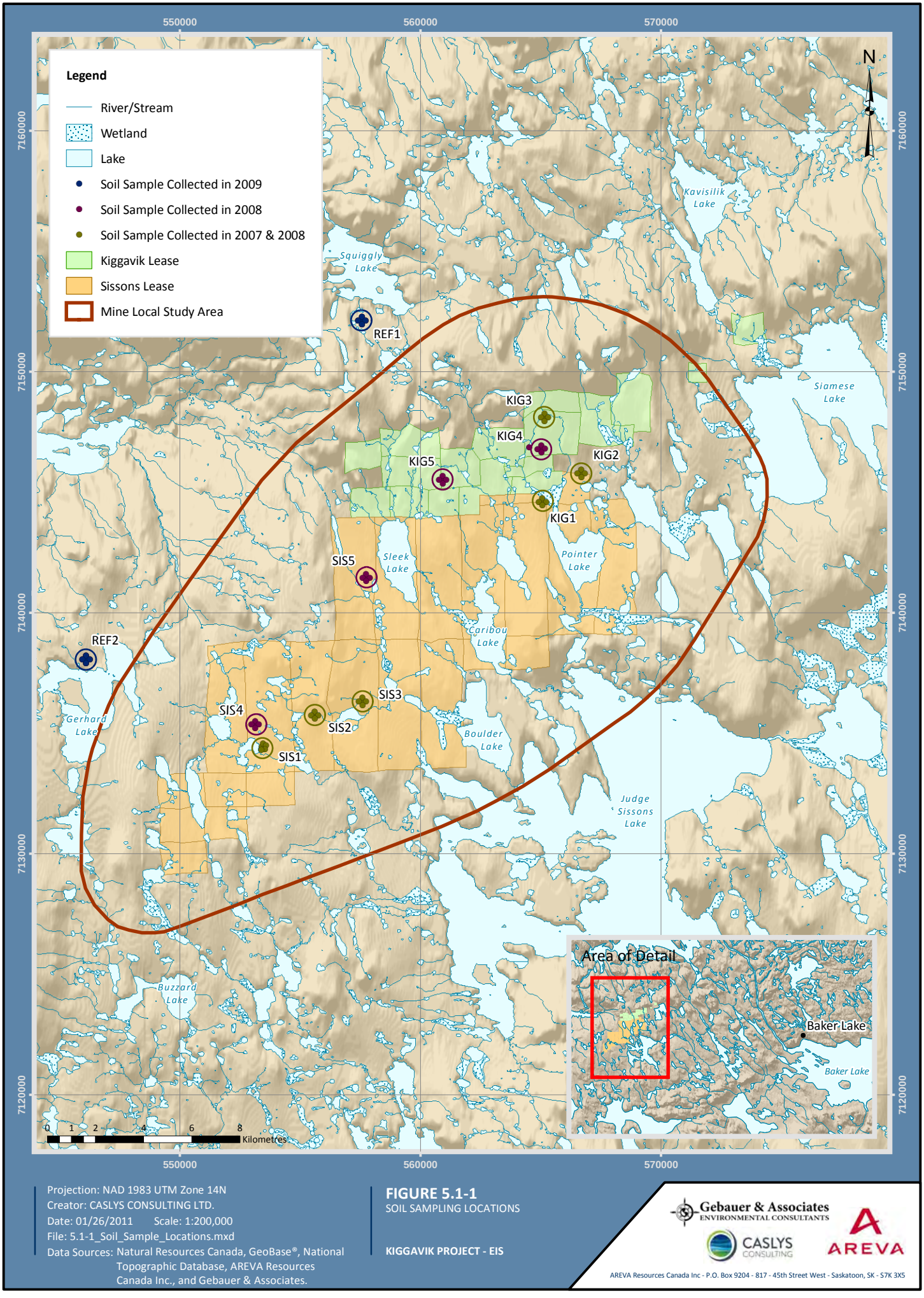

Projection: NAD 1983 UTM Zone 14N
Creator: CASLYS CONSULTING LTD.
Date: 01/26/2011 Scale: 1:200,000
File: 5.1-1_Soil_Sample_Locations.mxd
Data Sources: Natural Resources Canada, GeoBase®, National Topographic Database, AREVA Resources Canada Inc., and Gebauer & Associates.

FIGURE 5.1-1
SOIL SAMPLING LOCATIONS

KIGGAVIK PROJECT - EIS

Gebauer & Associates ENVIRONMENTAL CONSULTANTS
CASLYS CONSULTING
AREVA

AREVA Resources Canada Inc - P.O. Box 9204 - 817 - 45th Street West - Saskatoon, SK - S7K 3X5

5.2 Results

5.2.1 Soil Classification

Soils in the region around the Kiggavik Project were originally described by BEAK (1987a, 1987b), Wickware (1990) and Geomatics (1991). In general, the soil profile in the Kiggavik RSA consists of a shallow organic soil layer underlain by glacial tills varying in thickness from less than one metre on ridges to more than four metres in depressions (AREVA 2008). Soil deposits or profiles identified within the Project LSAs and anticipated footprints do not appear to be consistent with what would be expected in similar areas in the RSA and surrounding Arctic environments.

The soils documented for the Kiggavik RSA included Turbic Cryosols, Static Cryosols and Organic Cryosols. Cryosols are formed in either mineral or organic materials that have permafrost either within one metre of the surface or within two metres if the active layer of the soil profile has been strongly cryoturbated (CSSC 1998). The active layer of Cryosolic soils is frequently saturated with water, especially near the frozen layers or permafrost table.

Specific soil classes documented in the Kiggavik RSA during the current baseline program are listed in Table 5.2-1. A general description of these soils and their classes is provided below. Also listed in the table are the soil classes documented for the study area prior to initiation of the 2008 ELC field surveys. One Regosol was documented historically (Wickware 1990). Regosols are an order of soils not affected by permafrost within one metre of the surface. The location of the Regosol soil type was not noted in available information, and this soil type was not noted in the recent field surveys. Detailed information for each of the soil classes listed is provided in sections 5.2.1.1 to 5.2.1.3. The information provided is derived from The Canadian System of Soil Classification (1998).

Table 5.2-1 Soil Classes in the Kiggavik Regional Study Area

Soil Order	Soil Class	Abbreviation	Previously Documented[(a)]
Static Cryosols	Orthic Static Cryosol	O.SC	√
	Brunisolic Static Cryosol	BR.SC	√
	Gleysolic Static Cryosol	GL.SC	√
	Histic Static Cryosol	H.SC	X
	Regosolic Static Cryosol	R.SC	X
	Histic Regosolic Static Cryosol	HR.SC	X

Table 5.2-1 Soil Classes in the Kiggavik Regional Study Area

Soil Order	Soil Class	Abbreviation	Previously Documented[(a)]
Turbic Cryosols	Orthic Turbic Cryosol	O.TC	√
	Brunisolic Turbic Cryosol	BR.TC	√
	Gleysolic Turbic Cryosol	GL.TC	√
	Regosolic Turbic Cryosol	R.TC	X
Organic Cryosols	Terric Fibric Organic Cryosols	TFI.OC	X
	Terric Humic Organic Cryosols	THU.OC	√
Orthic Regosols	(Not found)		(Class not specified)
NOTES: [(a)] from Wickware 1990			

5.2.1.1 Turbic Cryosols

Mineral soils with marked cryoturbation are classified as Turbic Cryosols, which are often found in conjunction with permafrost features such as patterned ground. To be classified as a Turbic Cryosol, the permafrost layer must be found within two metres of the mineral surface. The LSA and RSA contain dominantly Brunisolic Turbic Cryosols and Orthic Turbic Cryosols (AAFC 1996). Turbic Cryosols can be found in any area where the mean annual soil temperature is less than or equal to zero degrees Celsius; however, they are most commonly found in fine-textured mineral parent materials such as glacial till and glaciolacustrine.

Orthic Turbic Cryosol (O.TC): Soils are classified as Orthic Turbic Cryosols (O.TC) if their B horizon is less than 10 cm thick and is frozen (Bmy), and the profile is strongly cryoturbated. Permafrost must be encountered within two metres of the surface, and there may be gleying in the horizon immediately above the permafrost. The surface material may be organic in nature, but must be less than 15 cm thick.

Brunisolic Turbic Cryosol (BR.TC): Soils are classified as Brunisolic Turbic Cryosols (BR.TC) if they contain an unfrozen B horizon (Bm) at least 10 cm thick. This B horizon must be continuous over the imperfectly- to well-drained part of the pedon, and must be relatively unaffected by cryoturbation. All other horizons (other than the B horizon described above) should be strongly cryoturbated. The surface material may be organic in nature, but must be less than 15 cm thick.

Gleysolic Turbic Cryosol (GL.TC): GL.TC soils develop in poorly drained areas under reducing conditions. Either the B or C horizon must be both gleyed and strongly cryoturbated, and show evidence of gleying or mottling to the mineral surface. The surface material may be organic in nature,

but must be less than 40 cm thick. GL.TC soils are most commonly found in lower landscape positions where surface water collects, or in areas of localized groundwater discharge.

Regosolic Turbic Cryosol (R.TC): R.TC soils are characterized by the absence of a B horizon but with evidence of cryoturbation. These soils are poorly developed and usually have little incorporated organic matter. R.TC soils are commonly found in higher landscape positions such as slope crests where surface water dominantly runs laterally across the ground surface instead of vertically through the profile.

5.2.1.2 Static Cryosols

Static Cryosols have permafrost within one metre of the surface, but show little or no evidence of cryoturbation. They generally develop on coarse-textured mineral parent material or thin soils over bedrock or in a wide textural range of recently deposited or disturbed sediments where evidence of cryoturbation is still largely absent. Static Cryosols may contain surface organic horizons less than 40 cm thick. These soils can be found in any areas where the mean annual soil temperature is less than or equal to zero degrees Celsius; however they are most commonly found in coarse textured mineral parent materials such as glaciofluvial, fluvial, aeolian, and some glacial till materials.

Orthic Static Cryosol (O.SC): Soils are classified as O.SC if they contain a B horizon less than 10 cm thick. The surface material may be organic in nature, but must be less than 15 cm thick.

Brunisolic Static Cryosol (BR.SC): Soils are classified as BR.SC if they contain an unfrozen B horizon (Bm) at least 10 cm thick. The surface material may be organic in nature, but must be less than 15 cm thick.

Gleysolic Static Cryosol (GL.SC): GL.SC soils develop in poorly drained areas under reducing conditions and contain a B horizon or C horizon (or both) that is gleyed. Soils show evidence of gleying or mottling to the mineral surface. The surface material may be organic in nature, but must be less than 40 cm thick. GL.SC soils are generally located in low landscape positions where surface water can accumulate and cause saturated, reducing conditions or where groundwater discharges to the surface (or near surface).

Histic Static Cryosol (H.SC): Soils are classified as H.SC if they contain a thick organic (peaty) horizon 15 to 40 cm thick in the upper one metre of the soil profile. Soils where the combined thickness of surface and subsurface organic layers exceeds 15 cm are also considered Histic Static Cryosols. H.Sc soils must contain a B horizon that is continuous across the pedon. These soils are most commonly found in lower landscape positions that are conducive to the accumulation of organic matter.

Regosolic Static Cryosol (R.SC): R.SC soils are characterized by the absence of a B horizon. These soils are poorly developed, and usually occur on recently deposited material and may contain a thin peaty organic surface horizon less than 15 cm thick. R.SC soils are most commonly found in higher landscape positions such as slope crests where surface water dominantly runs laterally across the ground surface instead of vertically through the profile.

Histic Regosolic Static Cryosol (HR.SC): HR.SC soils are characterized by a thick (15 to 40 cm) organic surface horizon and the absence of a B horizon, and are most commonly found in lower landscape positions that are conducive to the accumulation of organic matter.

5.2.1.3 Organic Cryosols

Organic Cryosols have permafrost within one metre of the surface and contain an organic layer greater than 40 cm thick. They develop principally from organic materials and have a surface layer composed of at least 30% organic material.

Terric Fibric Organic Cryosols (TFI.OC): TFI.OC soils are composed dominantly of fibric material and have a mineral contact within one metre of the surface.

Terric Humic Organic Cryosols (THU.OC): THU.OC soils are composed dominantly of humic material and have a mineral contact within one metre of the surface.

5.2.2 Soils Description of Ecological Land Classification Units

The general terrain and soils characteristics for each ELC unit identified in the Kiggavik RSA are described below, and are summarized in Table 5.2-2. Detailed soil information for each survey plot is provided in Attachment G.

Wet Graminoid Community: The Wet Graminoid ELC unit occurs in depressions, drainage basins and along lakeshores, and is associated with nearly level topography (0-2% slope) and poor drainage. Rock content at the surface is low, and organic material generally covers 85% of the surface, with the remainder composed of water. A peat layer is often found at the surface with a thickness of 15 to 20 cm, underlain by sandy loam or gravelly material. The Wet Graminoid sites generally have a high nutrient and moisture regime due to the movement of nutrient-rich groundwater through the substrate. Soils are frequently saturated and may contain standing water. Soil types associated with sedge communities are potentially Gleysolic Static Cryosols, due to long periods of the year in which the soil is saturated, and to the absence of cryoturbation. In areas where the period of soil saturation is less, Histic Static Cryosols or Histic Regosolic Static Cryosols may develop.

Graminoid Tundra Community: The Graminoid Tundra ELC unit is closely associated with the Wet Graminoid community, occurring on gently sloping or relatively flat topography (0-2% slope) with poor drainage. Rock content at the surface is low and a peat layer is frequently at the surface with a thickness of 15 to 20 cm, underlain by sandy loam or gravelly material. Graminoid Tundra sites generally have a high nutrient and moisture regime due to the movement of nutrient-rich groundwater through the substrate. Soil types associated with Graminoid Tundra communities are potentially Gleysolic Static Cryosols, Gleysolic Turbic Cryosols, Brunisolic Static Cryosols, Brunisolic Turbic Cryosols, Terric Fibric Organic Cryosols and Terric Humic Organic Cryosols.

Graminoid/Shrub Tundra Community: The Graminoid/Shrub Tundra ELC unit is a transitional class between Graminoid Tundra and Shrub Tundra.

Shrub Tundra Community: The Shrub Tundra ELC unit generally occurs at the toe of a gentle slope (0-6%) at the outflow of groundwater from the active layer, and may also be present at the edge of sedge communities where the moisture regime is transitional between the saturated conditions of the sedge community and the moderately well-drained conditions of the Heath Tundra. The moisture regime is generally medium to high, and the nutrient regime is medium. Coverage of organic material at the surface is high (approximately 80%) and rocks are common with approximately 20% coverage. Soil is generally thin and consists of a thin layer of humus over sandy loam-textured material, followed by gravel. Cryoturbation may be present in these areas, resulting in soils such as Orthic Turbic Cryosols, Orthic Static Cryosols, Brunisolic Turbic Cryosols, or Brunisolic Static Cryosols. Poorly drained soils such as Gleysolic Static Cryosol or Gleysolic Turbic Cryosol may also occur.

The riparian shrub component of the Shrub Tundra ELC unit is associated with drainage areas between lakes and transitory ponds where drainage areas frequently have a boulder substrate through which water flows. Shrub Tundra sites have a medium to high moisture regime and a medium nutrient regime. Slopes are gentle (0-2%). Soil is generally thin or non-existent, and may consist of just an accumulation of organic material or litter perched on boulders. Most of the fine particles necessary for soil development have been removed through fluvial action. Soils may be classified as Regosolic Static Cryosols or Regosolic Turbic Cryosols.

Table 5.2-2 Description of Terrain and Soils Characteristics of Ecological Land Classification Units

ELC Units	Terrain Type	Terrain Characteristics	Soil Classes[(a)]
Water	N/A		
Disturbance	Variable and site-specific soil and terrain characteristics		
Cloud/Shadow	N/A		
Sand	No specific soil and terrain characteristics		

Table 5.2-2 Description of Terrain and Soils Characteristics of Ecological Land Classification Units

ELC Units	Terrain Type	Terrain Characteristics	Soil Classes[(a)]
Gravel	No specific soil and terrain characteristics		
Rock Association	No specific soil and terrain characteristics		
Wet Graminoid	Shallow organic over lacustrine, fluvial, or morainal materials	Depressions, drainage basins, shorelines. Poorly drained, saturated soils with peaty surface layer. High moisture and nutrient regime.	BR.TC, GL.SC, HR.SC
Graminoid Tundra	Morainal	Gently sloping lowland areas. Medium to high moisture regime and medium nutrient regime. Poorly drained soils with peaty surface layer.	BR.SC, BR.TC, GL.SC, GL.TC, TFI.OC, THU.OC
Graminoid/ Shrub Tundra	Transitional unit between Graminoid Tundra community and Shrub Tundra community.		
Shrub Tundra	Morainal, Fluvial	Flat to gentle slopes with peaty surface layer. Medium to high moisture regime, and medium nutrient regime	BR.SC, BR.TC, GL.SC, GL.TC, R.SC, R.TC
Shrub/Heath Tundra	Transitional unit between Shrub Tundra community and Heath Tundra community.		
Heath Tundra	Morainal	Flat to gentle slopes with low to medium moisture and nutrient regimes. May have a thin peaty surface layer.	BR.SC, BR.TC, GL.SC, H.SC, O.TC, R.SC
Heath Upland	Bedrock, boulder field, morainal	Flat to gently sloping upland areas. Low to medium moisture and nutrient regimes. Typically contains glacial till, gravel and boulder substrate and thin soils.	BR.SC, BR.TC, R.SC, O.TC
Lichen Tundra	Bedrock, boulder fields, gravel, cobble	Flat to gently sloping upland areas. Poorly developed soils with low moisture and nutrient regime.	R.SC
Heath Upland/ Rock Complex	Transitional unit between Heath Upland community and Rock Complex community.		

NOTES:

[(a)] Refer to Section 5.2.1 for a description of soil classes

N/A = Not applicable (no soil present)

Shrub/Heath Tundra Community: The Shrub/Heath Tundra ELC unit is a transitional class between Shrub Tundra and Heath Tundra.

Heath Tundra Community: The Heath Tundra ELC unit is the most abundant unit in the RSA area, occurring on flat to gently sloping (0-10%) terrain that has a low to medium nutrient and moisture regime. The majority of terrain within this unit is covered by an organic surface layer scattered with surface stones. Cryoturbation is common and results in the formation of Orthic Turbic Cryosols and Brunisolic Turbic Cryosols. Regosolic Static Cryosols and Histic Static Cryosols can also be found in this community. Parent material is predominantly morainal and demonstrates sandy loam surface textures over material with increasing coarse fragment content.

Heath Upland Community: The Heath Upland ELC unit occurs on gently sloping (0-10%) upland areas with a low to medium nutrient and moisture regime. Typically a thin layer of soil covers glacial till, gravel and boulders. Cryoturbation is common and results in the formation of Orthic Turbic Cryosols and Brunisolic Turbic Cryosols. Regosolic Static Cryosols and Histic Static Cryosols can also be found in this community. Parent material includes bedrock, boulder and morainal features.

Lichen Tundra: The Lichen Tundra ELC unit occurs on flat to gently sloping upland areas and esker tops with a low moisture and nutrient regime. A continuous mat of lichen covers the rocky substrate (i.e., bedrock, boulders and gravel) and any thin soils that are present will be poorly developed and likely classified as Regosolic Static Cryosols.

Heath Upland/Rock Complex Community: The Heath Upland/Rock Complex ELC unit is a transitional class between Heath Upland and Rock complexes.

Gravel/Sand/Rock: No specific soil and terrain characteristics are associated with the Gravel or Sand ELC units.

Disturbed Sites: Disturbed sites may occur on any substrate. No specific soil and terrain characteristics are associated with this ELC unit.

5.2.3 Soil Chemistry

Chemistry data for soil samples collected from 2007 to 2009 are summarized in Table 5.2-3. Summary data include the range of concentrations, mean and standard deviation measured in soil samples from the Mine LSA (2007 and 2008) and the reference stations in the RSA (2009). Although separate mineral soil and peat samples were both collected in 2007, all individual samples are included in Table 5.2-3 regardless of soil type. In general, differences between mineral soil and peat were minimal. Raw soil chemistry data are provided in Attachment H.

Concentrations of metals are compared to Canadian Soil Quality Guideline levels for industrial land use areas in Table 5.2-3 (CCME 2006). One sample (location KIG5; see Figure 5.1-1) exceeded arsenic guidelines. Two 2007 peat samples from the Mine LSA slightly exceeded guideline levels for copper (location KIG1, SIS2). One of the reference samples slightly exceeded nickel guidelines. Exceedances are likely due to natural conditions rather than human-induced disturbance.

Historical soil chemistry data was collected but not included in Table 5.2-3 since most of the data was not directly comparable to the current baseline dataset. Future assessments could use historical data to evaluate expected variability in background soil chemistry data. In 1985, samples were collected to measure natural levels of radionuclides in regional soils (Svobada et al. 1985). In this study, composite soil samples were collected along two perpendicular transects (running north-to-south and east-to-west) that intersected at the mine camp (as summarized by Wickware 1990). Data showed distinct anomalies in natural concentrations of radionuclides at two areas that correlated to ore body locations. Activities of uranium-238, radium-226, and bismuth-214 were three to four orders of magnitude greater in the vicinity of one ore body (the 'Main Showing') compared to the transect average. Near a second ore body (the 'Centre Zone'), which was lightly buried under glacial drift, radionuclide activities were about 100 times that of the transect average. Activities fell to very low levels about 200 m from the 'Main Showing'. Patterns of activity of cesium-137 did not resemble the uranium radionuclides pattern and were more variable.

Table 5.2-3 Summary Table of 2008/2009 Soil Chemistry Data for Mine Local Study Area and Regional Study Area, Compared to Canadian Soil Quality Guideline Levels

Parameter	Units	Mine LSA							RSA					CCME Guidelines (Industrial)
		Sample Number			Mean	SD	Range		Sample Number	Mean	SD	Range		
		2007[a]	2008[b]	Total			Min	Max	2009[c]			Min	Max	
pH	pH	6	50	56	6.1	0.76	4.8	7.8	ND	ND	ND	ND	ND	N/A
Moisture (mineral soil)	%	6	0	6	16	4.8	14	22	10	11	1.8	9.3	14.3	N/A
Moisture (peat)	%	5	0	5	78	3.6	74	84	ND	ND	ND	ND	ND	N/A
Aluminum	µg/g	11	0	11	17,227	11,318	4,400	37,200	10	7,594	3,960	3,500	16,200	N/A
Antimony	µg/g	11	50	61	4.1	2	<0.1	5.0	10	<0.2	N/A	<0.2	N/A	40
Arsenic	µg/g	11	50	61	3.7	2	1.2	13.6	10	3.1	1.4	1.4	5.8	12
Barium	µg/g	11	50	61	156	177	27	910	10	138	202	48	710	2,000
Beryllium	µg/g	11	50	61	0.38	0	<0.5	2.1	10	0.4	0.11	0.3	0.6	8
Boron	µg/g	11	0	11	16	20	<1	54	10	15	19	0.5	48	N/A
Cadmium	µg/g	11	50	61	0.26	0	<0.1	0.89	10	<0.1	N/A	<0.1	N/A	22
Chromium	µg/g	11	50	61	20	7	4.6	44	10	15	14	6.8	54	87
Cobalt	µg/g	11	50	61	4.3	2	1.3	8.9	10	4.0	3.3	1.6	13	300
Copper	µg/g	11	50	61	14	19	2.2	96	10	6.3	6.1	2	23	91
Iron	µg/g	11	0	11	12,391	5,218	5,700	25,000	10	11,810	4,896	7,400	25,100	N/A
Lead	µg/g	11	50	61	15	10	0.74	85	10	11	6.5	4.1	23	600
Manganese	µg/g	11	0	11	150	77	11	280	10	115	53	61	230	N/A
Mercury	µg/g	11	50	61	0.012	0	<0.005	0.12	0	ND	ND	ND	ND	50
Molybdenum	µg/g	11	50	61	2.0	1	0.2	6.9	10	0.2	0.067	0.1	0.3	40
Nickel	µg/g	11	50	61	13	6	<5	34	10	14	17	5.1	61	50
Selenium	µg/g	11	50	61	0.92	0	<0.1	<4.0	10	0.08	0.079	0.05	0.3	2.9
Silver	µg/g	11	50	61	0.84	0	<0.1	1.0	10	<0.1	N/A	<0.1	N/A	40
Strontium	µg/g	11	0	11	73	18	47	110	10	115	102	66	400	N/A
Thallium	µg/g	11	50	61	0.44	0	<0.05	0.50	10	<0.2	N/A	<0.2	N/A	1
Tin	µg/g	11	50	61	2.1	1	<0.05	2.5	10	0.08	0.049	0.05	0.2	300
Titanium	µg/g	11	0	11	303	96	54	410	10	608	419	210	1,600	N/A
Uranium	µg/g	11	0	11	2.5	2	0.65	6.0	10	1.3	0.56	0.8	2.4	300
Vanadium	µg/g	11	50	61	19	7	4.3	47	10	22	13	13	59	130
Zinc	µg/g	11	50	61	19	8	6.2	50	10	20	13	9.1	56	360
Lead-210	Bq/g	11	31[b]	42[b]	0.020	0.024	<0.006	0.13	10	<0.04	N/A	<0.04	N/A	N/A
Polonium-210	Bq/g	11	31[b]	42[b]	0.036	0.070	0.004	0.47	10	0.022	0.010	0.005	0.03	N/A

Table 5.2-3 Summary Table of 2008/2009 Soil Chemistry Data for Mine Local Study Area and Regional Study Area, Compared to Canadian Soil Quality Guideline Levels

Parameter	Units	Mine LSA							RSA					CCME Guidelines (Industrial)
		Sample Number			Mean	SD	Range		Sample Number	Mean	SD	Range		
		2007[a]	2008[b]	Total			Min	Max	2009[c]			Min	Max	
Radium-226	Bq/g	11	31[b]	42[b]	0.039	0.030	<0.01	0.14	10	0.035	0.020	0.005	0.08	N/A
Thorium-230	Bq/g	11	31[b]	42[b]	0.037	0.024	0.017	0.13	10	0.020	0.012	0.01	0.04	N/A
Thorium-232	Bq/g	0	31[b]	31[b]	0.028	0.012	<0.02	0.06	10	0.032	0.014	0.01	0.05	N/A

NOTES:

Shaded value indicates guideline level is exceeded

[a] Includes mineral soil samples collected from all six sampling locations and peat samples collected from five of the sampling locations (not SIS3)

[b] Includes 20 individual samples (two from each sampling location) and 10 composite samples (one composite from each sampling location), plus an extra sample collected at KIG4)

[c] Includes 10 samples collected from two sampling locations in 2009

ND = No data

N/A = Not applicable

SD = Standard deviation

CCME = Canadian Council of Ministers of the Environment Soil Quality Guideline (CCME 2006)

6 Summary

The area around the Kiggavik and Sissons leases has been the subject of exploration and study since the late 1970s by various parties. Following initial feasibility and baseline studies, review of existing information and the submission of a formal Project Proposal in 2008, AREVA initiated the procedural requirements towards completing the Draft Environmental Impact Statement (DEIS). Baseline soil and plant investigations that occurred between 2007 and 2010 are included in this report.

Lying predominantly within the Dubawnt Lake Plain/Upland Ecoregion, the Kiggavik Project area is located in a low arctic region characterized by minimal topography, predominantly shrub tundra habitat with low structural habitat heterogeneity, an extreme northern climate, and relatively few terrestrial vertebrates. The terrestrial environment in the Kiggavik area is used by caribou, muskox, large predators, small mammals and upland birds, while the extensive water and wetland features dotting the landscape provide habitat for various species of waterbirds.

Human activities have historically consisted of subsistence hunting and gathering, and local plants and wildlife continue to be used by people living in the region. The Hamlet of Baker Lake is the community in closest proximity to the Kiggavik Project. Previous studies, as well as TK/IQ studies completed as part of this baseline program, demonstrate the continued dependency that local people have on the terrestrial resources in the region.

During the current baseline program, field data were collected on terrain conditions, soil types, and plant species present in the immediate area around the proposed mine and road alignments (the Local Study Area or LSA) as well as in the surrounding lands (the Regional Study Area or RSA). Soil and plant tissues were also collected for analysis of metals and radionuclides. Historical data and information were integrated wherever possible in order to provide as complete a description as possible of the vegetation and soil resources for the local and regional area surrounding the Kiggavik Project.

The focus of the vegetation and soils component was to provide a comprehensive and representative snapshot of current terrestrial conditions, including existing soil and habitat types, and their characteristics. Soil types were identified within the mine LSA as well as for two reference locations within the RSA. For vegetation, an Ecological Land Classification (ELC) was created to identify the habitat types that occur within the LSA and RSA. Through map analysis and field surveys, nine vegetated habitats and five largely non-vegetated habitats (e.g., sand, gravel, etc.) were identified. These ELC units are the basis for the vegetation description, and also the assessment of habitat suitability for wildlife.

The vegetation and soils baseline data collected for the Kiggavik Project will provide important information on pre-Project conditions that will allow prediction and monitoring of potential changes to these resources. Change, or impacts, that can be evaluated with the information provided in this baseline include changes to the amount of habitat available, the type of habitat available, and the plant species found within each habitat type. The location of high quality habitat for different terrestrial animals can now be considered more accurately when planning and designing different aspects of the project. Change in the amount of chemicals found in soil and plant tissues can be monitored and used to determine if possible food chain impacts are observed. As well, the vegetation and soils baseline provides the starting point from which the potential impacts to wildlife can begin to be assessed.

The baseline data collected will also be incorporated in subsequent human health and ecological risk assessments for the proposed development project with the goal of identifying potential impacts and implementation of integrated risk management solutions to mitigate identified concerns.

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8 Glossary

All-Weather Access Road (AWAR): A permanent road that is used all year-round, unlike a winter road which is built of snow and ice and is used only seasonally.

Cryoturbation: Frost churning, the mixing of soil horizons from the surface to the bedrock due to freezing and thawing.

Ecological Land Classification (ELC): A land classification system based on terrain, soils and vegetation, in which areas of similar ecology are identified and mapped within a hierarchy of ecosystems where broad to specific levels of detail are presented on a series of maps.

Ericaceous: Plants of the family Ericaceae that require an acidic soil.

Gleyed: Soil that is waterlogged.

Graminoid: Grasses and grasslike plants.

Horizon: Specific layers within the soil that show different characteristics and physical conditions

Hummock: a small knoll or mound above the ground; irregular ground surface.

Hygric: Of or pertaining to moisture.

Local Study Area (LSA): The area immediately surrounding specific components of the Project, including the Mine site and access roads. LSAs include the footprint of the infrastructure itself as well as a pre-determined buffer. The LSA provides a boundary for various surveys.

Mesic: A moderate or well-balanced supply of moisture.

Pedon: A unit of measure that contains all soil horizons of a particular soil type.

Permafrost: Permanently frozen ground.

Regional Study Area (RSA): The area surrounding all Project-related infrastructure, including entire road alignments and associated infrastructure, as well as a large buffer area. The size of the buffer is

selected to ensure any changes across a larger-scale area can be adequately monitoring, and to provide an appropriate comparison to the LSAs and the various habitat and species that may move in and out of these areas.

Tussock: Small hill of grassy or grass-like growth.

Xeric: Of, characterized by, or adapted to an extremely dry habitat

Attachment A Coordinates of Tissue Sampling Stations and Sites 2008/09

File: VSBR/Attachment A Tissue Waypoints

Attachment A Coordinates of Tissue Sampling Stations and Sites (2007-09)

STATION	NAME	UTM_ZONE	EASTING	NORTHING
KIG1	KIG1-Sample 1	14 W	565065	7144614
	KIG1-Sample 2	14 W	565063	7144764
	KIG1-Sample 3	14 W	564915	7144611
	KIG1-Sample 4	14 W	565221	7144617
	KIG1-Sample 5	14 W	565069	7144463
KIG2	KIG2-Sample 1	14 W	566678	7145781
	KIG2-Sample 2	14 W	566675	7145933
	KIG2-Sample 3	14 W	566527	7145777
	KIG2-Sample 4	14 W	566829	7145784
	KIG2-Sample 5	14 W	566683	7145633
KIG3	KIG3-Sample 1	14 W	565160	7148108
	KIG3-Sample 2	14 W	565156	7148262
	KIG3-Sample 3	14 W	565311	7148115
	KIG3-Sample 4	14 W	565009	7148108
	KIG3-Sample 5	14 W	565153	7147962
KIG4	KIG4-Sample 1	14 W	565020	7146802
	KIG4-Sample 2	14 W	565017	7146952
	KIG4-Sample 3	14 W	564869	7146798
	KIG4-Sample 4	14 W	565171	7146806
	KIG4-Sample 5	14 W	565024	7146648
KIG5	KIG5-Sample 1	14 W	560923	7145517
	KIG5-Sample 2	14 W	560921	7145669
	KIG5-Sample 3	14 W	560773	7145513
	KIG5-Sample 4	14 W	561074	7145521
	KIG5-Sample 5	14 W	560927	7145364
SIS1	SIS1-Sample 1	14 W	553411	7134452
	SIS1-Sample 2	14 W	553458	7134590
	SIS1-Sample 3	14 W	553578	7134497
	SIS1-Sample 4	14 W	553537	7134351
	SIS1-Sample 5	14 W	553384	7134317
SIS2	SIS2-Sample 1	14 W	555609	7135754
	SIS2-Sample 2	14 W	555606	7135903
	SIS2-Sample 3	14 W	555461	7135754
	SIS2-Sample 4	14 W	555760	7135758
	SIS2-Sample 5	14 W	555612	7135605
SIS3	SIS3-Sample 1	14 W	557590	7136329
	SIS3-Sample 2	14 W	557587	7136478
	SIS3-Sample 3	14 W	557440	7136327
	SIS3-Sample 4	14 W	557741	7136331
	SIS3-Sample 5	14 W	557594	7136178
SIS4	SIS4-Sample 1	14 W	553133	7135373
	SIS4-Sample 2	14 W	553130	7135523
	SIS4-Sample 3	14 W	552983	7135369
	SIS4-Sample 4	14 W	553285	7135374
	SIS4-Sample 5	14 W	553136	7135222
SIS5	SIS5-Sample 1	14 W	557745	7141467
	SIS5-Sample 2	14 W	557897	7141468
	SIS5-Sample 3	14 W	557742	7141618
	SIS5-Sample 4	14 W	557593	7141463
	SIS5-Sample 5	14 W	557746	7141313
REF2	REF2-Sample 1	14 W	546101	7138078
	REF2-Sample 2	14 W	546099	7138221
	REF2-Sample 3	14 W	545947	7138070
	REF2-Sample 4	14 W	546259	7138086
	REF2-Sample 5	14 W	546093	7137914
REF1	REF1-Sample 1	14 W	557570	7152123
	REF1-Sample 2	14 W	557567	7152273
	REF1-Sample 3	14 W	557416	7152125
	REF1-Sample 4	14 W	557719	7152114
	REF1-Sample 5	14 W	557565	7151972

UTM Zone 14N, NAD83 (accuracy depends on GPS unit used for survey)

Attachment B Analytical Methods

File: VSBR/Attachment B ICP-AES

File: VSBR/Attachment B ICP-MS

File: VSBR/Attachment B Lead210

File: VSBR/Attachment B Po210

File: VSBR/Attachment B Radium

File: VSBR/Attachment B Thorium

File: VSBR/Attachment B Strontium-89/90

File: VSBR/Attachment B Gamma Spectroscopy

SRC Analytical Laboratories

Standard Operating Procedure Summary

Elemental Analysis by ICP-AES (Simultaneous)

SOP Number: Chm-512

Summary:

Several elements in aqueous solution may be quickly and easily determined using Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP-AES). The plasma is a stream of Argon gas that is ionized by an applied radio frequency field. Sample aerosols are injected into the plasma which subjects the atoms to temperatures of 6000 to 10,000K. The high temperatures atomize the sample. The atoms produce emission spectra which are optically measured in a computer controlled spectrometer.

Samples undergo suitable preparation to ensure that the analytes are in an aqueous environment. Water samples can be analyzed for dissolved metals directly without any preparation. Water samples are often digested with nitric and perchloric acids. The digestion ensures that analytes present in any suspended solids are in solution. A variety of sample types can be analyzed after suitable preparation.

Scope and Detection Limit:

Contact the laboratory for a complete list of current detection limits.

Sample Requirements

Water samples must be preserved with Nitric Acid.

Quality Control:

One of every 10 samples is analyzed in duplicate. At least one control sample is analyzed with each batch. Standards are analyzed after every 5 samples to check the calibration. Instrument performance checks are performed regularly. All quality control checks must be within specified limits or corrective action is taken.

References:

Standard Methods for the Examination of Water and Wastewater, 21st Ed., 2005. Part 3120, APHA-AWWA-WEF.

Compiled November 6, 2009 GS.

SRC Analytical Laboratories

Standard Operating Procedure Summary

Elemental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS)

SOP Number: Chm-515

Summary:

Several elements in aqueous solution may be quickly and easily determined using Inductively Coupled Plasma Atomic Mass Spectrometry (ICP-MS). The plasma is a stream of Argon gas that is ionized by an applied radio frequency field. Sample aerosols are injected into the plasma which subjects the atoms to temperatures of 6000 to 10,000°K. The plasma dissociates the sample into its constituent atoms or ions. The ions are extracted from the central channel of the plasma and pass into the mass spectrometer, where they are separated on the basis of their mass to charge ratio by a quadrapole analyzer. The ions passing through the mass spectrometer are counted by an electron multiplier detector in a computer based data handling system.
A variety of sample types can be analyzed after suitable preparation.

Scope and Detection Limit:

Contact the laboratory for a complete list of current detection limits.

Sample Requirements

Samples should be collected in plastic containers and preserved with nitric acid. A minimum of 100 mL of water sample or 10 g of solid sample is required.

Quality Control:

One of every 10 samples is analyzed in duplicate. At least one control sample is analyzed with each batch. Standards and blanks are analyzed after every 10 samples to check the calibration. An internal standard is added to each sample. All quality control checks must be within specified limits or corrective action is taken.

References:

Standard Methods for the Examination of Water and Wastewater, 21st Edition, 2005 APHA-AWWA-WEF. Part 3125

Compiled November 6, 2009 GS.

SRC Analytical Laboratories

Standard Operating Procedure Summary

Lead-210 in Various Matrices by Beta Counting of the Bismuth-210 Successor Product

SOP Number: **Rad-101**

Summary:

Lead-210 is determined indirectly by the precipitation and counting of its high energy beta emitting progeny, Bismuth-210. Following a digestion (using nitric and perchloric acids for liquid samples and the five acid digestion (Aqua Regia, perchloric , hydrofluoric and sulfuric acids) for solid samples), bismuth is isolated by solvent extraction and subsequently precipitated as bismuth oxychloride. The precipitate is collected on a filter paper/disk assembly and beta counted in a low background counting system (Berthold LB770 Gas Flow Proportional Counter)

Scope and Detection Limit:

This method may be used on a variety of sample types in conjunction with proper initial preparation procedures. The reportable detection limit for a 1 litre water sample is 0.02 Bq/L. The reportable detection limit for a 1 gram solid sample is 0.02 Bq/g.

Sample Requirements

For water samples, a sample size of 1 litre is normally required. Water samples must be preserved with nitric acid to a pH of <2. For soil or sediment samples, a sample size of 0.5 grams is normally required. Holding time for water samples is 6 months. Holding time for solid samples is indefinite.

Quality Control:

For each set of samples a blank, a control sample and a calibration check standard are analyzed. One of every ten samples (10% of all samples) is analyzed in duplicate, if sufficient sample is available. Each sample is spiked with a known quantity of stable (non-radioactive) bismuth which is used to determine the recovery after sample processing. The bismuth recovery is suspect if it is less than 25% or greater than 100%. All quality control results must be within specified limits otherwise corrective action is required.

References:

National Uranium Tailings Program (NUTP) Radioanalytical Methods Manual, N.W. Chiu and J.R. Dean, Canadian Centre for Mineral and Energy Technology (CANMET), Canadian Government Publishing Centre, 1986.
CANMET Report 78-22.
Standard Methods for the Examination of Water and Wastewater, 21st Ed, APHA, AWWA, WEF, 2005.

Compiled November 6, 2009 GS.

SRC Analytical Laboratories

Standard Operating Procedure Summary

Polonium-210 in Water, Solids and Biological Tissue by Alpha Spectroscopy

SOP Number: **Rad-103**

Summary:

Polonium-210 is plated onto a nickel disk and subsequently determined by alpha spectrometry. Alpha spectroscopy incorporates use of another alpha emitting polonium isotope (e.g. Po 209) as a tracer so that recovery can be calculated. This method may be used on a variety of sample types in conjunction with proper initial preparation procedures (e.g., digestion with nitric and perchloric acid for water samples and a five acid digestion (AquaRegia, perchloric, hydrofluoric and sulfuric acids) for solid samples.

Scope and Detection Limit:

This method is used to determine Po210. It may be used on a variety of sample types in conjunction with proper initial preparation procedures. Detection limit for a 1 litre water sample is 0.005 Bq/L. Detection limit for a 1 gram solid sample is 0.005 Bq/g.

Sample Requirements

For water samples, a sample size of 1 litre is normally required. Water samples must be preserved with nitric acid to a pH of <2. Samples for dissolved 210Po must be filtered before acidification.
For soil or sediment samples a sample size of 1 gram is normally required.
Holding time for water samples is 6 months. Holding time for solid samples is indefinite.

Quality Control:

For each set of samples a blank, a control sample, and a calibration check standard are analyzed. One of every ten samples is analyzed in duplicate if sufficient sample is available. Each sample is spiked with a known quantity of Po209 to determine the recovery. All quality control results must be within specified limits otherwise corrective action is required.

References:

Canmet Report 78-22.
Radioelement Analysis Progress and Problems, W. S. Lyon, Editor, 1979. Standard Methods for the Examination of Water and Wastewater, 21st Ed, APHA, AWWA, WEF, 2005.
National Uranium Tailings Program (NUTP) Radioanalytical Methods Manual, N.W. Chiu and J.R. Dean, Canadian Centre for Mineral and Energy Technology (CANMET), Canadian Government Publishing Centre, 1986.

Compiled November 6, 2009 GS.

SRC Analytical Laboratories

Standard Operating Procedure Summary

Radium-226 by Alpha Spectroscopy

SOP Number: **Rad-105**

Summary:

All radium isotopes and other actinide and lanthanide elements in the sample solution are separated by coprecipitation with lead sulfate. The precipitate is redissolved and the radium isotopes are separated by coprecipitation with barium sulfate. The precipitate is filtered and mounted on a plastic disk. It is then counted on an alpha spectrometer. The Radium-226 alpha energy is distinct and the peak can be clearly identified.

Scope and Detection Limit:

This method can be used on water samples and a variety of different types of solid samples after suitable preparation. The detection limit is 0.005Bq/L for a 1Litre water sample and 0.01Bq/g for 0.5 grams of solid sample.

Sample Requirements

For water samples, a minimum sample size of 1 Litre is normally required. Water samples must be preserved with Nitric acid to a pHof <2.

Water samples that require dissolved radium must be filtered through a 0.45μm membrane filter before acidification. For soil or sediment samples, a minimum sample size of 0.5 gram is normally required.

Holding time for water samples is 6 months. Soils, sediments and biological samples should be kept frozen until initial preparation (e.g., drying, ashing). Holding time for dried or ashed solid samples is indefinite.

Quality Control:

For each set of samples a blank, a control sample, and a calibration check standard are analyzed. One of every ten samples is analyzed in duplicate if sufficient sample is available. Each sample is spiked with a known quantity of Barium-133 which is used to determine the recovery. All quality control results must be within specified limits otherwise corrective action is required.

References:

National Uranium Tailings Program Radioanalytical Methods Manual, N.W.Chiu and J.R. Dean, Candian Centre for Mineral and Energy Technology (CANMET), Canadian Government Publishing Centre, 1986.

Compiled November 6, 2009 GS.

SRC Analytical Laboratories

Standard Operating Procedure Summary

Thorium Isotopes by Alpha Spectroscopy

SOP Number: Rad-106

Summary:

Thorium is isolated by precipitation with barium sulfate, several cleanup steps and subsequent precipitation with ceric hydroxide. It is collected on a filter paper and the individual isotopes are determined by alpha spectrometry. The prepared sample must be counted immediately when Th227 is required, otherwise the Th228 progeny will interfere.

Scope and Detection Limit:

This method is used to determine alpha emitting isotopes of thorium including Th227, Th228, Th230, and Th232. It may be used on a variety of sample types in conjunction with proper preparation procedures. Detection limit for a 1 litre water sample is 0.01 Bq/L. Detection limit for 0.5 gram of solid sample is 0.02 Bq/g.

Sample Requirements

For water samples, a sample size of 1 Litre is normally required. Water samples should be preserved with Nitric acid to a pH of <2. Samples for dissolved thorium must be filtered through a 0.45 μm membrane filter before acidification. For soil or sediment samples a sample size of 0.5 grams is normally required.
Holding time for water samples is 6 months. Holding time for solid, vegetation and frozen animal tissue samples is indefinite.

Quality Control:

For each set of samples a blank, calibration check standard and a control sample are analyzed. One of every ten samples is analyzed in duplicate if sufficient sample is available. Each sample is spiked with a known quantity of Th234 which is used to determine the recovery. The tracer recovery is suspect if it is less than 25% or greater than 100%. All quality control results must be within specified limits othewise corrective action is required.

References:

National Uranium Tailings Program Radioanalytical Methods Manual, NUTP-3E, Canmet, 1986. Canmet Report 78-22.

Compiled November 6, 2009 GS.

SRC Analytical Laboratories
Standard Operating Procedure Summary

Determination of Strontium-89/90

SOP Number: Rad-112

Summary:

After sample preparation steps (e.g., acid digestion of solid samples), samples are filtered through 3M Empore Strontium Rad disks. Strontium is adsorbed on the disk. Disks are counted on a low background gas-flow proportional counter. This method may be used on a variety of sample types in conjunction with proper initial preparation procedures.

Scope and Detection Limit:

The detection limit for Strontium (Sr89 and/or Sr90) for 1 Litre of aqueous sample is 0.01 Bq./L. The detection limit for a 1 gram solid sample is 0.01 Bq/g.

Sample Requirements

Water samples should be preserved in the field with nitric acid to a pH of <2. Soil and sediment samples must be dried and ground before analysis.

Quality Control:

A blank filter is analyzed with each batch of samples. One out of every ten samples is run in duplicate.

References:

3M test method "Rapid Determination of Radiostrontium using Empore Strontium Rad Disks".

SRC Analytical Laboratories
Standard Operating Procedure Summary

Gamma Spectroscopy

SOP Number: Rad-300

Summary:

Samples are counted on a HPGe Solid-state Photon Detector with digital spectrometer. The data may be used to calculate the concentrations of gamma emitting nuclides. This method is applicable to the analysis of water, soil, sediment, biological tissue, vegetation and other materials. It is possible to analyze for a wide variety of natural and man-made gamma emitters. Additional parameters may be determined when samples are activated with neutrons in a nuclear reactor.

Scope and Detection Limit:

Since each sample has a different background and the background is different for each isotope in a particular gamma spectrum, the Minimum Detectable Activity (MDA) will be different for every sample and for every isotope within that sample. SRC Environmental Analytical Laboratories calculates the MDA as outlined in the MARLAP manual and ISO 11929.

Sample Requirements

Water samples should be preserved with Nitric acid to a pH of <2. Water samples that require dissolved gamma spec analysis must be filtered through a 0.45 um membrane filter before acidification. Soil and sediment samples are dried and ground before analysis. Holding time for water samples is 6 months and for solid samples is indefinite.

Quality Control:

Reference materials traceable to recognized standard agencies such as NIST or NRC are used to calibrate the detection equipment for energy and efficiency. Quality assurance measurements (background count and QA sample count) are made to demonstrate that the equipment is operating properly. These measurements are made using the Automated Laboratory Quality Assurance Program included with the ORTEC GammaVision® -32 Software.

References:

This method follows Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WEF, Part 7120 without modification.

Compiled July 2014 RO

Attachment C Ecological Land Classification Survey Plot Data – Vegetation

File: VSBR/Attachment C ELC Vegetation Summary

Attachment C Ecological Land Classification Survey Plot Data - Vegetation

(Note that the percentages recorded for each category of vegetation and cover type are independent of one another and are not intended to add up to 100%.)

Kiggavik Project ELC Field Plot Summary

Plot Number	Observer A	Observer B	Percent Cover (%)																	Observations
			Rock	Boulder	Cobble	Gravel	Sand	Clay/Silt	Wet Peat	Dry Peat	Water	Disturbed	Moss	Lichens	Graminoides	Forbes	Trees	Erect Shrubs	Prostrate Shrubs	Ericaceous Shrubs	
1	C. BIANCHINI	J. Aittauq											2	1	1	1		8		3	Shrub dominated site with small sedge patches. Very small sphagnum hummocks
2	C. Bianchini	K. Martee	5											15	2	15				2	
3	c. bianchini	k. martee											5	1	7	1		6	1	16	shrub dominated dry heath tundra
4	c. bianchini	k. martee		1									1	25				1		65	dry lichen - heath tundra
5	c. bianchini	k. martee	4	2									5	29	1			1		4	dry heath tundra w. bedrock
6	c. bianchini	k. martee	6	1									1	1		1		2		2	dry rock- heath lichen tundra
7	c. bianchini	k. martee	9											4	1	1		1		6	crest of hill- bedrock dominate w/ small patches of heath lichen
8	c. bianchini	k. martee											1	1	95	9		1		4	wet sedge meadow w/small hummocks and tussocks
9	c. bianchini	k. martee	8	18										1	1					1	
10	c. bianchini	k. martee		4									1	7				25		55	dry heath tundra
11	c. bianchini	k. martee		1										1	95	1		1	1	1	wet sedge meadow - small tussocks
12	c. bianchini	k. martee	75										3	7	6	2		2	1	4	bedrock heath lichen
13	c. bianchini	k. martee											1	2	92	1		2	1	3	wet segde meadow w/ small tussocks and occassional hummocks
14	c. bianchini	k. martee											5	1	1	3		4		43	hummocky heath-shrub tundra, very low-lying shrub
15	c. bianchini	k. martee	8	5									3	5	1	1		1		5	bedrock outcrop
16	c. bianchini	k. martee											1	4	23			4		32	shrubby-heath tundra with small hummocks
17	c. bianchini	k. martee	35	15									1	5	1	3		2		2	heath- rock- lichen
18	c. bianchini	k. martee											1	1	95	1		1	1	2	sedge meadow w/ small hummocks, tussocks definitely not boulder lichen
19	c. bianchini	k. martee		1									2		2			9	1	2	shrub dominated site
20	c. bianchini	k. martee											1	1	2			95		4	shrub dominated site, very tall hummocks similar to 149E
21	c. bianchini	k. martee											3		1			95		1	shrub dominated site on small hummocks and tussocks. Similar to 149E and 150E
22	c. bianchini	k. martee											1	1	1	1		8		3	low shrub dominated.. Hussocks/tussocks
23	c. bianchini	k. martee		1									1	1	5			25	5	25	hummocky/tussocky
24	c. bianchini	k. martee											35	2	8			8			shrub dominated site w/ wet sedge patches
25	c. bianchini	k. martee									1		5		95	1		1			sedge meadow/wetland, shrub on hummocks
26	c. bianchini	k. martee											2		2			9			shrub dominated site on small hummocks
27	c. bianchini	k. martee											1	1	1	8		9		2	shrub dominated site
28	c. bianchini	k. martee		1									15	1	8	1		3	1	4	sedge dominated site w/ small tussocks and hummocks
29	c. bianchini	k. martee											2	2	25			6	2	12	shrub dominated hummocky site w/ sedge in depressions
30	c. bianchini	k. martee											5	15	3	1		5		23	shrub dominated hummocky site
31	c. bianchini	k. martee									1		1		98			1		1	wet sedge tussocky meadow
32	c. bianchini	k. martee											8	1	8	2		1	1	3	sedge dominated tussocky site w/ shrubs on hummocks
33	c. bianchini	k. martee													1						wet sedge meadow
34	c. bianchini	k. martee											2	2	4			32	2	27	small hummocks, shrub/gramnoid mix
35	C. Bianchini	k. Martee											5	15	13	2		3	1	35	Dry heath hummocky shrub interspersed with some small sedge tussocks
36	C. Bianchini	K. Martee											5	1	6	2		3	1	5	Shrub hummocks with small sedge tussocks & sedge in depressions
37	C. Bianchini	K. Martee											5	1	3	1		5	1	12	Mix hummock/tussock
38	C. Bianchini	K. Martee													5	1		5			Sedge site with good willow growth on tussocks-riparian
39	C. Bianchini	K. Martee									5							1			Wet sedge meadow
40	C. Bianchini	K. Martee											1		99	1		2		2	Tussocky sedge wetland - no stream or water near site
41													15	2	1	2		3	5	4	Dry heath tundra
42	C. Bianchini	K. Martee									1				99	1		1			Sedge Wetland
43	C. Bianchini	K. Martee											25	15	5	3		2	2	33	Dry hummocky heath tundra
44	C. Bianchini	K. Martee											1	1	1	1		9	1	21	Dry heath tundra dominated by tall birch - Vigorous bluebery understorey
45	C. Bianchini	K. Martee		1									5	1	45	18		5	1	35	Dry heath/sedge tundra - disturbance adjacent to site - (road & gravel pit) - windswept - <1% boulder cover - {hoto 1130525 looking @ pit 1130526 @ rd.
46	C. Bianchini	K. Martee	3	1									2	15	1	36		1	1	4	Bedrock/boulder - lichen/heath site
47	C. Bianchini	K. Martee											1	1	8	1		3	1	4	Hummocky dry heath tundra
48	C. Bianchini	K. Martee											1	1	7	1		4		45	Dry heath tundra - similar to 1L-WL
49	C. Bianchini	K. Martee									3				97			1		1	Wet sedge meadow
50	C. Bianchini	K. Martee	7										1	15	5	2		3		1	Rock-lichen - exposed bedrock - no boulders
51	C. Bianchini	K. Martee											2	1	95			1	1		Camera Malfunction - sedge-tusock meadow
52	C. Bianchini	M. Hounjet									1		4		95			1			Camera Malfunction - sedge meadow
53	C. Bianchini	M, Hounjet		1									3	3	18	2		6	1	4	Camera Malfunction - Dry shrubby hummocky tundra

Attachment C Ecological Land Classification Survey Plot Data - Vegetation

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Plot Number	Observer A	Observer B	Percent Cover (%)																	Observations
			Rock	Boulder	Cobble	Gravel	Sand	Clay/Silt	Wet Peat	Dry Peat	Water	Disturbed	Moss	Lichens	Graminoides	Forbes	Trees	Erect Shrubs	Prostrate Shrubs	Ericaceous Shrubs	
54	C. Bianchini	M. Hounjet		1									3	3	5	4		2	2	1	Camera Malfunction - Gramnoid dominated site with shrubby hummocks - no tussocks
55	C. Bianchini	M. Hounjet		1									5	2	4	3		4	8	2	Camera Malfunction - Gramnoid/shrub mixed with minor hummocks
56	C. Bianchini	M. Hounjet		1									1	3	2	2		45	18	1	Camera Malfunction - NOT a sedge wetland - nostly shrub hummocks w/ sedge tussocks in depressions
57	C. Bianchini	M. Hounjet											4	1	2	1		55	28	1	Camera Malfunction - Shrub dominated small hummocks with some small tussocks
58	C. Bianchini	M. Hounjet											2		5	1		5	25		Camera Malfunction - Complex sphagnum hummocks with small sedge tussocks surrounded by dry tundra
59	C. Bianchini	M. Hounjet											2	1	42			1	27		Camera Malfunction - Very similar to 49S except w/ more tussocks
60	C. Bianchini	M. Hounjet		4	1	2							1	7	2			1	2		Camera Malfunction - Boulder-lichen-crowberry
61	C. Bianchini	J. Aittauq											1	6	5	4		18	5	17	Dry heath tundra w/ very small hummocks & tussocks
62	C. Bianchini	J. Aittauq											1	2	75	4		5	4	2	Sedge meadow - small tussocks
63	C. Bianchini	J. Aittauq											3	1	5	25		3	1	2	Dry heath tundra - no tussocks
64	C. Bianchini	J. Aittauq											3		3	1		8			Shrub dominated site with sedge understorey
65	C. Bianchini	J. Aittauq									1		4	1	85			2	1	7	Sedge tussock meadow w/ very small slow flowing stream - ericaciuos plants on small sphagnum hummocks
66	C. Bianchini	J. Aittauq				1	1						1	1	1			8	4	19	shrub dominated low lying esker
67	C. Bianchini	J. Aittauq											2	2	2			9			Shrub dominated dry tundra - no riparian - walk from 39G-32J 1st 1.6km tussocks - last 400m hummocks
68	C. Bianchini	J. Aittauq											25	1	9	2		3	3	2	Dry heath tundra - no tussocks
69	C. Bianchini	J. Aitauq		2								1	2	4	2					55	Dry heath-lichen tundra
70	C. Bianchini	J. Aittauq		2	1								2	25	3					55	Dry heath - lichen tundra w/ some boulders - very similar to 34Y
71	C. Bianchini	J. Aittauq		1									1	1	7			2		35	Sedge tussock dominated w/ some heath
72	C. Bianchini	J. Aittauq										1		1	2			5	2	19	Hummocky shrub site
73	D. Power	J. Aittauq											5	2	15	3		1		18	Heath tundra w/ low hummocks
74	D. Power	J. Aittauq						1						1	6	1		75		12	Abundant low shrubs
75	D. Power	J. Aittauq											1	2	25	1		5		1	
76	D. Power	J. Aittauq											75	1	1	1		1		15	
77	D. Power	J. Aittauq											1		65			2		5	
78	D. Power	J. Aittauq											1	1	5	5		5		3	
79	D. Power	J. Aittauq	1										1	1	97	1			1	2	Hummock sedge wetland
80	D. Power		6					5						5	1					3	
81	D. Power	J. Aittauq	95																	5	No photos taken
82	D. Power	J. Aittauq	1					3						1						7	
83	D. Power	J. Aittauq		9										71						9	
84	D. Power	J. Aittauq	8										1	2	1			1		15	rocky outcrop - mostly exposed bedrock
85	D. Power	J. Aittauq											1		2			75			
86	D. Power	J. Aittauq													99			1			
87	D. Power	J. Aittauq		15						99			5	34	1	1		5	1	54	
88	D. Power	J. Aittauq											3	1	2	7		2	35	2	
89	D. Power	J. Aittauq											1					8		3	
90	D. Power	J. Aittauq											1		99			1			
91	D. Power	J. Aittauq													99						
92	D. Power	J. Aittauq											5	1		8		1		15	
93	D. Power	J. Aittauq											5		8			15			
94	C. Bianchini			1									5	2	5	1		85	1	1	Scrub birch dominated site w/ patches of gramnoids
95	C. Bianchini												1	2	38			42	1	1	Patchy veg of scrub birch/moss/lichen & gramnoids
96	C. Bianchini	J. Aittauq											1	1	95	1		4			Wet sedge meadow w/ occasional raised dry site
97	C. Bianchini	J. Aittauq											1	1	7			3			Graminoid dominated w/ shrubby hummocks
98	C. Bianchini	M. Hounjet											15	1	2	5		43	5	2	Small hummocks - no tussocks
99	C. bianchini	M. Hounjet											1	1	95	1		2	1	1	Sedge dominated riparian area w/ occasional large shrubby hummocks
100	C. Bianchni	M. Hounjet		1									2	5	5			55	5	1	Very hummocky shrub dominated site
101	C. Bianchini	M. Hounjet		1									3	1	5	2		3	15	1	Dry heath tundra w/ small hummocks
102	C. Bianchini	M. Hounjet		3									2	1	3	2		9	8	2	Camera malfunction - Dry hummock site w/ occasional boulders
103	C. Bianchini	M. Hounjet		8									1	5	5	2		2	3	2	Camera malfunction - Dry tundra w/ frost boils & boulders
104	C. Bianchini	M. Hounjet		1									2	1	95	1		3	1	1	Camera malfunction - Sedge meadow w/ occasional shrub hummock - definitely NOT Boulder-Lichen

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			Rock	Boulder	Cobble	Gravel	Sand	Clay/Silt	Wet Peat	Dry Peat	Water	Disturbed	Moss	Lichens	Graminoides	Forbes	Trees	Erect Shrubs	Prostrate Shrubs	Ericaceous Shrubs	
105	C. Bianchini	M. Hounjet		5									1	1	2			3	8		Camera malfunction - Boulder-Lichen - Morainal flow
106	C. Bianchini	M. Hounjet		1									15	3	4						Camera malfunction - Dry tundra w/ occasional frost boil & boulders
107	D. Power	C. Bianchini	2	2									1	1	45	5		4	3	7	
108	C. Bianchini	D. Power	5	2									1	65	2					3	Exposed congomerate bedrock - well worn and windswept - limited soil and veg. development
109	C. Bianchini	D. Power	1	3	1									7	1				7	7	Gravel/Boulder rock outcrop - wind swept - minimal vegetation development
110	C. Bianchini	D. Power	1	4		2								65	1	1		15	1	32	Windswept bedrock outcrop w/ many boulders and exposed soil - limited vegetation
111	C. Bianchini	D. Power	1		2	25							2		7	1	1		2	36	Low lying bedrock outcrop - mostly covered in gravel - limited soil and veg. development in depressions
112	C. Bianchini	D. Power	25	4		1							15	4	1	1		25		7	Large bedrock outcrop dominated by fractured boulders - limited soil and veg. development
113	C. Bianchini	D. Power	1											6	1	1				25	Slanted fractured bedrock
114	C. Bianchini	D. Power	4		3								1	1	3	15		1			Fractured bedrock outcrop w/ lots of cobbles
115	C. Bianchini	D. Power	6		2								1	35	1	3		4		13	Very low rising bedrock outcrop
116	C. Bianchini	D. Power	7										1	7	15	1		1		11	Windswept bedrock 'island' - nearest outcrop approx. 3km away
117	C. Bianchini	D. Power	8	1									1	85	1	2		1		25	Windswept bedrock outcrop?
118	C. Bianchini	D. Power	45		1								1	51	1	1					Exposed bedrock outcrop w/ limited soil and veg.
119	C. Bianchini	D. Power	1			1							2	1	5	1		3	15	5	Bedrock outcrop w/ vegetation in depressions
120	C. Bianchini	D. Power	3	1									3	7	2	6					Windswept bedrock outcrop w/ shallow soils and veg. in depressions
121	C. Bianchini	D. Power	95										3	8	1	1				2	Fracture bedrock outcrop w/ lifted boulder fragments. <1% veg. and soi
122	D. Power	I. Rossman	5		15	5							15		5					25	High outcrop of bedrock (108m ASL) and cobbles. Small patches of vegetation. Little forage for caribou. Main value insect avoidance. Hare pellets
123	D. Power	I. Rossman	85										3	3	1	7		1		5	Predominantly bedrock w/ patches of sparse veg. Main value as inset avoidance. Hare pellets and goose droppings.
124	D. Power	I. Rossman	6										2	9	1	2				2	No caribou signs. A bedrock outcrop w/ little vegetation. Mainly insect avoidance.
125	C. Bianchini	D. Power	24	1									1	75	1	1				4	Bedrock ridge w/ shallow soils. Exposed gravel throughout w/ xeric, low lying veg. Quad trails near ?
126	D. Power	I. Rossman	3										1	65	1				15	13	Low relief bedrock outcrop. 1 Caribou carcass. Caribou pellets. Good Cetraria site but poor in orther forage species.
127			85										1	75	1	2		8		7	Rounded, windswept rock outcrop. No cliffs. Some cobbles and gravles. Limited soil and veg. development.
128	C. Bianchini	K. Marte	9	5									1	2	1	1		1	1	2	Rounded bedrock outcrop w/ some fracture. Limited soil and veg. development
129	C. Bianchini	K. Marte	5	5	1	1						5	2	15	1			1		2	Windswept exposed bedrock w/ some (50%) shallow soil development.
130	C. Bianchini	D. Power	85	5									2	4	1					5	Windswept bedrock outcrop w/ very little soil and veg.
131	C. Bianchini	D. Power	3	6									2	3		1			2	2	Broken bedrock outcrop w/ many boulders - very windswept
132	C. Bianchini	K. Marte	3	5									2	2	3	2		1		1	Fractured windswept bedrock outcrop w/ many boulders
133	C. Bianchini	K. Marte	3	2	4								3	1	3	2				2	Exposed bedrock - windswept ridge w/ some cobbles and boulders - evidence of old beaches above and below
134	C. Bianchini	K. Martee	7	5	2								1	1	1	1		1		1	Broken/eroded bedrock outcrop w/ evidence of old beaches above and below. Boulders, cobbles and gravel present.
135	C. Bianchini	D. Power	8			1								1	1			25		35	Top of bedrock outcrop - proposed quarry site
136	C. Bianchini	D. Power	9			1							1	11	1	1		1	4	35	Bedrock outcrop - proposed quarry site
137	C. Bianchini	D. Power	25	1									1	55	1			25		32	Tilted, broken rock outcrop w/ scattered boulders. Limited soil & veg. development in depressions.
138	C. Bianchini	D. Power		2		5								1	1			15		13	Eroded bedrock outcrop, gravelly w/ boulders.
139	C. Bianchini	D. Power		4									7	6	2	1		5	2	1	Dry hummocky heath tundra w/ extensive boulders, almost frozen to surface.
140	C. Bianchini	D. Power		25									1	2	75	3		2	5	5	Undulating irregular tundra w/ many large scattered boulders above and below surface - organic on glacial till
141	C. Bianchini	D. Power	1										7	25	75	1		45	5	2	Sedge/shrub hummocky tundra w/ occassional boulders surface. Over frozen ? mineral soil.

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142	C. Bianchini	D. Power		1									1	4	4			15	15	9	Hummocky heath dominated tundra w/ many scattered boulders at surface over well drained soil (gravel, sand, clay/silt substrates)
143	C. Bianchini	D. Power											1	1	95	1		3		1	Sedge dominated plateau w/ shrubs on hummocks - thick organic layer over frozen mineral layer
144	C. Bianchini	D. Power				9		2						2	1						Esker, fuel cache. Very well drained soils.
145	C. Bianchini	D. Power											5	1	85	5		1		5	Hummoncky heath tundra w/ abundant sedge over carved till.
146				1	1								2		95	1		35		5	Sedge dominated site w/ shrub hummock organic over well drained sand. Water flowing through @ 37cm depth.
147	C. Bianchini	D. Power											5	1	8			2	1	4	Shrub/sedge dominated hummocky site over ? frozen soils
148	C. Bianchini	D. Power		5									1	1	5			35	1	3	Dry morainal plateau w/ scattered boulders - was shallow melt-water lake, now dry
149	C. Bianchini	D. Power		8									1	9	1	1			1	5	Undulating boulder field. Very red, shallow, sandy soils w/ some gravel & pebbles. 20cm to permafrost
150	D. Power	C. Bianchini		3										25	1			1	1	35	Site moved 130m SW from original site which was in lake. Moved to representative habitat: morainal dry plateau w/ lots of scattered boulders
151	D. Power	C. Bianchini	1	1		1				1			6	2	5	1		4	6	1	
152	C. Bianchini	D. Power		25										11	15			5	1	4	Birch dominated site w/ sedge tussocks
153	C. Bianchini	D. Power	1	75									1	85	1	1		5	1	15	Undulating morainal blanket/plateau. Fairly deep soil (>40cm), some pebbles/gravels & cobbles. Some leaching into A layer; no obvious layering - B blends into C
154	C. Bianchini	D. Power		1									2	35	95			5		5	Sedge dominated site on iron rich (very red) well drained soils
155	C. Bianchini	D. Power		1		3							2	1	25	1		7	5	1	Shrub dominated hummocky plateau on silty-clay loam frozen @ 10cm.
156	C. Bianchini	D. Power	1	1									1	1	95	1		5		1	Sedge dominated plateau on wet churned soils w/ water seeping @ 40cm. Substrates: Gravel, Clay/Silt, Sand.
157	C. Bianchini	D. Power											1	1	75			15	1	2	Shrub hummocks interspersed w/ sedge on farily well drained site. Very red soils - high mineral content. Substrates: Gravel, Clay/Silt, Sand.
158	C. Bianchini	D. Power											1	5	1	1		15	5	2	Dry heath tundra on well drained site. Substrates: Gravel, Sand, Clay/Silt, Glacial Till
159	D. Power	C. Bianchini											1	5	5	1		5	3	52	Heath Tundra on well drained soils. No Substrate specified.
160	C. Bianchini	D. Power											1	5	9	2		1	1	1	Sedge dominated hummocky plateau. No Substrate specified.
161	C. Bianchini	D. Power											1	1	65	1		3	5	1	Hummocky sedge dominated slope w/ scattered boulders on surface. Substrates: Cobbles, Gravel, Clay/Silt, Glacial Till
162	C. Bianchini	D. Power		3									1		95	9		5	1	1	Hummocky sedge dominated site w/ boulders scattered on surface over gravel-cobble. Well drained glacial till.
163				6										5	1	1		5		35	Heath lichen boulder field on sandy churned soils w/ large cobbles & boulders.
164	C. Bianchini	D. Power		1										1	4			5	1	1	Shrub dominated hummocky slope w/ scattered boulders.
165	C. Bianchini	D. Power											25	25	4	5		2	5	5	Hummock sedge/shrub slope on frozen soil. No Substrate specified.
166	C. Bianchini	D. Power											5	1	2	1		65	15	5	Shrub dominated hummock slope. Lots of frost heaving. Farily well drained soils w/ frozen spots. No Substrate specified.
167	C. Bianchini	D. Power	1										1	25	6	1		1	25	7	Hummock heath tundra w/ scattered boulders & cobbles on surface. Very poor soil dev't - mostly angular gravel.
168	C. Bianchini	D. Power											8		1	1		8	1	57	Shrub dominated hummocky plateau over frozen soils. Substrates: Gravel, Sand, Clay/Silt
169													1		95	6		5	1	1	Sedge dominated 'valley' bottom. Soils from solid @ 29cm.
170													3		4	1		55	5		Transition from heath tundra to sedge. Thick organic layer w/ fairly deep rooting. Partial frozen mineral layer. Substrates: Cobbles, Gravel, Clay/Silt
171	C. Bianchini	D. Power		2									15		1	1		1	6	7	Dry heath tundra w/ peaty/shrubby hummocks on compact poor soils. Substrates: Gravel, Sand, Clay/Silt
172	C. Bianchini	D. Power		1									1	1	3	1			52	16	Dry heath tundra on very well drained soil. Substrates: Gravel, Sand, Clay/Silt
173	C. Bianchini	D. Power											5	2	1	5		5		2	Crest position on health tundra over churned, well drained but poorly dev't soils. Substrates: Boulders, Cobbles, Gravel, Sand, Clay/Silt
174	C. Bianchini	D. Power									1		15		99	1		3		2	Sedge dominated edge of pond w/ many large hummocks. Substrates: gravel, sand, clay/silt.

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175	C. Bianchini	D. Power											5	5	1	2		65	1	1	Very shrubby-hummock site on glacial till.
176	C. Bianchini	D. Power											1		7	1		3			Transition from shrubby hummocks to sedge. Thick organic over till.
177	C. Bianchini	D. Power		2		1							15	1	15	1		55	8	6	Transition: shrubby/dry hummock w/ sedge/moss depressions over compact soil w/ thick organic layer. Substrates: gravel, sand, clay/silt.
178	C. Bianchini	D. Power		5		2							5	1	5	1		5	55	13	Dry heath tundra w/ boulder patches over glacial till. Substrates: gravel, sand, glacial till.
179	C. Bianchini	D. Power											2		1	1		75	5	5	Shrub dominated hummocky site w/ sedges in depression. Thick organic layer over frozen mineral soil. Other substrates: glacial till.
180	C. Bianchini	D. Power		1	5								2	4	1	1			1	32	Dry heath tundra over frozen soils. Other substrates: clay/silt
181	C. Bianchini	D. Power		5									2	6	5	1		37	3	2	Transition from dry to wet. Large dry shrubby hummock w/ sedgy depressions. Other substrates: sand, clay/silt, glacial till.
182	C. Bianchini	D. Power		1	1								1	1	25	1		65	5	5	Shrub hummock site w/ scattered, partially burried boulders @ surface over extreme glacial till. Other substrates: cobbles, gravel, sand.
183	C. Bianchini	D. Power			1								3	1	65	1		4	1	1	Shrub hummock / sedge depression over thick organic peat layer of moss & graminoids, mixed w/ heavy till. Other substrates: boulders, gravel, moss peat.
184	C. Bianchini	D. Power		1									3	1	1	1		35	5	35	Between xeric & mesic. Dry heath tundra w/ thick moss layer. Scattered boulders @ surface. Other substrates: cobbles, gravel, sand.
185	C. Bianchini	D. Power			1					2			5	1	4	1		2	2	11	Large dry hummocks w/ sedge depressions. Organic soil over sandy mineral soil. Other substrates: cobbles.
186	C. Bianchini	D. Power								1			2	5	5	1		7		3	Hummocky heath tundra w/ birch on hummocks over very frozen soil near surface. Other substrates: clay/silt
187	C. Bianchini	D. Power								3			1	2	1	3		75	5	17	Very shrubby/hummocky site over thin till veneer & frozen soils. Other substrates: sand.
188	C. Bianchini	D. Power								1			3	1	2			85	5	15	Very shrubby site w/ many low hummocks over thin til veneer and frozen mineral soils. Other substrates: cobbles, gravel, sand.
189	C. Bianchini	D. Power				5							1	1	1	1		18	2	8	Moraine ridge w/ exposed soils. Undulating, very sandy and well drained. Limited soil dev't. Other substrates: boulders, cobbles, gravel.
190	C. Bianchini	D. Power			1	1				2			4	2	1	1		5		23	Hummocky heath tundra over churned, well drained soils/till. Other substrates: cobbles, gravel, sand.
191	C. Bianchini	D. Power		1									5	1	8	1		3		6	Small hummocks w/ shurbs. More sedge than shrub over frozen mineral soil. Other substrates: sand.

Government of Nunavut ELC Field Plot Summary

Plot Number	Observer A	Observer B	Percent Cover (%)																	Observations
			Rock	Boulder	Cobble	Gravel	Sand	Clay/Silt	Wet Peat	Dry Peat	Water	Disturbed	Moss	Lichens	Graminoides	Forbes	Trees	Erect Shrubs	Prostrate Shrubs	Ericaceous Shrubs	
958	Jonathan Pameolik	Mitch Campbell		2	2	2				1			2	5	2	2				3	Caribou Dung
959	Jonathan Pameolik	Mitch Campbell		2	1	1			1	1			3	3	3			15		3	Antler and Dung
960	Jonathan Pameolik	Mitch Campbell			2	5	1			1			2	3	5	2		15		4	
961	Jonathan Pameolik	Mitch Campbell		5	1	5	1		1				25	2	1	2		2		4	
962	Jonathan Pameolik	Mitch Campbell		5	2	5	5			1			1	15	2	1		5	2	2	
963	Jonathan Pameolik	Mitch Campbell		5		2	1	1					3	2	1			2	5	5	
964	Jonathan Pameolik	Mitch Campbell	1	6							2		1	2	2			2	1	1	
965	Jonathan Pameolik	Mitch Campbell		5	1	5	2	2					2	35	5	2		2		3	
966	Jonathan Pameolik	Mitch Campbell	2	3	2	2		2					1	35	5	2		1		3	
967	Jonathan Pameolik	Mitch Campbell		1		15							5	7	5	5			1	2	Flat and Level because on top of hill

Attachment C Ecological Land Classification Survey Plot Data - Vegetation

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Kiggavik Project ELC Field Plot Summary

Plot Number	Observer A	Observer B	Percent Cover (%)																	Observations
			Rock	Boulder	Cobble	Gravel	Sand	Clay/Silt	Wet Peat	Dry Peat	Water	Disturbed	Moss	Lichens	Graminoides	Forbes	Trees	Erect Shrubs	Prostrate Shrubs	Ericaceous Shrubs	
968	Jonathan Pameolik	Mitch Campbell		2		2							3	15	15	2		2		5	
969	Jonathan Pameolik	Mitch Campbell		2		15	1	1				2	3	1	1	15		2	1	25	
970	Jonathan Pameolik	Mitch Campbell		7									5	25	5	5				1	
971	Jonathan Pameolik	Mitch Campbell		2		2		2		2			15	5	15			3	15	4	
972	Jonathan Pameolik	Mitch Campbell		3	2	2	2	2					1	1	1			1		45	
973	Jonathan Pameolik	Mitch Campbell		5	2	2		2	2				15	1	1	5		5	5	65	
974	Jonathan Pameolik	Mitch Campbell		2		1							5	7	5	2			2	25	Flat Because on top
975	Jonathan Pameolik	Mitch Campbell		1									1	1	1	1		1		1	
976	Jonathan Pameolik	Mitch Campbell		4	2	2		2		1			1	3	5	2		25	5	25	
977	Jonathan Pameolik	Mitch Campbell		5		5		2					2	15	2	2		3		3	Caribou Antler
978	Jonathan Pameolik	Mitch Campbell		2		1							5	6	5	1		2		15	Flat Because on top of hill
979	Jonathan Pameolik	Mitch Campbell		5		5	1	2		1			3	1	2			25	5	4	
980	Jonathan Pameolik	Mitch Campbell		2		5		2		2			15	1	3	2		15	5	45	Muskox close to site
981	Jonathan Pameolik	Mitch Campbell		2	2	5		2		1			35	15	2	5		2	2	35	Tussocky Tundra
982	Jonathan Pameolik	Mitch Campbell						2					1	3	6			1		15	
983	Jonathan Pameolik	Mitch Campbell		5		2	2	1	1	1		2	1	1	3	25			1	15	
984	Jonathan Pameolik	Mitch Campbell		15		5		2		2			15	2	2	2		2	15	4	Edge of Boulder Field
985	Jonathan Pameolik	Mitch Campbell		5		1		1					1	1	7	15		5	5	3	Site was on edge, moved over to a flatter mesic site right next to it.
986	Jonathan Pameolik	Mitch Campbell			1	2	2	2		1		5	5	6	15	15		1		5	
987	Jonathan Pameolik	Mitch Campbell		2		5	1						1	5	15	2		5	1	4	
988	Jonathan Pameolik	Mitch Campbell		2		5				1			5	4	2	2				3	
989	Jonathan Pameolik	Mitch Campbell	1	2	5								2	5	2	5		2		1	
990	Jonathan Pameolik	Mitch Campbell	1	2	5	1		2		2			5	3	1	3		5		2	
991	Jonathan Pameolik	Mitch Campbell							1		1		9		1	2		9		1	
992	Jonathan Pameolik	Mitch Campbell		5				2	1				2	1	7	2		1	1	4	
993	Jonathan Pameolik	Mitch Campbell		2									4	2	1	15		1	5	3	
994	Jonathan Pameolik	Mitch Campbell							1	1	2		2	2	6			5		3	Tussocky Tundra
995	Jonathan Pameolik	Mitch Campbell		2									4	25	1	1		15	2	4	
996	Jonathan Pameolik	Mitch Campbell		5		1	1	1		1			3	2	15	15		1	1	3	
997	Jonathan Pameolik	Mitch Campbell		2					2		1		2	2	9	5		2	2	5	Site is to the north of datasheet waypoint Hummocky Tundra

Attachment C Ecological Land Classification Survey Plot Data - Vegetation

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Kiggavik Project ELC Field Plot Summary

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			Rock	Boulder	Cobble	Gravel	Sand	Clay/Silt	Wet Peat	Dry Peat	Water	Disturbed	Moss	Lichens	Graminoides	Forbes	Trees	Erect Shrubs	Prostrate Shrubs	Ericaceous Shrubs	
998	Jonathan Pameolik	Mitch Campbell		1					1		1		1	2	9	5		2	5	5	Site is little north of where the waypoint is indicated
999	Jonathan Pameolik	Mitch Campbell		1									3	15	3	15		1	1	3	
1000	Jonathan Pameolik	Mitch Campbell		5	2	5		2		1			3	3	1	2		5	5	25	
1001	Jonathan Pameolik	Mitch Campbell		5		5		2		1			1	2	1	2		5	5	45	
1002	Jonathan Pameolik	Mitch Campbell		2	2				1				1	25	3	1		15	5	3	
1003	Jonathan Pameolik	Mitch Campbell						5	2		2		5		9	2		3	5		
1004	Jonathan Pameolik	Mitch Campbell									2		2		5			95			Ptarmigan
1005	Jonathan Pameolik	Mitch Campbell			5			5	2				5	5	6	15		3	2	5	
1006	Jonathan Pameolik	Mitch Campbell		2	2			1	2				25	1	5	1		3	5	2	
1007	Jonathan Pameolik	Mitch Campbell			2	2			2	2			2	15	5	2		1	5	1	
1008	Jonathan Pameolik	Mitch Campbell		2		2		2	1	1			1	15	5	15		15	5	1	
1009	Jonathan Pameolik	Mitch Campbell		2		5		2		2			2	15	15	15		2	5	1	
1010	Jonathan Pameolik	Mitch Campbell			2	5	1	5	1	2			35	1	5	5		3	5	2	Betula field with Frost Boils
1011	Jonathan Pameolik	Mitch Campbell		2		2		2		2			65	1	1	5		8		2	
1012	Jonathan Pameolik	Mitch Campbell		2		5	1	5		2			3	1	1	5		6	2	2	Muskox on Site
1013	Jonathan Pameolik	Mitch Campbell		5	2	5	2	2		1			3	15	1	2		3	5	35	
1014	Jonathan Pameolik	Mitch Campbell		2	2	2		2		5			2	3	1	2		5		3	Site to North East of Site on waypoint (slight)
1015	Jonathan Pameolik	Mitch Campbell			2	2		2		2			4	15	5	2		4	2	3	
1016	Jonathan Pameolik	Mitch Campbell		5	2	2		2	2		1		1	5	5	5		4	5	1	
1017	Jonathan Pameolik	Mitch Campbell		2		2		2	2				1	5	8	1		5	5	2	
1018	Jonathan Pameolik	Mitch Campbell		2					2				1	2	95			5	2		
1019	Jonathan Pameolik	Mitch Campbell		2		2		2					25	2	1	2		5	5	15	
1020	Jonathan Pameolik	Mitch Campbell		2					2				25	4	15	1		2		35	Off to SouthEast
1021	Jonathan Pameolik	Mitch Campbell							5		5		5		95	2		5	1		
1022	Jonathan Pameolik	Mitch Campbell		5	5			2	5				1	5	6	5		1	5	5	
1023	Jonathan Pameolik	Mitch Campbell		2	2	2		2	2				1	5	8	5		15	1	5	
1024	Jonathan Pameolik	Mitch Campbell		2									6	3	1	2		55	2	15	
1025	Jonathan Pameolik	Mitch Campbell		5	2	2	2	1		5		2	1	15	5	5		15	5	5	
1026	Jonathan Pameolik	Mitch Campbell				2		2			5		5	1	15	2		9	2		Caribou on site
1027	Jonathan Pameolik	Mitch Campbell		5	2	2		2		2			4	1	1	5		4	5	2	

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Kiggavik Project ELC Field Plot Summary

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			Rock	Boulder	Cobble	Gravel	Sand	Clay/Silt	Wet Peat	Dry Peat	Water	Disturbed	Moss	Lichens	Graminoides	Forbes	Trees	Erect Shrubs	Prostrate Shrubs	Ericaceous Shrubs	
1028	Jonathan Pameolik	Mitch Campbell		5	2	5		2		2			3	1	15	1		5	2	3	
1029	Jonathan Pameolik	Mitch Campbell		2	2			2	5	2			5		85	5		5			
1030	Jonathan Pameolik	Mitch Campbell				2		2		5			2	1	5	25		1	1	15	
1031	Jonathan Pameolik	Mitch Campbell		2	5	1		2		2			1	2	25	15		5	5	1	
1032	Jonathan Pameolik	Mitch Campbell			2	1	2	2		2		2	1	15	2	1		5	5	15	Caribou Scat
1033	Jonathan Pameolik	Mitch Campbell		2	2	5		2		2			1	1	75	5		15	5	5	
1034	Jonathan Pameolik	Mitch Campbell			2	2		2		2			1	15	35	35		1	5	5	
1035	Jonathan Pameolik	Mitch Campbell		2	2	5		2		5			1	15	3	15		1	5	1	
1036	Jonathan Pameolik	Mitch Campbell		2	5	2		2		2			1	1	65	1		1	2	1	
1037	Jonathan Pameolik	Mitch Campbell		2			2	2		2			5	5	8	15		5	5	5	Ptarmigan
1038	Jonathan Pameolik	Mitch Campbell		2	2	2		2		5			1	2	4	1		5	5	2	
1039	Jonathan Pameolik	Mitch Campbell		2	2	5		1		2			1	5	7	15		5	5	5	
1040	Jonathan Pameolik	Mitch Campbell		2	2	5	1			5			2	5	3	1		2	5	1	
1041	Jonathan Pameolik	Mitch Campbell		2		2				2			5	5	6	1		1	5	1	
1042	Jonathan Pameolik	Mitch Campbell		2		5	2	5		2			1	2	2	5		1	5	3	
1043	Jonathan Pameolik	Mitch Campbell		2	2	1			5				5	5	8	2		5	5	5	Ptarmigan
1044	Jonathan Pameolik	Mitch Campbell									15		8		7	5		2			
1045	Jonathan Pameolik	Mitch Campbell							5		5		5		9			5	5		Ptarmigan On site, Lowland other is Graminoide Flat
1046	Jonathan Pameolik	Mitch Campbell							2		1				9	2		2			Several Caribou Trails
1047	Jonathan Pameolik	Mitch Campbell											6		3	2		75	5		
1048	Jonathan Pameolik	Mitch Campbell			2	1	2	2		2			2	25	2	5		5	2	2	
1049	Jonathan Pameolik	Mitch Campbell				2	5	5		5			2	2	1	5		5	2	2	
1050	Jonathan Pameolik	Mitch Campbell				2	2	2		2			3	2	2			25		15	
1051	Jonathan Pameolik	Mitch Campbell		1	2	1		2		2			5	6	5			1		3	
1052	Jonathan Pameolik	Mitch Campbell	8	5										15	2					5	
1053	Jonathan Pameolik	Mitch Campbell		4	5	1	1	1					5	4	2					15	
1054	Jonathan Pameolik	Mitch Campbell		2					2		1		5	5	8	5		2	2	5	
1055	Jonathan Pameolik	Mitch Campbell		2		2			2		2		5	5	8	1		2		2	
1056	Jonathan Pameolik	Mitch Campbell		2	2	1	5						5	7	2					2	Off Site slightly
1057	Jonathan Pameolik	Mitch Campbell											1	2	25	2		5	5	25	

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Kiggavik Project ELC Field Plot Summary

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			Rock	Boulder	Cobble	Gravel	Sand	Clay/Silt	Wet Peat	Dry Peat	Water	Disturbed	Moss	Lichens	Graminoides	Forbes	Trees	Erect Shrubs	Prostrate Shrubs	Ericaceous Shrubs	
1058	Jonathan Pameolik	Mitch Campbell	5	2		2							2	5	15	15				1	Bedrock outcrop on old beach ridge, flat cause on top of ridge
1059	Jonathan Pameolik	Mitch Campbell		5	2	5							5	4	2	15				3	
1060	Jonathan Pameolik	Mitch Campbell							2				9	2	15			1	5	25	Habitat on top edge of aerial shot
1061	Jonathan Pameolik	Mitch Campbell									1		5		9			2	1		
1062	Jonathan Pameolik	Mitch Campbell									1		15		85	5			2	5	
1063	Jonathan Pameolik	Mitch Campbell							5		5		9		1	5			5		Waypoint north of point
1064	Jonathan Pameolik	Mitch Campbell							5		2		9		1			1	2	15	
1065	Jonathan Pameolik	Mitch Campbell							2	2	2		2	9	5			2		1	East of Site
1066	Jonathan Pameolik	Mitch Campbell			95									2	1					2	
1067	Jonathan Pameolik	Mitch Campbell		2	8								5	1	2	5				1	
1068	Jonathan Pameolik	Mitch Campbell				4							2	4	2	2				15	Waypoint is to the east
1069	Jonathan Pameolik	Mitch Campbell				5					2		5	5	15	2		4	2	2	Patchy Graminoide Site
1070	Jonathan Pameolik	Mitch Campbell			2	3	2						2	6						1	
1071	Jonathan Pameolik	Mitch Campbell	5	5		5							2	35	1	2		2		1	Off to North
1072	Jonathan Pameolik	Mitch Campbell				2			2		5		4	1	1	2		6		3	
1073	Jonathan Pameolik	Mitch Campbell				85	1						1	1	1	1		1		1	
1098	Jonathan Pameolik	Mitch Campbell		1	2	2	2			2			5	5	5			2	2	2	Flat because on top, Bouldery Ridge with Frost Boils
1099	Jonathan Pameolik	Mitch Campbell		9							1					1					Exposed Boulders Adjacent to summer ice, Late Snow Melt
1100	Jonathan Pameolik	Mitch Campbell							2		5		25	2	5			4	5	1	Waypoint off to north, Betula Field
1101	Jonathan Pameolik	Mitch Campbell		5	2	5		2	2				4	25	15			15	5	15	
1102	Jonathan Pameolik	Mitch Campbell		5		1				2			5	2	15			5	1	25	
1103	Jonathan Pameolik	Mitch Campbell		5							5		1	2	2			5		3	
1104	Jonathan Pameolik	Mitch Campbell		6	2								2	4	1					1	Flat Because on top
1105	Jonathan Pameolik	Mitch Campbell		2	2	1				2			15	25	15			2		25	
1106	Jonathan Pameolik	Mitch Campbell		4										5	2			5	2	2	
1107	Jonathan Pameolik	Mitch Campbell		5					2	2	5		2	5	3			5	2	5	
1108	Jonathan Pameolik	Mitch Campbell							5		25		3		7						
1109	Jonathan Pameolik	Mitch Campbell		2		5	2		2		2		5	7	5	1				15	
1110	Jonathan Pameolik	Mitch Campbell		2		5	2		1	2	2		1	7	5	5				2	
1111	Jonathan Pameolik	Mitch Campbell		2		5				5		5	1	6	1					25	

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1112	Jonathan Pameolik	Mitch Campbell							5		5		5	5	8			2		5	
1113	Jonathan Pameolik	Mitch Campbell				5			2	5	1	2	2	5	2	1		5		2	
1114	Jonathan Pameolik	Mitch Campbell		2	2	5				2			1	8	2					1	Flat Because on top
1115	Jonathan Pameolik	Mitch Campbell							5	2	2		1	2	8	2		2		1	
1116	Jonathan Pameolik	Mitch Campbell							1		5		5	2	7					1	
1117	Jonathan Pameolik	Mitch Campbell								2	2		5	2	7	2		2		3	
1118	Jonathan Pameolik	Mitch Campbell		1	5	5	2			1			2	3	5					5	Flat because on top
1119	Jonathan Pameolik	Mitch Campbell							5				5	2	6	2		5	5	1	Landed site is north of indicated waypoint, Drainage on side of mountain
1120	Jonathan Pameolik	Mitch Campbell		1	2	2	2			1			5	6	2					5	Caribou Scat on site
1121	Jonathan Pameolik	Mitch Campbell				5				2	1	1	1	7	5	2				1	
1122	Jonathan Pameolik	Mitch Campbell		2		5				5			25	1	5			5		3	
1123	Jonathan Pameolik	Mitch Campbell		2	2	5				5	1		4	2	2	2		65		1	
1124	Jonathan Pameolik	Mitch Campbell		2		2					1		3	1	1			2	2	4	
1125	Jonathan Pameolik	Mitch Campbell		2		2			2	2	2		2	3	5	2		15		1	Landed north of site
1126	Jonathan Pameolik	Mitch Campbell		2	2	5				5			3	3	15			1	2	2	
1127	Jonathan Pameolik	Mitch Campbell		2		5				2			5	8	15	2				1	
1128	Jonathan Pameolik	Mitch Campbell		4	5	5				1			2	45	2					1	Very Rugged
1129	Jonathan Pameolik	Mitch Campbell		2	2	5				1			2	75	2					1	
1130	Jonathan Pameolik	Mitch Campbell							5		2		3	15	5	2		5		1	North of site 100 Feet, Bottom of Boulder Ridge
1131	Jonathan Pameolik	Mitch Campbell		2	2	5			2	2	1		3	15	3			3		15	Hummock Slope
1132	Jonathan Pameolik	Mitch Campbell							2		5		4		8			1	2	2	
1133	Jonathan Pameolik	Mitch Campbell		2		2				2	2		5	7	5			5		1	
1134	Jonathan Pameolik	Mitch Campbell		2		2			2	2	1		1	25	1			1		3	
1135	Jonathan Pameolik	Mitch Campbell		3	5	5								5	2					15	
1136	Jonathan Pameolik	Mitch Campbell	3	15		1							2	4	5			2		5	
1137	Jonathan Pameolik	Mitch Campbell							2		1		5		85	2		5		5	
1138	Jonathan Pameolik	Mitch Campbell							2		5		1	2	6	2		4	2	1	
1139	Jonathan Pameolik	Mitch Campbell							2	2	2		1	2	8	5		15		1	
1140	Jonathan Pameolik	Mitch Campbell		2	2	2				2	1		7	1	5			1	2	3	
1141	Jonathan Pameolik	Mitch Campbell		2	5	2		2		2	1		4	2	1			45		2	

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			Rock	Boulder	Cobble	Gravel	Sand	Clay/Silt	Wet Peat	Dry Peat	Water	Disturbed	Moss	Lichens	Graminoides	Forbes	Trees	Erect Shrubs	Prostrate Shrubs	Ericaceous Shrubs	
1142	Jonathan Pameolik	Mitch Campbell		2					2		2		4	2	6	2		2	2	1	Mossy Slope from Hill
1143	Jonathan Pameolik	Mitch Campbell		2		15							5	5	2					15	
1144	Jonathan Pameolik	Mitch Campbell							5		2	5	1		8			5		5	
1145	Jonathan Pameolik	Mitch Campbell		8									2	1	2					1	
1146	Jonathan Pameolik	Mitch Campbell			2	15				5		2	4	15	2	1		5	2	3	
1147	Jonathan Pameolik	Mitch Campbell							1		1		5	1	7			2	2	5	
1148	Jonathan Pameolik	Mitch Campbell		5		15			2	1			3	2	1	5		2	5	15	
1149	Jonathan Pameolik	Mitch Campbell		2		1		2	2	5	2		4	2	1	2		2		25	Frost Boil Hill
1150	Jonathan Pameolik	Mitch Campbell	5	1	5								2	35	1					5	North of Site, Part of Rock Outcrop green lichens on rock
1151	Jonathan Pameolik	Mitch Campbell			1									2							Light Green crustose lichens on rocks
1152	Jonathan Pameolik	Mitch Campbell	2	5	2	15								75	5			2		5	Lichen Hill, Flat Because on top
1153	Jonathan Pameolik	Mitch Campbell		5	5	2							1	6	5			2		1	Mostly Gravel and Lichen on Bedrock
1154	Jonathan Pameolik	Mitch Campbell			2	5	5	5	2	5			5	1	1	15		15	5	5	
1155	Jonathan Pameolik	Mitch Campbell							1		5		1		75			5	5	5	
1156	Jonathan Pameolik	Mitch Campbell				5	1	1	2	2	1		3	5	5	1		3		1	Ptarmigan on site
1225	Jonathan Pameolik	Mitch Campbell			3	5	5					2	4		25	1		6			Periodically Flooded Island in River
1226	Jonathan Pameolik	Mitch Campbell			3	5	5					5	3		2	2		65			Caribou Scat on site, Ptarmigan on site, River Island Periodically Flooded
1227	Jonathan Pameolik	Mitch Campbell			5	1	45			1			1	2	1					2	
1228	Jonathan Pameolik	Mitch Campbell			2	5	2			1			2	4	1					2	
1229	Jonathan Pameolik	Mitch Campbell		1	5	5	5		1		5		5	35	3			2		1	
1230	Jonathan Pameolik	Mitch Campbell		1	1		1						2	75	2					2	
1231	Jonathan Pameolik	Mitch Campbell		1		1	5						1	75	1					15	
1232	Jonathan Pameolik	Mitch Campbell		5	5	5	5		15	5	1		5	15	55			2	2	5	

Attachment D Compiled Plant Species List (1979 to 2009)

File: VSBR/Attachment D Complete Plant List

Attachment D Compiled Plant Species List (1979 to 2009)

Scientific Name	Common Name	Pre-1987 [a]	1987-1989[b]	1990[c]	1991[d]	1991[e]	2008 - 09	Other Names
Shrubs and Heaths								
Andromeda polifolia	andromeda sp.		x	x		x	x	
Arctostaphylos alpina	alpine bearberry		x	x	x	x		
Arctostaphylos rubra	red bearberry	x	x	x				
Arctostaphylos sp.	bearberry sp.						x	
Betula glandulosa	dwarf birch	x	x	x	x	x	x	
Cassiope tetragona	white arctic mountain heather	x	x	x	x	x	x	
Diapensia lapponica	pincushion plant						x	
Dryas integrifolia	entire-leaf mountain-avens	x	x	x	x	x		
Empetrum nigrum	black crowberry	x	x	x	x	x	x	
Kalmia polifolia	bog laurel				x	x		
Ledum decumbens	northern Labrador-tea	x	x	x	x	x	x	
Loiseleuria procumbens	alpine azalea	x	x	x			x	
Orthilia secunda	one-sided wintergreen						x	
Phyllodoce caerulea	blue mountain heather	x	x					
Rhododendron lapponicum	Lapland rosebay	x	x		x	x	x	
Rubus chamaemorus	cloudberry				x	x		
Salix alaxensis	river willow	x	x				x	Latin name is for felt-leaf willow
Salix arctica	arctic willow	x	x	x	x	x	x	
Salix arctophila	northern willow						x	
Salix cordifolia	gray willow	x	x					*Salix glauca* ssp. *callicarpaea*
Salix fuscescens	Alaska bog willow			x	x	x		
Salix herbacea	snowbed willow	x	x	x	x	x	x	
Salix lanata	wooly willow						x	
Salix planifolia	diamond leaf willow			x	x	x	x	
Salix reticulata	net leaf willow	x	x	x	x	x	x	
Salix richardsonii	Richardson's willow	x	x		x	x		*Salix lanata* ssp. *richardsonii*
Salix sp.	willow sp.	x	x				x	
Salix sp. (prostrate)	willow sp.						x	
Shepherdia canadensis	russet buffaloberry				x			
Vaccinium uliginosum	bilberry; bog blueberry	x	x	x	x	x	x	
Vaccinium vitis-idaea	lingonberry/cowberry	x	x	x	x	x	x	
Forbs								
Antennaria ekmaniana	Fries's pussytoes				x	x		*Antennaria friesiana* spp. *friesiana*
Arabis arenicola	rock-cress	x	x					
Arenaria spp.	sandwort	x	x					
Armeria maritime	thrift seapink		x	x	x	x	x	
Arnica alpina	alpine arnica						x	
Artemisia borealis	field sagewort				x	x		*Artemisia campestris* spp. *borealis* var. *borealis*
Artemisia sp.	wormword		x					
Astragalus alpinus	alpine milkvetch		x	x			x	
Astragalus eucosmus	elegant milkvetch		x					
Astragalus sp.	milkvetch			x			x	
Braya purpurascens	smooth northern rockcress	x	x					*Braya glabella* ssp. *purpurascens*
Cardamine bellidifolia	alpine bittercress	x	x		x	x		
Cardamine digitata	Richardson's bittercress			x				
Cardamine pratensis	cuckoo flower; lady's smock						x	
Caryophyllaceae	pink family	x	x					
Castilleja elegans	elegant Indian paintbrush			x	x		x	
Castilleja pallida	Indian paintbrush		x					
Castilleja raupii	Raup's Indian paintbrush					x		
Cerastium arcticum	arctic mouse-ear chickweed	x	x					
Cerastium alpinum	alpine chickweed						x	
Cerastium sp.	mouse-ear chickweed	x	x					
Cochlearia officinalis	scurvygrass	x	x					
Brassicaceae	mustard family		x					
Draba alpina	alpine draba	x	x					
Draba bellii	flat-top draba	x	x					
Draba glabella	smooth draba						x	
Draba lactea	milky draba	x	x					
Draba nivalis	yellow arctic draba				x	x		
Draba oblongata	Canadian arctic draba	x	x					
Draba sp.	draba (mountain avens)	x	x					
Dryas integrifolia	entireleaf mountain-avens						x	
Epilobium latifolium	dwarf fireweed		x		x	x	x	*Chamerion latifolium*
Erigeron humilis	arctic alpine fleabane				x			
Erigeron sp.	fleabane sp.						x	
Eutrema edwardsii	Edwards' mock wallflower	x	x	x				
Hedysarum alpinum var americanum	liquorice-root				x		x	
Hedysarum mackenziei	Mackenzie's sweetvetch		x					*Hedysarum boreale* ssp. *mackenziei*
Hedysarum sp.	sweetvetch sp.						x	
Hippuris vulgaris	common mare's-tail				x			
Lycopodium selago	fir clubmoss						x	
Lycopodium sp.	clubmoss sp.						x	
Matricaria ambigua	false mayweed				x	x		*Tripleurospermum maritimum* ssp. *phaeocephalum*
Melandrium apetalum	apetalous catchfly	x	x				x	*Silene uralensis* ssp. *uralensis*

Attachment D Compiled Plant Species List (1979 to 2009)

Scientific Name	Common Name	Pre-1987 [a]	1987-1989[b]	1990[c]	1991[d]	1991[e]	2008 - 09	Other Names
Parnassia palustris	marsh grass of Parnasus						x	
Parrya arctica	Arctic false wallflower	x	x					
Parrya nudicaulis	nakedstem wallflower	x	x					
Parrya sp.	parrya sp.	x	x					
Pedicularis arctica	arctic lousewort		x				x	*Pedicularis langsdorffii* ssp. *arctica*
Pedicularis capitata	few-flowered lousewort						x	
Pedicularis flammea	flame-coloured lousewort						x	
Pedicularis lanata	woolly lousewort		x				x	
Pedicularis lapponica	Lapland lousewort		x					
Pedicularis sudetica	sudetic lousewort		x	x	x	x	x	
Pedicularis sp.	lousewort sp.			x			x	
Pinguicula villosa	hairy butterwort						x	
Pinguicula vulgaris	common butterwort				x	x		
Polygonum viviparum	alpine bistort	x	x	x	x	x	x	
Potentilla hyparctica	Arctic cinquefoil		x					*Potentilla nana*
Potentilla palustris	purple marshlocks			x	x	x	x	*Comarum palustre*
Potentilla rubricaulis	Rocky Mountain cinquefoil				x	x		
Potentilla vahliana	Vahl's cinquefoil		x					
Potentilla sp.	cinquefoil sp.		x				x	
Pyrola grandiflora	large-flowered wintergreen		x	x	x	x	x	
Pyrola sp.	wintergreen sp.						x	
Ranunculus sabinei	Sabine buttercup	x	x					
Ranunculus sulphureus	sulphur buttercup	x	x					
Rubus chamaemorus	cloudberry						x	
Sagina intermedia	snow pearlwort	x	x					*Sagina nivalis*
Sausseria purpurea	sawwort						x	
Saussurea angustifolia	narrow-leaf sawwort			x	x	x	x	
Saxifraga aizoides	yellow mountain saxifrage			x				
Saxifraga caespitosa	tufted bulrush		x		x			
Saxifraga cernua	nodding saxifrage		x	x			x	
Saxifraga flagellaris	whiplash saxifrage		x					
Saxifraga foliolosa	leafy-stem saxifrage		x		x	x		
Saxifraga hieraciifolia	hawkweed-leaved saxifrage		x					
Saxifraga hirculus	yellow marsh saxifrage		x					
Saxifraga nivalis	alpine saxifrage		x					
Saxifraga oppositifolia	purple mountain saxifrage		x					
Saxifraga sp.	saxifrage sp.						x	
Saxifraga tenuis	Ottertail Pass saxifrage		x					
Saxifraga tricuspidata	three toothed saxifrage		x	x	x	x	x	
Sedum lanceolatum	spear-leaf stonecrop				x	x		
Silene acaulis	moss campion	x	x	x	x	x	x	
Stellaria longipes	long-stalk starwort	x	x	x	x	x	x	
Tofieldia coccinea	northern false asphodel						x	
Tofieldia pusilla	Scotch false asphodel				x	x	x	
Trisetum spicatum	spike trisetum	x	x				x	
Graminoids								
Agrostis sp.	bentgrass sp.						x	
Arctagrostis latifolia	wide-leaf polargrass	x	x	x	x	x	x	
Arctagrostis sp.	arcticgrass sp.						x	
Agropyron latiglume	Alaskan wheatgrass	x	x					*Elymus alaskanus* ssp. *latiglumis*
Alopecurus alpinus	boreal alopecurus	x	x					
Calamagrostis deschampsoides	circumpolar reedgrass						x	
Calamagrostis inexpansa	slimstem reedgrass						x	
Calamagrostis lapponica	Lapland reedgrass			x	x		x	*Calamagrostis lapponica* var. *nearctica*
Calamagrostis neglecta	slimstem reedgrass						x	*Calamagrostis neglecta*
Calamagrostis sp.	reedgrass sp.						x	
Carex aquatilis	water sedge		x	x	x	x	x	*Carex aquatilis* var. *stans*
Carex atrofusca	darkbrown sedge						x	
Carex bigelowii	Bigelow's sedge		x	x	x	x	x	
Carex capillaris	hair-like sedge				x	x		
Carex chordorrhiza	creeping sedge				x	x		
Carex glacialis	alpine sedge		x				x	
Carex gynocrates	northern bog sedge						x	
Carex holostoma	Arctic marsh sedge			x	x	x		
Carex membranacea	fragile sedge				x	x	x	
Carex misandra	short-leaved sedge		x				x	
Carex nardina	spike sedge				x	x		
Carex norvegica	Norway sedge				x	x		
Carex rariflora	loose-flower alpine sedge		x		x	x	x	
Carex rostrata	beaked sedge		x					
Carex rotundata	round sedge				x	x	x	
Carex rupestris	curly sedge				x	x	x	
Carex saxatilis	rock sedge			x	x	x	x	
Carex scirpoidea	northern single-spike sedge		x				x	
Carex sp.	sedge sp.						x	
Carex stans	tundra sedge		x					
Carex vaginata	sheathed sedge			x	x	x	x	
Carex williamsii	Williams' sedge				x	x		
Colpodium vahlianum	Vahl's alkaligrass	x	x					*Puccinellia vahliana*
Deschampsia caespitosa	tufted hairgrass						x	
Dupontia fisheri	Fisher's tundragrass	x	x					
Elymus arenarius ssp. *mollis*	American dunegrass				x	x		*Elymus mollis*
Eriophorum angustifolium	tall cottongrass		x	x	x	x	x	
Eriophorum russeolum	red cottongrass						x	
Eriophorum scheuchzeri	white cottongrass		x				x	
Eriophorum sp.	cottongrass sp.		x				x	

Attachment D Compiled Plant Species List (1979 to 2009)

Scientific Name	Common Name	Pre-1987 [a]	1987-1989[b]	1990[c]	1991[d]	1991[e]	2008 - 09	Other Names
Eriophorum vaginatum	tussock cottongrass		x		x	x	x	*Eriophorum vaginatum* ssp. *spissum*
Eriophorum triste	tall cottongrass		x					*Eriophorum angustifolium* ssp. *triste*
Festuca baffinensis	Baffin fescue	x	x					
Festuca brachyphylla	alpine fescue	x	x					
Festuca sp.	fescue sp.						x	
Graminoid sp.	grass sp.						x	
Hierochloe alpina	alpine sweetgrass	x	x	x	x	x	x	*Anthoxanthum monticola* ssp. *alpinum*
Juncaceace sp.	rush family		x					
Juncus albescens	northern white rush				x	x	x	
Juncus arcticus	Arctic rush						x	
Juncus biglumis	two-flowered rush		x					
Juncus castaneus	chestnut rush				x	x		
Kobresia myosuroides	Bellardi bog sedge				x	x	x	
Kobresia simpliciuscula	simple bog sedge						x	
Luzula confusa	northern woodrush		x	x	x	x	x	
Luzula nivalis	arctic woodrush		x	x				*Luzula arctica* ssp. *arctica*
Luzula sp.	woodrush sp.				x	x		
Luzula spicata	spiked woodrush				x	x		
Luzula wahlenbergii	Wahlenberg's woodrush		x		x	x	x	
Phippsia algida	icegrass	x	x					
Pleuropogon sabinei	false semaphoregrass	x	x					
Poa abbreviata	short bluegrass	x	x					
Poa alpigena	northern meadow grass	x	x					*Poa pratensis* ssp. *alpigena*
Poa alpina	alpine bluegrass						x	
Poa arctica	arctic bluegrass	x	x				x	
Poa glauca	glaucous bluegrass				x	x		
Poa sp.	bluegrass sp.	x	x				x	
Poaceae	grass family	x						
Puccinellia bruggemannii	Prince Patrick alkaligrass	x	x					
Scirpus caespitosus	tufted bulrush				x	x	x	*Trichophorum cespitosum*
Ferns and allies								
Dryopteris fragrans	fragrant woodfern						x	
Equisetum arvense	field horsetail			x		x		
Equisetum variegatum	variegated scouring-rush		x					
Lycopodium clavatum	running clubmoss				x	x		
Lycopodium selago	fir clubmoss	x	x	x	x	x		*Huperzia selago* var. *selago*
Lycopodium sp.	clubmoss sp.				x	x		
Woodsia ilvensis	rusty woodsia				x			
Bryophytes								
Aulacomnium sp.	aulacomnium moss sp.			x		x		
Aulacomnium turgidum	turgid aulacomnium moss		x			x		
Brophyta	unknown mosses	x					x	
Calliergon sarmentosum	sarmenthypnum moss					x		*Sarmenthypnum sarmentosum*
Calliergon sp.	watermoss					x		
Campylium stellatum	star campylium moss					x		
Cinclidium latifolium	wideleaf cinclidium moss					x		
Dicranum acutifolium	acute-leaf dicranum moss					x		
Dicranum elongatum	elongate dicranum moss		x			x		
Dicranum sp.	dicranum moss sp.			x		x		
Dicranum spadiceum	dicranum moss					x		
Grimmia affinis	grimmia dry rock moss					x		
Hylocomium splendens	step moss					x		
Limprichtia revolvens	limprichtia moss					x		
Loeskypnum badium	loeskypnum moss					x		*Sarmenthypnum sarmentosum*
Oncophorus wahlenbergii	Wahlenberg's oncophorus moss					x		
Physconia muscigena	frosted lichen					x		
Pleurozium schreberi	Schreber's big red stem moss					x		
Pleurozium sp.	big red stem moss			x				
Polytrichum sp.	haircap moss					x		
Polytrichum strictum	polytrichum moss					x		
Ptilidium ciliare	northern naugehyde liverwort					x		
Racomitrium lanuginosum	woolly fringe moss		x			x		
Racomitrium sp.	racomitrium moss			x				
Rhytidium rugosum	crumpled-leaf moss					x		
Sphagnum fuscum	rusty peat moss			x				
Sphagnum russowii	Russow's sphagnum					x		
Sphagnum sp.	sphagnum moss	x	x	x		x	x	
Sphagnum subsecundum	slender cow-horn bog-moss					x		
Fungus	variety						x	
Lichens								
Alectoria nigricans	gray witch's hair lichen					x	x	
Alectoria ochroleuca	green witch's hair lichen	x	x		x		x	
Allantoparmelia alpicola	allantoparmelia lichen					x		
Arctoparmelia centrifuga	sunburst lichen					x	x	
Arctoparmelia incurva	arctoparmelia lichen					x		
Arctoparmelia separata	bryocaulon lichen					x		
Bryocaulin divergens	lichen sp.						x	
Bryoria nitidula	bryoria lichen sp.						x	
Cetraria aculeata	lichen sp.						x	
Cetraria andrejevii	lichen sp.	x	x			x		*Arctocetraria andrejevii*
Cetraria cucullata	crinkled snow lichen				x		x	*Flavocetraria cucullata*
Cetraria delisei	snow bed Iceland lichen	x	x			x		
Cetraria islandica	Iceland moss	x	x	x			x	
Cetraria islandica ssp crispiformis	brown island moss					x		
Cetraria islandica ssp islandica	island cetraria lichen					x		
Cetraria laevigata	cetraria lichen				x			
Cetraria nigricans	cetraria lichen					x		

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Scientific Name	Common Name	Pre-1987 [a]	1987-1989[b]	1990[c]	1991[d]	1991[e]	2008 - 09	Other Names
Cetraria nivalis	ballroom dervish	x	x	x	x		x	*Flavocetraria nivalis*
Cetraria sp.	lichen sp.						x	
Cetraria tilesii	lichen sp.	x	x					*Vulpicida tilesii*
Cetrariella delisei	lichen sp.						x	
Cladina alpestris	star reindeer lichen	x	x			x	x	*Cladina stellaris*
Cladina mitis	lesser green reindeer lichen					x	x	
Cladina rangiferina	grey green reindeer lichen	x	x	x	x		x	
Cladina sp	reindeer lichen			x			x	
Cladonia amaurocraea	cup lichen	x	x		x			
Cladonia arbuscula	shrubby reindeer lichen					x		
Cladonia bellidiflora	toy soldiers lichen	x	x					
Cladonia chlorophaea	mealy pixie-cup	x	x					
Cladonia coccifera	cup lichen sp.	x	x			x		
Cladonia gracillis ssp. *gracilis*	cup lichen sp.					x		
Cladonia laevigata	cup lichen sp.					x		
Cladonia phyllophora	cup lichen sp.					x		
Cladonia pleurota	red-fruited pixie-cup					x		
Cladonia pocillum	cup lichen sp.					x		
Cladonia sp.	cup lichen sp.				x		x	
Cladonia stricta	cup lichen sp.					x		
Cladonia uncialis	cup lichen sp.					x		
Cladonia verticillata	cup lichen sp.	x	x					*Cladonia cervicornis* ssp. *verticillata*
Collema ceraniscum	jelly lichen					x		
Comicularia divergens	bryocaulon lichen	x	x					*Bryocaulon divergens*
Comicularia sp	lichen sp.			x				
Dactylina arctica	glove lichen	x	x		x		x	
Dactylina sp	dactylina lichen				x			
Icmadophila ericetorum	peppermint drop lichen					x		
Lecanora rupicola	rim lichen					x		
Lecidea auriculata	lecidea lichen					x		
Lecidea lapicida	lecidea lichen					x		
Lichen sp.	lichen sp.						x	
Nephroma arcticum	Arctic kidney lichen						x	
Ochrolechia frigida	cold crabseye lichen					x		
Ochrolechia sp.	crabseye lichen					x		
Ophioparma lapponica	feckle pelt lichen						x	
Parmelia omphalodes ssp. *omphalodes*	shield lichen					x		
Peltigera aphthosa	latex pelt, freckle pelt					x		
Peltigera rufescens	felt lichen					x		
Peltigera sp.	pelt lichen				x		x	
Pertusaria coriacea	leathery pore lichen	x	x			x		
Pertusaria dactylina	white finger lichen	x	x			x		
Pertusaria panyrga	pore lichen					x		
Porpidia flavicunda	porpidia lichen					x		*Porpidia flavocaerulescens*
Porpidia thomsonii	Thomson's porpidia lichen					x		
Pseudephebe pubescens	blackcurly lichen						x	
Rhizocarpon badioatrum	map lichen sp.					x		
Rhizocarpon eupetraeoides	map lichen sp.					x		
Rhizocarpon geminatum	map lichen sp.					x		
Rhizocarpon geographicum	world map lichen					x		
Rhizocarpon grande	big map lichen					x		
Rhizocarpen sp.	map lichen sp.						x	
Rock crustose lichen sp.	Rock crustose lichen sp.	x	x				x	
Siphula sp.	whitefingers lichen	x	x					
Solorina bispora	chocolate chip lichen					x		
Solorina crocea	chocolate chip lichen	x	x					
Sphaerophorus globosus	globe ball lichen	x	x		x		x	
Spilonema revertens	spilonema lichen		x					
Stereocaulon albicans	mealy lichen	x	x					*Leprocaulon albicans*
Stereocaulon alpinum	alpine snow lichen					x		
Stereocaulon rivulorum	snow lichen				x			
Stereocaulon sp.	foam lichens			x		x	x	
Thamnolia sp.	whiteworm lichen sp.			x	x			
Thamnolia subuliformis	whiteworm lichen sp.						x	
Thamnolia vermicularis	whiteworm lichen sp.	x	x			x	x	
Toninia sp.	bruised lichen					x		
Tortella tortuosa	tortured tortella moss					x		
Umbilicaria proboscidea	navel lichen sp.					x		
Umbilicaria sp.	navel lichen sp.					x	x	
Umbilicaria torrefacta	navel lichen sp.					x		
Verrucaria nigrescens	wart lichen sp.					x		
Verrucaria nigrescens var laeviascula	wart lichen sp.					x		
Xanthoria elegans	elegant orange wall lichen					x		

Note that 1979 plant species list may not be species observed in the field, but instead may be list of typical species in vegetation groups (includes observation of felt-leaf willow)

(a) Beak 1987b. Summary of plant species compiled from existing studies of the area (pre 1987) and during that study

(b) Wickware 1989. Summary of plant species compiled from existing studies of area (pre 1989) and during that study

(c) Geomatics International 1990. Plants noted on the study site (Sissons area only)

(d) Geomatics International 1991. Preliminary results of species found in the study area. Lichens were preliminary pending confirmation

(e) Geomatics International 1991. List of raw species from data sheets - identification not confirmed

Attachment E List of Plant Species Observed in Ecological Land Classification Units 2008/09

File: VSBR/Attachment E ELC and Plant Species

Attachment E List o List of Plant Species Observed in Ecological Land Classification Units 2008/09

ELC Unit	Plant Species	Wet Graminoid	Graminoid Tundra	Graminoid/ Shrub Tundra	Shrub Tundra	Shrub/ Heath Tundra	Heath Tundra	Heath Upland	Heath Upland/ Rock Complex	Lichen Tundra	Gravel	Rock Association
Graminoide	*Agrostis* sp.				√		√					
	Arctagrostis latifolia	√	√	√	√	√	√	√	√	√		√
	Arctagrostis sp.		√					√				
	Calamagrostis deschampsoides						√	√	√			
	Calamagrostis inexpansa				√							
	Calamagrostis lappinoca	√		√	√	√	√	√	√			√
	Calamagrostis neglecta				√	√	√					√
	Calamagrostis sp.	√	√	√	√	√	√	√	√			√
	Carex aquatilis	√	√	√	√	√	√	√		√		
	Carex atrofusca	√	√									
	Carex bigelowii		√				√					
	Carex glacialis							√				
	Carex gynocrates	√										
	Carex membranacea	√	√									
	Carex misandra	√	√					√				
	Carex rariflora	√	√									
	Carex rotundata	√	√	√	√		√	√				
	Carex rupestris		√									
	Carex saxatilis	√										
	Carex scirpoidea		√	√	√		√	√				
	Carex sp.	√	√	√	√	√	√	√	√		√	√
	Carex vaginata		√		√		√					
	Deschampsia caespitosa				√							
	Eriophorum angustifolium	√	√	√	√	√	√	√	√			√
	Eriophorum russeolum	√	√	√			√		√			
	Eriophorum scheuchzeri	√	√	√	√		√	√	√			
	Eriophorum sp.	√	√	√			√					
	Eriophorum vaginatum	√	√	√	√	√	√	√		√		
	Festuca sp.										√	
	Graminoid sp.	√	√	√	√	√	√	√	√	√	√	√
	Hierochloe alpina	√	√	√	√	√	√	√	√	√	√	√
	Juncus albescens					√						
	Juncus arcticus				√							
	Kobresia myosuroides		√									
	Kobresia simpliciuscula	√	√		√							
	Luzula confusa		√				√	√	√	√	√	
	Luzula wahlenbergii	√										
	Poa alpina					√	√					
	Poa arctica		√		√		√	√			√	
	Poa sp.	√	√	√	√	√	√	√	√		√	
	Trichophorum caespitosum	√	√					√				
Erect Shrub	*Betula glandulosa*	√	√	√	√	√	√	√	√	√		√
	Salix alexensis	√	√	√	√			√	√	√		
	Salix lanata	√	√	√	√		√	√				
	Salix planifolia	√	√	√	√	√	√	√	√			√
	Salix sp.	√	√	√	√	√	√	√	√	√	√	√
Ericaceous Shrub	*Arctostaphylos rubra*		√	√			√	√	√			√
	Arctostaphylos sp.	√	√	√	√	√	√	√	√	√		√
	Orthilia secunda				√		√					
	Vaccinium uliginosum	√	√	√	√	√	√	√	√	√	√	√
Evergreen Ericaceous Shrub	*Andromeda polifolia*	√	√	√	√	√	√	√	√			
	Cassiope tetragona	√	√	√	√	√	√	√	√	√	√	√
	Ledum decumbens	√	√	√	√	√	√	√	√	√	√	√
	Loiseleuria procumbens									√		
	Rhododendron lapponicum	√	√		√		√	√	√	√		
	Vaccinium vitis-idaea	√	√	√	√	√	√	√	√	√		√
Evergreen Prostrate Shrub	*Diapensia lappinoca*			√			√			√		
	Empetrum nigrum	√	√	√	√	√	√	√	√	√	√	√
Prostrate Shrub	*Salix arctica*	√	√	√	√		√	√				
	Salix arctophila	√	√	√	√	√	√	√	√			√
	Salix herbacea	√					√	√				
	Salix reticulata	√	√	√	√	√	√	√	√	√		√
	Salix sp. *(prostate)*	√	√		√	√	√	√				
Moss	*Moss* sp.	√	√	√	√	√	√	√	√	√	√	√
	Sphagnum Moss	√	√	√	√	√	√	√	√			√
Fern	*Dryopteris fragrans*								√		√	√
Forb	*Armeria maritima*	√	√		√		√	√				√
	Arnica alpina				√	√						
	Astragalus alpinus		√		√		√					
	Astragalus sp.							√				
	Cardamine pratensis		√		√	√	√		√			
	Castilleja elegans		√		√	√	√	√				
	Cerastium alpinum				√	√						
	Cerastium alpinum					√						
	Chamerion latifolium		√		√		√	√				√
	Draba glabella							√	√			
	Dryas integrifolia	√	√	√	√	√	√	√	√	√		√
	Epilobium latifolium		√	√			√		√			√
	Erigeron sp.						√					
	Forb sp.		√		√							
	Hedysarum alpinum		√		√	√	√	√	√			
	Hedysarum sp.		√						√			
	Lycopodium selago	√		√		√	√					
	Lycopodium sp.	√		√			√		√			√
	Melandrium apetalum											√
	Oxyria digyna		√									
	Oxytropis arctobia		√	√	√	√	√	√	√			√
	Oxytropis bellii							√				
	Oxytropis maydelliana		√	√		√	√	√	√			√
	Oxytropis sp.	√	√	√			√	√	√			
	Papaver hultenii		√				√					
	Parnassia palustris	√			√							
	Pedicularis arctica	√	√	√	√	√	√		√			
	Pedicularis capitata			√		√						
	Pedicularis flammea		√		√							
	Pedicularis lanata	√										
	Pedicularis sp.	√	√		√		√					
	Pedicularis sudetica		√	√				√				
	Pinguicula villosa		√			√						
	Polygonum viviparum	√	√	√	√		√	√	√			√
	Potentilla palustris	√		√	√			√				
	Potentilla sp.		√									√

Attachment E List o List of Plant Species Observed in Ecological Land Classification Units 2008/09

ELC Unit	Plant Species	Wet Graminoid	Graminoid Tundra	Graminoid/ Shrub Tundra	Shrub Tundra	Shrub/ Heath Tundra	Heath Tundra	Heath Upland	Heath Upland/ Rock Complex	Lichen Tundra	Gravel	Rock Association
	Pyrola grandiflora					√	√					
	Pyrola sp.				√	√	√					
	Rubus chamaemorus	√	√	√			√	√		√		
	Sausseria purpurens	√	√	√	√	√	√	√				
	Saussurea angustifolia	√	√	√	√	√	√	√	√			√
	Saxifraga cernua		√									
	Saxifraga sp.	√				√	√					√
	Saxifraga tricuspidata				√	√		√	√		√	√
	Silene acaulis	√	√	√	√	√	√	√	√		√	√
	Stellaria longipes					√	√		√			
	Tofielda pusilla	√	√	√		√	√		√			
	Tofieldia coccinea						√					
	Tofieldia pusilla		√		√			√				
	Trisetum spicatum								√			
Fungi	Fungi	√	√	√	√	√	√	√	√			
	Alectoria nigricans		√			√	√	√	√	√		√
	Alectoria ochroleuca		√	√	√	√	√	√	√	√	√	√
	Arctoparmelia centrifuga	√	√	√	√		√		√			√
	Bryocaulin divergens		√			√	√	√	√			√
	Bryoria nitidula		√		√	√	√	√	√	√	√	√
	Cetraria aculeata	√						√				
	Cetraria cucullata	√	√	√	√	√	√	√	√	√	√	√
	Cetraria islandica	√	√	√	√	√	√	√	√	√		
	Cetraria nivalis	√	√	√	√	√	√	√	√	√	√	√
	Cetraria sp.	√	√	√	√	√	√	√	√			
	Cetrariella delisei		√									
	Cladina mitis	√	√		√	√	√	√	√	√		√
	Cladina rangiferina	√	√		√	√	√	√	√	√		√
	Cladina sp.	√	√	√	√	√	√	√	√	√		
	Cladina stellaris							√	√	√		
Lichen	*Cladonia* sp.	√	√	√	√	√	√	√	√	√	√	
	Crustose lichens					√	√	√	√			√
	Dactylina arctica	√	√	√	√	√	√	√	√	√		√
	Lichen sp.	√	√	√	√	√	√	√	√	√	√	√
	Nephroma arcticum											√
	Ophioparma lapponica								√			
	Peltigera s p.								√			
	Pseudephebe pubescens								√			
	Rhizocarpen sp.	√	√		√		√	√	√			√
	Sphaerophorus globosus		√				√	√				
	Sphaerophorus globosus							√				
	Stereocaulon sp.		√		√	√	√	√	√	√	√	√
	Thamnolia subuliformis	√	√	√	√	√	√	√	√			√
	Thamnolia vermicularis		√	√	√	√	√	√	√	√	√	
	Umbellicaria		√		√		√	√	√			√
	Umbilicaria sp.								√		√	√
# of Plots		**42**	**46**	**21**	**42**	**19**	**66**	**47**	**55**	**12**	**5**	**19**
Average # Spp/Plot		**12.0**	**23.2**	**15.6**	**15.9**	**20.3**	**19.3**	**18.3**	**15.5**	**17.7**	**10.8**	**13.3**
Total Number - >10%		**31**	**50**	**22**	**29**	**20**	**33**	**36**	**28**	**17**	**3**	**11**
Total Number		**75**	**99**	**64**	**83**	**69**	**96**	**86**	**75**	**37**	**25**	**55**

Highlighted cells depict species that have over 10% cover in at least one sample plot
Plot size = 20 x 20 m

Attachment F Plant Tissue Raw Chemistry Data

File: VSBR/Attachment F Plant Chemistry

Attachment F Raw Chemistry Data, Plant Tissue 2008

Parameters	Units	AREVA-KIGGAVIK-KIG3 SITE#1	AREVA-KIGGAVIK-KIG3 SITE#2	AREVA-KIGGAVIK-KIG3 SITE#3	AREVA-KIGGAVIK-KIG3 SITE#4	AREVA-KIGGAVIK-KIG3 SITE#5	AREVA-KIGGAVIK-KIG3 SITE#1-5 COMPOSITE	AREVA-KIGGAVIK-SIS3 SITE#1	AREVA-KIGGAVIK-SIS3 SITE#2	AREVA-KIGGAVIK-SIS3 SITE#3	AREVA-KIGGAVIK-SIS3 SITE#4	AREVA-KIGGAVIK-SIS3 SITE#5	AREVA-KIGGAVIK-SIS3 SITE#1-5 COMPOSITE	AREVA-KIGGAVIK-KIG4 SITE#1	AREVA-KIGGAVIK-KIG4 SITE#2	AREVA-KIGGAVIK-KIG4 SITE#3	AREVA-KIGGAVIK-KIG4 SITE#4	AREVA-KIGGAVIK-KIG4 SITE#5	AREVA-KIGGAVIK-KIG4 SITE#1-5 COMPOSITE	AREVA-KIGGAVIK-KIG2 SITE#1	AREVA-KIGGAVIK-KIG2 SITE#2	AREVA-KIGGAVIK-KIG2 SITE#3	AREVA-KIGGAVIK-KIG2 SITE#4	AREVA-KIGGAVIK-KIG2 SITE#5	AREVA-KIGGAVIK-KIG2 SITE#1-5 COMPOSITE
		Berries	Berries	Berries	Berries	Berries	Berries	Berries	Berries	Berries	Berries	Berries	Berries	Berries	Berries	Berries	Berries	Berries	Berries	Berries	Berries	Berries	Berries	Berries	Berries
Aluminum	ug/g	2.7	3	2.8	2.4	2.2	ND	4	<2.0	3	5.1	<2.0	ND	4	2.3	75.2	2.4	2.3	ND	3.2	2.2	2.6	2	3.1	ND
Antimony	ug/g	<0.010	<0.010	<0.010	<0.010	<0.010	ND	<0.010	<0.010	<0.010	<0.010	<0.010	ND	<0.010	<0.010	<0.010	<0.010	<0.010	ND	<0.010	<0.010	<0.010	<0.010	<0.010	ND
Arsenic	ug/g	<0.010	<0.010	<0.010	<0.010	<0.010	ND	<0.010	<0.010	<0.010	<0.010	<0.010	ND	<0.010	<0.010	0.026	<0.010	<0.010	ND	<0.010	<0.010	<0.010	<0.010	<0.010	ND
Barium	ug/g	2.33	2.51	3.49	2.64	1.81	ND	0.859	0.813	1.33	1.47	0.815	ND	1.71	1.45	8.31	1.33	1.09	ND	2.88	1.72	2.69	2.23	3.04	ND
Beryllium	ug/g	<0.10	<0.10	<0.10	<0.10	<0.10	ND	<0.10	<0.10	<0.10	<0.10	<0.10	ND	<0.10	<0.10	<0.10	<0.10	<0.10	ND	<0.10	<0.10	<0.10	<0.10	<0.10	ND
Cadmium	ug/g	0.0206	<0.0050	0.0224	0.0151	0.0133	ND	<0.0050	<0.0050	0.0056	<0.0050	<0.0050	ND	<0.0050	0.0152	<0.0050	<0.0050	<0.0050	ND	<0.0050	<0.0050	0.0323	<0.0050	0.0215	ND
Chromium	ug/g	0.11	0.11	0.3	<0.10	<0.10	ND	<0.10	3.45	<0.10	0.11	<0.10	ND	0.74	<0.10	0.44	0.45	0.8	ND	0.72	2.82	<0.10	1.32	<0.10	ND
Cobalt	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	ND	<0.020	0.047	<0.020	<0.020	<0.020	ND	<0.020	<0.020	0.054	<0.020	<0.020	ND	<0.020	0.041	<0.020	<0.020	<0.020	ND
Copper	ug/g	0.655	0.669	0.659	0.863	0.751	ND	0.769	1.02	0.883	0.639	0.774	ND	0.73	0.662	0.649	0.611	0.705	ND	0.662	0.712	0.621	0.701	0.59	ND
Lead	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	ND	<0.020	<0.020	<0.020	<0.020	<0.020	ND	<0.020	<0.020	0.033	<0.020	<0.020	ND	<0.020	<0.020	<0.020	<0.020	<0.020	ND
Manganese	ug/g	20.1	14	25.4	45.8	18.1	ND	6.07	8.88	15.9	20.6	10	ND	27.1	21.3	13.1	35.3	21.1	ND	27.7	18.9	20.5	29.4	15	ND
Mercury	ug/g	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	ND	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	ND	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	ND	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	ND
Molybdenum	ug/g	0.138	0.024	0.08	0.025	0.223	ND	0.022	0.187	0.014	0.03	<0.010	ND	0.051	0.035	0.074	0.058	0.055	ND	0.058	0.166	0.013	0.077	0.03	ND
Nickel	ug/g	0.24	0.18	0.39	0.2	0.13	ND	0.1	1.96	0.11	<0.10	0.14	ND	0.5	0.16	0.31	0.37	0.48	ND	0.49	1.68	0.14	0.77	0.17	ND
Selenium	ug/g	<0.20	<0.20	<0.20	<0.20	<0.20	ND	<0.20	<0.20	<0.20	<0.20	<0.20	ND	<0.20	<0.20	<0.20	<0.20	<0.20	ND	<0.20	<0.20	<0.20	<0.20	<0.20	ND
Strontium	ug/g	0.709	0.62	0.892	0.636	0.601	ND	0.179	0.226	0.283	0.235	0.239	ND	0.529	0.485	0.384	0.285	0.452	ND	0.653	0.313	0.746	0.649	0.757	ND
Thallium	ug/g	<0.010	<0.010	<0.010	<0.010	<0.010	ND	<0.010	<0.010	<0.010	<0.010	<0.010	ND	<0.010	<0.010	<0.010	<0.010	<0.010	ND	<0.010	<0.010	<0.010	<0.010	<0.010	ND
Tin	ug/g	0.084	0.069	0.103	0.083	0.082	ND	0.117	0.184	0.147	0.2	0.136	ND	0.09	0.09	0.053	0.112	0.068	ND	0.106	0.065	0.172	0.147	0.155	ND
Uranium	ug/g	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	ND	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	ND	0.0031	<0.0020	0.0036	<0.0020	0.0059	ND	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	ND
Vanadium	ug/g	<0.10	<0.10	<0.10	<0.10	<0.10	ND	<0.10	<0.10	<0.10	<0.10	<0.10	ND	<0.10	<0.10	<0.10	<0.10	<0.10	ND	<0.10	<0.10	<0.10	<0.10	<0.10	ND
Zinc	ug/g	31.2	6.67	32.3	7.23	24.3	ND	7.27	20.6	26.5	1.75	2.26	ND	8.17	28.3	14.5	2.74	22.8	ND	16.6	1.31	9.78	1.63	28.8	ND
Bismuth	ug/g	<0.030	<0.030	<0.030	<0.030	<0.030	ND	<0.030	<0.030	<0.030	<0.030	<0.030	ND	<0.030	<0.030	<0.030	<0.030	<0.030	ND	<0.030	<0.030	<0.030	<0.030	<0.030	ND
Calcium	ug/g	323	149	359	253	305	ND	99.1	227	278	142	88.6	ND	177	345	164	167	239	ND	366	182	266	230	329	ND
Lithium	ug/g	<0.10	<0.10	<0.10	<0.10	<0.10	ND	<0.10	<0.10	<0.10	<0.10	<0.10	ND	<0.10	<0.10	<0.10	<0.10	<0.10	ND	<0.10	<0.10	<0.10	<0.10	<0.10	ND
Magnesium	ug/g	75.2	80.5	81.8	93.8	77.2	ND	51.2	72.9	64.9	86.5	67.2	ND	76.8	88.1	84.1	69.4	82.4	ND	90.8	82.9	85.4	107	66.7	ND
Moisture	%	89.4	86.6	89.8	87.1	87.6	87.49	87.5	86.8	86.4	85.1	86.1	86.44	87.9	87.8	87	88.4	84.7	87.15	87	86.6	88.2	86.2	87.5	87.29
Lead-210	Bq/g	ND	ND	ND	ND	ND	0.004	ND	ND	ND	ND	ND	0.013	ND	ND	ND	ND	ND	0.004	ND	ND	ND	ND	ND	0.008
Polonium-210	Bq/g	ND	ND	ND	ND	ND	0.0034	ND	ND	ND	ND	ND	0.013	ND	ND	ND	ND	ND	0.004	ND	ND	ND	ND	ND	0.008
Radium-226	Bq/g	ND	ND	ND	ND	ND	0.002	ND	ND	ND	ND	ND	<0.0009	ND	ND	ND	ND	ND	0.001	ND	ND	ND	ND	ND	<0.001
Thorium-230	Bq/g	ND	ND	ND	ND	ND	<0.005	ND	ND	ND	ND	ND	<0.005	ND	ND	ND	ND	ND	<0.005	ND	ND	ND	ND	ND	<0.005
Thorium-232	Bq/g	ND	ND	ND	ND	ND	<0.005	ND	ND	ND	ND	ND	<0.005	ND	ND	ND	ND	ND	<0.005	ND	ND	ND	ND	ND	<0.005

ND = No data

Attachment F Raw Chemistry Data, Plant Tissue 2008

Parameters	Units	AREVA-KIGGAVIK-KIG1 SITE#1	AREVA-KIGGAVIK-KIG1 SITE#2	AREVA-KIGGAVIK-KIG1 SITE#3	AREVA-KIGGAVIK-KIG1 SITE#4	AREVA-KIGGAVIK-KIG1 SITE#5	AREVA-KIGGAVIK-KIG1 SITE#1-5 COMPOSITE	AREVA-KIGGAVIK-KIG5 SITE#1	AREVA-KIGGAVIK-KIG5 SITE#5	AREVA-KIGGAVIK-KIG5 SITE#1,5 COMPOSITE	AREVA-KIGGAVIK-SIS5 SITE#1	AREVA-KIGGAVIK-SIS5 SITE#3	AREVA-KIGGAVIK-SIS5 SITE#4	AREVA-KIGGAVIK-SIS5 SITE#5	AREVA-KIGGAVIK-SIS5 SITE#1,3,4,5 COMPOSITE	AREVA-KIGGAVIK-SIS1 SITE#1	AREVA-KIGGAVIK-SIS1 SITE#2	AREVA-KIGGAVIK-SIS1 SITE#3	AREVA-KIGGAVIK-SIS1 SITE#4	AREVA-KIGGAVIK-SIS1 SITE#5	AREVA-KIGGAVIK-SIS1 SITE#1-5 COMPOSITE	AREVA-KIGGAVIK-SIS2 SITE#1	AREVA-KIGGAVIK-SIS2 SITE#3	AREVA-KIGGAVIK-SIS2 SITE#5	AREVA-KIGGAVIK-SIS2 SITE#1,3,5 COMPOSITE
		Berries	Berries	Berries	Berries	Berries	Berries	Berries	Berries	Berries	Berries	Berries	Berries	Berries	Berries	Berries	Berries	Berries	Berries	Berries	Berries	Berries	Berries	Berries	Berries
Aluminum	ug/g	3.5	3.5	5.4	3.6	3.5	ND	3.8	4.2	ND	4.2	2.7	3.6	2.2	ND	3.1	2.3	4.4	4.3	2.3	ND	25.6	3.5	<2.0	ND
Antimony	ug/g	<0.010	<0.010	<0.010	<0.010	<0.010	ND	<0.010	<0.010	ND	<0.010	<0.010	<0.010	<0.010	ND	<0.010	<0.010	<0.010	<0.010	<0.010	ND	<0.010	<0.010	<0.010	ND
Arsenic	ug/g	<0.010	<0.010	<0.010	<0.010	<0.010	ND	<0.010	<0.010	ND	<0.010	<0.010	<0.010	<0.010	ND	<0.010	<0.010	<0.010	<0.010	<0.010	ND	<0.010	<0.010	<0.010	ND
Barium	ug/g	1.8	3.52	2.06	2.31	2.27	ND	2.64	2.09	ND	1.73	1.6	1.48	1.75	ND	2.05	1.85	1.92	1.73	2.31	ND	1.85	1.8	1.42	ND
Beryllium	ug/g	<0.10	<0.10	<0.10	<0.10	<0.10	ND	<0.10	<0.10	ND	<0.10	<0.10	<0.10	<0.10	ND	<0.10	<0.10	<0.10	<0.10	<0.10	ND	<0.10	<0.10	<0.10	ND
Cadmium	ug/g	<0.0050	0.0455	<0.0050	0.0183	0.0182	ND	<0.0050	<0.0050	ND	<0.0050	<0.0050	<0.0050	<0.0050	ND	0.0207	0.0199	0.0156	0.0071	0.0239	ND	0.0055	0.0121	<0.0050	ND
Chromium	ug/g	0.88	<0.10	<0.10	<0.10	<0.10	ND	0.16	<0.10	ND	<0.10	4.94	<0.10	1.4	ND	<0.10	<0.10	<0.10	<0.10	<0.10	ND	0.23	<0.10	0.47	ND
Cobalt	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	ND	<0.020	<0.020	ND	<0.020	0.067	<0.020	0.021	ND	<0.020	<0.020	<0.020	<0.020	<0.020	ND	<0.020	<0.020	<0.020	ND
Copper	ug/g	0.73	0.728	0.682	0.685	0.67	ND	0.734	0.537	ND	0.563	0.737	0.747	0.655	ND	0.646	0.726	0.675	0.743	0.594	ND	0.719	0.644	0.565	ND
Lead	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	ND	<0.020	<0.020	ND	<0.020	<0.020	<0.020	<0.020	ND	<0.020	<0.020	<0.020	<0.020	<0.020	ND	<0.020	<0.020	<0.020	ND
Manganese	ug/g	31.8	24.1	20.4	23.6	24.1	ND	40.1	65.6	ND	65.7	28.8	13.3	38.5	ND	18.6	22	26.1	20.1	27.5	ND	23	35.4	27.5	ND
Mercury	ug/g	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	ND	<0.0010	<0.0010	ND	<0.0010	<0.0010	<0.0010	<0.0010	ND	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	ND	<0.0010	<0.0010	<0.0010	ND
Molybdenum	ug/g	0.057	<0.010	<0.010	0.012	0.013	ND	0.032	0.013	ND	0.015	0.308	0.015	0.089	ND	0.041	0.043	0.04	0.055	0.05	ND	0.021	<0.010	0.037	ND
Nickel	ug/g	0.56	0.3	0.12	0.12	0.12	ND	0.18	<0.10	ND	<0.10	2.99	<0.10	0.86	ND	0.12	0.32	0.15	<0.10	0.13	ND	0.27	0.16	0.37	ND
Selenium	ug/g	<0.20	<0.20	<0.20	<0.20	<0.20	ND	<0.20	<0.20	ND	<0.20	<0.20	<0.20	<0.20	ND	<0.20	<0.20	<0.20	<0.20	<0.20	ND	<0.20	<0.20	<0.20	ND
Strontium	ug/g	0.425	0.937	0.449	0.644	0.623	ND	0.326	0.358	ND	0.338	0.326	0.28	0.37	ND	0.459	0.399	0.417	0.367	0.516	ND	0.434	0.244	0.261	ND
Thallium	ug/g	<0.010	<0.010	<0.010	<0.010	<0.010	ND	<0.010	<0.010	ND	<0.010	<0.010	<0.010	<0.010	ND	<0.010	<0.010	<0.010	<0.010	<0.010	ND	<0.010	<0.010	<0.010	ND
Tin	ug/g	0.062	0.19	0.1	0.138	0.141	ND	0.093	0.174	ND	<0.050	0.063	0.129	0.063	ND	0.112	0.073	0.207	0.164	0.103	ND	0.123	0.15	0.102	ND
Uranium	ug/g	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	ND	<0.0020	<0.0020	ND	<0.0020	<0.0020	<0.0020	<0.0020	ND	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	ND	<0.0020	<0.0020	<0.0020	ND
Vanadium	ug/g	<0.10	<0.10	<0.10	<0.10	<0.10	ND	<0.10	<0.10	ND	<0.10	<0.10	<0.10	<0.10	ND	<0.10	<0.10	<0.10	<0.10	<0.10	ND	<0.10	<0.10	<0.10	ND
Zinc	ug/g	4.47	22.8	1.5	24.7	24.2	ND	1.91	1.79	ND	1.61	2.86	1.58	1.69	ND	18	34.2	15.8	15.4	33.8	ND	29.3	20.3	22.1	ND
Bismuth	ug/g	<0.030	<0.030	<0.030	<0.030	<0.030	ND	<0.030	<0.030	ND	<0.030	<0.030	<0.030	<0.030	ND	<0.030	<0.030	<0.030	<0.030	<0.030	ND	<0.030	<0.030	<0.030	ND
Calcium	ug/g	180	378	145	327	323	ND	293	227	ND	207	185	149	203	ND	307	403	281	306	413	ND	264	294	248	ND
Lithium	ug/g	<0.10	<0.10	<0.10	<0.10	<0.10	ND	<0.10	<0.10	ND	<0.10	<0.10	<0.10	<0.10	ND	<0.10	<0.10	<0.10	<0.10	<0.10	ND	<0.10	<0.10	<0.10	ND
Magnesium	ug/g	76	91	73.8	79.9	79.9	ND	95.7	106	ND	108	80.4	86.1	97.1	ND	79.3	81.6	81	85.7	86.1	ND	97	80.9	74	ND
Moisture	%	86.8	88.3	87.7	85.6	86.6	87.02	85.4	85.8	85.69	85.8	86.4	85	89	85.69	88.2	85.6	87.2	86.4	88.5	88.06	86.5	87.8	87.9	86.87
Lead-210	Bq/g	ND	ND	ND	ND	ND	0.014	ND	ND	0.009	ND	ND	ND	ND	0.01	ND	ND	ND	ND	ND	0.013	ND	ND	ND	0.007
Polonium-210	Bq/g	ND	ND	ND	ND	ND	0.014	ND	ND	0.007	ND	ND	ND	ND	0.0082	ND	ND	ND	ND	ND	0.012	ND	ND	ND	0.008
Radium-226	Bq/g	ND	ND	ND	ND	ND	0.001	ND	ND	0.001	ND	ND	ND	ND	<0.0009	ND	ND	ND	ND	ND	0.001	ND	ND	ND	<0.001
Thorium-230	Bq/g	ND	ND	ND	ND	ND	<0.005	ND	ND	<0.005	ND	ND	ND	ND	<0.005	ND	ND	ND	ND	ND	<0.005	ND	ND	ND	<0.005
Thorium-232	Bq/g	ND	ND	ND	ND	ND	<0.005	ND	ND	<0.005	ND	ND	ND	ND	<0.005	ND	ND	ND	ND	ND	<0.005	ND	ND	ND	<0.005

ND = No data

Attachment F Raw Chemistry Data, Plant Tissue 2008

Parameters	Units	AREVA-KIGGAVIK-SIS4 SITE#1	AREVA-KIGGAVIK-SIS4 SITE#2	AREVA-KIGGAVIK-SIS4 SITE#3	AREVA-KIGGAVIK-SIS4 SITE#4	AREVA-KIGGAVIK-SIS4 SITE#5	AREVA-KIGGAVIK-SIS4 SITE#1-5 COMPOSITE	AREVA KIGGAVIK SIS5 #1 SEDGE	AREVA KIGGAVIK SIS5 #1 LICHEN	AREVA KIGGAVIK SIS5 #2 SEDGE	AREVA KIGGAVIK SIS5 #2 LICHEN	AREVA KIGGAVIK SIS5 #3 SEDGE	AREVA KIGGAVIK SIS5 #3 LICHEN	AREVA KIGGAVIK SIS5 #4 SEDGE	AREVA KIGGAVIK SIS5 #4 LICHEN	AREVA KIGGAVIK SIS5 #5 SEDGE	AREVA KIGGAVIK SIS5 #5 LICHEN	AREVA KIGGAVIK SIS5-1,2 SEDGE COMPOSITE	AREVA-KIGGAVIK SIS5 #1,3 LICHEN COMPOSITE	AREVA-KIGGAVIK SIS5 #2,5 LICHEN COMPOSITE	AREVA KIGGAVIK SIS4 #1 SEDGE	AREVA KIGGAVIK SIS4 #1 LICHEN
		Berries	Berries	Berries	Berries	Berries	Berries	Sedge	Lichen	Sedge	Lichen	Sedge	Lichen	Sedge	Lichen	Sedge	Lichen	Sedge Comp	Lichen Comp	Lichen Comp	Sedge	Lichen
Aluminum	ug/g	2.1	3.7	2.7	3.3	4.7	ND	53.4	58.6	16.2	281	42.7	462	54.2	96.6	298	73.1	ND	ND	ND	39.8	170
Antimony	ug/g	<0.010	<0.010	<0.010	<0.010	<0.010	ND	<0.020	<0.030	<0.020	<0.030	<0.020	<0.030	<0.020	<0.040	<0.020	<0.040	ND	ND	ND	<0.020	<0.040
Arsenic	ug/g	<0.010	<0.010	<0.010	<0.010	<0.010	ND	0.03	0.032	<0.020	0.095	0.028	0.162	0.033	0.065	0.443	0.067	ND	ND	ND	0.034	0.073
Barium	ug/g	2.39	2.65	2.67	2.5	2.03	ND	10.8	35.4	19.1	21.6	12.4	51.4	22.6	42.4	30.7	23.8	ND	ND	ND	19.9	58.5
Beryllium	ug/g	<0.10	<0.10	<0.10	<0.10	<0.10	ND	<0.20	<0.30	<0.20	<0.30	<0.20	<0.30	<0.20	<0.40	<0.20	<0.40	ND	ND	ND	<0.20	<0.40
Cadmium	ug/g	0.0176	0.0085	0.0164	0.0153	0.0174	ND	0.027	0.036	0.017	0.106	0.064	0.063	0.034	0.084	0.054	0.102	ND	ND	ND	0.077	0.097
Chromium	ug/g	0.29	<0.10	<0.10	<0.10	<0.10	ND	0.35	3.39	0.21	0.9	0.3	17.9	0.77	1.29	6.33	0.85	ND	ND	ND	0.37	2.06
Cobalt	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	ND	0.054	0.112	<0.040	0.085	0.042	0.417	0.066	0.161	0.86	<0.080	ND	ND	ND	0.044	0.329
Copper	ug/g	0.665	0.706	0.643	0.647	0.652	ND	0.602	1.87	1.18	1.18	0.755	4.65	1.37	1.85	2.24	1.66	ND	ND	ND	0.923	4.71
Lead	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	ND	0.188	0.209	0.103	0.432	0.198	0.541	0.237	0.702	0.447	0.365	ND	ND	ND	0.308	0.402
Manganese	ug/g	24.9	43.7	32.5	29.1	26.5	ND	109	652	135	77.4	108	296	215	260	293	220	ND	ND	ND	113	271
Mercury	ug/g	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	ND	0.0122	0.0086	0.0037	0.023	0.0129	0.0242	0.0133	0.0174	0.013	0.0082	ND	ND	ND	0.0134	0.0041
Molybdenum	ug/g	0.053	0.034	0.025	0.021	0.026	ND	0.026	0.339	0.236	0.038	<0.020	0.521	0.17	0.068	0.183	0.067	ND	ND	ND	0.039	0.454
Nickel	ug/g	0.28	0.12	0.17	0.11	0.18	ND	0.31	2.18	0.28	0.99	0.42	9.09	0.83	1.04	3.78	0.87	ND	ND	ND	0.35	2.45
Selenium	ug/g	<0.20	<0.20	<0.20	<0.20	<0.20	ND	<0.40	<0.60	<0.40	<0.60	<0.40	<0.60	<0.40	<0.80	<0.40	<0.80	ND	ND	ND	<0.40	<0.80
Strontium	ug/g	0.482	0.543	0.487	0.519	0.433	ND	2.83	6.83	5.27	11.1	3.86	13.3	5.06	10.4	8.49	11.3	ND	ND	ND	6.52	13.6
Thallium	ug/g	<0.010	<0.010	<0.010	<0.010	<0.010	ND	<0.020	<0.030	<0.020	<0.030	<0.020	<0.030	<0.020	<0.040	<0.020	<0.040	ND	ND	ND	<0.020	<0.040
Tin	ug/g	0.128	0.336	0.215	0.13	0.193	ND	<0.10	<0.15	<0.10	<0.15	<0.10	<0.15	<0.10	<0.20	<0.10	<0.20	ND	ND	ND	<0.10	<0.20
Uranium	ug/g	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	ND	0.0056	0.0066	<0.0040	0.0341	0.009	0.0571	0.01	0.0122	0.0476	0.009	ND	ND	ND	0.0065	0.0333
Vanadium	ug/g	<0.10	<0.10	<0.10	<0.10	<0.10	ND	<0.20	<0.30	<0.20	<0.30	<0.20	0.74	<0.20	<0.40	0.83	<0.40	ND	ND	ND	<0.20	<0.40
Zinc	ug/g	29.5	35.6	40.4	32	31.8	ND	10.5	23.2	17.4	16	16.8	29	18.4	37	13.9	23.9	ND	ND	ND	18.1	28.3
Bismuth	ug/g	<0.030	<0.030	<0.030	<0.030	<0.030	ND	<0.060	<0.090	<0.060	<0.090	<0.060	<0.090	<0.060	<0.12	<0.060	<0.12	ND	ND	ND	<0.060	<0.12
Calcium	ug/g	409	460	479	430	410	ND	830	2070	1040	2790	1310	2340	1300	2780	1550	3320	ND	ND	ND	2400	3470
Lithium	ug/g	<0.10	<0.10	<0.10	<0.10	<0.10	ND	<0.20	<0.30	<0.20	<0.30	<0.20	0.34	<0.20	<0.40	0.27	<0.40	ND	ND	ND	<0.20	<0.40
Magnesium	ug/g	88.8	93.7	89.3	89.4	94.2	ND	183	448	304	451	202	650	300	535	380	526	ND	ND	ND	342	856
Moisture	%	87.9	86.7	88.4	87.3	87.8	88.01	44.5	51.9	53.3	44.3	55.7	56	58.5	47.7	55.4	61.1	ND	ND	ND	53.9	66.7
Lead-210	Bq/g	ND	ND	ND	ND	ND	0.008	ND	ND	ND	ND	0.2	ND	0.36	0.54	0.32	ND	0.32	0.37	0.4	ND	ND
Polonium-210	Bq/g	ND	ND	ND	ND	ND	0.0068	ND	ND	ND	ND	0.16	ND	0.24	0.36	0.15	ND	0.24	0.37	0.32	ND	ND
Radium-226	Bq/g	ND	ND	ND	ND	ND	0.001	ND	ND	ND	ND	0.003	ND	0.002	0.004	0.004	ND	0.003	0.002	0.002	ND	ND
Thorium-230	Bq/g	ND	ND	ND	ND	ND	<0.004	ND	ND	ND	ND	<0.005	ND	<0.005	<0.005	<0.005	ND	<0.005	<0.005	<0.005	ND	ND
Thorium-232	Bq/g	ND	ND	ND	ND	ND	<0.004	ND	ND	ND	ND	<0.005	ND	<0.005	<0.005	<0.005	ND	<0.005	<0.005	<0.005	ND	ND

ND = No data

Attachment F Raw Chemistry Data, Plant Tissue 2008

Parameters	Units	AREVA KIGGAVIK SIS4 #2 SEDGE	AREVA KIGGAVIK SIS4 #2 LICHEN	AREVA KIGGAVIK SIS4 #3 SEDGE	AREVA KIGGAVIK SIS4 #3 LICHEN	AREVA KIGGAVIK SIS4 #4 SEDGE	AREVA KIGGAVIK SIS4 #4 LICHEN	AREVA KIGGAVIK SIS4 #5 SEDGE	AREVA KIGGAVIK SIS4 #5 LICHEN	AREVA KIGGAVIK SIS4-1,3 SEDGE COMPOSITE	AREVA-KIGGAVIK SIS4 #2,3 LICHEN COMPOSITE	AREVA-KIGGAVIK SIS4 #1,4,5 LICHEN COMPOSITE	AREVA KIGGAVIK SIS1 #1 SEDGE	AREVA KIGGAVIK SIS1 #1 LICHEN	AREVA KIGGAVIK SIS1 #2 SEDGE	AREVA KIGGAVIK SIS1 #2 LICHEN	AREVA KIGGAVIK SIS1 #3 SEDGE	AREVA KIGGAVIK SIS1 #3 LICHEN	AREVA KIGGAVIK SIS1 #4 SEDGE	AREVA KIGGAVIK SIS1 #4 LICHEN	AREVA KIGGAVIK SIS1 #5 SEDGE	AREVA KIGGAVIK SIS1 #5 LICHEN
		Sedge	Lichen	Sedge	Lichen	Sedge	Lichen	Sedge	Lichen	Sedge Comp	Lichen Comp	Lichen Comp	Sedge	Lichen	Sedge	Lichen	Sedge	Lichen	Sedge	Lichen	Sedge	Lichen
Aluminum	ug/g	40.7	403	72.4	74.1	41.6	57.1	41.2	48.4	ND	ND	ND	13.5	42.3	94.8	16	60.4	85.1	53.3	60.8	29.2	55.6
Antimony	ug/g	<0.020	<0.040	<0.030	<0.040	<0.020	<0.040	<0.020	<0.040	ND	ND	ND	<0.020	<0.030	<0.030	<0.020	<0.030	<0.020	<0.020	<0.030	<0.020	<0.030
Arsenic	ug/g	0.028	0.199	0.034	0.06	0.031	<0.040	0.027	<0.040	ND	ND	ND	<0.020	0.032	0.055	<0.020	0.05	0.074	0.029	0.047	<0.020	0.035
Barium	ug/g	17.4	65	45.1	37.3	24.8	58.4	12.5	35.1	ND	ND	ND	13.2	16.5	26.6	16.3	21.7	18.7	21.6	23.2	21.9	22.8
Beryllium	ug/g	<0.20	<0.40	<0.30	<0.40	<0.20	<0.40	<0.20	<0.40	ND	ND	ND	<0.20	<0.30	<0.30	<0.20	<0.30	<0.20	<0.20	<0.30	<0.20	<0.30
Cadmium	ug/g	0.086	0.065	0.063	0.147	0.076	0.067	0.06	0.05	ND	ND	ND	0.012	0.067	0.11	0.019	0.092	0.025	0.057	0.073	0.037	0.086
Chromium	ug/g	0.26	1.59	0.62	0.48	0.37	0.6	0.37	1.12	ND	ND	ND	1.62	<0.30	0.65	<0.20	0.56	1.8	0.96	0.36	0.38	0.37
Cobalt	ug/g	0.047	1.4	0.245	0.084	<0.040	0.105	0.044	<0.080	ND	ND	ND	0.076	<0.060	0.077	0.097	0.129	0.423	0.228	0.063	0.221	0.067
Copper	ug/g	1.22	5.17	3.38	1.77	1.05	3.45	0.784	2.42	ND	ND	ND	3.18	0.911	1.37	2.56	1.38	2.88	2.38	1.11	1.91	1.25
Lead	ug/g	0.293	0.483	0.403	0.63	0.378	0.377	0.239	0.321	ND	ND	ND	0.055	0.299	0.531	0.104	0.412	0.214	0.253	0.453	0.094	0.385
Manganese	ug/g	159	434	340	244	77.9	292	102	409	ND	ND	ND	98.5	94.4	214	116	196	145	90.7	143	100	247
Mercury	ug/g	0.0145	0.0043	0.006	0.0043	0.0148	0.008	0.0182	0.007	ND	ND	ND	0.0056	0.0244	0.0351	0.0064	0.0296	0.0072	0.0107	0.0348	0.0077	0.0332
Molybdenum	ug/g	0.053	0.473	0.441	0.115	0.04	0.615	0.035	0.376	ND	ND	ND	0.122	0.077	0.092	0.255	0.156	0.453	1.01	0.126	0.386	0.136
Nickel	ug/g	0.34	2.76	1.02	0.51	0.32	1.09	0.31	0.92	ND	ND	ND	1.3	<0.30	0.52	0.45	0.53	1.86	1.04	0.34	0.76	0.36
Selenium	ug/g	<0.40	<0.80	<0.60	<0.80	<0.40	<0.80	<0.40	<0.80	ND	ND	ND	<0.40	<0.60	<0.60	<0.40	<0.60	<0.40	<0.40	<0.60	<0.40	<0.60
Strontium	ug/g	6.45	13.4	9.07	12.4	9.4	12.7	4.72	7.17	ND	ND	ND	3.35	6.78	6.62	4.27	7.82	6.75	6.89	7.15	5.94	6.82
Thallium	ug/g	<0.020	<0.040	<0.030	<0.040	<0.020	<0.040	<0.020	<0.040	ND	ND	ND	<0.020	<0.030	<0.030	<0.020	<0.030	<0.020	<0.020	<0.030	<0.020	<0.030
Tin	ug/g	<0.10	<0.20	<0.15	<0.20	<0.10	<0.20	<0.10	<0.20	ND	ND	ND	<0.10	<0.15	0.82	<0.10	<0.15	<0.10	<0.10	<0.15	<0.10	<0.15
Uranium	ug/g	0.0048	0.0654	0.0191	0.0096	0.0056	0.0081	0.0063	0.031	ND	ND	ND	<0.0040	0.0651	0.322	0.061	0.0704	0.0145	0.0383	0.0753	0.0147	0.0424
Vanadium	ug/g	<0.20	0.49	<0.30	<0.40	<0.20	<0.40	<0.20	<0.40	ND	ND	ND	<0.20	<0.30	<0.30	<0.20	<0.30	<0.20	<0.20	<0.30	<0.20	<0.30
Zinc	ug/g	19.1	23.8	23.1	33.5	15.5	36.1	16.5	19.9	ND	ND	ND	11.3	15.6	23.7	12.3	23.7	13.6	11	23.5	9.21	19.4
Bismuth	ug/g	<0.060	<0.12	<0.090	<0.12	<0.060	<0.12	<0.060	<0.12	ND	ND	ND	<0.060	<0.090	<0.090	<0.060	<0.090	<0.060	<0.060	<0.090	<0.060	<0.090
Calcium	ug/g	2370	2910	2140	4570	3900	3340	1520	2200	ND	ND	ND	876	2250	2490	933	2500	1490	1720	2480	1290	2590
Lithium	ug/g	<0.20	<0.40	<0.30	<0.40	<0.20	<0.40	<0.20	<0.40	ND	ND	ND	<0.20	<0.30	<0.30	<0.20	<0.30	<0.20	<0.20	<0.30	<0.20	<0.30
Magnesium	ug/g	363	753	600	576	349	787	294	653	ND	ND	ND	285	358	412	281	439	414	307	327	397	407
Moisture	%	36.1	63.7	57.3	58.1	44.9	62.4	56.4	61	ND	ND	ND	65.5	40.4	32.5	57.1	35	61.2	45.5	31.1	60.8	33.4
Lead-210	Bq/g	0.19	ND	ND	ND	0.46	ND	0.32	ND	0.27	0.48	0.56	ND	ND	0.16	ND	ND	ND	ND	ND	ND	ND
Polonium-210	Bq/g	0.14	ND	ND	ND	0.26	ND	0.22	ND	0.23	0.47	0.43	ND	ND	0.12	ND	ND	ND	ND	ND	ND	ND
Radium-226	Bq/g	0.008	ND	ND	ND	0.003	ND	0.003	ND	0.001	0.002	0.002	ND	ND	0.008	ND	ND	ND	ND	ND	ND	ND
Thorium-230	Bq/g	0.02	ND	ND	ND	0.01	ND	<0.005	ND	<0.005	0.006	<0.005	ND	ND	0.01	ND	ND	ND	ND	ND	ND	ND
Thorium-232	Bq/g	0.02	ND	ND	ND	<0.005	ND	<0.005	ND	<0.005	<0.005	<0.005	ND	ND	<0.005	ND	ND	ND	ND	ND	ND	ND

ND = No data

Attachment F Raw Chemistry Data, Plant Tissue 2008

Parameters	Units	AREVA KIGGAVIK SIS1-1,5 SEDGE COMPOSITE	AREVA-KIGGAVIK SIS1 #1,2,3 LICHEN COMPOSITE	AREVA KIGGAVIK SIS1-3,4 SEDGE COMPOSITE	AREVA-KIGGAVIK SIS1 #4,5 LICHEN COMPOSITE	AREVA KIGGAVIK K1G3 #1 SEDGE	AREVA KIGGAVIK K1G3 #1 LICHEN	AREVA KIGGAVIK K1G3 #2 SEDGE	AREVA KIGGAVIK K1G3 #2 LICHEN	AREVA KIGGAVIK K1G3 #3 SEDGE	AREVA KIGGAVIK K1G3 #3 LICHEN	AREVA KIGGAVIK K1G3 #4 SEDGE	AREVA KIGGAVIK K1G3 #4 LICHEN	AREVA KIGGAVIK K1G3 #5 SEDGE	AREVA KIGGAVIK K1G3 #5 LICHEN	AREVA-KIGGAVIK KIG3 #1,2,4 LICHEN COMPOSITE	AREVA KIGGAVIK KIG3-3,5 SEDGE COMPOSITE	AREVA-KIGGAVIK KIG3 #3,5 LICHEN COMPOSITE	AREVA-KIGGAVIK SIS2-1 SEDGE	AREVA-KIGGAVIK SIS2-1 LICHEN	AREVA-KIGGAVIK SIS2-2 SEDGE	AREVA-KIGGAVIK SIS2-2 LICHEN
		Sedge Comp	Lichen Comp	Sedge Comp	Lichen Comp	Sedge	Lichen	Sedge	Lichen	Sedge	Lichen	Sedge	Lichen	Sedge	Lichen	Lichen Comp	Sedge Comp	Lichen Comp	Sedge	Lichen	Sedge	Lichen
Aluminum	ug/g	ND	ND	ND	ND	60.1	501	191	43.1	16.6	96.5	68.6	27.2	18.7	76.6	ND	ND	ND	19.5	51.8	19.7	39.6
Antimony	ug/g	ND	ND	ND	ND	<0.040	<0.020	<0.040	<0.030	<0.020	<0.040	<0.030	<0.020	<0.020	<0.040	ND	ND	ND	<0.020	<0.030	<0.020	<0.030
Arsenic	ug/g	ND	ND	ND	ND	0.051	0.31	0.103	<0.030	<0.020	0.092	0.06	0.032	<0.020	0.071	ND	ND	ND	<0.020	0.049	<0.020	0.041
Barium	ug/g	ND	ND	ND	ND	50	75.4	84.8	38.1	41.3	59	50.2	55.1	41	48.7	ND	ND	ND	19.5	34.8	24.9	26.5
Beryllium	ug/g	ND	ND	ND	ND	<0.40	<0.20	<0.40	<0.30	<0.20	<0.40	<0.30	<0.20	<0.20	<0.40	ND	ND	ND	<0.20	<0.30	<0.20	<0.30
Cadmium	ug/g	ND	ND	ND	ND	0.171	0.084	0.075	0.021	0.042	0.121	0.129	0.03	0.035	0.105	ND	ND	ND	0.023	0.161	0.014	0.069
Chromium	ug/g	ND	ND	ND	ND	<0.40	5.29	1.75	1.14	0.23	1.3	0.36	0.34	0.21	0.48	ND	ND	ND	0.68	0.34	<0.20	<0.30
Cobalt	ug/g	ND	ND	ND	ND	<0.080	0.622	0.293	0.083	0.052	0.088	0.155	0.252	<0.040	0.093	ND	ND	ND	0.068	0.162	<0.040	<0.060
Copper	ug/g	ND	ND	ND	ND	2.05	6.19	1.23	1.32	1.49	1.85	1.87	2.86	2.01	2.26	ND	ND	ND	1.46	1.65	1.83	0.702
Lead	ug/g	ND	ND	ND	ND	0.337	1.05	0.94	0.237	0.072	0.492	0.37	0.148	0.086	0.594	ND	ND	ND	0.056	0.303	0.057	0.258
Manganese	ug/g	ND	ND	ND	ND	117	123	186	345	147	209	356	180	106	214	ND	ND	ND	209	353	68.7	27
Mercury	ug/g	ND	ND	ND	ND	0.0292	0.0154	0.0445	0.0191	0.006	0.0397	0.0395	0.0102	0.0073	0.0453	ND	ND	ND	0.005	0.0323	0.0059	0.019
Molybdenum	ug/g	ND	ND	ND	ND	0.907	3.41	0.293	0.646	1.84	0.413	0.128	0.395	1.52	1.58	ND	ND	ND	0.09	<0.030	0.176	0.056
Nickel	ug/g	ND	ND	ND	ND	0.7	4.34	1.31	0.82	0.54	1.23	0.78	0.96	0.46	0.75	ND	ND	ND	0.56	0.77	0.57	<0.30
Selenium	ug/g	ND	ND	ND	ND	<0.80	<0.40	<0.80	<0.60	<0.40	<0.80	<0.60	<0.40	<0.40	<0.80	ND	ND	ND	<0.40	<0.60	<0.40	<0.60
Strontium	ug/g	ND	ND	ND	ND	25.1	13.5	16.5	7.77	7.78	16.2	17.8	8.58	9.53	15.5	ND	ND	ND	1.99	4.59	4.54	9.58
Thallium	ug/g	ND	ND	ND	ND	<0.040	<0.020	<0.040	<0.030	<0.020	<0.040	<0.030	<0.020	<0.020	<0.040	ND	ND	ND	<0.020	<0.030	<0.020	<0.030
Tin	ug/g	ND	ND	ND	ND	<0.20	<0.10	<0.20	<0.15	<0.10	<0.20	<0.15	<0.10	<0.10	<0.20	ND	ND	ND	<0.10	<0.15	<0.10	<0.15
Uranium	ug/g	ND	ND	ND	ND	0.0157	0.175	0.0277	0.0076	<0.0040	0.0258	0.0169	0.0141	<0.0040	0.0126	ND	ND	ND	<0.0040	<0.0060	<0.0040	<0.0060
Vanadium	ug/g	ND	ND	ND	ND	<0.40	1.16	<0.40	<0.30	<0.20	<0.40	<0.30	<0.20	<0.20	<0.40	ND	ND	ND	<0.20	<0.30	<0.20	<0.30
Zinc	ug/g	ND	ND	ND	ND	26.5	16.2	26.4	22.7	21.3	38.5	33	18.4	12	29.2	ND	ND	ND	11.5	36.1	10.7	13.3
Bismuth	ug/g	ND	ND	ND	ND	<0.12	<0.060	<0.12	<0.090	<0.060	<0.12	<0.090	<0.060	<0.060	<0.12	ND	ND	ND	<0.060	<0.090	<0.060	<0.090
Calcium	ug/g	ND	ND	ND	ND	5960	1590	2340	1210	1080	2460	3030	1080	1520	3260	ND	ND	ND	723	1840	1620	4430
Lithium	ug/g	ND	ND	ND	ND	<0.40	0.41	<0.40	<0.30	<0.20	<0.40	<0.30	<0.20	<0.20	<0.40	ND	ND	ND	<0.20	<0.30	<0.20	<0.30
Magnesium	ug/g	ND	ND	ND	ND	740	607	529	477	360	460	522	334	353	455	ND	ND	ND	258	383	368	421
Moisture	%	ND	ND	ND	ND	16.9	55.8	15.6	50.5	55.9	14.9	16.8	56.7	50.3	16.7	ND	ND	ND	64.9	31.4	58.9	42.5
Lead-210	Bq/g	0.2	0.47	0.25	0.41	0.25	ND	0.31	ND	ND	ND	0.32	ND	ND	ND	0.47	0.24	0.45	ND	ND	ND	ND
Polonium-210	Bq/g	0.12	0.38	0.13	0.38	0.23	ND	0.24	ND	ND	ND	0.29	ND	ND	ND	0.45	0.21	0.39	ND	ND	ND	ND
Radium-226	Bq/g	0.004	0.01	0.005	0.004	0.006	ND	0.004	ND	ND	ND	0.006	ND	ND	ND	0.004	0.007	0.002	ND	ND	ND	ND
Thorium-230	Bq/g	<0.004	0.006	0.006	<0.005	<0.005	ND	<0.005	ND	ND	ND	<0.005	ND	ND	ND	<0.005	<0.005	<0.005	ND	ND	ND	ND
Thorium-232	Bq/g	<0.004	<0.005	<0.005	<0.005	<0.005	ND	<0.005	ND	ND	ND	<0.005	ND	ND	ND	<0.005	<0.005	<0.005	ND	ND	ND	ND

ND = No data

Attachment F Raw Chemistry Data, Plant Tissue 2008

Parameters	Units	AREVA-KIGGAVIK SIS2-3 SEDGE	AREVA-KIGGAVIK SIS2-3 LICHEN	AREVA-KIGGAVIK SIS2-4 SEDGE	AREVA-KIGGAVIK SIS2-4 LICHEN	AREVA-KIGGAVIK SIS2-5 SEDGE	AREVA-KIGGAVIK SIS2-5 LICHEN	AREVA KIGGAVIK SIS2-2,3 SEDGE COMPOSITE	AREVA-KIGGAVIK SIS2-2,3 LICHEN COMPOSITE	AREVA KIGGAVIK SIS2-1,4,5 SEDGE COMPOSITE	AREVA-KIGGAVIK SIS2-1,5 LICHEN COMPOSITE	AREVA-KIGGAVIK SIS3-1 SEDGE	AREVA-KIGGAVIK SIS3-1 LICHEN	AREVA-KIGGAVIK SIS3-2 SEDGE	AREVA-KIGGAVIK SIS3-2 LICHEN	AREVA-KIGGAVIK SIS3-3 SEDGE	AREVA-KIGGAVIK SIS3-3 LICHEN	AREVA-KIGGAVIK SIS3-4 SEDGE	AREVA-KIGGAVIK SIS3-4 LICHEN	AREVA-KIGGAVIK SIS3-5 SEDGE	AREVA-KIGGAVIK SIS3-5 LICHEN	AREVA-KIGGAVIK SIS3-1,3 LICHEN COMPOSITE
		Sedge	Lichen	Sedge	Lichen	Sedge	Lichen	Sedge Comp	Lichen Comp	Sedge Comp	Lichen Comp	Sedge	Lichen	Sedge	Lichen	Sedge	Lichen	Sedge	Lichen	Sedge	Lichen	Lichen Comp
Aluminum	ug/g	23	55.9	16	51.9	9.7	156	ND	ND	ND	ND	22.6	89.6	47.1	48.9	96.1	52.7	46	87.6	33.2	332	ND
Antimony	ug/g	<0.020	<0.030	<0.020	<0.040	<0.020	<0.040	ND	ND	ND	ND	<0.020	<0.040	<0.020	<0.040	<0.040	<0.040	<0.020	<0.040	<0.030	<0.040	ND
Arsenic	ug/g	0.031	0.048	<0.020	0.053	0.027	0.101	ND	ND	ND	ND	<0.020	0.102	0.06	0.052	0.085	0.054	0.035	0.077	<0.030	0.189	ND
Barium	ug/g	16.3	42.4	31.4	31.7	23.2	30.1	ND	ND	ND	ND	24.4	20.6	25.2	22.5	51.9	22.5	16.8	31.1	26.2	38.3	ND
Beryllium	ug/g	<0.20	<0.30	<0.20	<0.40	<0.20	<0.40	ND	ND	ND	ND	<0.20	<0.40	<0.20	<0.40	<0.40	<0.40	<0.20	<0.40	<0.30	<0.40	ND
Cadmium	ug/g	0.015	0.079	0.014	0.087	0.014	0.074	ND	ND	ND	ND	0.095	0.111	0.032	0.116	0.073	0.098	0.017	0.073	0.058	0.129	ND
Chromium	ug/g	<0.20	0.46	<0.20	0.41	<0.20	1.06	ND	ND	ND	ND	<0.20	0.45	0.26	<0.40	1.28	<0.40	2.05	0.73	<0.30	3.8	ND
Cobalt	ug/g	0.07	0.118	<0.040	<0.080	0.528	0.134	ND	ND	ND	ND	<0.040	<0.080	0.052	<0.080	0.272	<0.080	0.07	<0.080	<0.060	0.318	ND
Copper	ug/g	1.7	1.66	1.71	0.955	1.41	1.61	ND	ND	ND	ND	1.97	1.54	2.57	1.13	4.27	1.25	2.24	1.52	2.41	1.83	ND
Lead	ug/g	<0.040	0.264	0.042	0.31	<0.040	0.448	ND	ND	ND	ND	0.091	0.375	0.104	0.347	0.193	0.41	0.094	0.545	0.121	1.66	ND
Manganese	ug/g	91.5	271	62.3	35.6	453	233	ND	ND	ND	ND	104	91.7	97.6	57.1	284	184	78.9	59.6	50.2	136	ND
Mercury	ug/g	0.0057	0.047	0.005	0.0267	0.0056	0.0526	ND	ND	ND	ND	0.0111	0.0518	0.0069	0.0314	0.0152	0.0353	0.0067	0.0485	0.0134	0.0776	ND
Molybdenum	ug/g	0.254	0.044	0.153	0.062	0.495	0.053	ND	ND	ND	ND	0.108	0.05	0.414	0.048	0.47	<0.040	0.167	0.115	0.159	0.085	ND
Nickel	ug/g	0.61	0.94	0.44	0.41	0.59	0.91	ND	ND	ND	ND	0.61	0.63	0.87	<0.40	2.56	0.59	1.21	0.6	0.65	2.32	ND
Selenium	ug/g	<0.40	<0.60	<0.40	<0.80	<0.40	<0.80	ND	ND	ND	ND	<0.40	<0.80	<0.40	<0.80	<0.80	<0.80	<0.40	<0.80	<0.60	<0.80	ND
Strontium	ug/g	2.5	7.99	5.31	11.8	3.34	7.93	ND	ND	ND	ND	7.75	8.5	5.4	10.2	12	7.42	3.96	11.7	9.63	17.3	ND
Thallium	ug/g	<0.020	<0.030	<0.020	<0.040	<0.020	<0.040	ND	ND	ND	ND	<0.020	<0.040	<0.020	<0.040	<0.040	<0.040	<0.020	<0.040	<0.030	<0.040	ND
Tin	ug/g	<0.10	<0.15	<0.10	<0.20	<0.10	<0.20	ND	ND	ND	ND	<0.10	<0.20	<0.10	<0.20	<0.20	<0.20	<0.10	<0.20	<0.15	<0.20	ND
Uranium	ug/g	0.0052	0.0065	<0.0040	<0.0080	<0.0040	0.0155	ND	ND	ND	ND	<0.0040	0.0127	0.617	0.0098	0.0377	0.0095	0.0053	0.0118	0.0144	0.034	ND
Vanadium	ug/g	<0.20	<0.30	<0.20	<0.40	<0.20	<0.40	ND	ND	ND	ND	<0.20	<0.40	<0.20	<0.40	<0.40	<0.40	<0.20	<0.40	<0.30	0.74	ND
Zinc	ug/g	11.7	33.1	10.1	17.7	15.9	35.9	ND	ND	ND	ND	18.9	24.4	18.4	29.7	24	26.7	10.8	22.3	18.2	23.8	ND
Bismuth	ug/g	<0.060	<0.090	<0.060	<0.12	<0.060	<0.12	ND	ND	ND	ND	<0.060	<0.12	<0.060	<0.12	<0.12	<0.12	<0.060	<0.12	<0.090	<0.12	ND
Calcium	ug/g	857	4140	1870	5380	936	2960	ND	ND	ND	ND	2570	3640	1880	4910	3320	3290	1170	4810	3000	3700	ND
Lithium	ug/g	<0.20	<0.30	<0.20	<0.40	<0.20	<0.40	ND	ND	ND	ND	<0.20	<0.40	<0.20	<0.40	<0.40	<0.40	<0.20	<0.40	<0.30	<0.40	ND
Magnesium	ug/g	420	576	370	516	392	480	ND	ND	ND	ND	495	524	428	476	696	442	357	487	586	530	ND
Moisture	%	63.7	21	58.4	17.6	61.3	22.4	ND	ND	ND	ND	54.9	15.6	49.7	14.6	27.4	15.4	61.2	14	42.2	13.9	ND
Lead-210	Bq/g	ND	ND	ND	0.38	ND	ND	0.095	0.4	0.12	0.35	ND	ND	ND	ND	0.031	ND	ND	ND	ND	0.54	0.4
Polonium-210	Bq/g	ND	ND	ND	0.38	ND	ND	0.086	0.38	0.11	0.29	ND	ND	ND	ND	0.027	ND	ND	ND	ND	0.48	0.41
Radium-226	Bq/g	ND	ND	ND	0.002	ND	ND	0.002	0.002	0.004	0.002	ND	ND	ND	ND	0.007	ND	ND	ND	ND	0.005	0.004
Thorium-230	Bq/g	ND	ND	ND	<0.005	ND	ND	0.006	<0.005	<0.004	<0.005	ND	ND	ND	ND	0.01	ND	ND	ND	ND	<0.005	<0.005
Thorium-232	Bq/g	ND	ND	ND	<0.005	ND	ND	<0.005	<0.005	<0.004	<0.005	ND	ND	ND	ND	0.01	ND	ND	ND	ND	<0.005	<0.005

ND = No data

Attachment F Raw Chemistry Data, Plant Tissue 2008

Parameters	Units	AREVA-KIGGAVIK SIS3-2,4 LICHEN COMPOSITE	AREVA KIGGAVIK SIS3-1,2,4,5 SEDGE COMPOSITE	AREVA-KIGGAVIK KIG1-1 SEDGE	AREVA-KIGGAVIK KIG1-1 LICHEN	AREVA-KIGGAVIK KIG1-2 SEDGE	AREVA-KIGGAVIK KIG1-2 LICHEN	AREVA-KIGGAVIK KIG1-3 SEDGE	AREVA-KIGGAVIK KIG1-3 LICHEN	AREVA-KIGGAVIK KIG1-4 SEDGE	AREVA-KIGGAVIK KIG1-4 LICHEN	AREVA-KIGGAVIK KIG1-5 SEDGE	AREVA-KIGGAVIK KIG1-5 LICHEN	AREVA-KIGGAVIK KIG1-1,2 LICHEN COMPOSITE	AREVA KIGGAVIK KIG1-1,2,4 SEDGE COMPOSITE	AREVA KIGGAVIK KIG1-3,5 SEDGE COMPOSITE	AREVA-KIGGAVIK KIG1-3,5 LICHEN COMPOSITE	AREVA-KIGGAVIK KIG2-1 SEDGE	AREVA-KIGGAVIK KIG2-1 LICHEN	AREVA-KIGGAVIK KIG2-2 SEDGE	AREVA-KIGGAVIK KIG2-2 LICHEN	AREVA-KIGGAVIK KIG2-3 SEDGE
		Lichen Comp	Sedge Comp	Sedge	Lichen	Sedge	Lichen	Sedge	Lichen	Sedge	Lichen	Sedge	Lichen	Lichen Comp	Sedge Comp	Sedge Comp	Lichen Comp	Sedge	Lichen	Sedge	Lichen	Sedge
Aluminum	ug/g	ND	ND	27.8	65.5	27.8	80.5	48.7	91.7	45.1	155	31.7	63.5	ND	ND	ND	ND	109	77	21.9	1270	14.4
Antimony	ug/g	ND	ND	<0.020	<0.040	<0.020	<0.040	<0.020	<0.040	<0.020	<0.040	<0.030	<0.040	ND	ND	ND	ND	<0.020	<0.040	<0.020	<0.040	<0.020
Arsenic	ug/g	ND	ND	<0.020	0.058	0.021	0.065	0.044	0.066	0.033	0.133	0.142	0.056	ND	ND	ND	ND	0.062	0.065	0.029	0.147	<0.020
Barium	ug/g	ND	ND	46.2	41.7	41.7	57.6	49.1	64.3	48.1	72.3	48.7	88.9	ND	ND	ND	ND	48.3	93	21.9	46.8	30.7
Beryllium	ug/g	ND	ND	<0.20	<0.40	<0.20	<0.40	<0.20	<0.40	<0.20	<0.40	<0.30	<0.40	ND	ND	ND	ND	<0.20	<0.40	<0.20	<0.40	<0.20
Cadmium	ug/g	ND	ND	0.042	0.18	0.038	0.253	0.034	0.124	0.017	0.124	0.027	0.147	ND	ND	ND	ND	0.027	0.159	0.019	0.088	0.027
Chromium	ug/g	ND	ND	<0.20	0.51	0.67	0.64	0.69	0.57	0.26	0.67	0.36	0.6	ND	ND	ND	ND	0.32	0.71	<0.20	2.17	<0.20
Cobalt	ug/g	ND	ND	0.075	<0.080	0.052	<0.080	0.142	0.13	0.369	0.539	0.102	<0.080	ND	ND	ND	ND	0.28	0.124	0.106	0.398	<0.040
Copper	ug/g	ND	ND	2.98	1.71	2.2	2.36	3.62	1.77	1.87	1.95	2.55	1.65	ND	ND	ND	ND	1.87	2.08	1.7	1.54	1.09
Lead	ug/g	ND	ND	0.211	0.471	0.143	0.776	0.379	1.01	0.105	0.627	0.106	0.55	ND	ND	ND	ND	0.127	0.727	0.063	1.17	0.089
Manganese	ug/g	ND	ND	105	256	113	214	187	179	75.9	287	188	164	ND	ND	ND	ND	91.6	167	63.3	97.3	64.7
Mercury	ug/g	ND	ND	0.008	0.0295	0.0067	0.0307	0.011	0.0311	0.004	0.0345	0.0058	0.0243	ND	ND	ND	ND	0.0044	0.0268	0.0037	0.0508	0.0039
Molybdenum	ug/g	ND	ND	0.135	<0.040	0.384	0.075	0.265	0.076	0.105	<0.040	0.16	0.059	ND	ND	ND	ND	0.11	0.078	0.176	0.069	0.343
Nickel	ug/g	ND	ND	0.92	0.71	0.92	0.85	1.04	0.66	1.14	1.35	1.09	0.72	ND	ND	ND	ND	1.07	0.96	0.54	1.46	0.36
Selenium	ug/g	ND	ND	<0.40	<0.80	<0.40	<0.80	<0.40	<0.80	<0.40	<0.80	<0.60	<0.80	ND	ND	ND	ND	<0.40	<0.80	<0.40	<0.80	<0.40
Strontium	ug/g	ND	ND	8.69	11.3	9.42	18.7	10.2	16.8	7.75	10.8	8.1	24.1	ND	ND	ND	ND	7.46	21.5	4.86	12.8	6.63
Thallium	ug/g	ND	ND	<0.020	<0.040	<0.020	<0.040	<0.020	<0.040	<0.020	<0.040	<0.030	<0.040	ND	ND	ND	ND	<0.020	<0.040	<0.020	<0.040	<0.020
Tin	ug/g	ND	ND	<0.10	<0.20	<0.10	<0.20	<0.10	<0.20	<0.10	<0.20	<0.15	<0.20	ND	ND	ND	ND	<0.10	<0.20	<0.10	<0.20	<0.10
Uranium	ug/g	ND	ND	0.0114	0.008	0.0047	0.0134	0.0211	0.0259	0.0966	0.0269	0.0156	0.0136	ND	ND	ND	ND	0.0776	0.0287	0.0072	0.0734	0.0358
Vanadium	ug/g	ND	ND	<0.20	<0.40	<0.20	<0.40	<0.20	<0.40	<0.20	<0.40	<0.30	<0.40	ND	ND	ND	ND	<0.20	<0.40	<0.20	1.9	<0.20
Zinc	ug/g	ND	ND	21.3	38.6	11.9	35.8	19	31.7	6.89	28.9	16.8	28.8	ND	ND	ND	ND	14.3	40.4	10.3	20.1	9.42
Bismuth	ug/g	ND	ND	<0.060	<0.12	<0.060	<0.12	<0.060	<0.12	<0.060	<0.12	<0.090	<0.12	ND	ND	ND	ND	<0.060	<0.12	<0.060	<0.12	<0.060
Calcium	ug/g	ND	ND	1250	2780	1590	4980	1470	3360	1050	1700	1290	5050	ND	ND	ND	ND	1120	4740	1080	2910	1520
Lithium	ug/g	ND	ND	<0.20	<0.40	<0.20	<0.40	<0.20	<0.40	<0.20	<0.40	<0.30	<0.40	ND	ND	ND	ND	<0.20	<0.40	<0.20	4.34	<0.20
Magnesium	ug/g	ND	ND	355	426	393	552	447	464	349	399	396	550	ND	ND	ND	ND	320	607	405	1080	445
Moisture	%	ND	ND	56.2	13.2	55.6	13.2	47.4	13.2	65.6	9.98	46.7	15.4	ND	ND	ND	ND	62.2	13.2	56.5	11	59.4
Lead-210	Bq/g	0.42	0.16	ND	ND	ND	ND	ND	ND	ND	0.35	ND	ND	0.52	0.15	0.16	0.5	ND	0.52	ND	0.51	ND
Polonium-210	Bq/g	0.4	0.1	ND	ND	ND	ND	ND	ND	ND	0.36	ND	ND	0.45	0.15	0.15	0.49	ND	0.38	ND	0.45	ND
Radium-226	Bq/g	0.003	0.003	ND	ND	ND	ND	ND	ND	ND	0.002	ND	ND	0.002	0.004	0.004	0.003	ND	0.002	ND	0.003	ND
Thorium-230	Bq/g	<0.005	<0.005	ND	ND	ND	ND	ND	ND	ND	<0.005	ND	ND	<0.005	<0.005	0.005	<0.005	ND	<0.005	ND	<0.005	ND
Thorium-232	Bq/g	<0.005	<0.005	ND	ND	ND	ND	ND	ND	ND	<0.005	ND	ND	<0.005	<0.005	<0.005	<0.005	ND	<0.005	ND	<0.005	ND

ND = No data

Attachment F Raw Chemistry Data, Plant Tissue 2008

Parameters	Units	AREVA-KIGGAVIK KIG2-3 LICHEN	AREVA-KIGGAVIK KIG2-4 SEDGE	AREVA-KIGGAVIK KIG2-4 LICHEN	AREVA-KIGGAVIK KIG2-5 SEDGE	AREVA-KIGGAVIK KIG2-5 LICHEN	AREVA KIGGAVIK KIG2-2,4 SEDGE COMPOSITE	AREVA KIGGAVIK KIG2-1,3,5 SEDGE COMPOSITE	AREVA-KIGGAVIK KIG2-3,5 LICHEN COMPOSITE	AREVA-KIGGAVIK KIG4-1 SEDGE	AREVA-KIGGAVIK KIG4-1 LICHEN	AREVA-KIGGAVIK KIG4-2 SEDGE	AREVA-KIGGAVIK KIG4-2 LICHEN	AREVA-KIGGAVIK KIG4-3 SEDGE	AREVA-KIGGAVIK KIG4-3 LICHEN	AREVA-KIGGAVIK KIG4-4 SEDGE	AREVA-KIGGAVIK KIG4-4 LICHEN	AREVA-KIGGAVIK KIG4-5 SEDGE	AREVA-KIGGAVIK KIG4-5 LICHEN	AREVA-KIGGAVIK KIG4-1,2 LICHEN COMPOSITE	AREVA KIGGAVIK KIG4-2,4 SEDGE COMPOSITE	AREVA KIGGAVIK KIG4-1,3,5 SEDGE COMPOSITE
		Lichen	Sedge	Lichen	Sedge	Lichen	Sedge Comp	Sedge Comp	Lichen Comp	Sedge	Lichen	Sedge	Lichen	Sedge	Lichen	Sedge	Lichen	Sedge	Lichen	Lichen Comp	Sedge Comp	Sedge Comp
Aluminum	ug/g	101	16	106	839	287	ND	ND	ND	97.3	128	30.3	76	142	1640	132	107	46.4	141	ND	ND	ND
Antimony	ug/g	<0.040	<0.020	<0.040	<0.020	<0.040	ND	ND	ND	<0.020	<0.040	<0.020	<0.040	<0.020	<0.030	<0.020	<0.040	<0.030	<0.040	ND	ND	ND
Arsenic	ug/g	0.086	<0.020	0.113	0.51	0.181	ND	ND	ND	0.06	0.091	0.044	0.064	0.054	0.405	0.132	0.069	0.031	0.109	ND	ND	ND
Barium	ug/g	63.8	21.2	51.7	66.7	243	ND	ND	ND	16.5	48.7	8.97	25.8	16.3	50.5	8.51	32.2	37.3	42.6	ND	ND	ND
Beryllium	ug/g	<0.40	<0.20	<0.40	<0.20	<0.40	ND	ND	ND	<0.20	<0.40	<0.20	<0.40	<0.20	<0.30	<0.20	<0.40	<0.30	<0.40	ND	ND	ND
Cadmium	ug/g	0.219	0.022	0.124	0.053	0.296	ND	ND	ND	0.03	0.088	<0.010	0.154	0.029	0.123	0.018	0.089	0.034	0.136	ND	ND	ND
Chromium	ug/g	0.81	0.26	0.74	22.8	1.45	ND	ND	ND	7.24	1.45	<0.20	0.86	1.01	13.8	0.38	0.94	0.64	0.82	ND	ND	ND
Cobalt	ug/g	0.087	0.047	0.094	0.868	1.03	ND	ND	ND	0.217	0.323	0.101	0.092	0.559	3.84	0.311	0.184	0.062	0.204	ND	ND	ND
Copper	ug/g	2.64	1.54	1.9	3.52	3.91	ND	ND	ND	3.35	1.75	1.43	2.11	2.83	4.07	2.41	1.8	2.41	2.4	ND	ND	ND
Lead	ug/g	0.852	0.052	0.433	0.947	1.79	ND	ND	ND	0.184	0.788	<0.040	0.521	0.59	6.96	0.185	0.71	0.148	0.991	ND	ND	ND
Manganese	ug/g	143	136	124	176	293	ND	ND	ND	221	223	69.2	175	167	185	39.9	358	53.2	156	ND	ND	ND
Mercury	ug/g	0.0324	0.0042	0.0356	0.002	0.0581	ND	ND	ND	0.004	0.0413	0.0036	0.0395	0.0031	0.0588	0.0053	0.041	0.0132	0.0532	ND	ND	ND
Molybdenum	ug/g	0.101	0.151	0.071	0.443	0.181	ND	ND	ND	0.384	0.245	0.628	0.318	1.45	1.27	2.85	0.389	0.501	0.209	ND	ND	ND
Nickel	ug/g	0.89	0.56	0.99	12.5	2.87	ND	ND	ND	3.92	1.16	0.41	0.99	1.51	7.72	0.55	1.02	1.05	0.84	ND	ND	ND
Selenium	ug/g	<0.80	<0.40	<0.80	<0.40	<0.80	ND	ND	ND	<0.40	<0.80	<0.40	<0.80	<0.40	<0.60	<0.40	<0.80	<0.60	<0.80	ND	ND	ND
Strontium	ug/g	22.2	5.29	17.3	14.2	44.5	ND	ND	ND	5.08	16.3	3.71	11.3	8.27	20	3.41	7.08	17.3	19	ND	ND	ND
Thallium	ug/g	<0.040	<0.020	<0.040	<0.020	<0.040	ND	ND	ND	<0.020	<0.040	<0.020	<0.040	<0.020	0.069	<0.020	<0.040	<0.030	<0.040	ND	ND	ND
Tin	ug/g	<0.20	<0.10	<0.20	<0.10	<0.20	ND	ND	ND	<0.10	<0.20	<0.10	<0.20	<0.10	<0.15	<0.10	<0.20	<0.15	<0.20	ND	ND	ND
Uranium	ug/g	0.0297	0.154	0.0238	0.0858	0.16	ND	ND	ND	0.129	0.3	0.0566	0.0935	13.9	18.1	8.14	0.349	0.044	0.336	ND	ND	ND
Vanadium	ug/g	<0.40	<0.20	<0.40	1.73	0.55	ND	ND	ND	0.25	<0.40	<0.20	<0.40	0.53	4.67	0.32	<0.40	<0.30	<0.40	ND	ND	ND
Zinc	ug/g	30.5	8.55	30.8	14	47.3	ND	ND	ND	10.5	23.6	14.2	31.2	10.4	23.7	15.3	34.8	11.9	27.2	ND	ND	ND
Bismuth	ug/g	<0.12	<0.060	<0.12	<0.060	<0.12	ND	ND	ND	<0.060	<0.12	<0.060	<0.12	<0.060	0.726	<0.060	<0.12	<0.090	<0.12	ND	ND	ND
Calcium	ug/g	6520	1180	4430	1310	10700	ND	ND	ND	542	2960	789	3310	1110	2900	721	1990	2870	3690	ND	ND	ND
Lithium	ug/g	<0.40	<0.20	<0.40	0.89	<0.40	ND	ND	ND	<0.20	<0.40	<0.20	<0.40	0.24	1.58	<0.20	<0.40	<0.30	<0.40	ND	ND	ND
Magnesium	ug/g	719	500	627	568	789	ND	ND	ND	237	419	310	527	375	749	310	393	652	638	ND	ND	ND
Moisture	%	14.2	53	12.6	54.7	11.5	ND	ND	ND	65.2	16.6	68.2	13.5	60	14.3	64.1	15.6	41.2	13.2	ND	ND	ND
Lead-210	Bq/g	ND	ND	0.4	ND	ND	0.082	0.12	0.55	ND	ND	ND	ND	ND	0.64	ND	ND	ND	ND	0.46	0.056	0.32
Polonium-210	Bq/g	ND	ND	0.35	ND	ND	0.076	0.12	0.56	ND	ND	ND	ND	ND	0.58	ND	ND	ND	ND	0.41	0.039	0.29
Radium-226	Bq/g	ND	ND	0.002	ND	ND	0.002	0.002	0.01	ND	ND	ND	ND	ND	0.18	ND	ND	ND	ND	0.012	0.015	0.26
Thorium-230	Bq/g	ND	ND	<0.005	ND	ND	<0.005	0.006	<0.005	ND	ND	ND	ND	ND	0.24	ND	ND	ND	ND	<0.005	0.01	0.12
Thorium-232	Bq/g	ND	ND	<0.005	ND	ND	<0.005	<0.005	<0.005	ND	ND	ND	ND	ND	<0.005	ND	ND	ND	ND	<0.005	<0.005	<0.005

ND = No data

Parameters	Units	AREVA-KIGGAVIK KIG4-4,5 LICHEN COMPOSITE	AREVA-KIGGAVIK KIG5-1 SEDGE	AREVA-KIGGAVIK KIG5-1 LICHEN	AREVA-KIGGAVIK KIG5-2 SEDGE	AREVA-KIGGAVIK KIG5-2 LICHEN	AREVA-KIGGAVIK KIG5-3 SEDGE	AREVA-KIGGAVIK KIG5-3 LICHEN	AREVA-KIGGAVIK KIG5-4 SEDGE	AREVA-KIGGAVIK KIG5-4 LICHEN	AREVA-KIGGAVIK KIG5-5 SEDGE	AREVA-KIGGAVIK KIG5-5 LICHEN	AREVA KIGGAVIK KIG5-2,4 SEDGE COMPOSITE	AREVA-KIGGAVIK KIG5-2,4 LICHEN COMPOSITE	AREVA KIGGAVIK KIG5-1,3,5 SEDGE COMPOSITE	AREVA-KIGGAVIK KIG5-1,5 LICHEN COMPOSITE
		Lichen Comp	Sedge	Lichen	Sedge	Lichen	Sedge	Lichen	Sedge	Lichen	Sedge	Lichen	Sedge Comp	Lichen Comp	Sedge Comp	Lichen Comp
Aluminum	ug/g	ND	61.3	25	36.3	72.3	31.5	135	107	79.5	35.2	106	ND	ND	ND	ND
Antimony	ug/g	ND	<0.030	<0.020	<0.030	<0.040	<0.030	<0.030	<0.020	<0.030	<0.020	<0.040	ND	ND	ND	ND
Arsenic	ug/g	ND	0.067	0.039	<0.030	0.071	0.044	0.098	0.074	0.109	0.257	0.115	ND	ND	ND	ND
Barium	ug/g	ND	40.2	10.1	43.7	32.9	52.6	38.4	54.4	39.1	41.7	38.2	ND	ND	ND	ND
Beryllium	ug/g	ND	<0.30	<0.20	<0.30	<0.40	<0.30	<0.30	<0.20	<0.30	<0.20	<0.40	ND	ND	ND	ND
Cadmium	ug/g	ND	0.071	0.101	0.041	0.173	0.025	0.178	0.05	0.143	0.023	0.143	ND	ND	ND	ND
Chromium	ug/g	ND	0.74	0.29	<0.30	0.58	<0.30	0.54	0.46	1	0.23	0.78	ND	ND	ND	ND
Cobalt	ug/g	ND	0.171	0.05	0.088	<0.080	0.093	0.103	0.512	0.061	0.363	<0.080	ND	ND	ND	ND
Copper	ug/g	ND	3.44	0.6	2.05	1.3	2.38	1.42	2.58	1.37	1.97	1.28	ND	ND	ND	ND
Lead	ug/g	ND	0.186	0.141	0.081	0.298	0.072	0.347	0.123	0.354	0.072	0.465	ND	ND	ND	ND
Manganese	ug/g	ND	169	35.8	120	35.1	116	88.1	173	46.9	100	109	ND	ND	ND	ND
Mercury	ug/g	ND	0.0137	0.0111	0.0085	0.0276	0.0075	0.0272	0.0097	0.0292	0.0058	0.026	ND	ND	ND	ND
Molybdenum	ug/g	ND	0.351	0.025	0.25	0.071	0.397	0.079	0.198	0.082	0.231	0.066	ND	ND	ND	ND
Nickel	ug/g	ND	1.99	0.32	0.91	0.65	1.44	0.83	1.26	0.75	0.69	0.63	ND	ND	ND	ND
Selenium	ug/g	ND	<0.60	<0.40	<0.60	<0.80	<0.60	<0.60	<0.40	<0.60	<0.40	<0.80	ND	ND	ND	ND
Strontium	ug/g	ND	7.82	4.17	7.54	13.1	7.73	12.4	7.79	13.1	6.92	12.2	ND	ND	ND	ND
Thallium	ug/g	ND	<0.030	<0.020	<0.030	<0.040	<0.030	<0.030	<0.020	<0.030	<0.020	<0.040	ND	ND	ND	ND
Tin	ug/g	ND	<0.15	<0.10	<0.15	<0.20	<0.15	<0.15	<0.10	<0.15	<0.10	<0.20	ND	ND	ND	ND
Uranium	ug/g	ND	0.0174	0.0055	0.0105	0.0126	0.0109	0.0269	0.0307	0.0657	0.0094	0.0117	ND	ND	ND	ND
Vanadium	ug/g	ND	<0.30	<0.20	<0.30	<0.40	<0.30	<0.30	<0.20	<0.30	<0.20	<0.40	ND	ND	ND	ND
Zinc	ug/g	ND	16.3	10.9	13.4	22.9	12.8	22.9	9.61	21.8	8.65	26.1	ND	ND	ND	ND
Bismuth	ug/g	ND	<0.090	<0.060	<0.090	<0.12	<0.090	<0.090	<0.060	<0.090	<0.060	<0.12	ND	ND	ND	ND
Calcium	ug/g	ND	2110	1740	2090	5440	2210	5000	2040	4790	1920	4330	ND	ND	ND	ND
Lithium	ug/g	ND	<0.30	<0.20	<0.30	<0.40	<0.30	<0.30	<0.20	<0.30	<0.20	<0.40	ND	ND	ND	ND
Magnesium	ug/g	ND	469	212	479	550	578	554	545	623	497	549	ND	ND	ND	ND
Moisture	%	ND	51	29.3	48.9	27.9	46.5	27.6	50.6	24	59.5	19.2	ND	ND	ND	ND
Lead-210	Bq/g	0.44	ND	ND	ND	ND	ND	0.41	ND	ND	ND	ND	0.18	0.44	0.18	0.4
Polonium-210	Bq/g	0.4	ND	ND	ND	ND	ND	0.35	ND	ND	ND	ND	0.12	0.41	0.12	0.39
Radium-226	Bq/g	0.018	ND	ND	ND	ND	ND	0.002	ND	ND	ND	ND	0.002	0.002	0.004	<0.001
Thorium-230	Bq/g	<0.005	ND	ND	ND	ND	ND	<0.005	ND	ND	ND	ND	<0.005	<0.005	<0.005	<0.005
Thorium-232	Bq/g	<0.005	ND	ND	ND	ND	ND	<0.005	ND	ND	ND	ND	<0.005	<0.005	<0.005	<0.005

ND = No data

Attachment G Ecological Land Classification Survey Plot Data – Soils

File: VSBR/Attachment G Soils Summary

Attachment D Ecological Land Classification Survey Plot Data - Soils

						Grade				Class Size					Kind								Consistence			Coarse Fragment					Shape		Mottles						Roots							
Date	Plot Number	Photos	Class	Horizon	Depth	weak	moderate	strong	none	very fine	fine	medium	coarse	very coarse	subangular blocky	angular blocky	granular	massive	single grained	columnar	prismatic	platy	dry	moist	wet	pebble	gravel	cobble	boulder	total	Round	Angular	few	common	many	fine	medium	coarse	few	common	many	fine	medium	coarse	restricting	Texture	Comments
6-Aug-09	13D	5964 + 5965	BR.TC (FROZEN)	LFH	3-0																																		X		X					
				Ahg	1-6																					10	20	30		60		X							X		X				SCL	
				Bgy	6-15																					10	20	30		60		X						X			X			10	SCL	
				BmyZ	15-30+																					15	20			35		X													SCL	Churned soil with frozen Bm - Till throughout
6-Aug-09	15C	5961	BR.SC	Of	1-3																																		X		X					
				Oh	3-6																																		X		X					
				Ah	6-10																						2			2		X	X			X				X		X				SL	
				Bg	10-29																												X			X				X		X			20	SL	
				Bn	29-46+																																										SL	Organic over very sandy soil with water filling in at 37cm
23-Jul-09	17B	1014911	GL.SC	LFH	3-0																																										
				Ag	0-7																																										
				Bgz	7-21																																										
				Cgz	21+																				PLIABLE	3	5			8		X			X			X			X		X			6	SILT CLAY LOAM	GLEYED FROZEN SOIL
21-Jul-09	24C	4806 + 4807	BR.SC	LFH	0-2.5																																										
				Ah	2.5-4.5																																										
				Bm	4.5-7.5																																										
				BCg	7.5-30									X										FIRM		X	X	X		10															4	L5	
22-Jul-09	27D	1014846	BR.SC	LFH	2-0																																										
				Ah	0-3																																										
				Bm	3-20																																										
				bc	20-50+		X							X				X						FIRM																					7	LOAMY SAND	VERY RED WELL DRAINED SOIL WITH MOTTLES - WATER SEEPING IN AT 50CM
22-Jul-09	28C	1014849	BR.TC (FROZEN)	LFH	5-0																																									
				Ah	0-8																																										
				BCgZ	8-37+																			X		5	5			10			X			X				X		X			6	SCL	FROZEN - SILTY - CLAY - CLAY/LOAM SOIL WITH LELTING OCCURING AT 10CM ON EXPOSED PROFILE
22-Jul-09	29A	1014842 + 843	BR.TC	Of	0-5																																									
				Om	5-9(30)																																										
				Bmy	9-40														X						X	30	30			60				X		X										LOAMY	CHURNED SOILS WITH WATER SEEPING IN AT 40CM
22-Jul-09	30D	4839	BR.SC	LFH	2-0																																									
				Aeh	0-4																																				X			X		5		
				Bm	4-29																					5	15			20																	
				BCx	29+																																										Very red with frozen clumps - appears to have abundanat silt and clay - frozen throughout
22-Jul-09	32C	1014836	BR.SC	LFH	3-0																																									
				Ah	0-4																																										
				Bm	4-17																																										FINE LOAMY SAND	
				BCg	17-46+		X							X									FIRM			3	5			8					X									6	FIND LOAMY SAND	WELL DRAINED WITH MOTTLES - VERY SIMILAR TO 33D
22-Jul-09	33D	1014833	BR.SC	LFH	4-0																																									
				Ah	0-3																																										
				Bm	3-27																																										FINE LOAMY SAND	
				Bcd	27-40+		X							X									FIRM			4	5			10					X									5	FINE LOAMY SAND	
22-Jul-09	34D	1014855	BR.SC (FROZEN)	LFH	2-0																																									
				Ah	0-6																																										
				Bmgz	6-17																																										
				Cz	17-36																					2	8			10					X			X		X			X			7	LOAMY SAND	FINER TEXTURED SOIL WITH SOME LARGE FROZEN MOTTLES AT 10CM
	35B	1014861	BR.TC	LFH	9-0																																									
				Ahy	2-9																																										
				Bmy	9-23		X																	FIRM			1	7	2		10				X			X			X		X				SANDY-CLAY LOAM	VERY SIMILAR TO 39C - C LAYER IS FROZEN - CHURNED SOILS
				Cy	23+																																										
22-Jul-09	37E	1014852	O.TC	LFH	6-0																																									
				Ahy	0-7																																										
				Bmy	7-16																																										
				Cy	16-36+																			FIRM			5	20	10		35	X	X	X			X			X		X				SANDY LOAM	-GLACIAL TILL WITH ABUNDANT CHURNING - LFH DIPS TO 14CM IN SOME SPOTS - UNSORTED ANGULAR AND ROUND GRAVEL AND COBBLES THROUGH OUT - WELL DRAINED.
21-Jul-09	38G	1014821 + 4822	O.TC	Ahy	0-4		X					X			X																													LOAMY SAND	
				Aejy	4-8																																										
				Bmjy	8-12																																										FINE LOAMY SAND	
				Cy	12-33+																					9	5	1	5	20																FOAMY SAND	SOILS CHURNED AND MIXED = CRYOTURBULATION
22-Jul-09	39C	1014858	BR.TC	LFH	3-0																																									
				Ahy	0-9																																										
				Bgy	9-33																																										
				BCy	33+																					3	5	5	2	15	X	X	X			X			X		X			10	SANDY CLAY LOAM	CHURNED SOIL WITH C HORIZON PREDOMINANTLY CLAY - ROOTING LAYER VARIES
23-Jul-09	40B	1014908	BR.SC (FROZEN)	LFH	4-0																																									
				Aeg	0-8																																										
				Bgz	8-26		X																			3	5			8	X		X				X		X				X		5CM	SANDY CLAY LOAM	
				BCz	26+																																										FROZEN SOIL WITH GLAYING/MOTTLES THROUGHOUT - FAIRLY WELL DRAINED

Attachment D Ecological Land Classification Survey Plot Data - Soils

						Grade				Class Size					Kind								Consistence			Coarse Fragment					Shape		Mottles						Roots								
Date	Plot Number	Photos	Class	Horizon	Depth	weak	moderate	strong	none	very fine	fine	medium	coarse	very coarse	subangular blocky	angular blocky	granular	massive	single grained	columnar	prismatic	platy	dry	moist	wet	pebble	gravel	cobble	boulder	total	Round	Angular	few	common	many	fine	medium	coarse	few	common	many	fine	medium	coarse	restricting	Texture	Comments
23-Jul-09	41C	1014900 + 901	O.TC	LFH	0-3																																									
				Ah	0-6																																									
				Bmz																				FIRM		2	2			4	X		X			X				X		X			9	SANDY CLAY LOAM	
				BCz	15-43+		X							X					X																										REDDISH SOIL WITH FROZEN SPOTS THROUGHOUT AND SOME MOTTLING
23-Jul-09	42D	1014897	R.SC	LFH	5-0																																								
				Ag	0-5																																									
				C	5-25+																					30	20	2		52		X									X		X			LOAMY SAND	GLACIAL TILL - LTD SOIL DEVELOPMENT - MOSTLY GRAVELS AND COBBLES - WELL DRAINED
24-Jul-09	43C	1014945 + 946	BR.SC	LFH	4-0																																								
				Ah	1-9																					1	1			2	X									X		X				
				Bh	9-24																					1	3			4		X	X			X			X			X		10	SANDY CLAY LOAM	
				Bf	24-34																						X					X	X			X								SCL	FROZEN SOILS WITH VERY FEW COARSE FRAGS
26-Jul-09	ML-01	1014987-88	GL.SC	Of	0-3																														X	X										
				Oh	3-7																																			X		X				
				Bg	7-29																																			X		X			SILTY LOAM	
				Cz	29+																																									VERY FIBEROUS - STRONG ODOR OF DECOMPOSITION - C LAYER FROZEN SOLID - WATER SEEPING INTO PIT
26-Jul-09	ML-02	1014994-96	GL.TC	Of	0-9																																				X	X				
				Oh	9-14(24)																																X			X						
				Bgy	14-31																					2	15	3		20						X	X				X		X		20	SCL	
				Cyz	31+																																									TRANSITION SITE - DISTINCT LAYERING BUYT ALSO SOME CHURNING OF SOILS IN PIT - PARTIALY FROZEN
26-Jul-09	ML-03	1015005	GL.SC	LFH	5-0																																			X			X				
				Ah	1-6																					10	10			20		X			X		X			X			X				
				Bg	6-20+																																X		X			X		X				
27-Jul-09	ML-04	1015060	BR.TC	LFH	3-0																																			X			X				
				Ahy	1-6 (19)																						30			30	X			X		X								6		
				Bgy	6-25																						30			30		X		X			X								SL	
				Cy	35-36+																						1			1																SL	VERY WELL DRAINED SOIL WITH LTD MINERAL DEVELOPMENT
27-Jul-09	ML-05	1015063	BR.TC	LFH	5-0 (28)																																									
				Agy	1-7																						20			20		X		X			X			X			X				
				Bgy	7-34																						40	10	10	60		X		X					X			X		20	SL	
				ROCK	34+																																									CREST POSITION SITE WITH CHURNED SOILS + NUMEROUS ANGULAR GRAVEL (COBBLES + BOULDERS)
27-Jul-09	ML-06	1015066	GL.SC	Of	0-3																																				X	X				
				Oh	3-6																						30			30												X	X				
				Ag	6-10																						30			30				X			X				X		X				
				Bg	10-30+																						30			30				X			X				X		X		28	SiL	VERY SILTY - CLAY SOIL WITH NUMEROUS GRAVELS - MANY ROOTS
27-Jul-09	ML-07	1015069	BR.TC	LFh	3-0																																									
				Ah	0-7																						10			10				X			X				X			X				
				Bgy	7-23																						20	20		40				X			X			X			X		9	SCL	
				ROCK	23+																																									CHURNED GLACIAL TILL
27-Feb-09	ML-08	1015072	THU.OC	Of	0-4																																				X	X				
				Oh	4-20																																				X	X			20		
				C	20-30+																						15	5		20		X													SC	DOWNSLOPE OF POND - TRANSITION FROM DRY TO WET THICK ORGANIC OVER TILL
28-Jul-09	ML-09/KIG3	101581 + 582	BR.SC	MOSS	0-1																																								
				LFH	6-1																																									
				Ah	6-8																																				X		X				
				Bg	8-27																					4	10	1		15	X		X			X			X			X		10	SCL	
				Cz	27-35+																																									THICK ORGANIC LAYER OVER COMPACT MINERAL LAYER - PIT FROZEN AFTER 35cm
28-Jul-09	ML-10/KIG4	1015090	BR.TC	LFH	7-0																																						X			X				
				Ah	7-14 (27)																						2		1	3		X		X			X				X		X		14		
				Bgy	14-24																						15	5	1	21		X		X			X								SL	
				Cy	24-50+																						10	10	1	21		X	X				X								SCL	THICK ORGANIC LAYER OVER WELL DRAINED CHURNED SOILS WITH OCCASIONAL LARGE BOULDERS
28-Jul-09	ML-11/KIG2	1015093 + 5094	BR.TC (FROZEN)	LFH	4-0																																								
				Ahy	1-9 (18)																						2			2		X		X			X				X		X		18		
				Bgyz	9-33+																						5			5		X		X			X									CHURNED SOILS OVER FROZEN MINERAL LAYER, BE LAYER MELTING DURING ASSESSMENT
28-Jul-09	ML-12/KIG1	1015099 + 5100	BR.SC (FROZEN)	LFH	4-0																																			X			X				
				Ah	2-6																					1				1			X			X				X		X			SCL	
				Bmz	6-30																					1	10			11				X				X	X			X		10	SiL	
				Cz	30-36+																																									FROZEN MINERAL SOIL - MELTING DURING ANALYSIS, SIDES PUSHING IN
28-Jul-09	ML-13/SIS1	1015103	BR.TC	LFW	4-0																					1	2	1		4		X								X			X				
				Ahy	4-8 (20)																					1	2	1		4		X		X			X				X		X				
				Bgy	8-30																					10	10	10		30		X		X			X			X			X		24	SCL	
				Bmy	30-36																					1	7	2		10		X		X			X								SCL	
				Cz	36-40+																																									CHURNED WELL DRAINED MINERAL SOIL WITH FROZEN SILTY C LAYER
28-Jul-09	ML-14	1015106 + 107	BR.TC	LFH	4-0																																				X		X				
				Ahy	2-6 (14)																						1	10	50	60											X		X				
				Bmy	6-23																						1	20	50	70										X			X		14		
				ROCK	23+																																									EXTREME OCCURRENCE OF BOULDERS IN ALL LAYERS - VERY SANDY
28-Jul-09	ML-15	1015111 + 5112	TF.OC	MOSS	0-5																																								
				Of	5-11																					2	3	5	5	15		X									X		X				
				Oh	11-30																					2	3	20	40	65		X								X			X		30		

Attachment D Ecological Land Classification Survey Plot Data - Soils

						Grade				Class Size					Kind								Consistence			Coarse Fragment					Shape		Mottles						Roots							
Date	Plot Number	Photos	Class	Horizon	Depth	weak	moderate	strong	none	very fine	fine	medium	coarse	very coarse	subangular blocky	angular blocky	granular	massive	single grained	columnar	prismatic	platy	dry	moist	wet	pebble	gravel	cobble	boulder	total	Round	Angular	few	common	many	fine	medium	coarse	few	common	many	fine	medium	coarse	restricting	Texture	Comments
				ROCK	30+																																									THICK PEAT-ORGANIC LAYER IN VERY MIXED GLACIAL TILL - PIT IN DEPRESSION ONE TO NUMEROUS BOULDERS IMPEDING DIGGING
5-Aug-09	ML-16	5861 - 5862	BR.TC	MOSS	1-7																																			X	X					
				Agy	7-10																																			X			X				
				Bgy	10-40																					10	10	10		30		X	X				X			X		X			15	SL	EXTREMEMLY CHURNED SOIL WITH LARGE COBBLES - SIGNIFICANT GLEYING. VERY WELL DRAINED GLACIAL TILL
5-Aug-09	ML-17	5865	BR.SC	Of	0-2																																		X		X					
				Oh	2-4																																		X		X					
				Bm	4-40																					10	20	5	35			X		X			X		X			X			30		
				C	40+																																									ORGANIC OVER VERY SANDY MINERAL SOIL - MOTTLING THOROUGHLY. TRANSITION FROM DRY TO WET
5-Aug-09	ML-18	5875	BR.SC (FROZEN)	MOSS	0-1																																		X			X				
				LFH	3-0																																		X			X				
				Ahz	2-4																					30				30	X		X			X			X	X						
				Bgz	4-11																					30				30	X			X			X								SCL	
				Bmz	11-40+																					30				30	X			X			X								SCL	EXTREMELY FROZEN SOIL ALMOST TO SURFACE - SIGNIFICANT MOTTLING
5-Aug-09	ML-19	5878	BR.SC (FROZEN)	LFH	3-0																																									
				Ahz	2-4																					10	50			60		X	X			X			X			X					
				Bgz	4-12																					10	50			60		X	X			X			X			X		10	SCL	
				Bmz	12-32																					5	5			10			X				X								SCL	
				Cz	32-41+																					5	5			10															SCL	FROZEN SOIL WITH ANGULAR GRAVEL IN FIRST 10cm (GLACIAL TILL) - MOTTLING THROUGHOUT
	ML-20	5926 - 927	BR.SC	LFH	3-0																					5	5	50		60		X									X	X				
				Ah	2-6																					10	40			50		X		X			X			X				5	SL	
				Bgz	6-15																					10	40			50		X			X										SCL	
				Bmz	15-25																					10	40			50		X			X										SCL	
				Cz	25+																																								SCL	VENEER OF GLACIAL TILL OVER FROZEN MINERAL SOIL
6-Aug-09	ML-21	5951 + 5952	BR.TC	LFH	1-0																																				X	X					
				Aey	1-4																					5	10	5	40	60		X	X				X			X		X			SL	
				Bgy	4-30+																					5	10	5	40	60		X	X				X			X		X		10	SL	CHURNED MORAINE - VERY SANDY WITH LARGE BOULDERS - LTD SOIL DEVELOPMENT
6-Aug-09	ML-22	5955	BR.TC	LFH	4-0																																				X	X					
				Aey	2-6																					15	15	25		55				X			X			X		X			SL	
				Bmy	6-30																					15	15	25		55				X			X			X		X		20	SL	
				C	30-40+																																									SCL	CHURNED SANDY SOIL WITH FAIRLY LARGE MOTTLING
6-Aug-09	ML-23	5958	BR.SC (FROZEN)	LFH	3-0																																			X		X					
				Ahz	2-7																					10	10			20		X	X			X			X			X			SCL	
				Bmz	7-23+																					10	10			20		X	X			X			X			X		9	SCL	FROZEN MINERALIZED SOIL
21-Jul-09	Q24	1014829	BR.SC	LFH	0-2																																									
				Acj	2-3																																									
				BC	3-20+																					20	5	5		30																SANDY LOAM	Bedrock crest - ltd soil development - mainly sand-gravel+cobbles
24-Jul-09	1E	1014950	BR.SC	LFH	2-0																																									
				Ah	1-3																																									
				Bhz	3-27+																						10			10				X			X					X			3	SC	Frozen almost to surface - Large Fe Mottles
24-Jul-09	2E	1014928	TFI.OC	Of	0-5																																					X	X				
				Om	5-14																																						X	X				
				Oh	14-31																						5	2		7										X			X		30		
				C	31+																					5	10	80		90		X															
24-Jul-09	3D	1014931 + 932	GL.SC	LFH	5-0																																				X		X					
				Ah	0-7																																									
				Bgz	7-25																						5			5		X		X				X								SILTY CLAY LOAM	Frozen soil with glaying and mottling
24-Jul-09	4E	1014953	BR.SC	Of	0-3																																				X			X				
				Oh	3-9																								1	1		X									X			X		10	SCL	
				Bm	9-29																						10			10		X															
				Cz	29+																																										9cm organic layer over distinct B layer - C layer frozen
24-Jul-09	5D	1014956	H.SC	Oh	0-19																					1	1	1		3	X																
				Ah	19-23																					1	2	1		4	X									X	X	X			23		
				BgB	23-40+																					1	5	1		7	X			X			X								SCL	Thick organic over frozen mineral layer
23-Jul-09	9F	10149	O.SC	LFW	3-0																																									
				Ah	3-6																																									
				Bm	6-16																																			X		X					Very Sandy well drained soil

Attachment H Soil Raw Chemistry Data

File: VSBR/Attachment H Soil Chemistry

Parameters	Units	2007 Mine LSA											2008 Mine LSA					
		8/28/2007 SIS1S (SOIL)	8/28/2007 SIS2S (SOIL)	8/27/2007 SIS3S (SOIL)	8/27/2007 KIG1S (SOIL)	8/27/2007 KIG2S (SOIL)	8/27/2007 KIG3S (SOIL)	8/29/2007 SIS1PE (PEAT)	8/28/2007 SIS2PE (PEAT)	8/30/2007 KIG1PE (PEAT)	8/29/2007 KIG2PE (PEAT)	8/30/2007 KIG3PE (PEAT)	AREVA KIGGAVIK SIS5 #1 SOIL	AREVA KIGGAVIK SIS5 #2 SOIL	AREVA KIGGAVIK SIS5 #3 SOIL	AREVA KIGGAVIK SIS5 #4 SOIL	AREVA KIGGAVIK SIS5 #5 SOIL	AREVA-KIGGAVIK SIS5 #1-5 COMPOSITE
Mercury	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.10	0.05	0.12	0.08	0.07	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	ND
Aluminum	ug/g	7300	19700	7300	9400	11100	10300	4400	37200	22600	32000	28200	ND	ND	ND	ND	ND	ND
Antimony	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<10	<10	<10	<10	<10	ND
Arsenic	ug/g	2.9	7	2.1	5.5	4.8	4.9	1.2	3.8	2.3	3.4	3.8	<5.0	<5.0	<5.0	<5.0	<5.0	ND
Barium	ug/g	84	130	60	300	210	240	260	560	760	910	750	32	56.3	29.1	26.6	38.5	ND
Beryllium	ug/g	0.5	1	0.5	0.6	0.7	0.8	0.40	0.83	0.69	0.87	2.1	<0.50	<0.50	<0.50	<0.50	<0.50	ND
Boron	ug/g	<1	6	<1	<1	<1	<1	10	41	24	41	54	ND	ND	ND	ND	ND	ND
Cadmium	ug/g	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.31	0.76	0.81	0.89	0.48	<0.50	<0.50	<0.50	<0.50	<0.50	ND
Chromium	ug/g	9.6	44	16	25	21	25	4.6	30	24	23	31	11.2	12.9	10.7	10.6	13.7	ND
Cobalt	ug/g	3.4	8.9	2.9	5.4	4.1	6.4	1.3	4.0	2.0	3.3	2.5	2.7	3	2.6	2.2	2.8	ND
Copper	ug/g	4.8	18	6.2	16	7.7	19	11	96	96	80	42	2.7	3.7	3.1	2.9	4.5	ND
Iron	ug/g	9400	25000	10600	15800	11900	16600	8000	11700	5700	11800	9800	ND	ND	ND	ND	ND	ND
Lead	ug/g	4.8	5.4	4.8	16	7.4	8.9	0.74	8	8	13	85	<30	<30	<30	<30	<30	ND
Manganese	ug/g	110	280	100	200	140	230	11	210	150	150	70	ND	ND	ND	ND	ND	ND
Molybdenum	ug/g	0.2	0.2	0.2	0.4	0.2	6.9	0.7	0.8	1.5	1.1	2.0	<4.0	<4.0	<4.0	<4.0	<4.0	ND
Nickel	ug/g	9.7	34	9.3	17	15	16	7.4	25	19	24	25	7.3	7.6	6.1	5.5	8.3	ND
Selenium	ug/g	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.37	0.62	0.76	0.61	0.49	<2.0	<2.0	<2.0	<2.0	<2.0	ND
Silver	ug/g	<0.1	<0.1	<0.1	<0.1	0.4	<0.1	0.06	0.25	0.22	0.22	0.11	<2.0	<2.0	<2.0	<2.0	<2.0	ND
Strontium	ug/g	61	74	55	75	99	73	47	62	110	80	70	ND	ND	ND	ND	ND	ND
Thallium	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	0.38	0.28	0.34	0.25	<1.0	<1.0	<1.0	<1.0	<1.0	ND
Tin	ug/g	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	0.12	<5.0	<5.0	<5.0	<5.0	<5.0	ND
Titanium	ug/g	300	410	230	350	340	320	54	280	350	310	390	ND	ND	ND	ND	ND	ND
Uranium	ug/g	0.7	0.8	0.7	1	1	1.6	0.65	4	5	6	6	ND	ND	ND	ND	ND	ND
Vanadium	ug/g	16	47	17	25	21	24	4.3	30	20	20	40	11.7	13.2	11.6	10.5	14	ND
Zinc	ug/g	14	35	16	38	21	26	6.2	50	25	35	19	8.6	9.4	8.2	7.8	10.6	ND
Moisture	%	16.03	14.25	7.77	22.61	16.64	17.45	83.64	75.65	78.17	76.62	74.36	ND	ND	ND	ND	ND	ND
pH	pH units	5.47	4.85	6.45	4.86	4.96	4.97	ND	ND	ND	ND	ND	6.78	6.64	5.7	5.98	5.96	ND
Lead-210	Bq/g	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.01	0.08	0.04	0.13	<0.006	ND	<0.02	<0.02	ND	ND	<0.02
Polonium-210	Bq/g	0.02	0.02	0.02	0.03	0.02	0.03	0.016	0.058	0.058	0.47	0.004	ND	0.02	0.02	ND	ND	0.02
Radium-226	Bq/g	0.03	0.02	0.05	0.07	0.04	0.06	0.048	0.09	0.06	0.14	0.06	ND	<0.01	0.03	ND	ND	0.02
Thorium-230	Bq/g	0.04	0.04	0.02	0.06	0.03	0.05	0.017	0.049	0.06	0.05	0.06	ND	0.03	0.02	ND	ND	0.03
Thorium-232	Bq/g	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.05	0.03	ND	ND	0.04
Calcium	mg/L	76	79	68	100	100	75	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloride	mg/L	10	11	8	13	10	11	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Magnesium	mg/L	21	28	18	22	22	27	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Potassium	mg/L	4	4	6	8	3	6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Sodium	mg/L	4	4	6	3	4	4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Sodium Absorption Ratio	--	0.1	0.1	0.2	0.05	0.1	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Specific conductivity	uS/cm	478	588	477	592	594	463	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Sulfate	mg/L	51	50	59	85	87	71	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Saturation	%	29.0	26.4	19.1	38.0	30.8	32.7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

ND = No data

Parameters	Units						2008 Mine LSA											2008 Mine L
		AREVA KIGGAVIK SIS4 #1 SOIL	AREVA KIGGAVIK SIS4 #2 SOIL	AREVA KIGGAVIK SIS4 #3 SOIL	AREVA KIGGAVIK SIS4 #4 SOIL	AREVA KIGGAVIK SIS4 #5 SOIL	AREVA-KIGGAVIK SIS4 #1-5 COMPOSITE	AREVA KIGGAVIK SIS1 #1 SOIL	AREVA KIGGAVIK SIS1 #2 SOIL	AREVA KIGGAVIK SIS1 #3 SOIL	AREVA KIGGAVIK SIS1 #4 SOIL	AREVA KIGGAVIK SIS1 #5 SOIL	AREVA-KIGGAVIK SIS1 #1-5 COMPOSITE	AREVA KIGGAVIK K1G3 #1 SOIL	AREVA KIGGAVIK K1G3 #2 SOIL	AREVA KIGGAVIK K1G3 #3 SOIL	AREVA KIGGAVIK K1G3 #4 SOIL	AREVA KIGGAVIK K1G3 #5 SOIL
Mercury	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	ND	<0.0050	<0.0050	<0.0050	0.0071	<0.0050	ND	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Aluminum	ug/g	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Antimony	ug/g	<10	<10	<10	<10	<10	ND	<10	<10	<10	<10	<10	ND	<10	<10	<10	<10	<10
Arsenic	ug/g	<5.0	<5.0	<5.0	<5.0	<5.0	ND	<5.0	<5.0	<5.0	<5.0	<5.0	ND	5.6	<5.0	5	<5.0	6.2
Barium	ug/g	32.4	40	61	44.2	52.4	ND	47.3	40.4	31.2	56.4	58.6	ND	223	147	113	174	215
Beryllium	ug/g	<0.50	<0.50	<0.50	<0.50	<0.50	ND	<0.50	<0.50	<0.50	<0.50	<0.50	ND	0.52	<0.50	<0.50	<0.50	<0.50
Boron	ug/g	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cadmium	ug/g	<0.50	<0.50	<0.50	<0.50	<0.50	ND	<0.50	<0.50	<0.50	<0.50	<0.50	ND	<0.50	<0.50	<0.50	<0.50	<0.50
Chromium	ug/g	8.4	11.4	11.4	11	12.7	ND	17.8	13.2	14.9	11.1	14.2	ND	20.5	16.2	22.4	22.5	27.1
Cobalt	ug/g	2	2.7	2.7	2.4	2.8	ND	3.2	2.3	2.5	2	3.1	ND	5.3	3.6	4.6	4.7	6.1
Copper	ug/g	2.2	4.2	7.6	5.6	3.1	ND	7.3	4.6	6	5.5	8.1	ND	11.6	6.9	14	11.1	18.7
Iron	ug/g	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead	ug/g	<30	<30	<30	<30	<30	ND	<30	<30	<30	<30	<30	ND	<30	<30	<30	<30	<30
Manganese	ug/g	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Molybdenum	ug/g	<4.0	<4.0	<4.0	<4.0	<4.0	ND	<4.0	<4.0	<4.0	<4.0	<4.0	ND	<4.0	<4.0	<4.0	<4.0	<4.0
Nickel	ug/g	<5.0	6.5	7	6.7	7.1	ND	9.2	8.2	7.6	6	8.5	ND	13.7	8.8	12.4	13	17.8
Selenium	ug/g	<3.0	<2.0	<2.0	<2.0	<2.0	ND	<3.0	<2.0	<2.0	<2.0	<3.0	ND	<2.0	<2.0	<3.0	<2.0	<2.0
Silver	ug/g	<2.0	<2.0	<2.0	<2.0	<2.0	ND	<2.0	<2.0	<2.0	<2.0	<2.0	ND	<2.0	<2.0	<2.0	<2.0	<2.0
Strontium	ug/g	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Thallium	ug/g	<1.0	<1.0	<1.0	<1.0	<1.0	ND	<1.0	<1.0	<1.0	<1.0	<1.0	ND	<1.0	<1.0	<1.0	<1.0	<1.0
Tin	ug/g	<5.0	<5.0	<5.0	<5.0	<5.0	ND	<5.0	<5.0	<5.0	<5.0	<5.0	ND	<5.0	<5.0	<5.0	<5.0	<5.0
Titanium	ug/g	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Uranium	ug/g	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vanadium	ug/g	10	11.2	11.3	11.1	12.9	ND	16.1	12	12.5	13.4	14.8	ND	20.6	18.3	21.8	21.3	23
Zinc	ug/g	8.8	11.8	12.3	10.2	11	ND	14.1	10.5	12.2	10.3	14.3	ND	19.8	13.6	20.4	21.1	23.8
Moisture	%	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
pH	pH units	6.64	6.82	6.9	6.9	6.89	ND	6.18	6.25	5.46	5.77	7.49	ND	6.45	5.78	5.49	5.79	7.82
Lead-210	Bq/g	ND	0.04	<0.02	ND	ND	<0.02	ND	ND	<0.02	ND	<0.02	<0.02	ND	<0.02	ND	<0.02	ND
Polonium-210	Bq/g	ND	0.02	0.02	ND	ND	0.02	ND	ND	0.02	ND	0.01	0.01	ND	0.03	ND	0.03	ND
Radium-226	Bq/g	ND	<0.01	0.02	ND	ND	0.02	ND	ND	0.02	ND	0.04	0.04	ND	0.04	ND	0.03	ND
Thorium-230	Bq/g	ND	0.02	0.04	ND	ND	0.03	ND	ND	0.02	ND	0.02	<0.02	ND	0.03	ND	0.05	ND
Thorium-232	Bq/g	ND	0.03	0.03	ND	ND	0.03	ND	ND	0.04	ND	0.06	0.05	ND	0.04	ND	0.05	ND
Calcium	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloride	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Magnesium	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Potassium	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Sodium	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Sodium Absorption Ratio	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Specific conductivity	uS/cm	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Sulfate	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Saturation	%	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

ND = No data

Parameters	Units	SA										2008 Mine LSA						
		AREVA-KIGGAVIK KIG3 #1-5 COMPOSITE	AREVA-KIGGAVIK SIS2-1 SOIL	AREVA-KIGGAVIK SIS2-2 SOIL	AREVA-KIGGAVIK SIS2-3 SOIL	AREVA-KIGGAVIK SIS2-4 SOIL	AREVA-KIGGAVIK SIS2-5 SOIL	AREVA-KIGGAVIK SIS2 #1-5 COMPOSITE	AREVA-KIGGAVIK SIS3-1 SOIL	AREVA-KIGGAVIK SIS3-2 SOIL	AREVA-KIGGAVIK SIS3-3 SOIL	AREVA-KIGGAVIK SIS3-4 SOIL	AREVA-KIGGAVIK SIS3-5 SOIL	AREVA-KIGGAVIK SIS3 #1-5 COMPOSITE	AREVA-KIGGAVIK KIG1-1 SOIL	AREVA-KIGGAVIK KIG1-2 SOIL	AREVA-KIGGAVIK KIG1-3 SOIL	AREVA-KIGGAVIK KIG1-4 SOIL
Mercury	ug/g	ND	0.0106	<0.0050	<0.0050	<0.0050	<0.0050	ND	<0.0050	<0.0050	<0.0050	<0.0050	0.0052	ND	<0.0050	<0.0050	<0.0050	<0.0050
Aluminum	ug/g	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-	-
Antimony	ug/g	ND	<10	<10	<10	<10	<10	ND	<10	<10	<10	<10	<10	ND	<10	<10	<10	<10
Arsenic	ug/g	ND	<5.0	<5.0	5	<5.0	<5.0	ND	<5.0	<5.0	<5.0	<5.0	6.9	ND	<5.0	<5.0	5.4	<5.0
Barium	ug/g	ND	93.8	75.5	71	60.9	53.6	ND	49	45.8	34.4	30.2	97.5	ND	124	173	87.2	162
Beryllium	ug/g	ND	<0.50	<0.50	<0.50	<0.50	<0.50	ND	<0.50	<0.50	<0.50	<0.50	<0.50	ND	<0.50	<0.50	<0.50	<0.50
Boron	ug/g	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cadmium	ug/g	ND	<0.50	<0.50	<0.50	<0.50	<0.50	ND	<0.50	<0.50	<0.50	<0.50	<0.50	ND	<0.50	<0.50	<0.50	<0.50
Chromium	ug/g	ND	21.8	28.2	23.6	19.5	18.6	ND	18.7	18.8	17.9	16	25.6	ND	23.1	19.8	21.1	17.6
Cobalt	ug/g	ND	4.8	5.7	5.1	4.2	5.3	ND	4	5.3	4.4	4.2	5.5	ND	5.6	5.1	6.8	3.8
Copper	ug/g	ND	7	7.7	7.6	7.9	8.3	ND	7.9	9.2	5.5	5.3	19.4	ND	13.1	9.6	11.3	4.9
Iron	ug/g	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead	ug/g	ND	<30	<30	<30	<30	<30	ND	<30	<30	<30	<30	<30	ND	<30	<30	<30	<30
Manganese	ug/g	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Molybdenum	ug/g	ND	<4.0	<4.0	<4.0	<4.0	<4.0	ND	<4.0	<4.0	<4.0	<4.0	<4.0	ND	<4.0	<4.0	<4.0	<4.0
Nickel	ug/g	ND	13.1	17.6	15.6	12.2	11.8	ND	10.9	12.9	9.9	8.8	15.7	ND	14	12.8	15.3	9.7
Selenium	ug/g	ND	<2.0	<2.0	<2.0	<2.0	<2.0	ND	<2.0	<2.0	<2.0	<2.0	<2.0	ND	<2.0	<2.0	<2.0	<2.0
Silver	ug/g	ND	<2.0	<2.0	<2.0	<2.0	<2.0	ND	<2.0	<2.0	<2.0	<2.0	<2.0	ND	<2.0	<2.0	<2.0	<2.0
Strontium	ug/g	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Thallium	ug/g	ND	<1.0	<1.0	<1.0	<1.0	<1.0	ND	<1.0	<1.0	<1.0	<1.0	<1.0	ND	<1.0	<1.0	<1.0	<1.0
Tin	ug/g	ND	<5.0	<5.0	<5.0	<5.0	<5.0	ND	<5.0	<5.0	<5.0	<5.0	<5.0	ND	<5.0	<5.0	<5.0	<5.0
Titanium	ug/g	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Uranium	ug/g	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vanadium	ug/g	ND	21	22.9	22.8	16.4	20.1	ND	16.4	16.9	16.2	14.3	21.4	ND	21.8	18	20.9	17.8
Zinc	ug/g	ND	13.4	16.4	17.1	15	18.6	ND	15.3	15.5	14.2	13.6	21.6	ND	27.3	19.6	29.9	15.2
Moisture	%	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
pH	pH units	ND	4.99	5.91	5.5	7.03	6.9	ND	7.63	7.28	5.98	6.61	6.3	ND	5.29	6.37	5.38	5.45
Lead-210	Bq/g	<0.02	<0.02	<0.02	ND	ND	ND	<0.02	ND	ND	ND	<0.02	0.02	<0.02	0.02	ND	ND	0.03
Polonium-210	Bq/g	0.03	0.02	0.02	ND	ND	ND	0.02	ND	ND	ND	0.02	0.02	0.02	0.02	ND	ND	0.01
Radium-226	Bq/g	0.04	0.02	0.01	ND	ND	ND	0.02	ND	ND	ND	0.02	0.02	<0.01	0.02	ND	ND	0.04
Thorium-230	Bq/g	0.03	0.02	<0.02	ND	ND	ND	0.04	ND	ND	ND	<0.02	0.05	0.02	0.02	ND	ND	<0.02
Thorium-232	Bq/g	0.04	0.02	0.04	ND	ND	ND	0.03	ND	ND	ND	<0.02	0.04	0.04	0.04	ND	ND	<0.02
Calcium	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloride	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Magnesium	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Potassium	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Sodium	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Sodium Absorption Ratio	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Specific conductivity	uS/cm	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Sulfate	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Saturation	%	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

ND = No data

Attachment H Raw Chemistry Data, Soil

Parameters	Units	2008 Mine LSA															2008 Mine LSA	
		AREVA-KIGGAVIK KIG1-5 SOIL	AREVA-KIGGAVIK KIG1 #1-5 COMPOSITE	AREVA-KIGGAVIK KIG2-1 SOIL	AREVA-KIGGAVIK KIG2-2 SOIL	AREVA-KIGGAVIK KIG2-3 SOIL	AREVA-KIGGAVIK KIG2-4 SOIL	AREVA-KIGGAVIK KIG2-5 SOIL	AREVA-KIGGAVIK KIG2 #1-5 COMPOSITE	AREVA-KIGGAVIK KIG4-1 SOIL	AREVA-KIGGAVIK KIG4-2 SOIL	AREVA-KIGGAVIK KIG4-3 SOIL	AREVA-KIGGAVIK KIG4-4 SOIL	AREVA-KIGGAVIK KIG4-5 SOIL	AREVA-KIGGAVIK KIG4 #1,3,4,5 COMPOSITE	AREVA-KIGGAVIK KIG4 #1,3,4,5 COMPOSITE	AREVA-KIGGAVIK KIG5-1 SOIL	AREVA-KIGGAVIK KIG5-2 SOIL
Mercury	ug/g	<0.0050	ND	0.0201	<0.0050	<0.0050	<0.0050	0.0252	ND	<0.0050	<0.0050	0.0055	<0.0050	<0.0050	ND	ND	0.0075	<0.0050
Aluminum	ug/g	-	ND	-	-	-	-	-	ND	-	-	-	-	ND	ND	ND	ND	ND
Antimony	ug/g	<10	ND	<10	<10	<10	<10	<10	ND	<10	<10	<10	<10	<10	ND	ND	<10	<10
Arsenic	ug/g	<5.0	ND	<5.0	5.5	<5.0	<5.0	5.4	ND	5.2	5.6	6.1	<5.0	5.2	ND	ND	6.7	<5.0
Barium	ug/g	147	ND	295	212	168	104	323	ND	156	125	145	114	189	ND	ND	162	69.3
Beryllium	ug/g	<0.50	ND	0.6	<0.50	<0.50	<0.50	0.66	ND	<0.50	<0.50	0.54	<0.50	<0.50	ND	ND	0.54	<0.50
Boron	ug/g	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cadmium	ug/g	<0.50	ND	<0.50	<0.50	<0.50	<0.50	<0.50	ND	<0.50	<0.50	<0.50	<0.50	<0.50	ND	ND	<0.50	<0.50
Chromium	ug/g	22.4	ND	17.6	20.9	16.5	22.8	15.4	ND	18.8	24.1	31.4	21.5	21.1	ND	ND	29	22.9
Cobalt	ug/g	5.1	ND	4.2	5.8	4	4.7	3.2	ND	5.9	7.2	6.9	4.5	6.9	ND	ND	6.5	7.2
Copper	ug/g	13.4	ND	14.1	12.1	5.6	6.6	16.6	ND	10.6	22.4	16.5	18	13.6	ND	ND	12.1	13.4
Iron	ug/g	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead	ug/g	<30	ND	<30	<30	<30	<30	<30	ND	<30	<30	<30	<30	<30	ND	ND	<30	<30
Manganese	ug/g	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Molybdenum	ug/g	<4.0	ND	<4.0	<4.0	<4.0	<4.0	<4.0	ND	<4.0	5.4	<4.0	5	<4.0	ND	ND	<4.0	<4.0
Nickel	ug/g	14.3	ND	13.3	13.3	9.4	13.8	10.1	ND	11.7	16.5	17.5	12.9	14.9	ND	ND	19	19.9
Selenium	ug/g	<2.0	ND	<2.0	<2.0	<4.0	<2.0	<2.0	ND	<2.0	<2.0	<2.0	<2.0	<2.0	ND	ND	<2.0	<2.0
Silver	ug/g	<2.0	ND	<2.0	<2.0	<2.0	<2.0	<2.0	ND	<2.0	<2.0	<2.0	<2.0	<2.0	ND	ND	<2.0	<2.0
Strontium	ug/g	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Thallium	ug/g	<1.0	ND	<1.0	<1.0	<1.0	<1.0	<1.0	ND	<1.0	<1.0	<1.0	<1.0	<1.0	ND	ND	<1.0	<1.0
Tin	ug/g	<5.0	ND	<5.0	<5.0	<5.0	<5.0	<5.0	ND	<5.0	<5.0	<5.0	<5.0	<5.0	ND	ND	<5.0	<5.0
Titanium	ug/g	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Uranium	ug/g	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vanadium	ug/g	20.3	ND	16.6	20.4	17.6	20.2	17.9	ND	21.3	24.5	29	22.6	22.9	ND	ND	24.3	19.7
Zinc	ug/g	24.3	ND	37.3	21.5	13.5	19.7	11.3	ND	19.9	25.8	26	23.8	20.9	ND	ND	23.3	24.1
Moisture	%	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
pH	pH units	5.42	ND	5.84	6.8	6.7	6.4	5.14	ND	5.88	6.01	5.2	4.95	6.45	ND	ND	5.7	7.2
Lead-210	Bq/g	ND	0.04	ND	ND	<0.02	<0.02	ND	<0.02	ND	ND	0.07	0.05	ND	<0.02	<0.02	ND	ND
Polonium-210	Bq/g	ND	0.02	ND	ND	0.02	0.02	ND	0.02	ND	ND	0.1	0.04	ND	0.04	0.04	ND	ND
Radium-226	Bq/g	ND	0.03	ND	ND	0.02	0.03	ND	0.03	ND	ND	0.14	0.05	ND	0.07	0.07	ND	ND
Thorium-230	Bq/g	ND	0.04	ND	ND	0.04	0.04	ND	0.02	ND	ND	0.13	0.04	ND	0.09	0.09	ND	ND
Thorium-232	Bq/g	ND	0.05	ND	ND	0.04	0.05	ND	0.05	ND	ND	0.03	0.04	ND	0.04	0.04	ND	ND
Calcium	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloride	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Magnesium	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Potassium	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Sodium	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Sodium Absorption Ratio	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Specific conductivity	uS/cm	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Sulfate	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Saturation	%	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

ND = No data

Parameters	Units					2009 RSA					2009 RSA				
		AREVA-KIGGAVIK KIG5-3 SOIL	AREVA-KIGGAVIK KIG5-4 SOIL	AREVA-KIGGAVIK KIG5-5 SOIL	AREVA-KIGGAVIK KIG5 #1-5 COMPOSITE	8/8/2009 KIGGAVIK REF-1 STATION-1	8/8/2009 KIGGAVIK REF-1 STATION-2	8/8/2009 KIGGAVIK REF-1 STATION-3	8/8/2009 KIGGAVIK REF-1 STATION-4	8/8/2009 KIGGAVIK REF-1 STATION-5	8/8/2009 KIGGAVIK REF-2 STATION-1	8/8/2009 KIGGAVIK REF-2 STATION-2	8/8/2009 KIGGAVIK REF-3 STATION-3	8/8/2009 KIGGAVIK REF-2 STATION-4	8/8/2009 KIGGAVIK REF-2 STATION-5
Mercury	ug/g	<0.0050	<0.0050	<0.0050	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aluminum	ug/g	ND	ND	ND	ND	6700	5400	7100	12700	16200	4300	3500	5600	8500	5940
Antimony	ug/g	<10	<10	<10	ND	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arsenic	ug/g	5.8	6	13.6	ND	3.3	3.4	4.2	4.6	5.8	1.4	1.8	2	2.5	1.8
Barium	ug/g	121	111	157	ND	54	48	65	92	120	68	92	84	710	48
Beryllium	ug/g	<0.50	<0.50	0.51	ND	0.3	0.3	0.3	0.5	0.6	0.4	0.3	0.5	0.4	0.5
Boron	ug/g	ND	ND	ND	ND	<1	<1	<1	48	46	5	<1	21	2	28
Cadmium	ug/g	<0.50	<0.50	<0.50	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium	ug/g	25.1	25.9	28.1	ND	11	6.8	17	8.5	9.4	7.2	15	11	54	10
Cobalt	ug/g	5.1	4.7	5.7	ND	3	2.7	3.7	4.1	4.5	1.6	2.7	2.5	13	2.3
Copper	ug/g	7	5.9	9.8	ND	3.9	3.5	6.4	5	7.5	3.4	3.6	4.7	23	2
Iron	ug/g	ND	ND	ND	ND	10300	9400	12000	11100	12700	7400	9300	10400	25100	10400
Lead	ug/g	<30	<30	<30	ND	5.1	4.1	6	5.2	6.1	10	15	15	23	17
Manganese	ug/g	ND	ND	ND	ND	83	96	95	140	180	61	88	83	230	93
Molybdenum	ug/g	<4.0	<4.0	<4.0	ND	0.2	0.2	0.2	0.3	0.2	0.1	0.3	0.2	0.1	0.2
Nickel	ug/g	15.4	15.1	16.8	ND	9	6.4	11	9.2	13	5.1	7.8	7.5	61	6.6
Selenium	ug/g	<2.0	<2.0	<2.0	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.3	<0.1
Silver	ug/g	<2.0	<2.0	<2.0	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Strontium	ug/g	ND	ND	ND	ND	71	67	73	100	120	66	84	85	400	79
Thallium	ug/g	<1.0	<1.0	<1.0	ND	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Tin	ug/g	<5.0	<5.0	<5.0	ND	0.1	<0.1	<0.1	<0.1	0.2	<0.1	0.1	<0.1	<0.1	<0.1
Titanium	ug/g	ND	ND	ND	ND	220	210	310	380	400	610	750	740	1600	860
Uranium	ug/g	ND	ND	ND	ND	1	0.9	2.2	0.9	1	1.1	2.4	1.3	0.8	1.2
Vanadium	ug/g	21.7	22.8	24.8	ND	16	13	20	20	25	14	16	17	59	20
Zinc	ug/g	16.6	16.5	18.6	ND	13	9.1	14	19	21	16	15	16	56	19
Moisture	%	ND	ND	ND	ND	11.17	14.34	12.97	12.49	10.26	9.35	9.85	12.86	9.42	9.53
pH	pH units	6.4	5.79	6.65	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead-210	Bq/g	<0.02	ND	<0.02	<0.02	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Polonium-210	Bq/g	0.02	ND	0.02	0.03	0.02	0.02	0.03	<0.01	0.02	<0.01	0.03	0.03	0.03	0.03
Radium-226	Bq/g	0.04	ND	0.02	0.02	0.04	0.03	0.04	<0.01	0.03	0.02	0.08	0.02	0.05	0.03
Thorium-230	Bq/g	0.05	ND	<0.02	0.03	0.02	<0.02	0.03	<0.02	0.04	0.03	<0.02	<0.02	<0.02	0.03
Thorium-232	Bq/g	0.06	ND	0.04	0.03	0.03	0.04	0.04	0.04	0.02	<0.02	<0.02	0.04	0.04	0.05
Calcium	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloride	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Magnesium	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Potassium	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Sodium	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Sodium Absorption Ratio	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Specific conductivity	uS/cm	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Sulfate	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Saturation	%	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

ND = No data