

Supporting Document A2

**Baseline Study Reference List
(KHS, 2004)**

SOILS

Title	Date	Author(s)	Location	Methods	Sample Size	Analysis	Other Analysis
<i>Arsenic Pollution in the Yellowknife Area from Gold Smelter Activities</i>	1982	T.C. Hutchinson, S. Aufreiter, and R.G.V. Hancock	Yellowknife area, Giant Mine	Corer (0-2, 2-4, 4-6 cm depths)	24 locations	Metals	Vegetation
<i>Evaluation of Surface Contamination Data, Giant Mine Site, Yellowknife, N.W.T</i>	1998	EBA Engineering Consultants Limited	Giant Mine property and controls sites	Surface and 0.2 metres below grade 4 year study	Year 1 - 91 sites on mine property and 3 control sites in Yellowknife (188 samples) Year 2 - 31 locations of previously high As Year 3 - 50 locations previously sampled Year 4 - 8 sample sites (control sites)	CN, pH, N, Cu, Ni, Zn, As, Pb, oil and grease SWEP leachate extraction	Surface runoff and standing water
<i>Arsenic Contamination of the Terrestrial and Freshwater Environment Impacted by Gold Mining Operations, Yellowknife, NWT</i>	1999	C.A. Ollson	City of Yellowknife, Con Mine area, Kam Lake, Rat Lake, Yellowknife Bay, Frame Lake, Range Lake, Meg Lake, Keg Lake, Peg Lake, Great Slave Outflow	Surface grab samples with scoop	32 locations around City of Yellowknife, 42 locations around the Con Mine property – including tailings	Metals, Leachate tests	Sediment and water
<i>Environmental Study of Arsenic Contamination from the Giant Mine, Yellowknife, Northwest Territories; Part I</i>	2000	Environmental Sciences Group, Royal Military College of Canada	Ingraham Trail and Giant Mine Townsite	Surface, plastic scoop	28 – Ingraham Trail 24 – Giant Mine Townsite	Inorganic elements	
<i>Characterization of Arsenic in Solid Phase Samples Collected on the Giant Mine Townsite, Yellowknife, NWT,</i>	2000	C.A. Ollson, I. Koch, K.J. Reimer, S.R. Walker, H.E. Jamieson	Giant Townsite and along Ingraham Road	Surface, plastic scoop	Focus on 17 of original 25 samples	Sequential selective extraction, gastric fluid extraction, mineralogical analysis	
<i>Risk Characterization of Arsenic Exposure from Consumption of Berries in the Akaitcho Territory</i>	2001	G. Stephens, A. Armstrong, L. Chan, O. Receveur, B. Dabeka, and W. Hendershot	Akaitcho Territory	?	52 samples	Speciation of As	Berries

Title	Date	Author(s)	Location	Methods	Sample Size	Analysis	Other Analysis
<i>Arsenic Levels In the Yellowknife Area: Distinguishing Between Natural and Anthropogenic Inputs</i>	2001	<i>Environmental Sciences Group, Royal Military College of Canada</i>	<i>Tailings, mill site, Baker Creek, Yellowknife Bay, City of Yellowknife, along Ingraham Road, Ndilo, Dettah,</i>	<i>Surface – trowel</i>	<i>295 – reports historic data – analyzed in batches of up to 36 (28 samples, 2 blanks, 4 duplicates, 2 reference material) Does not distinguish soil samples from sediment samples</i>	<i>Metals, principle component analysis,</i>	<i>Sediments</i>
<i>Giant Mine Site Soil Arsenic Assessment, Yellowknife, NWT</i>	2004	<i>Golder Associates Ltd.</i>	<i>Giant Mine Site</i>			<i>Arsenic in Soil</i>	

SOILS (cont)

VEGETATION

Title	Date	Author(s)	Location	Methods	Sample Size	Analysis	Other Analysis
<i>Arsenic in Sediments, Water and Aquatic Biota from Lakes in the Vicinity of Yellowknife, Northwest Territories, Canada</i>	1978	Wagemann, R., N.B. Snow, D.M. Rosenberg and A. Lutz	Chitty, Likely, Kam, Grace, and Keg Lakes		15 samples over 4 months, variable species for each lake	Arsenic	Water, sediment, and benthos
<i>Arsenic Pollution in the Yellowknife Area from Gold Smelter Activities</i>	1982	T.C. Hutchinson, S. Aufreiter, and R.G.V. Hancock	Yellowknife area, Giant Mine	Hand – washed and unwashed	9 sites – alder (<i>Alnus crispa</i>), paper birch (<i>Betula papyrifera</i>), fireweed (<i>Epilobium angustifolium</i>), black spruce (<i>Picea mariana</i>), jack pine (<i>Pinus banksiana</i>), crowberry (<i>Vaccinium vitis-idaea</i>)	Metals	Soils
<i>Arsenic Bioaccumulation and Toxicity of Aquatic Macrophytes Exposed to Gold-Mine Effluent: Relationships with Environmental Partitioning, Metal Uptake and Nutrients</i>	1994	W.T. Dushenko, D.A. Bright and K.J. Reimer	Meg, Keg, Peg Lakes, Yellowknife Bay, Kam Lake, Grace Lake, Madeline Lake	Hand sampled, rinsed	47 samples – 26- <i>Typhia latifolia</i> , 13- <i>Potamogeton pectinatus</i> , 3- <i>Equisetum fluviatile</i> , 3- <i>Myriophyllum exalbscens</i> , 1- <i>Trichogon palustre</i> , 1- <i>Sparganium</i> sp.	As, Fe, Cu, Mn, Zn – roots/shoots, concentration factors	Sediment and water
<i>Arsenic and Antimony Species in the Terrestrial Environment</i>	1998	I. Koch	Kam Lake, Baker Creek (marsh and mill area), Niven Lake, Yellowknife Bay	Hand sampled June and August sampling	13 samples total of horsetail, cattail, milfoil, duckweed, burweed, pondweed 5 samples of algae mats 7 samples of mosses 14 samples of fungi and mushrooms	Sb and As speciation, different digestion methods	Water, sediment, benthos, algae, and fish tissue
<i>Arsenic Levels in Berries and Soils from the Yellowknives Dene First Nation Traditional Territory</i>	1999	E. Davey, D. Maxwell, G. Stephens, Elders	Baker Creek, Ingraham Trail, Yellowknife Bay area, Mac Lake, Enodah, MacKay Lake, City of Yellowknife area	As set out by laboratory staff	21 samples – raspberry (<i>Rubus idaeus</i>), cloudberry (<i>Rubus chamaemorus</i>), blueberry (<i>Vaccinium ovalifolium</i>), cranberry (<i>Vaccinium vitis-idaea</i>), rose hip (<i>Rosa acicularis</i>), gooseberry (<i>Ribes lacustre</i>)	As, human consumption assessment	
<i>Risk Characterization of Arsenic Exposure from Consumption of Berries in the Akaitcho Territory</i>	2001	G. Stephens, A. Armstrong, L. Chan, O. Receveur, B. Dabeka, and W. Hendershot	Akaitcho Territory	?	12 samples	Speciation of As, human consumption assessment	Soils

<i>Heavy Metal Analyses of Wild Edible Mushrooms in the North Great Slave Lake Region, Northwest Territories</i>	2001	J. Obst, W. Coedy, R.G. Bromely	550 x 200km area centering around the City of Yellowknife	?	40 locations – 15 species of mushrooms	27 elements, human consumption assessment	
Title	Date	Author(s)	Location	Methods	Sample Size	Analysis	Other Analysis
<i>Arsenic Species in Terrestrial Fungi and Lichens from Yellowknife, NWT, Canada</i>	2000	I. Koch, L. Wang, K.J. Reimer, and W.R. Cullen	Giant Mine Property tailings ponds	Picked by hand, washed and rinsed	Lichen, puffball (<i>Lycoperdon pyriforme</i>), shaggy mane mushroom (<i>Coprinus comatus</i>) other samples collected on Con Mine property	As speciation	
<i>Antimony Species in Environmental Samples</i>	2000	I. Koch, L. Wang, J. Feldmann, P. Andrewes, K.J. Reimer, and W.R. Cullen	Yellowknife Bay, Giant Mine Tailings area, Kam Lake, Niven Lake	Sampled by hand, washed, and rinsed	15 samples – moss (<i>Funaria hygrometrica</i> and <i>Drepanocladus</i> sp.) cattail (<i>Typha latifolia</i>) bur-marigold (<i>Bidens cernua</i>), duckweed (<i>Lemna minor</i>), water milfoil (<i>Myriophyllum</i> sp.) Richardson's pondweed (<i>Potamogeton richardsonii</i>), bur-reed (<i>Sparganium augustifolium</i>), lichen, pixie cup (<i>Cladonia</i> sp.) puffball (<i>Lycoperdon</i> sp.) and shaggy mane (<i>Coprinus comatus</i>)	Antimony speciation	Snails, water
<i>Biological Sampling at Baker Creek – Summary Report</i>	2002	Dillon Consulting Limited	2 upstream and 2 downstream locations on Baker Creek	Sampled by hand (stems and foliage)	Triplicate samples – <i>Carex aquatilis</i> (upstream), <i>Equisetum hyemale</i> (downstream)	Biological and chemical analysis	Water, sediment, benthos

VEGETATION (cont)

WATER

Title	Date	Author(s)	Location	Methods	Sample Size	Analysis	Other Analysis
<i>Biological Effects of Mining Wastes in the Northwest Territories</i>	1973	<i>M.R. Falk, M.D. Miller and S.J.M. Kostiuk</i>	<i>Effluent stream and receiving environment of Giant Mine</i>	<i>Grab sample</i>	<i>20 stations</i>	<i>Heavy metals and basic water chemistry measurements in the field</i>	<i>Fish toxicity, fish tissue, sediments and benthos</i>
Aspects of Evaporation and Evapotranspiration in the Water Balance of Baker Creek Basin, Near Yellowknife, Northwest Territories	1973	Wight, J.B.	Baker Creek			Meteorological Data	
<i>The Effects of Metal Mining on Aquatic Ecosystems in the NWT II. Giant Yellowknife Mines Ltd.</i>	1978	<i>J.W. Moore, S.J. Wheeler, and D.J. Sutherland</i>	<i>- Baker Creek – one station 2 km upstream of effluent discharge, one station 1 km downstream - Yellowknife and Back Bays</i>	<i>Van Dorn bottle at surface and 10m depth intervals.</i>	<i>- 2 stations - 10 stations (1976), - 24 transects (every 2 weeks from June 1976 to March 1977)</i>	<i>Nutrient and metals</i>	<i>Benthos, sediments and fish tissue</i>
<i>Arsenic in Sediments, Water and Aquatic Biota from Lakes in the Vicinity of Yellowknife, Northwest Territories, Canada</i>	1978	<i>Wagemann, R., N.B. Snow, D.M. Rosenberg and A. Lutz</i>	<i>Kam and Grace Lakes</i>	<i>Surface grab sample</i>	<i>Once a month (16 samples each)</i>	<i>Trace metals</i>	<i>Aquatic vegetation, sediments, and benthos</i>
<i>Arsenic Transport in a Watershed Receiving Gold Mine Effluent near Yellowknife, Northwest Territories, Canada</i>	1994	<i>D.A. Bright, B. Coedy, W.T. Dushenko, K.J. Reimer</i>	<i>Meg, Keg and Peg Lakes, Yellowknife Bay, Grace and Kam Lakes</i>	<i>Surface grab sample</i>	<i>One site at each lake</i>	<i>Organic and inorganic arsenicals</i>	<i>Sediment</i>
<i>Arsenic in Subarctic Lakes Influenced by Gold Mine Effluent: The Occurrence or Organoarsenicals and 'Hidden' Arsenic</i>	1994	<i>D.A. Bright, M. Dodd, and K.J. Reimer</i>	<i>Kam Lake, Grace Lake, Meg Lake, Peg Lake, Keg Lake, and Yellowknife Bay</i>	<i>Surface grab samples</i>	<i>One sample at each lake</i>	<i>Inorganic and organic arsenicals</i>	<i>Sediment and porewater</i>

Title	Date	Author(s)	Location	Methods	Sample Size	Analysis	Other Analysis
<i>Arsenic Bioaccumulation and Toxicity of Aquatic Macrophytes Exposed to Gold-Mine Effluent: Relationships with Environmental Partitioning, Metal Uptake and Nutrients</i>	1994	<i>W.T. Dushenko, D.A. Bright and K.J. Reimer</i>	<i>Meg, Keg, Peg Lakes, Yellowknife Bay, Kam Lake, Grace Lake, Madeline Lake</i>	<i>Surface grab sample</i>	<i>9 samples</i>	<i>Arsenate and arsenite</i>	<i>Macrophytes and sediments</i>
<i>Yellowknife – Back Bay Study on Metal and Trace Element Contamination of Water, Sediment and Fish</i>	1996	<i>F.J. Jackson, C.N. Lafontaine, and J. Klaverkamp</i>	<i>Baker Creek, Back Bay, Yellowknife Bay</i>	<i>Grab and Van Dorn sampler at 1m depth</i>	<i>13 sampling sites – six sample collections</i>	<i>Nutrient, major ions, and metals</i>	<i>Sediment and Fish</i>
<i>Yellowknife-Back Bay Summer Water Quality Monitoring Program (September 1992 to June 1995)</i>	1998	<i>F.J. Jackson</i>	<i>Baker Creek outlet, Tip of Latham Island, Dettah dock, Peg outlet, 2 storm drains (control on Yellowknife River)</i>	<i>Surface grab</i>	<i>Between 9 and 12 samples at each site and one sample each at 2 storm drain outlets</i>	<i>Nutrient, major ion, and metals, bacteriological</i>	
<i>A Study of Arsenic Contamination from the Royal Oak Giant Mine, Yellowknife, Northwest Territories</i>	1998	<i>I.S. Mace</i>	<i>Yellowknife Bay, Baker Creek, and Giant Mine tailings ponds</i>	<i>Surface grab samples, Van Dorn sampler from top and bottom of water column (if depth >4m a sample collected from middle of water column)</i>	<i>24 sample locations during 2 sample periods</i>	<i>Arsenic</i>	<i>Sediments</i>
<i>Arsenic and Antimony Species in the Terrestrial Environment, 1998</i>	1998	<i>I. Koch</i>	<i>Baker Creek, Yellowknife Bay, Niven Lake, Giant Mine property</i>	<i>Surface grab samples</i>	<i>7 locations during 2 sampling periods (June and August)</i>	<i>Arsenic speciation</i>	<i>Vegetation, algae, sediment, benthos, and fish</i>
<i>Baker Creek Fish Habitat and Rehabilitation Study for Abandonment and Restoration Planning</i>	1998	<i>Dillon Consulting Limited</i>	<i>Baker Creek</i>	<i>In-situ parameters with portable meter</i>	<i>7 locations</i>	<i>Temp, pH, conductivity and dissolved oxygen</i>	<i>Fish community, fish habitat, benthic</i>
<i>Arsenic Contamination of the Terrestrial and Freshwater Environment Impacted by Gold Mining Operations, Yellowknife, NWT</i>	1999	<i>C.A. Ollson</i>	<i>City of Yellowknife, Con Mine area, Kam Lake, Rat Lake, Yellowknife Bay, Frame Lake, Range Lake, Meg Lake, Keg Lake, Peg Lake, Great Slave Outflow</i>	<i>Surface grab samples and Van Dorn samples when depth > 2m.</i>	<i>29 samples reported</i>	<i>Metals, arsenic speciation</i>	<i>Sediment and soils</i>

Title	Date	Author(s)	Location	Methods	Sample Size	Analysis	Other Analysis
<i>Antimony Species in Environmental Samples</i>	2000	<i>I. Koch, L. Wang, J. Feldmann, P. Andrewes, K.J. Reimer, and W.R. Cullen</i>	<i>Streams and puddles receiving mine effluent. Niven Lake</i>	<i>Surface grab samples</i>	<i>7 locations during 2 sampling periods (June and August)</i>	<i>Antimony speciation</i>	<i>Vegetation and snails</i>
<i>Assessment of Metal Speciation in Baker Creek, Yellowknife</i>	2000	<i>Lorax Environmental Services Limited</i>	<i>Baker Creek</i>	<i>Grab samples and gel sampler technology</i>	<i>3 sample stations – during two sampling periods (June and July)</i>	<i>Comparison of sampling, analysis technologies for metal speciation accuracy</i>	
<i>Biological Sampling at Baker Creek 2002 Technical Report – Final</i>	2002	<i>Dillon Consulting Limited</i>	<i>Two sample locations upstream and two sample locations downstream on Baker Creek</i>	<i>Surface grab sample</i>	<i>One sample from each site</i>	<i>Metals</i>	<i>Sediment, fish, and benthos</i>
<i>Biological Sampling at Baker Creek – Summary Report</i>	2002	<i>Dillon Consulting Limited</i>	<i>Two sample locations upstream and two sample locations downstream on Baker Creek</i>	<i>Surface grab sample</i>	<i>One sample from each site with one duplicate upstream and one downstream</i>	<i>Metals</i>	<i>Vegetation, sediment, benthos</i>
<i>2001 Annual Environmental Report: Water License N1L2 0043</i>	2002	<i>R. Connel, Miramar Giant Mine Limited</i>	<i>Giant Mine Property</i>		<i>Surveillance Network Program – 20 sampling stations – 10 active during discharge</i>	<i>Flow, temp., pH, TSS, As, Cu, CN, Ni, NH3, Pb, Zn,</i>	
<i>2002 Annual Environmental Report: Water License N1L2 0043</i>	2003	<i>R. Connel, Miramar Giant Mine Limited</i>	<i>Giant Mine Property</i>		<i>Surveillance Network Program – 20 sampling stations – 10 active during discharge</i>	<i>Flow, temp., pH, TSS, As, Cu, CN, Ni, NH3, Pb, Zn,</i>	
<i>Discharge data for Baker Creek from the years 1983-2001. Gauging Station 07SB013 – Baker Creek at Outlet of Martin Lake</i>	2003	<i>Water Survey of Canada, Environment Canada</i>	<i>Baker Creek at Outlet of Martin Lake</i>	<i>Gauging Station</i>		<i>Stream Discharge</i>	
<i>2003 Annual Environmental Report: Water License N1L2 0043</i>	2004	<i>R. Connel, Miramar Giant Mine Limited</i>	<i>Giant Mine Property</i>		<i>Surveillance Network Program – 20 sampling stations – 10 active during discharge</i>	<i>Flow, temp., pH, TSS, As, Cu, CN, Ni, NH3, Pb, Zn,</i>	

WATER (cont)

SEDIMENTS

Title	Date	Author(s)	Location	Methods	Sample Size	Analysis	Other Analysis
<i>Biological Effects of Mining Wastes in the Northwest Territories</i>	1973	<i>M.R. Falk, M.D. Miller and S.J.M. Kostiuk</i>	<i>Effluent stream (tailings included) and receiving environment of Giant Mine</i>	<i>6 " Ekman Dredge, and grid sampling</i>	<i>20 sample locations</i>	<i>Metal analysis</i>	<i>Fish toxicity, fish tissue, benthos and water</i>
<i>The Effects of Metal Mining on Aquatic Ecosystems in the NWT II. Giant Yellowknife Mines Ltd.</i>	1978	<i>J.W. Moore, S.J. Wheeler, and D.J. Sutherland</i>	<i>Back Bay and Yellowknife Bay</i>	<i>Corer</i>	<i>70 stations grouped into 6 areas, 10 additional stations, 24 transects at 400 m intervals</i>	<i>Metal analysis</i>	<i>Water, benthos and fish tissue</i>
<i>Arsenic in Sediments, Water and Aquatic Biota from Lakes in the Vicinity of Yellowknife, Northwest Territories, Canada</i>	1978	<i>Wagemann, R., N.B. Snow, D.M. Rosenberg and A. Lutz</i>	<i>Chitty, Likely, Kam, Grace, and Keg Lakes</i>	<i>Grab samples</i>	<i>5 location from Kam Lake, 2 from Keg and Grace Lakes, 3 from Likely Lake, and one sample from Chitty Lake</i>	<i>Arsenic</i>	<i>Water, benthos, aquatic vegetation</i>
<i>Heavy Metals in Bottom Sediment of Great Slave Lake (Canada): A Reconnaissance</i>	1979	<i>R.J. Allan</i>	<i>North Arm, West Arm, and Central-West Basin of Great Slave Lake</i>	<i>Corer</i>	<i>Six locations</i>	<i>Particle size and metals</i>	
<i>Geochemistry of Sediments in the Back Bay and Yellowknife Bay if the Great Slave Lake</i>	1989	<i>A. Mudroch, S.R. Joshi, D. Sutherland, P. Mudroch and K.M Dickson</i>	<i>Back Bay and Yellowknife Bay</i>	<i>Cores collected at 12 m depth in Back Bay and 14 m depth in Yellowknife Bay (1 cm section up to 30 cm depth)</i>	<i>4 cores at each location</i>	<i>Major elements Sediment dating and mineralogical composition</i>	
<i>Assessment of Gold Mine Impacts on Benthic Environment of Yellowknife Bay, N.W.T.</i>	1989	<i>D. Sutherland</i>	<i>Back Bay and Yellowknife Bay</i>	<i>Corer</i>	<i>10 locations – 1983 3 locations – suspended and bottom sediments – 1984</i>	<i>Particle size, elements</i>	<i>Benthos</i>
<i>Arsenic Transport in a Watershed Receiving Gold Mine Effluent near Yellowknife, Northwest Territories, Canada</i>	1994	<i>Bright, D.A., B. Coedy, W.T. Dushenko, K.J. Reimer</i>	<i>Meg, Keg and Peg Lakes, Yellowknife Bay, Grace and Kam Lakes</i>	<i>Core samples</i>	<i>One site at each lake</i>	<i>Metals, spatial distribution, porewater analysis</i>	<i>Water</i>
<i>Arsenic in Subarctic Lakes Influenced by Golf Mine Effluent: The Occurrence or Organoarsenicals and 'Hidden' Arsenic</i>	1994	<i>D.A. Bright, M. Dodd, and K.J. Reimer</i>	<i>Kam Lake, Grace Lake, Meg Lake, Peg Lake, Keg Lake, and Yellowknife Bay</i>	<i>Core samples</i>	<i>One sample at each lake</i>	<i>Metals, Arsenic species</i>	<i>Porewater and surface water</i>

Title	Date	Author(s)	Location	Methods	Sample Size	Analysis	Other Analysis
<i>Methylation of Arsenic by Anaerobic Microbial Consortia Isolated from Lake Sediment</i>	1994	Bright, D.A., S. Brock, W.R. Cullen, G.M. Hewitt, J. Jafaar and K.J. Reimer	Kam Lake	Core sample	One sample divided into 1, 5, 9, 13, 19, and 25 cm.	Methylation of different species of arsenic by bacteria	
<i>Arsenic Bioaccumulation and Toxicity of Aquatic Macrophytes Exposed to Gold-Mine Effluent: Relationships with Environmental Partitioning, Metal Uptake and Nutrients</i>	1994	W.T. Dushenko, D.A. Bright and K.J. Reimer	Meg, Keg, Peg Lakes, Yellowknife Bay, Kam Lake, Grace Lake, Madeline Lake	Deep water cores and near shore hand samples	32 samples	As, Fe, Cu, Zn, Mn, porewater analysed	Macrophytes and water
<i>Yellowknife – Back Bay Study on Metal and Trace Element Contamination of Water, Sediment and Fish</i>	1996	F.J. Jackson, C.N. Lafontaine, and J. Klaverkamp	Baker Creek, Back Bay, Yellowknife Bay	Petite ponar	13 locations - 3 sets of sediments collected in open water months Sep 92, June 93, Aug 93	Metals and organic carbon	Water and Fish
<i>A Study of Arsenic Contamination from the Royal Oak Giant Mine, Yellowknife, Northwest Territories</i>	1998	I.S. Mace	Giant Mine tailings, Baker Creek, Yellowknife Bay	Surface grabs using a Ekman Modified Kajak-Brinkhurst gravity corer Above water – scoop	35 locations	Elements, depth profile, principle component analysis, porewater, speciation	Water
<i>Arsenic and Antimony Species in the Terrestrial Environment</i>	1998	I. Koch	3 locations – near mill, Baker Creek, and outflow in Back Bay	trowel	3	Arsenic concentration and speciation	Water, fish, benthos, algae, and vegetation
<i>Arsenic Contamination of the Terrestrial and Freshwater Environment Impacted by Gold Mining Operations, Yellowknife, NWT</i>	1999	C.A. Ollson	City of Yellowknife, Con Mine area, Kam Lake, Rat Lake, Yellowknife Bay, Frame Lake, Range Lake, Meg Lake, Keg Lake, Peg Lake, Great Slave Outflow	Surface samples (0-5 cm) using a modified Kajak-Brinkhurst corer	44 samples locations	Metals, arsenic speciation, leachate tests, depth profile, porewater analysis completed	Soils and water
<i>Arsenic Levels in the Yellowknife Area: Distinguishing Between Natural and Anthropogenic Inputs</i>	2001	Environmental Sciences Group, Royal Military College of Canada	Tailings, mill site, Baker Creek, Yellowknife Bay, City of Yellowknife, along Ingraham Road, Ndilo, Dettah,	Surface – trowel Modified Kajak-Brinkhurst gravity corer Does not distinguish soil samples from sediment samples	295 – reports historic data – analyzed in batches of up to 36 (28 samples, 2 blanks, 4 duplicates, 2 reference material)	Metals, principle component analysis,	Soils
<i>Biological Sampling at Baker Creek 2002 Technical Report – Final</i>	2002	Dillon Consulting Limited	Two sample locations upstream and two sample locations downstream on Baker Creek	Uppermost 20 cm using trowel	Triplicate samples	Metals and sediment composition	Water, fish, and benthos

Title	Date	Author(s)	Location	Methods	Sample Size	Analysis	Other Analysis
<i>Biological Sampling at Baker Creek – Summary Report</i>	2002	<i>Dillon Consulting Limited</i>	<i>2 upstream and 2 downstream locations on Baker Creek</i>	<i>Top 2 cm</i>	<i>Triplicate</i>	<i>Metals, organic carbon, and particle size</i>	<i>Water, vegetation, benthos</i>

SEDIMENTS (cont)

BENTHIC INVERTEBRATES

Title	Date	Author(s)	Location	Methods	Sample Size	Analysis	Other Analysis
<i>Biological Effects of Mining Wastes in the Northwest Territories</i>	1973	M.R. Falk, M.D. Miller and S.J.M. Kostiuik	Effluent stream (tailings included) and receiving environment of Giant Mine	6 " Ekman Dredge, and grid sampling	20 sample locations	composite metal, community structure	Fish toxicity, fish tissue, sediments and water
<i>The Effects of Metal Mining on Aquatic Ecosystems in the NWT II. Giant Yellowknife Mines Ltd.</i>	1978	J.W. Moore, S.J. Wheeler, and D.J. Sutherland	- Baker Creek – one station 2 km upstream of effluent discharge, one station 1 km downstream - Yellowknife and Back Bays	Zoobenthos - Serber sampler and drift net Phytoplankton – Van Dorn Bottle Zoobenthos – Ekman Dredge (15x15x25 cm)	- 2 stations - 10 stations (1976), - 24 transects (every 2 weeks from June 1976 to March 1977)	Community structure	Water, sediments and fish tissue
<i>Arsenic in Sediments, Water and Aquatic Biota from Lakes in the Vicinity of Yellowknife, Northwest Territories, Canada</i>	1978	Wagemann, R., N.B. Snow, D.M. Rosenberg and A. Lutz	Chitty, Likely, Kam, Grace, and Keg Lakes	Dip net	Once a month from May to September at one location per lake	Arsenic, concentration factors calculated	Water, aquatic vegetation, and sediments
<i>Assessment of Gold Mine Impacts on Benthic Environment of Yellowknife Bay, N.W.T.</i>	1989	D. Sutherland	- Back Bay and Yellowknife Bay	15x15x23 cm Ekman Dredge	1981 – different water depths (2, 6, 8, 12 m) and different distances from Baker Creek outflow (300, 600, 900, 1200, 1500 m) in two directions 1983 – 10 sites in the 12m depth and a similar depth of Yellowknife Bay	Community structure	Sediment
<i>Arsenic and Antimony Species in the Terrestrial Environment</i>	1998	I. Koch	FW mussel– <i>Anadonta grandis</i> (collected from areas with low As levels) Snail – <i>Stagnicola</i> sp. – marsh at Baker Creek outlet and from Baker Creek outside mill area	Mussels by hand and Ekman dredge, shelled and frozen - smaller snails frozen whole	2 mussels (June and August same location) Snail - 2 locations	Antimony and Arsenic speciation, different digestion methods	Water, sediment, vegetation, algae, and fish tissue

<i>Baker Creek Fish Habitat and Rehabilitation Study for Abandonment and Restoration Planning</i>	1998	<i>Dillon Consulting Limited</i>	<i>Baker Creek</i>	<i>Surber sampler, 60 second agitated substrates</i>	<i>7 locations</i>	<i>Community analysis</i>	<i>Fish community, fish habitat, in-situ water</i>
Title	Date	Author(s)	Location	Methods	Sample Size	Analysis	Other Analysis
<i>Antimony Species in Environmental Samples</i>	2000	<i>I. Koch, L. Wang, J. Feldmann, P. Andrewes, K.J. Reimer, and W.R. Cullen</i>	<i>Effluent drainage</i>	<i>Snails – dissected to remove soft tissue and frozen</i>	<i>?</i>	<i>Antimony speciation</i>	<i>Vegetation</i>
<i>Biological Sampling at Baker Creek 2002 Technical Report – Final</i>	2002	<i>Dillon Consulting Limited</i>	<i>Two sample locations upstream and two sample locations downstream on Baker Creek</i>	<i>Hester-Dendy plates</i>	<i>- five replicates (one location the plates were exposed when water levels dropped)</i>	<i>Metals and community structure</i>	<i>Water, sediment, and fish tissue</i>
<i>Biological Sampling at Baker Creek – Summary Report</i>	2002	<i>Dillon Consulting Limited</i>	<i>2 upstream and 2 downstream locations on Baker Creek</i>	<i>surber sampler, d-net, rock pick</i>	<i>?</i>	<i>No analysis completed (only one location produced invertebrates)</i>	<i>Water, sediment, aquatic vegetation</i>

BENTHIC INVERTEBRATES (cont)

FISH

Source Document	Date	Author(s)	Location	Methods	Sample Size	Analysis	Other Analysis
<i>Biological Effects of Mining Wastes in the Northwest Territories</i>	1973	M.R. Falk, M.D. Miller and S.J.M. Kostiuk	Toxicity Test – fish collected from Yellowknife Bay Tissue analysis – mouth of Baker Creek, Back Bay, Sub Islands Region	- Acute Toxicity – caged bioassays, bucket bioassays, comparative bioassays, lab. bioassays, caged fish experiments - Gill nets for tissue analysis	Toxicity – Rainbow trout, Sucker, stickleback Tissue analysis – 3 to 5 of same species and similar length was pooled (northern pike, whitefish, lake cisco, lake trout, walleye)	Static acute toxicity tests – 96h-LC50, LT50, Metal analysis of muscle and liver tissue of pooled fish	Benthos, sediment and water
<i>The Effects of Metal Mining on Aquatic Ecosystems in the NWT II. Giant Yellowknife Mines Ltd.</i>	1978	J.W. Moore, S.J. Wheeler, and D.J. Sutherland	Yellowknife Bay and Back Bay	- collected by Fisheries and Marine Service in 1974	Northern pike and whitefish – numbers unknown	Metal analysis of flesh	Water, sediments and benthos
<i>Yellowknife – Back Bay Study on Metal and Trace Element Contamination of Water, Sediment and Fish</i>	1996	F.J. Jackson, C.N. Lafontaine, and J. Klaverkamp	5 locations within Yellowknife Bay (DFO provided additional location)	Gillnets, angled, and set lines	452 fish collected – northern pike, burbot, walleye, lake whitefish, longnose sucker, lake cisco, lake trout	Biological evaluation, metal analysis of muscle, liver, kidney	Water and sediment
<i>Histological Analyses of Posterior Kidneys and Livers of Fish from Yellowknife Bay, Great Slave Lake, Northwest Territories, Canada</i>	1997	R.E. Evans and J.F. Klaverkamp	Four locations		160 large fish (northern pike, lake whitefish,) And 52 forage fish (yellow perch, ninespine stickleback, burbot, 4 small lake whitefish)	Histological analysis of liver and kidneys	
<i>Arsenic and Antimony Species in the Terrestrial Environment</i>	1998	I. Koch	Yellowknife Bay at outflow of Baker Creek	Gillnet	Lake whitefish(3), longnose sucker(2), walleye(2), northern pike(2)	Arsenic speciation in muscle tissue (different extraction/digestion methods)	Water, sediment, vegetation, algae, and benthos
<i>Baker Creek Fish Habitat and Rehabilitation Study for Abandonment and Restoration Planning</i>	1998	Dillon Consulting Limited	Baker Creek	Seine nets, electrofishing, and observations	7 location along Baker Creek	Fish habitat assessment, fish community	Benthos, water
Title	Date	Author(s)	Location	Methods	Sample Size	Analysis	Other Analysis

<i>Biological Sampling at Baker Creek 2002 Technical Report – Final</i>	2002	<i>Dillon Consulting Limited</i>	<i>Two sample locations upstream and two sample locations downstream on Baker Creek</i>	<i>Electrofishing</i>	<i>Northern pike and longnose sucker</i>	<i>Metal analysis of muscle tissue</i>	<i>Water, sediment, and benthos</i>
<i>Arsenic Concentration and Speciation in Fishes from Back Bay near Yellowknife NWT</i>	2004	<i>Simone de Rosemont et. al</i>	<i>Back Bay</i>	<i>Gill Nets</i>	<i>Eight lake whitefish (<i>C. clupeaformis</i>), eight northern pike (<i>E. lucius</i>), eight walleye (<i>S. vitreum</i>), six white sucker (<i>C. commersoni</i>) and four longnose sucker (<i>C. catostomus</i>)</i>	<i>Arsenic Speciation</i>	

FISH (cont)

GROUNDWATER

Title	Date	Author(s)	Location	Methods	Sample Size	Analysis	Other Analysis
<i>Groundwater Monitoring Report Giant Mine, Yellowknife, NWT, Results for September 1999</i>	2000	G.G. Burse, J.J. Gibson, and J.E. Gale (Fracflow Consultants Ltd.)	<i>Underground - Levels 100, 250, 425, 575(3), 750(2), 1100, 1650(2), and 2000(2) Surface – tap in C dry, NW tailings pond and Baker Creek</i>	<i>Grab samples from fractures, drill holes, drainage ditches - repeat sampling of 16 locations</i>	<i>27 locations underground and 3 locations on surface</i>	<i>Field measurements, trace metal, cation, anion, organic carbon, oxygen-18, deuterium and tritium</i>	
<i>Sources of Water and Arsenic in Mine Waters, Giant Mine, Yellowknife, NWT; Interpretation of Geochemical and Isotope Data</i>	2001	I.D. Clark	<i>42 sites underground</i>	<i>Grab samples from fractures, drill holes, drainage ditches</i>	<i>All sites sampled in April, May and November</i>	<i>Field measurements, geochemical analysis and isotope analysis</i>	