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Canada North Environmental Services
Limited Partnership

EASTERN ATHABASCA REGIONAL MONITORING PROGRAM 2014/2015 COMMUNITY REPORT

Final Report

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EXECUTIVE SUMMARY

The Eastern Athabasca Regional Monitoring Program (EARMP) was established in 2011 under the Province of Saskatchewan's Boreal Watershed Initiative. The EARMP community program was established to monitor the safety of traditionally harvested country foods by collecting and testing representative water, fish, berry, and mammal chemistry from the seven communities located in the region. Harvesting and eating traditional country foods (berries, fish, and wild game) are an important part of the culture in northern Saskatchewan and contribute to an overall healthy lifestyle through physical activity and healthy eating. The intent of the EARMP community program is to provide confidence to community members that their traditional country foods remain safe to eat today and for future generations.

The 2014/2015 EARMP community sampling program included testing water, berries, fish, moose, barren-ground caribou, and snowshoe hare collected independently by, or with the aid of, community members from Black Lake, Camsell Portage, Fond du Lac Denesuline First Nation, Stony Rapids, Uranium City, Wollaston Lake, and Hatchet Lake Denesuline First Nation. The evaluation of the country foods data shows that most chemical concentrations are below available guidelines, similar to concentrations expected for the region, and similar to the established baseline data. Based on the available information, chemicals in the EARMP community country foods are not generally considered a concern. Further monitoring of cadmium levels in moose meat from Uranium City is required to confirm that the higher levels observed in 2014/2015 are an anomaly. In addition, it is also recommended that sensitive populations (women of childbearing age and children under the age of 12) in Fond du Lac limit their consumption of large lake trout (>50 cm) until further testing is completed to determine if older lake trout with higher mercury levels are common to the area. This recommendation is very similar to guidelines in other lakes in Saskatchewan and Canada, where larger, predatory fish tend to have higher mercury levels.

1.0 INTRODUCTION

1.1 Background

The Eastern Athabasca Regional Monitoring Program (EARMP) is a joint, long-term environmental monitoring program established in 2011 under the Province of Saskatchewan's Boreal Watershed Initiative. The program is supported by contributions from several stakeholders including Cameco Corporation, AREVA Resources Canada Inc., and the Saskatchewan Ministry of Environment. One of the primary goals of the Boreal Watershed Initiative is to assess the ecological integrity of Saskatchewan's northern watersheds in order to address potential environmental concerns and to identify sustainable management practices in the region. The EARMP was designed to identify potential cumulative effects downstream of uranium mining and milling operations in the Eastern Athabasca region of northern Saskatchewan (Figure 1).

Cumulative effects are defined as impacts on the environment that result from the incremental impact of an action when added to other past, present, and foreseeable future actions (Joint Panel 1992). Cumulative effects might occur when projects overlap spatially, such as when two watersheds exposed to uranium mining and milling activities converge. Cumulative effects may also occur temporally if contaminants are emitted into the environment over extended periods of time. The EARMP was developed to establish baseline conditions and facilitate the examination of spatial and temporal changes over the long term.

Extensive amounts of environmental monitoring are completed near each uranium mining and milling operation in northern Saskatchewan. The operations are regulated by both federal and provincial agencies including Environment Canada, the Canadian Nuclear Safety Commission, and the Saskatchewan Ministry of Environment. In addition, regional sampling occurs through the Athabasca Working Group (AWG) Environmental Monitoring Program, which started in 2000. The EARMP was designed to complement other monitoring programs and allows a more comprehensive evaluation of potential cumulative effects from industry in northern Saskatchewan.

The EARMP framework includes two programs: a community program and a technical program. The technical program was established to monitor potential long-term changes in the aquatic environment far far-field downstream of uranium mining and milling operations in the Eastern Athabasca region. Information from the technical program is

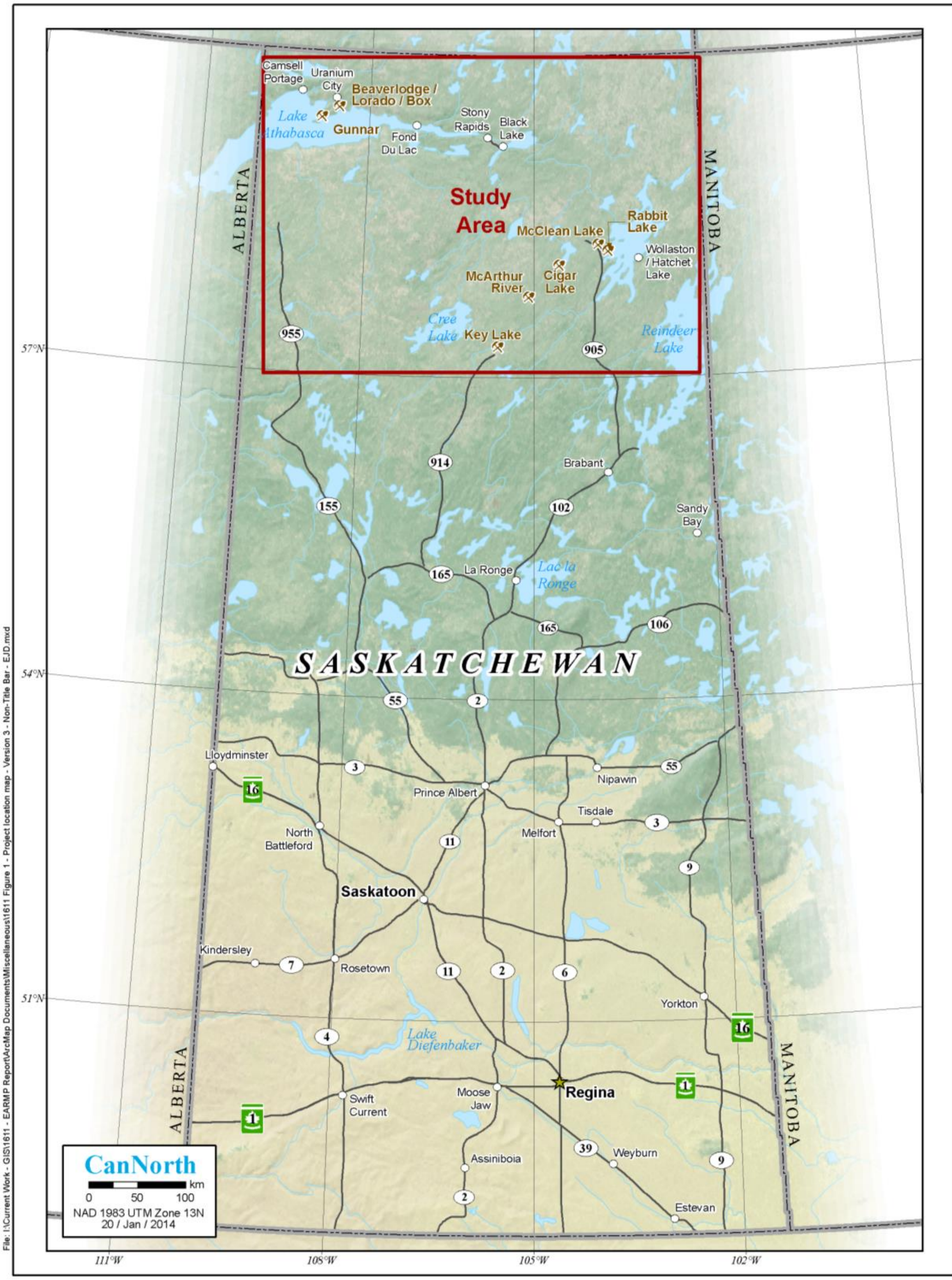

Figure 1.

Study location.

presented in a separate report. The community program was established to monitor the safety of traditionally harvested country foods by collecting and testing water, fish, berry, and mammal samples from the seven communities located in the Eastern Athabasca region. The objective of this document is to discuss the study design and results of the 2014/2015 EARMP community program.

1.1.1 Uranium Mining and Milling Operations in the Region

There are five active uranium mines in the Eastern Athabasca region. These include Key Lake, McArthur River, McClean Lake, Rabbit Lake, and Cigar Lake. In addition, other decommissioned and/or abandoned uranium mine sites are located within the region and near the community of Uranium City. The locations of these uranium mining and milling operations are presented in Figure 2. Extensive monitoring in the local study areas generally includes testing the air, soil, vegetation, water, sediment, benthic invertebrates, and fish (EcoMetrix 2010a, 2010b; SENES 2010, 2012; AREVA 2012). These sampling programs are designed specifically for each mine and are a requirement under the provincial operating licence. Summary descriptions of each site are provided in Appendix A.

1.1.2 Communities in the Region

There are seven communities in the region, including Black Lake, Fond du Lac Denesuline First Nation, Stony Rapids, Wollaston Lake, Hatchet Lake Denesuline First Nation, Camsell Portage, and Uranium City (Figure 2). For the EARMP community program, the communities of Wollaston Lake and Hatchet Lake Denesuline First Nation were assessed together, creating a total of six community study areas. Summary descriptions of each community are provided in Appendix A.

1.2 EARMP Community Program Objectives

The EARMP community program was developed to address potential concerns about the safety of country foods that community members routinely consume. Country foods can be defined as "traditional native foods that are obtained from the land, such as wild game, birds, fish, and berries by local residents during subsistence hunting and gathering" (Peace-Athabasca Delta Group Project 1972). Country food studies in Hatchet Lake and

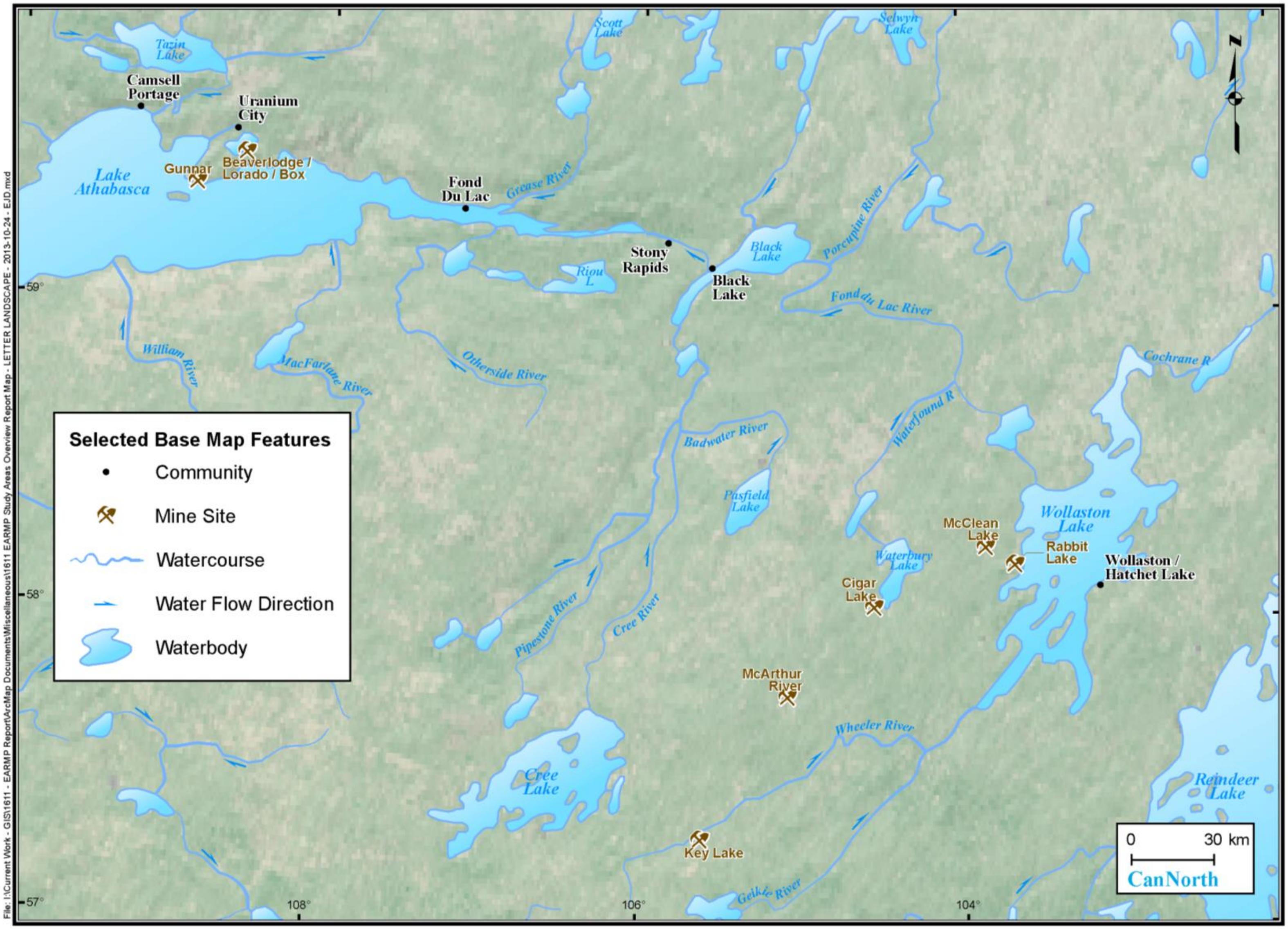

Figure 2.
Study area overview.

Uranium City have established that fish, berries, and wild game are important food sources for communities located in northern Saskatchewan (CanNorth 1999, 2011). In this way, the EARMP community program provides important information to the residents of northern Saskatchewan. Additional information on the use of country foods in northern Saskatchewan and the health benefits associated their consumption is provided in Appendix A.

The EARMP community monitoring program objectives are to:

1. determine the safety of traditionally harvested food for local consumption;
2. establish long-term monitoring at community sampling areas to assess variability and potential changes over time;
3. build mutually beneficial relationships as well as engage and involve community members in the gathering of information for the program; and,
4. communicate monitoring results to community members and other stakeholders through reporting, public media, and meetings.

1.3 Summary of EARMP Community Program Framework

1.3.1 Community Involvement

The community monitoring program relies on the participation of community members for the selection of sampling locations and sample collection. Prior to commencing the fieldwork in the summer of 2011, notices describing a new environmental monitoring program were distributed to the band chief/mayor and council for distribution and discussion within each community. The purpose of the notices was to invite community members to select representatives from each community to carry out the country foods sampling for the EARMP. Community members were selected from each community and provided training in the collection and shipping procedures for the EARMP community sampling program.

The collection of country food samples is carried out in one of two ways: either independently by the community member or in conjunction with a representative of CanNorth, who is responsible for the management of the program. The sampling locations within each community were established during the field training session when physical variables such as water depth, fishing locations, and berry patches could be determined.

1.3.2 Communications Program in 2014/2015

Communicating the yearly monitoring results and getting feedback from the community members and leaders is one of the primary goals of the EARMP community program. In order to do this numerous communication and engagement strategies are implemented yearly and are summarized below.

Northern Saskatchewan Environmental Quality Committee (NSEQC)

As an advisory committee of the provincial government, the NSEQC gives northerners a voice on environmental, socio-economic, and Occupational Health and Safety (OH&S) issues in regards to the northern Saskatchewan uranium industry (from exploration to decommissioning). Although not a regulatory body, the NSEQC is a well informed and well respected group which assists in the free flow of information and understanding among communities, industry, and government. The committee is composed of trusted and knowledgeable people each nominated by his/her community, is a bridge between northerners, government and the uranium mining industry. The main responsibility of NSEQC representatives is to bring community issues, concerns, and recommendations on the uranium industry to this forum and in turn to bring information, decisions, and directions back to their communities.

In May of 2015 the results of the EARMP community program were presented at the Uranium 101 workshop held in La Ronge, Saskatchewan. The workshop provided an opportunity to facilitate the communication of the results of the program and to answer any questions, concerns or suggestions of community members in relation to the monitoring program moving forward. This is the fourth year in a row that EARMP results have been presented to the NSEQC members. EARMP plans to continue to attend NSEQC meetings on a yearly basis in order to update the Athabasca community representatives on the results of the program.

Science Ambassador Program

The Science Ambassador Program pairs senior university science, engineering, and health science students with rural and remote Aboriginal community schools, to support creative and culturally-relevant science teaching and learning. Science Ambassadors work alongside teachers to present hands-on science activities, facilitate class discussions, and mentor students exploring possibilities for careers and continuing science education.

In May of 2015 EARMP teamed up with the University of Saskatchewan (U of S) and conducted a five day tour of four of the six communities with schools in the Athabasca region. With the permission of the local school principal/teacher and working with the U of S Science Ambassador Program, a science lesson was developed around the environmental monitoring that currently takes place across northern Saskatchewan. Some of the sampling equipment currently used in the field was displayed so that students better understand how the equipment works and is used. In addition a fish dissection class on lake trout was completed at four schools in the Athabasca Basin (see Appendix B for more details on the program).

EARMP Promotions

The EARMP website continues to be the primary promotional material used to inform community members on upcoming events and reports. The website is routinely updated with any new event pictures, community visits, sampling programs, and maps. The website (www.earmp.ca) also contains a wealth of information about the project objectives, contact information, downloads and data files, as well as links to other websites such as the stakeholders.

Additional marketing materials include free EARMP calendars in English and Dene that are shipped to the Athabasca communities once a year and disseminated within each community through the band offices, community health centers, post offices, and schools. Ads are also posted in the Opportunity North magazine that are distributed throughout the north and includes information about the program as well as contact information for those who have any questions. Other promotional materials including hats, toques, fish hooks, coffee mugs, and water bottles are often shipped to communities for fish derbies and community events.

1.3.3 Study Design and Objectives of the 2014/2015 Program

The specific objective of the 2014/2015 EARMP community monitoring program is to determine the safety of traditionally harvested foods by monitoring foods gathered from areas selected by each community from the summer 2014 to the winter of 2015 and comparing them to the baseline established during the previous sampling years to monitor for potential changes over time.

Consistent with the baseline monitoring years, samples of water, fish (lake trout and lake whitefish[1]), blueberry[2], and ungulates (moose and/or barren ground caribou) were collected from each of the six EARMP community sampling areas in 2014 and early 2015. In addition, ungulate organ samples (livers and kidneys) were also collected from some of the communities to address some concerns expressed by community members. As discussed above, sample selection and collection was completed directly by, or with the assistance of, community residents. Although a full suite of chemical parameters were measured for each sample, this report focused on a smaller list of chemicals[3], which have been identified as the chemicals of most interest for uranium operations by regulatory agencies, environmental assessments, as well as other monitoring programs. Table 1 summarizes the reduced list of chemicals.

Table 1

Chemicals assessed for the EARMP community program.

Chemicals	
Aluminum	Molybdenum
Ammonia*	Nickel
Arsenic	Polonium-210
Cadmium	Radium-226
Cobalt	Selenium
Copper	Thorium-230
Iron	Uranium
Lead	Vanadium
Lead-210	Zinc
Mercury**	

*For water only.
**Mercury is not associated with uranium mining and milling operations (refer to Appendix A for more information).

Chemistry results from the country foods tested in 2014/2015 were compared to available guidelines, to chemical concentrations measured in country foods collected throughout northern Saskatchewan during other monitoring programs (i.e., regional reference range), and to chemical concentrations measured as part of the baseline. Comparing the EARMP

[1] Northern pike samples were also collected from Uranium City in 2011and 2012 and Camsell Portage in 2012.
[2] Bog cranberry samples were also collected in 2011 to 2014 from select communities.
[3] Referred to as Constituents of Potential Concern by industry.

country foods results to available guidelines and regional reference data is valuable because most foods have detectable levels of environmental chemicals, but that does not mean they are a concern to human health. A full description of the data sources used for comparison is provided in Appendix A.

1.4 Report Structure

The EARMP community report is subdivided into six major sections:

1.0 Introduction
2.0 Water Quality
3.0 Fish Chemistry
4.0 Berry Chemistry
5.0 Mammal Chemistry
6.0 Summary and Conclusions

Sections 2.0 to 5.0 provide an overall summary of the water, fish, berry, and mammal chemistry results from 2014/2015. Section 6.0 provides an overall conclusion about the country foods assessed in the region.

This document is streamlined so that the main text provides a summary of the most important information, with further background information and details of the analysis presented in appendices. Appendix A expands on the EARMP community program framework and provides detailed information on the study area, study design, and data sources while Appendix B provides some additional information about the Science Ambassador Program. Appendix C presents the detailed data analyses completed on the 2014/2015 community data, while the raw data are provided in Appendix D.

2.0 WATER QUALITY

Surface water samples were collected by hand at one waterbody of interest near each community by community members and CanNorth field staff. Waterbodies assessed included Black Lake, Ellis Bay of Lake Athabasca near Camsell Portage, the Fond du Lac River near Fond du Lac, the Fond du Lac River near Stony Rapids, the Fredette River near Uranium City, and Welcome Bay of Wollaston Lake (Figure 3). All samples were preserved as required and kept refrigerated until chemical analysis was completed. All water samples were submitted to the Saskatchewan Research Council (SRC) analytical laboratory for chemical analysis. The detailed water quality data analysis is presented in Appendix C and summarized below. The raw water quality data are presented in Appendix D.

Concentrations of the chemicals in the water were very low, with most chemicals at levels so low the laboratory could not measure them even with the use of laboratory techniques known for their ability to measure low levels of chemicals. Chemicals that were at measurable levels were all lower than the Canadian Drinking Water Quality guidelines (HC 2012) and the Canadian Water Quality guidelines for the protection of freshwater aquatic life (CCME 2015). Additionally, chemical concentrations were within the range of concentrations expected for the region or during the baseline assessment. Table 2 summarizes the 2014 community water quality sampling program results.

Table 2

Summary results of the 2014 EARMP community water quality program.

Community	Below Drinking Water Guideline	Below Environmental Guideline	Within Regional Reference Range	Similar to Baseline Levels	Safe to Drink
Black Lake	✓	✓	✓	✓	✓
Camsell Portage	✓	✓	✓,1 exception	✓	✓
Fond du Lac	✓	✓	✓,1 exception	✓	✓
Stony Rapids	✓	✓	✓	✓	✓
Uranium City	✓	✓	✓,1 exception	✓	✓
Wollaston Lake/ Hatchet Lake	✓	✓	✓,1 exception	✓	✓

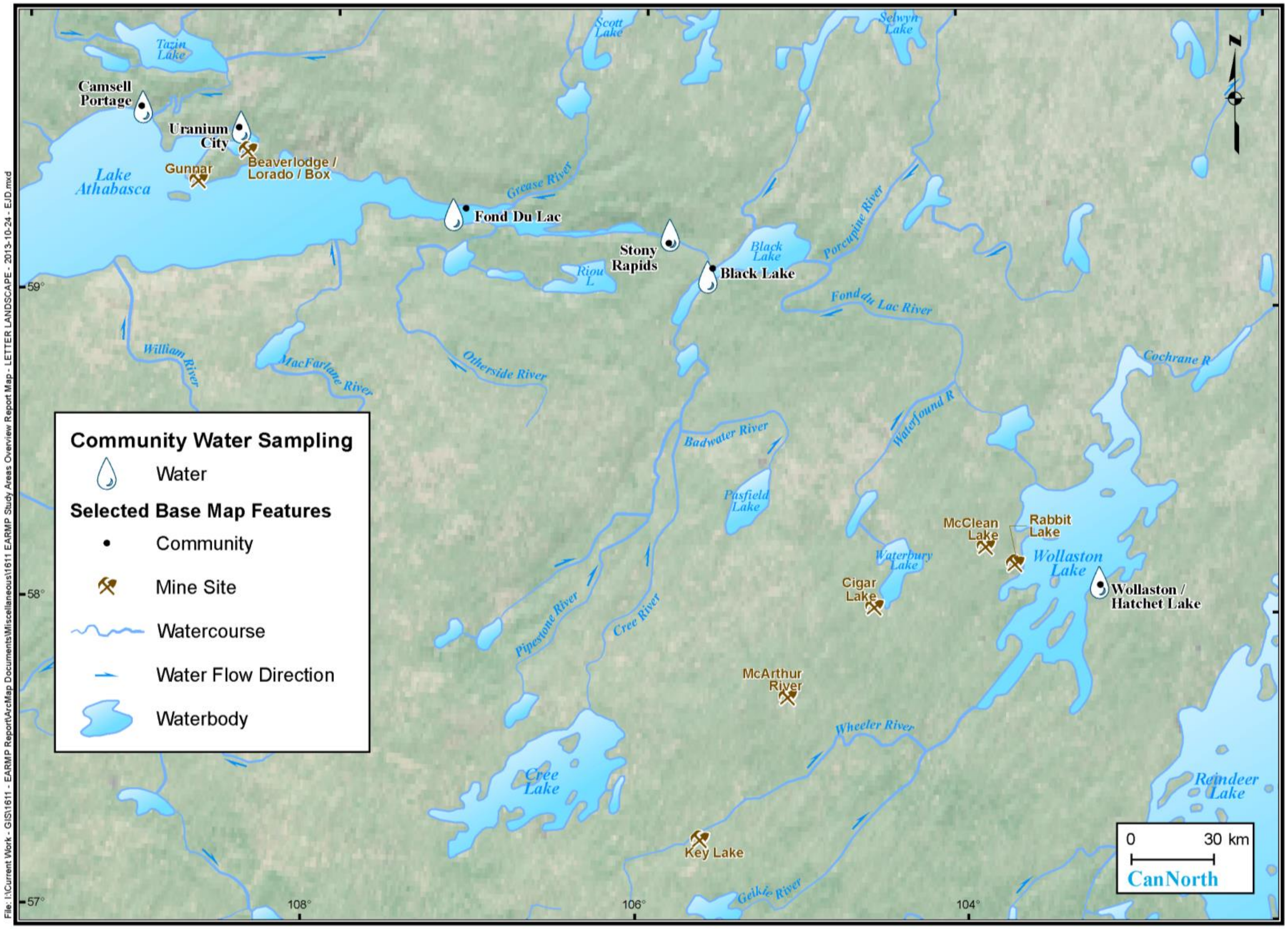

Figure 3.
Water quality sampling areas, 2011 to 2014.

3.0 FISH CHEMISTRY

Fish chemistry samples were collected by community members using overnight gill nets set at waterbodies near their communities or by angling (Figure 4.). Fish collected from each community included lake trout and lake whitefish. Five samples of each species from each of the six study areas in each year were targeted; however, this target was not always achieved in all years (see Appendix C for sample sizes).

All fish collected for chemistry near the communities were frozen and shipped to CanNorth offices in Saskatoon where they were identified to species, measured (fork length) to the nearest 1 mm, weighed to the nearest 20 g, and sexed. A visual external health assessment was completed for each fish and the stomach contents were described. Ageing structures (otoliths[4] or cleithra[5]) were removed and submitted to North Shore Environmental to determine the age of the fish. The fish flesh was then submitted to SRC for chemical analysis. The detailed data analyses are presented in Appendix C and are summarized below. The raw fish chemistry data are provided in Appendix D.

Chemical concentrations in the community fish samples from 2014 were often so low that the laboratory could not measure the level. This was the case for cadmium, molybdenum, lead-210, radium-22, thorium-230, and vanadium in over half of the lake whitefish and lake trout samples assessed in all of the communities. In addition, aluminum and polonium-210 were below levels the laboratory could measure in over half of the lake trout sampled from each community.

Similar to previous years, mercury in lake trout was higher than regional reference levels in some communities. In Black Lake, the average level of mercury was higher than the regional reference range, but lower than the level where any restrictions on eating the fish would be recommended. The average level of mercury in the lake trout from Fond du Lac was slightly higher than the level where some restrictions on eating are normally recommended. The high average levels are because two of the five lake trout in 2014 had higher levels compared to other lake trout sampled from the area. These two fish were the oldest lake trout sampled from the area and since mercury levels get higher in fish as they get older, it is recommended that community members limit the number of larger

[4]Calcified structures that fish use for balance and orientation. They can be used to age some species of fish.
[5]Paired, flat bones located beside the clavicle in the pectoral arch of some fish. They can be used to age northern pike.

lake trout (more than 50 cm long) that they eat in a week. It is recommended additional lake trout samples be assessed, if possible, in 2015/2016 to better understand the mercury levels in larger lake trout nearby the community of Fond du Lac.

No other concerns were noted in the 2014 fish chemistry data. A summary of the EARMP community program fish chemistry results is presented in Table 3.

Table 3

Summary results of the 2014 EARMP community fish chemistry program.

Community	Within Regional Reference Range	Similar to Baseline Levels	Safe to Eat
Black Lake	✓,1 exception	✓,1 exception	Yes
Camsell Portage	✓,1 exception	✓	Yes
Fond du Lac	✓,1 exception	✓,1 exception	*Yes
Stony Rapids	✓	✓	Yes
Uranium City	✓	✓	Yes
Wollaston Lake/ Hatchet Lake	✓	✓	Yes

*Community members should limit their intake of large lake trout (>50 cm) to ensure mercury levels are low.

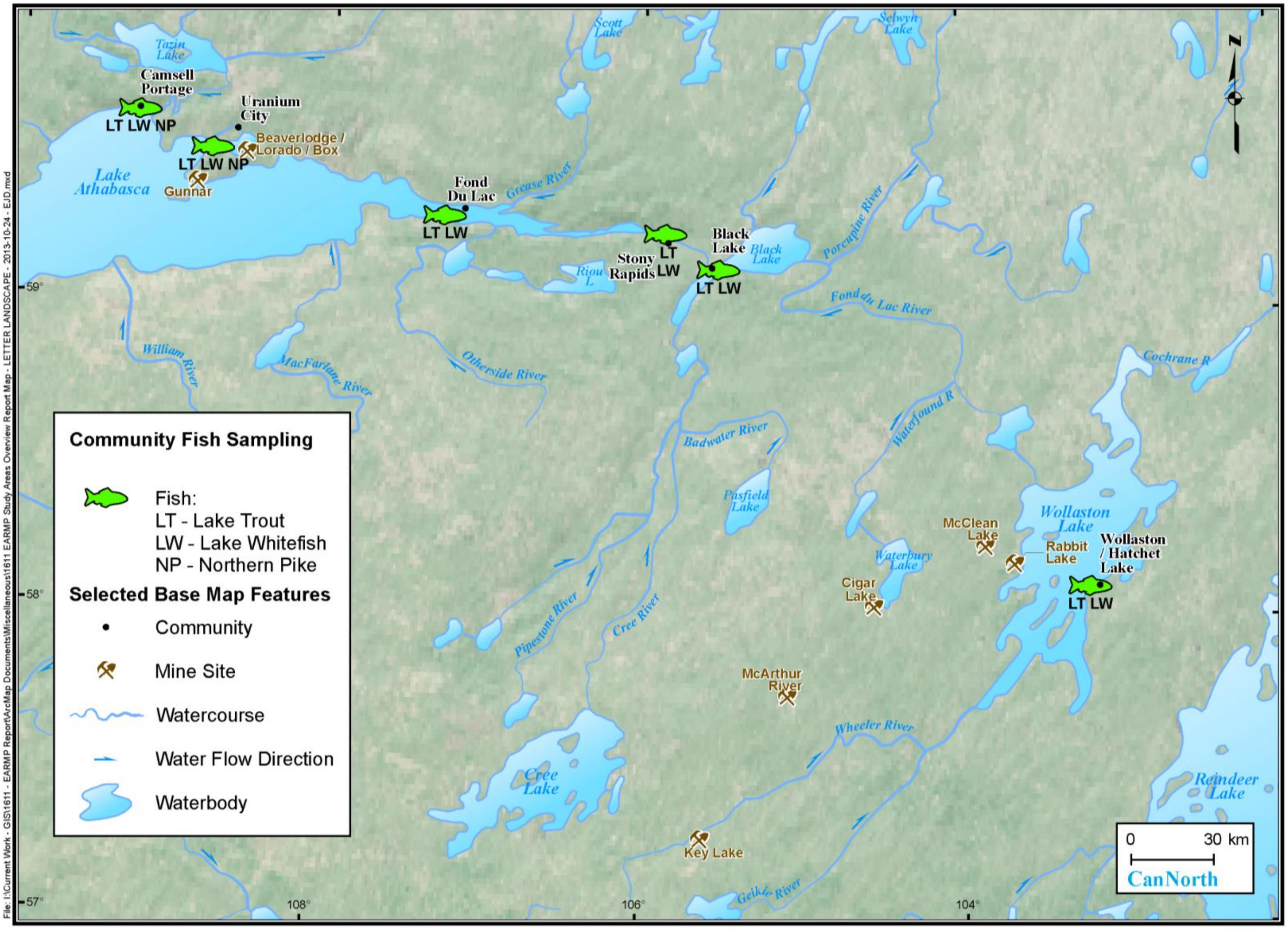

Figure 4.
Fish chemistry sampling areas, 2011 to 2014.

4.0 BERRY CHEMISTRY

Near each study community, berry samples were hand collected by local community members independently or with the aid of CanNorth personnel. Sampling was completed at five locations typically used for berry collection by community members (Figure 5.). Depending on accessibility and on current local abundance, berry species selected for collection were either blueberries or bog cranberries. All samples were double-bagged and frozen until submission to SRC for chemical analysis. The detailed data analyses are presented in Appendix C and are summarized below. The raw chemistry data for berries are provided in Appendix D.

Similar to the water and fish data, the level of chemicals in the blueberries were often too low for the laboratory to measure. This included levels of cadmium, selenium, uranium, thorium-230, arsenic, and vanadium which were below measurable levels in more than half of the samples from most communities. Aluminum and radium-226 levels in Stony Rapids, which were slightly higher in 2013 as compared to the baseline monitoring years, decreased back to baseline levels in 2014 and fell within the regional reference range. Levels of lead, molybdenum, and nickel in the blueberries from Fond du Lac and molybdenum and cobalt in blueberries from Wollaston Lake were higher in 2014 as compared to previous monitoring years and as compared to the regional reference range. However, after consultation of toxicity reference values used in the previous Human Health Risk Assessment, and other available literature and guidelines, these concentrations are considered low. The levels of these parameters will continue to be monitored during future monitoring cycles to ensure they are not increasing over time.

A summary of the EARMP community program berry chemistry results is presented in Table 4.

Table 4

Summary results of the 2014 EARMP community berry chemistry program.

Community	Within the Regional Reference Range	Similar to Baseline Levels	Safe to Eat
Black Lake	✓	✓	Yes
Camsell Portage	✓	✓	Yes
Fond du Lac	✓, 3 exceptions	✓, 3 exceptions	Yes
Stony Rapids	✓	✓	Yes
Uranium City	✓, 1 exceptions	✓	Yes
Wollaston Lake/ Hatchet Lake	✓, 2 exceptions	✓, 2 exceptions	Yes

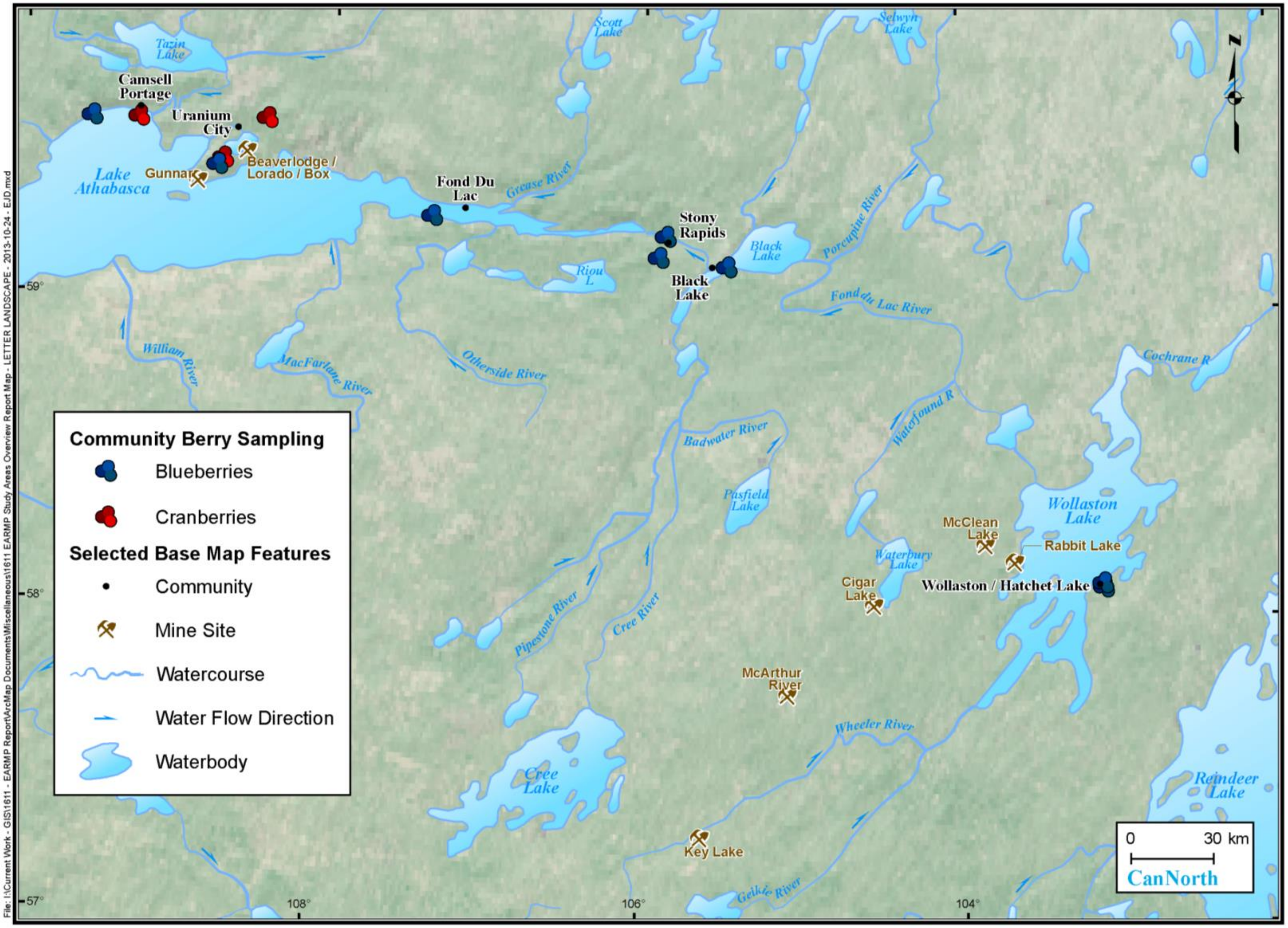

Figure 5.
Berry chemistry sampling areas, 2011 to 2014.

5.0 MAMMAL CHEMISTRY

Mammal samples were collected by local community members during their routine hunting activities. Two main species commonly hunted and consumed in northern Saskatchewan were targeted; barren-ground caribou and moose. Moose samples were collected near the communities of Uranium City and Camsell Portage (Figure 6). Although barren-ground caribou samples were collected from most communities, several communities hunt in the same general area (Figure 6).

In the winter of 2014/2015, five barren-ground caribou samples from each of Black Lake, and Stony Rapids, four samples were collected from Wollaston Lake, while three samples were collected from Fond du Lac. In Camsell Portage and Uranium City, two and one moose samples were collected in 2014/2015, respectively. In addition, organ samples (livers and kidneys) were retained from some of the moose and caribou as requested by the communities. All samples received from the communities by CanNorth were submitted to SRC for chemical analysis. The detailed data analyses are presented in Appendix C and are summarized below. The raw mammal chemistry data are provided in Appendix D. The focus of the discussion below remains on flesh samples since more organ samples are required over time to complete a comparison.

Concentrations of chemicals that were too low for the laboratory to measure varied slightly between the barren-ground caribou and moose meat samples. In barren-ground caribou meat, concentrations of aluminum, molybdenum, nickel, uranium, lead-210, thorium-230, and vanadium were often too low for the laboratory to measure. In moose meat, molybdenum, nickel, uranium, lead-210, radium-226, thorium-230, arsenic, and vanadium were below MDLs in more than half of the samples from each community.

The average level of nickel in barren-ground caribou from Stony Rapids, which were slightly higher than expected for the area in 2013/2014, have decreased to levels below what the laboratory can measure in 2014/2015 samples. In the most recent monitoring year, only average cobalt in barren-ground caribou samples exceeded the regional reference range. It is noted only one of the five caribou samples collected from Black Lake contained concentrations which exceeded the upper regional reference range limit (Sample 5; Appendix D, Table 10). After consultation of the Human Health Risk Assessment completed previously for EARMP, these levels are considered low. Special attention to this chemical will be made in future monitoring years to ensure concentrations are not increasing over time. It is also worth noting that one of the four caribou samples from Wollaston Lake contained high levels of lead, which is likely the result of contamination from lead shot in the meat sample. These levels of lead can be hazardous to human health so care should be taken when preparing wild meat to remove and discard any segments contaminated with lead shot fragments.

Of those chemicals with concentrations that the laboratory could measure, only cadmium exceeded the regional reference range and baseline concentrations in moose samples. This occurred in samples from both Uranium City and Camsell Portage. Concentrations were also higher than concentrations generally found in supermarket meat (HC 2011) and the Uranium City moose sample contained levels slightly higher than consumption guidelines for supermarket meats set by the European Commission. Since previous monitoring years have shown considerably lower levels of cadmium in moose meat and only one sample has shown levels higher than the European Commission limit, it is recommended a larger number of samples are assessed, if possible, in 2015/2016 to determine if the 2014/2015 concentration is an anomaly.

Table 5

Summary results of the 2013/2014 EARMP community mammal chemistry program.

Community	Within the Regional Reference Range	Similar to Baseline Assessment	Safe to Eat
Black Lake	✓, 1 exception	✓, 1 exception	Yes
Camsell Portage	✓, 1 exception	✓, 1 exception	Yes
Fond du Lac	✓	✓	Yes
Stony Rapids	✓	✓	Yes
Uranium City	✓, 1 exception	✓, 1 exception	*
Wollaston Lake/Hatchet Lake	✓	✓	Yes

*Additional sampling required to confirm cadmium levels in moose are low.

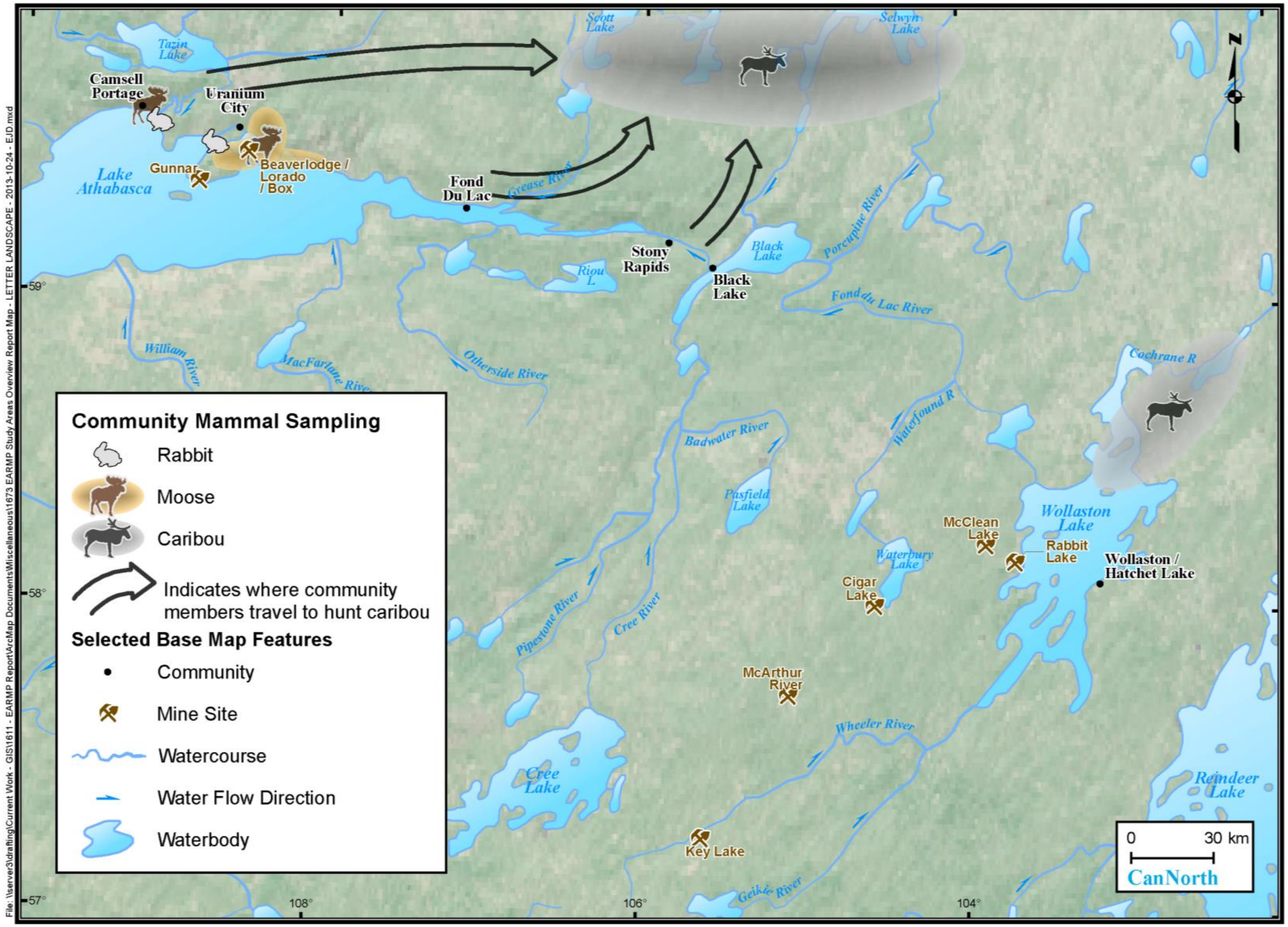

Figure 6.
Mammal chemistry sampling areas, 2011 to 2014.

6.0 SUMMARY AND CONCLUSIONS

Seven communities in northern Saskatchewan are located downstream of uranium mining and milling operations in the Eastern Athabasca region. The EARMP community program was established in 2011 to monitor the safety of traditionally harvested country foods (water, berries, fish, moose, and barren-ground caribou) in Black Lake, Camsell Portage, Fond du Lac, Stony Rapids, Uranium City, and Wollaston Lake (assessed together with Hatchet Lake). This report presents the results of the 2014/2015 monitoring year.

The results of the evaluation of the country foods data shows that most chemical concentrations are below available guidelines, similar to concentrations expected for the region, and similar to the baseline assessment completed in 2011 and 2012. Based on the available information, chemicals in the EARMP community country foods are not generally considered a concern. Further monitoring of cadmium levels in moose meat from Uranium City is required to determine if the higher levels observed in 2014/2015 are an anomaly. It is also recommended that sensitive populations (defined as women who are or could become pregnant, women who are breastfeeding, and children under the age of 12) in Fond du Lac community limit their consumption of large lake trout (>50 cm) until further testing is completed.

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APPENDICES

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Appendix A

EARMP Community Program Framework

APPENDIX A: COMMUNITY MONITORING PROGRAM FRAMEWORK

1.0 INTRODUCTION

The Eastern Athabasca Regional Monitoring Program (EARMP) is a joint, long-term environmental monitoring program established in 2011 under the Province of Saskatchewan's Boreal Watershed Initiative. The EARMP was designed to identify potential cumulative effects downstream of uranium mining and milling operations in the Eastern Athabasca region of northern Saskatchewan. It consists of two programs: a technical monitoring program and a community monitoring program. The technical program was established to monitor long-term changes in the aquatic environment far downstream of uranium mining and milling operations in the Eastern Athabasca region. The community program was established to monitor the safety of traditionally harvested country foods from the communities located in the Eastern Athabasca region.

The following document focuses entirely on the EARMP community program. The objective of the EARMP community program framework document is to provide detailed information related to the communities and mine sites located in the Eastern Athabasca region of northern Saskatchewan, the rationale for studying country foods, detailed information and rationale on the EARMP community program study design, and details of the data analyses and communication of the results.

2.0 STUDY AREA

2.1 Communities

There are seven communities in the region including Black Lake, Camsell Portage, Fond du Lac Denesuline First Nation, Hatchet Lake Denesuline First Nation/Wollaston Lake, Stony Rapids, and Uranium City. For the EARMP community program, the communities of Wollaston Lake and Hatchet Lake Denesuline First Nation were assessed together due to their close proximity to each other, creating a total of six community study areas. Provided below are brief descriptions of each community.

2.1.1 Black Lake

The community of Black Lake is situated in northern Saskatchewan's Athabasca region approximately 1,180 km northwest of Prince Albert. Access to the community is by air to Stony Rapids and then by all-weather road approximately 20 km to Black Lake. Access to the Athabasca Seasonal Road (provincial highway 905) also lies between the two communities. The community currently maintains a total registered membership of 2,035 members, with 1,586 of those members residing on reserve and 442 members residing at locations off reserve (AANDC 2012).

The people of Black Lake initially settled at Stony Lake prior to relocating to the area currently occupied by the fishing camp on the banks of the Black Lake River. The current community of Black Lake was settled in the early 1950s after a new Roman Catholic church was constructed. The Dene language is still very strong and continues to be taught by the Elders to children and youth, both at home and within the school system. The people continue to maintain their traditional lifestyle: with hunting, fishing, and trapping very evident on a year-round basis as both commercial and private pursuits (PAGC 2008, 2012).

2.1.2 Camsell Portage

Camsell Portage is a small community located on the northern shoreline of Lake Athabasca, approximately 35 km from the community of Uranium City. It remains the most northern and isolated community in the province and is only accessible by boat in the open water season and by air year round.

Camsell Portage was settled by trappers who arrived during the 1900s from Lac La Biche, the Northwest Territories and Fort Fitzgerald, Alberta and who used it as a historical portage route to the north. During peak activities near Uranium City, Camsell Portage had a population of over 300 people (pers. comm. Philippe Steene). The population of Camsell Portage is currently 27 people. No mining activity has taken place in the area; however, currently there are operating hydroelectricity generating stations nearby the community of Camsell Portage on the Waterloo, Wellington, and Charlot River systems.

2.1.3 Fond du Lac

The community of Fond du Lac is situated on the northeast shore of Lake Athabasca in the Athabasca region of northern Saskatchewan, approximately 60 km south of the Northwest Territories border and 1,275 km northwest of Prince Albert. It currently maintains a total registered membership of 1,842 members, with 1,045 members residing on reserve and 796 members residing at locations off reserve (AANDC 2012). Members are primarily of Dene and Cree decent. Access to the community is by seasonal ice road in the winter and by boat during the summer. Two airline companies also provide year-round access to the community.

Founded over 150 years ago, Fond du Lac is one of the oldest and most remote northern communities in Saskatchewan. During Cultural Camp, the Elders share their cultural and traditional knowledge with the youth, including demonstrations in setting traps, tent raising, fire building, snow shoe racing, and preparing and smoking dry meat (PAGC 2008, 2012).

2.1.4 Hatchet Lake/Wollaston Lake

The Hatchet Lake Denesuline First Nation and the community of Wollaston Lake are situated on the south-eastern shoreline of Wollaston Lake (known in Dene as "Axe" Lake) in the Athabasca region of northern Saskatchewan, approximately 724 km northwest of Prince Albert (PAGC 2008). The Hatchet Lake Denesuline First Nation has total of 1,659 registered members, with 1,276 residing on the reserve and 377 members residing at locations off reserve (AANDC 2012). The northern settlement of Wollaston Lake has a population of 129 (SMMA 2012). Access to Hatchet Lake and Wollaston Lake is by ice road in the winter and by barge during the open water season. Year-round access is provided by two airline companies that operate scheduled flights to and from the surrounding communities and southern Saskatchewan.

Traditionally, the people lived as a hunting and gathering society, primarily barren-ground caribou. They still follow the seasonal caribou hunting patterns today. The majority of residents are Dene; however, during the 1950s some people of Cree-Metis ancestry moved to the northern settlement of Wollaston Lake (PAGC 2012).

2.1.5 Stony Rapids

Stony Rapids is a northern hamlet in Saskatchewan with a total population of 243 residents (SC 2012). The community is located on the shoreline of the Fond du Lac River, approximately 80 km south of the border to the Northwest Territories. The Fond du Lac River connects the community of Stony Rapids to the Fond du Lac Denesuline

First Nation, Uranium City, and Camsell Portage. An all-weather road also connects the community to the Black Lake Denesuline First Nation.

2.1.6 Uranium City

The history of Uranium City area dates back to the late 1930s when uranium ore was first discovered in the area. It was not until 1952 that the town of Uranium City was established as a base for uranium mining in the Beaverlodge area. Operations at Saskatchewan's first uranium mine began in May of 1953 and continued until June of 1982, by which time rising costs and failing ore grade made it unprofitable. Within a year following the closure of the mine, Uranium City changed from a resource town of almost 2,500 inhabitants to a northern settlement with approximately 150 residents (Bone 1998). Uranium City continued to serve as the regional base for a number of services including education, health care, and the RCMP headquarters for a number of years following the mine closure. Many public institutions closed in 1983 and the hospital closed in 2003. The current population is approximately 101 residents.

2.2 Uranium Operations

There are currently five active uranium mines in the Eastern Athabasca region. These include Key Lake, McArthur River, McClean Lake, Rabbit Lake, and Cigar Lake. In addition, the decommissioned Beaverlodge uranium mine and mill site is located within the region and nearby the community of Uranium City.

2.2.1 Key Lake

Cameco Corporation's (Cameco) Key Lake Operation is located in north-central Saskatchewan approximately 570 km north of Saskatoon. Mining at the Key Lake Operation began in 1982 with open pit mining of the Gaertner orebody followed by open pit mining of the Deilmann orebody beginning in 1986. Once stockpiles from the Deilmann orebody were consumed in late 1999, the mill began processing ore from the McArthur River Operation.

2.2.2 McArthur River

The McArthur River Operation is located approximately 270 km north of La Ronge and 80 km north of the Key Lake Operation. It is currently the world's largest, high-grade uranium deposit. McArthur River has been operational since 1999 and is managed and operated by Cameco. The operation includes underground mining, processing systems, an ore handling system, and camp infrastructure. Specialized mining equipment is used to extract the high-grade uranium ore and mineralized wastes are blended with high-grade ore to produce a slurry, which is trucked to the Key Lake Operation for processing.

2.2.3 McClean Lake

The McClean Lake Operation is located approximately 15 km west of Wollaston Lake in northern Saskatchewan. AREVA Resources Canada Inc. (AREVA) is the majority owner (70%) and operator of the McClean Lake Operation. Exploration activities started in the late 1970s, environmental assessment in the early 1990s, and the initiation of mining and mill operations in 1996 and 1999, respectively. The McClean Lake Operation currently comprises of three main areas: the JEB area, which includes the permanent camp and the JEB mill and tailing management facility; the Sue mining area, which includes the mined out Sue A/C, Sue B, and Sue E pits; and the Sink/Vulture Treated Effluent Management System (S/V TEMS).

2.2.4 Rabbit Lake

The Rabbit Lake Operation, owned and operated by Cameco, is the longest-operating uranium production facility in Saskatchewan (since 1975). It is located in northeastern Saskatchewan, on the west side of Wollaston Lake approximately 350 km north of La Ronge. The Rabbit Lake Operation includes the Eagle Point underground mine, Rabbit Lake mill, four mined-out open pit mines, of which the original Rabbit Lake pit is being used as the Rabbit Lake In-Pit Tailings Management Facility (RLTMF), the Rabbit Lake Above Ground Tailings Management Facility (AGTMF), overburden stockpiles, waste rock stockpiles, effluent treatment facilities, and camp infrastructure. Currently, uranium ore is sourced from the Eagle Point underground mine and hauled to the mill for processing.

2.2.5 Cigar Lake

The Cigar Lake Operation is located approximately 80 km west of Wollaston Lake and 40 km inside the eastern margin of the Athabasca Basin region of northern Saskatchewan. The Operation involves the construction, mining operation, and eventual decommissioning of what is currently the world's second largest known high-grade uranium deposit. The Operation is currently managed and operated by Cameco. The initial discovery of the Cigar Lake uranium deposit occurred in May 1981. Following the acquisition of the construction license in December 2004, underground construction activities commenced. Site construction activities were expected to take 24 months to 36 months; however, in 2006 and 2008 the mine experienced two inflow events that caused flooding of all underground workings of the Cigar Lake Project. Cigar Lake became operational in July 2014.

2.2.6 Other Properties

The decommissioned Eldorado uranium mining and milling operation is located approximately 8 km east of Uranium City north-east of Beaverlodge Lake in northern Saskatchewan. The mine operated for almost 30 years between 1953 and 1982. Decommissioning of the site occurred from 1983 to 1985 and transition phase monitoring continues today. Upon its inception as a publicly traded company, Cameco was assigned responsibility for the management and reclamation of the decommissioned site. Post-decommissioning activities include the ongoing monitoring and maintenance of the site, regular water quality monitoring at stations within the area, and a variety of special investigations to assess specific environmental concerns.

In addition, Beaverlodge Lake is the receiving environment for the discharges from at least nine other abandoned uranium mine sites and one former uranium mill tailings area (the Lorado Uranium Mining Ltd. mill site), which are managed by the Saskatchewan Research Council (SRC). SRC is managing Project Cleans, which is also responsible for the assessment and reclamation of the Gunnar uranium mine and mill site and over 30 abandoned satellite mines in the Uranium City area.

3.0 RATIONALE FOR STUDYING COUNTRY FOODS

The uranium mining and milling operations in northern Saskatchewan complete extensive environmental monitoring that routinely test the air, soil, vegetation, water, sediment, benthic invertebrates, and fish in their local study areas. However, these monitoring programs do not answer the question of whether country foods that are fished, hunted, or gathered near communities located downstream of multiple uranium operations are safe to eat. Since country foods, such as fish, berries, and wild game are important food sources in northern communities, the EARMP community program was developed to conduct an extensive and long-term regional sampling program testing country foods. The following section further discusses some of the uses and benefits of traditional country foods by northern residents.

3.1 Traditional Use of Country Foods

Studies conducted across Canada have documented that harvesting, sharing, and preparing traditional country foods is an important part of the Aboriginal lifestyle (Wein et al. 1991; Wein and Freeman 1995; Kuhnlein and Receveur 1996; Receveur et al. 1997; AFN 2007). Traditional country food studies conducted in Hatchet Lake and Uranium City established that fish, berries, and wild game are important food sources for communities located in northern Saskatchewan (CanNorth 1999, 2011).

Studies in northern Saskatchewan have indicated that Hatchet Lake residents have a strong dependence on barren-ground caribou meat (especially during the winter months) whereas Uranium City residents rely more on moose and birds (CanNorth 1999, 2011). Uranium City residents have comparable meat/bird (grams per day) consumption values to the residents from similar regions such as Fort Smith, Northwest Territories and Fort Chipewyan, Alberta (CanNorth 2011). The more frequent caribou meat consumption in Hatchet Lake may be explained by availability, cultural differences, and/or preference of Hatchet Lake residents for caribou. A number of factors play a role in the differences in consumption patterns such as population size, road access, proximity to animal migration routes, presence of hunters, trappers, or fishermen, age and gender, costs and availability of market foods, and access to transportation with the south (Wein et al. 1991; Blanchet et al. 2000; Batal et al. 2005).

3.2 Health Benefits of Traditional Country Foods

Harvesting and consuming traditional foods are integral components of good health among Aboriginal people, influencing both physical health and social well-being. The act of hunting and gathering traditional foods is an important aspect of physical activity.

Hunting, fishing, and berry picking also provides socio-cultural benefits to community members including mental health, cultural identity, and morale (AFN 2007). Gathering and eating traditional country foods can help reduce the risk of diabetes, heart disease, and obesity, especially when the foods are cooked in traditional ways (PHU AHA 2005).

Several health benefits of consuming traditional country foods have been documented across northern Canada. Fish are an important part of a healthy diet containing high-quality protein, Vitamin B, Vitamin D, omega-3 fatty acids, other essential nutrients (NWT 2011; PHU AHA 2014). Fatty fish, such as lake trout, are especially high in omega 3 fatty acids and are considered important for heart health and brain and eye development. Compared to store bought chicken breast and ground beef (0.10-0.31g/100g) northern Saskatchewan fresh water fish have much higher contents of omega 3 fatty acids (0.31-1.19g/100g). In addition, northern Saskatchewan fish have substantially lower levels of saturated fat, compared to store bought chicken and ground beef (PHU AHA 2014). Fish eggs are also an excellent source of protein, Vitamin C, B vitamins, and iron (NWT 2002; NWT 2011). The skin of the fish and soups cooked with fish head and bones are good sources of calcium (Receveur et al. 1997; NWT 2011).

Wild game meat such as moose and caribou are an important source of vitamins, minerals, and protein and has less saturated fats than store bought meats (PHU AHA 2005; 2014). The fat content of barren-ground caribou meat is very low (1%) compared to beef, pork, or poultry (12% to 40%) (NWT 2002). Wild game are also high in essential nutrients such as iron, zinc, copper, magnesium, and phosphorous (Kuhnlein et al 1995; Receveur et al. 1997).

Compared to store bought chicken breast and ground beef, the northern game meats have similar amounts of protein (21.4-25.6 g/100g), between 2 and 7 times higher levels of Iron (3.08-4.1 mg/100g) and lower levels of calories (98-123 kcal/ 100g). Overall, this indicates that northern Saskatchewan caribou, moose, and rabbit are low calorie, nutrient dense, healthy servings of meat and meat alternatives (PHU AHA, 2014). Soups and/or stews cooked with bones for broth are high in calcium (Receveur et al. 1997), while many organ meats including liver contain high levels of iron needed for healthy blood and Vitamin A needed for healthy bones, skin, and teeth (HWC 1987; NWT 2002).

Traditional plants such as cranberries, blueberries, and Labrador tea are often used in both food and medicine (CanNorth 1999, 2011) and may potentially offer benefits through diet. Wild plants are excellent sources of Vitamin C, fibre, and carbohydrates (Johnson et al. 1995; NWT 2002). For example, rose hips, consumed by many First Nations in a variety of medicinal and food preparations, are high in Vitamin C and demonstrate antibacterial and antioxidant properties (Yi et al. 2007).

3.3 Canada Food Guide – First Nations, Inuit, and Métis

In 2007, Health Canada introduced a newly tailored Canada Food Guide *"Eating Well with Canada's Food Guide - First Nations, Inuit and Métis" (HC 2007)* that includes both traditional country foods and store-bought foods that are generally available and accessible across Canada. This tailored food guide has recommendations for healthy eating based on science and recognizes the importance of traditional/country and store-bought foods for First Nations, Inuit, and Métis today. In addition, the government of Northwest Territories (NWT 2005) has also established a food guide that is tailored towards traditional country foods. Both the Canada Food Guide and the Northwest Territories Food Guide contain recommendations on the number of servings[6] (grams per day) of wild meats, birds, plants, fish, and other staples such as bannock, wild rice, and traditional fats. Choosing the amount and type of food recommended in Canada's Food Guide will help:

- children and teens grow and thrive;
- meet needs for vitamins, minerals, and other nutrients; and,
- lower risk of obesity, type 2 diabetes, heart disease, certain types of cancer, and, osteoporosis (weak and brittle bones).

For more information on Canada's Food Guide please visit www.healthcanada.gc.ca/foodguide or *"Eating Well with Canada's Food Guide - First Nations, Inuit and Métis"* http://www.hc-sc.gc.ca/fn-an/pubs/fnim-pnim/index-eng.php. For more information on the Northwest Territories Food guide please visit http://www.hss.gov.nt.ca/publications/posters-flyers/nwt-food-guide.

[6] It should be noted that the food guide serving size for meat and alternatives has decreased over time and each serving size recommended is 75 g, which is likely less than what most people consider a serving size. For this study, actual intake amounts were used from the area to complete the Human Health Risk Assessment.

4.0 STUDY DESIGN AND OBJECTIVES

The EARMP community monitoring program objectives are to:

1. determine the safety of traditionally harvested food for local consumption;
2. establish long-term monitoring at community sampling areas to assess variability and potential changes over time;
3. build mutually beneficial relationships and engage and involve community members in the gathering of information for the program; and,
4. communicate monitoring results to community members and other stakeholders through reporting, public media, and meetings.

The 2011/2012 and 2012/2013 data were used to establish baseline/current conditions for each species sampled in each community area. Each subsequent monitoring year's data will be compared to this baseline in order to assess potential changes over time or temporal trends in chemical concentrations of country foods routinely eaten by residents of the Eastern Athabasca region.

The study design for the EARMP community program will remain consistent over time, to the extent possible, in order to collect a consistent long-term data set. However, the program is also adaptive and may be refined in response to new information or changes associated with the development in the region. Some things to consider moving forward include:

- Community Concerns: The EARMP community program monitors endpoints of highest concern to the communities. Sampling components may be refined or expanded based on the needs of the community members.
- Regional Development: The development of additional uranium mining and milling operations in the region may also influence the overall design of the program.
- EARMP Community Program Results: Changes to the design of the EARMP community program may occur based on results and conclusions from each monitoring year.

A key aspect of a successful community monitoring program is that the sampling locations and media are selected based on their importance to the communities and the sampling is completed by, or with, local residents. It also helps to build trust between the residents of communities and industrial operators in the region. Traditional Ecological Knowledge (TEK) is an essential part of the program. The approach of the EARMP community program is summarized below in Appendix A, Figure 1.

In addition to community input, chemicals of interest are selected based on those identified through the environmental assessment process and monitoring requirements in the region. Uranium mining and milling operations are subject to the *Canadian Environmental Assessment Act* and regulated by the Canadian Nuclear Safety Commission, the Saskatchewan Ministry of Environment, and Environment Canada.

4.1 Sampling Components

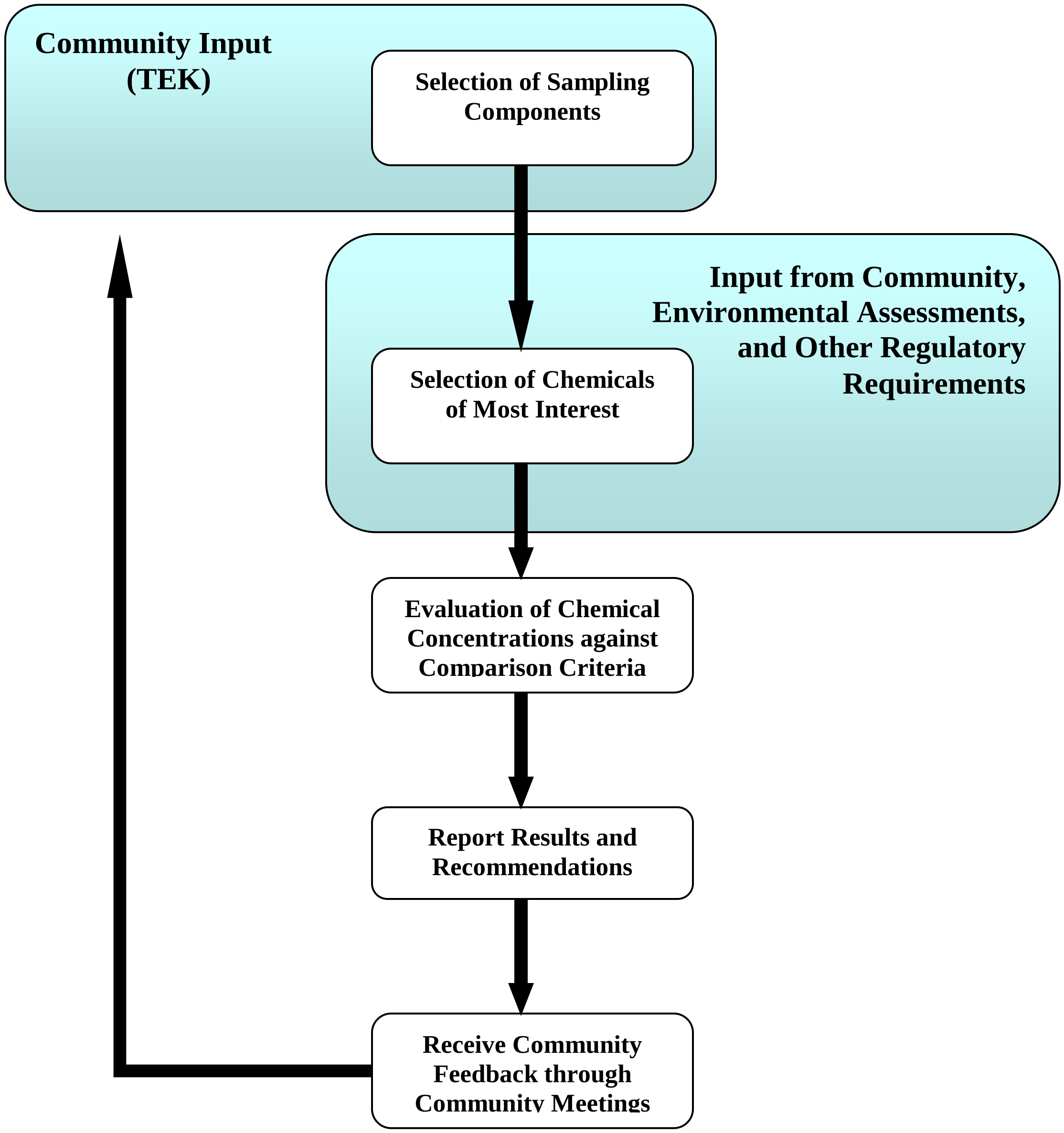
Country foods were selected in consultation with community members and currently include water, fish (lake trout, lake whitefish, and northern pike), berries (blueberry and bog cranberry), and mammals (moose, barren-ground caribou, and snowshoe hare[7]). However, sampling components are meant to be representative of what community members are consuming; therefore, they will likely vary from time to time throughout the long-term monitoring program to include other components (e.g., game birds).

Two dietary surveys have been completed for communities within the region: The Hatchet Lake Dietary Survey (CanNorth 1999) and the Uranium City Country Foods Study (CanNorth 2011). Country foods currently selected for the EARMP community program formed a large percentage of foods identified in these surveys.

4.2 Sampling Locations

Near each community, one station was established from which a water quality sample was obtained. The station locations were decided upon by the CanNorth staff member and the community members conducting the sampling and were determined by accessibility, water depth, and proximity to the community. Fish, berry, and mammal samples were obtained from locations that community members routinely fish, gather, and hunt their traditional country foods. This ensures the sampling program is testing the study areas most relevant to the communities.

[7] New country food as of 2013/2014.



Appendix A, Figure 1.
Summary of the EARMP community monitoring program approach.

4.3 Sampling Frequency

The EARMP community program is intended to be an annual sampling campaign (every fall/winter) for the first five years, after which the sampling frequency will be re-evaluated. Yearly sampling keeps the community program fresh in the mind of community members and allows for thorough training of community members for sample collection.

The target sample size is five samples from each community of each media type. However, some sampling components are harder to obtain, such as moose and barren-ground caribou; thus sample sizes may be lower at some communities in some years. Completing yearly sampling for at least the first five years will allow for a greater number of samples to be collected during the early years of the program. This will allow for a comprehensive data set to be established to which future monitoring data can be compared.

4.4 Laboratory Analysis

All samples are analyzed by the Saskatchewan Research Council (SRC) in Saskatoon. The SRC Analytical Laboratories are certified and accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA). Accreditation ensures that procedures, facilities, and methods conform to ISO/IEC 17025, which is an internationally recognized standard. SRC has an extensive Quality Assurance/Quality Control (QA/QC) program to ensure reliable analytical results. With each set of samples run, SRC tests reference materials, duplicates, and spiked samples. Data results provided by SRC include full QA/QC reports for each sample submission.

Sample analyses completed by SRC included a full suite of parameters for each media type and are described Appendix A, Table 1.

Appendix A, Table 1

List of chemicals assessed in country foods for the EARMP community program.

Parameter		Water	Berries	Fish	Mammals
Inorganic Ions	Bicarbonate, Calcium, Carbonate, Chloride, Magnesium, Potassium, Sodium, Sulphate, Hydroxide	✓			
Metals and Trace Elements	Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Chromium, Cobalt, Copper, Fluoride Iron, Lead, Manganese, Mercury*, Molybdenum, Nickel, Selenium, Silver, Strontium, Thallium, Tin, Titanium, Uranium, Vanadium, Zinc	✓	✓	✓	✓
Nutrients	Ammonia, Nitrate, Total Nitrogen, Total Kjeldahl Nitrogen, Total Organic Carbon, Phosphorus	✓			
Radionuclides	Lead-210, Polonium-210, Throium-230, Radium-226	✓	✓	✓	✓
Physical Properties	pH, Specific Conductance, Sum of Ions, Total Alkalinity, Total Dissolved Solids, Total Hardness, Total Suspended Solids, Turbidity	✓			
Physical Properties	% Moisture		✓	✓	✓

*Water and fish only.

Metals and trace elements analysis are completed by ICP-MS because it is a fast, multi-elemental technique similar to ICP-AES, but with better detection limits. For most elements, ICP-MS is able to achieve detection limits similar to or lower than Graphite Furnace AAS (Wolf 2005). The analysis of metals and trace elements with ICP-MS also meets MMER requirements (EC 2012). However, it should be noted that even with the use of ICP-MS, concentrations of many metals and trace elements in the EARMP sampling media are at levels below the Method Detection Limit (MDL). In addition, MDL for radionuclides tend to vary based on the mass of the sample. For values that were below the MDL, it is not possible to determine the actual concentration; therefore, all values were set equal to the MDL for computing averages and standard deviations. This is a conservative approach as the actual concentrations could be substantially lower than the MDL.

4.5 Data Assessment Approach

4.5.1 Endpoints

Although a full suite of chemical parameters were measured for each sample, this report focuses on a smaller list of chemicals, which have been identified as the chemicals of most interest for uranium operations by regulatory agencies, environmental assessments, as well as other monitoring programs. Appendix A, Table 2 summarizes the endpoints assessed for the EARMP Community Program.

Appendix A, Table 2

Chemical endpoints selected for the EARMP.

Reduced List of Chemicals	
Aluminum	Molybdenum
Ammonia*	Nickel
Arsenic	Polonium-210
Cadmium	Radium-226
Cobalt	Selenium
Copper	Thorium-230
Iron	Uranium
Lead	Vanadium
Lead-210	Zinc
Mercury**	

*For water only.
**Mercury is not associated with the uranium mining and milling process.

Supporting endpoints for the water quality assessment also included organic carbon, specific conductivity, total hardness, and pH.

While mercury is included in Appendix A, Table 2, it is not associated with uranium mining and milling operations. Monitoring programs completed in each mine site's local study area have repeatedly shown that mercury concentrations in the treated effluent are below the Metal Mining Effluent Regulations (MMER) criteria for monitoring[8] (EcoMetrix 2010a, 2010b; SENES 2010, 2012; AREVA 2012). Mercury occurs naturally in the environment and can be found at low levels in most soils and rocks. In northern Saskatchewan, natural deposits associated with lead, zinc, copper, silver, and gold are likely the cause of higher levels of mercury in fish in some lakes (SE 2011). Since mercury has been identified as a concern to community members in the Athabasca Region, it has been included in the assessment.

4.5.2 Comparison Criteria

To evaluate the community data, concentrations of the reduced list of chemicals are compared to:

- available guidelines;
- available regional reference data; and,
- available literature and/or Human Health Risk Assessments.

The above comparison criteria is used for each media type to establish if the country foods sampled in each community are within the expected background concentrations for the region, are below guidelines, and are considered safe to eat based on a Human Health Risk Assessment. As additional monitoring phases are completed, assessing changes in potential chemical concentrations over time will be an important component of the program. Data sources for the information used are described below.

[8] If the concentrations of total mercury is less than 0.1 µg/L in 12 consecutive treated effluent samples, monitoring is not required (MMER, Schedule 5, subsection 4(3)).

4.5.3 Data Sources

4.5.3.1 Guidelines

Federal and provincial guidelines are available for some media types assessed in the EARMP community program. These include the Canadian Drinking Water Quality Guidelines (CDWQGs; HC 2012), the Canadian Water Quality Guidelines (CWQGs) for the protection of freshwater aquatic life (CCME 2015), and the Saskatchewan Water Quality Guidelines (SWQG) for the protection of freshwater aquatic life (GS 2015). Since the SWQG are a direct adoption of the CWQGs, the CWQGs were taken as the primary source of information. For those chemicals where the values depend on hardness, the hardness concentration from each location was used to establish the guideline. Appendix A, Table 3 summarizes the guidelines used for comparison to the EARMP community data.

Appendix A, Table 3

Chemistry guidelines used for comparison to EARMP community data.

Chemical	Guideline	
	CDWQG (Drinking Water)	CWQG (Environmental)
Aluminum	0.2 mg/L	0.1[1] mg/L
Ammonia as nitrogen	-	2.68-26.65[2] mg/L
Arsenic	10 µg/L	5 µg/L
Cadmium	0.005 mg/L	0.00004-0.0001[3]mg/L
Copper	1.0 mg/L	0.002[3] mg/L
Iron	0.3 mg/L	0.3 mg/L
Lead	0.01 mg/L	0.001[3] mg/L
Lead-210	0.2 Bq/L	-
Mercury	1 µg/L	0.026 µg/L
Molybdenum	-	0.073 mg/L
Nickel	-	0.025[3] mg/L
pH	6.5 to 8.5	6.5 to 9.0
Radium-226	0.5 Bq/L	-
Selenium	0.01 mg/L	0.001 mg/L
Uranium	20 µg/L	15 µg/L
Zinc	5.0 mg/L	0.03 mg/L

[1]Adjusted to a pH > 6.5.
[2]Adjusted according to water temperature and pH of each waterbody.
[3]Adjusted to water hardness in each waterbody.

4.5.3.2 Regional Reference Data

Regional reference data are available from a number of sources. Reference water and fish chemistry data are available from CanNorth's database. Water and fish chemistry data from a number of lakes north of Point's North sampled between 2004 and 2014 were utilized to generate the regional reference values (Appendix A, Table 4). This included 249 water samples, 69 lake whitefish samples, and 35 lake trout samples. Water samples spanned a total of 39 lakes, while lake trout data spanned 3 lakes, and lake whitefish data spanned 12 lakes. As more data become available, the regional reference data set will become more robust, particularly for the lake trout data set.

Appendix A, Table 4

EARMP regional reference range data sources for water and fish chemistry.

Factor	Water		Lake Trout Flesh	Lake Whitefish Flesh
Years[1]	2006 to 2014		2005[2], 2010 to 2012	2006 to 2014
Areas[1]	Agent Lake	Lower Read Lake	Cree Lake	Alsask Lake
	Alsask Lake	Mad Dog Lake	Henday Lake[2]	Cree Lake
	Bobby's Lake	McGowan Lake	Milliken Lake	Fredette Lake
	Brayden Lake	Milliken Lake		Henday Lake
	Carys Lake	Moon Lake		Lac Philip
	Colette Lake	Pasfield Lake		Mallen Lake
	Cree Lake	Read Lake		Milliken Lake
	David Lake	Reference 2		Pasfield Lake
	East Spur Lake	Reference 3		Riou Lake
	Fredette Lake	Reference 4		Ryan Lake
	Kapesin Lake	Reference 5		Wapata Lake
	Kazz Lake	Riou Lake		West Spur Lake
	Lac Philip	Ryan Lake		
	Lake B	Shallow Lake		
	Lake C2	Slush Lake		
	Lake C3	Wapata Lake		
	Lake C4	West Spur Lake		
	Lake C5	White Lake		
	Lake C6	Yeoung Lake		
	Lake C7			

[1]Not all areas were sampled all years.

[2]Five additional lake trout from an earlier date (2005) from Henday Lake were added to improve sample sizes (n) for analytes that were >MDL, namely arsenic, copper, iron, selenium, and zinc. These additional lake trout samples could not be used for other analytes because of large differences in MDLs in 2005 compared to later years.

Historical data (2008 to 2011) available from the Athabasca Working Group (AWG) Environment Monitoring Program and the Uranium City Country Foods Program (CanNorth and SENES 2012) were utilized to generate the regional reference values for the berry data (Appendix A, Table 5). Data from the AWG program were also used to establish regional reference ranges for the moose and barren-ground caribou data (Appendix A, Table 5). In most cases, data from 2000 to 2010 were included in order to have adequate samples sizes; however, there were some situations where obvious and consistent changes in MDLs precluded earlier data from being included.

Appendix A, Table 5

EARMP regional reference range data sources for berry and mammal chemistry.

Factor	Blueberries	Cranberries	Caribou Flesh	Moose Flesh	Snowshoe Hare Flesh
Years[1]	2000 to 2011	2000 to 2011	2000 to 2011	2000 to 2011	2011
Areas[1]	Black Lake Camsell Portage Fond Du Lac Stony Lake Stony Rapids Uranium City Wollaston Lake	Black Lake Bushell Bay Camsell Portage Fond Du Lac Stony Lake Stony Rapids Uranium City Wollaston Lake	Black Lake Camsell Portage Fond Du Lac Stony Rapids Uranium City Wollaston Lake	Black Lake Camsell Portage Fond Du Lac Stony Rapids Uranium City Wollaston Lake	Camsell Portage

[1]Not all areas were sampled all years.

4.5.3.4 Human Health Risk Assessment

Human Health Risk Assessment is a scientific procedure that is used to assess the potential for adverse health effects to humans caused by a selected group of chemicals that are a concern. Risk assessments involve the application of a staged, formal, and reproducible process that incorporates procedures accepted by regulatory authorities. Through the completion of a Human Health Risk Assessment, it is possible to answer one of the primary questions of the EARMP community program: are country foods safe to eat?

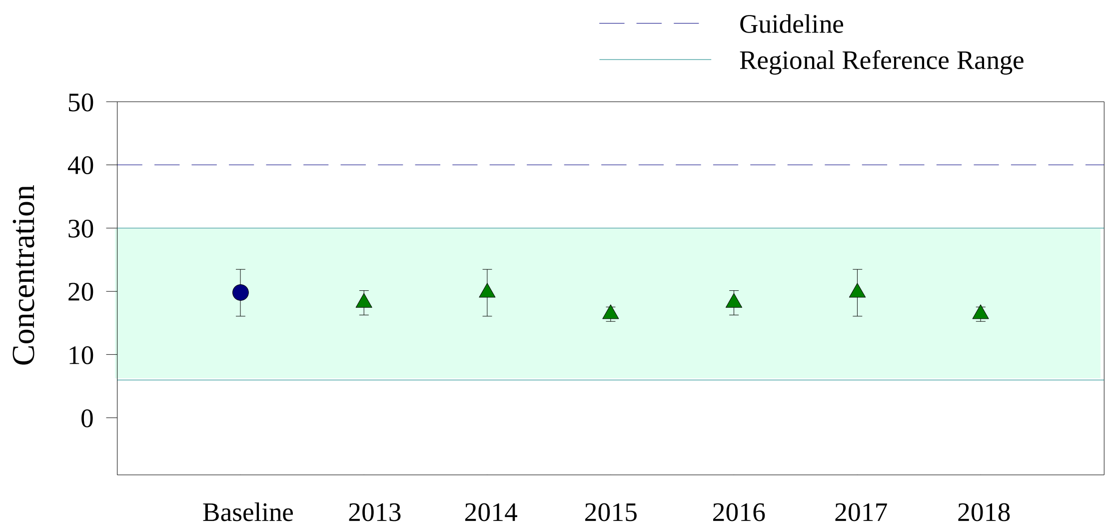
A Human Health Risk Assessment was completed by SENES Consultants Ltd. using the 2011/2012 and 2012/2013 EARMP data and determined that the country foods were safe to eat in all communities assessed. In subsequent monitoring phases, if the levels of chemicals remain within the range of those measured during the baseline conditions, the Human Health Risk Assessment can be used as a basis for concluding if the country foods remain safe to eat. It should be noted that the Human Health Risk Assessment was completed using chemical endpoints typically used for assessments associated with uranium mining. Aluminum, cadmium, iron, vanadium, and zinc, which are chemical endpoints identified for the EARMP community program, were not included in the assessment. As more data become available, and potentially new types of country foods assessed, it may be necessary to complete a new Human Health Risk Assessment.

4.5.4 Data Presentation

The EARMP community data is presented using both summary tables and figures. Descriptive statistics (average, standard deviation, number of samples, and number of values below the MDL) are calculated and reported for each chemical, media, and study area. A graphical presentation of the data is used to compare chemical concentrations to guidelines, the regional reference range, and baseline levels. Data are only graphed if >50% of the values are above the MDL.

The regional reference range has been re-assessed as the range between the 2.5% to 97.5% of the regional reference distribution (where 95% of the regional reference data are expected to fall), since it was determined the majority of the chemistry data is not normally distributed. The highest and lowest 2.5% of the reference data were identified using regression analysis of the cumulative percent frequencies of the observed reference concentrations. After identification, the highest and lowest 2.5% of the data were excluded and the remainder were used as the reference ranges representative of natural conditions. As more regional reference data becomes available, the ranges will be further refined. Appendix A, Table 6 provides the overall reliability of the current ranges based on the data available as of 2015.

Appendix A, Figure 2 shows a hypothetical figure that will be used to assess levels of chemicals in country foods. This figure provides information on guidelines values, the regional reference range, and temporal changes in a single image for each chemical in each sampling component. The blue line represents a guideline concentration (e.g., drinking water guidelines). The shaded area represents the regional reference range (i.e., reference average ± 2 standard deviations). The average concentration in the EARMP community sample is shown as a circle for the baseline year and a triangle for those sampling years following the baseline data collection. The error bars represent one standard deviation. The graph will be a very useful visual tool for assessing the EARMP community data against the comparison criteria at a glance. It will also allow for a qualitative assessment of increasing or decreasing concentrations of individual chemicals over time in each community.



Appendix A, Figure 2.
Example of how the EARMP community program results will be presented graphically during future monitoring campaigns.

5.0 REPORTING AND COMMUNICATION PLAN

A report will be completed to assess the EARMP community data following each monitoring year. The report will be structured so that the most relevant information is presented in the main document, with the detailed analysis presented in appendices. This will allow all potential audiences access to the information most relevant to them. The report, along with the raw data, will be available for download from the EARMP website: www.earmp.ca

In addition to the report, community visits may be completed to present the results of the monitoring program. Community visits may include presentations, distribution of summary brochures/calendars, school visits, and/or ads. The community visits will be an opportunity to receive feedback on the program and encourage to further involvement from community members. Feedback on the program can also be provided through the EARMP website. Since 2012, the EARMP has taken the opportunity to engage communities at least annually about their environment while also distributing information about the new project.

Appendix A, Table 6

Sample sizes for each analyte in each medium used for computing EARMP regional reference ranges.

Chemical	Water			Lake Trout Flesh			Lake Whitefish Flesh			Blueberries			Cranberries			Caribou Flesh			Moose Flesh		
	Available N	Included N[1]	Reliability	Available N	Included N[1]	Reliability	Available N	Included N[1]	Reliability	Available N	Included N[1]	Reliability	Available N	Included N[1]	Reliability	Available N	Included N[1]	Reliability	Available N	Included N[1]	Reliability
Metals																					
Aluminum	249	243	H	30	10	M[2]	69	28	H	43	43	H	55	18	H	32	11	H	40	40	H
Cadmium	249	84	H	30	30	-[3]	69	69	-[3]	43	43	-[3]	55	18	M[5, 7]	32	13	M[5]	40	10	M[2, 5]
Copper	249	243	H	35	35	M[4]	69	69	H	43	43	H	55	55	H	32	30[10]	H	40	40	H
Iron	249	249	H	35	35	H	69	69	H	43	43	H	55	55	H	32	32	H	40	40	H
Lead	249	243	H	30	30	H	69	69	H	43	22	H[5]	55	18	H[5]	32	13	M[5]	40	10	H
Mercury[6]	185	44	H	20	20	H	59	59	H	3	3	-[2, 3]	10	10	-[2, 3]	3	3	-[2, 3, 6]	7	7	-[2, 3, 6]
Molybdenum	249	243	H	30	30	-[3]	69	69	-[3]	43	43	M[5, 7]	55	55	H[5, 7]	32	32	-[3, 4, 5]	40	40	-[3]
Nickel	249	243	H	30	30	M[3, 5, 7]	69	69	H	43	43	H	55	55	H	32	32	M[5, 7]	40	38	H
Selenium	249	249	H	35	35	M[4]	69	69	H	43	43	-[3]	55	55	-[3]	32	32	H	40	37	H
Uranium	249	249	H	30	30	H	69	69	H	43	21	H	55	37	H	32	32	M[5]	40	36	H
Zinc	249	243	H	35	35	H	69	69	H	43	43	H	55	55	H	32	32	H	40	40	H
Nutrients																					
Ammonia[8]	241	241	H	0	0	-	0	0	-	0	0	-	0	0	-	0	0	-	0	0	-
Radionuclides																					
Lead-210	226	225	H	30	30	H	69	69	-[3]	43	19	H	54	17	H	32	32	H	40	35	H
Polonium-210[9]	164	164	M[4]	30	30	-[3]	47	42	H	8	8	M[2, 5]	0	0	-	0	0	-	1	1	-[3]
Radium-226	239	238	H	30	30	-[3]	69	64	H	43	30	H	55	55	H	32	25	H	40	35	H
Thorium-230[9]	154	152	H	30	30	-[3]	47	47	-[3]	8	8	-[3]	0	0	-	0	0	-	1	1	-[3]
Trace Elements																					
Arsenic	249	249	M[7]	35	35	H	69	69	H	43	43	-[3, 4, 5]	55	18	-[3]	32	32	H	40	37	H
Cobalt	245	239	M[5]	30	30	M[7]	69	69	H	43	22	M[5, 7]	55	18	M[5, 7]	32	13	H	40	10	M[2, 5]
Vanadium	245	239	M[7]	30	30	-[3]	69	69	-[3]	43	43	-[3]	55	55	-[3]	32	32	-[3]	40	40	-[3]

[1]Included N is smaller than available N when some of the samples were analyzed while using high MDLs (usually older samples). These samples in some instances had to be excluded.

[2]Sample size was low.

[3]All or nearly all values were = or < MDL.

[4]A completely accurate curve could not be produced for the concentration distribution of this analyte.

[5]Few values were > 5 x MDL (high uncertainty in some of the measures).

[6]Mercury is not associated to uranium mining operations and is therefore usually not analyzed for.

[7]The spread of concentrations was small and could be inaccurate (number of classes (k) < 5).

[8]Ammonia is not associated to uranium mining operations and is therefore usually not analyzed for.

[9]Some analytes were seldom analyzed for.

[10]Some outliers were removed.

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LIST OF FIGURES

LIST OF TABLES

Appendix B

Science Ambassador Program

UNIVERSITY OF SASKATCHEWAN

The Science Ambassador Program

2015 Annual Report

Making Science Fun & Relevant, One Community at a Time!

The Science Ambassador Program *is offered by* the University of Saskatchewan through the **College of Arts & Science** *with support from:*

UNIVERSITY OF SASKATCHEWAN
College of Arts and Science
ARTSANDSCIENCE.USASK.CA

The College of Agriculture & Bioresources; The College of Engineering; The College of Kinesiology; The College of Medicine; The College of Nursing; The College of Pharmacy & Nutrition; & The School of Environment & Sustainability

We thank our sponsors!

Legend of images: activity, school name, community

Front: ‘What is science?’ St. Pascal School, Green Lake

P1: College Dean, Dr. Peta Bonham-Smith; word cloud created from U of S student responses to the question ‘Why study science?’

P3: Science Activity notebooks, St. Pascal School, Green Lake

P4: Ambassadors Armugan Ashraf and Elly Knorr, Kelsey School Division, The Pas

P5: Balancing Eagles and Catapult Challenge, Stony Rapids School, Stony Rapids

P6-7: Science Ambassador Activities: clockwise: Geo-cake, St. Pascal School, Green Lake; Straw towers, Minahik Waskahigan School, Pinehouse; Lemon batteries, Valley View School, Beauval; Sprouting seeds, Father Megret School, Wollaston Lake; Mixes and Mixtures, Father Gamache School, Fond du Lac; Jell-O-cells with Mary Tait and Helen Tang, St. Pascal School, Green Lake; Identifying Organisms & Reconstructing Skeletons found in Owl Pellet dissection, Valley View School, Beauval; DNA beading, Father Megret School, Wollaston Lake

P8: Two-way Learning: Water-level monument, Charlebois Community school, Cumberland House; Ambassadors Joshua Nash and Jerry Wong, Rossignol Community School, Île-à-la-Crosse; Duck ready for cooking, Pike Lake Culture Days, The Pas and OCN; Culture camp Tent and Traditional Plant Medicine Walk; Rossingol Community School, Ile a la Crosse

P9: Fish Dissections facilitated by Ryan Froess, Eastern Athabasca Regional Monitoring Program; students from Father Porte Memorial Dene School, Black Lake and Father Megret School, Wollaston Lake

P10: Science Ambassador Celebration, U of S Campus, Saskatoon

P11: Digital Microscope Image Gallery Project, Charlebois Community School, Cumberland House

P13: Flexagon Programming and Flexagon Making, Valley View School, Beauval

P14: Elementary students at Father Megret School, Wollaston Lake; Elk caller, Father Porte Memorial Dene School, Black Lake

A Message from the College of Arts & Science

"Our science outreach programs are committed to helping schools find and create experiences that open students' eyes, spark exploration and learning and shine a light on the richness of experience they already know. Our Science Ambassadors have received a warm welcome in host schools, and their knowledge has been enriched too, by the opportunity not only to teach but to learn in participating communities.

I am so looking forward to meeting those youth who are encouraged by their early STEM-learning experiences, by their teachers and their Science Ambassadors, andwho will join us in post-secondary education and STEM careers in the years ahead!"

- Dr. Peta Bonham-Smith, Interim Dean of Arts & Science

What we do:

The Science Ambassador Program enhances science teaching and learning in remote Aboriginal communities by providing hands-on support.

We work alongside teachers to lead creative and culturally relevant demonstrations and experiments, facilitate class discussions and student inquiry projects, connect to community priorities and perspectives, and mentor students exploring possibilities for careers and continuing education.

Why we do it:

There has been a steady increase in the participation of First Nations and Métis peoples in science, technology, engineering and mathematics (STEM) but these students and professionals remain under-represented compared to their demographic importance in our province; the diversity, richness, and social-relevance of our STEM disciplines suffers as a result, and students are missing out on the social and economic benefits of an exciting array of careers.

Our Goals:

- to provide fun and engaging science experiences to students and teachers;
- to form learning partnerships with teachers, schools, and communities;
- to have Science Ambassadors serve as role models to younger generations;
- to engage schools and post-secondary institutions in dialogue to enhance science education overall;
- **and to broaden the pool of future U of S students and homegrown STEM professionals!**

Our USASK Science Ambassador Program

Initiated in 2007 by Dr. Julita Vassileva, NSERC/Cameco Prairie Women in Science and Engineering Chair (2006-2011), the Science Ambassador Program has grown steadily. As of 2015, the Science Ambassador Program has arranged 66 Science Ambassador placements in 14 remote communities across the three prairie provinces.

Feedback in the form of questionnaires and qualitative surveys have indicated a consistent, positive correlation between time spent with Science Ambassadors and positive student attitudes toward taking elective secondary science courses, careers related to Science, Technology, Engineering and the Health Sciences, and the success of women in these careers (*Vassileva, J. 2011. NSERC PrairieWISE reports: reports online at artsandscience.usask.ca/scienceoutreach/)*

Offered through the College of Arts & Science, coordinated by Dr. Sandy Bonny, with broad support from the University of Saskatchewan's science, engineering, agriculture and health science colleges, our program has grown in collaboration with enthusiastic educators in host schools and communities. We have enjoyed opportunities for dialogue around pathways for motivated Aboriginal students to access and succeed in post-secondary STEM degrees and professional programs.

The Science Ambassador Program is unique in that it engages university STEM students in long-term community placements. They spend 4-6 weeks working with community educators, harnessing their growing disciplinary expertise to deliver creative and culturally-responsive support for on-site STEM teaching and learning.

Science Ambassadors are matched with communities based on best fits between their areas of study with the interests and teaching and learning needs in the schools. They are hosted in the community between the end of winter term at the university (mid-April) and the end of the elementary school year (early June). These relatively long-term placements allow our Science Ambassadors to build meaningful friendships and learning relationships with students, teachers and community members, to participate in community life and culture, and to enjoy and learn from the natural environment.

Our 2015 Science Ambassadors represented four University STEM Colleges and included international students from China, Russia, South Africa, India and Iran.

In 2015 the Science Ambassadors

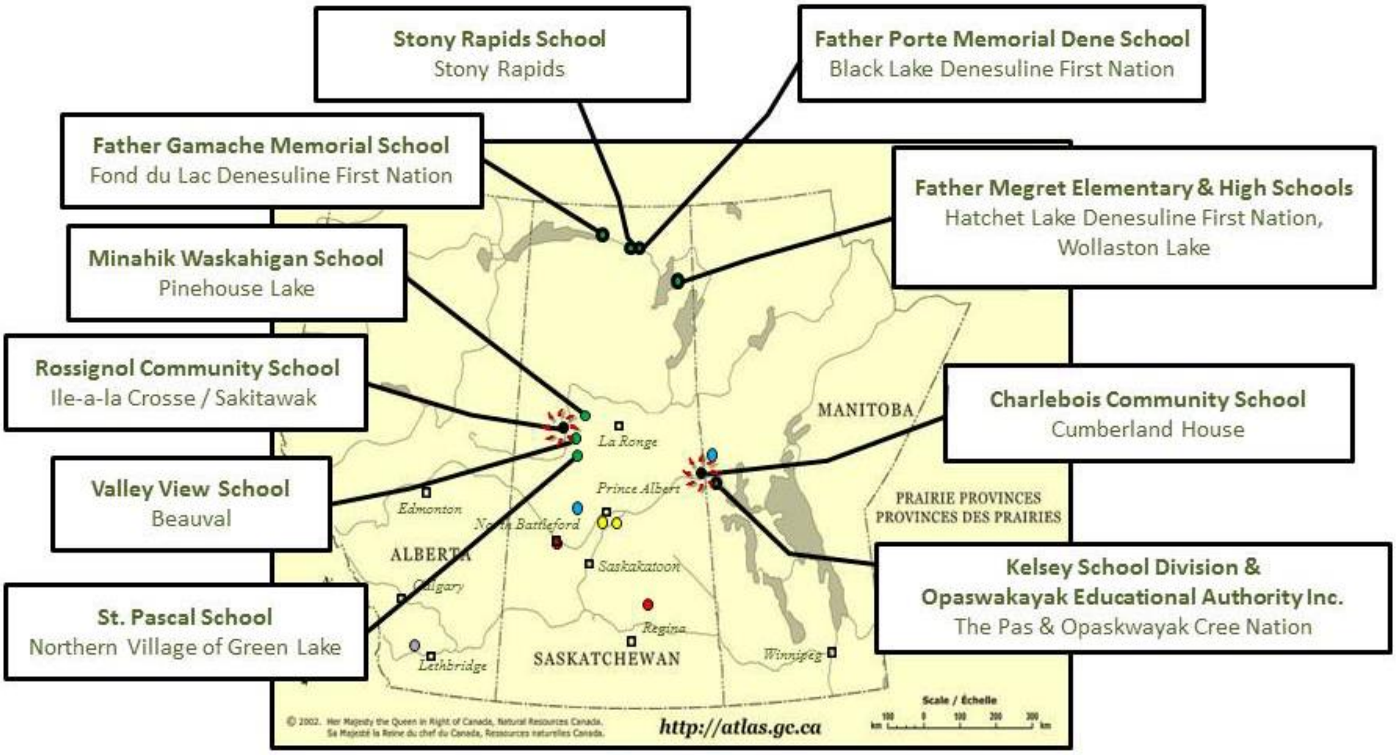
… partnered with 11 host communities

… worked with 153 teachers, EAs & community educators

… and reached 2200 students, 96% of whom are Aboriginal (as reported by school administrators)

Students at St. Pascal school in Green Lake kept lab notebooks to record the activities and experiments they did with Science Ambassadors Mary and Helen. They decorated their notebook covers with images prompted by the question – 'What is Science all About?'

2015 Participating Schools & Communities



New Communities

Past-participating communities

2013-14: green 2011-12: blue 2010: purple
2009: red 2008: orange 2007 Pilot Program

Thank you to those who help us, each step of the way!

- The **Northern Lights School Division #113** provided accommodations to Science Ambassadors in Stony Rapids, Beauval, Green Lake, Cumberland House and Pinehouse Lake
- The **University College of the North** donated dormitory space and cafeteria meals to Science Ambassadors working in The Pas and Opaskwayak Cree Nation
- The **Departments of Biology, Chemistry** and **Geological Science**, **A & S Science Outreach**, and the **College of Engineering's Sci-Fi Camps** loaned teaching materials
- **Professional development opportunities for our Science Ambassadors were facilitated by:**
    - **Sylvia Macadam (Saysewahum)**, Indigenous Voices Coordinator– Legacies of Aboriginal Education and Community Priorities for Youth
    - **Sheryl Mills**, Gwenna Moss Centre for Teaching Effectiveness – Teaching to a Learner's Needs, and Reflective School Engagement
    - **Lana Elias**, Director Science Outreach – Hands-on Science Show 'n Tell
    - **Kate Grapes-Yeo**, Saskatchewan Mining Association Educational Outreach Coordinator – Earth Science Activities K-12
    - **Garry Sibley**, FSIN Science Consultant and Science Fair Coordinator – Culturally-relevant science inquiry projects, and fairs

Our 2015 Science Ambassadors

Science Ambassadors are recruited competitively. They come to us with strong science backgrounds, excellent communication skills, enthusiasm for teaching and learning, and lots of creativity.

They share STEM expertise, time, perspectives, and stories; acting as academic mentors who work hard to connect with teaching and learning needs in their communities.

Our 2015 Science Ambassadors came with a wealth of energy, represented four STEM Colleges and included international students from five continents!

Elvira Knorr (Russia) 5th yr. Chemistry/Education

Armugan Ashraf (Bangladesh) 3rd yr. Biology

Jessica Popp (USA) M.Sc. Biology

Jerry Wang (China) M.Eng. Electrical

Joshua Nash 4th yr. Biology

Sara Kuleza M.Sc. Biology

Sara Mansouri (Iran) M.Sc. Computer Science

Helen Tang 2nd yr. Biochemistry

Mitchell Cassidy 3rd yr. Civil Engineering

Franco LeRoux (S. Africa) B.Sc. Biochemistry

Taraneh Kazerouni (Iran) D.Eng. Electrical

Aravind Ravichandran (India) 2nd yr. Physics

Derek Green M.Sc. Toxicology

Neil Patel 4th yr. Kinesiology/Arts

Amir Abolhassani (Iran) M.Eng. Chemical

Mary Tait M.SEM / HB.Sc. Chemistry

Joel Reimer 3rd yr. Math/Education

Amandeep Sangha (India) M.SEM./ Agricultural Eng.

Nicole Cameron M.Sc. Kinesiology

Mahsa Mafi (Iran) M.Eng. Biophysical Engineering

The Science Ambassador Program
MAKING SCIENCE FUN AND RELEVANT ONE COMMUNITY AT A TIME!

Fond du Lac Den
General Delivery
Fond du Lac, SK
S0J 0W0

Dear Chief Earl

DEAR FATHER GAMACHE SCHOOL...

MEET YOUR 2015 Science Ambassadors

JOEL & ARAVIND!

UNIVERSITY OF SASKATCHEWAN

ARAVIND:

I am a second year physics student at the University of Saskatchewan, I am currently studying about exoplanet transits and I will be starting a new research on nuclear science soon. I like to do hands-on science activities with students, I like to teach about gravity, atoms, subatomic particles, etc. My favourite game is volley ball, I like rock climbing and to play squash. I was born and raised in India, I came to Canada on September 2013 to study at U of S. I am looking forward to meet you all to have some fun time with science.

"Change is the only constant in our life."

JOEL:

Hello! I am a first year Education student at the University of Saskatchewan. My passion for teaching started as I tutored at a young age. As I've grown older I have continued to tutor students in Math, Science and English. I also have grown to love the arts and am currently a facilitator of spoken word poetry workshops all across Saskatchewan. I love writing, being active and playing guitar. I also love the outdoors and the peace and chaos that comes with it. I was born in Hong Kong and grew up in both North Africa and Mongolia (my parents were both travelling teachers, go figure). I am so looking forward to providing students with an opportunity to grab a hold of the wonder and thought that comes from discovering the natural world around us.

The Science Ambassador Program
MAKING SCIENCE FUN AND RELEVANT ONE COMMUNITY AT A TIME!

Letters acknowledging program sponsors and introducing Science Ambassador teams are provided to schools, community and Band Councils and/or Civic Offices ahead 4-6 week long community placements

"The students loved their Science Ambassadors! They brought lots of knowledge, hands-on experience and a team approach – they made science fun for the students, great work Joel & Aravind!"

- G5 teacher, Father Gamache Memorial Dene School

"Some scientists are among the most awestruck witnesses to the glories of the unfolding universe and among its most eloquent guides"
- John Mohawk (Sotsisiwah) Elder, Smithsonian Scholar

"My students gained the understanding that the Science Ambassadors are only EIGHT years older than them – and see how possible University is!"
Grade Five Teacher, Minahik Waskahigan School

What Teachers are Saying:

"The students felt comfortable asking questions, and seeing people other than their teachers involved and interested in science!"
- G7 teacher, OCN

"I think the greatest aspect having Ambassadors at our school was having STRONG, INTELLIGENT, FEMALE ROLE MODELS for the students to look up to. A couple of my female students are now considering careers in the field of science."
- G7 teacher, St. Pascal School

"The greatest benefit is the message that it is 90% work 10% brain to get into nursing and/or medicine, great role models!"
- G6 teacher, Rossignol Community School

"They were willing to use the language that the students can understand and relate to. They worked hard to connect, and they did!"
- G10-12 teacher, Father Megret School

We asked youth:
How much did you enjoy having Science Ambassadors in your community?
(0-not at all, 5-it was great!)

4.3

Average of 384 responses

"Our Science Ambassadors were friendly, inclusive and very enthusiastic … They showed the students that science is all around us, even in our own community!"
Grade Two Teacher, Father Megret School

2015 Science Ambassador Activities

Science Ambassadors work alongside teachers to engage students in fun and culturally relevant hands-on learning. Their activities are determined in consultation with science teachers and school administrators, and their role in the school evolves during school placements too - following student enthusiasms, and emergent learning opportunities!

HITS of the 2015 Science Ambassador Program

Wollaston Lake: photo-treasure hunt; seed identification; egg physics; learning about solar cells and renewable energy; fish dissections; DNA extraction and molecular beadwork; career talks; having Science Ambassadors help with our cake decorating contest and teaching them to fish; sprouting seeds to eat

Black Lake: chemical car design challenge; traditional simple machines; digeridoo science; planting seeds; environmental sampling; physics of flight; high school study hall; and teaching the Science Ambassadors how to cook fish on a fire at Culture Camp

Stony Rapids: animal survival games; exploring science outside; fish dissections; building elastic cars; dissolving and extracting potash; learning all about the physics of flight and biomechanics of birds, having our own bird Olympics!

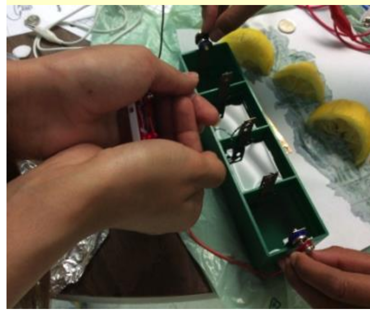
Fond du Lac: designing balancing eagles; oobleck and how molecules move; solar distillation and 'survival science'; growing sprouts; hands-on math; building electrical circuits; dissecting fish an Elder got from the lake

Pinehouse Lake: making slime; high and low viscosity volcanoes; ukulele science; bridge-building competition; aerodynamics; environmental testing in the wetlands; post-secondary planning session; joining Culture Week; spectrophotometry, the Fermi paradox, and how we can use light to find earth-like planets and aliens!

Green Lake: making polymers; invisible acid-base ink; surveyor's wheels; banana DNA extraction; beading DNA; making Jell-O cells; dissecting perch and owl pellets; predator-prey tag; keeping science journals; planning a community garden; Chinese calligraphy lessons

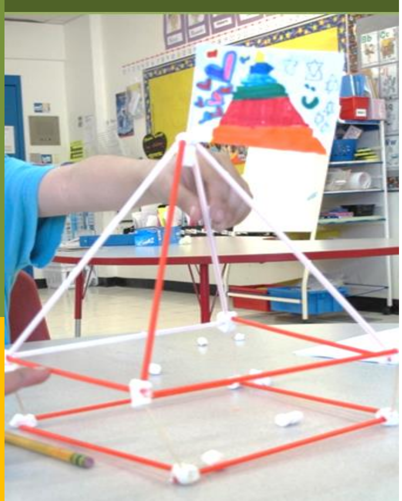
Our Science Ambassadors share ideas through a "Party Line" and Facebook activity page. We love to pass successful strategies between schools and it is exciting to see new ideas connect with students and teachers each year. Pooling our strengths makes creative STEM teaching (like examining Earth's inner layers with cake mix and fondant icing) a…

"Piece of Cake"!



Students loved activities that were:

- Hands-on
- Linked to familiar topics
- **FUN** and **MESSY!**



Ile a la Crosse: analyzing states of matter (slimes!); tutoring senior students; plant identification; traditional medicine walk; learning how lenses help us learn (microscopes, telescopes, and rainbows); starfish and worm dissections; building circuits; building watershed models; collecting aquatic insects; mini-science fair; the biomechanics of track & field; university life presentations; and joining culture camp

Cumberland House: making a rain gauge; environmental water sampling; grade 6 science inquiry projects; sprouting plants for the garden; learning how to collect and analyze data; making a digital microscope image gallery; working to design and build a water-mark sculpture for the boat landing!

Beauval: magnetic cars and boats, and magnetic oobleck; designing solar ovens to cook marshmallows; potash extraction and solubility; Star Wars sound effects; dissecting owl pellets – and assembling complete skeletons from the bones we found; making mobile apps for our own flexagons; animation from paraxiscope to 3D graphics; school-wide Science Symposium day

The Pas / Opaskwayak Cree Nation: microwaving soap – Myth busting!; learning about gas pressure; Pike Lake Culture Days (how to pluck a duck, make bannock, flying fish, making duck soup); exploring surface tension; extinguishing and relighting a flame; DNA extraction and plating bacteria with high school students; having the Ambassadors join the water symposium!

We asked students: “What was the best thing you learned from your Science Ambassadors?:

FUNDAMENTALS

‘that eggs have SO MUCH protein’ (G7)

‘that the old ground is right under us’ (G4)

‘that by cutting it open I learn new things about the trout that live here’ (G12)

‘I loved learning about the spectrum and I loved the multiple galaxies and every star sending us older light!’(G8)

NEW PERSPECTIVES

‘I learned that I love to make stuff in science!’ (G7)

‘I learned to go after your dreams and never give up’ (G7)

‘that I can make it to Uni. and do no matter what I want to do, lol!’ (G5)

‘I saw people enjoy an experience of spreading knowledge that they have’ (G10)

Franco Le Roux
49 mins

Mitch and I have had a ton of fun activities these first two weeks. One of our highlights was teaching a lesson on light and a girl in the grade 5 class asked if we could do something with this with aliens. This inspired Mitch to write a lesson plan we could tie into talking about aliens.
He worked hard and incorporated it into a lesson about spectrophotometry. So we start by burning some Magnesium strips and go from there. We even had some gloves and tongs for safety, and the science teacher had some portable bunsen burners so we look so professional. haha

Anyway the kids really seem to enjoy it in every class we do it in, and we have a lot of fun teaching it too. The best part was that these kids in grade 5 were able to grasp such a high level concept as spectrophotometry and go even further, it was awesome to see.

Sorry no pictures as of yet, but I'll be sure to get a few before our time is up.

-Franco

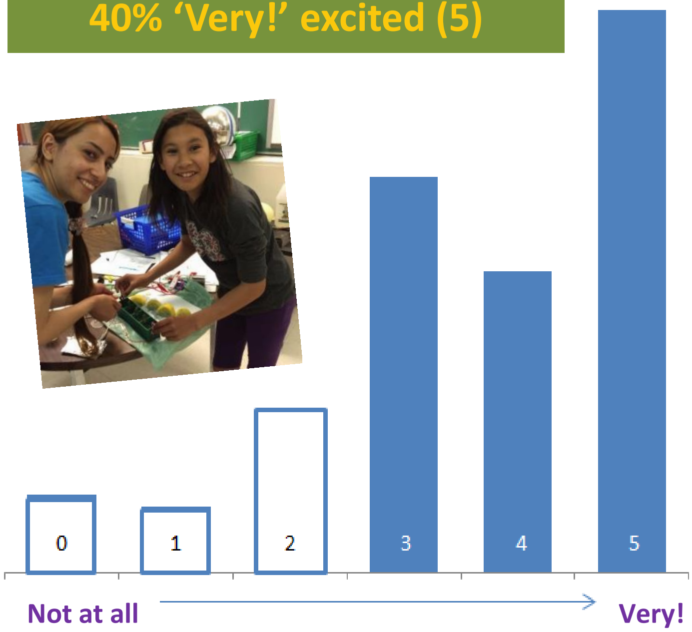
Unlike · Comment

You, Mary Tait and Elly Kay like this.

Mary Tait Love this idea!
45 mins · Edited · Like

“Are you excited to take science in high school, and College/University one day?”

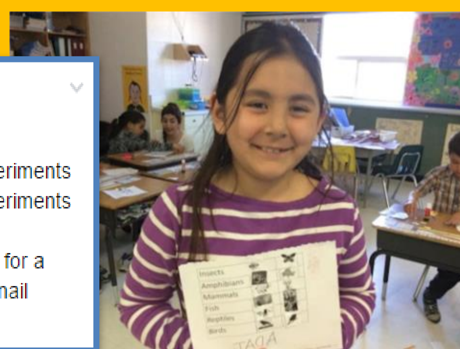
80% excited (≥ 3)
40% ‘Very!’ excited (5)

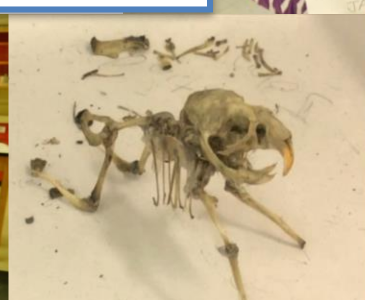


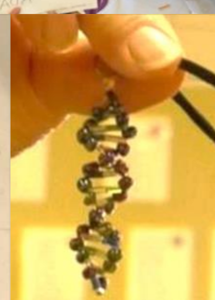
- **I am excited**! Why I like it? Because it shows you cool things about life and the earth! (G5)
- Because I love to do new things and I love working in groups and I just love science so much! (G7)
- I would love to go to University and become a nurse. (G12)
- I would like to work with animals and preserving the land. (G12)
- I'm excited because all the new things I learned that I never knew about. (G4)

Mahsa Mafi
May 23 · Edited

We had lots of fun in these past 3 weeks. We did a bunch of experiments for different grades, from grade 1 to grade 12. Implemented experiments include force, magnets, biology (owl pellet dissection), electricity, mechanical mixtures, sound, water and etc. We also volunteered for a carnival in which Sa Ra was doing face painting and I was doing nail painting. We are so happy to be on this adventurous journey.







Two-way Learning - Kiskiaumatowin

Hosted in culturally-vibrant Métis and First Nations communities, Science Ambassadors engage in rich experiential learning—they return to the University with fresh perspectives and new appreciation for Aboriginal community and culture.

Science Ambassadors connect their activities to local priorities and culture, working alongside local community educators. This year they helped to facilitate the construction of a water-mark art installation at Cumberland House (right) ; joined culture camp activities in The Pas and OCN, Fond du Lac, Green Lake, and Ile a la Crosse; worked with local knowledge keepers to identify plants and medicines; learned to fish in a derby at Wollaston Lake; and worked with Elders to teach students about Indigenous science as part of culture week in Black Lake.

Educators' feedback recognizes the Science Ambassadors' engagement in two-way community-based learning as a strong, and positive influence for students in participating schools:

"I think the students now realize that science can and should be learned by anyone and that everything is connected – much like the Aboriginal perspective on things. Sitting around listening, sharing stories, laughing and respecting our ways and views, it was/is a good thing."
— Cultural Facilitator, Île-à-la-Crosse

We asked students… "What is the best thing that your Science Ambassadors learned from you?"

- how to spell and talk in Dene, and listening!
- we taught our S.A.s how to play heads up 7 up and that we like to fish, and how to cook fish
- we taught about cheeskanis (spruce bugs) and they learned about our names
- they learned that we are cool and awesome and that we give awesome answers
- I teached them how I give them kindness ☺
- we showed them how to behave (lol) and how to help one another in our community!

Our Science Ambassadors value the opportunity to learn about Aboriginal ways of living and knowing, and community priorities for learning:

Not only were the students very pumped, their parents often told us they appreciated us. Community members also offered to teach us - I have learned as much as I've taught, I think! - Franco Le Roux, Biochemistry

I've gained in perspective - I stayed to help with the Elder's gathering – and I'm more determined now to make my future work as an Engineer inclusive and accessible for people with diverse backgrounds and learning. - Mitchell Cassidy, Engineering

The experience also teaches you about how science impacts the lives of others, its perspective within other communities, its availability - It also reminded me just how cool science is! – Elvira Knorr, Chemistry/ Education

Being a Science Ambassador has really broadened my definition of science and the skills that kids can learn through science. I feel that I have grown in knowledge of Aboriginal history and current affairs and culture and also as a person – I feel more connected and committed to understanding my own values too – Nicole Cameron, Kinesiology

Our program goals include providing practical and academic STEM-support to teachers:

Science Ambassadors “bring the curriculum to life”, and teachers are very appreciative of having disciplinary expertise available in their classroom:

“The Ambassadors showed me a lot of new activities that reflect concepts from the curriculum!”
– G9 teacher, Father Megret School

“Every time they came to the class it was a different experiment. It was wonderful for myself and my students having someone else build on concepts!”
– G6 teacher, Valley View School

“The activities that I found most helpful to my teaching goals were plant / soil / rock identification - also the photo gallery using the digital microscope and camera. The Ambassadors were very technically proficient!”
- G9/11 teacher, Charlebois Community School

“Discussions about math pedagogy and emphasis on positive and negative directions in the unit circle related to the tangent function helped my precalculus students, I loved their hands-on unit circle activity!”
- G12 teacher, Rossignol Community School

Indicators of Success:

Momentum

Every participating community has requested to host the program again, and 2 additional communities have requested to join the program in spring 2016

Changing Attitudes

Teachers report that interacting with Science Ambassadors is a motivating factor for students, sparking interest and ambitions for continuing education

Expectations

Surveys and follow-up interviews indicate a correlation between hosting Science Ambassadors in successive years and teachers’ and parents’ ambitions for their students STEM learning

Patterns of STEM Engagement

High school administrators in The Pas report a 40% increase in high school science enrollment since 2007, have had to restrict registration in an after-school science club at one school, and teachers report improved springtime attendance during SA placements

Every Science Ambassador responded that - ‘YES’ - they recommend the program to other U of S students

*Understanding animal physiology is important to post-secondary science, and dissection skills are key to academic preparation for biology and the health sciences – this year Science Ambassadors partnered with the **Eastern Athabasca Regional Monitoring Program**, biologist **Ryan Froess**, and **Elders in Black Lake, Wollaston Lake, Stony Rapids** and **Fond du Lac** to bring fresh lake trout to the dissection table.*

It was fun to identify internal organs and connect stomach contents to ecosystem dynamics – one large trout had 18 little fish inside! Science Ambassadors followed up, exploring a range of connected topics, from how to tell a fish’s age by growth rings on their scales, to health science and environmental career opportunities available in the North!

Celebrating the 2015 Science Ambassador Program

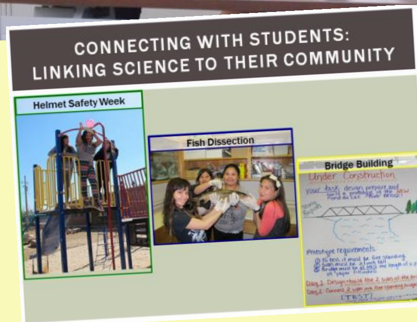
August 20th we held our annual Science Ambassador Celebration at the Diefenbaker Canada Centre to share this year's program with the University community and our sponsors.

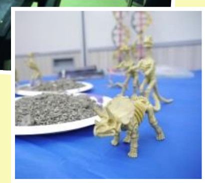
Eight Science Ambassadors made presentations about their experiences and the impact of the program on their growth and development as STEM professionals. An overview of the program scope and feedback received from school administrators, community educators and, most importantly, youth, was provided by program coordinator Dr. Sandy Bonny, along with new insights and program goals for next year.

Our guests included the Honourable Senator Dr. Lillian Dyck, who spoke about the absolute importance of increasing Aboriginal student participation the sciences – not only to the provincial economy – but for the benefit of the sciences as a whole. Diversity of perspective, priorities, and experience provide strength for any collaborative endeavor and equity in access to STEM education and careers should be a provincial, and national priority.

Minister of Advanced Education, the Honorable Scott Moe also joined us, bringing greetings from the Province of Saskatchewan and encouragement to our program. He emphasized the importance of equalizing educational opportunities for all Saskatchewan youth, and the increasing importance that partnerships between provincially and federally funded schools will play in our province.

We were honoured to have leadership from diverse University Colleges in attendance, as well as Indigenous Engineering advocates Mr. Matt Dunn and Dr. Duncan Cree; pioneering Cross-cultural science educator Dr. Glen Aikenhead; and past Cameco NSERC Prairie Women in Science and Engineering Chair, and Science Ambassador Program Founder, Dr. Julita Vassileva.





Top: guests learn how to extract Banana DNA; Middle: activity tables and presentations; Left: Hon. Senator Dr. Lillian Dyck awards a Certificate of Appreciation to SA Helen Tang

Following the afternoon event our Science Ambassadors received Certificates of Appreciation from the College of Arts & Science. We were joined by USSU Student President Mr. Jack Saddleback, who congratulated our Science Ambassadors on their perseverance and dedication teaching youth, commenting that, "You may not think that you've made a difference in four weeks, or six weeks – but in ten years, there will still be a student who remembers that you met them where they were, and saw how much they wanted to learn." Teaching and mentoring students has been transformative for many of our Science Ambassadors – we're celebrating spirits of growth and change!

"Whenever I ask someone how they became inspired to go on to university or got into their particular career, they always say it was a teacher or a professor who took an interest in them and encouraged them. As Science Ambassadors, you science teachers – you have my admiration and gratitude for the difference you make in the lives of the students you mentored. Meegwitch, Xie Xie, Merci, I thank you."

- Hon. Senator Lillian Dyck, SAP Celebration, 2015




Science Up Close!

Students at Charlebois School in Cumberland House conducted a field survey, collecting environmental data as well as samples of insects, plants, soil and water. Science Ambassadors Derek and Amandeep helped the students to develop collection logs, tracking observational data and instrument measurements (dissolved gas, pH, etc.) at each sample location. Then the class used a digital microscope to create an 'Up Close' image gallery representing the diversity of natural systems around their school.

Program Administration

The 2015 Science Ambassador Program was offered through the Division of Science, College of Arts & Science, with broad support from University of Saskatchewan science, engineering and health science colleges and schools.

Industry, Provincial, and Institutional partnerships provide pivotal support to our program:

- Science Ambassadorships to fly-in communities in the Athabasca Basin were funded in part by the Cameco Corporation through their office of Community Investment
- Science Ambassadors in The Pas and Opaskwayak Cree Nation, Manitoba, were hosted and supply costs generously sponsored by the University College of the North and Manitoba Education
- The Saskatchewan Indian Gaming Authority provided a grant of $5,000 to support the program's supply and equipment costs
- The Nuclear Waste Management Organization provided $7,500 toward hiring the best Science Ambassadors from a competitive pool
- We secured 3- year funding through to 2017 in the amount of S22,000 from the NSERC PromoScience Grant Program

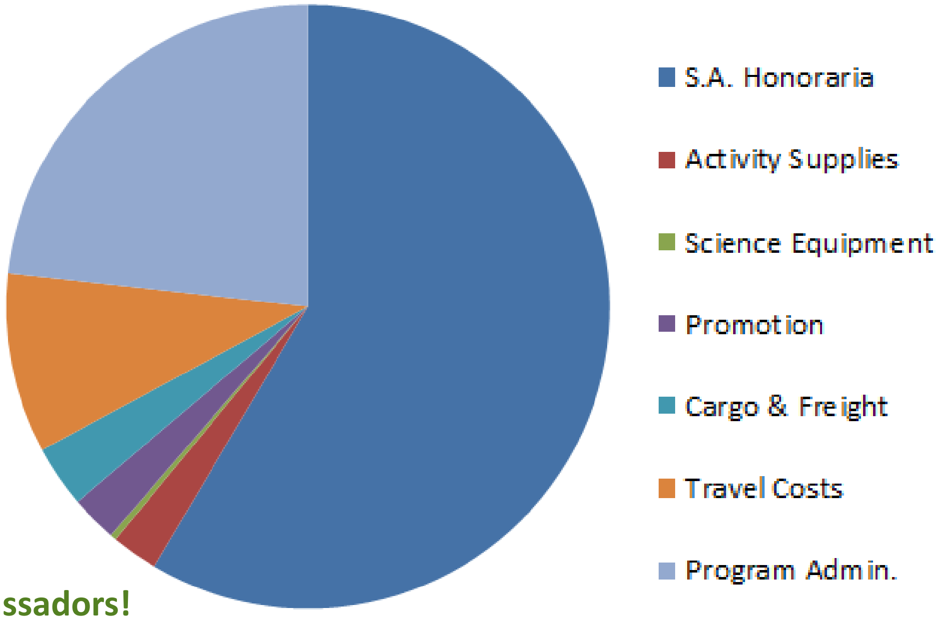
Valuable in-kind donations of teaching materials were contributed by:

- PotashCorp: potash, DVD mine tours, and fossiliferous gravel
- The Saskatchewan Dental Hygienists Association: teaching kits and supplies from Canada's ToothFairy
- Agriculture in the Classroom, Saskatchewan: seed identification and classification kits; little Green Sprouts seeding kit; and Exploring Bioengineering DNA extraction and bacterial plating supplies
- The Saskatchewan Mining Association; potash solution and recovery activity supplies

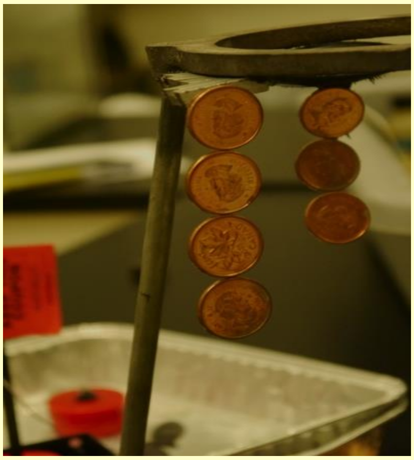
We welcome collaboration with new and returning donors - your financial and practical support is truly essential to the quality and continuity of our Science Ambassador Program!

"Hosting Science Ambassadors at our school has brought our learning community NEW and FRESH ways of seeing science!"
- Senior Science Teacher, Cumberland House

Cost Summary 2015



Reaching 17 Schools
…in 11 communities
…with 20 Science Ambassadors!



Counting Pennies
Students at Valley View school tested the strength of magnetic forces against gravity, with quantum penny chains

Science Ambassador Program expenses are met through a combination of monetary and in-kind donations from our partners.

This cost summary does not include accommodation costs, which are met by participating communities, nor does it include provision of office and working space, and academic leadership in the College of Arts & Science, University of Saskatchewan.

Expense Details

Our largest expense is the provision of student compensation in the form of **Science Ambassador honoraria.** Averaging 60% of the program cost, this expense varies year to year, and is determined by the University of Saskatchewan Student Pay Scale (2015) which adjusts wages to year and degree level.

Administrative Costs (23%) include salary for a 0.5 FTE program coordinator, pre-placement training of student Science Ambassadors, printing of program manuals, telephone, fax, postal costs, and office supplies and equipment. **Travel Costs** (10%) include air travel, bus service, and recompense for the use of personal vehicles for highway and city transportation.

Activity Supplies (2.5%) and **Re-usable Equipment** purchases and maintenance (0.5%) are kept relatively low by generous loans and in-kind donations from the University of Saskatchewan's science, engineering and health science colleges, as well as from external donors.

Cargo & Freight charges (2%) are associated primarily with the delivery and return of science materials and equipment.

Promotion & Communication Costs (3%) for 2015 included printing brochures, flyers and reports, website maintenance, hosting the 2015 Science Ambassador Celebration Symposium, and relevant professional and academic conference participation. Saskatchewan has a strong community of practice in STEM education – this year we shared our approach, and learned from many others at ITEP's Think Indigenous Conference 'Inspiring change through Indigenous education practices and knowledges' (Saskatoon, March); the Awasis Aboriginal Education Conference (Saskatoon, April); and the Saskatchewan Science Teachers' Society Siematics' 15 Conference, 'Embracing Change' (Regina, May).

Future of the Science Ambassador Program

The Science Ambassador Program has grown five fold since 2007, while maintaining a high standard for meeting STEM teaching and learning needs 'One Community at a Time!'

Our Science Ambassadors provide a valuable resource to teachers working in remote communities, bringing strong science backgrounds, practical hands-on support, and youthful enthusiasm for inquiry-based and cross-cultural learning.

It is our hope that the Science Ambassador Program will continue to support Aboriginal student success with provincial science curricula in the short term. In the long term, as Science Ambassadors, science students, community schools, and the University of Saskatchewan continue learning together, we are truly looking forward to increased representation of Aboriginal peoples and perspectives among our provinces' future scientists, mathematicians, engineers, health professionals… and science teachers!

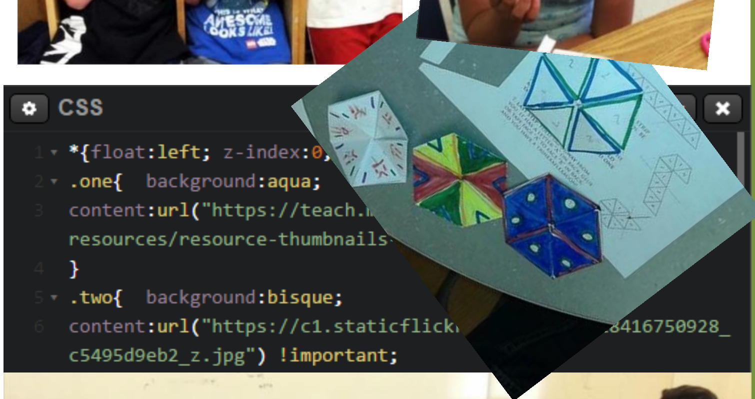
The Science Ambassador Program plans to return to all of the communities that participated in 2015, and we are building capacity with the support of our sponsors to offer Science Ambassador opportunities to new schools that share our vision of supporting Saskatchewan's youth through creative and culturally relevant STEM learning!

If you are interested in learning more about The Science Ambassador Program, or would like to participate as a program sponsor, host community, or Science Ambassador, please use the contact information on the next page to explore possibilities for next spring's program…

We're Excited!

Unfolding Possibilities!

Students at several schools explored mathematical probabilities with flexagons– multi-faced paper models that can be folded and unfolded to reveal multiple image patterns. They are tricky to map by hand so senior computer science students in in Beauval worked with their Science Ambassadors to build a hexaflexagon maker in html code, that they shared with elementary math classrooms.



Thank you! to all the Elders, teachers, administrators, parents and, especially, participating youth, for helping our Science Ambassadors feel at home in your schools and communities!

Masi cho! Kinanaskomitin! Wopida! Miigwech! Marsee! Thank you!

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...Give us a call, Get in touch!

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Download our Annual Program Reports & LEARN MORE Online!

artsandscience.usask.ca/scienceoutreach

Appendix C

Detailed Data Analysis

APPENDIX C: DETAILED DATA ANALYSIS

1.0 WATER QUALITY

To evaluate the 2014 EARMP community water quality data, concentrations of the reduced chemical list were compared to:

1. Canadian Drinking Water Quality Guidelines (CDWQG; HC 2012) and the Canadian Water Quality Guidelines (CWQG) for the protection of freshwater aquatic life (CCME 2015);
2. regional reference data from CanNorth's database; and,
3. previous monitoring phases.

Summaries of available guidelines, regional reference data, and the 2011 to 2014 EARMP community data are presented in Appendix C, Figure 1 and Appendix C, Table 1. Data were graphed if concentrations of a certain chemical were above the method detection Limit (MDL) in at least one community. If available, the CDWQG are presented on the graphs since the EARMP community program is most concerned with human health. If CDWQG are not available for a certain chemical, then the CWQG were included on the graph. The raw water chemistry results are presented in Appendix D, Table 1.

In 2014, concentrations of most chemicals were very low and in the case of mercury, selenium, lead-210, polonium-210, thorium-230, cobalt, and vanadium, the concentrations were too low for the laboratory to measure in all of the samples (i.e., below the MDL). All chemical concentrations measured near the communities were below available CDWQG or CWQG (Appendix C, Figure 1 and Appendix C, Table 1). In addition, all chemicals were within the expected range for the region or similar to those measured during the baseline years. As there has been no apparent increase in the concentrations of the chemicals assessed in the community water samples since the baseline sampling years and the last Human Health Risk Assessment indicated there was no risk, there are no concerns associated with the 2014 EARMP community water quality.

2.0 FISH CHEMISTRY

To evaluate the EARMP community fish chemistry data, concentrations of the reduced chemical list were compared to:

1. regional reference data; and,
2. previous monitoring phases.

Lake trout and lake whitefish samples were collected from each community in 2014; however, no northern pike were sampled. Five samples of each species were collected from each community. A summary of fish descriptive statistics (length, weight, and age) is provided in Appendix C, Figure 2 and Appendix B, Figure 3. Summaries of available chemical concentrations measured in regional reference data, baseline data, and the 2014 EARMP community data are presented in Appendix C, Figure 4 and Appendix C, Figure 5 and Appendix C, Table 2. Data were graphed if >50% of the concentrations for a certain chemical were above the MDL in at least one community. The raw fish chemistry results are presented in Appendix D, Tables 2 to 7.

Chemical concentrations in the community fish samples from 2014 were often so low that the laboratory could not measure the level. This was the case for cadmium, molybdenum, lead-210, radium-22, thorium-230, and vanadium in over half of the lake whitefish and lake trout samples assessed in all of the communities. In addition, aluminum and polonium-210 were below levels the laboratory could measure in over half of the lake trout sampled from each community.

Average arsenic concentrations fall within the updated regional reference range in lake trout from all communities, but slightly higher than the regional reference range in lake whitefish from most of the communities during at least one of the monitoring years (Appendix C, Figure 4 and Appendix C, Figure 5). It is noted that overall, the 2014 arsenic levels were lower or comparable to those measured during the baseline monitoring years from which a human health risk assessment indicated the fish were safe to eat.

Similar to previous monitoring cycles, mercury in lake trout exceeded the regional reference range in some communities. In Black Lake, average concentrations of mercury measured 0.44 ± 0.073 µg/g in lake trout from Black Lake and 0.59 ± 0.180 µg/g in lake trout from Fond du Lac. Black Lake and Fond du Lac are not currently listed in the MOE mercury in fish guidelines (GS 2014). Before the MOE switched to lake specific consumption guidelines for mercury in fish, 0.5 µg/g was used as a threshold before consumption restrictions were advised (SE 2004). If fish contained mercury between 0.5 µg/g and 1.0 µg/g, as observed in the lake trout from Fond du Lac, recommended consumption restrictions included having children and pregnant women avoid consumption of the fish and restricting those who fished the lake more than 3 weeks a year (as is the case for most Fond du Lac residents) to 1 meal a week (SE 2004). The 0.5 µg/g threshold has only ever been surpassed in two of the lake trout sampled from Fond du Lac, LT06 and LT09 from 2014 (Appendix D, Table 5). These two fish were also among oldest ever analysed, 29 and 21 years old, respectively (Appendix D, Table 5). Since mercury accumulates in fish with age, community members could also consider limiting their consumption of large, and therefore, older lake trout. No lake trout less than 55 cm long have shown elevated mercury levels.

No fish were collected from Crackingstone Inlet of Lake Athabasca for the community of Uranium City in 2013 or 2014 as the community selected Prospectors Bay as their sampling location during these years. However, selenium values in the lake trout and lake whitefish collected from Prospectors Bay of Lake Athabasca were within the regional reference range and were comparable to the values from previous years. Additional fish sampling in Crackingstone Bay will take place during the technical sampling program in 2015.

3.0 BERRY CHEMISTRY

To evaluate the EARMP community berry chemistry data, concentrations of the reduced chemical list were compared to:

1. regional reference data; and,
2. previous monitoring phases.

Summaries of available chemical concentrations measured in regional reference data, baseline data, and the 2014 EARMP community data are presented in Appendix C, Figure 6. and 7 and Appendix C, Table 3 and 4. Data were graphed if >50% of the concentrations for a certain chemical were above the MDL in at least one community. The raw berry chemistry results are presented in Appendix D, Tables 8 and 9.

Similar to the water and fish data, levels of chemicals in the blueberries were often too low for the laboratory to measure. This included levels of cadmium, selenium, thorium-230, arsenic, and vanadium, which were below measurable levels in more than half of the samples from most communities. Aluminum and radium-226 levels in Stony Rapids, which were slightly higher in 2013 as compared to the baseline monitoring years decreased back to baseline levels in 2014 and fell within the regional reference range. Levels of lead (0.08 ± 0.07 µg/g), molybdenum (0.5 ± 0.08 µg/g), and nickel (1.7 ± 0.72 µg/g) in the blueberries from Fond du Lac and molybdenum (0.4 ± 0.05 µg/g) and cobalt (0.08 ± 0.085 µg/g) in blueberries from Wollaston Lake were higher in 2014 as compared to previous monitoring years and as compared to the regional reference range. It is noted that these chemicals, when converted to a wet weight basis, were also slightly higher as compared to available supermarket berry data (HC 2011).

To further put these values into context, the human health risk assessment toxicity reference values completed as part CanNorth 2014 were consulted. Exposure to lead, molybdenum, and cobalt at these slightly higher levels than observed during the baseline assessment would have negligible effect on the overall assessment completed in 2014 which showed that overall exposure to these chemicals from country foods was well below toxicity reference values. A Country Foods study completed in the Yukon (Gamberg 2000) also found blueberries contained similar and/or higher concentrations of lead and molybdenum to the levels found in the 2014 Fond du Lac and/or Wollaston Lake samples. In addition, the European Commission does have guidelines related to maximum allowable levels of lead in food for consumption. For berries, the limit is 0.2 µg/g on a wet weight basis (EC No 629/2008), with the Fond du Lac values falling well below that limit, particularly when converted to a wet weight basis (0.08 µg/g dry weight is equivalent to 0.013 µg/g wet weight) (Appendix C, Table 3). Overall, blueberries are considered safe to eat in all of the EARMP community; however, particular attention will be paid to levels of lead, molybdenum, nickel, and cobalt during future monitoring years to ensure they are not increasing over time.

In the cranberries from Camsell Portage and Uranium City, the level of chemicals were generally low, with cadmium, selenium, thorium-230, arsenic, and vanadium at levels too low to measure in more than half of the samples. Lead levels decreased in the Uranium City cranberry samples to levels within the regional reference range. The remaining chemicals were similar to previous years or fell within the range of concentrations expected for the region.

4.0 MAMMAL CHEMISTRY

To evaluate the EARMP community barren-ground caribou and moose chemistry data, concentrations of the reduced chemical list were compared to:

1. regional reference data; and,
2. previous monitoring phases.

Summaries of available caribou and moose chemical concentrations measured in regional reference data, baseline data, and the 2014/2015 EARMP community data are presented in Appendix C, Figure 8. and 9, and Appendix C, Table 5 and 6. Data were graphed if >50% of the concentrations for a certain chemical were above the MDL in at least one community. The raw mammal chemistry results are presented in Appendix D, Tables 10 to 13.

Concentrations of chemicals that were too low for the laboratory to measure varied only slightly between the barren-ground caribou and moose meat samples. In barren-ground caribou meat, levels of aluminum, molybdenum, nickel, uranium, lead-210, thorium-230, and vanadium were below MDLs in more than half of the samples in each community. In moose meat, molybdenum, nickel, uranium, lead-210, radium-226, thorium-230, arsenic, and vanadium were below MDLs in more than half of the samples from each community.

Similar to the 2013/2014 barren-ground caribou results, average radium-226 and cobalt levels have decreased to levels similar to the regional reference range since the baseline assessment. Nickel concentrations, which were slightly higher than baseline levels in Stony Rapids in the 2013/2014 monitoring year have decreased to levels below the MDLs in 2014/2105 samples (Appendix C, Table 5). Mean concentrations of cobalt in barren-ground caribou from Black Lake, slightly exceeded the regional reference range concentrations (Appendix C, Figure 8). Mean concentrations measured 0.010 ± 0.004 µg/g in the 2014/2015 samples as compared to the upper regional reference range limit of 0.009 µg/g. To further put these values in perspective, cobalt concentrations in supermarket meat (combination of steak, roast beef, ground beef, fresh pork, cured pork, and/or lamb) collected between 2000 and 2009 and assessed as part of Health Canada’s total dietary study were examined (HC 2011). The average cobalt concentration in supermarket meat was 0.006 ± 0.004 µg/g. It is noted only one of the five caribou samples collected from Black Lake contained concentrations which exceeded the upper regional reference range limit (Sample 5; Appendix D, Table 10). Consultation of the Human Health Risk Assessment completed as part of CanNorth 2014 indicates that the overall estimated daily intake of cobalt in the communities was at least a magnitude lower than the toxicity reference value and the very small increase observed in 2014 is not anticipated to affect the overall assessment that cobalt levels remain low in country foods. However, special attention to this chemical will be made in future monitoring years to ensure concentrations are not increasing over time.

It is also worth noting that one of the four caribou samples from Wollaston Lake contained lead levels well above previous levels and the regional reference range (Sample 2; Appendix D, Table 10). Concentrations measured 1.1 µg/g wet weight as compared to < 0.002 µg/g in the other three samples from 2014/2015. The European Commission maximum level of lead for supermarket meat is 0.1 µg/g wet weight, a magnitude lower than the levels observed in Sample 2. It is likely that the segment of meat submitted for Sample 2 was contaminated with lead bullet fragments. Community members should pay special attention when preparing wild meat to remove any segments contaminated with lead shot or bullet fragments.

Only one moose flesh sample was collected from the Uranium City area, while two samples were collected from the Camsell Portage area in 2014/2015. Of those chemicals with concentrations higher than MDLs, only cadmium exceeded the regional reference range and baseline concentrations. This occurred in samples from both communities, where cadmium measured at 0.030 µg/g in Camsell Portage and 0.056 µg/g in Uranium City. Concentrations were a magnitude higher than previous monitoring years, higher than concentrations generally found in supermarket meat (0.001 µg/g; HC 2011), and in the case of the Uranium City moose, higher than levels observed in a country foods study completed in the Yukon (0.03 µg/g[9]; Gamberg 2000). The European Commission maximum limit for consumption of cadmium in supermarket meat is 0.05 µg/g (EC 629/2008), which is exceeded by the Uranium City moose sample. Since previous monitoring years have shown considerably lower levels of cadmium in moose meat and only one sample has shown levels higher than the available guideline, it is recommended

[9] Converted to wet weight basis assuming 75% moisture; dry weight value presented in Gamberg 2000 was 0.12 ± 0.12 µg/g.

a larger number of samples are assessed, if possible, in 2015/2016 to determine if the 2014/2015 concentration is an anomaly.

No additional snowshoe hare were submitted in 2014/2015 (Appendix C, Table 7), however, caribou and moose kidney and liver samples were submitted by community members for analysis. These data are presented in Appendix C, Table 8. Metals are known to occur in higher levels in the livers and kidneys as compared to muscle tissue. Therefore, as was expected, the liver and kidney samples collected in 2014/2015 had higher levels of chemicals than the flesh samples. In terms of cadmium levels in the organs from the moose from Uranium City and Camsell Portage, both liver and kidney levels were considerably lower than those observed by Gamberg (2000; liver: 3.09 µg/g[10], kidney: 26.4 µg/g[10]) in the Yukon. EARMP community program will focus on collecting more ungulate kidney and liver samples during future monitoring cycles to provide a larger dataset for comparison over time.

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[10] Converted to wet weight using percent moisture values presented in Gamberg 2000.

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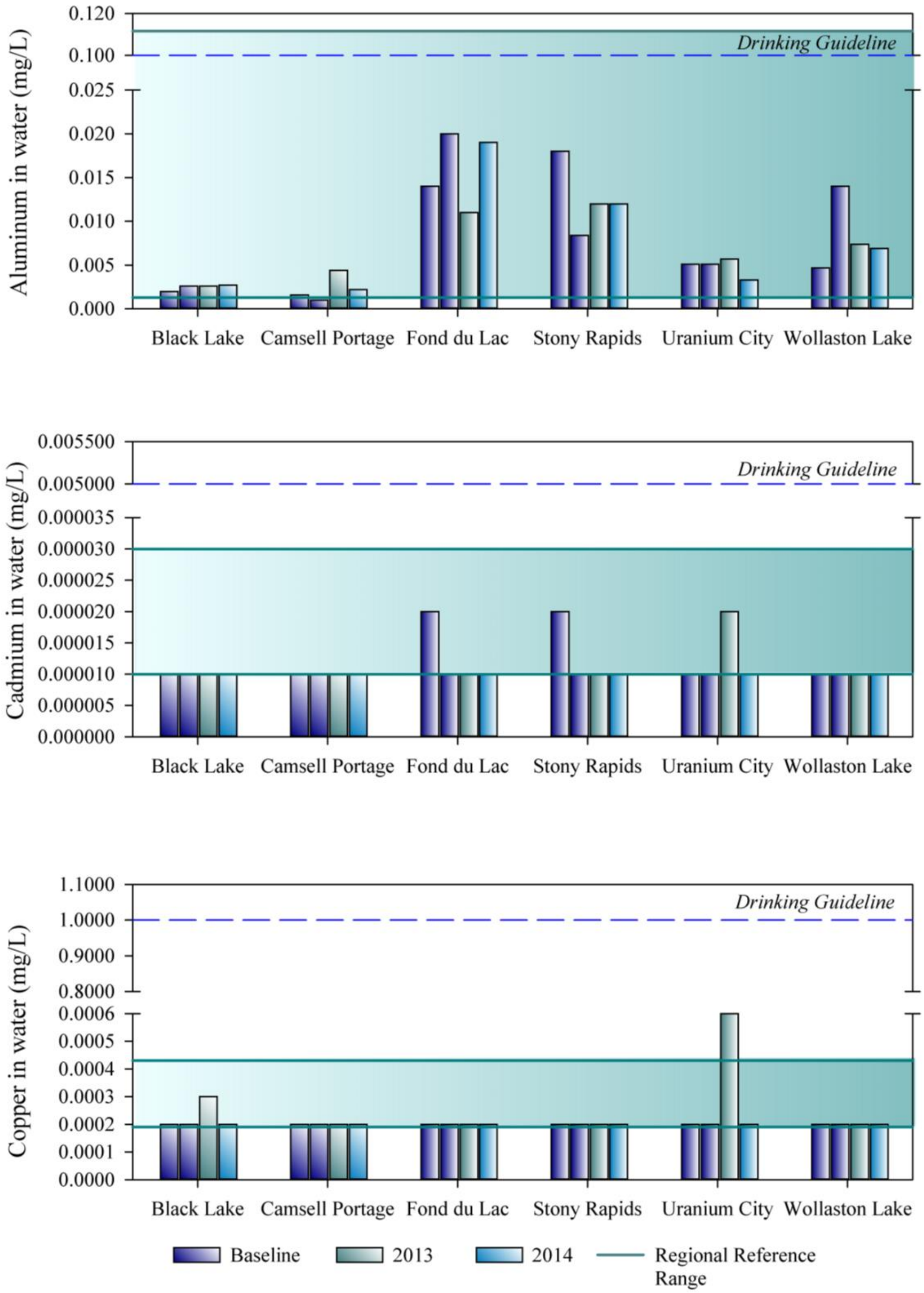
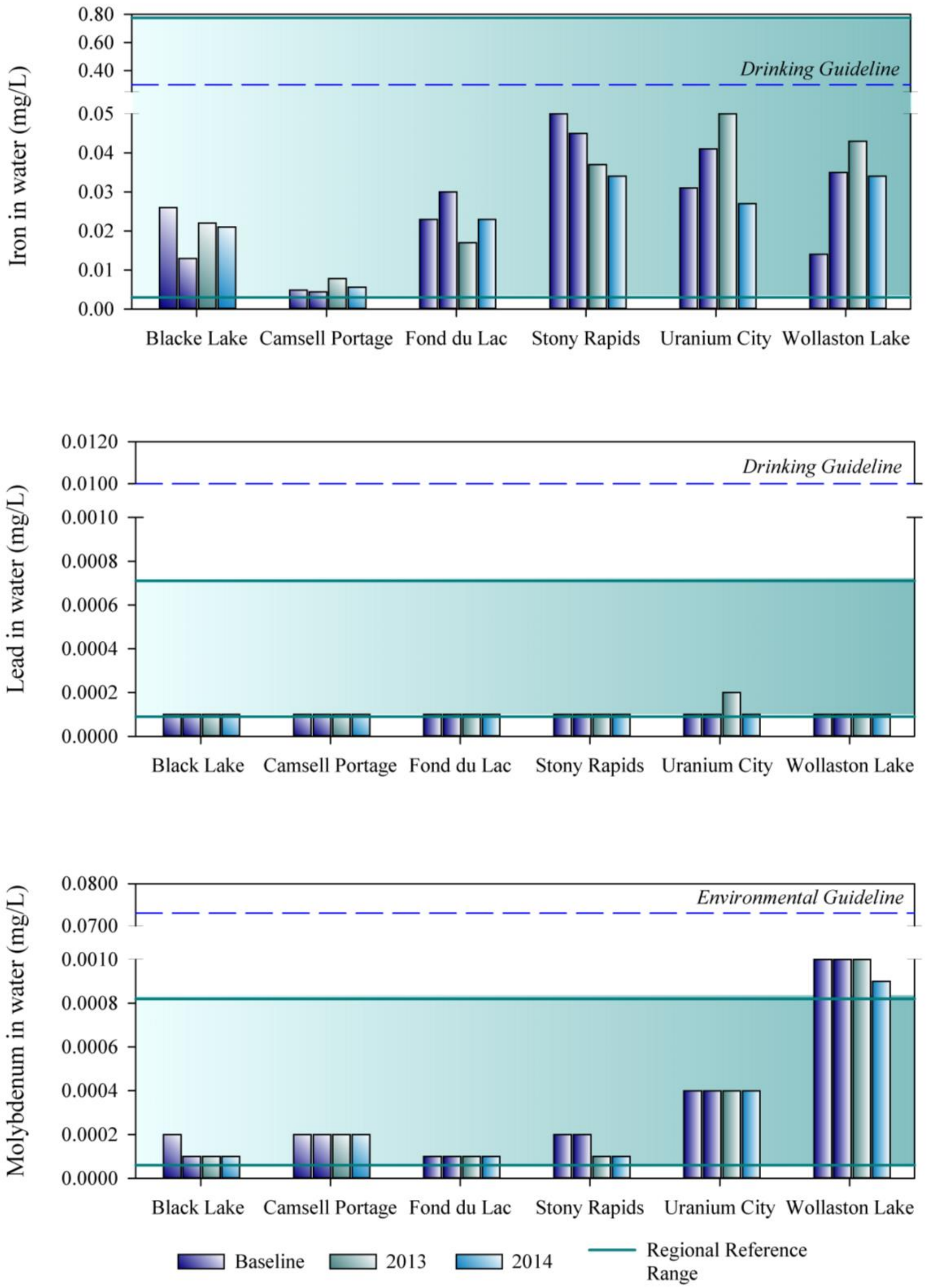


Appendix C, Figure 1
Chemicals in water from the EARMP community study area, 2011 to 2014.



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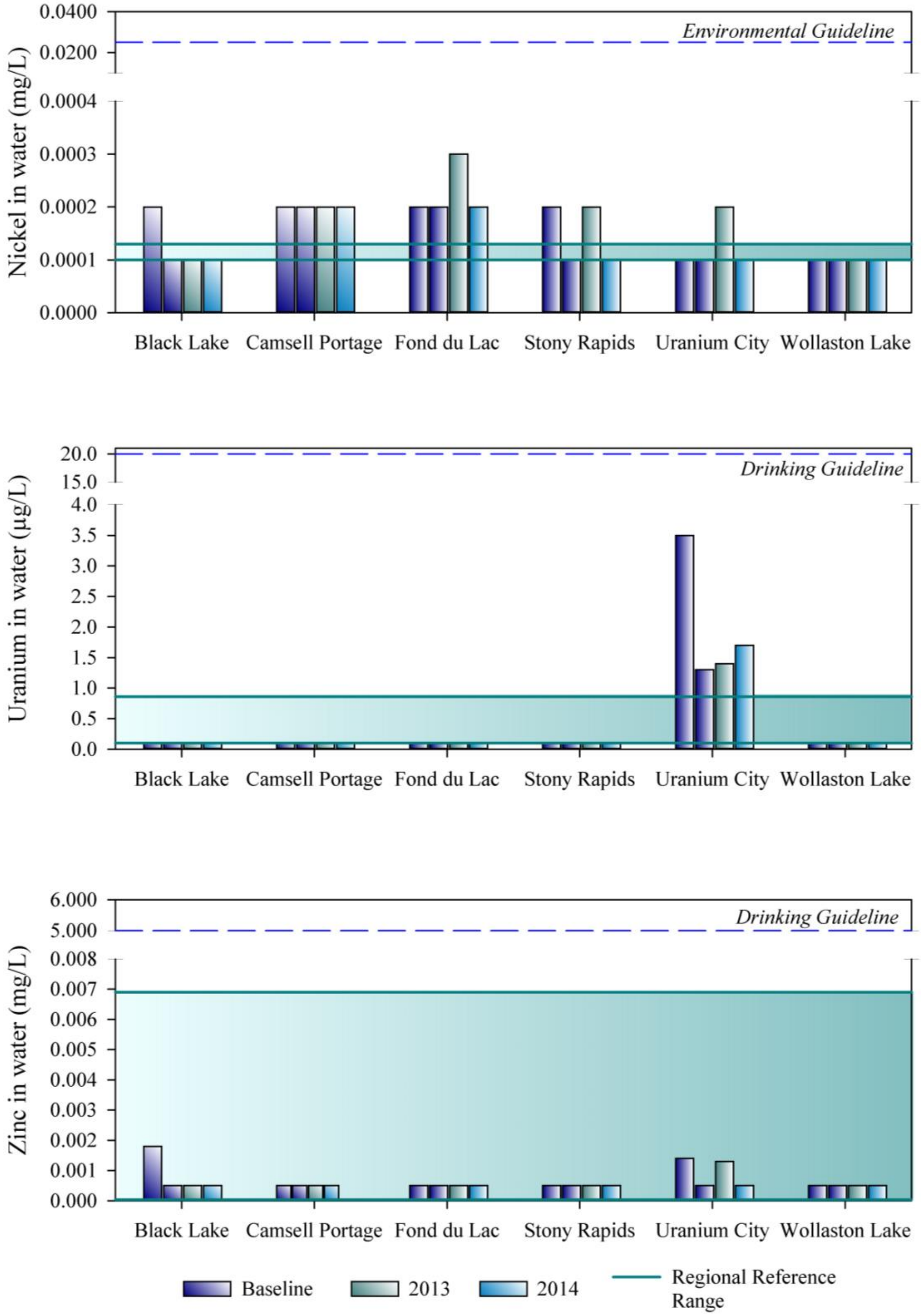

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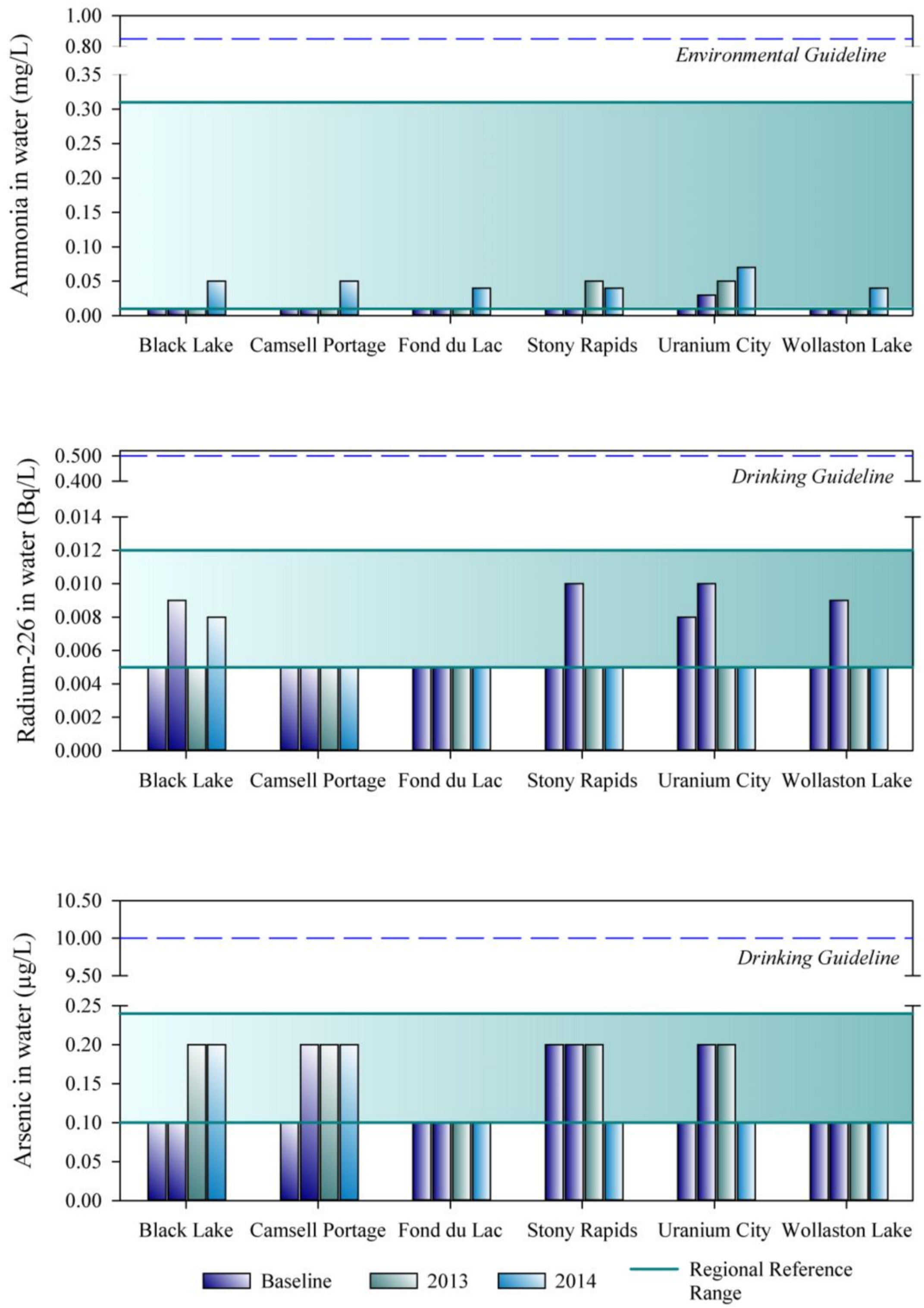

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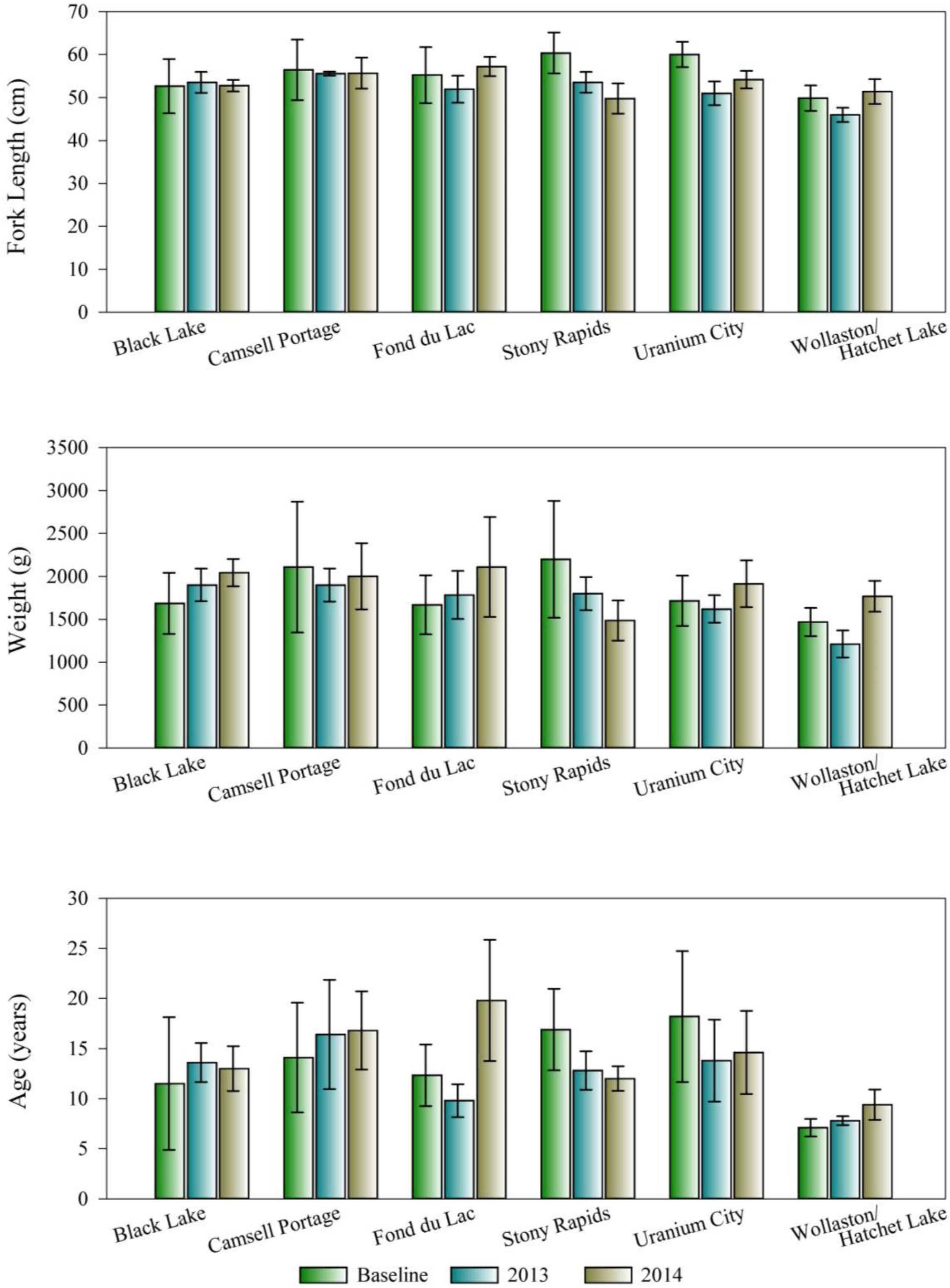

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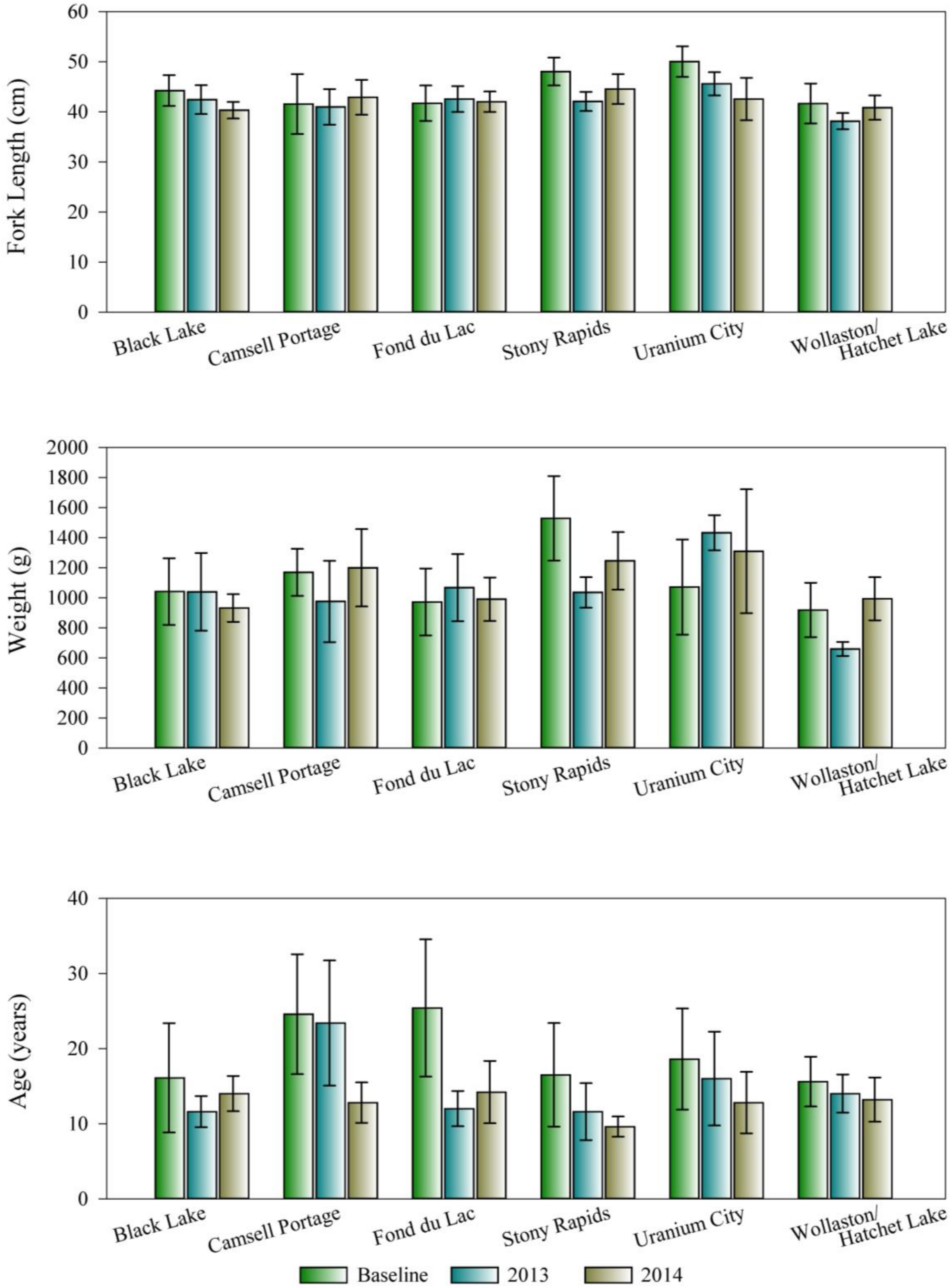
Length, weight, and age of lake trout assessed by EARMP, 2011 to 2014.



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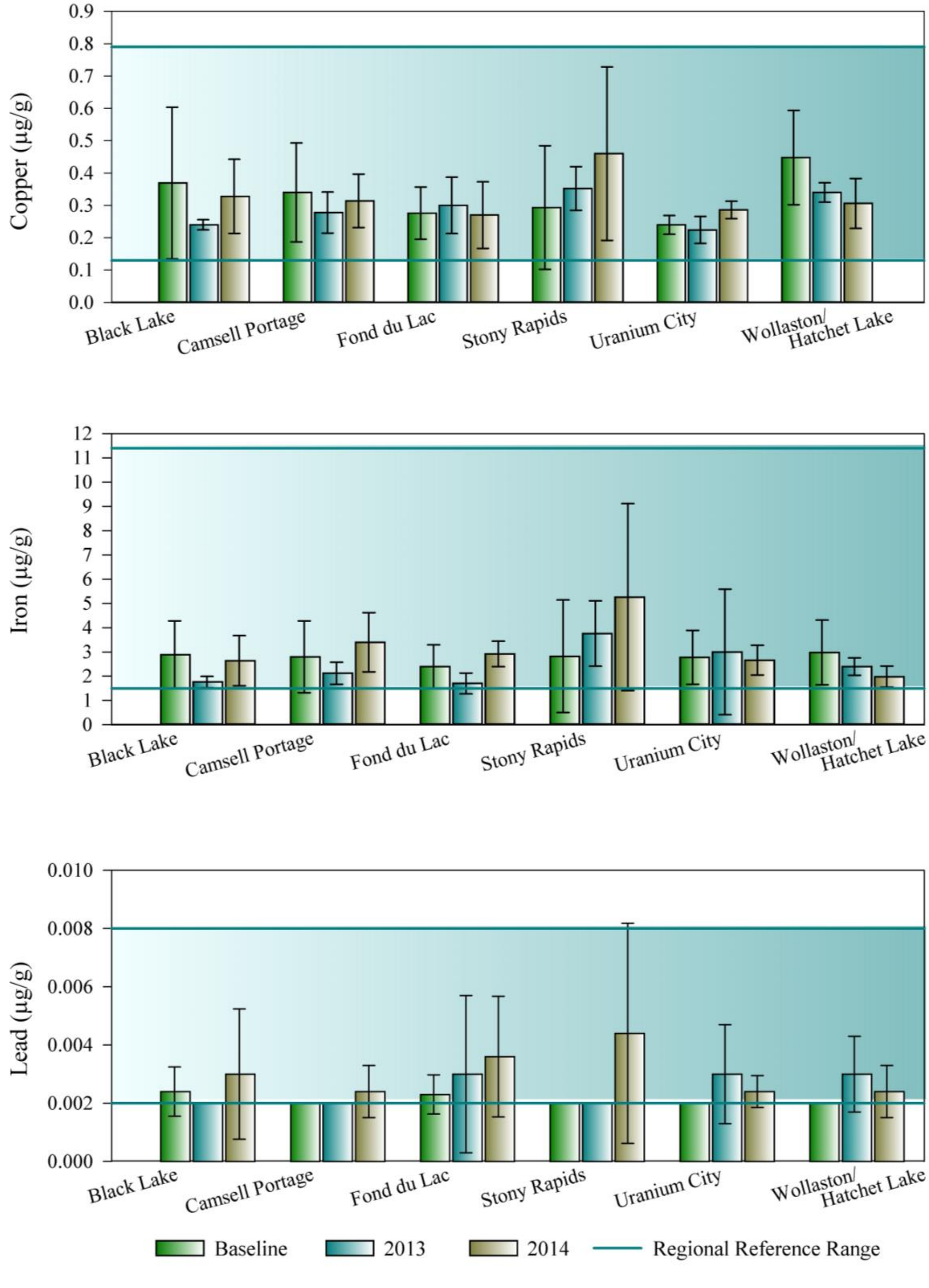
Length, weight, and age of lake whitefish assessed by EARMP, 2011 to 2014.



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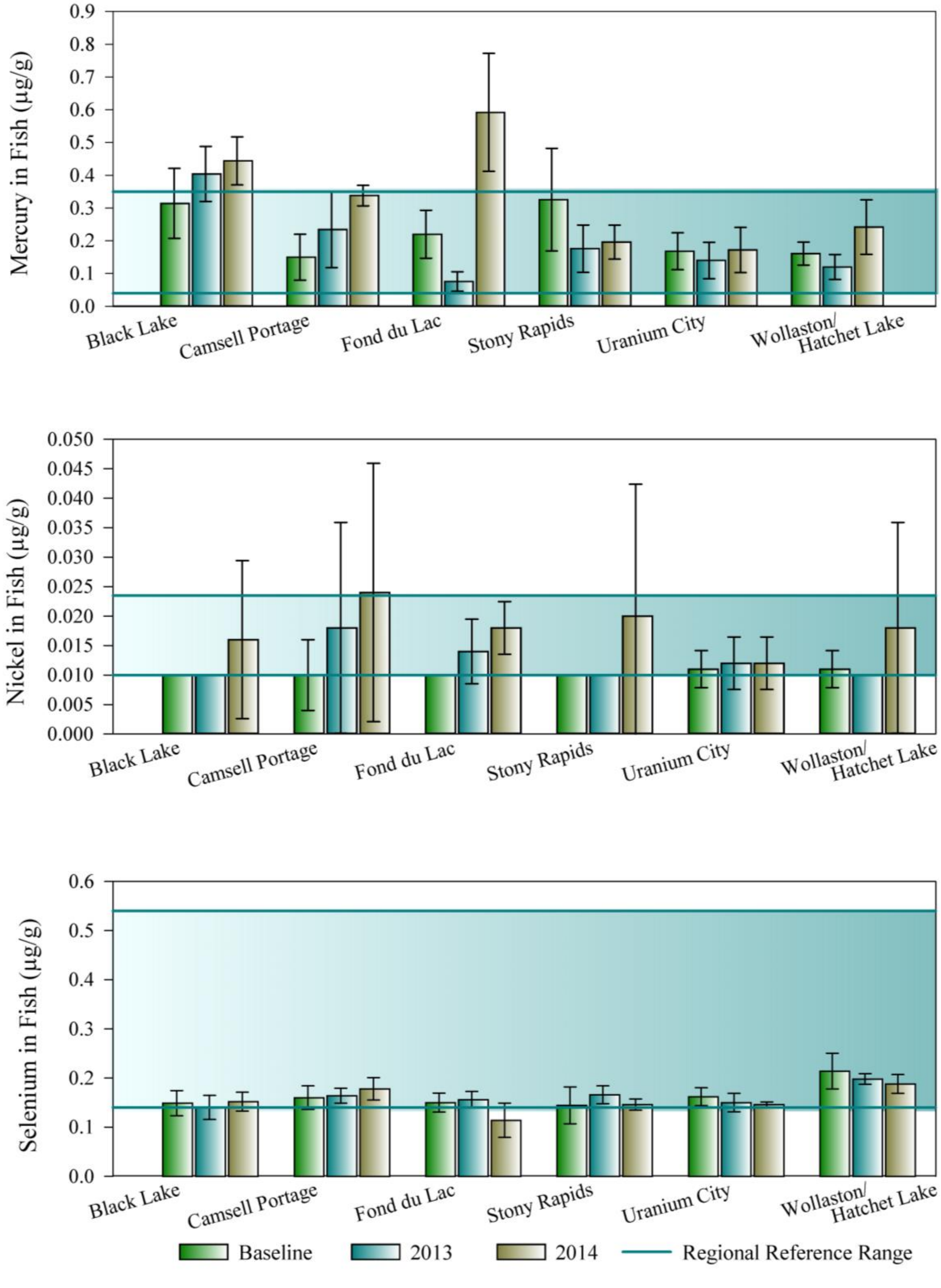
Chemicals in lake trout from the EARMP community study areas, 2011 to 2014.



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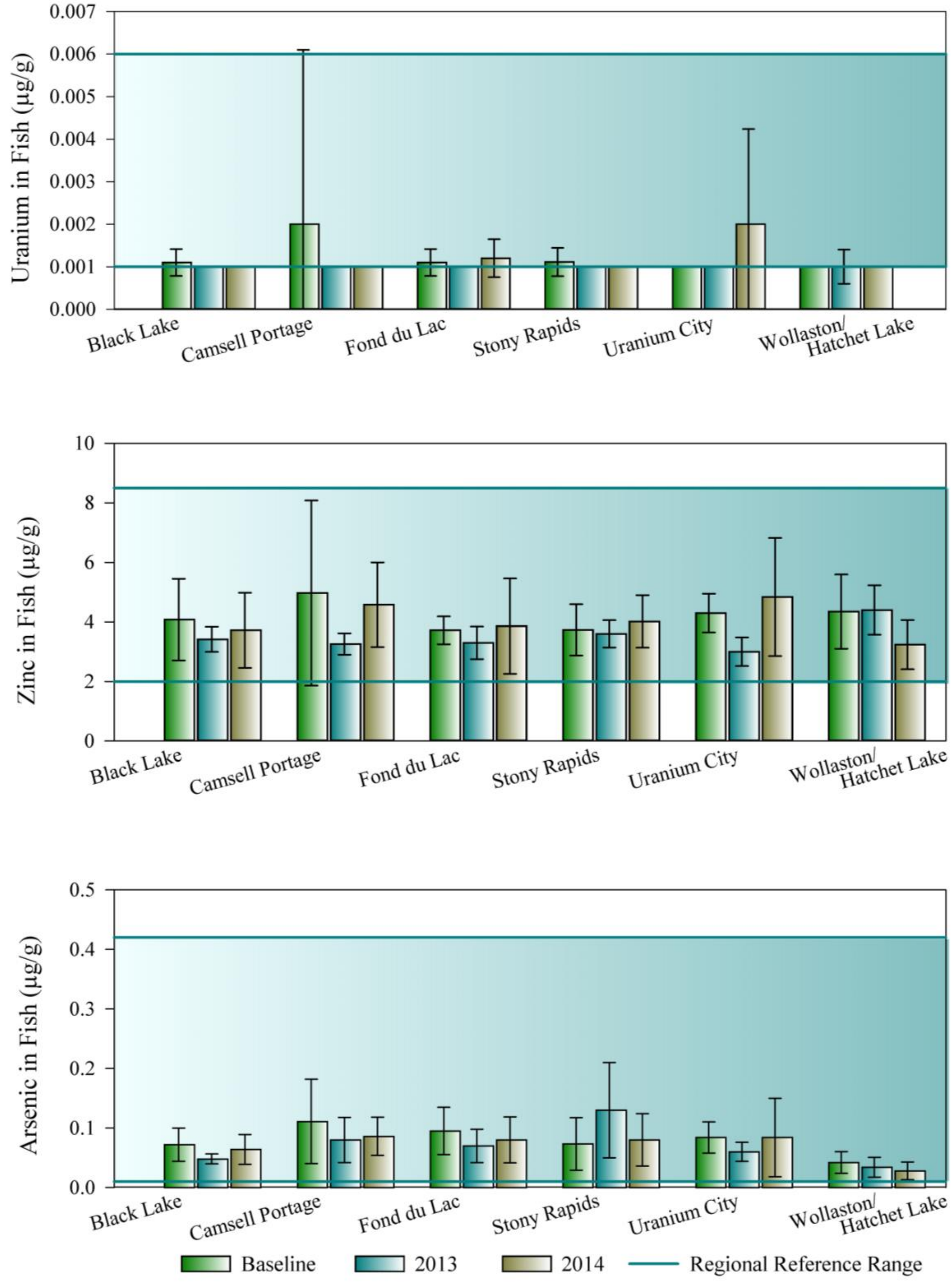

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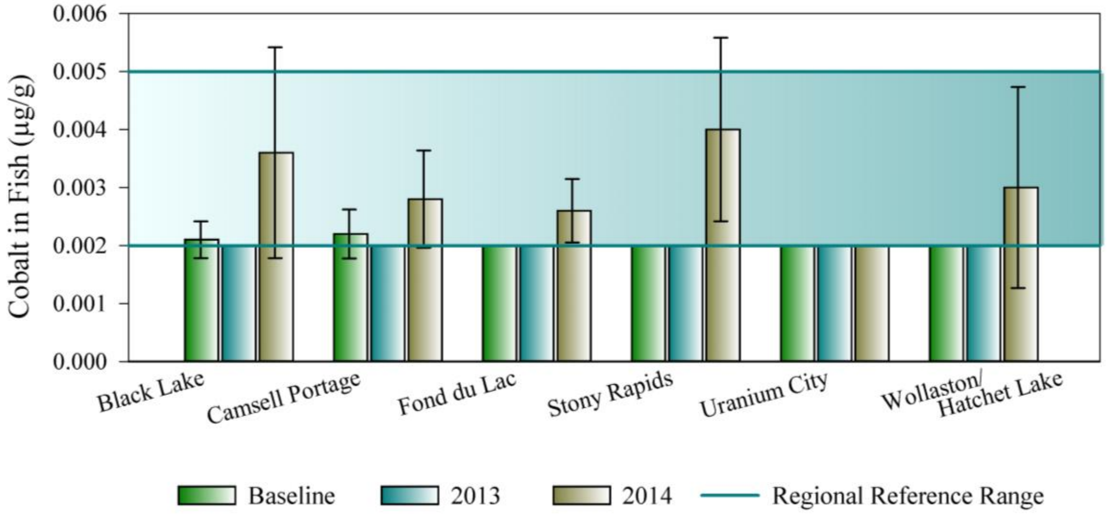

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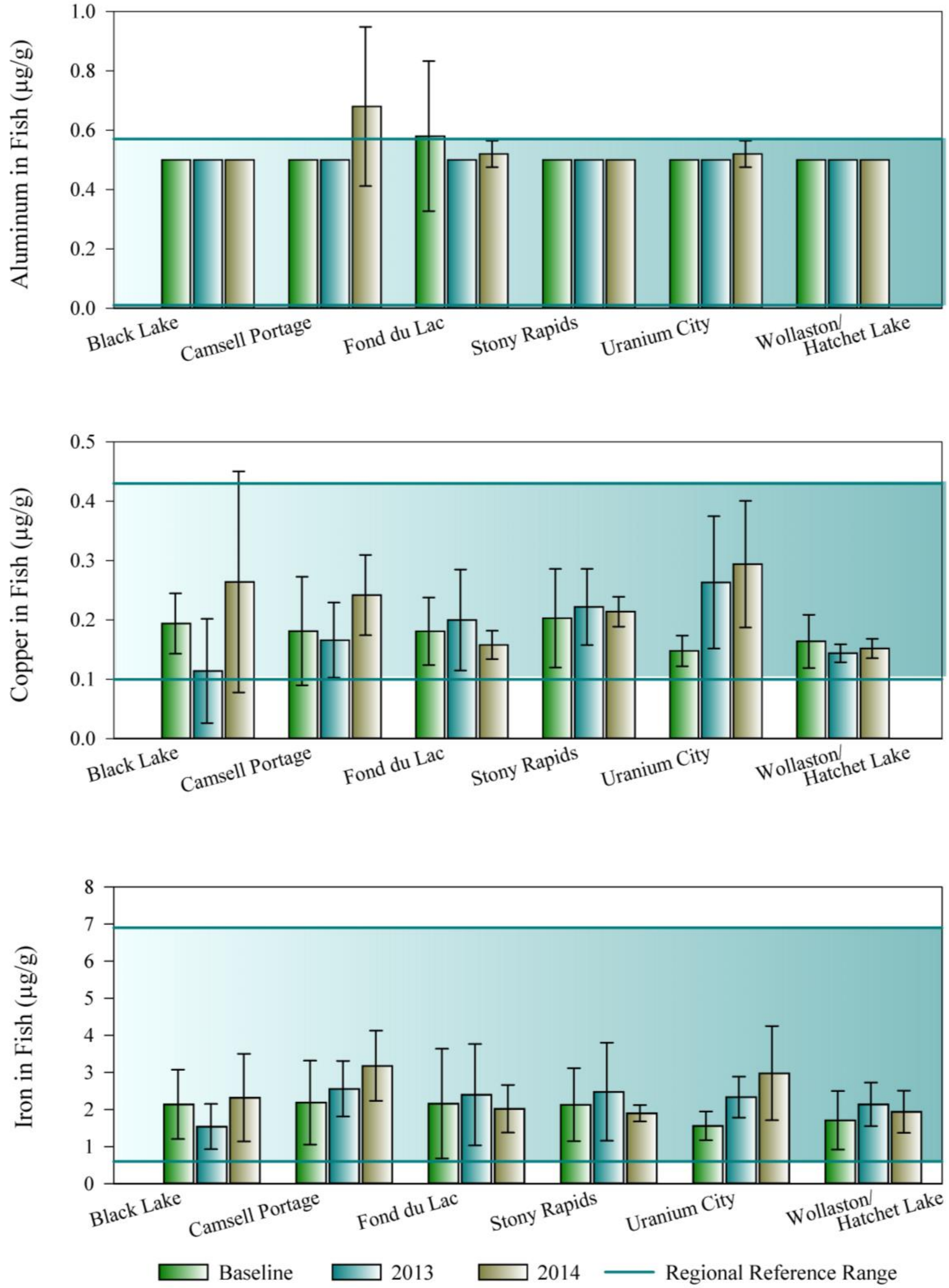

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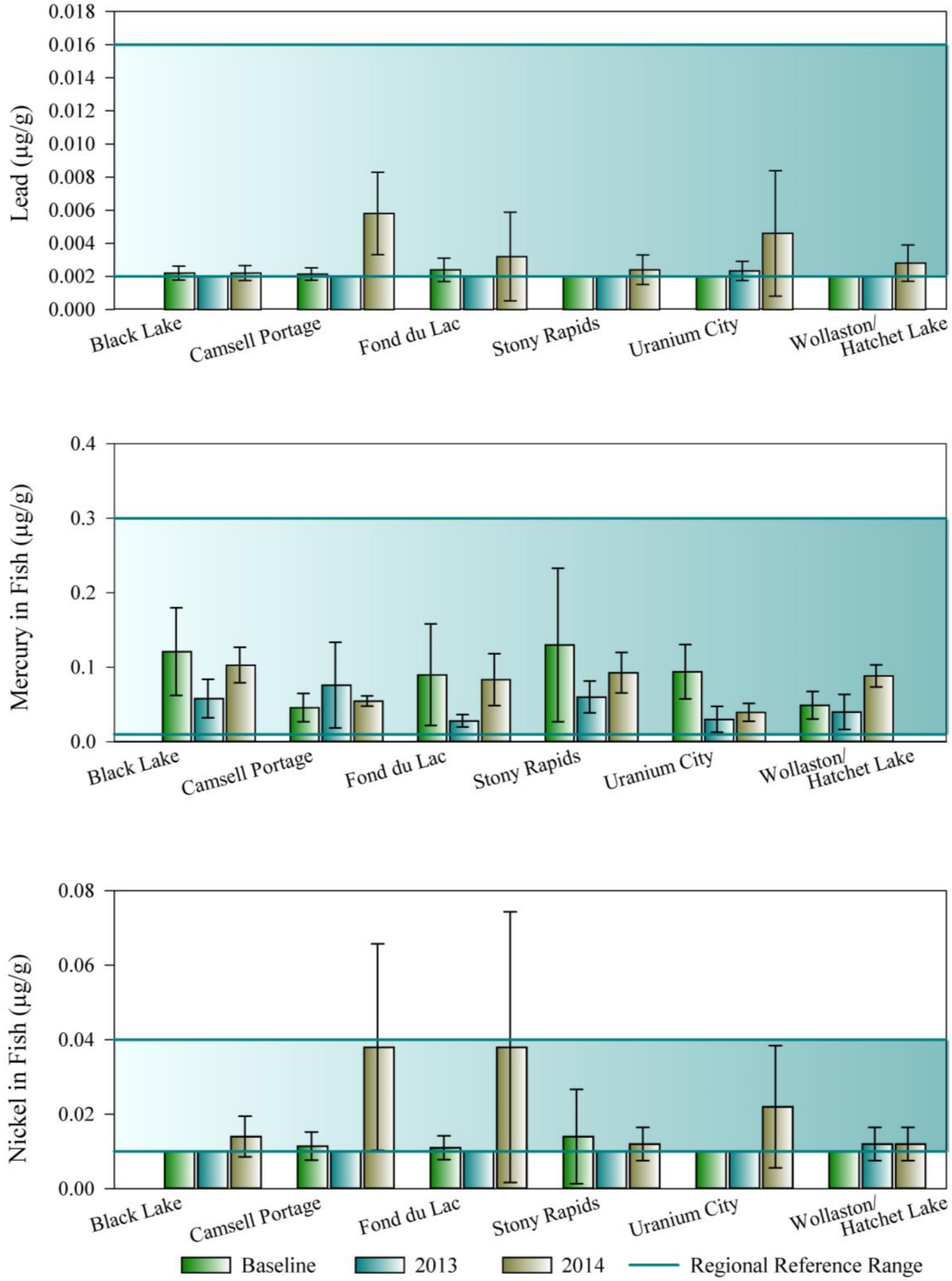
Chemicals in lake whitefish from the EARMP community study area, 2011 to 2014.



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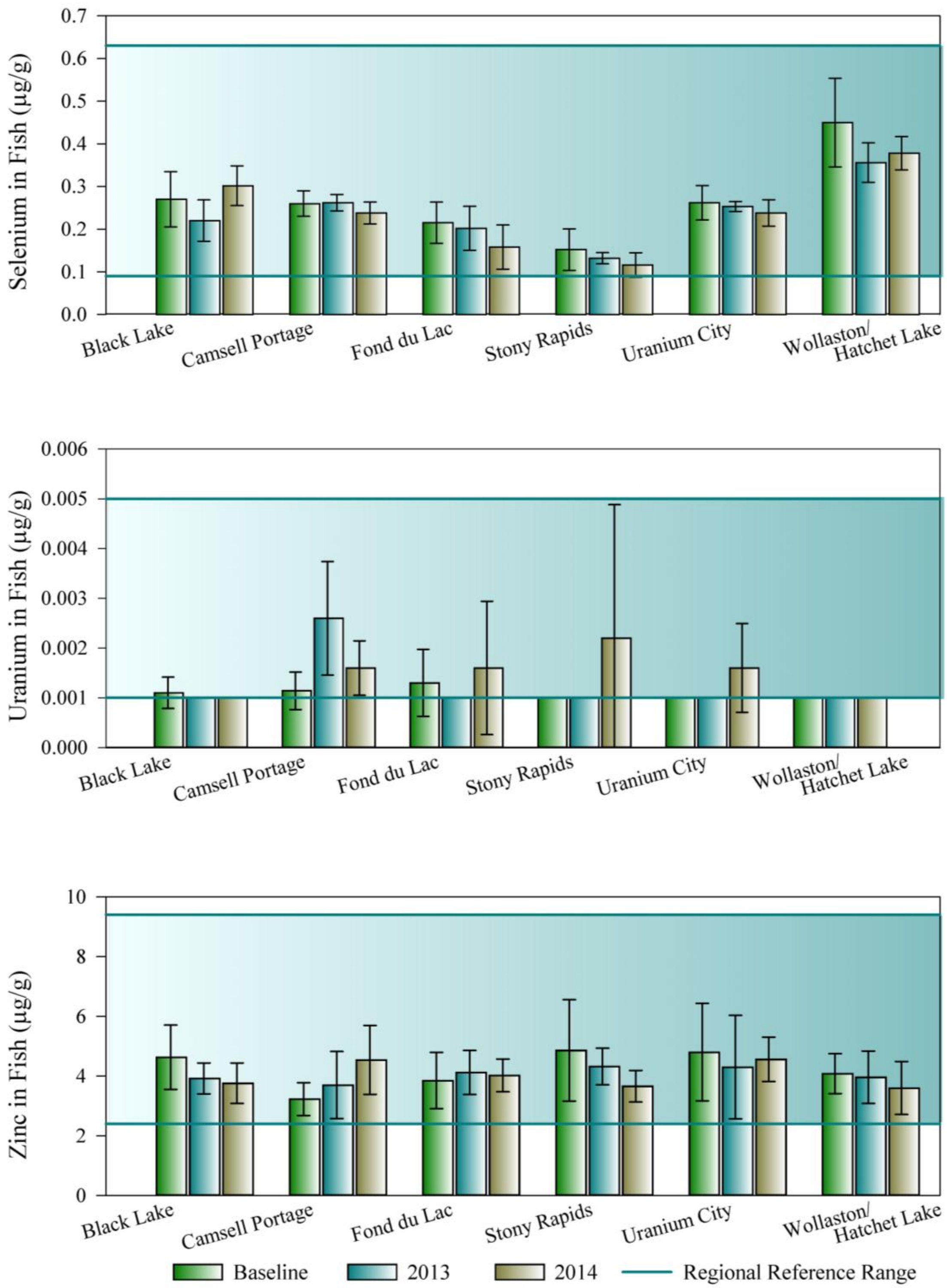

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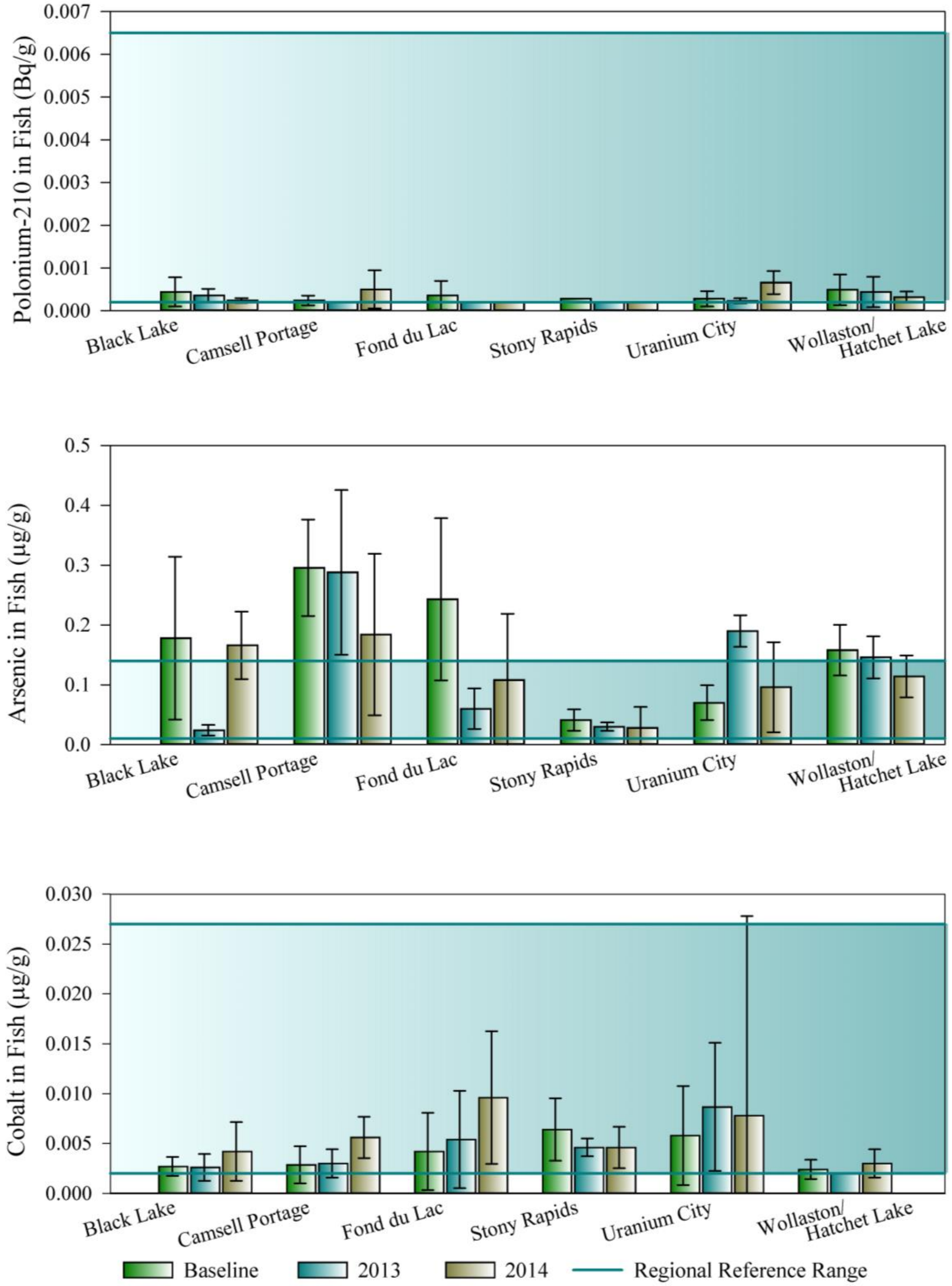

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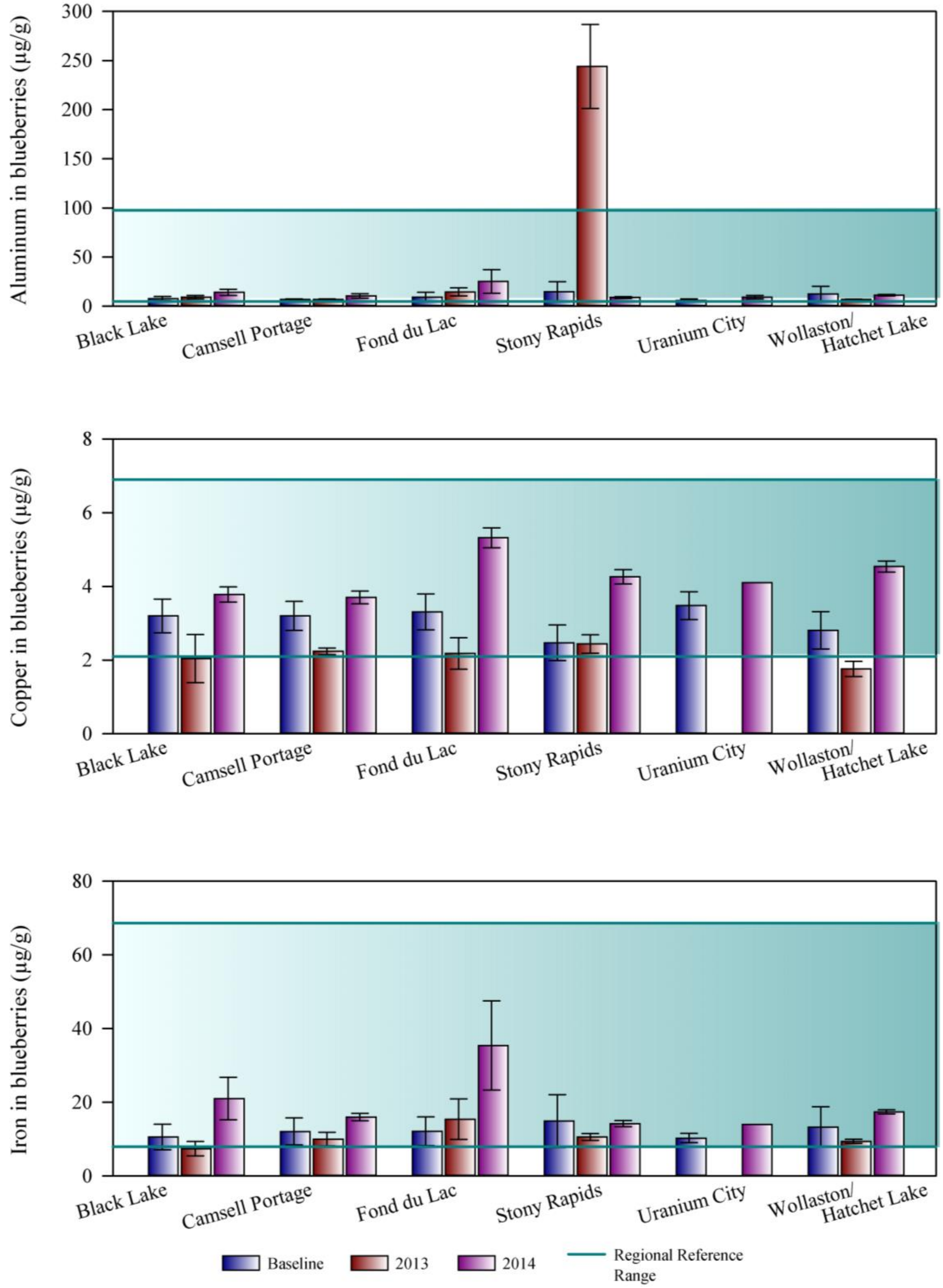

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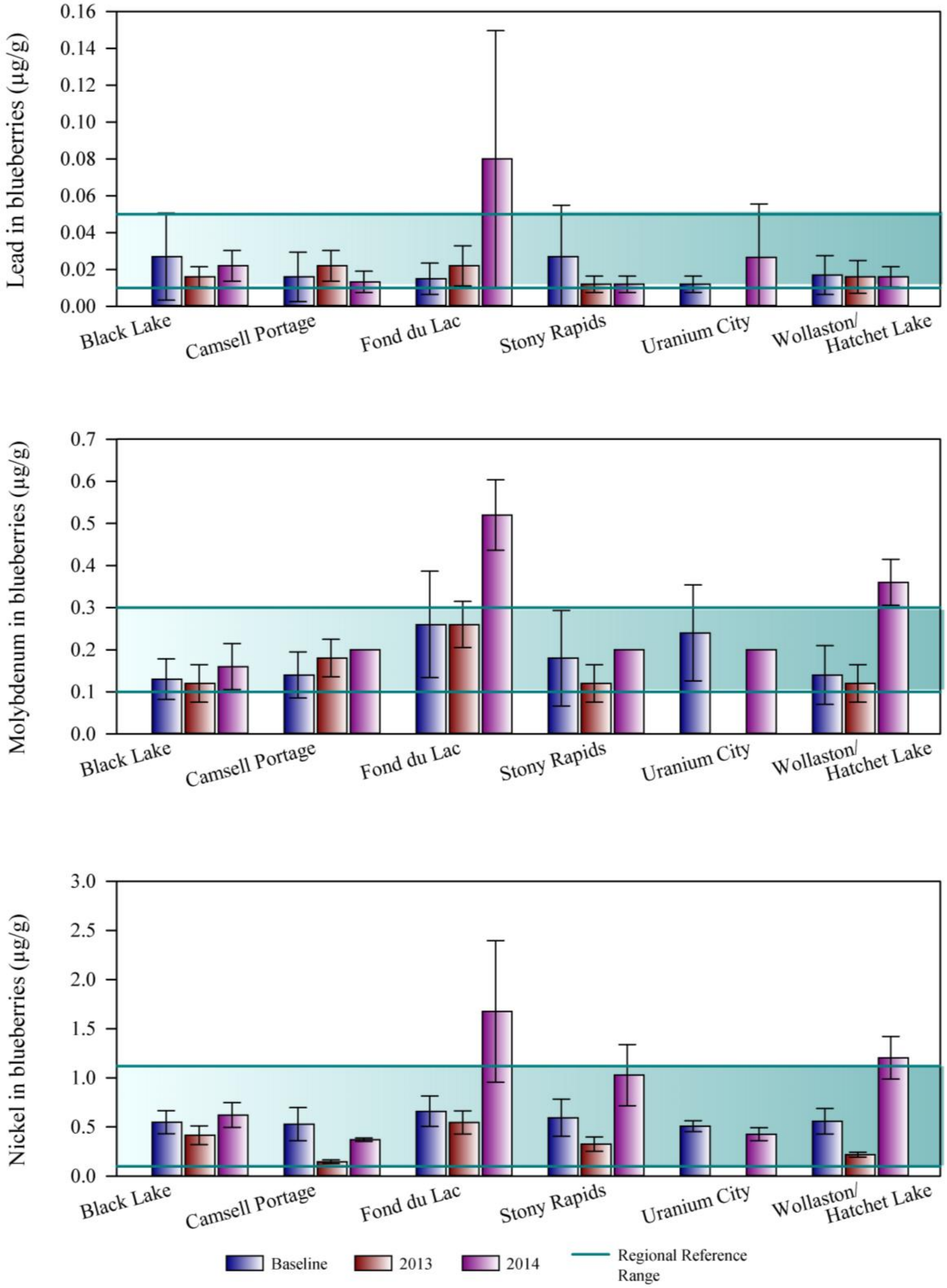
Chemicals in blueberries from the EARMP community study area, 2011 to 2014.



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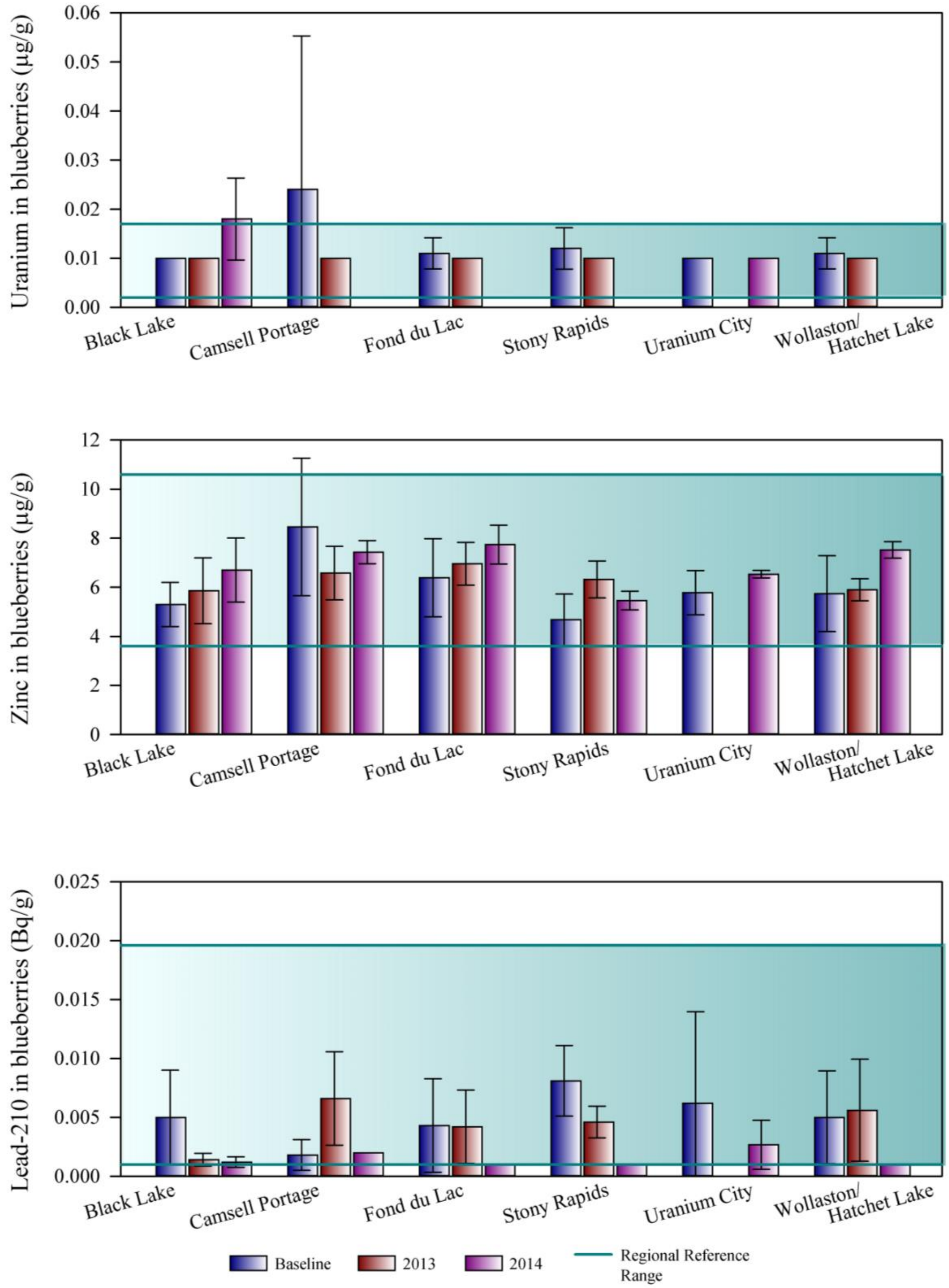

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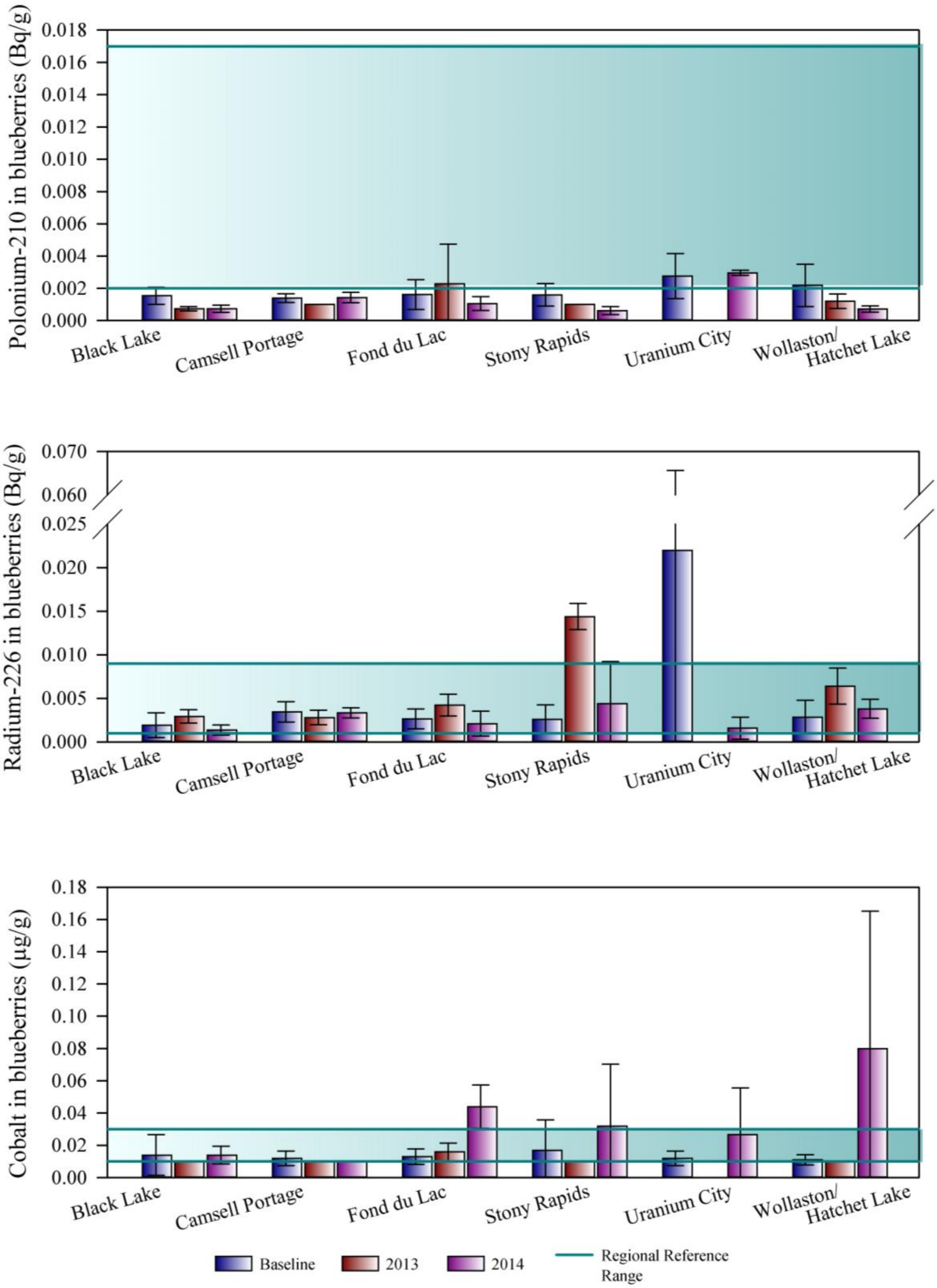

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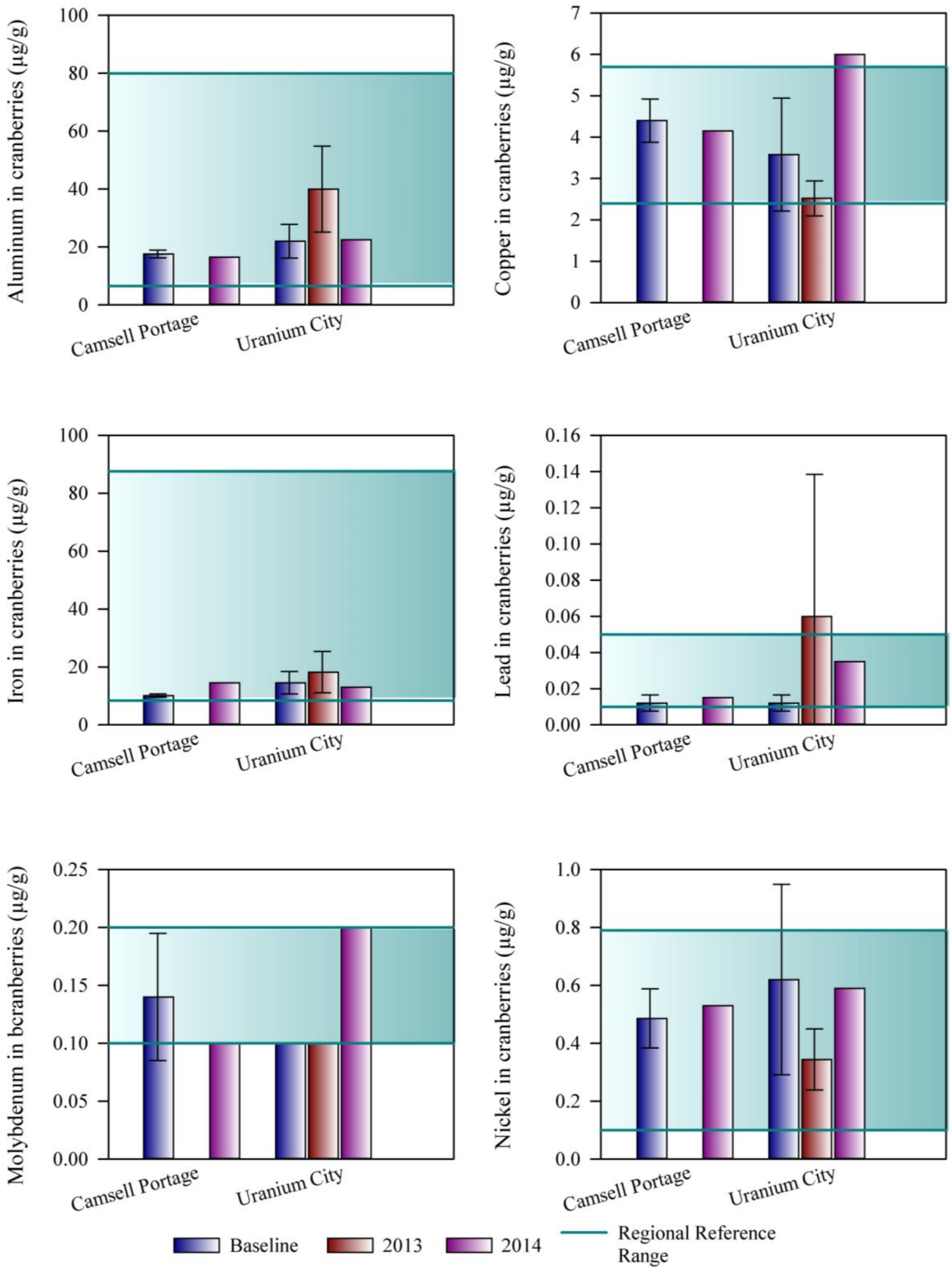

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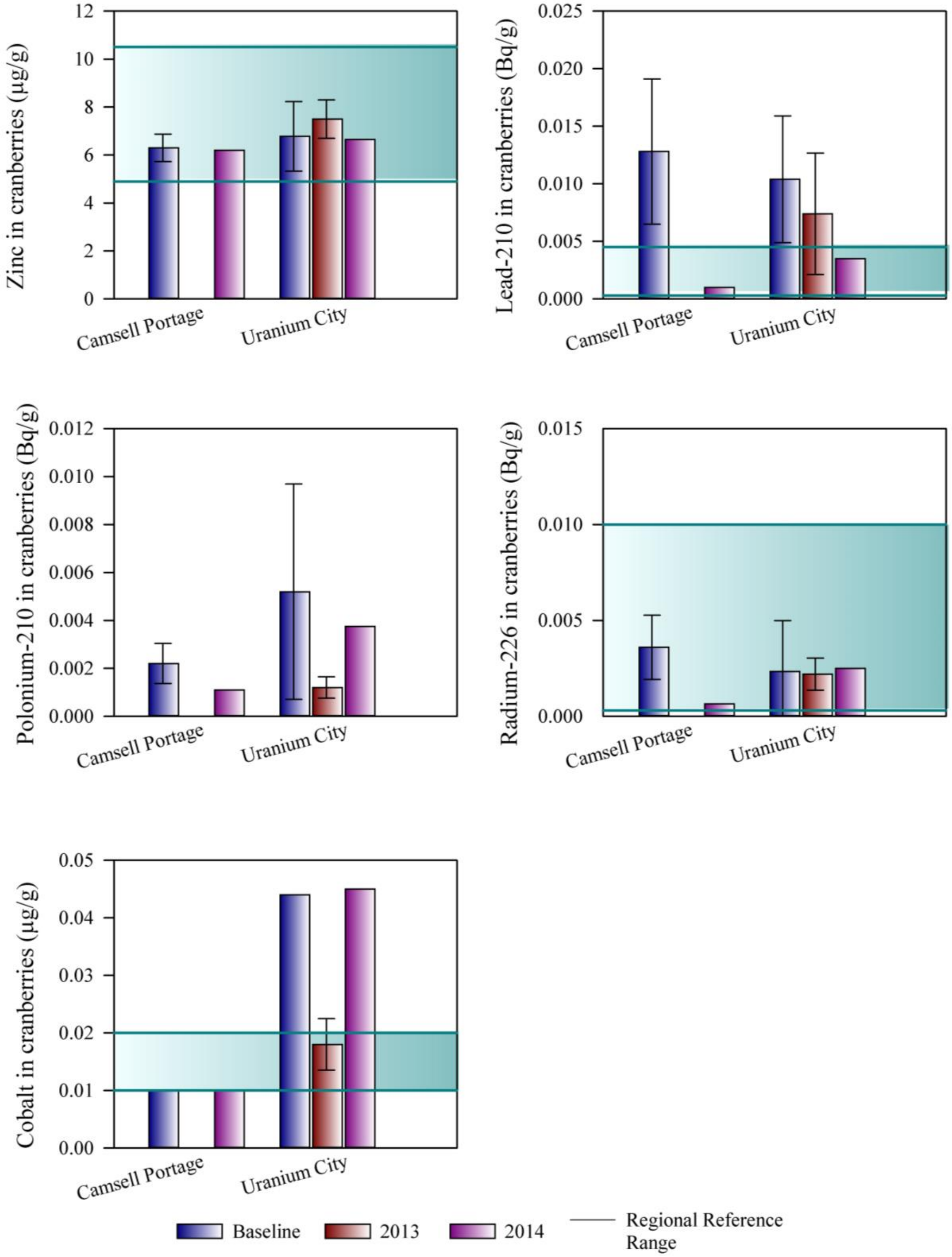
Chemicals in cranberries from the EARMP community study area, 2011 to 2014.



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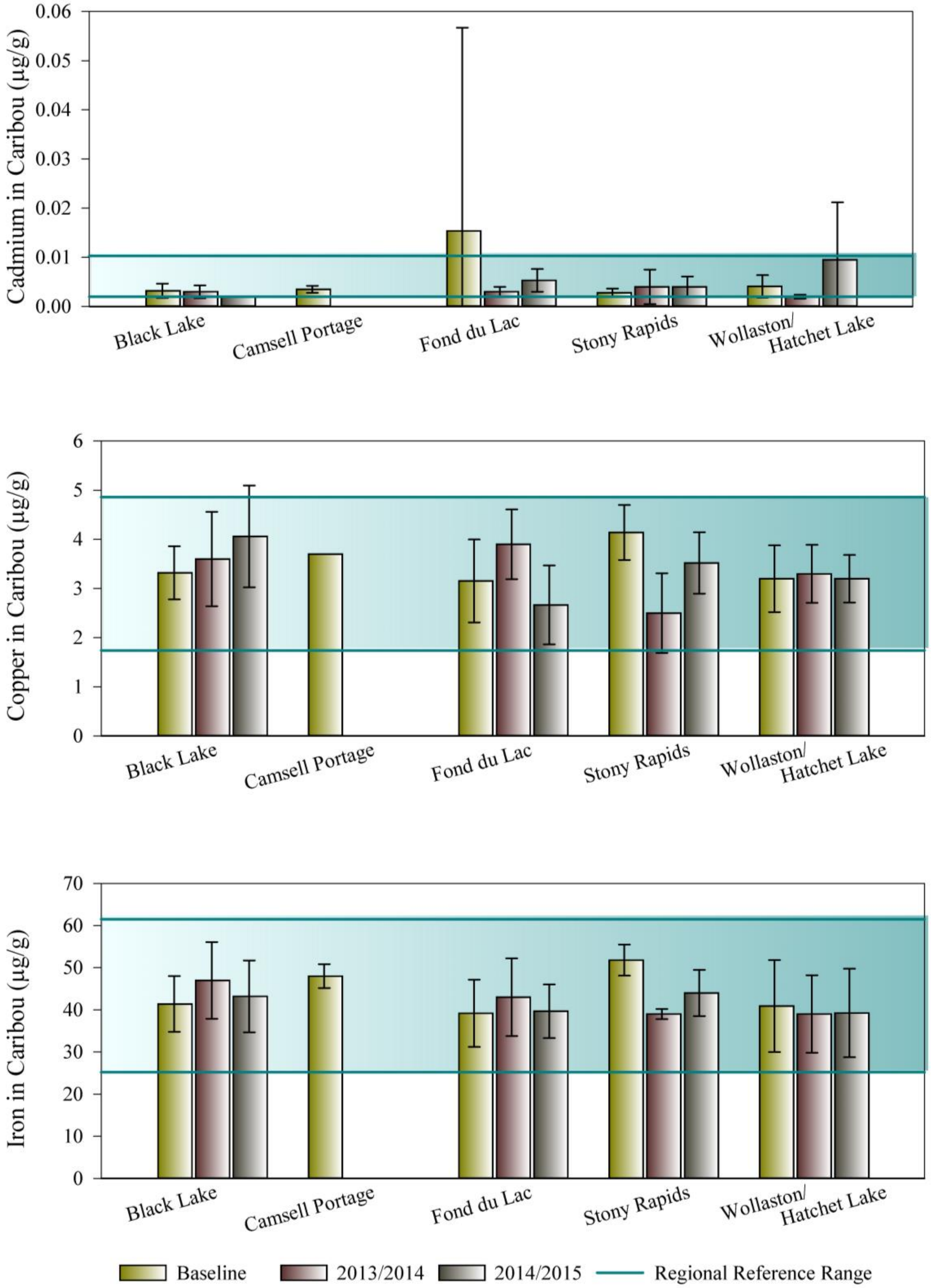
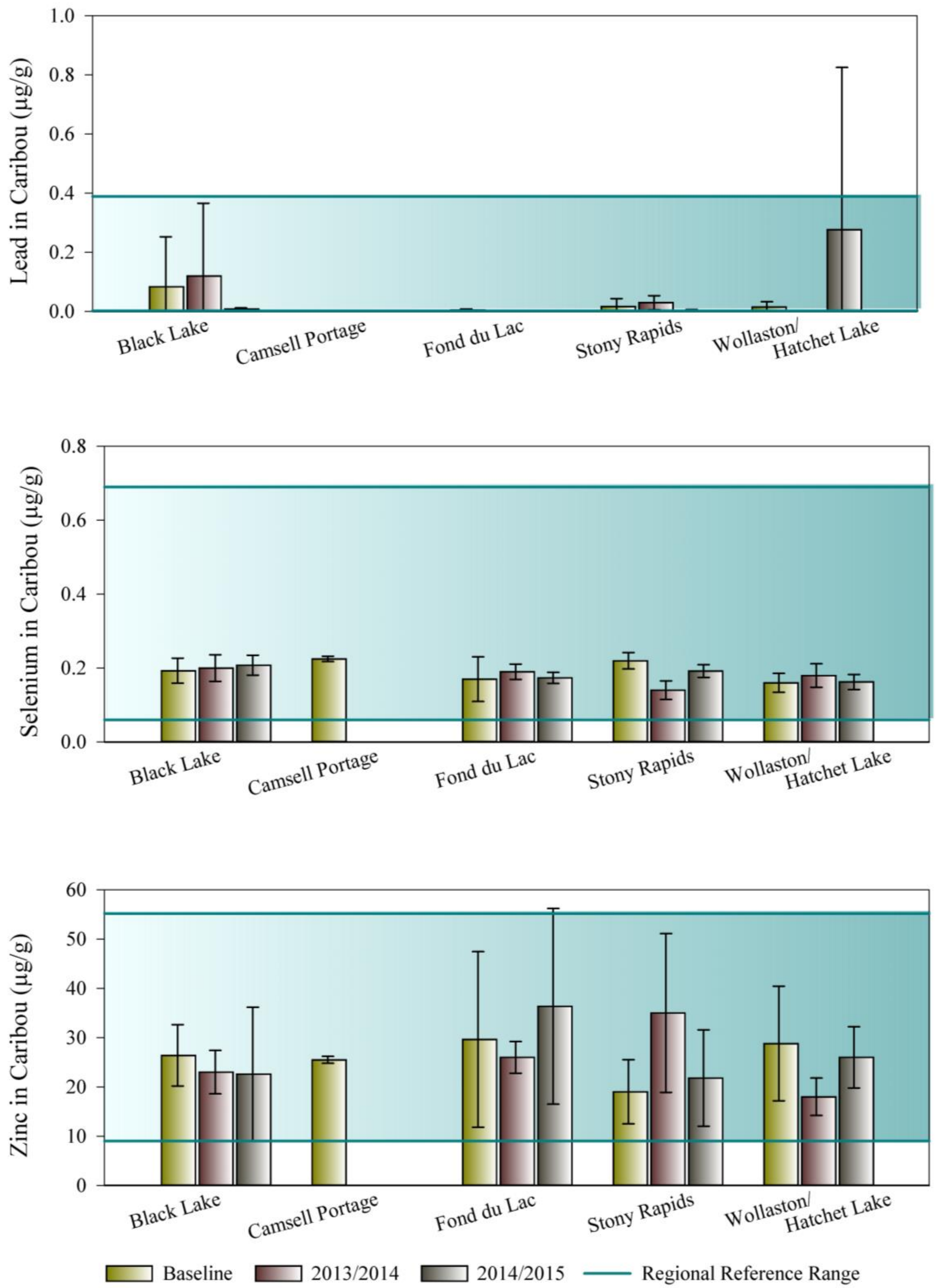
Chemicals in cranberries from the EARMP community study area, 2011 to 2014.



Appendix C, Figure 8.
Chemicals in barren-ground caribou from the EARMP community study area, 2011 to 2015.



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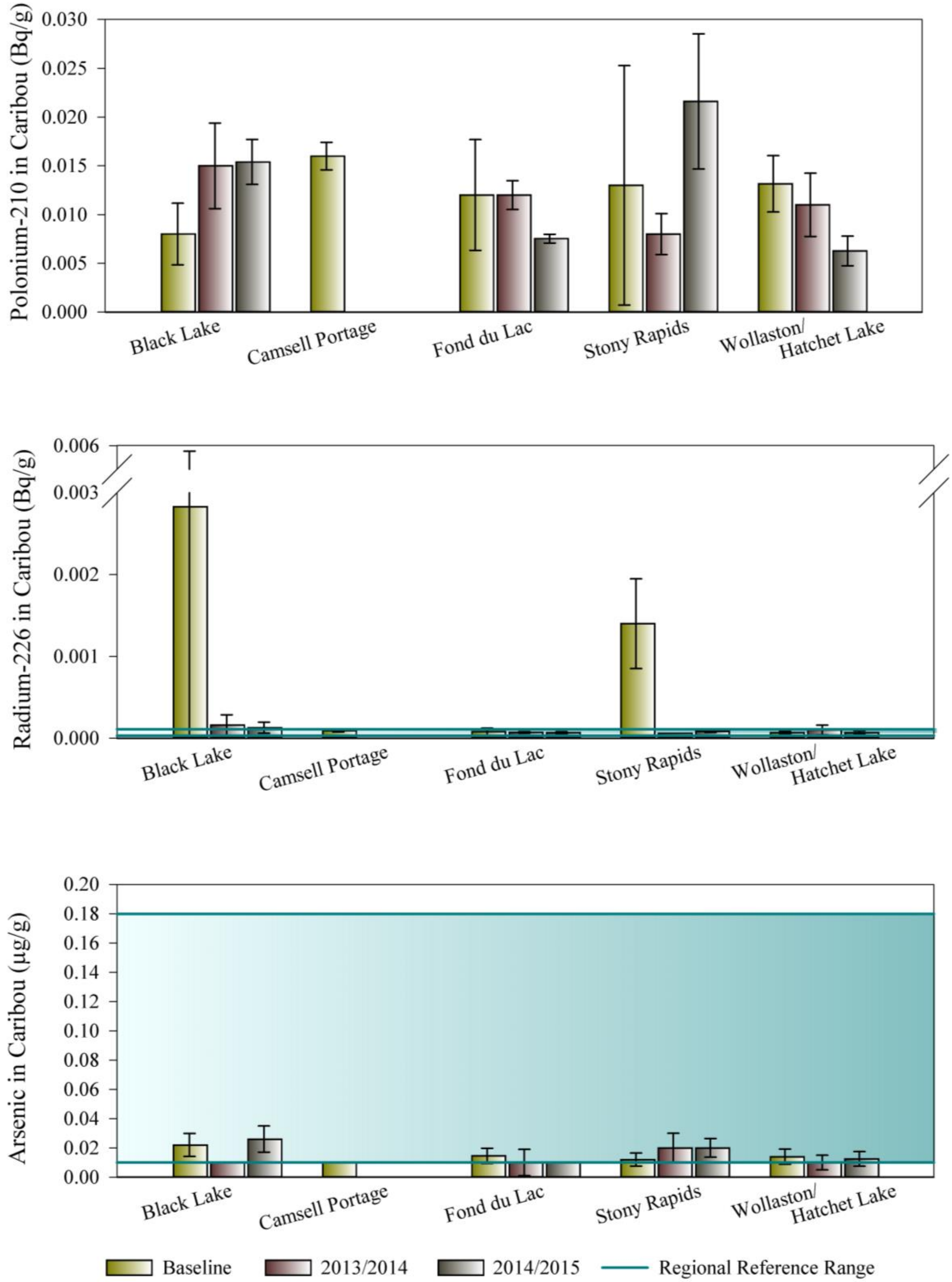

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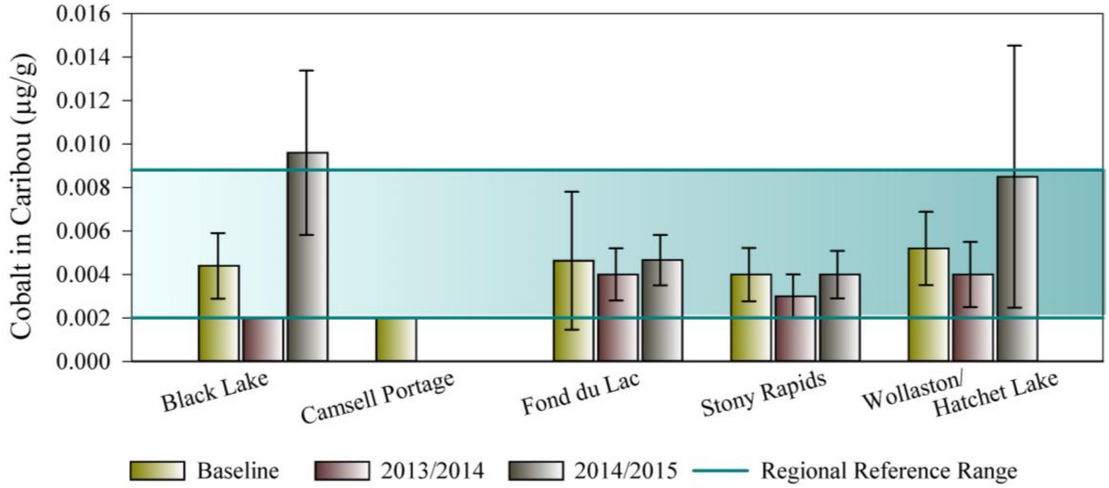

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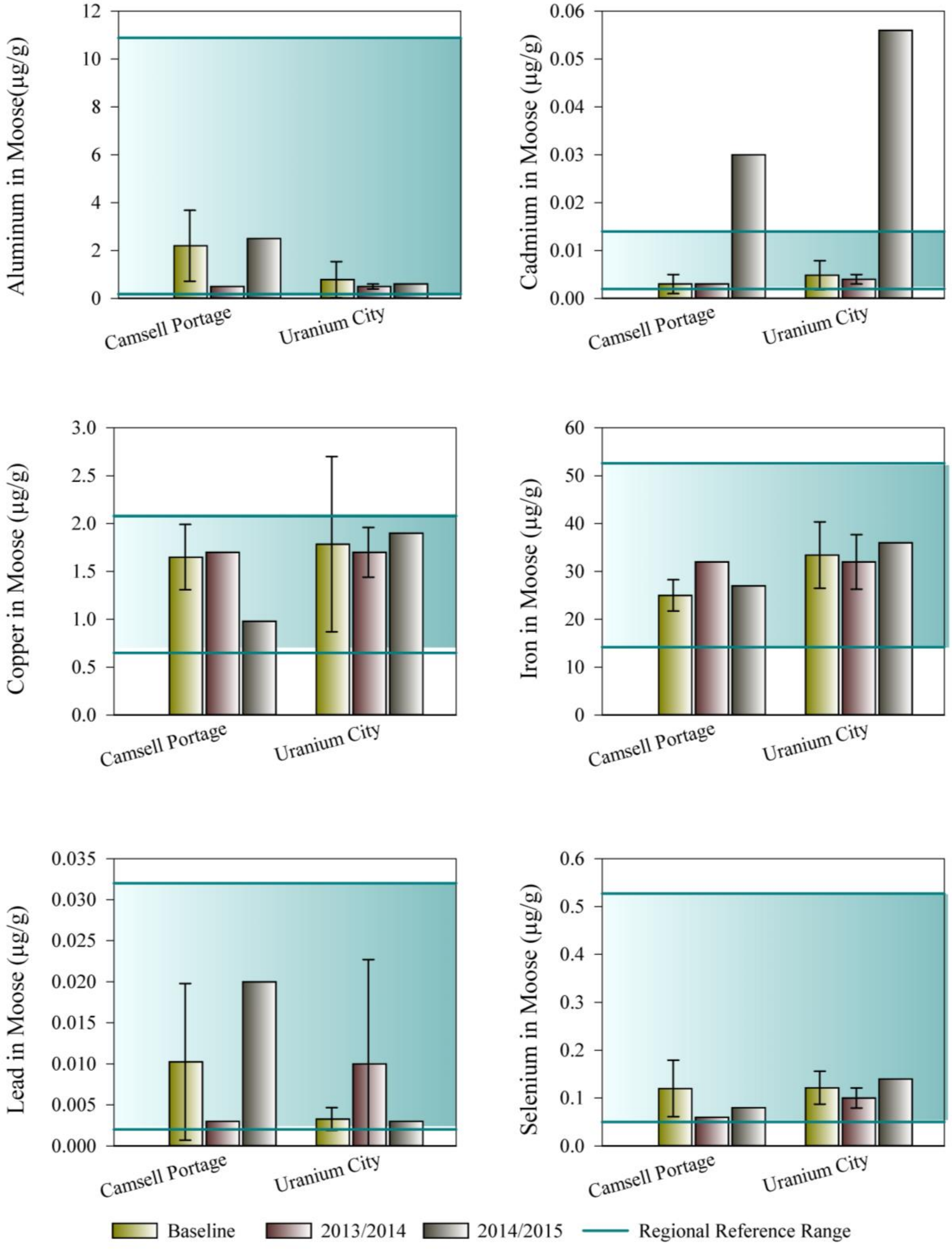

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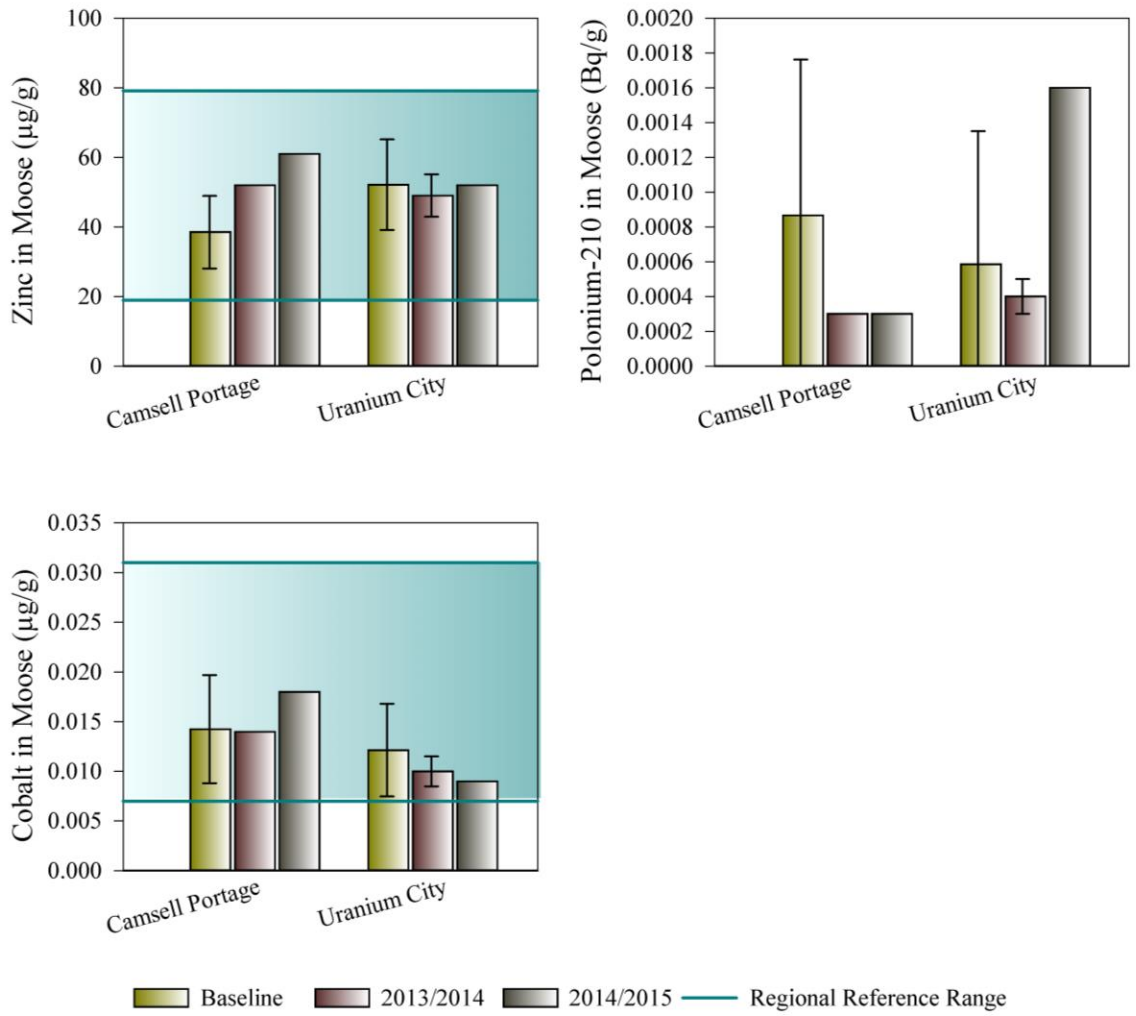
Chemicals in moose from the EARMP community study area, 2011 to 2015.



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Summary water chemistry results for the EARMP community program.

Chemical[1]	Guidelines		Regional Reference Range[4]				Black Lake				Camsell Portage				Fond du Lac			
	CDWQ[2]	CWQG[3]	Lower Limit	Median	Upper Limit	N	2011	2012	2013	2014	2011	2012	2013	2014	2011	2012	2013	2014
Metals																		
Aluminum	0.1	0.05 - 0.1[5]	0.0013	0.0059	0.1116	235	0.0020	0.0026	0.0026	0.0027	0.0016	0.0010	0.0044	0.0022	0.0140	0.0200	0.011	0.019
Cadmium	0.005	0.00004-0.00037[6]	0.00001	0.00001	0.00003	84	0.00001	0.00001	<0.00001	<0.00001	0.00001	0.00001	<0.00001	<0.00001	0.00002	<0.00001	0.00001	<0.00001
Copper	1	0.002[6]	0.0002	0.0002	0.0004	243	<0.0002	<0.0002	0.0003	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Iron	0.3	0.3	0.003	0.111	0.774	249	0.026	0.013	0.022	0.021	0.0049	0.0044	0.0078	0.0056	0.023	0.03	0.017	0.023
Lead	0.01	0.001[6]	0.0001	0.0001	0.0007	243	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001
Mercury (µg/L)	1	0.026	<0.01	<0.01	0.07	44	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Molybdenum	-	0.073	0.0001	0.0001	0.0008	243	0.0002	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0001	0.0001	0.0001	<0.0001
Nickel	-	0.025[6]	0.0001	0.0001	0.00013	243	0.0002	0.0001	0.0001	<0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0003	0.0002
Selenium	0.05	0.001	<0.0001	<0.0001	0.0002	249	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Uranium (µg/L)	20	15	<0.1	<0.1	0.86	249	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.1	<0.1	<0.1	<0.1	<0.1
Zinc	5	0.03	<0.0005	0.0011	0.0069	234	0.0018	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Nutrients																		
Ammonia as N	-	0.85-26.65[7]	<0.01	0.02	0.31	241	<0.01	<0.01	<0.01	0.05	<0.01	<0.01	<0.01	0.05	<0.01	<0.01	<0.01	0.04
Organic carbon	-	-	-	-	-	-	2.5	3.8	2.9	3	2.8	3.5	3.2	3.4	2.7	1.9	3.2	3.4
Physical Properties																		
pH (pH units)	6.5-8.5	6.5-9.0	-	-	-	-	7.12	7.18	7.38	6.76	7.46	7.50	7.71	7.26	7.22	7.14	6.86	6.88
Sp. Cond. (µS/cm)	-	-	-	-	-	-	40	38	38	43	66	69	69	73	39	44	42	44
Total hardness	-	-	-	-	-	-	14	13	14	14	26	26	27	27	14	15	15	15
Radionuclides																		
Lead-210 (Bq/L)	0.2	-	<0.02	<0.02	0.03	225	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Polonium-210 (Bq/L)	-	-	<0.005	<0.005	0.010	164	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Radium-226 (Bq/L)	0.5	0.11	0.005	0.005	0.012	238	<0.005	0.009	<0.005	0.008	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Thorium-230 (Bq/L)	-	-	<0.01	<0.01	0.031	152	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Trace Elements																		
Arsenic (µg/L)	10	5	0.1	0.1	0.24	249	0.1	0.1	0.2	0.2	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.1
Cobalt	-	-	0.0001	0.0001	0.0001	239	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Vanadium	-	-	0.0001	0.0001	0.0002	239	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

Appendix C, Table 1

Summary water chemistry results for the EARMP community program.

Chemical[1]	Guidelines		Regional Reference Range[4]				Stony Rapids				Uranium City				Wollaston Lake/ Hatchet Lake			
	CDWQ[2]	CWQG[3]	Lower Limit	Median	Upper Limit	N	2011	2012	2013	2014	2011	2012	2013	2014	2011	2012	2013	2014
Metals																		
Aluminum	0.1	0.05 - 0.1[5]	0.0013	0.0059	0.1116	235	0.0180	0.0084	0.0120	0.012	0.0051	0.0051	0.0057	0.0033	0.0047	0.0140	0.0074	0.0069
Cadmium	0.005	0.00004-0.0001[6]	0.00001	0.00001	0.00003	84	0.00002	<0.00001	0.00001	<0.00001	0.00001	0.00001	0.00002	<0.00001	0.00001	<0.00001	<0.00001	<0.00001
Copper	1	0.002[6]	0.0002	0.0002	0.0004	243	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0006	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Iron	0.3	0.3	0.003	0.111	0.774	249	0.074	0.045	0.037	0.034	0.031	0.041	0.05	0.027	0.014	0.035	0.043	0.034
Lead	0.01	0.001[6]	0.0001	0.0001	0.0007	243	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Mercury (µg/L)	1	0.026	<0.01	<0.01	0.07	44	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Molybdenum	-	0.073	0.0001	0.0001	0.0008	243	0.0002	0.0002	0.0001	0.0001	0.0004	0.0004	0.0004	0.0004	0.0012	0.0012	0.001	0.0009
Nickel	-	0.025[6]	0.0001	0.0001	0.00013	243	0.0002	0.0001	0.0002	0.0001	0.0001	0.0001	0.0002	0.0001	0.0001	0.0001	0.0001	<0.0001
Selenium	0.05	0.001	<0.0001	<0.0001	0.0002	249	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Uranium (µg/L)	20	15	<0.1	<0.1	0.86	249	<0.1	<0.1	<0.1	<0.1	3.5	1.3	1.4	1.7	<0.1	<0.1	<0.1	<0.1
Zinc	5	0.03	<0.0005	0.0011	0.0069	234	<0.0005	<0.0005	<0.0005	<0.0005	0.0014	<0.0005	0.0013	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Nutrients																		
Ammonia as N	-	0.85-26.65[7]	<0.01	0.02	0.31	241	<0.01	<0.01	0.05	0.04	<0.01	0.03	0.05	0.07	<0.01	<0.01	<0.01	0.04
Organic carbon	-	-	-	-	-	-	2.7	3.8	4.1	3.4	7.4	9.9	7.6	7.7	2.5	3	2.8	2.8
Physical Properties																		
pH (pH units)	6.5-8.5	6.5-9.0	-	-	-	-	7.30	7.30	7.38	6.89	7.75	7.72	7.94	7.46	7.10	7.12	7.37	6.91
Sp. Cond. (µS/cm)	-	-	-	-	-	-	39	40	36	38	114	112	113	114	34	37	34	36
Total hardness	-	-	-	-	-	-	13	14	13	13	49	52	56	53	13	13	13	12
Radionuclides																		
Lead-210 (Bq/L)	0.2	-	<0.02	<0.02	0.03	225	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Polonium-210 (Bq/L)	-	-	<0.005	<0.005	0.010	164	<0.006	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Radium-226 (Bq/L)	0.5	-	0.005	0.005	0.012	238	<0.005	0.01	<0.005	<0.005	0.008	0.01	<0.005	<0.005	<0.005	0.009	<0.005	<0.005
Thorium-230 (Bq/L)	-	-	<0.01	<0.01	0.031	152	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Trace Elements																		
Arsenic (µg/L)	10	5	0.1	0.1	0.24	249	0.2	0.2	0.2	0.1	0.1	0.2	0.2	0.1	<0.1	<0.1	0.1	0.1
Cobalt	-	-	0.0001	0.0001	0.0001	239	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Vanadium	-	-	0.0001	0.0001	0.0002	239	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

[1]All values are in mg/L, unless specified otherwise.

[2]CDWQ = Guidelines for Canadian drinking water quality (HC 2012).

[3]CWQG = All guidelines are Canadian Water Quality Guidelines for the protection of freshwater life (CCME 2015) except radium-226, which is a Saskatchewan General Surface Water Quality Objective (SERM 1997). When short and long term guidelines are available, the most conservative one was used.

[4]Water chemistry data from reference lakes north of Point's North sampled between 2006 and 2014 were utilized to generate the regional reference range. The median corresponds to the 50th percentile, while the lower and upper limits are the 2.5th and 97.5th percentiles that delimit the 95% range of the reference data. N is the number of reference samples utilized to compute the range.

[5]Guideline based on pH measurements: 0.05 mg/L if pH < 6.5 or 0.1 mg/L if pH ≥ 6.5

[6]Adjusted according to water hardness of each waterbody.

[7]Adjusted according to a water temperature of approximately 10°C and pH of each waterbody.

Values less than the method detection limit (MDL) were set equal to the MDL when calculating summary statistics.

SD = standard deviation.

Appendix C, Table 2

Summary fish flesh chemistry results for the EARMP community program.

Chemical[1]	Regional Reference Range[2, 3]							
	Lake Trout				Lake Whitefish			
	Lower Limit	Median	Upper Limit	N	Lower Limit	Median	Upper Limit	N
Metals								
Aluminum	0.05	0.22	0.70	10	<0.01	0.08	0.57	28
Cadmium	-	-	-	30	-	-	-	69
Copper	0.13	0.29	0.79	35	0.10	0.20	0.43	69
Iron	1.5	3.5	11.4	35	0.6	2.4	6.9	69
Lead	<0.002	<0.002	0.008	30	<0.002	<0.002	0.016	69
Mercury	<0.04	0.12	0.35	20	<0.01	0.05	0.30	59
Molybdenum	-	-	-	30	-	-	-	69
Nickel	-	-	-	30	<0.01	<0.01	0.04	69
Selenium	0.14	0.26	0.54	35	0.09	0.27	0.63	69
Uranium	<0.001	<0.001	0.006	30	<0.001	<0.001	0.005	69
Zinc	2.0	4.2	8.5	35	2.4	4.2	9.4	69
Radionuclides								
Lead-210 (Bq/g)	<0.001	<0.001	0.035	30	-	-	-	69
Polonium-210 (Bq/g)	-	-	-	30	<0.0002	0.0009	0.0065	42
Radium-226 (Bq/g)	-	-	-	30	0.00005	0.00006	0.00015	64
Thorium-230 (Bq/g)	-	-	-	21	-	-	-	47
Trace Elements								
Arsenic	0.01	0.03	0.42	35	<0.01	0.03	0.14	69
Cobalt	<0.002	<0.002	0.005	30	0.002	0.002	0.027	69
Vanadium	-	-	-	30	-	-	-	69

Appendix C, Table 2

Summary fish flesh chemistry results for the EARMP community program.

Chemical[1]	Black Lake (Black Lake)																					
	Lake Trout											Lake Whitefish										
	Baseline			2013				2014				Baseline			2013				2014			
	Average	**S.D.**	**N**	**Average**	**S.D.**	**<MDL**	**N**	**Average**	**S.D.**	**<MDL**	**N**	**Average**	**S.D.**	**N**	**Average**	**S.D.**	**<MDL**	**N**	**Average**	**S.D.**	**<MDL**	**N**
Metals																						
Aluminum	0.5	-	10	0.50	-	5	5	0.5	0.089	4	5	0.5	-	10	0.5	-	5	5	0.5	-	5	5
Cadmium	0.002	-	10	0.002	-	5	5	0.002	-	5	5	0.002	-	10	0.002	-	5	5	0.002	-	5	5
Copper	0.37	0.23	10	0.24	0.016	0	5	0.33	0.115	0	5	0.19	0.051	10	0.114	0.0879	0	5	0.26	0.186	0	5
Iron	2.9	1.39	10	1.8	0.23	0	5	2.6	1.04	0	5	2.1	0.93	10	1.54	0.611	0	5	2.3	1.2	0	5
Lead	0.002	0.0008	10	0.002	-	5	5	0.003	0.0022	3	5	0.002	0.00040	10	0.002	-	5	5	0.0022	0.00045	4	5
Mercury	0.31	0.107	10	0.40	0.084	0	5	0.44	0.073	0	5	0.12	0.059	10	0.058	0.026	0	5	0.10	0.024	0	5
Molybdenum	0.02	-	10	0.02	-	5	5	0.02	-	5	5	0.02	-	10	0.02	-	5	5	0.02	-	5	5
Nickel	0.01	-	10	0.01	-	5	5	0.02	0.013	2	5	0.01	0	10	0.01	-	5	5	0.01	0.0055	3	5
Selenium	0.15	0.026	10	0.14	0.024	0	5	0.15	0.0192	0	5	0.27	0.065	10	0.22	0.048	0	5	0.30	0.0466	0	5
Uranium	0.001	0.0003	10	0.001	-	5	5	0.001	0	2	5	0.001	0.00030	10	0.001	-	5	5	0.001	-	5	5
Zinc	4.1	1.37	10	3.4	0.42	0	5	3.7	1.26	0	5	4.6	1.08	10	3.92	0.517	0	5	3.8	0.677	0	5
Radionuclides																						
Lead-210 (Bq/g)	0.001	0.0004	10	0.001	-	5	5	0.001	0	4	5	0.002	0.0013	10	0.001	0	4	5	0.001	-	5	5
Polonium-210 (Bq/g)	0.0002	0	10	0.0002	-	5	5	0.0002	-	5	5	0.0004	0.00034	10	0.00036	0.000152	0	5	0.0002	0.000055	2	5
Radium-226 (Bq/g)	0.00006	0.000016	10	0.00007	0.00002	4	5	0.00005	-	5	5	0.00040	0.00065	10	0.00016	0.00015	3	5	0.00009	0.00006	4	5
Thorium-230 (Bq/g)	0.00011	0.000033	10	0.0001	0.00004	5	5	0.00009	-	5	5	0.0005	0.00080	10	0.0001	0.00004	4	5	0.0001	-	5	5
Trace Elements																						
Arsenic	0.07	0.028	10	0.05	0.008	0	5	0.06	0.025	0	5	0.18	0.136	10	0.024	0.0089	0	5	0.17	0.056	0	5
Cobalt	0.002	0.0003	10	0.002	-	5	5	0.004	0.0018	1	5	0.003	0.0009	10	0.0026	0.00134	2	5	0.004	0.0029	2	5
Vanadium	0.02	-	10	0.02	-	5	5	0.02	-	5	5	0.02	-	10	0.02	-	5	5	0.02	-	5	5

Appendix C, Table 2

Summary fish flesh chemistry results for the EARMP community program.

Chemical[1]	Camsell Portage (Ellis Bay)																					
	Lake Trout											Lake Whitefish										
	Baseline			2013				2014				Baseline			2013				2014			
	Average	S.D.	N	Average	S.D.	<MDL	N	Average	S.D.	<MDL	N	Average	S.D.	N	Average	S.D.	<MDL	N	Average	S.D.	<MDL	N
Metals																						
Aluminum	0.5	-	10	0.5	-	5	5	0.5	0.09	4	5	0.5	-	7	0.50	-	5	5	0.7	0.27	2	5
Cadmium	0.002	-	10	0.002	-	5	5	0.002	-	5	5	0.002	-	7	0.002	-	5	5	0.002	-	5	5
Copper	0.34	0.153	10	0.28	0.063	0	5	0.31	0.083	0	5	0.18	0.092	7	0.17	0.063	0	5	0.24	0.068	0	5
Iron	2.8	1.48	10	2.1	0.45	0	5	3.4	1.22	0	5	2.2	1.13	7	2.6	0.75	0	5	3.2	0.95	0	5
Lead	0.002	-	10	0.002	-	5	5	0.002	0.0009	3	5	0.002	0.0004	7	0.002	-	5	5	0.006	0.0025	1	5
Mercury	0.15	0.070	10	0.23	0.116	0	5	0.34	0.031	0	5	0.05	0.019	7	0.08	0.058	0	5	0.05	0.007	0	5
Molybdenum	0.02	-	10	0.02	-	5	5	0.02	-	5	5	0.02	-	7	0.02	-	5	5	0.02	-	5	5
Nickel	0.01	0.006	10	0.02	0.018	4	5	0.02	0.022	2	5	0.01	0.004	7	0.01	-	5	5	0.04	0.028	1	5
Selenium	0.16	0.024	10	0.16	0.015	0	5	0.18	0.023	0	5	0.26	0.030	7	0.26	0.019	0	5	0.24	0.026	0	5
Uranium	0.002	0.0041	10	0.001	-	5	5	0.001	0	4	5	0.001	0.0004	7	0.003	0.0011	1	5	0.002	0.0005	2	5
Zinc	5.0	3.11	10	3.3	0.36	0	5	4.6	1.42	0	5	3.2	0.55	7	3.7	1.12	0	5	4.5	1.2	0	5
Radionuclides																						
Lead-210 (Bq/g)	0.001	-	10	0.001	-	5	5	0.001	-	5	5	0.001	0.0004	7	0.001	-	5	5	0.001	-	5	5
Polonium-210 (Bq/g)	0.0003	0.00016	10	0.0002	-	5	5	0.0002	-	5	5	0.0002	0.00011	7	0.0002	-	5	5	0.0005	0.00045	1	5
Radium-226 (Bq/g)	0.0001	0.00005	10	0.00007	0.00002	3	5	0.00005	-	5	5	0.0001	0.00010	7	0.00010	0.00006	3	5	0.00006	-	5	5
Thorium-230 (Bq/g)	0.0001	-	10	0.00010	0.00001	5	5	0.0001	-	5	5	0.0001	-	7	0.00014	-	5	5	0.0001	-	5	5
Trace Elements																						
Arsenic	0.11	0.071	10	0.08	0.038	0	5	0.09	0.032	0	5	0.30	0.081	7	0.29	0.138	0	5	0.18	0.135	0	5
Cobalt	0.002	0.0004	10	0.002	0	4	5	0.003	0.00084	2	5	0.003	0.0019	7	0.003	0.0014	2	5	0.006	0.0021	0	5
Vanadium	0.02	-	10	0.02	-	5	5	0.02	-	5	5	0.02	-	7	0.02	-	5	5	0.02	-	5	5

Appendix C, Table 2

Summary fish flesh chemistry results for the EARMP community program.

Chemical[1]	Fond du Lac (Fond du Lac River)																					
	Lake Trout											Lake Whitefish										
	Baseline			2013				2014				Baseline			2013				2014			
	Average	S.D.	N	Average	S.D.	<MDL	N	Average	S.D.	<MDL	N	Average	S.D.	N	Average	S.D.	<MDL	N	Average	S.D.	<MDL	N
Metals																						
Aluminum	0.5	-	10	0.50	-	5	5	0.5	0.045	4	5	0.6	0.25	10	0.5	-	5	5	0.5	0.045	4	5
Cadmium	0.002	-	10	0.002	-	5	5	0.002	-	5	5	0.002	0.0013	10	0.002	0	4	5	0.002	-	5	5
Copper	0.28	0.081	10	0.30	0.087	0	5	0.27	0.10	0	5	0.18	0.057	10	0.2	0.09	0	5	0.16	0.024	0	5
Iron	2.4	0.90	10	1.7	0.43	0	5	2.9	0.526	0	5	2.2	1.48	10	2.4	1.37	0	5	2.0	0.64	0	5
Lead	0.002	0.0007	10	0.003	0.0027	4	5	0.004	0.0021	1	5	0.002	0.0007	10	0.002	-	5	5	0.003	0.003	3	5
Mercury	0.22	0.073	10	0.08	0.030	0	5	**0.59**	0.180	0	5	0.09	0.068	10	0.028	0.0084	0	5	0.083	0.035	0	5
Molybdenum	0.02	-	10	0.02	-	5	5	0.02	-	5	5	0.02	-	10	0.02	-	5	5	0.02	-	5	5
Nickel	0.01	-	10	0.01	0.005	3	5	0.02	0.004	1	5	0.01	0.003	10	0.01	0	4	5	0.04	0.036	1	5
Selenium	0.15	0.019	10	0.16	0.017	0	5	0.11	0.035	0	5	0.22	0.048	10	0.202	0.0517	0	5	0.16	0.052	0	5
Uranium	0.001	0.0003	10	0.001	-	5	5	0.001	0.00045	4	5	0.001	0.0007	10	0.001	-	5	5	0.002	0.0013	4	5
Zinc	3.7	0.47	10	3.3	0.55	0	5	3.9	1.60	0	5	3.9	0.94	10	4.12	0.740	0	5	4.0	0.550	0	5
Radionuclides																						
Lead-210 (Bq/g)	0.001	0.0004	10	0.001	-	5	5	0.001	-	5	5	0.004	-	10	0.001	-	5	5	0.001	-	5	5
Polonium-210 (Bq/g)	0.0002	-	10	0.0002	-	5	5	0.0002	-	5	5	0.0004	0.00034	10	0.0002	-	5	5	0.0002	-	5	5
Radium-226 (Bq/g)	0.00006	-	10	0.00006	0.000004	5	5	0.00006	0.00001	4	5	0.00040	0.00065	10	0.00007	0.00002	4	5	0.00007	0.00001	4	5
Thorium-230 (Bq/g)	0.0001	-	10	0.0001	-	5	5	0.0001	-	5	5	0.002	-	10	0.00012	-	5	5	0.0001	0.000045	4	5
Trace Elements																						
Arsenic	0.10	0.040	10	0.07	0.028	0	5	0.08	0.039	0	5	0.24	0.136	10	0.06	0.034	0	5	0.11	0.11	0	5
Cobalt	0.002	-	10	0.002	-	5	5	0.003	0.00055	1	5	0.004	0.0039	10	0.0054	0.00488	1	5	0.010	0.0067	0	5
Vanadium	0.02	-	10	0.02	-	5	5	0.02	-	5	5	0.02	-	10	0.02	-	5	5	0.02	-	5	5

Appendix C, Table 2

Summary fish flesh chemistry results for the EARMP community program.

Chemical[1]	Stony Rapids (Fond du Lac River)																					
	Lake Trout											Lake Whitefish										
	Baseline			2013				2014				Baseline			2013				2014			
	Average	S.D.	N	Average	S.D.	<MDL	N	Average	S.D.	<MDL	N	Average	S.D.	N	Average	S.D.	<MDL	N	Average	S.D.	<MDL	N
Metals																						
Aluminum	0.5	-	9	0.5	-	5	5	0.5	-	5	5	0.5	-	10	0.50	-	5	5	0.5	-	5	5
Cadmium	0.002	-	9	0.002	-	5	5	0.002	-	5	5	0.002	-	10	0.002	-	5	5	0.002	-	5	5
Copper	0.29	0.191	9	0.352	0.0676	0	5	0.46	0.27	0	5	0.20	0.083	10	0.22	0.064	0	5	0.21	0.025	0	5
Iron	2.8	2.32	9	3.76	1.348	0	5	5.3	3.9	0	5	2.1	0.98	10	2.5	1.32	0	5	1.9	0.22	0	5
Lead	0.002	-	9	0.002	-	5	5	0.0044	0.0038	2	5	0.002	-	10	0.002	-	5	5	0.002	0.001	4	5
Mercury	0.33	0.156	9	0.176	0.0723	0	5	0.20	0.0518	0	5	0.13	0.103	10	0.06	0.021	0	5	0.093	0.027	0	5
Molybdenum	0.02	-	9	0.02	-	5	5	0.02	-	5	5	0.02	-	10	0.02	-	5	5	0.02	-	5	5
Nickel	0.01	0	9	0.01	0	4	5	0.02	0.022	3	5	0.01	0.013	10	0.01	-	5	5	0.01	0.0045	4	5
Selenium	0.14	0.037	9	0.166	0.0182	0	5	0.15	0.0114	0	5	0.15	0.049	10	0.13	0.013	0	5	0.12	0.029	0	5
Uranium	0.001	0.0003	9	0.001	-	5	5	0.001	-	5	5	0.001	0	10	0.001	-	5	5	0.002	0.0027	4	5
Zinc	3.7	0.86	9	3.6	0.46	0	5	4.0	0.88	0	5	4.9	1.70	10	4.3	0.61	0	5	3.7	0.527	0	5
Radionuclides																						
Lead-210 (Bq/g)	0.001	0	9	0.001	0	4	5	0.001	-	5	5	0.001	-	10	0.001	-	5	5	0.001	-	5	5
Polonium-210 (Bq/g)	0.0002	0.00007	9	0.0002	0.00004	3	5	0.0002	-	5	5	0.0003	-	10	0.0002	0	4	5	0.0002	0	4	5
Radium-226 (Bq/g)	0.00006	-	9	0.00007	0.00002	4	5	0.00007	-	5	5	0.00016	0.00029	10	0.00007	0.00002	3	5	0.00006	-	5	5
Thorium-230 (Bq/g)	0.0001	-	9	0.0001	-	5	5	0.0001	-	5	5	0.0003	0.00060	10	0.0001	-	5	5	0.0001	-	5	5
Trace Elements																						
Arsenic	0.07	0.044	9	0.13	0.080	0	5	0.080	0.044	0	5	0.04	0.018	10	0.03	0.007	0	5	0.03	0.035	0	5
Cobalt	0.002	0	9	0.002	-	5	5	0.004	0.0016	1	5	0.006	0.0031	10	0.005	0.0009	0	5	0.005	0.0021	0	5
Vanadium	0.02	-	9	0.02	-	5	5	0.02	-	5	5	0.02	-	10	0.02	-	5	5	0.02	-	5	5

Appendix C, Table 2

Summary fish flesh chemistry results for the EARMP community program.

Chemical[1]	Uranium City (Prospector Bay)																					
	Lake Trout											Lake Whitefish										
	Baseline			2013				2014				Baseline			2013				2014			
	Average	S.D.	N	Average	S.D.	<MDL	N	Average	S.D.	<MDL	N	Average	S.D.	N	Average	S.D.	<MDL	N	Average	S.D.	<MDL	N
Metals																						
Aluminum	0.5	-	5	0.50	-	5	5	0.5	-	5	5	0.5	-	5	0.5	-	3	3	0.5	0.045	4	5
Cadmium	0.002	-	5	0.002	-	5	5	0.002	-	5	5	0.002	-	5	0.002	0	2	3	0.002	0	4	5
Copper	0.24	0.029	5	0.22	0.042	0	5	0.29	0.027	0	5	0.15	0.026	5	0.26	0.112	0	3	0.29	0.107	0	5
Iron	2.8	1.11	5	3.0	2.59	0	5	2.7	0.619	0	5	1.6	0.38	5	2.33	0.551	0	3	3.0	1.3	0	5
Lead	0.002	-	5	0.003	0.0017	1	5	0.002	0.00055	3	5	0.002	-	5	0.0023	0.00058	1	3	0.0046	0.0038	2	5
Mercury	0.20	0.046	5	0.14	0.056	0	5	0.17	0.0691	0	5	0.090	0.0360	5	0.03	0.017	0	3	0.039	0.0119	0	5
Molybdenum	0.02	-	5	0.02	-	5	5	0.02	-	5	5	0.02	-	5	0.02	-	3	3	0.02	-	5	5
Nickel	0.01	-	5	0.01	0.004	4	5	0.01	0.0045	3	5	0.01	-	5	0.01	1.6E-10	2	3	0.02	0.016	0	5
Selenium	0.17	0.0050	5	0.15	0.019	0	5	0.15	0.00548	0	5	0.26	0.040	5	0.25	0.012	0	3	0.24	0.0311	0	5
Uranium	0.001	-	5	0.001	-	5	5	0.002	0.0022	4	5	0.001	-	5	0.001	-	3	3	0.002	0.00089	2	5
Zinc	4.3	0.65	5	3.0	0.48	0	5	4.8	1.98	0	5	4.8	1.63	5	4.3	1.73	0	3	4.6	0.74	0	5
Radionuclides																						
Lead-210 (Bq/g)	0.001	-	5	0.001	-	5	5	0.001	-	5	5	0.001	-	5	0.001	-	3	3	0.001	-	5	5
Polonium-210 (Bq/g)	0.0002	-	5	0.0002	0	4	5	0.0002	-	5	5	0.00030	0.00018	5	0.00023	0.00006	2	3	0.00066	0.00027	0	5
Radium-226 (Bq/g)	0.00006	0.000004	5	0.00009	0.000061	3	5	0.00006	0.00001	4	5	0.00006	-	5	0.00006	0	2	3	0.00008	0.00002	3	5
Thorium-230 (Bq/g)	0.0001	-	5	0.0001	0.00004	4	5	0.0001	-	5	5	0.0001	-	5	0.0001	-	3	3	0.0001	-	5	5
Trace Elements																						
Arsenic	0.08	0.0260	5	0.06	0.016	0	5	0.08	0.07	0	5	0.07	0.029	5	0.19	0.026	0	3	0.10	0.075	0	5
Cobalt	0.002	-	5	0.002	-	5	5	0.002	0	2	5	0.0060	0.00500	5	0.0087	0.00643	0	3	0.008	0.0049	0	5
Vanadium	0.02	-	5	0.02	-	5	5	0.02	0	5	5	0.02	-	5	0.02	-	3	3	0.02	-	5	5

Appendix C, Table 2

Summary fish flesh chemistry results for the EARMP community program.

Chemical[1]	Wollaston Lake/Hatchet Lake (Wollaston Lake)																					
	Lake Trout											Lake Whitefish										
	Baseline			2013				2014				Baseline			2013				2014			
	Average	S.D.	N	Average	S.D.	<MDL	N	Average	S.D.	<MDL	N	Average	S.D.	N	Average	S.D.	<MDL	N	Average	S.D.	<MDL	N
Metals																						
Aluminum	0.5	-	10	0.50	-	5	5	0.5	-	5	5	0.5	-	10	0.5	-	5	5	0.5	-	5	5
Cadmium	0.002	-	10	0.002	-	5	5	0.002	-	5	5	0.002	-	10	0.002	-	5	5	0.002	-	5	5
Copper	0.45	0.146	10	0.34	0.030	0	5	0.31	0.0770	0	5	0.16	0.045	10	0.144	0.0152	0	5	0.15	0.0164	0	5
Iron	3.0	1.34	10	2.4	0.36	0	5	2.0	0.43	0	5	1.7	0.79	10	2.14	0.586	0	5	1.9	0.57	0	5
Lead	0.002	-	10	0.003	0.0013	4	5	0.002	0.00089	4	5	0.002	0	10	0.002	0	4	5	0.003	0.0011	2	5
Mercury	0.16	0.035	10	0.12	0.038	0	5	0.24	0.0832	0	5	0.05	0.019	10	0.04	0.023	0	5	0.088	0.015	0	5
Molybdenum	0.02	-	10	0.02	-	5	5	0.02	-	5	5	0.02	-	10	0.02	-	5	5	0.02	-	5	5
Nickel	0.01	0.003	10	0.01	-	5	5	0.02	0.018	3	5	0.01	-	10	0.012	0.0045	3	5	0.01	0.0045	1	5
Selenium	0.21	0.036	10	0.20	0.011	0	5	0.19	0.019	0	5	0.45	0.104	10	0.356	0.0462	0	5	0.38	0.0390	0	5
Uranium	0.001	-	10	0.001	0.0004	4	5	0.001	0	4	5	0.001	-	10	0.001	-	5	5	0.001	0	4	5
Zinc	4.4	1.25	10	4.4	0.83	0	5	3.2	0.83	0	5	4.1	0.67	10	3.96	0.876	0	5	3.6	0.889	0	5
Radionuclides																						
Lead-210 (Bq/g)	0.001	0	10	0.001	-	5	5	0.001	-	5	5	0.002	-	10	0.00086	0.000313	4	5	0.001	-	5	5
Polonium-210 (Bq/g)	0.0002	-	10	0.0002	-	5	5	0.0002	-	5	5	0.0005	0.00036	10	0.00044	0.000358	3	5	0.0003	0.0001	1	5
Radium-226 (Bq/g)	0.00009	0.00008	10	0.00009	0.00006	2	5	0.00005	-	5	5	0.00050	0.00082	10	0.00028	0.00040	2	5	0.00007	0.00002	4	5
Thorium-230 (Bq/g)	0.0001	-	10	0.0001	-	5	5	0.0001	-	5	5	0.0007	-	10	0.0001	-	5	5	0.0001	-	5	5
Trace Elements																						
Arsenic	0.04	0.018	10	0.034	0.0167	0	5	0.03	0.015	0	5	0.16	0.042	10	0.146	0.0351	0	5	0.11	0.035	0	5
Cobalt	0.002	-	10	0.002	-	5	5	0.003	0.0017	2	5	0.002	0.0010	10	0.002	0	4	5	0.003	0.0014	1	5
Vanadium	0.02	-	10	0.02	-	5	5	0.02	-	5	5	0.02	-	10	0.02	-	5	5	0.02	-	5	5

[1]All concentrations are reported on a µg/g wet weight basis, except when specified otherwise.

[2]Regional reference data are from reference lakes north of Point's North sampled between 2006 and 2014. The median corresponds to the 50th percentile, while the lower and upper limits are the 2.5th and 97.5th percentiles that delimit the 95% range of the reference data.

[3]Regional reference ranges could not be computed when all or nearly all values were lower than the method detection limit (MDL).

S.D. = Standard deviation; standard deviations of 0 signify "no variance between samples", not "a very small variance"; while "-" indicates insufficient data to calculate S.D.

<MDL = number of samples with values below the laboratory method detection limit.

Values less than the MDL were set equal to the MDL when calculating summary statistics.

Appendix C, Table 3

Summary blueberry chemistry results for the EARMP community program.

Chemical[1]	Regional Reference Range[2, 3]				Black Lake												Camsell Portage										
					Baseline			2013				2014				Baseline			2013				2014			
	Lower Limit	Median	Upper Limit	N	Average	S.D.	N	Average	S.D.	<MDL	N	Average	S.D.	<MDL	N	Average	S.D.	N	Average	S.D.	<MDL	N	Average	S.D.	<MDL	N
Metals																										
Aluminum	4.9	12.1	97.7	43	7.9	2.07	10	9.2	1.8	0	5	14	3.19	0	5	7.0	0.57	5	7.1	0.39	0	5	11	2.25	0	3
Cadmium	-	-	-	22	0.01	-	10	0.01	0.004	3	5	0.01	-	5	5	0.01	-	5	0.01	-	5	5	0.01	-	3	3
Copper	2.1	3.6	6.9	43	3.2	0.46	10	2.0	0.65	0	5	3.8	0.20	0	5	3.2	0.39	5	2.2	0.09	0	5	3.7	0.173	0	3
Iron	7.9	15.3	68.6	43	10.6	3.47	10	7.4	1.95	0	5	21	5.79	0	5	12.1	3.68	5	10.0	1.87	0	5	16	1.00	0	3
Lead	<0.01	0.01	0.05	22	0.03	0.024	10	0.02	0.005	2	5	0.02	0.0084	1	5	0.02	0.013	5	0.02	0.008	1	5	0.01	0.0058	0	3
Molybdenum	<0.1	0.1	0.3	43	0.1	0.05	10	0.1	0.04	1	5	0.2	0.055	2	5	0.1	0.05	5	0.2	0.04	0	5	0.2	0	0	3
Nickel	0.10	0.57	1.12	43	0.55	0.117	10	0.42	0.095	0	5	0.62	0.126	0	5	0.53	0.169	5	0.15	0.019	0	5	0.37	0.0173	0	3
Selenium	-	-	-	22	0.05	0.010	10	0.05	-	5	5	0.05	-	5	5	0.05	-	5	0.05	-	5	5	0.05	-	3	3
Uranium	<0.002	0.003	0.017	21	0.01	-	10	0.01	0	4	5	0.02	0.0084	1	5	0.02	0.031	5	0.01	-	5	5	0.01	0	0	3
Zinc	3.6	6.9	10.6	43	5.3	0.90	10	5.9	1.34	0	5	6.7	1.31	0	5	8.5	2.80	5	6.6	1.09		5	7.4	0.473	0	3
Radionuclides																										
Lead-210 (Bq/g)	<0.001	0.004	0.020	19	0.005	0.0040	10	0.001	0.0005	3	5	0.001	0.00045	4	5	0.002	0.0013	5	0.007	0.0040	2	5	0.002	0	0	3
Polonium-210 (Bq/g)	<0.002	0.003	0.014	8	0.0015	0.00053	10	0.0007	0.00013	0	5	0.00074	0.00022	0	5	0.0014	0.00027	5	0.0010	0	4	5	0.0014	0.00032	0	3
Radium-226 (Bq/g)	0.001	0.003	0.009	30	0.0019	0.00141	10	0.0029	0.00077	0	5	0.001	0.00059	0	5	0.003	0.0012	5	0.0028	0.00084	0	5	0.003	0.00058	0	3
Thorium-230 (Bq/g)	-	-	-	8	0.002	0.0005	10	0.002	-	5	5	0.001	-	5	5	0.001	-	5	0.002	-	5	5	0.001	-	3	3
Trace Elements																										
Arsenic	-	-	-	22	0.05	-	10	0.05	-	5	5	0.05	-	5	5	0.05	-	5	0.05	-	5	5	0.05	-	3	3
Cobalt	<0.01	0.01	0.03	22	0.01	0.013	10	0.01	0	4	5	0.01	0.0055	0	5	0.01	0.004	5	0.01	-	5	5	0.01	0	2	3
Vanadium	-	-	-	22	0.1	-	10	0.1	-	5	5	0.1	-	5	5	0.1	-	5	0.1	-	5	5	0.1	-	3	3

Appendix C, Table 3.

Summary blueberry chemistry results for the EARMP community program.

Chemical[1]	Fond du Lac											Stony Rapids										
	Baseline			2013				2014				Baseline			2013				2014			
	Average	S.D.	N	Average	S.D.	<MDL	N	Average	S.D.	<MDL	N	Average	S.D.	N	Average	S.D.	<MDL	N	Average	S.D.	<MDL	N
Metals																						
Aluminum	9.4	4.88	10	14.6	4.04	0	5	25	12.1	0	5	14.7	10.21	10	244	43		5	8.9	0.856	0	5
Cadmium	0.01	-	10	0.01	-	5	5	0.01	-	5	5	0.01	0.003	10	0.01	-	5	5	0.01	-	5	5
Copper	3.3	0.49	10	2.2	0.43	0	5	5.3	0.27	0	5	2.5	0.49	10	2.4	0.25		5	4.3	0.19	0	5
Iron	12.1	3.90	10	15.4	5.50	0	5	35	12.1	0	5	14.9	7.18	10	10.6	0.91		5	14	0.837	0	5
Lead	0.02	0.008	10	0.02	0.011	0	5	0.08	0.070	0	5	0.03	0.028	10	0.01	0.004	3	5	0.01	0.0045	2	5
Molybdenum	0.3	0.13	10	0.3	0.05	0	5	0.5	0.08	0	5	0.2	0.11	10	0.1	0.04	2	5	0.2	0	0	5
Nickel	0.66	0.156	10	0.55	0.117	0	5	1.7	0.72	0	5	0.59	0.189	10	0.33	0.073		5	1.0	0.31	0	5
Selenium	0.06	0.011	10	0.05	-	5	5	0.05	-	5	5	0.05	0	10	0.05	-	5	5	0.05	-	5	5
Uranium	0.01	0.003	10	0.01	-	5	5	0.01	0	1	5	0.01	0.004	10	0.01	-	5	5	0.01	0.0089	3	5
Zinc	6.4	1.59	10	7.0	0.87	0	5	7.7	0.789	0	5	4.7	1.05	10	6.3	0.75		5	5.5	0.378	0	5
Radionuclides																						
Lead-210 (Bq/g)	0.004	0.0040	10	0.004	0.0031	2	5	0.001	0	3	5	0.008	0.0030	10	0.005	0.0013	4	5	0.001	0	3	5
Polonium-210 (Bq/g)	0.0016	0.00092	10	0.0023	0.00246	1	5	0.0011	0.00043	0	5	0.002	0.0007	10	0.001	0	3	5	0.0006	0.00025	1	5
Radium-226 (Bq/g)	0.003	0.0011	10	0.0042	0.0013	0	5	0.002	0.0014	1	5	0.003	0.0017	10	0.014	0.0015		5	0.004	0.0048	0	5
Thorium-230 (Bq/g)	0.001	-	10	0.002	-	5	5	0.001	-	5	5	0.002	-	10	0.002	-	5	5	0.001	-	5	5
Trace Elements																						
Arsenic	0.05	-	10	0.05	-	5	5	0.05	-	5	5	0.05	-	10	0.05	-	5	5	0.05	-	5	5
Cobalt	0.01	0.005	10	0.02	0.005	1	5	0.04	0.013	0	5	0.02	0.019	10	0.01	-	5	5	0.03	0.038	1	5
Vanadium	0.1	-	10	0.1	-	5	5	0.1	-	5	5	0.1	-	10	0.1	-	5	5	0.1	-	5	5

Appendix C, Table 3.

Summary blueberry chemistry results for the EARMP community program.

Chemical[1]	Uranium City							Wollaston Lake/Hatchet Lake										
	Baseline			2014				Baseline			2013				2014			
	Average	S.D.	N	Average	S.D.	<MDL	N	Average	S.D.	N	Average	S.D.	<MDL	N	Average	S.D.	<MDL	N
Metals																		
Aluminum	5.9	1.6	5	9.3	1.65	0	3	12.5	7.77	10	7.0	0.32	0	5	11	0.837	0	5
Cadmium	0.01	-	5	0.01	-	3	3	0.01	-	10	0.01	-	5	5	0.01	-	5	5
Copper	3.5	0.4	5	4.1	0	0	3	2.8	0.51	10	1.8	0.21	0	5	4.5	0.152	0	5
Iron	10.3	1.3	5	14	0	0	3	13.3	5.51	10	9.4	0.55	0	5	17	0.548	0	5
Lead	0.012	0.0045	5	0.03	0.029	1	3	0.02	0.011	10	0.02	0.009	3	5	0.02	0.005	2	5
Molybdenum	0.2	0.1	5	0.2	0	0	3	0.1	0.07	10	0.1	0.04	3	5	0.4	0.05	0	5
Nickel	0.5	0.055	5	0.43	0.067	0	3	0.56	0.129	10	0.22	0.026	0	5	1.2	0.217	0	5
Selenium	0.05	-	5	0.05	-	3	3	0.05	0	10	0.05	-	5	5	0.05	-	5	5
Uranium	0.01	-	5	0.01	0	2	3	0.01	0.003	10	0.01	-	5	5	0.01	0.0089	3	5
Zinc	5.8	0.9	5	6.5	0.153	0	3	5.7	1.54	10	5.9	0.45		5	7.5	0.335	0	5
Radionuclides																		
Lead-210 (Bq/g)	0.0062	0.008	5	0.003	0.0021	0	3	0.0050	0.00394	10	0.006	0.0043	2	5	0.001	0	4	5
Polonium-210 (Bq/g)	0.00276	0.0014	5	0.0030	0.00015	0	3	0.0022	0.00131	10	0.0012	0.00045	4	5	0.0007	0.00019	0	5
Radium-226 (Bq/g)	0.022	0.044	5	0.002	0.0013	0	3	0.003	0.0019	10	0.0064	0.0021	0	5	0.004	0.0011	0	5
Thorium-230 (Bq/g)	0.0012	0.0004	5	0.001	-	3	3	0.0016	-	10	0.002	-	5	5	0.001	-	5	5
Trace Elements																		
Arsenic	0.05	-	5	0.05	-	3	3	0.05	-	10	0.05	-	5	5	0.05	-	5	5
Cobalt	0.012	0.004	5	0.03	0.029	2	3	0.01	0.003	10	0.01	0	3	5	0.08	0.085	0	5
Vanadium	0.1	-	5	0.1	-	3	3	0.1	-	10	0.1	-	5	5	0.1	-	5	5

[1]All concentrations are in µg/g on a dry weight basis, unless specified otherwise.

[2]Regional reference data are from the AWG program (2000 to 2010) and the Uranium City Country Foods program (2011). Data are not available from all communities in all years. The median corresponds to the 50th percentile, while the lower and upper limits are the 2.5th and 97.5th percentiles that delimit the 95% range of the reference data.

[3]Regional reference ranges could not be computed when all or nearly all values were lower than the method detection limit (MDL).

S.D. = Standard deviation; standard deviations of 0 signify "no variance between samples", not "a very small variance".

<MDL = less than the laboratory method detection limit.

Values less than the MDL were set equal to the MDL when calculating summary statistics.

Appendix C, Table 4

Summary bog cranberry chemistry results for the EARMP community program.

Chemical[1]	Regional Reference Range[2, 3]				Camsell Portage							Uranium City										
					Baseline			2014				Baseline			2013				2014			
	Lower Limit	Median	Upper Limit	N	Average	S.D.	N	Average	S.D.	<MDL	N	Average	S.D.	N	Average	S.D.	<MDL	N	Average	S.D.	<MDL	N
Metals																						
Aluminum	6.5	21.1	79.9	18	17.6	1.3	5	16.5	-	0	2	22	5.8	5	40	14.9	0	5	23	-	0	2
Cadmium	<0.01	<0.01	0.03	18	0.01	0	5	0.01	-	2	2	0.01	-	5	0.02	0.004	1	5	0.01	-	2	2
Copper	2.4	3.7	5.7	55	4.4	0.5	5	4.2	-	0	2	3.6	1.36	5	2.5	0.42	0	5	6.0	-	0	2
Iron	8.4	12.1	87.6	55	10.1	0.5	5	14.5	-	0	2	15	3.9	5	18	7.2	0	5	13	-	0	2
Lead	<0.01	0.02	0.05	18	0.012	0.004	5	0.015	-	1	2	0.01	0.004	5	0.06	0.078	0	5	0.04	-	0	2
Molybdenum	<0.1	<0.1	0.2	55	0.14	0.05	5	0.1	-	2	2	0.1	-	5	0.1	0	1	5	0.2	-	0	2
Nickel	<0.1	0.35	0.79	55	0.49	0.10	5	0.53	-	0	2	0.62	0.33	5	0.34	0.105	0	5	0.59	-	0	2
Selenium	-	-	-	55	0.05	0	5	0.05	-	2	2	0.05	-	5	0.05	-	5	5	0.05	-	2	2
Uranium	0.001	0.003	0.029	37	0.012	0.004	5	0.01	-	1	2	0.01	0.004	5	0.01	0.009	4	5	0.02	-	1	2
Zinc	4.9	7.2	10.5	55	6.3	0.57	5	6.2	-	0	2	6.8	1.45	5	7.5	0.80	0	5	6.7	-	0	2
Radionuclides																						
Lead-210 (Bq/g)	<0.0003	0.0015	0.0045	17	0.013	0.006	5	0.001	-	1	2	0.010	0.0055	5	0.007	0.0053	3	5	0.004	-	0	2
Polonium-210 (Bq/g)	-	-	-	0	0.0022	0.0008	5	0.0011	-	0	2	0.005	0.0045	5	0.001	0.0004	1	5	0.0038	-	0	2
Radium-226 (Bq/g)	<0.0003	0.0018	0.0100	55	0.0036	0.0017	5	0.0007	-	1	2	0.002	0.0026	5	0.0022	0.0008	1	5	0.003	-	0	2
Thorium-230 (Bq/g)	-	-	-	0	0.002	0	5	0.001	-	2	2	0.002	-	5	0.002	-	5	5	0.001	-	2	2
Trace Elements																						
Arsenic	-	-	-	55	0.05	0	5	0.05	-	2	2	0.05	-	5	0.05	-	5	5	0.05	-	2	2
Cobalt	<0.01	<0.01	0.02	18	0.01	0	5	0.01	-	0	2	0.04	0.054	5	0.02	0.004	0	5	0.05	-	0	2
Vanadium	-	-	-	55	0.1	0	5	0.1	-	2	2	0.1	-	5	0.1	-	5	5	0.1	-	2	2

[1]All concentrations are in µg/g on a dry weight basis, unless specified otherwise.

[2]Regional reference data are from the AWG program (2000 to 2010) and the Uranium City Country Foods program (2011). Data are not available from all communities in all years. The median corresponds to the 50^{th} percentile, while the lower and upper limits are the 2.5^{th} and 97.5^{th} percentiles that delimit the 95% range of the reference data.

[3]Regional reference ranges could not be computed when all or nearly all values were lower than the method detection limit (MDL).

S.D. = Standard deviation; standard deviations of 0 signify "no variance between samples", not "a very small variance"; when less than three samples were collected, S.D. was not computed.

<MDL = less than the laboratory method detection limit.

Values less than the MDL were set equal to the MDL when calculating summary statistics.

Appendix C, Table 5

Summary barren-ground caribou flesh chemistry results for the EARMP community program.

Chemical[1]	Regional Reference Range[2, 3]			
	Lower Limit	**Median**	**Upper Limit**	**N**
Metals				
Aluminum	0.02	0.3	1.1	11
Cadmium	0.002	0.004	0.010	13
Copper	1.7	2.9	4.9	30
Iron	25	39	62	32
Lead	0.003	0.003	0.389	13
Molybdenum	-	-	-	-
Nickel	0.01	0.02	0.04	32
Selenium	0.06	0.28	0.69	32
Uranium	0.001	0.001	0.003	32
Zinc	9	29	55	32
Radionuclides				
Lead-210 (Bq/g)	0.001	0.001	0.003	32
Polonium-210 (Bq/g)				
Radium-226 (Bq/g)	0.00003	0.00006	0.00011	25
Thorium-230 (Bq/g)	-	-	-	-
Trace Elements				
Arsenic	0.01	0.04	0.18	32
Cobalt	0.001	0.004	0.009	13
Vanadium	-	-	-	-

Appendix C, Table 5

Summary barren-ground caribou flesh chemistry results for the EARMP community program.

Chemical[1]	Black Lake													
	Baseline			2013/2014				2014/2015						
	Average	S.D.	N	Average	S.D.	< MDL	N	1	2	3	4	5	Average	S.D.
Metals														
Aluminum	0.5	0	10	0.7	0.30	2	5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	-
Cadmium	0.003	0.0015	10	0.003	0.0013	1	5	0.002	<0.002	<0.002	<0.002	<0.002	0.002	-
Copper	3.3	0.54	10	3.6	0.96	0	5	4.9	3.5	4.6	4.8	2.5	4.1	1.04
Iron	41	6.6	10	47	9.1	0	5	46	32	53	48	37	43	8.5
Lead	0.084	0.1688	10	0.120	0.2460	1	5	0.015	0.009	0.007	0.005	0.006	0.008	0.0040
Molybdenum	0.02	-	10	0.02	-	5	5	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	-
Nickel	0.01	0.005	10	0.01	-	5	5	0.01	0.01	<0.01	0.04	0.04	0.02	0.016
Selenium	0.19	0.034	10	0.20	0.036	0	5	0.22	0.18	0.24	0.22	0.18	0.21	0.027
Uranium	0.001	0	10	0.001	-	5	5	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	-
Zinc	26	6.2	10	23	4.4	0	5	14	23	15	15	46	23	13.6
Radionuclides														
Lead-210 (Bq/g)	0.001	0	10	0.001	-	5	5	0.002	<0.001	<0.001	<0.001	0.001	0.001	-
Polonium-210 (Bq/g)	0.008	0.0032	10	0.015	0.0044	0	5	0.019	0.014	0.015	0.016	0.013	0.015	0.0023
Radium-226 (Bq/g)	0.0028	0.00305	10	0.00016	0.00013	2	5	0.0002	0.0002	<0.00008	0.0001	<0.00006	0.0001	0.00007
Thorium-230 (Bq/g)	0.0001	-	10	0.0001	-	5	5	<0.0002	<0.0001	<0.0002	<0.0001	<0.0001	0.0001	0.00005
Trace Elements														
Arsenic	0.02	0.008	10	0.01	0	2	5	0.02	0.03	0.02	0.04	0.02	0.03	0.009
Cobalt	0.004	0.0015	10	0.002	0	3	5	0.009	0.006	0.009	0.008	0.016	0.010	0.0038
Vanadium	0.02	-	10	0.02	-	5	5	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	-

Appendix C, Table 5

Summary barren-ground caribou flesh chemistry results for the EARMP community program.

Chemical[1]	Fond du Lac											
	Baseline			2014/2015				2014/2015				
	Average	S.D.	N	Average	S.D.	< MDL	N	1	2	3	Average	S.D.
Metals												
Aluminum	0.5	-	11	0.5	0	4	5	<0.5	<0.5	0.6	0.5	0.06
Cadmium	0.015	0.0414	11	0.003	0.0010	1	5	0.004	0.004	0.008	0.005	0.0023
Copper	3.2	0.84	11	3.9	0.71	0	5	3.5	2.6	1.9	2.7	0.80
Iron	39	8.0	11	43	9.2	0	5	47	36	36	40	6.4
Lead	0.005	0.0038	11	0.002	0.0004	3	5	<0.002	<0.002	0.004	0.003	0.0012
Molybdenum	0.02	-	11	0.02	-	5	5	<0.02	<0.02	<0.02	0.02	-
Nickel	0.02	0.021	11	0.01	-	5	5	<0.01	<0.01	0.01	0.01	0
Selenium	0.17	0.060	11	0.19	0.021	0	5	0.19	0.17	0.16	0.17	0.015
Uranium	0.001	0.0004	11	0.001	-	5	5	<0.001	<0.001	<0.001	0.001	-
Zinc	30	17.8	11	26	3.2	0	5	22	28	59	36	19.9
Radionuclides												
Lead-210 (Bq/g)	0.002	0.0021	11	0.001	-	5	5	<0.001	<0.001	<0.001	0.001	-
Polonium-210 (Bq/g)	0.0120	0.00568	11	0.0118	0.00148	0	5	0.0071	0.008	0.0075	0.0075	0.00045
Radium-226 (Bq/g)	0.00008	0.000043	11	0.00007	0.000009	3	5	<0.00006	0.00008	<0.00006	0.00007	0.000012
Thorium-230 (Bq/g)	0.0001	0.00007	11	0.0001	-	5	5	<0.0001	<0.0001	<0.0001	0.0001	-
Trace Elements												
Arsenic	0.01	0.005	11	0.01	0.009	4	5	0.01	<0.01	0.01	0.01	0
Cobalt	0.005	0.0032	11	0.004	0.0012	1	5	0.004	0.004	0.006	0.005	0.0012
Vanadium	0.02	-	11	0.02	-	5	5	<0.02	<0.02	<0.02	0.02	-

Appendix C, Table 5

Summary barren-ground caribou flesh chemistry results for the EARMP community program.

Chemical[1]	Stony Rapids													
	Baseline			2013/2014				2014/2015						
	Average	S.D.	N	Average	S.D.	< MDL	N	1	2	3	4	5	Average	S.D.
Metals														
Aluminum	0.6	0.31	8	0.5	-	3	3	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	-
Cadmium	0.003	0.0008	8	0.004	0.0035	1	3	0.007	<0.002	<0.002	0.006	0.003	0.004	0.0021
Copper	4.1	0.56	8	2.5	0.81	0	3	2.4	4.3	3.6	3.8	3.5	3.5	0.62
Iron	52	3.7	8	39	1.2	0	3	34	43	46	47	50	44	5.5
Lead	0.017	0.0272	8	0.030	0.0236	0	3	0.004	0.002	<0.002	0.009	<0.002	0.004	0.0027
Molybdenum	0.02	-	8	0.020	-	3	3	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	-
Nickel	0.01	0	8	0.08	0.087	1	3	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	-
Selenium	0.22	0.022	8	0.14	0.025	0	3	0.17	0.18	0.22	0.20	0.19	0.19	0.017
Uranium	0.001	0.0004	8	0.001	-	3	3	0.002	<0.001	<0.001	<0.001	<0.001	0.001	0.0004
Zinc	19	6.5	8	35	16.1	0	3	41	15	15	18	20	22	9.8
Radionuclides														
Lead-210 (Bq/g)	0.001	0.0004	8	0.001	0.0006	2	3	<0.001	<0.001	0.001	<0.001	<0.001	0.001	-
Polonium-210 (Bq/g)	0.013	0.0123	8	0.008	0.0021	0	3	0.013	0.017	0.025	0.033	0.02	0.022	0.0069
Radium-226 (Bq/g)	0.001	0.0005	8	0.00006	-	3	3	<0.00007	0.0001	0.00008	<0.00007	0.0001	0.00008	0.000014
Thorium-230 (Bq/g)	0.002	-	8	0.0001	-	3	3	<0.0001	<0.0002	<0.0002	<0.0001	<0.0002	0.0002	-
Trace Elements														
Arsenic	0.01	0.004	8	0.02	0.010	0	3	0.02	0.02	0.03	0.02	0.01	0.02	0.006
Cobalt	0.004	0.0012	8	0.003	0.0010	0	3	0.005	0.004	0.002	0.005	0.004	0.004	0.0011
Vanadium	0.02	-	8	<0.02	-	3	3	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	-

Appendix C, Table 5

Summary barren-ground caribou flesh chemistry results for the EARMP community program.

Chemical[1]	Wollaston Lake/Hatchet Lake												
	Baseline			2013/2014				2014/2015					
	Average	S.D.	N	Average	S.D.	< MDL	N	1	2	3	4	Average	S.D.
Metals													
Aluminum	0.52	0.063	10	0.5	0.04	4	5	<0.5	<0.5	<0.5	<0.5	0.5	-
Cadmium	0.004	0.0023	10	0.002	0.0004	0	5	0.003	0.003	0.005	0.027	0.010	0.012
Copper	3.2	0.68	10	3.3	0.59	0	5	3.1	3	2.8	3.9	3.2	0.48
Iron	41	10.9	10	39	9.2	0	5	42	36	27	52	39	10.5
Lead	0.015	0.0183	10	0.003	0.0013	3	5	<0.002	1.1	<0.002	<0.002	0.28	0.549
Molybdenum	0.02	-	10	0.02	-	5	5	<0.02	<0.02	<0.02	<0.02	0.02	-
Nickel	0.01	0.003	10	0.01	-	5	5	<0.01	<0.01	<0.01	<0.01	0.01	-
Selenium	0.16	0.026	10	0.18	0.032	0	5	0.14	0.16	0.16	0.19	0.16	0.021
Uranium	0.001	-	10	0.001	-	5	5	<0.001	<0.001	<0.001	<0.001	0.001	-
Zinc	29	11.6	10	18	3.8	0	5	33	29	23	19	26	6.2
Radionuclides													
Lead-210 (Bq/g)	0.001	0.0003	10	0.001	-	5	5	<0.001	<0.001	<0.001	<0.001	0.001	-
Polonium-210 (Bq/g)	0.0132	0.00289	10	0.0109	0.00324	0	5	0.0079	0.0072	0.0047	0.0053	0.0063	0.00152
Radium-226 (Bq/g)	0.00007	0.000014	10	0.0001	0.00006	3	5	<0.00006	<0.00005	<0.00006	0.0001	0.00007	0.000022
Thorium-230 (Bq/g)	0.0001	-	10	0.0001	0.00005	5	5	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	-
Trace Elements													
Arsenic	0.01	0.005	10	0.01	0.005	2	5	<0.01	0.01	0.02	<0.01	0.01	0.005
Cobalt	0.005	0.0017	10	0.004	0.0015	1	5	0.017	0.006	0.003	0.008	0.009	0.0060
Vanadium	0.02	-	10	0.02	-	5	5	<0.02	<0.02	<0.02	<0.02	0.02	-

[1]All concentrations are reported on a µg/g wet weight basis, except when specified otherwise.

[2]Regional reference data are from the AWG program (2000 to 2010) and the Uranium City Country Foods program (2011). Data are not available from all communities in all years. The median corresponds to the 50th percentile, while the lower and upper limits are the 2.5th and 97.5th percentiles that delimit the 95% range of the reference data.

[3]Regional reference ranges could not be computed when all or nearly all values were lower than the method detection limit (MDL).

S.D. = Standard deviation; standard deviations of 0 signify "no variance between samples", not "a very small variance".

<MDL = less than the laboratory method detection limit.

Values less than the MDL were set equal to the MDL when calculating summary statistics.

Appendix C, Table 6

Summary moose flesh chemistry results for the EARMP community program.

Chemical[1]	Regional Reference Range[2, 3]				Camsell Portage								
					Baseline			2013/2014			2014/2015		
	Lower Limit	Median	Upper Limit	N	Average	S.D.	N	1	2	Average	1	2	Average
Metals													
Aluminum	0.2	0.5	10.9	40	2.2	1.48	4	<0.5	<0.5	0.5	0.6	4.4	2.5
Cadmium	0.002	0.004	0.014	10	0.003	0.0020	4	0.002	0.003	0.003	0.003	**0.05**	0.03
Copper	0.7	1.3	2.1	40	1.7	0.34	4	1.5	1.8	1.7	0.56	1.4	0.98
Iron	14	30	53	40	25	3.27	4	29	34	32	22	32	27
Lead	0.002	0.010	0.032	10	0.010	0.0095	4	0.004	<0.002	0.003	0.029	0.011	0.020
Molybdenum	-	-	-	-	0.02	-	4	<0.02	<0.02	0.02	<0.02	<0.02	0.02
Nickel	0.01	0.01	0.10	38	0.02	0.006	4	<0.01	<0.01	0.01	<0.01	<0.01	0.01
Selenium	0.05	0.23	0.53	37	0.12	0.059	4	0.06	0.06	0.06	0.08	0.08	0.08
Uranium	0.001	0.001	0.011	36	0.001	-	4	<0.001	<0.001	0.001	<0.001	0.002	0.002
Zinc	19	48	79	40	39	10.4	4	59	45	52	63	58	61
Radionuclides													
Lead-210 (Bq/g)	0.0001	0.0002	0.0013	35	0.0008	-	4	<0.001	<0.001	0.001	<0.001	<0.001	0.001
Polonium-210 (Bq/g)	-	-	-	-	0.0009	0.00090	3	0.0004	<0.0002	0.0003	0.0004	<0.0002	0.0003
Radium-226 (Bq/g)	0.00005	0.00005	0.00009	35	0.00010	0.000066	4	0.00006	0.00007	0.00007	<0.00006	<0.00006	0.00006
Thorium-230 (Bq/g)	-	-	-	-	0.0001	0.00006	3	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	0.0001
Trace Elements													
Arsenic	0.01	0.02	0.21	37	0.01	-	4	<0.01	<0.01	0.01	<0.01	<0.01	0.01
Cobalt	0.007	0.015	0.031	10	0.014	0.0054	4	0.012	0.015	0.014	0.02	0.016	0.018
Vanadium	-	-	-	-	0.02	-	4	<0.02	<0.02	0.02	<0.02	<0.02	0.02

Appendix C, Table 6

Summary moose flesh chemistry results for the EARMP community program.

Chemical[1]	Uranium City								
	Baseline			2013/2014					2014/2015
	Average	S.D.	N	1	2	3	Average	S.D.	1
Metals									
Aluminum	0.8	0.76	7	<0.5	0.6	<0.5	0.5	0.1	0.6
Cadmium	0.005	0.0030	7	0.004	0.005	0.003	0.004	0.0010	0.056
Copper	1.8	0.92	7	1.6	2.0	1.5	1.7	0.26	1.9
Iron	33	6.9	7	34	37	26	32	5.7	36
Lead	0.003	0.0012	7	0.003	0.025	0.003	0.010	0.0127	0.003
Molybdenum	0.02	-	7	<0.02	<0.02	<0.02	0.02	-	<0.02
Nickel	0.01	0.005	7	<0.01	<0.01	<0.01	0.01	-	<0.01
Selenium	0.12	0.034	7	0.09	0.12	0.08	0.10	0.021	0.14
Uranium	0.001	0.0008	7	<0.001	<0.001	<0.001	0.001	-	<0.001
Zinc	52	13.0	7	44	48	56	49	6.1	52
Radionuclides									
Lead-210 (Bq/g)	0.0007	0.00075	7	<0.001	<0.001	<0.001	0.001	-	<0.001
Polonium-210 (Bq/g)	0.0006	0.00076	7	0.0004	0.0005	0.0003	0.0004	0.00010	0.0016
Radium-226 (Bq/g)	0.00007	-	7	0.00008	0.00010	<0.00005	0.00008	0.000025	<0.00005
Thorium-230 (Bq/g)	0.0001	0.00005	7	<0.0001	<0.0001	<0.0001	0.0001	-	<0.0001
Trace Elements									
Arsenic	0.01	0	7	<0.01	<0.01	<0.01	0.01	-	<0.01
Cobalt	0.012	0.0047	7	0.010	0.011	0.008	0.010	0.0015	0.009
Vanadium	0.02	-	7	<0.02	<0.02	<0.02	0.02	-	<0.02

[1]All concentrations are reported on a µg/g wet weight basis, except when specified otherwise.

[2]Regional reference data are from the AWG program. Data used are from 2000 to 2010. However, data are not available from all communities in all years.

[3]Regional reference ranges could not be computed when all or nearly all values were lower than the method detection limit (MDL).

S.D. = Standard deviation; standard deviations of 0 signify "no variance between samples", not "a very small variance".

<MDL = less than the laboratory method detection limit.

Values less than the MDL were set equal to the MDL when calculating summary statistics.

Appendix C, Table 7

Summary of additional mammal chemistry (snowshoe hare) collected from Uranium City and Camsell Portage, 2013/2014.

Chemical[1]	Camsell Portage						Uranium City				
	Baseline[2]			2013/2014			Baseline[2]			2013/2014	
	Average	S.D.	N	1	2	3	Average	S.D	N	1	2
Metals											
Aluminum	0.5	0.04	5	<0.5	<0.5	<0.5	0.5	0.04	5	<0.5	0.5
Cadmium	0.002	-	5	<0.002	0.004	0.006	0.004	0.0033	5	<0.002	0.0050
Copper	1.8	0.38	5	1.9	2.1	1.8	1.8	0.37	5	2.4	2.10
Iron	26	6.6	5	19	25	20	26	3.6	5	21	31.0
Lead	0.003	0.0005	5	0.003	0.002	0.002	0.003	0.0017	5	0.002	<0.002
Molybdenum	0.02	-	5	<0.02	<0.02	<0.02	0.02	-	5	<0.02	<0.02
Nickel	0.01	0	5	<0.01	<0.01	0.07	0.02	0.009	5	0.02	0.050
Selenium	0.06	0.012	5	0.03	0.08	0.14	0.06	0.044	5	0.15	0.070
Uranium	0.001	-	5	<0.001	<0.001	<0.001	0.001	-	5	<0.001	<0.001
Zinc	13	3.2	5	13	11	16	15	4.7	5	10	16.0
Radionuclides											
Lead-210 (Bq/g)	0.001	-	5	<0.001	<0.001	<0.001	0.001	-	5	<0.001	<0.001
Polonium-210 (Bq/g)	0.002	0.0007	5	0.002	0.002	0.002	0.002	0.0004	5	0.002	0.00150
Radium-226 (Bq/g)	0.00017	0.000097	5	0.00010	<0.00006	0.00010	0.00011	0.000050	5	0.00010	<0.00007
Thorium-230 (Bq/g)	0.0001	-	5	<0.0001	<0.0001	<0.0001	0.0001	-	5	<0.0002	<0.0001
Trace Elements											
Arsenic	0.01	-	5	<0.01	<0.01	<0.01	0.01	-	5	0.02	<0.01
Cobalt	0.004	0.0008	5	<0.002	0.005	0.032	0.006	0.0027	5	0.005	0.0040
Vanadium	0.02	-	5	<0.02	<0.02	<0.02	0.02	-	5	<0.02	<0.02

[1]All concentrations are reported on a µg/g wet weight basis, except when specified otherwise.

[2]Baseline data for snowshoe hare were collected in 2011 as part of the Uranium City County Foods Program (CanNorth and SENES 2012). Values less than MDLs were set equal to MDLs for the calculation of average and standard deviations.

S.D. = Standard deviation; standard deviations of 0 signify "no variance between samples", not "a very small variance".

<MDL = less than the laboratory method detection limit.

Appendix C, Table 8

Summary barren-ground caribou and moose organ chemistry results for the EARMP community program, 2014/2015.

Chemical[1]	Fond du Lac			Uranium City		Camsell Portage				Wollaston Lake
	Caribou Kidney			Moose Liver	Moose Kidney	Moose Liver		Moose Kidney		Caribou Liver
	Sample 1	Sample 2	Sample 3	Sample 1	Sample 1	Sample 1	Sample 2	Sample 1	Sample 2	Sample 1
Metals										
Aluminum	<0.5	<0.5	<0.5	1.3	<0.5	<0.5	1.1	<0.5	1.2	0.7
Cadmium	6.2	9.6	6.8	0.48	8	1.7	1.1	8.6	6.5	0.65
Copper	3.6	4.9	4.3	28	3	38	47	2.1	3.8	26
Iron	40	60	60	120	41	100	150	70	90	140
Lead	0.073	0.068	0.078	0.008	0.002	<0.002	0.003	<0.002	0.002	0.097
Molybdenum	0.12	0.11	0.14	0.65	0.24	0.9	1	0.21	0.42	1
Nickel	<0.01	0.01	0.01	<0.01	0.04	<0.01	<0.01	0.05	0.06	<0.01
Selenium	1.3	1.6	1.4	0.2	0.67	0.22	0.21	0.71	0.78	0.4
Uranium	<0.001	<0.001	<0.001	<0.01	<0.001	<0.01	<0.01	<0.001	<0.001	<0.01
Zinc	23	28	27	14	25	15	20	16	23	24
Radionuclides										
Lead-210 (Bq/g)	0.072	0.054	0.042	0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Polonium-210 (Bq/g)	0.088	0.081	0.086	0.0021	0.0032	0.0036	0.0024	0.0018	0.0023	0.0093
Radium-226 (Bq/g)	0.0003	0.0009	0.0005	0.00007	<0.00006	0.0001	<0.0001	<0.00006	0.0005	0.0002
Thorium-230 (Bq/g)	<0.0003	<0.0006	<0.0005	<0.0001	<0.0001	<0.0001	<0.0002	<0.0001	<0.0004	<0.0001
Trace Elements										
Arsenic	<0.01	0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02
Cobalt	0.029	0.044	0.046	0.054	0.097	0.25	0.2	0.12	0.2	0.075
Vanadium	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

[1]All concentrations are presented on a µg/g wet weight basis, unless specified otherwise.

Appendix D

Raw Data

LIST OF TABLES

APPENDIX D, TABLE 1

Fall water chemistry results for the EARMP community program, 2011 to 2014.

Chemical[1]	Black Lake				Camsell Portage				Fond du Lac				Stony Rapids				Uranium City				Wollaston Lake/Hatchet Lake			
	Black Lake				Ellis Bay, Lake Athabasca				Fond du Lac River				Fond du Lac River				Fredette River				Welcome Bay, Wollaston Lake			
	2011	2012	2013	2014	2011	2012	2013	2014	2011	2012	2013	2014	2011	2012	2013	2014	2011	2012	2013	2014	2011	2012	2013	2014
Inorganic Ions																								
Bicarbonate	20	26	16	15	35	30	34	38	18	27	28	17	21	20	16	16	63	60	63	65	17	20	15	15
Calcium	3.5	3.3	3.4	3.4	6.9	7.1	7.4	7.3	3.7	3.9	3.8	3.7	3.4	3.4	3.3	3.2	15	16	17	16	3.4	3.5	3.5	3.3
Carbonate	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chloride	3.6	2	4	4.2	3.1	2.9	3.4	3	2.8	2.8	2.9	2.9	3.2	2.8	2.8	2.4	1.5	1.2	2.3	1.2	0.4	0.5	0.4	0.3
Hydroxide	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Magnesium	1.3	1.2	1.3	1.3	2.1	2.1	2.1	2.2	1.3	1.4	1.4	1.4	1.1	1.3	1.2	1.2	2.9	3	3.2	3.2	1.1	1.1	1	1
Potassium	0.8	0.7	0.8	0.6	0.9	0.9	0.8	0.7	0.8	0.8	0.8	0.6	0.8	0.7	0.8	0.6	0.9	1	1.1	0.9	0.7	0.6	0.7	0.5
Sodium	1.8	1.5	1.7	1.8	2.5	2.5	2.6	2.6	1.6	1.7	1.7	1.6	1.7	1.6	1.6	1.5	1.9	1.6	1.8	1.7	1.4	1.4	1.4	1.3
Sulfate	1.4	1.0	1.2	1.1	3.6	3.3	3.7	3.8	1.5	1.5	1	1.4	1.4	1.2	1.4	1.3	4.5	3.8	4.1	5.5	4	4.0	3.9	4.0
Metals																								
Aluminum	0.002	0.0026	0.0026	0.0027	0.0016	0.001	0.0044	0.0022	0.014	0.02	0.011	0.019	0.018	0.0084	0.012	0.012	0.0051	0.0051	0.0057	0.0033	0.0047	0.014	0.0074	0.0069
Barium	0.0044	0.0044	0.0043	0.0043	0.01	0.01	0.011	0.011	0.0051	0.0055	0.0052	0.0053	0.0046	0.0043	0.0044	0.0043	0.032	0.031	0.032	0.028	0.0041	0.0042	0.0042	0.0039
Boron	0.01	<0.01	<0.01	0.01	<0.01	0.01	<0.01	<0.01	0.01	0.01	<0.01	<0.01	0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cadmium	0.00001	0.00001	<0.00001	<0.00001	0.00001	0.00001	<0.00001	<0.00001	0.00002	<0.00001	0.00001	<0.00001	0.00002	<0.00001	0.00001	<0.00001	0.00001	0.00001	0.00002	<0.00001	0.00001	<0.00001	<0.00001	<0.00001
Chromium	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Copper	<0.0002	<0.0002	0.0003	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0006	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Iron	0.026	0.013	0.022	0.021	0.0049	0.0044	0.0078	0.0056	0.023	0.03	0.017	0.023	0.074	0.045	0.037	0.034	0.031	0.041	0.05	0.027	0.014	0.035	0.043	0.034
Lead	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Manganese	0.036	0.0068	0.021	0.017	0.0008	0.0008	0.0006	0.0006	0.003	0.0027	0.0034	0.0037	0.027	0.013	0.014	0.01	0.014	0.024	0.026	0.017	0.0047	0.0087	0.0066	0.0053
Mercury (µg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Molybdenum	0.0002	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0001	0.0001	0.0001	<0.0001	0.0002	0.0002	0.0001	0.0001	0.0004	0.0004	0.0004	0.0004	0.0012	0.0012	0.001	0.0009
Nickel	0.0002	0.0001	0.0001	<0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0003	0.0002	0.0002	0.0001	0.0002	0.0001	0.0001	0.0001	0.0002	0.0001	0.0001	0.0001	0.0001	<0.0001
Selenium	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Silver	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Thallium	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Tin	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Titanium	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	0.0002	0.0008	0.0008	0.0004	0.0016	0.0016	0.0007	0.0012	0.0006	0.0003	<0.0002	0.0003	<0.0002	<0.0002	0.0002	<0.0002	<0.0002
Uranium (µg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	3.5	1.3	1.4	1.7	<0.1	<0.1	<0.1	<0.1
Zinc	0.0018	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0014	<0.0005	0.0013	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Nutrients																								
Ammonia as nitrogen	<0.01	<0.01	<0.01	0.05	<0.01	<0.01	<0.01	0.05	<0.01	<0.01	<0.01	0.04	<0.01	<0.01	0.05	0.04	<0.01	0.03	0.05	0.07	<0.01	<0.01	<0.01	0.04
Nitrate		<0.04	<0.04	<0.04	<0.04	0.09	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.09	<0.04	<0.04	0.13	0.18	<0.04	<0.04	<0.04	<0.04
Organic carbon	2.5	3.8	2.9	3	2.8	3.5	3.2	3.4	2.7	1.9	3.2	3.4	2.7	3.8	4.1	3.4	7.4	9.9	7.6	7.7	2.5	3	2.8	2.8
Phosphorus	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Total Kjeldahl nitrogen	0.27	0.2	0.26	0.22	0.23	0.21	0.22	0.19	0.26	0.22	0.21	0.13	0.28	0.23	0.49	0.18	0.41	0.37	0.43	0.32	0.28	0.21	0.2	0.17
Total nitrogen	0.27	0.2	0.26	0.22	0.23	0.23	0.22	0.19	0.26	0.22	0.21	0.13	0.28	0.23	0.49	0.2	0.41	0.37	0.46	0.36	0.28	0.21	0.2	0.17
P. alkalinity	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
pH (pH units)	7.12	7.18	7.38	6.76	7.46	7.5	7.71	7.26	7.22	7.14	6.86	6.88	7.3	7.3	7.38	6.89	7.75	7.72	7.94	7.46	7.1	7.12	7.37	6.91
Specific conductivity (µS/cm)	40	38	38	43	66	69	69	73	39	44	42	44	39	40	36	38	114	112	113	114	34	37	34	36
Sum of ions	32	36	28	28	54	49	54	58	30	39	40	29	33	31	27	26	90	87	93	94	28	31	26	25
Total alkalinity	16	21	13	12	29	25	28	31	15	22	23	14	17	16	13	13	52	49	52	53	14	16	12	12
Total dissolved solids	30	30	14	31	40	44	27	46	28	32	34	33	32	33	13	28	72	76	56	83	24	28	13	25
Total hardness	14	13	29	14	26	26	47	27	14	15	15	15	13	14	31	13	49	52	80	53	13	13	28	12
Total suspended solids	<1	1	2	1	<1	<1	<1	1	<1	2	1	2	5	2	2	2	2	1	<1	<1	<1	2	2	1
Turbidity (NTU)	0.6	0.7	0.7	0.7	0.3	0.4	0.4	0.4	1	1.1	0.8	1.1	1.3	1.2	1	0.7	0.3	0.6	0.4	0.3	0.3	0.8	0.7	0.4
Lead-210 (Bq/L)	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Polonium-210 (Bq/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.006	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Radium-226 (Bq/L)	<0.005	0.009	<0.005	0.008	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.01	<0.005	<0.005	0.008	0.01	<0.005	<0.005	<0.005	0.009	<0.005	<0.005
Thorium-230 (Bq/L)	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Trace Elements																								
Antimony	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Arsenic (µg/L)	0.1	0.1	0.2	0.2	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.2	0.2	0.1	<0.1	<0.1	0.1	0.1
Beryllium	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cobalt	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Fluoride	0.04	0.07	0.07	0.06	0.06	0.07	0.08	0.07	0.05	0.07	0.05	0.06	0.04	0.06	0.08	0.06	0.1	0.13	0.12	0.12	0.05	0.07	0.08	0.07
Strontium	0.047	0.033	0.049	0.058	0.051	0.05	0.054	0.059	0.043	0.04	0.042	0.045	0.044	0.04	0.039	0.04	0.049	0.045	0.047	0.049	0.012	0.012	0.012	0.013
Vanadium	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

[1]All values are in mg/L, unless specified otherwise.

APPENDIX D, TABLE 2

Detailed Black Lake fish flesh chemistry data for the EARMP community program, 2011 to 2014.

Black Lake (Black Lake) — Lake Trout

Chemical[1]	2011 GN1-1 LT01	2011 GN1-1 LT02	2011 GN1-1 LT03	2011 GN1-1 LT04	2011 GN1-1 LT05	2012 GN1-1 LT01	2012 GN1-1 LT02	2012 GN1-1 LT03	2012 GN1-1 LT04	2012 GN1-1 LT05	2013 GN1-1 LT01	2013 GN1-1 LT02	2013 GN1-1 LT03	2013 GN1-1 LT04	2013 GN1-1 LT05	2014 GN1-1 LT01	2014 GN1-1 LT02	2014 GN1-1 LT03	2014 GN1-1 LT04	2014 GN1-1 LT05
Metals																				
Aluminum	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.7	<0.5	<0.5	<0.5
Barium	0.02	0.03	0.01	<0.01	0.03	<0.01	0.01	0.01	0.02	0.01	0.01	<0.01	<0.01	0.01	0.02	0.01	0.03	0.01	<0.01	<0.01
Boron	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cadmium	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Chromium	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Copper	0.27	0.41	0.31	0.22	1	0.31	0.31	0.43	0.18	0.25	0.22	0.24	0.26	0.25	0.23	0.42	0.35	0.19	0.45	0.23
Iron	1.9	3.3	2	4.5	6	2.2	2	2.6	1.5	2.9	1.7	2	2	1.6	1.5	3.9	3.3	1.4	2.8	1.8
Lead	<0.002	0.004	<0.002	<0.002	<0.002	0.002	<0.002	0.002	<0.002	0.004	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	0.007	<0.002	<0.002	<0.002
Manganese	0.06	0.08	0.08	0.08	0.09	0.08	0.06	0.05	0.07	0.1	0.08	0.06	0.09	0.09	0.06	0.1	0.12	0.07	0.08	0.09
Mercury	0.45	0.41	0.37	0.33	0.37	0.16	0.16	0.18	0.36	0.35	0.42	0.5	0.45	0.37	0.28	0.37	0.53	0.37	0.45	0.5
Molybdenum	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Nickel	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	0.04	0.01	<0.01	<0.01
Selenium	0.11	0.15	0.15	0.11	0.13	0.15	0.18	0.17	0.18	0.16	0.13	0.11	0.13	0.17	0.16	0.18	0.14	0.13	0.15	0.16
Silver	<0.002	<0.002	<0.002	<0.002	0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Thallium	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Tin	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Titanium	0.08	0.09	0.08	0.07	0.08	0.07	0.07	0.08	0.07	0.08	0.01	0.01	0.01	0.02	0.01	0.09	0.09	0.08	0.07	0.08
Uranium	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	0.001	0.001	<0.001	<0.001
Zinc	2.9	4.7	2.5	2.2	5.9	3.6	4.7	4.4	3.6	6.3	3	3.2	4.1	3.5	3.3	5.5	4.1	2.5	4	2.5
Physical Properties																				
Moisture (%)	77.19	77.72	73.93	76.78	77.42	73.79	71.07	77.81	77.02	76.28	75.03	76.5	74.42	74.85	72.4	73.77	75.34	76.29	75.02	73.38
Length (cm)	44.9	51.2	48.7	48.3	50.5	51.3	52.7	51.2	62.5	65.2	54.0	56.0	53.2	54.8	49.6	52.6	53.2	53.5	50.5	54
Weight (g)	1730	1710	1480	1450	1740	1360	1740	1180	2060	2410	1940	2200	1720	1880	1760	1920	2240	1965	1900	2190
Sex	F	M	M	F	M	F	M	M	F	M	F	F	M	M	M	M	F	F	M	M
Maturity	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Age (years)	12	10	7	10	10	7	7	6	27	19	12	17	13	13	13	14	14	9	14	14
Radionuclides																				
Lead-210 (Bq/g)	0.002	<0.001	0.002	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001
Polonium-210 (Bq/g)	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Radium-226 (Bq/g)	<0.00004	<0.00006	<0.00007	<0.00005	<0.00006	<0.00006	<0.0001	<0.00005	0.00005	<0.00006	<0.00006	0.0001	<0.00008	<0.00006	<0.00006	<0.00006	<0.00004	<0.00005	<0.00003	<0.00005
Thorium-230 (Bq/g)	<0.00009	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0002	<0.0001	<0.00009	<0.0001	<0.0001	<0.0001	<0.0002	<0.0001	<0.0001	<0.0001	<0.00007	<0.0001	<0.00007	<0.0001
Trace Elements																				
Antimony	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Arsenic	0.05	0.06	0.07	0.05	0.10	0.06	0.14	0.07	0.06	0.06	0.05	0.04	0.04	0.05	0.06	0.07	0.1	0.04	0.04	0.07
Beryllium	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Cobalt	<0.002	<0.002	<0.002	0.002	0.002	<0.002	<0.002	<0.002	0.003	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.005	0.003	0.002	0.006	<0.002
Strontium	0.10	0.07	0.09	0.05	0.13	0.07	0.21	0.27	0.2	0.8	0.05	0.03	0.23	0.27	0.07	0.15	0.12	0.08	0.3	0.06
Vanadium	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

Black Lake (Black Lake) — Lake Whitefish

Chemical[1]	2011 GN1-1 LW06	2011 GN1-1 LW07	2011 GN1-1 LW08	2011 GN1-1 LW09	2011 GN1-1 LW10	2012 GN1-1 LW06	2012 GN1-1 LW07	2012 GN1-1 LW08	2012 GN1-1 LW09	2012 GN1-1 LW10	2013 GN1-1 LW06	2013 GN1-1 LW07	2013 GN1-1 LW08	2013 GN1-1 LW09	2013 GN1-1 LW10	2014 GN1-1 LW06	2014 GN1-1 LW07	2014 GN1-1 LW08	2014 GN1-1 LW09	2014 GN1-1 LW10
Metals																				
Aluminum	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Barium	0.06	0.13	0.09	<0.01	0.02	0.02	0.01	0.02	<0.01	0.02	0.02	0.02	0.02	0.01	0.01	<0.01	0.02	<0.01	<0.01	0.02
Boron	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cadmium	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Chromium	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Copper	0.24	0.21	0.12	0.17	0.14	0.16	0.19	0.25	0.28	0.18	0.06	0.27	0.09	0.08	0.07	0.14	0.12	0.58	0.27	0.21
Iron	2.3	2.9	2.5	1.4	1.5	1	2	2.7	4	1.1	1.8	2.5	1.2	1.1	1.1	1.1	1.3	4	2.8	2.4
Lead	<0.002	0.002	<0.002	<0.002	<0.002	0.002	<0.002	0.003	<0.002	0.003	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.003
Manganese	0.18	0.39	0.22	0.06	0.09	0.06	0.07	0.11	0.06	0.06	0.08	0.07	0.07	0.05	0.04	0.08	0.11	0.09	0.09	0.1
Mercury	0.16	0.13	0.14	0.06	0.21	0.13	0.16	0.15	0.02	0.05	0.05	0.09	0.03	0.04	0.08	0.097	0.13	0.068	0.1	0.12
Molybdenum	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Nickel	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	0.02
Selenium	0.30	0.35	0.25	0.36	0.31	0.28	0.24	0.26	0.15	0.2	0.2	0.23	0.3	0.18	0.19	0.27	0.34	0.29	0.25	0.36
Silver	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Thallium	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Tin	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Titanium	0.08	0.09	0.08	0.08	0.08	0.07	0.08	0.09	0.08	0.08	0.02	0.01	0.02	0.01	<0.01	0.07	0.08	0.07	0.09	0.08
Uranium	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Zinc	3.9	4.6	3.5	4.7	3.3	6.7	6.2	4.6	4.4	4.4	3.4	4.7	4	3.5	4	3.6	3.1	4.9	3.5	3.7
Physical Properties																				
Moisture (%)	75.22	76.01	76.93	75.27	75.79	74.3	72.89	75.74	78.39	76.9	79.98	78.5	79.92	79.2	78.64	75.64	76.94	77.68	75.67	75.1
Length (cm)	38.3	41.8	45.5	48.0	45.2	46.0	45.7	45.5	40.2	46.2	43.9	41.5	38	43.2	45.6	39.5	42.4	38	41	40.7
Weight (g)	840	1060	1360	890	1450	980	1020	920	760	1140	1200	920	660	1100	1320	950	1060	805	895	950
Sex	F	M	M	F	F	M	M	M	M	F	M	M	F	F	F	F	F	M	M	M
Maturity	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Age (years)	21	21	26	10	27	9	15	15	7	10	12	10	10	11	15	15	16	10	14	15
Radionuclides																				
Lead-210 (Bq/g)	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.004	<0.004	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Polonium-210 (Bq/g)	0.0002	<0.0002	0.0005	0.0007	<0.0002	<0.0002	<0.0002	<0.001	<0.001	<0.0002	0.0004	0.0006	0.0003	0.0003	0.0002	0.0003	<0.0002	0.0003	<0.0002	0.0002
Radium-226 (Bq/g)	<0.00006	<0.00006	9E-05	<0.00007	<0.00006	<0.00006	<0.00006	0.001	0.002	<0.00006	0.0002	<0.00007	0.0004	<0.00006	<0.00006	<0.00006	<0.00006	<0.00006	<0.00005	0.0002
Thorium-230 (Bq/g)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.002	<0.002	<0.0001	<0.0001	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Trace Elements																				
Antimony	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Arsenic	0.25	0.27	0.40	0.14	0.37	0.04	0.05	0.08	0.14	0.04	0.01	0.03	0.03	0.03	0.02	0.2	0.16	0.2	0.07	0.2
Beryllium	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Cobalt	0.003	0.005	<0.002	0.003	0.003	<0.002	0.002	<0.002	<0.002	0.003	<0.002	0.002	<0.002	0.005	0.002	<0.002	<0.002	0.005	0.003	0.009
Strontium	0.79	0.24	1.20	0.28	0.22	0.27	0.31	0.25	0.16	0.17	0.55	0.45	0.47	0.47	0.42	0.27	0.49	0.25	0.21	0.28
Vanadium	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

[1]All concentrations are presented on a µg/g wet weight basis, unless specified otherwise.

GN = gill net; LT = lake trout; LW = lake whitefish; M = male; F = female; A = adult.

APPENDIX D, TABLE 3

Detailed Uranium City (Prospectors Bay) fish flesh chemistry data for the EARMP community program, fall 2012 and 2014.

Chemical[1]	Uranium City (Prospectors Bay)[2]																											
	Lake Trout															Lake Whitefish					Lake Whitefish			Lake Whitefish				
	2012					2013					2014					2012					2013			2014				
	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1
	LT01	LT02	LT03	LT04	LT05	LT01	LT02	LT03	LT04	LT05	LT01	LT02	LT03	LT04	LT05	LW06	LW07	LW08	LW09	LW10	LW01	LW02	LW03	LW01	LW02	LW03	LW04	LW05
Metals																												
Aluminum	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	<0.5
Barium	0.01	0.03	0.02	0.02	0.03	<0.01	<0.01	<0.01	0.04	0.01	0.03	0.06	0.02	0.03	0.04	0.01	0.02	0.01	0.01	0.01	0.02	<0.01	0.02	0.01	0.1	0.02	0.09	0.03
Boron	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cadmium	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	<0.002
Chromium	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Copper	0.27	0.21	0.21	0.26	0.26	0.18	0.19	0.22	0.28	0.25	0.29	0.27	0.3	0.25	0.32	0.12	0.13	0.17	0.18	0.14	0.22	0.18	0.39	0.48	0.22	0.28	0.26	0.23
Iron	2.2	4.5	2.0	3.3	1.9	1.2	1.6	2.7	7.5	1.9	2.1	2.1	2.7	3.6	2.8	1.0	2.0	1.8	1.6	1.4	2.3	1.8	2.9	4.3	1.8	2	4.4	2.4
Lead	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.003	0.004	0.002	0.006	0.003	0.003	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	<0.002	0.003	<0.002	0.003	<0.002	0.005	0.011
Manganese	0.08	0.07	0.05	0.05	0.05	0.07	0.06	0.07	0.12	0.08	0.08	0.08	0.08	0.07	0.06	0.07	0.06	0.07	0.07	0.12	0.1	0.06	0.11	0.09	0.12	0.12	0.1	0.08
Mercury	0.17	0.24	0.23	0.21	0.13	0.13	0.15	0.23	0.09	0.1	0.16	0.11	0.14	0.29	0.16	0.05	0.13	0.06	0.12	0.11	0.05	0.02	0.02	0.051	0.033	0.053	0.026	0.034
Molybdenum	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Nickel	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	0.02	0.01	0.01	0.05	0.02
Selenium	0.18	0.17	0.17	0.18	0.17	0.15	0.14	0.18	0.15	0.13	0.15	0.15	0.14	0.15	0.14	0.28	0.22	0.23	0.32	0.26	0.26	0.24	0.26	0.24	0.27	0.23	0.19	0.26
Silver	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Thallium	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	0.01	0.01	<0.01	<0.01	<0.01	0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Tin	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	<0.01
Titanium	0.07	0.07	0.07	0.07	0.06	0.04	0.02	0.03	0.03	0.03	0.08	0.08	0.1	0.08	0.07	0.08	0.07	0.08	0.08	0.08	0.03	0.03	0.04	0.08	0.1	0.08	0.11	0.11
Uranium	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.006	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.003	0.002	<0.001	0.001	<0.001
Zinc	4.3	4.0	3.7	5.4	4.1	2.7	2.7	3.1	3.8	2.7	7.2	3.4	3.6	3.2	6.8	4.3	4.5	7.6	4.3	3.3	3.2	3.4	6.3	4	4.1	4.7	5.8	4.2
Physical Properties																												
Moisture (%)	74.73	78.66	78.14	75.87	76.3	76.09	74.75	77.52	77.24	77.69	74.48	72.13	75.17	78.5	73.75	79.31	78.4	75.72	73.83	76.89	79.25	76.91	72.22	74.04	74.06	76.04	75.15	76.82
Length (cm)	55.6	60.2	59.1	61.8	63.4	46.8	50.1	52.3	51.5	54.2	54.9	52	52.1	56.7	55.1	46.7	49.6	48.8	55.0	50.0	46.9	47	42.9	47.2	41.5	45.9	41.7	36.5
Weight (g)	1380	1700	1520	1840	2140	1500	1580	1580	1540	1900	1940	1710	1605	2305	2010	640	980	1140	1520	1080	1480	1520	1300	1780	1090	1620	1310	750
Sex	M	M	M	M	M	F	M	F	M	F	F	M	M	F	M	M	M	F	F	F	M	M	F	M	F	M	F	M
Maturity	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Age (years)	12	24	25	19	11	12	11	21	13	12	13	12	13	13	22	12	29	14	17	21	23	14	11	19	10	15	10	10
Radionuclides																												
Lead-210 (Bq/g)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Polonium-210 (Bq/g)	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0006	<0.0002	<0.0002	0.0003	<0.0002	<0.0002	0.0006	0.0005	0.0004	0.0011	0.0007
Radium-226 (Bq/g)	<0.00005	<0.00006	<0.00006	<0.00006	0.00006	<0.00006	0.0002	<0.00006	0.00009	<0.00006	<0.00006	<0.00006	0.00008	<0.00005	<0.00006	<0.00006	<0.00007	<0.00005	<0.00006	<0.00008	0.00006	<0.00006	<0.00006	0.0001	<0.00006	<0.00006	<0.00007	0.0001
Thorium-230 (Bq/g)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0002	<0.0001	<0.0001	<0.0001	<0.0002	<0.0001	<0.0001	<0.0001	<0.0002
Trace Elements																												
Antimony	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Arsenic	0.07	0.07	0.08	0.07	0.13	0.07	0.04	0.04	0.07		0.06	0.04	0.07	0.05	0.2	0.08	0.03	0.09	0.05	0.1	0.17	0.18	0.22	0.23	0.06	0.07	0.05	0.07
Beryllium	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Cobalt	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	<0.002	<0.002	0.002	0.002	<0.002	0.003	0.013	0.009	<0.002	0.004	0.006	0.016	0.004	0.004	0.007	0.016	0.008
Strontium	0.17	0.11	0.13	0.25	0.32	0.05	0.04	0.07	0.18	0.16	0.15	0.12	0.26	0.08	0.16	0.22	0.19	0.4	0.4	0.25	0.25	0.23	0.25	0.26	1.8	0.29	0.65	0.31
Vanadium	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

[1]All concentrations are presented on a µg/g wet weight basis, unless specified otherwise.

GN = gill net; LT = lake trout; LW = lake whitefish; M = male; F = female; A = adult.

APPENDIX D, TABLE 4

Detailed Camsell Portage (Ellis Bay) fish flesh chemistry data for the EARMP community program, 2011 to 2014.

Camsell Portage (Ellis Bay) — Lake Trout

Chemical[1]	2011					2012					2013					2014				
	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1
	LT01	LT02	LT03	LT04	LT05	LT01	LT02	LT03	LT04	LT05	LT01	LT02	LT03	LT04	LT05	LT01	LT02	LT03	LT04	LT05
Metals																				
Aluminum	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.7	<0.5
Barium	0.04	0.01	<0.01	<0.01	<0.01	0.05	0.08	0.02	0.04	0.02	<0.01	0.01	<0.01	0.22	0.04	<0.01	<0.01	0.04	0.02	0.02
Boron	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cadmium	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Chromium	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Copper	0.52	0.52	0.11	0.32	0.28	0.24	0.28	0.33	0.58	0.21	0.22	0.28	0.38	0.23	0.28	0.29	0.2	0.39	0.29	0.4
Iron	4.5	3.0	1.0	2.2	2.0	1.5	2.7	3.5	5.8	1.6	1.4	2.1	2.1	2.6	2.4	4.7	1.5	3	3.8	4
Lead	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	<0.002	0.004
Manganese	0.1	0.09	0.09	0.07	0.08	0.06	0.09	0.6	0.08	0.06	0.09	0.06	0.08	0.08	0.09	0.08	0.06	0.07	0.08	0.07
Mercury	0.13	0.2	0.28	0.07	0.18	0.17	0.08	0.06	0.21	0.14	0.19	0.24	0.09	0.41	0.24	0.37	0.33	0.32	0.37	0.3
Molybdenum	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Nickel	0.03	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.05	<0.01	<0.01	0.01	<0.01	0.03	<0.01	0.06
Selenium	0.14	0.18	0.15	0.16	0.18	0.15	0.16	0.15	0.18	0.1	0.17	0.14	0.16	0.17	0.18	0.17	0.15	0.19	0.21	0.17
Silver	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Thallium	<0.01	0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.02	0.01	0.01	0.02
Tin	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Titanium	0.07	0.15	0.06	0.07	0.06	0.01	0.02	0.02	0.01	<0.01	0.03	0.08	0.06	0.04	0.05	0.08	0.08	0.08	0.09	0.09
Uranium	0.014	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001
Zinc	11	3.8	2.9	3.8	3.5	2.6	3.2	2.6	10	6.3	3	2.8	3.6	3.3	3.6	4	2.5	5	5.1	6.3
Physical Properties																				
Moisture (%)	73.73	71.7	74.1	70.34	67.36	73.93	76.07	75.33	76.29	72.6	69.45	68.65	72.36	78.67	79.54	78.57	74.76	75.37	77.41	77.04
Length (cm)	49.8	48.6	53.9	48.5	55.6	62.2	69.1	53.0	60.3	63.5	55.0	56.1	55.2	55.9	55.6	58.8	56.8	51.5	52.2	59.1
Weight (g)	1490	1480	1920	1420	2480	3640	2920	1420	1760	2560	2200	1920	1720	1920	1740	2245	2200	1750	1450	2360
Sex	M	M	F	F	F	F	M	M	M	F	M	F	M	M	M	M	M	M	M	M
Maturity	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Age (years)	12	8	23	8	11	19	13	9	20	18	15	15	10	25	17	23	17	13	14	17
Radionuclides																				
Lead-210 (Bq/g)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Polonium-210 (Bq/g)	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0007	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Radium-226 (Bq/g)	<0.00007	<0.00006	0.0002	0.00009	0.0001	<0.00007	<0.00007	<0.00006	<0.00005	<0.00004	0.0001	<0.00004	<0.00006	<0.00006	0.00009	<0.00006	<0.00003	<0.00003	<0.00005	<0.00006
Thorium-230 (Bq/g)	<0.0001	<0.0001	<0.0001	<0.0002	<0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00008	<0.0001	<0.0001	<0.0001	<0.0001	<0.00007	<0.00006	<0.0001	<0.0001
Trace Elements																				
Antimony	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Arsenic	0.12	0.08	0.12	0.08	0.12	0.06	0.14	0.04	0.06	0.29	0.07	0.12	0.11	0.05	0.03	0.06	0.07	0.13	0.11	0.06
Beryllium	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Cobalt	0.003	0.003	<0.002	<0.002	0.002	<0.002	<0.002	<0.002	0.002	<0.002	0.002	<0.002	<0.002	<0.002	<0.002	0.003	<0.002	0.003	<0.002	0.004
Strontium	0.3	0.19	0.26	0.2	0.15	0.06	0.13	0.07	0.68	0.65	0.1	0.09	0.21	0.09	0.12	0.12	0.08	0.15	0.31	0.14
Vanadium	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

Camsell Portage (Ellis Bay) — Lake Whitefish

Chemical[1]	2011					2012		2013					2014				
	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1
	LW06	LW07	LW08	LW09	LW10	LW06	LW07	LW06	LW07	LW08	LW09	LW10	LW06	LW07	LW08	LW09	LW10
Metals																	
Aluminum	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.8	0.5	1.1	<0.5	<0.5
Barium	<0.01	0.04	0.06	<0.01	<0.01	0.03	0.02	0.04	0.05	0.05	0.02	0.02	0.09	0.02	0.04	0.02	<0.01
Boron	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cadmium	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Chromium	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1
Copper	0.12	0.15	0.38	0.11	0.15	0.18	0.18	0.27	0.14	0.13	0.18	0.11	0.36	0.23	0.19	0.21	0.22
Iron	1.5	1.2	3.6	1.1	2.2	1.8	3.9	2.9	2.5	3.6	1.6	2.2	4.5	2.3	3.8	2.4	2.9
Lead	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.003	<0.002	<0.002	<0.002	<0.002	<0.002	0.008	0.005	0.008	0.006	<0.002
Manganese	0.12	0.19	0.13	0.12	0.1	0.11	0.11	0.17	0.32	0.14	0.1	0.13	0.16	0.07	0.1	0.07	0.08
Mercury	0.07	0.06	0.03	0.03	0.02	0.05	0.06	0.17	0.07	0.04	0.02	0.08	0.051	0.06	0.06	0.044	0.058
Molybdenum	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Nickel	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.05	0.03	0.08	0.02	<0.01
Selenium	0.29	0.25	0.25	0.22	0.25	0.31	0.25	0.27	0.26	0.24	0.29	0.25	0.25	0.23	0.27	0.2	0.24
Silver	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.003	<0.002	<0.002	<0.002
Thallium	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Tin	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.04	<0.01	<0.01	<0.01	<0.01
Titanium	0.07	0.07	0.06	0.06	0.07	0.02	<0.01	0.04	0.03	0.04	0.04	0.05	0.11	0.11	0.16	0.1	0.12
Uranium	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	0.004	0.003	0.002	<0.001	0.003	0.002	0.002	0.002	<0.001	<0.001
Zinc	3	2.8	4.4	3.3	3.1	2.8	3.2	5.5	3.3	2.5	3.9	3.3	4.9	3.6	6.4	3.8	4
Physical Properties																	
Moisture (%)	74.81	78.24	73.86	77.91	76.16	74.12	74.97	77.14	77.18	76.99	75.03	77.45	75.83	74.78	76.26	77.59	74.18
Length (cm)	32.0	43.2	40.0	39.5	38.6	49.1	48.5	40.2	44.8	37.9	37.4	44.6	41.3	44	47.6	38.2	43.5
Weight (g)	1250	1260	1380	1120	880	1180	1120	840	1120	820	720	1380	980	1280	1460	880	1400
Sex	M	M	F	F	F	M	M	F	F	F	M	M	F	F	F	F	F
Maturity	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Age (years)	31	27	22	18	11	30	33	30	25	25	9	28	14	14	14	8	14
Radionuclides																	
Lead-210 (Bq/g)	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Polonium-210 (Bq/g)	0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	0.0002	0.0007	0.0012
Radium-226 (Bq/g)	<0.00006	<0.00006	<0.0002	<0.00006	0.0003	<0.00007	<0.00006	0.0001	<0.00006	<0.00006	<0.00008	0.0002	<0.00006	<0.00007	<0.00006	<0.00005	<0.00005
Thorium-230 (Bq/g)	<0.0001	<0.0001	<0.0003	<0.0001	<0.0001	<0.0001	<0.0002	<0.0001	<0.0001	<0.0001	<0.0002	<0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Trace Elements																	
Antimony	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Arsenic	0.38	0.24	0.36	0.31	0.17	0.37	0.24	0.14	0.31	0.34	0.17	0.48	0.25	0.26	0.33	0.03	0.05
Beryllium	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Cobalt	<0.002	<0.002	0.007	0.002	0.002	<0.002	0.003	0.004	0.005	0.002	<0.002	<0.002	0.006	0.004	0.007	0.008	0.003
Strontium	0.15	0.74	1	0.18	0.24	0.15	0.23	0.51	0.64	0.43	0.2	0.25	0.92	0.24	0.28	0.71	0.21
Vanadium	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

Camsell Portage (Ellis Bay) — Northern Pike

Chemical[1]	2012				
	AN1-1	AN1-1	AN1-1	AN1-1	AN1-1
	NP01	NP02	NP03	NP04	NP05
Metals					
Aluminum	<0.5	<0.5	<0.5	<0.5	<0.5
Barium	0.02	0.02	0.02	0.02	<0.01
Boron	<0.2	<0.2	<0.2	<0.2	<0.2
Cadmium	<0.002	<0.002	<0.002	<0.002	<0.002
Chromium	<0.1	<0.1	<0.1	<0.1	<0.1
Copper	0.39	0.45	0.16	0.17	0.28
Iron	2.8	3.2	1.3	0.6	3.2
Lead	<0.002	<0.002	<0.002	<0.002	<0.002
Manganese	0.08	0.09	0.08	0.08	0.08
Mercury	0.19	0.13	0.08	0.17	0.24
Molybdenum	<0.02	<0.02	<0.02	<0.02	<0.02
Nickel	<0.01	<0.01	<0.01	<0.01	<0.01
Selenium	0.2	0.17	0.22	0.18	0.19
Silver	<0.002	<0.002	<0.002	<0.002	<0.002
Thallium	<0.01	<0.01	<0.01	<0.01	<0.01
Tin	<0.01	<0.01	<0.01	<0.01	<0.01
Titanium	0.02	0.02	0.02	0.01	0.01
Uranium	<0.001	<0.001	<0.001	<0.001	<0.001
Zinc	4.2	9.8	5.4	4.9	6.5
Physical Properties					
Moisture (%)	76.89	77.35	76.06	77.29	79.91
Length (cm)	76.0	67.7	67.8	72.3	89.5
Weight (g)	2800	2760	1660	2760	4860
Sex	F	M	F	F	F
Maturity	A	A	A	A	A
Age (years)	6	9	5	7	16
Radionuclides					
Lead-210 (Bq/g)	<0.001	<0.001	<0.001	<0.001	<0.001
Polonium-210 (Bq/g)	0.0002	0.0004	0.0008	0.0003	0.0003
Radium-226 (Bq/g)	<0.00006	<0.00007	<0.00008	<0.00006	0.00008
Thorium-230 (Bq/g)	<0.0001	<0.0001	<0.0002	<0.0002	<0.003
Trace Elements					
Antimony	<0.02	<0.02	<0.02	<0.02	<0.02
Arsenic	0.09	0.15	0.09	0.12	0.1
Beryllium	<0.002	<0.002	<0.002	<0.002	<0.002
Cobalt	0.003	0.003	<0.002	<0.002	0.003
Strontium	0.16	0.2	0.18	0.11	0.14
Vanadium	<0.02	<0.02	<0.02	<0.02	<0.02

[1]All concentrations are presented on a µg/g wet weight basis, unless specified otherwise.

GN = gill net; AN = angling; LT = lake trout; LW = lake whitefish; NP = northern pike; M = male; F = female; A = adult.

APPENDIX D, TABLE 5

Detailed Fond du Lac fish flesh chemistry data for the EARMP community program, 2011 and 2014.

Fond du Lac (Fond du Lac River) — Lake Trout

Chemical[1]	2011					2012					2013					2014				
	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1
	LT01	LT02	LT03	LT04	LT05	LT06	LT07	LT08	LT09	LT10	LT06	LT07	LT08	LT09	LT10	LT06	LT07	LT08	LT09	LT10
Metals																				
Aluminum	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6
Barium	<0.01	0.02	0.01	0.66	0.01	0.02	0.02	0.02	<0.01	<0.01	<0.01	0.01	0.01	<0.01	0.01	0.01	<0.01	0.01	0.01	0.04
Boron	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cadmium	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Chromium	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Copper	0.17	0.31	0.4	0.19	0.4	0.31	0.26	0.23	0.28	0.21	0.36	0.25	0.24	0.43	0.24	0.2	0.17	0.4	0.22	0.36
Iron	2.1	2.1	3.2	1.8	2.8	3.4	1.8	1.4	4.0	1.4	2.2	1.3	1.6	2.1	1.3	2.6	2.3	3.3	2.8	3.6
Lead	<0.002	<0.002	<0.002	<0.002	<0.002	0.004	0.003	<0.002	<0.002	<0.002	<0.002	<0.002	0.008	<0.002	<0.002	0.003	<0.002	0.002	0.004	0.007
Manganese	0.09	0.08	0.09	0.1	0.08	0.07	0.04	0.07	0.06	0.08	0.05	0.06	0.07	0.07	0.05	0.09	0.04	0.12	0.14	0.1
Mercury	0.26	0.30	0.24	0.1	0.23	0.17	0.14	0.14	0.26	0.31	0.09	0.11	0.09	0.05	0.04	0.83	0.46	0.49	0.74	0.44
Molybdenum	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Nickel	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	<0.01	0.02	<0.01	<0.01	0.02	<0.01	0.02	0.02	0.02
Selenium	0.17	0.12	0.16	0.16	0.13	0.16	0.14	0.18	0.15	0.13	0.18	0.14	0.14	0.16	0.16	0.13	0.07	0.16	0.09	0.12
Silver	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Thallium	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	0.01	<0.01	0.01	0.01	0.01	<0.01	0.01	0.01	<0.01	<0.01
Tin	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Titanium	0.08	0.09	0.09	0.1	0.08	0.08	0.07	0.08	0.08	0.08	0.01	<0.01	0.01	0.01	<0.01	0.09	0.04	0.1	0.08	0.09
Uranium	<0.001	0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002
Zinc	3	3.7	4.2	3.2	3.9	4.2	3.4	3.8	4.4	3.4	4.2	3.3	2.9	3.3	2.8	3.8	1.8	3.6	6.3	3.8
Physical Properties																				
Moisture (%)	76.91	76.77	74.35	75.75	71.88	77.01	75.5	69.03	77.64	68.66	74.35	74.57	75.49	72.33	73.93	81.13	73.27	76.95	79.64	74.4
Length (cm)	49.6	46.4	53.9	49.1	49.2	60.5	55.6	61.2	63.4	63.5	48.5	52.7	56.8	51.5	50.1	54.5	57.1	60.2	55.7	58.5
Weight (g)	1430	1310	2020	1230	1530	1680	1420	1940	1840	2280	1520	1940	2200	1640	1620	1405	2205	2860	1670	2410
Sex	M	F	F	F	M	M	M	F	F	F	M	M	M	M	M	F	M	F	F	F
Maturity	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Age (years)	12	10	15	9	8	17	11	15	-	14	9	11	12	9	8	29	20	16	21	13
Radionuclides																				
Lead-210 (Bq/g)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Polonium-210 (Bq/g)	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Radium-226 (Bq/g)	<0.00006	<0.00006	<0.00006	<0.00006	<0.00006	<0.00005	<0.00006	<0.00005	<0.00006	<0.00006	<0.00006	<0.00006	<0.00006	<0.00006	<0.00005	<0.00006	<0.00004	7E-05	<0.00005	<0.00006
Thorium-230 (Bq/g)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00008	<0.0001	<0.0001	<0.0001
Trace Elements																				
Antimony	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Arsenic	0.17	0.08	0.10	0.05	0.12	0.05	0.06	0.1	0.14	0.08	0.05	0.04	0.08	0.11	0.06	0.07	0.04	0.11	0.13	0.05
Beryllium	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Cobalt	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.003	<0.002	0.003	0.002	0.003
Strontium	0.11	0.16	0.18	0.20	0.18	0.12	0.09	0.21	0.16	0.15	0.1	0.09	0.11	0.04	0.08	0.19	0.05	0.13	0.15	0.13
Vanadium	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

Fond du Lac (Fond du Lac River) — Lake Whitefish

Chemical[1]	2011					2012					2013					2014				
	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1
	LW06	LW07	LW08	LW09	LW10	LW01	LW02	LW03	LW04	LW05	LW01	LW02	LW03	LW04	LW05	LW01	LW02	LW03	LW04	LW05
Metals																				
Aluminum	<0.5	<0.5	<0.5	<0.5	1.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.5
Barium	0.06	0.04	0.02	<0.01	0.03	0.02	0.04	0.01	0.07	0.02	0.01	<0.01	0.02	0.03	0.01	0.14	<0.01	0.04	0.06	0.05
Boron	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cadmium	0.002	<0.002	<0.002	<0.002	0.006	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Chromium	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Copper	0.14	0.18	0.12	0.22	0.28	0.27	0.16	0.16	0.15	0.13	0.22	0.16	0.15	0.34	0.13	0.13	0.14	0.19	0.16	0.17
Iron	1.7	2.9	1.3	2.6	6.0	2.0	1.0	1.4	1.4	1.3	2.1	3.1	1.3	4.4	1.1	1.8	1.4	3.1	1.8	2
Lead	<0.002	0.002	<0.002	<0.002	<0.002	0.003	0.004	0.003	<0.002	0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	<0.002	0.008	<0.002	<0.002
Manganese	0.17	0.13	0.07	0.14	0.08	0.05	0.08	0.14	0.19	0.08	0.08	0.09	0.06	0.1	0.07	0.21	0.07	0.19	0.1	0.1
Mercury	0.14	0.12	0.14	0.18	0.18	0.02	0.05	0.02	0.02	0.03	0.03	0.02	0.02	0.03	0.04	0.086	0.14	0.051	0.081	0.059
Molybdenum	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Nickel	<0.01	<0.01	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	0.02	0.02	0.04	<0.01	0.1
Selenium	0.25	0.15	0.22	0.20	0.29	0.17	0.28	0.2	0.16	0.23	0.22	0.13	0.27	0.21	0.18	0.15	0.11	0.12	0.24	0.17
Silver	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Thallium	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Tin	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Titanium	0.08	0.08	0.09	0.07	0.1	0.07	0.08	0.07	0.08	0.07	0.02	0.01	0.02	0.02	0.02	0.1	0.09	0.1	0.07	0.09
Uranium	0.002	<0.001	<0.001	<0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.004	<0.001	<0.001
Zinc	3	4.2	3.2	3	4.2	6.2	3.8	3.5	4	3.4	3.8	4	3.9	5.4	3.5	3.3	4.6	4.4	4.2	3.6
Physical Properties																				
Moisture (%)	73.98	78.34	76.86	75.56	75.69	75.73	71.01	74.93	73.77	76.15	75.67	78.03	73.18	76.28	78.04	78.86	77.96	76.51	77.23	76.57
Length (cm)	38.5	44.9	36.4	41.1	42.2	44.4	43.8	46.6	42.8	36.5	46.5	43.4	40.5	40.1	42.3	42.5	45	41.3	41.9	39.4
Weight (g)	900	1340	805	1100	1120	940	1040	1100	860	520	1420	1120	980	820	1000	965	1240	910	965	875
Sex	M	M	F	F	M	M	F	M	F	M	F	M	F	M	M	F	F	M	F	M
Maturity	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Age (years)	30	26	31	33	38	7	27	20	15	27	14	12	13	13	8	19	9	15	17	11
Radionuclides																				
Lead-210 (Bq/g)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.004	<0.004	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Polonium-210 (Bq/g)	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	<0.001	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Radium-226 (Bq/g)	<0.00008	<0.00006	<0.00006	<0.00006	<0.00007	<0.00007	<0.00008	<0.00009	<0.001	0.002	<0.00009	0.0001	<0.00006	<0.00006	<0.00006	8E-05	<0.00006	<0.00007	<0.00006	<0.00006
Thorium-230 (Bq/g)	<0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0002	<0.0002	<0.002	<0.002	<0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	<0.0001
Trace Elements																				
Antimony	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Arsenic	0.40	0.19	0.20	0.52	0.29	0.02	0.22	0.22	0.18	0.19	0.04	0.04	0.11	0.08	0.03	0.16	0.02	0.04	0.28	0.04
Beryllium	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Cobalt	0.003	0.005	0.003	0.003	0.015	0.003	0.002	0.003	0.003	<0.002	0.004	0.014	0.003	0.004	<0.002	0.007	0.006	0.02	0.003	0.012
Strontium	1.00	0.88	0.55	0.15	0.36	0.51	0.24	0.27	1.6	0.2	0.19	0.26	0.19	0.61	0.15	2.2	0.33	1.2	0.68	0.33
Vanadium	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

[1]All concentrations are presented on a µg/g wet weight basis, unless specified otherwise.

GN = gill net; LT = lake trout; LW = lake whitefish.

APPENDIX D, TABLE 6

Detailed Stony Rapids (Fond du Lac River) fish flesh chemistry data for the EARMP community program, 2011 to 2014.

Stony Rapids (Fond du Lac River) — Lake Trout

Chemical[1]	2011					2012				2013					2014				
	GN1-1	GN1-1	GN1-1	GN1-1	SP01-01	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1
	LT01	LT02	LT03	LT04	LT05	LT06	LT07	LT08	LT09	LT01	LT02	LT03	LT04	LT05	LT01	LT02	LT03	LT04	LT05
Metals																			
Aluminum	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Barium	<0.01	<0.01	0.01	<0.01	0.01	0.01	0.01	0.02	0.01	<0.01	<0.01	<0.01	<0.01	0.01	0.1	0.09	<0.01	0.07	0.03
Boron	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cadmium	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Chromium	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1
Copper	0.28	0.2	0.22	0.22	0.17	0.21	0.78	0.2	0.36	0.39	0.45	0.32	0.32	0.28	0.43	0.93	0.34	0.3	0.3
Iron	1.9	1.7	1.5	1.6	1.2	2.3	8.6	2.6	4.0	3.6	3.3	6.1	3.1	2.7	10	8.9	3	2.3	2.1
Lead	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.011	0.003	<0.002	0.004	<0.002
Manganese	0.09	0.09	0.08	0.12	0.06	0.09	0.08	0.1	0.07	0.11	0.07	0.06	0.06	0.07	0.13	0.09	0.06	0.07	0.06
Mercury	0.27	0.46	0.57	0.38	0.49	0.12	0.19	0.18	0.27	0.17	0.12	0.13	0.3	0.16	0.11	0.24	0.23	0.21	0.19
Molybdenum	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Nickel	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	0.06	<0.01	<0.01	0.01	<0.01
Selenium	0.10	0.11	0.09	0.14	0.16	0.15	0.19	0.17	0.19	0.16	0.19	0.15	0.18	0.15	0.13	0.15	0.16	0.15	0.14
Silver	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.003	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Thallium	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	0.02	<0.01	0.01	0.01	0.01	<0.01	0.02	0.01	<0.01	0.01	0.01	0.01	<0.01
Tin	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Titanium	0.08	0.07	0.08	0.08	0.08	0.07	0.08	0.08	0.08	0.04	0.03	0.04	0.03	0.03	0.14	0.09	0.09	0.09	0.08
Uranium	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Zinc	4.7	3.1	3.4	3.3	2.5	3.8	5.4	3.6	3.8	3.1	4	4	3.8	3.1	3.3	5.2	4.3	4.3	3
Physical Properties																			
Moisture (%)	77.77	77.9	77.43	76.77	73.64	78.8	76.77	78.11	78.05	73.56	74.02	75.29	75.06	73.99	73.76	75.09	76.3	76.67	75.55
Length (cm)	54.9	55.9	57.2	64.9	69.6	57.2	62.8	61.0	59.8	52.0	52.5	55.0	57.0	51.2	49.5	51.9	44.7	54	48.7
Weight (g)	1750	2060	2180	2840	3720	1520	2060	1840	1820	1720	1680	1940	2060	1600	1580	1640	1100	1670	1440
Sex	F	F	F	F	M	M	M	M	M	F	M	F	M	F	F	M	M	M	F
Maturity	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Age (years)	10	15	16	17	15	14	22	21	22	12	12	11	16	13	11	14	12	12	11
Radionuclides																			
Lead-210 (Bq/g)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Polonium-210 (Bq/g)	<0.0002	<0.0002	0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0003	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Radium-226 (Bq/g)	<0.00007	<0.00006	<0.00006	<0.00006	<0.00006	<0.00006	<0.00006	<0.00006	<0.00006	<0.00007	<0.00006	<0.00008	<0.00006	0.0001	<0.00006	<0.00006	<0.00008	<0.00006	<0.00007
Thorium-230 (Bq/g)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0002	<0.0001	<0.0001
Trace Elements																			
Antimony	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Arsenic	0.02	0.06	0.05	0.06	0.09	0.07	0.18	0.06	0.07	0.06	0.18	0.25	0.09	0.08	0.14	0.11	0.04	0.07	0.04
Beryllium	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Cobalt	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.006	0.005	<0.002	0.004	0.003
Strontium	0.10	0.09	0.21	0.23	0.09	0.13	0.14	0.14	0.14	0.08	0.14	0.30	0.14	0.10	0.26	0.15	0.2	0.34	0.28
Vanadium	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

Stony Rapids (Fond du Lac River) — Lake Whitefish

Chemical[1]	2011					2012					2013					2014				
	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1
	LW06	LW07	LW08	LW09	LW10	LW01	LW02	LW03	LW04	LW05	LW06	LW07	LW08	LW09	LW10	LW06	LW07	LW08	LW09	LW10
Metals																				
Aluminum	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Barium	0.01	0.01	0.09	<0.01	0.02	0.01	0.05	0.01	0.01	0.02	<0.01	0.02	<0.01	<0.01	0.02	0.07	<0.01	0.08	0.03	0.04
Boron	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cadmium	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Chromium	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Copper	0.36	0.15	0.14	0.26	0.19	0.24	0.14	0.3	0.14	0.11	0.31	0.15	0.17	0.23	0.25	0.19	0.2	0.25	0.23	0.2
Iron	3.5	2.0	2.0	2.2	1.7	1.3	1.4	4.2	1.9	1.1	4.7	1.9	1.2	2.2	2.4	1.9	1.8	1.6	2.2	2
Lead	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.004
Manganese	0.09	0.1	0.18	0.08	0.1	0.08	0.22	0.08	0.1	0.1	0.09	0.12	0.08	0.12	0.19	0.09	0.09	0.1	0.18	0.09
Mercury	0.23	0.06	0.15	0.37	0.06	0.05	0.05	0.14	0.06	0.13	0.09	0.04	0.04	0.07	0.06	0.13	0.098	0.08	0.1	0.056
Molybdenum	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Nickel	0.05	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	<0.01	<0.01
Selenium	0.13	0.10	0.15	0.27	0.12	0.18	0.12	0.14	0.18	0.13	0.14	0.13	0.15	0.12	0.12	0.11	0.08	0.11	0.12	0.16
Silver	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Thallium	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Tin	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Titanium	0.07	0.08	0.08	0.07	0.09	0.06	0.07	0.07	0.06	0.06	0.03	0.03	0.03	0.03	0.03	0.09	0.06	0.09	0.09	0.08
Uranium	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.007	<0.001	<0.001	<0.001
Zinc	4.0	4.0	4.1	8.3	4.7	6.1	7.0	3.6	3.4	3.4	4.0	4.6	3.4	4.9	4.7	3.8	2.8	3.6	4.2	3.9
Physical Properties																				
Moisture (%)	76.78	78.07	78.94	77.19	75.5	74.99	80.97	76.82	80.22	79.53	76.95	78.07	73.93	75.51	76.73	74.28	79.2	76.81	75.18	76.08
Length (cm)	47.8	44.8	48.1	51.4	42.5	48.0	47.0	50.6	50.8	49.5	44.5	42.2	43.3	39.9	40.5	44	43.2	44.2	41.8	49.6
Weight (g)	1490	1640	1730	2060	1410	1420	980	1680	1360	1520	1180	940	1100	1000	960	1300	1120	1120	1130	1560
Sex	F	F	F	F	M	F	F	M	F	F	M	F	F	M	M	F	F	F	M	F
Maturity	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Age (years)	27	14	13	29	8	9	14	18	15	18	18	8	11	11	10	11	9	9	8	11
Radionuclides																				
Lead-210 (Bq/g)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Polonium-210 (Bq/g)	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Radium-226 (Bq/g)	<0.00008	0.0001	0.00006	0.0001	<0.00006	<0.00005	0.001	<0.00006	<0.00007	<0.00005	<0.00006	<0.00006	0.0001	9E-05	<0.00006	<0.00007	<0.00006	<0.00006	<0.00006	<0.00006
Thorium-230 (Bq/g)	<0.0002	<0.00009	<0.00008	<0.0002	<0.0001	<0.0001	<0.002	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Trace Elements																				
Antimony	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Arsenic	0.06	0.03	0.03	0.07	0.02	0.02	0.06	0.05	0.03	0.04	0.03	0.02	0.04	0.03	0.03	0.01	0.01	0.01	0.02	0.09
Beryllium	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Cobalt	0.005	0.009	0.012	0.004	0.008	<0.002	0.009	0.005	0.007	0.003	0.004	0.004	0.006	0.004	0.005	0.003	0.005	0.003	0.004	0.008
Strontium	0.23	0.26	2.00	0.12	0.24	0.28	1.8	0.3	0.23	0.24	0.27	0.22	0.17	0.22	0.25	0.36	0.1	0.18	0.3	0.29
Vanadium	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

[1]All concentrations are presented on a µg/g wet weight basis, unless specified otherwise.

GN = gill net; LT = lake trout; LW = lake whitefish; M = male; F = female; A = adult.

APPENDIX D, TABLE 7

Detailed Wollaston Lake/Hatchet Lake (Welcome Bay) fish flesh chemistry data for the EARMP community program, 2011 to 2014.

Wollaston Lake/Hatchet Lake (Welcome Bay, Wollaston Lake) — Lake Trout

Chemical[1]	2011					2012					2013					2014				
	GN1-1	GN1-1	GN1-1	SP01-01	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1
	LT01	LT02	LT03	LT04	LT05	LT06	LT07	LT08	LT09	LT10	LT07	LT08	LT09	LT10	LT11	LT07	LT08	LT09	LT10	LT11
Metals																				
Aluminum	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-0.5	<0.5	<0.5	<0.5	<0.5
Barium	0.02	0.02	0.02	0.02	<0.01	0.02	0.01	<0.01	0.02	<0.01	<0.01	0.02	<0.01	<0.01	0.02	0.02	0.03	0.02	0.01	0.03
Boron	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-0.2	<0.2	<0.2	<0.2	<0.2
Cadmium	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-0.002	<0.002	<0.002	<0.002	<0.002
Chromium	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-0.1	<0.1	<0.1	<0.1	<0.1
Copper	0.62	0.48	0.53	0.31	0.3	0.52	0.39	0.4	0.69	0.24	0.35	0.38	0.34	0.3	0.32	0.44	0.25	0.29	0.26	0.29
Iron	6.0	4.0	2.6	1.8	1.9	3.1	2.8	2.2	3.8	1.6	2.3	3	2.6	2.2	2.1	2	1.9	1.7	1.6	2.7
Lead	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.005	-0.002	<0.002	0.004	<0.002	<0.002
Manganese	0.1	0.1	0.07	0.06	0.07	0.08	0.06	0.08	0.07	0.05	0.08	0.09	0.1	0.1	0.09	0.08	0.11	0.06	0.1	0.09
Mercury	0.15	0.16	0.16	0.20	0.12	0.24	0.15	0.13	0.16	0.14	0.14	0.1	0.09	0.1	0.18	0.18	0.26	0.2	0.19	0.38
Molybdenum	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	-0.02	<0.02	<0.02	<0.02	<0.02
Nickel	0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.05	<0.01	<0.01	0.01	<0.01
Selenium	0.17	0.28	0.19	0.18	0.19	0.27	0.21	0.22	0.22	0.21	0.21	0.2	0.2	0.18	0.2	0.19	0.18	0.2	0.21	0.16
Silver	<0.002	0.003	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-0.002	<0.002	<0.002	<0.002	<0.002
Thallium	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-0.01	<0.01	<0.01	<0.01	<0.01
Tin	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-0.01	<0.01	<0.01	<0.01	<0.01
Titanium	0.09	0.09	0.09	0.09	0.07	0.07	0.07	0.07	0.08	0.07	0.03	0.03	0.03	0.07	0.04	0.08	0.08	0.07	0.08	0.08
Uranium	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	-0.001	<0.001	0.001	<0.001	<0.001
Zinc	5.5	6.6	3.9	3.1	3.3	5.8	3.6	3.8	4.8	3.1	5.7	4.2	3.8	4.8	3.7	3.6	3	2.5	2.6	4.5
Physical Properties																				
Moisture (%)	78.93	75.5	76.46	75.65	75.48	75.41	73.15	73.02	79.09	75.73	76.78	72.75	72.82	71.52	74.12	78.37	75.48	75.05	77.38	74.92
Length (cm)	51.5	46.3	46.8	47.9	46.6	55.6	50.5	50.8	50.5	52.0	45.3	46.5	44.1	45.4	48.5	48.4	49.8	52.2	50.6	55.9
Weight (g)	1730	1220	1440	1410	1430	1760	1420	1360	1400	1520	1200	1340	1060	1060	1400	1580	1610	1850	1780	2020
Sex	F	M	M	F	M	M	M	M	M	M	M	M	F	F	F	M	F	M	M	F
Maturity	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Age (years)	7	7	7	8	6	6	7	7	9	7	8	7	8	8	8	8	9	9	9	12
Radionuclides																				
Lead-210 (Bq/g)	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-0.001	<0.001	<0.001	<0.001	<0.001
Polonium-210 (Bq/g)	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Radium-226 (Bq/g)	<0.00006	<0.00006	<0.00006	0.0003	9E-05	<0.00006	<0.00006	<0.00005	<0.00007	<0.00005	0.0002	7E-05	<0.00006	<0.00006	8E-05	-4E-05	<0.00006	<0.00005	<0.00005	<0.00005
Thorium-230 (Bq/g)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00009	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-8E-05	<0.0001	<0.00009	<0.0001	<0.0001
Trace Elements																				
Antimony	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	-0.02	<0.02	<0.02	<0.02	<0.02
Arsenic	0.06	0.03	0.04	0.02	0.04	0.05	0.04	0.04	0.08	0.02	0.02	0.04	0.03	0.06	0.02	0.01	0.03	0.02	0.03	0.05
Beryllium	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-0.002	<0.002	<0.002	<0.002	<0.002
Cobalt	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.003	<0.002	<0.002	0.006	0.002
Strontium	0.09	0.22	0.09	0.15	0.05	0.19	0.09	0.07	0.11	0.03	0.19	0.1	0.05	0.04	0.05	0.12	0.24	0.08	0.04	0.16
Vanadium	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	-0.02	<0.02	<0.02	<0.02	<0.02

Wollaston Lake/Hatchet Lake (Welcome Bay, Wollaston Lake) — Lake Whitefish

Chemical[1]	2011					2012					2013					2014				
	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1	GN1-1
	LW06	LW07	LW08	LW09	LW10	LW01	LW02	LW03	LW04	LW05	LW01	LW02	LW03	LW05	LW06	LW01	LW02	LW03	LW05	LW06
Metals																				
Aluminum	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Barium	0.11	0.01	0.01	0.02	0.02	0.02	0.02	0.04	0.02	0.02	0.02	0.01	0.12	0.05	0.03	0.02	0.02	0.04	0.08	0.02
Boron	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cadmium	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Chromium	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Copper	0.26	0.16	0.18	0.12	0.14	0.12	0.18	0.13	0.14	0.21	0.13	0.16	0.16	0.14	0.13	0.17	0.17	0.14	0.14	0.14
Iron	2.2	1.3	1.5	3.1	1.4	1.1	1.0	1.5	1.0	3.0	1.8	1.7	2.5	3.0	1.7	1.7	1.5	2	2.9	1.6
Lead	0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	0.002	0.004	0.004	<0.002	<0.002
Manganese	0.15	0.09	0.09	0.12	0.1	0.09	0.07	0.14	0.1	0.13	0.11	0.09	0.1	0.25	0.11	0.12	0.1	0.11	0.24	0.1
Mercury	0.06	0.05	0.05	0.05	0.08	0.03	0.02	0.07	0.03	0.05	0.02	0.02	0.06	0.07	0.03	0.086	0.094	0.11	0.07	0.082
Molybdenum	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Nickel	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	<0.01	<0.01	0.01	<0.01	0.01	0.02	0.01	0.01	<0.01
Selenium	0.39	0.41	0.34	0.38	0.38	0.5	0.53	0.38	0.68	0.51	0.31	0.34	0.32	0.41	0.4	0.44	0.34	0.36	0.39	0.36
Silver	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Thallium	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Tin	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Titanium	0.07	0.08	0.08	0.11	0.08	0.07	0.07	0.07	0.07	0.07	0.04	0.04	0.03	0.03	0.04	0.1	0.07	0.08	0.09	0.08
Uranium	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001
Zinc	5.1	3.0	3.8	4.7	4.3	3.7	4.5	3.2	4.5	4.0	3.7	3.7	5.5	3.3	3.6	4.9	3.3	4.1	2.8	2.9
Physical Properties																				
Moisture (%)	73.6	75.29	75.27	76.01	73.6	73.9	70.19	74.68	71.83	76.61	73.91	73.39	75.49	79.53	78.4	71.26	72.78	76.4	76.45	79.18
Length (cm)	36.5	38.0	40.6	36.9	39.2	47.9	43.3	46.2	44.4	43.6	36.2	37.4	37.5	39.5	40.1	43.4	37.9	42.4	38.6	41.9
Weight (g)	780	820	940	810	825	1380	880	1060	860	840	620	620	640	700	720	1230	850	930	950	1010
Sex	M	M	M	M	F	M	F	F	F	M	M	F	F	F	M	M	F	M	F	M
Maturity	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Age (years)	16	16	14	12	17	19	11	21	12	18	12	12	15	13	18	12	13	18	13	10
Radionuclides																				
Lead-210 (Bq/g)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.004	<0.001	<0.004	<0.004	0.0003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Polonium-210 (Bq/g)	0.0003	0.0004	<0.0002	0.0002	0.0004	<0.0002	<0.001	<0.0002	<0.001	<0.001	<0.001	<0.0002	<0.0002	0.0002	0.0006	0.0005	<0.0002	0.0004	0.0002	0.0003
Radium-226 (Bq/g)	<0.00006	<0.00006	<0.00008	<0.00006	<0.00006	<0.00006	0.001	<0.00005	0.002	0.002	<0.001	0.0001	<0.0001	0.0001	0.0001	<0.00006	<0.00006	<0.00006	<0.00006	0.0001
Thorium-230 (Bq/g)	<0.0001	<0.0001	<0.0002	<0.0001	<0.0001	<0.0001	<0.002	<0.0001	<0.002	<0.002	<0.00002	<0.0001	<0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Trace Elements																				
Antimony	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Arsenic	0.24	0.13	0.17	0.09	0.18	0.19	0.12	0.17	0.16	0.13	0.15	0.18	0.17	0.09	0.14	0.14	0.15	0.11	0.11	0.06
Beryllium	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Cobalt	<0.002	<0.002	<0.002	0.005	<0.002	<0.002	<0.002	0.002	<0.002	0.003	<0.002	<0.002	<0.002	0.002	<0.002	0.004	0.002	0.005	<0.002	0.002
Strontium	0.47	0.08	0.11	0.24	0.14	0.11	0.13	0.25	0.15	0.18	0.16	0.12	0.14	0.62	0.21	0.15	0.15	0.16	0.54	0.11
Vanadium	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

[1] All concentrations are presented on a µg/g wet weight basis, unless specified otherwise.

GN = gill net; LT = lake trout; LW = lake whitefish; M = male; F = female; A = adult.

APPENDIX D, TABLE 8

Detailed blueberry chemistry results for the EARMP community program, 2011 to 2014.

Chemical[1]	Black Lake																			
	2011					2012					2013					2014				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Metals																				
Aluminum	6	8.6	7.9	8.6	6	13	6	7.1	7.9	7.7	11	7.1	11	8.9	7.8	19	16	12	12	12
Barium	12	15	13	11	15	13	14	17	15	15	11	12	14	14	7	21	18	24	22	24
Boron	6	5	5	3	5	6	8	5	5	7	8	4	7	5	13	4	4	4	4	4
Cadmium	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Chromium	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Copper	3.3	3.2	2.5	2.6	3.1	2.8	3.8	3.5	3.4	3.8	3.2	1.8	1.8	1.8	1.6	3.7	3.6	4	3.6	4
Iron	8.4	11	8.6	11	10	20	10	8.1	8.8	9.8	10	6	8	8	5	31	21	18	18	17
Lead	0.07	0.02	0.02	0.07	<0.01	0.03	<0.01	<0.01	0.02	<0.01	0.02	0.02	<0.01	0.02	<0.01	0.03	0.03	0.02	0.02	<0.01
Manganese	160	130	120	180	220	100	100	170	170	120	160	220	200	250	160	220	200	89	98	83
Molybdenum	0.2	0.2	0.1	0.1	0.2	<0.1	<0.1	<0.1	<0.1	0.1	0.1	0.1	0.2	0.1	<0.1	<0.1	<0.1	0.2	0.2	0.2
Nickel	0.66	0.68	0.54	0.56	0.38	0.32	0.56	0.58	0.66	0.54	0.58	0.38	0.41	0.37	0.34	0.47	0.55	0.78	0.59	0.72
Selenium	<0.05	0.08	<0.05	<0.05	0.06	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Silver	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Thallium	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Tin	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Titanium	<0.05	0.08	0.06	0.1	0.15	0.1	0.05	0.05	0.08	<0.05	0.11	<0.05	0.12	0.07	0.06	0.69	0.52	0.23	0.22	0.34
Uranium	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	0.01	0.03	0.02	0.02
Zinc	4.8	6.1	5	3.9	5.5	3.9	6.1	6	5.3	6.4	5.8	6.2	6.7	7	3.6	8.8	7.1	6.2	5.7	5.7
Physical Properties																				
Moisture (%)	86.24	86.69	85.12	86.04	87.39	86.19	85.89	84.95	84.99	84.86	84.23	83.47	84.32	83.26	84.73	85.74	85.93	87.13	86.97	87.28
Radionuclides																				
Lead-210 (Bq/g)	0.009	0.005	0.007	0.009	0.012	0.002	0.002	<0.001	0.002	<0.001	0.002	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	<0.001
Polonium-210 (Bq/g)	0.001	0.002	0.001	0.002	<0.0009	0.0015	0.002	0.0024	0.0014	0.0012	0.0008	0.0008	0.0005	0.0008	0.0008	0.0007	0.0007	0.0011	0.0005	0.0007
Radium-226 (Bq/g)	0.002	0.004	0.004	0.002	0.002	<0.00003	0.0012	<0.00003	0.0028	0.001	0.0025	0.0042	0.0029	0.0028	0.0022	0.002	0.0008	0.001	0.001	0.002
Thorium-230 (Bq/g)	<0.002	<0.002	<0.002	<0.002	<0.002	<0.001	0.002	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001
Trace Elements																				
Antimony	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Beryllium	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cobalt	0.05	0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	0.02	0.02	0.01	0.01	0.01
Strontium	2.1	4.4	3.5	2.1	1.2	1.1	1.7	1.7	2	1.8	1.7	1.8	3	2	2	3.7	3.6	11	9.8	9.9
Vanadium	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

APPENDIX D, TABLE 8

Detailed blueberry chemistry results for the EARMP community program, 2011 to 2014.

Chemical[1]	Camsell Portage												
	2012					2013					2014		
	1	2	3	4	5	1	2	3	4	5	1	2	3
Metals													
Aluminum	7.2	7.3	7	7.4	6	6.8	7.7	6.7	7.1	7.2	10	13	8.6
Barium	12	24	20	22	20	11	13	12	12	13	22	24	20
Boron	5	8	8	8	6	4	4	4	4	4	5	6	5
Cadmium	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Chromium	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Copper	3.5	3	3.4	3.5	2.6	2.2	2.2	2.2	2.2	2.4	3.8	3.8	3.5
Iron	11	8.7	9.7	18	13	8	10	10	13	9	15	17	16
Lead	<0.01	0.04	<0.01	<0.01	<0.01	0.03	0.02	0.03	<0.01	0.02	0.01	0.02	0.01
Manganese	280	490	490	480	580	350	390	360	380	360	430	470	370
Molybdenum	0.1	0.1	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Nickel	0.44	0.37	0.6	0.79	0.44	0.12	0.17	0.16	0.14	0.14	0.36	0.36	0.39
Selenium	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Silver	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Thallium	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Tin	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Titanium	0.07	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.06	<0.05	0.15	0.21	0.14
Uranium	0.01	0.08	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	0.01	0.01
Zinc	13	6.5	8.9	8	5.9	6	6.7	5.6	8.4	6.2	7.6	7.8	6.9
Physical Properties													
Moisture (%)	83.98	85.16	84.30	84.62	85.57	84.78	84.99	84.99	84.76	84.82	84.37	84.9	83.77
Radionuclides													
Lead-210 (Bq/g)	0.001	0.004	<0.001	0.001	0.002	<0.004	0.013	0.004	0.008	<0.004	0.002	0.002	0.002
Polonium-210 (Bq/g)	0.0014	0.0017	0.0013	0.001	0.0016	<0.001	0.001	<0.001	<0.001	<0.001	0.002	0.001	0.001
Radium-226 (Bq/g)	0.0025	0.0028	0.0025	0.0049	0.0045	0.003	0.002	0.002	0.004	0.003	0.003	0.004	0.003
Thorium-230 (Bq/g)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.001	<0.0009	<0.001
Trace Elements													
Antimony	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Beryllium	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cobalt	<0.01	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01
Strontium	1.4	1.4	1.4	1.6	1.5	0.9	1	1	1	1.1	1.9	1.8	2
Vanadium	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

APPENDIX D, TABLE 8

Detailed blueberry chemistry results for the EARMP community program, 2011 to 2013.

Chemical[1]	Fond du Lac																			
	2011					2012					2013					2014				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Metals																				
Aluminum	4.4	9.5	6.2	7	6.2	14	20	7.3	13	5.9	10	21	13	14	15	29	13	33	12	39
Barium	12	12	13	13	12	12	9.9	14	11	11	14	14	16	18	15	20	16	22	14	29
Boron	8	6	7	8	6	14	6	5	8	5	6	4	5	4	6	6	7	6	5	7
Cadmium	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Chromium	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.5	<0.5	<0.5
Copper	2.7	3	3.6	3.2	3.9	2.8	3.9	3.3	3.9	2.8	1.8	2.4	2.8	1.8	2.1	5.2	5	5.6	5.2	5.6
Iron	10	8.2	9.7	11	9.3	14	21	12	16	10	10	23	17	17	10	48	23	40	22	44
Lead	<0.01	0.02	<0.01	0.03	0.01	0.03	0.01	<0.01	0.01	<0.01	0.04	0.02	0.02	0.01	0.02	0.02	0.03	0.17	0.14	0.04
Manganese	140	150	140	140	130	280	460	240	370	310	460	410	660	700	460	400	380	400	390	390
Molybdenum	0.4	0.2	0.4	0.4	0.4	0.2	0.2	<0.1	0.2	<0.1	0.2	0.3	0.3	0.3	0.2	0.5	0.5	0.6	0.4	0.6
Nickel	0.97	0.67	0.75	0.8	0.74	0.48	0.55	0.54	0.6	0.5	0.4	0.7	0.62	0.53	0.48	2.2	0.89	2.3	0.89	2.1
Selenium	<0.05	<0.05	<0.05	0.08	0.07	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Silver	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Thallium	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Tin	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.09	<0.05	0.07	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.15	<0.05
Titanium	<0.05	0.08	0.08	0.08	0.1	0.35	0.88	0.07	0.42	0.05	0.21	0.86	0.43	0.4	0.21	1.5	0.46	2	0.33	1.7
Uranium	<0.01	0.02	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	0.01	0.01	0.01
Zinc	5.6	6	7.5	7	7.1	4.4	5.1	10	5.4	5.8	6.7	6.2	7.1	8.4	6.4	7.7	7.7	8.6	6.5	8.2
Physical Properties																				
Moisture (%)	87.10	85.50	86.68	84.60	86.31	83.99	83.87	84.56	83.79	84.11	84.33	83.47	84.18	84.47	83.71	84.83	82.79	84.76	82.2	84.79
Radionuclides																				
Lead-210 (Bq/g)	<0.004	0.007	0.01	0.011	0.006	<0.001	<0.001	<0.001	<0.001	<0.001	<0.004	0.002	<0.001	0.009	0.005	<0.001	<0.001	0.001	0.001	<0.001
Polonium-210 (Bq/g)	0.001	0.002	0.001	0.004	0.002	0.0012	0.0009	0.0015	0.0012	0.0014	0.001	0.0066	0.0008	0.002	<0.001	0.001	0.001	0.0008	7E-04	0.002
Radium-226 (Bq/g)	0.002	0.004	0.003	0.001	0.005	0.0023	0.0018	0.0026	0.0021	0.0026	0.003	0.0033	0.0038	0.006	0.005	0.001	0.004	<0.0005	0.002	0.003
Thorium-230 (Bq/g)	<0.002	<0.002	<0.002	<0.002	<0.002	<0.001	<0.001	<0.0004	<0.001	<0.0003	<0.002	<0.002	<0.002	<0.002	<0.002	<0.001	<0.001	<0.0009	<0.0009	<0.0009
Trace Elements																				
Antimony	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Beryllium	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cobalt	0.01	0.02	<0.01	<0.01	<0.01	<0.01	0.02	<0.01	0.02	<0.01	<0.01	0.02	0.02	0.02	0.01	0.05	0.03	0.05	0.03	0.06
Strontium	1.3	1.3	1.4	1.6	1.3	2.8	1.8	1.8	2.6	1.6	1.8	2.4	1.8	1.8	2	6.4	2.5	6.3	1.9	5
Vanadium	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

APPENDIX D, TABLE 8

Detailed blueberry chemistry results for the EARMP community program, 2011 to 2013.

Chemical[1]	Stony Rapids																			
	2011					2012					2013					2014				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Metals																				
Aluminum	21	8	27	37	10	9.6	8.9	7	11	7.6	300	180	250	240	250	7.8	9.3	10	8.3	8.9
Barium	15	15	16	8.9	13	14	12	12	10	13	10	9	13	14	13	22	21	21	18	21
Boron	12	5	4	3	4	5	4	11	14	6	4	4	4	5	5	4	5	5	5	16
Cadmium	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Chromium	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Copper	2.9	3.2	3	2.4	2.9	1.9	2	2.3	2.1	2	2.4	2.8	2.1	2.5	2.4	4.5	4.2	4.2	4	4.4
Iron	16	12	23	32	11	12	12	11	10	9.9	9.9	10	10	11	12	14	15	14	13	15
Lead	0.01	<0.01	0.02	0.04	<0.01	0.1	<0.01	0.03	0.03	<0.01	<0.01	0.02	<0.01	<0.01	0.01	<0.01	0.01	<0.01	0.02	0.01
Manganese	140	100	130	70	180	290	250	230	240	260	210	200	270	340	300	130	150	140	270	140
Molybdenum	0.1	0.2	<0.1	<0.1	<0.1	0.1	<0.1	0.4	0.3	0.3	0.2	0.1	<0.1	<0.1	0.1	0.2	0.2	0.2	0.2	0.2
Nickel	0.75	0.68	0.84	0.82	0.74	0.39	0.48	0.47	0.37	0.4	0.38	0.42	0.24	0.3	0.29	1.1	1.1	1.4	0.54	1
Selenium	<0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Silver	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Thallium	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Tin	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Titanium	0.26	0.12	1.6	1.4	0.19	0.2	0.23	0.09	0.26	0.11	0.08	0.14	0.07	0.06	0.06	0.12	0.3	0.17	0.08	0.26
Uranium	<0.01	<0.01	0.02	0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.03	0.01	<0.01	<0.01	<0.01
Zinc	5.8	6.4	5.1	4.9	5.3	3.3	3.7	4.9	3.4	4	5.9	5.8	5.9	7.6	6.4	5.2	5.2	5.5	6.1	5.3
Physical Properties																				
Moisture (%)	85.84	85.47	84.14	85.08	86.57	85.35	85.14	84.42	85.08	84.82	85.92	85.78	86.59	86.18	86.45	86.37	86.04	86.1	86.52	86.16
Radionuclides																				
Lead-210 (Bq/g)	<0.004	0.005	0.012	0.006	<0.004	<0.01	<0.01	<0.01	<0.01	<0.01	0.007	<0.004	<0.004	<0.004	<0.004	0.001	0.001	<0.001	<0.001	<0.001
Polonium-210 (Bq/g)	0.002	0.002	0.002	0.003	0.002	0.001	<0.001	0.001	0.001	<0.001	<0.001	<0.001	0.001	<0.001	0.001	<0.0002	8E-04	7E-04	8E-04	6E-04
Radium-226 (Bq/g)	0.003	0.006	0.001	<0.0009	0.001	0.003	<0.001	0.003	0.003	0.004	0.015	0.014	0.016	0.012	0.015	0.003	0.002	0.002	0.013	0.002
Thorium-230 (Bq/g)	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.0009	<0.001	<0.001	<0.001	<0.001
Trace Elements																				
Antimony	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Beryllium	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cobalt	0.01	0.07	0.01	0.02	0.01	0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	0.02	0.1	<0.01	0.02
Strontium	2.6	1.7	2.9	2.5	2	1.7	1.5	2.9	2.6	2.4	3.4	3	3.5	4.5	3.8	2.5	2.5	2.2	5.3	2.6
Vanadium	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

APPENDIX D, TABLE 8

Detailed blueberry chemistry results for the EARMP community program, 2011 to 2013.

Chemical[1]	Uranium City							
	2012					2014		
	1	2	3	4	5	1	2	3
Metals								
Aluminum	5.3	5.6	8.7	4.4	5.4	9.2	7.7	11
Barium	12	11	12	12	9.9	14	14	14
Boron	8	8	9	6	7	3	4	3
Cadmium	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Chromium	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Copper	3.9	3.4	3.7	3.5	2.9	4.1	4.1	4.1
Iron	11	9.7	10	12	8.7	14	14	14
Lead	0.01	0.01	0.02	0.01	<0.01	<0.01	0.06	0.01
Manganese	280	330	280	200	140	430	440	450
Molybdenum	0.2	0.2	0.3	0.4	<0.1	0.2	0.2	0.2
Nickel	0.54	0.47	0.58	0.44	0.51	0.37	0.41	0.5
Selenium	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Silver	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Thallium	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Tin	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Titanium	<0.05	<0.05	<0.05	0.05	0.05	0.17	0.13	0.21
Uranium	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01
Zinc	6.3	5.9	6.2	6.3	4.2	6.7	6.5	6.4
Physical Properties								
Moisture (%)	84.40	83.99	84.04	85.06	84.43	89.62	89.29	89.56
Radionuclides								
Lead-210 (Bq/g)	0.002	0.004	0.003	0.002	0.02	0.001	0.005	0.002
Polonium-210 (Bq/g)	0.0021	0.005	0.0032	0.0015	0.002	0.0031	0.003	0.0028
Radium-226 (Bq/g)	0.0014	0.006	0.0016	0.1	0.001	0.0007	0.003	0.001
Thorium-230 (Bq/g)	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001
Trace Elements								
Antimony	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Beryllium	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cobalt	0.01	<0.01	0.01	<0.01	0.02	<0.01	<0.01	0.06
Strontium	1.3	1.1	1.4	1.3	1.6	1.3	1.3	1.4
Vanadium	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

APPENDIX D, TABLE 8

Detailed blueberry chemistry results for the EARMP community program, 2011 to 2013.

Chemical[1]	Wollaston Lake/Hatchet Lake																			
	2011					2012					2013					2014				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Metals																				
Aluminum	6.1	3.9	8.7	6.2	5.9	14	20	12	26	22	7.4	6.8	6.8	6.7	7.3	11	11	10	12	12
Barium	16	17	15	14	15	10	9.9	7.7	16	16	13	13	11	12	10	21	19	15	22	18
Boron	7	4	7	13	6	5	7	17	7	8	4	5	4	5	5	5	5	8	6	5
Cadmium	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Chromium	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Copper	2.9	1.7	3	3	2.6	3.4	2.9	2.5	2.6	3.5	1.8	1.7	2.1	1.6	1.6	4.5	4.4	4.5	4.8	4.5
Iron	6.8	5.4	12	9.5	9	17	17	15	21	20	10	9	10	9	9	17	18	18	17	17
Lead	0.04	<0.01	0.01	<0.01	<0.01	<0.01	0.01	0.03	0.02	0.02	0.03	<0.01	0.02	<0.01	<0.01	<0.01	0.02	0.02	<0.01	0.02
Manganese	270	290	300	290	260	150	160	110	180	190	150	140	150	140	150	100	81	90	84	59
Molybdenum	<0.1	<0.1	<0.1	0.1	0.1	0.3	0.1	0.1	0.2	0.2	0.1	<0.1	0.2	<0.1	<0.1	0.3	0.4	0.3	0.4	0.4
Nickel	0.66	0.28	0.59	0.5	0.59	0.66	0.44	0.68	0.5	0.68	0.23	0.19	0.24	0.19	0.24	1.1	0.92	1.2	1.3	1.5
Selenium	<0.05	<0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Silver	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Thallium	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Tin	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Titanium	<0.05	0.07	0.13	0.09	0.09	0.38	1.3	0.4	0.91	0.51	0.1	0.05	0.05	0.11	0.09	0.16	0.17	0.14	0.17	0.25
Uranium	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	0.03	<0.01	<0.01
Zinc	5.7	3	5.5	5.1	4.4	6.6	7.7	4.7	6.7	8	6.4	6	6.2	5.6	5.3	7.3	8.1	7.3	7.5	7.4
Physical Properties																				
Moisture (%)	85.31	84.46	84.79	84.44	85.11	84.44	84.81	84.13	85.40	84.17	85.61	85.47	85.66	85.56	85.51	86.34	86.99	86.93	87.01	86.51
Radionuclides																				
Lead-210 (Bq/g)	0.005	0.009	0.008	0.01	0.004	<0.001	0.001	0.001	<0.001	<0.01	0.008	0.002	<0.002	0.012	<0.004	0.001	<0.001	<0.001	<0.001	<0.001
Polonium-210 (Bq/g)	0.002	0.002	0.004	0.004	0.004	0.0012	0.0012	0.0008	0.0017	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	6E-04	0.001	5E-04	0.0008	0.0007
Radium-226 (Bq/g)	<0.001	0.001	<0.001	0.006	<0.001	0.0024	0.0032	0.0032	0.0057	0.004	0.008	0.005	0.006	0.009	0.004	0.004	0.002	0.004	0.005	0.004
Thorium-230 (Bq/g)	<0.002	<0.002	<0.002	<0.002	<0.002	<0.001	<0.001	<0.0009	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.0009
Trace Elements																				
Antimony	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Beryllium	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cobalt	0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	0.02	0.01	<0.01	0.01	<0.01	<0.01	0.01	<0.01	0.02	0.01	0.2	0.03	0.14
Strontium	3.4	1.2	3.1	3.8	3.6	1.3	1.2	1.1	1.4	2.8	1.8	2.3	1.6	1.8	1.5	2.6	3.7	1.5	2.6	5.4
Vanadium	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

[1]All concentrations are in µg/g dry weight, unless specified otherwise.

APPENDIX D, TABLE 9

Detailed bog cranberry chemistry results for the EARMP community program, fall 2011.

Chemical[1]	Camsell Portage							Uranium City												
	2011					2014		2011					2013					2014	
	1	2	3	4	5	1	2	1	2	3	4	5	1	2	3	4	5	1	2
Metals																			
Aluminum	17	17	19	19	16	17	16	20	29	15	19	27	21	56	50	45	28	22	23
Barium	14	13	14	15	9.1	15	15	13	9.1	11	9.4	13	10	12	14	12	10	13	12
Boron	9	8	8	10	9	6	5	10	9	8	14	10	18	16	15	7	5	6	6
Cadmium	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	0.02	0.02	0.02	<0.01	<0.01
Chromium	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5
Copper	4.5	4.2	4.8	4.9	3.6	4	4.3	5.9	3.6	2.6	2.6	3.2	2.6	2.1	2.3	2.4	3.2	5.6	6.4
Iron	9.7	9.7	10	10	11	15	14	16	20	9.5	13	14	13	12	26	26	14	12	14
Lead	<0.01	<0.01	<0.01	0.01	0.02	0.02	<0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.2	0.03	0.02	0.03	0.04	0.03
Manganese	110	120	100	100	80	170	170	150	110	300	210	220	210	150	100	81	100	160	160
Molybdenum	0.1	0.1	0.2	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.1	0.1	0.1	0.2	0.2
Nickel	0.46	0.46	0.49	0.65	0.37	0.54	0.52	1.1	0.8	0.28	0.5	0.42	0.2	0.28	0.42	0.46	0.36	0.59	0.59
Selenium	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Silver	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Thallium	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Tin	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Titanium	0.06	0.06	<0.05	0.08	0.17	0.08	0.08	0.07	0.47	0.06	0.18	0.14	0.11	0.56	0.6	0.7	0.33	0.16	0.11
Uranium	0.01	<0.01	0.01	<0.01	0.02	<0.01	0.01	0.01	0.02	<0.01	0.01	<0.01	<0.01	0.03	<0.01	<0.01	<0.01	0.02	<0.01
Zinc	6.6	6.4	6.5	6.7	5.3	6.2	6.2	8.9	7.3	5.7	5.2	6.8	7.2	8.9	7.4	7	7	6.2	7.1
Physical Properties																			
Moisture (%)	87.53	87.36	87.13	86.87	86.78	86.06	86.2	88.39	87.69	87.22	86.9	87.44	84.89	85.4	85.63	85.57	85.84	86.38	86.63
Radionuclides																			
Lead-210 (Bq/g)	0.007	0.006	0.020	0.013	0.018	0.001	<0.001	0.005	0.005	0.016	0.010	0.016	0.016	0.009	<0.004	<0.004	<0.004	0.005	0.002
Polonium-210 (Bq/g)	0.003	0.002	0.001	0.002	0.003	0.001	0.0011	0.003	0.003	0.013	0.002	0.005	0.002	0.001	0.001	<0.001	0.001	0.004	0.004
Radium-226 (Bq/g)	0.004	0.002	0.006	0.004	0.002	8E-04	<0.0005	0.002	0.007	<0.0009	<0.0009	<0.0009	<0.001	0.002	0.003	0.002	0.003	0.003	0.002
Thorium-230 (Bq/g)	<0.002	<0.002	<0.002	<0.002	<0.002	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.001	<0.001
Trace Elements																			
Antimony	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Beryllium	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cobalt	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.14	0.02	0.02	0.02	0.01	0.02	0.02	0.02	0.02	0.05	0.04
Strontium	2.3	2	2.1	2.5	1.8	2.3	2.3	3.4	2.5	2.5	2.4	1.8	2.1	2.2	2.2	2.1	1.5	1.6	1.5
Vanadium	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

[1] All concentrations are in µg/g dry weight, unless specified otherwise.

APPENDIX D, TABLE 10

Detailed barren-ground caribou flesh chemistry results for the EARMP community program, 2011 to 2013/2014.

Chemical[1]	Black Lake																				Camsell Portage	
	2011/2012					2012/2013					2013/2014					2014/2015					2012/2013	
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2
Metals																						
Aluminum	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Barium	0.2	0.03	0.04	0.03	0.25	0.04	0.02	0.02	0.01	<0.01	0.02	0.05	0.11	0.33	0.02	0.04	0.03	0.02	0.03	0.02	0.02	<0.01
Boron	0.7	0.2	0.6	<0.2	0.9	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cadmium	0.002	0.004	0.002	<0.002	<0.002	0.004	0.003	0.002	0.006	0.005	0.002	<0.002	0.003	0.005	0.004	0.002	<0.002	<0.002	<0.002	<0.002	0.004	0.003
Chromium	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1
Copper	4.3	2.6	3.0	3.0	3.3	3.3	4.2	3.4	3.0	3.1	4.6	3.3	3.2	2.4	4.6	4.9	3.5	4.6	4.8	2.5	3.7	3.7
Iron	43	29	40	38	45	33	49	44	50	43	49	38	58	37	52	46	32	53	48	37	50	46
Lead	0.013	<0.002	0.008	<0.002	0.005	0.003	0.31	0.003	0.48	0.013	<0.002	0.008	0.56	0.028	0.004	0.015	0.009	0.007	0.005	0.006	<0.002	<0.002
Manganese	0.45	0.29	0.35	0.38	0.42	0.28	0.53	0.34	0.3	0.26	0.48	0.56	0.48	0.34	0.42	0.49	0.34	0.54	0.48	0.3	0.35	0.26
Molybdenum	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Nickel	0.01	<0.01	<0.01	0.02	0.02	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	0.01	<0.01	0.04	0.04	<0.01	<0.01
Selenium	0.15	0.2	0.21	0.19	0.2	0.15	0.27	0.18	0.2	0.18	0.24	0.15	0.21	0.17	0.21	0.22	0.18	0.24	0.22	0.18	0.23	0.22
Silver	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Thallium	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Tin						<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Titanium	0.08	0.08	0.07	0.07	0.08	0.09	0.11	0.08	0.08	0.08	0.06	0.1	0.07	0.1	0.09	0.07	0.07	0.07	0.07	0.06	0.08	0.07
Uranium	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Zinc	17	31	21	16	29	26	29	33	30	32	19	21	23	30	20	14	23	15	15	46	26	25
Physical Properties																						
Moisture (%)	74.06	74.11	74.21	73.58	72.53	76.52	73.84	75.07	75.5	74.1	70.87	67.93	65.21	69.85	71.08	73.58	73.63	72.12	72.03	73.79	72.15	72.11
Radionuclides																						
Lead-210 (Bq/g)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	0.001	<0.001	<0.001
Polonium-210 (Bq/g)	0.011	0.0095	0.0083	0.01	0.011	0.0007	0.0052	0.0065	0.0085	0.0094	0.023	0.014	0.013	0.015	0.012	0.019	0.014	0.015	0.016	0.013	0.017	0.015
Radium-226 (Bq/g)	<0.00006	<0.00006	<0.00006	<0.00006	<0.00006	0.008	<0.005	<0.005	<0.005	<0.005	<0.00006	0.0003	<0.00006	0.0003	0.0001	0.0002	0.0002	<0.00008	0.0001	<0.00006	<0.00008	<0.0001
Thorium-230 (Bq/g)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0002	<0.0001	<0.0002	<0.0001	<0.0001	<0.0002	<0.0002
Trace Elements																						
Antimony	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	0.06	0.04	0.38	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Arsenic	0.02	0.01	0.02	0.02	0.02	0.04	0.02	0.03	0.02	0.02	0.01	0.01	0.01	<0.01	<0.01	0.02	0.03	0.02	0.04	0.02	<0.01	<0.01
Beryllium	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Cobalt	0.005	0.004	0.003	0.003	0.003	0.008	0.005	0.004	0.004	0.005	<0.002	0.002	0.002	<0.002	0.002	0.009	0.006	0.009	0.008	0.016	0.002	<0.002
Strontium	0.03	0.03	0.02	0.02	0.03	0.05	0.04	0.03	0.03	0.03	0.03	0.06	0.12	0.27	0.05	0.04	0.03	0.02	0.02	0.03	0.04	0.04
Vanadium	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

APPENDIX D, TABLE 10

Detailed barren-ground caribou flesh chemistry results for the EARMP community program, 2011 to 2013/2014.

Chemical[1]	Fond du Lac					Fond du Lac														Stony Rapids												
	2011/2012					2012/2013						2013/2014					2014/2015			2012/2013					2013/2014			2014/2015				
	1	2	3	4	5	1	2	3	4	5	6	1	2	3	4	5	1	2	3	1	2	3	4	5	1	2	3	1	2	3	4	5
Metals																																
Aluminum	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	<0.5	<0.5	0.6	<0.5	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Barium	0.08	0.02	0.03	0.04	0.02	0.05	0.14	0.11	0.08	0.12	0.32	0.01	<0.01	0.02	0.02	0.04	<0.01	<0.01	0.18	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	0.04	0.12	0.03	0.01	0.02	0.02	0.01
Boron	0.4	0.5	0.3	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.8	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cadmium	0.004	0.002	0.003	0.002	<0.002	0.004	0.002	0.005	<0.002	0.003	0.14	0.004	0.004	<0.002	0.003	0.002	0.004	0.004	0.008	0.003	0.004	0.002	0.003	0.002	<0.002	0.002	0.008	0.007	<0.002	<0.002	0.006	0.003
Chromium	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	0.1	<0.1
Copper	3.9	2.3	2.2	4.1	3.1	1.8	2.6	3.2	3.3	3.9	4.3	4.2	4.3	2.6	4	4.2	3.5	2.6	1.9	4.0	4.6	4.7	3.3	4.1	2.4	3.4	1.8	2.4	4.3	3.6	3.8	3.5
Iron	48	31	29	48	32	30	36	43	50	39	45	46	47	27	48	49	47	36	36	52	55	46	51	55	38	38	40	34	43	46	47	50
Lead	0.008	<0.002	<0.002	<0.002	<0.002	0.006	0.006	0.008	<0.002	0.014	0.004	0.002	<0.002	<0.002	0.003	<0.002	<0.002	<0.002	0.004	0.002	0.065	0.009	0.003	0.004	0.005	0.052	0.032	0.004	0.002	<0.002	0.009	<0.002
Manganese	0.39	0.26	0.25	0.43	0.32	0.24	0.26	0.33	0.37	0.53	0.8	0.38	0.35	0.32	0.39	0.44	0.41	0.33	0.29	0.46	0.55	0.42	0.44	0.44	0.3	0.28	0.36	0.21	0.47	0.41	0.42	0.51
Molybdenum	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Nickel	0.08	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	0.01	<0.01	<0.01	0.18	<0.01	0.06	<0.01	<0.01	<0.01	<0.01	<0.01
Selenium	0.15	0.15	0.15	0.18	0.15	0.12	0.13	0.16	0.2	0.14	0.34	0.19	0.17	0.17	0.18	0.22	0.19	0.17	0.16	0.21	0.26	0.21	0.21	0.21	0.16	0.14	0.11	0.17	0.18	0.22	0.2	0.19
Silver	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Thallium	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Tin						0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Titanium	0.08	0.08	0.07	0.08	0.09	0.08	0.05	0.09	0.08	0.08	0.08	0.06	0.13	0.12	0.05	0.13	0.07	0.07	0.08	0.03	0.12	0.2	0.09	0.11	0.13	0.04	0.08	0.07	0.07	0.06	0.08	0.07
Uranium	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001
Zinc	22	56	59	16	49	40	15	23	12	16	18	28	22	30	26	24	22	28	59	22	13	16	29	15	40	17	48	41	15	15	18	20
Physical Properties																																
Moisture (%)	71.24	76.19	74.05	73.91	73.77	71.94	71.95	72.9	73.46	71.99	68.45	62.73	71.46	75.61	72.28	70.81	73.17	73	71.99	70.86	70.2	70	70.4	71	74.41	74.78	67.52	73.27	73.71	72.62	72.05	71.78
Radionuclides																																
Lead-210 (Bq/g)	<0.001	<0.001	<0.001	<0.001	<0.001	0.003	0.002	0.002	<0.001	<0.001	0.008	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.002	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	0.001	<0.001	<0.001
Polonium-210 (Bq/g)	0.0042	0.0084	0.0098	0.0096	0.0021	0.015	0.015	0.015	0.016	0.016	0.021	0.012	0.012	0.011	0.01	0.014	0.0071	0.008	0.0075	0.026	0.001	<0.001	0.012	0.025	0.0083	0.01	0.0059	0.013	0.017	0.025	0.033	0.02
Radium-226 (Bq/g)	<0.00005	0.0002	0.0001	<0.00004	0.00008	<0.00006	<0.00006	<0.00006	<0.00007	<0.00007	0.00009	<0.00006	<0.00006	<0.00006	0.00007	0.00008	<0.00006	0.00008	<0.00006	0.002	<0.001	<0.001	0.002	0.001	<0.00006	<0.00006	<0.00005	<0.00007	0.0001	0.00008	<0.00007	0.0001
Thorium-230 (Bq/g)	<0.0001	0.0003	<0.0002	<0.00008	<0.0001	<0.0001	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0002	<0.0002	<0.0001	<0.0002
Trace Elements																																
Antimony	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Arsenic	<0.01	<0.01	<0.01	0.02	0.02	0.01	0.01	0.02	0.02	0.02	0.01	<0.01	<0.01	0.03	<0.01	<0.01	0.01	<0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.03	0.02	0.01	0.02	0.02	0.03	0.02	0.01
Beryllium	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Cobalt	0.004	0.006	0.006	0.003	0.003	0.003	<0.002	0.003	0.002	0.006	0.013	0.005	0.004	0.005	0.004	<0.002	0.004	0.004	0.006	0.006	0.003	0.004	0.004	0.003	0.004	0.002	0.003	0.005	0.004	0.002	0.005	0.004
Strontium	0.07	0.05	0.06	0.05	0.03	0.06	0.07	0.07	0.05	0.08	0.14	0.04	0.04	0.03	0.05	0.05	0.03	0.04	0.07	0.02	0.03	0.02	<0.02	<0.02	0.05	0.04	0.17	0.03	0.02	0.03	0.04	0.03
Vanadium	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

APPENDIX D, TABLE 10

Detailed barren-ground caribou flesh chemistry results for the EARMP community program, 2011 to 2013/2014.

Chemical[1]	Wollaston Lake/Hatchet Lake																		
	2011/2012					2012/2013					2013/2014					2014/2015			
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4
Metals																			
Aluminum	<0.5	<0.5	<0.5	<0.5	<0.5	0.7	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.5
Barium	0.04	0.09	0.03	0.04	0.09	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01
Boron	0.4	<0.2	0.4	0.3	0.4	0.3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cadmium	0.005	0.008	0.002	0.004	0.002	0.008	0.003	<0.002	0.004	0.003	0.002	0.002	<0.002	<0.002	0.003	0.003	0.003	0.005	0.027
Chromium	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Copper	3.1	3.2	2.5	3.9	3.1	4.4	2.3	2.4	3.6	3.5	3.6	3.3	2.3	3.8	3.5	3.1	3	2.8	3.9
Iron	37	35	26	45	29	63	36	43	52	43	42	43	23	44	45	42	36	27	52
Lead	0.013	0.002	<0.002	0.046	0.051	0.006	0.003	0.013	0.014	<0.002	<0.002	<0.002	0.003	0.005	<0.002	<0.002	1.1	<0.002	<0.002
Manganese	0.35	0.29	0.25	0.53	0.33	0.46	0.27	0.29	0.5	0.44	0.31	0.37	0.21	0.37	0.41	0.39	0.29	0.29	0.4
Molybdenum	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Nickel	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Selenium	0.15	0.17	0.17	0.19	0.13	0.18	0.13	0.12	0.19	0.17	0.21	0.13	0.16	0.2	0.18	0.14	0.16	0.16	0.19
Silver	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Thallium	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Tin						<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Titanium	0.07	0.07	0.07	0.07	0.07	0.11	0.09	0.11	0.08	0.09	0.03	0.06	0.06	0.07	0.11	0.06	0.06	0.06	0.06
Uranium	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Zinc	33	30	30	20	29	16	52	42	20	16	16	20	18	13	23	33	29	23	19
Physical Properties																			
Moisture (%)	74.5	73.6	75.2	74.14	75.2	72.82	78.45	77.45	73.98	72.58	75.58	74.52	75	74.43	73.43	76.77	73.74	74.44	68.86
Radionuclides																			
Lead-210 (Bq/g)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Polonium-210 (Bq/g)	0.016	0.013	0.011	0.015	0.011	0.011	0.012	0.0095	0.019	0.014	0.0082	0.0083	0.012	0.016	0.01	0.0079	0.0072	0.0047	0.0053
Radium-226 (Bq/g)	<0.00006	<0.00007	<0.00006	<0.00006	<0.00005	<0.00008	<0.00006	<0.00006	0.0001	<0.00007	<0.00008	<0.00009	0.0002	<0.00006	0.00007	<0.00006	<0.00005	<0.00006	0.0001
Thorium-230 (Bq/g)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0002	<0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Trace Elements																			
Antimony	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	<0.02	<0.02
Arsenic	<0.01	<0.01	0.01	0.02	0.02	0.02	0.02	0.01	0.01	<0.01	0.02	<0.01	0.01	0.02	<0.01	<0.01	0.01	0.02	<0.01
Beryllium	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Cobalt	0.003	0.003	0.007	0.005	0.004	0.008	0.006	0.006	0.004	0.006	0.003	0.006	<0.002	0.003	0.004	0.017	0.006	0.003	0.008
Strontium	0.04	0.03	0.03	0.02	0.03	0.05	0.03	0.03	0.02	<0.02	0.02	0.04	0.05	0.03	0.04	0.02	0.03	0.02	0.03
Vanadium	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

[1]All concentrations are presented on a µg/g wet weight basis, unless specified otherwise.

APPENDIX D, TABLE 11

Detailed moose flesh chemistry results for the EARMP community program, 2011 to 2014.

Chemical[1]	Uranium City Study Area											Camsell Portage Study Area							
	2011/2012				2012/2013			2013/2014			2014/2015	2011/2012				2013/2014		2014/2015	
	Mackintosh Bay	Deadman Channel	Melville Lake	Orbit Bay	Ace Creek	Gunnar	Milliken Lake	Sample 1	Sample 2	Sample 3	Sample 1	Sample 1	Sample 2	Sample 3	Sample 4	Sample 1	Sample 2	Sample 1	Sample 2
Metals																			
Aluminum	2.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	0.6	1.5	3	<0.5	3.8	<0.5	<0.5	0.6	4.4
Barium	0.03	0.02	<0.01	0.02	0.04	0.22	0.08	0.02	0.09	0.02	<0.01	0.04	0.15	0.03	0.02	0.05	0.02	0.07	0.04
Boron	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cadmium	0.003	<0.002	0.002	0.004	0.011	0.006	0.003	0.004	0.005	0.003	0.056	<0.002	0.006	0.002	<0.002	0.002	0.003	0.003	0.05
Chromium	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Copper	1.3	1.8	3.8	1.7	1.2	1.4	1.3	1.6	2	1.5	1.9	2.0	1.2	1.8	1.6	1.5	1.8	0.56	1.4
Iron	30	25	42	42	35	34	26	34	37	26	36	21	25	25	29	29	34	22	32
Lead	<0.002	<0.002	<0.002	<0.002	0.005	0.004	0.003	0.003	0.025	0.003	0.003	0.018	0.019	<0.002	0.002	0.004	<0.002	0.029	0.011
Manganese	0.16	0.16	0.33	0.14	0.17	0.18	0.15	0.14	0.24	0.14	0.22	0.2	0.18	0.21	0.13	0.13	0.16	0.38	0.27
Molybdenum	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Nickel	0.01	0.02	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Selenium	0.11	0.16	0.18	0.09	0.1	0.11	0.1	0.09	0.12	0.08	0.14	0.2	0.06	0.1	0.12	0.06	0.06	0.08	0.08
Silver	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Thallium	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Tin	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Titanium	0.14	0.08	0.1	0.13	0.08	0.08	0.06	0.06	0.06	0.06	0.09	0.09	0.25	0.09	0.08	0.07	0.07	0.1	0.22
Uranium	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002
Zinc	50	49	31	49	75	56	55	44	48	56	52	24	38	47	45	59	45	63	58
Physical Properties																			
Moisture (%)	74.42	72.36	72.74	73.84	69.87	74.09	74.28	74.01	71.23	74.71	75.54	75.01	73.92	75.02	75.12	73.27	72.65	73.14	70.99
Radionuclides																			
Lead-210 (Bq/g)	0.002	<0.001	<0.001	<0.001	<0.00002	<0.00001	<0.00002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0003	<0.001	<0.001	<0.001	<0.001
Polonium-210 (Bq/g)	<0.0002	0.0005	0.0023	0.0003	0.0002	0.0004	<0.0002	0.0004	0.0005	0.0003	0.0016	0.0019	0.0004	0.0003	-	0.0004	0.0002	0.0004	<0.0002
Radium-226 (Bq/g)	<0.00006	<0.0001	<0.00006	<0.00007	<0.00009	<0.00006	<0.00008	0.00008	0.0001	<0.00005	<0.00005	<0.00008	<0.00007	0.0002	<0.00006	0.00006	0.00007	<0.00006	<0.00006
Thorium-230 (Bq/g)	<0.0001	<0.0002	<0.0001	<0.0001	<0.0002	0.0001	<0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0002	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001
Trace Elements																			
Antimony	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	<0.02
Arsenic	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Beryllium	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Cobalt	0.013	0.014	0.003	0.017	0.016	0.01	0.012	0.01	0.011	0.008	0.009	0.014	0.011	0.022	0.01	0.012	0.015	0.02	0.016
Strontium	<0.02	<0.02	0.04	0.03	0.08	0.05	0.05	0.02	0.03	0.03	0.04	0.1	0.06	0.03	0.02	0.06	0.04	0.06	0.09
Vanadium	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

[1]All concentrations are presented on a µg/g wet weight basis, unless specified otherwise.

APPENDIX D, TABLE 12

Detailed snowshoe hare flesh chemistry results for the EARMP community program, 2011 to 2014.

Chemical[1]	Uranium City							Camsell Portage							
	2011					2014		2011					2014		
	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Sample 1	Sample 2	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Sample 1	Sample 2	Sample 3
Metals															
Aluminum	0.6	<0.5	<0.5	0.5	<0.5	<0.5	0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Barium	0.27	0.05	0.09	0.04	0.05	0.13	0.28	0.09	0.04	0.08	0.03	0.08	0.18	0.1	0.12
Boron	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cadmium	0.004	<0.002	0.003	0.003	<0.002	<0.002	0.005	0.003	0.004	0.01	<0.002	0.002	<0.002	0.004	0.006
Chromium	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Copper	1.5	1.5	1	1.4	1.1	2.4	2.1	1.8	2.4	1.5	1.8	1.5	1.9	2.1	1.8
Iron	27	22	22	14	20	21	31	31	28	24	22	24	19	25	20
Lead	<0.002	0.003	<0.002	<0.002	0.003	0.002	<0.002	0.003	<0.002	0.006	<0.002	<0.002	0.003	0.002	0.002
Manganese	0.27	0.2	0.37	0.29	0.18	0.24	1.1	0.72	0.46	0.32	0.22	0.22	0.36	0.28	0.39
Molybdenum	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Nickel	0.01	0.02	<0.01	<0.01	<0.01	0.02	0.05	0.03	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	0.07
Selenium	0.13	0.05	0.1	0.12	0.06	0.15	0.07	0.04	0.03	0.13	0.02	0.06	0.03	0.08	0.14
Silver	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Thallium	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Tin	0.02	<0.01	0.02	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	0.04	0.02	0.02	<0.01	<0.01	<0.01
Titanium	0.07	0.04	0.07	0.08	0.15	0.05	0.1	0.08	0.07	0.05	0.08	0.04	0.09	0.06	0.09
Uranium	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Zinc	25	24	17	10	19	10	16	14	11	23	13	13	13	11	16
Physical Properties															
Moisture (%)	77.55	77.14	77.49	78.65	78.51	70.07	65.8	77.61	76.53	75.79	77.6	78.45	71.24	75.39	73.89
Radionuclides															
Lead-210 (Bq/g)	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Polonium-210 (Bq/g)	0.0014	0.0013	0.0015	0.00003	0.0016	0.0022	0.0015	0.0011	0.0018	0.0021	0.0013	0.0012	0.0017	0.002	0.0018
Radium-226 (Bq/g)	<0.00006	0.00009	0.0001	0.0001	0.00009	0.0001	0.00007	0.0001	<0.00007	0.0001	0.0001	0.0002	0.0001	<0.00006	0.0001
Thorium-230 (Bq/g)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Trace Elements															
Antimony	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Arsenic	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Beryllium	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Cobalt	0.007	0.005	0.004	0.004	0.006	0.005	0.004	0.01	0.006	0.007	0.003	0.004	<0.002	0.005	0.032
Strontium	0.39	0.1	0.28	0.1	0.19	0.14	0.19	0.27	0.07	0.22	0.05	0.09	0.2	0.1	0.29
Vanadium	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

[1]All concentrations are presented on a µg/g wet weight basis, unless specified otherwise.

APPENDIX D, TABLE 13

Detailed barren-ground caribou and moose organ chemistry results for the EARMP community program, 2015.

Chemical[1]	Fond du Lac			Uranium City		Camsell Portage				Wollaston Lake
	Caribou Kidney			Moose Liver	Moose Kidney	Moose Liver		Moose Kidney		Caribou Liver
	Sample 1	Sample 2	Sample 3	Sample 1	Sample 1	Sample 1	Sample 2	Sample 1	Sample 2	Sample 1
Metals										
Aluminum	<0.5	<0.5	<0.5	1.3	<0.5	<0.5	1.1	<0.5	1.2	0.7
Barium	0.58	0.45	0.41	0.1	0.27	0.1	0.12	0.23	0.44	0.02
Boron	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cadmium	6.2	9.6	6.8	0.48	8	1.7	1.1	8.6	6.5	0.65
Chromium	<0.5	<0.5	<0.5	<0.1	<0.5	<0.1	<0.1	<0.5	<0.5	<0.1
Copper	3.6	4.9	4.3	28	3	38	47	2.1	3.8	26
Iron	40	60	60	120	41	100	150	70	90	140
Lead	0.073	0.068	0.078	0.008	0.002	<0.002	0.003	<0.002	0.002	0.097
Manganese	1.8	2	1.8	1.4	1	1.3	2.2	1.2	2	3.6
Molybdenum	0.12	0.11	0.14	0.65	0.24	0.9	1	0.21	0.42	1
Nickel	<0.01	0.01	0.01	<0.01	0.04	<0.01	<0.01	0.05	0.06	<0.01
Selenium	1.3	1.6	1.4	0.2	0.67	0.22	0.21	0.71	0.78	0.4
Silver	0.003	0.003	<0.002	0.01	<0.002	0.009	0.014	<0.002	<0.002	0.12
Thallium	0.02	<0.01	0.03	<0.01	<0.01	<0.01	<0.01	0.02	<0.01	<0.01
Tin	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Titanium	0.06	0.08	0.07	<0.5	0.04	<0.5	<0.5	0.03	0.08	<0.5
Uranium	<0.001	<0.001	<0.001	<0.01	<0.001	<0.01	<0.01	<0.001	<0.001	<0.01
Zinc	23	28	27	14	25	15	20	16	23	24
Physical Properties										
Moisture (%)	48.56	66.49	42.82	58.58	78.25	74.05	70.38	76.94	78.33	71.23
Radionuclides										
Lead-210 (Bq/g)	0.072	0.054	0.042	0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Polonium-210 (Bq/g)	0.088	0.081	0.086	0.0021	0.0032	0.0036	0.0024	0.0018	0.0023	0.0093
Radium-226 (Bq/g)	0.0003	0.0009	0.0005	0.00007	<0.00006	0.0001	<0.0001	<0.00006	0.0005	0.0002
Thorium-230 (Bq/g)	<0.0003	<0.0006	<0.0005	<0.0001	<0.0001	<0.0001	<0.0002	<0.0001	<0.0004	<0.0001
Trace Elements										
Antimony	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Arsenic	<0.01	0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02
Beryllium	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Cobalt	0.029	0.044	0.046	0.054	0.097	0.25	0.2	0.12	0.2	0.075
Strontium	0.18	0.18	0.16	0.1	0.11	0.06	0.07	0.17	0.13	0.04
Vanadium	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

[1]All concentrations are presented on a µg/g wet weight basis, unless specified otherwise.