

December 22, 2015

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: December 14-15, 2015**

The following memo is a brief field update from EDI’s December 2015 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.

<b>Trip Dates:</b>	December 14 - 15, 2015
<b>EDI Field Staff:</b>	Dawn Hansen, Joel MacFabe and Danny Skookum
<b>Weather conditions during monitoring:</b>	Conditions for the three days included air temperatures from -24 to -15°C, with clear skies to light snow and calm to light wind conditions.
<b>Any changes to project scope, schedule or budget:</b>	None. All sampling and monitoring was conducted within scope. The trip took two days versus the typical three days, as the number of sites/stations is reduced in the winter (resulting in some savings to the project). The next trip is scheduled for January 11-13, 2015, and will be the third winter season trip (open-water season ended October 15, 2015). As discussed below a replacement direct read cable will need to be purchased for the H-DC-M WP station (estimated cost: \$100).
<b>Additional Comments:</b>	The direct read cable for the logger at the H-DC-M WP station appears to be broken, as data could not be downloaded at this station during the November or December 2015 trips. A replacement direct read cable will need to be purchased and installed as soon as possible. Conditions were representative of early-winter, with lower water levels than 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.
<b>Wildlife Sightings:</b>	None.
<b>Site concerns (safety):</b>	None.



**Table 1. Summary of hydrometric program tasks completed and station conditions during the December 14-15, 2015 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. Water level moderate with clear water. Channel is generally covered with thin layer of ice and snow with a few open water leads.
H-DC-D1b	None	Channel is frozen to bed for winter period.
H-DC-B	None	Channel is frozen to bed – no water present. Ice approximately 0.55 m thick.
H-DC-M-WP	Volumetric	Volumetric discharge measurement was made at downstream end of weir. Water level moderate. Weir pond covered with thin layer of ice. Logger could not be downloaded, suspect damage in direct read cable. The logger will be pulled from the well on the next trip to be downloaded and a new direct read cable will be installed.
H-DC-R	None	Channel is frozen to bed – no water present. Lots of overflow both upstream and downstream of road crossing. Station frozen to substrate for winter period.
H-VC-U	ADV	Velocity-area discharge measurement completed using an ADV. Water level low with clear water. Channel completely covered with ice and snow. Logger downloaded.
H-BC	None	Channel is frozen to bed – no water present. Stilling well and logger removed from station. Station likely frozen to substrate for winter period.
H-VC-DBC	ADV	Velocity-area discharge measurement completed using an ADV. Water level low with clear water. Channel covered with ice. Logger downloaded.
H-VC-UMN	ADV	Velocity-area discharge measurement completed using an ADV. Channel covered with a layer of thin ice. Logger downloaded.
H-VC-R	ADV	Velocity-area discharge measurement completed using an ADV. Water level low, and water was clear. Channel covered in ice. Overflow ice forming upstream and downstream of the culvert at the road crossing. The overflow ice has not yet reached the hydrometric station. This station will remain in place until spring 2016 to collect concurrent data with H-VC-R+290. Logger data was downloaded.
H-VC-R+290	ADV	Velocity-area discharge measurement completed using an ADV. Water level low, with all flow along the left downstream bank while the right bank was frozen to bed. Water was clear. Channel covered in ice. Logger data was downloaded.
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 – no water present. Placer mining activity upstream of road has stopped. No water being pumped from pond at



## HYDROLOGY

Station	Hydrometric Measurement Type	Notes & Comments
		time of station visit. Station frozen to substrate 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 December 14-15, 2015 sampling event.**

## WATER QUALITY

Site	Sampled? (Yes/No)	Notes / Explanations
WQ-SEEP	Yes	Moderate flow rate from pipe. Ice build-up inside culvert.
WQ-TP	Yes	Low water level in pond with light turbidity. Entire pond covered with ice at least 0.3 m thick.
WQ-DC-DX	No	Frozen to substrate.
WQ-DC-DX+105	Yes	Moderate flow with light turbidity. Minimal algae growth in channel. Thin ice covering channel with many open water leads.
WQ-MS-S-08	No	No surface flow/ice – dry.
WQ-DC-D1b	No	Frozen to substrate for winter period.
WQ-DC-B	No	Frozen to substrate. Ice approximately 0.55 m thick.
WQ-DC-U	Yes	Low flow with light turbidity. Thin ice cover and deep snow.
WQ-DC-R	No	Ice thickness greater than 0.7 m, water not located and sample was not collected. Overflow ice conditions upstream and downstream of culvert. Site frozen to substrate for winter period.
WQ-CH-P-13-01	No	Seep dry; no samples collected. Site frozen to substrate for winter period.
WQ-LW-SEEP-01	No	Seep dry; no samples collected.
WQ-BC	No	Sample site has not changed since last visit, hole chipped last trip still present and channel dry.
WQ-VC-U	Yes	Low/moderate flow with clear water. Thin ice, however no open water leads upstream or downstream of sampling site this trip.
WQ-VC-DBC	Yes	Low flow with clear water. Chipped through thin layer of ice to collect sample. No open water leads during this trip upstream or downstream of sampling site.
WQ-VC-UMN	Yes	Low flow with clear water. Variable ice thickness with no open leads.
WQ-VC-R	No	Extensive overflow ice upstream of road crossing prevented sample 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).



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## WATER QUALITY

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Site	Sampled? (Yes/No)	Notes / Explanations
WQ-PW	Yes	Drinking water sample and bacteriological sample collected from pipe outlet. Typical buildup of ice at pipe outlet.
WQ-ADIT-SEEP	No	Seep dry; no samples collected.
WQ-PC-U	No	Site frozen to substrate for winter period.
WQ-PC-D	No	Site frozen to substrate for winter period.
<b>Quality Assurance/Quality Control Samples</b>		
Field Replicate 1	Yes	Collected from WQ-DC-DX+105-r
Field Replicate 2	No	Not required.
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.

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