

July 26, 2016

EDI Project No: 16Y0089

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: April 18-20, 2016 - FINAL

The following memo is a brief field update from EDI’s mid-April 2016 trip to Mount Nansen; sampling conducted as part of the 2016/17 Water Resources Investigations. This trip represents the first of two spring freshet trips. This memo provides a record of site conditions and tasks that were completed at each hydrometric station and water quality site (see tables below). 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:	April 18-20, 2016
EDI Field Staff:	Scott Dilling, Joel MacFabe and Danny Skookum
Weather conditions during monitoring:	Conditions for the two days included air temperatures from 3 to 8°C, with clear skies to light snow and calm wind conditions.
Any changes to project scope, schedule or budget:	None. All sampling and monitoring was conducted within scope. The mid-April 2016 trip is the first field trip of the 2016/17 contract and is the first of two spring freshet monitoring trips. A second freshet trip is scheduled for April 26-28, 2016 .
Additional Comments:	Conditions were representative of early-spring, with higher water levels than last trip on March 14 – 15, 2016. Snow and ice around the Mount Nansen site has melted significantly from the previous trip, particularly on south slopes and banks. All watercourses were flowing, including Back Creek and the Diversion Channel. Victoria Creek is flowing, although significant ice remains along the Dome Creek stations.
Wildlife Sightings:	A red fox was spotted along the banks of Diversion Channel on April 19, 2016.
Site concerns (safety):	None



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

HYDROLOGY

Station	Hydrometric Measurement Type	Notes & Comments
ATM-VC5	None	Barometric logger was downloaded.
H-DC-DX+105	Volumetric	Volumetric measurement was collected. Ice and snow upstream and downstream of sample site.
H-DC-D1b	None	Thick ice persists at station. Water flowing on top of ice and through ice layers – not suitable for discharge measurement.
H-DC-B	Salt Tracer	Salt tracer measurement was collected. Significant ice and snow along south facing banks. Anchor ice present along bed of channel.
H-DC-M-WP	Salt Tracer	Salt tracer measurement was collected. Logger was successfully downloaded using existing direct-read cable. Ice has melted from the active channel in weir pond, including at the stilling well.
H-DC-R	Salt Tracer	Salt tracer measurement was collected. All flowing water contained in usual single channel. Anchor ice along bed of channel and ground frozen; stilling well, staff gauge and continuous logger not installed.
H-VC-U	ADV	Velocity-area discharge measurement completed using an ADV. Thin ice along margins of channel. Logger downloaded successfully.
H-BC	ADV	Velocity-area discharge measurement completed using an ADV. Minor ice upstream and downstream of monitoring station. Stilling well, staff gauge and continuous logger installed.
H-VC-DBC	ADV	Velocity-area discharge measurement completed using an ADV. Thin ice along margins of channel. Logger downloaded successfully.
H-VC-UMN	ADV	Velocity-area discharge measurement completed using an ADV. Logger downloaded successfully.
H-VC-R	None	Site not suitable for ADV or salt tracer measurement due to braided channel conditions and water flowing on top of ice. Water flows in multiple directions from culvert at road with a portion of flow diverted to overland flow beyond the left downstream bank. 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	ADV	Velocity-area discharge measurement completed using an ADV. Overland flow converges with main channel upstream of station. Channel free of ice and snow. Logger downloaded successfully.
H-SEEP	Volumetric	Volumetric measurement collected in addition to reading the flow meter in the seepage pond shack. Water flows freely from pipe outlet.
H-TP	None	Water level remains low. Thawed earth at bottom of staff gauges.
H-PC-DSP	Volumetric	Volumetric discharge measurement completed at culvert outlet.
H-PW	Volumetric	Volumetric discharge measurement was collected at end of discharge pipe. Discharge point now at summer location with extension hose. This discharge was collected as a value-added component to determine if the data would assist in the Victoria Creek water balance. Because field crew was at the site to collect a water quality sample there was no additional time/cost associated.



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

WATER QUALITY

Site	Sampled? (Yes/No)	Notes / Explanations
WQ-SEEP	Yes	Moderate flow rate from pipe with moderately turbid water.
WQ-TP	Yes	Low water level in pond with clear water. Augured hole through ice to collect sample.
WQ-DC-DX	Yes	Low flowrate with clear water. Channel covered with ice 0.05 m thick.
WQ-DC-DX+105	Yes	Channel covered with snow and soft ice. Low water level with lightly turbid water.
WQ-DC-D1b	Yes	Low flowrate with clear water. Water flowing on top of ice estimated to be 2 m thick.
WQ-DC-B	Yes	Water flowing on top of anchor ice. Moderate flow with clear water.
WQ-DC-U	Yes	Moderate flow with lightly turbid water. Ice up to 0.1 m thick present in channel.
WQ-DC-R	Yes	Moderate flow with lightly turbid water. Minor anchor ice in vicinity of sample site.
WQ-CH-P-13-01	Yes	Low, steady flow with clear water. Ice present along channel.
WQ-LW-SEEP-01	No	Site dry; no sample collected.
WQ-NW-SEEP-02	No	Site dry; no sample collected.
WQ-BC	Yes	Moderate flow with moderately turbid water.
WQ-VC-U	Yes	Moderate flow with lightly turbid water. Minor ice along banks of channel.
WQ-VC-DBC	Yes	Moderate flow with lightly turbid water. Thin layer of ice (1 cm) along edges of channel.
WQ-VC-UMN	Yes	Moderate flow with lightly turbid water. Moderate amount of shore ice.
WQ-VC-R	No	Extensive overflow ice upstream of road crossing prevents sample collection at this site until spring 2016. The remaining winter/early spring samples continue to 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). Moderate flow in channel with lightly turbid water.
WQ-PW	Yes	Low flow with clear water. Discharge point now at summer location with extension hose.
WQ-DESS-01	Yes	Moderate flow with clear water. Water flows along access road downstream of site.
WQ-DESS-02	No	Ponded water at site with no detectable flow. No sample collected.
WQ-DESS-03	Yes	Moderate, steady flow with clear water.
WQ-ADIT-SEEP	No	No visible seepage or evidence of recent flows. Snow and ice covers slope face.
WQ-PC-U	Yes	Moderate flow with lightly turbid water.
WQ-PC-D	Yes	Moderate flow with highly turbid water. Melt water flowing over road and along re-vegetated bank possible source of elevated turbidity.



WATER QUALITY

Site	Sampled? (Yes/No)	Notes / Explanations
Quality Assurance/Quality Control Samples		
Field Replicate 1	Yes	Collected at WQ-VC-U.
Field Replicate 2	Yes	Collected at WQ-DC-DX+105.
Field Blank	Yes	Sample bottles filled with deionized water supplied by ALS; samples were filtered and preserved as instructed. Collected at WQ-LW-SEEP-01.
Travel Blank	Yes	Samples were provided by the lab and were transported to and from site.