APPENDIX 3-IX

REGIONAL ENVIRONMENTAL SAMPLING DATA

TABLE OF CONTENTS

SECTION **PAGE**

LIST OF TABLES

LIST OF FIGURES

LIST OF ATTACHMENTS

1 INTRODUCTION

A regional environmental sampling program was proposed in June 2007 for the oil sands development area south of Fort McMurray. The 2007 sampling program included five proposed projects:

- Canadian Natural Resources Limited's (Canadian Natural's) Kirby In-Situ Oil Sands Project;
- Canadian Natural's Primrose East Project;
- ConocoPhillips Canada's (ConocoPhillips') Surmont Project;
- EnCana Oil Sands Ltd.'s (EnCana's) Christina Lake Thermal Project; and
- MEG Energy Corp.'s (MEG's) Christina Lake Regional Project (CLRP) – Phase 3.

Soil and vegetation (alder, berries, cattail and Labrador tea) collected between August 2006 through September 2007 were included in the regional database. Vegetation and soil samples were analyzed for metals as well as Polycyclic Aromatic Hydrocarbons (PAHs). The locations where soil and vegetation samples were collected as part of each project are provided in Figure 1. Table 1 provides the number and type of samples collected for each project.

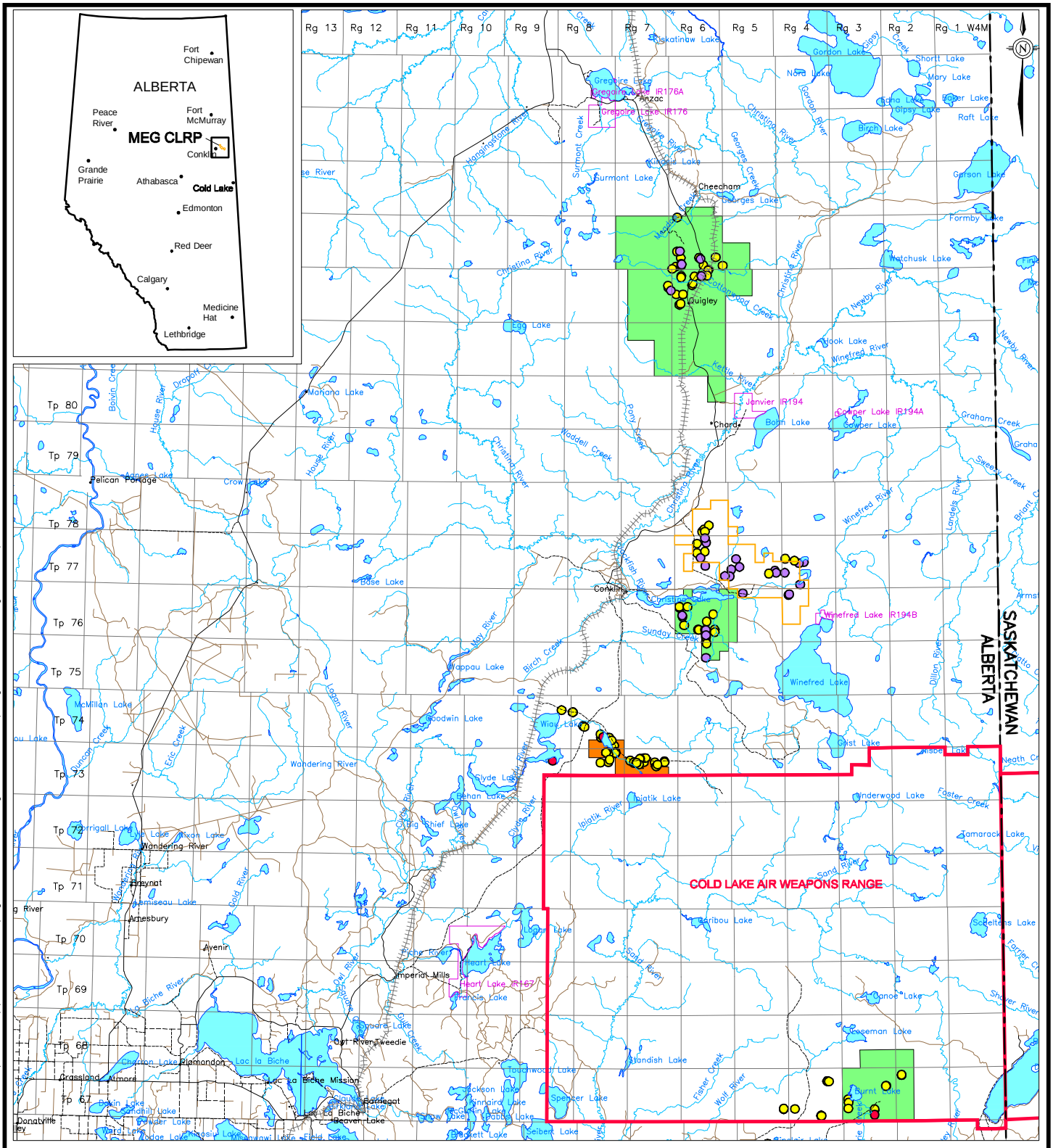
Table 1 Sample Size of Soil and Vegetation Collected in the Sampling Program by Each Proposed Project

Proposed Project	Soil	Alder	Berries	Cattail	Labrador Tea	Year Sampling Initiated
Canadian Natural Kirby	75	18	14	17	16	July 2007
Canadian Natural Primrose East	40	10	10	10	10	July 2007
ConocoPhillips Surmont	3	2	2	1	1	July 2007
MEG CLRP Phase 3	11	11	n/d	9	11	September 2007
EnCana Christina Lake	17	n/a	n/a	n/a	n/a	August 2006
Total Samples	**146**	**41**	**26**	**37**	**38**	

Note: The sample sizes in the table contain all samples including composites and triplicates.

n/a = Not analyzed.

n/d = No data.



LEGEND

- ROAD
- RAILWAY
- RIVER
- OPEN WATER
- INDIAN RESERVE
- COLD LAKE AIR WEAPONS RANGE
- MEG LEASE BOUNDARY
- EXISTING AND APPROVED DEVELOPMENT
- PLANNED DEVELOPMENT
- VEGETATION AND SOIL SAMPLING LOCATION
- VEGETATION ONLY SAMPLING LOCATION
- FISH TISSUE SAMPLING LOCATION

NOTE

* Also known as the Hamlet of Janvier

REFERENCE

ALBERTA NTDB DIGITAL DATA OBTAINED FROM GEOMATICS CANADA, AUGUST 2001. DATUM: NAD 83 PROJECTION: UTM ZONE 12

PROJECT

CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL INTEGRATION OF DATA COLLECTION FOR SOUTH ATHABASCA IN-SITU OIL SANDS PROJECTS: SAMPLING LOCATIONS (SUMMER 2007)

MEG ENERGY CORP.

PROJ	07-1346-0009		FILE No.	Sampling location
DESIGN	LV	11/10/07	SCALE	AS SHOWN REV. 0
CADD	TY	22/02/08		
CHECK	BK	31/03/08		
REVIEW	IGG	07/04/08		

FIGURE: 1

L:\2007\1346 Oil Sands\07-1346-0009-MEG EXPANSION\Vol 3-Appendix 3-XI\Fig 1 Soil and vegetation sampling locations.dwg Apr 09, 2008 - 10:34am

Table 2 provides a list of where summary statistics and comparative box plots can be found in this appendix, which describes the environmental media collected to date. The tables of summary statistics of each media type analyzed indicate that the majority of samples of soil and vegetation submitted for PAH analysis reported concentrations below the detection limit. There were also some metals that reported a large percentage of non-detected concentrations (e.g., beryllium, cadmium, selenium) and others that report 100% non-detect (e.g., silver, thallium and tin).

Table 2 Reference to Tables and Figures for Details on Summary Statistics and Distribution of Concentrations Among Samples

Media	Tables of Summary Statistics	Figures of Box Plots
soil	Attachment A, Tables A-1 to A-10	Attachment A, Figures A-1 to A-22
alder	Attachment B, Tables B-1 to B-8	Attachment B, Figures B-1 to B-20
berries	Attachment C, Tables C-1 to C-6	Attachment C, Figures C-1 to C-25
cattail	Attachment D, Tables D-1 to D-8	Attachment D, Figures D-1 to D-23
Labrador Tea	Attachment E, Tables E-1 to E-8	Attachment E, Figures E-1 to E-20

Box plots of metal concentrations in soil and vegetation are used to show the distribution of concentrations among the samples collected for the various projects. Box plots of PAH concentrations were not provided as most samples reported non-detected levels. Box plots were used to provide an unbiased summary of the environmental data collected for each project. Hypothesis testing (analysis of variance) was not considered at this time to determine if concentrations among the projects are statistically different; reasons for excluding this detailed analysis are as follows:

- the monitoring program is incomplete and other projects are likely to be added to the regional database;
- the proposed program for evaluating and managing the regional data collected to date is currently under review;
- detailed statistical analysis for every measured chemical would be premature at this stage of the monitoring program and could lead to unwanted or inaccurate conclusions about the data;
- some metals and all PAHs are 100% or largely non-detect and need to be analyzed in a separate manner; and
- before any analysis of variance is done, the compatibility of sampling methods, soil types, surface geology and vegetation habitat must be determined for each project.

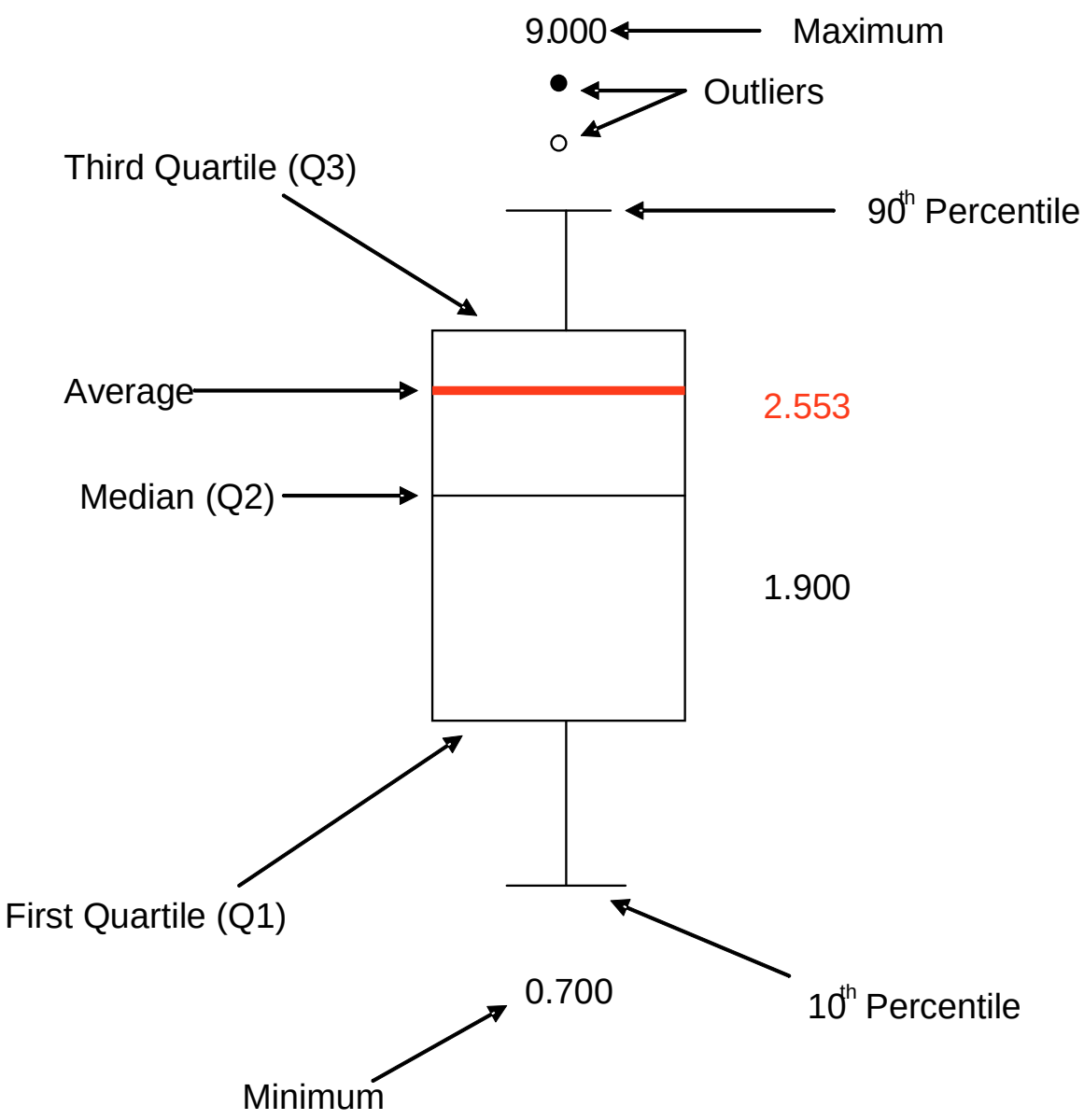
The following describe the parameters of the box plots detailed in Figure 2:

- The top of the box is the 75th percentile (3rd quartile), while the bottom of the box represents the 25th percentile (1st quartile).
- The black line in the middle of the box represents the median. The red line in the box is the mean of the data (typically the mean is always higher than the median).
- The ends of the whiskers are the 10th and 90th percentiles.
- The circles represent outliers. These circles are filled in when the values are more than three times the distance between the quartiles (Q3 – Q1), and are empty if they are within that interval (AddinSoft 2001).

For the statistical analysis of metal and PAH concentrations in soil and vegetation, a decision matrix was developed to determine whether it would be useful to provide statistical summaries for the various projects:

- if one or more soil or vegetation concentrations were detected, summary statistics were provided;
- if the soil or vegetation concentrations in the samples were all non-detect, summary statistics were not provided, however the range of detection limits were noted; and
- for all non-detect concentrations in soil and vegetation, a proxy value of half the detection limit was used for the statistical summary tables as well as for the box plots.

Environmental assessments typically use half the analytical detection limit when calculating summary statistics for data sets with non-detect values. This approach is considered acceptable by Alberta Environment (Saffran and Trew 1996), the United States Environmental Protection Agency (U.S. EPA 1996) and the British Columbia Ministry of the Environment (B.C. MOE 1995) for characterizing environmental concentrations.



PROJECT

CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

DESCRIPTION OF BOX PLOTS

MEG ENERGY CORP.

PROJECT 07.1346.0009.8800			FILE No. Descrip-Box Plots	
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	PSR	28/02/08	**FIGURE: 2**	
CHECK	BK	07/04/08		
REVIEW	IGG	07/04/08		

L:\2007\1346 Oil Sands\07-1346-0009-MEG EXPANSION\Vol 3-Appendix 3-XI\Fig 2 Description of box plots.dwg Apr 09, 2008 - 10:37am

2 DISCUSSION OF RESULTS

2.1 SOIL MEASUREMENTS

Sample sizes and levels of detected values vary among the projects (Table 1) and in some cases, samples sizes are very low (i.e., n = 3 for ConocoPhillips Surmont). For the most part, the distribution of soil concentrations for metals among the projects appear to be similar (i.e., within a factor of 10). The following observations were made for PAH and metal concentrations in soil:

- A number of metals that are not detected in samples collected from the MEG CLRP Phase 3 site are detected in samples collected from the other project sites (i.e., beryllium, cadmium, lead, mercury, molybdenum, selenium, uranium).
- Aluminum, barium, beryllium, bismuth, cadmium, lead, strontium, uranium and vanadium soil concentrations are observed to be very similar among the projects or within the region.
- Mean arsenic, chromium, cobalt, copper, nickel, titanium and zinc concentrations measured at the MEG CLRP Phase 3 and EnCana Christina Lake sites appear to be lower than those observed at the Canadian Natural Kirby and Primrose East sites.
- Mean boron concentrations at the EnCana Christina Lake and ConocoPhillips Surmont sites appear to be higher than those observed at the Canadian Natural Kirby and Primrose East sites.
- Mean manganese and molybdenum concentrations at the EnCana Christina Lake site appear to be lower than those observed at the Canadian Natural Kirby and Primrose East sites.
- Polycyclic Aromatic Hydrocarbons concentrations in soil are essentially non-detect. Fluoranthene, naphthalene, methyl naphthalene and phenanthrene were detected on a very infrequent basis (i.e., 1%).

2.2 ALDER MEASUREMENTS

Sample sizes and levels of detected values vary among the projects (Table 1) and in some cases, sample sizes are very low (i.e., n = 2 for ConocoPhillips Surmont). For the most part, the distribution of alder concentrations for metals among the projects appears to be similar (i.e., within a factor of 10). The following observations were made for PAH and metal concentrations in alder:

- Antimony, arsenic, beryllium, cadmium, mercury, selenium, silver, thallium, tin, uranium and vanadium are entirely or largely non-detect.

- Specifically at the MEG CLRP Phase 3 site, antimony, arsenic, beryllium, cadmium, selenium, silver, thallium and uranium are entirely non-detect. The majority of tin (10/11) and mercury (8/11) samples are also non-detect.
- Mean concentrations of aluminum, cobalt, manganese, strontium, titanium and vanadium collected at the MEG CLRP Phase 3 site appear to be higher than those observed at the Canadian Natural Kirby and Primrose East and ConocoPhillips Surmont sites.
- Mean concentrations of arsenic, barium, boron, chromium, copper, lead, mercury and nickel are observed to be similar among the projects.
- Mean concentrations of molybdenum, tin and zinc at the MEG CLRP Phase 3 site appear to be lower than those observed at Canadian Natural Kirby and Primrose East and ConocoPhillips Surmont sites.
- All PAH concentrations at the MEG CLRP Phase 3 site are non-detect. Other locations report very limited samples detecting acenaphthene, C2 substituted naphthalene, methyl naphthalene, naphthalene, phenanthrene.

2.3 BERRY MEASUREMENTS

No berries were collected or analyzed from the MEG CLRP Phase 3 proposed project area. For the remaining proposed project locations in the region, sample sizes and levels of detected values vary among the projects (Table 1) and in some cases, samples sizes were very low (i.e., n = 2 for ConocoPhillips Surmont). For the most part, the distribution of berry concentrations for metals among the projects appears to be similar (i.e., within a factor of 10). The following observations were made for PAH and metal concentrations in berries:

- antimony, arsenic, beryllium, bismuth, mercury, selenium, silver, thallium, tin, uranium and vanadium are entirely or largely non-detect;
- concentrations of PAH are essentially non-detect with very limited samples detecting acenaphthene, biphenyl, C3 substituted naphthalene, C4 substituted naphthalene, naphthalene and phenanthrene;
- mean concentrations of aluminum are observed to be different among the projects; and
- mean concentrations of barium, boron, cadmium, chromium, cobalt, copper, lead, manganese, molybdenum, nickel, strontium, titanium, vanadium and zinc are observed to be similar among the projects.

2.4 CATTAIL MEASUREMENTS

Sample sizes and levels of detected values vary among the projects (Table 1) and in some cases, sample sizes are very low (i.e., n = 1 for ConocoPhillips Surmont). For the most part, the distribution of cattail concentrations for metals among the projects appears to be similar (i.e., within a factor of 10). The following observations were made for PAH and metal concentrations in cattail:

- Antimony, beryllium, silver and tin are entirely or largely non-detect.
- Specifically at the MEG CLRP Phase 3 site, beryllium and silver are non-detect. The majority of cadmium (5/9) and selenium (7/9) samples are also non-detect.
- Mean concentrations of aluminum, chromium, copper, molybdenum, nickel, selenium, titanium, uranium and vanadium at the MEG CLRP Phase 3 site appear to be lower than those at the Canadian Natural Kirby and Primrose East sites.
- Mean manganese concentrations at the Canadian Natural Primrose East site appear to be lower than those observed at the Canadian Natural Kirby and MEG CLRP Phase 3 sites.
- Mean concentrations of arsenic, barium, boron, cadmium, cobalt, mercury, strontium, thallium and zinc are observed to be similar among the projects.
- Concentrations of PAH are entirely non-detect.

2.5 LABRADOR TEA MEASUREMENTS

Sample sizes and levels of detected values vary among the projects (Table 1) and in some cases, sample sizes are very low (i.e., n = 1 for ConocoPhillips Surmont). For the most part, the distribution of Labrador tea concentrations for metals among the projects appear to be similar (i.e., within a factor of 10). The following observations were made for PAH and metal concentrations in Labrador tea:

- Antimony, arsenic, beryllium, bismuth, selenium, silver, thallium, tin and uranium are entirely or largely non-detect.
- Specifically at the MEG CLRP Phase 3 site, arsenic, beryllium, cadmium, selenium and uranium are entirely non-detect. The majority of antimony (9/11), mercury (9/11), molybdenum (8/11), silver (10/11), thallium (9/11) and tin (9/11) samples are also non-detect.

- Mean concentrations of most of the metals are observed to be similar among the projects.
- Mean concentrations of manganese concentrations at the MEG CLRP Phase 3 site appear to be higher than those observed at the Canadian Natural Kirby and Primrose East sites.
- Mean concentrations of aluminum, chromium, lead, nickel, titanium and concentrations at the Canadian Natural Kirby site appear to be higher than those observed at the MEG CLRP Phase 3 and Canadian Natural Primrose East sites.
- Concentrations of PAH are essentially non-detect with very limited samples detecting acenaphthene, biphenyl, C2 substituted naphthalene, C3 substituted naphthalene, C4 substituted naphthalene, methyl naphthalene, naphthalene and phenanthrene.

3 REFERENCES

AddinSoft©. 2001. XLstatPro Software Manual.

BC MOE (British Columbia Ministry of the Environment). 1995. Contaminated Site Statistical Application Guidance Document No.5. Nonparametric Methods. A guide for data analysts and interpreters on statistical methods that do not require a distribution model. March 1995.

Saffran K.A. and Trew D.O. 1996. Sensitivity of Alberta lakes to acidifying deposition: An update of maps with emphasis on 109 northern lakes. Water Management Division, Alberta Environmental Protection. Edmonton, AB. 70 pp.

U.S. EPA (United States Environmental Protection Agency). 1996. Soil Screening guidance: User's Guide. Office of Solid Waste and Emergency Response Washington DC. Publication 9355.4-23. Second Edition. July 1996.

ATTACHMENT A

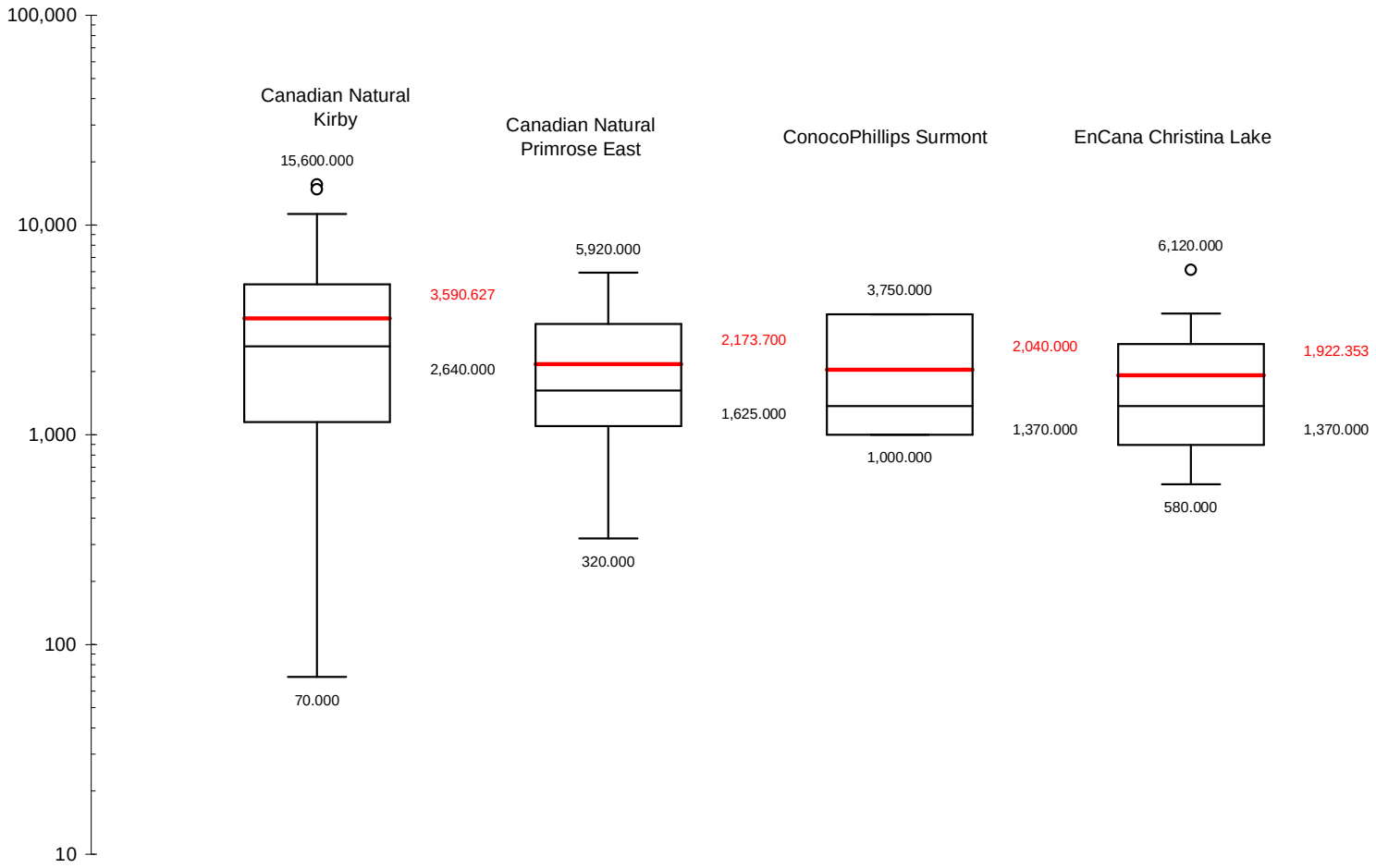
SUMMARY OF MEASURED SOIL CONCENTRATIONS
AS PART OF THE
OIL SANDS REGIONAL ENVIRONMENTAL SAMPLING PROGRAM

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

L:\2007\1346 Oil Sands\07-1346-0009-MEG EXPANSION\8800\8810\Appendix C1-Attachment A\Fig A-1_Regional Distribution-Alum Conc in soil.dwg Apr 09, 2008 - 10:43am



PROJECT

CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

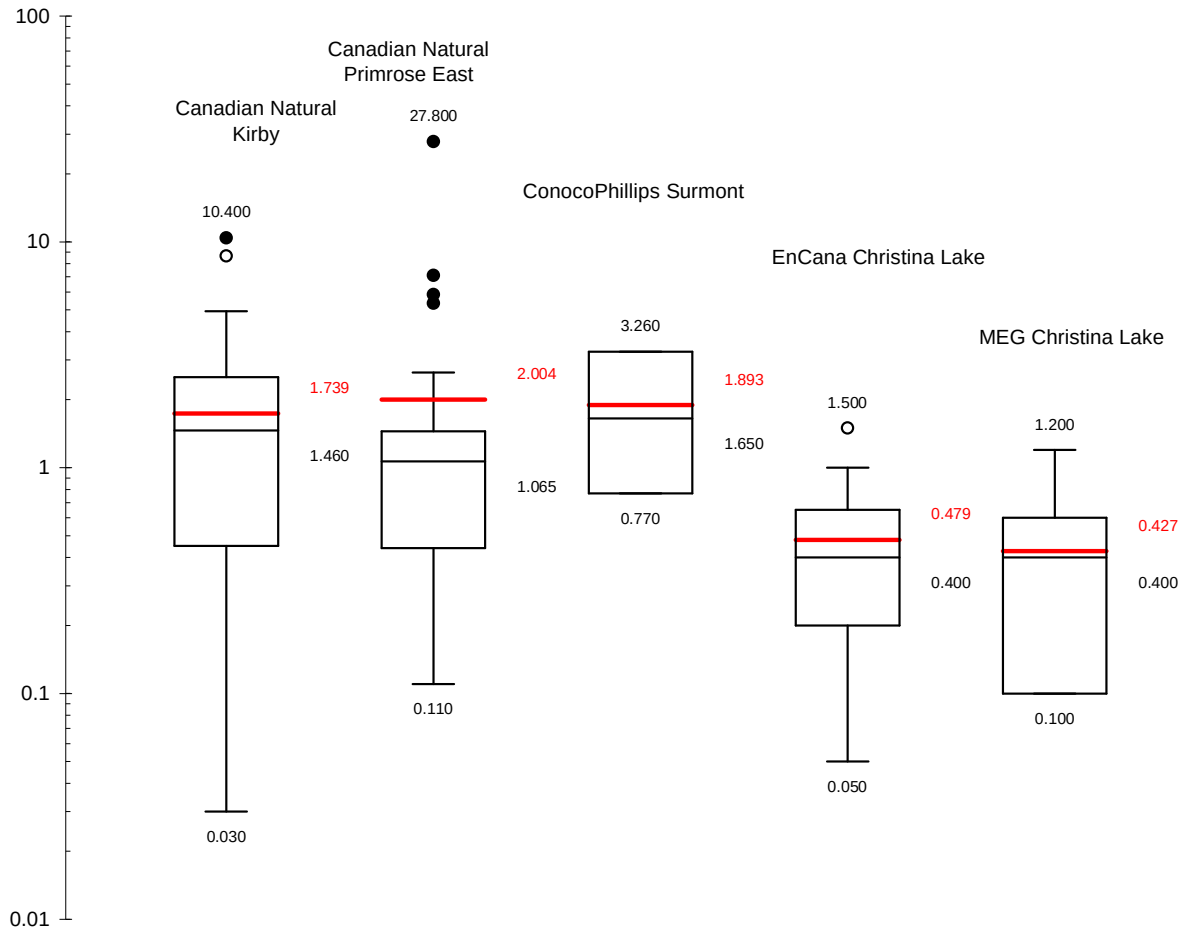
TITLE

REGIONAL DISTRIBUTION OF ALUMINUM CONCENTRATIONS IN SOIL [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.	Regional-Alum-Soil
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	PSR	27/02/08		
CHECK	BK	07/04/08		
REVIEW	IGG	07/04/08		

FIGURE: A-1



PROJECT

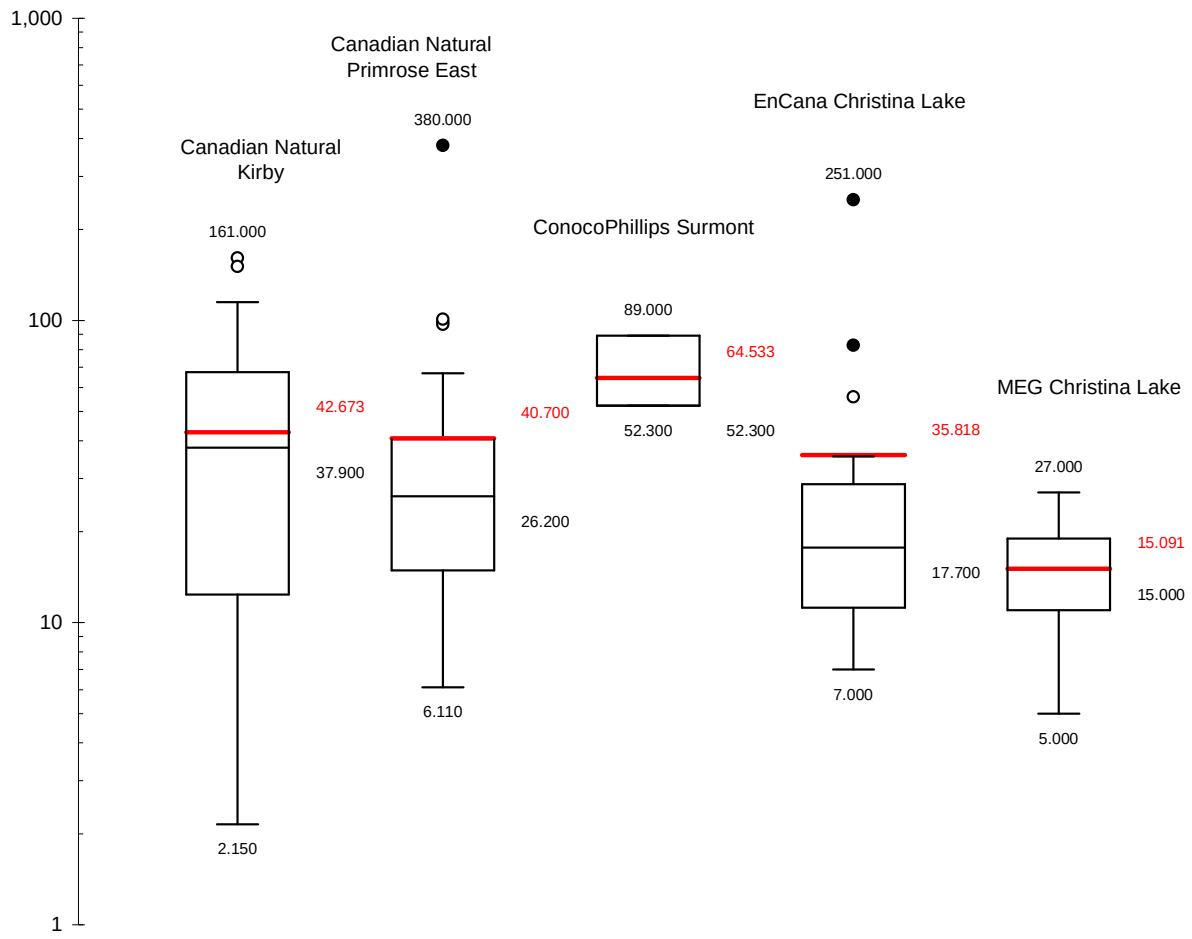
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF ARSENIC CONCENTRATIONS IN SOIL [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No. Regional-Arsenic-Soil	
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	PSR	27/02/08	FIGURE: A-2	
CHECK	BK	07/04/08		
REVIEW	IGG	07/04/08		



PROJECT

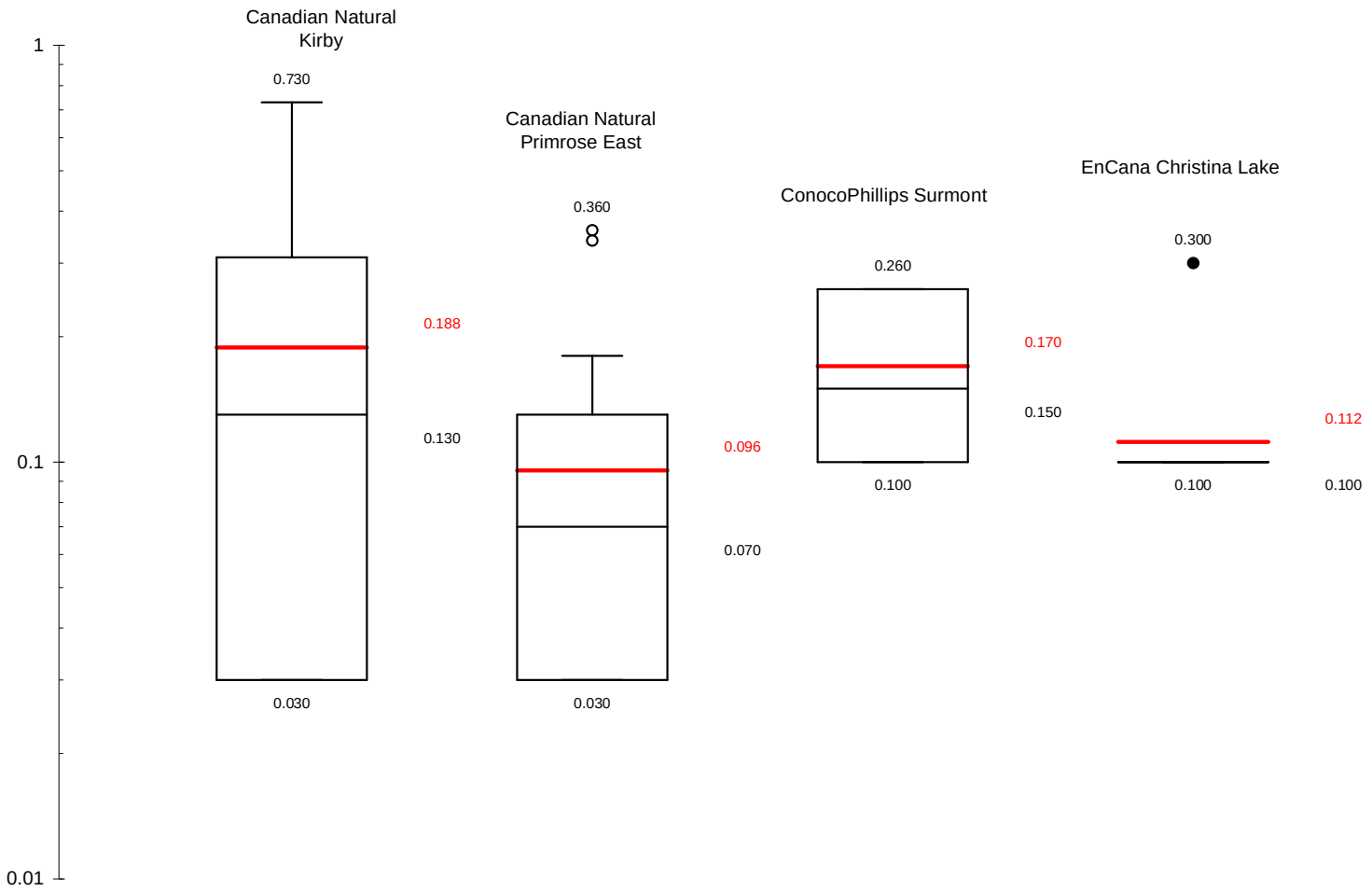
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF BARIUM CONCENTRATIONS IN SOIL [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No. Regional-Arsenic-Soil	
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	TRE	27/02/08	FIGURE: A-3	
CHECK	BK	07/04/08		
REVIEW	IGG	07/04/08		



PROJECT

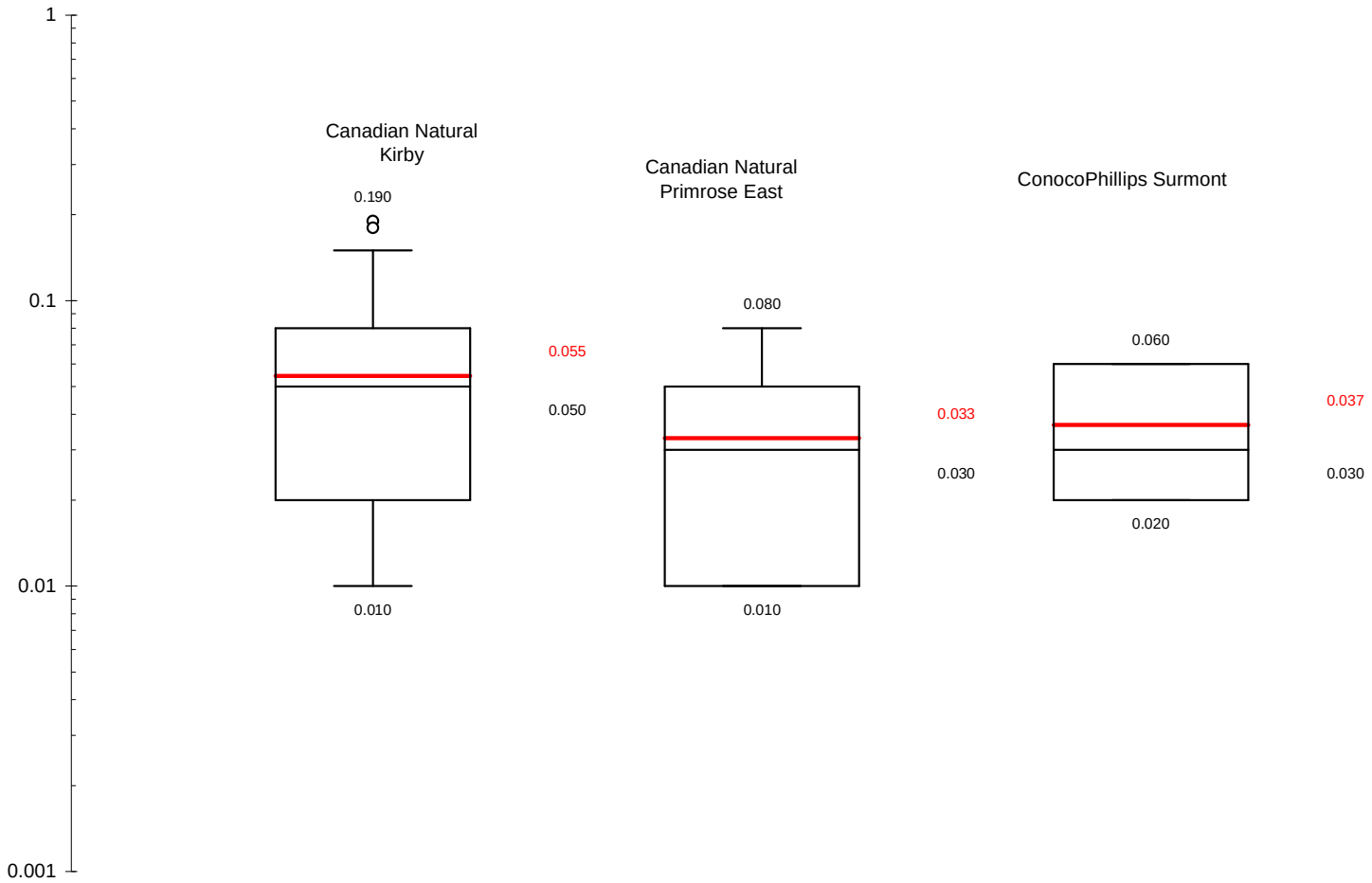
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF BERYLLIUM CONCENTRATIONS IN SOIL [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No. Region-Beryllium-Soil	
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	PSR	27/02/08	**FIGURE: A-4**	
CHECK	BK	07/04/08		
REVIEW	IGG	07/04/08		



PROJECT

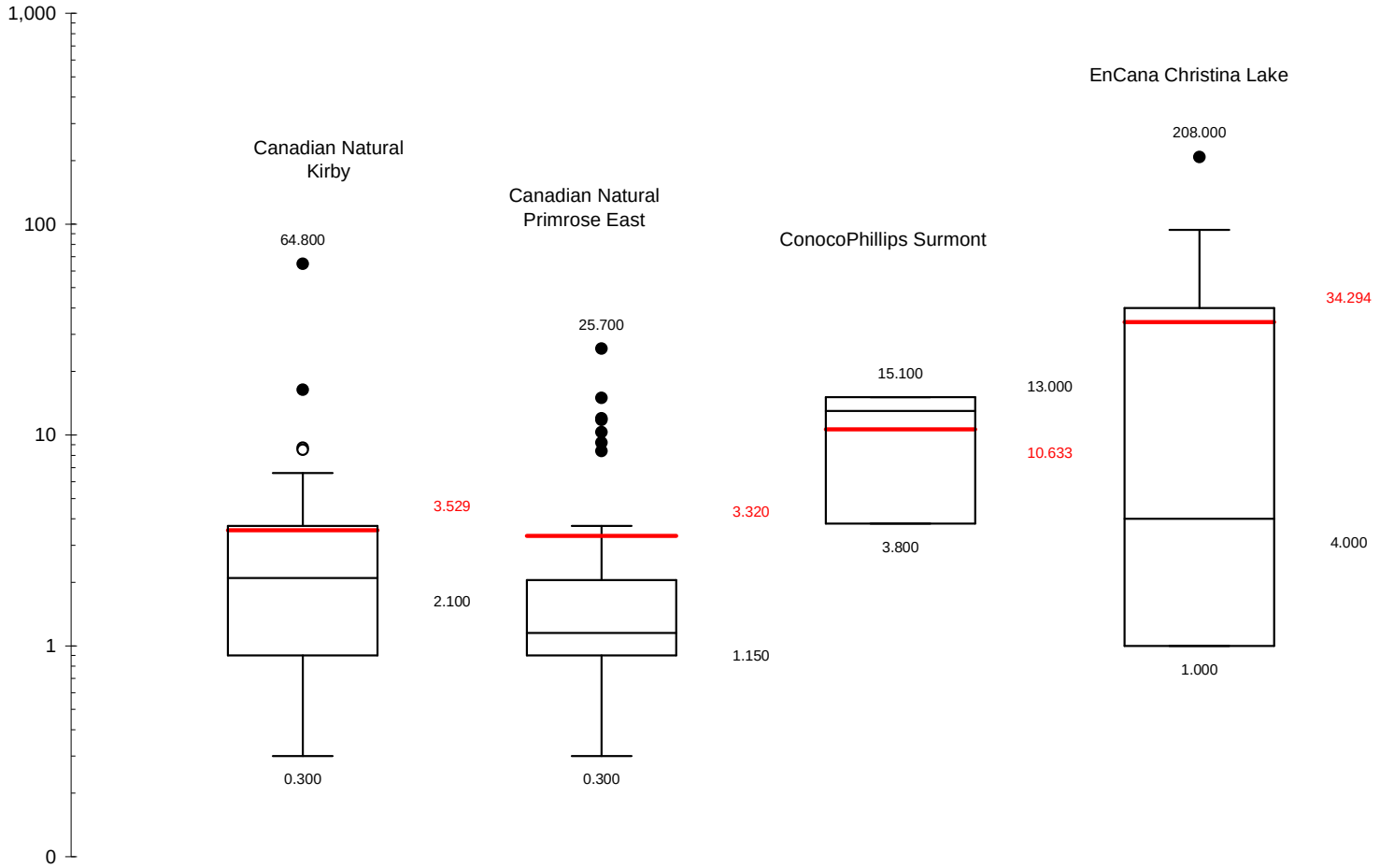
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF BISMUTH CONCENTRATIONS IN SOIL [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No. Region-Bismuth-Soil	
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	PSR	27/02/08	**FIGURE: A-5**	
CHECK	BK	07/04/08		
REVIEW	IGG	07/04/08		



PROJECT

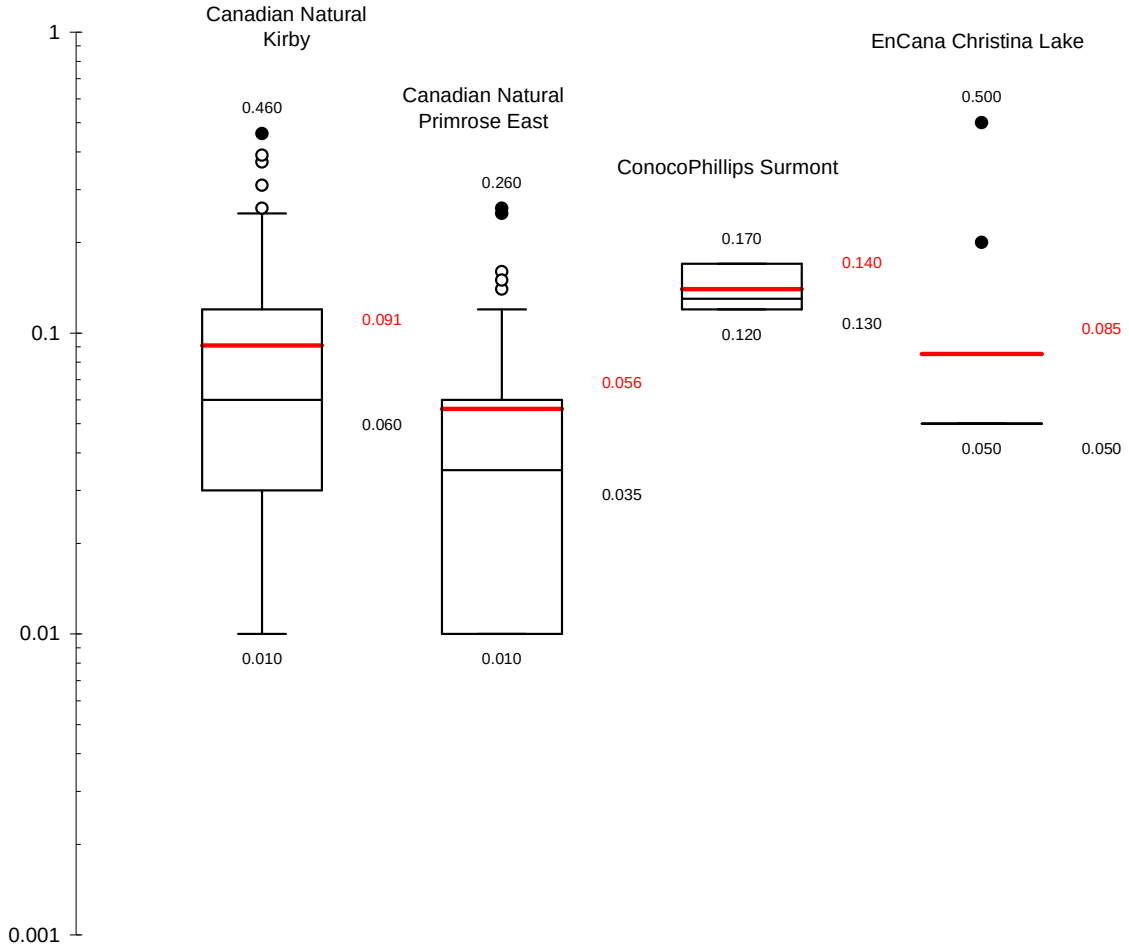
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF BORON CONCENTRATIONS IN SOIL [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.	Region-Boron-Soil	
DESIGN	BK	26/02/08	SCALE	AS SHOWN	REV. 0
CADD	PSR	27/02/08	FIGURE: A-6		
CHECK	BK	07/04/08			
REVIEW	IGG	07/04/08			



PROJECT

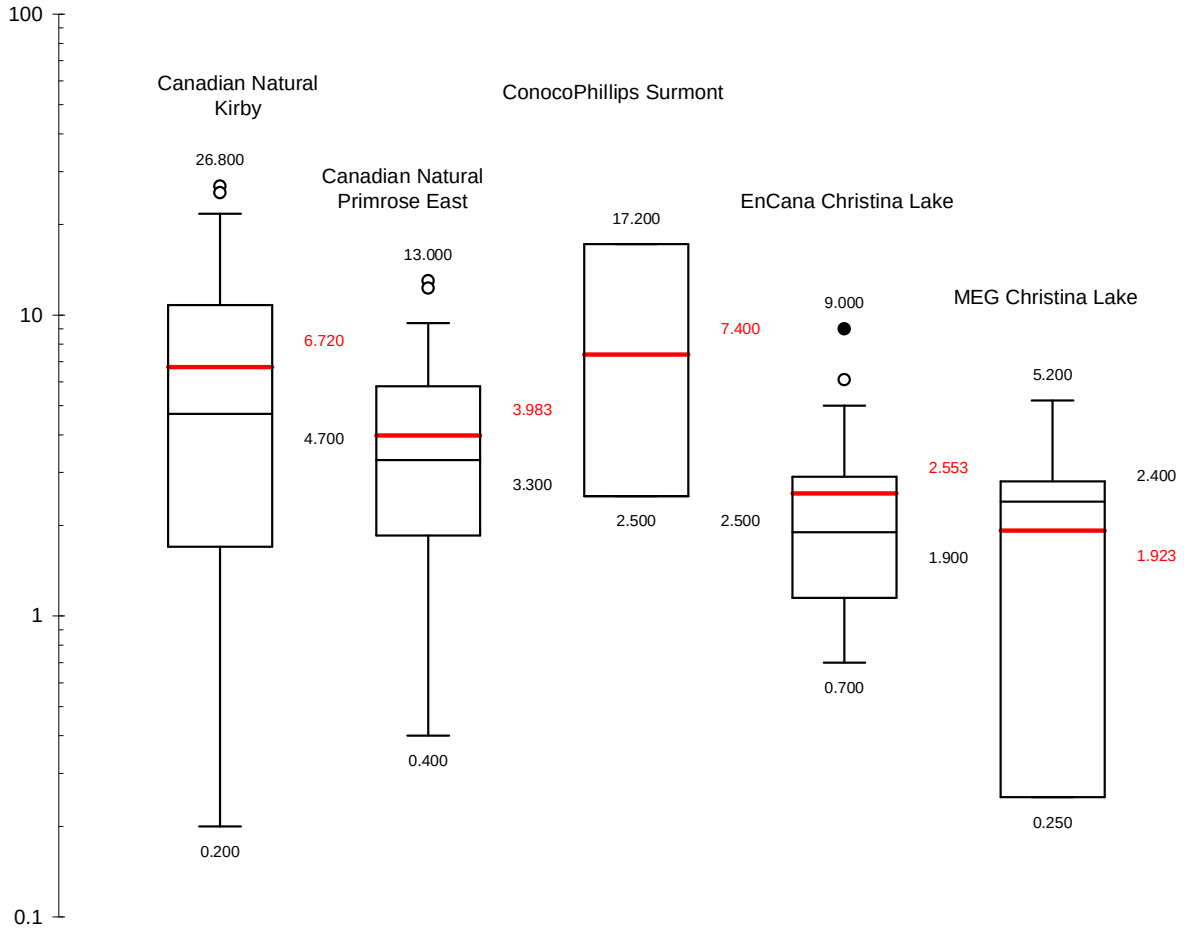
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF CADMIUM CONCENTRATIONS IN SOIL [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No. Region-Cadmium-Soil	
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	PSR	27/02/08	FIGURE: A-7	
CHECK	BK	07/04/08		
REVIEW	IGG	07/04/08		



PROJECT

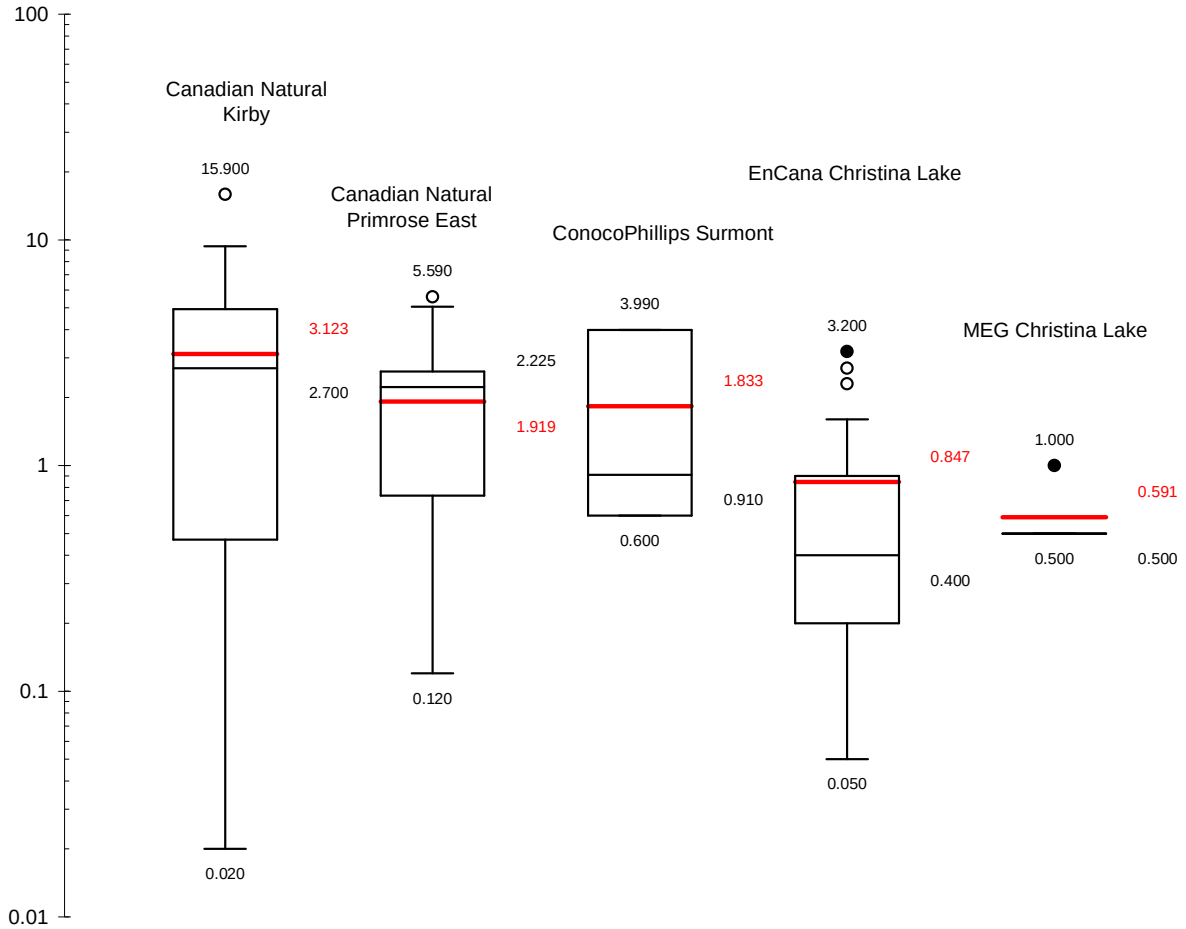
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF CHROMIUM CONCENTRATIONS IN SOIL [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE	NoRegion-Chromium-Soil
DESIGN	BK	26/02/08	SCALE	AS SHOWN REV. 0
CADD	PSR	27/02/08	**FIGURE: A-8**	
CHECK	BK	07/04/08		
REVIEW	IGG	07/04/08		



PROJECT

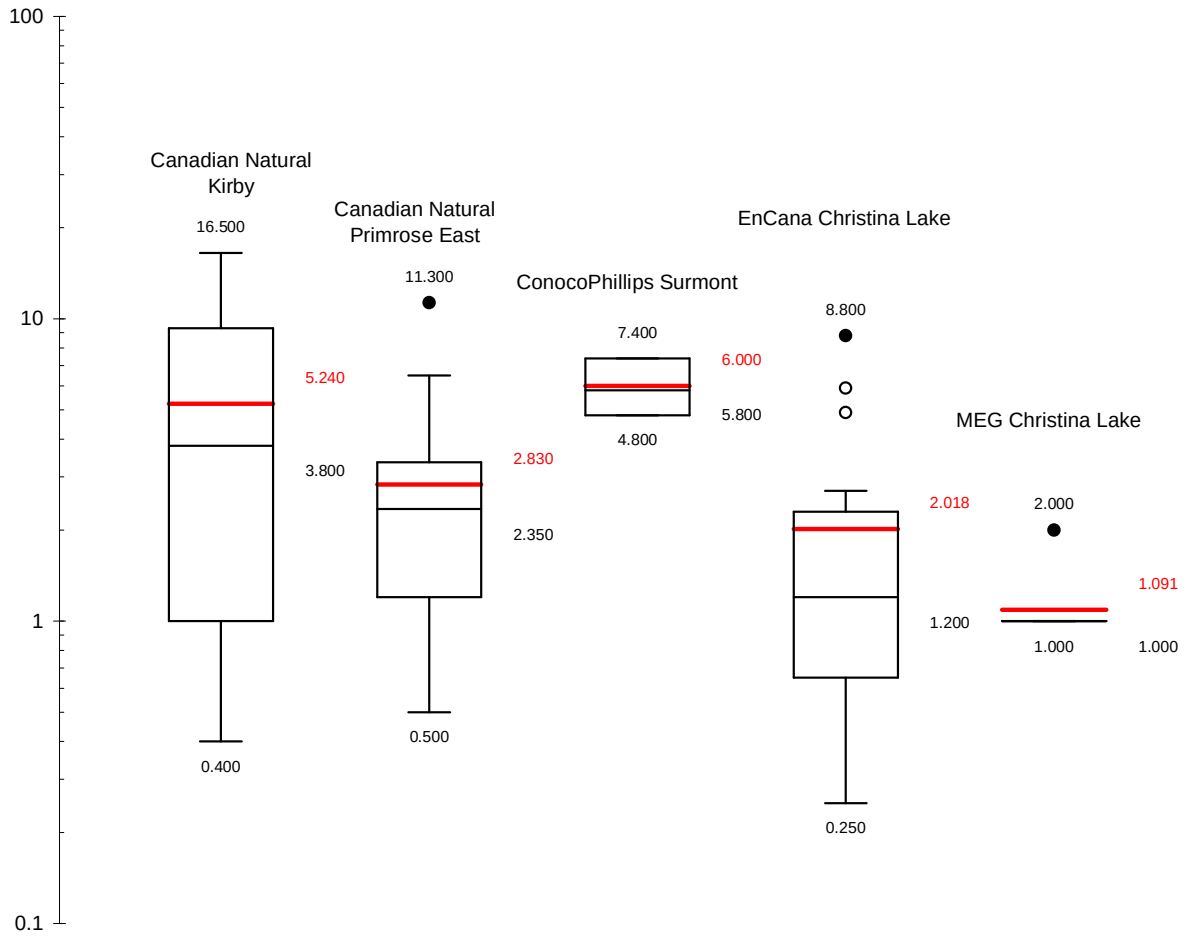
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF COBALT CONCENTRATIONS IN SOIL [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.	Region-Cobalt-Soil
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	PSR	27/02/08	**FIGURE: A-9**	
CHECK	BK	07/04/08		
REVIEW	IGG	07/04/08		



PROJECT

CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

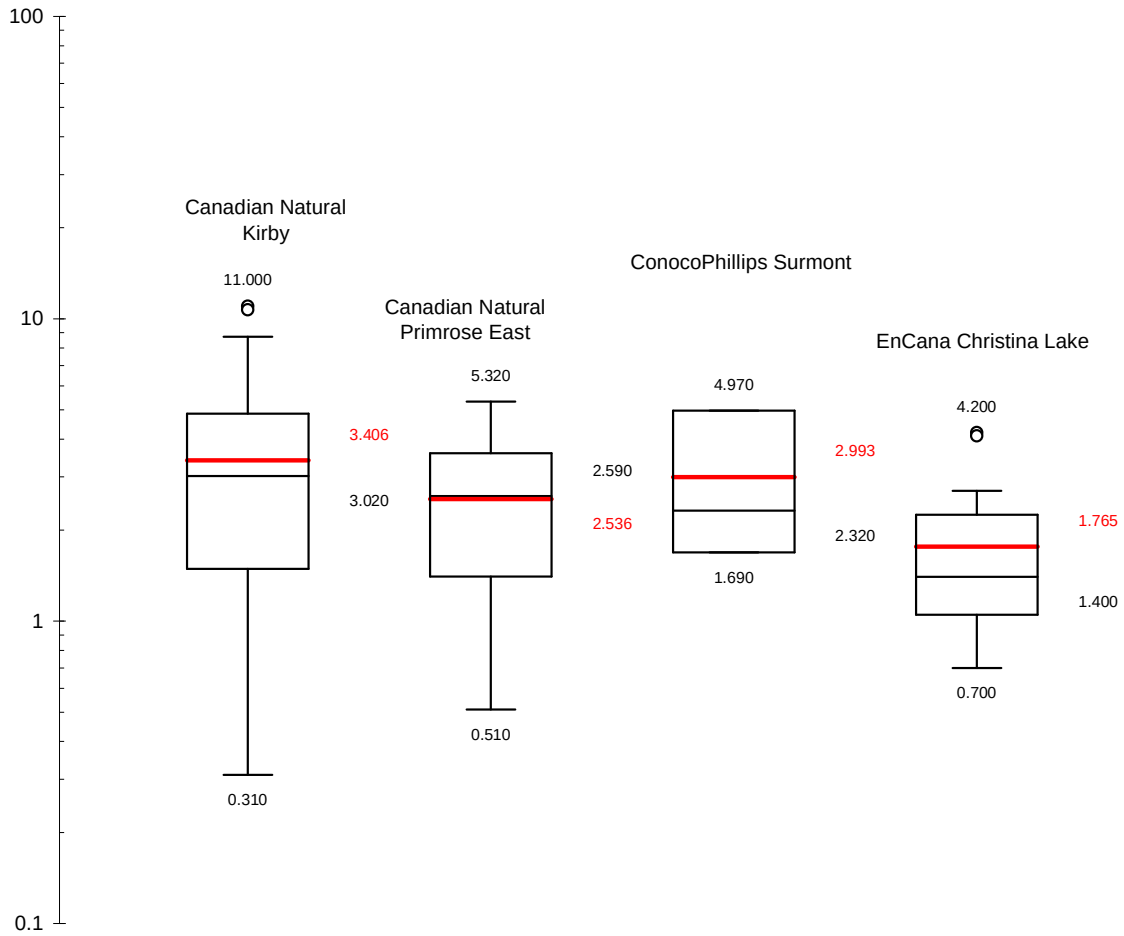
TITLE

REGIONAL DISTRIBUTION OF COPPER CONCENTRATIONS IN SOIL [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.	Region-Copper-Soil
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	PSR	27/02/08		
CHECK	BK	07/04/08		
REVIEW	IGG	07/04/08		

FIGURE: A-10



PROJECT

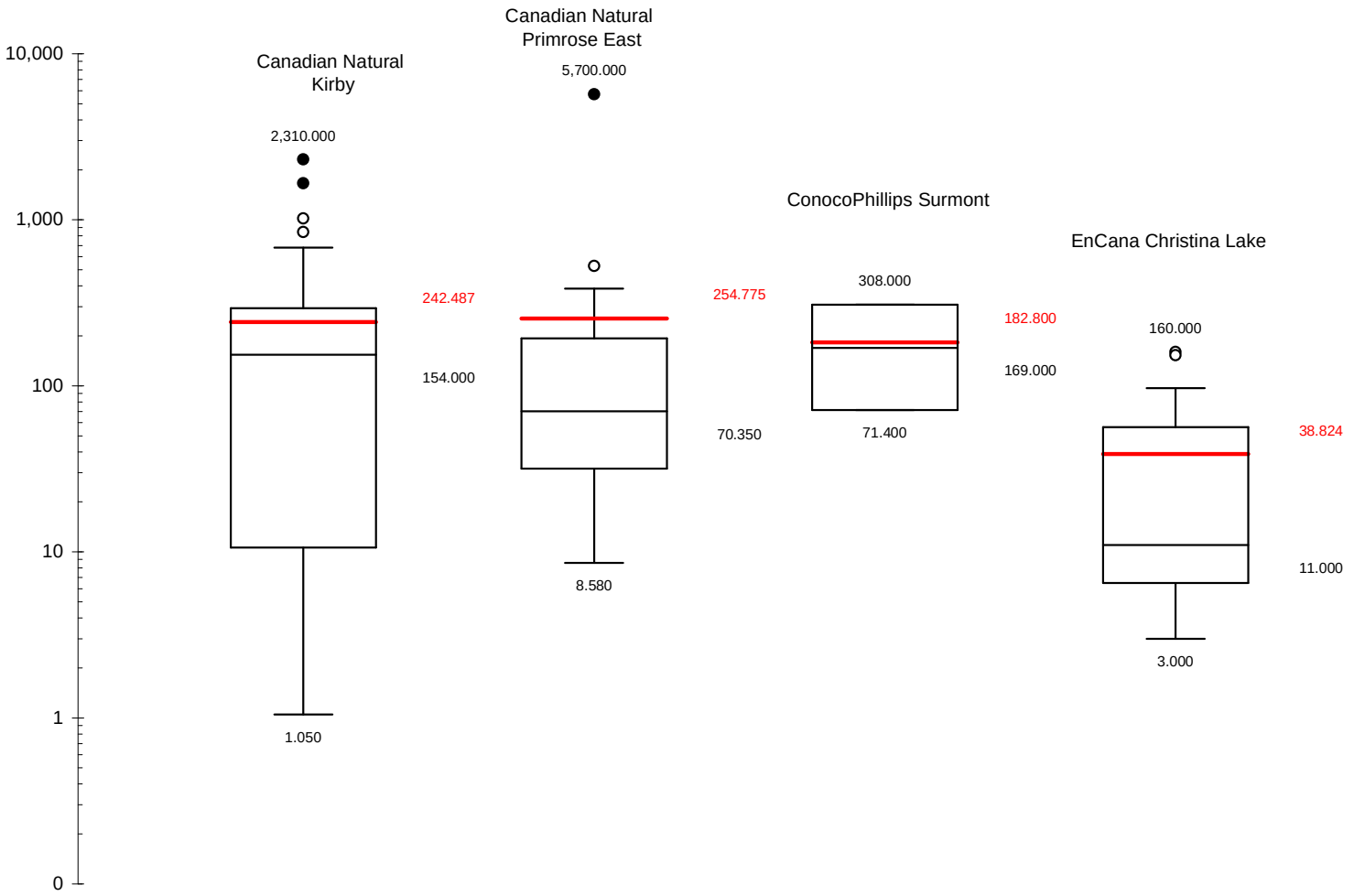
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF LEAD CONCENTRATIONS IN SOIL [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.	Region-Lead-Soil	
DESIGN	BK	26/02/08	SCALE	AS SHOWN	REV. 0
CADD	PSR	27/02/08	**FIGURE: A-11**		
CHECK	BK	07/04/08			
REVIEW	IGG	07/04/08			



PROJECT

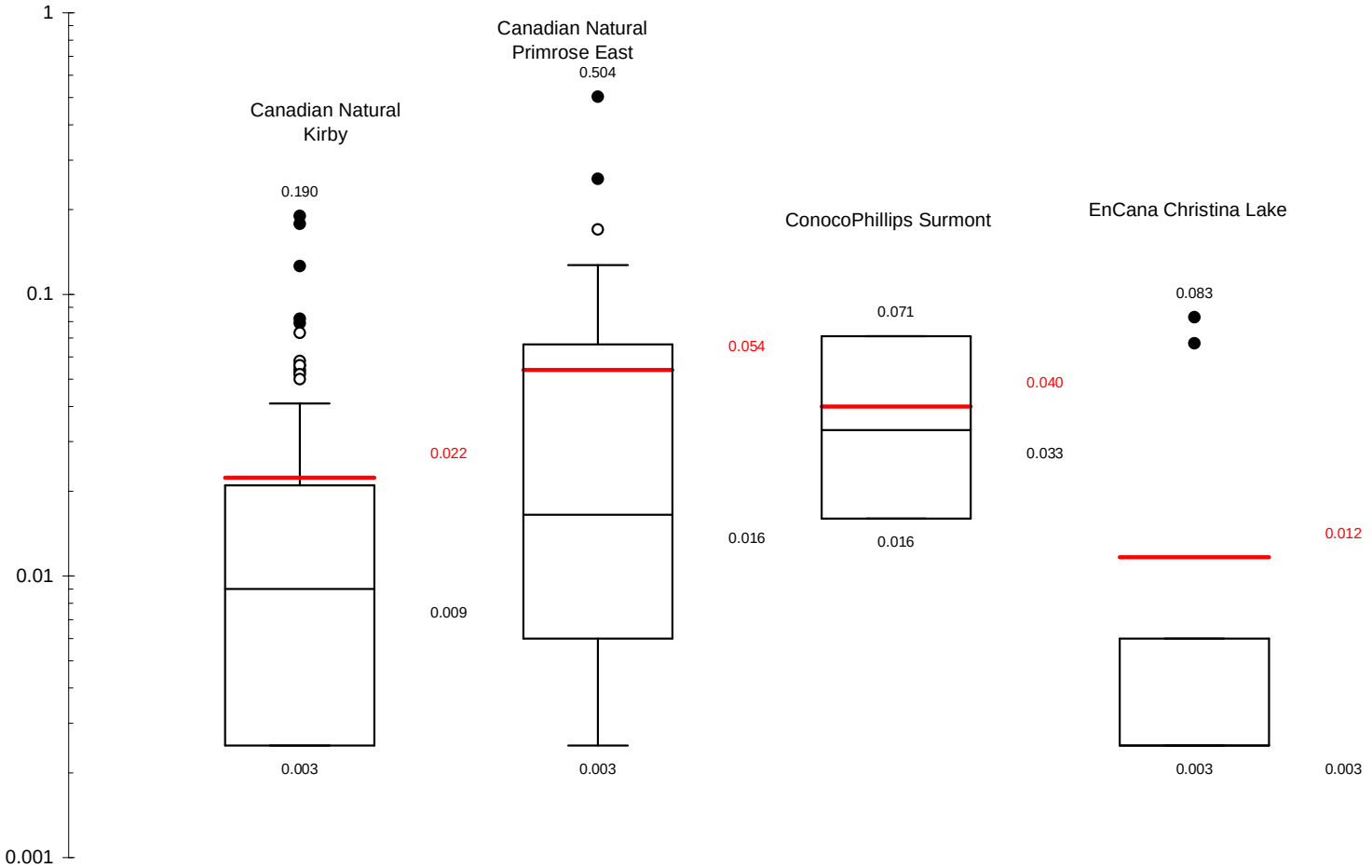
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF MANGANESE CONCENTRATIONS IN SOIL [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.	Manganese-Soil	
DESIGN	BK	26/02/08	SCALE	AS SHOWN	REV. 0
CADD	PSR	27/02/08	FIGURE: A-12		
CHECK	BK	07/04/08			
REVIEW	IGG	07/04/08			



PROJECT

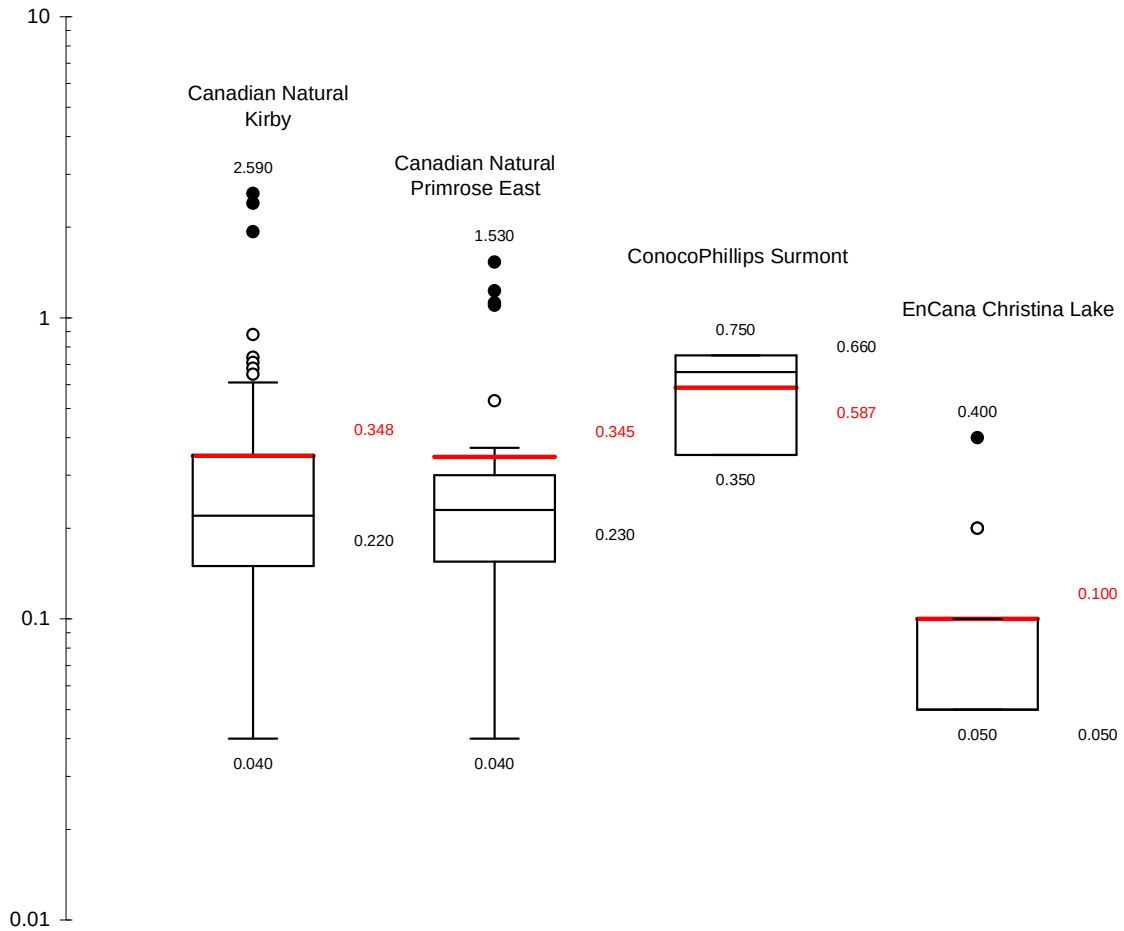
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF MERCURY CONCENTRATIONS IN SOIL [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.	Mercury-Soil	
DESIGN	BK	26/02/08	SCALE	AS SHOWN	REV. 0
CADD	PSR	27/02/08	**FIGURE: A-13**		
CHECK	BK	07/04/08			
REVIEW	IGG	07/04/08			



PROJECT

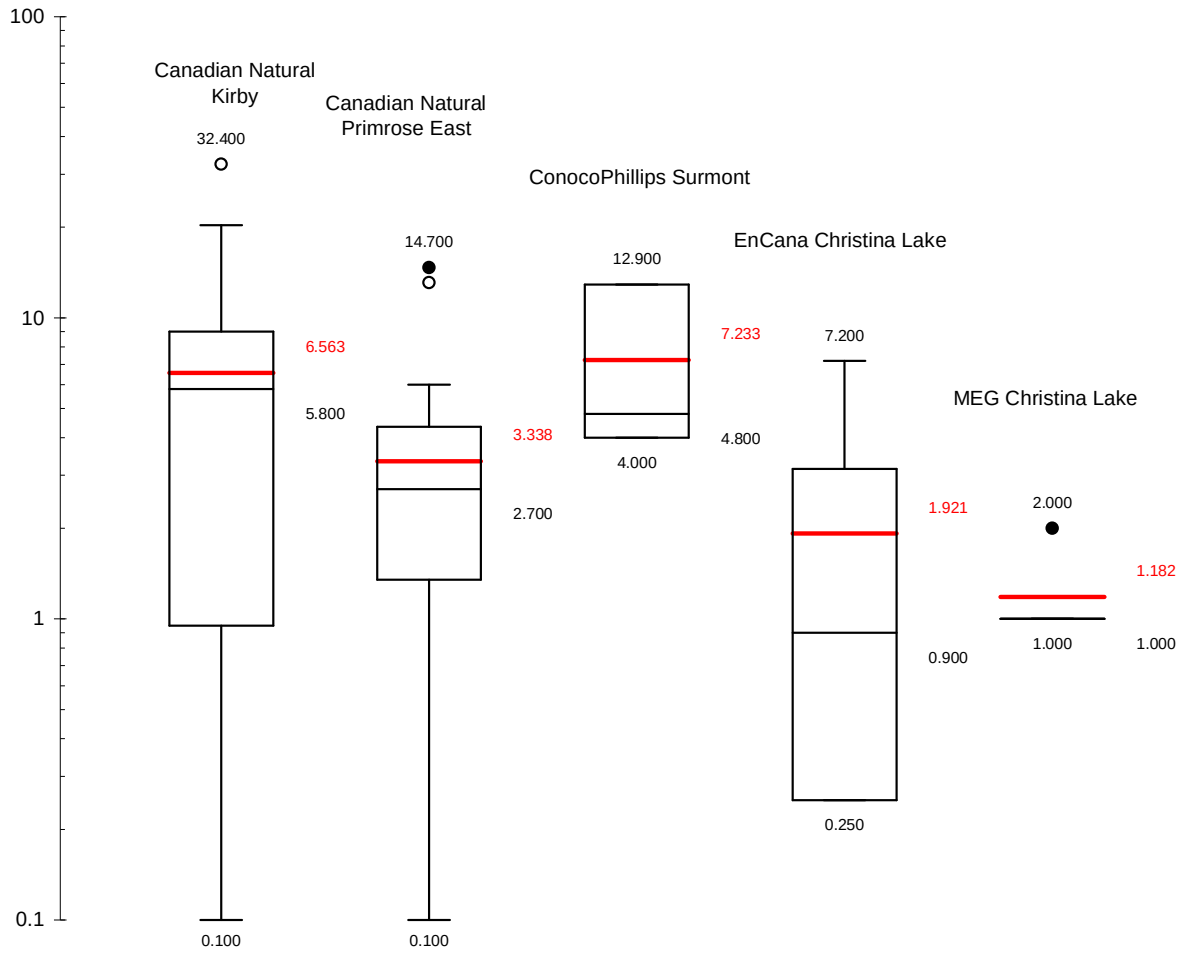
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF MOLYBDENUM CONCENTRATIONS IN SOIL [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.	Molybdenum-Soil	
DESIGN	BK	26/02/08	SCALE	AS SHOWN	REV. 0
CADD	PSR	27/02/08	**FIGURE: A-14**		
CHECK	BK	07/04/08			
REVIEW	IGG	07/04/08			



PROJECT

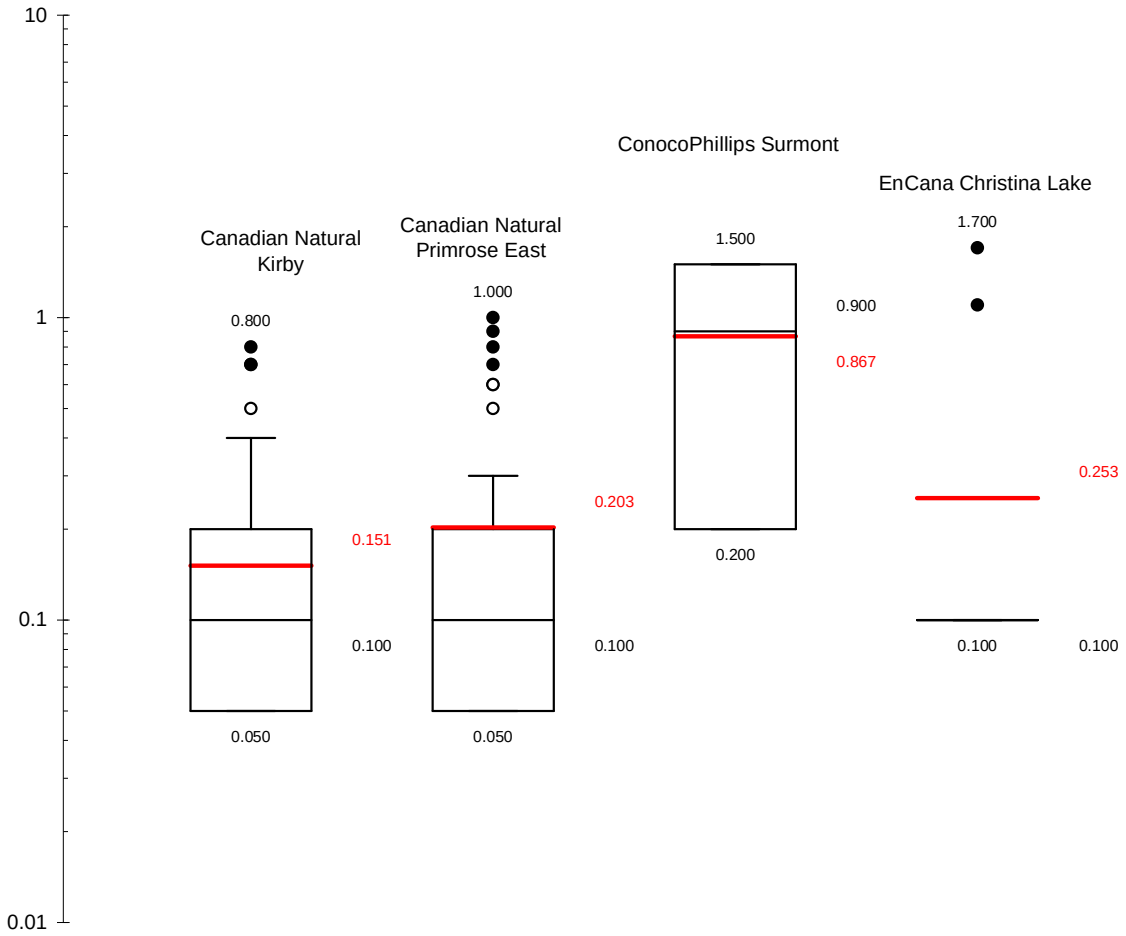
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF NICKEL CONCENTRATIONS IN SOIL [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.	Nickel-Soil	
DESIGN	BK	26/02/08	SCALE	AS SHOWN	REV. 0
CADD	PSR	27/02/08	FIGURE: A-15		
CHECK	BK	07/04/08			
REVIEW	IGG	07/04/08			



PROJECT

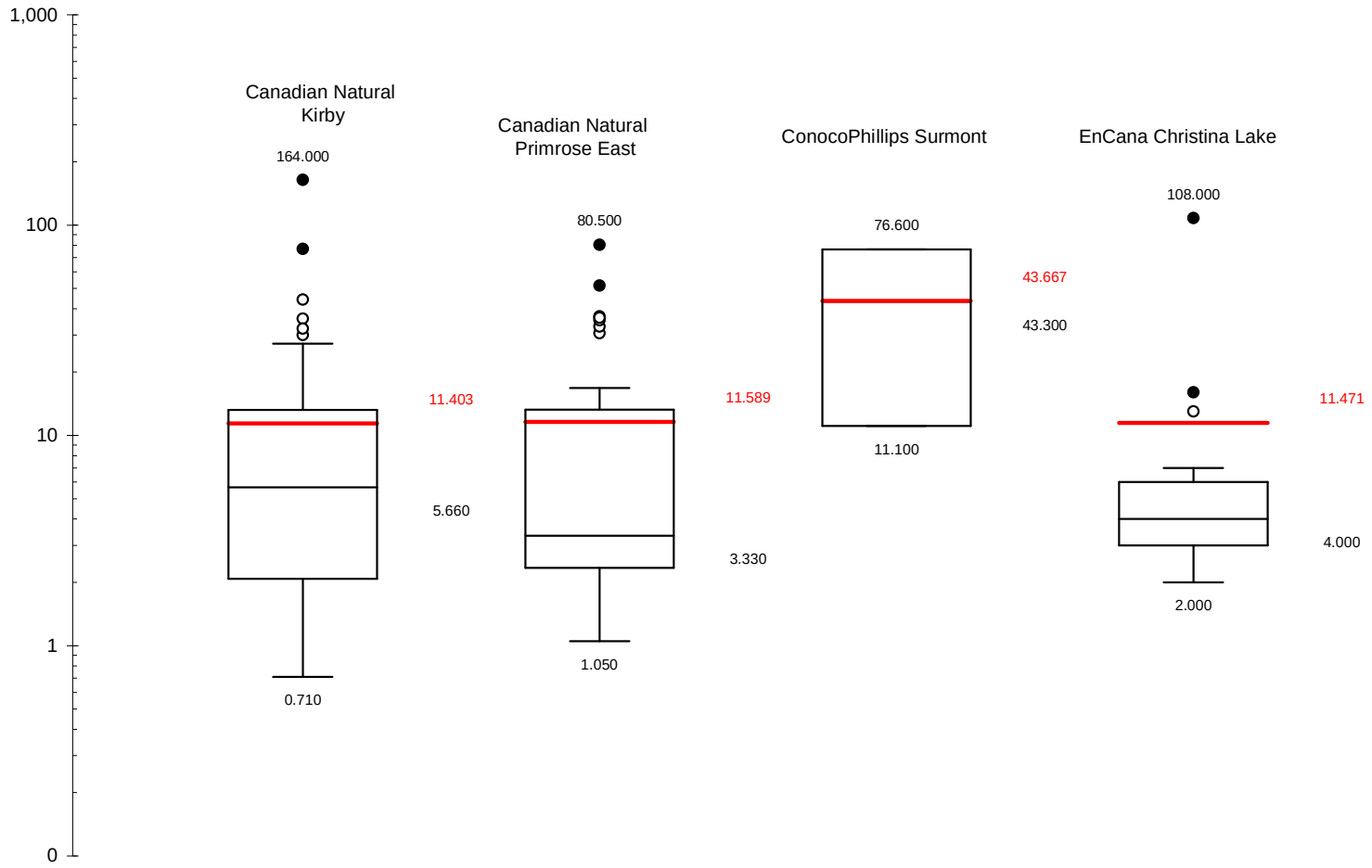
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF SELENIUM CONCENTRATIONS IN SOIL [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.	Selenium-Soil	
DESIGN	BK	26/02/08	SCALE	AS SHOWN	REV. 0
CADD	PSR	27/02/08	**FIGURE: A-16**		
CHECK	BK	07/04/08			
REVIEW	IGG	07/04/08			



PROJECT

CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

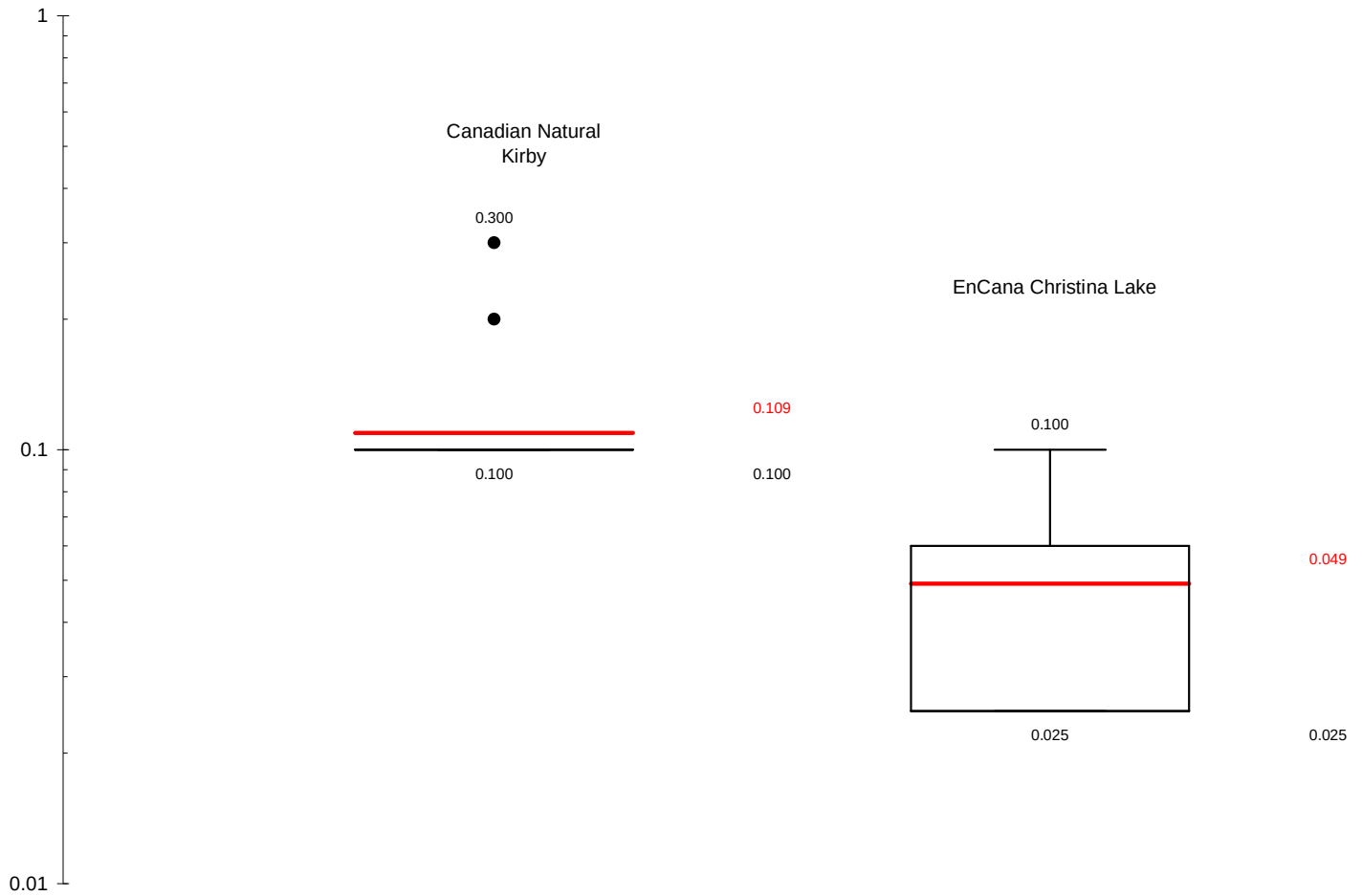
TITLE

REGIONAL DISTRIBUTION OF STRONTIUM CONCENTRATIONS IN SOIL [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.	Strontium-Soil	
DESIGN	BK	26/02/08	SCALE	AS SHOWN	REV. 0
CADD	PSR	27/02/08	**FIGURE: A-17**		
CHECK	BK	07/04/08			
REVIEW	IGG	07/04/08			

L:\2007\1346 Oil Sands\07-1346-0009-MEG EXPANSION\8800\8810\Appendix C1-Attachment A\Fig A-18_Regional Distribution-Thallium Conc in Soil.dwg Apr 09, 2008 - 1:15pm



PROJECT

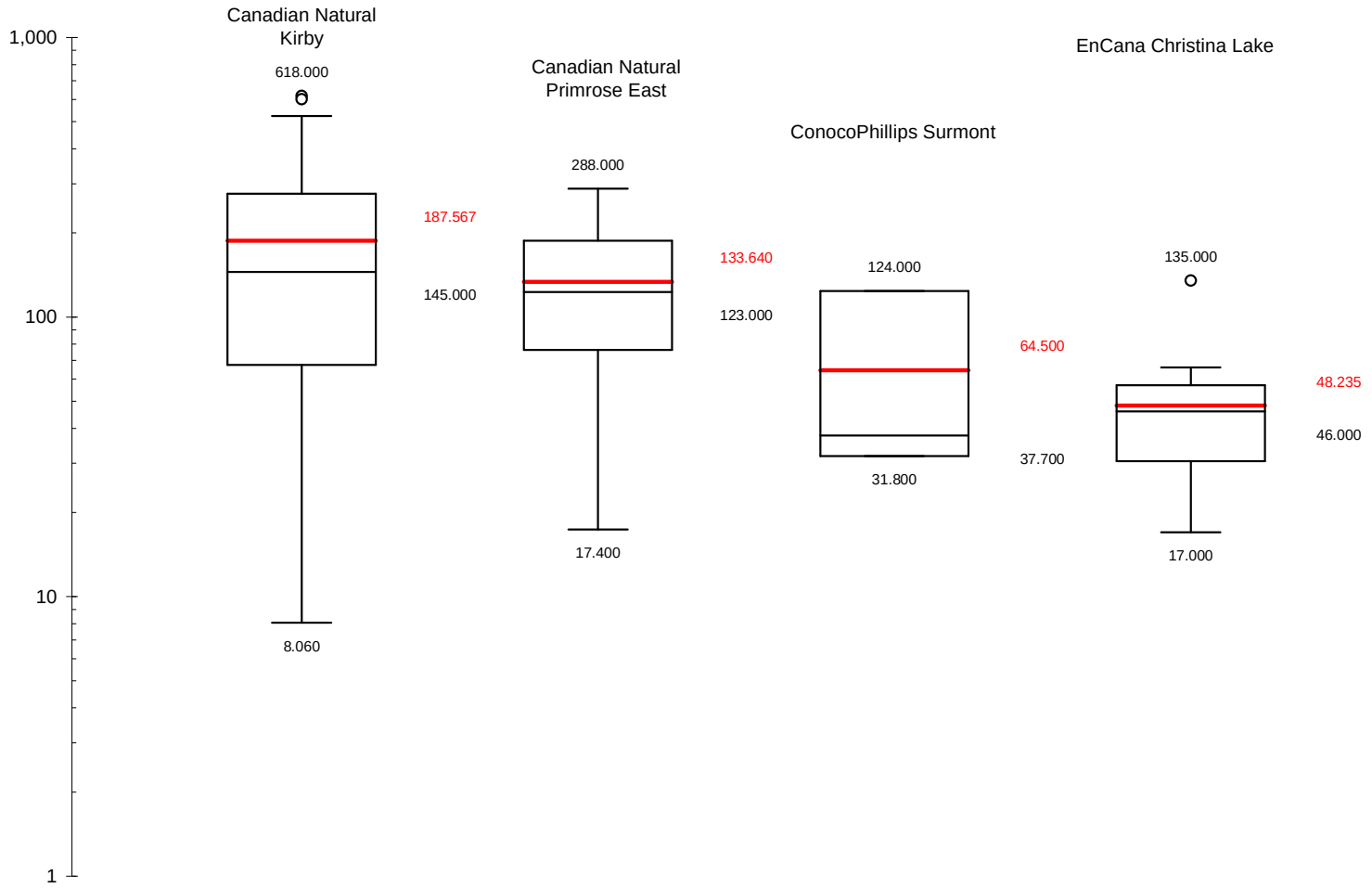
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF THALLIUM CONCENTRATIONS IN SOIL [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.	Thallium-Soil	
DESIGN	BK	26/02/08	SCALE	AS SHOWN	REV. 0
CADD	PSR	27/02/08	**FIGURE: A-18**		
CHECK	BK	07/04/08			
REVIEW	IGG	07/04/08			



PROJECT

CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

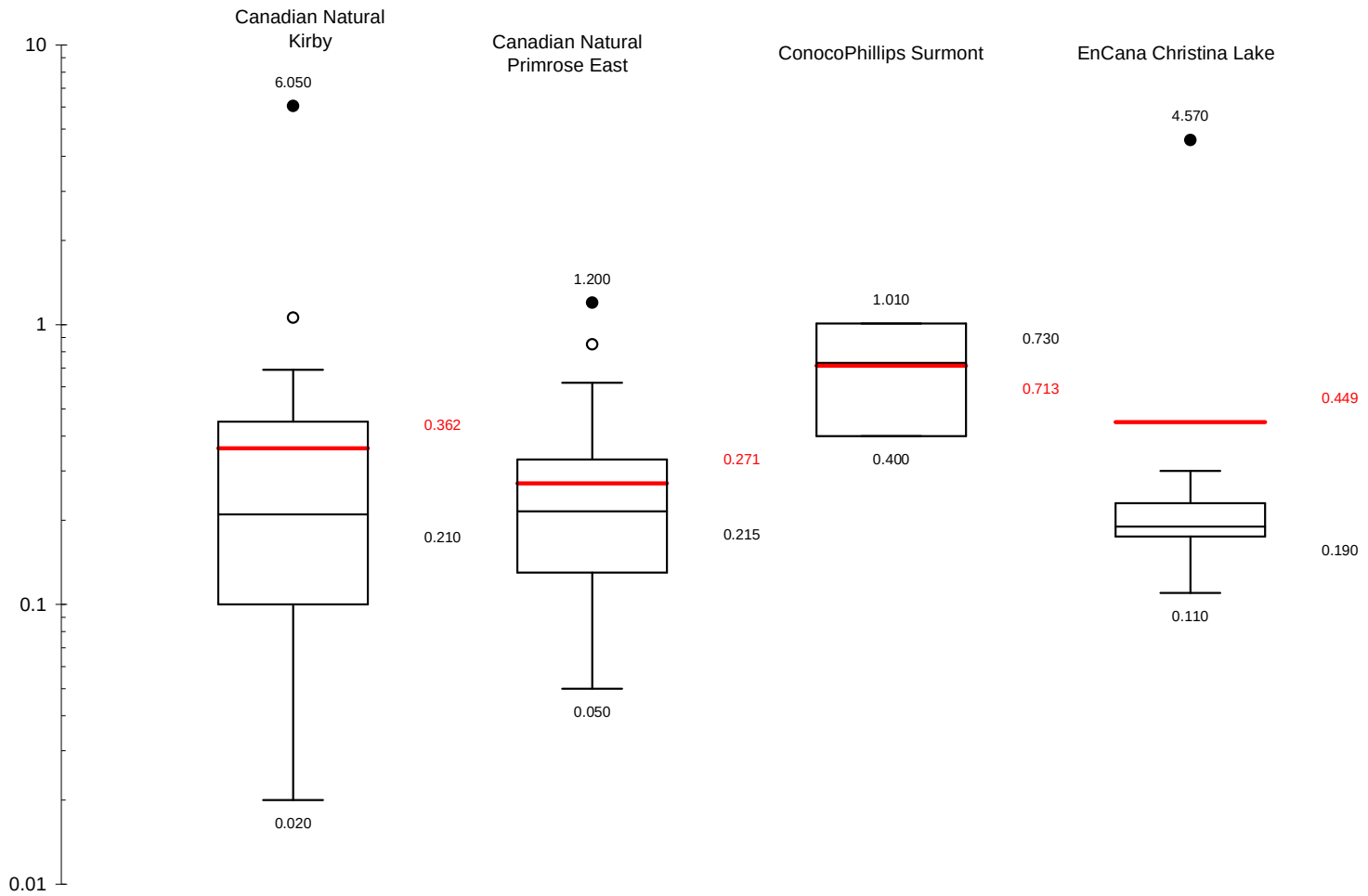
TITLE

REGIONAL DISTRIBUTION OF TITANIUM CONCENTRATIONS IN SOIL [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.	Titanium-Soil	
DESIGN	BK	26/02/08	SCALE	AS SHOWN	REV. 0
CADD	PSR	27/02/08	FIGURE: A-19		
CHECK	BK	07/04/08			
REVIEW	IGG	07/04/08			

L:\2007\1346 Oil Sands\07-1346-0009-MEG EXPANSION\8800\8810\Appendix C1-Attachment A\Fig A-20_Regional Distribution-Uranium Conc in Soil.dwg Apr 09, 2008 - 1:23pm



PROJECT

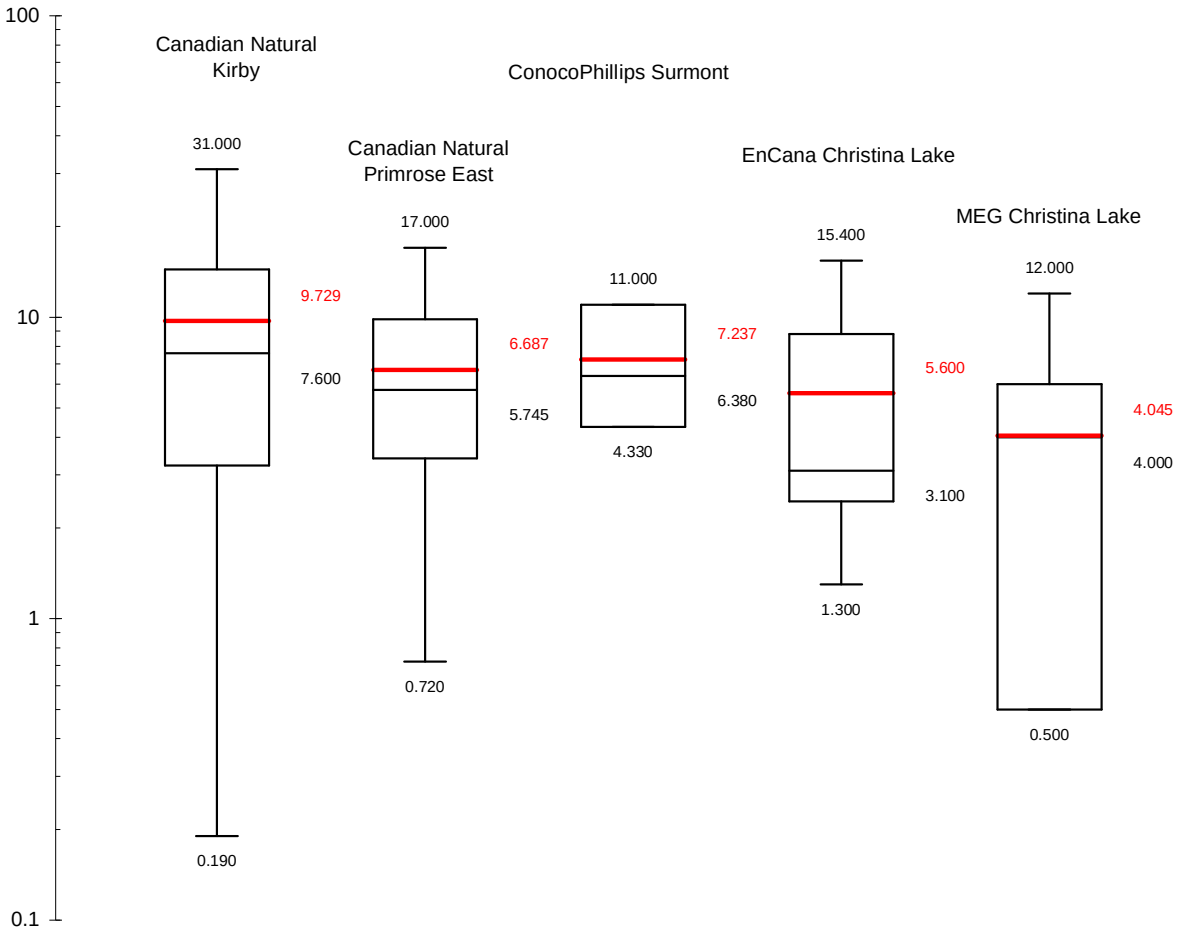
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF URANIUM CONCENTRATIONS IN SOIL [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.	Uranium-Soil
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	PSR	27/02/08	**FIGURE: A-20**	
CHECK	BK	07/04/08		
REVIEW	IGG	07/04/08		



PROJECT

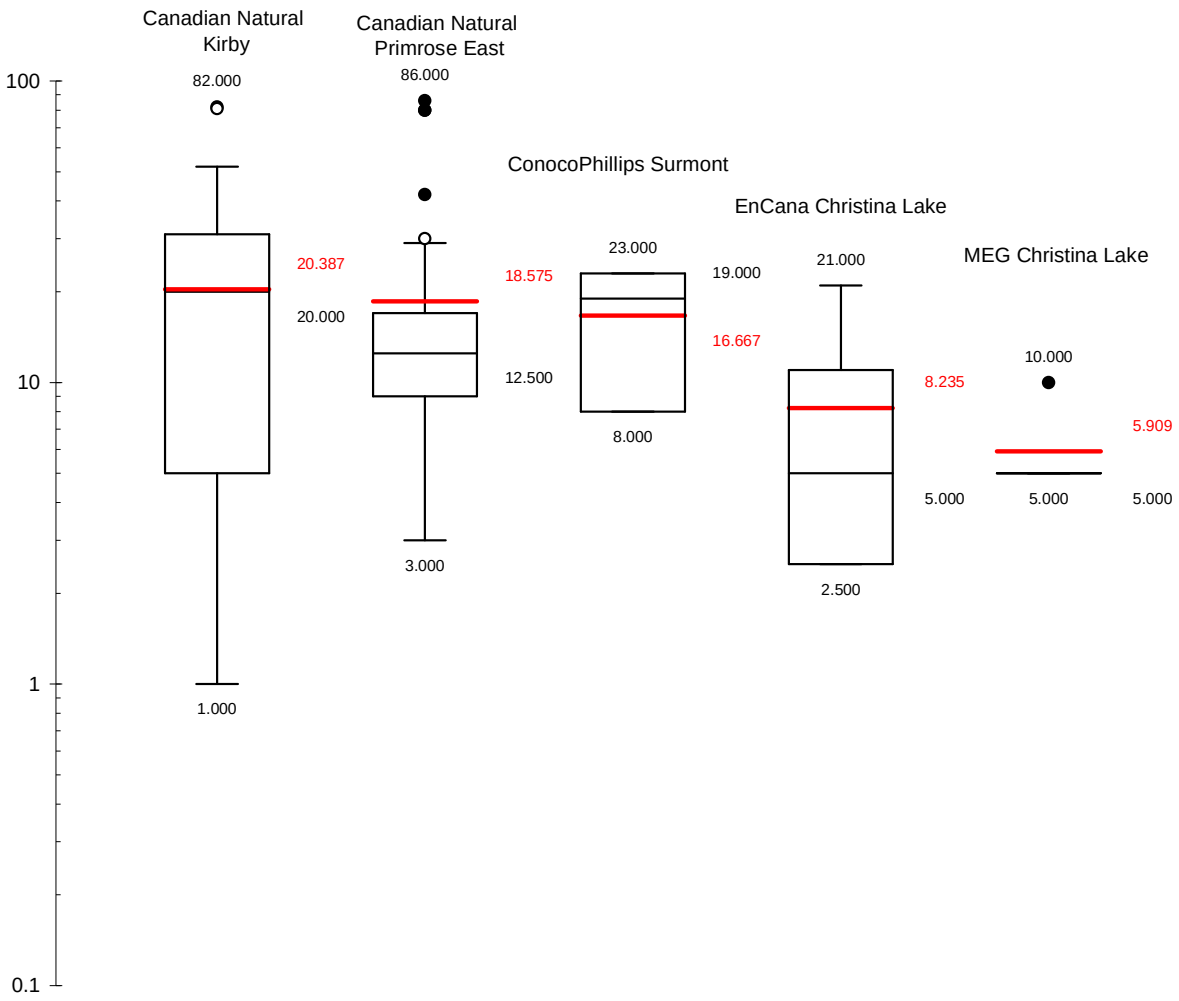
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF VANADIUM CONCENTRATIONS IN SOIL [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.	Vanadium-Soil	
DESIGN	BK	26/02/08	SCALE	AS SHOWN	REV. 0
CADD	PSR	27/02/08	FIGURE: A-21		
CHECK	BK	07/04/08			
REVIEW	IGG	07/04/08			



PROJECT

CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF ZINC CONCENTRATIONS IN SOIL [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.	Zinc-Soil	
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV.	0
CADD	PSR	27/02/08	**FIGURE: A-22**		
CHECK	BK	07/04/08			
REVIEW	IGG	07/04/08			

Table A-1 Summary of Measured Soil Metal Concentrations for Canadian Natural Kirby Project (units in mg/kg)

Chemical	Avg	St Dev	Min	Max	Count	Median	95th Percentile	95UCLM	Comment
Aluminum (Al)	3.6E+03	3.2E+03	7.0E+01	1.6E+04	75	2.3E+03	8.7E+03	4.3E+03	-
Arsenic (As)	1.7E+00	1.8E+00	3.0E-02	1.0E+01	75	1.0E+00	4.1E+00	2.1E+00	-
Barium (Ba)	4.3E+01	3.5E+01	2.2E+00	1.6E+02	75	2.9E+01	9.1E+01	5.1E+01	-
Beryllium (Be)	1.9E-01	1.8E-01	3.0E-02	7.3E-01	75	1.1E-01	5.7E-01	2.3E-01	27/75 non-detect
Bismuth (Bi)	5.5E-02	4.2E-02	1.0E-02	1.9E-01	75	3.8E-02	1.3E-01	6.4E-02	18/75 non-detect
Boron (B)	3.5E+00	7.6E+00	3.0E-01	6.5E+01	75	2.0E+00	7.2E+00	5.2E+00	3/75 non-detect
Cadmium (Cd)	9.1E-02	9.4E-02	1.0E-02	4.6E-01	75	5.5E-02	2.8E-01	1.1E-01	12/75 non-detect
Chromium (Cr)	6.7E+00	6.4E+00	2.0E-01	2.7E+01	75	3.8E+00	2.0E+01	8.2E+00	-
Cobalt (Co)	3.1E+00	3.0E+00	2.0E-02	1.6E+01	75	1.5E+00	7.9E+00	3.8E+00	-
Copper (Cu)	5.2E+00	4.6E+00	4.0E-01	1.7E+01	75	3.1E+00	1.3E+01	6.3E+00	-
Lead (Pb)	3.4E+00	2.3E+00	3.1E-01	1.1E+01	75	2.6E+00	7.3E+00	3.9E+00	-
Manganese (Mn)	2.4E+02	3.6E+02	1.1E+00	2.3E+03	75	7.9E+01	7.3E+02	3.2E+02	-
Mercury (Hg)	2.2E-02	3.6E-02	2.5E-03	1.9E-01	75	9.7E-03	8.0E-02	3.0E-02	26/75 non-detect
Molybdenum (Mo)	3.5E-01	4.4E-01	4.0E-02	2.6E+00	75	2.4E-01	7.8E-01	4.5E-01	-
Nickel (Ni)	6.6E+00	6.6E+00	1.0E-01	3.2E+01	75	3.2E+00	1.8E+01	8.1E+00	1/75 non-detect
Selenium (Se)	1.5E-01	1.7E-01	5.0E-02	8.0E-01	75	1.0E-01	5.6E-01	1.9E-01	37/75 non-detect
Silver (Ag)	n/d	n/d	n/d	n/d	75	n/d	n/d	n/d	DL <1
Strontium (Sr)	1.1E+01	2.1E+01	7.1E-01	1.6E+02	75	5.6E+00	3.3E+01	1.6E+01	-
Thallium (Tl)	1.1E-01	4.1E-02	1.0E-01	3.0E-01	75	1.1E-01	1.3E-01	1.2E-01	71/75 non-detect
Tin (Sn)	n/d	n/d	n/d	n/d	75	n/d	n/d	n/d	DL <4
Titanium (Ti)	1.9E+02	1.5E+02	8.1E+00	6.2E+02	75	1.3E+02	4.7E+02	2.2E+02	-
Uranium (U)	3.6E-01	7.0E-01	2.0E-02	6.1E+00	75	2.2E-01	6.7E-01	5.2E-01	-
Vanadium (V)	9.7E+00	7.5E+00	1.9E-01	3.1E+01	75	6.5E+00	2.4E+01	1.1E+01	-
Zinc (Zn)	2.0E+01	1.8E+01	1.0E+00	8.2E+01	75	1.2E+01	4.8E+01	2.4E+01	6/75 non-detect

- = No comment.

n/d = Non-detect.

95UCLM = 95th Upper confidence interval on the mean.

Table A-2 Summary of Measured Soil Metal Concentrations for Canadian Natural Primrose East Project (units in mg/kg)

Chemical	Avg	St Dev	Min	Max	Count	Median	95th Percentile	95UCLM	Comment
Aluminum (Al)	2.2E+03	1.5E+03	3.2E+02	5.9E+03	40	1.6E+03	5.3E+03	2.6E+03	-
Arsenic (As)	2.0E+00	4.5E+00	1.1E-01	2.8E+01	40	9.0E-01	5.9E+00	3.4E+00	-
Barium (Ba)	4.1E+01	6.0E+01	6.1E+00	3.8E+02	40	2.6E+01	9.9E+01	5.9E+01	-
Beryllium (Be)	9.5E-02	7.7E-02	3.0E-02	3.6E-01	40	7.2E-02	1.9E-01	1.2E-01	14/40 non-detect
Bismuth (Bi)	3.3E-02	1.9E-02	1.0E-02	8.0E-02	40	2.7E-02	6.1E-02	3.9E-02	11/40 non-detect
Boron (B)	3.3E+00	5.2E+00	3.0E-01	2.6E+01	40	1.6E+00	1.2E+01	4.9E+00	5/40 non-detect
Cadmium (Cd)	5.6E-02	6.2E-02	1.0E-02	2.6E-01	40	3.4E-02	1.6E-01	7.5E-02	11/40 non-detect
Chromium (Cr)	4.0E+00	2.9E+00	4.0E-01	1.3E+01	40	3.0E+00	9.5E+00	4.9E+00	-
Cobalt (Co)	1.9E+00	1.3E+00	1.2E-01	5.6E+00	40	1.4E+00	3.6E+00	2.3E+00	-
Copper (Cu)	2.8E+00	2.5E+00	5.0E-01	1.1E+01	40	2.1E+00	6.7E+00	3.6E+00	-
Lead (Pb)	2.5E+00	1.3E+00	5.1E-01	5.3E+00	40	2.2E+00	4.3E+00	2.9E+00	-
Manganese (Mn)	2.5E+02	8.9E+02	8.6E+00	5.7E+03	40	7.6E+01	3.9E+02	5.3E+02	-
Mercury (Hg)	5.4E-02	9.0E-02	2.5E-03	5.0E-01	40	2.2E-02	1.7E-01	8.2E-02	3/40 non-detect
Molybdenum (Mo)	3.4E-01	3.4E-01	4.0E-02	1.5E+00	40	2.4E-01	1.1E+00	4.4E-01	-
Nickel (Ni)	3.3E+00	2.9E+00	1.0E-01	1.5E+01	40	2.2E+00	6.4E+00	4.2E+00	1/40 non-detect
Selenium (Se)	2.0E-01	2.6E-01	5.0E-02	1.0E+00	40	1.2E-01	8.1E-01	2.8E-01	16/40 non-detect
Silver (Ag)	n/d	n/d	n/d	n/d	40	n/d	n/d	n/d	DL <1
Strontium (Sr)	1.2E+01	1.7E+01	1.1E+00	8.1E+01	40	5.4E+00	3.8E+01	1.7E+01	-
Thallium (Tl)	n/d	n/d	n/d	n/d	40	n/d	n/d	n/d	DL <0.2
Tin (Sn)	n/d	n/d	n/d	n/d	40	n/d	n/d	n/d	DL <4
Titanium (Ti)	1.3E+02	7.3E+01	1.7E+01	2.9E+02	40	1.1E+02	2.8E+02	1.6E+02	-
Uranium (U)	2.7E-01	2.2E-01	5.0E-02	1.2E+00	40	2.1E-01	6.3E-01	3.4E-01	-
Vanadium (V)	6.7E+00	4.2E+00	7.2E-01	1.7E+01	40	5.2E+00	1.3E+01	8.0E+00	-
Zinc (Zn)	1.9E+01	2.0E+01	3.0E+00	8.6E+01	40	1.3E+01	8.0E+01	2.5E+01	-

- = No comment.

n/d = Non-detect.

95UCLM = 95th Upper confidence interval on the mean.

Table A-3 Summary of Measured Soil Metal Concentrations for ConocoPhillips Surmont Project (units in mg/kg)

Chemical	Avg	St Dev	Min	Max	Count	Median	95th Percentile	95UCLM	Comment
Aluminum (Al)	2.0E+03	1.5E+03	1.0E+03	3.8E+03	3	1.7E+03	3.5E+03	3.7E+03	-
Arsenic (As)	1.9E+00	1.3E+00	7.7E-01	3.3E+00	3	1.6E+00	3.1E+00	3.3E+00	-
Barium (Ba)	6.5E+01	2.1E+01	5.2E+01	8.9E+01	3	6.2E+01	8.5E+01	8.9E+01	-
Beryllium (Be)	1.7E-01	8.2E-02	1.0E-01	2.6E-01	3	1.6E-01	2.5E-01	2.6E-01	-
Bismuth (Bi)	3.7E-02	2.1E-02	2.0E-02	6.0E-02	3	3.3E-02	5.7E-02	6.0E-02	-
Boron (B)	1.1E+01	6.0E+00	3.8E+00	1.5E+01	3	9.1E+00	1.5E+01	1.7E+01	-
Cadmium (Cd)	1.4E-01	2.6E-02	1.2E-01	1.7E-01	3	1.4E-01	1.7E-01	1.7E-01	-
Chromium (Cr)	7.4E+00	8.5E+00	2.5E+00	1.7E+01	3	4.8E+00	1.6E+01	1.7E+01	-
Cobalt (Co)	1.8E+00	1.9E+00	6.0E-01	4.0E+00	3	1.3E+00	3.7E+00	4.0E+00	-
Copper (Cu)	6.0E+00	1.3E+00	4.8E+00	7.4E+00	3	5.9E+00	7.2E+00	7.5E+00	-
Lead (Pb)	3.0E+00	1.7E+00	1.7E+00	5.0E+00	3	2.7E+00	4.7E+00	5.0E+00	-
Manganese (Mn)	1.8E+02	1.2E+02	7.1E+01	3.1E+02	3	1.5E+02	2.9E+02	3.2E+02	-
Mercury (Hg)	4.0E-02	2.8E-02	1.6E-02	7.1E-02	3	3.3E-02	6.7E-02	7.2E-02	-
Molybdenum (Mo)	5.9E-01	2.1E-01	3.5E-01	7.5E-01	3	5.6E-01	7.4E-01	8.2E-01	-
Nickel (Ni)	7.2E+00	4.9E+00	4.0E+00	1.3E+01	3	6.3E+00	1.2E+01	1.3E+01	-
Selenium (Se)	8.7E-01	6.5E-01	2.0E-01	1.5E+00	3	6.5E-01	1.4E+00	1.6E+00	-
Silver (Ag)	n/d	n/d	n/d	n/d	3	n/d	n/d	n/d	DL<1
Strontium (Sr)	4.4E+01	3.3E+01	1.1E+01	7.7E+01	3	3.3E+01	7.3E+01	8.1E+01	-
Thallium (Tl)	n/d	n/d	n/d	n/d	3	n/d	n/d	n/d	DL<0.2
Tin (Sn)	n/d	n/d	n/d	n/d	3	n/d	n/d	n/d	DL<4
Titanium (Ti)	6.5E+01	5.2E+01	3.2E+01	1.2E+02	3	5.3E+01	1.2E+02	1.2E+02	-
Uranium (U)	7.1E-01	3.1E-01	4.0E-01	1.0E+00	3	6.7E-01	9.8E-01	1.1E+00	-
Vanadium (V)	7.2E+00	3.4E+00	4.3E+00	1.1E+01	3	6.7E+00	1.1E+01	1.1E+01	-
Zinc (Zn)	1.7E+01	7.8E+00	8.0E+00	2.3E+01	3	1.5E+01	2.3E+01	2.5E+01	-

- = No comment.

n/d = Non-detect.

95UCLM = 95th Upper confidence interval on the mean.

Table A-4 Summary of Measured Soil Metal Concentrations for MEG Christina Lake Project (units in mg/kg)

Chemical	Avg	St Dev	Min	Max	Count	Median	95th Percentile	95UCLM	Comment
Antimony (Sb) Beryllium (Be) Cadmium (Cd) Lead (Pb) Mercury (Hg) Molybdenum (Mo) Selenium (Se) Silver (Ag) Thallium (Tl) Tin (Sn) Uranium (U)	n/d	n/d	n/d	n/d	11	n/d	n/d	n/d	DL <0.05 - <5
Arsenic (As)	4.3E-01	3.5E-01	1.0E-01	1.2E+00	11	3.0E-01	1.0E+00	6.3E-01	4/11 non-detect
Barium (Ba)	1.5E+01	6.1E+00	5.0E+00	2.7E+01	11	1.4E+01	2.5E+01	1.9E+01	-
Chromium (Cr)	1.9E+00	1.6E+00	2.5E-01	5.2E+00	11	1.2E+00	4.2E+00	2.8E+00	3/11 non-detect
Cobalt (Co)	5.9E-01	2.0E-01	5.0E-01	1.0E+00	11	5.7E-01	1.0E+00	7.1E-01	9/11 non-detect
Copper (Cu)	1.1E+00	3.0E-01	1.0E+00	2.0E+00	11	1.1E+00	1.5E+00	1.3E+00	10/11 non-detect
Nickel (Ni)	1.2E+00	4.0E-01	1.0E+00	2.0E+00	11	1.1E+00	2.0E+00	1.4E+00	9/11 non-detect
Vanadium (V)	4.0E+00	3.5E+00	5.0E-01	1.2E+01	11	2.5E+00	9.0E+00	6.1E+00	3/11 non-detect
Zinc (Zn)	5.9E+00	2.0E+00	5.0E+00	1.0E+01	11	5.7E+00	1.0E+01	7.1E+00	9/11 non-detect

- = No comment.

n/d = Non-detect.

95UCLM = 95th Upper confidence interval on the mean.

Table A-5 Summary of Measured Soil Metal Concentrations for EnCana Christina Lake Project (units in mg/kg)

Chemical	Avg	St Dev	Min	Max	Count	Median	95th Percentile	95UCLM	Comment
Aluminum (Al)	1.9E+03	1.5E+03	5.8E+02	6.1E+03	17	1.5E+03	4.2E+03	2.6E+03	-
Arsenic (As)	4.8E-01	3.7E-01	5.0E-02	1.5E+00	17	3.6E-01	1.1E+00	6.5E-01	1/17 non-detect
Barium (Ba)	3.6E+01	5.9E+01	7.0E+00	2.5E+02	17	2.0E+01	1.2E+02	6.4E+01	-
Beryllium (Be)	1.1E-01	4.9E-02	1.0E-01	3.0E-01	17	1.1E-01	1.4E-01	1.3E-01	16/17 non-detect
Bismuth (Bi)	n/d	n/d	n/d	n/d	17	n/d	n/d	n/d	DL<0.5
Boron (B)	3.4E+01	5.6E+01	1.0E+00	2.1E+02	17	7.1E+00	1.2E+02	6.1E+01	7/17 non-detect
Cadmium (Cd)	8.5E-02	1.1E-01	5.0E-02	5.0E-01	17	6.2E-02	2.6E-01	1.4E-01	15/17 non-detect
Chromium (Cr)	2.6E+00	2.2E+00	7.0E-01	9.0E+00	17	2.0E+00	6.7E+00	3.6E+00	-
Cobalt (Co)	8.5E-01	9.9E-01	5.0E-02	3.2E+00	17	4.3E-01	2.8E+00	1.3E+00	2/17 non-detect
Copper (Cu)	2.0E+00	2.3E+00	2.5E-01	8.8E+00	17	1.2E+00	6.5E+00	3.1E+00	2/17 non-detect
Lead (Pb)	1.8E+00	1.1E+00	7.0E-01	4.2E+00	17	1.5E+00	4.1E+00	2.3E+00	-
Manganese (Mn)	3.9E+01	5.1E+01	3.0E+00	1.6E+02	17	1.8E+01	1.5E+02	6.3E+01	-
Mercury (Hg)	1.2E-02	2.4E-02	2.5E-03	8.3E-02	17	4.4E-03	7.0E-02	2.3E-02	12/17 non-detect
Molybdenum (Mo)	1.0E-01	9.2E-02	5.0E-02	4.0E-01	17	7.8E-02	2.4E-01	1.4E-01	10/17 non-detect
Nickel (Ni)	1.9E+00	2.2E+00	2.5E-01	7.2E+00	17	9.4E-01	6.2E+00	3.0E+00	7/17 non-detect
Selenium (Se)	2.5E-01	4.4E-01	1.0E-01	1.7E+00	17	1.4E-01	1.2E+00	4.6E-01	15/17 non-detect
Silver (Ag)	n/d	n/d	n/d	n/d	17	n/d	n/d	n/d	DL<0.2
Strontium (Sr)	1.1E+01	2.5E+01	2.0E+00	1.1E+02	17	5.6E+00	3.4E+01	2.3E+01	-
Thallium (Tl)	4.9E-02	2.9E-02	2.5E-02	1.0E-01	17	4.2E-02	1.0E-01	6.3E-02	9/17 non-detect
Tin (Sn)	n/d	n/d	n/d	n/d	17	n/d	n/d	n/d	DL<2
Titanium (Ti)	4.8E+01	2.6E+01	1.7E+01	1.4E+02	17	4.3E+01	8.0E+01	6.1E+01	-
Uranium (U)	4.5E-01	1.1E+00	1.1E-01	4.6E+00	17	2.2E-01	1.2E+00	9.5E-01	-
Vanadium (V)	5.6E+00	4.6E+00	1.3E+00	1.5E+01	17	4.2E+00	1.5E+01	7.8E+00	-
Zinc (Zn)	8.2E+00	6.6E+00	2.5E+00	2.1E+01	17	6.1E+00	2.1E+01	1.1E+01	6/17 non-detect

- = No comment.

n/d = Non-detect.

95UCLM = 95th Upper confidence interval on the mean

Table A-6 Summary of Measured Soil Polycyclic Aromatic Hydrocarbons Concentrations for Canadian Natural Kirby Project (units in mg/kg)

Chemical	Avg	St Dev	Min	Max	Count	Median	95th Percentile	95UCLM	Comment
Acenaphthene Acenaphthylene Anthracene Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Benzo(g,h,i)perylene Benzo(k)fluoranthene Chrysene Dibenzo(a,h)anthracene Fluorene Indeno(1,2,3-cd)pyrene Methyl naphthalenes Pyrene	n/d	n/d	n/d	n/d	75	n/d	n/d	n/d	DL <0.01 - <0.1
Fluoranthene	7.3E-03	8.1E-03	5.0E-03	5.0E-02	75	5.9E-03	2.0E-02	9.2E-03	74/75 non-detect
Naphthalene	7.3E-03	7.4E-03	5.0E-03	5.0E-02	75	6.0E-03	2.0E-02	8.9E-03	73/75 non-detect
Phenanthrene	8.3E-03	9.7E-03	5.0E-03	5.0E-02	75	6.3E-03	3.0E-02	1.0E-02	70/75 non-detect

n/d = Non-detect.

95UCLM = 95th Upper confidence interval on the mean.

Table A-7 Summary of Measured Soil Polycyclic Aromatic Hydrocarbons Concentrations for Canadian Natural Primrose East Project (units in mg/kg)

Chemical	Avg	St Dev	Min	Max	Count	Median	95th Percentile	95UCLM	Comment
Acenaphthene Acenaphthylene Anthracene Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Benzo(g,h,i)perylene Benzo(k)fluoranthene Chrysene Dibenzo(a,h)anthracene Fluoranthene Fluorene Indeno(1,2,3-cd)pyrene Naphthalene Pyrene	n/d	n/d	n/d	n/d	40	n/d	n/d	n/d	DL <0.01 - <0.05
Methyl naphthalene	8.1E-03	8.6E-03	5.0E-03	4.0E-02	40	6.3E-03	2.6E-02	1.1E-02	38/40 non-detect
Phenanthrene	9.0E-03	1.1E-02	5.0E-03	6.0E-02	40	6.5E-03	3.1E-02	1.2E-02	37/40 non-detect

n/d = Non-detect.

95UCLM = 95th Upper confidence interval on the mean.

Table A-8 Summary of Measured Soil Polycyclic Aromatic Hydrocarbons Concentrations for ConocoPhillips Surmont Project (units in mg/kg)

Chemical	Avg	St Dev	Min	Max	Count	Median	95th Percentile	95UCLM	Comment
Acenaphthene Acenaphthylene Anthracene Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Benzo(g,h,i)perylene Benzo(k)fluoranthene Chrysene Dibenzo(a,h)anthracene Fluoranthene Indeno(1,2,3-cd)pyrene Naphthalene Pyrene	n/d	n/d	n/d	n/d	3	n/d	n/d	n/d	DL <0.01 - <0.04
Fluorene	2.2E-02	1.8E-02	5.0E-03	4.0E-02	3	1.6E-02	3.8E-02	4.2E-02	2/3 non-detect
Methyl naphthalenes	3.5E-02	2.6E-02	5.0E-03	5.0E-02	3	2.3E-02	5.0E-02	6.4E-02	1/3 non-detect
Phenanthrene	4.8E-02	3.9E-02	5.0E-03	8.0E-02	3	2.9E-02	7.8E-02	9.2E-02	1/3 non-detect

n/d = Non-detect.

95UCLM = 95th Upper confidence interval on the mean.

Table A-9 Summary of Measured Soil Polycyclic Aromatic Hydrocarbons Concentrations for MEG Christina Lake Project (units in mg/kg)

Chemical	Avg	St Dev	Min	Max	Count	Median	95th Percentile	95UCLM	Comment
3-Methylcholanthrene 7,12-Dimethylbenz(a)anthracene Acenaphthene Acenaphthylene Anthracene Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Benzo(c)phenanthrene Benzo(g,h,i)perylene Benzo(j)fluoranthene Benzo(k)fluoranthene Chrysene Dibenzo(a,h)anthracene Dibenzo(a,h/a,i/a,l)pyrene Equivalent B(a)P Concentration Fluoranthene Fluorene Indeno(1,2,3-cd)pyrene Naphthalene Phenanthrene Pyrene	n/d	n/d	n/d	n/d	11	n/d	n/d	n/d	DL <0.01 - <0.03

n/d = Non-detect.

95UCLM = 95th Upper confidence interval on the mean.

Table A-10 Summary of Measured Soil Polycyclic Aromatic Hydrocarbons Concentrations for MEG Surmont Project (units in mg/kg)

Chemical	Avg	St Dev	Min	Max	Count	Median	95th Percentile	95UCLM	Comment
Acenaphthene Acenaphthylene Anthracene Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Benzo(g,h,i)perylene Benzo(k)fluoranthene Chrysene Dibenzo(a,h)anthracene Fluoranthene Fluorene Indeno(1,2,3-cd)pyrene Methyl naphthalenes Naphthalene Phenanthrene Pyrene	n/d	n/d	n/d	n/d	17	n/d	n/d	n/d	DL <0.01 - <0.04

n/d = Non-detect.

95UCLM = 95th Upper confidence interval on the mean.

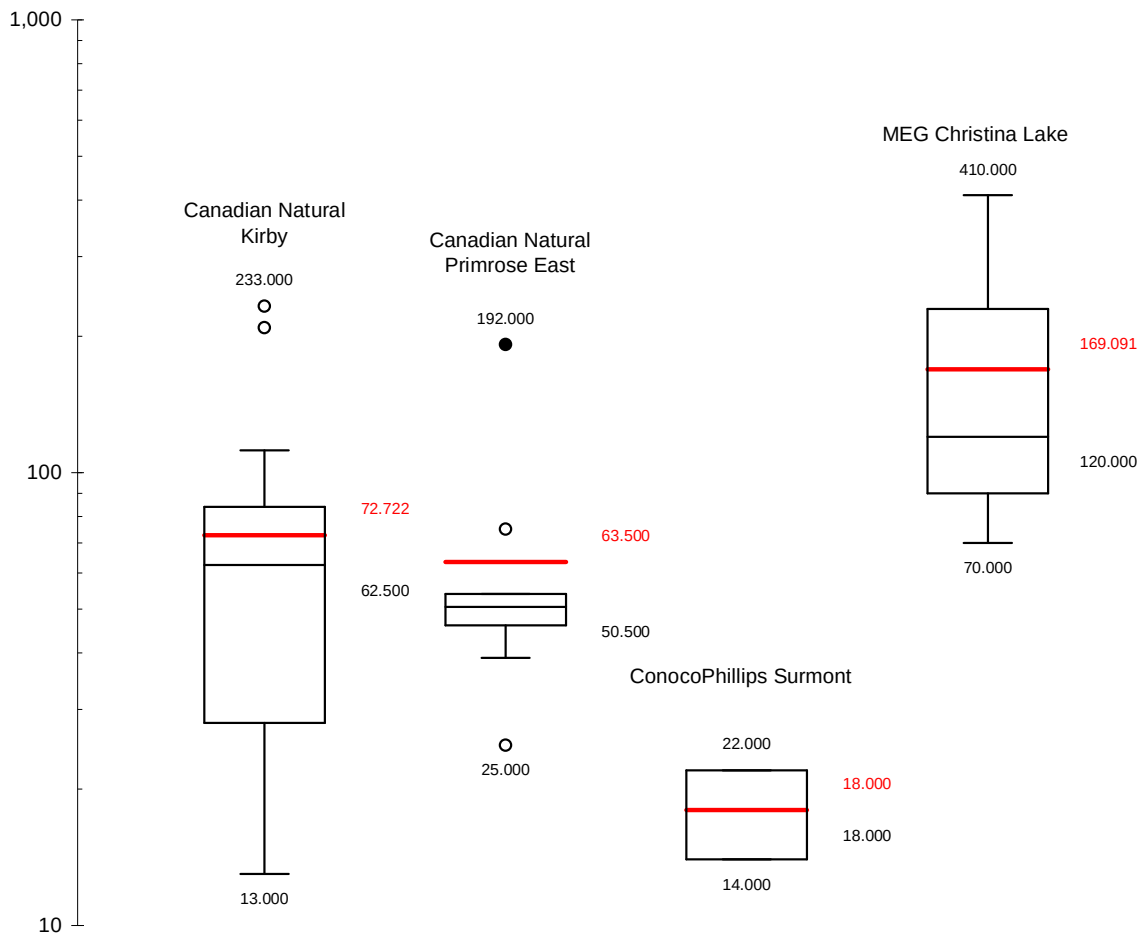
ATTACHMENT B

SUMMARY OF MEASURED ALDER CONCENTRATIONS AS PART OF THE OIL SANDS REGIONAL ENVIRONMENTAL SAMPLING PROGRAM

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES



PROJECT

CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

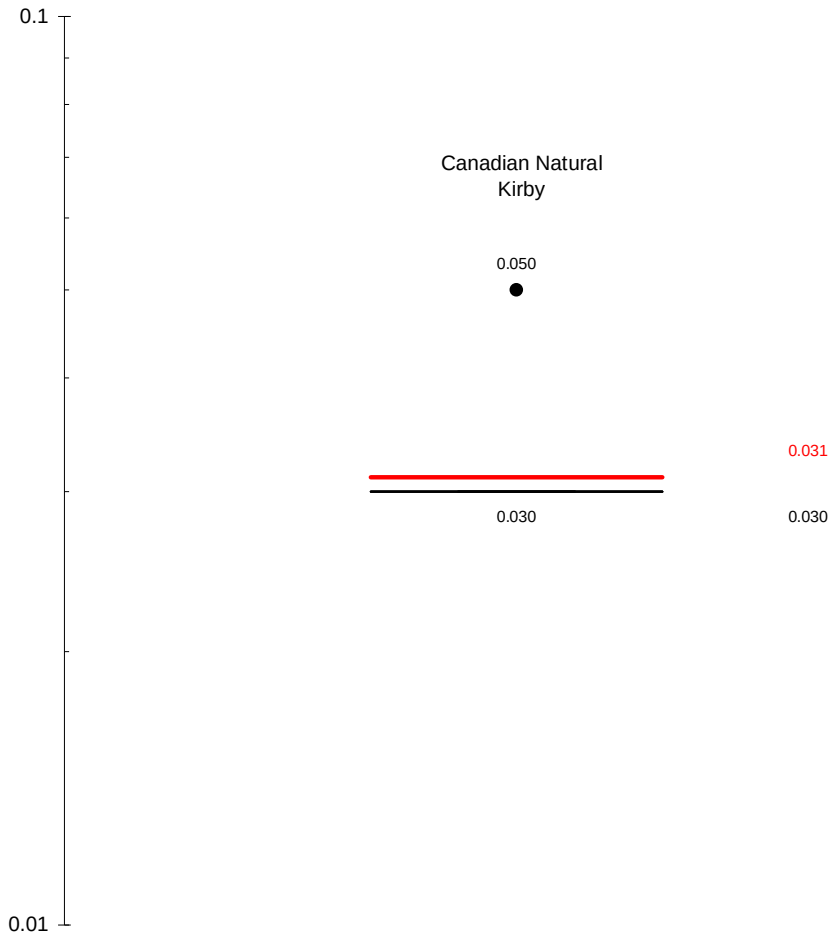
REGIONAL DISTRIBUTION OF ALUMINUM CONCENTRATIONS IN ALDER [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.	Regional-Alum-Alder
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	TRE	27/02/08		
CHECK	BK	07/04/08		
REVIEW	IGG	07/04/08		

FIGURE: B-1

L:\2007\1346 Oil Sands\07-1346-0009-MEG EXPANSION\8800\8810\Appendix C2-Attachment B\Fig B-2_Regional Distribution-Antimony Conc in Alder.dwg Apr 10, 2008 - 9:30am



PROJECT

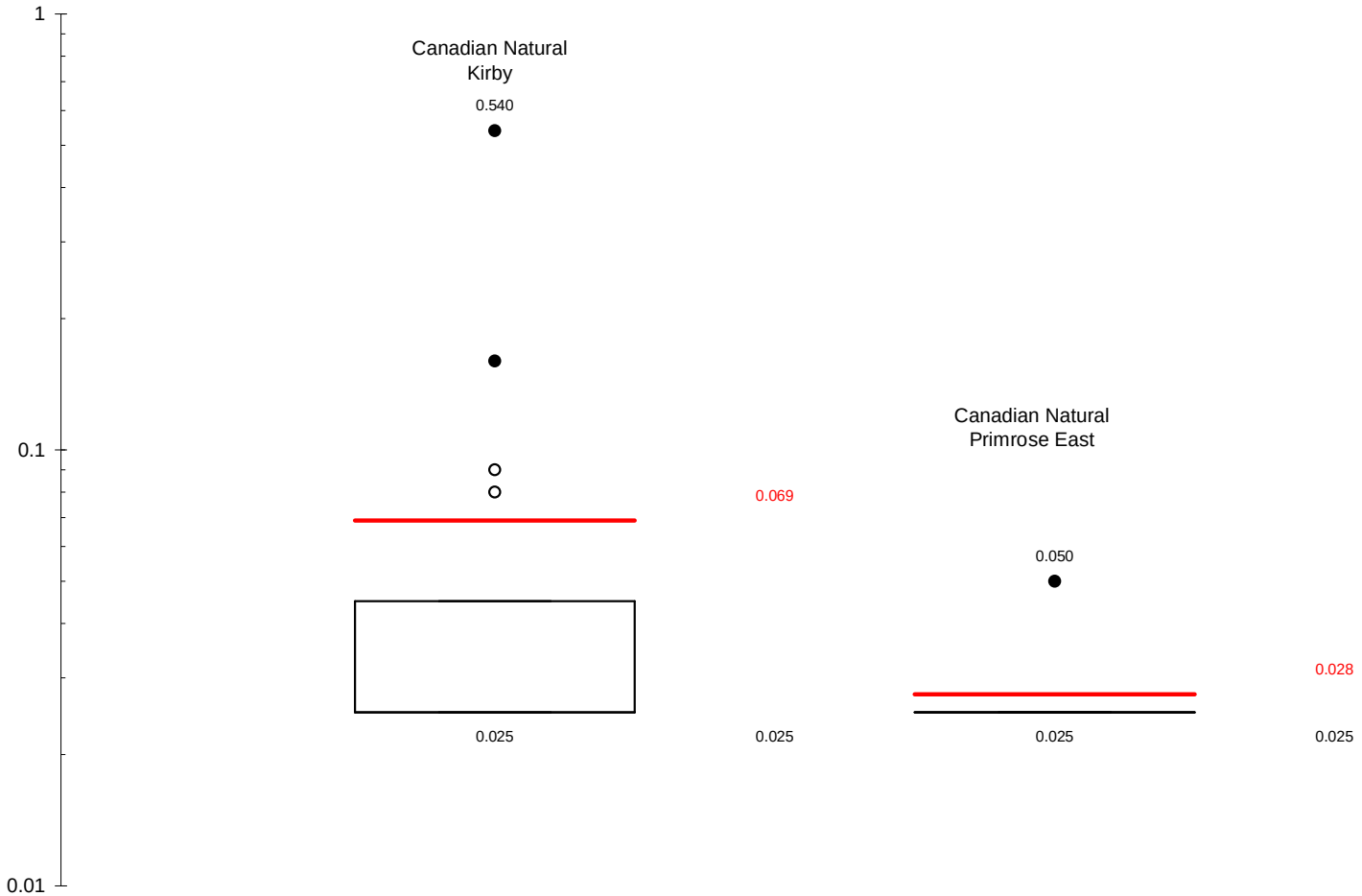
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF ANTIMONY CONCENTRATIONS IN ALDER [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE NoRegional.Antimony.Alder	
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	TRE	27/02/08	**FIGURE: B-2**	
CHECK	BK	07/04/08		
REVIEW	TRE	07/04/08		



PROJECT

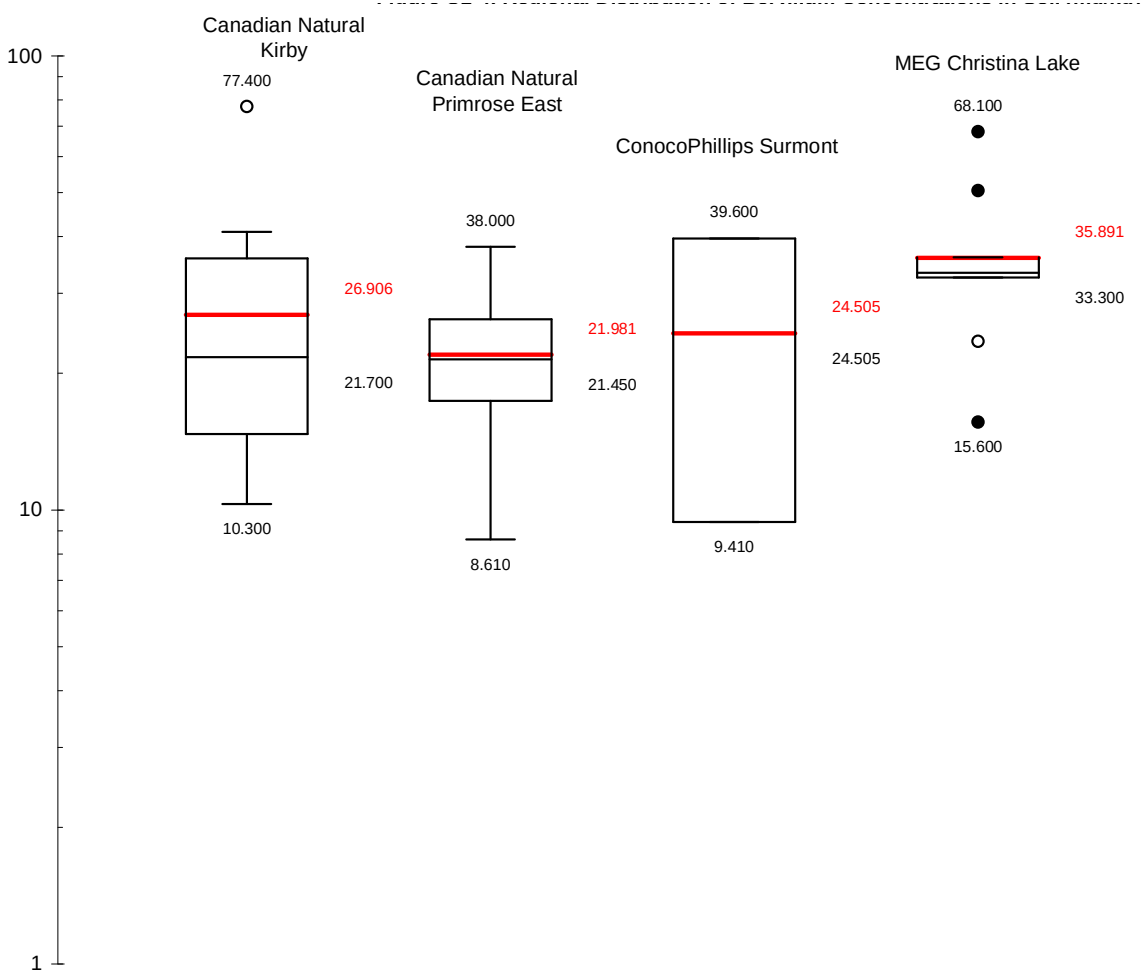
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF ARSENIC CONCENTRATIONS IN ALBER [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.	Regional.Arsenic.Alber
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	TRE	27/02/08	FIGURE: B-3	
CHECK	BK	07/04/03		
REVIEW	IGG	07/04/03		



PROJECT

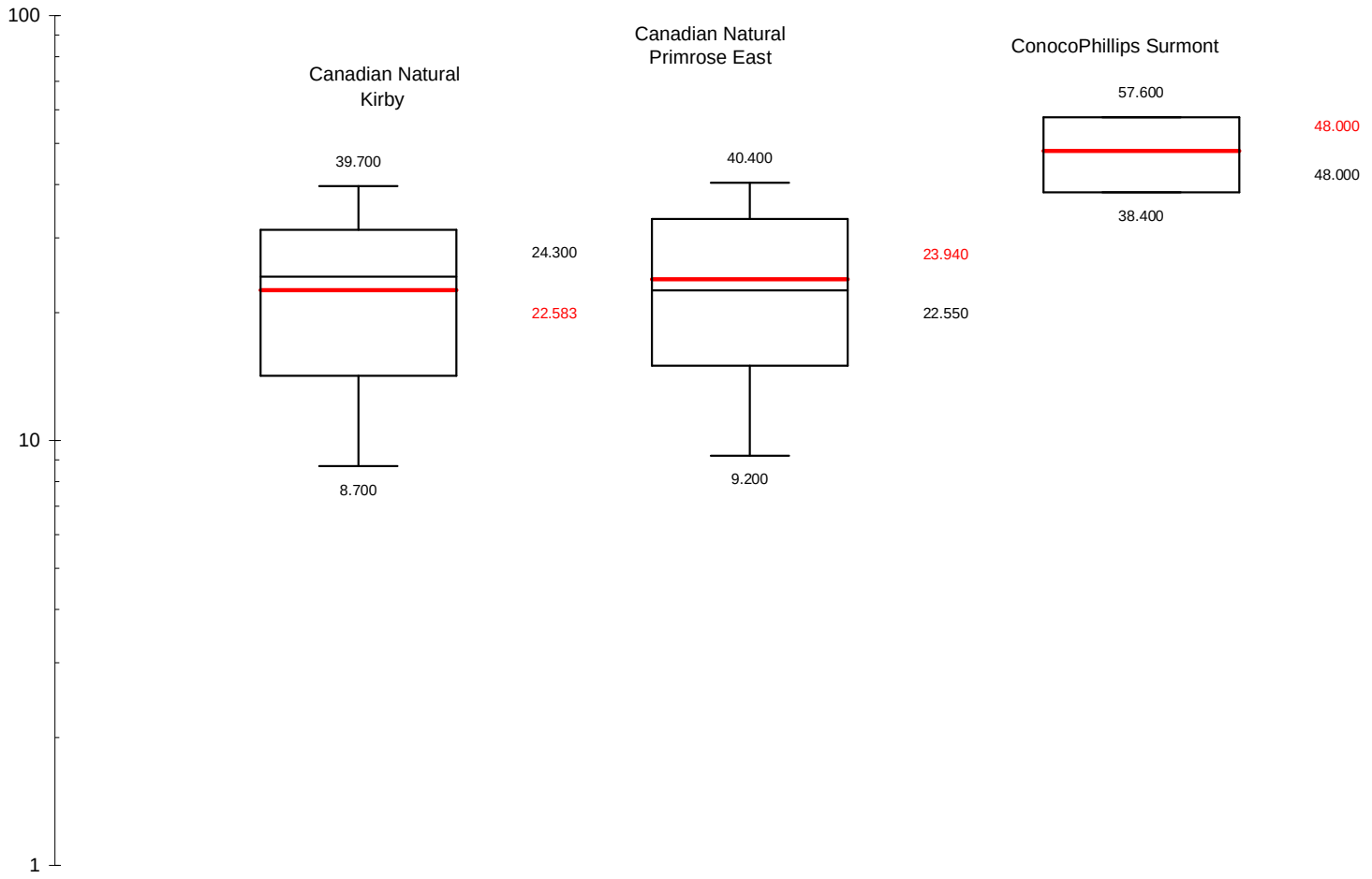
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF BARIUM CONCENTRATIONS IN ALDER [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No. Region-Barium-Alder	
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	TRE	27/02/08	**FIGURE: B-4**	
CHECK	BK	07/04/03		
REVIEW	IGG	07/04/03		



PROJECT

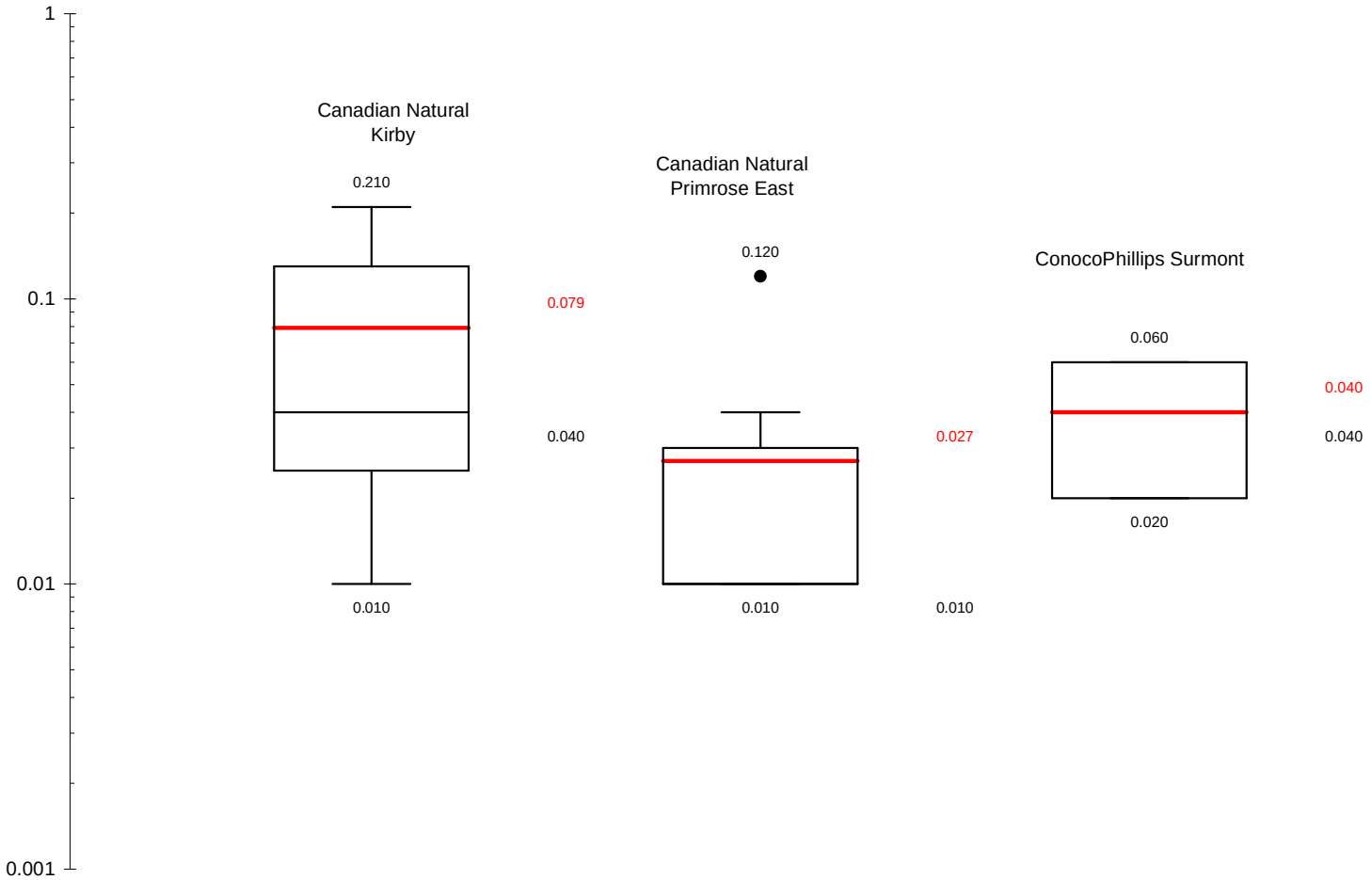
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF BORON CONCENTRATIONS IN ALDER [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.	Region-Boron-Alder
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	TRE	27/02/08	FIGURE: B-5	
CHECK	BK	07/04/03		
REVIEW	IGG	07/04/03		



PROJECT

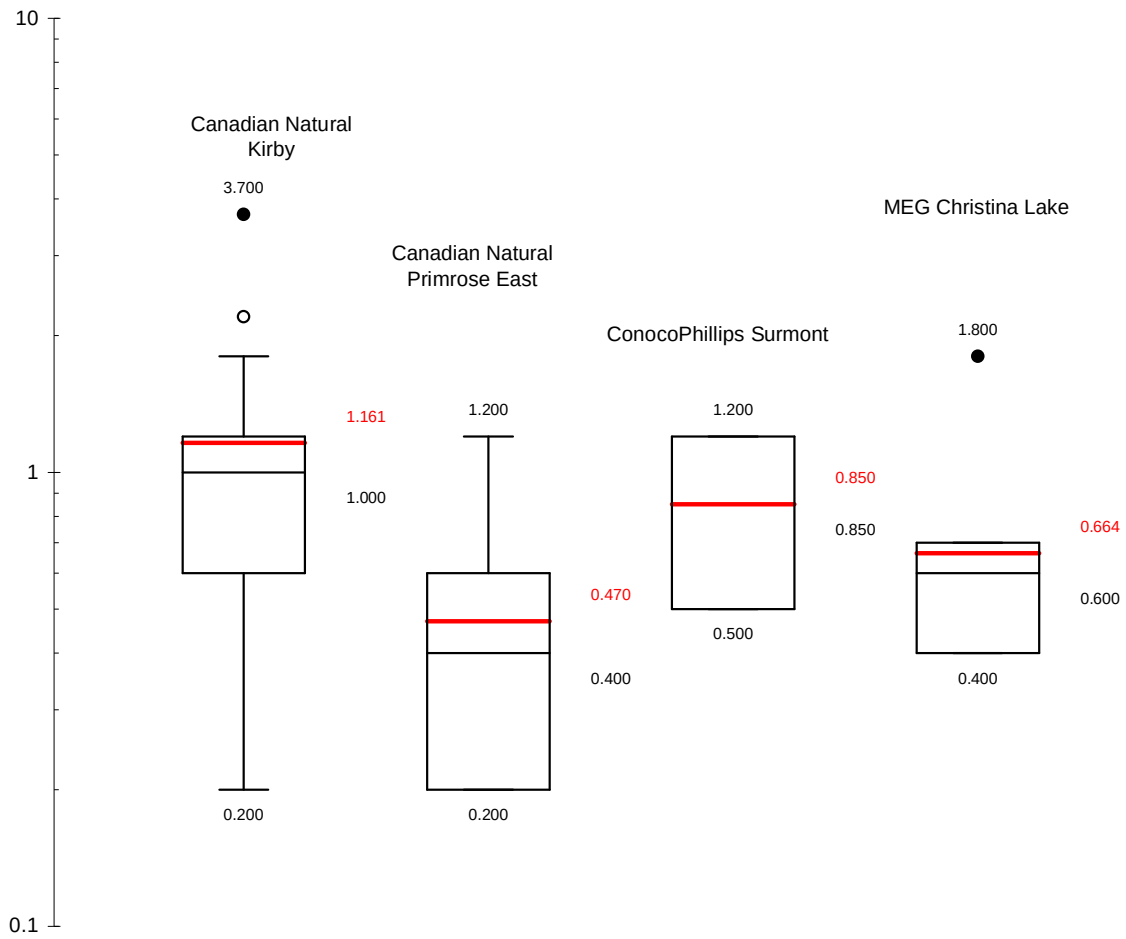
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF CADMIUM CONCENTRATIONS IN ALDER [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No. Region.Cadmium.Alder	
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	TRE	27/02/08	**FIGURE: B-6**	
CHECK	BK	07/04/08		
REVIEW	IGG	07/04/08		



PROJECT

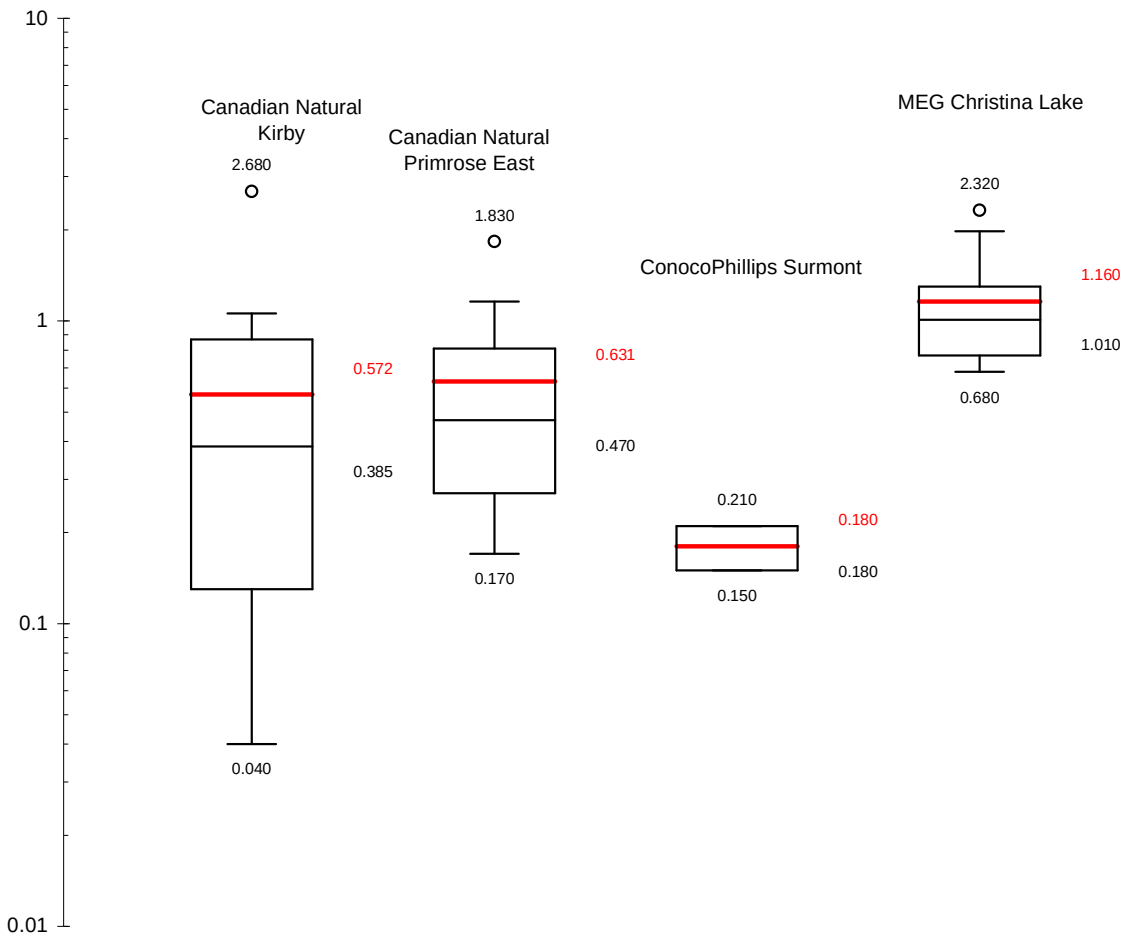
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF CHROMIUM CONCENTRATIONS IN ALDER [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.Region.Chromium.Alder	
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	TRE	27/02/08	**FIGURE: B-7**	
CHECK	BK	07/04/03		
REVIEW	IGG	07/04/03		



PROJECT

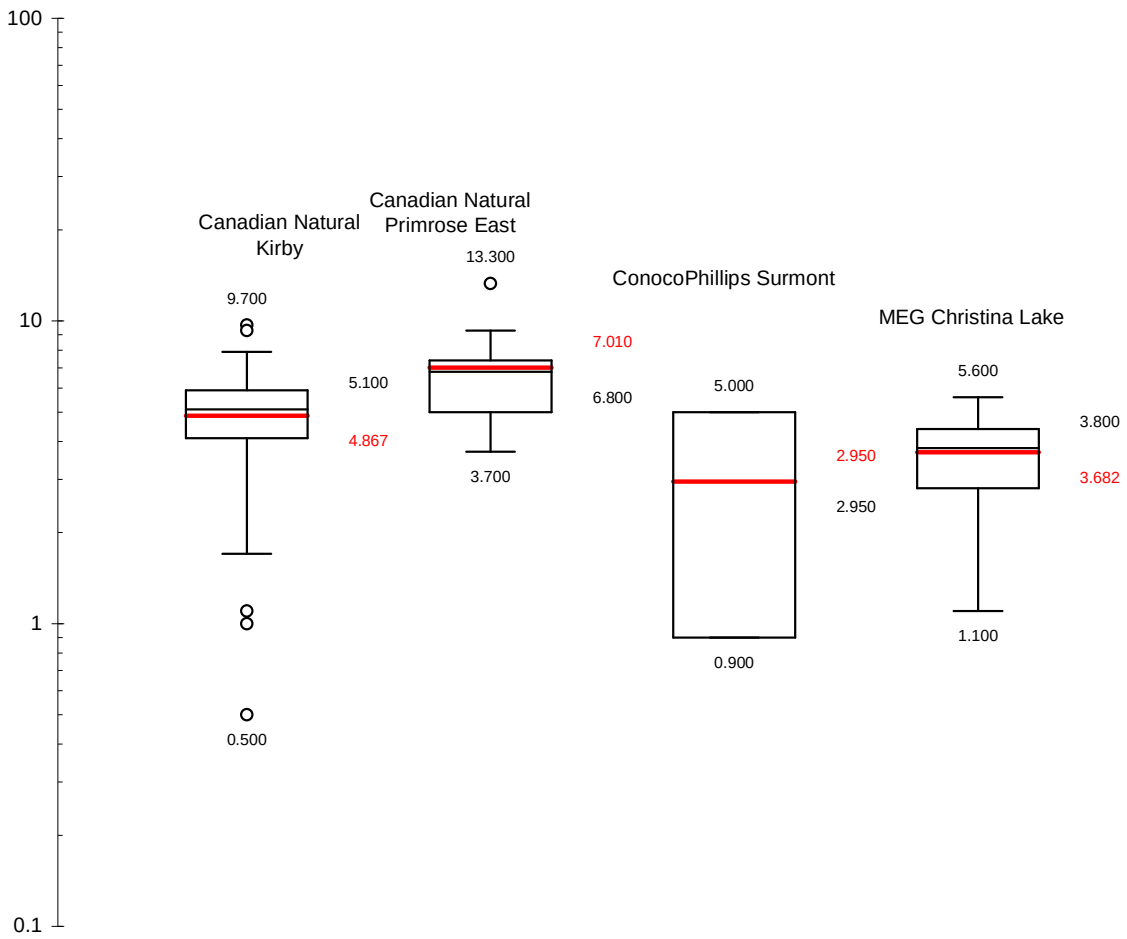
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF COBALT CONCENTRATIONS IN ALDER [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No. Region-Colbalt-Alder	
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	TRE	27/02/08	**FIGURE: B-8**	
CHECK	BK	07/04/08		
REVIEW	IGG	07/04/08		



PROJECT

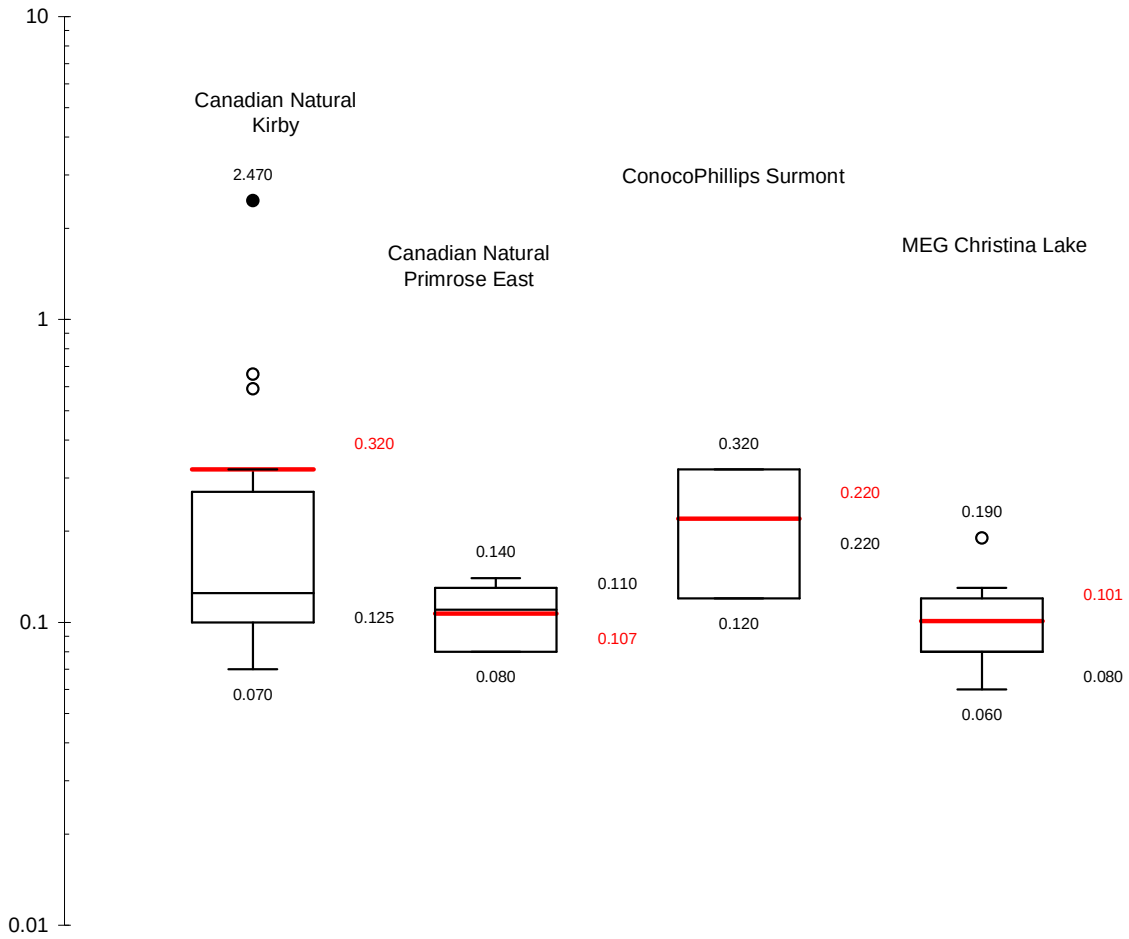
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF COPPER CONCENTRATIONS IN ALDER [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No. Region-Copper-Alder	
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	TRE	27/02/08	**FIGURE: B-9**	
CHECK	BK	07/04/08		
REVIEW	IGG	07/04/08		



PROJECT

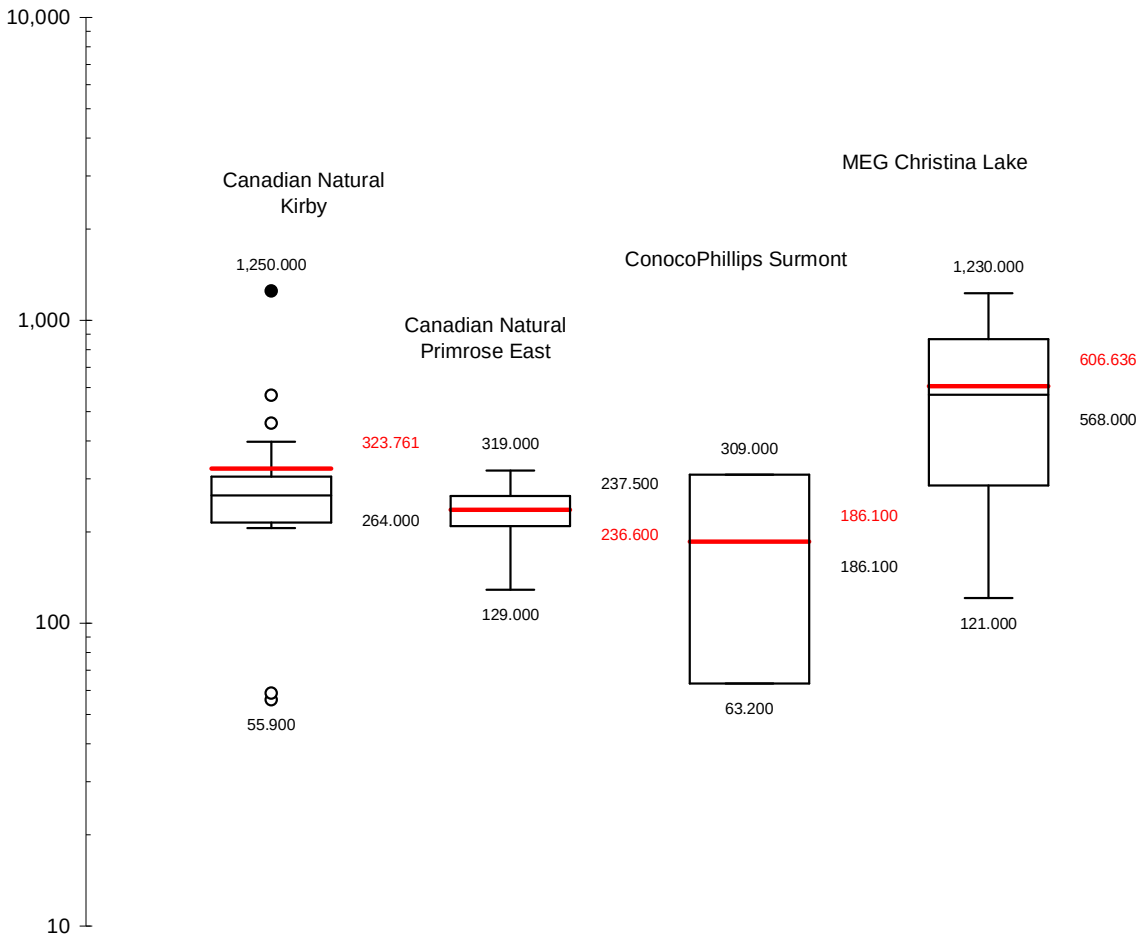
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF LEAD CONCENTRATIONS IN ALDER [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.	Region-Lead-Alder
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	TRE	27/02/08	**FIGURE: B-10**	
CHECK	BK	07/04/08		
REVIEW	IGG	07/04/08		



PROJECT

CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

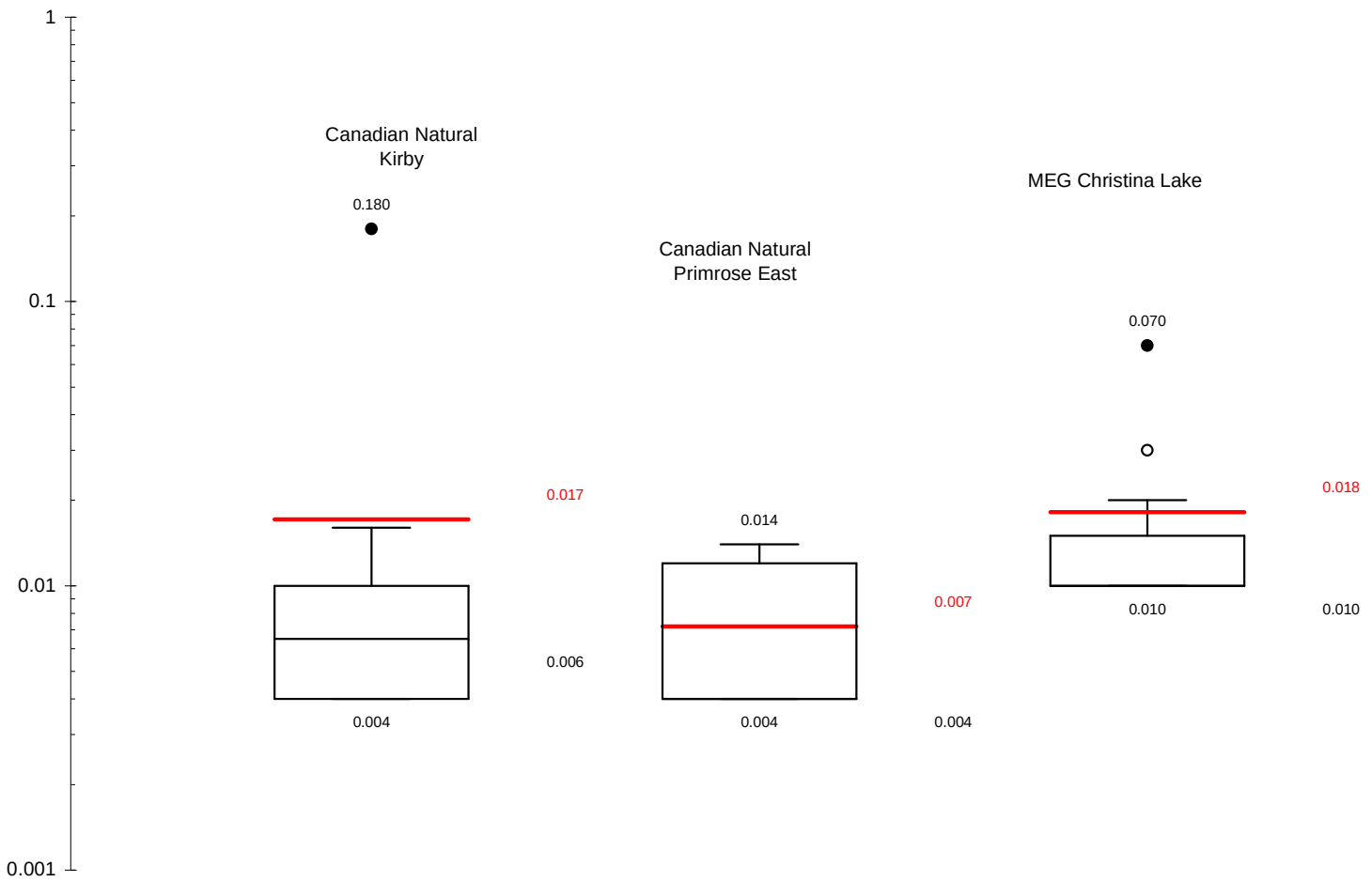
TITLE

REGIONAL DISTRIBUTION OF MANGANESE CONCENTRATIONS IN ALDER [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.Regional-Manga-Alder	
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	TRE	27/02/08	**FIGURE: B-11**	
CHECK	BK	07/04/08		
REVIEW	IGG	07/04/08		

L:\2007\1346 Oil Sands\07-1346-0009-MEG EXPANSION\8800\8810\Appendix C2-Attachment B\Fig B-12_Regional Distribution-Mercury Conc in Alder.dwg Apr 10, 2008 - 11:33am



PROJECT

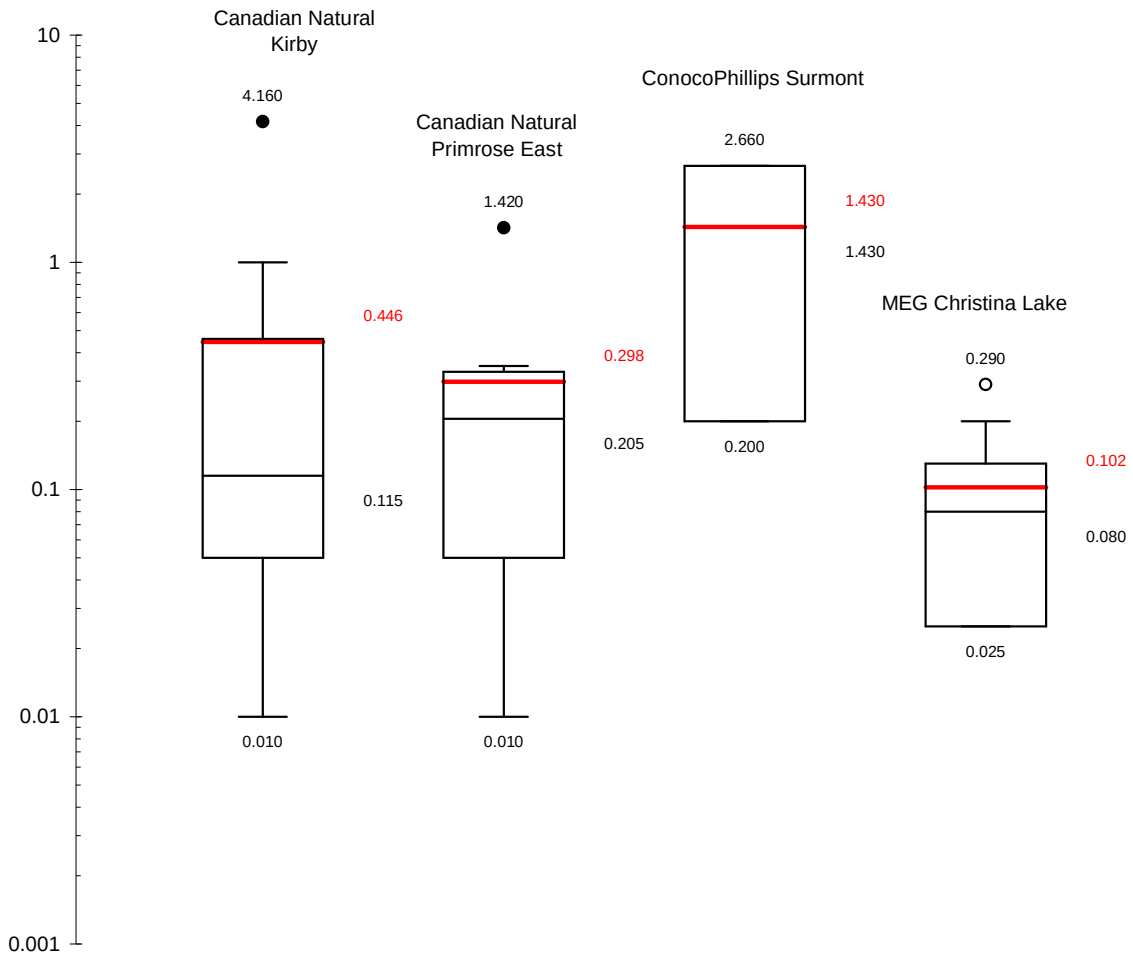
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF MERCURY CONCENTRATIONS IN ALDER [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No. Regional.Mercury.Alder	
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	TRE	27/02/08	**FIGURE: B-12**	
CHECK	BK	07/04/08		
REVIEW	IGG	07/04/08		



PROJECT

CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

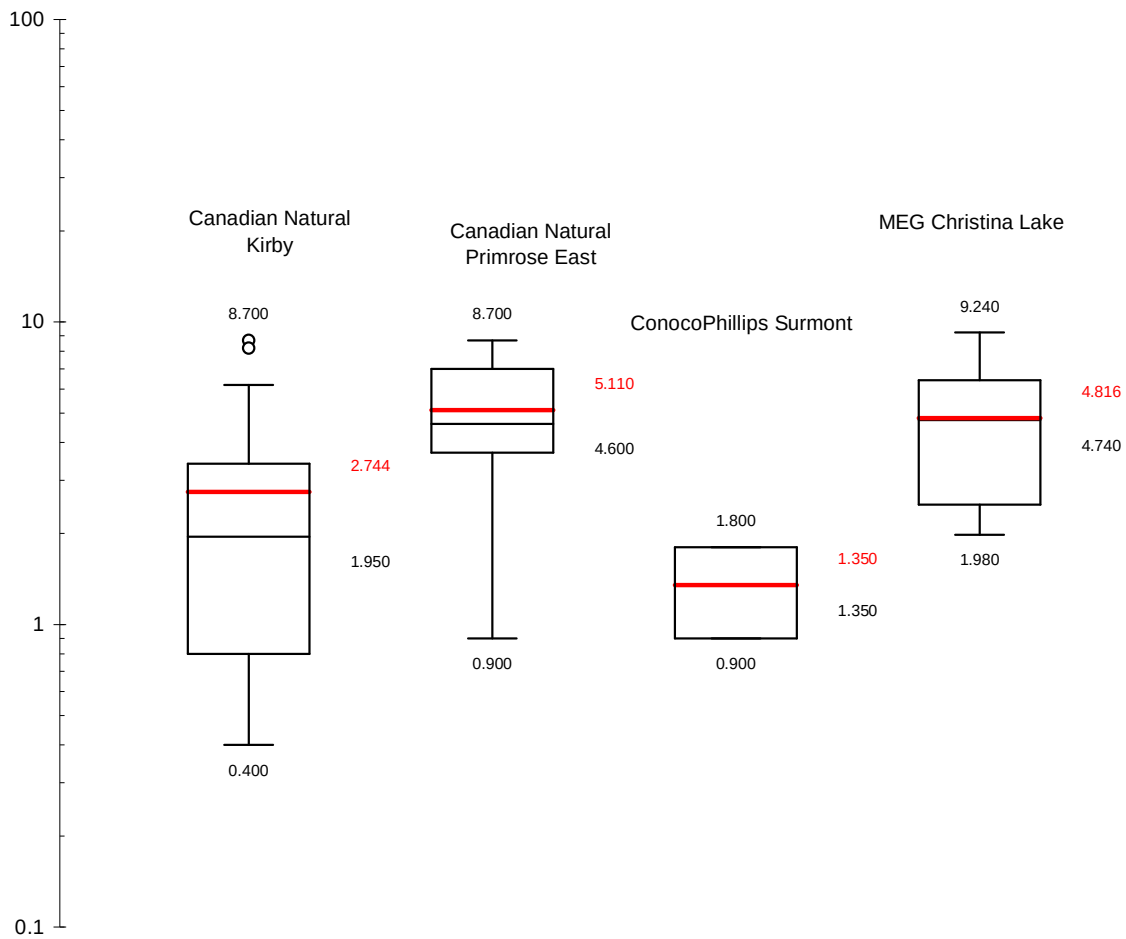
TITLE

REGIONAL DISTRIBUTION OF MOLYBDENUM CONCENTRATIONS IN ALDER [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.	Regional.Molybd.Alder
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	TRE	27/02/08		
CHECK	BK	07/04/08		
REVIEW	IGG	07/04/08		

FIGURE: B-13



PROJECT

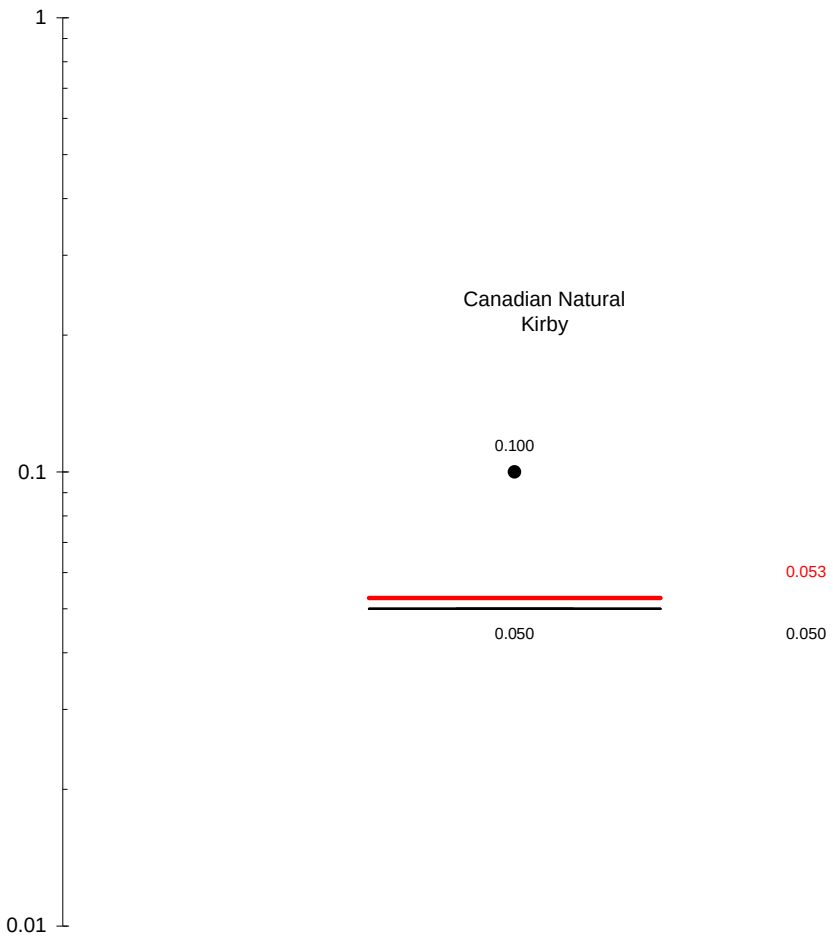
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF NICKEL CONCENTRATIONS IN ALDER [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No. Regional-Nickel-Alder	
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	TRE	27/02/08	**FIGURE: B-14**	
CHECK	BK	07/04/08		
REVIEW	IGG	07/04/08		



PROJECT

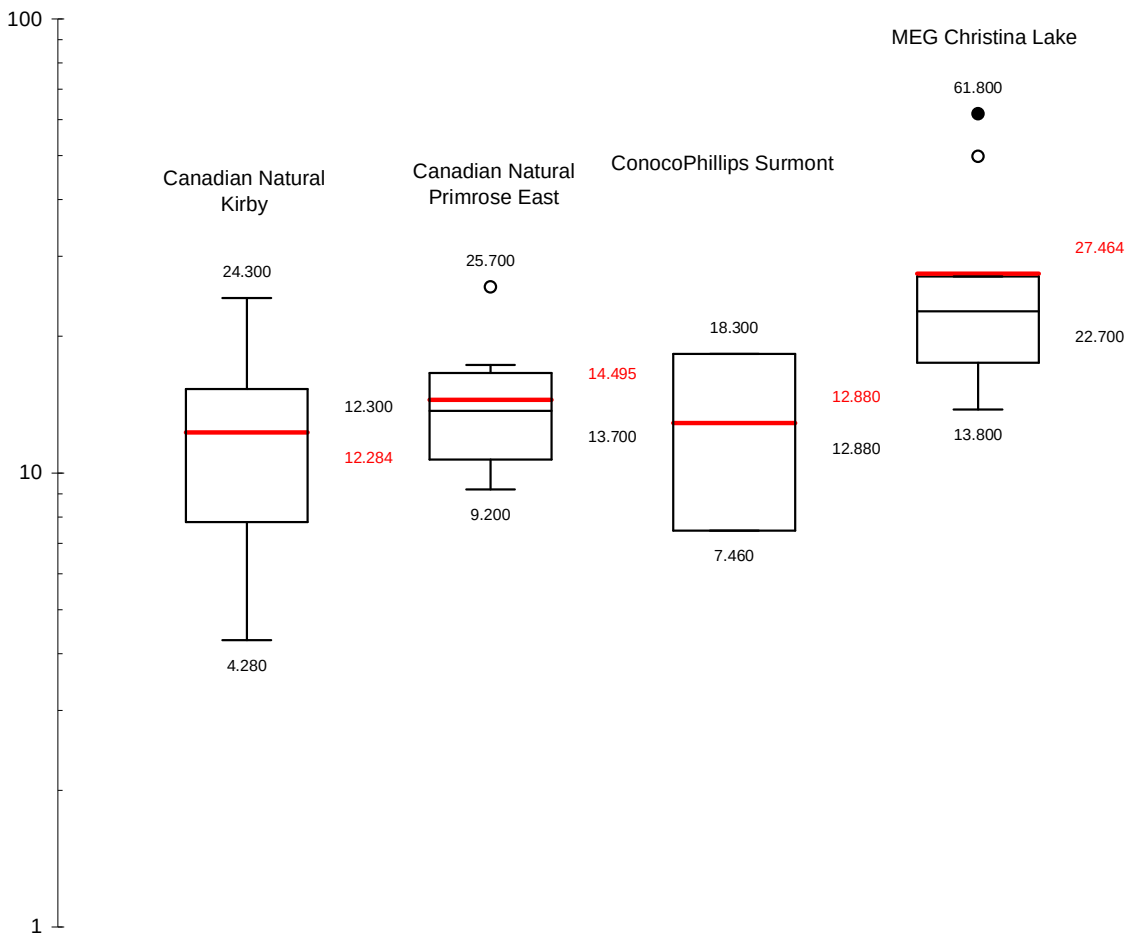
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF SELENIUM CONCENTRATIONS IN ALDER [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No. Regional-Selen-Alder	
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	TRE	27/02/08	FIGURE: B-15	
CHECK	BK	07/04/08		
REVIEW	IGG	07/04/08		



PROJECT

CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

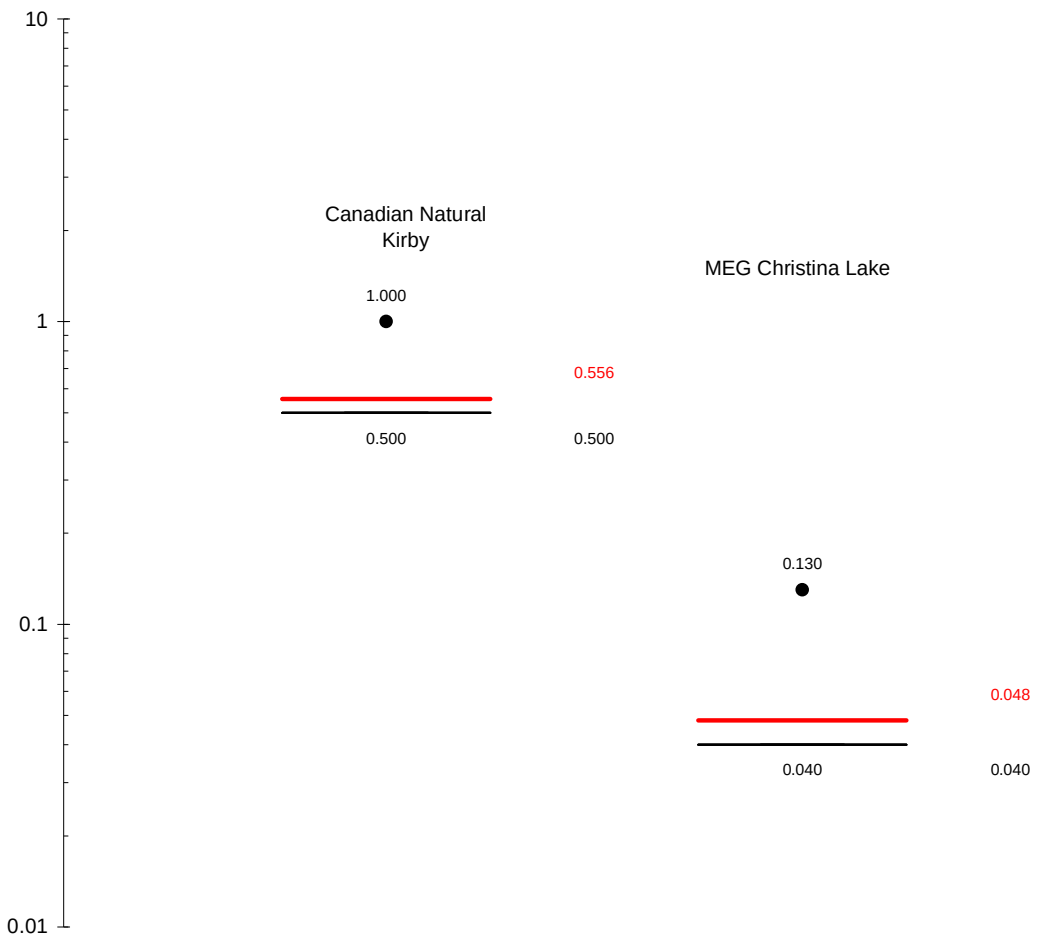
TITLE

REGIONAL DISTRIBUTION OF STRONTIUM CONCENTRATIONS IN ALDER [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No. Regional-Stront-Alder	
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	TRE	27/02/08	**FIGURE: B-16**	
CHECK	BK	07/04/08		
REVIEW	IGG	07/04/08		

L:\2007\1346 Oil Sands\07-1346-0009-MEG EXPANSION\8800\8810\Appendix C2-Attachment B\Fig B-17_Regional Distribution-Tin Conc in Alder.dwg Apr 10, 2008 - 1:04pm



PROJECT

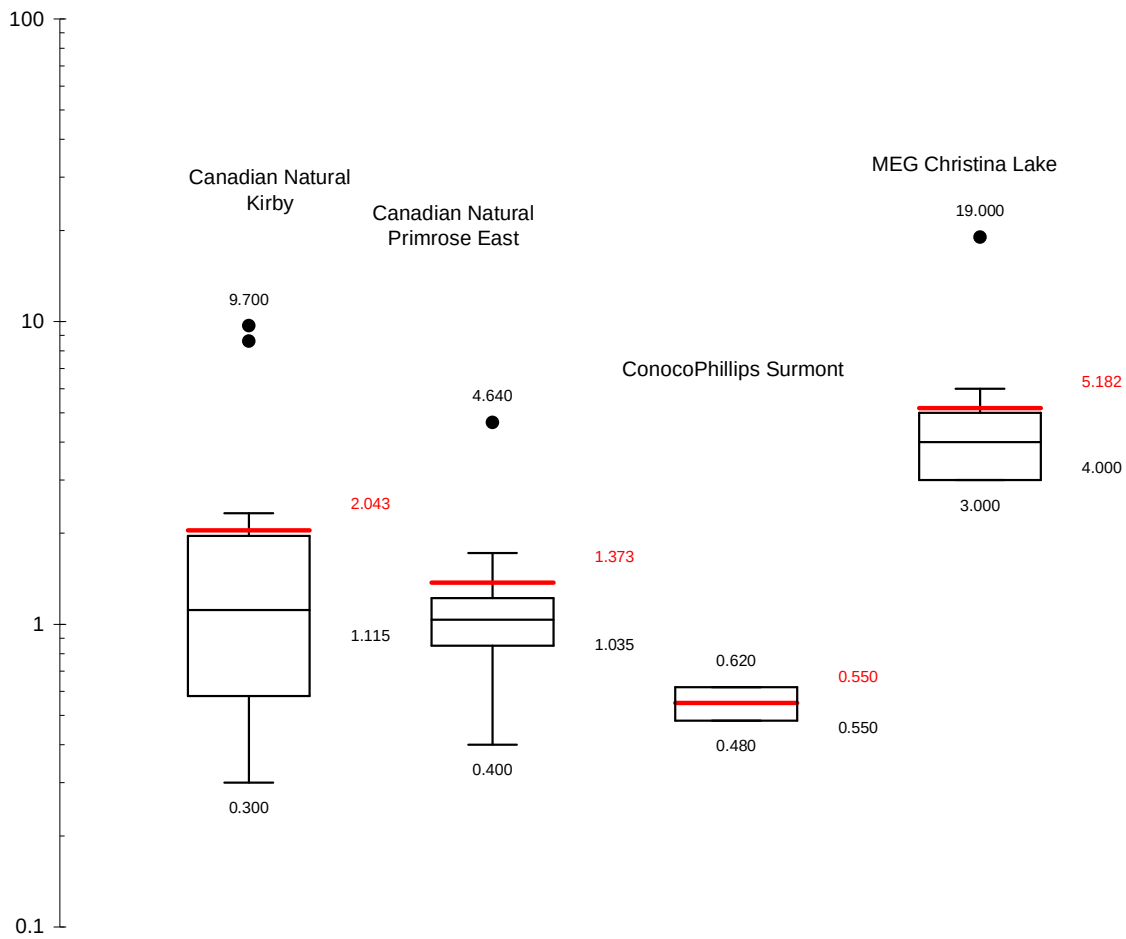
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF TIN CONCENTRATIONS IN ALDER [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.	Regional-Tin-Alder	
DESIGN	BK	26/02/08	SCALE	AS SHOWN	REV. 0
CADD	TRE	27/02/08	**FIGURE: B-17**		
CHECK	BK	07/04/08			
REVIEW	IGG	07/04/08			



PROJECT

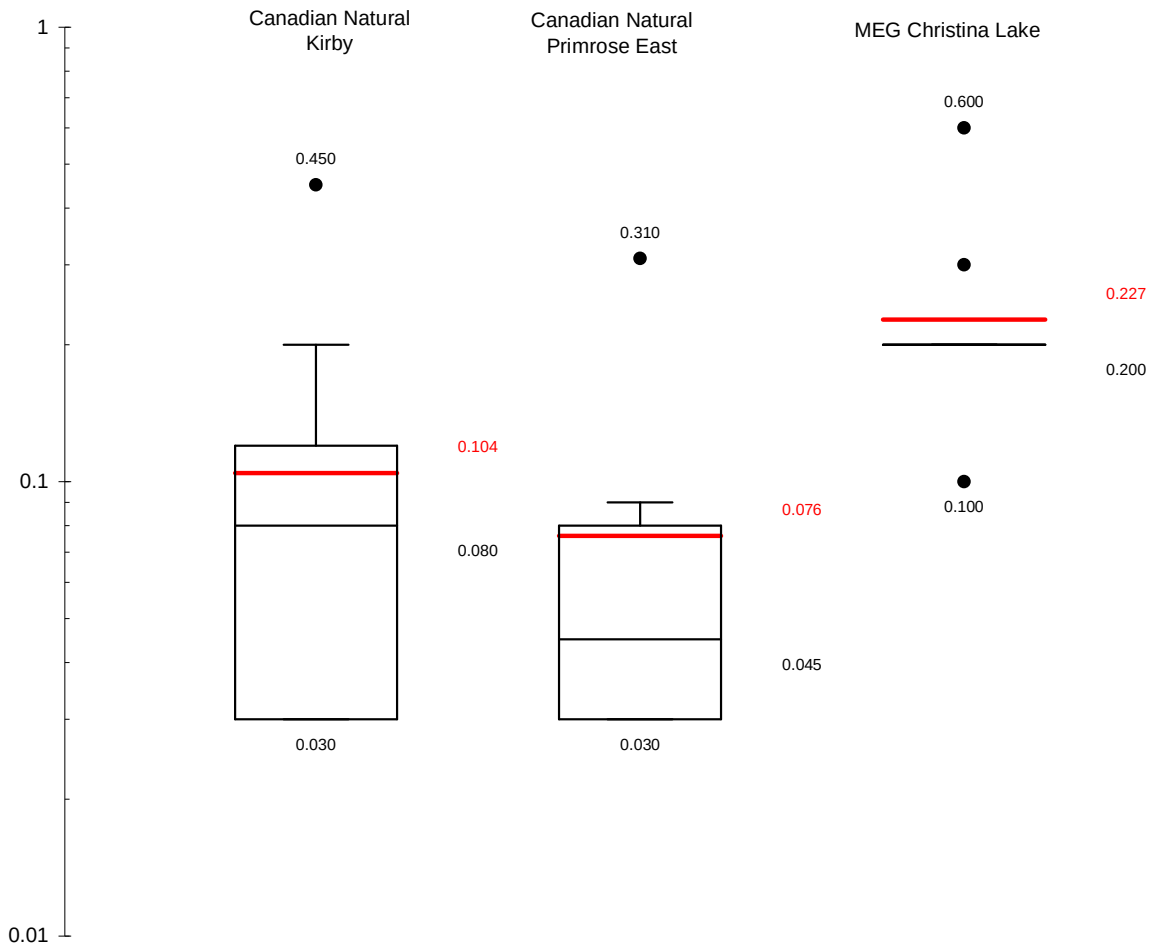
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF TITANIUM CONCENTRATIONS IN ALDER [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No. Regional-Titan-Alder	
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	TRE	27/02/08	**FIGURE: B-18**	
CHECK	BK	07/04/08		
REVIEW	IGG	07/04/08		



PROJECT

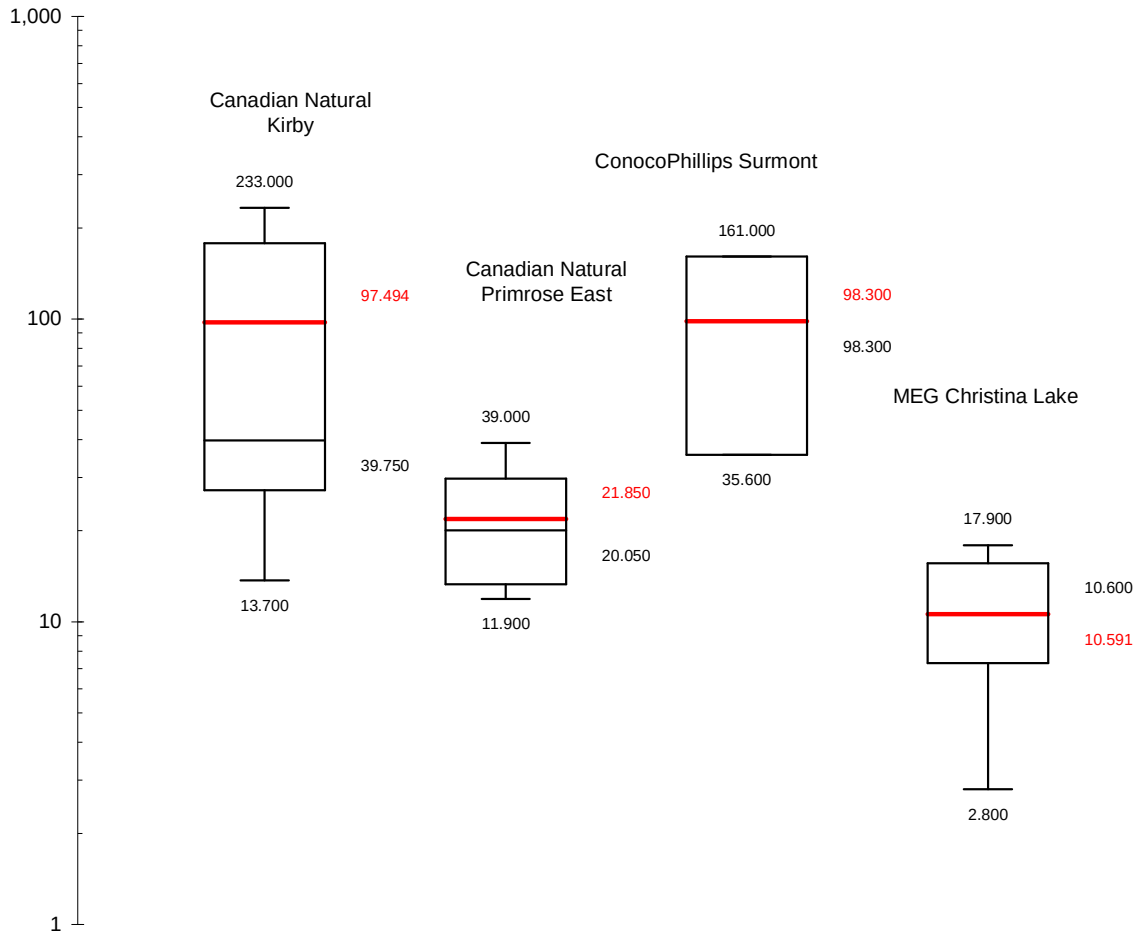
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF VANADIUM CONCENTRATIONS IN ALDER [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No. Regional-Vanad-Alder	
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	TRE	27/02/08	**FIGURE: B-19**	
CHECK	BK	07/04/08		
REVIEW	IGG	07/04/08		



PROJECT

CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF ZINC CONCENTRATIONS IN ALDER [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.	Regional-Zinc-Alder
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	TRE	27/02/08	**FIGURE: B-20**	
CHECK	BK	07/04/08		
REVIEW	IGG	07/04/08		

Table B-1 Summary of Measured Alder Metal Concentrations for Canadian Natural Kirby Project (units in mg/kg)

Chemical	Avg	St Dev	Min	Max	Count	Median	95th Percentile	95UCLM	Comment
Aluminum (Al)	7.3E+01	6.1E+01	1.3E+01	2.3E+02	18	5.4E+01	2.1E+02	1.0E+02	-
Antimony (Sb)	n/d	n/d	n/d	n/d	18	n/d	n/d	n/d	DL <0.06 - <0.1
Arsenic (As)	6.9E-02	1.2E-01	2.5E-02	5.4E-01	18	3.9E-02	2.2E-01	1.3E-01	14/18 non-detect
Barium (Ba)	2.7E+01	1.6E+01	1.0E+01	7.7E+01	18	2.3E+01	4.6E+01	3.4E+01	-
Beryllium (Be)	n/d	n/d	n/d	n/d	18	n/d	n/d	n/d	DL <0.05
Bismuth (Bi)	1.3E-02	7.7E-03	1.0E-02	4.0E-02	18	1.1E-02	2.7E-02	1.6E-02	17/18 non-detect
Boron (B)	2.3E+01	9.5E+00	8.7E+00	4.0E+01	18	2.0E+01	3.5E+01	2.7E+01	-
Cadmium (Cd)	7.9E-02	7.2E-02	1.0E-02	2.1E-01	18	4.9E-02	2.1E-01	1.1E-01	4/18 non-detect
Chromium (Cr)	1.2E+00	8.0E-01	2.0E-01	3.7E+00	18	9.6E-01	2.4E+00	1.5E+00	-
Cobalt (Co)	5.7E-01	6.4E-01	4.0E-02	2.7E+00	18	3.4E-01	1.3E+00	8.7E-01	-
Copper (Cu)	4.9E+00	2.6E+00	5.0E-01	9.7E+00	18	3.9E+00	9.4E+00	6.1E+00	-
Lead (Pb)	3.2E-01	5.6E-01	7.0E-02	2.5E+00	18	1.7E-01	9.3E-01	5.8E-01	-
Manganese (Mn)	3.2E+02	2.6E+02	5.6E+01	1.3E+03	18	2.6E+02	6.7E+02	4.4E+02	-
Mercury (Hg)	1.7E-02	4.1E-02	4.0E-03	1.8E-01	18	7.8E-03	4.1E-02	3.6E-02	9/18 non-detect
Molybdenum (Mo)	4.5E-01	9.6E-01	1.0E-02	4.2E+00	18	1.4E-01	1.5E+00	8.9E-01	1/18 non-detect
Nickel (Ni)	2.7E+00	2.5E+00	4.0E-01	8.7E+00	18	1.9E+00	8.3E+00	3.9E+00	-
Selenium (Se)	n/d	n/d	n/d	n/d	18	n/d	n/d	n/d	DL <0.1 - <0.2
Silver (Ag)	n/d	n/d	n/d	n/d	18	n/d	n/d	n/d	DL <1 - <2
Strontium (Sr)	1.2E+01	5.3E+00	4.3E+00	2.4E+01	18	1.1E+01	2.1E+01	1.5E+01	-
Thallium (Tl)	n/d	n/d	n/d	n/d	18	n/d	n/d	n/d	DL <0.06 - <0.1
Tin (Sn)	5.6E-01	1.6E-01	5.0E-01	1.0E+00	18	5.4E-01	1.0E+00	6.3E-01	17/18 non-detect
Titanium (Ti)	2.0E+00	2.7E+00	3.0E-01	9.7E+00	18	1.2E+00	8.8E+00	3.3E+00	-I3
Uranium (U)	n/d	n/d	n/d	n/d	18	n/d	n/d	n/d	DL <0.02 - <0.05
Vanadium (V)	1.0E-01	9.8E-02	3.0E-02	4.5E-01	18	7.9E-02	2.4E-01	1.5E-01	5/18 non-detect
Zinc (Zn)	9.7E+01	8.5E+01	1.4E+01	2.3E+02	18	6.1E+01	2.3E+02	1.4E+02	-

- = No comment.

n/d = Non-detect.

95UCLM = 95th Upper confidence interval on the mean.

Table B-2 Summary of Measured Alder Metal Concentrations for Canadian Natural Primrose East Project (units in mg/kg)

Chemical	Avg	St Dev	Min	Max	Count	Median	95th Percentile	95UCLM	Comment
Aluminum (Al)	6.4E+01	4.7E+01	2.5E+01	1.9E+02	10	5.5E+01	1.4E+02	9.3E+01	-
Antimony (Sb)	n/d	n/d	n/d	n/d	10	n/d	n/d	n/d	DL <0.06
Arsenic (As)	2.8E-02	7.9E-03	2.5E-02	5.0E-02	10	2.7E-02	3.9E-02	3.2E-02	9/10 non-detect
Barium (Ba)	2.2E+01	9.3E+00	8.6E+00	3.8E+01	10	2.0E+01	3.6E+01	2.8E+01	-
Beryllium (Be)	n/d	n/d	n/d	n/d	10	n/d	n/d	n/d	DL <0.05
Bismuth (Bi)	n/d	n/d	n/d	n/d	10	n/d	n/d	n/d	DL <0.02
Boron (B)	2.4E+01	1.1E+01	9.2E+00	4.0E+01	10	2.1E+01	3.9E+01	3.1E+01	-
Cadmium (Cd)	2.7E-02	3.4E-02	1.0E-02	1.2E-01	10	1.8E-02	8.4E-02	4.8E-02	6/10 non-detect
Chromium (Cr)	4.7E-01	3.1E-01	2.0E-01	1.2E+00	10	3.9E-01	9.7E-01	6.6E-01	-
Cobalt (Co)	6.3E-01	5.2E-01	1.7E-01	1.8E+00	10	4.8E-01	1.5E+00	9.5E-01	-
Copper (Cu)	7.0E+00	2.8E+00	3.7E+00	1.3E+01	10	6.6E+00	1.2E+01	8.7E+00	-
Lead (Pb)	1.1E-01	2.6E-02	8.0E-02	1.4E-01	10	1.0E-01	1.4E-01	1.2E-01	-
Manganese (Mn)	2.4E+02	5.8E+01	1.3E+02	3.2E+02	10	2.3E+02	3.2E+02	2.7E+02	-
Mercury (Hg)	7.2E-03	4.3E-03	4.0E-03	1.4E-02	10	6.2E-03	1.4E-02	9.9E-03	6/10 non-detect
Molybdenum (Mo)	3.0E-01	4.2E-01	1.0E-02	1.4E+00	10	1.4E-01	9.4E-01	5.6E-01	1/10 non-detect
Nickel (Ni)	5.1E+00	2.4E+00	9.0E-01	8.7E+00	10	4.4E+00	8.6E+00	6.6E+00	-
Selenium (Se)	n/d	n/d	n/d	n/d	10	n/d	n/d	n/d	DL <0.1
Silver (Ag)	n/d	n/d	n/d	n/d	10	n/d	n/d	n/d	DL <1
Strontium (Sr)	1.4E+01	4.9E+00	9.2E+00	2.6E+01	10	1.4E+01	2.2E+01	1.8E+01	-
Thallium (Tl)	n/d	n/d	n/d	n/d	10	n/d	n/d	n/d	DL <0.06
Tin (Sn)	n/d	n/d	n/d	n/d	10	n/d	n/d	n/d	DL <1
Titanium (Ti)	1.4E+00	1.2E+00	4.0E-01	4.6E+00	10	1.1E+00	3.3E+00	2.1E+00	-
Uranium (U)	n/d	n/d	n/d	n/d	10	n/d	n/d	n/d	DL <0.02
Vanadium (V)	7.6E-02	8.6E-02	3.0E-02	3.1E-01	10	5.4E-02	2.1E-01	1.3E-01	5/10 non-detect
Zinc (Zn)	2.2E+01	9.2E+00	1.2E+01	3.9E+01	10	2.0E+01	3.5E+01	2.8E+01	-

- = No comment.

n/d = Non-detect.

95UCLM = 95th Upper confidence interval on the mean.

Table B-3 Summary of Measured Alder Metal Concentrations for ConocoPhillips Surmont Project (units in mg/kg)

Chemical	Avg	St Dev	Min	Max	Count	Median	95th Percentile	95UCLM	Comment
Aluminum (Al)	1.8E+01	5.7E+00	1.4E+01	2.2E+01	2	1.8E+01	2.2E+01	2.6E+01	-
Antimony (Sb)	n/d	n/d	n/d	n/d	2	n/d	n/d	n/d	DL <0.06
Arsenic (As)	n/d	n/d	n/d	n/d	2	n/d	n/d	n/d	DL <0.05
Barium (Ba)	2.5E+01	2.1E+01	9.4E+00	4.0E+01	2	1.9E+01	3.8E+01	5.4E+01	-
Beryllium (Be)	n/d	n/d	n/d	n/d	2	n/d	n/d	n/d	DL <0.05
Bismuth (Bi)	n/d	n/d	n/d	n/d	2	n/d	n/d	n/d	DL <0.02
Boron (B)	4.8E+01	1.4E+01	3.8E+01	5.8E+01	2	4.7E+01	5.7E+01	6.7E+01	-
Cadmium (Cd)	4.0E-02	2.8E-02	2.0E-02	6.0E-02	2	3.5E-02	5.8E-02	7.9E-02	-
Chromium (Cr)	8.5E-01	4.9E-01	5.0E-01	1.2E+00	2	7.7E-01	1.2E+00	1.5E+00	-
Cobalt (Co)	1.8E-01	4.2E-02	1.5E-01	2.1E-01	2	1.8E-01	2.1E-01	2.4E-01	-
Copper (Cu)	3.0E+00	2.9E+00	9.0E-01	5.0E+00	2	2.1E+00	4.8E+00	7.0E+00	-
Lead (Pb)	2.2E-01	1.4E-01	1.2E-01	3.2E-01	2	2.0E-01	3.1E-01	4.2E-01	-
Manganese (Mn)	1.9E+02	1.7E+02	6.3E+01	3.1E+02	2	1.4E+02	3.0E+02	4.3E+02	-
Mercury (Hg)	n/d	n/d	n/d	n/d	2	n/d	n/d	n/d	DL <0.008
Molybdenum (Mo)	1.4E+00	1.7E+00	2.0E-01	2.7E+00	2	7.3E-01	2.5E+00	3.8E+00	-
Nickel (Ni)	1.4E+00	6.4E-01	9.0E-01	1.8E+00	2	1.3E+00	1.8E+00	2.2E+00	-
Selenium (Se)	n/d	n/d	n/d	n/d	2	n/d	n/d	n/d	DL <0.1
Silver (Ag)	n/d	n/d	n/d	n/d	2	n/d	n/d	n/d	DL <1
Strontium (Sr)	1.3E+01	7.7E+00	7.5E+00	1.8E+01	2	1.2E+01	1.8E+01	2.4E+01	-
Thallium (Tl)	n/d	n/d	n/d	n/d	2	n/d	n/d	n/d	DL <0.06
Tin (Sn)	n/d	n/d	n/d	n/d	2	n/d	n/d	n/d	DL <1
Titanium (Ti)	5.5E-01	9.9E-02	4.8E-01	6.2E-01	2	5.5E-01	6.1E-01	6.9E-01	-
Uranium (U)	n/d	n/d	n/d	n/d	2	n/d	n/d	n/d	DL <0.02
Vanadium (V)	n/d	n/d	n/d	n/d	2	n/d	n/d	n/d	DL <0.06
Zinc (Zn)	9.8E+01	8.9E+01	3.6E+01	1.6E+02	2	7.6E+01	1.5E+02	2.2E+02	-

- = No comment.

n/d = Non-detect.

95UCLM = 95th Upper confidence interval on the mean.

Table B-4 Summary of Measured Alder Metal Concentrations for MEG Christina Lake Project (units in mg/kg)

Chemical	Avg	St Dev	Min	Max	Count	Median	95th Percentile	95UCLM	Comment
Aluminum (Al)	1.7E+02	1.2E+02	7.0E+01	4.1E+02	11	1.4E+02	3.9E+02	2.4E+02	-
Antimony (Sb)	n/d	n/d	n/d	n/d	11	n/d	n/d	n/d	DL <0.05
Arsenic (As)	n/d	n/d	n/d	n/d	11	n/d	n/d	n/d	DL <0.2
Barium (Ba)	3.6E+01	1.4E+01	1.6E+01	6.8E+01	11	3.4E+01	5.9E+01	4.4E+01	-
Beryllium (Be)	n/d	n/d	n/d	n/d	11	n/d	n/d	n/d	DL<0.2
Cadmium (Cd)	n/d	n/d	n/d	n/d	11	n/d	n/d	n/d	DL <0.08
Chromium (Cr)	6.6E-01	4.0E-01	4.0E-01	1.8E+00	11	6.0E-01	1.3E+00	9.0E-01	-
Cobalt (Co)	1.2E+00	5.3E-01	6.8E-01	2.3E+00	11	1.1E+00	2.2E+00	1.5E+00	-
Copper (Cu)	3.7E+00	1.4E+00	1.1E+00	5.6E+00	11	3.4E+00	5.6E+00	4.5E+00	-
Lead (Pb)	1.0E-01	3.8E-02	6.0E-02	1.9E-01	11	9.6E-02	1.6E-01	1.2E-01	-
Manganese (Mn)	6.1E+02	3.6E+02	1.2E+02	1.2E+03	11	5.0E+02	1.2E+03	8.2E+02	-
Mercury (Hg)	1.8E-02	1.8E-02	1.0E-02	7.0E-02	11	1.4E-02	5.0E-02	2.9E-02	8/11 non-detect
Molybdenum (Mo)	1.0E-01	8.2E-02	2.5E-02	2.9E-01	11	7.5E-02	2.5E-01	1.5E-01	3/11 non-detect
Nickel (Ni)	4.8E+00	2.3E+00	2.0E+00	9.2E+00	11	4.3E+00	8.5E+00	6.2E+00	-
Potassium (K)	1.1E+04	3.1E+03	6.5E+03	1.7E+04	11	1.1E+04	1.6E+04	1.3E+04	-
Selenium (Se)	n/d	n/d	n/d	n/d	11	n/d	n/d	n/d	DL <0.2
Silver (Ag)	n/d	n/d	n/d	n/d	11	n/d	n/d	n/d	DL <0.08
Strontium (Sr)	2.7E+01	1.5E+01	1.4E+01	6.2E+01	11	2.5E+01	5.6E+01	3.6E+01	-
Thallium (Tl)	n/d	n/d	n/d	n/d	11	n/d	n/d	n/d	DL <0.04
Tin (Sn)	4.8E-02	2.7E-02	4.0E-02	1.3E-01	11	4.5E-02	8.5E-02	6.4E-02	10/11 non-detect
Titanium (Ti)	5.2E+00	4.7E+00	3.0E+00	1.9E+01	11	4.3E+00	1.3E+01	8.0E+00	-
Uranium (U)	n/d	n/d	n/d	n/d	11	n/d	n/d	n/d	DL <0.05
Vanadium (V)	2.3E-01	1.3E-01	1.0E-01	6.0E-01	11	2.0E-01	4.5E-01	3.1E-01	-
Zinc (Zn)	1.1E+01	4.9E+00	2.8E+00	1.8E+01	11	9.3E+00	1.7E+01	1.3E+01	-

- = No comment.

n/d = Non-detect.

95UCLM = 95th Upper confidence interval on the mean.

Table B-5 Summary of Measured Alder PAH Concentrations for Canadian Natural Kirby Project (units in mg/kg)

Chemical	Avg	St Dev	Min	Max	Count	Median	95th Percentile	95UCLM	Comment
Acenaphthylene									
Anthracene									
Benzo(a)anthracene									
Benzo(a)pyrene									
Benzo(b)fluoranthene									
Benzo(ghi)perylene									
Benzo(k)fluoranthene									
Biphenyl									
C2 sub'd B(a)A/chrysene									
C2 sub'd B(b&k)F/B(a)P									
C2 sub'd biphenyl									
C2 sub'd dibenzothiophene									
C2 sub'd fluorene									
C2 sub'd phenanthrene/anth									
C3 sub'd dibenzothiophene									
C3 sub'd naphthalene	n/d	n/d	n/d	n/d	18	n/d	n/d	n/d	DL <0.01 - <0.04
C3 sub'd phenanthrene/anth									
C4 sub'd dibenzothiophene									
C4 sub'd naphthalene									
C4 sub'd phenanthrene/anth									
Chrysene									
Dibenzo(a,h)anthracene									
Dibenzothiophene									
Fluoranthene									
Fluorene									
Indeno(c,d-123)pyrene									
Methyl acenaphthene									
Methyl B(a)A/chrysene									
Methyl B(b&k)F/B(a)P									
Methyl biphenyl									
Methyl dibenzothiophene									
Methyl fluoranthene/pyrene									
Methyl fluorene									
Methyl phenanthrene/anthracene									
Pyrene									
Acenaphthene	5.8E-03	3.5E-03	5.0E-03	2.0E-02	18	5.4E-03	7.2E-03	7.5E-03	17/18 non-detect
C2 sub'd naphthalene	2.3E-02	1.4E-02	2.0E-02	8.0E-02	18	2.2E-02	2.9E-02	3.0E-02	17/18 non-detect
Methyl naphthalene	5.8E-03	1.9E-03	5.0E-03	1.0E-02	18	5.6E-03	1.0E-02	6.7E-03	15/18 non-detect
Naphthalene	5.6E-03	1.6E-03	5.0E-03	1.0E-02	18	5.4E-03	1.0E-02	6.3E-03	16/18 non-detect
Phenanthrene	8.9E-03	7.2E-03	5.0E-03	3.0E-02	18	7.2E-03	2.2E-02	1.2E-02	12/18 non-detect

n/d = Non-detect.

95UCLM = 95th Upper confidence interval on the mean.

Table B-6 Summary of Measured Alder PAH Concentrations for Canadian Natural Primrose East Project (units in mg/kg)

Chemical	Avg	St Dev	Min	Max	Count	Median	95th Percentile	95UCLM	Comment
Acenaphthene									
Acenaphthylene									
Anthracene									
Benzo(a)anthracene									
Benzo(a)pyrene									
Benzo(b)fluoranthene									
Benzo(g,h,i)perylene									
Benzo(k)fluoranthene									
Biphenyl									
C2 sub'd B(a)A/chrysene									
C2 sub'd B(b&k)F/B(a)P									
C2 sub'd biphenyl									
C2 sub'd dibenzothiophene									
C2 sub'd fluorene									
C2 sub'd phenanthrene/anth									
C3 sub'd dibenzothiophene									
C3 sub'd naphthalene									
C3 sub'd phenanthrene/anth	n/d	n/d	n/d	n/d	10	n/d	n/d	n/d	DL <0.01 - <0.04
C4 sub'd dibenzothiophene									
C4 sub'd naphthalene									
C4 sub'd phenanthrene/anth									
Chrysene									
Dibenzo(a,h)anthracene									
Dibenzothiophene									
Fluoranthene									
Fluorene									
Indeno(1,2,3-cd)pyrene									
Methyl acenaphthene									
Methyl B(a)A/chrysene									
Methyl B(b&k)F/B(a)P									
Methyl biphenyl									
Methyl dibenzothiophene									
Methyl fluoranthene/pyrene									
Methyl fluorene									
Methyl naphthalene									
Methyl phenanthrene/anthracene									
Naphthalene									
Pyrene									
C2 sub'd naphthalene	2.8E-02	1.3E-02	2.0E-02	5.0E-02	10	2.6E-02	5.0E-02	3.6E-02	7/10 non-detect
Phenanthrene	9.0E-03	6.1E-03	5.0E-03	2.0E-02	10	7.6E-03	2.0E-02	1.3E-02	6/10 non-detect

n/d = Non-detect.

95UCLM = 95th Upper confidence interval on the mean.

Table B-7 Summary of Measured Alder Polycyclic Aromatic Hydrocarbons Concentrations for Canadian Natural Primrose East Project (units in mg/kg)

Chemical	Avg	St Dev	Min	Max	Count	Median	95th Percentile	95UCLM	Comment
Acenaphthene									
Acenaphthylene									
Anthracene									
Benzo(a)anthracene									
Benzo(a)pyrene									
Benzo(b)fluoranthene									
Benzo(g,h,i)perylene									
Benzo(k)fluoranthene									
Biphenyl									
C2 sub'd B(a)A/chrysene									
C2 sub'd B(b&k)F/B(a)P									
C2 sub'd biphenyl									
C2 sub'd dibenzothiophene									
C2 sub'd fluorene									
C2 sub'd naphthalene									
C2 sub'd phenanthrene/anth									
C3 sub'd dibenzothiophene									
C3 sub'd naphthalene	n/d	n/d	n/d	n/d	2	n/d	n/d	n/d	DL <0.04 - <0.2
C3 sub'd phenanthrene/anth									
C4 sub'd dibenzothiophene									
C4 sub'd naphthalene									
C4 sub'd phenanthrene/anth									
Chrysene									
Dibenzo(a,h)anthracene									
Dibenzothiophene									
Fluoranthene									
Fluorene									
Indeno(1,2,3-cd)pyrene									
Methyl acenaphthene									
Methyl B(a)A/chrysene									
Methyl B(b&k)F/B(a)P									
Methyl biphenyl									
Methyl dibenzothiophene									
Methyl fluoranthene/pyrene									
Methyl fluorene									
Methyl naphthalene									
Methyl phenanthrene/anthracene									
Naphthalene									
Phenanthrene									
Pyrene									

n/d = Non-detect.

95UCLM = 95th Upper confidence interval on the mean.

Table B-8 Summary of Measured Alder Polycyclic Aromatic Hydrocarbons Concentrations for MEG Christina Lake Project (units in mg/kg)

Chemical	Avg	St Dev	Min	Max	Count	Median	95th Percentile	95UCLM	Comment
3-Methylcholanthrene									
7,12-Dimethylbenz(a)anthracene									
Acenaphthene									
Acenaphthylene									
Anthracene									
Benzo(a)anthracene									
Benzo(a)pyrene									
Benzo(b)fluoranthene									
Benzo(c)phenanthrene									
Benzo(g,h,i)perylene									
Benzo(j)fluoranthene	n/d	n/d	n/d	n/d	11	n/d	n/d	n/d	DL <0.01 - <0.4
Benzo(k)fluoranthene									
Chrysene									
Dibenzo(a,h)anthracene									
Dibenzo(a,h/a,i/a,l)pyrene									
Equivalent B(a)P Concentration									
Fluoranthene									
Fluorene									
Indeno(1,2,3-cd)pyrene									
Naphthalene									
Phenanthrene									
Pyrene									

n/d = Non-detect.

95UCLM = 95th Upper confidence interval on the mean.

ATTACHMENT C

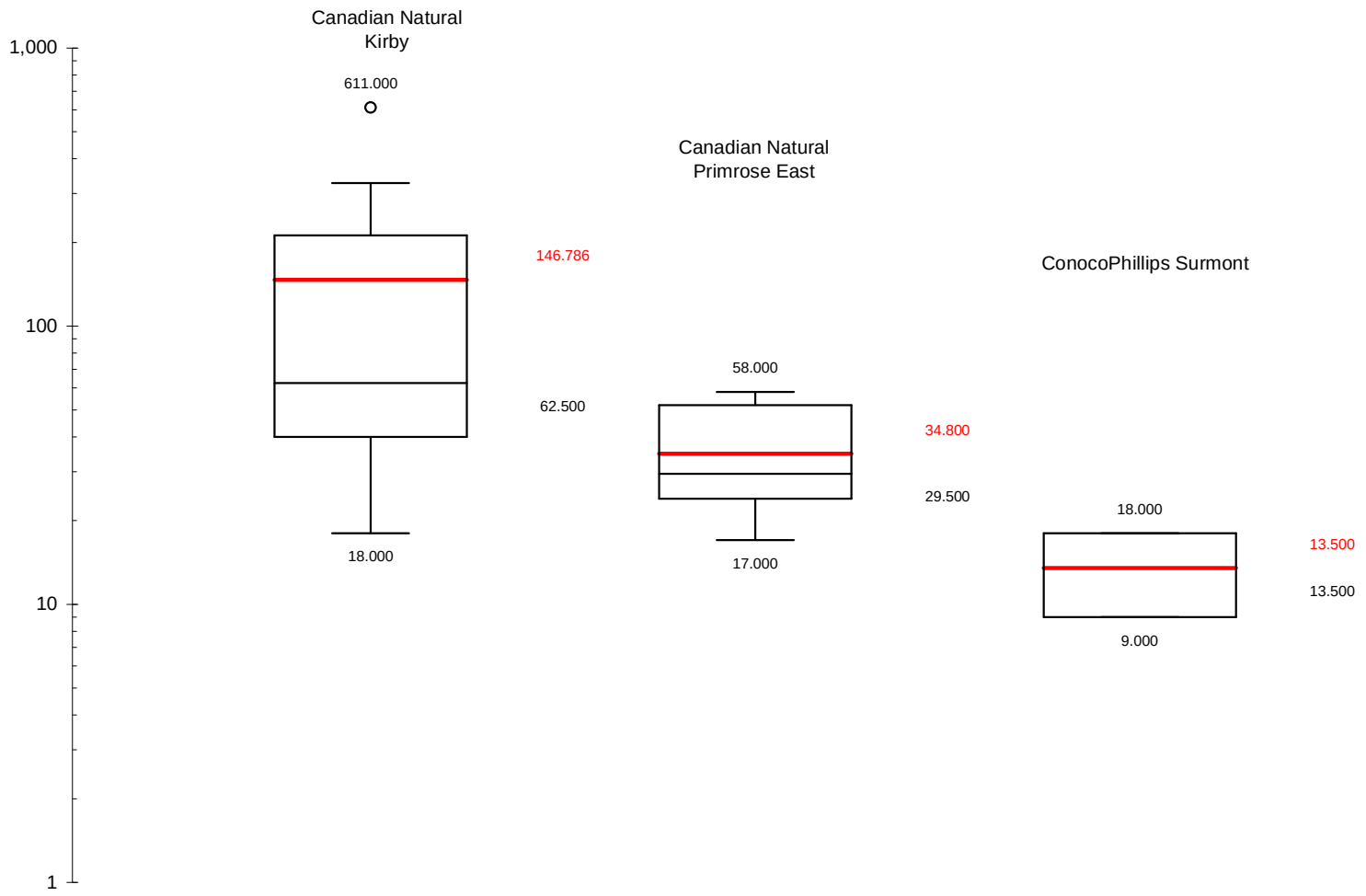
SUMMARY OF MEASURED BERRY CONCENTRATIONS AS PART OF THE OIL SANDS REGIONAL ENVIRONMENTAL SAMPLING PROGRAM

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

L:\2007\1346 Oil Sands\07-1346-0009-MEG EXPANSION\8800\8810\Appendix C3-Attachment C\Fig C-1_Regional Distribution-Aluminum Conc in Berries.dwg Apr 10, 2008 - 1:37pm



PROJECT

CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

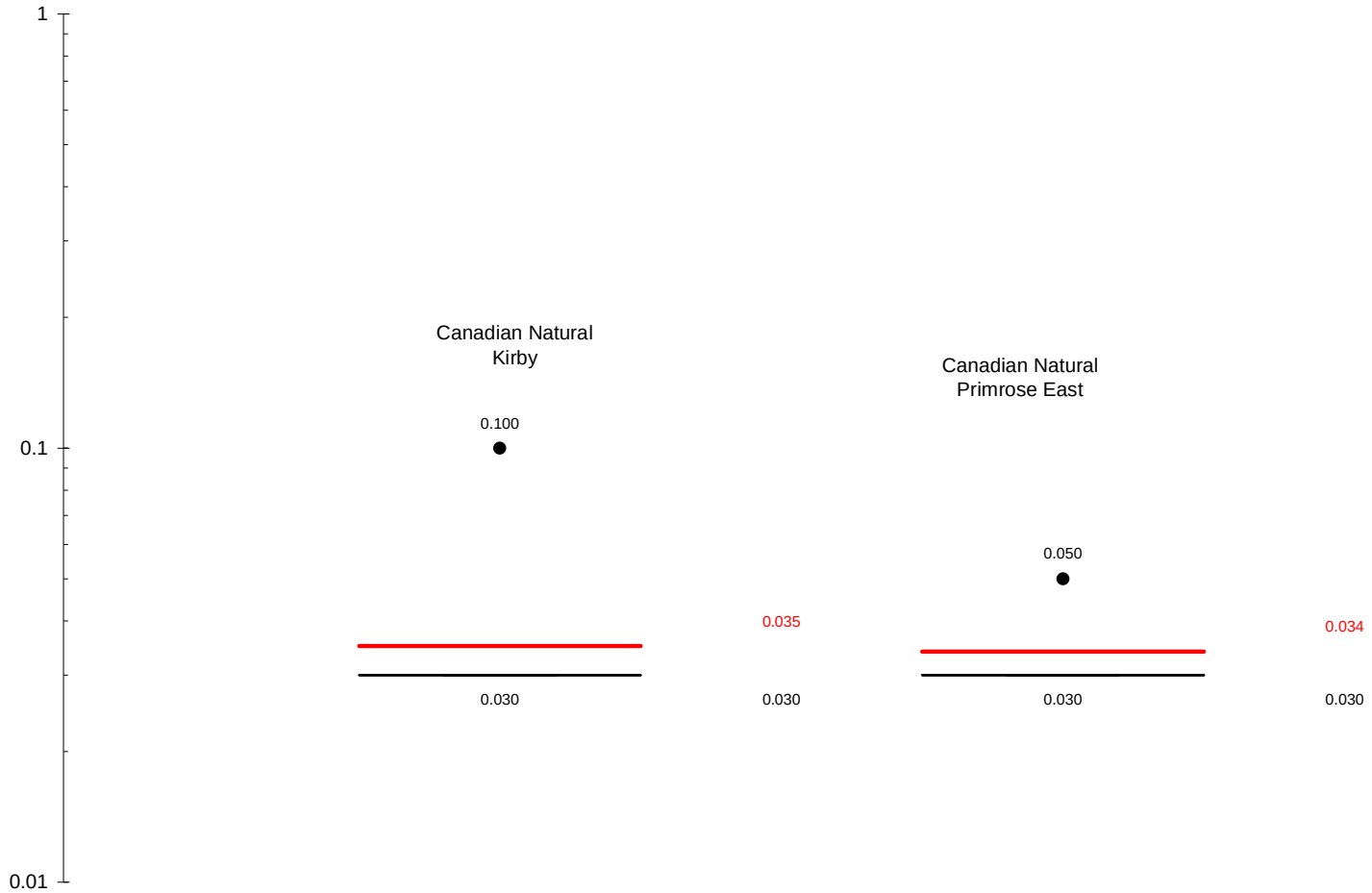
REGIONAL DISTRIBUTION OF ALUMINUM CONCENTRATIONS IN BERRIES [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.	Regional-alum-berries
DESIGN	BK	26/02/08	SCALE	AS SHOWN
CADD	PSR	27/02/08	REV.	0
CHECK	BK	07/04/08		
REVIEW	IGG	07/04/08		

FIGURE: C-1

L:\2007\1346 Oil Sands\07-1346-0009-MEG EXPANSION\8800\8810\Appendix C3-Attachment C\Fig C-2_Regional Distribution-Antimony Conc in Berries.dwg Apr 10, 2008 - 1:39pm



PROJECT

CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

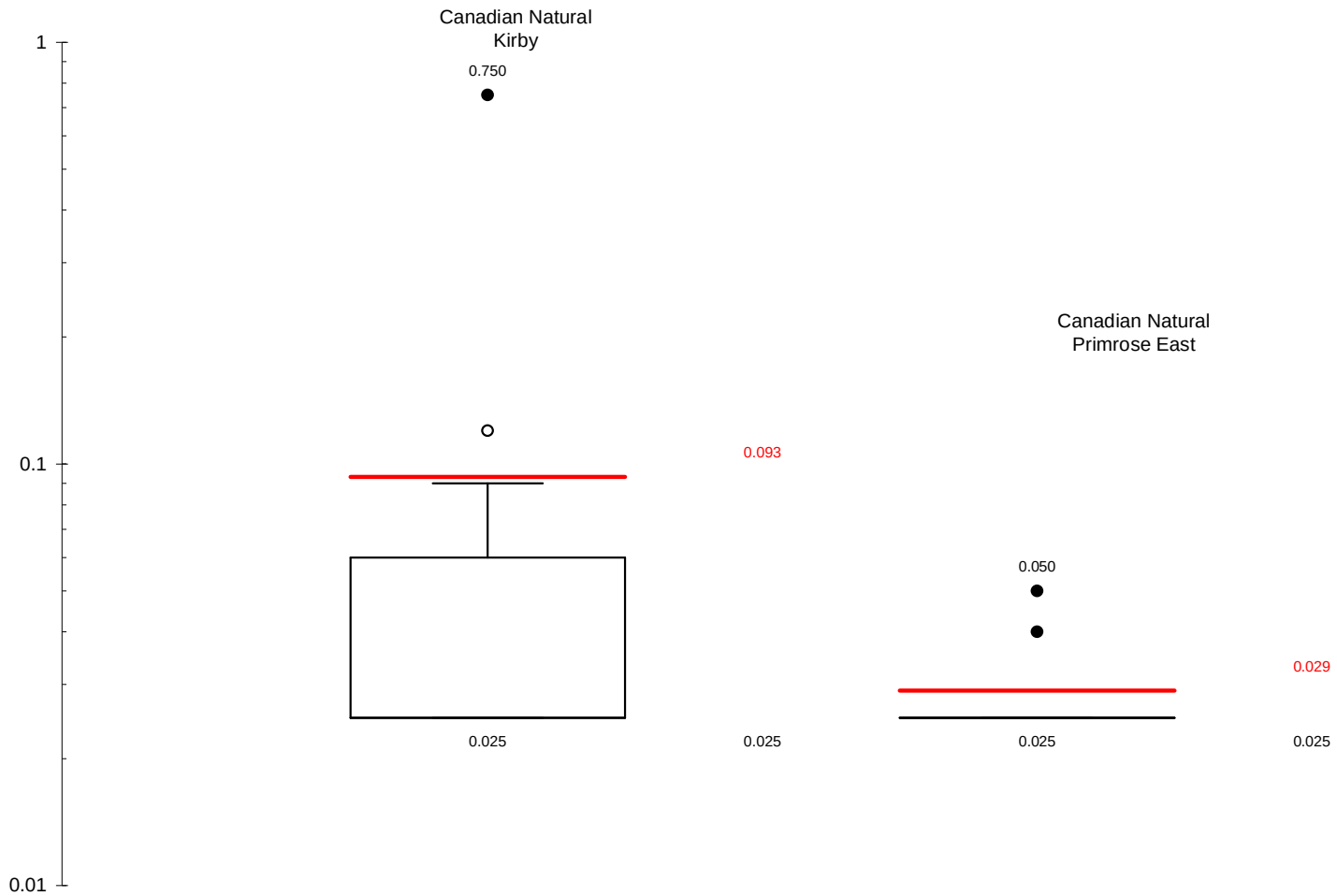
TITLE

REGIONAL DISTRIBUTION OF ANTIMONY CONCENTRATIONS IN BERRIES [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.	Antimony-Berries	
DESIGN	BK	26/02/08	SCALE	AS SHOWN	REV. 0
CADD	PSR	27/02/08	**FIGURE: C-2**		
CHECK	BK	07/04/08			
REVIEW	IGG	07/04/08			

L:\2007\1346 Oil Sands\07-1346-0009-MEG EXPANSION\8800\8810\Appendix C3-Attachment C\Fig C-3_Regional Distribution-Arsenic Conc in Berries.dwg Apr 10, 2008 - 1:41pm



PROJECT

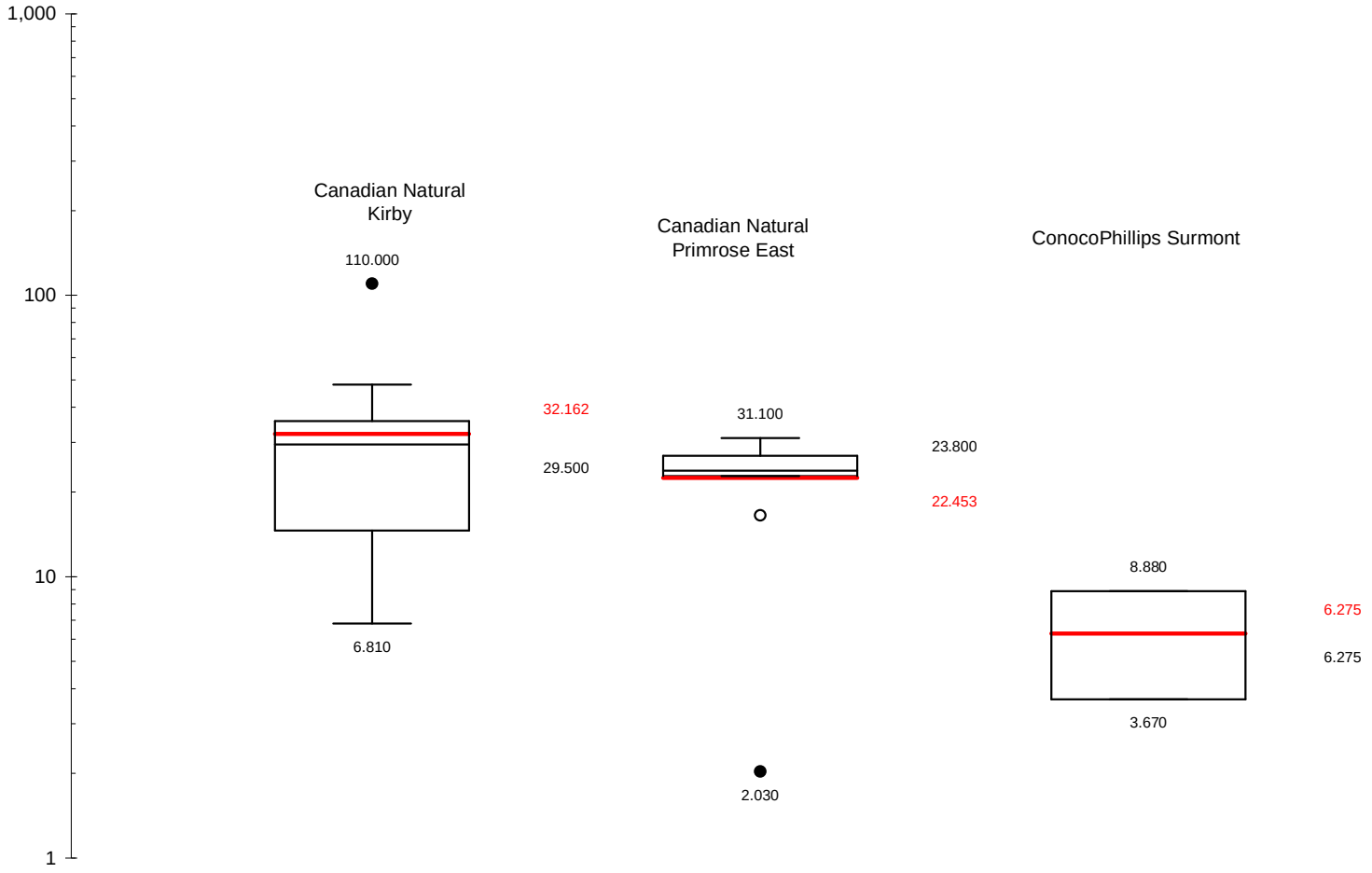
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF ARSENIC CONCENTRATIONS IN BERRIES [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.	Arsenic-Berries
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	PSR	27/02/08	FIGURE: C-3	
CHECK	BK	07/04/08		
REVIEW	IGG	07/04/08		



PROJECT

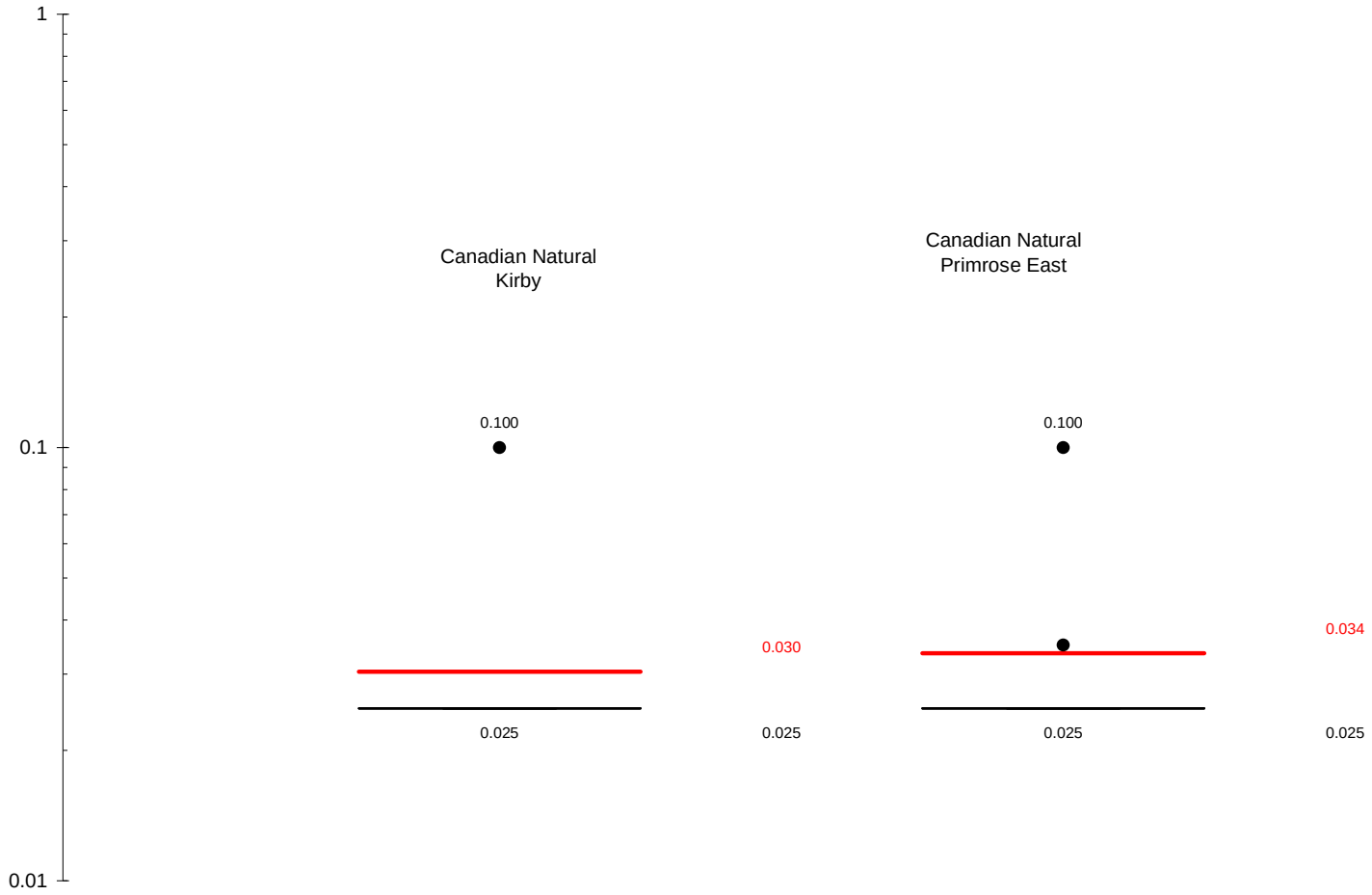
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF BARIUM CONCENTRATIONS IN BERRIES [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.	Barium-Berries	
DESIGN	BK	26/02/08	SCALE	AS SHOWN	REV. 0
CADD	PSR	27/02/08	FIGURE: C-4		
CHECK	BK	07/04/08			
REVIEW	IGG	07/04/08			



PROJECT

CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

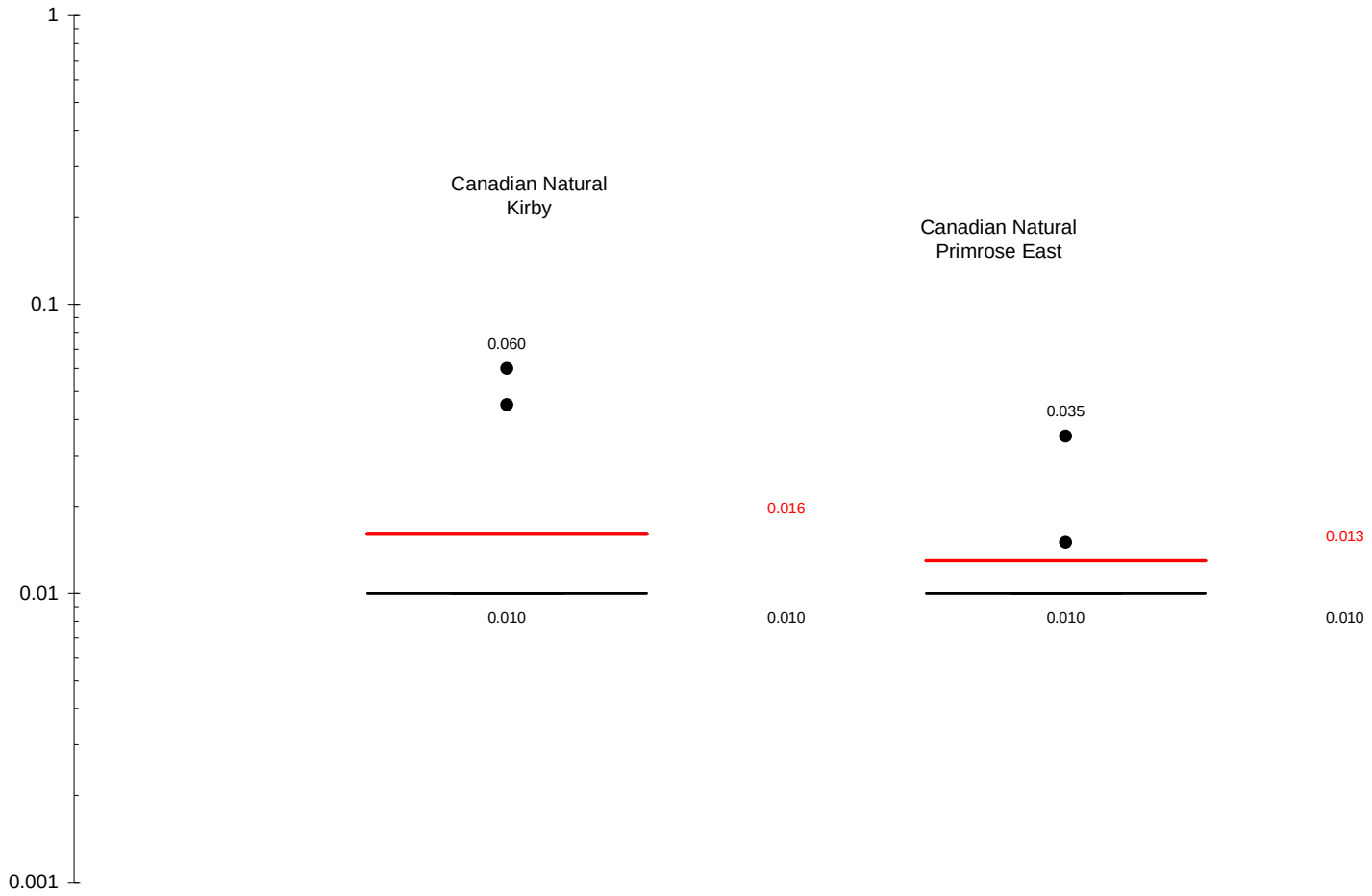
TITLE

REGIONAL DISTRIBUTION OF BERYLLIUM CONCENTRATIONS IN BERRIES [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.	Beryllium-Berries
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	PSR	27/02/08	FIGURE: C-5	
CHECK	BK	07/04/08		
REVIEW	IGG	07/04/08		

L:\2007\1346 Oil Sands\07-1346-0009-MEG EXPANSION\8800\8810\Appendix C3-Attachment C\Fig C-6_Regional Distribution-Bismuth Conc in Berries.dwg Apr 10, 2008 - 1:48pm



PROJECT

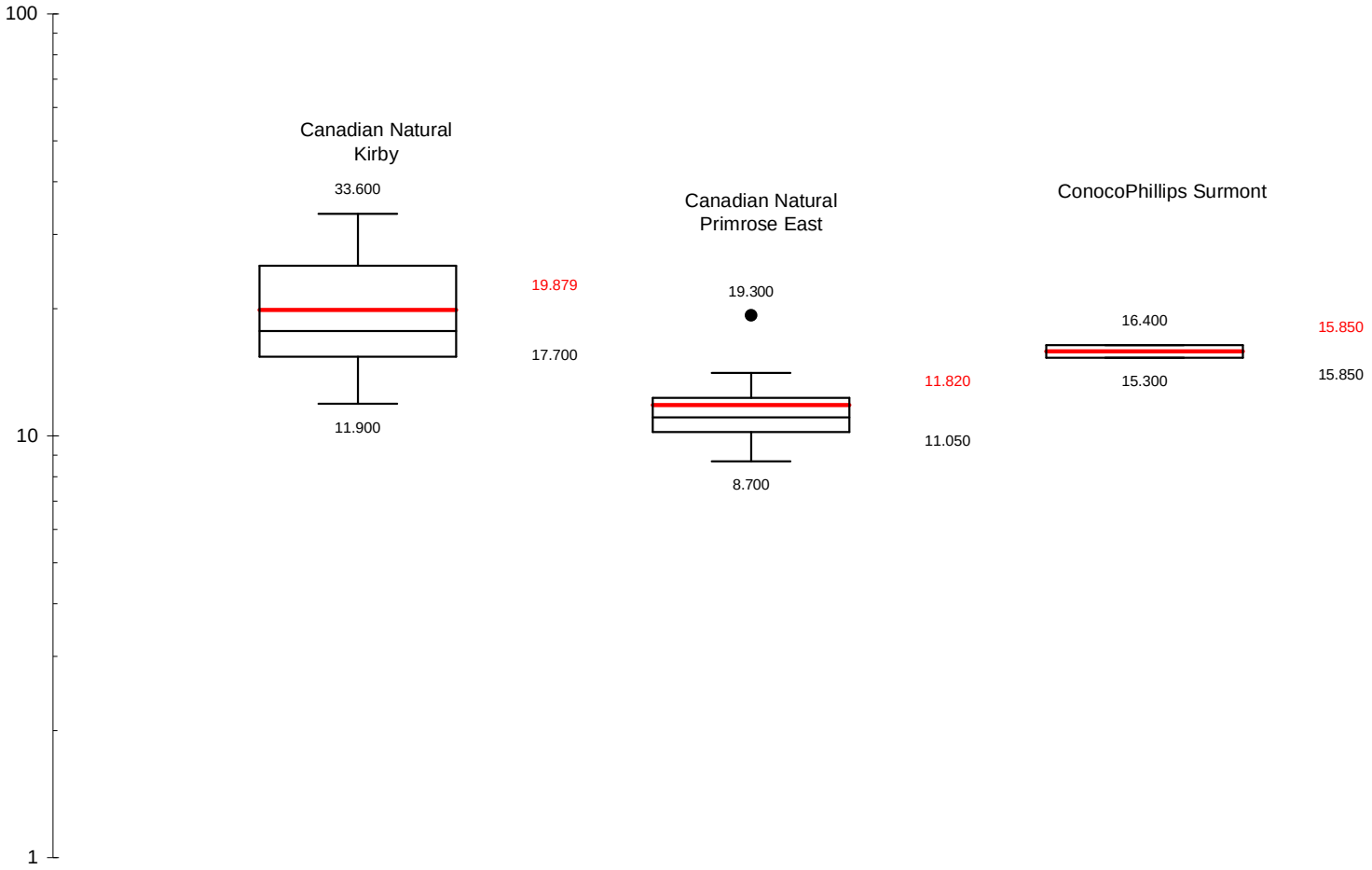
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF BISMUTH CONCENTRATIONS IN BERRIES [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.	Bismuth-Berries	
DESIGN	BK	26/02/08	SCALE	AS SHOWN	REV. 0
CADD	PSR	27/02/08	**FIGURE: C-6**		
CHECK	BK	07/04/08			
REVIEW	IGG	07/04/08			



PROJECT

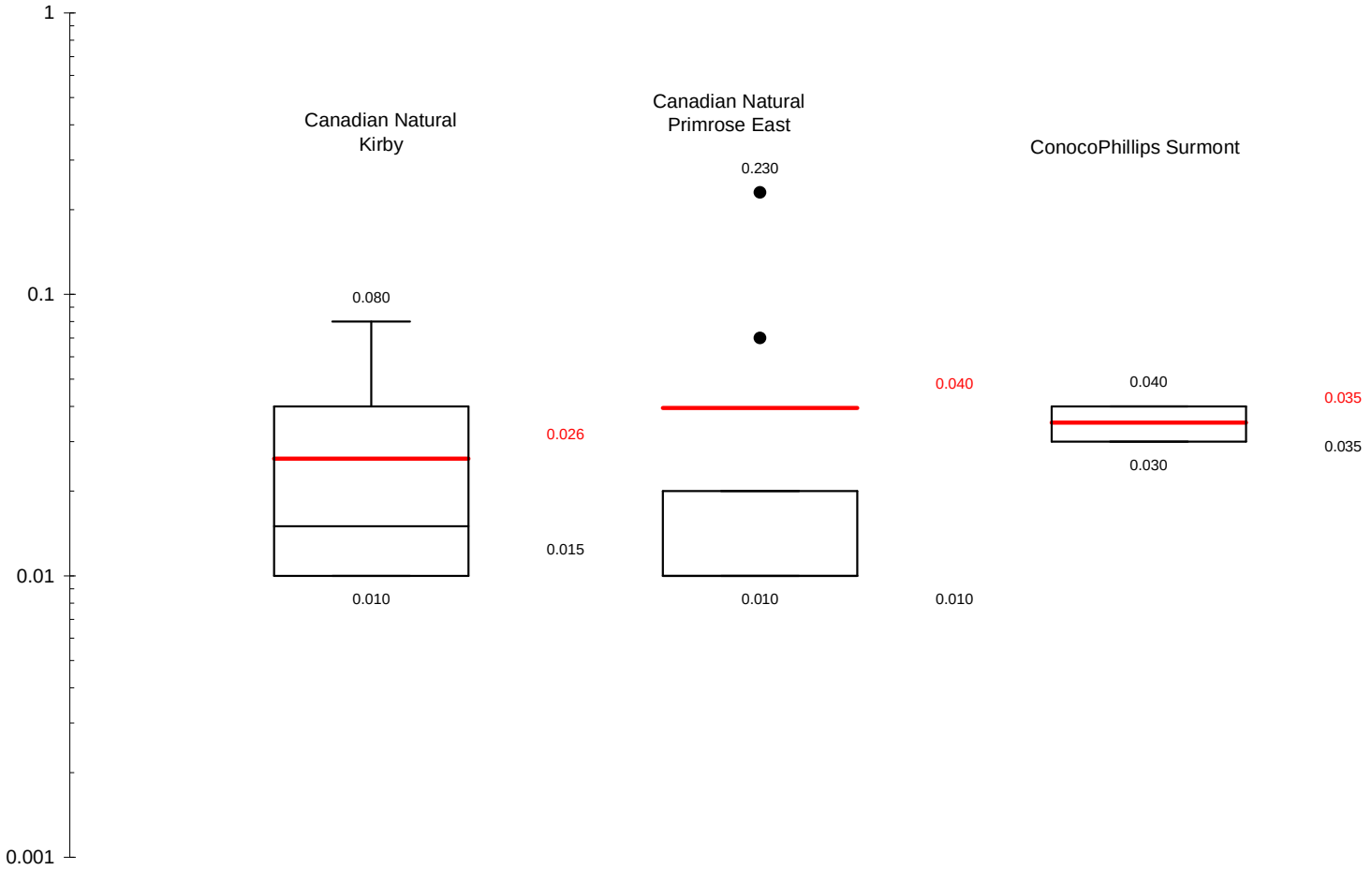
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF BORON CONCENTRATIONS IN BERRIES [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.	Boron-Berries	
DESIGN	BK	26/02/08	SCALE	AS SHOWN	REV. 0
CADD	PSR	27/02/08	FIGURE: C-7		
CHECK	BK	07/04/08			
REVIEW	IGG	07/04/08			



PROJECT

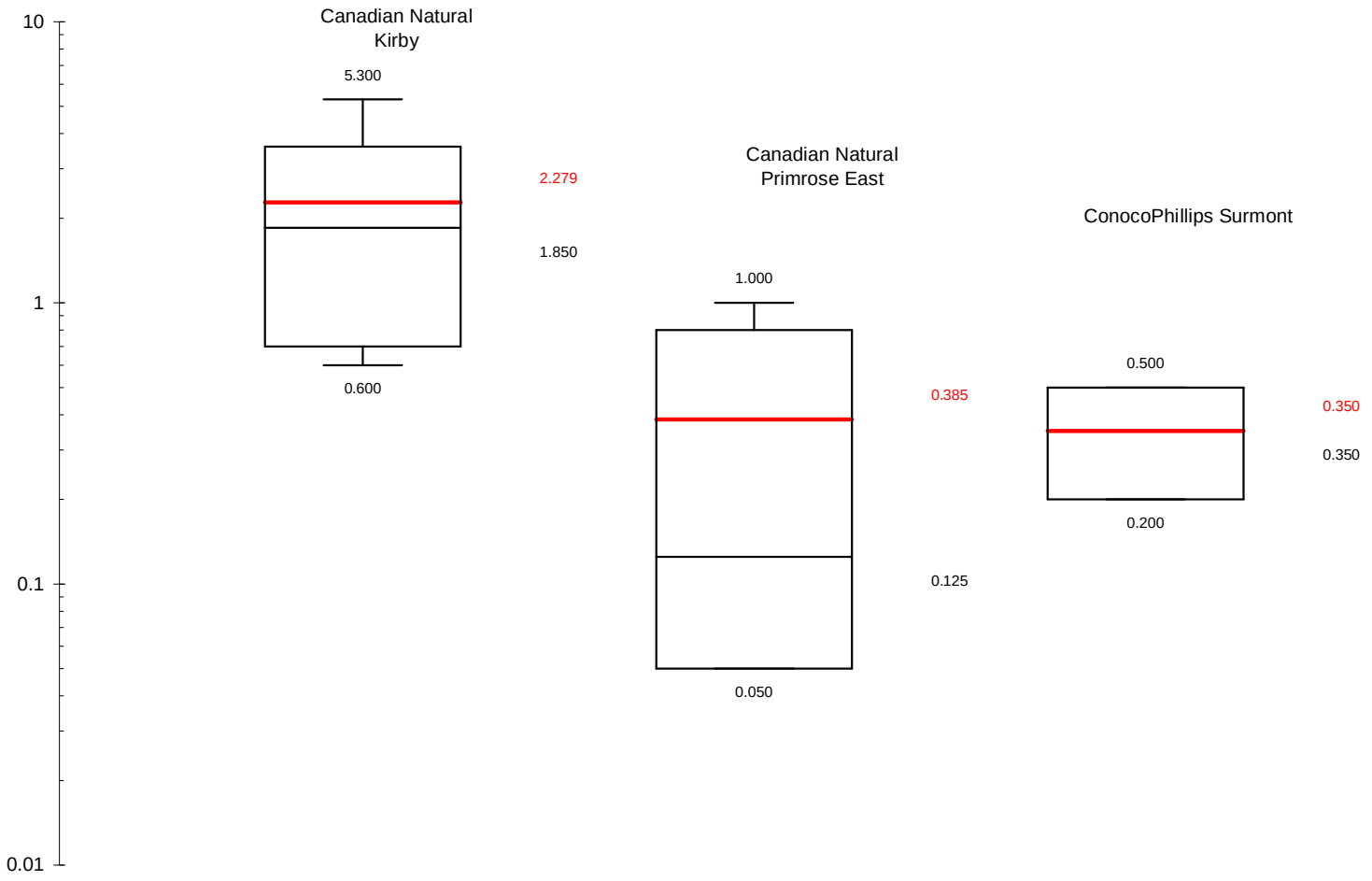
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF CADMIUM CONCENTRATIONS IN BERRIES [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.	Chromium-Berries	
DESIGN	BK	26/02/08	SCALE	AS SHOWN	REV. 0
CADD	PSR	27/02/08	FIGURE: C-8		
CHECK	BK	07/04/08			
REVIEW	IGG	07/04/08			



PROJECT

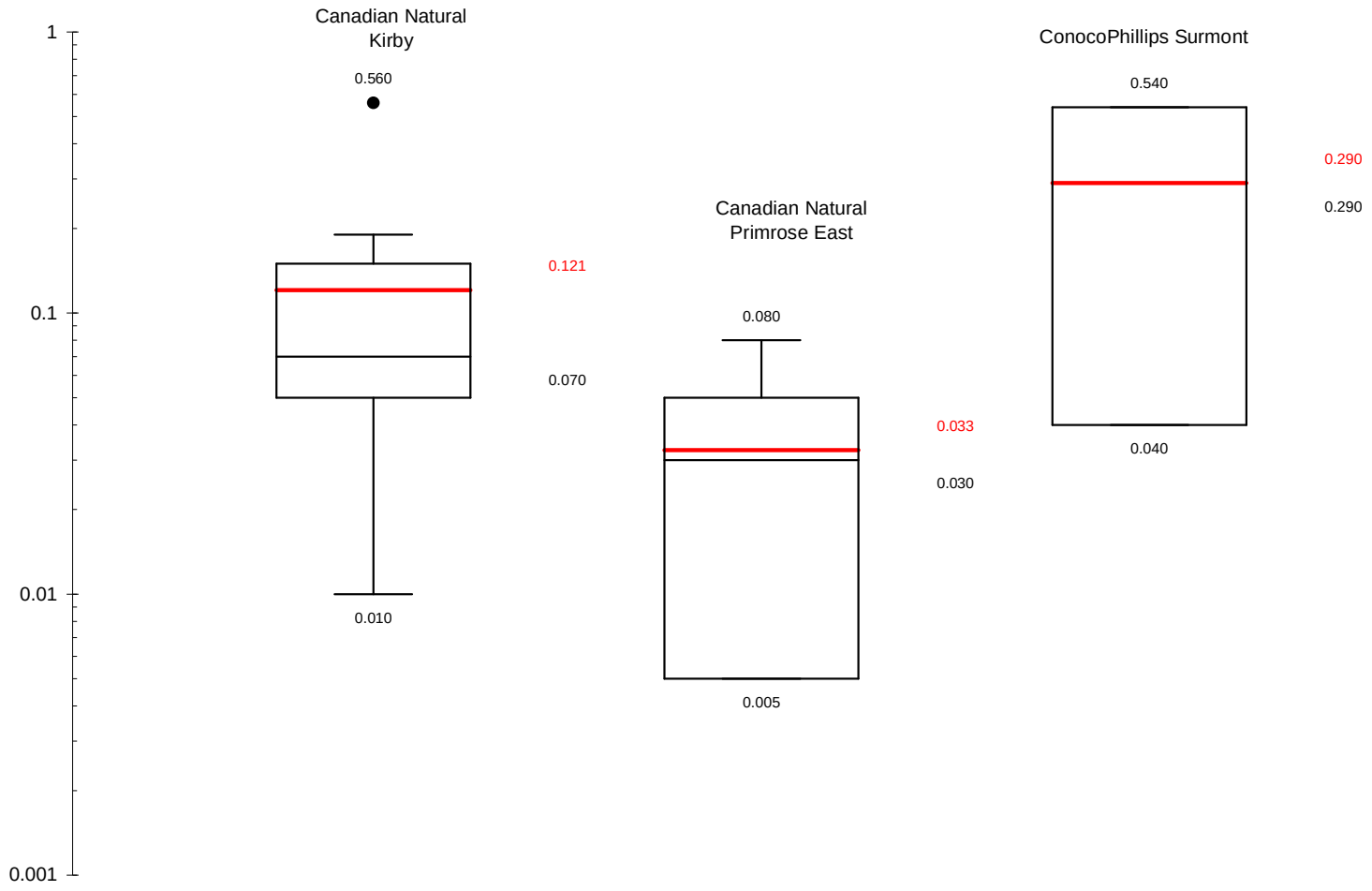
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF CHROMIUM CONCENTRATIONS IN BERRIES [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.	Chromium-Berries
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	PSR	27/02/08	**FIGURE: C-9**	
CHECK	BK	07/04/08		
REVIEW	IGG	07/04/08		



PROJECT

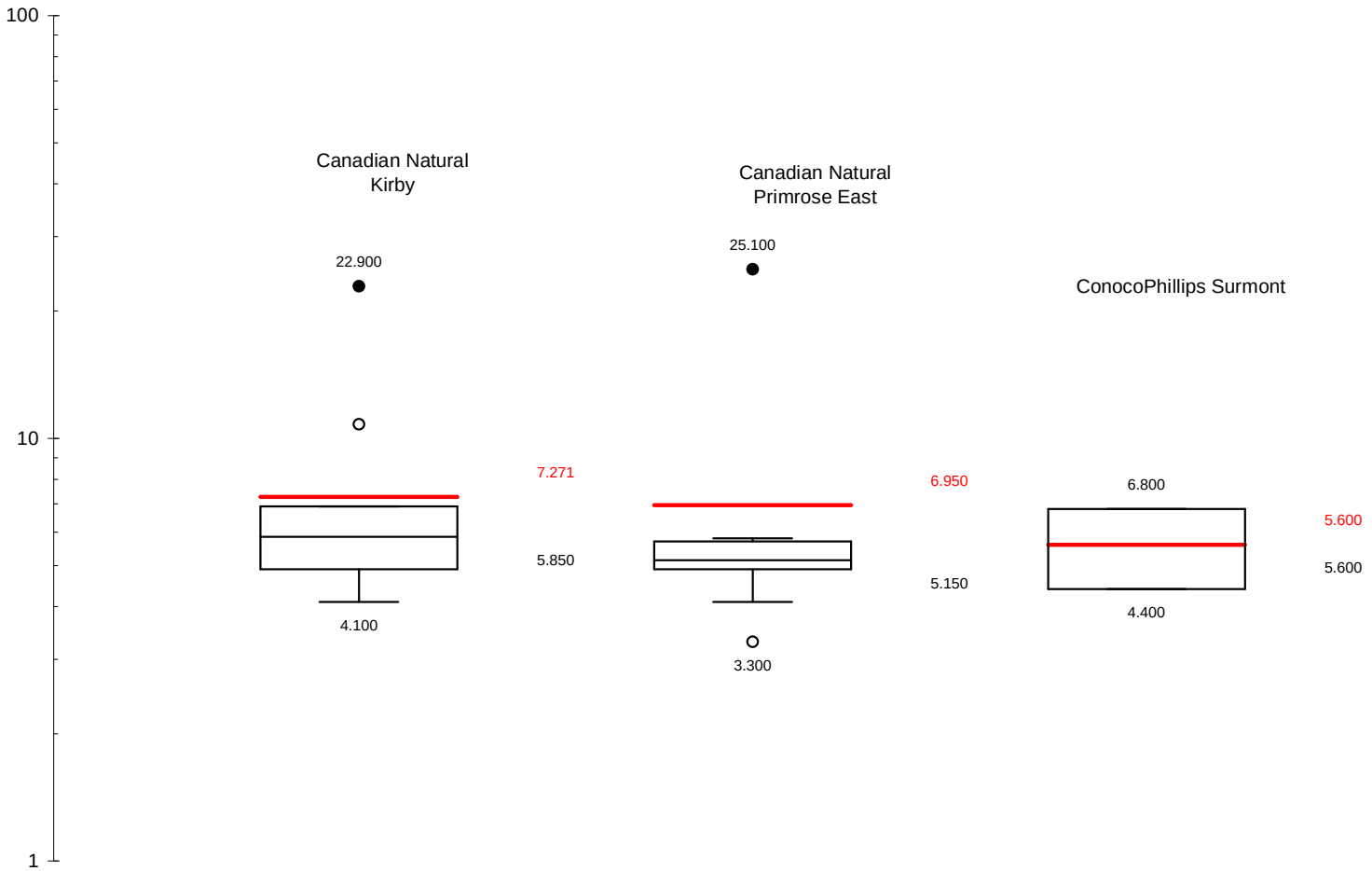
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF COBALT CONCENTRATIONS IN BERRIES [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.	Cobalt-Berries	
DESIGN	BK	26/02/08	SCALE	AS SHOWN	REV. 0
CADD	PSR	27/02/08	**FIGURE: C-10**		
CHECK	BK	07/04/08			
REVIEW	IGG	07/04/08			



PROJECT

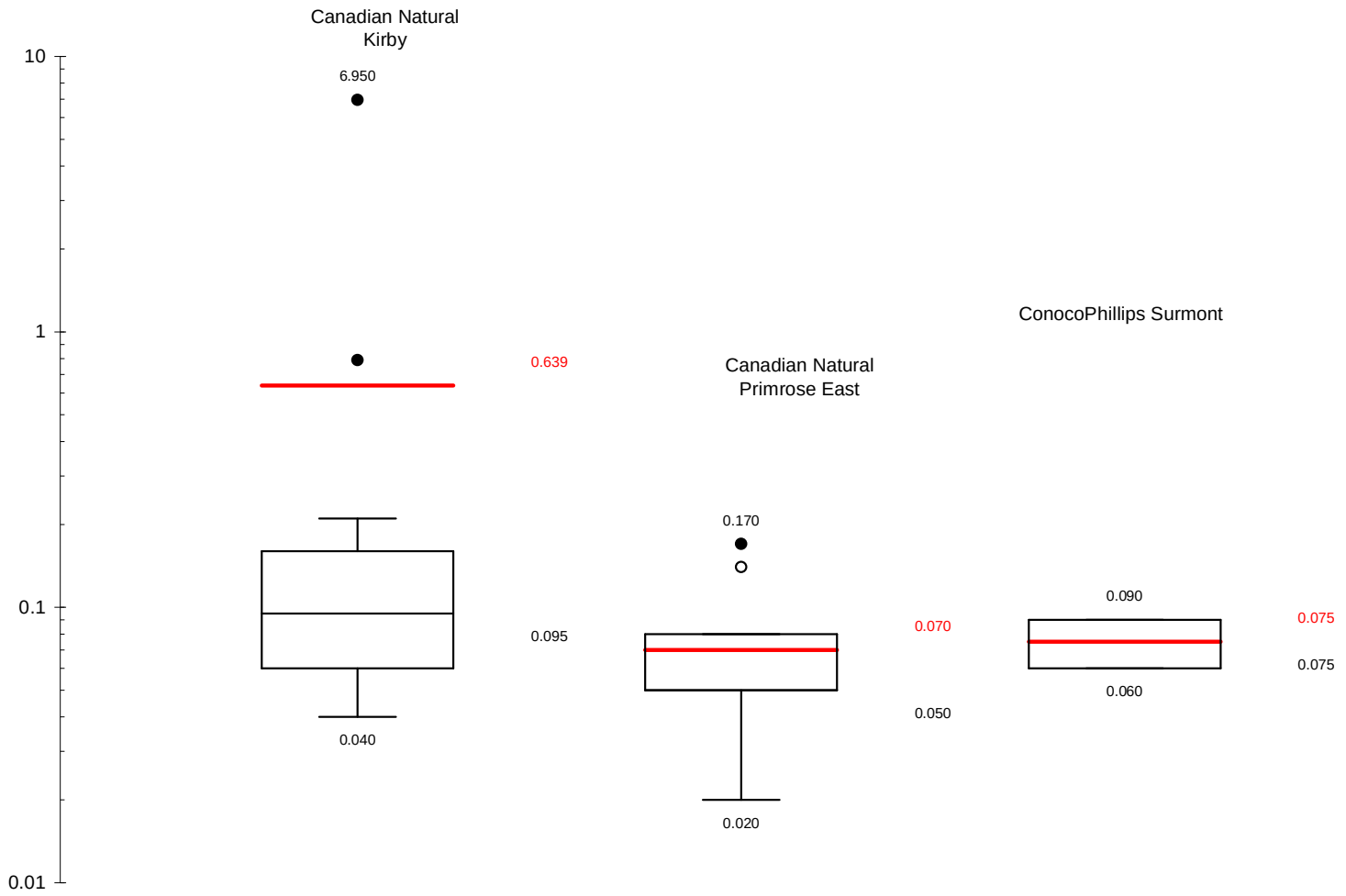
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF COPPER CONCENTRATIONS IN BERRIES [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.	Copper-Berries	
DESIGN	BK	26/02/08	SCALE	AS SHOWN	REV. 0
CADD	PSR	27/02/08	FIGURE: C-11		
CHECK	BK	07/04/08			
REVIEW	IGG	07/04/08			



PROJECT

CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

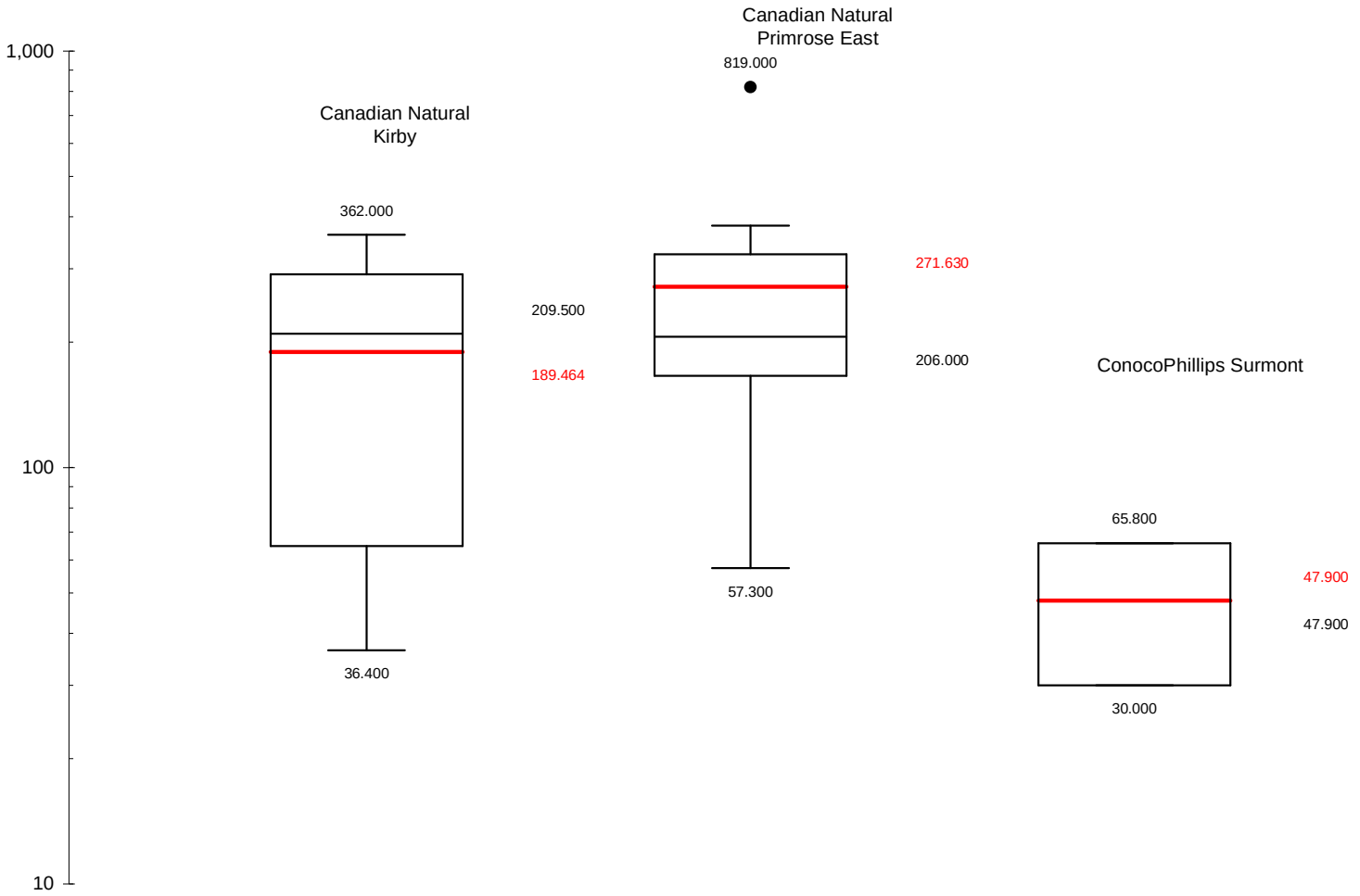
TITLE

REGIONAL DISTRIBUTION OF LEAD CONCENTRATIONS IN BERRIES [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.	Lead-Berries	
DESIGN	BK	26/02/08	SCALE	AS SHOWN	REV. 0
CADD	PSR	27/02/08	FIGURE: C-12		
CHECK	BK	07/04/08			
REVIEW	IGG	07/04/08			

L:\2007\1346 Oil Sands\07-1346-0009-MEG EXPANSION\8800\8810\Appendix C3-Attachment C\Fig C-13_Regional Distribution-Manganese Conc in berries.dwg Apr 10, 2008 - 2:47pm



PROJECT

CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

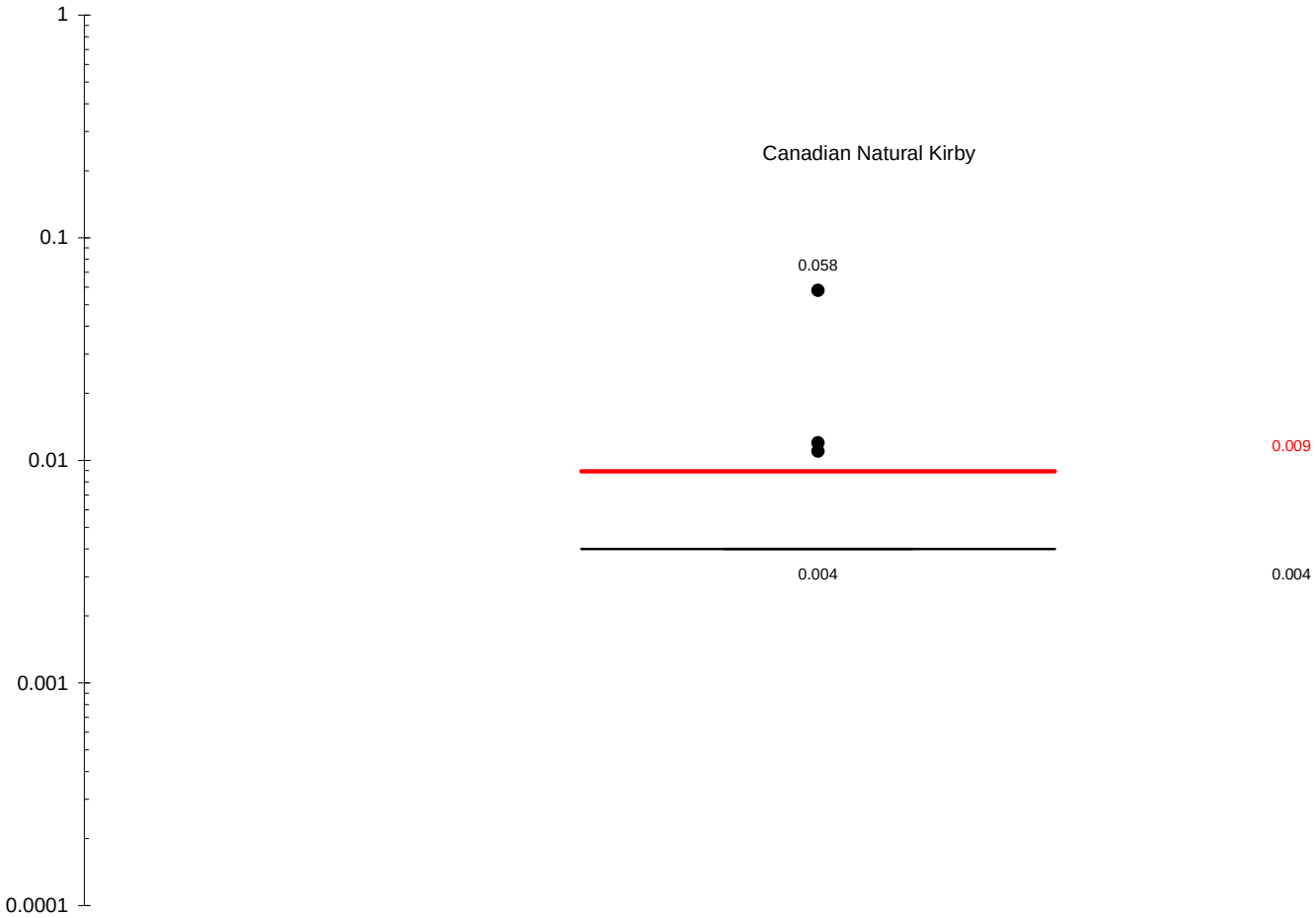
TITLE

REGIONAL DISTRIBUTION OF MANGANESE CONCENTRATIONS IN BERRIES [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.	Manganese-Berries
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	PSR	27/02/08	**FIGURE: C-13**	
CHECK	BK	07/04/08		
REVIEW	IGG	07/04/08		

L:\2007\1346 Oil Sands\07-1346-0009-MEG EXPANSION\8800\8810\Appendix C3-Attachment C\Fig C-14_Regional Distribution-Mercury Conc in berries.dwg Apr 10, 2008 - 2:48pm



PROJECT

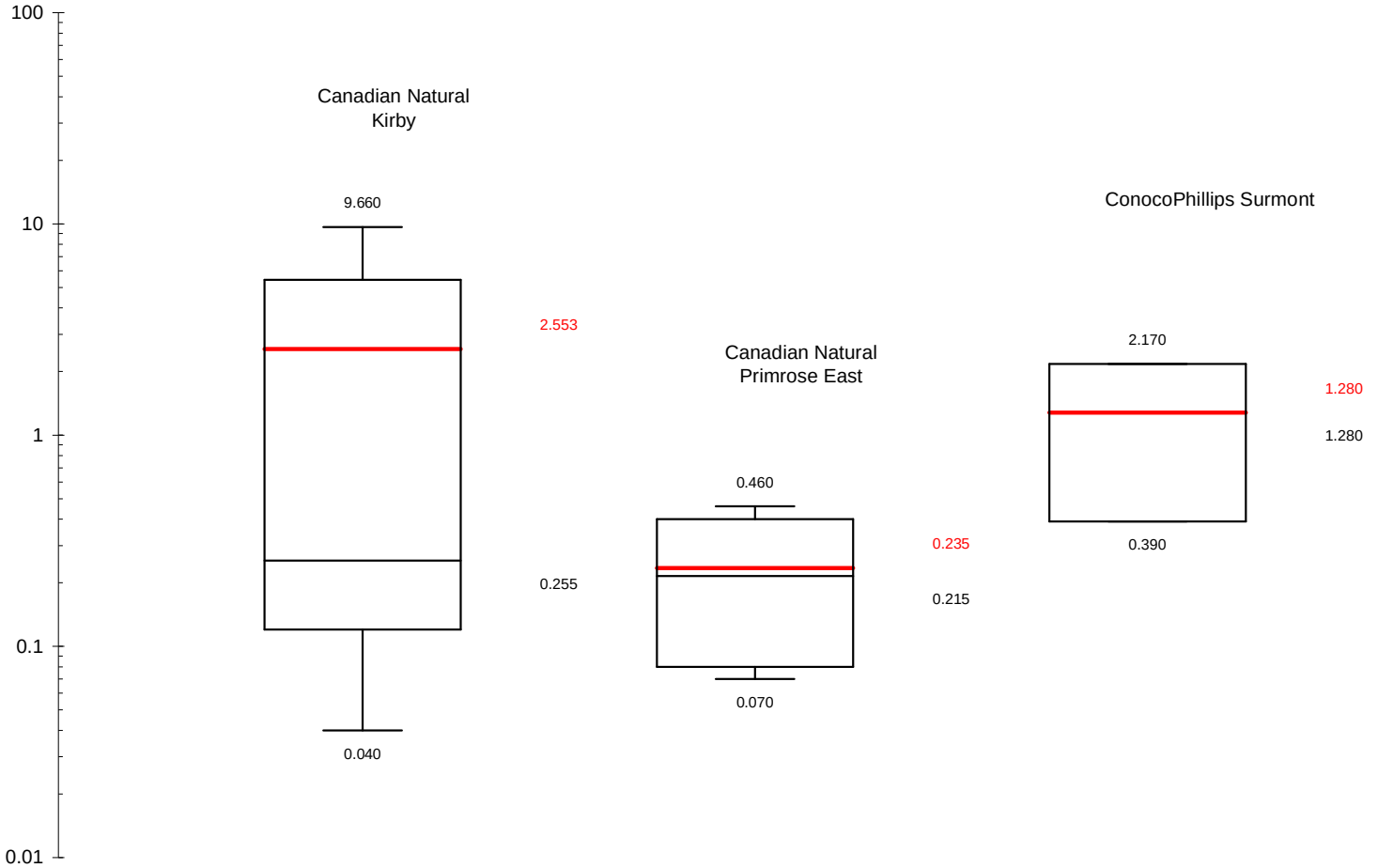
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF MERCURY CONCENTRATIONS IN BERRIES [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.	Mercury-Berries
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	PSR	27/02/08	**FIGURE: C-14**	
CHECK	BK	07/04/08		
REVIEW	IGG	07/04/08		



PROJECT

CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

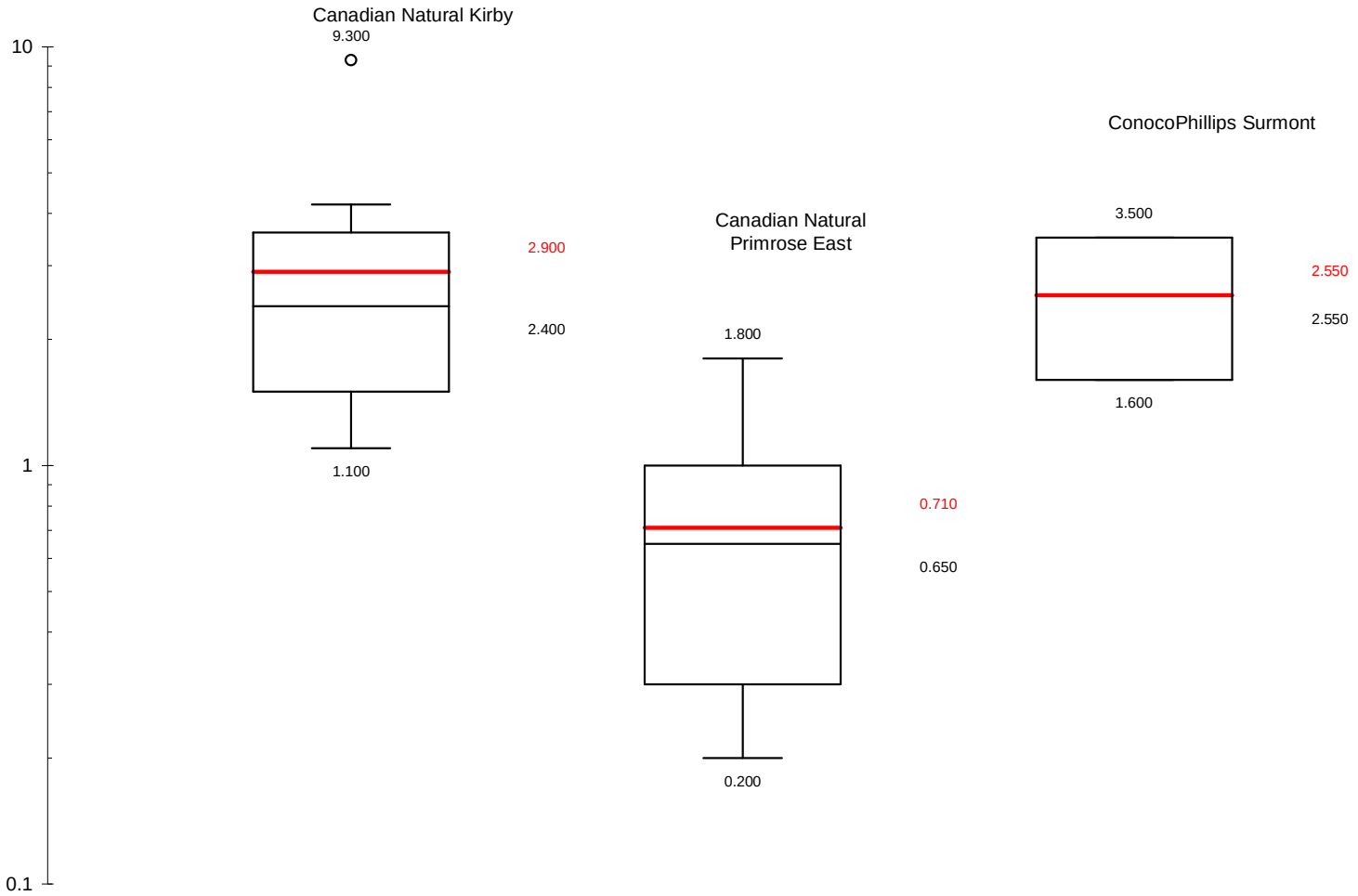
TITLE

REGIONAL DISTRIBUTION OF MOLYBDENUM CONCENTRATIONS IN BERRIES [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.	Molybdenum-Berries	
DESIGN	BK	26/02/08	SCALE	AS SHOWN	REV. 0
CADD	PSR	27/02/08			
CHECK	BK	07/04/08			
REVIEW	IGG	07/04/08			

FIGURE: C-15



PROJECT

CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

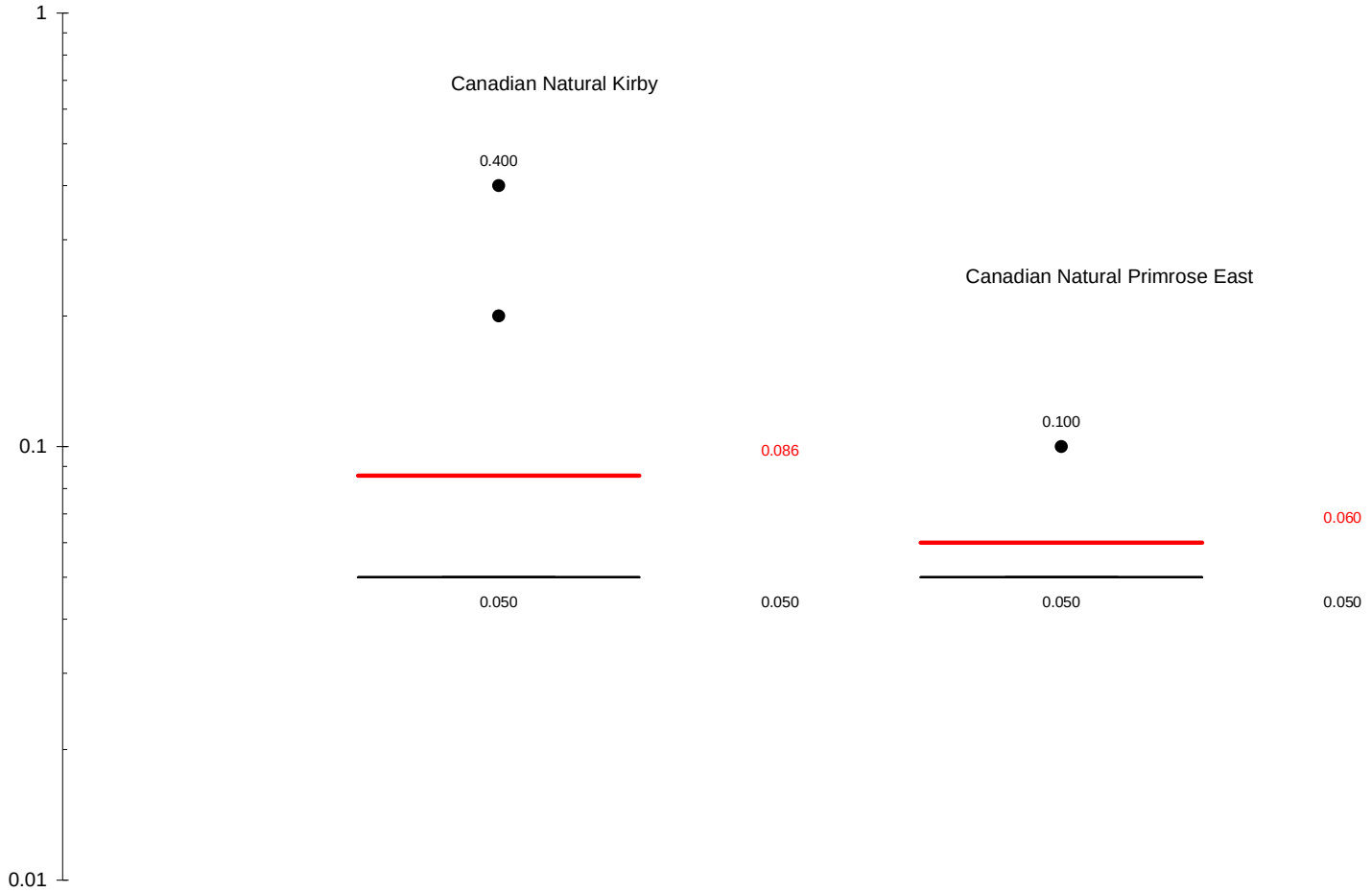
TITLE

REGIONAL DISTRIBUTION OF NICKEL CONCENTRATIONS IN BERRIES [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.	Nickel-Berries	
DESIGN	BK	26/02/08	SCALE	AS SHOWN	REV. 0
CADD	PSR	27/02/08	FIGURE: C-16		
CHECK	BK	07/04/08			
REVIEW	IGG	07/04/08			

L:\2007\1346 Oil Sands\07-1346-0009-MEG EXPANSION\8800\8810\Appendix C3-Attachment C\Fig C-17_Regional Distribution-Selenium Conc in berries.dwg Apr 10, 2008 - 2:50pm



PROJECT

CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF SELENIUM CONCENTRATIONS IN BERRIES [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.	Selenium-Berries
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	PSR	27/02/08	**FIGURE: C-17**	
CHECK	BK	07/04/08		
REVIEW	IGG	07/04/08		

L:\2007\1346 Oil Sands\07-1346-0009-MEG EXPANSION\8800\8810\Appendix C3-Attachment C\Fig C-18_Regional Distribution-Silver Conc in berries.dwg Apr 10, 2008 - 2:50pm

PROJECT

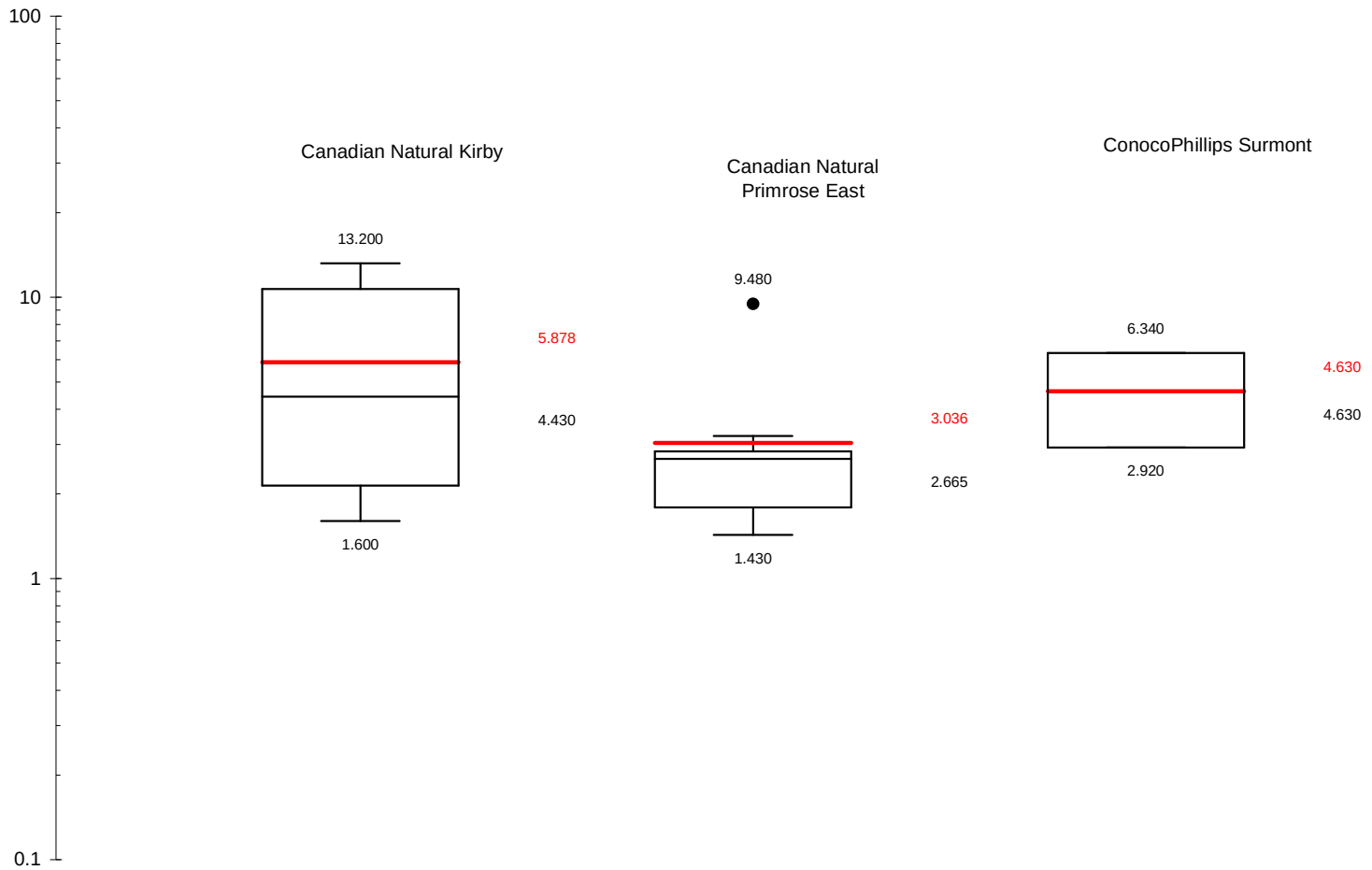
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF SILVER CONCENTRATIONS IN BERRIES [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.	Silver-Berreis
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	PSR	27/02/08	**FIGURE: C-18**	
CHECK	BK	07/04/08		
REVIEW	IGG	07/04/08		



PROJECT

CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

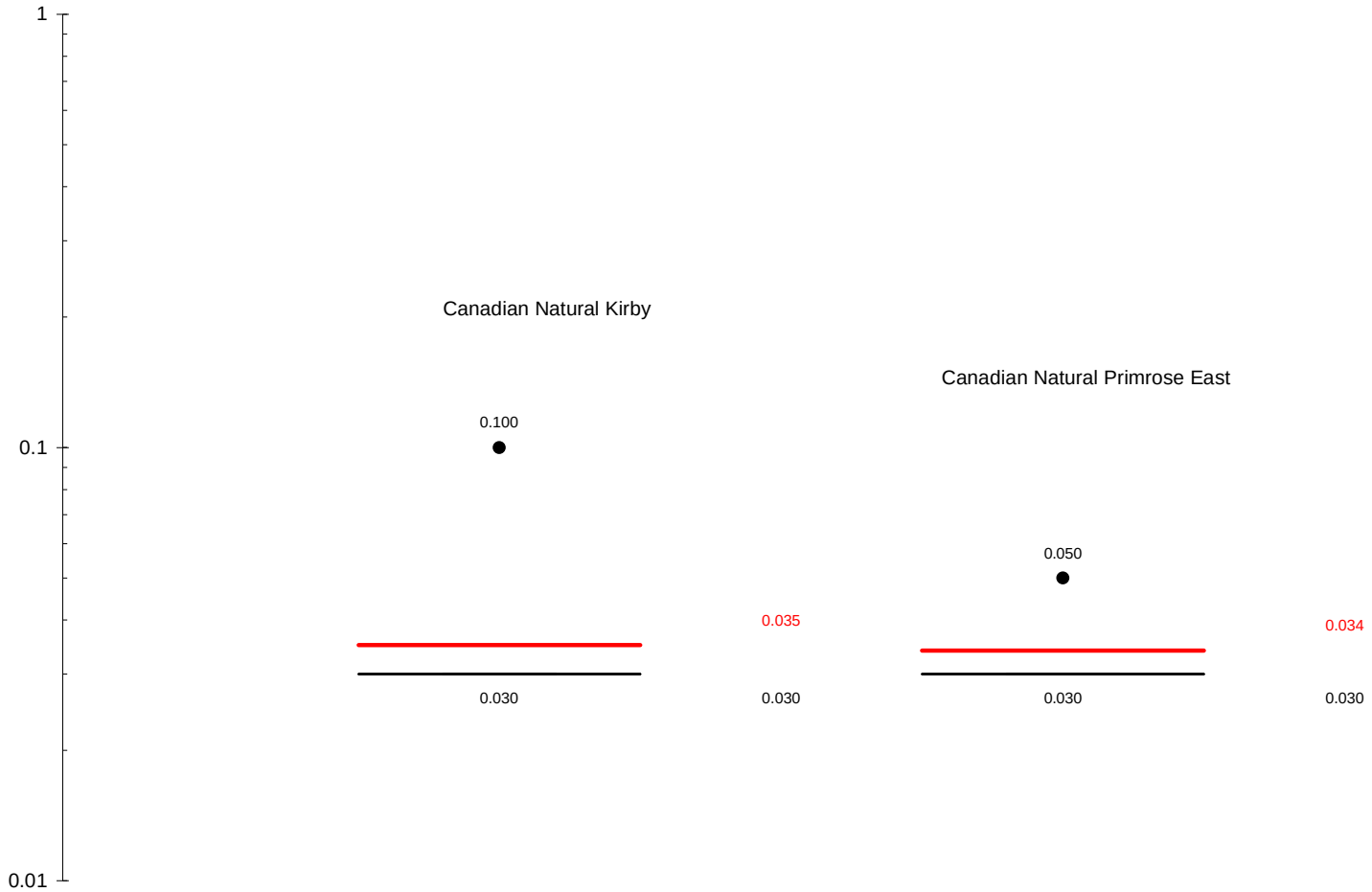
TITLE

REGIONAL DISTRIBUTION OF STRONTIUM CONCENTRATIONS IN BERRIES [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.	Strontium-Berries	
DESIGN	BK	26/02/08	SCALE	AS SHOWN	REV. 0
CADD	PSR	27/02/08	FIGURE: C-19		
CHECK	BK	07/04/08			
REVIEW	IGG	07/04/08			

L:\2007\1346 Oil Sands\07-1346-0009-MEG EXPANSION\8800\8810\Appendix C3-Attachment C\Fig C-20_Regional Distribution-Thallium Conc in berries.dwg Apr 10, 2008 - 2:23pm



PROJECT

CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

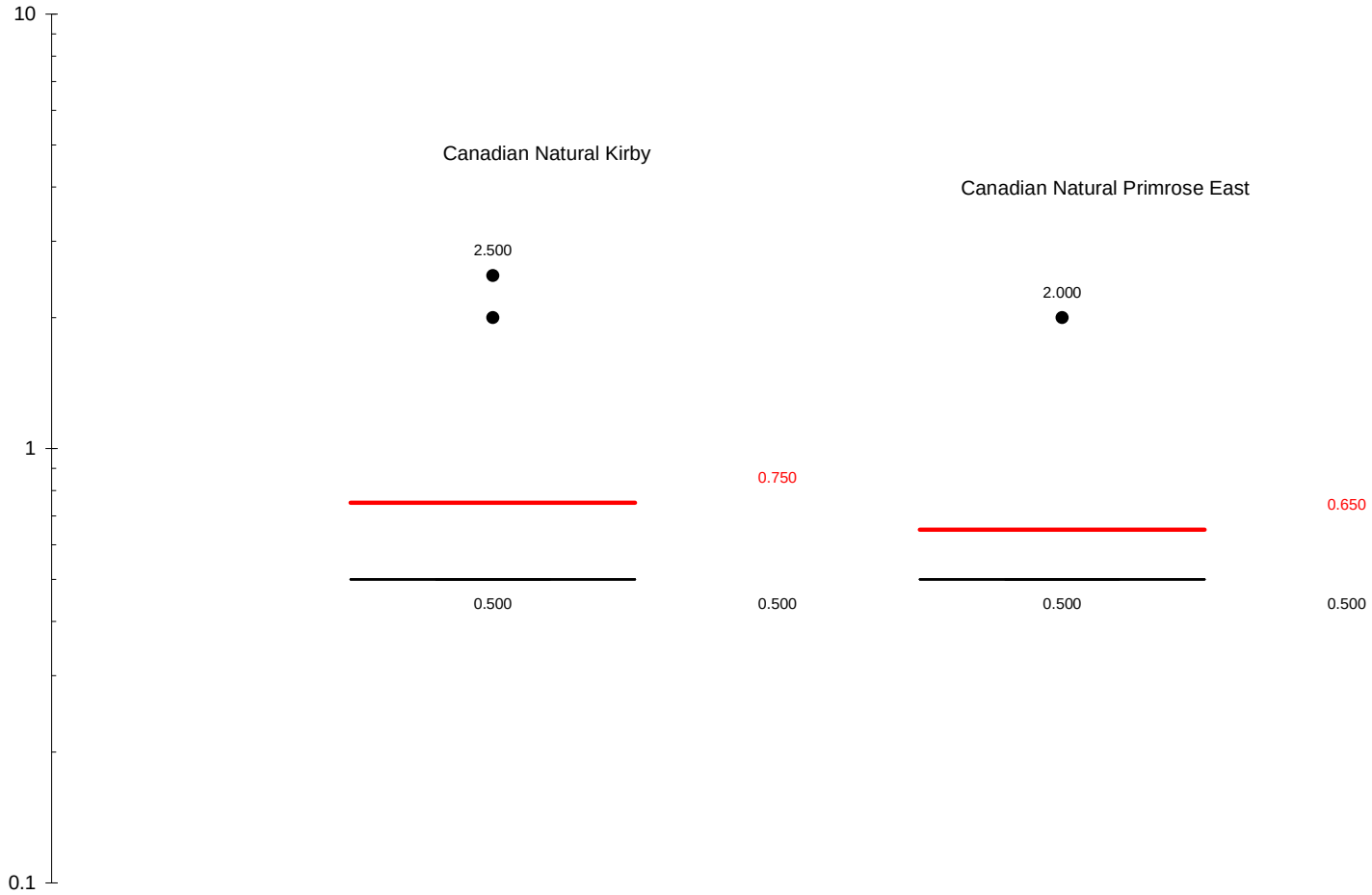
TITLE

REGIONAL DISTRIBUTION OF THALLIUM CONCENTRATIONS IN BERRIES [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.	Thallium-Berries	
DESIGN	BK	26/02/08	SCALE	AS SHOWN	REV. 0
CADD	PSR	27/02/08	**FIGURE: C-20**		
CHECK	BK	07/04/08			
REVIEW	IGG	07/04/08			

L:\2007\1346 Oil Sands\07-1346-0009-MEG EXPANSION\8800\8810\Appendix C3-Attachment C\Fig C-21_Regional Distribution-Tin Conc in berries.dwg Apr 10, 2008 - 2:25pm



PROJECT

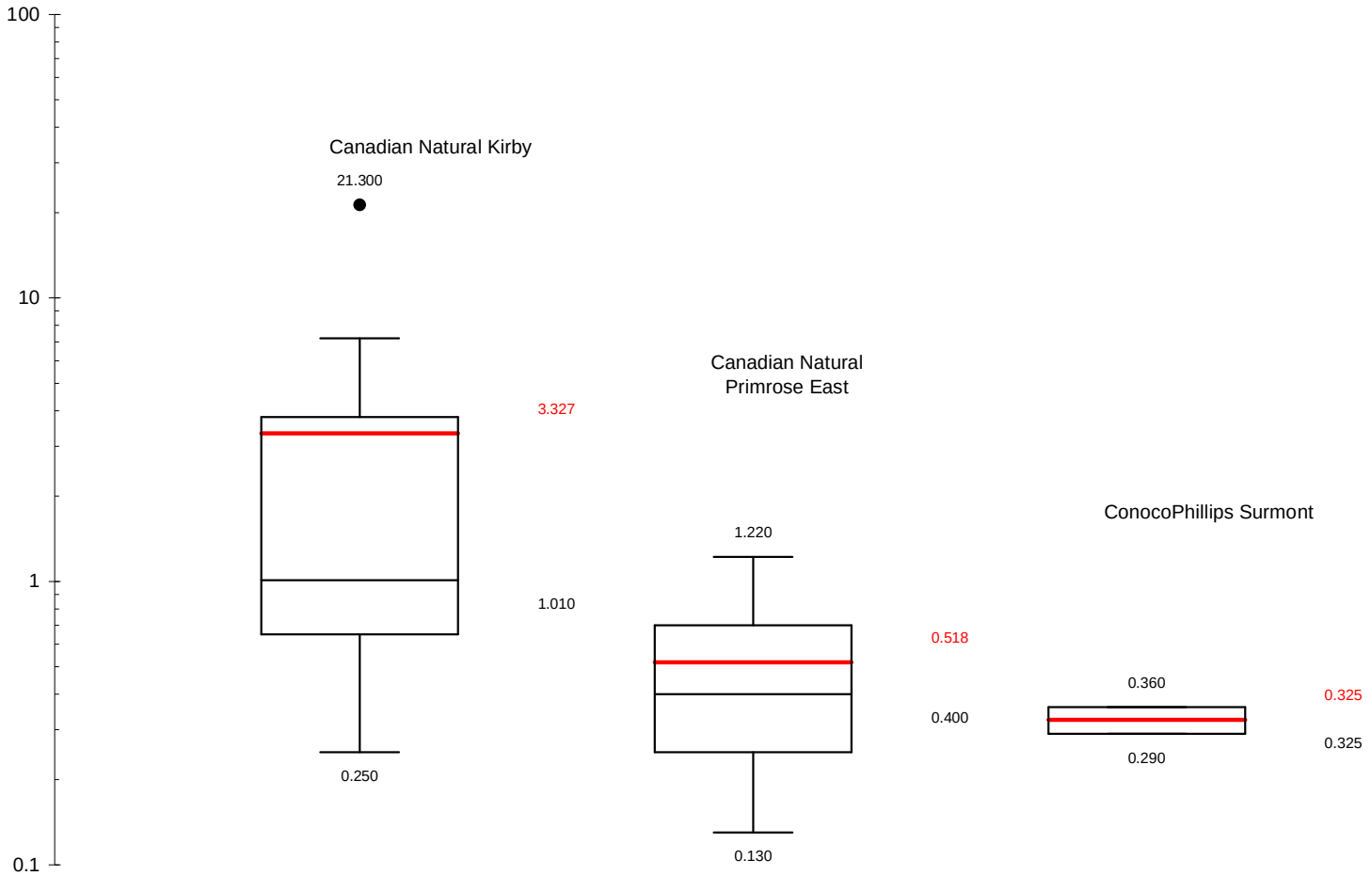
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF TIN CONCENTRATIONS IN BERRIES [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.	Tin-Berries
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	PSR	27/02/08	**FIGURE: C-21**	
CHECK	BK	07/04/08		
REVIEW	IGG	07/04/08		



PROJECT

CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

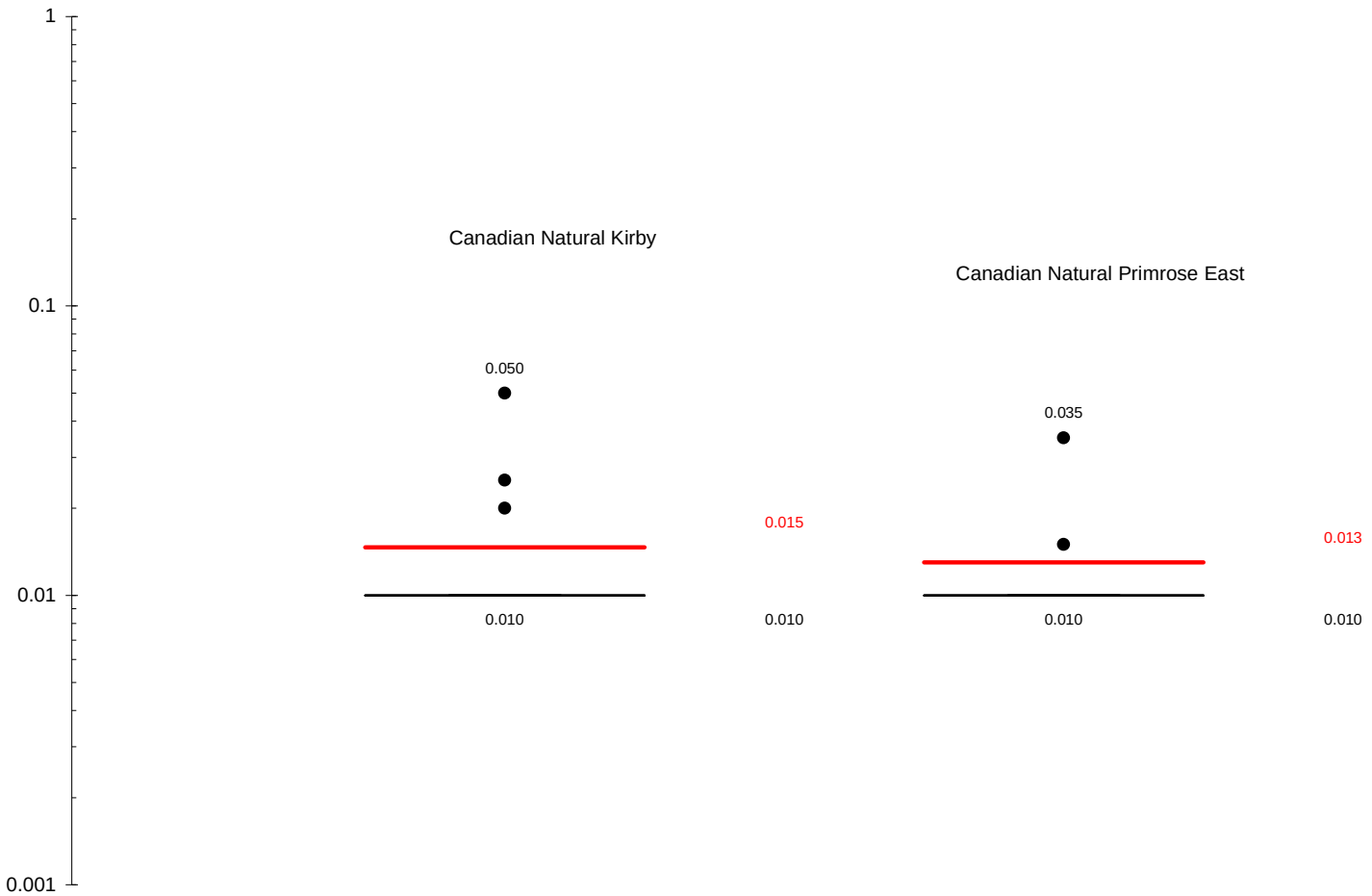
TITLE

REGIONAL DISTRIBUTION OF TITANIUM CONCENTRATIONS IN BERRIES [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.	Titanium-Berries	
DESIGN	BK	26/02/08	SCALE	AS SHOWN	REV. 0
CADD	TY	27/02/08	FIGURE: C-22		
CHECK	BK	07/04/08			
REVIEW	IGG	07/04/08			

L:\2007\1346 Oil Sands\07-1346-0009-MEG EXPANSION\8800\8810\Appendix C3-Attachment C\Fig C-23_Regional Distribution-Uranium Conc in in berries.dwg Apr 10, 2008 - 2:29pm



PROJECT

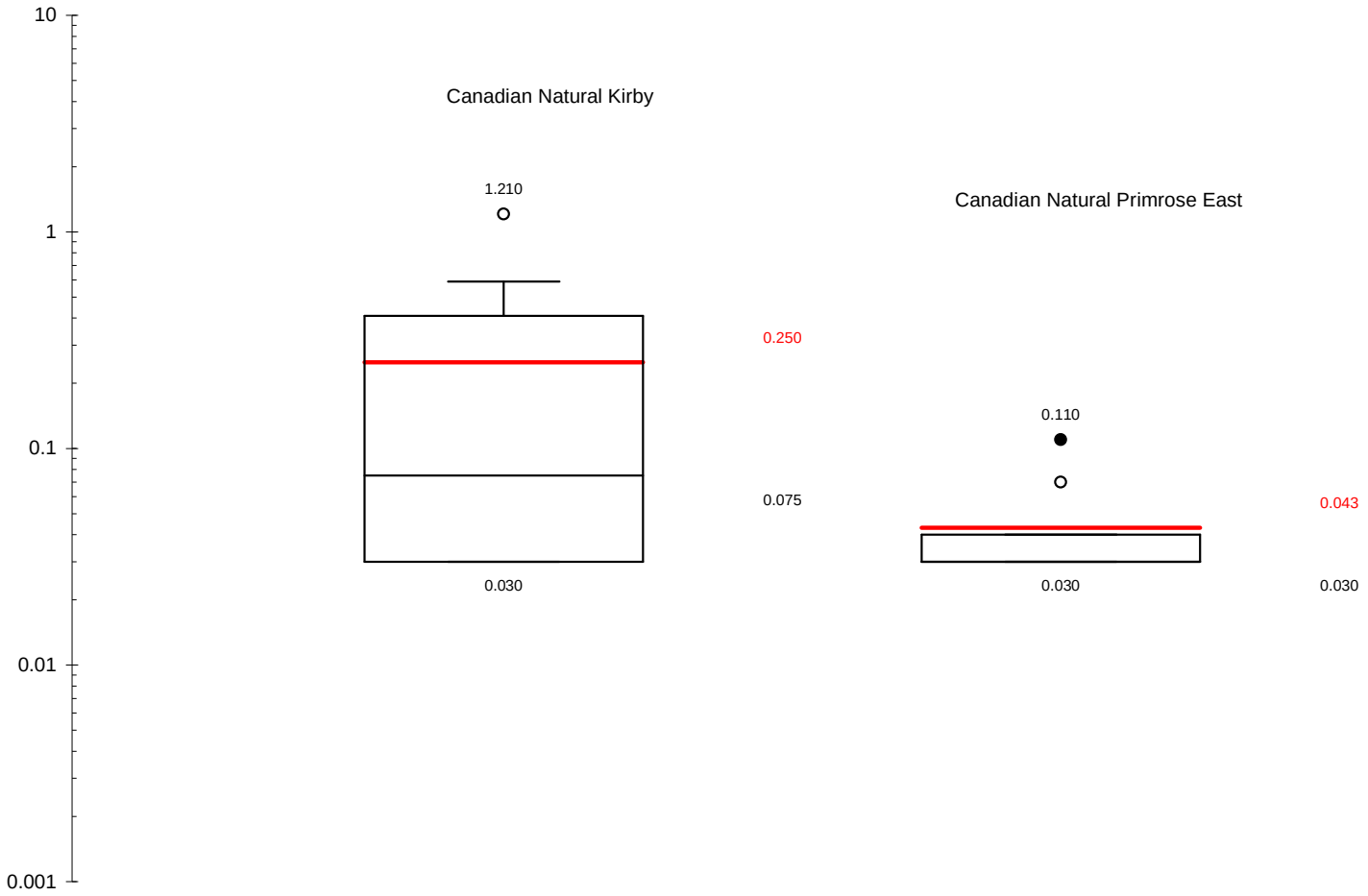
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF URANIUM CONCENTRATIONS IN BERRIES [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.	Uranium-Berries	
DESIGN	BK	26/02/08	SCALE	AS SHOWN	REV. 0
CADD	PSR	27/02/08	**FIGURE: C-23**		
CHECK	BK	07/04/08			
REVIEW	IGG	07/04/08			



PROJECT

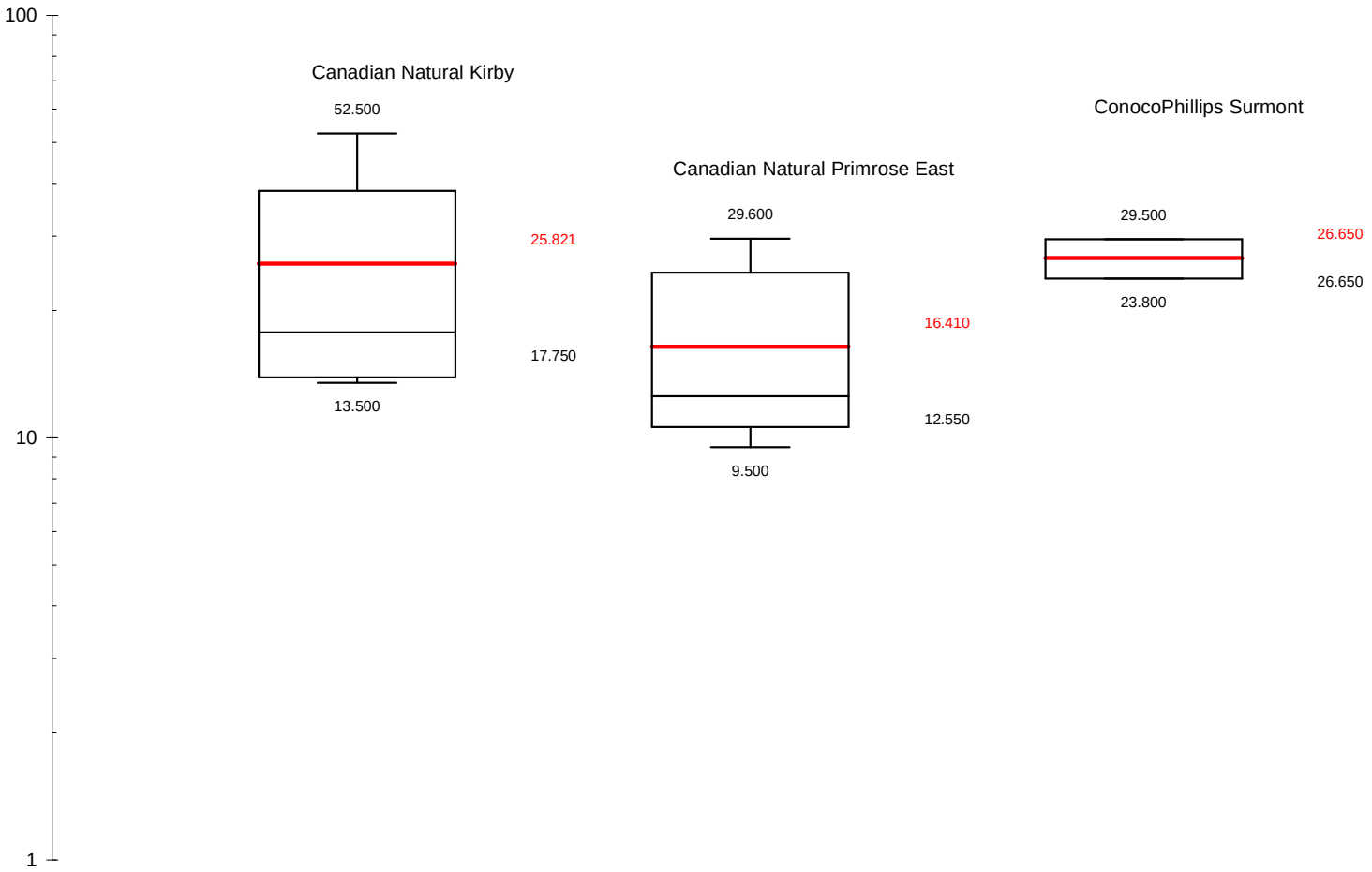
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF VANADIUM CONCENTRATIONS IN BERRIES [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.	Vanadium-Berries	
DESIGN	BK	26/02/08	SCALE	AS SHOWN	REV. 0
CADD	PSR	27/02/08	FIGURE: C-24		
CHECK	BK	07/04/08			
REVIEW	IGG	07/04/08			



PROJECT

CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF ZINC CONCENTRATIONS IN BERRIES [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.	Zinc-Berries	
DESIGN	BK	26/02/08	SCALE	AS SHOWN	REV. 0
CADD	PSR	27/02/08	FIGURE: C-25		
CHECK	BK	07/04/08			
REVIEW	IGG	07/04/08			

Table C-1 Summary of Measured Berry Concentrations for Canadian Natural Kirby Project (units in mg/kg)

Chemical	Avg	St Dev	Min	Max	Count	Median	95th Percentile	95UCLM	Comment
Aluminum (Al)	1.5E+02	1.7E+02	1.8E+01	6.1E+02	14	8.5E+01	4.3E+02	2.3E+02	-
Antimony (Sb)	n/d	n/d	n/d	n/d	14	n/d	n/d	n/d	DL <0.06 - <0.2
Arsenic (As)	9.3E-02	1.9E-01	2.5E-02	7.5E-01	14	4.4E-02	3.4E-01	1.9E-01	9/14 non-detect
Barium (Ba)	3.2E+01	2.6E+01	6.8E+00	1.1E+02	14	2.5E+01	7.0E+01	4.6E+01	-
Beryllium (Be)	n/d	n/d	n/d	n/d	14	n/d	n/d	n/d	DL <0.05 - <0.2
Bismuth (Bi)	1.6E-02	1.6E-02	1.0E-02	6.0E-02	14	1.3E-02	5.0E-02	2.4E-02	13/14 non-detect
Boron (B)	2.0E+01	6.9E+00	1.2E+01	3.4E+01	14	1.9E+01	3.1E+01	2.3E+01	-
Cadmium (Cd)	2.6E-02	2.2E-02	1.0E-02	8.0E-02	14	1.9E-02	6.7E-02	3.8E-02	8/14 non-detect
Chromium (Cr)	2.3E+00	1.6E+00	6.0E-01	5.3E+00	14	1.7E+00	5.0E+00	3.1E+00	-
Cobalt (Co)	1.2E-01	1.4E-01	1.0E-02	5.6E-01	14	7.7E-02	3.2E-01	1.9E-01	-
Copper (Cu)	7.3E+00	4.8E+00	4.1E+00	2.3E+01	14	6.5E+00	1.5E+01	9.8E+00	-
Lead (Pb)	6.4E-01	1.8E+00	4.0E-02	7.0E+00	14	1.4E-01	2.9E+00	1.6E+00	-
Manganese (Mn)	1.9E+02	1.1E+02	3.6E+01	3.6E+02	14	1.5E+02	3.4E+02	2.5E+02	-
Mercury (Hg)	8.9E-03	1.4E-02	4.0E-03	5.8E-02	14	5.6E-03	2.8E-02	1.6E-02	11/14 non-detect
Molybdenum (Mo)	2.6E+00	3.8E+00	4.0E-02	9.7E+00	14	5.3E-01	9.5E+00	4.5E+00	-
Nickel (Ni)	2.9E+00	2.1E+00	1.1E+00	9.3E+00	14	2.5E+00	6.0E+00	4.0E+00	-
Selenium (Se)	8.6E-02	9.9E-02	5.0E-02	4.0E-01	14	6.4E-02	2.7E-01	1.4E-01	13/14 non-detect
Silver (Ag)	n/d	n/d	n/d	n/d	14	n/d	n/d	n/d	DL <1 - <5
Strontium (Sr)	5.9E+00	4.2E+00	1.6E+00	1.3E+01	14	4.5E+00	1.2E+01	8.1E+00	-
Thallium (Tl)	n/d	n/d	n/d	n/d	14	n/d	n/d	n/d	DL <0.06 - <0.2
Tin (Sn)	7.5E-01	6.4E-01	5.0E-01	2.5E+00	14	6.2E-01	2.2E+00	1.1E+00	13/14 non-detect
Titanium (Ti)	3.3E+00	5.6E+00	2.5E-01	2.1E+01	14	1.4E+00	1.2E+01	6.2E+00	-
Uranium (U)	1.5E-02	1.1E-02	1.0E-02	5.0E-02	14	1.3E-02	3.4E-02	2.0E-02	12/14 non-detect
Vanadium (V)	2.5E-01	3.3E-01	3.0E-02	1.2E+00	14	1.2E-01	8.1E-01	4.2E-01	5/14 non-detect
Zinc (Zn)	2.6E+01	1.4E+01	1.4E+01	5.3E+01	14	2.3E+01	4.9E+01	3.3E+01	-

- = No comment.

n/d = Non-detect.

Table C-2 Summary of Measured Berry Concentrations for Canadian Natural Primrose East Project (units in mg/kg)

Chemical	Avg	St Dev	Min	Max	Count	Median	95th Percentile	95UCLM	Comment
Aluminum (Al)	3.5E+01	1.5E+01	1.7E+01	5.8E+01	10	3.2E+01	5.6E+01	4.4E+01	-
Antimony (Sb)	n/d	n/d	n/d	n/d	10	n/d	n/d	n/d	DL <0.06 - <0.1
Arsenic (As)	n/d	n/d	n/d	n/d	10	n/d	n/d	n/d	DL <0.05 - <0.1
Barium (Ba)	2.2E+01	8.2E+00	2.0E+00	3.1E+01	10	1.9E+01	3.0E+01	2.8E+01	-
Beryllium (Be)	n/d	n/d	n/d	n/d	10	n/d	n/d	n/d	DL <0.05 - <0.2
Bismuth (Bi)	n/d	n/d	n/d	n/d	10	n/d	n/d	n/d	DL <0.02 - <0.07
Boron (B)	1.2E+01	3.0E+00	8.7E+00	1.9E+01	10	1.2E+01	1.7E+01	1.4E+01	-
Cadmium (Cd)	4.0E-02	6.9E-02	1.0E-02	2.3E-01	10	1.9E-02	1.6E-01	8.3E-02	7/10 non-detect
Chromium (Cr)	3.9E-01	4.2E-01	5.0E-02	1.0E+00	10	1.8E-01	1.0E+00	6.4E-01	5/10 non-detect
Cobalt (Co)	3.3E-02	2.7E-02	5.0E-03	8.0E-02	10	2.1E-02	7.1E-02	4.9E-02	3/10 non-detect
Copper (Cu)	7.0E+00	6.4E+00	3.3E+00	2.5E+01	10	5.7E+00	1.6E+01	1.1E+01	-
Lead (Pb)	7.0E-02	4.9E-02	2.0E-02	1.7E-01	10	5.7E-02	1.6E-01	1.0E-01	2/10 non-detect
Manganese (Mn)	2.7E+02	2.1E+02	5.7E+01	8.2E+02	10	2.2E+02	6.2E+02	4.0E+02	-
Mercury (Hg)	n/d	n/d	n/d	n/d	10	n/d	n/d	n/d	DL <0.008
Molybdenum (Mo)	2.4E-01	1.5E-01	7.0E-02	4.6E-01	10	1.9E-01	4.3E-01	3.3E-01	-
Nickel (Ni)	7.1E-01	4.8E-01	2.0E-01	1.8E+00	10	5.8E-01	1.4E+00	1.0E+00	-
Selenium (Se)	n/d	n/d	n/d	n/d	10	n/d	n/d	n/d	DL <0.1 - <0.2
Silver (Ag)	n/d	n/d	n/d	n/d	10	n/d	n/d	n/d	DL <1 - <4
Strontium (Sr)	3.0E+00	2.3E+00	1.4E+00	9.5E+00	10	2.6E+00	6.7E+00	4.5E+00	-
Thallium (Tl)	n/d	n/d	n/d	n/d	10	n/d	n/d	n/d	DL <0.06 - <0.1
Tin (Sn)	6.5E-01	4.7E-01	5.0E-01	2.0E+00	10	5.7E-01	1.3E+00	9.4E-01	-
Titanium (Ti)	5.2E-01	3.7E-01	1.3E-01	1.2E+00	10	4.1E-01	1.1E+00	7.4E-01	-
Uranium (U)	n/d	n/d	n/d	n/d	10	n/d	n/d	n/d	DL <0.02 - <0.07
Vanadium (V)	4.3E-02	2.7E-02	3.0E-02	1.1E-01	10	3.8E-02	9.2E-02	6.0E-02	8/10 non-detect
Zinc (Zn)	1.6E+01	8.1E+00	9.5E+00	3.0E+01	10	1.5E+01	2.9E+01	2.1E+01	-

- = No comment.

n/d = Non-detect.

Table C-3 Summary of Measured Berry Concentrations for ConocoPhillips Surmont Project (units in mg/kg)

Chemical	Avg	St Dev	Min	Max	Count	Median	95th Percentile	95UCLM	Comment
Aluminum (Al)	1.4E+01	6.4E+00	9.0E+00	1.8E+01	2	1.3E+01	1.8E+01	2.2E+01	-
Antimony (Sb)	n/d	n/d	n/d	n/d	2	n/d	n/d	n/d	DL <0.06
Arsenic (As)	n/d	n/d	n/d	n/d	2	n/d	n/d	n/d	DL <0.05
Barium (Ba)	6.3E+00	3.7E+00	3.7E+00	8.9E+00	2	5.7E+00	8.6E+00	1.1E+01	-
Beryllium (Be)	n/d	n/d	n/d	n/d	2	n/d	n/d	n/d	DL <0.05
Bismuth (Bi)	n/d	n/d	n/d	n/d	2	n/d	n/d	n/d	DL <0.02
Boron (B)	1.6E+01	7.8E-01	1.5E+01	1.6E+01	2	1.6E+01	1.6E+01	1.7E+01	-
Cadmium (Cd)	3.5E-02	7.1E-03	3.0E-02	4.0E-02	2	3.5E-02	4.0E-02	4.5E-02	-
Chromium (Cr)	3.5E-01	2.1E-01	2.0E-01	5.0E-01	2	3.2E-01	4.9E-01	6.4E-01	-
Cobalt (Co)	2.9E-01	3.5E-01	4.0E-02	5.4E-01	2	1.5E-01	5.2E-01	7.8E-01	-
Copper (Cu)	5.6E+00	1.7E+00	4.4E+00	6.8E+00	2	5.5E+00	6.7E+00	8.0E+00	-
Lead (Pb)	7.5E-02	2.1E-02	6.0E-02	9.0E-02	2	7.3E-02	8.9E-02	1.0E-01	-
Manganese (Mn)	4.8E+01	2.5E+01	3.0E+01	6.6E+01	2	4.4E+01	6.4E+01	8.3E+01	-
Mercury (Hg)	n/d	n/d	n/d	n/d	2	n/d	n/d	n/d	DL <0.008
Molybdenum (Mo)	1.3E+00	1.3E+00	3.9E-01	2.2E+00	2	9.2E-01	2.1E+00	3.0E+00	-
Nickel (Ni)	2.6E+00	1.3E+00	1.6E+00	3.5E+00	2	2.4E+00	3.4E+00	4.4E+00	-
Selenium (Se)	n/d	n/d	n/d	n/d	2	n/d	n/d	n/d	DL <0.1
Silver (Ag)	n/d	n/d	n/d	n/d	2	n/d	n/d	n/d	DL <1
Strontium (Sr)	4.6E+00	2.4E+00	2.9E+00	6.3E+00	2	4.3E+00	6.2E+00	8.0E+00	-
Thallium (Tl)	n/d	n/d	n/d	n/d	2	n/d	n/d	n/d	DL <0.06
Tin (Sn)	n/d	n/d	n/d	n/d	2	n/d	n/d	n/d	DL <1
Titanium (Ti)	3.3E-01	4.9E-02	2.9E-01	3.6E-01	2	3.2E-01	3.6E-01	3.9E-01	-
Uranium (U)	n/d	n/d	n/d	n/d	2	n/d	n/d	n/d	DL <0.02
Vanadium (V)	n/d	n/d	n/d	n/d	2	n/d	n/d	n/d	DL <0.06
Zinc (Zn)	2.7E+01	4.0E+00	2.4E+01	3.0E+01	2	2.6E+01	2.9E+01	3.2E+01	-

- = No comment.

n/d = Non-detect.

Table C-4 Summary of Measured Berry Polycyclic Aromatic Hydrocarbons Concentrations for Canadian Natural Kirby Project (units in mg/kg)

Chemical	Avg	St Dev	Min	Max	Count	Median	95th Percentile	95UCLM	Comment
Acenaphthylene Anthracene Benzo(a)anthracene Benzo(b)fluoranthene Benzo(ghi)perylene Benzo(k)fluoranthene C2 sub'd B(a)A/chrysene C2 sub'd B(b&k)F/B(a)P C2 sub'd biphenyl C2 sub'd dibenzothiophene C2 sub'd fluorene C2 sub'd naphthalene C2 sub'd phenanthrene/anth C3 sub'd dibenzothiophene C3 sub'd phenanthrene/anth C4 sub'd dibenzothiophene C4 sub'd phenanthrene/anth Chrysene Dibenzo(a,h)anthracene Dibenzothiophene Fluoranthene Fluorene Indeno(c,d-123)pyrene Methyl acenaphthene Methyl B(a)A/chrysene Methyl B(b&k)F/B(a)P Methyl biphenyl Methyl dibenzothiophene Methyl fluoranthene/pyrene Methyl fluorene Methyl naphthalene Methyl phenanthrene/anthracene Phenanthrene Pyrene	n/d	n/d	n/d	n/d	14	n/d	n/d	n/d	DL <0.01 - <0.08
Acenaphthene	6.4E-03	4.1E-03	5.0E-03	2.0E-02	14	5.8E-03	1.4E-02	6.5E-03	13/14 non-detect
Biphenyl	5.7E-03	1.8E-03	5.0E-03	1.0E-02	14	5.5E-03	1.0E-02	5.7E-03	13/14 non-detect
C3 sub'd naphthalene	2.9E-02	2.7E-02	2.0E-02	1.2E-01	14	2.4E-02	6.8E-02	2.9E-02	13/14 non-detect
C4 sub'd naphthalene	2.4E-02	9.3E-03	2.0E-02	5.0E-02	14	2.2E-02	4.4E-02	2.4E-02	13/14 non-detect
Naphthalene	6.8E-03	4.2E-03	5.0E-03	2.0E-02	14	6.1E-03	1.4E-02	6.9E-03	12/14 non-detect

n/d = Non-detect.

Table C-5 Summary of Measured Berry Polycyclic Aromatic Hydrocarbons Concentrations for Canadian Natural Primrose East Project (units in mg/kg)

Chemical	Avg	St Dev	Min	Max	Count	Median	95th Percentile	95UCLM	Comment
Acenaphthene									
Acenaphthylene									
Anthracene									
Benzo(a)pyrene									
Benzo(b)fluoranthene									
Benzo(g,h,i)perylene									
Benzo(k)fluoranthene									
Biphenyl									
C2 sub'd B(a)A/chrysene									
C2 sub'd B(b&k)F/B(a)P									
C2 sub'd biphenyl									
C2 sub'd dibenzothiophene									
C2 sub'd fluorene									
C2 sub'd naphthalene									
C2 sub'd phenanthrene/anth									
C3 sub'd dibenzothiophene									
C3 sub'd naphthalene									
C3 sub'd phenanthrene/anth									
C4 sub'd dibenzothiophene	n/d	n/d	n/d	n/d	10	n/d	n/d	n/d	DL <0.01 - <0.04
C4 sub'd naphthalene									
C4 sub'd phenanthrene/anth									
Chrysene									
Dibenzo(a,h)anthracene									
Dibenzothiophene									
Fluoranthene									
Fluorene									
Indeno(1,2,3-cd)pyrene									
Methyl acenaphthene									
Methyl B(a)A/chrysene									
Methyl B(b&k)F/B(a)P									
Methyl biphenyl									
Methyl dibenzothiophene									
Methyl fluoranthene/pyrene									
Methyl fluorene									
Methyl naphthalene									
Methyl phenanthrene/anthracene									
Naphthalene									
Pyrene									
Phenanthrene	1.0E-02	1.4E-02	5.0E-03	5.0E-02	10	6.7E-03	3.2E-02	1.9E-02	9/10 non-detect

n/d = Non-detect.

Table C-6 Summary of Measured Berry Polycyclic Aromatic Hydrocarbons Concentrations for ConocoPhillips Surmont Project (units in mg/kg)

Chemical	Avg	St Dev	Min	Max	Count	Median	95th Percentile	95UCLM	Comment
Acenaphthene									
Acenaphthylene									
Anthracene									
Benzo(a)pyrene									
Benzo(b)fluoranthene									
Benzo(g,h,i)perylene									
Benzo(k)fluoranthene									
Biphenyl									
C2 sub'd B(a)A/chrysene									
C2 sub'd B(b&k)F/B(a)P									
C2 sub'd biphenyl									
C2 sub'd dibenzothiophene									
C2 sub'd fluorene									
C2 sub'd naphthalene									
C2 sub'd phenanthrene/anth									
C3 sub'd dibenzothiophene									
C3 sub'd naphthalene									
C3 sub'd phenanthrene/anth									
C4 sub'd dibenzothiophene	n/d	n/d	n/d	n/d	1	n/d	n/d	n/d	DL <0.04 - <0.2
C4 sub'd naphthalene									
C4 sub'd phenanthrene/anth									
Chrysene									
Dibenzo(a,h)anthracene									
Dibenzothiophene									
Fluoranthene									
Fluorene									
Indeno(1,2,3-cd)pyrene									
Methyl acenaphthene									
Methyl B(a)A/chrysene									
Methyl B(b&k)F/B(a)P									
Methyl biphenyl									
Methyl dibenzothiophene									
Methyl fluoranthene/pyrene									
Methyl fluorene									
Methyl naphthalene									
Methyl phenanthrene/anthracene									
Naphthalene									
Phenanthrene									
Pyrene									

n/d = Non-detect.

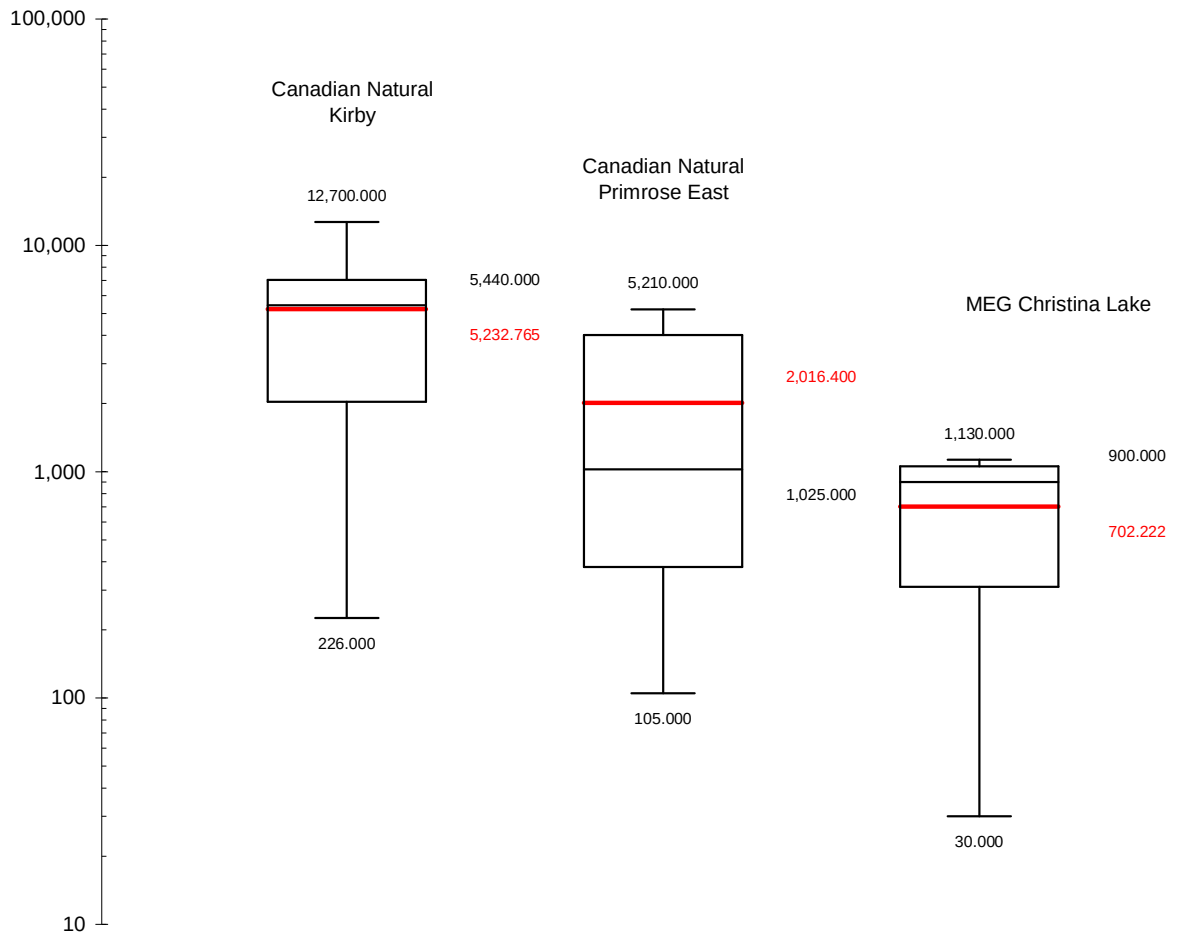
ATTACHMENT D

SUMMARY OF MEASURED CATTAIL CONCENTRATIONS AS PART OF THE OIL SANDS REGIONAL ENVIRONMENTAL SAMPLING PROGRAM

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES



PROJECT

CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

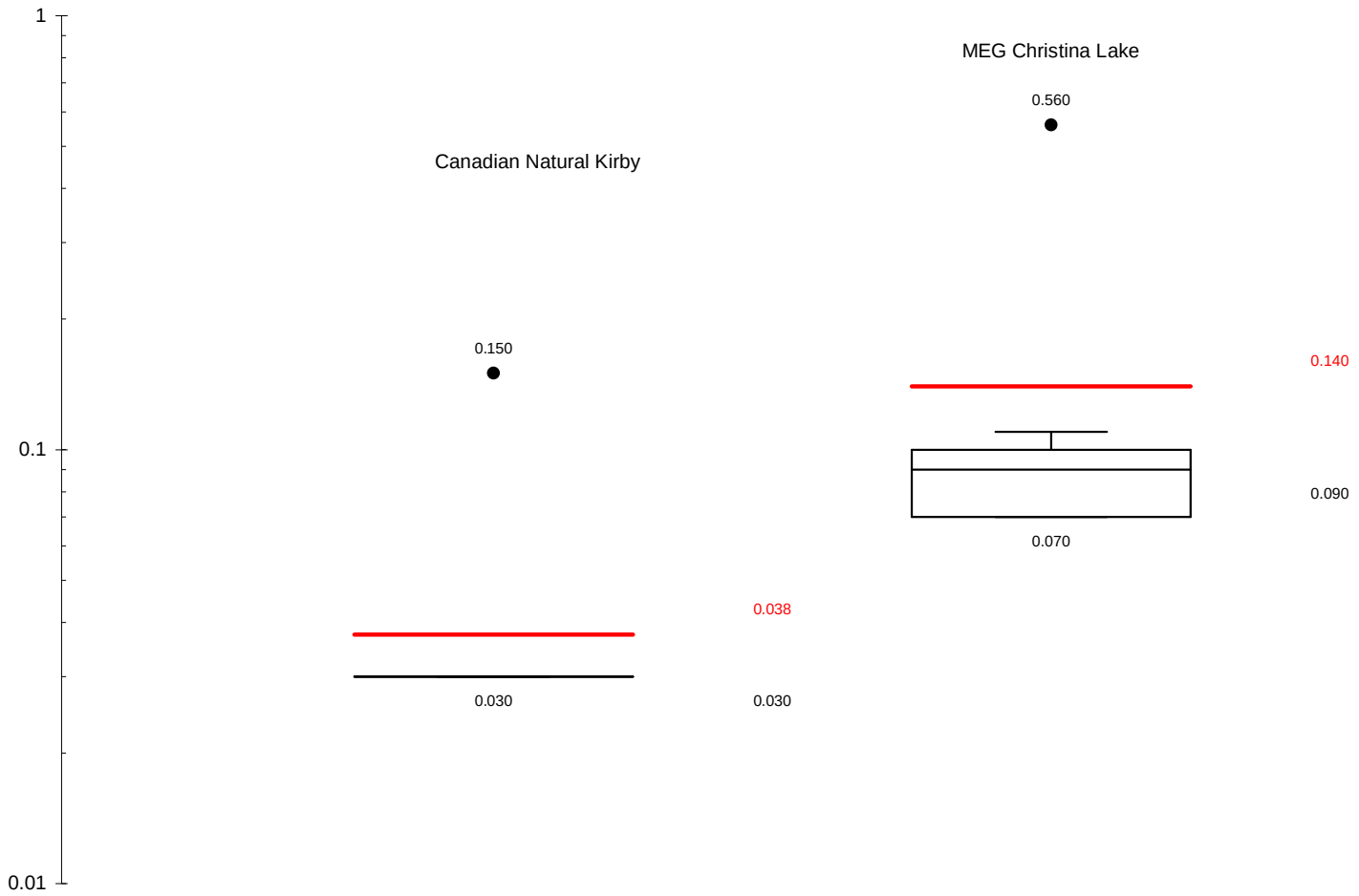
TITLE

REGIONAL DISTRIBUTION OF ALUMINUM CONCENTRATIONS IN CATTAIL [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No. Regional-Alum-Cattail	
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	TRE	27/02/08		
CHECK	BK	07/04/08		
REVIEW	IGG	07/04/08		

FIGURE: D-1



PROJECT

CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

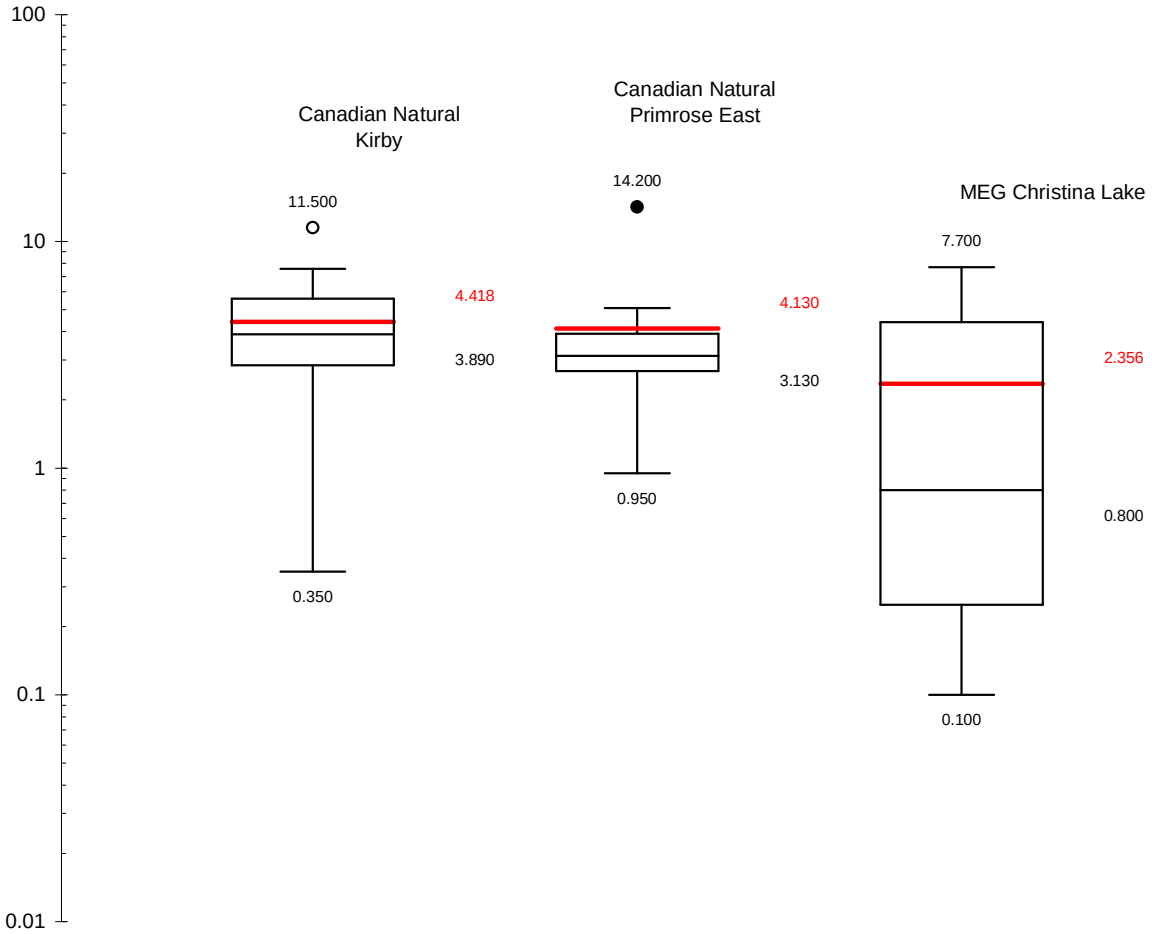
TITLE

REGIONAL DISTRIBUTION OF ANTIMONY CONCENTRATIONS IN CATTAIL [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.	Regional.Antim.Cattail
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	TRE	27/02/08		
CHECK	BK	07/04/08		
REVIEW	IGG	07/04/08		

FIGURE: D-2



PROJECT

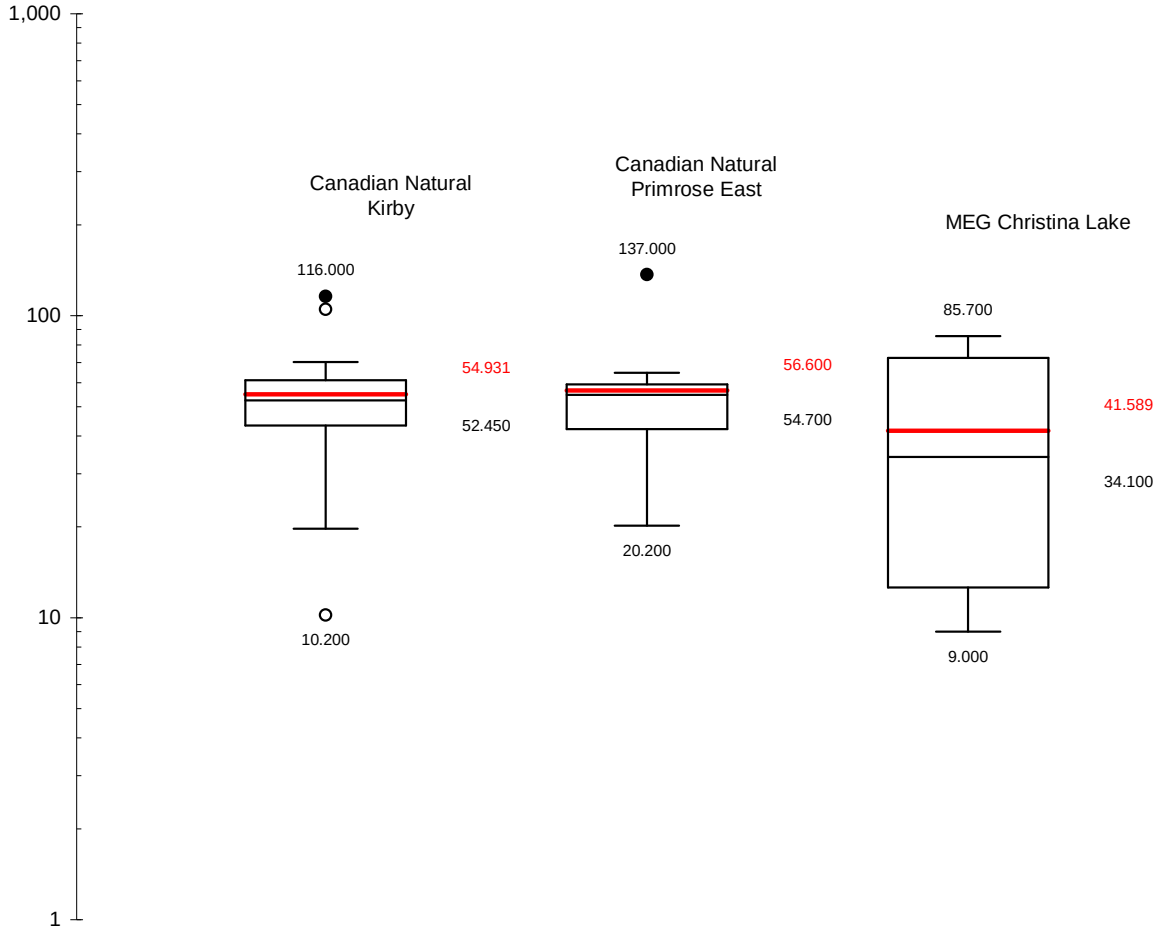
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF ARSENIC CONCENTRATIONS IN CATTAIL [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.Regional.Arsenic.Cattail	
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	TRE	27/02/08	FIGURE: D-3	
CHECK	BK	07/04/08		
REVIEW	IGG	07/04/08		



PROJECT

CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

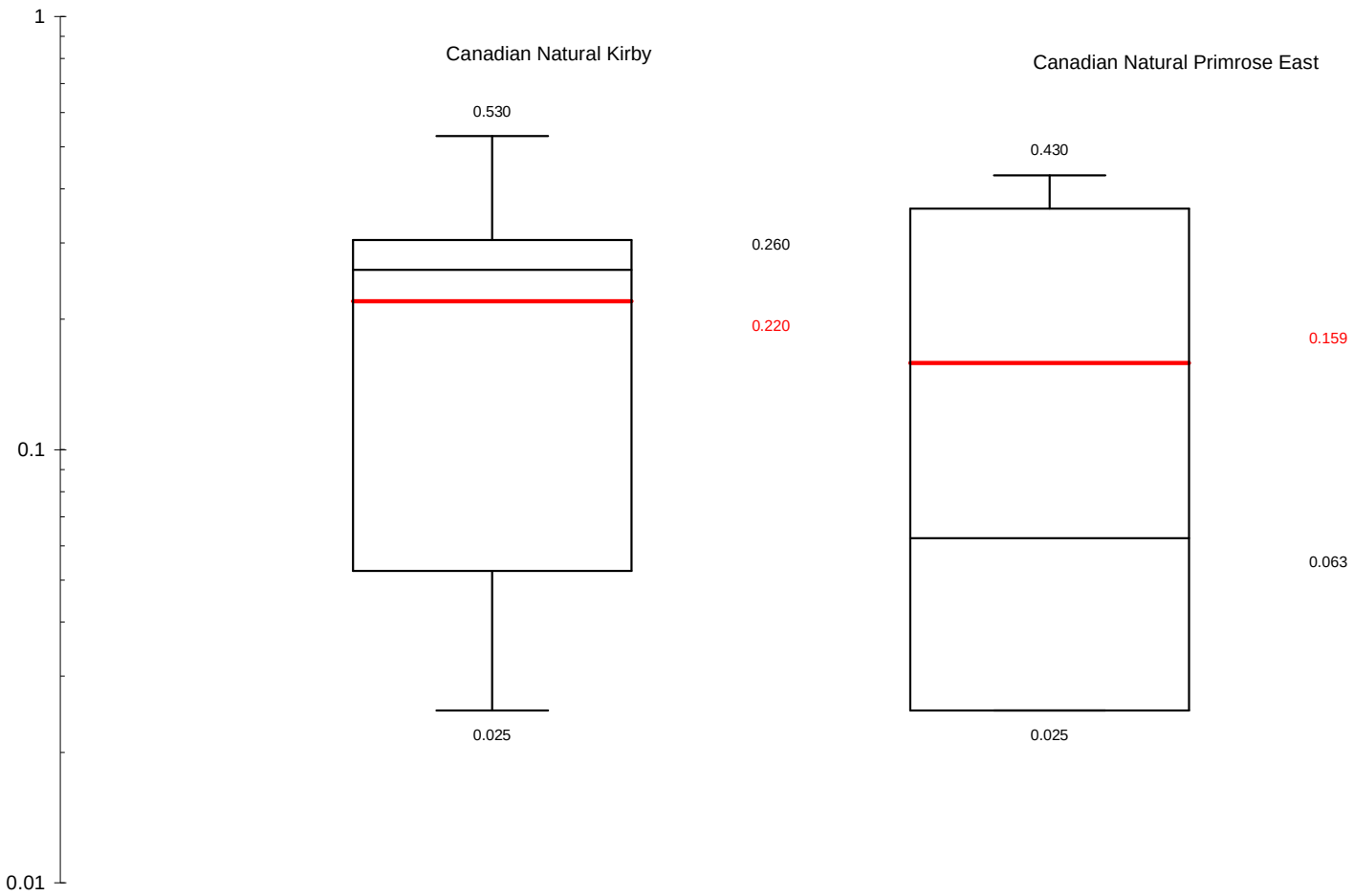
TITLE

REGIONAL DISTRIBUTION OF BARIUM CONCENTRATIONS IN CATTAIL [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.Region-Barium-Cattail	
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	TRE	27/02/08	FIGURE: D-4	
CHECK	BK	07/04/08		
REVIEW	IGG	07/04/08		

L:\2007\1346 Oil Sands\07-1346-0009-MEG EXPANSION\8800\8810\Appendix C4-Attachment D\Fig D-5_Regional Distribution-Beryllium Conc in Cattail.dwg Apr 10, 2008 - 3:14pm



PROJECT

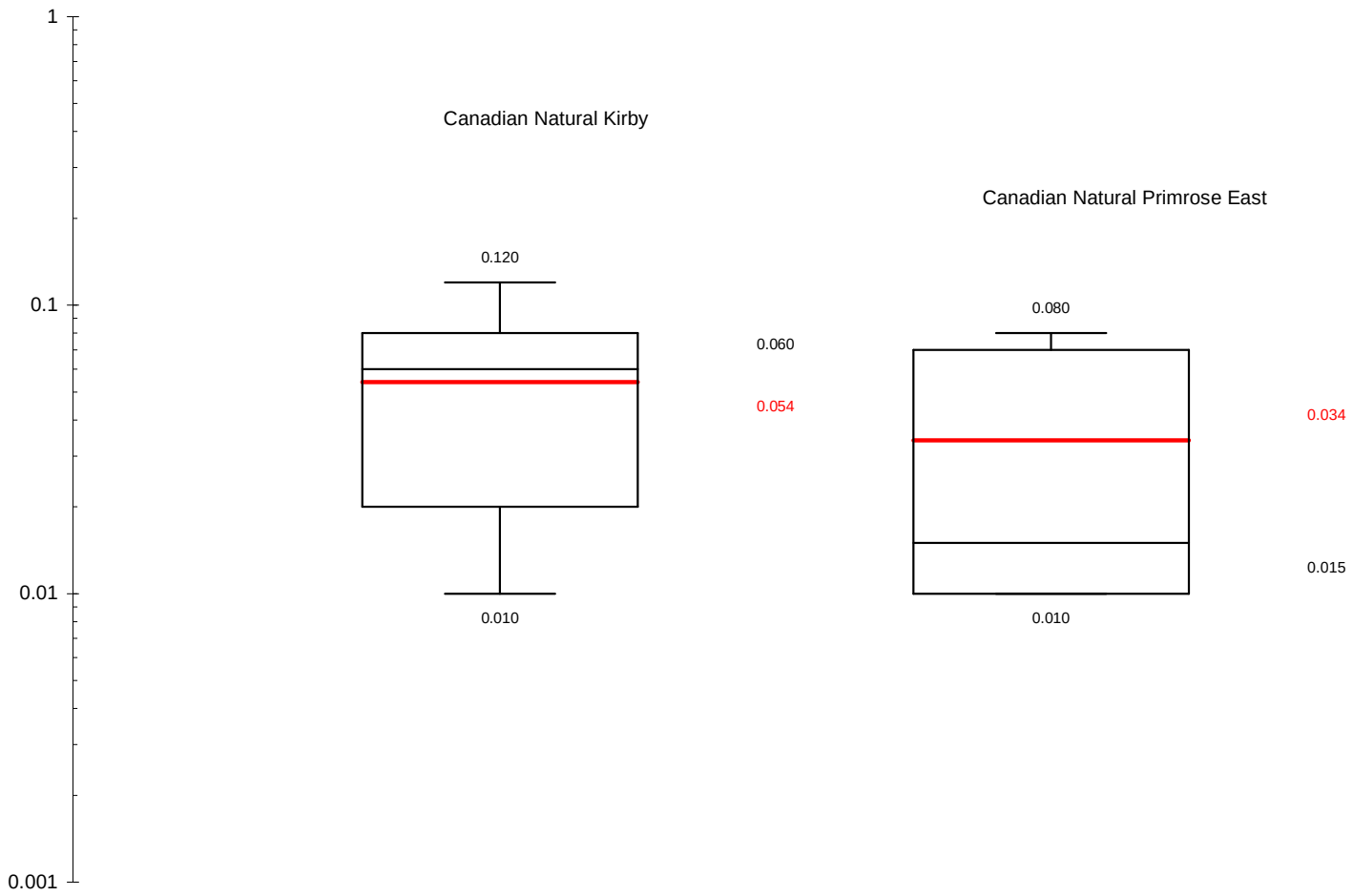
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF BERYLLIUM CONCENTRATIONS IN CATTAIL [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.Region.Beryllium.Cattail	
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	TRE	27/02/08	**FIGURE: D-5**	
CHECK	BK	07/04/08		
REVIEW	IGG	07/04/08		



PROJECT

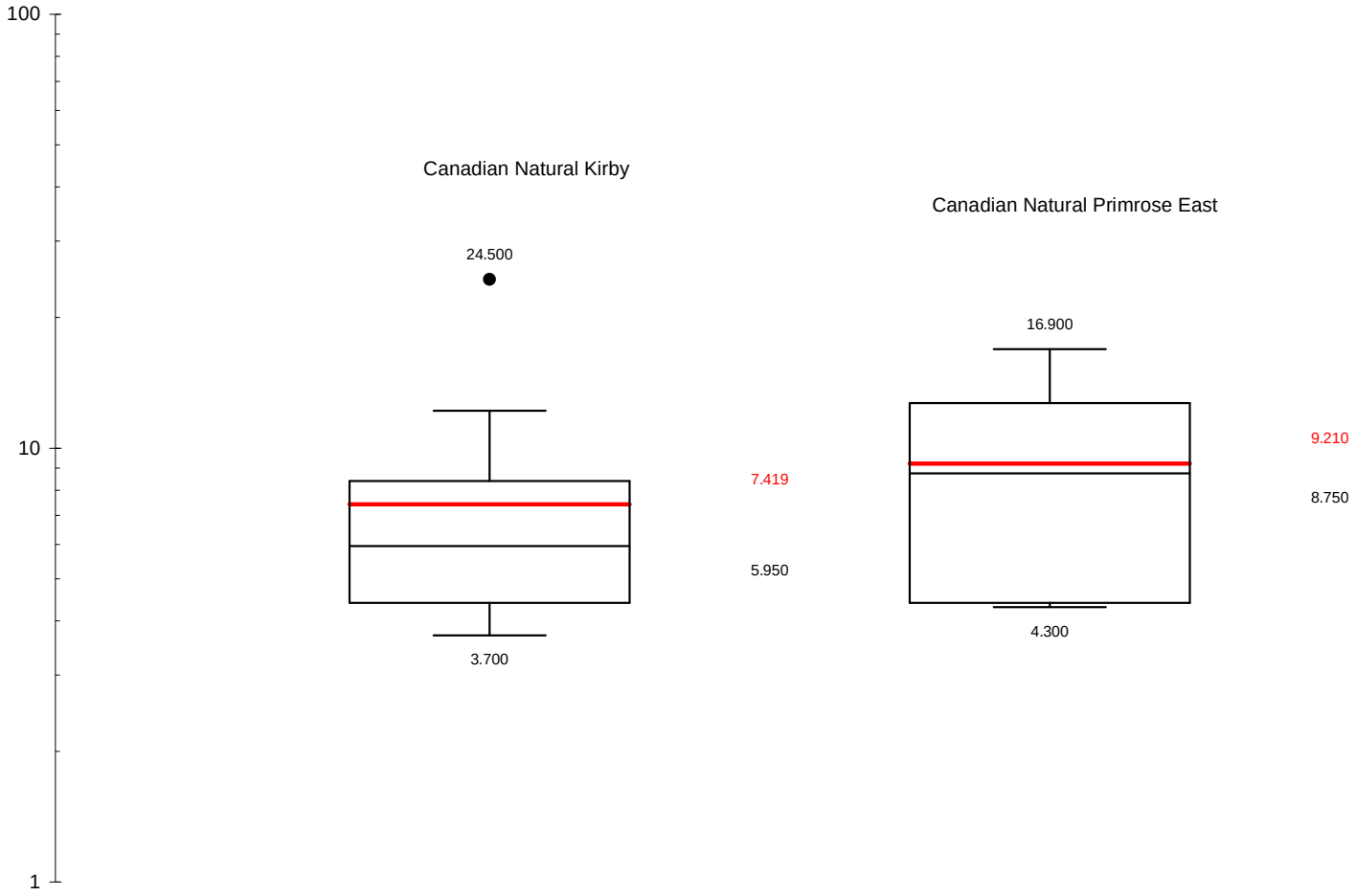
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF BISMUTH CONCENTRATIONS IN CATTAIL [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No. Region.Bismuth.Cattail	
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	TRE	27/02/08	**FIGURE: D-6**	
CHECK	BK	07/04/08		
REVIEW	IGG	07/04/08		



PROJECT

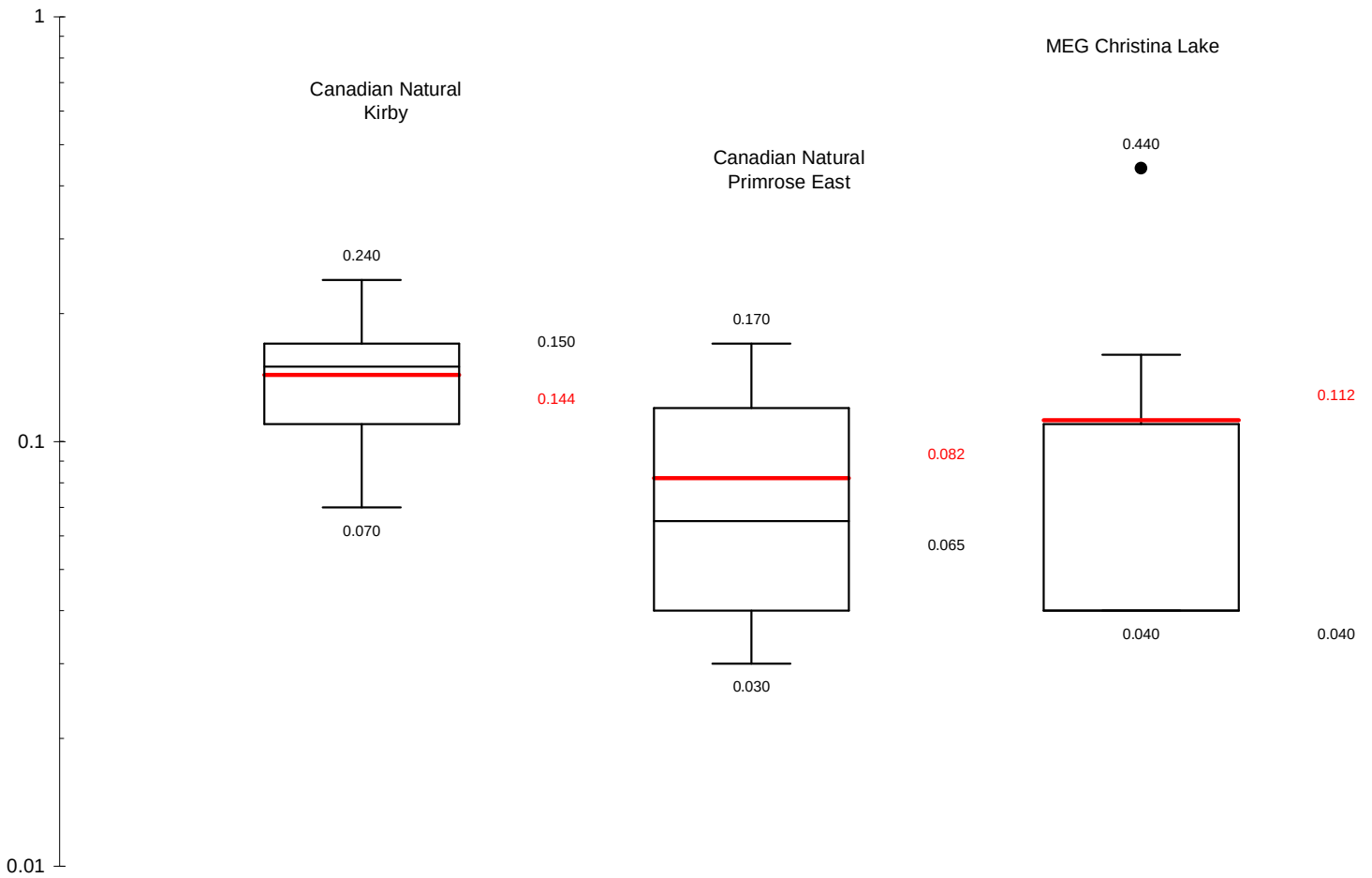
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF BORON CONCENTRATIONS IN CATTAIL [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No. Region-Boron-Cattail	
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	TRE	27/02/08	FIGURE: D-7	
CHECK	BK	07/04/08		
REVIEW	IGG	07/04/08		



PROJECT

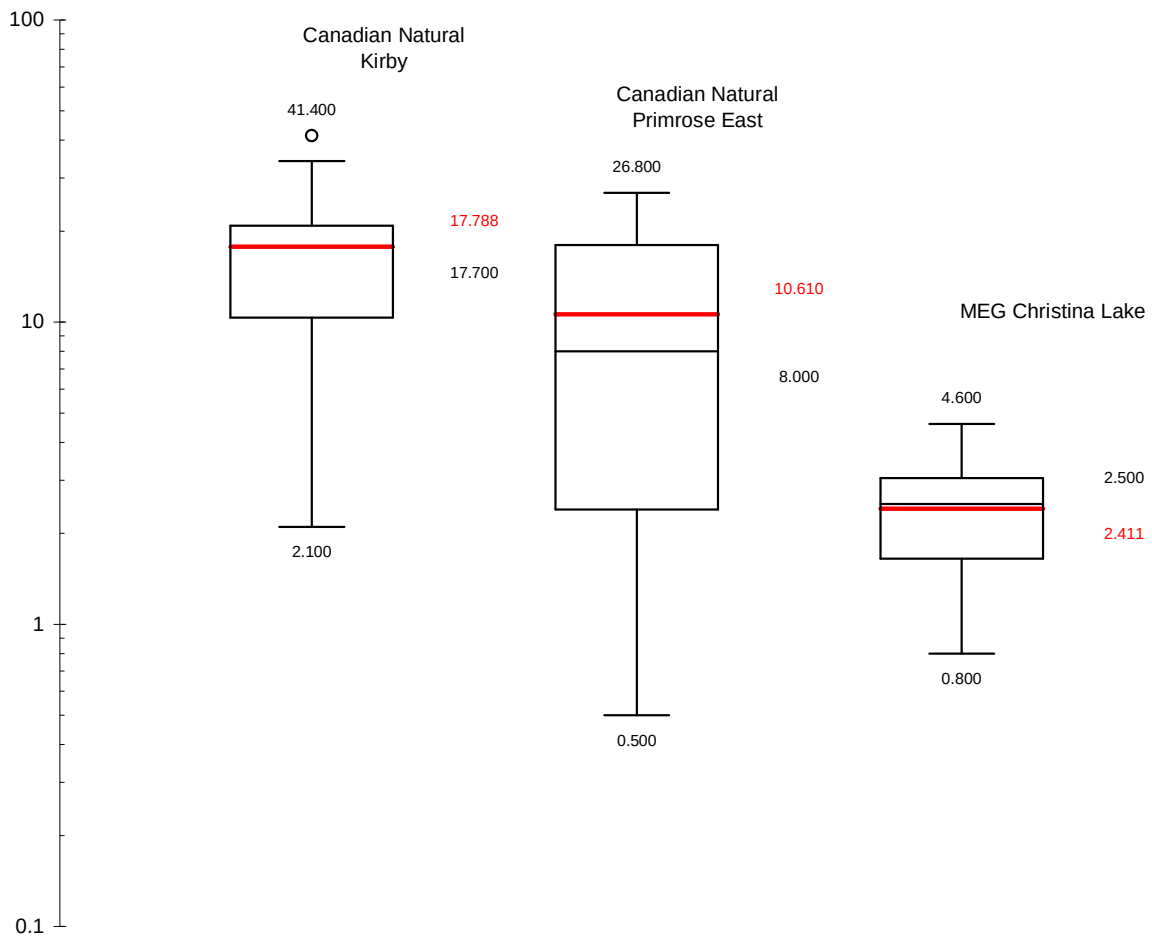
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF CADMIUM CONCENTRATIONS IN CATTAIL [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.	RegionCadmiumCattail
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	TRE	27/02/08	FIGURE:	D-8
CHECK	BK	07/04/08		
REVIEW	IGG	07/04/08		



PROJECT

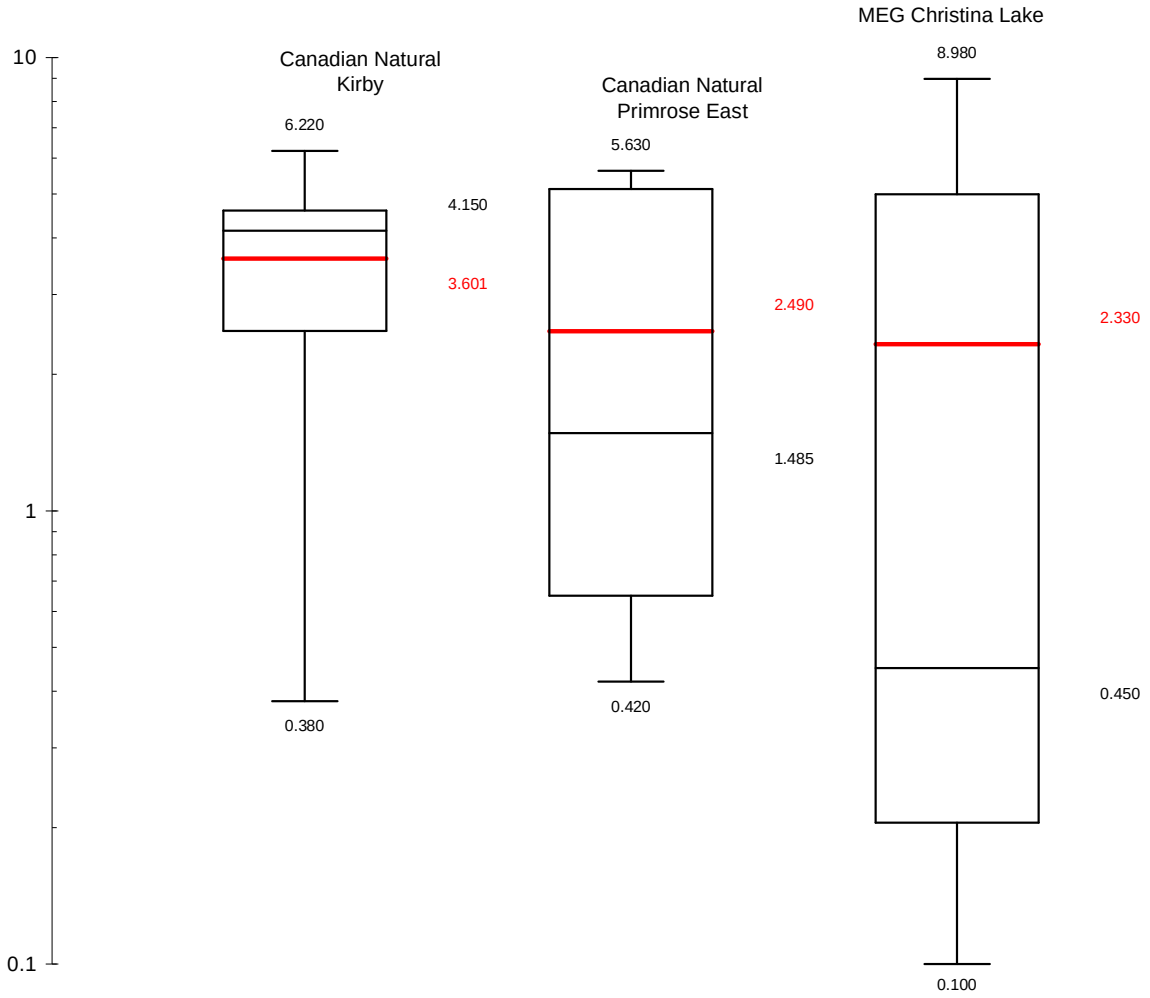
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF CHROMIUM CONCENTRATIONS IN CATTAIL [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.	Region.Chrom.Cattail
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	TRE	27/02/08	**FIGURE: D-9**	
CHECK	BK	07/04/08		
REVIEW	IGG	07/04/08		



PROJECT

CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

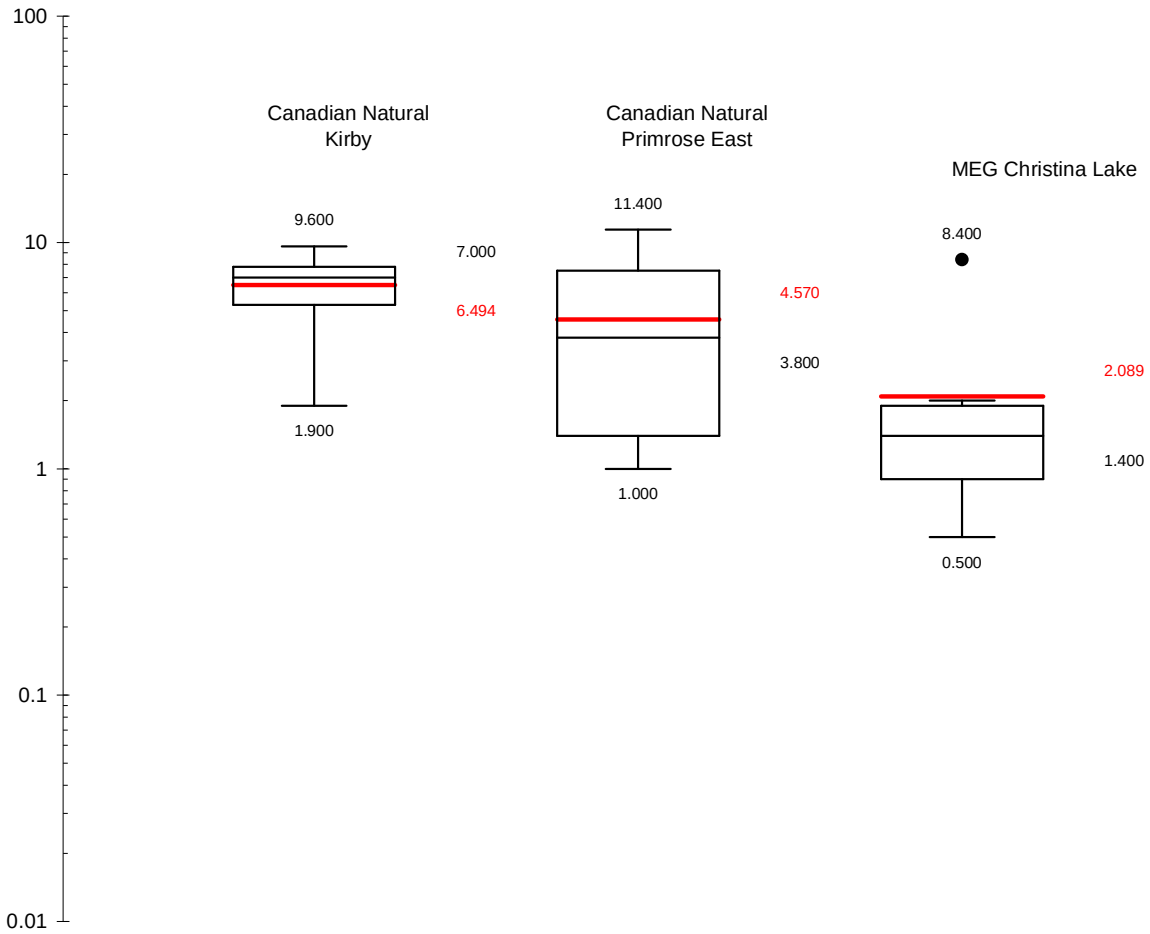
TITLE

REGIONAL DISTRIBUTION OF COBALT CONCENTRATIONS IN CATTAIL [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.Region-Colbalt-Cattail	
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	TRE	27/02/08	**FIGURE: D-10**	
CHECK	BK	07/04/08		
REVIEW	IGG	07/04/08		

L:\2007\1346 Oil Sands\07-1346-0009-MEG EXPANSION\8800\8810\Appendix C4-Attachment D\Fig D-11_Regional Distribution-Copper Conc in Cattail.dwg Apr 10, 2008 - 3:49pm



PROJECT

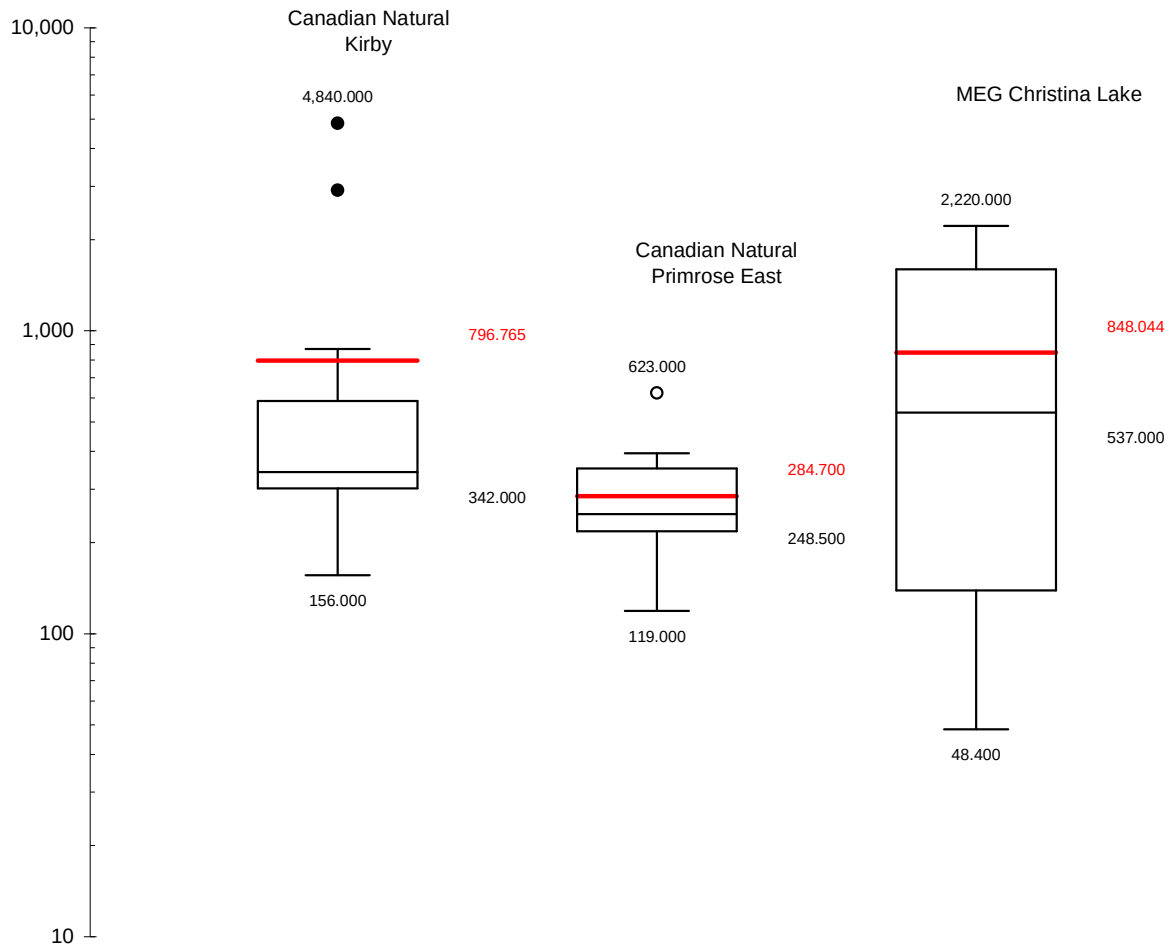
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF COPPER CONCENTRATIONS IN CATTAIL [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.Region-Copper-Cattail	
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	TRE	27/02/08	**FIGURE: D-11**	
CHECK	BK	07/04/08		
REVIEW	IGG	07/04/08		



PROJECT

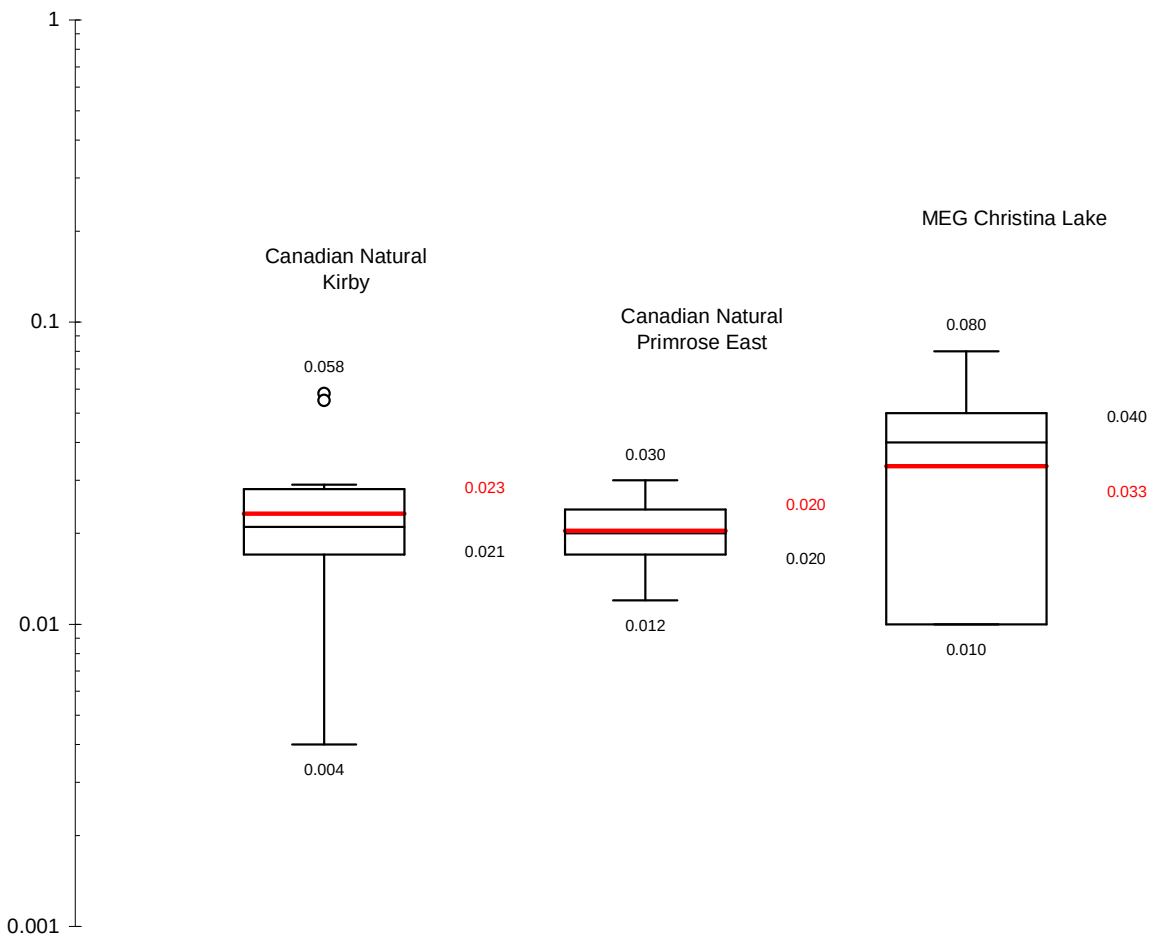
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF MANGANESE CONCENTRATIONS IN CATTAIL [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No. Regional.Manga.Cattail	
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	TRE	27/02/08	**FIGURE: D-12**	
CHECK	BK	07/04/08		
REVIEW	IGG	07/04/08		



PROJECT

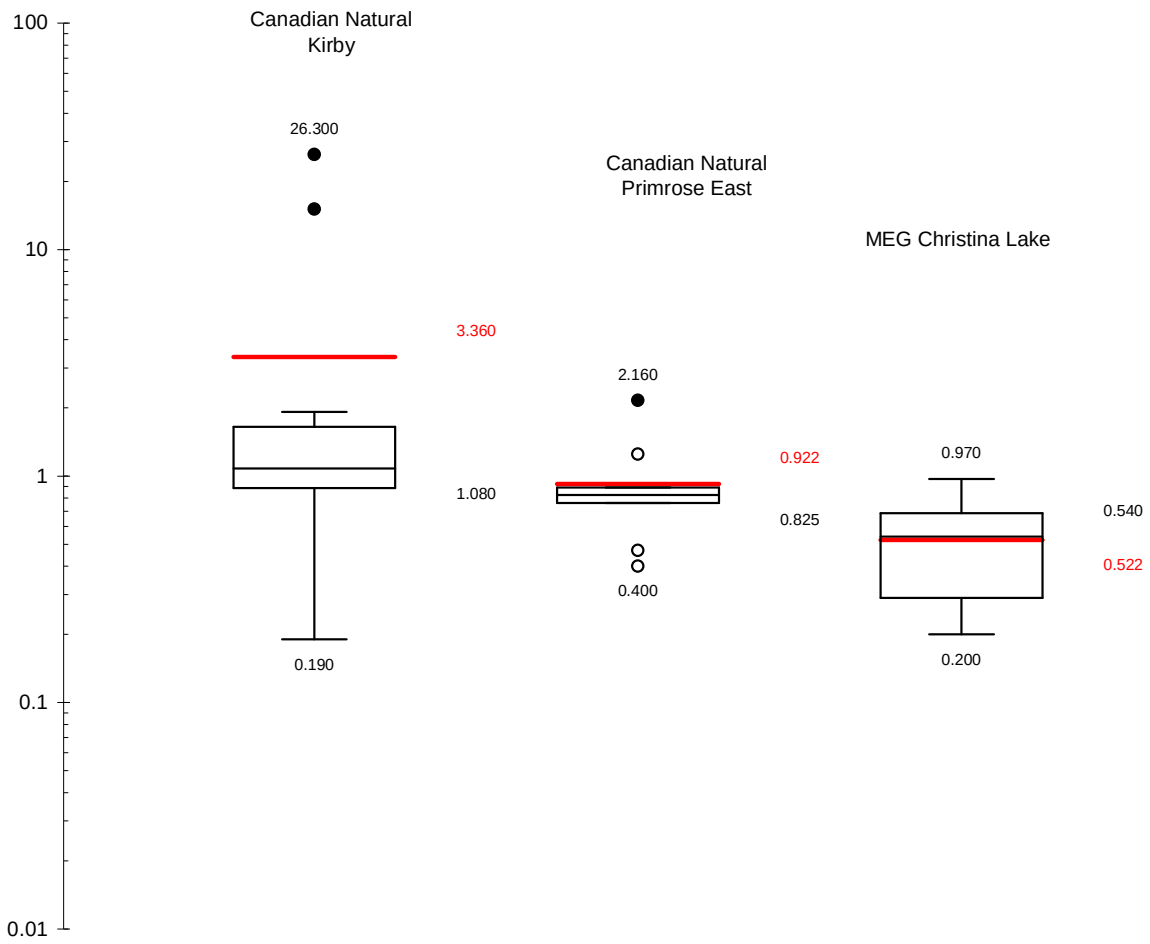
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF MERCURY CONCENTRATIONS IN CATTAIL [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No. Region.Mercury.Cattail	
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	TRE	27/02/08	**FIGURE: D-13**	
CHECK	BK	07/04/08		
REVIEW	IGG	07/04/08		



PROJECT

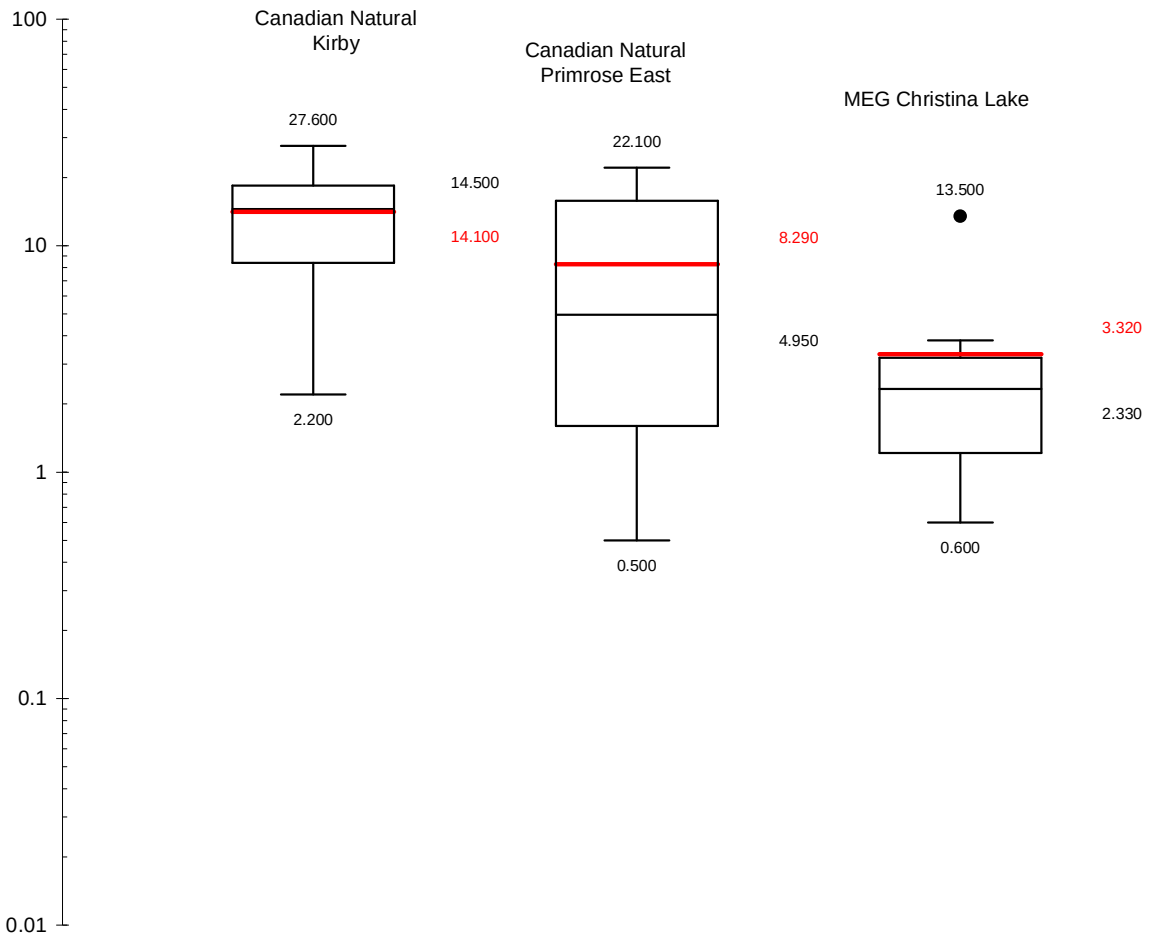
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF MOLYBDENUM CONCENTRATIONS IN CATTAIL [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.Region-Molybd-Cattail	
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	TRE	27/02/08	FIGURE: D-14	
CHECK	BK	07/04/08		
REVIEW	IGG	07/04/08		



PROJECT

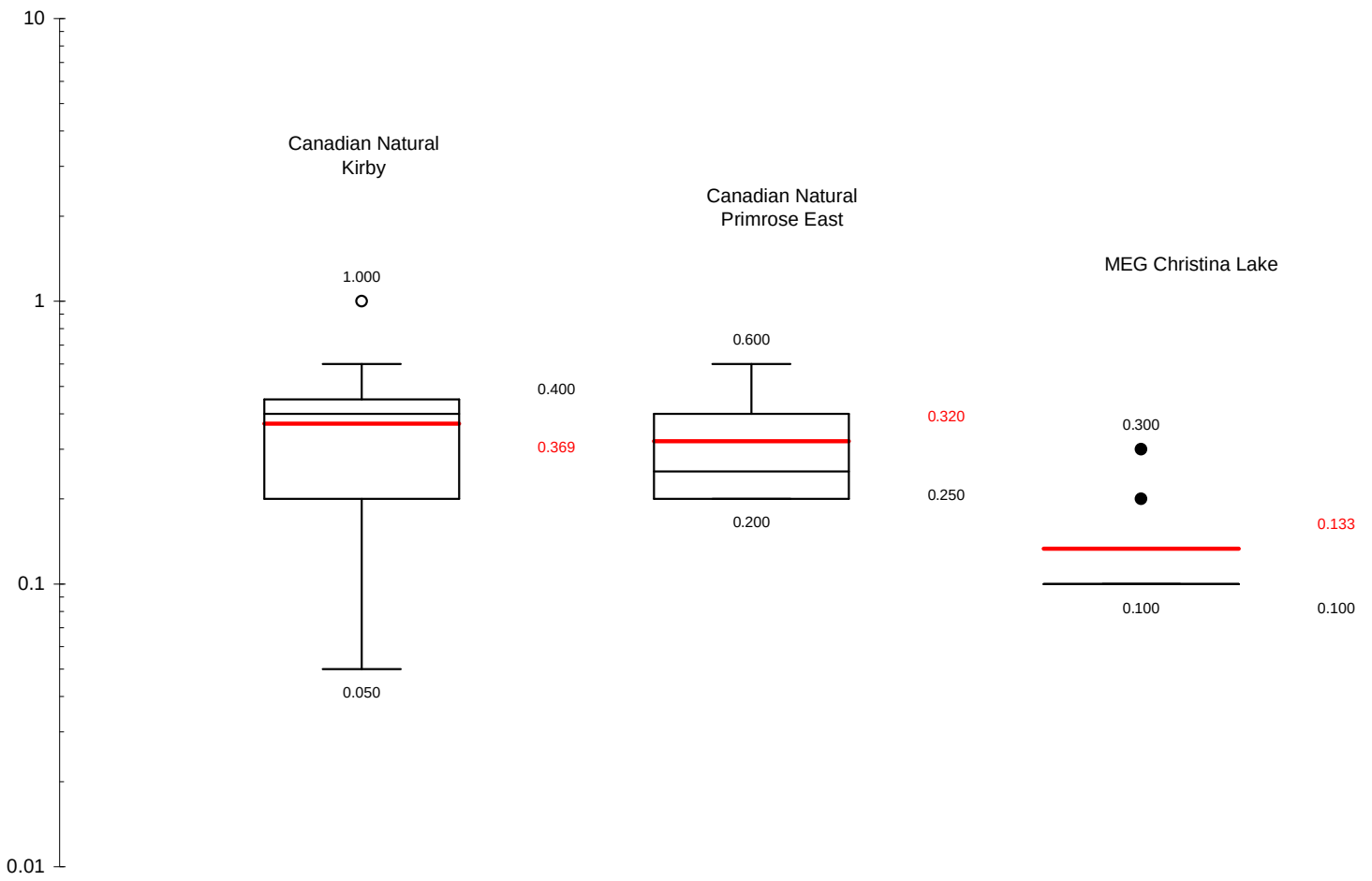
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF NICKEL CONCENTRATIONS IN CATTAIL [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No. Region-Nickel-Cattail	
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	TRE	27/02/08	**FIGURE: D-15**	
CHECK	BK	07/04/08		
REVIEW	IGG	07/04/08		



PROJECT

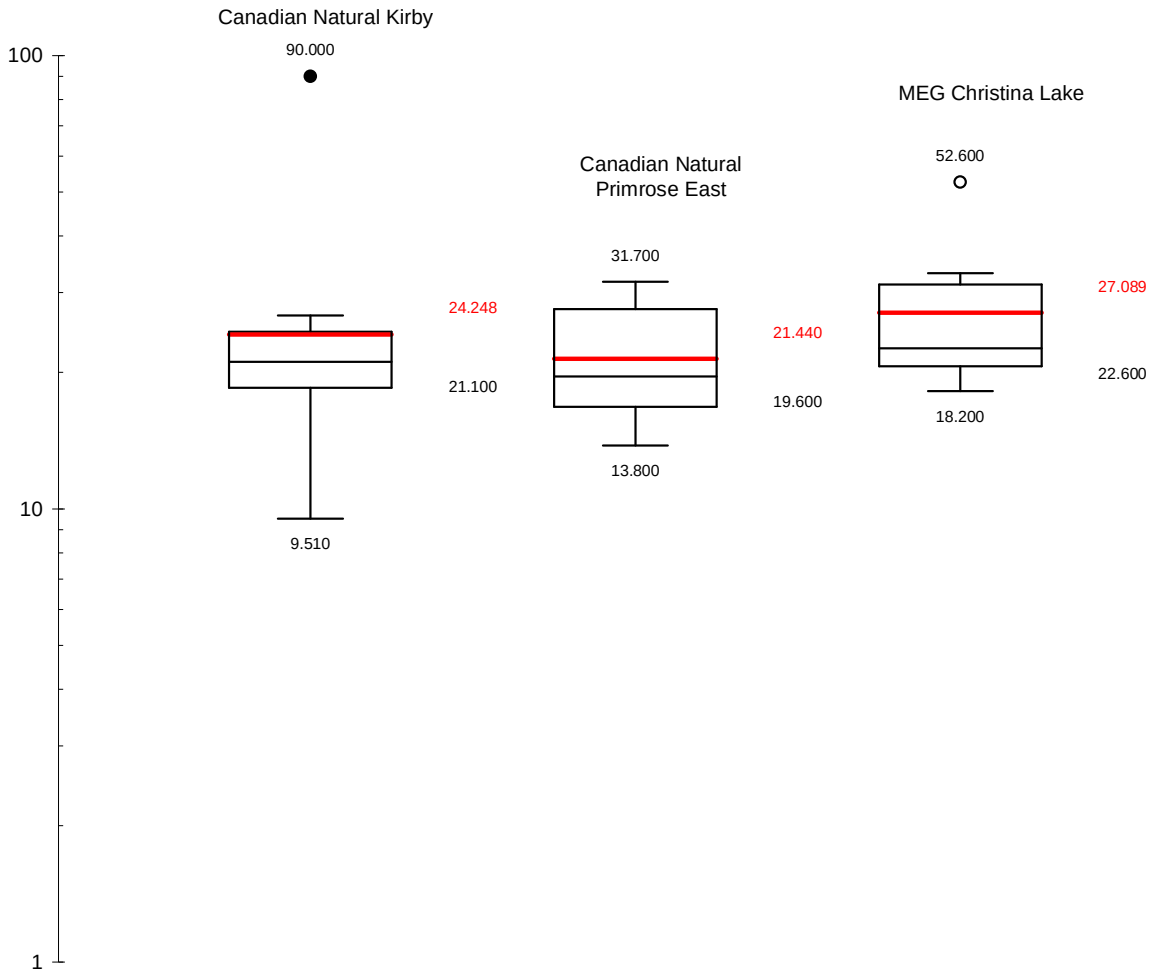
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF SELENIUM CONCENTRATIONS IN CATTAIL [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.Regional-Selen-Cattail	
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	TRE	27/02/08	**FIGURE: D-16**	
CHECK	BK	07/04/08		
REVIEW	IGG	07/04/08		



PROJECT

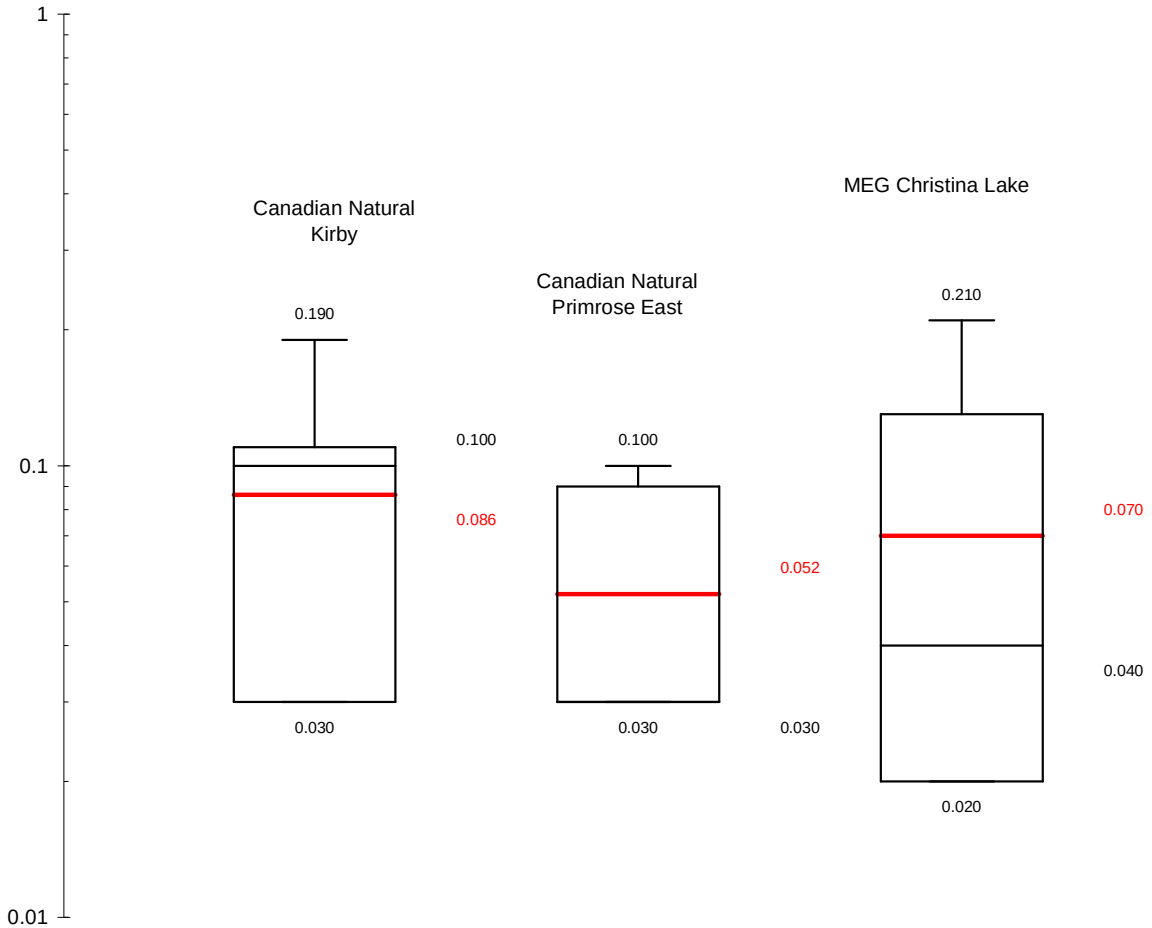
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF STRONTIUM CONCENTRATIONS IN CATTAIL [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No. Regional.Stront.Cattail	
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	TRE	27/02/08	FIGURE: D-17	
CHECK	BK	07/04/08		
REVIEW	IGG	07/04/08		



PROJECT

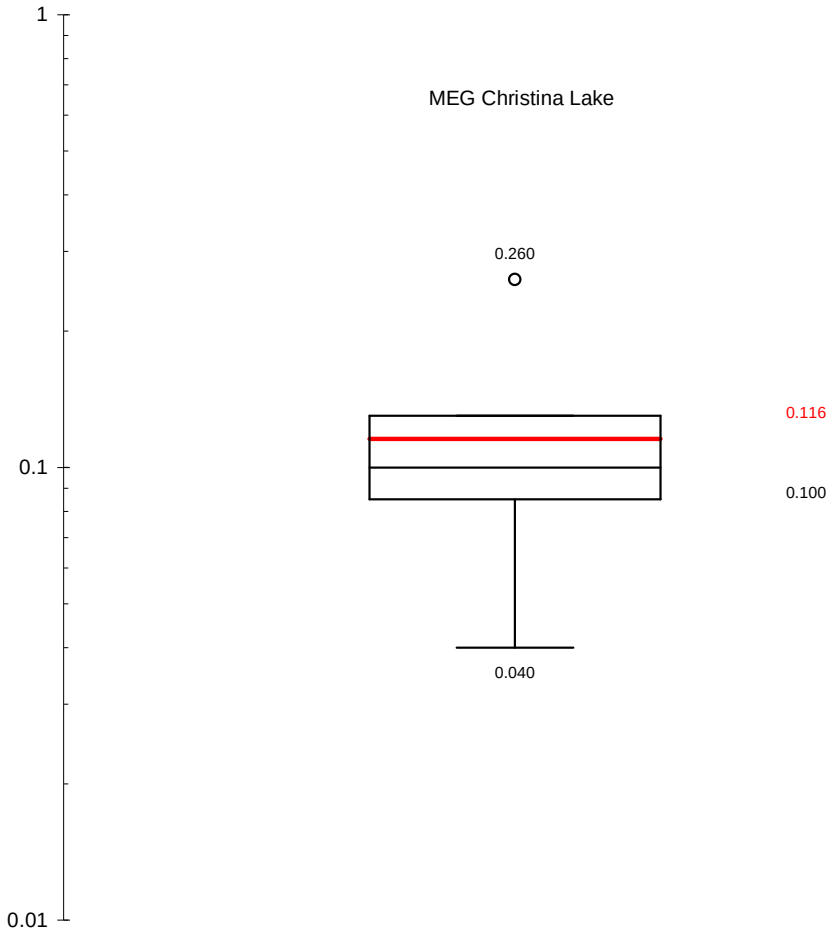
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF THALLIUM CONCENTRATIONS IN CATTAIL [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No. Region.Thallium.Cattail	
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	TRE	27/02/08	**FIGURE: D-18**	
CHECK	BK	07/04/08		
REVIEW	IGG	07/04/08		



PROJECT

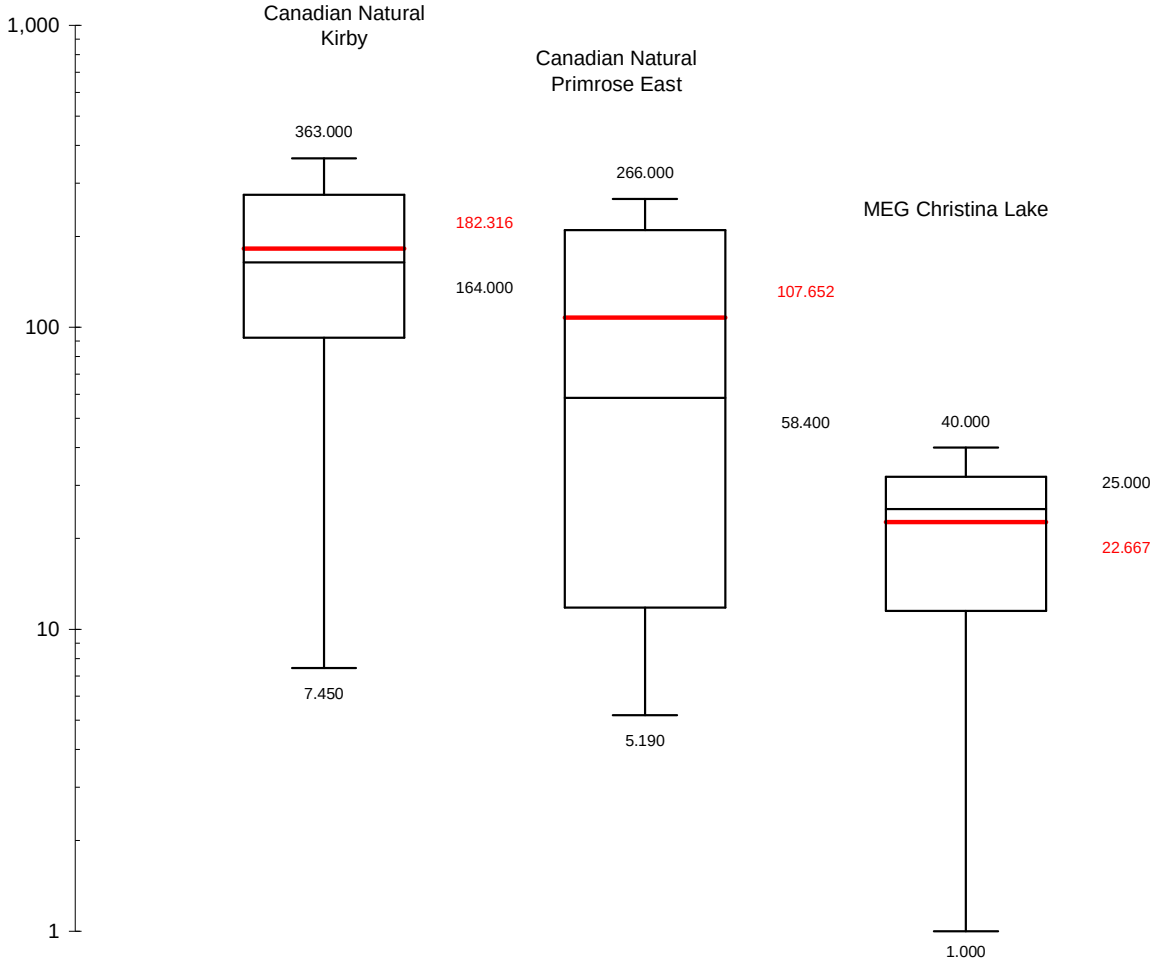
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF TIN CONCENTRATIONS IN CATTAIL [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.	Regional-Tin-Cattail
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	TRE	27/02/08	**FIGURE: D-19**	
CHECK	BK	07/04/08		
REVIEW	IGG	07/04/08		



PROJECT

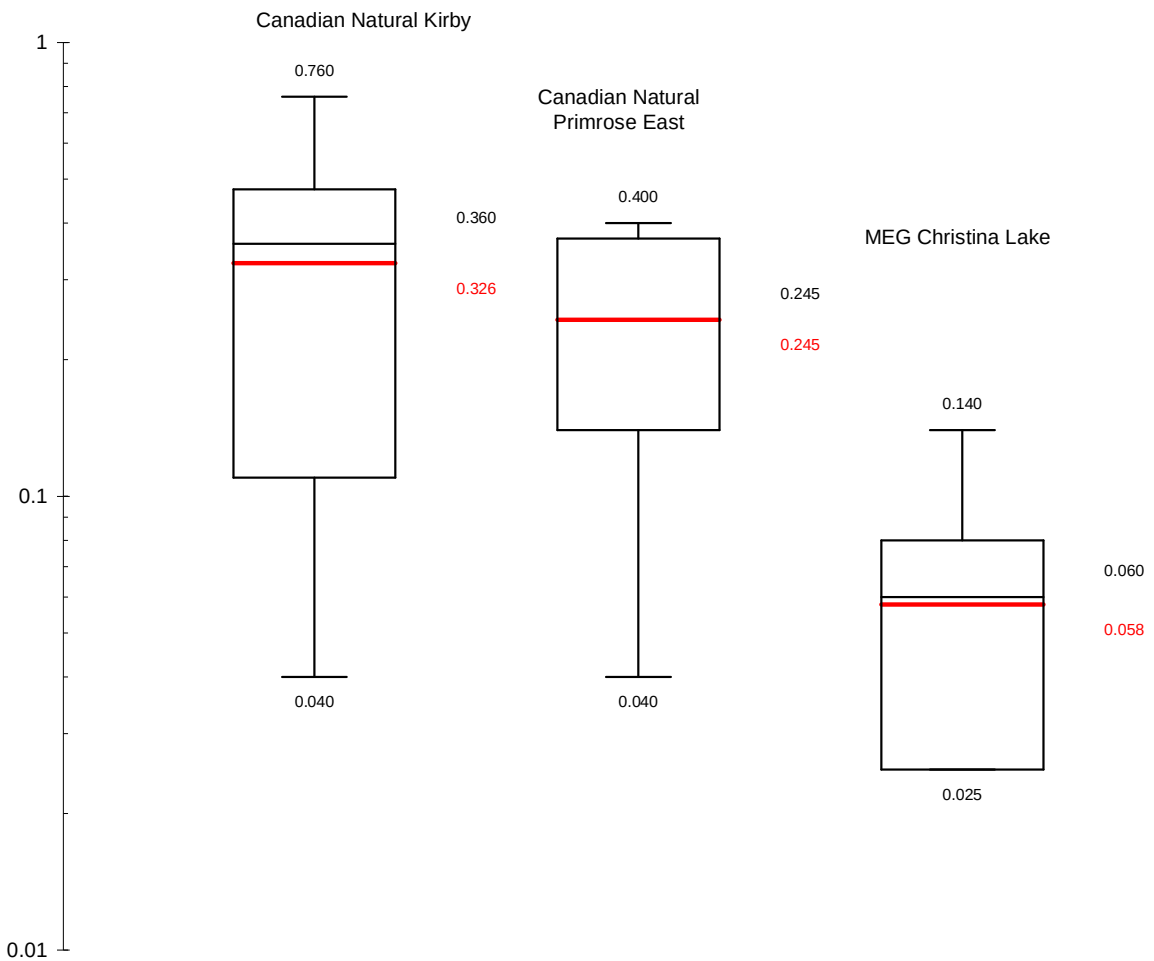
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF TITANIUM CONCENTRATIONS IN CATTAIL [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No. Regional-Titan-Cattail	
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	TRE	27/02/08	**FIGURE: D-20**	
CHECK	BK	07/04/08		
REVIEW	IGG	07/04/08		



PROJECT

CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

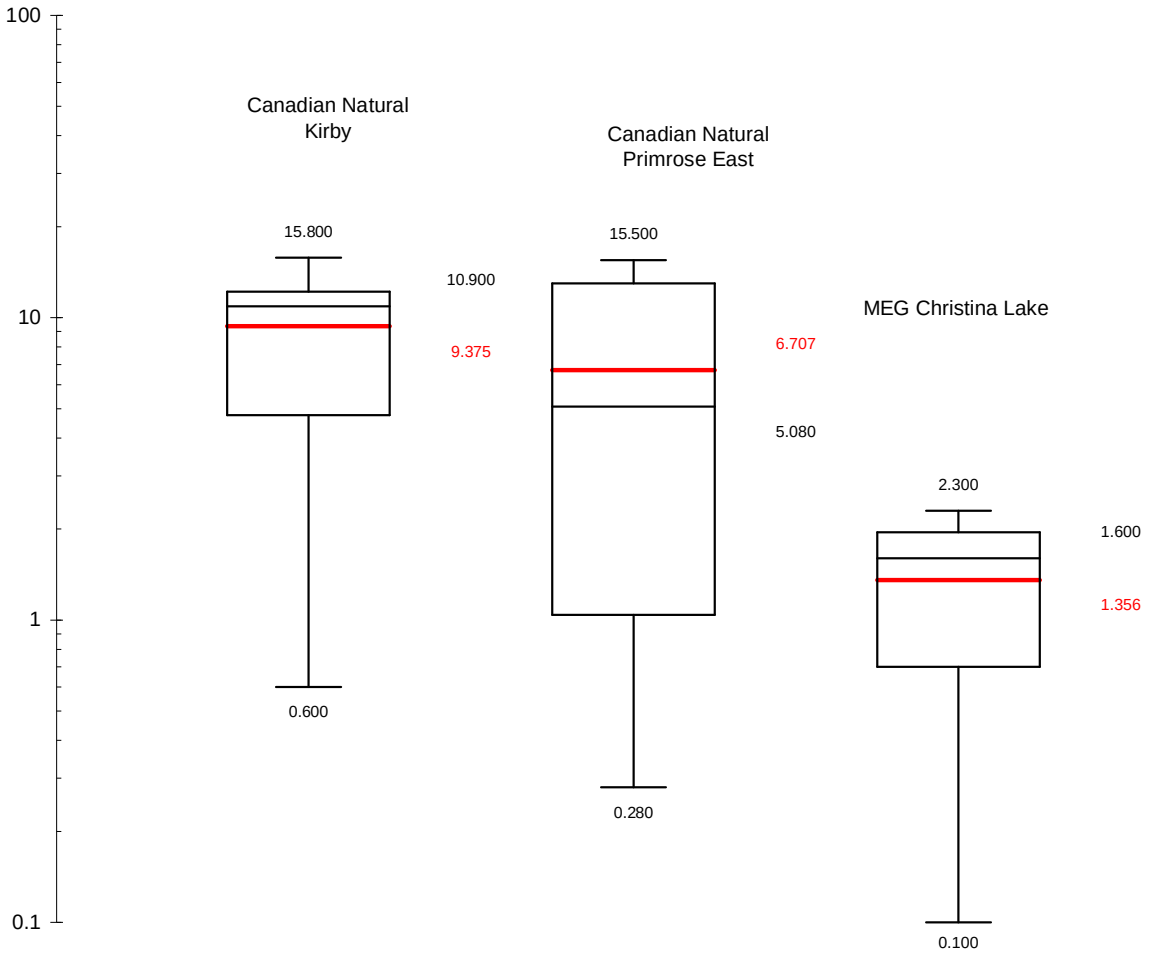
TITLE

REGIONAL DISTRIBUTION OF URANIUM CONCENTRATIONS IN CATTAIL [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.	Uranium-Cattail
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	TRE	27/02/08		
CHECK	BK	07/04/08		
REVIEW	IGG	07/04/08		

FIGURE: D-21



PROJECT

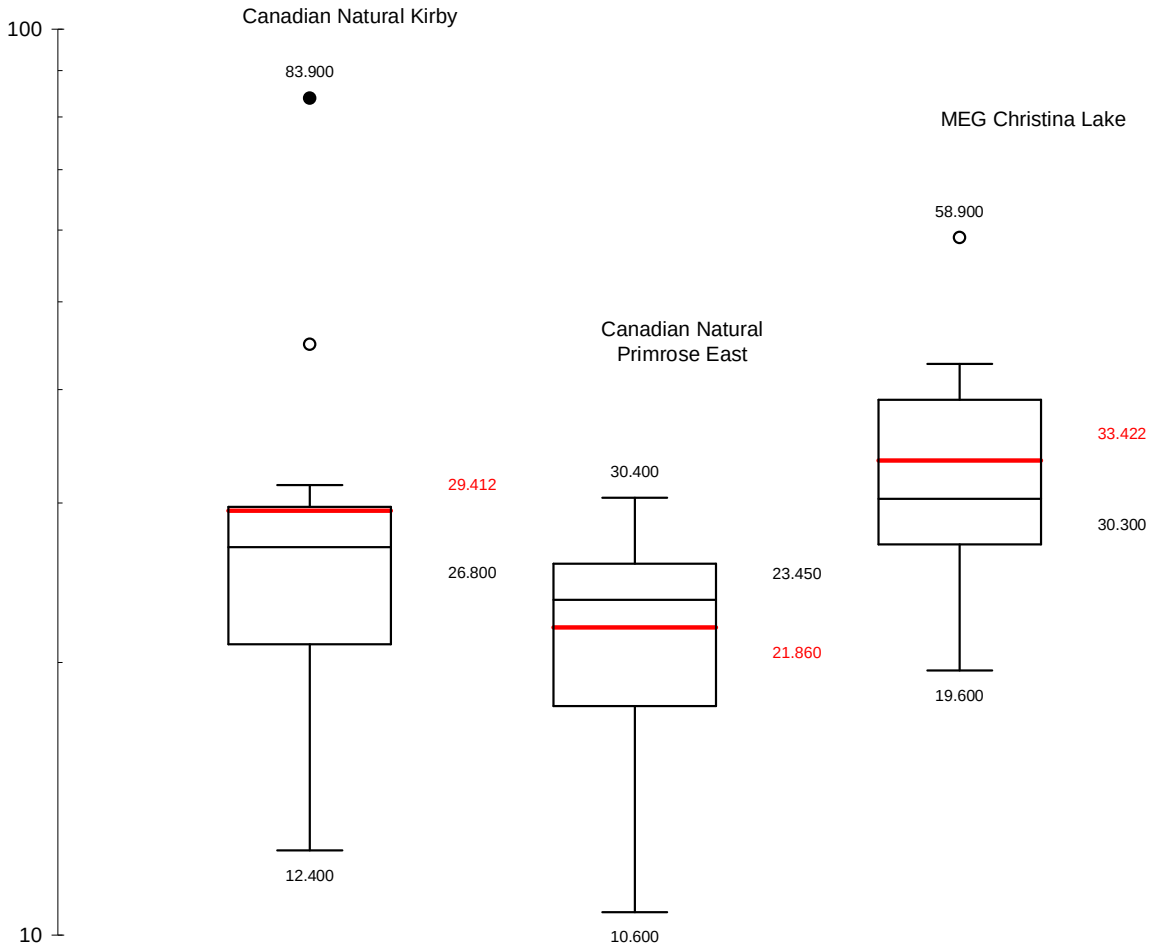
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF VANADIUM CONCENTRATIONS IN CATTAIL [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.	Vanadium-Cattail	
DESIGN	BK	26/02/08	SCALE	AS SHOWN	REV. 0
CADD	TRE	27/02/08	FIGURE: D-22		
CHECK	BK	07/04/08			
REVIEW	IGG	07/04/08			



PROJECT

CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF ZINC CONCENTRATIONS IN CATTAIL [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No. Regional-Zinc-Cattail	
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	TRE	27/02/08	FIGURE: D-23	
CHECK	BK	07/04/08		
REVIEW	IGG	07/04/08		

Table D-1 Summary of Measured Cattail Metal Concentrations for Canadian Natural Kirby Project (units in mg/kg)

Chemical	Avg	St Dev	Min	Max	Count	Median	95th Percentile	95UCLM	Comment
Aluminum (Al)	5.2E+03	3.5E+03	2.3E+02	1.3E+04	17	3.6E+03	1.1E+04	6.9E+03	-
Antimony (Sb)	3.8E-02	3.0E-02	3.0E-02	1.5E-01	16	3.3E-02	6.0E-02	5.2E-02	15/16 non-detect
Arsenic (As)	4.4E+00	2.6E+00	3.5E-01	1.2E+01	16	3.6E+00	8.6E+00	5.7E+00	-
Barium (Ba)	5.5E+01	2.6E+01	1.0E+01	1.2E+02	16	4.8E+01	1.1E+02	6.8E+01	-
Beryllium (Be)	2.2E-01	1.5E-01	2.5E-02	5.3E-01	17	1.5E-01	4.4E-01	2.9E-01	4/17 non-detect
Bismuth (Bi)	5.4E-02	3.3E-02	1.0E-02	1.2E-01	17	4.1E-02	9.6E-02	7.0E-02	4/17 non-detect
Boron (B)	7.4E+00	5.1E+00	3.7E+00	2.5E+01	16	6.4E+00	1.5E+01	9.9E+00	-
Cadmium (Cd)	1.4E-01	4.4E-02	7.0E-02	2.4E-01	17	1.4E-01	2.2E-01	1.6E-01	-
Cesium (Cs)	2.3E-01	1.4E-01	1.0E-02	5.6E-01	17	1.7E-01	4.5E-01	3.0E-01	-
Chromium (Cr)	1.8E+01	1.0E+01	2.1E+00	4.1E+01	17	1.5E+01	3.6E+01	2.3E+01	-
Cobalt (Co)	3.6E+00	1.5E+00	3.8E-01	6.2E+00	17	3.1E+00	5.5E+00	4.3E+00	-
Copper (Cu)	6.5E+00	2.3E+00	1.9E+00	9.6E+00	17	6.0E+00	9.4E+00	7.6E+00	-
Lead (Pb)	3.6E+00	1.8E+00	4.6E-01	8.3E+00	16	3.0E+00	5.7E+00	4.5E+00	-
Manganese (Mn)	8.0E+02	1.2E+03	1.6E+02	4.8E+03	17	4.7E+02	3.3E+03	1.4E+03	-
Mercury (Hg)	2.3E-02	1.4E-02	4.0E-03	5.8E-02	17	1.9E-02	5.6E-02	3.0E-02	2/17 non-detect
Molybdenum (Mo)	3.4E+00	6.8E+00	1.9E-01	2.6E+01	17	1.3E+00	1.7E+01	6.6E+00	-
Nickel (Ni)	1.4E+01	6.9E+00	2.2E+00	2.8E+01	17	1.2E+01	2.2E+01	1.7E+01	-
Selenium (Se)	3.7E-01	2.3E-01	5.0E-02	1.0E+00	16	2.9E-01	7.0E-01	4.8E-01	2/16 non-detect
Silver (Ag)	n/d	n/d	n/d	n/d	17	n/d	n/d	n/d	DL <1
Strontium (Sr)	2.4E+01	1.8E+01	9.5E+00	9.0E+01	17	2.1E+01	3.9E+01	3.3E+01	-
Thallium (Tl)	8.6E-02	4.8E-02	3.0E-02	1.9E-01	16	7.2E-02	1.6E-01	1.1E-01	5/16 non-detect
Tin (Sn)	n/d	n/d	n/d	n/d	17	n/d	n/d	n/d	DL <1
Titanium (Ti)	1.8E+02	1.2E+02	7.5E+00	3.6E+02	16	1.2E+02	3.5E+02	2.4E+02	-
Uranium (U)	3.3E-01	2.1E-01	4.0E-02	7.6E-01	17	2.4E-01	6.3E-01	4.3E-01	-
Vanadium (V)	9.4E+00	4.9E+00	6.0E-01	1.6E+01	17	7.1E+00	1.5E+01	1.2E+01	-
Zinc (Zn)	2.9E+01	1.6E+01	1.2E+01	8.4E+01	17	2.7E+01	5.3E+01	3.7E+01	-

- = No comment.

n/d = Non-detect.

Table D-2 Summary of Measured Cattail Metal Concentrations for Canadian Natural Primrose East Project (units in mg/kg)

Chemical	Avg	St Dev	Min	Max	Count	Median	95th Percentile	95UCLM	Comment
Aluminum (Al)	2.0E+03	2.0E+03	1.1E+02	5.2E+03	10	1.0E+03	4.9E+03	3.2E+03	-
Antimony (Sb)	n/d	n/d	n/d	n/d	10	n/d	n/d	n/d	DL <0.06
Arsenic (As)	4.1E+00	3.7E+00	9.5E-01	1.4E+01	10	3.2E+00	1.0E+01	6.4E+00	-
Barium (Ba)	5.7E+01	3.1E+01	2.0E+01	1.4E+02	10	5.1E+01	1.0E+02	7.6E+01	-
Beryllium (Be)	1.6E-01	1.7E-01	2.5E-02	4.3E-01	10	8.0E-02	4.0E-01	2.6E-01	5/10 non-detect
Bismuth (Bi)	3.4E-02	3.0E-02	1.0E-02	8.0E-02	10	2.3E-02	7.6E-02	5.3E-02	5/10 non-detect
Boron (B)	9.2E+00	4.7E+00	4.3E+00	1.7E+01	10	8.1E+00	1.6E+01	1.2E+01	-
Cadmium (Cd)	8.2E-02	5.0E-02	3.0E-02	1.7E-01	10	6.9E-02	1.6E-01	1.1E-01	-
Cesium (Cs)	1.7E-01	1.4E-01	3.0E-02	3.9E-01	10	1.1E-01	3.6E-01	2.5E-01	-
Chromium (Cr)	1.1E+01	9.0E+00	5.0E-01	2.7E+01	10	6.2E+00	2.3E+01	1.6E+01	-
Cobalt (Co)	2.5E+00	2.2E+00	4.2E-01	5.6E+00	10	1.6E+00	5.6E+00	3.9E+00	-
Copper (Cu)	4.6E+00	3.7E+00	1.0E+00	1.1E+01	10	3.3E+00	1.1E+01	6.9E+00	-
Lead (Pb)	2.2E+00	1.8E+00	2.2E-01	4.4E+00	10	1.3E+00	4.3E+00	3.3E+00	-
Manganese (Mn)	2.8E+02	1.5E+02	1.2E+02	6.2E+02	10	2.6E+02	5.2E+02	3.7E+02	-
Mercury (Hg)	2.0E-02	5.6E-03	1.2E-02	3.0E-02	10	2.0E-02	2.8E-02	2.4E-02	-
Molybdenum (Mo)	9.2E-01	4.9E-01	4.0E-01	2.2E+00	10	8.3E-01	1.8E+00	1.2E+00	-
Nickel (Ni)	8.3E+00	7.8E+00	5.0E-01	2.2E+01	10	4.6E+00	2.0E+01	1.3E+01	-
Selenium (Se)	3.2E-01	1.5E-01	2.0E-01	6.0E-01	10	2.9E-01	5.6E-01	4.1E-01	-
Silver (Ag)	n/d	n/d	n/d	n/d	10	n/d	n/d	n/d	DL <1
Strontium (Sr)	2.1E+01	6.1E+00	1.4E+01	3.2E+01	10	2.1E+01	3.0E+01	2.5E+01	-
Thallium (Tl)	5.2E-02	3.0E-02	3.0E-02	1.0E-01	10	4.5E-02	9.6E-02	7.1E-02	6/10 non-detect
Tin (Sn)	n/d	n/d	n/d	n/d	10	n/d	n/d	n/d	DL <1
Titanium (Ti)	1.1E+02	1.0E+02	5.2E+00	2.7E+02	10	5.2E+01	2.5E+02	1.7E+02	-
Uranium (U)	2.5E-01	1.3E-01	4.0E-02	4.0E-01	10	2.0E-01	3.9E-01	3.2E-01	-
Vanadium (V)	6.7E+00	6.0E+00	2.8E-01	1.6E+01	10	3.5E+00	1.5E+01	1.0E+01	-
Zinc (Zn)	2.2E+01	6.0E+00	1.1E+01	3.0E+01	10	2.1E+01	2.9E+01	2.6E+01	-

- = No comment.

n/d = Non-detect.

Table D-3 Summary of Measured Cattail Metal Concentrations for ConocoPhillips Surmont Project (units in mg/kg)

Chemical	Avg	Count	Comment
Aluminum (Al)	150	1	-
Antimony (Sb)	0.03	1	non-detect
Arsenic (As)	0.19	1	-
Barium (Ba)	16.5	1	-
Beryllium (Be)	0.025	1	non-detect
Bismuth (Bi)	0.01	1	non-detect
Boron (B)	12.9	1	-
Cadmium (Cd)	0.03	1	-
Chromium (Cr)	0.9	1	-
Cobalt (Co)	0.09	1	-
Copper (Cu)	0.8	1	-
Lead (Pb)	0.54	1	-
Manganese (Mn)	68.3	1	-
Mercury (Hg)	0.004	1	non-detect
Molybdenum (Mo)	0.11	1	-
Nickel (Ni)	1.3	1	-
Selenium (Se)	0.1	1	-
Silver (Ag)	0.5	1	non-detect
Strontium (Sr)	18.6	1	-
Thallium (Tl)	0.03	1	non-detect
Tin (Sn)	0.5	1	non-detect
Titanium (Ti)	2.45	1	-
Uranium (U)	0.06	1	-
Vanadium (V)	0.44	1	-
Zinc (Zn)	20.3	1	-

- = No comment.

Table D-4 Summary of Measured Cattail Metal Concentrations for MEG Christina Lake Project (units in mg/kg)

Chemical	Avg	St Dev	Min	Max	Count	Median	95th Percentile	95UCLM	Comment
Aluminum (Al)	7.0E+02	4.2E+02	3.0E+01	1.1E+03	9	4.7E+02	1.1E+03	9.7E+02	-
Antimony (Sb)	1.4E-01	1.6E-01	7.0E-02	5.6E-01	9	1.1E-01	3.8E-01	2.4E-01	-
Arsenic (As)	2.4E+00	2.7E+00	1.0E-01	7.7E+00	9	9.7E-01	6.8E+00	4.1E+00	1/9 non-detect
Barium (Ba)	4.2E+01	3.0E+01	9.0E+00	8.6E+01	9	3.1E+01	8.1E+01	6.1E+01	-
Beryllium (Be)	n/d	n/d	n/d	n/d	9	n/d	n/d	n/d	DL <0.2
Cadmium (Cd)	1.1E-01	1.3E-01	4.0E-02	4.4E-01	9	7.5E-02	3.3E-01	2.0E-01	5/9 non-detect
Chromium (Cr)	2.4E+00	1.1E+00	8.0E-01	4.6E+00	9	2.2E+00	4.0E+00	3.1E+00	-
Cobalt (Co)	2.3E+00	3.7E+00	1.0E-01	9.0E+00	9	7.0E-01	8.9E+00	4.8E+00	-
Copper (Cu)	2.1E+00	2.4E+00	5.0E-01	8.4E+00	9	1.5E+00	5.8E+00	3.7E+00	-
Lead (Pb)	8.0E-01	5.9E-01	7.0E-02	2.0E+00	9	5.6E-01	1.6E+00	1.2E+00	-
Manganese (Mn)	8.5E+02	8.3E+02	4.8E+01	2.2E+03	9	4.3E+02	2.1E+03	1.4E+03	-
Mercury (Hg)	3.3E-02	2.5E-02	1.0E-02	8.0E-02	9	2.4E-02	7.2E-02	5.0E-02	4/9 non-detect
Molybdenum (Mo)	5.2E-01	2.4E-01	2.0E-01	9.7E-01	9	4.7E-01	8.6E-01	6.8E-01	-
Nickel (Ni)	3.3E+00	3.9E+00	6.0E-01	1.4E+01	9	2.2E+00	9.6E+00	5.9E+00	-
Selenium (Se)	1.3E-01	7.1E-02	1.0E-01	3.0E-01	9	1.2E-01	2.6E-01	1.8E-01	7/9 non-detect
Silver (Ag)	n/d	n/d	n/d	n/d	9	n/d	n/d	n/d	DL <0.08
Strontium (Sr)	2.7E+01	1.1E+01	1.8E+01	5.3E+01	9	2.6E+01	4.5E+01	3.4E+01	-
Thallium (Tl)	7.0E-02	7.2E-02	2.0E-02	2.1E-01	9	4.5E-02	1.9E-01	1.2E-01	4/9 non-detect
Tin (Sn)	1.2E-01	6.1E-02	4.0E-02	2.6E-01	9	1.0E-01	2.1E-01	1.6E-01	1/9 non-detect
Titanium (Ti)	2.3E+01	1.3E+01	1.0E+00	4.0E+01	9	1.6E+01	3.7E+01	3.1E+01	1/9 non-detect
Uranium (U)	5.8E-02	3.9E-02	2.5E-02	1.4E-01	9	4.8E-02	1.2E-01	8.3E-02	4/9 non-detect
Vanadium (V)	1.4E+00	7.5E-01	1.0E-01	2.3E+00	9	1.0E+00	2.3E+00	1.8E+00	-
Zinc (Zn)	3.3E+01	1.1E+01	2.0E+01	5.9E+01	9	3.2E+01	5.2E+01	4.1E+01	-

- = No comment.

n/d = Non-detect.

Table D-5 Summary of Measured Cattail Polycyclic Aromatic Hydrocarbons Concentrations for Canadian Natural Kirby Project (units in mg/kg)

Chemical	Avg	St Dev	Min	Max	Count	Median	95th Percentile	95UCLM	Comment
Acenaphthene									
Acenaphthylene									
Anthracene									
Benzo(a)anthracene									
Benzo(a)pyrene									
Benzo(b)fluoranthene									
Benzo(ghi)perylene									
Benzo(k)fluoranthene									
Biphenyl									
C2 sub'd B(a)A/chrysene									
C2 sub'd B(b&k)F/B(a)P									
C2 sub'd biphenyl									
C2 sub'd dibenzothiophene									
C2 sub'd fluorene									
C2 sub'd naphthalene									
C2 sub'd phenanthrene/anth									
C3 sub'd dibenzothiophene									
C3 sub'd naphthalene									
C3 sub'd phenanthrene/anth									
C4 sub'd dibenzothiophene									
C4 sub'd naphthalene									
C4 sub'd phenanthrene/anth									
Chrysene	n/d	n/d	n/d	n/d	17	n/d	n/d	n/d	DL <0.01 - <0.08
Dibenzo(a,h)anthracene									
Dibenzothiophene									
Fluoranthene									
Fluorene									
Indeno(c,d-123)pyrene									
Methyl acenaphthene									
Methyl B(a)A/chrysene									
Methyl B(b&k)F/B(a)P									
Methyl biphenyl									
Methyl dibenzothiophene									
Methyl fluoranthene/pyrene									
Methyl fluorene									
Methyl naphthalene									
Methyl phenanthrene/anthracene									
Naphthalene									
Phenanthrene									
Pyrene									

n/d = Non-detect.

Table D-6 Summary of Measured Cattail Polycyclic Aromatic Hydrocarbons Concentrations for Canadian Natural Primrose East Project (units in mg/kg)

Chemical	Avg	St Dev	Min	Max	Count	Median	95th Percentile	95UCLM	Comment
Acenaphthene									
Acenaphthylene									
Anthracene									
Benzo(a)anthracene									
Benzo(a)pyrene									
Benzo(b)fluoranthene									
Benzo(g,h,i)perylene									
Benzo(k)fluoranthene									
Biphenyl									
C2 sub'd B(a)A/chrysene									
C2 sub'd B(b&k)F/B(a)P									
C2 sub'd biphenyl									
C2 sub'd dibenzothiophene									
C2 sub'd fluorene									
C2 sub'd naphthalene									
C2 sub'd phenanthrene/anth									
C3 sub'd dibenzothiophene									
C3 sub'd naphthalene									
C3 sub'd phenanthrene/anth									
C4 sub'd dibenzothiophene									
C4 sub'd naphthalene									
C4 sub'd phenanthrene/anth									
Chrysene	n/d	n/d	n/d	n/d	10	n/d	n/d	n/d	DL <0.01 - <0.04
Dibenzo(a,h)anthracene									
Dibenzothiophene									
Fluoranthene									
Fluorene									
Indeno(1,2,3-cd)pyrene									
Methyl acenaphthene									
Methyl B(a)A/chrysene									
Methyl B(b&k)F/B(a)P									
Methyl biphenyl									
Methyl dibenzothiophene									
Methyl fluoranthene/pyrene									
Methyl fluorene									
Methyl naphthalene									
Methyl phenanthrene/anthracene									
Naphthalene									
Phenanthrene									
Pyrene									

n/d = Non-detect.

Table D-7 Summary of Measured Cattail Polycyclic Aromatic Hydrocarbons Concentrations for ConocoPhillips Surmont Project (units in mg/kg)

Chemical	Avg	St Dev	Min	Max	Count	Median	95th Percentile	95UCLM	Comment
Acenaphthene									
Acenaphthylene									
Anthracene									
Benzo(a)anthracene									
Benzo(a)pyrene									
Benzo(b)fluoranthene									
Benzo(g,h,i)perylene									
Benzo(k)fluoranthene									
Biphenyl									
C2 sub'd B(a)A/chrysene									
C2 sub'd B(b&k)F/B(a)P									
C2 sub'd biphenyl									
C2 sub'd dibenzothiophene									
C2 sub'd fluorene									
C2 sub'd naphthalene									
C2 sub'd phenanthrene/anth									
C3 sub'd dibenzothiophene									
C3 sub'd naphthalene									
C3 sub'd phenanthrene/anth									
C4 sub'd dibenzothiophene									
C4 sub'd naphthalene									
C4 sub'd phenanthrene/anth									
Chrysene	n/d	n/d	n/d	n/d	1	n/d	n/d	n/d	DL <0.04 - 0.2
Dibenzo(a,h)anthracene									
Dibenzothiophene									
Fluoranthene									
Fluorene									
Indeno(1,2,3-cd)pyrene									
Methyl acenaphthene									
Methyl B(a)A/chrysene									
Methyl B(b&k)F/B(a)P									
Methyl biphenyl									
Methyl dibenzothiophene									
Methyl fluoranthene/pyrene									
Methyl fluorene									
Methyl naphthalene									
Methyl phenanthrene/anthracene									
Naphthalene									
Phenanthrene									
Pyrene									

n/d = Non-detect.

Table D-8 Summary of Measured Cattail Polycyclic Aromatic Hydrocarbons Concentrations for MEG Christina Lake Project (units in mg/kg)

Chemical	Avg	St Dev	Min	Max	Count	Median	95th Percentile	95UCLM	Comment
3-Methylcholanthrene									
7,12-Dimethylbenz(a)anthracene									
Acenaphthene									
Acenaphthylene									
Anthracene									
Benzo(a)anthracene									
Benzo(a)pyrene									
Benzo(b)fluoranthene									
Benzo(c)phenanthrene									
Benzo(g,h,i)perylene									
Benzo(j)fluoranthene									
Benzo(k)fluoranthene									
Chrysene	n/d	n/d	n/d	n/d	9	n/d	n/d	n/d	DL <0.01 - <0.04
Dibenzo(a,h)anthracene									
Dibenzo(a,h/a,i/a,l)pyrene									
Equivalent B(a)P Concentration									
Fluoranthene									
Fluorene									
Indeno(1,2,3-cd)pyrene									
Naphthalene									
Phenanthrene									
Pyrene									

n/d = Non-detect.

ATTACHMENT E

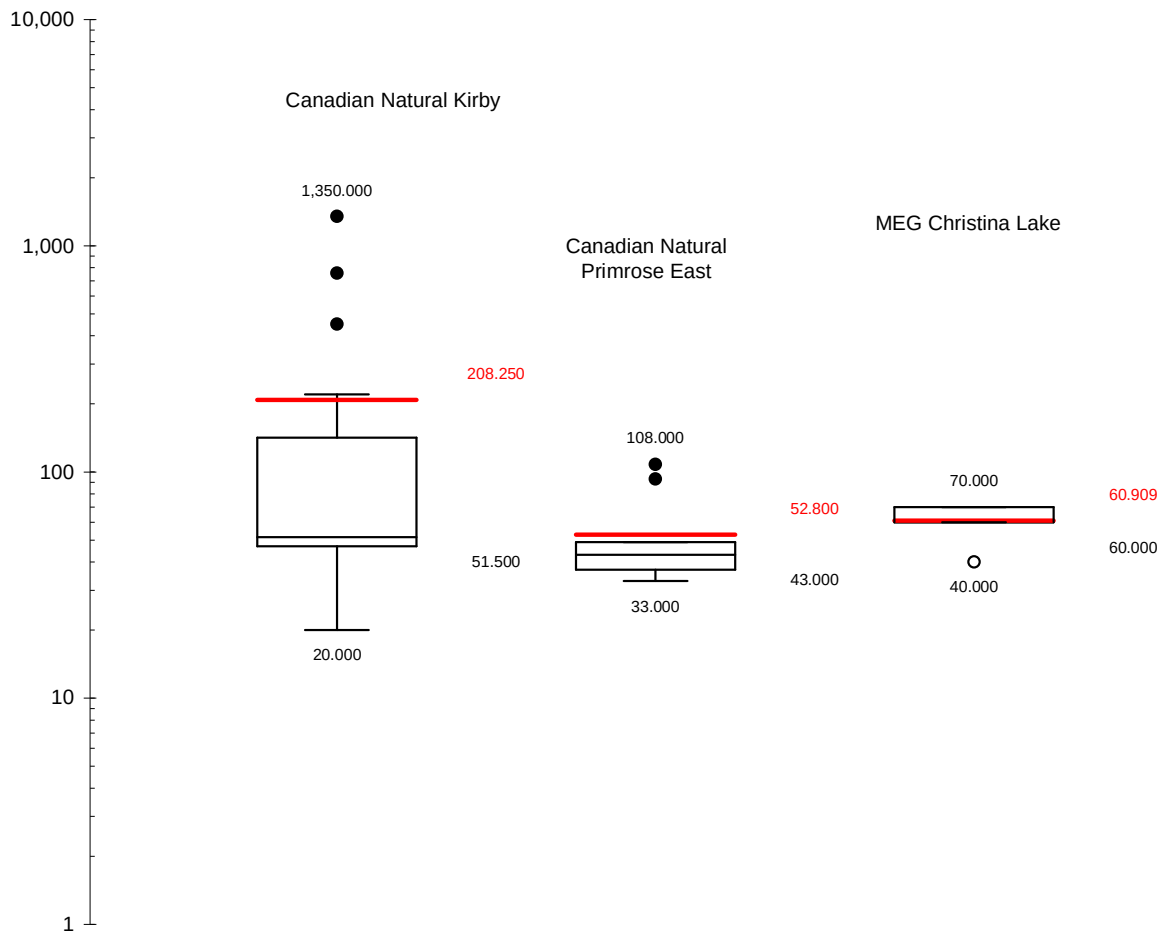
SUMMARY OF MEASURED LABRADOR TEA CONCENTRATIONS AS PART OF THE OIL SANDS REGIONAL ENVIRONMENTAL PROGRAM

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

L:\2007\1346 Oil Sands\07-1346-0009-MEG EXPANSION\8800\8810\Appendix C5-Attachment E\Fig E-1_Regional Distribution-Aluminum Conc in Labrador Tea.dwg Apr 10, 2008 - 4:56pm



PROJECT

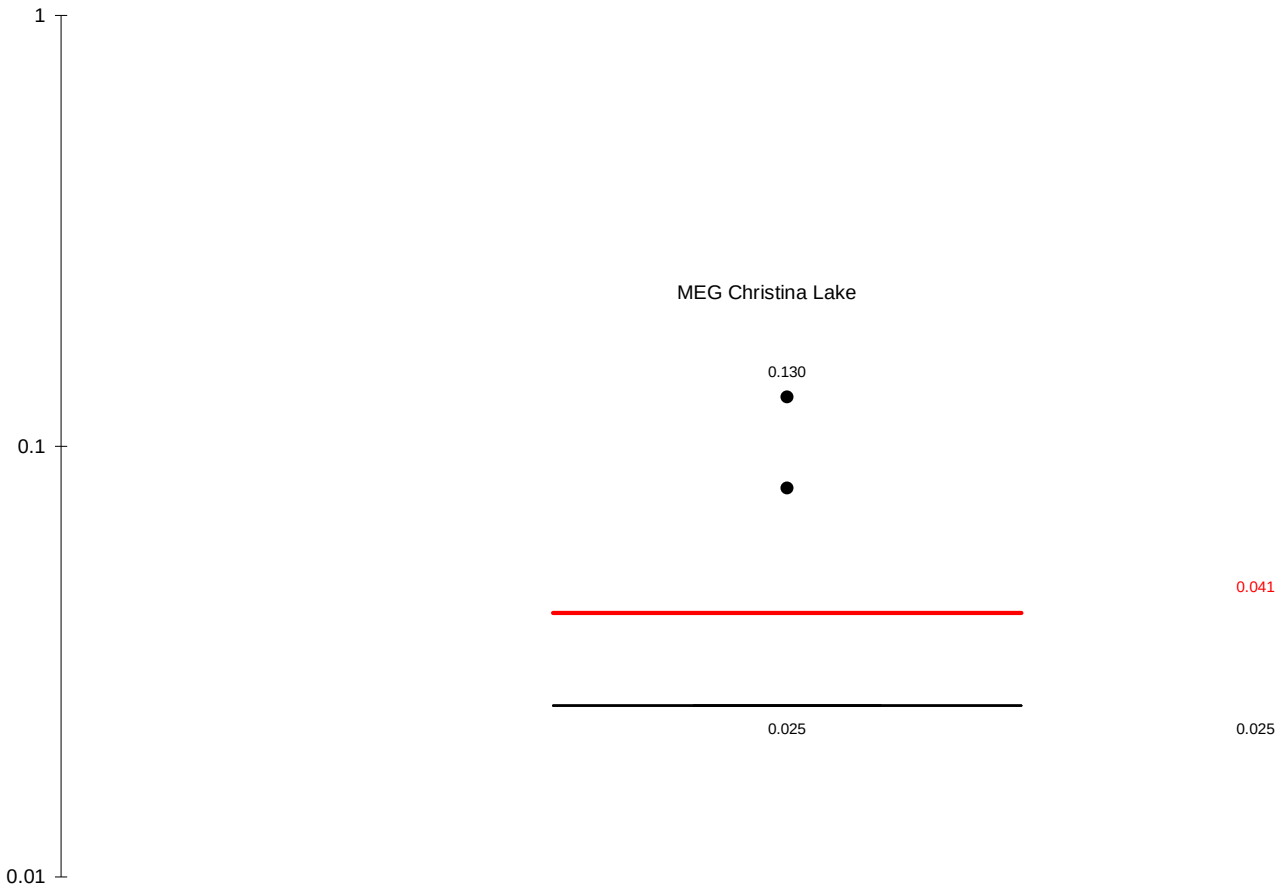
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF ALUMINUM CONCENTRATIONS IN LABRADOR TEA [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No. Aluminum.LabradorTea	
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	TRE	27/02/08	**FIGURE: E-1**	
CHECK	BK	31/03/08		
REVIEW	IGG	07/04/08		



PROJECT

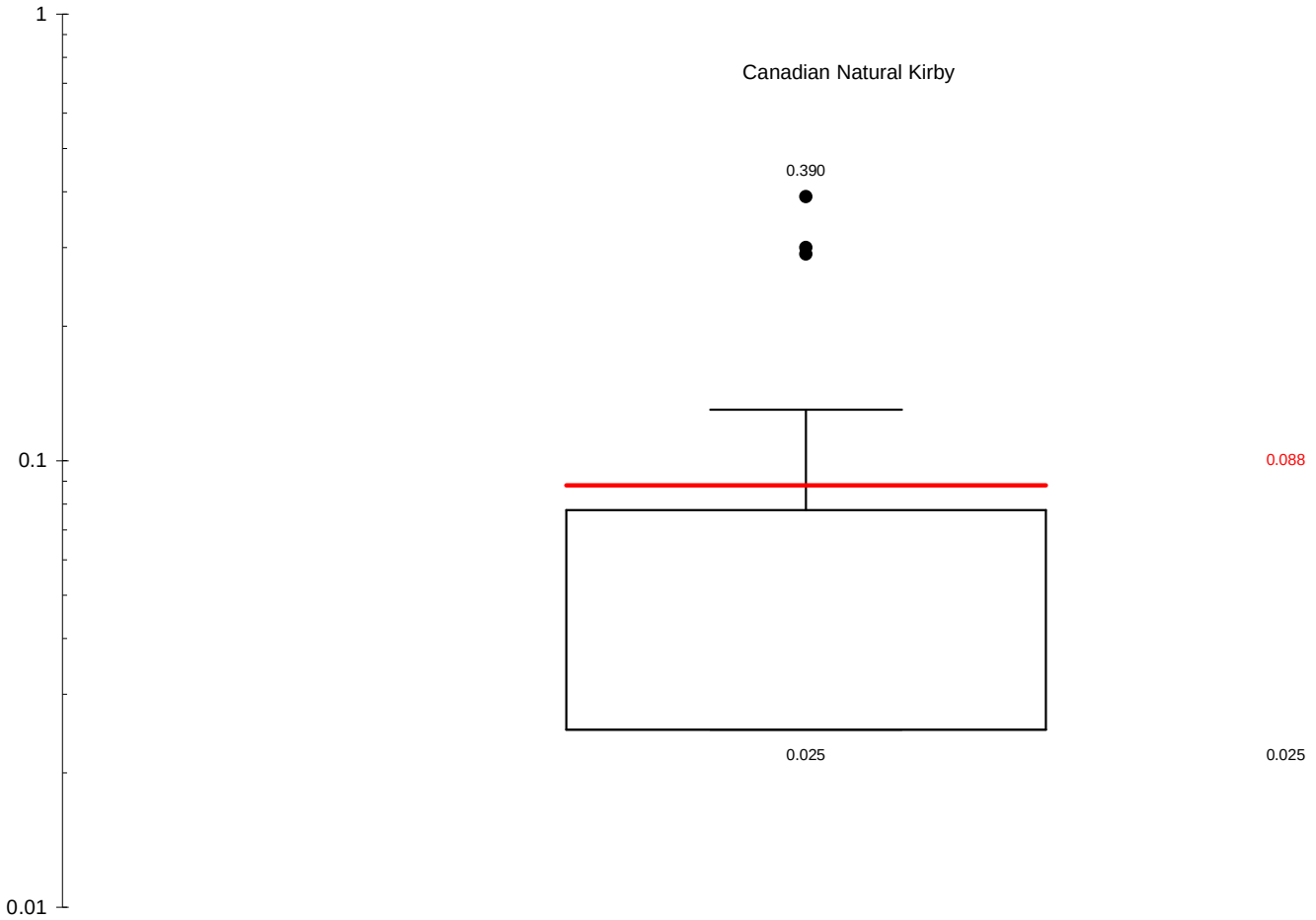
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF ANTIMONY CONCENTRATIONS IN LABRADOR TEA [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No. Arsenic-Labrador Tea	
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	TRE	31/03/08	FIGURE: E-2	
CHECK	BK	07/04/08		
REVIEW	IGG	07/04/08		



PROJECT

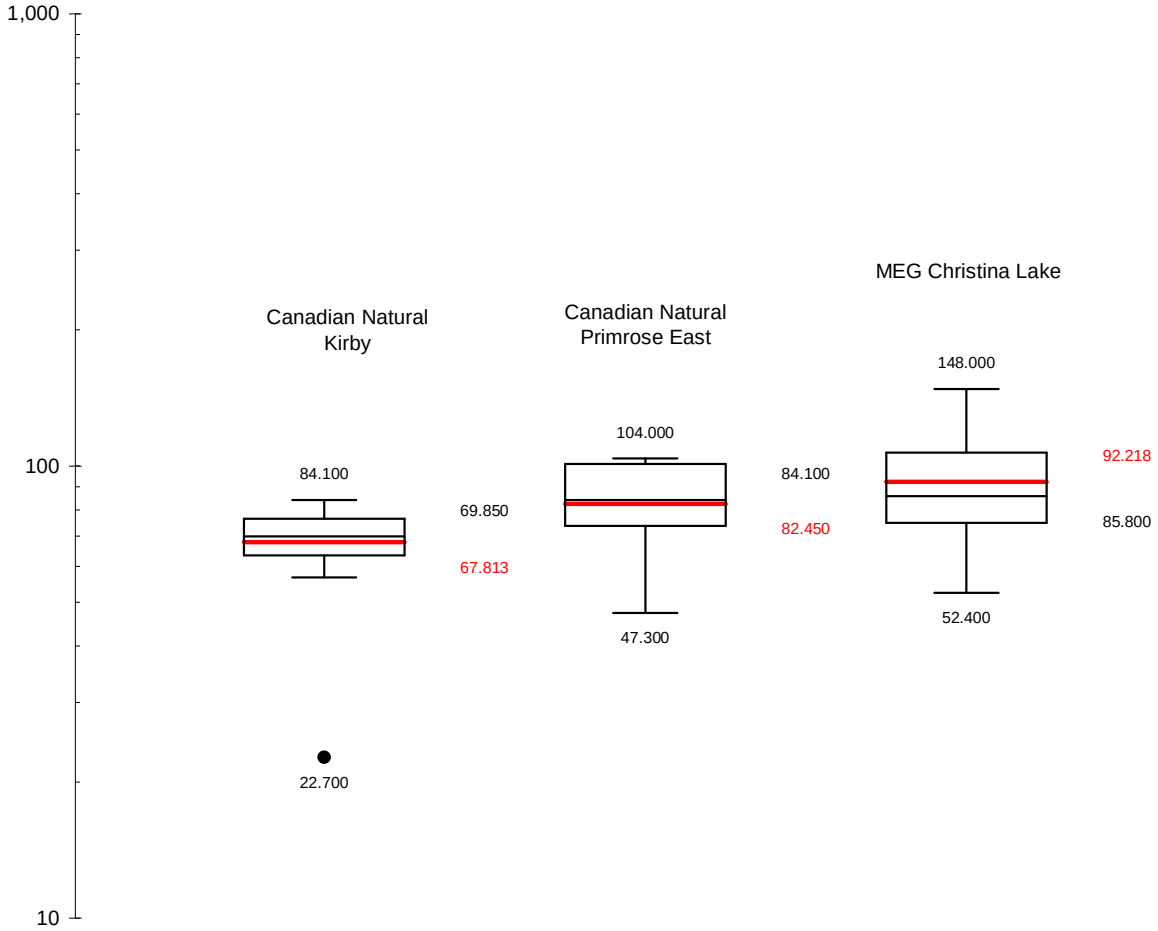
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF ARSENIC CONCENTRATIONS IN LABRADOR TEA [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No. Arsenic-Labrador Tea	
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	TRE	27/02/08	**FIGURE: E-3**	
CHECK	BK	31/03/08		
REVIEW	IGG	07/04/08		



PROJECT

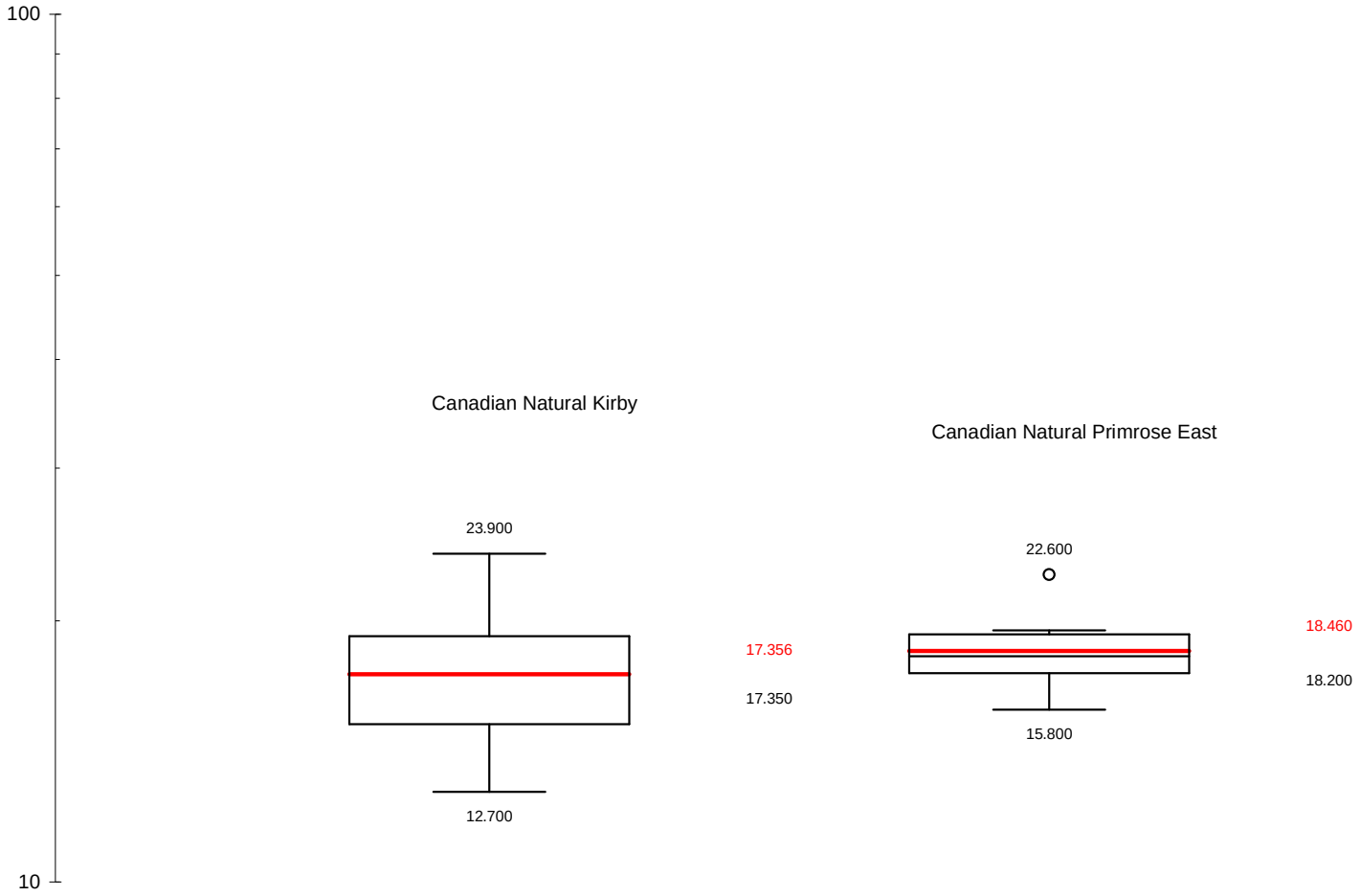
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF BARIUM CONCENTRATIONS IN LABRADOR TEA [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No. Barium-Labrador Tea	
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	TRE	27/02/08	FIGURE: E-4	
CHECK	BK	31/03/08		
REVIEW	IGG	07/04/08		



PROJECT

CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

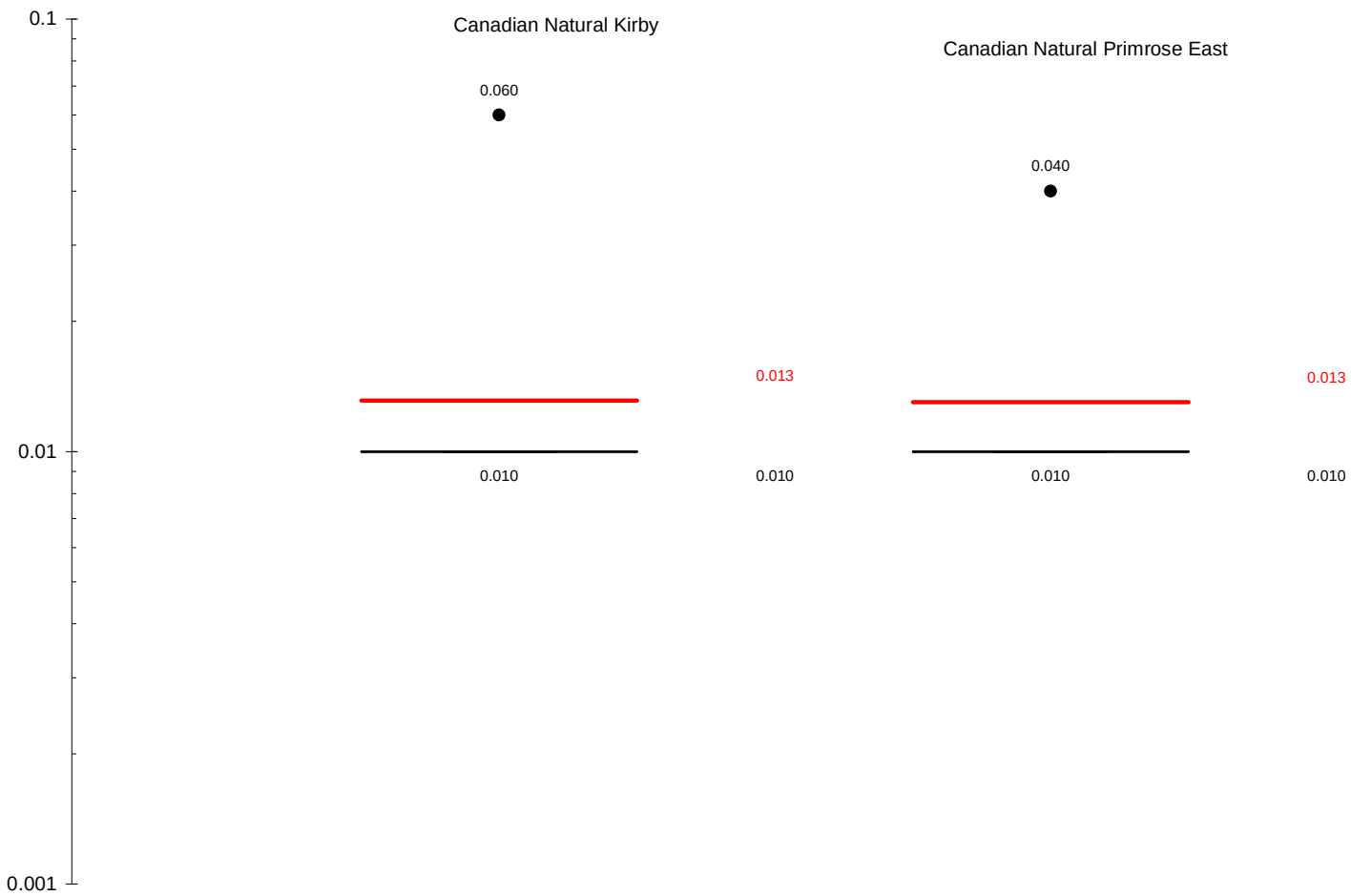
TITLE

REGIONAL DISTRIBUTION OF BORON CONCENTRATIONS IN LABRADOR TEA [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.	Boron-Labrador Tea
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	TRE	27/02/08	FIGURE: E-5	
CHECK	BK	31/03/08		
REVIEW	IGG	07/04/08		

L:\2007\1346 Oil Sands\07-1346-0009-MEG EXPANSION\8800\8810\Appendix C5-Attachment E\Fig E-6_Regional Distribution-Cadmium Conc in Labrador Tea.dwg Apr 10, 2008 - 5:01pm



PROJECT

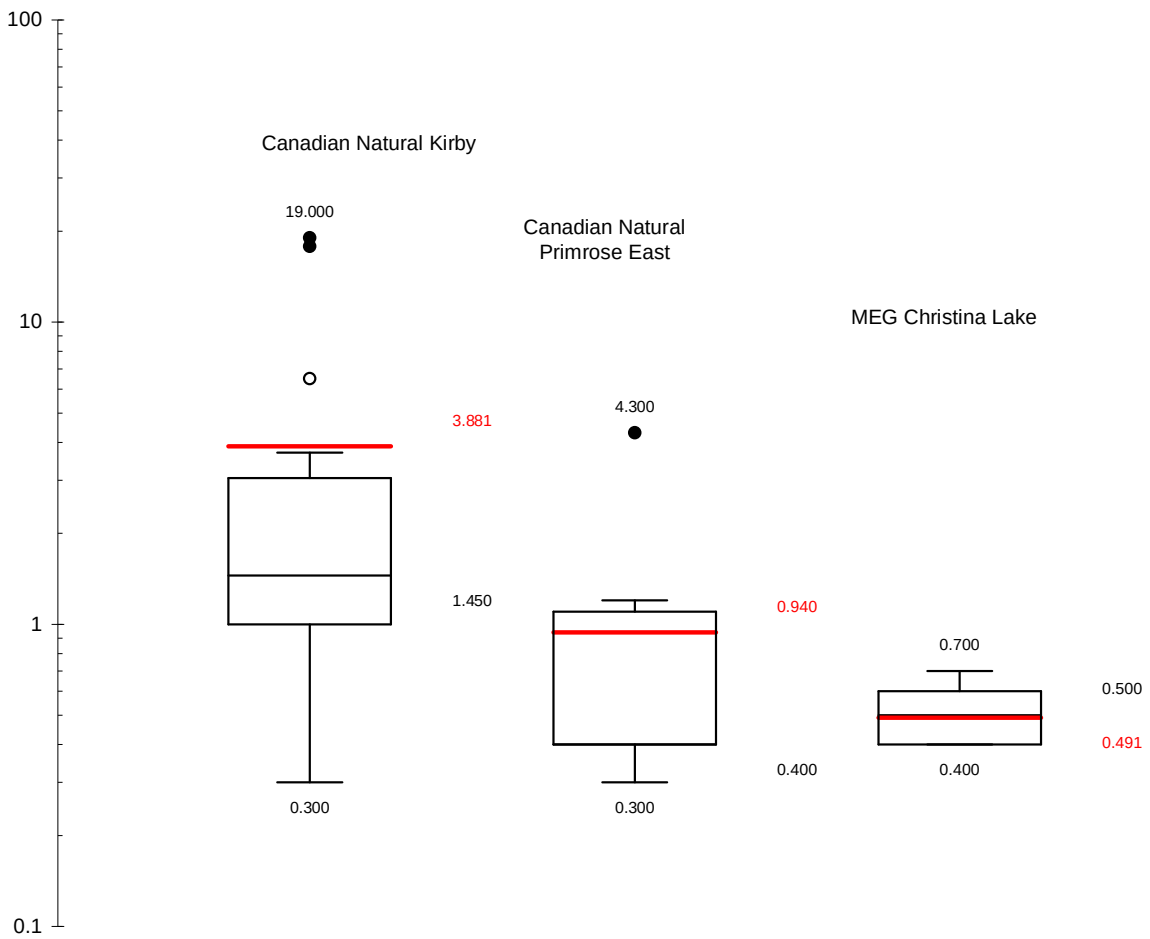
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF CADMIUM CONCENTRATIONS IN LABRADOR TEA [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.Cadmium-LabradorTea	
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	TRE	27/02/08	**FIGURE: E-6**	
CHECK	BK	31/03/06		
REVIEW	IGG	07/04/08		



PROJECT

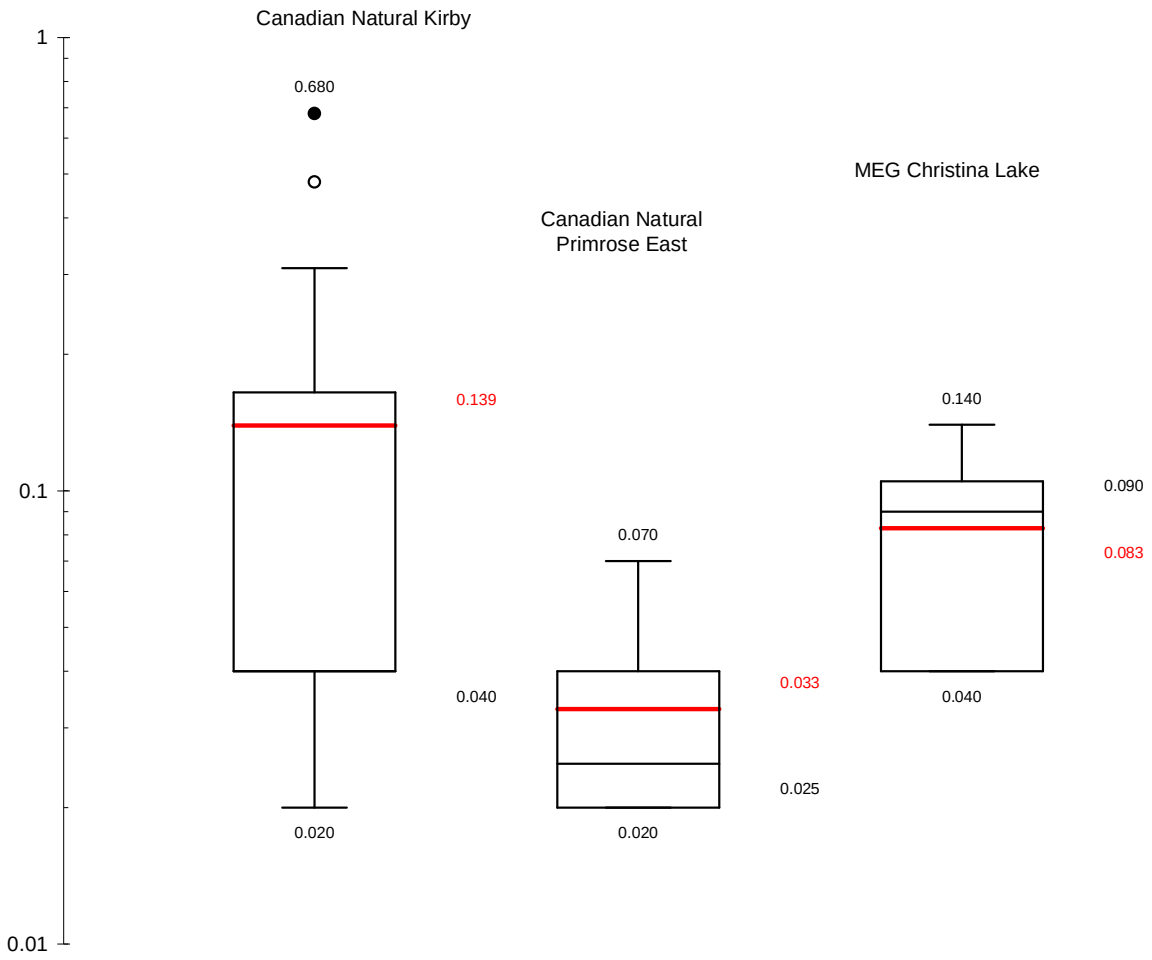
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF CHROMIUM CONCENTRATIONS IN LABRADOR TEA [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.Chromium.LabradorTea	
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	TRE	27/02/08	FIGURE: E-7	
CHECK	BK	31/03/08		
REVIEW	IGG	07/04/08		



PROJECT

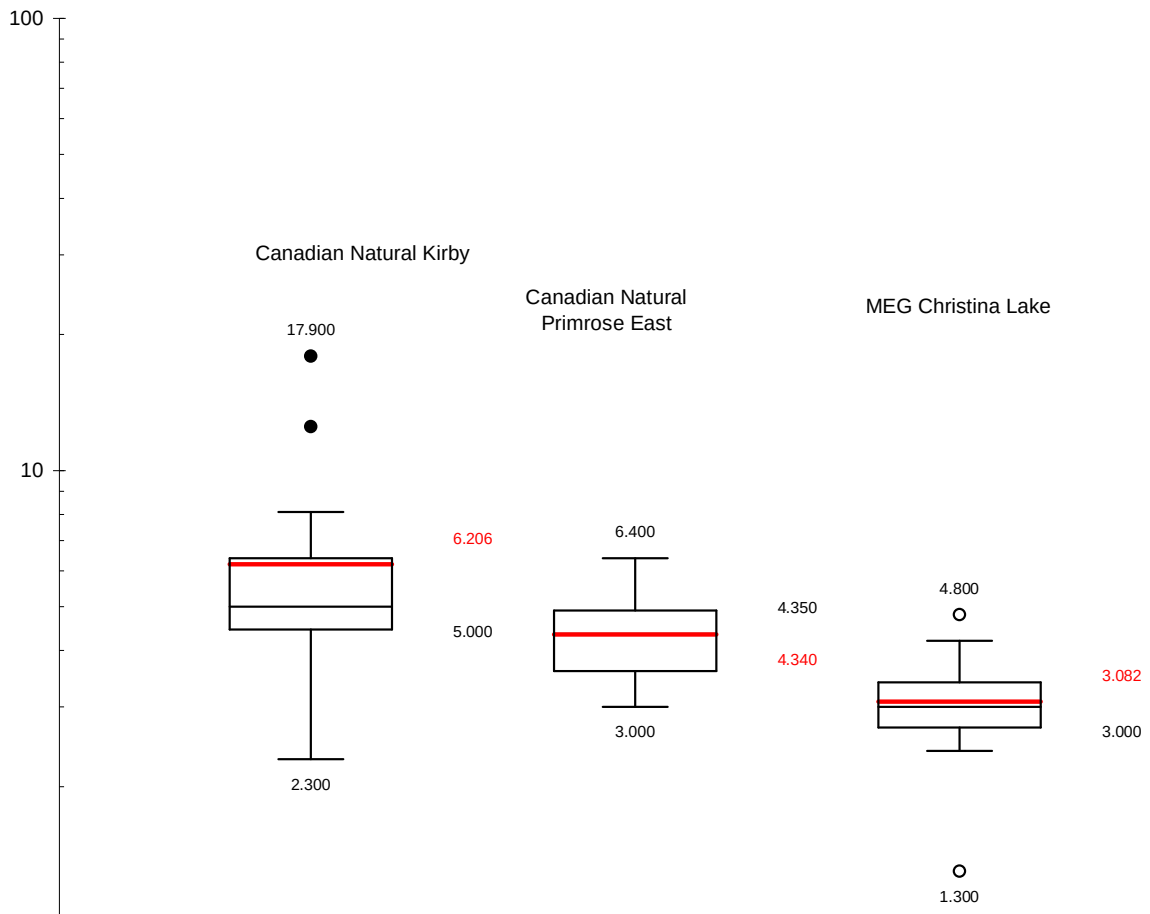
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF COBALT CONCENTRATIONS IN LABRADOR TEA [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No. Colbalt-Labrador Tea	
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	TRE	27/02/08	**FIGURE: E-8**	
CHECK	BK	31/03/08		
REVIEW	IGG	07/04/08		



PROJECT

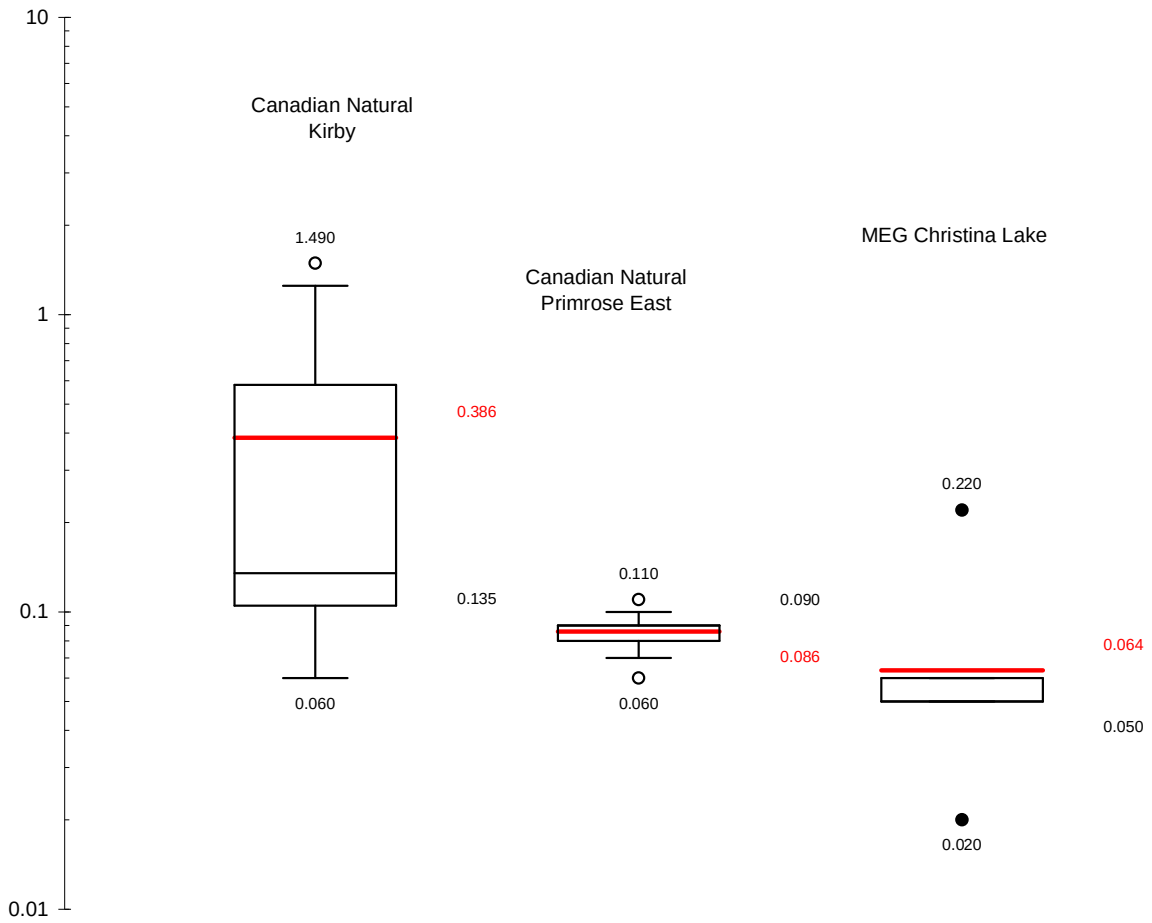
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF COPPER CONCENTRATIONS IN LABRADOR TEA [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No. Copper-Labrador Tea	
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	TRE	27/02/08	FIGURE: E-9	
CHECK	BK	31/03/08		
REVIEW	IGG	07/04/08		



PROJECT

CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

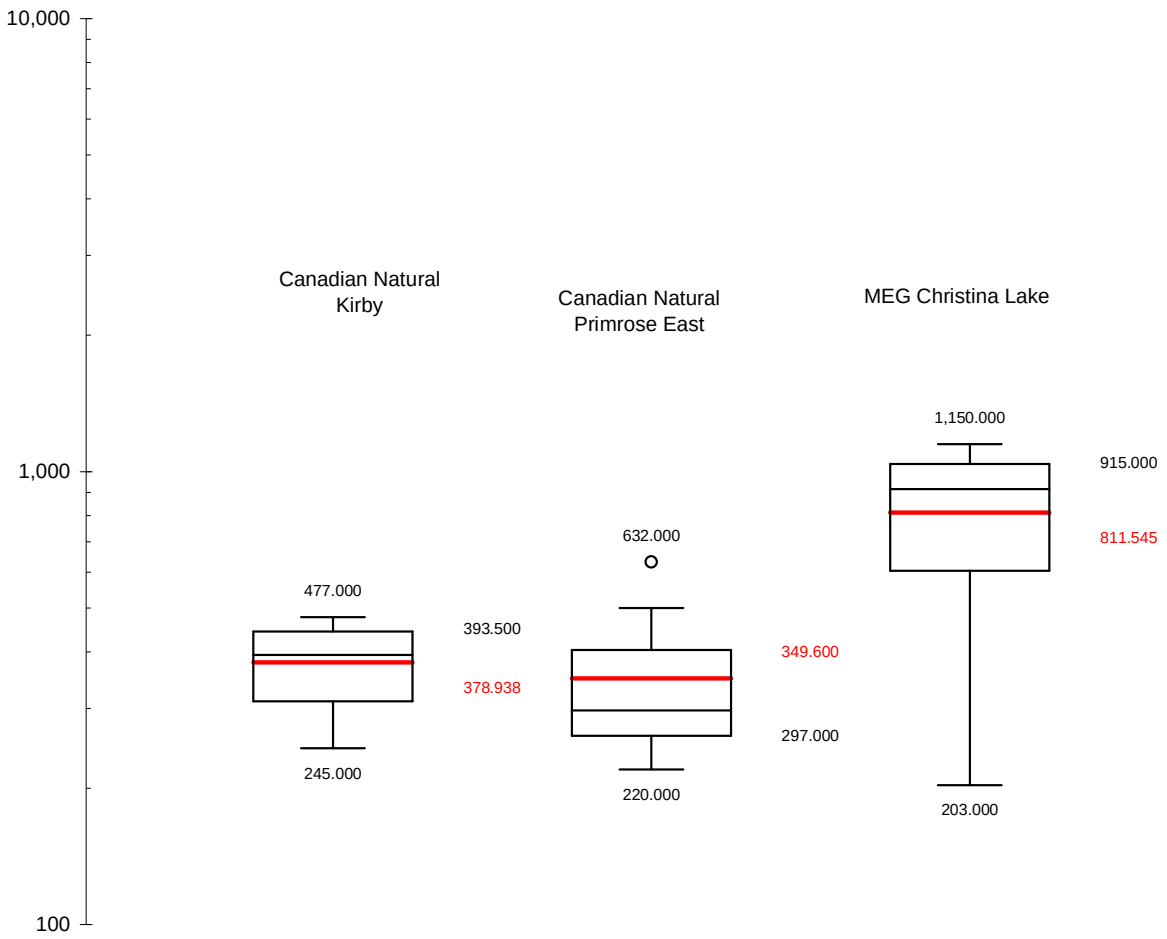
TITLE

REGIONAL DISTRIBUTION OF LEAD CONCENTRATIONS IN LABRADOR TEA [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.	Lead-Labrador Tea	
DESIGN	BK	26/02/08	SCALE	AS SHOWN	REV. 0
CADD	TRE	27/02/08	**FIGURE: E-10**		
CHECK	BK	31/03/08			
REVIEW	IGG	07/04/08			

L:\2007\1346 Oil Sands\07-1346-0009-MEG EXPANSION\8800\8810\Appendix C5-Attachment E\Fig E-11_Regional Distribution-Manganese Conc in Labrador Tea.dwg Apr 10, 2008 - 5:07pm



PROJECT

CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

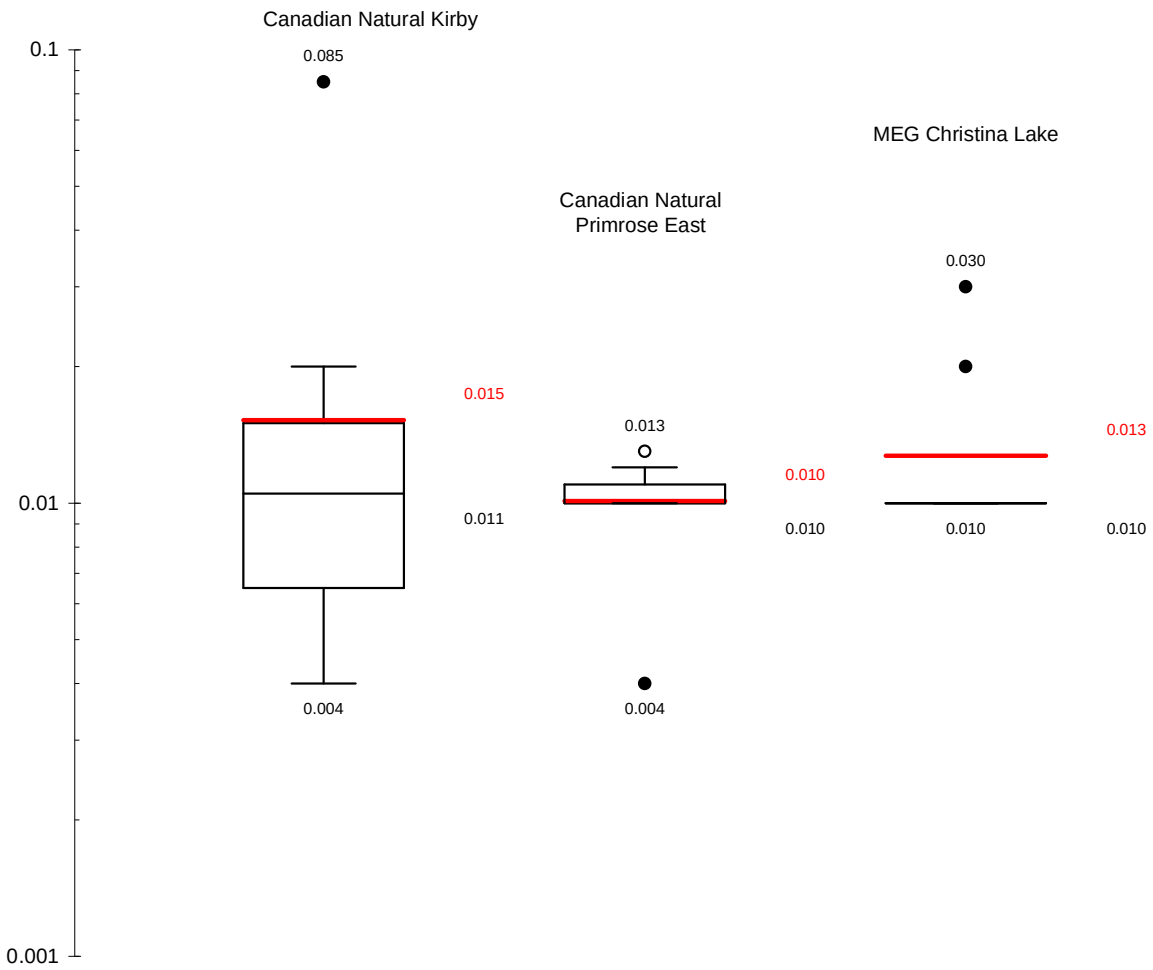
TITLE

REGIONAL DISTRIBUTION OF MANGANESE CONCENTRATIONS IN LABRADOR TEA [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.ManganeseLabradorTea	
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	TRE	27/02/08	**FIGURE: E-11**	
CHECK	BK	31/03/08		
REVIEW	IGG	07/04/08		

L:\2007\1346 Oil Sands\07-1346-0009-MEG EXPANSION\8800\8810\Appendix C5-Attachment E\Fig E-12_Regional Distribution-Mercury Conc in Labrador Tea.dwg Apr 10, 2008 - 5:09pm



PROJECT

CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

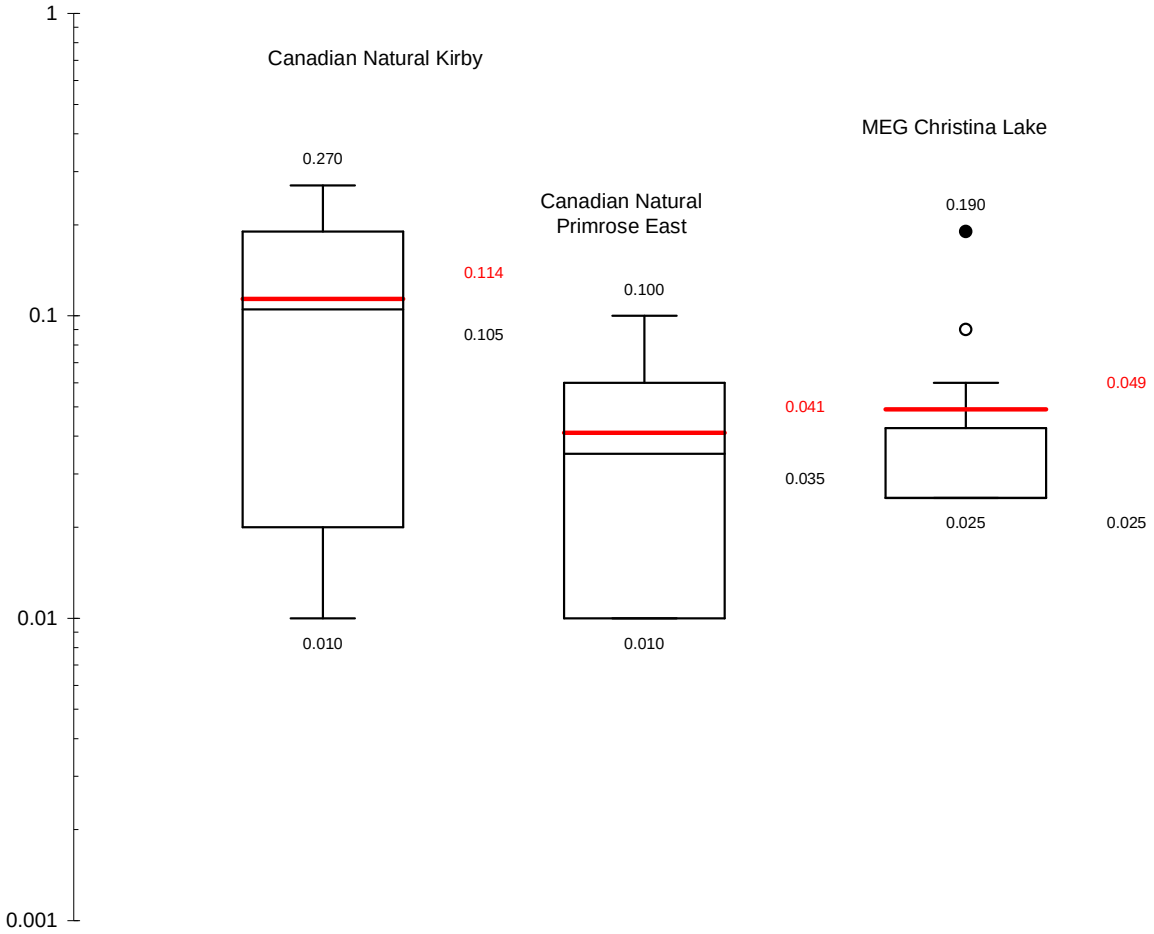
TITLE

REGIONAL DISTRIBUTION OF MERCURY CONCENTRATIONS IN LABRADOR TEA [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810	FILE No.Mercury-Labrador Tea
DESIGN	BK 26/02/08	SCALE AS SHOWN REV. 0
CADD	TRE 27/02/08	
CHECK	BK 31/03/08	
REVIEW	BK 07/04/08	

FIGURE: E-12



PROJECT

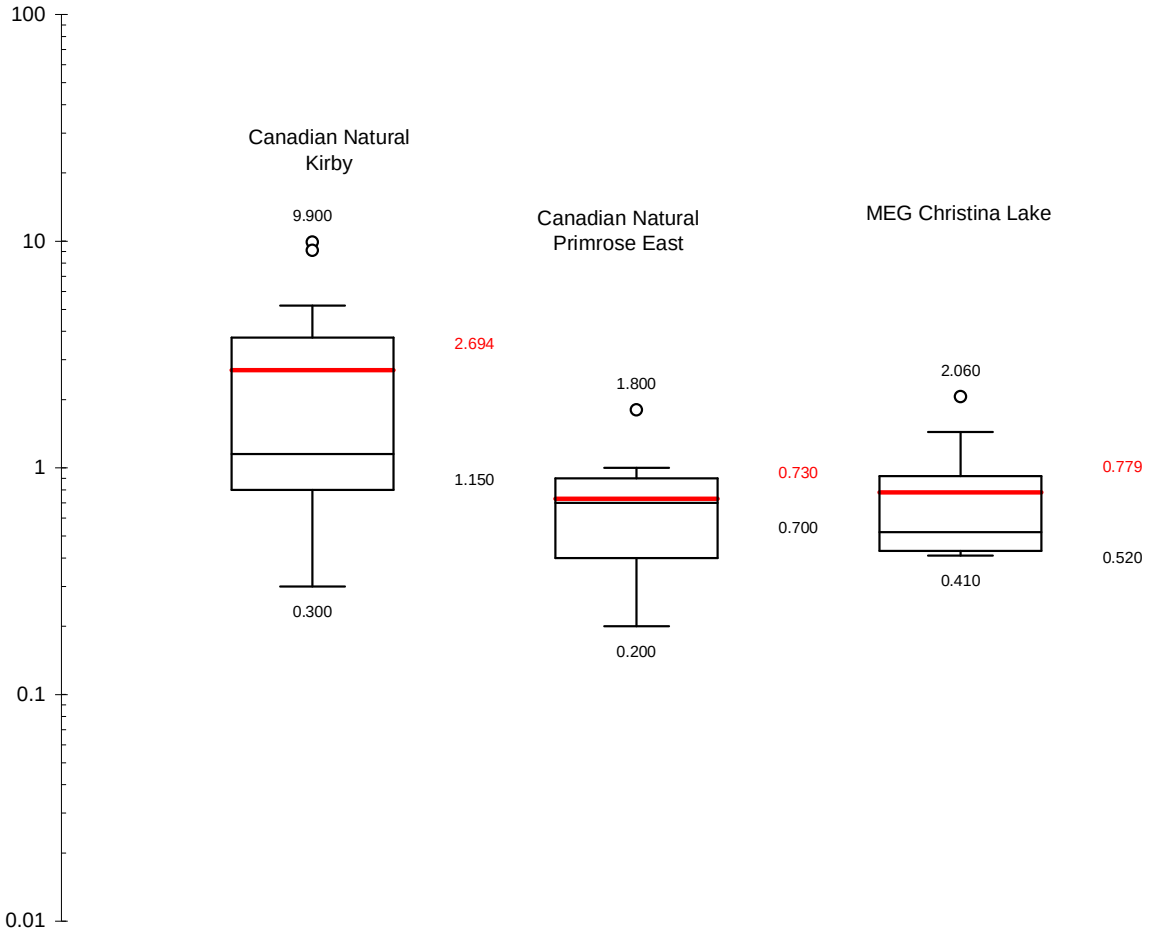
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF MOLYBDENUM CONCENTRATIONS IN LABRADOR TEA [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No. Molybden.LabradorTea	
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	TRE	27/02/08	FIGURE: E-13	
CHECK	BK	31/03/08		
REVIEW	IGG	07/04/08		



PROJECT

CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

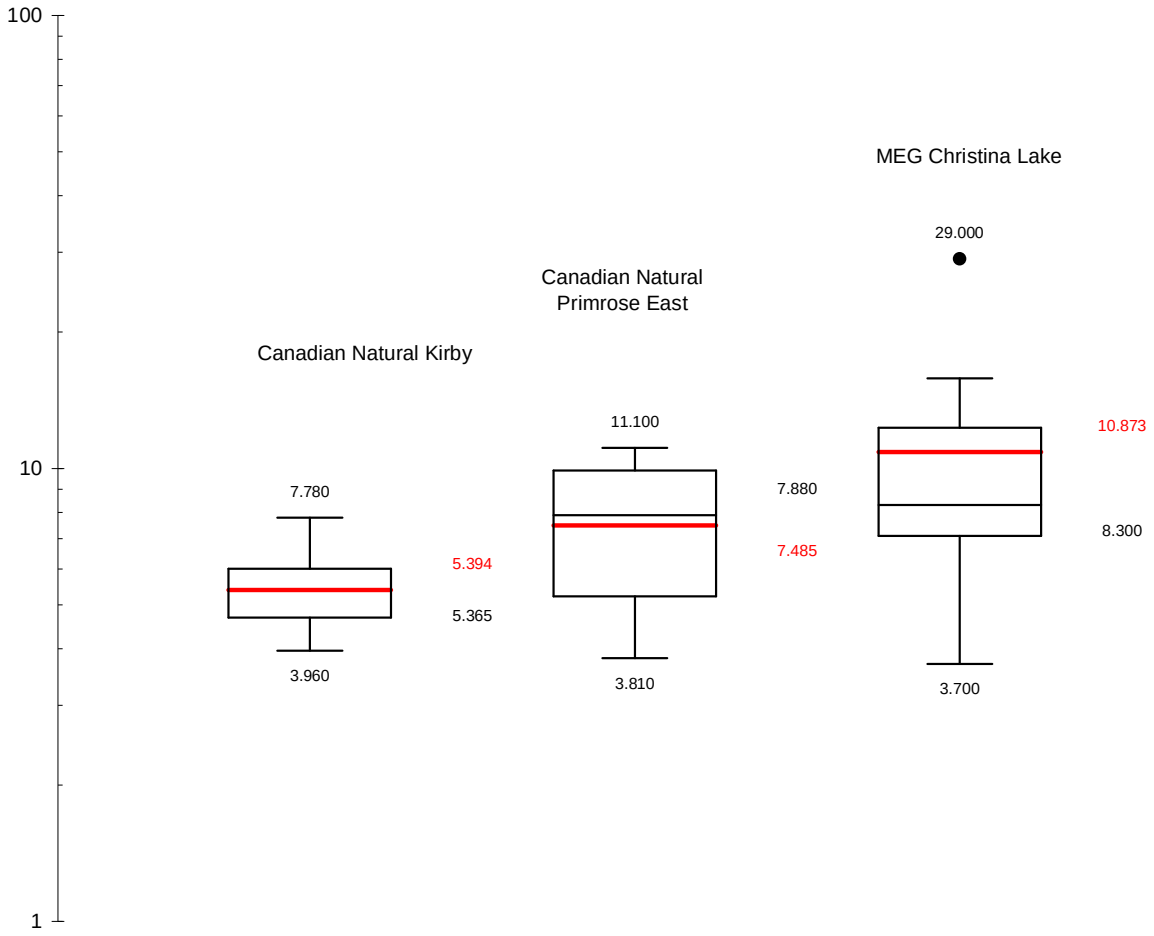
TITLE

REGIONAL DISTRIBUTION OF NICKEL CONCENTRATIONS IN LABRADOR TEA [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.	Nickel-Labrador Tea
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	TRE	27/02/08		
CHECK	BK	31/03/08		
REVIEW	IGG	07/04/08		

FIGURE: E-14



PROJECT

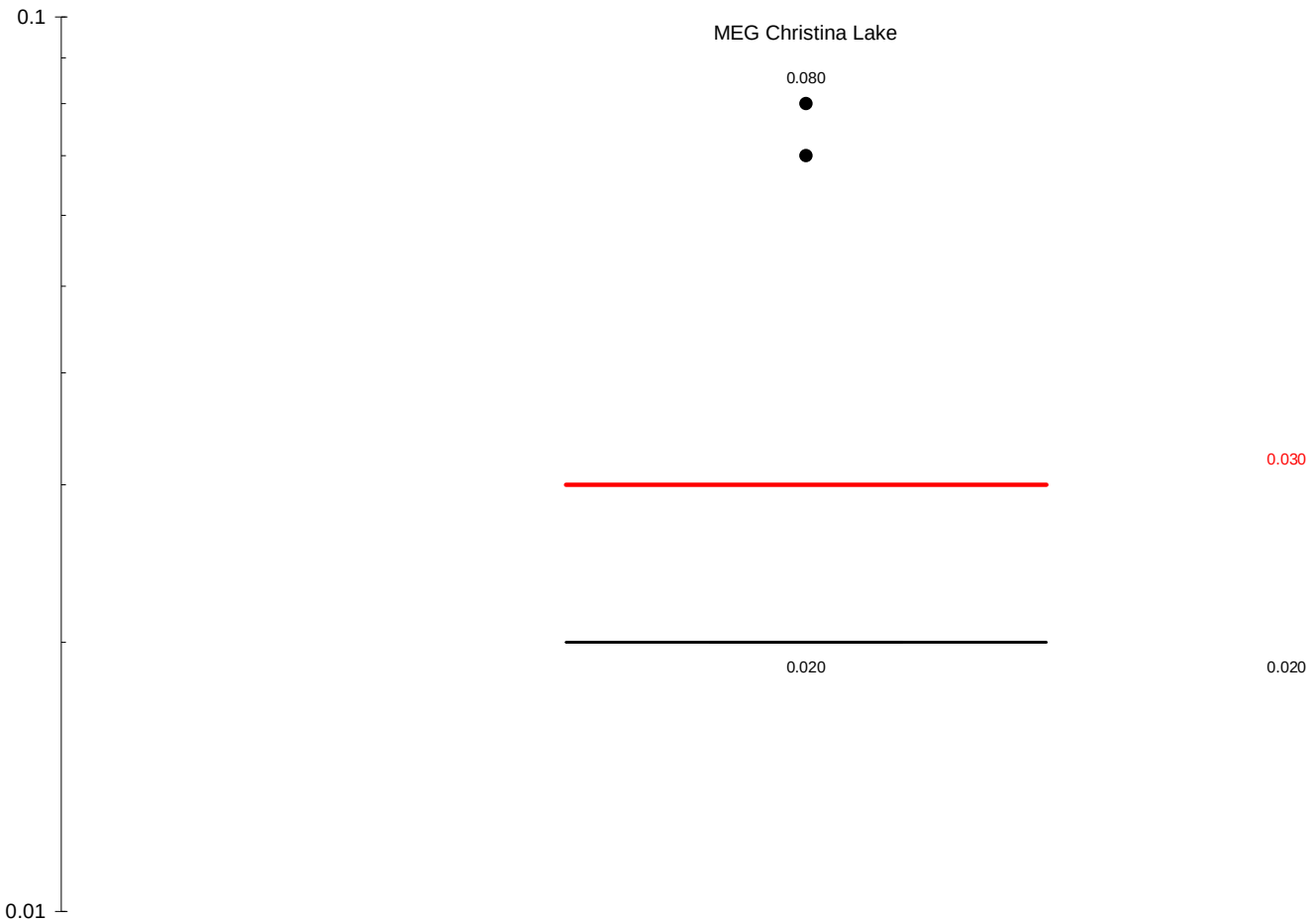
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF STRONTIUM CONCENTRATIONS IN LABRADOR TEA [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.StrontiumLabrador Tea	
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	TRE	27/02/08	**FIGURE: E-15**	
CHECK	BK	31/03/08		
REVIEW	IGG	07/04/08		



PROJECT

CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

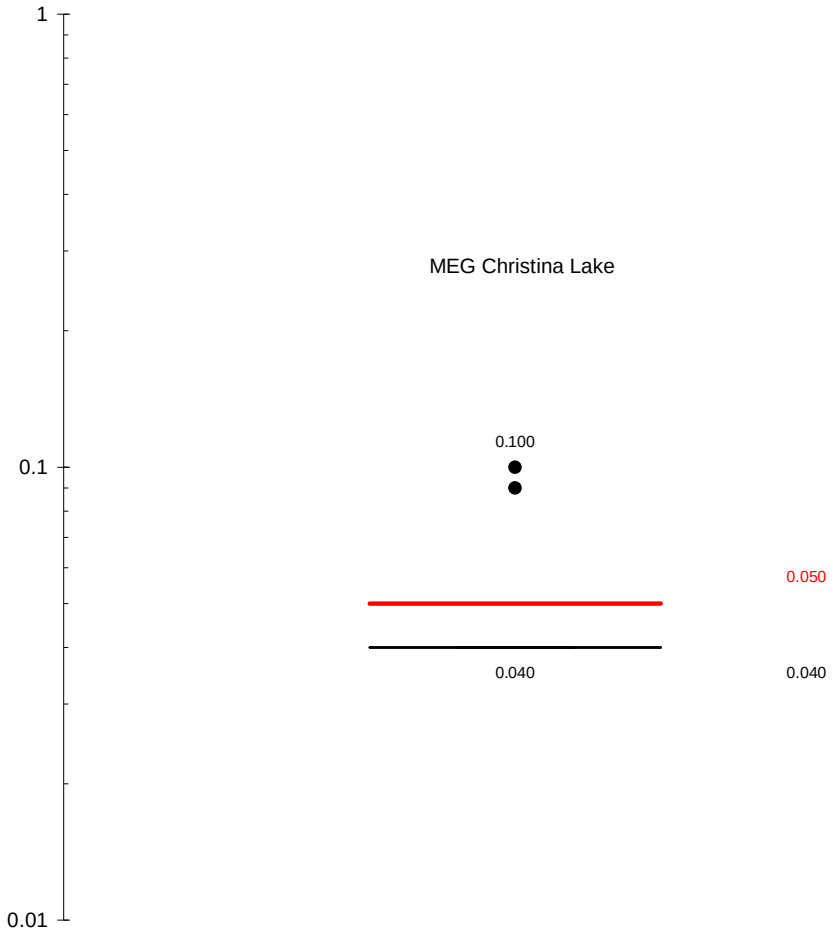
TITLE

REGIONAL DISTRIBUTION OF THALLIUM CONCENTRATIONS IN LABRADOR TEA [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.Thallium-Labrador Tea	
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	TRE	27/02/08	**FIGURE: E-16**	
CHECK	BK	31/03/08		
REVIEW	IGG	07/04/08		

L:\2007\1346 Oil Sands\07-1346-0009-MEG EXPANSION\8800\8810\Appendix C5-Attachment E\Fig E-17_Regional Distribution-Tin Conc in Labrador Tea.dwg Apr 10, 2008 - 5:31pm



PROJECT

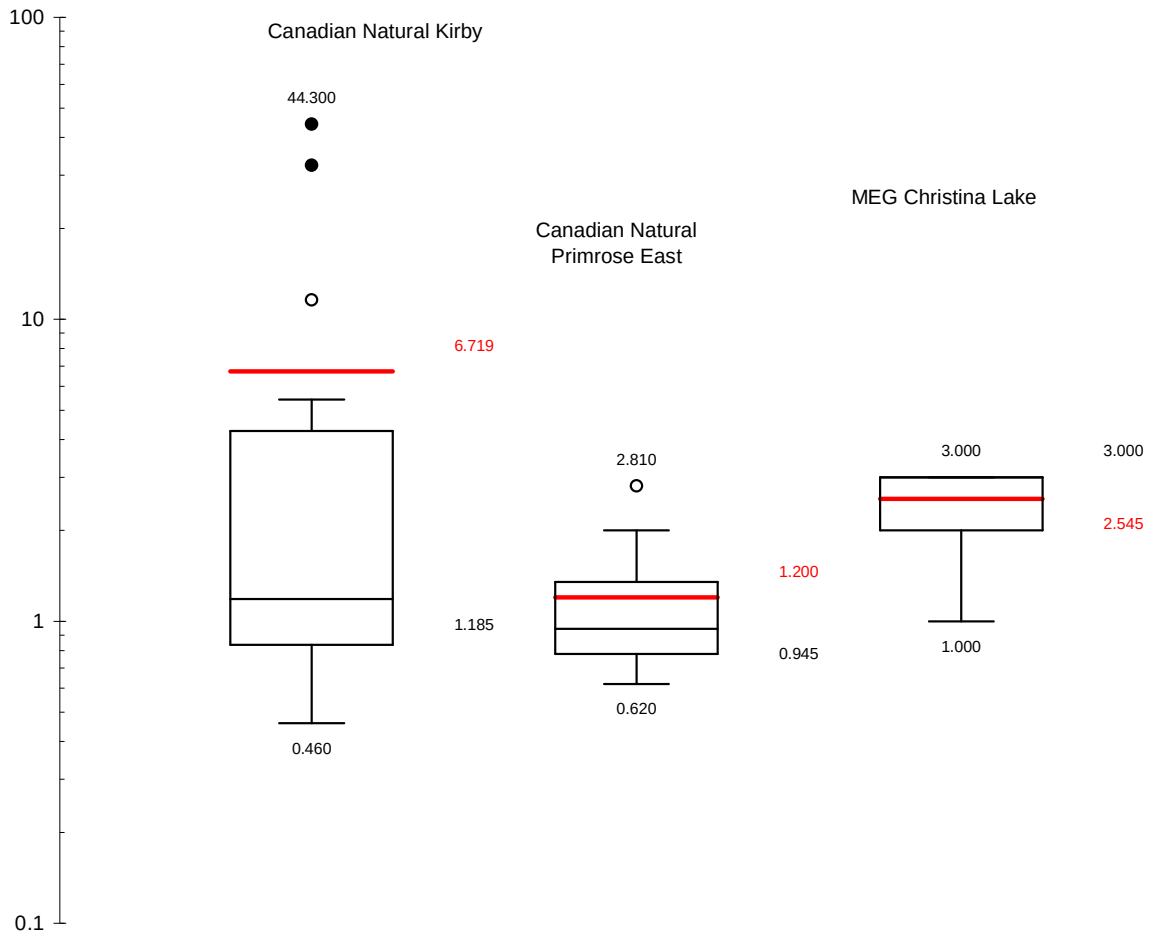
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF TIN CONCENTRATIONS IN LABRADOR TEA [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.	Tin-Labrador Tea	
DESIGN	BK	26/02/08	SCALE	AS SHOWN	REV. 0
CADD	TRE	27/02/08	FIGURE: E-17		
CHECK	BK	31/03/08			
REVIEW	IGG	07/04/08			



PROJECT

CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

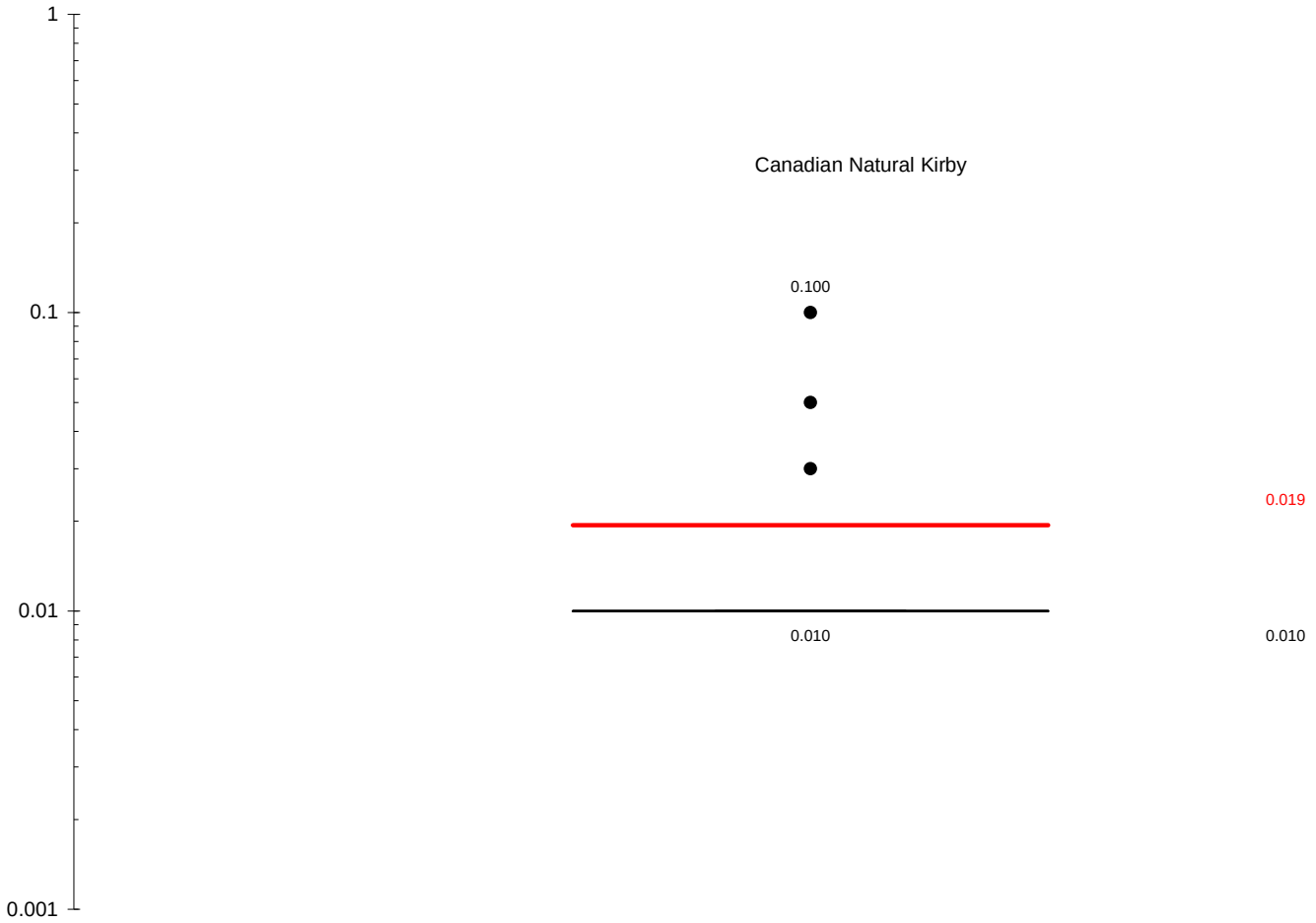
TITLE

REGIONAL DISTRIBUTION OF TITANIUM CONCENTRATIONS IN LABRADOR TEA [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No. Titanium-Labrador Tea	
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	TRE	27/02/08	FIGURE: E-18	
CHECK	BK	31/03/08		
REVIEW	IGG	07/04/08		

L:\2007\1346 Oil Sands\07-1346-0009-MEG EXPANSION\8800\8810\Appendix C5-Attachment E\Fig E-19_Regional Distribution-Uranium Conc in Labrador Tea.dwg Apr 10, 2008 - 5:32pm



PROJECT

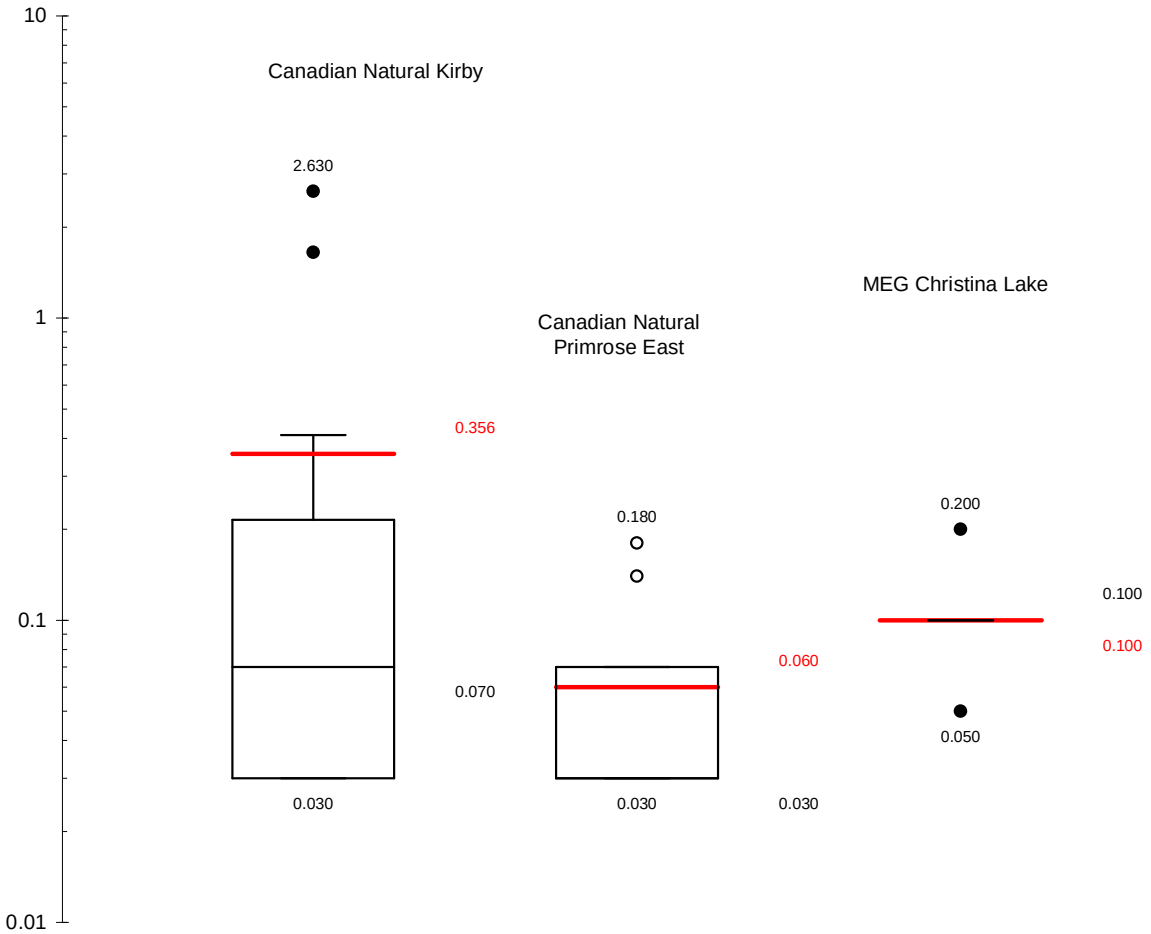
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF URANIUM CONCENTRATIONS IN LABRADOR TEA [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No. Uranium-Labrador Tea	
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	TRE	27/02/08	**FIGURE: E-19**	
CHECK	BK	31/03/08		
REVIEW	IGG	07/04/08		



PROJECT

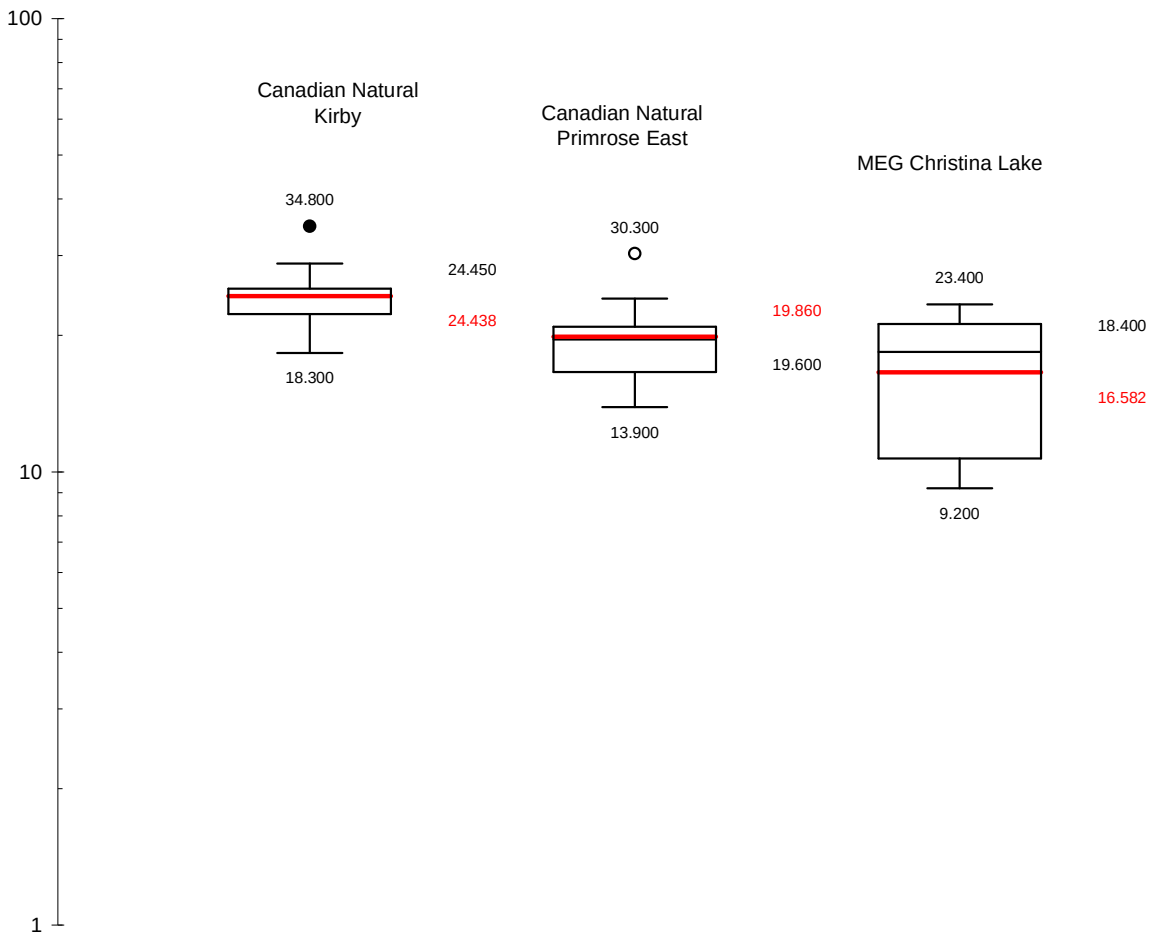
CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF VANADIUM CONCENTRATIONS IN LABRADOR TEA [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.Vanadium-LabradorTea	
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	TRE	27/02/08	FIGURE: E-20	
CHECK	BK	31/03/08		
REVIEW	IGG	07/04/08		



PROJECT

CHRISTINA LAKE REGIONAL PROJECT - PHASE 3

TITLE

REGIONAL DISTRIBUTION OF ZINC CONCENTRATIONS IN LABRADOR TEA [mg/kg]

MEG ENERGY CORP.

PROJ	07.1346.0009.8810		FILE No.	Zinc-Labrador Tea
DESIGN	BK	26/02/08	SCALE AS SHOWN	REV. 0
CADD	TRE	27/02/08		
CHECK	BK	31/03/08		
REVIEW	IGG	07/04/08		

FIGURE: E-21

Table E-1 Summary of Measured Labrador Tea Metal Concentrations for Canadian Natural Kirby Project (units in mg/kg)

Chemical	Avg	St Dev	Min	Max	Count	Median	95th Percentile	95UCLM	Comment
Aluminum (Al)	2.1E+02	3.6E+02	2.0E+01	1.4E+03	16	8.3E+01	9.1E+02	3.9E+02	-
Antimony (Sb)	n/d	n/d	n/d	n/d	16				DL <0.06
Arsenic (As)	8.8E-02	1.2E-01	2.5E-02	3.9E-01	16	4.5E-02	3.2E-01	1.5E-01	12/16 non-detect
Barium (Ba)	6.8E+01	1.5E+01	2.3E+01	8.4E+01	16	6.6E+01	8.3E+01	7.5E+01	-
Beryllium (Be)	2.7E-02	8.7E-03	2.5E-02	6.0E-02	16	2.6E-02	3.4E-02	3.1E-02	15/16 non-detect
Bismuth (Bi)	1.3E-02	1.0E-02	1.0E-02	5.0E-02	16	1.1E-02	2.0E-02	1.7E-02	15/16 non-detect
Boron (B)	1.7E+01	3.3E+00	1.3E+01	2.4E+01	16	1.7E+01	2.2E+01	1.9E+01	-
Cadmium (Cd)	1.3E-02	1.3E-02	1.0E-02	6.0E-02	16	1.1E-02	2.3E-02	1.9E-02	15/16 non-detect
Chromium (Cr)	3.9E+00	5.9E+00	3.0E-01	1.9E+01	16	1.8E+00	1.8E+01	6.8E+00	-
Cobalt (Co)	1.4E-01	1.9E-01	2.0E-02	6.8E-01	16	7.1E-02	5.3E-01	2.3E-01	-
Copper (Cu)	6.2E+00	3.9E+00	2.3E+00	1.8E+01	16	5.4E+00	1.4E+01	8.1E+00	-
Lead (Pb)	3.9E-01	4.6E-01	6.0E-02	1.5E+00	16	2.2E-01	1.3E+00	6.1E-01	-
Manganese (Mn)	3.8E+02	7.7E+01	2.5E+02	4.8E+02	16	3.7E+02	4.7E+02	4.2E+02	-
Mercury (Hg)	1.5E-02	1.9E-02	4.0E-03	8.5E-02	16	1.1E-02	3.6E-02	2.5E-02	4/16 non-detect
Molybdenum (Mo)	1.1E-01	9.6E-02	1.0E-02	2.7E-01	16	6.3E-02	2.6E-01	1.6E-01	4/16 non-detect
Nickel (Ni)	2.7E+00	3.0E+00	3.0E-01	9.9E+00	16	1.6E+00	9.3E+00	4.2E+00	-
Selenium (Se)	5.0E-02	7.2E-18	5.0E-02	5.0E-02	16	n/d	n/d	n/d	DL <0.1
Silver (Ag)	5.0E-01	0.0E+00	5.0E-01	5.0E-01	16	n/d	n/d	n/d	DL <1
Strontium (Sr)	5.4E+00	1.0E+00	4.0E+00	7.8E+00	16	5.3E+00	6.9E+00	5.9E+00	-
Thallium (Tl)	n/d	n/d	n/d	n/d	16	n/d	n/d	n/d	DL <0.06
Tin (Sn)	n/d	n/d	n/d	n/d	16	n/d	n/d	n/d	DL <1
Titanium (Ti)	6.7E+00	1.3E+01	4.6E-01	4.4E+01	16	2.1E+00	3.5E+01	1.3E+01	-
Uranium (U)	1.9E-02	2.4E-02	1.0E-02	1.0E-01	16	1.4E-02	6.3E-02	3.1E-02	13/16 non-detect
Vanadium (V)	3.6E-01	7.3E-01	3.0E-02	2.6E+00	16	1.0E-01	1.9E+00	7.1E-01	5/16 non-detect
Zinc (Zn)	2.4E+01	3.9E+00	1.8E+01	3.5E+01	16	2.4E+01	3.0E+01	2.6E+01	-

- = No comment.

n/d = Non-detect.

Table E-2 Summary of Measured Labrador Tea Metal Concentrations for Canadian Natural Primrose East Project (units in mg/kg)

Chemical	Avg	St Dev	Min	Max	Count	Median	95th Percentile	95UCLM	Comment
Aluminum (Al)	5.3E+01	2.6E+01	3.3E+01	1.1E+02	10	4.9E+01	1.0E+02	6.9E+01	-
Antimony (Sb)	n/d	n/d	n/d	n/d	10	n/d	n/d	n/d	DL <0.06
Arsenic (As)	n/d	n/d	n/d	n/d	10	n/d	n/d	n/d	DL <0.05
Barium (Ba)	8.2E+01	2.0E+01	4.7E+01	1.0E+02	10	8.0E+01	1.0E+02	9.5E+01	-
Beryllium (Be)	n/d	n/d	n/d	n/d	10	n/d	n/d	n/d	-
Bismuth (Bi)	n/d	n/d	n/d	n/d	10	n/d	n/d	n/d	-
Boron (B)	1.8E+01	1.9E+00	1.6E+01	2.3E+01	10	1.8E+01	2.1E+01	2.0E+01	-
Cadmium (Cd)	1.3E-02	9.5E-03	1.0E-02	4.0E-02	10	1.1E-02	2.7E-02	1.9E-02	9/10 non-detect
Chromium (Cr)	9.4E-01	1.2E+00	3.0E-01	4.3E+00	10	6.2E-01	2.9E+00	1.7E+00	-
Cobalt (Co)	3.3E-02	1.8E-02	2.0E-02	7.0E-02	10	2.9E-02	6.6E-02	4.4E-02	-
Copper (Cu)	4.3E+00	1.0E+00	3.0E+00	6.4E+00	10	4.2E+00	6.0E+00	5.0E+00	-
Lead (Pb)	8.6E-02	1.4E-02	6.0E-02	1.1E-01	10	8.5E-02	1.1E-01	9.5E-02	-
Manganese (Mn)	3.5E+02	1.3E+02	2.2E+02	6.3E+02	10	3.3E+02	5.7E+02	4.3E+02	-
Mercury (Hg)	1.0E-02	2.4E-03	4.0E-03	1.3E-02	10	9.7E-03	1.3E-02	1.2E-02	1/10 non-detect
Molybdenum (Mo)	4.1E-02	3.0E-02	1.0E-02	1.0E-01	10	3.1E-02	8.7E-02	5.9E-02	3/10 non-detect
Nickel (Ni)	7.3E-01	4.6E-01	2.0E-01	1.8E+00	10	6.1E-01	1.4E+00	1.0E+00	-
Selenium (Se)	n/d	n/d	n/d	n/d	10	n/d	n/d	n/d	DL <0.1
Silver (Ag)	n/d	n/d	n/d	n/d	10	n/d	n/d	n/d	DL <1
Strontium (Sr)	7.5E+00	2.5E+00	3.8E+00	1.1E+01	10	7.1E+00	1.1E+01	9.1E+00	-
Thallium (Tl)	n/d	n/d	n/d	n/d	10	n/d	n/d	n/d	DL <0.06
Tin (Sn)	n/d	n/d	n/d	n/d	10	n/d	n/d	n/d	DL <1
Titanium (Ti)	1.2E+00	6.9E-01	6.2E-01	2.8E+00	10	1.1E+00	2.4E+00	1.6E+00	-
Uranium (U)	n/d	n/d	n/d	n/d	10	n/d	n/d	n/d	DL <0.02
Vanadium (V)	6.0E-02	5.5E-02	3.0E-02	1.8E-01	10	4.6E-02	1.6E-01	9.4E-02	7/10 non-detect
Zinc (Zn)	2.0E+01	4.7E+00	1.4E+01	3.0E+01	10	1.9E+01	2.8E+01	2.3E+01	-

- = No comment.

n/d = Non-detect.

Table E-3 Summary of Measured Labrador Tea Metal Concentrations for ConocoPhillips Surmont Project (units in mg/kg)

Chemical	Value	Count	Comment
Aluminum (Al)	1.8E+01	1	-
Antimony (Sb)	3.0E-02	1	non-detect
Arsenic (As)	2.5E-02	1	non-detect
Barium (Ba)	6.6E+01	1	-
Beryllium (Be)	2.5E-02	1	non-detect
Bismuth (Bi)	1.0E-02	1	non-detect
Boron (B)	1.6E+01	1	-
Cadmium (Cd)	1.0E-02	1	non-detect
Chromium (Cr)	1.6E+00	1	-
Cobalt (Co)	3.0E-02	1	-
Copper (Cu)	1.2E+00	1	-
Lead (Pb)	4.0E-01	1	-
Manganese (Mn)	2.7E+02	1	-
Mercury (Hg)	4.0E-03	1	non-detect
Molybdenum (Mo)	5.0E-02	1	-
Nickel (Ni)	1.0E+00	1	-
Selenium (Se)	5.0E-02	1	non-detect
Silver (Ag)	5.0E-01	1	non-detect
Strontium (Sr)	9.0E+00	1	-
Thallium (Tl)	3.0E-02	1	non-detect
Tin (Sn)	5.0E-01	1	non-detect
Titanium (Ti)	5.0E-01	1	-
Uranium (U)	1.0E-02	1	non-detect
Vanadium (V)	3.0E-02	1	non-detect
Zinc (Zn)	1.9E+01	1	-

- = No comment.

Table E-4 Summary of Measured Labrador Tea Metal Concentrations for MEG Christina Lake Project (units in mg/kg)

Chemical	Avg	St Dev	Min	Max	Count	Median	95th Percentile	95UCLM	Comment
Aluminum (Al)	6.1E+01	1.1E+01	4.0E+01	7.0E+01	11	6.0E+01	7.0E+01	6.8E+01	-
Antimony (Sb)	4.0E-02	3.4E-02	2.5E-02	1.3E-01	11	3.2E-02	1.1E-01	6.0E-02	9/11 non-detect
Arsenic (As)	n/d	n/d	n/d	n/d	11	n/d	n/d	n/d	DL <0.2
Barium (Ba)	9.2E+01	2.5E+01	5.2E+01	1.5E+02	11	8.9E+01	1.3E+02	1.1E+02	-
Beryllium (Be)	n/d	n/d	n/d	n/d	11	n/d	n/d	n/d	DL <0.2
Cadmium (Cd)	n/d	n/d	n/d	n/d	11	n/d	n/d	n/d	DL <0.08
Chromium (Cr)	4.9E-01	1.0E-01	4.0E-01	7.0E-01	11	4.8E-01	6.5E-01	5.5E-01	-
Cobalt (Co)	8.3E-02	3.7E-02	4.0E-02	1.4E-01	11	7.4E-02	1.3E-01	1.0E-01	4/11 non-detect
Copper (Cu)	3.1E+00	9.1E-01	1.3E+00	4.8E+00	11	2.9E+00	4.5E+00	3.6E+00	-
Lead (Pb)	6.4E-02	5.4E-02	2.0E-02	2.2E-01	11	5.2E-02	1.4E-01	9.5E-02	2/11 non-detect
Manganese (Mn)	8.1E+02	3.0E+02	2.0E+02	1.2E+03	11	7.4E+02	1.1E+03	9.9E+02	-
Mercury (Hg)	1.3E-02	6.5E-03	1.0E-02	3.0E-02	11	1.2E-02	2.5E-02	1.7E-02	9/11 non-detect
Molybdenum (Mo)	4.9E-02	5.1E-02	2.5E-02	1.9E-01	11	3.7E-02	1.4E-01	7.9E-02	8/11 non-detect
Nickel (Ni)	7.8E-01	5.3E-01	4.1E-01	2.1E+00	11	6.6E-01	1.8E+00	1.1E+00	-
Selenium (Se)	n/d	n/d	n/d	n/d	11	n/d	n/d	n/d	DL <0.2
Silver (Ag)	4.5E-02	1.5E-02	4.0E-02	9.0E-02	11	4.3E-02	6.5E-02	5.3E-02	10/11 non-detect
Strontium (Sr)	1.1E+01	6.8E+00	3.7E+00	2.9E+01	11	9.5E+00	2.2E+01	1.5E+01	-
Thallium (Tl)	3.0E-02	2.2E-02	2.0E-02	8.0E-02	11	2.5E-02	7.5E-02	4.3E-02	9/11 non-detect
Tin (Sn)	5.0E-02	2.2E-02	4.0E-02	1.0E-01	11	4.7E-02	9.5E-02	6.3E-02	9/11 non-detect
Titanium (Ti)	2.5E+00	8.2E-01	1.0E+00	3.0E+00	11	2.4E+00	3.0E+00	3.0E+00	2/11 non-detect
Uranium (U)	n/d	n/d	n/d	n/d	11	n/d	n/d	n/d	DL <0.05
Vanadium (V)	1.0E-01	3.9E-02	5.0E-02	2.0E-01	11	9.4E-02	1.5E-01	1.2E-01	2/11 non-detect
Zinc (Zn)	1.7E+01	5.1E+00	9.2E+00	2.3E+01	11	1.6E+01	2.3E+01	2.0E+01	-

- = No comment.

n/d = Non-detect.

Table E-5 Summary of Measured Labrador Tea Polycyclic Aromatic Hydrocarbons Concentrations for Canadian Natural Kirby Project (units in mg/kg)

Chemical	Avg	St Dev	Min	Max	Count	Median	95th Percentile	95UCLM	Comment
Acenaphthylene Anthracene Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Benzo(ghi)perylene Benzo(k)fluoranthene C2 sub'd B(a)A/chrysene C2 sub'd B(b&k)F/B(a)P C2 sub'd biphenyl C2 sub'd dibenzothiophene C2 sub'd fluorene C2 sub'd phenanthrene/anth C3 sub'd dibenzothiophene C3 sub'd phenanthrene/anth C4 sub'd dibenzothiophene C4 sub'd phenanthrene/anth Chrysene Dibenzo(a,h)anthracene Dibenzothiophene Fluoranthene Fluorene Indeno(c,d-123)pyrene Methyl acenaphthene Methyl B(a)A/chrysene Methyl B(b&k)F/B(a)P Methyl biphenyl Methyl dibenzothiophene Methyl fluoranthene/pyrene Methyl fluorene Methyl phenanthrene/anthracene Phenanthrene Pyrene	n/d	n/d	n/d	n/d	16	n/d	n/d	n/d	DL <0.01 - <0.04
Acenaphthene	5.3E-03	1.3E-03	5.0E-03	1.0E-02	16	5.2E-03	6.3E-03	5.9E-03	15/16 non-detect
Biphenyl	5.3E-03	1.3E-03	5.0E-03	1.0E-02	16	5.2E-03	6.3E-03	5.9E-03	15/16 non-detect
C2 sub'd naphthalene	2.3E-02	6.8E-03	2.0E-02	4.0E-02	16	2.2E-02	4.0E-02	2.6E-02	14/16 non-detect
C3 sub'd naphthalene	3.1E-02	2.2E-02	2.0E-02	9.0E-02	16	2.7E-02	6.8E-02	4.2E-02	12/16 non-detect
C4 sub'd naphthalene	2.4E-02	1.0E-02	2.0E-02	5.0E-02	16	2.2E-02	5.0E-02	2.9E-02	14/16 non-detect
Methyl naphthalene	9.4E-03	9.1E-03	5.0E-03	4.0E-02	16	7.4E-03	2.5E-02	1.4E-02	10/16 non-detect
Naphthalene	8.1E-03	9.3E-03	5.0E-03	4.0E-02	16	6.2E-03	2.5E-02	1.3E-02	14/16 non-detect

n/d = Non-detect.

Table E-6 Summary of Measured Labrador Tea Polycyclic Aromatic Hydrocarbons Concentrations for Canadian Natural Primrose East Project (units in mg/kg)

Chemical	Avg	St Dev	Min	Max	Count	Median	95th Percentile	95UCLM	Comment
Acenaphthene									
Acenaphthylene									
Anthracene									
Benzo(a)anthracene									
Benzo(a)pyrene									
Benzo(b)fluoranthene									
Benzo(g,h,i)perylene									
Benzo(k)fluoranthene									
Biphenyl									
C2 sub'd B(a)A/chrysene									
C2 sub'd B(b&k)F/B(a)P									
C2 sub'd biphenyl									
C2 sub'd dibenzothiophene									
C2 sub'd fluorene									
C2 sub'd naphthalene									
C2 sub'd phenanthrene/anth									
C3 sub'd dibenzothiophene									
C3 sub'd naphthalene									
C3 sub'd phenanthrene/anth	n/d	n/d	n/d	n/d	10	n/d	n/d	n/d	DL <0.01 - 0.04
C4 sub'd dibenzothiophene									
C4 sub'd naphthalene									
C4 sub'd phenanthrene/anth									
Chrysene									
Dibenzo(a,h)anthracene									
Dibenzothiophene									
Fluoranthene									
Fluorene									
Indeno(1,2,3-cd)pyrene									
Methyl acenaphthene									
Methyl B(a)A/chrysene									
Methyl B(b&k)F/B(a)P									
Methyl biphenyl									
Methyl dibenzothiophene									
Methyl fluoranthene/pyrene									
Methyl fluorene									
Methyl naphthalene									
Methyl phenanthrene/anthracene									
Naphthalene									
Pyrene									
Phenanthrene	7.0E-03	4.8E-03	5.0E-03	2.0E-02	10	6.2E-03	1.6E-02	1.0E-02	8/10 non-detect

n/d = Non-detect.

Table E-7 Summary of Measured Labrador Tea Polycyclic Aromatic Hydrocarbons Concentrations for ConocoPhillips Surmont Project (units in mg/kg)

Chemical	Avg	St Dev	Min	Max	Count	Median	95th Percentile	95UCLM	Comment
Acenaphthene									
Acenaphthylene									
Anthracene									
Benzo(a)anthracene									
Benzo(a)pyrene									
Benzo(b)fluoranthene									
Benzo(g,h,i)perylene									
Benzo(k)fluoranthene									
Biphenyl									
C2 sub'd B(a)A/chrysene									
C2 sub'd B(b&k)F/B(a)P									
C2 sub'd biphenyl									
C2 sub'd dibenzothiophene									
C2 sub'd fluorene									
C2 sub'd naphthalene									
C2 sub'd phenanthrene/anth									
C3 sub'd dibenzothiophene									
C3 sub'd naphthalene	n/d	n/d	n/d	n/d	1	n/d	n/d	n/d	DL <0.04 - 0.2
C3 sub'd phenanthrene/anth									
C4 sub'd dibenzothiophene									
C4 sub'd naphthalene									
C4 sub'd phenanthrene/anth									
Chrysene									
Dibenzo(a,h)anthracene									
Dibenzothiophene									
Fluoranthene									
Fluorene									
Indeno(1,2,3-cd)pyrene									
Methyl acenaphthene									
Methyl B(a)A/chrysene									
Methyl B(b&k)F/B(a)P									
Methyl biphenyl									
Methyl dibenzothiophene									
Methyl fluoranthene/pyrene									
Methyl fluorene									
Methyl phenanthrene/anthracene									
Naphthalene									
Phenanthrene									
Pyrene									
Methyl naphthalene	5.0E-02				1				1 detected value

n/d = Non-detect.

Table E-8 Summary of Measured Labrador Tea Polycylic Aromatic Hydrocarbons Concentrations for MEG Christina Lake Project (units in mg/kg)

Chemical	Avg	St Dev	Min	Max	Count	Median	95th Percentile	95UCLM	Comment
3-Methylcholanthrene									
7,12-Dimethylbenz(a)anthracene									
Acenaphthene									
Acenaphthylene									
Anthracene									
Benzo(a)anthracene									
Benzo(a)pyrene									
Benzo(b)fluoranthene									
Benzo(c)phenanthrene									
Benzo(g,h,i)perylene									
Benzo(j)fluoranthene	n/d	n/d	n/d	n/d	11	n/d	n/d	n/d	DL <0.03 -<0.4
Benzo(k)fluoranthene									
Chrysene									
Dibenzo(a,h)anthracene									
Dibenzo(a,h/a,i/a,l)pyrene									
Equivalent B(a)P Concentration									
Fluoranthene									
Fluorene									
Indeno(1,2,3-cd)pyrene									
Naphthalene									
Phenanthrene									
Pyrene									

n/d = Non-detect.