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Cullaton Lake Mine

Closure and Reclamation Plan (2017)

Presentation April 27, 2018

Meeting agenda

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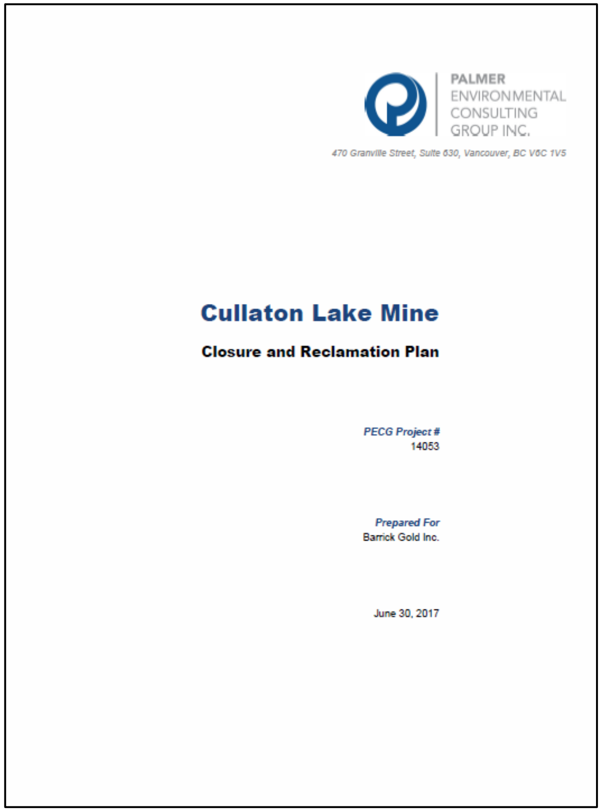
- Chair: Paul Brugger
- Present 2017 CRP: Rob Marsland / Rick Palmer
  - Work completed to date and timeline
  - Effects of current conditions on receiving environment
  - Projected loadings
  - Monitoring Plan
  - Cost Estimate of monitoring
- Present review of CRP: Arcadis
- Discussions: ALL
  - Arcadis comments on CRP
  - Long term monitoring plans
    - Type of monitoring, frequency, number of sites, monitoring reduction schedule


PALMER ENVIRONMENTAL CONSULTING GROUP INC.

470 Granville Street, Suite 630, Vancouver, BC V6C 1V5

Cullaton Lake Mine

Closure and Reclamation Plan

PECG Project #
14053

Prepared For
Barrick Gold Inc.

June 30, 2017

Introductions

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- Paul Brugger (Barrick)
- Allison Brown (Barrick)
- Michael McCarthy (Barrick)
- Charles Kazaz, (Blake, Cassels & Graydon)
- Rob Marsland (Palmer Environmental)
- Rick Palmer (Palmer Environmental)
- Ian Parsons (AADNC/AANDC)
- Karén Kharatyan (NWB)
- Assol Kubeisinova (NWB)

Timeline of events – Cullaton Lake Mine closure

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- Cullaton Lake mine operations – early 1981-1985 (processed <400,000 t of ore)
- Abandonment & Restoration Plan – draft developed by Trow in 1991
- Revised A&R Plan by Homestake in 1996, accepted
- Closure activities commenced in 1991; completed by 2002
- Barrick acquired Homestake in 2003
- Indigenous and Northern Affairs Canada (INAC) commissioned BGC Engineering in 2006 to assess Barrick's progress toward achieving the objectives of the Final A&R Plan
- Barrick commissioned AECOM to conduct an Ecological Risk Assessment in 2008
- AANDC requested Barrick update the 1996 A&R Plan in 2014
- Additional aquatic (benthic invertebrate, sediment, water quality) field work conducted by PECG in 2016
- Updated mass loadings assessment conducted by PECG in 2015 and 2016
- Closure and Reclamation Plan completed by PECG in 2017
- Post-closure water quality monitoring, submission of annual reports to the NWB, 2005-2017 (and ongoing)

Closure and reclamation plan (CRP) 2017 report

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- Prepared by Palmer Environmental Consulting Group Inc. (PECG) and submitted on June 30, 2017
- Update to the Final Abandonment and Restoration (A&R) Plan (Homestake, 1996) and includes:
  - BGC, 2007: Cullaton Lake Mine – 2006 Site Inspection Report and Mine Closure Review
  - AECOM, 2009: Existing Conditions Report and Screening Level Aquatic Ecological Risk Assessment for the Cullaton Lake Mine Site
  - Lorax, 2009: Geochemical Considerations of Tailings and Waste Rock – Cullaton Lake Mine
  - PECG, 2015: Cullaton Lake Mine Mass Loading Model
  - PECG, 2017: Cullaton Lake Mine 2016 Aquatic Monitoring Report & Adaptive Management Plan

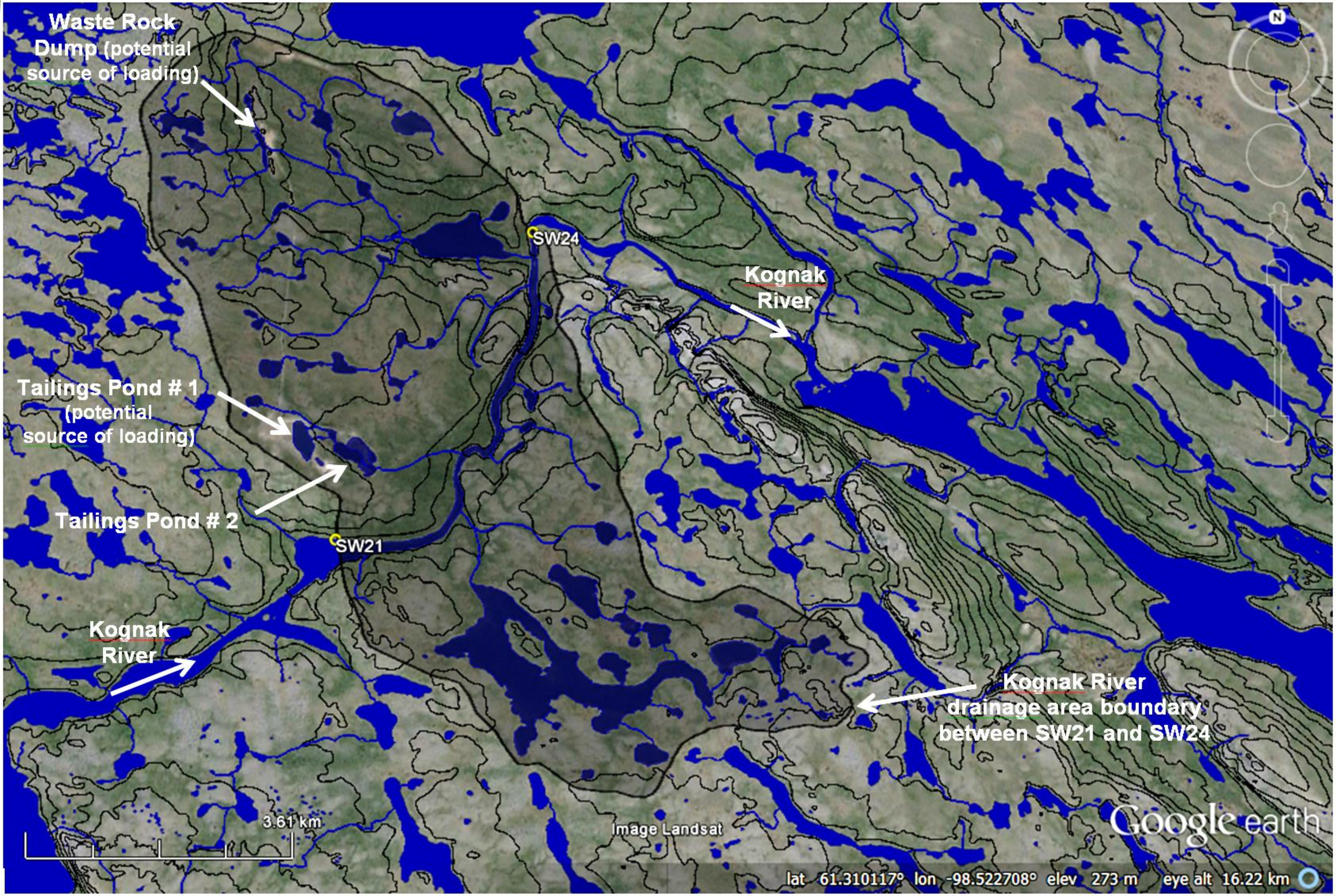
CURRENT CONDITIONS

KOGNAK RIVER, TAILINGS AREA, SHEAR LAKE

KOGNAK RIVER

WATER QUALITY

Overview


Waste Rock Dump (potential source of loading)
SW24
Kognak River
Tailings Pond # 1 (potential source of loading)
Tailings Pond # 2
SW21
Kognak River
Kognak River drainage area boundary between SW21 and SW24
3.61 km
Image Landsat
Google earth
lat 61.310117° lon -98.522708° elev 273 m eye alt 16.22 km

Kognak River Water Quality

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Water Quality Parameter		CCME[2]	SW21									SW24					
		(mg/L)	6/28/2008	6/28/2008	6/28/2008	8/3/2008	8/3/2008	8/3/2008	9/3/2008	6/27/2016	9/9/2016	6/28/2008	8/3/2008	9/4/2008	6/27/2016	6/27/2016	9/9/2016
Hardness			42	38	37	6.4	6.7	6.7	7.6	12.3	8.7	7.4	6.7	7.5	7.6	7.7	10.2
Sulphate	SO4	128.0	1.50	1.30	1.10	0.50	0.50	0.50	1.10	1.10	0.55	1.20	0.50	1.30	0.57	0.57	0.69
Aluminum	Al	0.1000	0.0178	0.0170	0.0177	0.0090	0.0077	0.0082	0.0089	0.0259	0.0098	0.0131	0.0093	0.0173	0.0170	0.0176	0.0101
Antimony	Sb		0.000030	0.000030	0.000040	0.000020	0.000020	0.000020	0.000020	0.000100	0.000200	0.000020	0.000020	0.000020	0.000100	0.000100	0.000200
Arsenic	As	0.00500	0.00091	0.00086	0.00083	0.00008	0.00010	0.00008	0.00012	0.00067	0.00012	0.00007	0.00008	0.00009	0.00011	0.00012	0.00011
Cadmium	Cd	0.000040	0.000025	0.000006	0.000028	0.000005	0.000005	0.000005	0.000013	0.000005	0.000010	0.000005	0.000044	0.000005	0.000005	0.000005	0.000010
Chromium	Cr	0.00890	0.00010	0.00010	0.00010	0.00010	0.00010	0.00010	0.00010	0.00012	0.00010	0.00010	0.00010	0.00010	0.00010	0.00010	0.00010
Cobalt	Co	0.004000	0.000044	0.000040	0.000033	0.000010	0.000010	0.000011	0.000013	0.00010	0.00020	0.000016	0.000013	0.000037	0.00010	0.00010	0.00020
Copper	Cu	0.00200	0.00129	0.00122	0.00128	0.00035	0.00034	0.00032	0.00040	0.00061	0.00037	0.00037	0.00044	0.00046	0.00050	0.00076	0.00037
Iron	Fe	0.3000	0.0510	0.0500	0.0540	0.0180	0.0180	0.0180	0.0190	0.088	0.023	0.0220	0.0170	0.0490	0.051	0.052	0.023
Lead	Pb	0.001000	0.000012	0.000012	0.000024	0.000022	0.000010	0.000007	0.000025	0.000050	0.000090	0.000007	0.000068	0.000024	0.000050	0.000050	0.000090
Manganese	Mn		0.0037	0.0040	0.0041	0.0038	0.0039	0.0039	0.0029	0.0080	0.0041	0.0051	0.0032	0.0143	0.0061	0.0064	0.0047
Mercury	Hg	0.000026	0.000010	0.000010	0.000010	0.000010	0.000010	0.000010	0.000010	0.000005	0.0000050	0.000010	0.000010	0.000010	0.000005	0.000005	0.0000050
Molybdenum	Mo	0.07300	0.00009	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00020	0.00006	0.00005	0.00005	0.00005	0.00005	0.00020
Nickel	Ni	0.02500	0.00163	0.00147	0.00148	0.00019	0.00016	0.00017	0.00020	0.00050	0.00040	0.00023	0.00018	0.00023	0.00050	0.00050	0.00040
Selenium	Se	0.00100	0.00004	0.00005	0.00006	0.00004	0.00004	0.00004	0.00004	0.00005	0.00010	0.00004	0.00004	0.00004	0.00005	0.00005	0.00010
Silver	Ag	0.000100	0.000005	0.000006	0.000005	0.000005	0.000005	0.000005	0.000005	0.000010	0.000010	0.000005	0.000005	0.000005	0.000010	0.000010	0.000010
Thallium	Tl	0.000800	0.000002	0.000009	0.000005	0.000002	0.000002	0.000002	0.000002	0.000010	0.000100	0.0000020	0.0000020	0.0000020	0.000010	0.000010	0.000100
Uranium	U	0.015000	0.000060	0.000068	0.000064	0.000050	0.000044	0.000047	0.000046	0.000056	0.000100	0.000050	0.000046	0.000053	0.000058	0.000056	0.000100
Vanadium	V		0.00020	0.00020	0.00020	0.00020	0.00020	0.00020	0.00020	0.00050	0.00020	0.00020	0.00020	0.00020	0.00050	0.00050	0.00020
Zinc	Zn	0.03000	0.00040	0.00040	0.00080	0.00080	0.00030	0.00030	0.00190	0.00300	0.00140	0.00090	0.00220	0.00110	0.00300	0.00300	0.00100

- The mine site does not appear to have any discernable influence on the water quality in Kognak River for most water quality parameters.
- Concentrations of water quality parameters of potential interest do not appear to be increasing with time.
- Other than for a single sample in August 2008, and only for cadmium in that one sample, CCME guidelines were never exceeded in Kognak River water quality dataset.

TAILINGS AREA

OVERVIEW

Tailings Area – Closure Considerations

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- Total quantity of tailings <400,000 tonnes, covering an area of ~5 ha
- Geochemical stability
  - Shear Zone tailings have potential to generate acid
  - B-zone tailings are lower acid generation potential, and less metal leaching
  - Best Practice is to keep PAG tailings saturated (water cover) or ensure they remain frozen
- Geotechnical stability
  - Dam has a very low consequence of failure
  - no evidence of physical distress of the dam (e.g., cracking, settlement, or displacement of material)
  - Subject to typical weathering mechanisms which warrant monitoring and infrequent maintenance
- Water Management
  - Spillway is adequate to route IDF
  - Needs monitoring and infrequent maintenance

Tailings Area – looking southeast

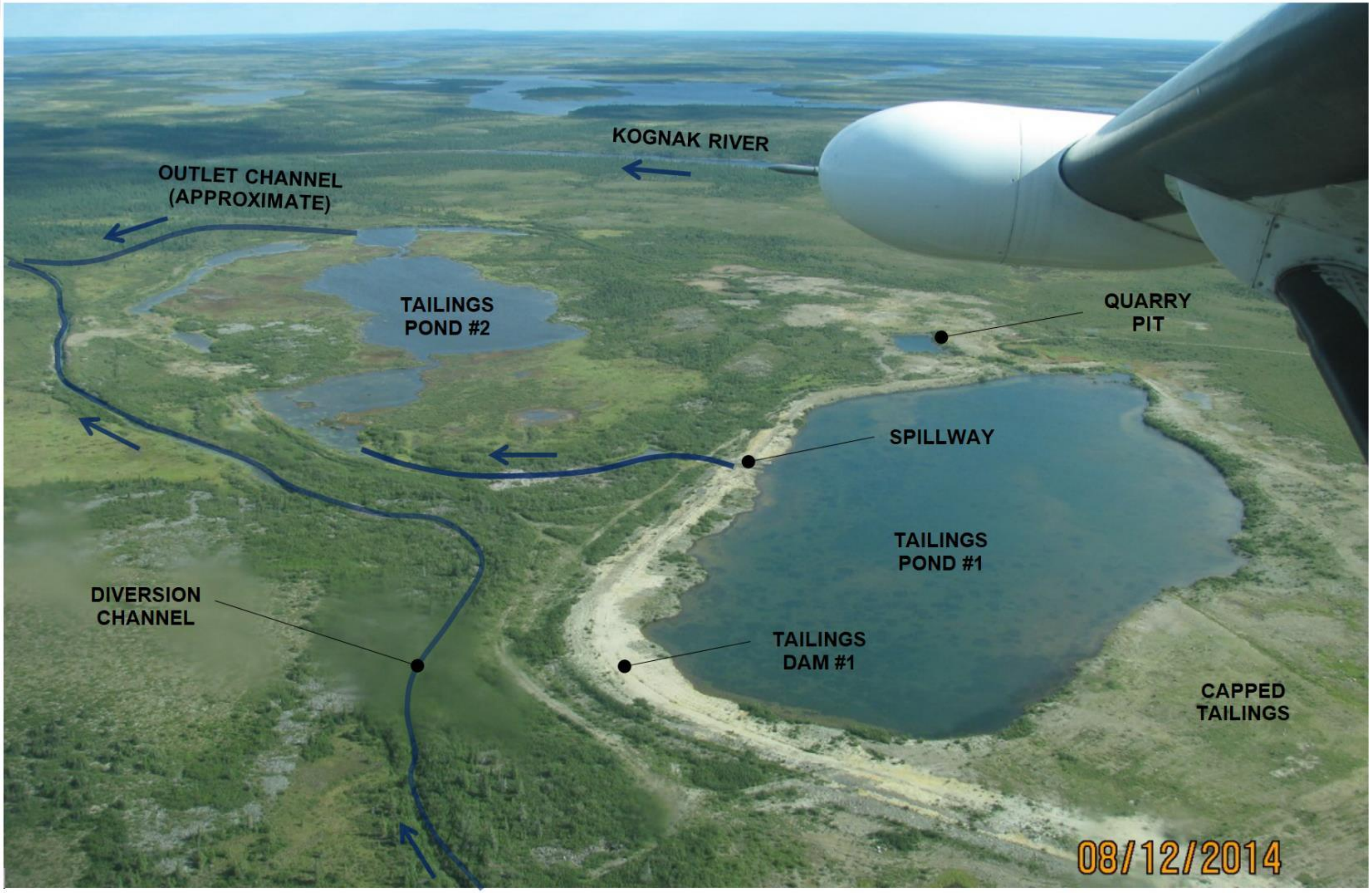

Photo source: Brugger (2015) Photo date: August 12, 2014

Tailings Area – Looking West

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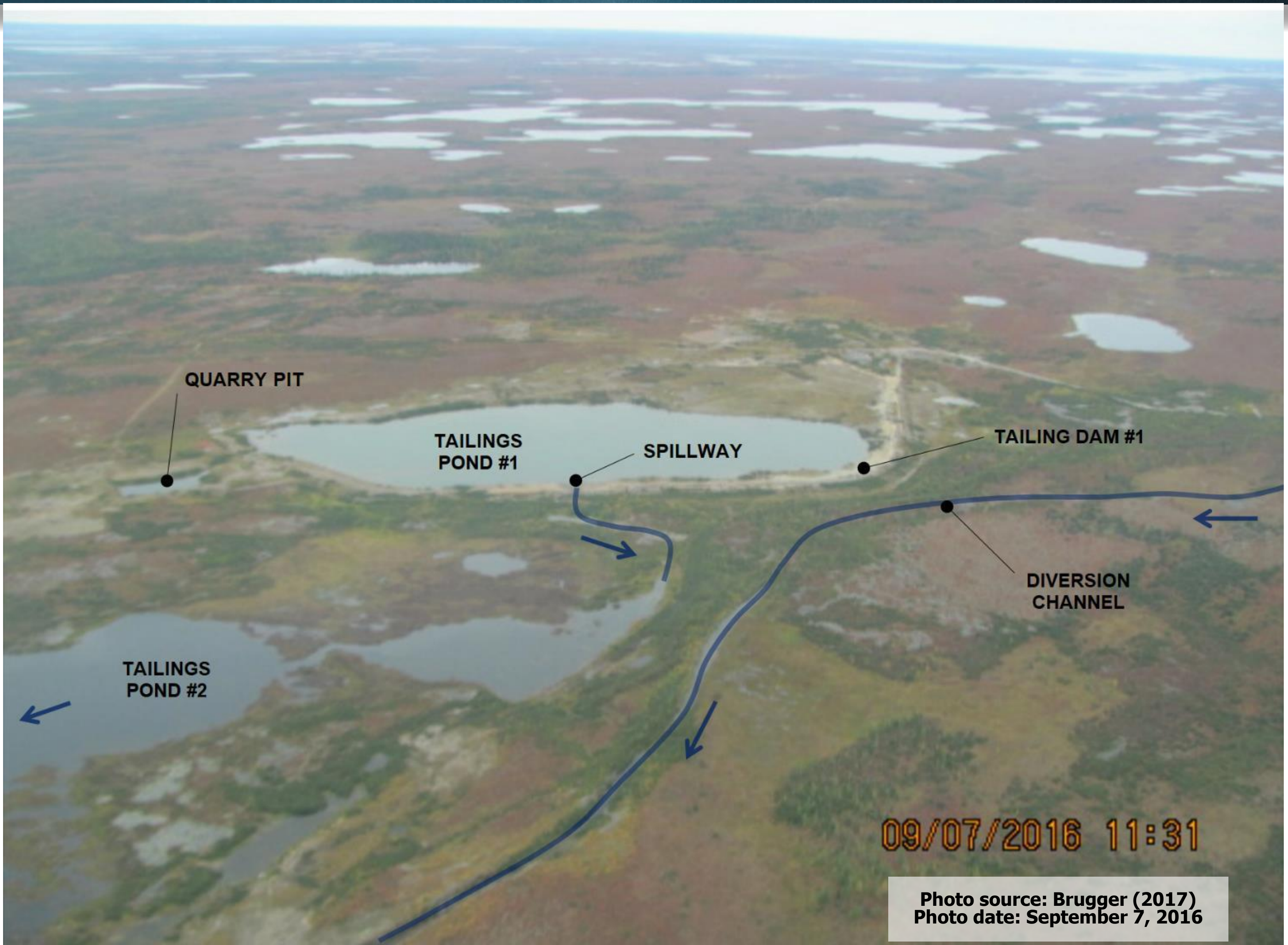
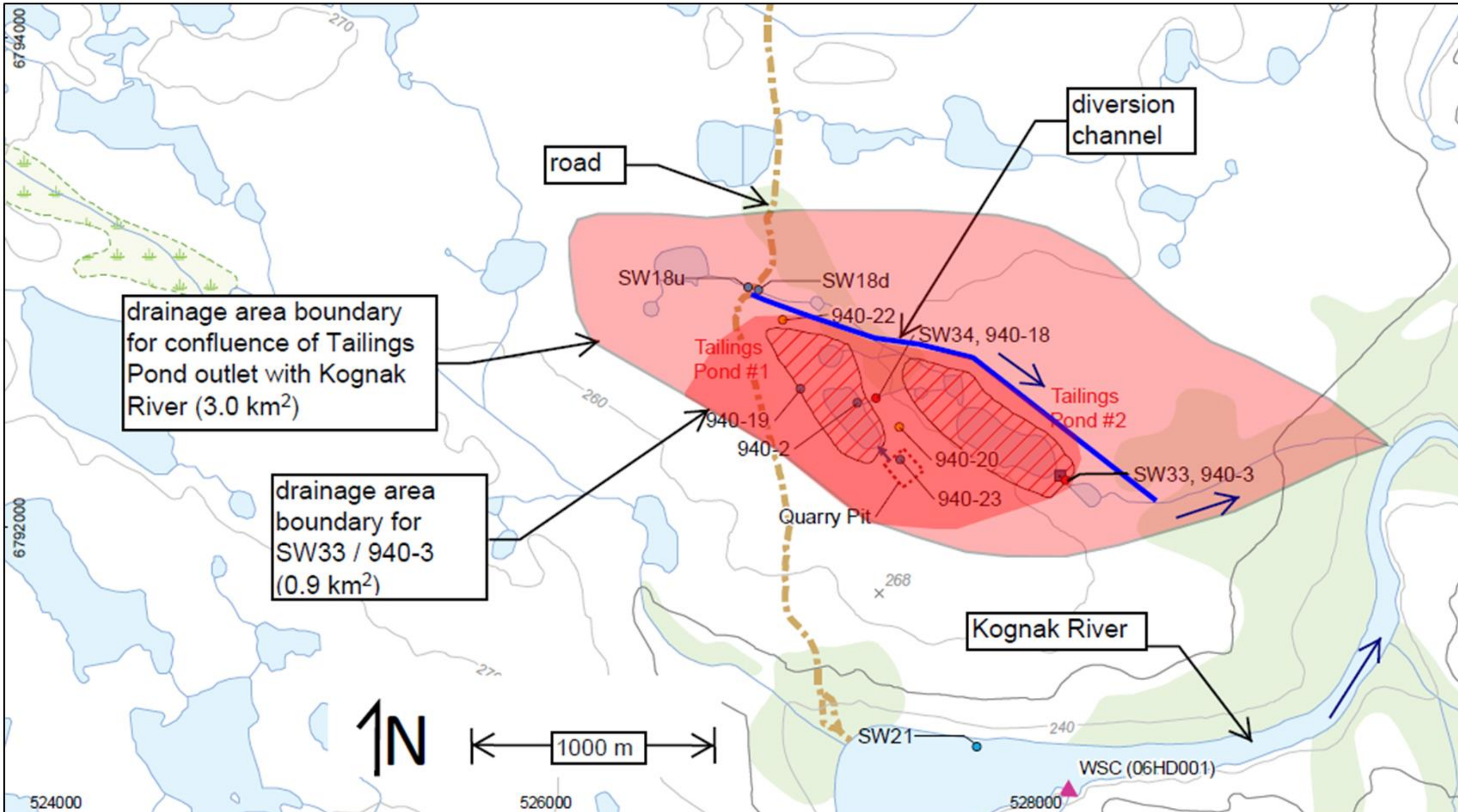


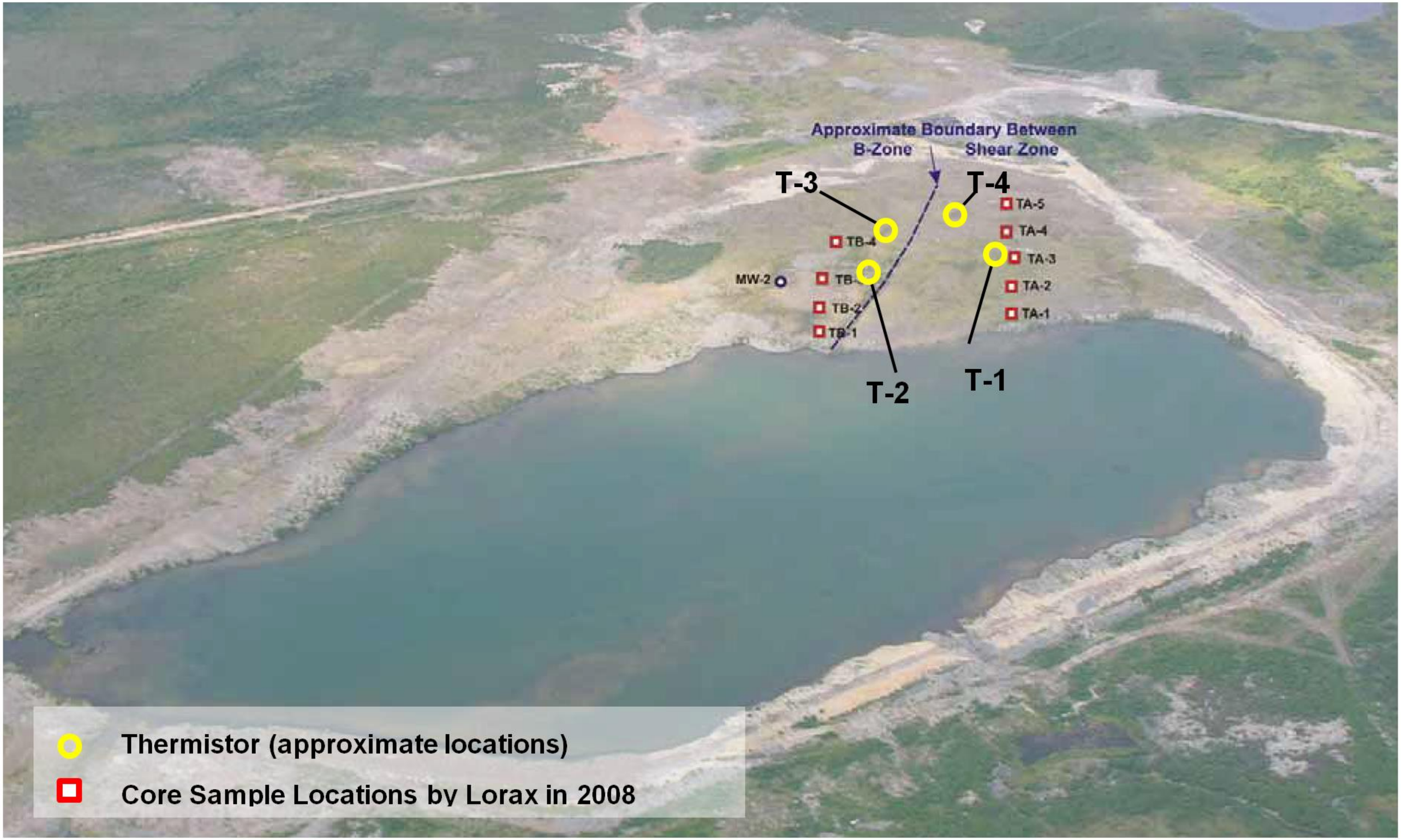
Tailings Area – Drainage Basin Boundaries



TAILINGS AREA

PERMAFROST MONITORING

Tailings Area – Permafrost Monitoring



Tailings Area – Permafrost Monitoring

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Annual depth to permafrost near Thermistor T-4

Sample Date	Depth to Permafrost at T-4 (m)	Thickness of Till Cover (m)	Thickness of Unfrozen Tailings (m)		
			Total Unfrozen Tailings	Saturated Unfrozen Tailings	Unsaturated Unfrozen Tailings
Sep-02-2008	2.0	0.9	1.1	0.2	0.9
Aug-05-2009	1.20	0.9	0.30	0.30	0.0
Aug-04-2010	1.40	0.9	0.50	0.50	0.0
Aug-04-2011	1.40	0.9	0.50	0.50	0.0
Aug-02-2012	1.35	0.9	0.45	0.45	0.0
Aug-15-2013	1.40	0.9	0.50	0.50	0.0
Aug-12-2014	1.07	0.9	0.17	0.17	0.0
Sep-03-2015	1.42	0.9	0.52	0.52	0.0
Sep-09-2016	1.27	0.9	0.37	0.37	0.0

Depth to permafrost measured by Lorax in 2008

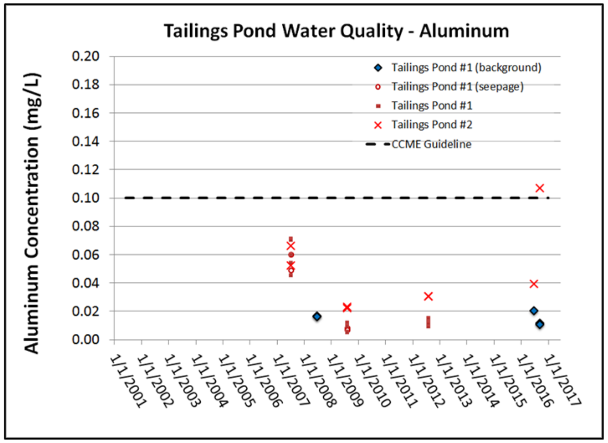
Sample Location	Depth to Permafrost (m)	Thickness of Till Cover (m)	Thickness of Unfrozen Tailings (m)
TA-1	1.65	0.5	1.15
TA-3	1.63	0.9	0.73
TA-5	1.61	0.8	0.81
TB-1	1.66	0.6	1.06
TB-3	1.61	0.8	0.81

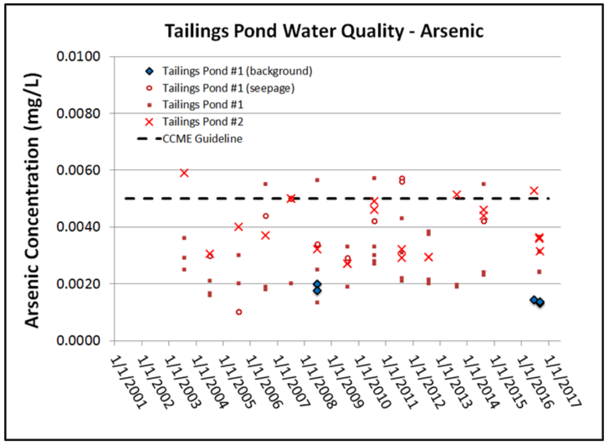
- Depth to permafrost was measured to be about 2.3 m in the mid-1990s when cover was initially placed.
- Recent depth to permafrost measurements have generally shown about a 1.4 m thick depth to permafrost with about 0.5 m thick layer of unfrozen tailings.
- Manual test pits have shown that the layer of unfrozen tailings has been saturated (with exception of 2008).

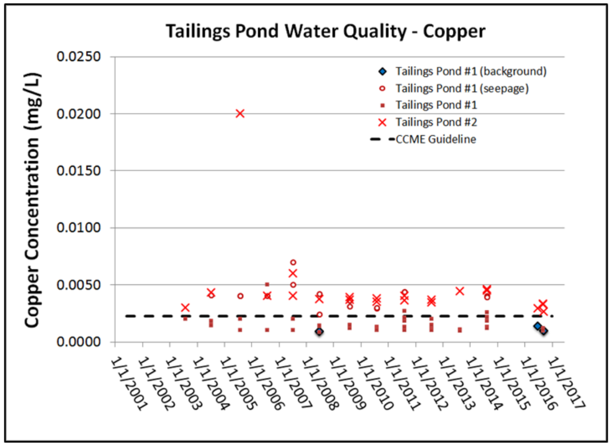
TAILINGS AREA

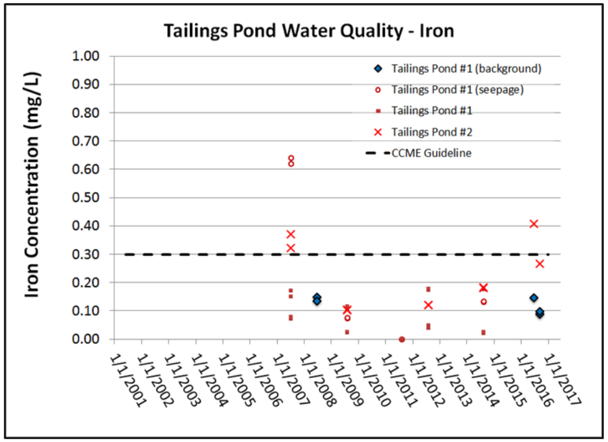
WATER QUALITY

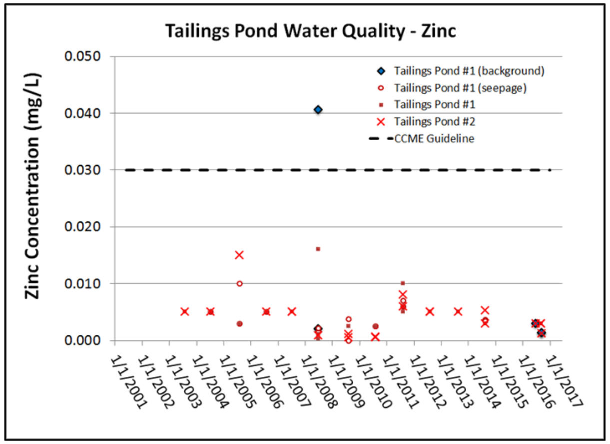
Tailings Pond – Water Quality











Concentrations of water quality parameters of potential interest do not appear to be increasing with time.

Water Quality Downstream from Tailings Area

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Dilution Calculation Parameters		Hardness (mg/L as $CaCO_3$)	Al (mg/L)	As (mg/L)	Cu (mg/L)	Fe (mg/L)
Background Water Quality	(C_{BG})	57.2	0.011	0.0014	0.00096	0.15
Water Quality at outlet of TP2	(C_{SW33})	98.5	0.107	0.0052	0.00369	0.41
Water Quality upstream of Kognak R. Confluence	(C_{KRC})	69.6	0.040	0.0026	0.00178	0.22
CCME Water Quality Guidelines			0.100	0.0050	0.00200	0.30

$$C_{KRC} = \frac{C_{SW33}\ A_{SW33} + C_{BG}\ A_{BG}}{A_{KRC}}$$

Where

C_{KRC} Calculated water quality at the confluence between the outlet channel from the Tailings Ponds, and Kognak River.

C_{SW33} Water quality at the outlet of Tailings Pond 2 (at SW33/940-3) when exceedances of water quality at were observed (Cu – median of all samples since 2008, Al – Sept 2016, As – median from Aug 2013 and Jun 2016, Fe – Jun 2016).

C_{BG} Background water quality from SW18 when exceedances of water quality at SW33 were observed.

A_{KRC} is the total drainage area at the Kognak River confluence with the tailings pond outlet channel and is equal to A_{SW33} + A_{BG}.

A_{SW33} is the drainage area at SW33 (0.9 km^2)

A_{BG} is the drainage area between SW33 and the Kognak River Confluence (2.1 km^2)

Dilution calculations suggest that concentrations downstream from the Tailings Area will be below CCME prior to discharge into the Kognak River.

TAILINGS AREA

BENTHIC INVERTEBRATES AND SEDIMENT QUALITY

Tailings Area - Sediment Quality

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- Sediment results from 2016 sampling do not show clear effects from tailings pond seepage, may be related to sediment heterogeneity in stream environments

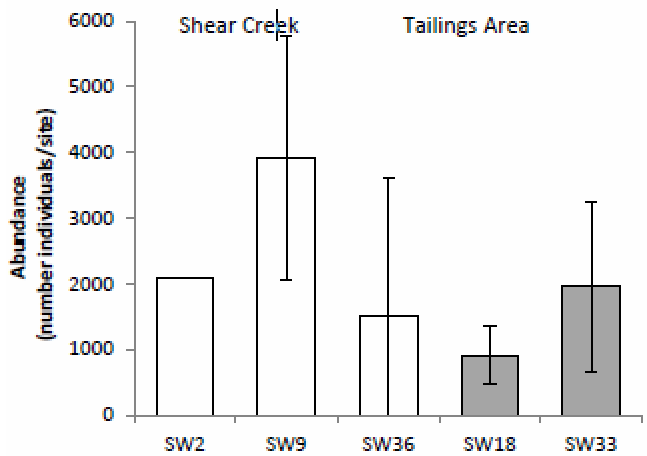
Parameter	Units	ISQG	PEL	SW18	SW33
Arsenic (As)	mg/kg	5.9	17.0	**<u>120</u>**	**<u>81.4</u>**
Cadmium (Cd)	mg/kg	0.60	3.50	0.13	0.30
Chromium (Cr)	mg/kg	37.3	90.0	**67.5**	**46.2**
Copper (Cu)	mg/kg	35.7	197.0	**45.4**	**60.9**
Lead (Pb)	mg/kg	35.0	91.3	12.6	5.5
Mercury (Hg)	mg/kg	0.17	0.486	0.010	0.054
Zinc (Zn)	mg/kg	123	315	**196**	60.1

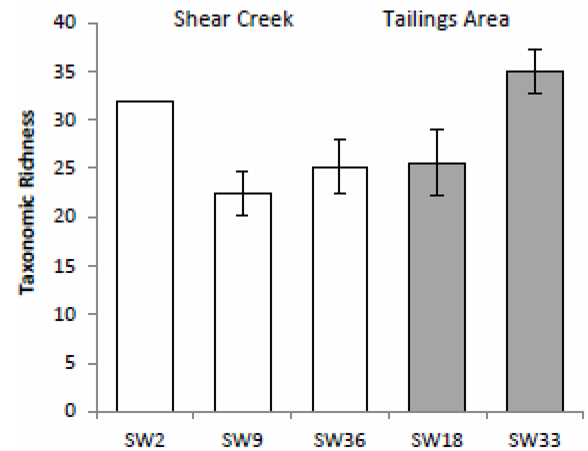
ISQG = interim sediment quality guideline; exceedances **bolded**

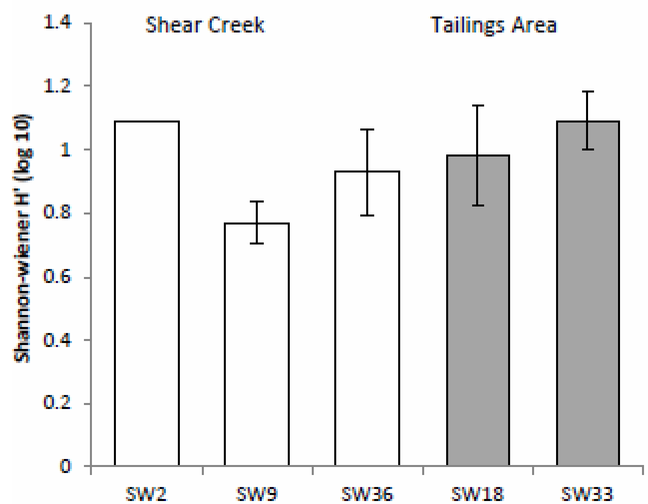
PEL = probable effects levels; exceedances **bolded** and **<u>underlined</u>**

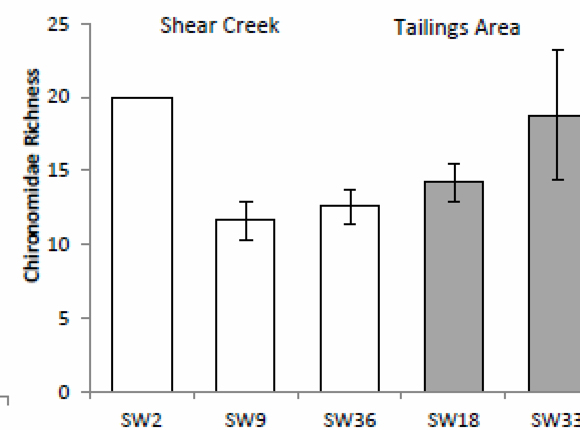
Tailings Area – Benthic Invertebrates

- Benthic invertebrate community more diverse in this area than Shear Creek area
- Higher EPT organisms at SW18 indicative of a healthier benthic community upstream of the tailings pond
- SW33, downstream of the tailings pond had higher proportion of Oligochaeta than SW18, which are typically more tolerant of organic pollution









SHEAR LAKE AREA

WATER QUALITY

Shear Lake - Overview

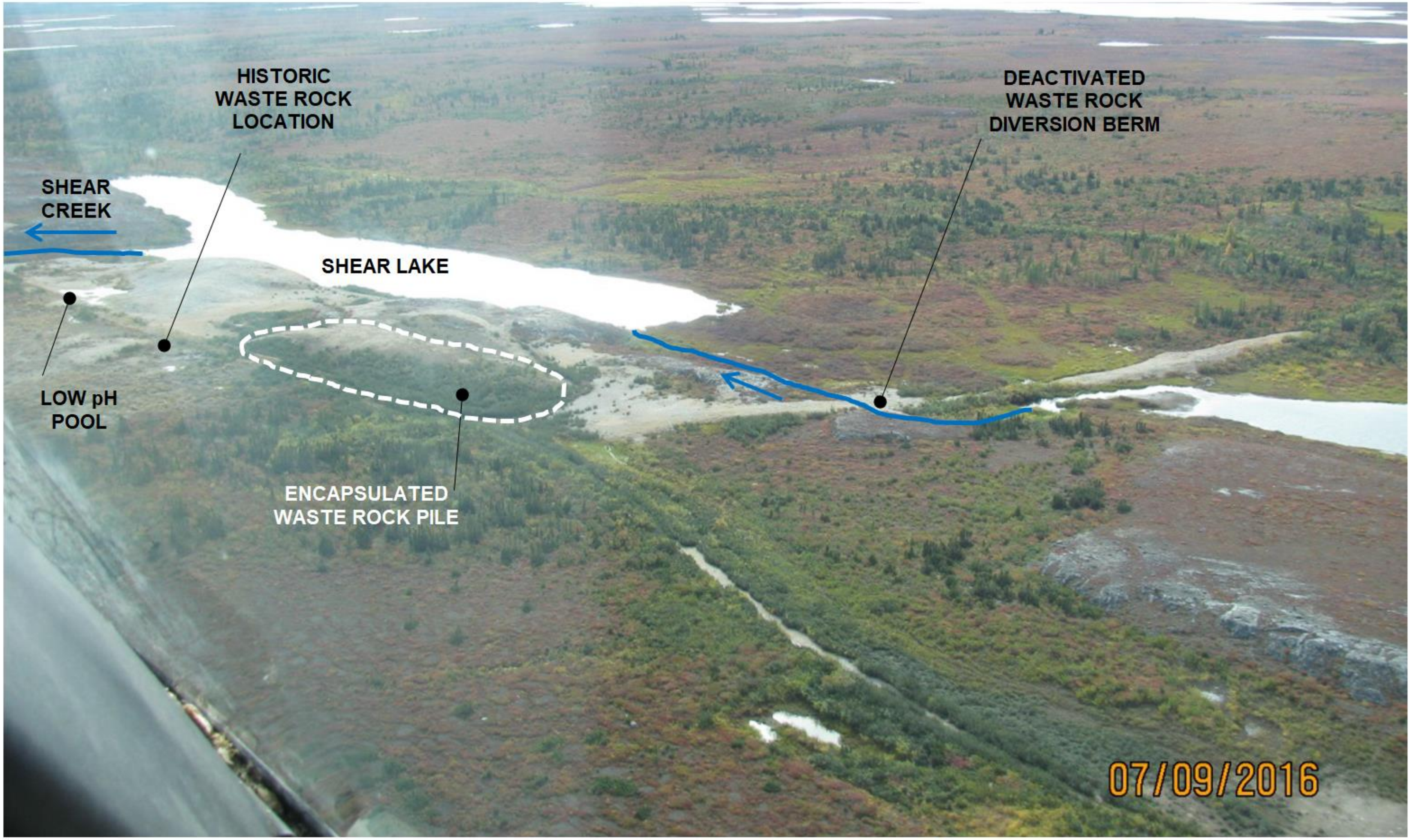
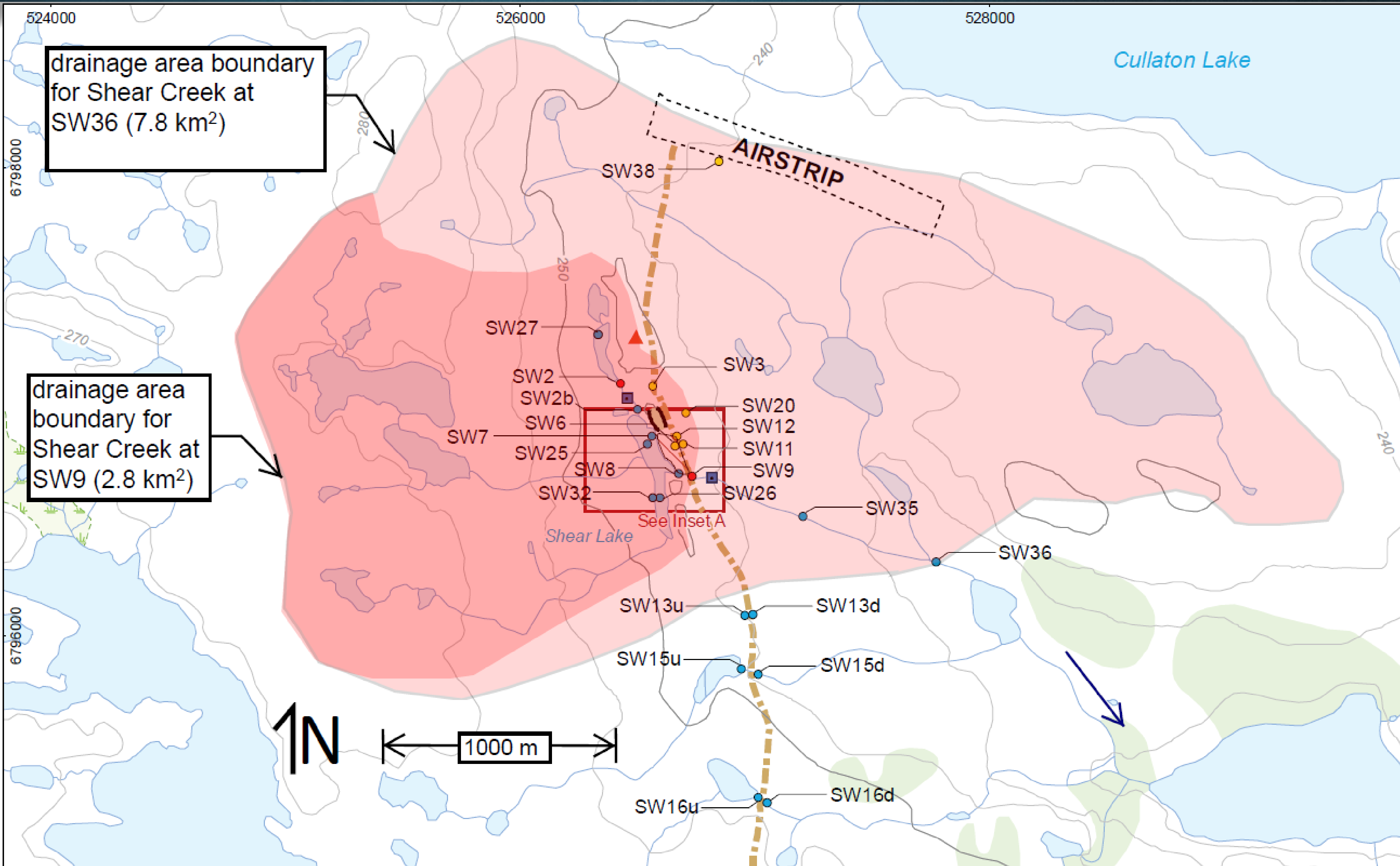


Photo source: Brugger (2017) Photo date: July 9, 2016.

Shear Lake Area



Shear Creek Water Quality

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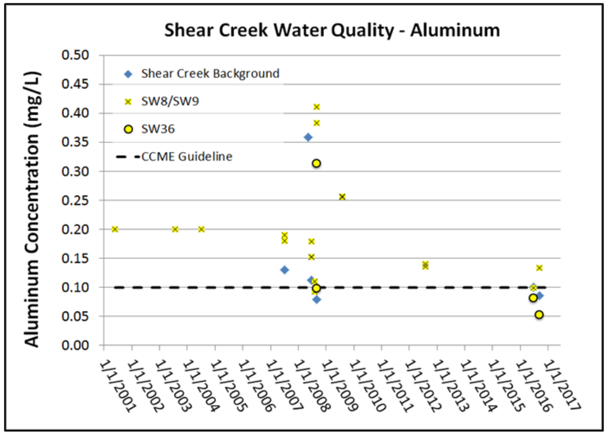

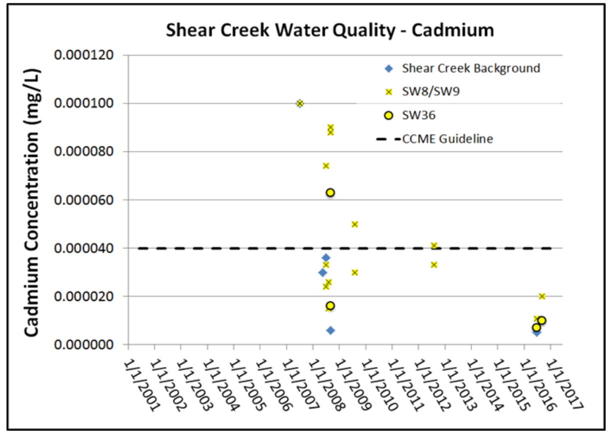

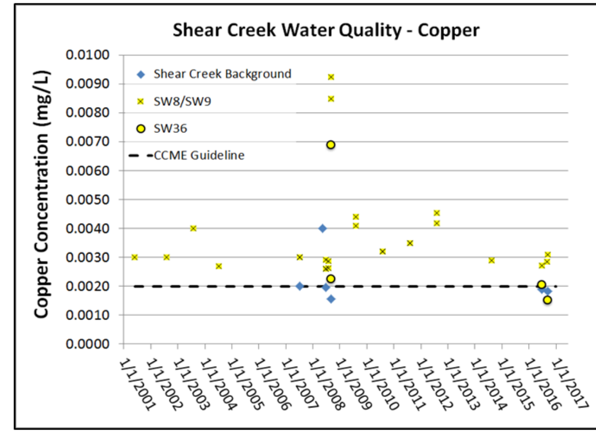

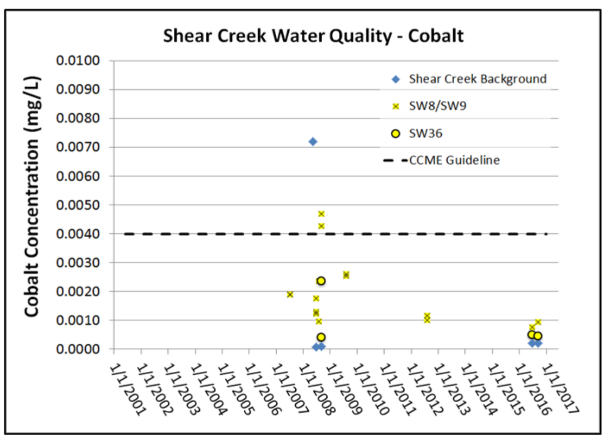

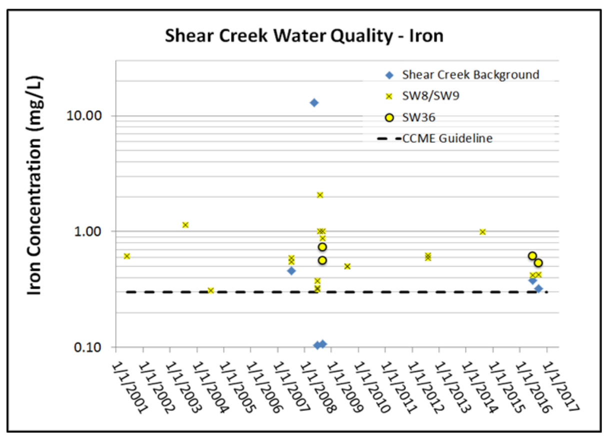

Water quality monitoring in Shear Creek, downstream from the waste rock pile, suggests that Shear Creek water quality returns to nearly background concentration by station SW36.

Shear Lake Area - Sediment Quality

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- Elevated levels of metals in sediment at SW9 in Shear Creek, downstream of waste rock pile, compared with SW2 background
- Elevated metals appear to be reflective of waste rock pile (except for Hg)
- Metal concentrations decreased further downstream at SW36

Parameter	Units	ISQG	PEL	SW2	SW9	SW36
Arsenic (As)	mg/kg	5.9	17.0	6.3	**18.6**	**15.4**
Cadmium (Cd)	mg/kg	0.60	3.50	**0.70**	**1.05**	**0.98**
Chromium (Cr)	mg/kg	37.3	90.0	23.6	**57.1**	**44.3**
Copper (Cu)	mg/kg	35.7	197.0	**43.4**	**72.6**	**39.3**
Lead (Pb)	mg/kg	35.0	91.3	10.5	8.3	5.7
Mercury (Hg)	mg/kg	0.17	0.486	**0.182**	0.098	0.089
Zinc (Zn)	mg/kg	123	315	23.2	86.0	92.3

ISQG = interim sediment quality guideline; exceedances **bolded**

PEL = probable effects levels; exceedances **bolded** and **underlined**

Shear Lake Area – Benthic Invertebrates

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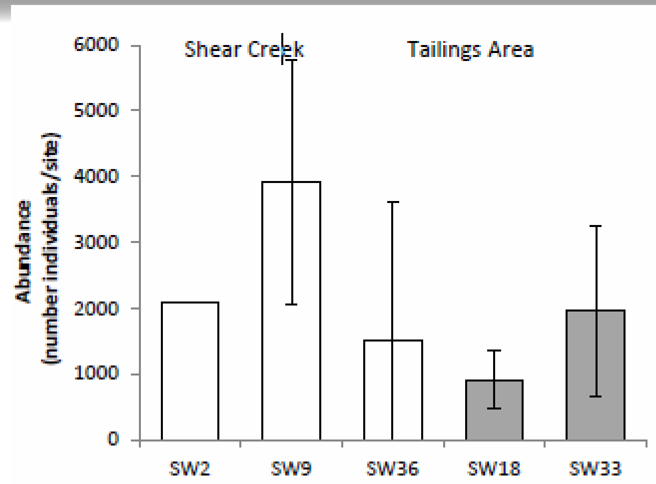
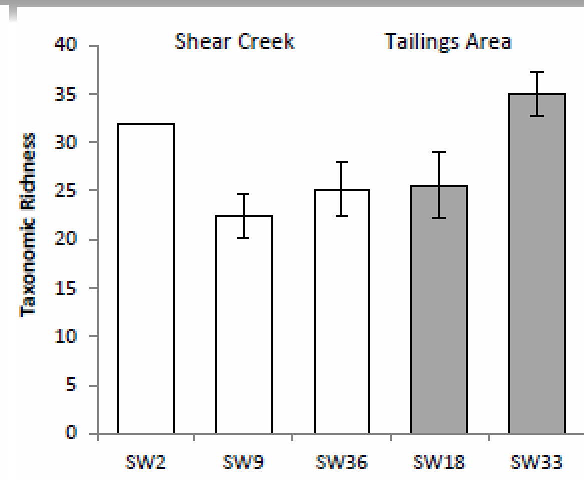
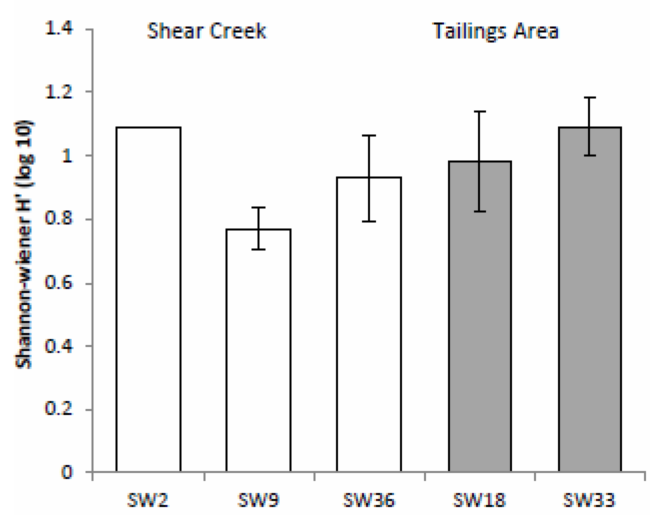
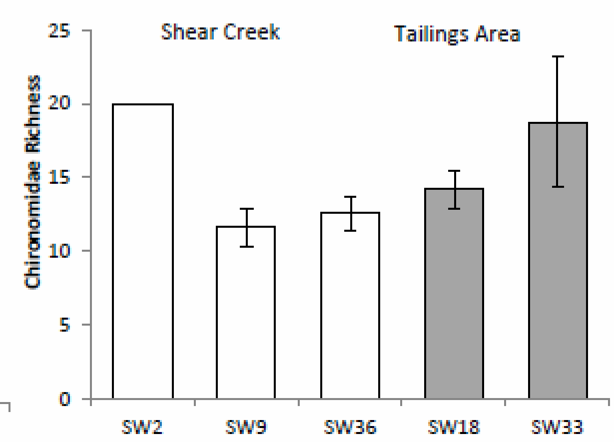
- SW2 site – only 1 replicate was obtained
- No statistical difference in abundance between SW9 and SW36
- Benthic invertebrate community mostly chironomids with no statistical differences in various metrics of richness and diversity
- However, Shannon-Wiener diversity significant higher at SW36, and slightly higher at SW2, providing some indication that community composition is more diverse at SW2 upstream of the waste rock pile









Summary of Effects on receiving environment

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- **Tailings Pond**
  - Concentrations of water quality parameters of potential interest do not appear to be increasing with time at the outlet of TP2
  - Seepage is limited to brief period post-freshet; quantity and quality assimilated within ultimate receiving environment of Kognak River
  - Dilution calculations suggest that concentrations downstream from the Tailings Area will be below CCME prior to discharge into the Kognak River.
- **Shear Lake**
  - Arctic grayling and Lake chub healthy with normal length/weight relationships; does not appear to be impacted by environmental conditions
  - Diversity of benthic invertebrate community similar to undisturbed sites in Nunavut
- **Shear Creek**
  - Water quality monitoring in Shear Creek, downstream from the waste rock pile, suggests that Shear Creek water quality returns to nearly background concentration by station SW36
  - Absence of sulphides remaining in residual waste rock indicates water quality of the waste rock drainage unlikely to get worse over time
  - Loadings considerably lower than prior to the 2002 reclamation efforts
- **Kognak River**
  - No discernable influence from the mine, concentrations not increasing with time, CCME guidelines not exceeded*

*Exception is one Aug 2008 Cd sample

LONG TERM MONITORING

PLAN AND COSTS

Adaptive Monitoring

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- Long-term monitoring is based on an Adaptive Monitoring Plan proposed in PECG's 2017 Report (2016 Aquatic Monitoring Report)
- Focuses on parameters which would reflect ecological effects at sites close to potential mine influence – ensures early detection of changes
- 3 sediment & benthic invertebrate sites (SW9, SW18, SW33)
- 4 water quality sites (SW9, SW18, SW33, 940-2)

Site	Site Location	Water Quality	Sediment Quality	Benthic Invertebrates
SW9	Shear Lake outlet	X	X	X
SW18	100 m upstream of SW18u	X	X	X
SW33 (940-3)	Further downstream of current SW33 to just downstream of the diversion channel	X	X	X
940-2	Tailings Pond #1 Discharge	X	-	-

Long term monitoring plan

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- Geotechnical
  - Currently – annual inspection of tailings dams indicate dams are stable with low consequence of failure, risk based approach recommended by Thurber
  - Proposed – Formal inspection every two years
  - Monitor condition of dam at wet spots and seeps
  - Monitor Dam No.1 spillway channel for erosion
  - Monitor thickness of active layer within tailings layer – thermistors will be reinstalled in 2018 (cost not included in post-closure program)
- Water Quality – Modification to current Water License monitoring
  - Reduction in locations from 9 to 4 (addresses redundancy and dry sites)
  - Modification of parameters to support water quality monitoring of Kognak River
  - Reduction of monitoring frequency from annual to bi-annual
- Aquatic Biology
  - Adaptive monitoring approach to include surface water quality, sediment quality and benthic invertebrates
  - 3 monitoring sites
  - Every 4 years

Summary of long-term monitoring

Component	Parameters/Metrics	Frequency	Timing	Methodology
Geotechnical	• Condition of dam and spillway channel • Stability of till cap of Shear Lake waste rock • Active layer thickness in till cap of tailings • Infrastructure and Water Management System	Every 2 years	Early September	Inspection by qualified geotechnical inspector
Water Quality	• 940-2, SW33 (940-3), SW9, SW18 • Physical parameters (e.g., conductivity, pH) • Anions and nutrients • Total Metals	Every 2 years	Early September	Sample collection and in situ measurements
Sediment Quality	• SW33 (940-3), SW9, SW18 • Physical parameters (grain size) • Leachable anions and nutrients • Total Metals	Every 4 years	Early September	Sample collection in depositional area
Benthic Invertebrates	• SW33 (940-3), SW9, SW18 • Benthic Community Composition and Descriptors	Every 4 years	Early September	Kick-net sampling

Closure cost estimate

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- Total cost for first 10 years of monitoring is **$431,000**, which includes $50,000 for spillway/rip-rap maintenance scheduled for every 20 years and $100,400 one time contingency fund for unexpected maintenance or supplemental monitoring
- Incremental cost for next 10 years, considering a 3% discount rate is $217,200
- Barrick has proposed 10-year bond amount consistent with duration of Water Licence, but is open to discussing other time frames

Closure cost estimate – Annual Breakdown

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			POST CLOSURE MONITORING									
			Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
			2018 Total	2019 Total	2020 Total	2021 Total	2022 Total	2023 Total	2024 Total	2025 Total	2026 Total	2027 Total
1	**SITE MAINTENANCE**											
	Fencing / Signage										$ 1,000	
	Emergency Housing	Assume shack repairs every 10 years starting in 2017									$ 1,000	
	Contingency allowance (unexpected maintenance, o	One time									$100,404	
	Site Road Work - clearing shrubs, leveling, maintaini	Every 10 years starting in 2017									$ 3,000	
	Repairs to Rip-Rap - Spillway	Every 20 yrs Starting in 2026									$ 50,000	
	Airstrip	Every 10 years staring in 2017									$ 15,000	
2	**Site Monitoring (Excluding Thermister Installation)**											
	Geotechnical Inspections											
	Routine Inpections	Starting in 2018 decrease frequency to every 2nd Yr	$ -	$ -	$ 11,350	$ -	$ 11,350	$ -	$ 11,350	$ -	$ -	$ -
	Dam Safety Reviews	Do every 10 yrs starting in 2016	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 43,840	$ -
	Routine Surface Water Monitoring											
	Chemistry 4 locations	Starting in 2018 decrease frequency to every 2nd Yr	$ 14,299	$ -	$ 14,299	$ -	$ 14,299	$ -	$ 14,299	$ -	$ 14,299	$ -
	Charter Flight Thompson to site	Starting in 2018 decrease frequency to every 2nd Yr	$ 10,750	$ -	$ 10,750	$ -	$ 10,750	$ -	$ 10,750	$ -	$ 10,750	$ -
	Sediment / Benthic sampling	Every 4 years starting in 2018	$ 19,120	$ -	$ -	$ -	$ 19,120	$ -	$ -	$ -	$ 19,120	$ -
	Ecological Risk Assessment Monitoring											
	Aquatic - Fish Survey		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Thermister installation at tailings		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	TOTAL 2018 to 2027 FORECAST COSTS		**$ 44,169**	**$ -**	**$ 36,399**	**$ -**	**$ 55,519**	**$ -**	**$ 36,399**	**$ -**	**$258,413**	**$ -**

Wrap-Up

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- Barrick to retain control and ownership of the site
- Closure and reclamation works are complete
  - Thermistors will be re-installed later this year
- No significant residual risks
  - Continuing slow oxidation of tailings below till cap is acceptable
- Monitoring and maintenance will continue to ensure no unexpected changes at site
- Barrick will provide bond adequate to ensure continued site monitoring

Questions?

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Closure cost estimate – detailed monitoring costs

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CALCULATION OF COST PER INDIVIDUAL MONITORI	Planning / Mobilizing		Travel to Area		Days In	Professionals	Fees	Assistance	Fees	Field Supplies	Travel	Per Diem	Total Nbr	Analytical	Reporting	SUBTOTAL COST per event	
	Days	Cost / Day	# People	Cost / Person	Field	In Field	Per Day	In Field	Per Day	& Expenses	Per Day	Per Day	Samples	Cost / Sample	Cost/Event	By Event	By Type
Geotechnical Monitoring																	
Geotechnical Inspections	0.5	$ 1,500	1	$ 1,600	1	1	$ 2,220	0	$ 960	$ -	$ 230	$ 150	0	0	$ 6,400	**$ 11,350**	
Dam Safety Review	5	$ 1,500	2	$ 1,600	1	1	$ 1,920	1	$ 960	$ 500	$ 460	$ 300	0	0	$ 29,000	**$ 43,840**	
Subtotal																	**$ 55,190**
Routine Surface Water Monitoring																	
Chemistry 4 locations - plus 2 duplicates	1	$ 1,500	1	$ 1,600	1	1	$ 2,160	0	$ 960	$ 500	$ 350	$ 150	6	$ 507	$ 5,000	**$ 14,299**	
Charter Flight Thompson to site	0.5	$ 1,500	1	$ 10,000	1					$ -			0			**$ 10,750**	
Sediment / Benthic sampling	2	$ 1,500	1	$ 1,600	1	1	$ 1,920	0	$ 960	$ 250	$ 350	$ 150	3	$ 1,950	$ 6,000	**$ 19,120**	
																$ -	
Subtotal																	**$ 44,169**