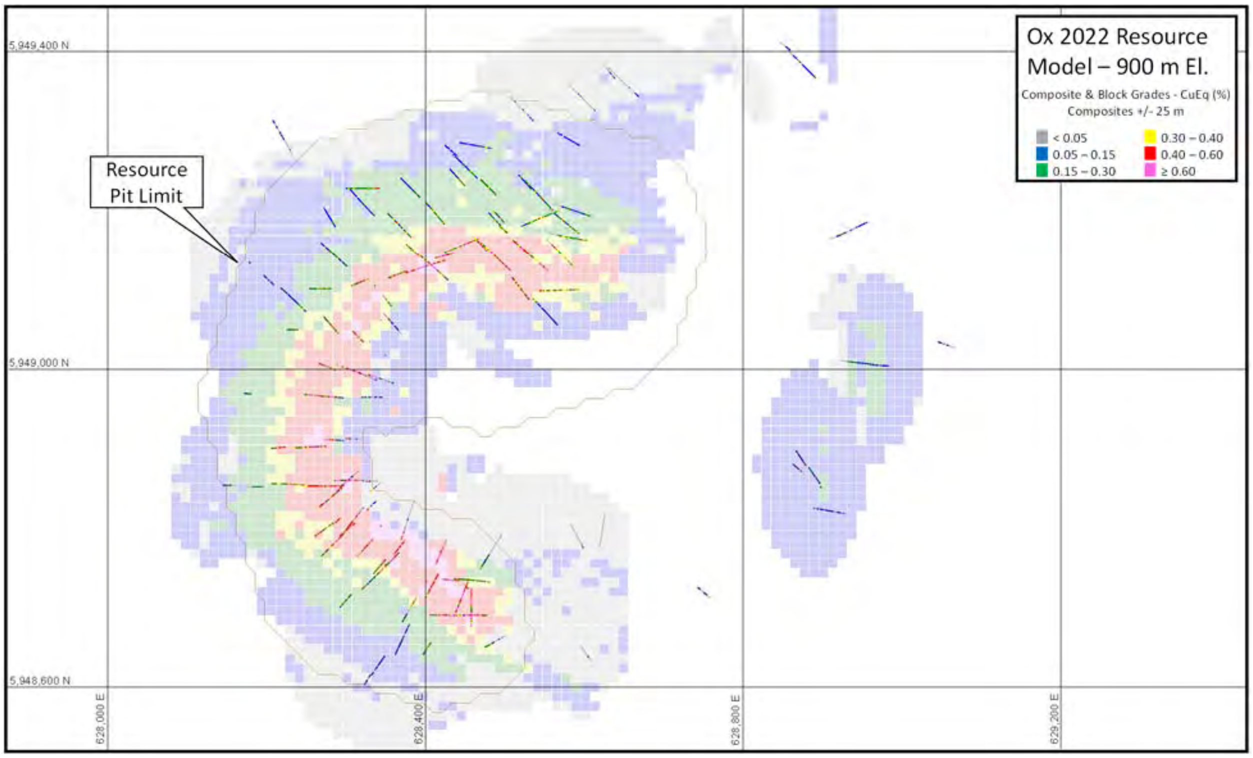
5,945,400 N
5,945,000 N
5,944,600 N
625,600 E
626,000 E
626,400 E
626,800 E
627,200 E
627,600 E
Resource Pit Limit
Seel 2022 Resource Model – 250 m El.
Composite & Block Grades - CuEq (%)
Composites +/- 25 m
< 0.05
0.05 – 0.15
0.15 – 0.30
0.30 – 0.40
0.40 – 0.60
≥ 0.60

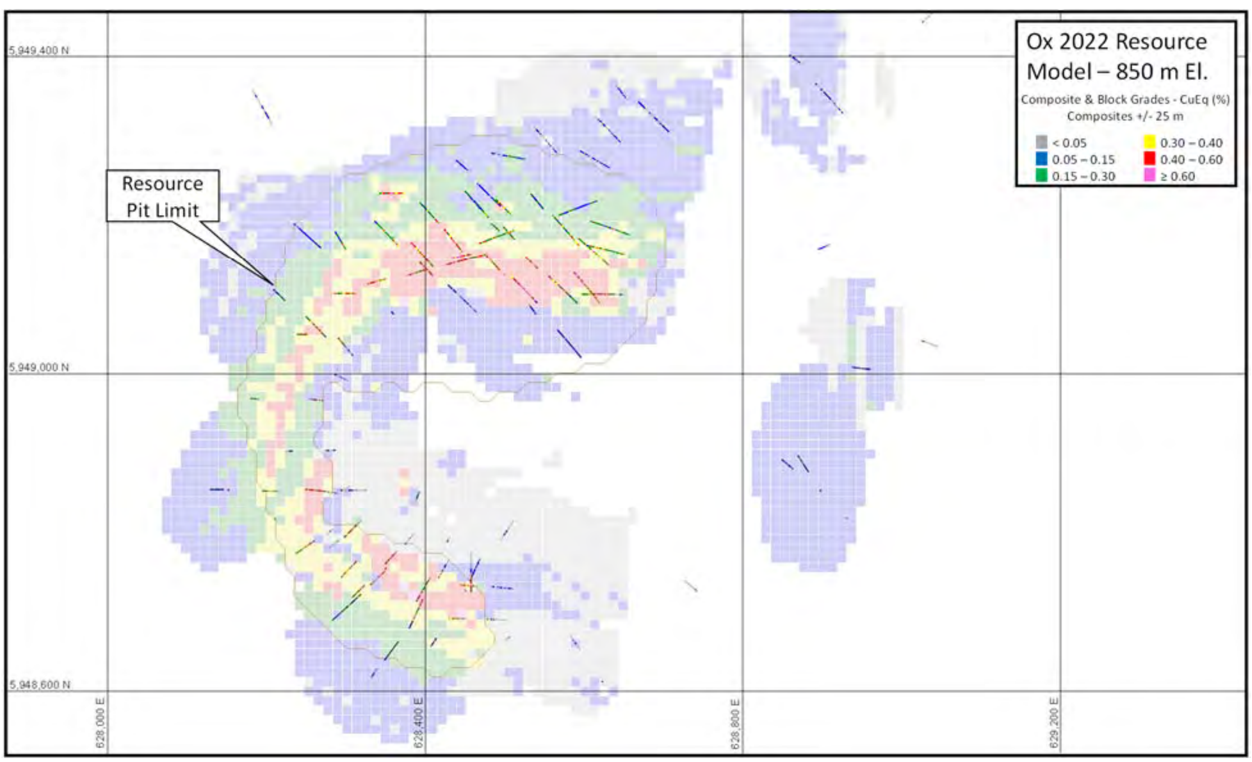
# Appendix 4 : Ox Level Plans (50 m spacing)

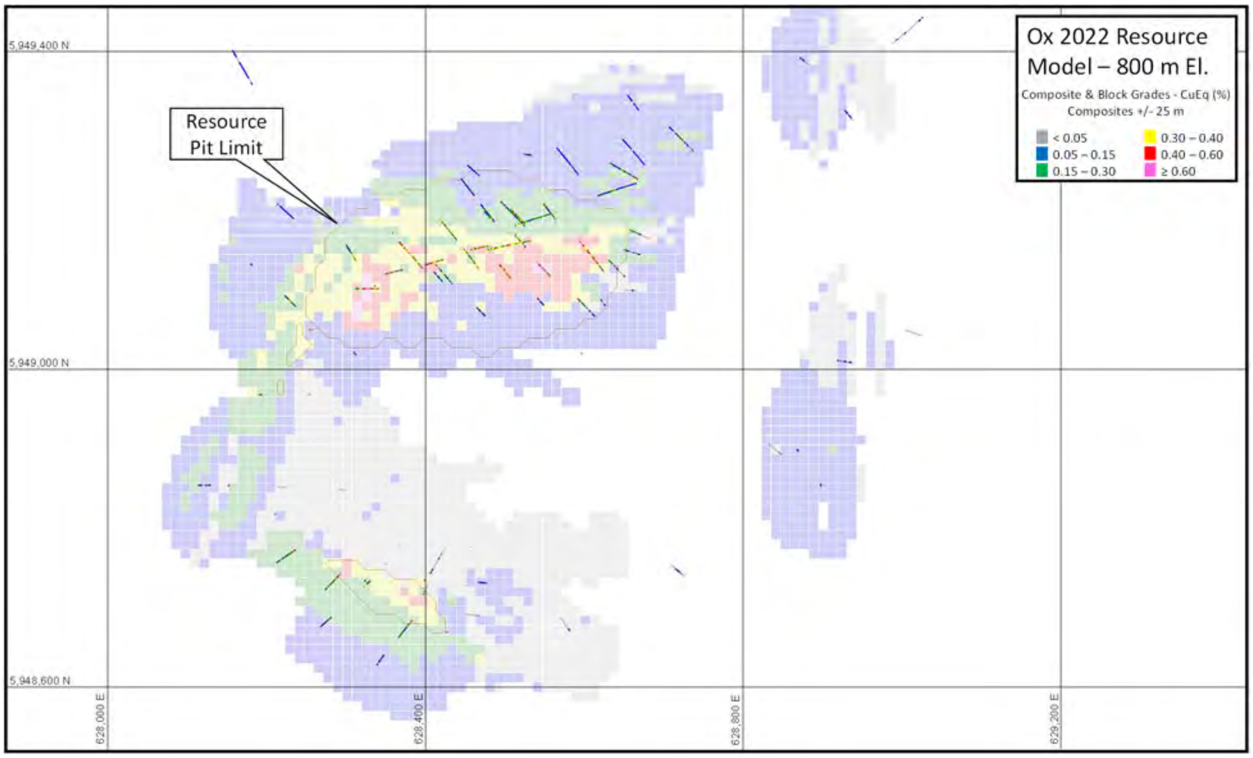
CuEq(%) Calculated from Estimated Block Grades

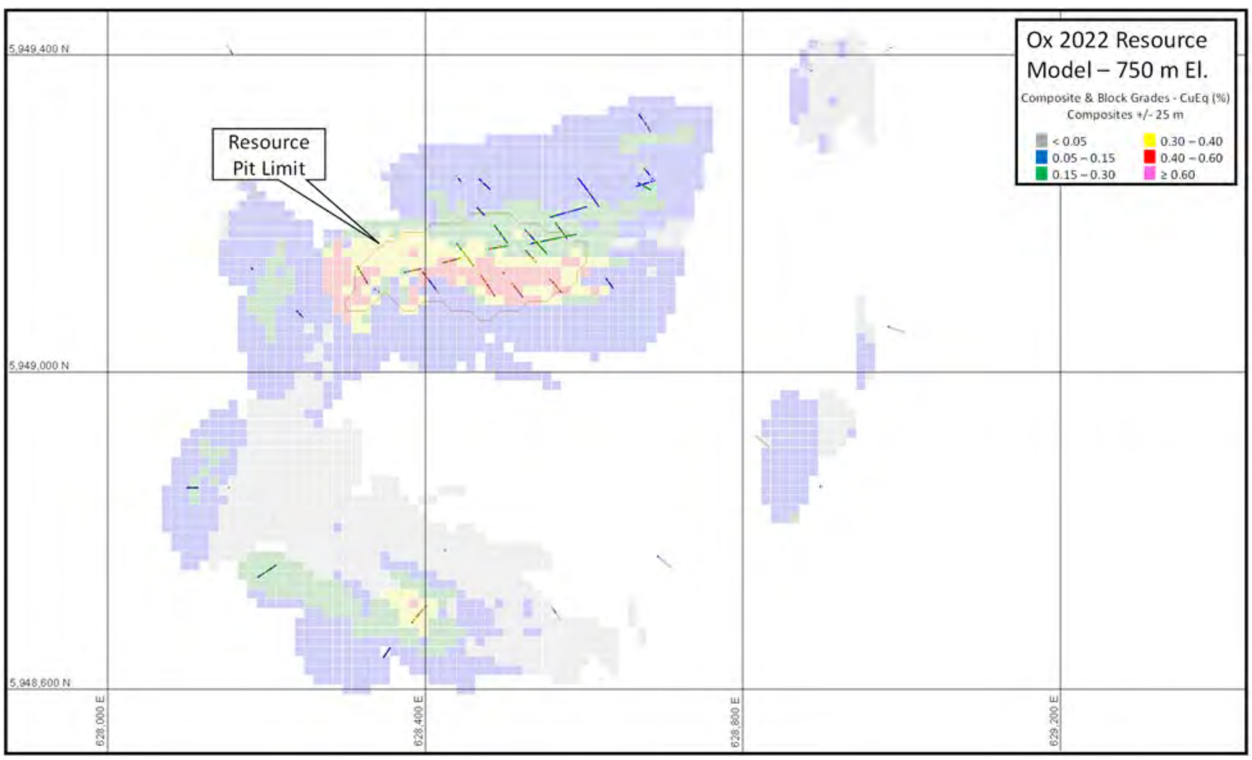
$$CuEq(\%) = Cu(\%) + 3.221 \times Mo(\%) + 0.663 \times Au(g/t) + 0.008 \times Ag(g/t)$$

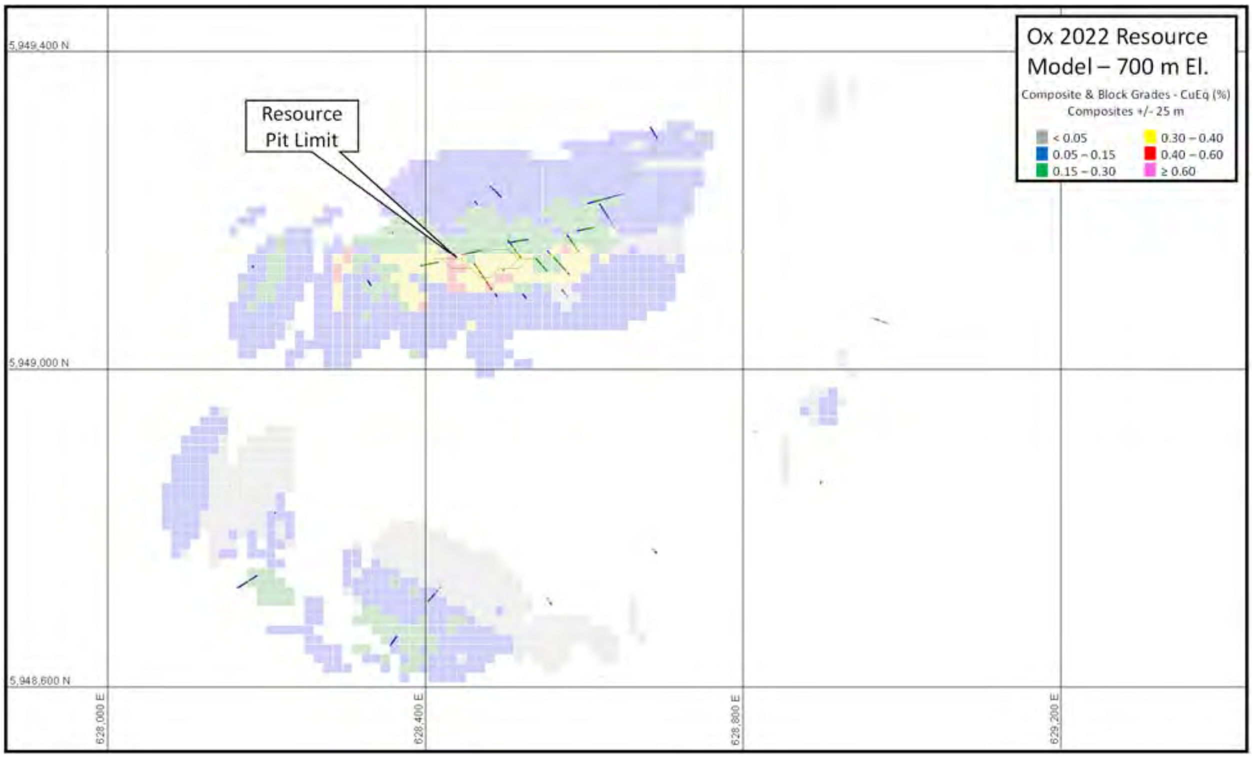



Ox 2022 Resource Model – 900 m El.
Composite & Block Grades - CuEq (%)
Composites +/- 25 m
< 0.05
0.05 – 0.15
0.15 – 0.30
0.30 – 0.40
0.40 – 0.60
≥ 0.60
Resource Pit Limit
5,949,400 N
5,949,000 N
5,948,600 N
628,000 E
628,400 E
628,800 E
629,200 E


Ox 2022 Resource Model – 850 m El.
Composite & Block Grades - CuEq (%)
Composites +/- 25 m
< 0.05
0.05 – 0.15
0.15 – 0.30
0.30 – 0.40
0.40 – 0.60
≥ 0.60
Resource Pit Limit
5,949,400 N
5,949,000 N
5,948,600 N
628,000 E
628,400 E
628,800 E
629,200 E


Ox 2022 Resource Model – 800 m El.
Composite & Block Grades - CuEq (%)
Composites +/- 25 m
< 0.05
0.05 – 0.15
0.15 – 0.30
0.30 – 0.40
0.40 – 0.60
≥ 0.60
Resource Pit Limit
5,949,400 N
5,949,000 N
5,948,600 N
628,000 E
628,400 E
628,800 E
629,200 E


Ox 2022 Resource Model – 750 m El.
Composite & Block Grades - CuEq (%)
Composites +/- 25 m
< 0.05
0.05 – 0.15
0.15 – 0.30
0.30 – 0.40
0.40 – 0.60
≥ 0.60
Resource Pit Limit
5,949,400 N
5,949,000 N
5,948,600 N
628,000 E
628,400 E
628,800 E
629,200 E


Ox 2022 Resource Model – 700 m El.
Composite & Block Grades - CuEq (%)
Composites +/- 25 m
< 0.05
0.05 – 0.15
0.15 – 0.30
0.30 – 0.40
0.40 – 0.60
≥ 0.60
Resource Pit Limit
5,949,400 N
5,949,000 N
5,948,600 N
628,000 E
628,400 E
628,800 E
629,200 E