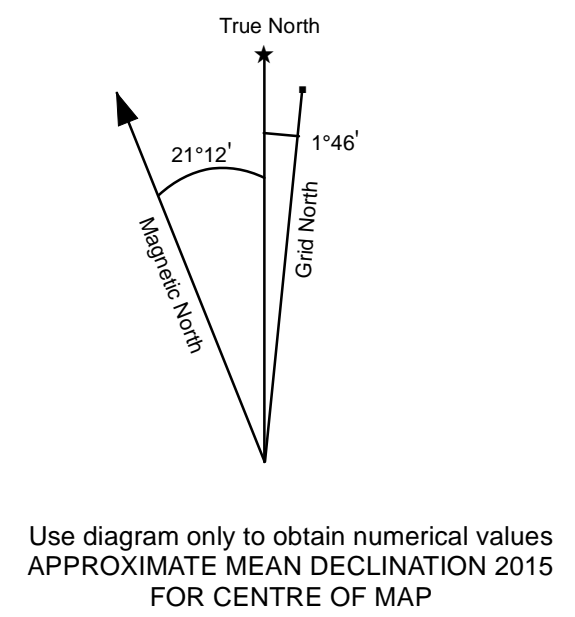
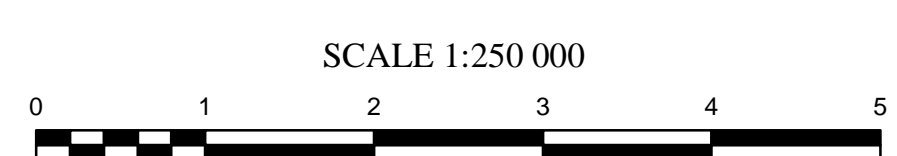


1:250 000-scale topographic base data produced by CENTRE FOR TOPOGRAPHIC INFORMATION, NATURAL RESOURCES CANADA. Copyright Her Majesty the Queen in Right of Canada. ONE THOUSAND METRE GRID Universal Transverse Mercator Projection North American Datum 1983 Zone 8. CONTOUR INTERVAL 100 FEET Elevations in metres above Mean Sea Level.

Porphyry Cu-Mo Weighted sums model (Geology Levelled) Sheet 10 of 17



105M	105N	105O
MAYO	LANSING RANGE	NIDDERY LAKE
105L	105K	105J
GLENLYON	THIS MAP	SHELDON LAKE
105E	105F	105G
LAKE LABERGE	QUIET LAKE	FINLAYSON LAKE

INTRODUCTION

New geochemical data from re-analysis of archived stream sediment samples have been assessed using weighted sums modeling and catchment basin analysis as described in the methodology report that accompanies this map (Mackie et al., 2015). Both commodity and pathfinder element abundances are evaluated to highlight areas that show geochemical responses consistent with a variety of base and precious-metal mineral deposit types. The results of modeling, completed using two approaches, are presented as a series of catchment maps and associated data files. This release is part of a regional assessment of stream sediment geochemistry that covers a large part of Yukon.

SAMPLING AND ANALYSIS PROGRAMS

Stream sediment and water samples from the Tay River map area (NTS 105K) were collected at a reconnaissance scale in 1988 and 1989 as part of the Canada-Yukon Mineral Development Agreement (Friske and Hornbrook, 1989; Friske et al., 1990). Field descriptions and initial geochemical data for 940 sites were released in Geological Survey of Canada ("GSC") open files 1961 (473 sites) and 2174 (467 sites). New geochemical data from the re-analysis of archived sample material were released in Yukon Geological Survey ("YGS") open files 2011-29 and 2012-7 (Jackman, 2011 & 2012). The reader is referred to these open files for detailed descriptions of sampling techniques, analytical procedures and quality control measures.

MINERAL OCCURRENCES

A variety of types of base and precious-metal mineralization are known to occur in the Tay River area as shown in Table 1 (Yukon MINFILE, 2015). These include sedimentary exhalative Zn-Pb-Ag (past-producing Faro, Vandogora and Grum mines); and Swim and Dy deposits and epithermal Au-Ag (Grew Creek) deposits. Polymetallic vein, Pb-Zn skarn, Cu skarn, intrusion-related Au and volcanogenic Zn-Pb-Ag-Cu-Au and Cu-Co massive sulphide mineralization are also documented within the map area. Along strike towards the southeast, in the Finlayson Lake district, numerous volcanic and sedimentary-hosted massive sulphide deposits occur, including Yukon Zinc Corporation's Wolverine mine (currently on care-and-maintenance).

WEIGHTED SUMS MODELING

As described in the methodology report (Mackie et al., 2015), two approaches have been used to subdue the influence of background lithological variation and secondary absorption on the composition of stream sediments. One uses data levelled by the dominant geology mapped within each catchment, while the other uses residuals calculated from

regression against selected principal components. Weighted sums models (WSM) have been generated using the processed data. The importance rankings used in WSMs are summarized in Table 2 for a variety of deposit types. Each model is optimized for a target deposit type however other deposit types may be represented in a given model due to similarities in elemental abundances and associated patterns.

For certain pathfinder elements (e.g., As, Sb and Cd) levelled by dominant lithology did not fully subdue the interpreted stratigraphic control on the spatial distribution of these elements. In order to reduce this impact on the WSM these elements were given low importance rankings (or were omitted) for certain deposit types. Additionally, strong responses for Zn, Pb and Ag related to SEDEX and polymetallic vein mineralization prevented using these elements as pathfinders for other deposit types. For example, negative rankings for Pb and Zn are used in the WSM for epithermal Au-Ag in order to reduce the contribution of Ag related to SEDEX mineralization. In the case of the WSM for porphyry copper, a negative ranking was assigned to Cd in order dampen a terrane effect (high Ag) in the north part of the map area.

The first principal component, accounting for ~34% of the total variation, shows high loadings for Se, S, Mo, Cd, Sb, Hg, Ag, Ba and Zn and forms a spatial trend that matches the distribution of the Road River and Earn Groups which contain shale horizons that are likely to be elevated in these metals. Similarly the second principal component, accounting for ~12% of the total variation, shows high loadings for Sb, As, Pb, Ni, Mo and Ag and forms a spatial trend matching the distribution of Tay, Mount Christie and Jones Lake formations which also contain shale. Regression analysis of these metals against the relevant principal component effectively subduced these terrane-effects while preserving, and in some cases enhancing, responses related to known occurrences. As above, negative rankings were used to differentiate deposit types with similar metal associations.

The effectiveness of historical sampling coverage has been assessed empirically using graphs of WSMs plotted against catchment surface area to determine the ideal maximum catchment size (10 km²). Catchments that cover larger areas (shown on the map with bold outlines) are interpreted to have been under-sampled and thus require further sampling to properly evaluate the area for geochemical anomalies. Given the likelihood that a mineralization 'signal' would be progressively diluted with increase in catchment size, marginally high WSM scores in large catchments could also be of interest.

Table 2: Importance rankings for weighted sums models using data levelled by dominant mapped geology.

Target Deposit Type*	Other Deposit Types*	Mn	Fe	Co	Ni	Cu	Mo	Zn	Pb	Ag	Au	As	Ba	Cd	Sn	Sb	Tl	Hg	Bi	W
SEDEX Pb-Zn-Ag	Polymetallic Ag-Pb-Zn; VMS; Pb-Zn skarn						3	2	4	1	1	1	1	1	1	1	1	1	1	1
Polymetallic Ag-Pb-Zn	SEDEX VMS; Pb-Zn skarn						4	4	2	1	1	-2	-2							
VMS (Cu-Rich)	Cu skarn; Cu porphyry	1			3	-1	-1													
Intrusion-related Au	Epithermal Au; replacement-style Au					-1	-1	-4	1							2			2	
Epithermal Au-Ag	Intrusion-related Au					-1	-1	4	3	1					1	3				
Porphyry Cu-Mo	Cu-Au porphyry; Cu skarn; Mo porphyry				4	3	-1	-1	2	1				-2						
W Skarn	Sn skarn; Porphyry W					-1	-1								2				2	3

*Hydrothermal Anomaly. *SEDEX = sedimentary exhalative; VMS = volcanic-hosted massive sulphide deposit; Polymetallic Ag-Pb-Zn includes both vein- and matrix-style. *Cobalt residuals are used following regression against Fe. *Gold data are not levelled by dominant geology, instead log₁₀ transformed raw data are used.

LEGEND

Town
 ▲ Mineral Occurrence
 — Road
 --- Contour
 ~~~~~ River  
 [ ] NTS map sheet  
 [ ] Water Body  
 [ ] Wetland  
 • Sample Location  
 [ ] Catchment >10km<sup>2</sup>  
 [ ] Catchment

**Weighted Sums Model (Geology Levelled) Porphyry Cu-Mo Deposits**  
 [ ] Incomplete element suite  
 [ ] 0-50th percentile  
 [ ] 50-75th percentile  
 [ ] 75-90th percentile  
 [ ] 90-95th percentile  
 [ ] 95-98th percentile  
 [ ] 98-100th percentile

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**RECOMMENDED CITATION**

MACKIE, R., ARNE, D. AND BROWN, O., 2015. Weighted sums model for Porphyry Cu-Mo deposits levelled by geology. In: Enhanced interpretation of stream sediment geochemical data for NTS 105K. Yukon Geological Survey, Open File 2015-25, scale 1:250 000, sheet 10 of 17.  
 Catchment basin polygons generated by the Yukon Geological Survey (J. O. Bruce).  
 Any revisions or additional geological information known to the user would be welcomed by the Yukon Geological Survey.  
 Paper copies of this map and the accompanying report may be purchased from the Yukon Geological Survey, Energy, Mines and Resources, Government of Yukon, Room 102-300 Main St., Whitehorse, Yukon, Y1A 2B5. Ph. 867-667-3201, Email [geology@gov.yk.ca](mailto:geology@gov.yk.ca).  
 A digital PDF (Portable Document File) file of this map may be downloaded free of charge from the Yukon Geological Survey website: <http://www.geology.gov.yk.ca>.

**Table 1: List of Mineral Occurrences for NTS map sheet 105K (Yukon MINFILE, 2015)**

| Number   | Name           | Type                                                    | Status             | Commodities                                            |
|----------|----------------|---------------------------------------------------------|--------------------|--------------------------------------------------------|
| 105K 001 | SHEENA         | Unknown                                                 | Unknown            |                                                        |
| 105K 002 | WOP            | Vein Polymetallic Ag-Pb-ZnAu                            | Drilled Prospect   | Copper, Molybdenum                                     |
| 105K 003 | RAGS           | Vein CuAg Quartz                                        | Showing            | Copper                                                 |
| 105K 004 | DARCY          | Vein Polymetallic Ag-Pb-ZnAu                            | Deposit            | Zinc, Lead, Silver                                     |
| 105K 005 | DEEJAY         | Unknown                                                 | Anomaly            |                                                        |
| 105K 006 | SHONCAP        | Skarn Cu                                                | Drilled Prospect   | Copper                                                 |
| 105K 007 | CITATION       | Unknown                                                 | Unknown            |                                                        |
| 105K 008 | MOURNE         | Epithermal Au-Ag-Cu: High Sulphidation                  | Prospect           |                                                        |
| 105K 009 | GREW CREEK     | Epithermal Au-Ag: Low Sulphidation                      | Deposit            | Gold, Silver, Mercury, Arsenic                         |
| 105K 010 | FARGO          | Sediment hosted Sedimentary Exhalative Zn-Pb-Ag (Sedex) | Drilled Prospect   | Lead, Silver, Zinc                                     |
| 105K 011 | LHN            | Vein Polymetallic Ag-Pb-ZnAu                            | Drilled Prospect   | Lead, Silver, Zinc                                     |
| 105K 012 | CASCA          | Sediment hosted Sedimentary Exhalative Zn-Pb-Ag (Sedex) | Anomaly            |                                                        |
| 105K 013 | THOMAS         | Skarn Pb-Zn                                             | Prospect           | Lead, Tin, Zinc                                        |
| 105K 014 | TILLMAN        | Unknown                                                 | Unknown            |                                                        |
| 105K 015 | EYE            | Epithermal Au-Ag-Cu: High Sulphidation                  | Unknown            |                                                        |
| 105K 016 | BRIDGE         | Unknown                                                 | Unknown            |                                                        |
| 105K 017 | FAST-TAN       | Unknown                                                 | Unknown            |                                                        |
| 105K 018 | TAKU           | Unknown                                                 | Anomaly            |                                                        |
| 105K 019 | GLYN           | Unknown                                                 | Unknown            |                                                        |
| 105K 020 | NESSBITT       | Unknown                                                 | Showing            | Copper                                                 |
| 105K 021 | SPIT           | Unknown                                                 | Unknown            |                                                        |
| 105K 022 | BOBCAT         | Epithermal Au-Ag-Cu: High Sulphidation                  | Drilled Prospect   |                                                        |
| 105K 023 | GREEN VALLEY   | Unknown                                                 | Showing            | Antimony, Gold, Silver, Zinc, Lead, Copper             |
| 105K 024 | HOLLY          | Unknown                                                 | Unknown            |                                                        |
| 105K 025 | ORCHARD        | Ultramafic Mafic Gabbro Cu-Ni-PGE                       | Showing            | Copper                                                 |
| 105K 026 | SOCK           | Unknown                                                 | Drilled Prospect   |                                                        |
| 105K 027 | SPUR           | Unknown                                                 | Drilled Prospect   | Lead, Zinc, Silver                                     |
| 105K 028 | DOMO           | Unknown                                                 | Unknown            |                                                        |
| 105K 029 | LAD            | Skarn                                                   | Drilled Prospect   | Lead, Zinc, Copper, Silver                             |
| 105K 030 | WELD           | Unknown                                                 | Drilled Prospect   | Lead, Zinc, Copper, Tin, Molybdenum                    |
| 105K 031 | TRUMP          | Unknown                                                 | Unknown            |                                                        |
| 105K 032 | LODGE          | Unknown                                                 | Unknown            |                                                        |
| 105K 033 | DARRN          | Vein Polymetallic Ag-Pb-ZnAu                            | Deposit            | Lead, Zinc, Copper, Silver                             |
| 105K 034 | ADAMSON        | Sediment hosted Sedimentary Exhalative Zn-Pb-Ag (Sedex) | Drilled Prospect   | Copper, Lead, Zinc                                     |
| 105K 035 | TEL            | Unknown                                                 | Drilled Prospect   |                                                        |
| 105K 036 | BETA           | Sediment hosted Sedimentary Exhalative Zn-Pb-Ag (Sedex) | Drilled Prospect   | Lead, Zinc                                             |
| 105K 037 | BLIND          | Unknown                                                 | Anomaly            |                                                        |
| 105K 038 | GENTIAN        | Vein Polymetallic Ag-Pb-ZnAu                            | Showing            | Zinc, Lead, Silver, Antimony, Cadmium, Arsenic, Copper |
| 105K 039 | CLUB           | Vein Polymetallic Ag-Pb-ZnAu                            | Drilled Prospect   | Lead                                                   |
| 105K 040 | NASTY          | Unknown                                                 | Drilled Prospect   |                                                        |
| 105K 041 | ABRAHAM        | Vein Polymetallic Ag-Pb-ZnAu                            | Drilled Prospect   |                                                        |
| 105K 042 | BEA            | Sediment hosted Sedimentary Exhalative Zn-Pb-Ag (Sedex) | Drilled Prospect   | Copper, Zinc, Lead, Silver                             |
| 105K 043 | SB             | Sediment hosted Sedimentary Exhalative Zn-Pb-Ag (Sedex) | Past Producer      | Copper, Zinc, Lead, Silver                             |
| 105K 044 | BLACKWOOD      | Skarn Pb-Zn                                             | Drilled Prospect   | Copper, Lead, Zinc                                     |
| 105K 045 | BEA            | Unknown                                                 | Drilled Prospect   |                                                        |
| 105K 046 | SWIM           | Sediment hosted Sedimentary Exhalative Zn-Pb-Ag (Sedex) | Deposit            | Lead, Silver, Zinc, Gold, Copper                       |
| 105K 047 | WANN           | Vein Polymetallic Ag-Pb-ZnAu                            | Showing            | Copper, Lead, Zinc                                     |
| 105K 048 | ELBOW          | Unknown                                                 | Unknown            |                                                        |
| 105K 049 | ST. LUCIE      | Sediment hosted Sedimentary Exhalative Zn-Pb-Ag (Sedex) | Drilled Prospect   | Copper                                                 |
| 105K 050 | OTCONOR        | Unknown                                                 | Drilled Prospect   |                                                        |
| 105K 051 | BABIE          | Vein Polymetallic Ag-Pb-ZnAu                            | Showing            | Gold, Silver, Lead, Zinc                               |
| 105K 052 | CIRQUE         | Vein Polymetallic Ag-Pb-ZnAu                            | Drilled Prospect   | Silver, Gold, Lead, Zinc, Arsenic                      |
| 105K 053 | ARSENIO        | Vein Polymetallic Ag-Pb-ZnAu                            | Drilled Prospect   | Gold, Zinc, Silver, Lead, Tin, Indium                  |
| 105K 054 | SHRIMP         | Sediment hosted Sedimentary Exhalative Zn-Pb-Ag (Sedex) | Drilled Prospect   | Lead, Silver, Zinc, Gold                               |
| 105K 055 | VANGORDA       | Sediment hosted Sedimentary Exhalative Zn-Pb-Ag (Sedex) | Past Producer      | Lead, Silver, Zinc, Gold                               |
| 105K 056 | GRUM           | Sediment hosted Sedimentary Exhalative Zn-Pb-Ag (Sedex) | Past Producer      | Gold, Zinc, Silver, Lead                               |
| 105K 057 | KILLAW         | Sediment hosted Sedimentary Exhalative Zn-Pb-Ag (Sedex) | Lead, Silver, Zinc |                                                        |
| 105K 058 | KIM            | Unknown                                                 | Prospect           | Copper                                                 |
| 105K 059 | LO             | Unknown                                                 | Drilled Prospect   |                                                        |
| 105K 060 | TAY            | Unknown                                                 | Unknown            |                                                        |
| 105K 061 | FARO           | Sediment hosted Sedimentary Exhalative Zn-Pb-Ag (Sedex) | Past Producer      | Silver, Gold, Zinc, Lead                               |
| 105K 062 | FLIGHTSTONE    | Skarn Cu                                                | Drilled Prospect   | Copper                                                 |
| 105K 063 | BRIDEN         | Unknown                                                 | Drilled Prospect   |                                                        |
| 105K 064 | JACOLA         | Plutonic Related Au                                     | Drilled Prospect   | Lead, Silver, Zinc                                     |
| 105K 065 | CROWN          | Unknown                                                 | Drilled Prospect   |                                                        |
| 105K 066 | LEON           | Unknown                                                 | Unknown            |                                                        |
| 105K 067 | LORNA          | Sediment hosted Sedimentary Exhalative Zn-Pb-Ag (Sedex) | Drilled Prospect   | Lead                                                   |
| 105K 068 | RESERVE        | Skarn Cu                                                | Drilled Prospect   | Copper                                                 |
| 105K 069 | PARADOX        | Unknown                                                 | Unknown            |                                                        |
| 105K 070 | MARY           | Unknown                                                 | Drilled Prospect   |                                                        |
| 105K 071 | COWARD         | Vein CuAg Quartz                                        | Unknown            | Copper                                                 |
| 105K 072 | PAGE           | Plutonic Related Au                                     | Anomaly            |                                                        |
| 105K 073 | WIKIQUETE      | Unknown                                                 | Drilled Prospect   |                                                        |
| 105K 074 | COLT           | Sediment hosted Sedimentary Exhalative Zn-Pb-Ag (Sedex) | Drilled Prospect   | Zinc                                                   |
| 105K 075 | BLUE           | Unknown                                                 | Unknown            |                                                        |
| 105K 076 | HOOT           | Skarn Pb-Zn                                             | Anomaly            | Lead                                                   |
| 105K 077 | OWL            | Vein Polymetallic Ag-Pb-ZnAu                            | Drilled Prospect   | Copper, Zinc, Silver, Lead, Tin, Indium                |
| 105K 078 | KEG            | Skarn                                                   | Deposit            | Lead, Zinc, Silver, Copper, Tin, Indium, Cadmium       |
| 105K 079 | IVAN           | Plutonic Related Au                                     | Drilled Prospect   | Copper, Lead, Zinc                                     |
| 105K 080 | SHANNON        | Unknown                                                 | Anomaly            |                                                        |
| 105K 081 | COMPLICATION   | Unknown                                                 | Unknown            |                                                        |
| 105K 082 | TRY            | Unknown                                                 | Drilled Prospect   |                                                        |
| 105K 083 | REBEL          | Vein Polymetallic Ag-Pb-ZnAu                            | Drilled Prospect   | Copper, Zinc, Lead, Silver, Tin, Indium                |
| 105K 084 | HAMMER         | Epithermal Au-Ag-Cu: High Sulphidation                  | Drilled Prospect   | Silver, Antimony, Gold, Lead, Zinc                     |
| 105K 085 | YETT           | Unknown                                                 | Anomaly            |                                                        |
| 105K 086 | MARKS          | Matrix Polymetallic Ag-Pb-Zn                            | Showing            | Lead, Zinc                                             |
| 105K 087 | TEDDY          | Volcanogenic Sulphide - type not determined             | Drilled Prospect   | Copper, Zinc                                           |
| 105K 088 | SIROLA         | Unknown                                                 | Drilled Prospect   |                                                        |
| 105K 089 | ANDREW         | Vein Polymetallic Ag-Pb-ZnAu                            | Deposit            | Lead, Zinc, Silver, Germanium, Copper                  |
| 105K 090 | MYSCHKA        | Vein Polymetallic Ag-Pb-ZnAu                            | Prospect           | Antimony, Gold, Zinc, Silver, Tin, Lead                |
| 105K 091 | EL PINO        | Epithermal Au-Ag: Low Sulphidation                      | Anomaly            | Antimony, Arsenic, Gold                                |
| 105K 092 | GALWAY         | Vein Polymetallic Ag-Pb-ZnAu                            | Showing            | Arsenic, Lead, Mercury, Silver, Zinc, Gold             |
| 105K 093 | PARLIAMENT     | Epithermal Au-Ag-Cu: High Sulphidation                  | Drilled Prospect   | Arsenic, Gold, Mercury, Zinc, Lead, Copper             |
| 105K 094 | CESSNA         | Unknown                                                 | Drilled Prospect   |                                                        |
| 105K 095 | BUNBURY        | Unknown                                                 | Showing            |                                                        |
| 105K 096 | JON            | Unknown                                                 | Anomaly            |                                                        |
| 105K 098 | CHAPLIN        | Volcanogenic Sulphide - type not determined             | Drilled Prospect   | Copper, Lead, Silver, Zinc, Gold                       |
| 105K 100 | MOR            | Unknown                                                 | Drilled Prospect   | Copper                                                 |
| 105K 101 | DY             | Sediment hosted Sedimentary Exhalative Zn-Pb-Ag (Sedex) | Deposit            | Gold, Zinc, Silver, Lead                               |
| 105K 102 | SELLMER        | Unknown                                                 | Anomaly            |                                                        |
| 105K 103 | TENAS          | Sediment hosted Sedimentary Exhalative Zn-Pb-Ag (Sedex) | Prospect           | Arsenic, Barium, Gold, Lead, Zinc                      |
| 105K 104 | DEV            | Sediment hosted Sedimentary Exhalative Zn-Pb-Ag (Sedex) | Drilled Prospect   | Lead, Silver, Zinc                                     |
| 105K 105 | SIR JOHN A.    | Sediment hosted Sedimentary Exhalative Zn-Pb-Ag (Sedex) | Drilled Prospect   | Lead, Zinc                                             |
| 105K 106 | KILBY          | Sediment hosted Stratiform Barite                       | Showing            | Barium                                                 |
| 105K 107 | WEEDKIND       | Epithermal Au-Ag-Cu: High Sulphidation                  | Unknown            |                                                        |
| 105K 108 | LADY DI        | Plutonic Related Au                                     | Drilled Prospect   | Lead, Zinc, Silver                                     |
| 105K 109 | PRINCE CHARLES | Unknown                                                 | Anomaly            |                                                        |
| 105K 110 | MT. MENZIE     | Sediment hosted Stratiform Barite                       | Showing            | Barium                                                 |
| 105K 111 | UNION          | Skarn W                                                 | Showing            | Copper, Molybdenum, Silver, Zinc                       |
| 105K 112 | STARLIGHT      | Vein CuAg Quartz                                        | Drilled Prospect   | Copper, Zinc                                           |
| 105K 113 | PONTOON        | Epithermal Au-Ag-Cu: High Sulphidation                  | Drilled Prospect   |                                                        |
| 105K 115 | MULTI          | Unknown                                                 | Drilled Prospect   |                                                        |

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Open File 2015-25

**Weighted sums model for Porphyry Cu-Mo deposits levelled by mapped geology (NTS 105K) Sheet 10 of 17**

by Rob Mackie, Dennis Arne, and Olivia Brown