

February 18, 2016

EDI Project No: 15Y0146

Assessment and Abandoned Mines Branch (AAM) K-149
Department of Energy, Mines and Resources, Yukon Government
Room 2C Royal Center, 4114-4th Avenue
PO 2703, Whitehorse, YT, Y1A 2C6

Attention: Erik Pit, Type II Project Manager

RE: Mount Nansen Water Resources Investigations – Field Memo: February 15-16, 2016 - DRAFT

The following memo is a brief field update from EDI's February 2016 trip to Mount Nansen; sampling conducted as part of the 2015/16 Water Resources Investigations. This memo provides a record of site conditions and tasks that were completed at each hydrometric station and water quality site (see attached tables). A detailed monthly report on the data collected during the trip will be provided once the water quality lab results are received and all data has been checked for quality assurance/quality control.

Trip Dates:	February 15-16, 2016
EDI Field Staff:	Joel MacFabe, Megan Sandford, and Danny Skookum
Weather conditions during monitoring:	Conditions for the two days included air temperatures from -15 to -3°C, with clear skies to light snow and calm to light wind conditions.
Any changes to project scope, schedule or budget:	None. All sampling and monitoring was conducted within scope. The next trip is scheduled for March 14-15, 2016 – which will be the last field trip of the 2015/16 Water Resource Investigation contract.
Additional Comments:	<p>Conditions were representative of mid-winter, with similar water levels to the last trip and ice and snow present at all locations. Stations and sites along Pony Creek, Back Creek, and some areas of Dome Creek remain frozen to substrate for the winter period.</p> <p>The existing direct read cable installed on the logger at H-DC-M WP was once again not working properly during the February 2016 site visit and since this has been a re-occurring issue, the direct read cable should be replaced during the spring to avoid further issues. The issues began in November 2015 through to December 2015, when the data could not be downloaded due to communication errors with the Leveloader (the logger downloading device). During the January 2016 trip, the crew was able to connect to the logger and download the data with no issues. However, the communication error reappeared during this recent February 2016 visit, where data could not be downloaded. EDI recommends that the replacement cable that was purchased back in early-January 2016 (following the November</p>



	and December 2015 trips) be allocated to the project. The cost for the direct read cable is around \$100.50 and could be covered in the contingency budget for the program.
Wildlife Sightings:	One female caribou observed along the Mount Nansen Access Road on February 16 th , 2016.
Site concerns (safety):	None.

Table 1. Summary of hydrometric program tasks completed and station conditions during the February 2016 sampling event.

HYDROLOGY

Station	Hydrometric Measurement Type	Notes & Comments
ATM-VC5	None	Barometric logger was downloaded.
H-DC-DX+105	None	Very low flow at site not suitable for salt tracer or volumetric measurement. Crew conducted a visual estimate of the flow rate, at approximately 0.05-0.07 L/s, which is below reportable limits (<0.001 m ³ /s).
H-DC-D1b	None	Channel is frozen to bed for winter period.
H-DC-B	None	Channel is frozen to bed for winter period. No change from last trip.
H-DC-M-WP	Salt Tracer	Salt tracer completed for discharge estimate. Water level low. Extensive overflow ice from the seepage discharge has extended down to the weir pond and along the right downstream bank beside the weir. The stilling well with the level logger was determined to be frozen to bed, crew chipped away ice in area and re-established a channel to encourage water to flow towards well. Logger could not be downloaded due to a communication error with Leveloader (similar issue to December 2015 trip). EDI recommends logger direct read cable be replaced.
H-DC-R	None	Station frozen to substrate for winter period. Large amount of overflow ice both upstream and downstream of road crossing.
H-VC-U	ADV	Velocity-area discharge measurement completed using an ADV. Water level low with clear water. Several small open leads upstream and downstream of station, ice thickness approximately 0.07 m thick. Logger downloaded successfully.
H-BC	None	Channel is frozen to bed – no water present.
H-VC-DBC	ADV	Velocity-area discharge measurement completed using an ADV. Water level low with clear water. Channel covered with ice approximately 0.25 m thick. Logger downloaded successfully.
H-VC-UMN	ADV	Velocity-area discharge measurement completed using an ADV. Channel covered with a layer of thin ice. Logger downloaded successfully.
H-VC-R	ADV	Site not suitable for ADV or salt tracer measurement due to low flow and very thick ice that would result in missed flow along the left bank therefore not accurately capturing discharge. This station will remain in place until spring 2016 to collect concurrent data with H-VC-R+290. Logger downloaded successfully.
H-VC-R+290	Salt Tracer	Salt tracer measurement was completed as water level was too low for



HYDROLOGY

Station	Hydrometric Measurement Type	Notes & Comments
		ADV measurement. Water level low with clear water. Channel covered in ice and snow. Logger downloaded successfully.
H-SEEP	Volumetric	Volumetric measurement collected in addition to reading the flow meter in the seepage pond shack. Ice buildup inside culvert. Water flows freely from pipe outlet.
H-TP	None	Water level remains low. Bottom of staff gauges covered with snow with frozen ground below. No ice in vicinity of staff gauges.
H-PC-DSP	None	Channel is frozen to bed for winter period.
H-PW	Volumetric	Volumetric discharge measurement was collected at end of discharge pipe. Large amount of ice at pipe outlet.

Table 2. Summary of water quality program tasks completed and site conditions during the February 2016 sampling event.

WATER QUALITY

Site	Sampled? (Yes/No)	Notes / Explanations
WQ-SEEP	Yes	Moderate flow rate from pipe. Ice build-up inside culvert. LC50 sample was not required this month (will be collected in March 2016).
WQ-TP	Yes	Low water level in pond with light turbidity. Entire pond covered with ice 0.45 m thick.
WQ-DC-DX	No	Channel is frozen to bed for winter period.
WQ-DC-DX+105	Yes	Low flow with light turbidity. Minimal algae growth in channel. Entire channel covered by a layer of thin ice.
WQ-MS-S-08	No	Dry for winter period.
WQ-DC-D1b	No	Site frozen to substrate for winter period.
WQ-DC-B	No	Site frozen to substrate for winter period.
WQ-DC-U	Yes	Low flow with light turbidity. Thin ice cover and deep snow. Extensive overflow ice upstream of weir pond, which has just reached upper edge of weir pond (has not reached WQ site).
WQ-DC-R	No	Site frozen to substrate for winter period.
WQ-CH-P-13-01	No	Site frozen to substrate for winter period.
WQ-LW-SEEP-01	No	Dry for winter period.
WQ-BC	No	Dry for winter period. No evidence of flow since previous visit.
WQ-VC-U	Yes	Low flow in channel with clear water. Significant portion of channel covered with thin layer of ice and snow.
WQ-VC-DBC	Yes	Low flow in channel with clear water. Most of channel covered with 0.25 m of ice. Thin layer of ice at sample location (0.05 m).
WQ-VC-UMN	Yes	Low flow with clear water. Variable, thin ice with no open leads.
WQ-VC-R	No	Extensive overflow ice upstream of road crossing prevented sample



WATER QUALITY

Site	Sampled? (Yes/No)	Notes / Explanations
		collection at this site until spring 2016. The remaining winter samples will be collected at the WQ-VC-R+150 location.
WQ-VC-R+150	Yes	This is the winter/early spring sampling location - samples collected at this site due to overflow ice buildup that was prohibitive for sampling at regular site (WQ-VC-R). Low flow in channel with clear water. No open leads in vicinity of sample site.
WQ-PW	Yes	Drinking water sample and bacteriological sample collected from pipe outlet. Typical buildup of ice at pipe outlet.
WQ-ADIT-SEEP	No	Dry for winter period.
WQ-PC-U	No	Site frozen to substrate for winter period.
WQ-PC-D	No	Site frozen to substrate for winter period.
Quality Assurance/Quality Control Samples		
Field Replicate 1	Yes	Collected from WQ-DC-DX+105
Field Replicate 2	No	Not required due to number of sites.
Field Blank	Yes	Sample bottles filled with deionized water supplied by ALS; samples were filtered and preserved as instructed. Collected at WQ-VC-R+150.
Travel Blank	Yes	Samples were provided by the lab and were transported to and from site.