

## Open File 9235 - Appendix A – Additional references

The references listed below include all the sources of information used to inventory the gossans. References are classified according to the following sections, which correspond to the columns in the database (Appendix B).

### 1. Scientific publications

#### 1.1. Journal article

#### 1.2. Geological Survey of Canada (GSC) Open File report

#### 1.3. GSC Open File map

### 2. Geological maps

#### 2.1. GSC "A" Series Map

#### 2.2. GSC Canadian Geoscience Map (CGM)

## 1. SCIENTIFIC PUBLICATIONS (n = 30)

### 1.1. Journal article (n = 11)

Battler, M.M., Osinski, G.R., Banerjee, N.R., 2013. Mineralogy of saline perennial cold springs on Axel Heiberg Island, Nunavut, Canada and implications for spring deposits on Mars. *Icarus* 224, 364-381. <http://dx.doi.org/10.1016/j.icarus.2012.08.031>

Elberling, B., Balić-Žunić, T., Edsberg, A., 2003. Spatial variations and controls of acid mine drainage generation. *Environmental Geology* 43, 806-813. <https://doi.org/10.1007/s00254-002-0695-8>

Laakso, K., Rivard, B., Peter, J.M., White, H.P., Maloley, M., Harris, J., Rogge, D., 2015. Application of Airborne, Laboratory, and Field Hyperspectral Methods to Mineral Exploration in the Canadian Arctic: Recognition and Characterization of Volcanogenic Massive Sulfide-Associated Hydrothermal Alteration in the Izok Lake Deposit Area, Nunavut, Canada. *Economic Geology* 110, 925-941. <https://doi.org/10.2113/econgeo.110.4.925>

Makvandi, S., Ghasemzadeh-Barvarz, M., Beaudoin, G., Grunsky, E.C., Beth McClenaghan, M., Duchesne, C., 2016. Principal component analysis of magnetite composition from volcanogenic massive sulfide deposits: Case studies from the Izok Lake (Nunavut, Canada) and Halfmile Lake (New Brunswick, Canada) deposits. *Ore Geology Reviews* 72, 60-85. <http://dx.doi.org/10.1016/j.oregeorev.2015.06.023>

Percival, J.B. and Williamson, M.-C., 2016. Mineralogy and spectral signature of reactive gossans, Victoria Island, NT, Canada. *Applied Clay Science* 119P2, 431-440. <http://dx.doi.org/10.1016/j.clay.2015.05.026>

Petch, C.A., 2004. The Geology and Mineralization of the High Lake Volcanic-hosted Massive Sulfide Deposit, Nunavut. *Exploration and Mining Geology* 13, 37-47. <https://doi.org/10.2113/gsemg.13.1-4.37>

- Peterson, R.C., Williamson, M.-C., Rainbird, R.H., 2014. Gossan Hill, Victoria Island, Northwest Territories: An analogue for mine waste reactions within permafrost and implication for the subsurface mineralogy of Mars. *Earth and Planetary Science Letters* 400, 88-93. <https://doi.org/10.1016/j.epsl.2014.05.010>
- West, L., McGown, D.J., Onstott, T.C., Morris, R.V., Suchecki, P., Pratt, L.M., 2009. High Lake gossan deposit: An Arctic analogue for ancient Martian surficial processes? *Planetary and Space Science* 57, 1302-1311. <https://doi.org/10.1016/j.pss.2009.05.011>
- Williamson, M.-C., Smyth, H.R., Peterson, R.C., Lavoie, D., 2011. Comparative geological studies of volcanic terrain on Mars: Examples from the Isachsen Formation, Axel Heiberg Island, Canadian High Arctic, in: Garry, W. B. and Bleacher, J. E. (eds.), *Analogs for Planetary Exploration: Geological Society of America Special Paper 483*, pp. 249-261. [https://doi.org/10.1130/2011.2483\(16\)](https://doi.org/10.1130/2011.2483(16))
- Wilton, D.H.C., Saumur, B.M., Gordon, A., Williamson, M.-C., 2019. Enigmatic massive sulphide mineralization in the High Arctic Large Igneous Province, Nunavut, Canada. *Canadian Journal of Earth Sciences* 56, 790-801. <https://doi.org/10.1139/cjes-2018-0156>
- Zentilli, M., Omelon, C.R., Hanley, J., LeFort, D., 2019. Paleo-Hydrothermal Predecessor to Perennial Spring Activity in Thick Permafrost in the Canadian High Arctic, and Its Relation to Deep Salt Structures: Expedition Fiord, Axel Heiberg Island, Nunavut. *Geofluids* 2019, 1-33. <https://doi.org/10.1155/2019/9502904>

## 1.2. GSC Open File report (n = 13)

*The numbers in brackets are the keys used in Appendix B, which correspond to the Open File number followed by the page number when the Open File contains different reports (e.g., 7718-03).*

[7718-03]

Harris, J.R., Williamson, M.-C., Percival, J.B., Behnia, P., Macleod, R.F., 2015. Detecting and mapping gossans using remotely sensed data, in: *Environmental and economic significance of gossans*; Williamson, M.-C. (ed.); Geological Survey of Canada, Open File 7718, 3-13. <https://doi.org/10.4095/296574>

[7046]

Hicken, A.K., McClenaghan, M.B., Paulen, R.C., Layton-Matthews, D., 2012. Till geochemical signatures of the Izok Lake Zn-Cu-Pb-Ag volcanogenic massive sulphide deposit, Nunavut; Geological Survey of Canada, Open File 7046, 118 p. <https://doi.org/10.4095/292140>

[7718-85]

McNeil, R.J., Day, S.J.A., Williamson, M.-C., 2015. Stream sediment and water geochemical study, Axel Heiberg Island, Nunavut, Canada, in: *Environmental and economic significance of gossans*; Williamson, M.-C. (ed.); Geological Survey of Canada, Open File 7718, 85-96. <https://doi.org/10.4095/296584>

[8151-27]

McNeil, R.J., Williamson, M.-C., Day, S.J., 2017. Drainage geochemistry surveys, Axel Heiberg Island, Nunavut, in: GEM 2 High Arctic Large Igneous Province (HALIP) activity: workshop report; Williamson, M.-C. (ed.); Geological Survey of Canada, Open File 8151, 27-33. <https://doi.org/10.4095/300707>

[7718-58]

Percival, J.B., Williamson, M.-C., McNeil, R.J., Day, S.J.A., Harris, J.R., 2015. Morphology of gossans in the Canadian Arctic Islands, in: Environmental and economic significance of gossans; Williamson, M.-C. (ed.); Geological Survey of Canada, Open File 7718, 58-73. <https://doi.org/10.4095/296581>

[8151-22]

Percival, J.B. and Williamson, M.-C., 2017. Morphology, mineralogy and geochemistry of gossans, Axel Heiberg Island, Nunavut, in: GEM 2 High Arctic Large Igneous Province (HALIP) activity: workshop report; Williamson, M.-C. (ed.); Geological Survey of Canada, Open File 8151, 22-26. <https://doi.org/10.4095/300706>

[7950-35]

Thomson, L. and Copland, L., 2016. Collaborative bedrock mapping of White Glacier basin, Axel Heiberg Island, Nunavut, in: Report of Activities for High Arctic Large Igneous Province (HALIP) – GEM 2 Western Arctic Region Project: Bedrock Mapping and Mineral Exploration; Williamson, M.-C. (ed.); Geological Survey of Canada, Open File 7950, 35-45. <https://doi.org/10.4095/297787>

[7718-54]

Turner, E.C., 2015. Gossans of the Cornwallis District, central high Arctic Islands, Canada, in: Environmental and economic significance of gossans; Williamson, M.-C. (ed.); Geological Survey of Canada, Open File 7718, 54-57. <https://doi.org/10.4095/296580>

[7486]

Williamson, M.-C., Percival, J.B., Behnia, P., Harris, J.R., Peterson, R.C., Froome, J., Fenwick, L., Rainbird, R.H., Bédard, J.H., McNeil, R.J., Day, S.J., Kingsbury, C.G., Grunsky, E., McCurdy, M.W., Shepherd, J., Hillary, E.M., Buller, G., 2014. Environmental and economic impact of oxide-sulphide gossans, Northwest Territories and Nunavut; Geological Survey of Canada, Open File 7486, 10 p. <https://doi.org/10.4095/293922>

[7718-74]

Williamson, M.-C., McNeil, R.J., Day, S.J.A., McCurdy, M., Rainbird, R.H., Grunsky, E., 2015. Environmental impact of gossans revealed by orientation surveys for base metals in the Canadian Arctic Islands, in: Environmental and economic significance of gossans; Williamson, M.-C. (ed.); Geological Survey of Canada, Open File 7718, 74-84. <https://doi.org/10.4095/296571>

[7950-14]

Williamson, M.-C., Saumur, B.M., Evenchick, C.A., 2016. HALIP volcanic-intrusive complexes, Axel Heiberg Island, Nunavut, in: Report of Activities for High Arctic Large Igneous Province (HALIP) – GEM 2 Western Arctic Region Project: Bedrock Mapping and Mineral Exploration; Williamson, M.-C. (ed.); Geological Survey of Canada, Open File 7950, 14-26. <https://doi.org/10.4095/297784>

[8151-51]

Williamson, M.-C., Harrison, C., McNeil, R.J., 2017. Origin of base metal showings associated with evaporite diapirs and HALIP intrusive rocks, in: GEM 2 High Arctic Large Igneous Province (HALIP) activity: workshop report; Williamson, M.-C. (ed.); Geological Survey of Canada, Open File 8151, 51-55. <https://doi.org/10.4095/300713>

[8151-45]

Wilton, D.H.C., Williamson, M.-C., McNeil, R.J., 2017. Quantitative MLA-SEM modal mineralogy of gossans and stream sediments in the HALIP: implications for economic potential, in: GEM 2 High Arctic Large Igneous Province (HALIP) activity: workshop report; Williamson, M.-C. (ed.); Geological Survey of Canada, Open File 8151, 45-50. <https://doi.org/10.4095/300712>

### **1.3. GSC Open File map (n = 6)**

Henderson, J.R., Jefferson, C.W., Henderson, M.N., Coe, K., Derome, I., 1991. Geology of the region around Wager Bay, District of Keewatin [parts of 46E and 56H]. Geological Survey of Canada, Open File 2383. <https://doi.org/10.4095/131852>

Hulbert, L.J., 2005. Geology of the Muskox Intrusion and associated Ni+Cu occurrences. Geological Survey of Canada, Open File 4881. <https://doi.org/10.4095/220361>

Panagapko, D.A., Pehrsson, S., Pilkington, M., Currie, M., 2003. Geoscience data compilation: Tehery Lake - Wager Bay area, Nunavut (NTS 56 B, C, F, and G); Part 1 - base data themes. Geological Survey of Canada, Open File 1809. <https://doi.org/10.4095/214767>

Sandeman, H.A., Brown, J.L., Greiner, E., Hyde, D., Johnstone, S., MacHattie, T.G., Studnicki-Gizbert, C., Plaza, D., 2001. Geology, Laughland Lake, Nunavut. Geological Survey of Canada, Open File 4190. <https://doi.org/10.4095/212991>

Sangster, D.F., 1998. Mineral deposits compilation and metallogenic domains, northern Baffin Island and northern Melville Peninsula, Northwest Territories. Geological Survey of Canada, Open File 3635. <https://doi.org/10.4095/210026>

St-Onge, M.R., Ford, A.B., Henderson, I., 2007. Digital geoscience atlas of Baffin Island (south of 70°N and east of 80°W), Nunavut. Geological Survey of Canada, Open File 5116. <https://doi.org/10.4095/223256>

## **2. GEOLOGICAL MAPS (n = 38)**

### **2.1. GSC "A" Series Map (n = 17)**

Dredge, L.A. and Nixon, F.M., 1993. Surficial Geology, Northern Melville Peninsula, District of Franklin, Northwest Territories. Geological Survey of Canada, "A" Series Map 1782A. <https://doi.org/10.4095/184152>

Dredge, L.A., 1994. Surficial Geology, Barrow River, District of Franklin, Northwest Territories. Geological Survey of Canada, "A" Series Map 1849A. <https://doi.org/10.4095/203635>

- Dredge, L.A., 1994. Surficial geology, Lefroy Bay-Committee Bay, districts of Franklin and Keewatin, Northwest Territories. Geological Survey of Canada, "A" Series Map 1847A. <https://doi.org/10.4095/203633>
- Dredge, L.A., 1994. Surficial Geology, Miertsching Lake, District of Franklin, Northwest Territories. Geological Survey of Canada, "A" Series Map 1848A. <https://doi.org/10.4095/203634>
- Dredge, L.A., 1994. Surficial geology, Repulse Bay-Hurd Channel, districts of Franklin and Keewatin, Northwest Territories. Geological Survey of Canada, "A" Series Map 1850A. <https://doi.org/10.4095/203636>
- Dredge, L.A., 1994. Surficial geology, Winter Island, district of Franklin, Northwest Territories. Geological Survey of Canada, "A" Series Map 1851A. <https://doi.org/10.4095/203637>
- Dredge, L.A., 2004. Surficial geology, Ekalugad Fiord (west half), central Baffin Island, Nunavut. Geological Survey of Canada, "A" Series Map 2073A. <https://doi.org/10.4095/216136>
- Dredge, L.A., 2004. Surficial geology, Lake Gillian, central Baffin Island, Nunavut. Geological Survey of Canada, "A" Series Map 2076A. <https://doi.org/10.4095/216172>
- Dredge, L.A. and McMartin, I., 2007. Surficial geology, Wager Bay, Nunavut. Geological Survey of Canada, "A" Series Map 2111A. <https://doi.org/10.4095/223218>
- Eade, K.E., 1974. Geology, Kognak River (Watterson Lake, 65GE1/2 and Henik Lakes, 65HW1/2), District of Keewatin. Geological Survey of Canada, "A" Series Map 1364A. <https://doi.org/10.4095/109071>
- Frisch, T., 1984. Geology, Prince of Wales Mountains, District of Franklin, Northwest Territories. Geological Survey of Canada, "A" Series Map 1572A. <https://doi.org/10.4095/126420>
- Harrison, J.C., Mayr, U., Piepjohn, K., 2007. Geology, Lady Franklin Bay, Ellesmere Island, Nunavut. Geological Survey of Canada, "A" Series Map 2105A. <https://doi.org/10.4095/223624>
- Lambert, M.B., 2004. Geology, Back River volcanic complex, Nunavut - Northwest Territories. Geological Survey of Canada, "A" Series Map 2041A. <https://doi.org/10.4095/215452>
- Mursky, G., 1973. Geology, Port Radium, District of Mackenzie. Geological Survey of Canada, "A" Series Map 1349A. <https://doi.org/10.4095/107940>
- Zaleski, E., 2005. Geology, Meadowbank River area, Nunavut. Geological Survey of Canada, "A" Series Map 2068A. <https://doi.org/10.4095/220495>
- Zaleski, E. and Pehrsson, S.J., 2005. Geology, Half Way Hills and Whitehills Lake area, Nunavut. Geological Survey of Canada, "A" Series Map 2069A. <https://doi.org/10.4095/220576>
- Zaleski, E., Pehrsson, S.J., Wilkinson, L., 2005. Geology, Amarulik and Tehek lakes area, Nunavut. Geological Survey of Canada, "A" Series Map 2070A. <https://doi.org/10.4095/220579>

## 2.2. GSC Canadian Geoscience Map (CGM) (n = 21)

- Machado, G., Houlé, M.G., Richan, L., Rigg, J., Corrigan, D., 2011. Geology, southern part of Prince Albert Greenstone Belt, Prince Albert Hills, Melville Peninsula, Nunavut. Geological Survey of Canada, Canadian Geoscience Map 44 (prelim.). <https://doi.org/10.4095/288959>
- Machado, G., Corrigan, D., Nadeau, L., Rigg, J., 2012. Geology, northern part of Prince Albert Greenstone Belt, Prince Albert Hills, Melville Peninsula, Nunavut. Geological Survey of Canada, Canadian Geoscience Map 81 (prelim.). <https://doi.org/10.4095/290088>
- Machado, G., Bilodeau, C., St-Onge, M.R., 2013. Geology, southern part of Hall Peninsula, south Baffin Island, Nunavut. Geological Survey of Canada, Canadian Geoscience Map 135 (prelim.). <https://doi.org/10.4095/292443>
- Geological Survey of Canada, 2014. Surficial geology, Aylmer Lake, Northwest Territories-Nunavut. Geological Survey of Canada, Canadian Geoscience Map 197 (prelim., Surficial Data Model V.2.0 Conversion). <https://doi.org/10.4095/295180>
- Geological Survey of Canada, 2014. Surficial geology, Contwoyto Lake, Northwest Territories - Nunavut, NTS 76-E. Geological Survey of Canada, Canadian Geoscience Map 198 (prelim., Surficial Data Model V.2.0 Conversion). <https://doi.org/10.4095/295192>
- Geological Survey of Canada, 2015. Surficial geology, Kugluktuk, Nunavut, NTS 86-O, east half. Geological Survey of Canada, Canadian Geoscience Map 230 (prelim., Surficial Data Model V.2.1 Conversion). <https://doi.org/10.4095/297329>
- Geological Survey of Canada, 2015. Surficial geology, Winter Lake, Northwest Territories, NTS 86-A. Geological Survey of Canada, Canadian Geoscience Map 196 (prelim., Surficial Data Model V.2.0 Conversion). <https://doi.org/10.4095/295588>
- Geological Survey of Canada, 2016. Surficial geology, Koignuk River, Nunavut, NTS 76-O north and part of NTS 77-A southwest. Geological Survey of Canada, Canadian Geoscience Map 227 (prelim., Surficial Data Model v.2.1 conversion). <https://doi.org/10.4095/297789>
- Geological Survey of Canada, 2016. Surficial geology, Napaktulik Lake, Nunavut, NTS 86-I. Geological Survey of Canada, Canadian Geoscience Map 235 (ed. 2, prelim., Surficial Data Model V.2.1 Conversion). <https://doi.org/10.4095/298708>
- Geological Survey of Canada, 2016. Surficial geology, Point Lake, Northwest Territories - Nunavut, NTS 86-H. Geological Survey of Canada, Canadian Geoscience Map 218 (ed. 2, prelim., Surficial Data Model V.2.0 Conversion). <https://doi.org/10.4095/298703>
- Geological Survey of Canada, 2017. Surficial geology, Kikerk Lake, Nunavut, NTS 86-P. Geological Survey of Canada, Canadian Geoscience Map 229 (prelim., Surficial Data Model v.2.1 Conversion). <https://doi.org/10.4095/299206>
- Geological Survey of Canada, 2019. Surficial geology, Foley Island, central Baffin Island, Nunavut, NTS 37-A. Geological Survey of Canada, Canadian Geoscience Map 366 (surficial data model v.2.3.14 conversion). <https://doi.org/10.4095/308430>

- Geological Survey of Canada, 2019. Surficial geology, McBeth Fiord west, central Baffin Island, Nunavut, NTS 27-C west. Geological Survey of Canada, Canadian Geoscience Map 362 (Surficial Data Model v.2.3.14 conversion). <https://doi.org/10.4095/308464>
- Sanborn-Barrie, M., Young, M.D., Whalen, J.B., 2011. Geology, Kingnait Fiord, Nunavut. Geological Survey of Canada, Canadian Geoscience Map 2 (ed. 2, prelim.). <https://doi.org/10.4095/289238>
- Sanborn-Barrie, M., Young, M.D., Whalen, J.B., James, D., 2011. Geology, Ujuktuk Fiord, Nunavut. Geological Survey of Canada, Canadian Geoscience Map 1 (ed. 2, prelim.). <https://doi.org/10.4095/289237>
- Sanborn-Barrie, M., Young, M.D., Whalen, J.B., James, D., St-Onge, M.R., 2011. Geology, Touak Fiord, Nunavut. Geological Survey of Canada, Canadian Geoscience Map 3 (ed. 2, prelim.). <https://doi.org/10.4095/289239>
- Sanborn-Barrie, M. and Young, M.D., 2013. Geology, Circle Lake, Baffin Island, Nunavut. Geological Survey of Canada, Canadian Geoscience Map 5 (prelim.). <https://doi.org/10.4095/288929>
- Sanborn-Barrie, M. and Young, M.D., 2013. Geology, Durban Harbour, Baffin Island, Nunavut. Geological Survey of Canada, Canadian Geoscience Map 38 (prelim.). <https://doi.org/10.4095/292015>
- Sanborn-Barrie, M. and Young, M.D., 2013. Geology, Paddle Fiord, Baffin Island, Nunavut. Geological Survey of Canada, Canadian Geoscience Map 37 (prelim.). <https://doi.org/10.4095/292014>
- Sanborn-Barrie, M., Young, M.D., Keim, R., Hamilton, B., 2013. Geology, Sunneshine Fiord, Baffin Island, Nunavut. Geological Survey of Canada, Canadian Geoscience Map 6 (prelim.). <https://doi.org/10.4095/288931>
- Sanborn-Barrie, M., Chakungal, J., James, D.T., Rayner, N., Whalen, J.B., 2014. Precambrian bedrock geology, Southampton Island, Nunavut. Geological Survey of Canada, Canadian Geoscience Map 132. <https://doi.org/10.4095/293328>