ALEXCO RESOURCE CORP.

Brewery Creek Mine

2011 ANNUAL WATER LICENSE REPORT

SUBMITTED TO THE YUKON WATER BOARD

WATER USE LICENSE QZ96-007

2011 ANNUAL QUARTZ MINING LICENSE REPORT

SUBMITTED TO YUKON GOVERNMENT, ENERGY MINES AND RESOURCES

YUKON QUARTZ MINING LICENSE A99-001

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February 2012

Executive Summary

The Brewery Creek Mine, owned and operated by Alexco Resource Corp., is located in central Yukon approximately 55 km east of Dawson City. With the exception of some remaining site facilities, the mine has been fully closed and reclaimed. The mine was operated and closed under Type A Water Use License QZ96-007 and Quartz Mining License A99-001 issued in June 1999.

Alexco submitted an application for Amendment #8 in 2011, required to address updated closure conditions and monitoring, which is currently before the Water Board.

Golden Predator Canada Corp. holds a Class 3 Mining Land Use Approval for the Brewery Creek Property (LQ00269) that expires in 2019 and covers the same footprint as Alexco's mine licences. Golden Predator is actively conducting exploration activities on the property.

During 2011 no mining operations were conducted. The heap leach pad was detoxified in 2002 and drained down in 2003. Throughout 2011, all assays for total cyanide remained below 2.0 mg/l.

Updates to the Blue WRSA infiltration rate and the Heap water balance were last carried out in 2009, as per the Blue WRSA Monitoring Program (August 2005) and Heap Monitoring Program (September 2004). Detoxification of the heap has occurred as monitoring results at BC-28a have met the requirement laid out in Part E, Clause 8 of licence QZ96-007 Amendment #7, *"detoxification of the heap shall be deemed to have occurred when the concentration of Total Cyanide measured at monitoring station BC-28a in accordance with Schedule A and B is equal to or lower than 2.0 mg/L for five continuous years of monitoring."* As such, programs to monitor climatic data were discontinued at the end of 2010.

The large scale lysimeter constructed in the Blue WRSA was last monitored for chemistry and infiltration during 2009.

No direct surface release of heap solution was made in 2011. No land application of solution occurred in 2011.

Final reclamation of the ponds was completed in 2008 through removal of all liners, resloping and scarification of the edges and side slopes. Additional erosion control and maintenance seeding and fertilization were completed in 2010.

There was no surface discharge of accumulated waters from any of the 6 pits (Pacific, Blue, Moosehead, Kokanee, South Golden and Lucky). Water that collects in the pits either evaporates or infiltrates into the ground.

2011 was the second year of monitoring under Schedule B-2 of QZ96-007. This schedule calls for twice-annual sampling events for most water quality monitoring sites. Whenever flow and climatic conditions permitted, all required monitoring was carried out. Piezometers in the Blue WRSA, among others at the site, do not reach water and therefore though they are regularly monitored, they are not sampled.

Stream sediment sampling was last carried out in 2009. Benthic monitoring was also last conducted in 2009. These two events mark the end of the monitoring programs for both benthic and sediment monitoring at Brewery Creek.

A revegetation assessment was last completed by Laberge Environmental Services in August 2009.

SRK Consulting completed an independent analysis of the reclamation activities and remaining liabilities in September 2011. The inspection also served as the annual geotechnical inspection report. The next scheduled inspection is for August 2014, as required by QZ96-007. The geotechnical inspection report is attached as Appendix E.

No recordable spills occurred in 2011.

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APPENDICES

1 INTRODUCTION

The Brewery Creek Mine, owned and operated by Alexco Resource Corp., is located in central Yukon approximately 55 km east of Dawson City. The mine operated as a conventional open pit heap leach continuously from 1996 through 2001; reclamation and closure began in 2002. With the exception of some remaining site facilities, the mine has been fully closed and reclaimed. The mine closure and reclamation objectives are outlined in the 2003 Decommissioning and Reclamation Plan (DRP) required under the Water Use Licence.

The mine was operated and closed under Type A Water Use License QZ96-007 (originally issued as QZ94-003 in August 1995) and Quartz Mining License A99-001 issued in June 1999. QZ96-007 was most recently amended in 2005 (Amendment 7, QZ03-062).

Amendments #1 through #6 were made mainly to revise operational project design components and specifications. Amendment #7 was subsequently made to address closure conditions and monitoring. Alexco submitted an application for Amendment #8 in 2011, required to address updated closure conditions and monitoring, which is currently before the Water Board.

Golden Predator Canada Corp. holds a Class 3 Mining Land Use Approval for the Brewery Creek Property (LQ00269) that expires in 2019 and covers the same footprint as Alexco's mine licences. Golden Predator is actively conducting exploration activities on the property.

This report summarizes the 2011 monitoring data and activities relevant to the DRP, Water Licence QZ96-007 and QML A99-001.

2 OVERVIEW OF ACTIVITIES

The following tasks and activities were completed in 2011:

January 2011

- Exploration activities conducted on the property by Golden Predator.

February 2011

- Exploration activities conducted on the property by Golden Predator.

March 2011

- Exploration activities conducted on the property by Golden Predator.

April 2011

- Exploration activities conducted on the property by Golden Predator.

May 2011

- Alexco Resource Corp submitted an application to the Yukon Water Board for amendment #8 to QZ96-007.
- Exploration activities conducted on the property by Golden Predator.

June 2011

- Routine water quality monitoring was completed per the sites and conditions under Water License QZ96-007 and Quartz Mining License A99-001.
- Exploration activities conducted on the property by Golden Predator.

July 2011

- Exploration activities conducted on the property by Golden Predator.

August 2011

- Exploration activities conducted on the property by Golden Predator.

September 2011

- Routine water quality monitoring was completed per the sites and conditions under Water License QZ96-007 and Quartz Mining License A99-001.
- SRK visited the Brewery Creek mine site on September 29, 2011 to complete a geotechnical inspection of the reclamation works.
- Exploration activities conducted on the property by Golden Predator.

October 2011

- Exploration activities conducted on the property by Golden Predator.

November 2011

- Exploration activities conducted on the property by Golden Predator.

December 2011

- Exploration activities conducted on the property by Golden Predator.

3 MONITORING PROGRAMS AND STUDIES

3.1 Water Use

No water was withdrawn from Laura Creek or BC-23 during 2011.

3.2 Climate

Updates to the Blue WRSA infiltration rate and the Heap water balance were last carried out in 2009, as per the Blue WRSA Monitoring Program (August 2005) and Heap Monitoring Program (September 2004). Detoxification of the heap has occurred as monitoring results at BC-28a have met the requirement laid out in Part E, Clause 8 of licence QZ96-007 Amendment #7, *“detoxification of the heap shall be deemed to have occurred when the concentration of Total Cyanide measured at monitoring station BC-28a in accordance with Schedules A and B is equal to or lower than 2.0 mg/L for five continuous years of monitoring.”* As such, programs to monitor climatic data were discontinued at the end of 2010.

3.3 Water Quality and Hydrology

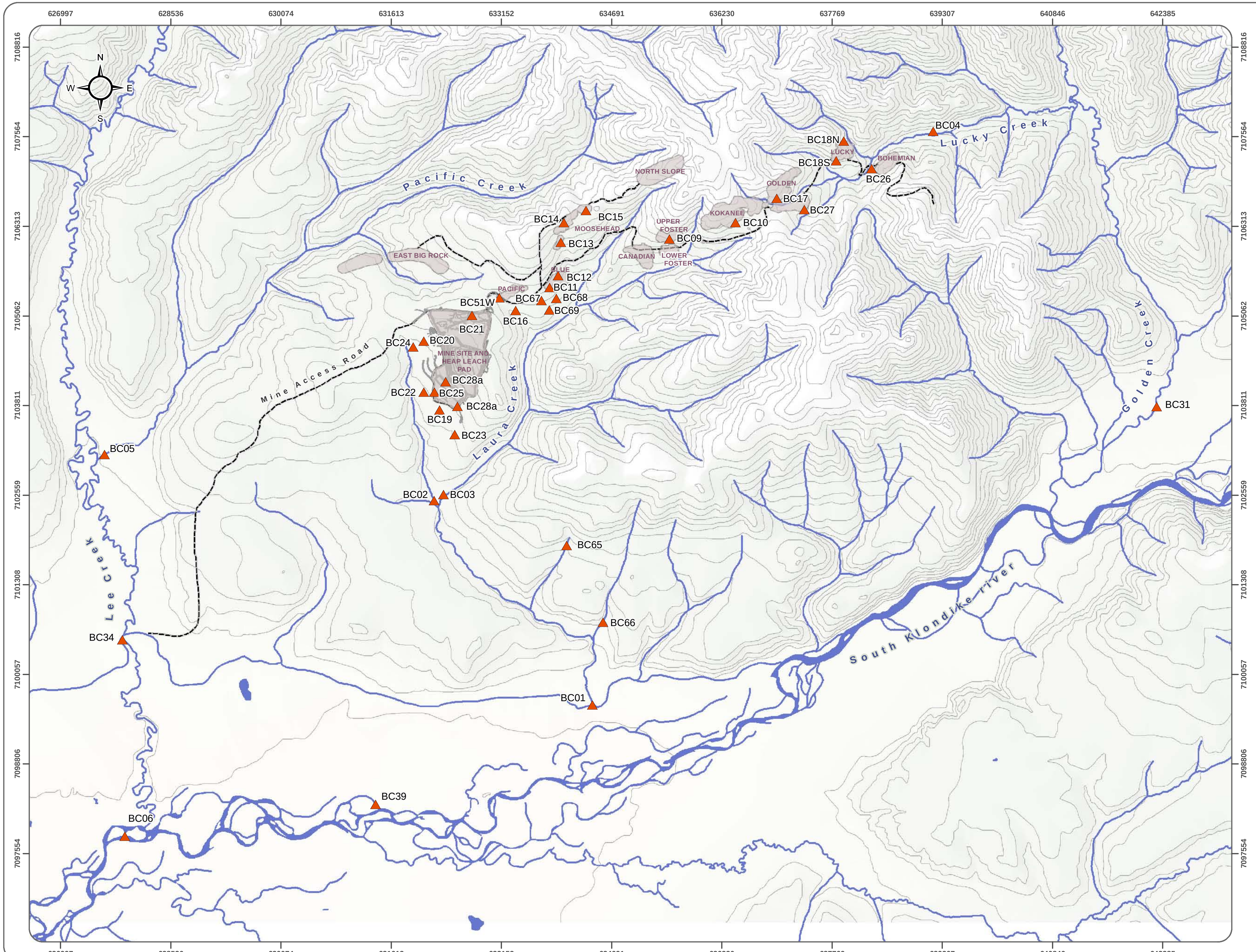
3.3.1 Water Quality Monitoring

Environmental monitoring at Brewery Creek has transitioned to the post-closure phase, which involves twice-annual monitoring of water quality surveillance sites where conditions require. These events are conducted shortly following freshet, in June, and again in September during low-flow conditions. The amount of environmental monitoring has declined since closure of the heap has been accomplished and the drain down solutions treated. Environmental monitoring during the post-closure period have been reduced commiserate with the amount of site activity.

Water quality sampling was performed as required by Schedule B of Water Licence QZ96-007. Appendix A presents a monthly summary of compliance sampling, including the results for bioassay testing. Sample station locations are presented in Figure 3-1.

3.3.2 Surface Water Quality Results

2011 surface water quality results are provided in Appendix A, and include descriptions of surface water quality stations. Certain key parameters including total suspended solids (TSS), nitrogen species (ammonia), and selected metals are graphically compared to historical data.



ALEXCO

BREWERY CREEK MINE

FIGURE 3-1

WATER QUALITY STATIONS

NAD 83 UTM Zone 7N

0 0.5 1 2 Kilometers

1:50,000 (when printed on 11 X 17 inch paper)

ACCESS

DRAWN BY MD	FEBRUARY 2012	VERIFIED BY TL

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(Last edited by: mducharme;17/02/2012/15:30 PM)

Total Suspended Solids

Generally, water quality analysis over the past nearly 10 years shows significant fluctuations in total metals and TSS relative to applicable WQ standards in the Water Use Licence. These fluctuations existed during baseline, and were further intensified after significant forest fire activity, particularly throughout the Laura Creek basin in 2004. The sampling results for TSS are evidence of the influence of the forest fires on water quality in the Laura Creek stations in 2005 through to 2008, during which time, TSS at stations BC-1, -2 and -3 were all elevated over historic levels. 2011 continued to see a reduction in TSS and particular metals, notably aluminum and iron at BC-1 and BC-3, suggesting the effects of the 2004 fire are off little impact today.

The same trends with TSS and metals were not exhibited at station BC-2 during 2011. TSS for June and September were 310 and 120 mg/L, respectively. It has been suggested that this is a result of increased flows resuspending residual sedimentation that has collected behind a v-notch weir (located at station BC-2).

Reviewing WQ data downstream of BC-2 shows that this sediment drops out of suspension shortly thereafter, where at station BC-53 TSS results were 65 mg/L in June and 7 mg/L in September. By the time flows enter Lee Creek at station BC-34, concentrations of TSS were at 9 mg/L in June and 13 mg/L in September. These trends are similar to those observed in 2010; however, the trend during 2011 was more pronounced, indicating that TSS concentrations are in continuing decline.

Arsenic and Zinc

Arsenic and zinc concentrations at stations BC-1, -2 and -3 are within the same range or lower than concentrations observed over the past several years. No significant trends either up or down appear in any of the stations for the parameters arsenic and zinc. Occasional spikes occur at various stations but these are not associated with any trends.

Copper and Lead

Copper and lead levels at most stations are within the range of historic concentrations and show strong evidence of past spikes having diminished.

Selenium

As per Clause 38(d) of the Water Use Licence, the maximum concentration of selenium is not to exceed 0.0038 mg/L at monitoring station BC-39. The Laura Creek 2004 Adaptive Management Plan (AMP) indicates the company will also use a site specific selenium objective of 0.0038 mg/L at BC-53 as a trigger mechanism for responses in the AMP. Selenium levels at stations BC-1 and BC-3 show consistent concentrations to those observed in other post-closure years. There were spikes of selenium at BC-02 between 2004 and 2008.

Over a period of fourteen years (1997 – 2011), concentrations of selenium observed at BC-39 range from below laboratory detection levels (<0.001 mg/L) to 0.0038 mg/L. The average concentration of selenium during this time was approximately 0.00098 mg/L[1]. Concentrations of selenium observed at BC-53 range from below laboratory detection levels (<0.001 mg/L) to 0.0051 mg/L. The average concentration of selenium during this time was approximately 0.0017 mg/L.

During June and September of 2011, the selenium water quality objective of 0.0038 mg/L was not exceeded at either BC-39 or BC-53. Total selenium ranged from between 0.00152 and 0.00197 mg/L, with an average concentration of 0.00168 mg/L.

3.3.3 Groundwater Quality Results

Locations and descriptions of groundwater quality stations are given in Appendix A. Water quality sampling from groundwater stations is required on a twice a year basis as per the Water Licence. There are 7 groundwater piezometers and 1 deep groundwater well (BC-23) located downgradient of the leach pad. It is important to note that some of these stations are dry and therefore no samples are obtained. Station BC-20 contains only ice year-round. This station historically collected water but at some point during sampling became permanently frozen. Attempts are made each site visit to collect a sample and the condition of the well is noted.

Antimony, arsenic, silver, lead, selenium and cadmium levels at BC-19 showed no increasing or decreasing trends in 2011. Copper, nickel, iron and zinc levels at BC-19 have shown a trend of decreasing concentrations since 2007 (up to which point concentrations were steadily rising).

Arsenic, antimony, silver, lead, iron, selenium, and cadmium levels at BC-21 showed no increasing or decreasing trends in 2011; results are commensurate with those observed since 2000. Copper, nickel and zinc show variable concentrations since 1997.

Selenium levels at BC-21 showed no increasing or decreasing trends in 2011.

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[1] Where levels were below detectable levels, a factor of 0.5 was applied to the detection limit to calculate the mean.

3.3.4 In-Pit Monitoring Stations Water Quality Results

Mined out pits were used effectively as sediment control basins. Snow melt and precipitation run-off was directed to the closest inactive pit. Samples from all pits were taken from surface standing water within each pit.

In-pit samples were collected from the following pits:

- BC-10: Kokanee Pit and Dump
- BC-12: Blue Pit
- BC-15: Moosehead Pit
- BC-17 Golden Pit and Dump

The following points highlight noteworthy trends from water samples collected at in-pit monitoring stations: Pacific (BC-51), Blue (BC-12), Moosehead (BC-15), Kokanee Phase 3 (BC-10), Golden (BC-17), and Lucky (BC-18):

- Water that is contained in all pits either exfiltrates or evaporates.
- Neither the Pacific nor Blue Pits discharge to surface waters; water infiltrates through the pit bottoms.
- Samples collected from the Kokanee Phase 3 and Golden pits (BC-10 and BC-17 respectively), show no abnormal values.
- The Blue Pit (BC-12) showed moderately low pH values, ranging from 6.73 in June to 6.93 in September. These pH values are considerably higher than historic (mining) results in the Blue Pit and suggest pit chemistry is stable and not trending towards any ARD concerns.
- Previous years sampling in Moosehead (BC-15) showed higher levels of selenium. This trend reversed beginning in 2009, and selenium levels in Moosehead from 2009 – 2011 continued below 0.05 mg/L, with an average of 0.03mg/L in 2009, 0.0216mg/L in 2010 and 0.0214 mg/L in 2011.
- The Upper Fosters (BC-9), Moosehead West and East Pits (BC-13 and -14), and the Lucky Pit (BC-18) were dry during scheduled sampling events.

Overall, the results of pit water sampling indicate no significant trends or changes from previous years.

3.3.5 Bioassay Monitoring

Bioassays were not collected from station BC-28a during 2011 as the site was not actively discharging.

3.3.6 Hydrology

Stream flow measurements for stations situated along Laura Creek, Golden Creek, Lucky Creek, Lee Creek, and Pacific Creek were measured in 2011 during the regularly scheduled monitoring periods. All data are presented in Appendix A.

Inspection of the discharge channel from the outflow of the Overflow Pond siphon pipe has demonstrated each year that the discharge water goes to ground and does not enter any receiving water directly. No direct surface water discharge was initiated in 2011 as the pond liners were removed in 2008 and the heap effluent meets water license criteria and now infiltrates into the ground within the reclaimed ponds.

Daily flows at the pumphouse (BC-1) were not recorded during the year as no direct surface discharge was carried out. Based on past experience, inspections and monitoring, it has been demonstrated that significant flows at BC-1 are evident and selenium criteria at BC-39 have been well under the licence condition and therefore daily changes in the discharge rates to match BC-1 flows has never been necessary.

3.4 Sediment and Benthic Monitoring

Stream sediment sampling was last carried out in 2009. Benthic monitoring was also last conducted in 2009. These two events mark the end of the monitoring programs for both benthic and sediment monitoring at Brewery Creek.

3.5 Leak Detection and Recovery Systems

Monitoring of (LDRS) systems was discontinued in 2005, consistent with long-term closure plans and the fact the heap has been fully decommissioned and drained. The leak detection piping and collection system remains intact however.

3.6 Air Quality

No air quality monitoring for mercury emissions was conducted in 2011 due to the dismantling of the ADR facility in 2004 and the cessation of refining. No further air quality monitoring is anticipated.

3.7 Effects on Wildlife

No wildlife process – related mortalities occurred during 2011. The fence constructed in June 2006 to prevent wildlife from entering the process ponds was removed in 2008 during the final reclamation of the ponds. There is no liner remaining on site to pose any wildlife entrapment risk.

3.8 Reclamation Activities Report

An inspection of the reclamation activities and remaining liabilities was completed by SRK Consulting and Yukon Government during September 2011. The SRK inspection serves as the annual geotechnical report as well as a status of the reclamation progress to date.

The only reclamation activities remaining at the site include dismantling the existing warehouse. No date has been set for this activity as the building is currently in use for exploration activities

4 ADDITIONAL PLANS AND STUDIES

4.1 Blue Zone Assessment

4.1.1 Purpose and Study Objectives

Mining at Brewery Creek consisted primarily of oxide-type ores with low potential for acid generation due to the prior removal of sulphide minerals by natural weathering processes. The exception was the Blue Zone which occurred in partially oxidized graphitic shales containing sulphide minerals.

In response to concerns raised by the regulatory agencies that approximately 1.1 million tonnes of waste rock generated from the Blue Zone is a current or potential source of acidic and/or metal-bearing water that could cause downstream impact to Laura Creek if not mitigated, an evapotranspiration soil cover was designed and constructed over the Blue WRSA to reduce infiltration. The cover was placed in 2003. In the same year, SRK Consulting was retained to:

- re-evaluate the available geochemical data for the Blue Waste Rock Storage Area (WRSA);
- estimate if the Blue WRSA could be a source of acid drainage; and
- predict the possible impacts of water originating from the Blue WRSA on Laura Creek at BC-1 and the South Klondike River at BC-6.

The last task culminated in the development of downstream water quality predictions for Laura Creek and the South Klondike River. A Blue Zone Monitoring and Assessment Program was designed and completed by VMC in 2005 to assess a number of components of the Blue Zone, among which were the geochemical stability of the waste rock and the quality of surrounding surface and groundwater. The monitoring program committed to revisiting those predictions made by SRK in 2003 to assess the overall effectiveness of remedial measures on surface water and determine if additional measures need to be implemented.

This chapter compares the water quality results collected from Laura Creek at BC-1 and the South Klondike River at BC-6 with the SRK predictions and provides discussion on the degree to which water quality predictions are being met.

4.1.2 SRK Downstream Surface Water Quality Predictions

The findings of the work SRK completed in 2003 on the acid generation potential of the Blue WRSA showed that overall, waste rock was geochemically stable during the time of their assessment and that conditions at that time could be used to accurately predict future behaviour of the waste rock and pore water chemistry, and from that downstream water chemistry.

Two scenarios of acid generation potential were used to model downstream water quality parameters. The first approach (Approach A), used the assumption that all of the annual production of soluble contaminant is leached each year, and that all of the waste rock is flushed by infiltration. The second approach (Approach B), used a higher water volume to obtain lower water concentrations for comparison with Approach A. The result was that the waste rock pore water chemistry modeled in Approach A was estimated to be greater than that of Approach B by a factor of roughly 25. Because Approach A represents a scenario in which all leachable contamination is flushed, it was determined to be a reasonable worst case.

The results of pore water chemistry modeling were then combined with groundwater chemistry observed at monitoring wells BC-67, -68 and -69 in a mixing model. The final step involved a dilution calculation to mix seepage from the Blue WRSA with Laura Creek discharge.

Downstream water quality was predicted for each of the two approaches described above and for each of the three conditions: winter low flow, spring freshet and summer flow. Downstream surface water quality predictions for BC-1 and BC-6 are summarized in Table 4-1.

4.1.3 Results and Discussion

Water quality results are compared against predictions in the following sections. A comprehensive comparison of flow water quality results against predicted concentrations can be found in Table 4-2. Where water chemistry predictions differ, results are compared against the more conservative (i.e. lower water quality) predictions of Approach B. Where water quality results do not exceed predicted values of a given parameter, they are not discussed.

Water quality results are generally thought to meet predictions where results range closely on either side of the predicted concentration. Copper and arsenic were the two primary contaminants of concern during the environmental assessment and licensing phase of the Brewery Creek decommissioning and closure plan. Additional graphical summaries are presented for copper and arsenic in the discussion of the performance results.

Table 4-1 Water Quality Predictions at BC-1 and BC-6 (SRK 2003)

		Total Aluminum	Total Antimony	Total Arsenic	Total Cadmium	Total Copper	Total Iron	Total Manganese	Total Mercury	Total Selenium	Dissolved SO_4	Total Zinc
Winter Flow Conditions												
Approach "A"												
	BC-1	0.08	0.03	0.008	0.002	0.04	0.1	0.1	0.00004	0.001	172	0.01
	BC-6	0.01	0.0012	0.001	0.0002	0.001	0.05	0.002	0.00002	0.001	76	0.005
Approach "B"												
	BC-1	0.08	0.0041	0.005	0.0003	0.003	0.1	0.04	0.00002	0.001	165	0.0077
	BC-6	0.006	0.001	0.001	0.0002	0.001	0.05	0.002	0.00002	0.001	76	0.005
Spring Flow Conditions												
Approach "A"												
	BC-1	1.17	0.01	0.01	0	0.03	1.8	0.1	0.00003	0.001	37	0.02
	BC-6	0.25	0.001	0	0.0002	0.002	0.4	0.014	0.00002	0.001	29	0.005
Approach "B"												
	BC-1	1.2	0.0051	0.01	0.0003	0.03	1.8	0.0867	0.00003	0.001	37	0.02
	BC-6	0.3	0.001	0.001	0.0002	0.002	0.4	0.0143	0.00002	0.001	29	0.01
Summer Flow Conditions												
Approach "A"												
	BC-1	0.6	0.01	0.01	0	0.01	1.3	0	0	0.001	63	0.01
	BC-6	0.17	0.0011	0	0.0002	0.008	0.3	0.021	0.0002	0.001	42	0.008
Approach "B"												
	BC-1	0.6	0.0051	0.005	0.0002	0.004	1.3	0.05	0.00002	0.001	62	0.008
	BC-6	0.17	0.001	0.001	0.0002	0.008	0.3	0.02	0.0002	0.001	42	0.008

Table 4-2 Water Quality Results Relative to Predictions at BC-1 and BC-6, Winter Flow Condition

		Total Aluminum	Total Antimony	Total Arsenic	Total Cadmium	Total Copper	Total Iron	Total Manganese	Total Mercury	Total Selenium	Dissolved SO_4	Total Zinc
Approach "A" - Winter Flow Conditions												
Predicted @ BC-1		***0.08***	***0.03***	***0.008***	***0.002***	***0.04***	***0.1***	***0.1***	***0.00004***	***0.001***	***172***	***0.01***
Observed @ BC-1	24-Jan-2008	0.101	0.0025	0.0083	0.00009	0.001	0.2	0.08	<0.0001[1]	0.0022	184	0.021
	18-Apr-2008	0.011	0.0031	0.0068	0.00012	0.002	<0.1	0.016	<0.0001[1]	0.0031	321	0.015
	18-Dec-2008	0.181	0.0028	0.0044	0.00006	<0.001	0.2	0.04	<0.0001[1]	0.0019	125	0.007
Predicted @ BC-6		***0.01***	***0.0012***	***0.001***	***0.0002***	***0.001***	***0.05***	***0.002***	***0.00002***	***0.001***	***76***	***0.005***
Observed @ BC-6	6-Mar-2008	0.006	<0.0002	0.0003	0.00006	0.002	<0.1[1]	<0.005[1]	<0.0001[1]	0.0011	72.7	0.009
	18-Dec-2008	0.008	<0.0002	0.0003	0.00005	<0.001	<0.05	<0.005[1]	<0.0001[1]	0.0011	79.5	0.007
	18-Mar-2009	0.013	0.0002	0.0004	0.00007	<0.001	0.05	0.004	<0.01[1]	0.0007	71	0.011
Approach "B" - Winter Flow Conditions												
Predicted @ BC-1		***0.08***	***0.0041***	***0.005***	***0.0003***	***0.003***	***0.1***	***0.04***	***0.00002***	***0.001***	***165***	***0.0077***
Observed @ BC-1	24-Jan-2008	0.101	0.0025	0.0083	0.00009	0.001	0.2	0.08	<0.0001[1]	0.0022	184	0.021
	18-Apr-2008	0.011	0.0031	0.0068	0.00012	0.002	<0.1	0.016	<0.0001[1]	0.0031	321	0.015
	18-Dec-2008	0.181	0.0028	0.0044	0.00006	<0.001	0.2	0.04	<0.0001[1]	0.0019	125	0.007
Predicted @ BC-6		***0.006***	***0.001***	***0.001***	***0.0002***	***0.001***	***0.05***	***0.002***	***0.00002***	***0.001***	***76***	***0.005***
Observed @ BC-6	6-Mar-2008	0.006	<0.0002	0.0003	0.00006	0.002	<0.1[1]	<0.005[1]	<0.0001[1]	0.0011	72.7	0.009
	18-Dec-2008	0.008	<0.0002	0.0003	0.00005	<0.001	<0.05	<0.005[1]	<0.0001[1]	0.0011	79.5	0.007
	18-Mar-2009	0.013	0.0002	0.0004	0.00007	<0.001	0.05	0.004	<0.01[1]	0.0007	71	0.011

Table 4-3 Water Quality Results Relative to Predictions at BC-1 and BC-6, Spring Flow Condition

		Total Aluminum	Total Antimony	Total Arsenic	Total Cadmium	Total Copper	Total Iron	Total Manganese	Total Mercury	Total Selenium	Dissolved SO_4	Total Zinc
Approach "A" - Spring Flow Conditions												
Predicted @ BC-1		***1.17***	***0.01***	***0.01***	***0.000***	***0.03***	***1.8***	***0.1***	***0.00003***	***0.0010***	***37***	***0.02***
Observed @ BC-1	13-May-2008	1.64	0.0044	0.0072	0.00013	0.004	1.9	0.17	<0.0001[1]	0.003	68	0.015
	18-Jun-2008	0.39	0.0031	0.0047	0.00004	0.002	0.5	0.038	<0.0001[1]	0.0013	124	0.007
	3-Jun-2009	0.239	0.00371	0.00592	0.000077	0.00181	0.569	0.128	0.00002	0.00152	110	0.0039
	15-Jun-2010	0.241	0.00416	0.00443	0.00005	0.00175	0.522	0.0382	<0.00001	0.00194	110	0.0035
	7-Jun-2011	0.24	0.00329	0.00586	0.000093	0.00204	0.608	0.113	<0.00001	0.00185	110	0.0051
Predicted @ BC-6		***0.25***	***0.0010***	***0.00***	***0.0002***	***0.002***	***0.4***	***0.014***	***0.00002***	***0.0010***	***29***	***0.005***
Observed @ BC-6	19-Jun-2008	0.018	0.0003	0.0003	0.00006	0.001	<0.05	<0.005	<0.0001[1]	0.0011	107	0.009
	3-Jun-2009	0.0352	0.00025	0.00045	0.000057	0.0012	0.085	0.00824	0.00002	0.00108	75	0.004
	14-Jun-2010	0.0249	0.00025	0.00028	0.000071	0.0014	0.061	0.00564	<0.00001	0.00159	81	0.0047
	7-Jun-2011	0.0359	0.00018	0.00092	0.000039	0.00076	0.084	0.00877	<0.00001	0.00048	38	0.0018
Approach "B' - Spring Flow Conditions												
Predicted @ BC-1		***1.2***	***0.0051***	***0.01***	***0.0003***	***0.03***	***1.8***	***0.0867***	***0.00003***	***0.0010***	***37***	***0.02***
Observed @ BC-1	13-May-2008	1.64	0.0044	0.0072	0.00013	0.004	1.9	0.17	<0.0001[1]	0.003	68	0.015
	18-Jun-2008	0.39	0.0031	0.0047	0.00004	0.002	0.5	0.038	<0.0001[1]	0.0013	124	0.007
	3-Jun-2009	0.239	0.00371	0.00592	0.000077	0.00181	0.569	0.128	0.00002	0.00152	110	0.0039
	15-Jun-2010	0.241	0.00416	0.00443	0.00005	0.00175	0.522	0.0382	<0.00001	0.00194	110	0.0035
	7-Jun-2011	0.24	0.00329	0.00586	0.000093	0.00204	0.608	0.113	<0.00001	0.00185	110	0.0051
Predicted @ BC-6		***0.3***	***0.0010***	***0.0010***	***0.0002***	***0.002***	***0.4***	***0.0143***	***0.00002***	***0.0010***	***29***	***0.01***
Observed @ BC-6	19-Jun-2008	0.018	0.0003	0.0003	0.00006	0.001	<0.05	<0.005	<0.0001[1]	0.0011	107	0.009
	3-Jun-2009	0.0352	0.00025	0.00045	0.000057	0.0012	0.085	0.00824	0.00002	0.00108	75	0.004
	14-Jun-2010	0.0249	0.00025	0.00028	0.000071	0.0014	0.061	0.00564	<0.00001	0.00159	81	0.0047
	7-Jun-2011	0.0359	0.00018	0.00092	0.000039	0.00076	0.084	0.00877	<0.00001	0.00048	38	0.0018

Table 4-4 Water Quality Results Relative to Predictions at BC-1 and BC-6, Summer Flow Condition

		Total Aluminum	Total Antimony	Total Arsenic	Total Cadmium	Total Copper	Total Iron	Total Manganese	Total Mercury	Total Selenium	Dissolved SO_4	Total Zinc
Approach "A" - Summer Flow Conditions												
Predicted @ BC-1		***0.60***	***0.01***	***0.01***	***0.000***	***0.01***	***1.3***	***0.0***	***0.0000***	***0.001***	***63***	***0.01***
Observed @ BC-1	9-Jul-2008	3.82	0.0044	0.0084	0.0002	0.009	10.6	0.237	<0.0001[1]	0.0013	68.6	0.034
	12-Aug-2008	2.9	0.0042	0.0074	0.00014	0.006	3.37	0.093	<0.0001[1]	0.0014	63.5	0.017
	17-Sep-2008	0.649	0.0042	0.004	0.00007	0.002	1.1	0.0575	<0.01[1]	0.0008	98.3	0.007
	7-Oct-2008	0.397	0.0039	0.0041	0.00004	0.003	0.68	0.055	<0.01[1]	0.0015	97.3	0.008
	1-Sep-2009	0.088	0.00438	0.00415	0.00005	0.00174	0.261	0.0414	-	0.00164	93	0.0032
	1-Sep-2010	0.0356	0.00339	0.0038	0.000021	0.00126	0.115	0.0189	<0.0001[1]	0.0015	110	0.0007
	15-Sep-2011	0.0845	0.00321	0.00454	0.000038	0.00147	0.242	0.045	<0.0001[1]	0.00176	106	0.0028
Predicted @ BC-6		***0.17***	***0.0011***	***0.00***	***0.0002***	***0.008***	***0.3***	***0.021***	***0.0002***	***0.001***	***42***	***0.008***
Observed @ BC-6	18-Sep-2008	0.038	<0.0002	<0.0002	0.00007	0.002	0.09	0.0065	<0.01[1]	0.0018	91.8	0.009
	8-Oct-2008	0.026	0.0002	0.0002	0.00005	0.002	0.06	0.006	<0.01[1]	0.0014	90.6	0.009
	2-Sep-2009	0.022	0.00023	0.00083	0.000031	0.00069	0.054	0.00723	-	0.00051	49	0.0015
	2-Sep-2010	0.0072	0.00029	0.00025	0.000084	0.00133	0.02	0.00227	<0.00001	0.00196	95	0.0054
	14-Sep-2011	0.0106	0.00017	0.00066	0.000036	0.00051	0.03	0.00523	<0.00001	0.00055	51.5	0.0014
Approach "B" – Summer Flow Conditions												
Predicted @ BC-1		***0.60***	***0.0051***	***0.005***	***0.0002***	***0.004***	***1.3***	***0.05***	***0.00002***	***0.001***	***62***	***0.008***
Observed @ BC-1	9-Jul-2008	3.82	0.0044	0.0084	0.0002	0.009	10.6	0.237	<0.0001[1]	0.0013	68.6	0.034
	12-Aug-2008	2.9	0.0042	0.0074	0.00014	0.006	3.37	0.093	<0.0001[1]	0.0014	63.5	0.017
	17-Sep-2008	0.649	0.0042	0.004	0.00007	0.002	1.1	0.0575	<0.01	0.0008	98.3	0.007
	7-Oct-2008	0.397	0.0039	0.0041	0.00004	0.003	0.68	0.055	<0.01	0.0015	97.3	0.008
	1-Sep-2009	0.088	0.00438	0.00415	0.00005	0.00174	0.261	0.0414	-	0.00164	93	0.0032
	1-Sep-2010	0.0356	0.00339	0.0038	0.000021	0.00126	0.115	0.0189	<0.00001[1]	0.0015	110	0.0007
	15-Sep-2011	0.0845	0.00321	0.00454	0.000038	0.00147	0.242	0.045	<0.00001[1]	0.00176	106	0.0028
Predicted @ BC-6		***0.17***	***0.0010***	***0.0010***	***0.0002***	***0.008***	***0.3***	***0.02***	***0.0002***	***0.001***	***42***	***0.008***
Observed @ BC-6	18-Sep-2008	0.038	<0.0002	<0.0002	0.00007	0.002	0.09	0.0065	<0.01[1]	0.0018	91.8	0.009
	8-Oct-2008	0.026	0.0002	0.0002	0.00005	0.002	0.06	0.006	<0.01[1]	0.0014	90.6	0.009
	2-Sep-2009	0.022	0.00023	0.00083	0.000031	0.00069	0.054	0.00723	-	0.00051	49	0.0015
	2-Sep-2010	0.0072	0.00029	0.00025	0.000084	0.00133	0.02	0.00227	<0.00001[1]	0.00196	95	0.0054
	14-Sep-2011	0.0106	0.00017	0.00066	0.000036	0.00051	0.03	0.00523	<0.00001[1]	0.00055	51.5	0.0014

1. Method detection limit is higher than the applicable site-specific water quality prediction

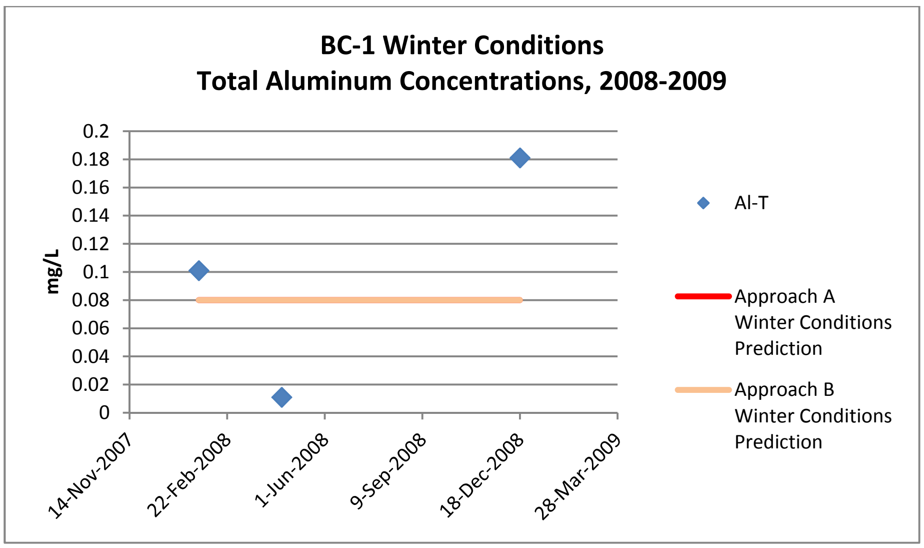
4.1.3.1 Winter Low Flow Condition

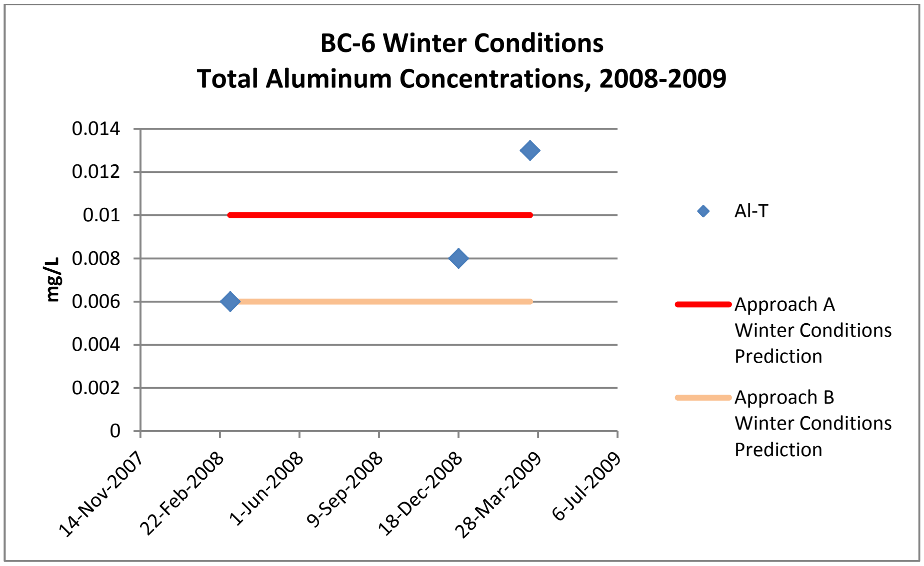
The winter flow condition represents the most conservative results of the three seasons.

Aluminum

The concentration of total aluminum predicted under both Approach A and B at BC-1 was 0.08 mg/L. Water quality results reported at BC-1 were higher than the prediction in two of the three winter samples; however, both samples only marginally exceeded aluminum predictions (0.101 and 0.181 mg/L).

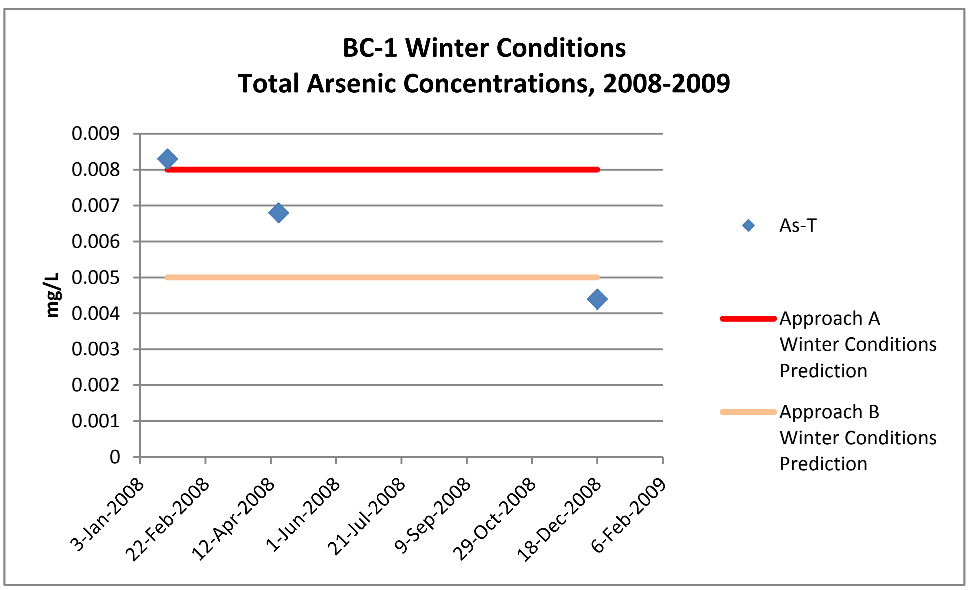
The predicted concentration of total aluminum at BC-6 differed under Approach A and B (0.01 mg/L and 0.006 mg/L, respectively). BC-6 exceeded the prediction for aluminum on two occasions of three total under Approach B. In March 2009 the result was slightly more than double the predicted figure (0.013 > 0.006 mg/L). The water quality results for aluminum under winter conditions are shown in the following graphs.

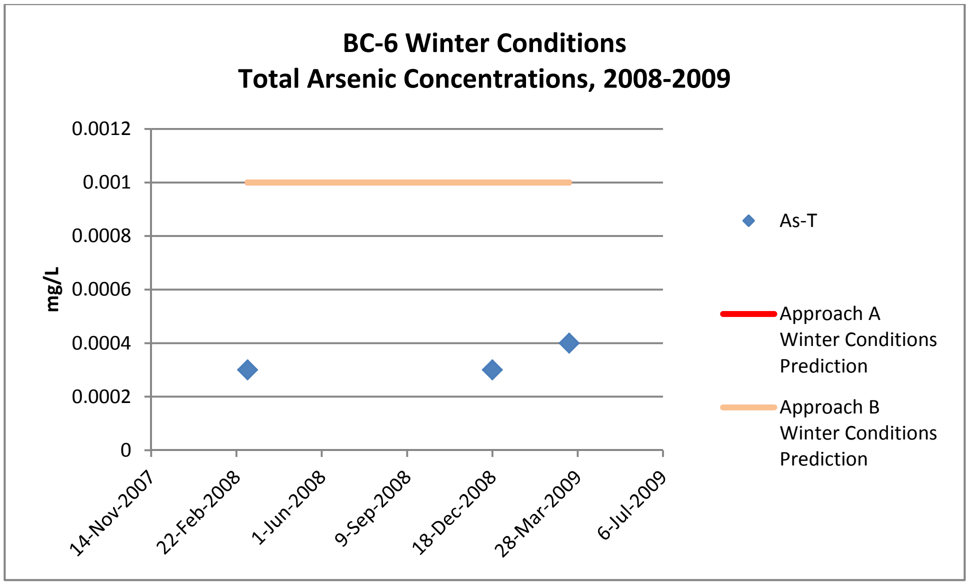




Arsenic

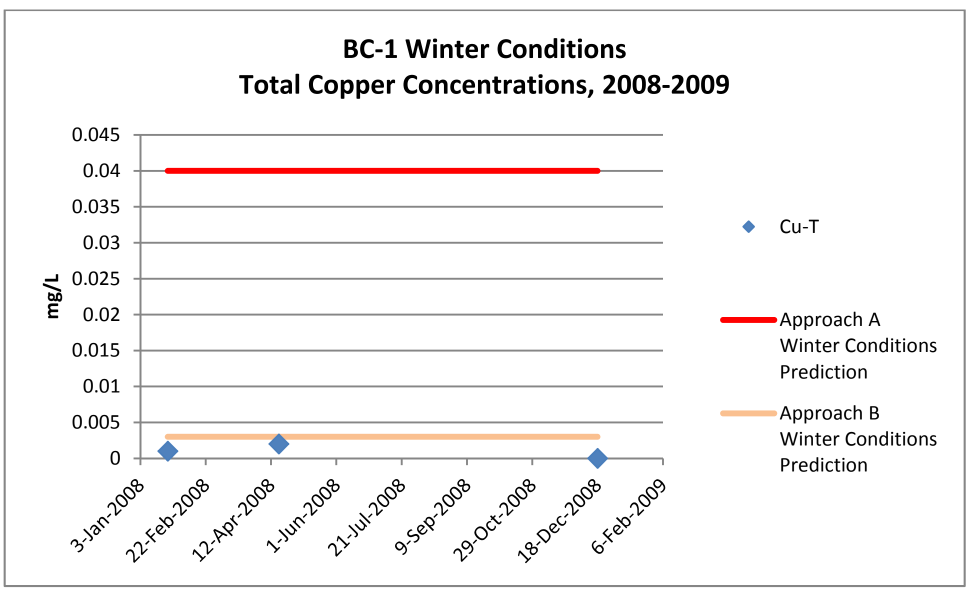
Under Approach A, water quality results at BC-1 were better than predicted on two out of three occasions Under Approach B, results were shown to be only marginally above the predicted concentration of 0.005 mg/L (0.0068 and 0.0083 mg/L). At stations BC-6, arsenic was below the predictions for both Approach A and Approach B for all sampling events. The water quality results for arsenic under winter conditions are shown in the following graphs.

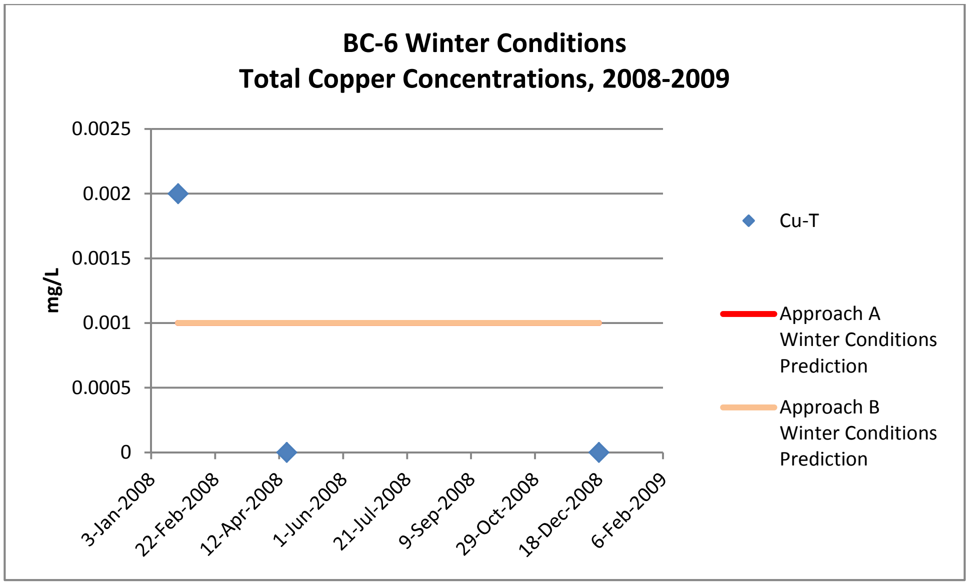




Copper

Water quality results at BC-6 exceeded the predicted concentration of copper (0.001 mg/L) on one occasion (0.002mg/L) under Approach B. Comparing to Approach A, water quality was better than predicted in two out of 3 sampling events.. Results given at above the detection limit (DL) for copper were very near the DL and may have experienced some degree of instrument interference. For station BC-1, water quality was better than predicted during all sampling events under both modeling approaches. The water quality results for copper under winter conditions are shown in the following graph.





Iron

Water quality results are BC-1 exceeded the predicted concentration of iron (0.01 mg/L) on two occasions (0.002mg/L). Like the results reported for copper, iron concentrations measured at above the DL were very near to it and may have experienced instrument interference.

Manganese

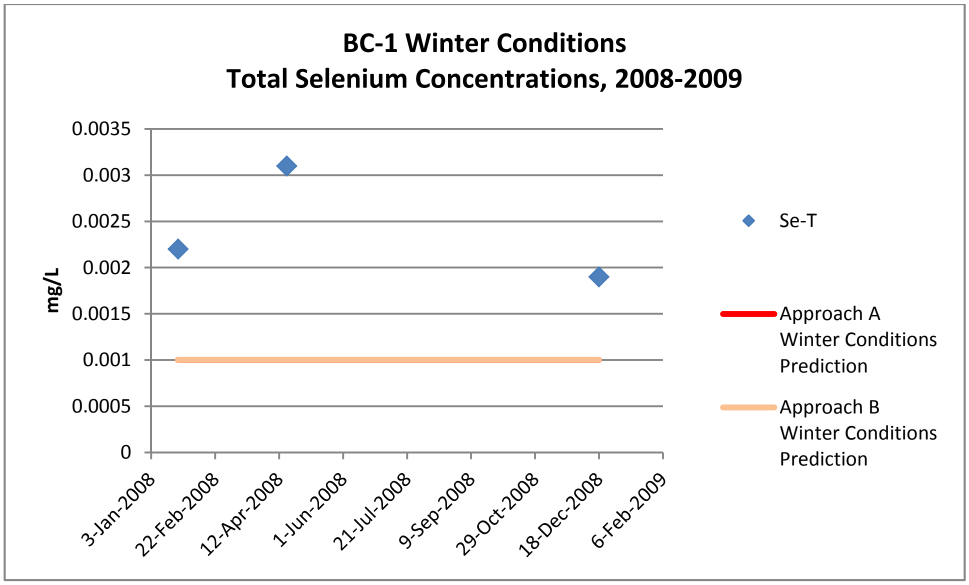
Results for manganese were higher than predicted on one occasion at BC-1 (0.08 > 0.04 mg/L) and on one occasion at BC-6 (0.004 > 0.002 mg/L). During the other two sampling results at BC-6, manganese results were non-detect; however, the DL was higher than the predicted water quality and thus it is not possible to determine if these results were in excess of predictions.

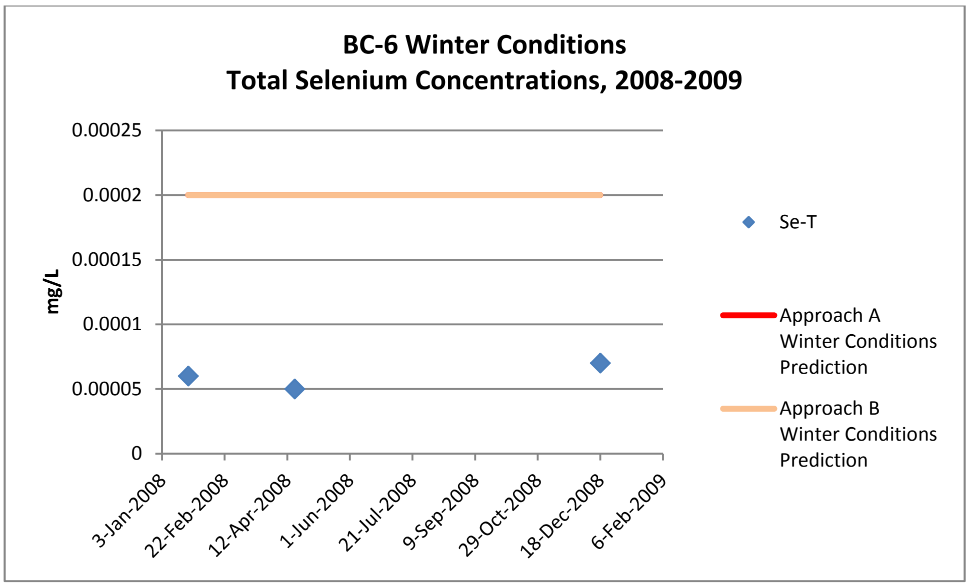
Mercury

Mercury testing suffers from detection limits that are higher than predicted water quality results. It is not possible to determine if mercury exceeds the water quality prediction of 0.00002mg/L as results were non-detect at 0.0001mg/L.

Selenium

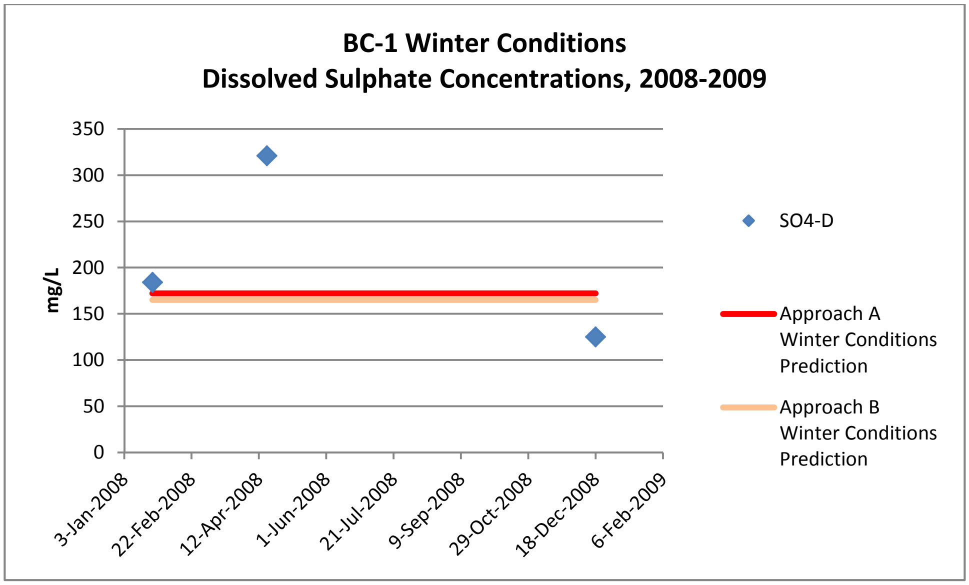
Selenium results marginally exceeded predictions on all three winter sampling occasions at BC-1. Selenium was also marginally higher than predictions at BC-6 on two of three occasions. The water quality results for selenium under winter conditions are shown in the following graphs.

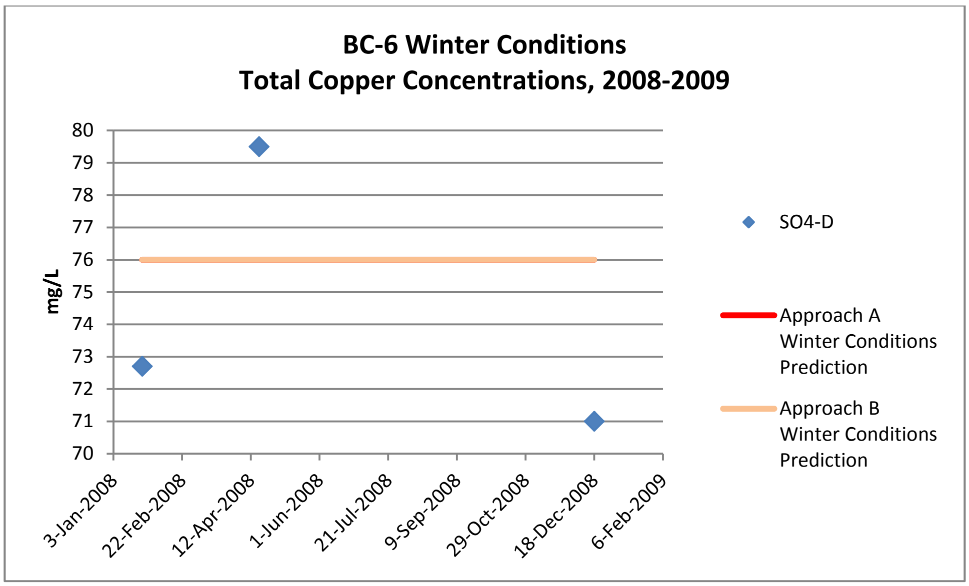




Sulphate

Sulphate predictions and results are generally congruent with predictions for both BC-1 and BC-6, with the exception of one BC-1 results at 321mg/L, which is slightly higher than the predicted 165mg/L. The water quality results for dissolved sulphate under winter conditions are shown in the following graphs.





Zinc

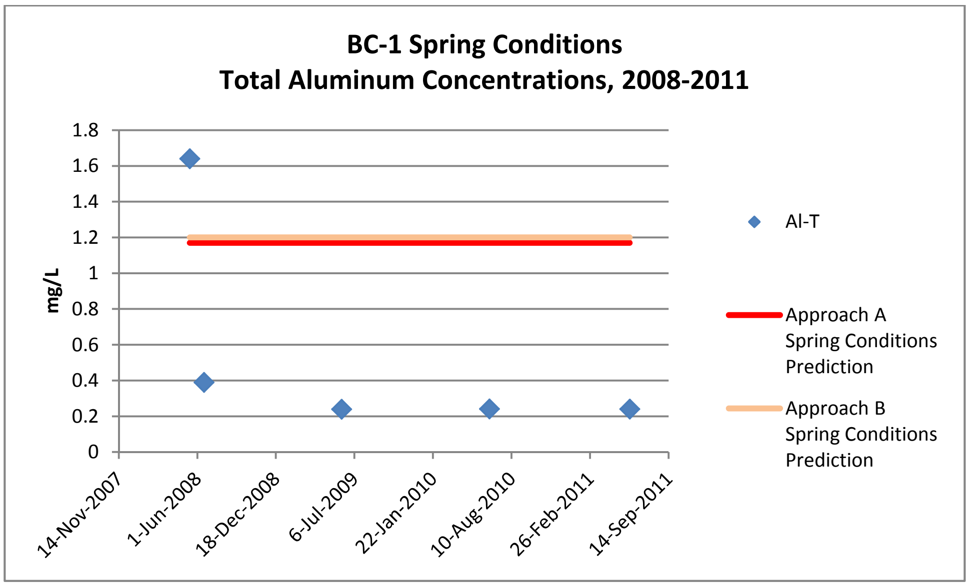
Zinc results marginally exceeded predictions on all two of three winter sampling occasions at BC-1. Zinc was also marginally higher than predictions at BC-6 during all three sampling events.

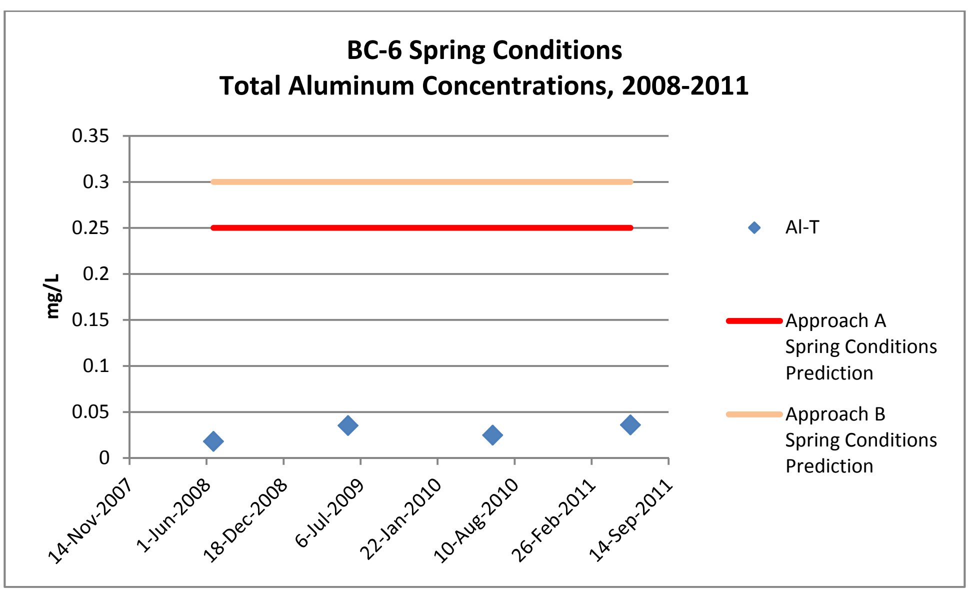
4.1.3.2 Spring Flow Condition

The spring flow condition represents the most liberal results of the three seasons as a result of the high erosive capacity of the system and the generally higher level of total metals expected to be flushed from sediments from surface runoff.

Aluminum

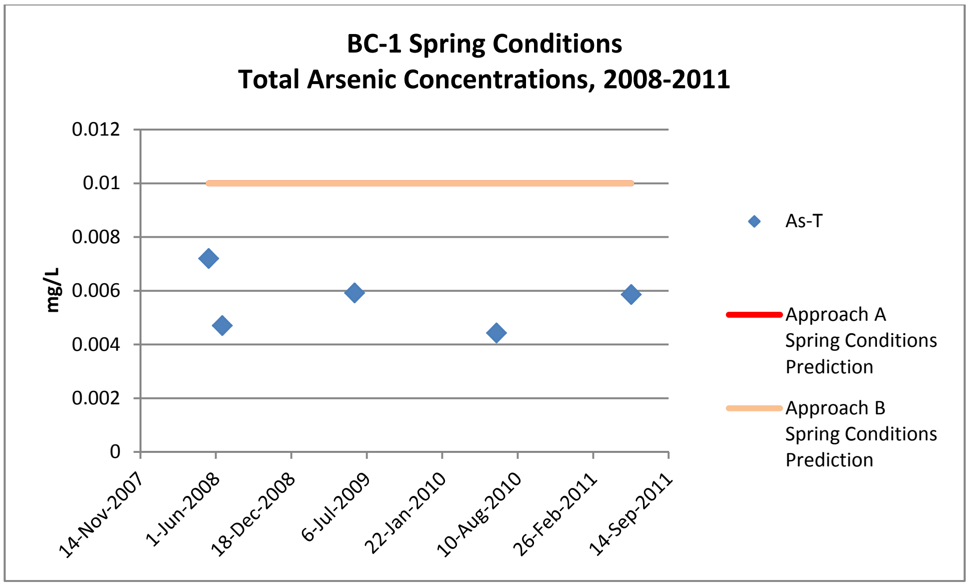
Aluminum was marginally higher than the prediction during one of five sampling sessions at BC-1 (1.64 > 1.2 mg/L). The water quality results for aluminum under spring conditions are shown in the following graphs.

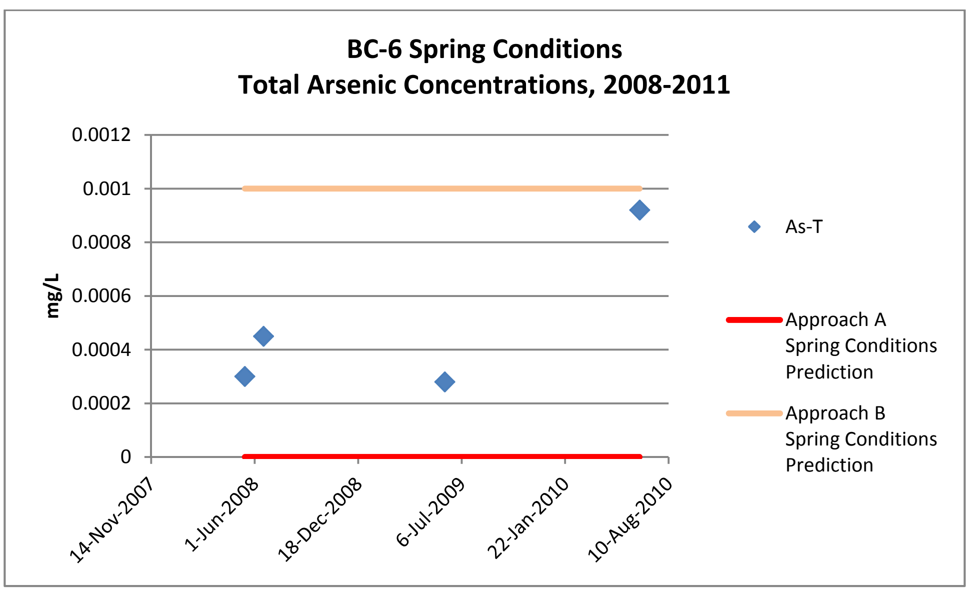




Arsenic

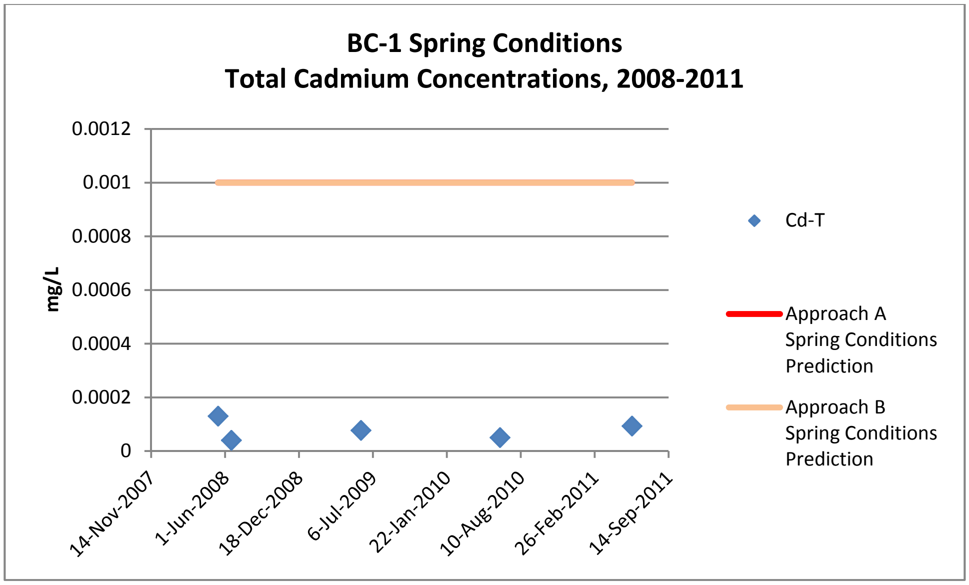
Arsenic predictions under Approach A for BC-6 were presented by SRK to only 3 significant digits and therefore shown as 0.000 mg/l. For the purposes of comparison, the detection limit for arsenic of <0.0002 mg/L will be used in lieu of the predicted result. Comparing the sampling results to the As detection limit, all 5 water quality samples were higher than the method detection limit but are within one order of magnitude at low concentrations, and all were well below the CCME guidelines for arsenic. None of the results returned exceeded the predictions made under Approach B. The water quality results for arsenic under spring conditions are shown in the following graphs.

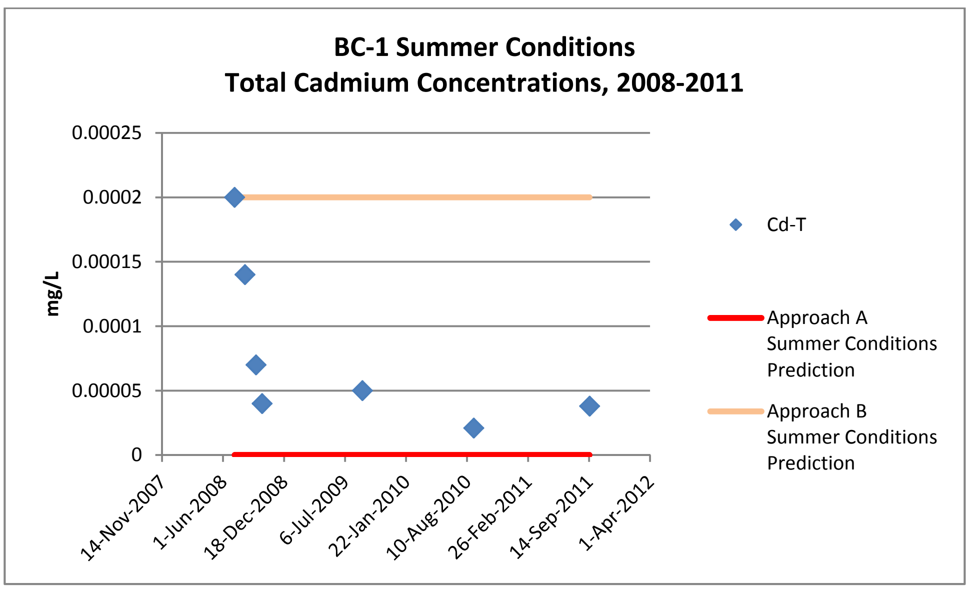




Cadmium

Like the prediction for arsenic, the cadmium prediction was only reported to 3 significant digits resulting in a value of 0.000mg/L under Approach A. Thus, all four sampling events returned results that were higher than this figure. None of the results returned exceeded the predictions made under Approach B. The water quality results for cadmium under spring conditions are shown in the following graphs.





Iron

Iron measured very marginally higher than predicted on one occasion at BC-1 (1.9 > 1.8 mg/L).

Manganese

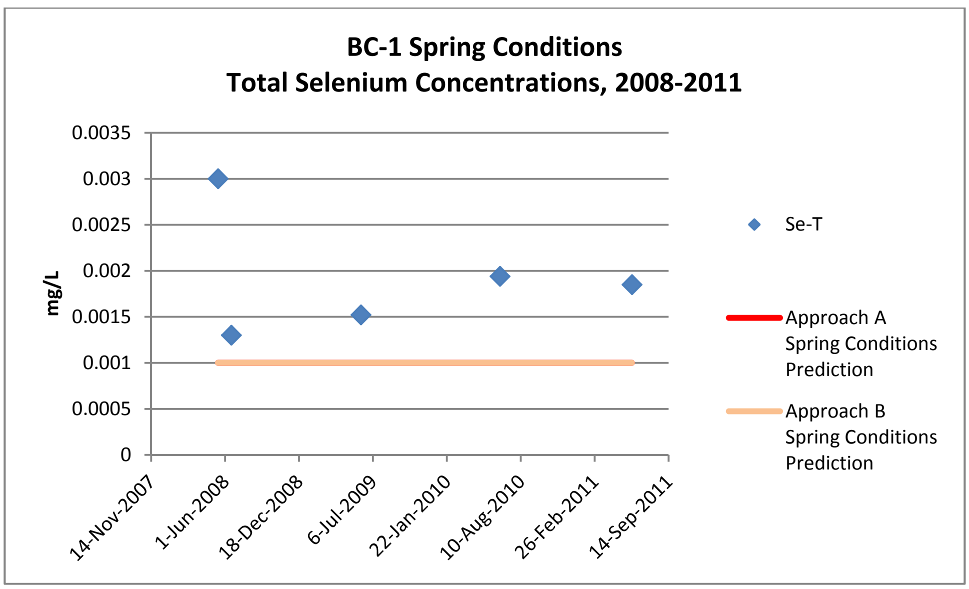
Manganese exceeded water quality predictions on three of five occasions at BC-1. Manganese ranged roughly equally on either side of the predicted concentration of 0.0867 mg/L (0.038 – 0.128 mg/L)

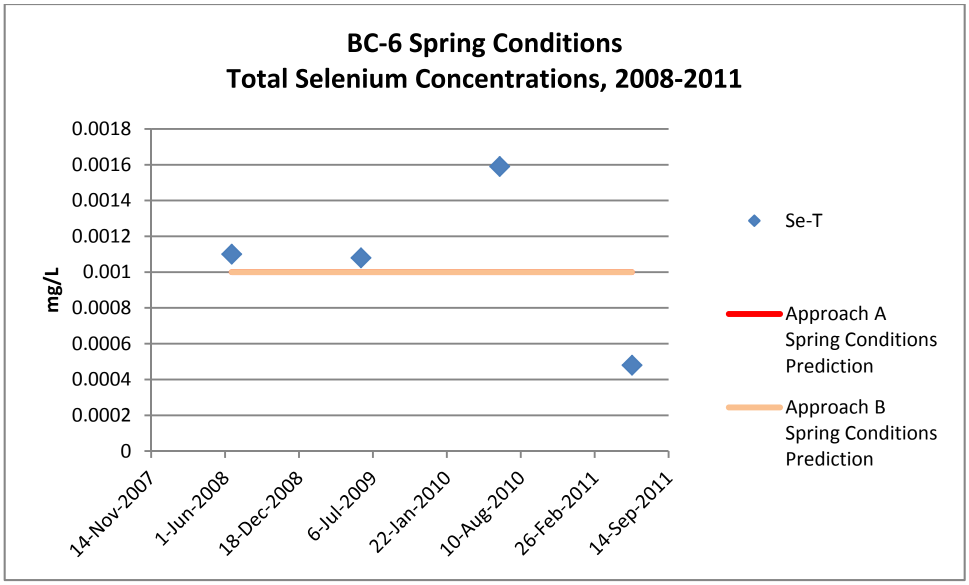
Mercury

Mercury results were confounded by the high detection limit, although to a lesser degree than for the winter condition. Detection limits higher than the predicted water quality concentration occurred in only three results between BC-1 and BC-6. All other results were definitively below predictions, as the DL was below the predicted mercury concentration.

Selenium

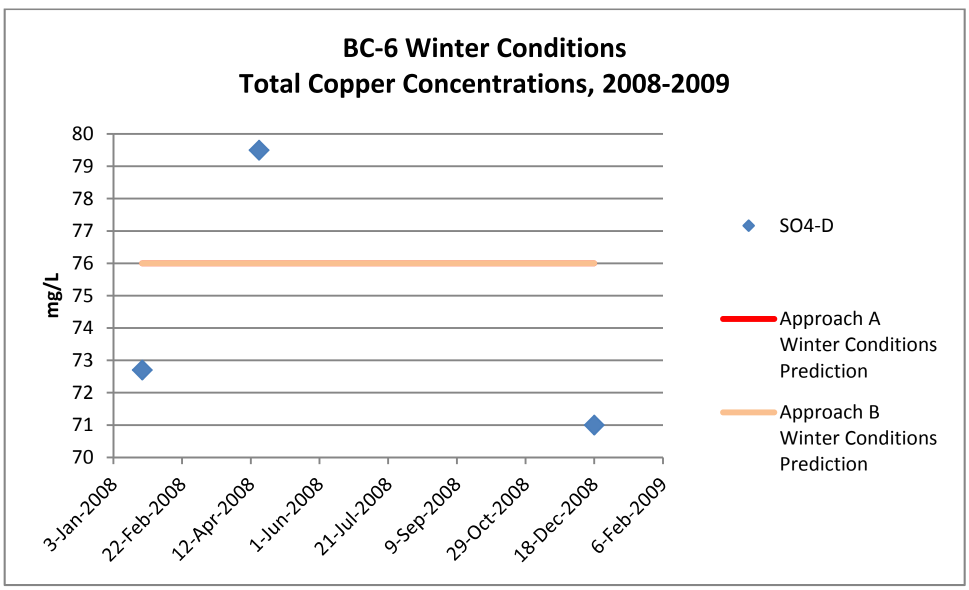
Selenium was higher than predicted in all five results at BC-1, and in three of four at BC-6. The results are consistently only marginally higher than the predicted concentration of 0.001 mg/L (results range from 0.0013 – 0.003 mg/L). The water quality results for selenium under spring conditions are shown in the following graphs.

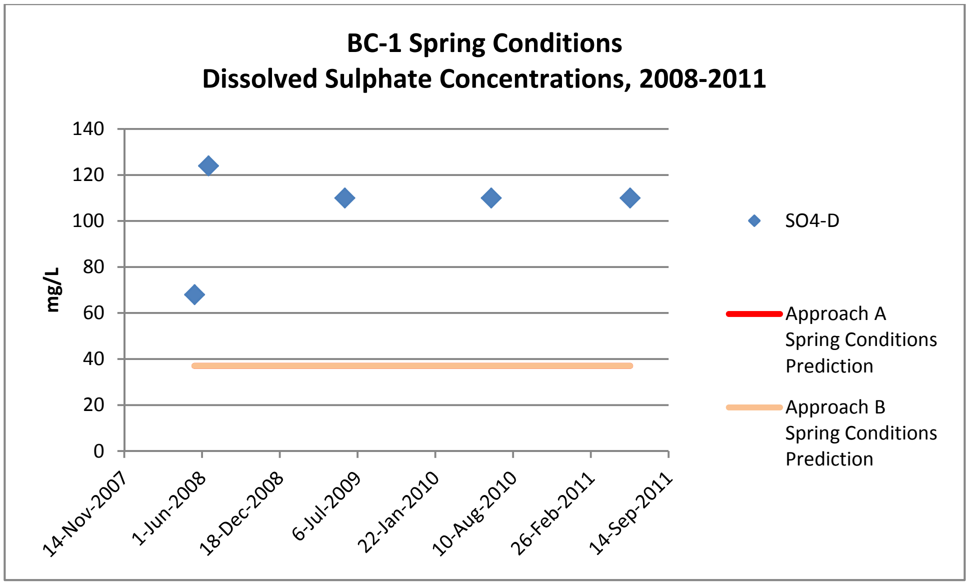




<u>Sulphate</u>

Sulphate results differ significantly from predicted concentrations at both BC-1 and BC-6. BC-1 has a water quality prediction of 37 mg/L, while results range from 68 – 124 mg/L. BC-6 similarly has a predicted water quality of 29 mg/L SO_4, with results ranging from 38 – 1070 mg/L. The water quality results for dissolved sulphate under spring conditions are shown in the following graphs.



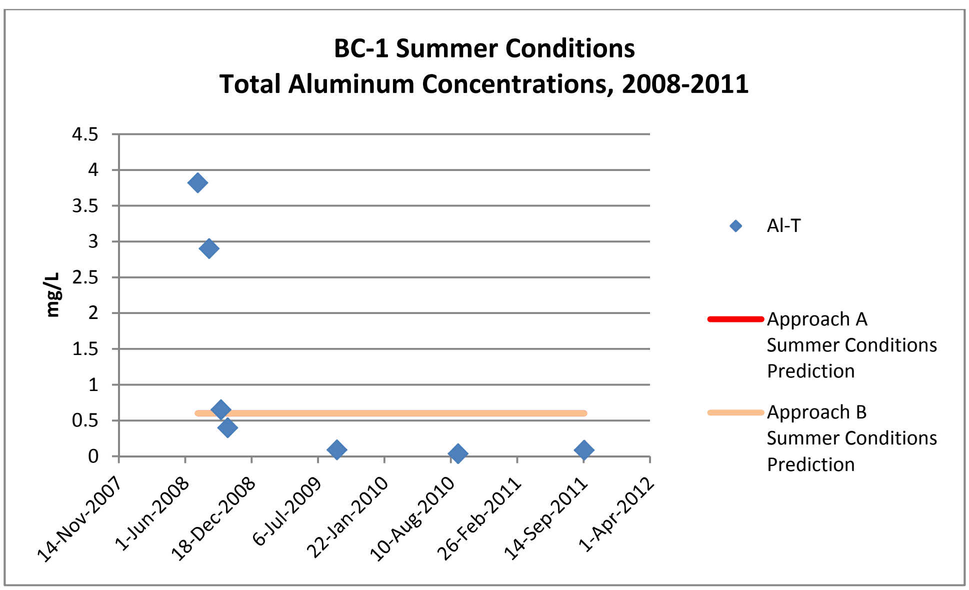


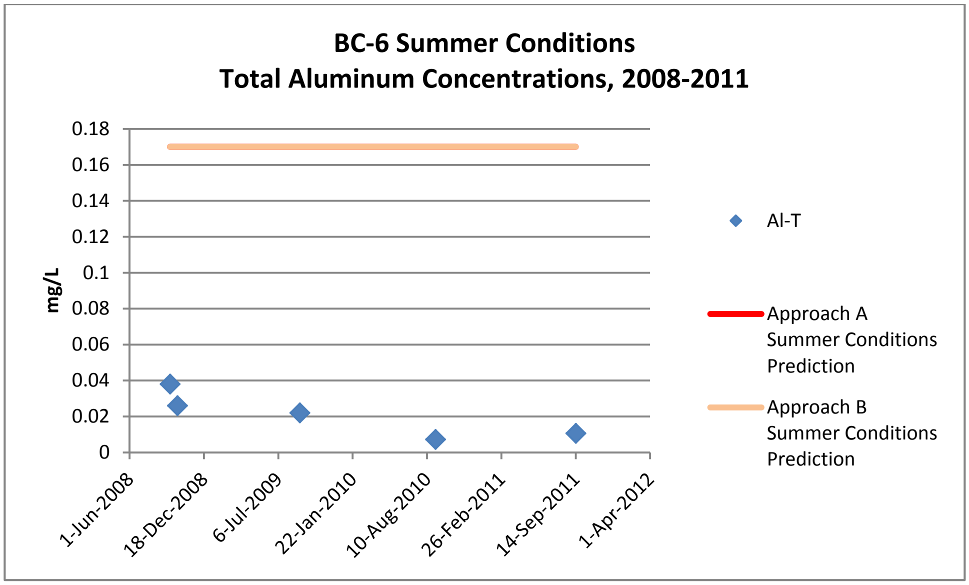
4.1.3.3 Summer Flow Condition

The summer flow condition represents intermediate water quality predictions.

<u>Aluminum</u>

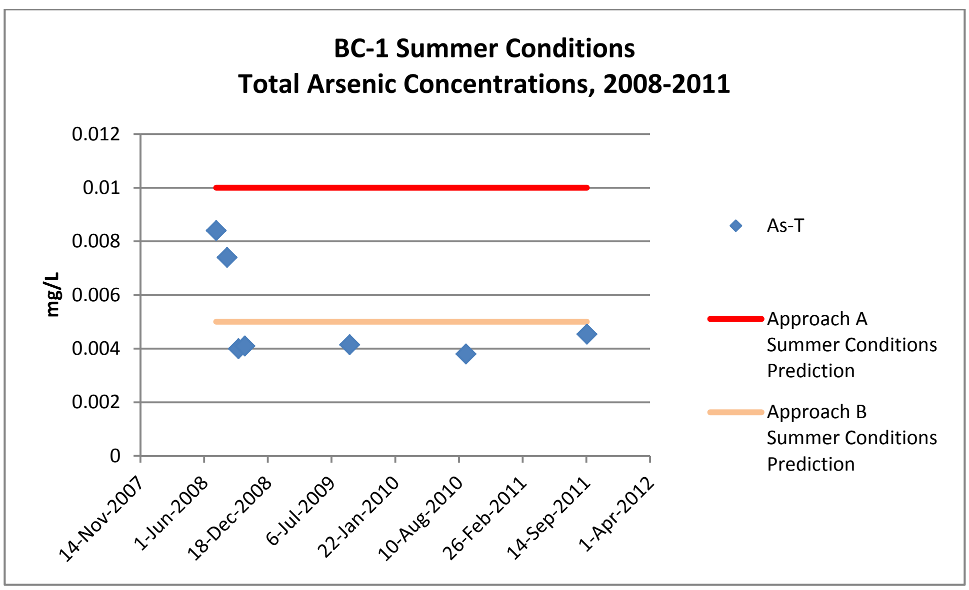
Aluminum concentrations were higher than predicted on only three of seven occasions at BC-1. Results were very high (3.82 mg/L) during the July 2008 sampling event. This may be the result of higher flows due to wetter climatic conditions and surface runoff. The water quality results for aluminum under summer conditions are shown in the following graphs.

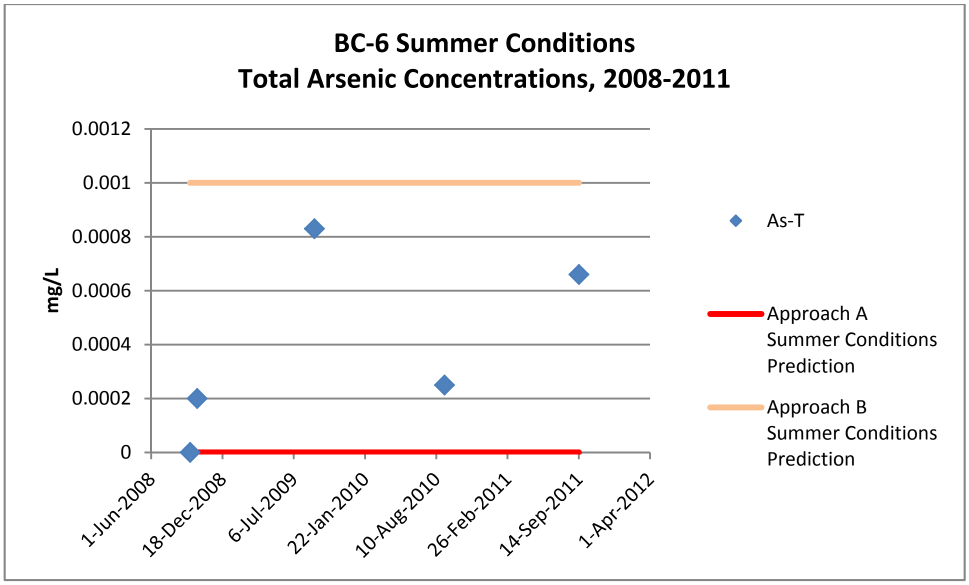




Arsenic

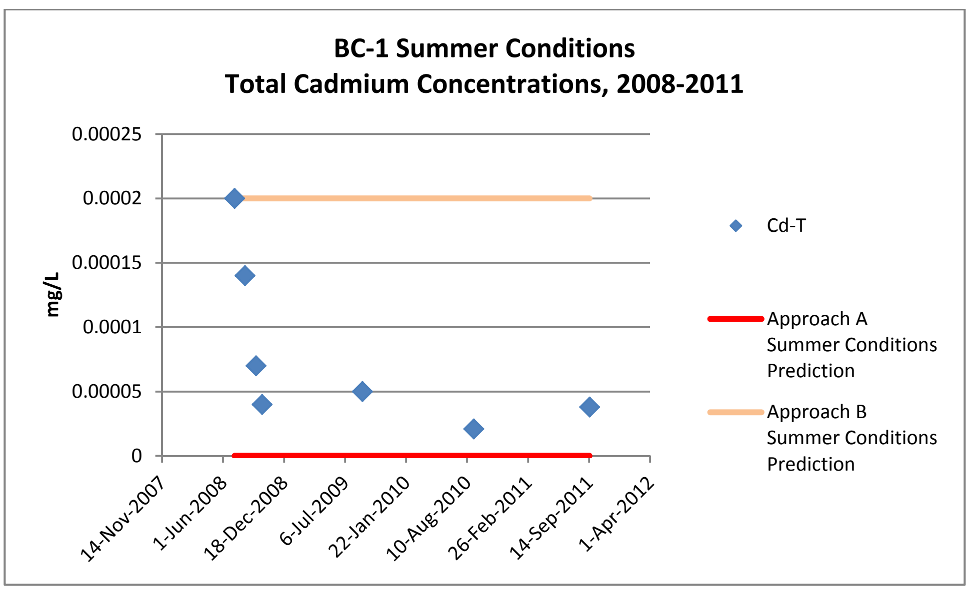
Arsenic predictions under Approach A for BC-6 were made at 0.000mg/L; again due to the reporting of the calculated value only being 3 significant digits. As such, all five sampling events were higher than this figure. Concentrations were higher than predicted on only two of seven occasions at BC-1 under Approach B. The water quality results for arsenic under summer conditions are shown in the following graphs.

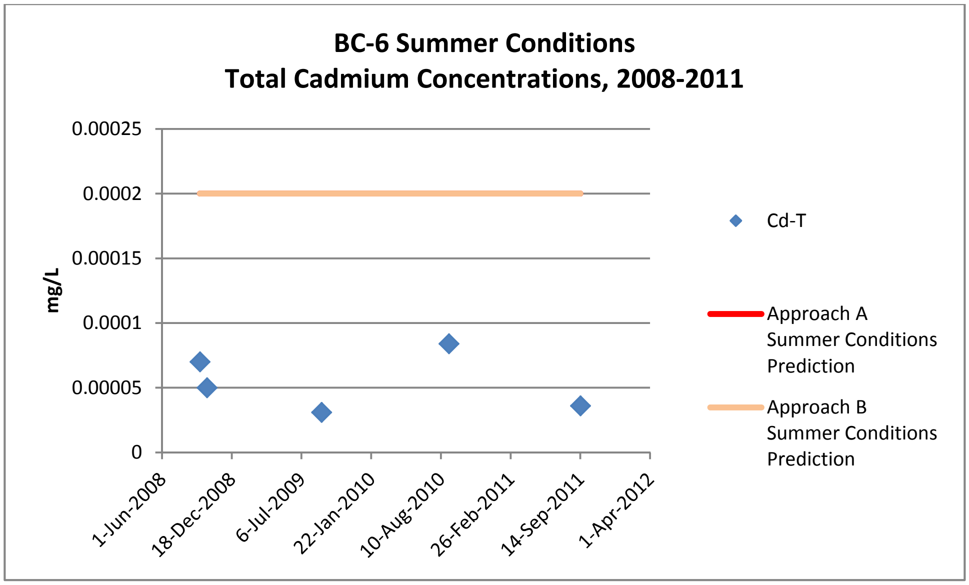




Cadmium

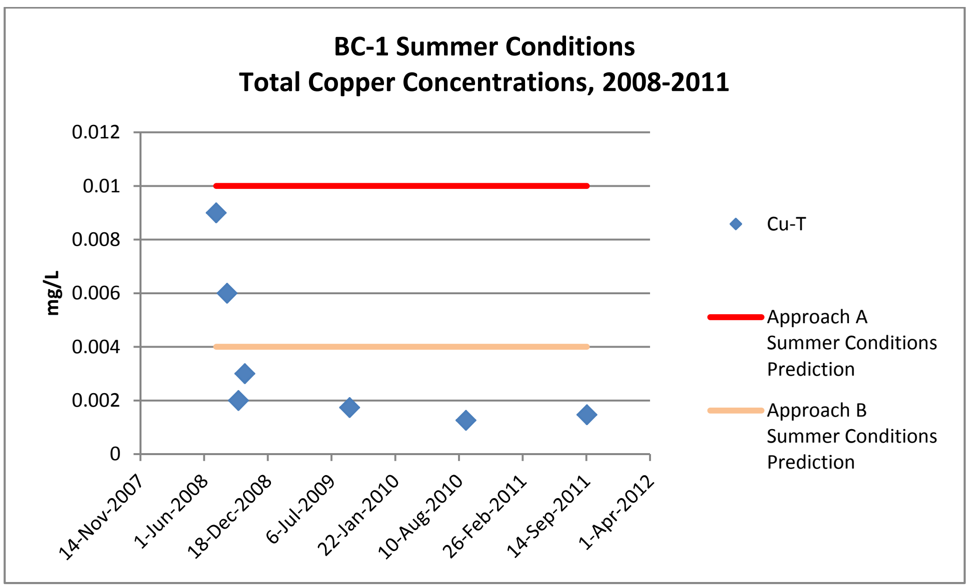
Like the prediction for arsenic, the cadmium prediction was only reported to 3 significant digits and showed a value of 0.000mg/L under Approach A. Thus, all seven sampling events at BC-1 returned results that were higher than this figure. None of the results returned exceeded the predictions made under Approach B. The water quality results for cadmium under summer conditions are shown in the following graphs.

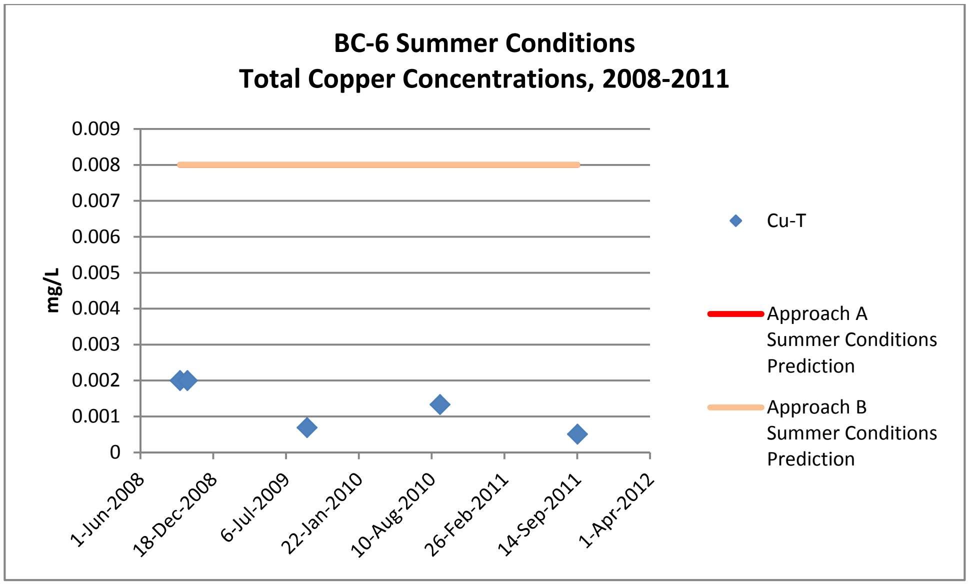




Copper

Copper results were higher than predicted on two of seven sampling events at BC-1. The water quality results for copper under summer conditions are shown in the following graphs.





Iron

Iron results were higher than predicted on two of seven sampling events at BC-1.

Manganese

Like the predictions for both arsenic and cadmium, the prediction for manganese was set at 0.0mg/L under Approach A. Thus, all seven sampling events at BC-1 returned results that were higher than this figure. Results under Approach B were higher than predicted on four of seven sampling events at BC-1.

Mercury

Mercury results were again impacted by the high detection limit. Detection limits higher than the predicted water quality concentration occurred in four of six results at BC-1 and two of four at BC-6. All other results were definitively below predictions, as the DL was below the predicted mercury concentration.

4.1.4 Conclusion

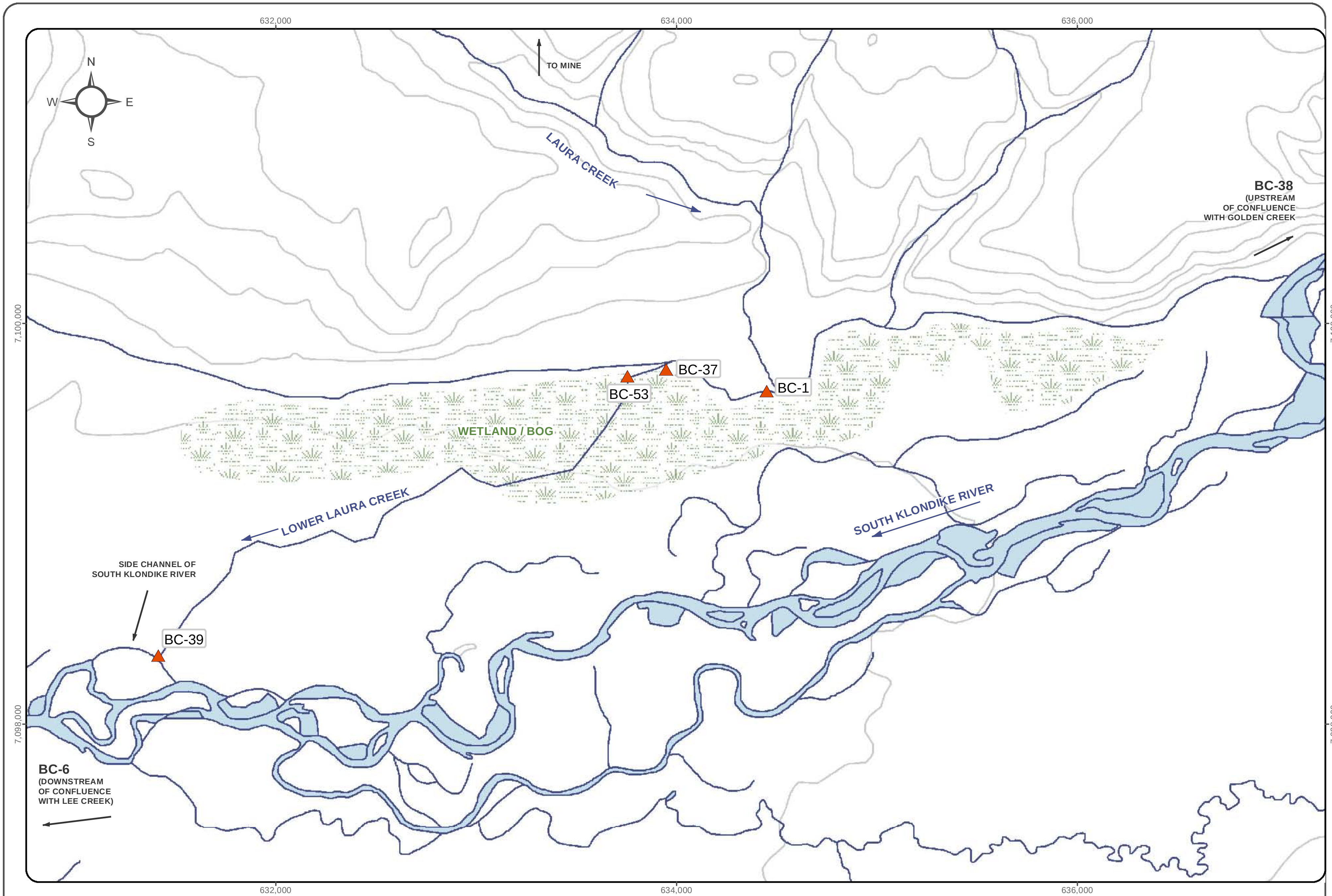
Results for most parameters are either commensurate with or below predicted water quality concentrations from SRK's 2003 work. Selenium is the only parameter showing results that are consistently marginally higher than the predicted water quality. From these results it is confirmed that the Blue WRSA and cover are performing as expected and the reclamation and closure measures have achieved their objective for the Blue WRSA.

4.2 Lower Laura Creek Impact Study

4.2.1 Purpose and Study Objective

In April 2004, the Laura Creek Adaptive Management Plan (AMP) was prepared in response to Clause 70 of Water Use Licence QZ96-007 Amendment No. 6. The AMP is a component of the overall Environmental Management System for the site and provides a contingency response plan to address downstream effects to aquatic resources in lower Laura Creek resulting from the release of mine site effluents containing selenium. In December 2004, a Lower Laura Creek Impact Study Plan was developed, which utilizes some of the responses described in the AMP, and details specific study components to be undertaken during the period 2005 – 2007 on the lower reach of Laura Creek from BC-53 to BC-39 (Figure 4-1), an approximate distance of three kilometers. Following the initial study phase from 2004 – 2007, the Study Plan documents a commitment to assess results collected as per the monitoring conditions of QZ96-007 in the three years following the initial study (i.e. 2008 – 2010). This chapter fulfills that licence condition.

The purpose of the study was to characterize the potential effects to Lower Laura Creek and the South Klondike River resulting from the release of effluents from the project. The following report summarizes data collected as part of the licenced monitoring program conducted on Laura Creek and the South Klondike River during the period 2008 – 2011.



Datum: NAD 83; Map Projection: UTM Zone 7N

1:25,022 *When printed on 81/2 by 11 inch paper*

0 250 500 750 1,000 Meters

ALEXCO

ACCESS

BREWERY CREEK MINE

FIGURE 4-1

SAMPLE STATION LOCATIONS

DRAWN BY MD	FEBRUARY 2012	VERIFIED BY TL

I:\ALEX-05-01\gis\mxd\BreweryCreek\2012\AnnulaRprt_LowLauraCr_20120214.mxd
(Last edited by: mducharme;17/02/2012/09:51 AM)

4.2.2 Water Quality Analysis

Water samples have been collected at BC-39 as per Water Licence QZ96-007, Schedule B, and also at BC-53 for the analysis of pH, conductivity, hardness, alkalinity, dissolved solids, suspended solids, sulfate, ammonia, nitrate and ICP total metals. In-situ measurements (temperature, pH, and conductivity) are also collected during sampling events.

Water quality data collected from 2008 – 2011 from lower Laura Creek at stations BC-53 and BC-39, is presented in Tables 4-5 and 4-6, respectively. Water quality data has also been collected at other stations on lower Laura Creek (BC-1 and BC-37) as well as in the South Klondike River (BC-38 and BC-6). Data collected for these stations is presented in Appendix A.

A discussion of water quality at BC-39 and BC-53 is provided below, followed by a comparison of selected parameters also measured at BC-1, BC-6, BC-37, and BC-38.

Between January 1, 2008 and December 31, 2011, BC-53 was sampled on fifteen occasions (Table 4-6), while BC-39 was sampled on six occasions over the same period (Table 4-5).

CCME Guidelines

The following discussion compares water quality parameters at stations on Laura Creek and the South Klondike River to the CCME guidelines to provide an idea of overall water quality in lower Laura Creek (these guidelines are presented in Table 4-7). Amendment #7 to Water Licence QZ96-007 added Clause 38(e), which states that water quality at BC-39 shall not exceed the water quality guidelines specified for the protection of aquatic life contained in the Canadian Environmental Quality Guidelines prepared by the Canadian Council of Ministers of the Environment (CCME).

As is shown in Tables 4-5 and 4-6, water quality at both BC-53 and BC-39 met the CCME guidelines for pH, ammonia, nitrate, cyanide, molybdenum, nickel, and thallium. At BC-53, water quality exceeded the CCME guidelines for total aluminum, arsenic, cadmium, chromium, copper and iron, and much less commonly for lead, mercury, silver, zinc, nitrate and cyanide. At station BC-39, water quality occasionally exceeded the CCME guidelines for total aluminum, cadmium, chromium, copper and iron.

In 2003 the CCME guideline for mercury was revised from 0.0001 mg/L to 0.000026 mg/L. The laboratory Method Detection Limit (MDL) for mercury ranges from 0.01 – 0.00001 mg/L for the samples collected from 2008 – 2011. Whether or not mercury met the CCME guideline at stations BC-39 and BC-53 on all occasions is not known given the samples where the laboratory detection limit is greater than the guideline. However, results for total mercury at BC-39 were either non-detect or below CCME on all occasions, while at BC-53 they are known to exceed CCME on only two occasions.

Further discussion of parameters which exceeded the guidelines at BC-39 is provided below. Those parameters which exceeded guidelines at BC-53 but not at BC-39 will not be discussed.

Selenium Guideline

A site-specific water quality objective (SSWQO) consistent with CCME guidelines was developed for selenium in the Laura Creek watershed. As per Clause 38(d) of the Water Licence, the maximum concentration of selenium shall not exceed 0.0038 mg/L at Lower Laura Creek monitoring station BC-39. The Laura Creek AMP (2004) indicates the company will also use a site-specific selenium objective of 0.0038 mg/L at BC-53 as a trigger under the AMP.

Table 4-5: Water Quality Data for BC-53 Laura Creek 300m below BC-37

Parameter	Units	CCME Guideline	24-Jan-2008	18-Apr-2008	24-May-2008	18-Jun-2008	9-Jul-2008	12-Aug-2008	17-Sep-2008	18-Dec-2008	3-Jun-2009	1-Sep-2009	15-Jun-2010	1-Sep-2010	7-Jun-2011	15-Sep-2011
Field Parameters																
Discharge rate	L/s											100.5				
pH, in-field	pH units	6.5-9		7.85	7.69				7.42		7.4	7.76	7.92			
Conductivity, in-field	µS/cm			755	271				344		1185	452	429			
Temperature, in-field	C			0.2	0				3		2	4	6.3			
pH, Laboratory	pH units	6.5-9	7.38	8.05	7.9	8.1	7.72	7.98	8.08	8.07	8.3	8.1	8.1	8.23	7.99	8.16
Conductivity, Laboratory	µS/cm		700	1100	349	480	304	310	386	584	430	441	454	435	442	460
Hardness calcualted from total metal scan	mg/L		406	598	184	254	322	164	210	304	214	225	226	220	213	221
Alkalinity, Total	mg/L		216	283	79	134	84	97	114	168	110	130	130	130	110	130
Alkalinity, Hydroxide OH	mg/L		<5	<5	<5	<5	<5	<5	<5	<5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Alaklinity, Carbonate CO3	mg/L		<6	<6	<6	<6	<6	<6	<6	<6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Alkalinity, Bicarbonate HCO3	mg/L		263	346	100	160	100	100	140	200	140	150	160	150	140	150
Total Dissolved Solids	mg/L		562	946	270	352	234	274	312	502	280	270	300	270	300	320
Total Suspended Solids	mg/L		<2	<2	<2	18	231	126	38	<2	64	9	110	24	65	7
Chloride	mg/L		0.78	1.93	1.19	0.59	0.32	0.37	0.75	0.51	1.2	<0.5	0.8	<0.5	1	1
Sulphate, Dissolved	mg/L		210	428	78.5	124	68.3	63.4	97	158	100	94	110	110	110	115
Ammonium Nitrogen (NH3, NH4+), as N	mg/L		0.01	0.013	0.012	0.008	0.032	0.021	0.024	0.08	<0.005	<0.005				
Nitrate Nitrogen, as N	mg/L	2.935	0.04	<0.02	**4.44**	0.5	0.85	0.43	1.03	0.1	0.19	0.24	0.16	0.14	0.22	0.14
Cyanide, Total	mg/L		0.001	0.002	0.017	0.001	0.76	0.001	0.002	0.001	0.0011	<0.0005	0.001	<0.0005	<0.0005	<0.0005
Cyanide, Weak Acid Dissociable.	mg/L	0.005	0.002	<0.002	0.004	0.004	**0.122**	0.002	<0.002	<0.002	0.0007	<0.0005	0.0007	0.001	<0.0005	<0.0005
Tota Metals, CCME-Regulated																
Aluminum, total	mg/L	*	0.013	0.013	**10.6**	**0.942**	**8.26**	**2.86**	**0.616**	**0.158**	**0.459**	0.0844	**0.556**	0.0347	**0.344**	0.0682
Arsenic, total	mg/L	0.005	0.0045	**0.0081**	**0.0387**	**0.0053**	**0.0178**	**0.0076**	0.0039	0.004	**0.0066**	0.00406	**0.00602**	0.00379	**0.00669**	0.00443
Cadmium, total	mg/L	*	**0.00014**	**0.00024**	**0.00077**	0.00007	**0.00046**	**0.00016**	**0.00007**	0.00004	**0.000142**	0.000039	**0.000122**	0.000016	**0.000144**	0.000035
Chromium, total	mg/L	0.001	0.0008	**0.0012**	**0.0222**	**0.0021**	**0.0159**	**0.0056**	**0.0021**	<0.0005	**0.0012**	0.0002	**0.0012**	0.0002	0.0008	0.0003
Copper, total	mg/L	*	0.001	0.002	**0.025**	**0.007**	**0.019**	**0.007**	0.002	<0.001	0.00334	0.00157	0.00353	0.00129	0.00344	0.00139
Iron, total	mg/L	0.3	<0.1	<0.1	**16.8**	**1.14**	**17.5**	**3.32**	**1.06**	0.16	**1.16**	0.244	**1.15**	0.106	**0.854**	0.211
Lead, total	mg/L	*	0.0002	0.0001	**0.0083**	0.0007	**0.0121**	0.0016	0.0006	0.0001	0.00128	0.000167	0.000949	0.000027	0.000993	0.000102
Mercury, total	mg/L	0.000026	<0.0001	<0.0001	**0.001**	<0.0001	**0.0001**	<0.0001	<0.01	<0.0001	0.00002		<0.00001	<0.00001	<0.00001	<0.00001
Molybdenum, total	mg/L	0.073	0.004	0.004	0.003	0.004	0.003	0.002	0.00234	0.003	0.00256	0.0027	0.00237	0.00262	0.0022	0.00222
Nickel, total	mg/L	*	0.0011	0.002	0.0281	0.0025	0.0196	0.0088	0.002	0.0019	0.0049	0.00216	0.00388	0.0022	0.00357	0.00245
Selenium, total	mg/L	0.0038[1]	0.0028	**0.0044**	**0.004**	0.0012	0.0031	0.0017	0.0012	0.002	0.00165	0.00159	0.00197	0.00152	0.0018	0.00174
Silver, total	mg/L	0.0001	<0.0001	<0.00001	**0.00019**	<0.00001	**0.00017**	0.00006	0.00002	<0.00001	<0.000005	<0.000005	0.000008	<0.000005	0.000012	<0.000005
Thallium, total	mg/L	0.0008					0.0001	<0.00005	0.00001		0.00001	0.000004	0.000009	0.000003	0.000007	0.000003
Zinc, total	mg/L	0.03	0.024	0.02	**0.108**	0.011	**0.085**	0.022	0.008	0.007	0.0155	0.0027	0.0101	0.0007	0.0094	0.0021
Total Metals, Anions																
Calcium, total	mg/L		99.3	140	45.5	61.5	76.1	40.5	52.6	75.5	54	56.4	54.1	53.8	52.6	53.9
Manganese, total	mg/L		0.005	0.029	0.826	0.047	0.441	0.092	0.0541	0.027	0.137	0.0252	0.0755	0.0108	0.118	0.0397
Magnesium, total	mg/L		38.5	60.2	17.2	24.3	32.1	15.3	19.1	28.1	19.3	20.5	22	20.8	19.9	21.1
Sodium, total	mg/L		8	11.9	12.3	5	4240	3.1	4.8	4.7	3.57	3.61	3.56	3.38	3.32	3.28
Potassium, total	mg/L		2.5	4.8	2.8	1.4	5.5	1.2	1.28	1.3	1.32	1.17	1.26	1.15	1.32	1.16

Table 4-6: Water Quality Data for BC-39 Laura Creek in side channel of South Klondike River

Parameter	Units	CCME Guideline	13-May-2008	18-Jun-2008	9-Jul-2008	12-Aug-2008	3-Jun-2009	7-Jun-2011
Field Parameters								
Discharge rate	L/s						6.54	
pH, in-field	pH units	6.5-9					7.27	
Conductivity, in-field	µS/cm						1059	
Temperature, in-field	°C						6	
pH, Laboratory	pH units	6.5-9	7.86	8	7.73	7.98	8.3	7.97
Conductivity, Laboratory	µS/cm		262	477	299	299	400	415
Hardness calcualted from total metal scan	mg/L		129	253	296	155	196	200
Alkalinity, Total	mg/L		73	133	82	94	110	110
Alkalinity, Hydroxide OH	mg/L		<5	<5	<5	<5	<0.5	<0.5
Alaklinity, Carbonate CO3	mg/L		<6	<6	<6	<6	<0.5	<0.5
Alkalinity, Bicarbonate HCO3	mg/L		90	160	100	100	130	130
Total Dissolved Solids	mg/L		204	354	226	272	270	280
Total Suspended Solids	mg/L		<2	8	8	7	20	2
Chloride	mg/L		0.46	0.56	0.31	0.28	1.2	0.8
Sulphate, Dissolved	mg/L		58.7	124	67.1	61.2	97	98
Ammonium Nitrogen (NH3, NH4+), as N	mg/L		0.025	0.017	0.013	0.017	<0.005	
Nitrate Nitrogen, as N	mg/L	2.935	0.52	0.44	0.8	0.41	0.15	0.05
Cyanide, Total	mg/L		0.002	0.002	0.003	0.002	0.0011	<0.0005
Cyanide, Weak Acid Dissociable.	mg/L	0.005	0.002	0.004	0.002	0.002	0.0007	<0.0005
Tota Metals, CCME-Regulated								
Aluminum, total	mg/L	*	**0.336**	**0.364**	**0.749**	**0.521**	0.0897	0.0339
Arsenic, total	mg/L	0.005	0.0033	0.0043	0.0038	0.0035	0.00357	0.00241
Cadmium, total	mg/L	*	**0.00008**	0.00004	0.00004	0.00004	0.000037	0.000054
Chromium, total	mg/L	0.001	**0.0013**	0.001	**0.002**	**0.0017**	0.0003	0.0002
Copper, total	mg/L	*	**0.004**	0.002	0.004	0.003	0.00118	0.00113
Iron, total	mg/L	0.3	0.3	**0.41**	**2.01**	**0.61**	0.221	0.065
Lead, total	mg/L	*	0.0007	0.0003	0.0008	0.0002	0.000165	0.000062
Mercury, total	mg/L	0.000026	<0.01	<0.01	<0.01	<0.0001	0.00001	<0.00001
Molybdenum, total	mg/L	0.073	0.002	0.003	0.002	0.002	0.00234	0.00177
Nickel, total	mg/L	*	0.003	0.0009	0.0032	0.0033	0.00157	0.00132
Selenium, total	mg/L	0.0038[1]	0.0013	0.0013	0.0015	0.0014	0.00126	0.00108
Silver, total	mg/L	0.0001	0.00002	<0.00001	0.00004	0.00002	<0.000005	<0.000005
Thallium, total	mg/L	0.0008			<0.00005	<0.00005	0.000003	<0.000002
Zinc, total	mg/L	0.03	0.02	0.007	0.008	0.007	0.0016	0.0012
Total Metals, Anions								
Calcium, total	mg/L		32.3	61.9	73.5	38.4	49.9	50.4
Manganese, total	mg/L		0.01	0.015	0.038	0.016	0.0134	0.00475
Magnesium, total	mg/L		11.7	24	27.5	14.3	17.4	17.9
Sodium, total	mg/L		2.9	4.8	8.9	2.9	3.15	2.96
Potassium, total	mg/L		1.2	1.4	2.2	0.9	1.24	1.31

Table 4-7 CCME Water Quality Guidelines for the Protection of Aquatic Life

Parameter	Concentration	Units	Notes	Maximum Conc.	Minimum Conc.
Aluminum	100	ug/L	if pH >= 6.5		
Arsenic	5	ug/L			
Cadmium	$10^{0.86[\log10(\text{hardness})]-3.2}$	ug/L	BC-53	0.051	0.154
			BC-39	0.041	0.084
Chromium	1	ug/L			
Copper	$e^{0.8545[\ln(\text{hardness})]-1.465} * 0.2$	ug/L	BC-53	3.61	10.9
			BC-39	2.94	5.98
Iron	300	ug/L	BC-53	5.97	31
Lead	$e^{1.273[\ln(\text{hardness})]-4.705}$	ug/L	BC-39	4.4	12.66
Mercury	0.026	ug/L			
Molybdenum	73	ug/L			
Nickel	$e^{0.76[\ln(\text{hardness})]+1.06}$	ug/L	BC-53	139.2	372.09
			BC-39	115.98	218.04
Nitrate	13000	ug/L			
pH	6.5-9.0	pH units			
Selenium	1	ug/L			
Silver	0.1	ug/L			
Thallium	0.8	ug/L			
Zinc	30	ug/L			

Selenium

The site specific selenium water quality objective of 0.0038 mg/L at BC-53 was exceeded during two sampling events of the fifteen carried out there (>10% of samples). Total selenium ranged between 0.0012 and 0.0044 mg/L, with an average concentration of 0.0022 mg/L observed.

Selenium results at BC-39 were consistently compliant with Clause 38(d) of the Water Licence; selenium did not exceed 0.0038 mg/L at monitoring station BC-39. Observed values ranged from 0.00108 – 0.00126 mg/L. The average concentration of selenium during this time was 0.00131 mg/L (σ = 0.0001).

At stations on Laura Creek above the Lower Laura Creek Study area (BC-1 and BC-37), selenium was below the BC-39 SSWQO of 0.0038 mg/L during every sampling event from 2008 – 2011.

The concentration of total selenium in the South Klondike River above Laura Creek (BC-38) was below the CCME guideline (0.001 mg/L) for all samples collected. In the South Klondike River below Laura Creek (BC-6), eight samples were marginally above the CCME guideline; however, all were below the selenium licence condition for BC-39. At BC-6, the dataset showed an average selenium concentration of 0.0011mg/L (σ = 0.0005), which is only marginally above the CCME guideline, and well below the licence condition for BC-39.

Aluminum

Total aluminum exceeded the CCME guideline (0.1 mg/L) ten of fifteen sampling events at BC-53. The average concentration of aluminum for the five samples is 1.79 mg/L. A maximum concentration of 10.6 mg/L was observed on 24 May 2008. This sample likely represents high-energy erosional conditions during freshet. Samples collected at BC-39 for 13 May 2008 (during the same sampling event), show an aluminum concentration of 0.336 mg/L. This indicates that the freshet likely began in late May.

Total aluminum exceeded the CCME guideline on four of six sampling events at BC-39. The average concentration of aluminum for the ten samples is 0.349 mg/L. A maximum concentration of 0.749 mg/L was observed in July 2008.

At stations on Laura Creek above the Lower Laura Creek Study area (BC-1 and BC-37), the CCME aluminum guideline was regularly exceeded (>50% of the time at both BC-1 and BC-37).

Aluminum concentrations in the South Klondike River both upstream and downstream of the Brewery Creek property were below CCME guidelines on all occasions.

Cadmium

The CCME guideline for total cadmium recommends a concentration of 0.000017 mg/L or the use of the formula $10^{\{0.86[\log(\text{hardness})]-3.2\}}$. Using this formula, the guideline at BC-53 and BC-39 is calculated within the range indicated in Table 4-7. At BC-53, cadmium exceeded the guideline on ten of fifteen sampling events, showing an average of 0.00018 mg/L and a maximum concentration of 0.00077 mg/L) At BC-39, cadmium exceeded the guideline in only one of six sampling events.

Total cadmium levels exceeded calculated guidelines at sample stations on both the South Klondike River upstream and downstream locations and in Laura Creek above the study area. Station BC-39 has the lowest frequency of cadmium results in excess of the CCME guideline of all sampling stations.

Chromium

Total chromium exceeded the CCME guideline on eight of fifteen sampling events at BC-53, with a maximum concentration of 0.0222 mg/L in May 2008.

Total chromium exceeded the CCME guideline (0.001 mg/L) on three of six sampling events at BC-39, with a maximum concentration of 0.002 mg/L observed in July 2008..

At BC-1 total chromium exceeded the CCME guideline in six of the fifteen samples collected between January 2008 and December 2011. Total chromium concentrations at BC-1 during this period range from below laboratory detection levels to 0.01 mg/L. Samples collected from BC-37 exceeded the CCME on five of fifteen occasions. The South Klondike River samples were below laboratory detection limits for total chromium on all occasions but for one.

Copper

The CCME guideline for total copper varies slightly between sites as the guideline is dependent on hardness according to the equation $e^{0.8545[\ln(hardness)]-1.465} * 0.2$. The range of values calculated for BC-39 and BC-53 are presented in Table 4-7.

Total copper met the CCME guideline eleven of fifteen times at BC-53, and on five of six occasions at BC-39.

The CCME guideline for total copper was not exceeded in the South Klondike River either upstream or downstream of the Brewery Creek property.

Iron

Total iron exceeded the CCME guideline (0.3 mg/L) on eight of the fifteen sampling events at BC-53. The average concentration of total iron over this period was approximately 3.64 mg/L. Total iron at BC-53 was higher overall (both in the number of times the concentration exceeded the CCME guideline, and in the magnitude of those events) than it had been in 2007 during the previous Lower Laura Creek assessment.

Total iron exceeded the CCME guideline during three of the six sampling events at BC-39. The average concentration of total iron during this time is approximately 0.602 mg/L. A maximum concentration of 2.01 mg/L was observed in July 2008. Contrary to the trend in data at BC-53 between the 2007 and 2011 assessments, the concentration of iron at BC-39 was *lower* overall during the period 2008 – 2011 than during the 2007 assessment.

The CCME guideline for total iron was not exceeded in the South Klondike River either upstream or downstream of the Brewery Creek property.

4.3 Sediment and Benthic Analysis

Laberge Environmental was retained in 2007 and in 2009 to continue work on sediment and benthic communities on the Brewery Creek Property. The results of their analyses indicate that little change has been noted in the concentrations of metals in stream sediments from assessments carried out in previous years. The same reports note good taxonomic abundance and diverse benthic communities with good representation of the major groups of organisms.

4.4 Conclusion

Data from the study was assessed to determine if downstream receiving waters are being adversely affected relative to historic conditions. Results from the surface water quality program was reviewed and compared with the existing Water Use Licence parameters and CCME Guidelines to assess downstream receiving water effects. Based on the results of this study, the hydrology of lower Laura Creek is unchanged from historic conditions.

The Laura Creek AMP was not implemented; as such the site specific selenium criterion was not recalculated.

The site specific water quality standard for selenium was met at BC-39. The objective for BC-53 was exceeded on two occasions only very marginally. Water quality at BC-39 exceeded the CCME guidelines for freshwater aquatic life for total aluminum, arsenic, cadmium, chromium and iron. These results are similar to the observations made in the 2007 study, with the exception that chromium has been added to the list.

Only water quality at BC-39 is elaborated on here as the water use licence requires that the CCME guidelines at this station not be exceeded.

- Arsenic levels observed at BC-39 in 2005 and 2006 marginally exceed the CCME guideline. However, this was not the case from 2008 – 2011, and arsenic concentrations appear to have returned to historic concentrations. This may be related to the 2004 fire and subsequent natural reclamation near the mine site.
- Aluminum concentrations are unchanged from levels assessed in the 2007 study report.
- Generally, total cadmium and chromium concentrations only marginally exceed CCME guidelines; this is consistent with observations made in 2007.
- The calculated CCME guideline for total copper was slightly exceeded once over the period from 2008 – 2011. This is consistent with observations made in 2007.

- While total iron continues to exceed CCME guideline at BC-39, this was also the case during pre-mine conditions. The guidelines for Canadian Drinking Water Quality note that iron is an aesthetic parameter.
- In their 2007 and 2009 reports, Laberge Environmental stated that little change had been noted in the concentrations of metals in stream sediments. The same reports noted good taxonomic abundance, and diverse benthic communities with good representation of the major groups of organisms.

Results of this study provide valuable insight into downstream effects of the Brewery Creek mine site on lower Laura Creek. Hydrological conditions in lower Laura Creek have not changed appreciably since this area was investigated, as the creek still goes to ground during low flow or winter conditions. Water quality at BC-39 and BC-53 has met the Water Use Licence criterion for selenium, with the exception of two occasions at BC-53 during the spring of 2008, and the criterion was not recalculated. Other water quality parameters at BC-39 that did not meet CCME guidelines (aluminum, arsenic, cadmium, chromium and iron) were elevated during pre-mine conditions and may also be elevated due to high flow freshet or fire run off influences. Laura Creek sediments appear to be decreasing towards pre-mine conditions and benthos show robust communities.

The study indicates that site decommissioning activities have been as predicted and the downstream receiving waters in lower Laura Creek are not adversely affected. The site specific water quality criterion for selenium has been met and at BC-39 the CCME guidelines are also generally being met. Where CCME guidelines are not being met, results are generally only marginally higher than the guidelines and remain within historic levels or show a decrease as post closure monitoring continues.. The levels of selenium at BC-39 continue to be lower than predicted by decommissioning water quality models. Downstream water in lower Laura Creek indicates good benthic community production.

5 REAGENT AND WASTE MANAGEMENT

5.1 Spill Occurrence and Response

No reportable spills occurred in 2011.

5.2 Reagent Storage and Handling

Other than some miscellaneous laboratory chemicals, there are no reagents or chemicals in storage at the Brewery Creek Mine. During the removal of the liner in the pregnant pond, approximately 70 bags of sludge/carbon were removed. This material was rebagged and shipped offsite in October 2009 for recovery of metals and final disposal.

6 WATER MANAGEMENT

6.1 Direct Release

There was no direct release of solution in 2011. Heap drainage is diverted into the barren pond (biological treatment cell) and overflows into the overflow pond where it infiltrates into the ground. The infiltrating water meets water license discharge criteria. Heap surface water is directed to the pregnant pond (now sediment settling pond) where it likewise infiltrates into the ground. All samples from BC-28a (heap effluent) were below 2.0 ppm total cyanide in 2010. The first sample from the heap below 2.0 ppm total cyanide was in February 2002. All samples subsequently taken have returned a total cyanide value below 2.0 ppm. This constitutes 92 consecutive months where the total cyanide from the heap has been less than 2.0 ppm. It is not expected that any direct surface water discharge will be required at Brewery Creek in the future and the long-term passive water management program as presented in the Decommissioning and Reclamation Plan has now been achieved.

7 GEOTECHNICAL INVESTIGATION

Alexco Resource Corp. issued a report titled *Blue Zone Monitoring and Assessment Program* (August 2005), as required by QML section 17.5.2. Section 3.1 of this report requires that Alexco conduct annual geotechnical inspections of the Blue WRSA and Pit for years 1-5 during mine reclamation. As a condition of the report, the next geotechnical investigation is scheduled to occur in 2014.

The 2011 geotechnical investigation and subsequent report was conducted by SRK Consulting on September 29, 2011. Results of this inspection are presented in Appendix B.

8 CLOSING STATEMENT

Access Consulting Group (ACG) of Whitehorse, Yukon, has prepared Annual Water Licence Report for Water Licence QZ96-007. If you have any questions or require further details, please contact the undersigned.

Prepared By:	Reviewed By:
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APPENDIX A

WATER QUALITY

APPENDIX A-1

TABULAR DATA

Station Name			BC-01	BC-02	BC-03	BC-04	BC-05	BC-06	BC-9	BC-10	BC-12	BC-13	BC-14	BC-15	BC-16
Description			Laura Creek, 50m u/s from Ditch Road	Carolyn Creek, u/s from Laura Creek	Laura Creek, above confluence w/ Carolyn Creek	Lucky Creek d/s from Lucky Pit	Pacific Creek u/s from confluence w/ Lee Creek	South Klondike R. d/s from confluence w/ Lee Creek	Upper Fosters Pit and Dump	Kokanee Pit and Dump	Blue Pit	Moosehead West Waste Dump	Moosehead East Waste Dump	Moosehead Pit discharge	Pacific Gulch
Sample Date			15-Sep-2011	15-Sep-2011	15-Sep-2011	14-Sep-2011	14-Sep-2011	14-Sep-2011		14-Sep-2011	14-Sep-2011			14-Sep-2011	
Flow	Flow Rate, volumetric	L/s	-	-	-	-	-	-		-	-			-	
pH-F	pH, in-field*	pH units	-	-	-	-	-	-		-	-			-	
Cond-F	Conductivity, in-field*	µS/cm	-	-	-	-	-	-		-	-			-	
Temp-F	Temperature, in-field*	C	-	-	-	-	-	-		-	-			-	
pH-L	pH, Laboratory	pH units	8.14	7.96	8.11	8.09	8.13	8.06		8.16	6.93			8.12	
Cond-L	Conductivity, Laboratory	µS/cm	459	574	479	601	471	265		428	1330			1240	
Hard-T	Hardness calcualted from total metal scan	mg/L	237	287	241	301	247	124		221	759			758	
Hard-D	Hardness calculated from dissolved metal scan	mg/L													
Alk-T	Alkalinity, Total	mg/L	130	110	130	130	130	80		120	17			140	
Alk-OH	Alkalinity, Hydroxide OH	mg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5			<0.5	
Alk-Carb	Alaklinity, Carbonate CO3	mg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5			<0.5	
Alk-Bicrb	Alkalinity, Bicarbonate HCO3	mg/L	160	140	160	160	160	98		150	21			170	
TDS	Total Dissolved Solids	mg/L	320	430	340	420	310	130		270	1100			1000	
TSS	Total Suspended Solids	mg/L	5	120	9	8	<1	<1		<1	<1			3	
Chloride	Chloride	mg/L	0.9	1	0.9	0.5	0.9	<0.5		<0.5	1.1			0.6	
SO4-D	Sulphate, Total	mg/L	106	170	113	174	118	51.5		102	745			569	
N-NO3	Nitrate Nitrogen, as N	mg/L	0.15	0.25	0.16	0.19	0.09	0.07		0.02	<0.02			0.13	
CN-T	Cyanide, Total	mg/L	<0.0005	0.0018	<0.0005	<0.0005	<0.0005	<0.0005							
CN-WAD	Cyanide, Weak Acid Dissociable	mg/L	<0.0005	0.0011	<0.0005	<0.0005	<0.0005	<0.0005							
Ca-T	Calcium, total	mg/L	58.2	67.9	58.9	69.6	62	34.7		51.5	185			169	
Mg-T	Magnesium, total	mg/L	22.2	28.5	22.9	31	22.5	9.04		22.5	72.4			81.6	
Na-T	Sodium, total	mg/L	3.45	7.34	2.78	2.15	1.6	1.8		0.78	1.25			0.56	
K-T	Potassium, total	mg/L	1.26	1.19	1.26	1.16	0.7	0.42		1.76	2.64			1.2	
Cu-T	Copper, total	mg/L	0.00147	0.00312	0.00154	0.00109	0.0017	0.00051		0.00041	0.0333			0.0004	
As-T	Arsenic, total	mg/L	0.00454	0.00167	0.00237	0.00278	0.00056	0.00066		0.0147	0.0196			0.0398	
Sb-T	Antimony, total	mg/L	0.00321	0.00072	0.00402	0.00356	0.0006	0.00017		0.147	0.0609			0.00524	
Hg-T	Mercury, total	mg/L	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001		<0.00001	<0.00001			<0.00001	
Zn-T	Zinc, total	mg/L	0.0028	0.0066	0.0059	0.0196	0.0119	0.0014		0.0006	0.286			0.0031	
Se-T	Selenium, total	mg/L	0.00176	0.00339	0.00158	0.00337	0.00186	0.00055		0.00542	0.00112			0.0281	
Pb-T	Lead, total	mg/L	0.000134	0.00118	0.000108	0.000138	0.000041	0.000035	Dry	0.000019	0.000369	Dry	Dry	0.000194	Dry
Al-T	Aluminum, total	mg/L	0.0845	0.596	0.0765	0.0724	0.0337	0.0106		0.0118	0.351			0.0097	
Bi-T	Bismuth, total	mg/L	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005		<0.000005	<0.000005			<0.000005	
Cd-T	Cadmium, total	mg/L	0.000038	0.000075	0.000061	0.000185	0.000059	0.000036		0.000026	0.00284			0.000049	
Cr-T	Chromium, total	mg/L	0.0003	0.0012	0.0003	0.0004	0.0002	<0.0001		0.0001	0.0002			0.0001	
Fe-T	Iron, total	mg/L	0.242	1.91	0.197	0.541	0.146	0.03		0.009	0.983			0.014	
Mn-T	Manganese, total	mg/L	0.045	0.286	0.06	0.192	0.0192	0.00523		0.0178	1.58			0.00602	
Mo-T	Molybdenum, total	mg/L	0.00233	0.00037	0.00182	0.00239	0.00269	0.00036		0.00337	0.00161			0.00087	
Ni-T	Nickel, total	mg/L	0.00265	0.00371	0.00374	0.011	0.00392	0.00051		0.00045	0.138			0.00077	
Ag-T	Silver, total	mg/L	0.000005	0.000008	<0.000005	<0.000005	<0.000005	<0.000005		<0.000005	0.000015			<0.000005	
Ca-D	Calcium, dissolved	mg/L													
Mg-D	Magnesium, dissolved	mg/L													
Na-D	Sodium, dissolved	mg/L													
K-D	Potassium, dissolved	mg/L													
Cu-D	Copper, dissolved	mg/L													
As-D	Arsenic, dissolved	mg/L													
Sb-D	Antimony, dissolved	mg/L													
Hg-D	Mercury, dissolved	mg/L													
Zn-D	Zinc, dissolved	mg/L													
Se-D	Selenium, dissolved	mg/L													
Pb-D	Lead, dissolved	mg/L													
Al-D	Aluminum, dissolved	mg/L													
Bi-D	Bismuth, dissolved	mg/L													
Cd-D	Cadmium, dissolved	mg/L													
Cr-D	Chromium, dissolved	mg/L													
Fe-D	Iron, dissolved	mg/L													
Mn-D	Manganese, dissolved	mg/L													
Mo-D	Molybdenum, dissolved	mg/L													
Ni-D	Nickel, dissolved	mg/L													
Ag-D	Silver, dissolved	mg/L													
S-D	Sulphur, Dissolved	mg/L													

*YSI meter malfunctioning during field visit

			BC-17	BC-18	BC-19	BC-20	BC-21	BC-22	BC-23	BC-24	BC-25	BC-26	BC-27	BC-28	BC-28a
Station Name			BC-17	BC-18	BC-19	BC-20	BC-21	BC-22	BC-23	BC-24	BC-25	BC-26	BC-27	BC-28	BC-28a
Description			Golden Pit and Dump	Lucky Pit and Dump	Piezometer RC94-843	Piezonmeter RC94-844	Piezometer RC95-1354	Piezometer RC95-1357	Piezometer RC95-1370	Piezometer RC951400	Piezometer RC96-1608	Piezometer RC97-2024	Piezometer RC97-2026	Overflow Pond decant	Discharge from heap
Sample Date			14-Sep-2011		15-Sep-2011		14-Sep-2011	15-Sep-2011					14-Sep-2011	15-Sep-2011	15-Sep-2011
Flow	Flow Rate, volumetric	L/s	-		-		-	-					-	-	-
pH-F	pH, in-field*	pH units	-		-		-	6.83					-	-	-
Cond-F	Conductivity, in-field*	µS/cm	-		-		-	1288					-	-	-
Temp-F	Temperature, in-field*	C	-		-		-	1.6					-	-	-
pH-L	pH, Laboratory	pH units	8.18		7.86		6.68	7.07					8	7.87	7.83
Cond-L	Conductivity, Laboratory	µS/cm	761		698		350	1250					746	1390	4230
Hard-T	Hardness calcualted from total metal scan	mg/L	405											343	1420
Hard-D	Hardness calculated from dissolved metal scan	mg/L			353		124	689					392		
Alk-T	Alkalinity, Total	mg/L	170		230		6.8	160					170	46	130
Alk-OH	Alkalinity, Hydroxide OH	mg/L	<0.5		<0.5		<0.5	<0.5					<0.5	<0.5	<0.5
Alk-Carb	Alaklinity, Carbonate CO3	mg/L	<0.5		<0.5		<0.5	<0.5					<0.5	<0.5	<0.5
Alk-Bicrb	Alkalinity, Bicarbonate HCO3	mg/L	210		280		8.3	190					200	56	160
TDS	Total Dissolved Solids	mg/L	520		460		270	1000					480	1000	3200
TSS	Total Suspended Solids	mg/L	<1		19		32	9					4	2	1
Chloride	Chloride	mg/L	0.7		1.2		92	2.4					1.5	13	29
SO4-D	Sulphate, Total	mg/L	202		161		12.6	513					206	221	954
N-NO3	Nitrate Nitrogen, as N	mg/L	<0.02		0.09		0.44	4.6					0.18	105	375
CN-T	Cyanide, Total	mg/L			<0.0005		<0.0005	<0.0005					0.001	0.0227	0.833
CN-WAD	Cyanide, Weak Acid Dissociable	mg/L			<0.0005		<0.0005	<0.0005					0.0007	0.0104	0.143
Ca-T	Calcium, total	mg/L	94.6											97.4	410
Mg-T	Magnesium, total	mg/L	41											24.2	95.4
Na-T	Sodium, total	mg/L	1.54											147	475
K-T	Potassium, total	mg/L	1.55											3	6.2
Cu-T	Copper, total	mg/L	0.00023											0.0029	0.0021
As-T	Arsenic, total	mg/L	0.0271											0.0029	0.329
Sb-T	Antimony, total	mg/L	0.0527											0.429	1.8
Hg-T	Mercury, total	mg/L	<0.00001											<0.00005	<0.00005
Zn-T	Zinc, total	mg/L	0.0011											0.0027	0.009
Se-T	Selenium, total	mg/L	0.00229											0.048	0.165
Pb-T	Lead, total	mg/L	0.000027	Dry		Piezometer Not Functioning - Not Possible to Obtain a Sample			Piezometer Not Functioning - Not Possible to Obtain a Sample	Piezometer Not Functioning - Not Possible to Obtain a Sample	Piezometer Not Functioning - Not Possible to Obtain a Sample	Piezometer Not Functioning - Not Possible to Obtain a Sample		0.00013	<0.00003
Al-T	Aluminum, total	mg/L	0.0037											0.129	0.025
Bi-T	Bismuth, total	mg/L	<0.000005											<0.00003	<0.00003
Cd-T	Cadmium, total	mg/L	0.000015											<0.00003	0.00012
Cr-T	Chromium, total	mg/L	<0.0001											0.0007	0.0007
Fe-T	Iron, total	mg/L	0.009											0.172	0.294
Mn-T	Manganese, total	mg/L	0.00529											0.0087	0.0361
Mo-T	Molybdenum, total	mg/L	0.00463											0.0087	0.0178
Ni-T	Nickel, total	mg/L	0.00036											0.0011	0.0102
Ag-T	Silver, total	mg/L	<0.000005											<0.00003	<0.00003
Ca-D	Calcium, dissolved	mg/L			79.3		29.6	172					95		
Mg-D	Magnesium, dissolved	mg/L			37.7		12.1	62.9					37.5		
Na-D	Sodium, dissolved	mg/L			9.1		5.75	20.5					1.87		
K-D	Potassium, dissolved	mg/L			2.36		2.04	4.15					1.52		
Cu-D	Copper, dissolved	mg/L			0.00721		0.00274	0.00884					0.0011		
As-D	Arsenic, dissolved	mg/L			0.0008		0.0019	0.00071					0.101		
Sb-D	Antimony, dissolved	mg/L			0.00065		0.00049	0.0007					0.00033		
Hg-D	Mercury, dissolved	mg/L													
Zn-D	Zinc, dissolved	mg/L			0.0321		0.0179	0.249					0.0034		
Se-D	Selenium, dissolved	mg/L			0.00123		0.00067	0.0773					<0.00004		
Pb-D	Lead, dissolved	mg/L			0.000053		0.000096	0.000133					0.000044		
Al-D	Aluminum, dissolved	mg/L			0.0062		0.0093	0.181					0.0039		
Bi-D	Bismuth, dissolved	mg/L			<0.000005		<0.000005	<0.000005					<0.000005		
Cd-D	Cadmium, dissolved	mg/L			0.000412		0.00048	0.00743					0.000032		
Cr-D	Chromium, dissolved	mg/L			0.0002		0.0003	0.0004					0.0002		
Fe-D	Iron, dissolved	mg/L			0.009		0.007	0.008					0.84		
Mn-D	Manganese, dissolved	mg/L			0.0728		0.0955	0.496					0.201		
Mo-D	Molybdenum, dissolved	mg/L			0.00016		0.00031	0.00032					0.0125		
Ni-D	Nickel, dissolved	mg/L			0.00453		0.0228	0.0714					0.00283		
Ag-D	Silver, dissolved	mg/L			<0.000005		<0.000005	<0.000005					<0.000005		
S-D	Sulphur, Dissolved	mg/L			61		<10	199					88		

*YSI meter malfunctioning during field visit

Station Name			BC-31	BC-34	BC-39	BC-51W	BC-65	BC-66	BC-67	BC-68	BC-69
Description			Golden Creek above confluence w/ South Klondike River	Lee Creek at Ditch Road	Laura Creek in side channel of South Klondike R.	Pacific Pit - west side	Land Application Piezometer	Land Application Piezometer	Blue WRSA Piezometer	Blue WRSA Piezometer	Blue WRSA Piezometer
Sample Date			14-Sep-2011	15-Sep-2011		14-Sep-2011	15-Sep-2011	15-Sep-2011	8-Jun-2011		8-Jun-2011
Flow	Flow Rate, volumetric	L/s	-	-	Dry	-	-	-	Dry	Piezometer Not Functioning - Not Possible to Obtain a Sample	Dry
pH-F	pH, in-field*	pH units	-	-		-	7.97	7.53			
Cond-F	Conductivity, in-field*	µS/cm	-	-		-	322.5	235.2			
Temp-F	Temperature, in-field*	C	-	-		-	3	2			
pH-L	pH, Laboratory	pH units	8.18	8.11		3.28	8.02	7.64			
Cond-L	Conductivity, Laboratory	µS/cm	471	432		878	307	246			
Hard-T	Hardness calcualted from total metal scan	mg/L	253	218		305					
Hard-D	Hardness calculated from dissolved metal scan	mg/L					147	101			
Alk-T	Alkalinity, Total	mg/L	150	130		<0.5	120	100			
Alk-OH	Alkalinity, Hydroxide OH	mg/L	<0.5	<0.5		<0.5	<0.5	<0.5			
Alk-Carb	Alaklinity, Carbonate CO3	mg/L	<0.5	<0.5		<0.5	<0.5	<0.5			
Alk-Bicrb	Alkalinity, Bicarbonate HCO3	mg/L	180	150		<0.5	150	120			
TDS	Total Dissolved Solids	mg/L	300	290		580	180	130			
TSS	Total Suspended Solids	mg/L	4	4		7	26	18			
Chloride	Chloride	mg/L	0.5	0.6		1.1	0.7	2.3			
SO4-D	Sulphate, Total	mg/L	98.7	101		333	34.7	15.1			
N-NO3	Nitrate Nitrogen, as N	mg/L	0.36	0.16		<0.02	0.02	1.71			
CN-T	Cyanide, Total	mg/L	<0.0005	<0.0005			<0.0005	0.0016			
CN-WAD	Cyanide, Weak Acid Dissociable	mg/L	<0.0005	<0.0005			<0.0005	0.0012			
Ca-T	Calcium, total	mg/L	61.5	54.7		64.7					
Mg-T	Magnesium, total	mg/L	24.2	19.8		34.9					
Na-T	Sodium, total	mg/L	1.71	1.29		0.85					
K-T	Potassium, total	mg/L	0.82	0.64		2.23					
Cu-T	Copper, total	mg/L	0.00178	0.00149		0.4					
As-T	Arsenic, total	mg/L	0.00058	0.00023		0.0166					
Sb-T	Antimony, total	mg/L	0.00061	0.00026		0.00315					
Hg-T	Mercury, total	mg/L	<0.00001	<0.00001		0.00002					
Zn-T	Zinc, total	mg/L	0.0053	0.0074		0.532					
Se-T	Selenium, total	mg/L	0.00201	0.00228		0.00445					
Pb-T	Lead, total	mg/L	0.000141	0.000043		0.000551					
Al-T	Aluminum, total	mg/L	0.0491	0.0269		6.5					
Bi-T	Bismuth, total	mg/L	<0.000005	<0.000005		<0.000005					
Cd-T	Cadmium, total	mg/L	0.000061	0.000098		0.00642					
Cr-T	Chromium, total	mg/L	0.0003	0.0001		0.0025					
Fe-T	Iron, total	mg/L	0.144	0.071		6.38					
Mn-T	Manganese, total	mg/L	0.0212	0.00968		2.94					
Mo-T	Molybdenum, total	mg/L	0.00121	0.00123		0.00013					
Ni-T	Nickel, total	mg/L	0.00224	0.00218		0.19					
Ag-T	Silver, total	mg/L	<0.000005	<0.000005		0.000073					
Ca-D	Calcium, dissolved	mg/L					47.4	29.3			
Mg-D	Magnesium, dissolved	mg/L					7	6.8			
Na-D	Sodium, dissolved	mg/L					5	10.2			
K-D	Potassium, dissolved	mg/L					1.78	2.15			
Cu-D	Copper, dissolved	mg/L					0.00078	0.0134			
As-D	Arsenic, dissolved	mg/L					0.0003	0.00507			
Sb-D	Antimony, dissolved	mg/L					0.00172	0.031			
Hg-D	Mercury, dissolved	mg/L									
Zn-D	Zinc, dissolved	mg/L					0.0035	0.0373			
Se-D	Selenium, dissolved	mg/L					0.00004	0.00181			
Pb-D	Lead, dissolved	mg/L					0.000076	0.00013			
Al-D	Aluminum, dissolved	mg/L					0.0153	0.0256			
Bi-D	Bismuth, dissolved	mg/L					<0.000005	<0.000005			
Cd-D	Cadmium, dissolved	mg/L					0.000026	0.000218			
Cr-D	Chromium, dissolved	mg/L					0.0001	0.0011			
Fe-D	Iron, dissolved	mg/L					0.013	0.02			
Mn-D	Manganese, dissolved	mg/L					0.00214	0.00967			
Mo-D	Molybdenum, dissolved	mg/L					0.00021	0.00601			
Ni-D	Nickel, dissolved	mg/L					0.00138	0.00474			
Ag-D	Silver, dissolved	mg/L					<0.000005	<0.000005			
S-D	Sulphur, Dissolved	mg/L					14	<10			

*YSI meter malfunctioning during field visit

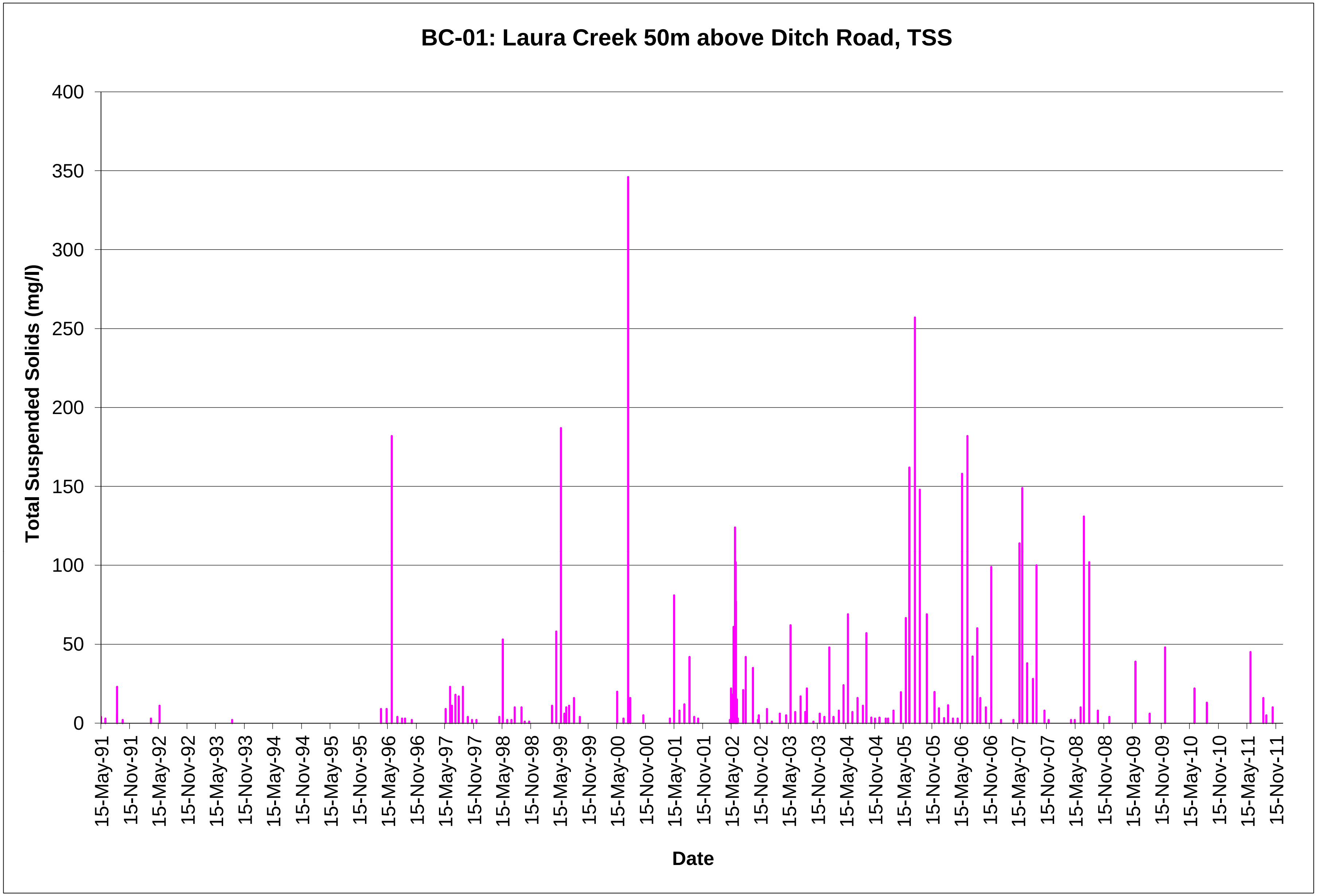
Station Name			BC-01	BC-02	BC-03	BC-04	BC-05	BC-06	BC-9	BC-10	BC-12	BC-13	BC-14	BC-15	BC-16	BC-17
Description			Laura Creek, 50m u/s from Ditch Road	Carolyn Creek, u/s from Laura Creek	Laura Creek, above confluence w/ Carolyn Creek	Lucky Creek d/s from Lucky Pit	Pacific Creek u/s from confluence w/ Lee Creek	South Klondike R. d/s from confluence w/ Lee Creek	Upper Fosters Pit and Dump	Kokanee Pit and Dump	Blue Pit	Moosehead West Waste Dump	Moosehead East Waste Dump	Moosehead Pit discharge	Pacific Gulch	Golden Pit and Dump
Sample Date			7-Jun-2011	7-Jun-2011	7-Jun-2011	7-Jun-2011	7-Jun-2011	7-Jun-2011		8-Jun-2011	8-Jun-2011			7-Jun-2011		8-Jun-2011
Flow	Flow Rate, volumetric	L/s		0.003												
pH-F	pH, in-field	pH units	8.36	7.92	8.32	7.88	8.16	8.06		8.86	6.73			8.56		8.66
Cond-F	Conductivity, in-field	µS/cm	244	273	227	292	166.5	137.7		213	591			480		432
Temp-F	Temperature, in-field	C	1.1	2.4	0.3	0.9	0.8	6		13.8	14.5			17.6		13.5
pH-L	pH, Laboratory	pH units	8.03	7.81	7.93	7.85	7.84	7.81		8.01	7.53			7.84		7.99
Cond-L	Conductivity, Laboratory	µS/cm	451	486	426	541	310	217		272	665			550		553
Hard-T	Hardness calcualted from total metal scan	mg/L	213	225	198	269	151	103		124	327			278		269
Hard-D	Hardness calculated from dissolved metal scan	mg/L														
Alk-T	Alkalinity, Total	mg/L	120	85	110	110	77	64		75	42			63		120
Alk-OH	Alkalinity, Hydroxide OH	mg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5			<0.5		<0.5
Alk-Carb	Alaklinity, Carbonate CO3	mg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5			<0.5		<0.5
Alk-Bicrb	Alkalinity, Bicarbonate HCO3	mg/L	140	100	140	140	94	78		92	51			77		140
TDS	Total Dissolved Solids	mg/L	280	340	280	370	210	150		170	510			410		390
TSS	Total Suspended Solids	mg/L	45	310	34	31	4	5		5	8			8		2
Chloride	Chloride	mg/L	1.2	1.5	1.1	0.8	1	0.6		0.9	1.4			0.5		0.8
SO4-D	Sulphate, Dissolved	mg/L	110	150	98	160	79	38		57	240			190		150
SO4-T	Sulphate, Total	mg/L														
N-NO3	Nitrate Nitrogen, as N	mg/L	0.21	1.19	0.08	0.17	<0.02	0.1		0.04	0.1			0.15		<0.02
CN-T	Cyanide, Total	mg/L	<0.0005	0.0015	<0.0005	<0.0005	<0.0005	<0.0005								
CN-WAD	Cyanide, Weak Acid Dissociable	mg/L	<0.0005	0.0012	<0.0005	<0.0005	<0.0005	<0.0005								
Ca-T	Calcium, total	mg/L	52.1	51.5	49.5	61.9	38.1	28.7		30.5	80.9			62.7		66.4
Mg-T	Magnesium, total	mg/L	20.2	23.3	18.1	27.8	13.5	7.59		11.6	30.3			29.6		25
Na-T	Sodium, total	mg/L	3.31	8.4	2.13	1.77	1.26	1.58		0.42	0.79			0.23		1.03
K-T	Potassium, total	mg/L	1.29	1.4	1.22	1.14	0.58	0.42		2.44	2.6			0.69		1.31
Cu-T	Copper, total	mg/L	0.00204	0.0088	0.00155	0.00167	0.00268	0.00076		0.0013	0.00453			0.00065		0.00088
As-T	Arsenic, total	mg/L	0.00586	0.00402	0.00506	0.00633	0.0007	0.00092		0.0129	0.0166			0.0547		0.0198
Sb-T	Antimony, total	mg/L	0.00329	0.00138	0.00361	0.0034	0.00044	0.00018		0.072	0.0507			0.00339		0.0443
Hg-T	Mercury, total	mg/L	<0.00001		<0.00001	<0.00001	<0.00001	<0.00001		<0.00001	<0.00001			<0.00001		<0.00001
Zn-T	Zinc, total	mg/L	0.0051	0.022	0.0059	0.0227	0.012	0.0018		0.0021	0.0622			0.0014		0.0025
Se-T	Selenium, total	mg/L	0.00185	0.00274	0.0016	0.00437	0.00116	0.00048	Dry - No Water Found	0.00367	0.00176	Dry - No Water Found	Dry - No Water Found	0.0147	Dry - No Water Found	0.0032
Pb-T	Lead, total	mg/L	0.000557	0.00377	0.000404	0.000514	0.00009	0.000102		0.000181	0.00019			0.000319		0.000255
Al-T	Aluminum, total	mg/L	0.24	3.98	0.152	0.191	0.0735	0.0359		0.0969	0.0996			0.0407		0.0243
Bi-T	Bismuth, total	mg/L	<0.000005	0.00005	<0.000005	<0.000005	<0.000005	<0.000005		<0.000005	<0.000005			<0.000005		<0.000005
Cd-T	Cadmium, total	mg/L	0.000093	0.000175	0.000105	0.000271	0.000067	0.000039		0.000066	0.000828			0.000064		0.000034
Cr-T	Chromium, total	mg/L	0.0005	0.0072	0.0003	0.0004	0.0003	<0.0001		0.0002	0.0002			0.0001		0.0001
Fe-T	Iron, total	mg/L	0.608	6.73	0.518	1.31	0.199	0.084		0.081	0.323			0.036		0.029
Mn-T	Manganese, total	mg/L	0.113	0.381	0.179	0.321	0.0172	0.00877		0.0164	0.589			0.00487		0.0111
Mo-T	Molybdenum, total	mg/L	0.00218	0.00063	0.00171	0.00252	0.00173	0.00042		0.00289	0.00379			0.00062		0.00425
Ni-T	Nickel, total	mg/L	0.00311	0.0089	0.00381	0.0123	0.00573	0.00075		0.00138	0.0383			0.0009		0.00077
Ag-T	Silver, total	mg/L	<0.000005	0.000061	<0.000005	<0.000005	<0.000005	<0.000005		0.000008	0.000026			0.00001		0.000005
Ca-D	Calcium, dissolved	mg/L														
Mg-D	Magnesium, dissolved	mg/L														
Na-D	Sodium, dissolved	mg/L														
K-D	Potassium, dissolved	mg/L														
Cu-D	Copper, dissolved	mg/L														
As-D	Arsenic, dissolved	mg/L														
Sb-D	Antimony, dissolved	mg/L														
Hg-D	Mercury, dissolved	mg/L														
Zn-D	Zinc, dissolved	mg/L														
Se-D	Selenium, dissolved	mg/L														
Pb-D	Lead, dissolved	mg/L														
Al-D	Aluminum, dissolved	mg/L														
Bi-D	Bismuth, dissolved	mg/L														
Cd-D	Cadmium, dissolved	mg/L														
Cr-D	Chromium, dissolved	mg/L														
Fe-D	Iron, dissolved	mg/L														
Mn-D	Manganese, dissolved	mg/L														
Mo-D	Molybdenum, dissolved	mg/L														
Ni-D	Nickel, dissolved	mg/L														
Ag-D	Silver, dissolved	mg/L														
S-D	Sulphur, Dissolved	mg/L														

Station Name			BC-18	BC-19	BC-20	BC-21	BC-22	BC-23	BC-24	BC-25	BC-26	BC-27	BC-28	BC-28a	BC-31	BC-34
Description				Piezometer RC94-843	Piezonmeter RC94-844	Piezometer RC95-1354	Piezometer RC95-1357	Piezometer RC95-1370	Piezometer RC951400	Piezometer RC96-1608	Piezometer RC97-2024	Piezometer RC97-2026	Overflow Pond decant	Discharge from heap	Golden Creek above confluence w/ South Klondike R.	Lee Creek at Ditch Road
Sample Date				7-Jun-2011		7-Jun-2011	7-Jun-2011					8-Jun-2011	8-Jun-2011	8-Jun-2011	7-Jun-2011	8-Jun-2011
Flow	Flow Rate, volumetric	L/s													0.95476	3.2095
pH-F	pH, in-field	pH units		6.95		5.92	6.26					7.88	9.42	8.1	8.31	8.32
Cond-F	Conductivity, in-field	µS/cm		427		103	746					471	1243	2133	193	230
Temp-F	Temperature, in-field	C		2.5		4.6	2.1					5.5	15.9	3.8	1.4	4.2
pH-L	pH, Laboratory	pH units		7.57		7.09	6.8					7.86	8.13	7.85	7.96	7.84
Cond-L	Conductivity, Laboratory	µS/cm		715		310	1260					748	1480	3550	358	381
Hard-T	Hardness calcualted from total metal scan	mg/L											365	1020	171	182
Hard-D	Hardness calculated from dissolved metal scan	mg/L		364		112	668					397				
Alk-T	Alkalinity, Total	mg/L		230		42	150					160	44	110	97	100
Alk-OH	Alkalinity, Hydroxide OH	mg/L		<0.5		<0.5	<0.5					<0.5	<0.5	<0.5	<0.5	<0.5
Alk-Carb	Alaklinity, Carbonate CO3	mg/L		<0.5		<0.5	<0.5					<0.5	<0.5	<0.5	<0.5	<0.5
Alk-Bicrb	Alkalinity, Bicarbonate HCO3	mg/L		280		51	180					200	54	140	120	130
TDS	Total Dissolved Solids	mg/L		440		230	1000					530	1100	2800	230	260
TSS	Total Suspended Solids	mg/L		10		9	10					9	2	<1	10	9
Chloride	Chloride	mg/L		1.5		52	2.6					1.2	13	24	1.3	0.8
SO4-D	Sulphate, Dissolved	mg/L		150		20	540					190	210	690	76	92
SO4-T	Sulphate, Total	mg/L														
N-NO3	Nitrate Nitrogen, as N	mg/L		0.16		0.64	3.8					<0.02	107	279	0.28	0.22
CN-T	Cyanide, Total	mg/L		<0.0005		<0.0005	<0.0005					<0.0005	0.0591	0.715	<0.0005	<0.0005
CN-WAD	Cyanide, Weak Acid Dissociable	mg/L		<0.0005		<0.0005	<0.0005					<0.0005	0.0249	0.119	<0.0005	<0.0005
Ca-T	Calcium, total	mg/L											105	305	40.5	46.1
Mg-T	Magnesium, total	mg/L											24.9	63.7	16.9	16.1
Na-T	Sodium, total	mg/L											142	352	1.84	1.08
K-T	Potassium, total	mg/L											3.1	4.7	0.76	0.6
Cu-T	Copper, total	mg/L											0.0017	0.0014	0.00287	0.00223
As-T	Arsenic, total	mg/L											0.0405	0.306	0.0011	0.00035
Sb-T	Antimony, total	mg/L											0.5	1.76	0.00058	0.00026
Hg-T	Mercury, total	mg/L											<0.00005	<0.00005	<0.00001	<0.00001
Zn-T	Zinc, total	mg/L											<0.0005	0.0068	0.0087	0.0093
Se-T	Selenium, total	mg/L											0.0541	0.143	0.00123	0.00153
Pb-T	Lead, total	mg/L	Dry; no water in pit		Piezometer Not Functioning - Not Possible to Obtain a Sample			Piezometer Not Functioning - Not Possible to Obtain a Sample	Piezometer Not Functioning - Not Possible to Obtain a Sample	Piezometer Not Functioning - Not Possible to Obtain a Sample	Piezometer Not Functioning - Not Possible to Obtain a Sample		<0.00003	<0.00003	0.000575	0.000134
Al-T	Aluminum, total	mg/L											0.038	0.012	0.0989	0.074
Bi-T	Bismuth, total	mg/L											<0.00003	<0.00003	<0.000005	<0.000005
Cd-T	Cadmium, total	mg/L											<0.00003	0.00018	0.000111	0.000101
Cr-T	Chromium, total	mg/L											<0.0005	0.0005	0.0004	0.0002
Fe-T	Iron, total	mg/L											0.022	0.246	0.32	0.194
Mn-T	Manganese, total	mg/L											0.0053	0.0208	0.0354	0.0192
Mo-T	Molybdenum, total	mg/L											0.0084	0.023	0.00106	0.00114
Ni-T	Nickel, total	mg/L											0.002	0.0062	0.00328	0.00285
Ag-T	Silver, total	mg/L											<0.00003	<0.00003	<0.000005	0.000006
Ca-D	Calcium, dissolved	mg/L		83.1		23.8	165					95.4				
Mg-D	Magnesium, dissolved	mg/L		38		12.8	62.4					38.6				
Na-D	Sodium, dissolved	mg/L		9.32		6.21	20.2					1.86				
K-D	Potassium, dissolved	mg/L		2.3		2.08	4.03					1.47				
Cu-D	Copper, dissolved	mg/L		0.00588		0.00314	0.00763					0.00047				
As-D	Arsenic, dissolved	mg/L		0.00088		0.00339	0.00062					0.0604				
Sb-D	Antimony, dissolved	mg/L		0.00074		0.00048	0.00049					0.0004				
Hg-D	Mercury, dissolved	mg/L														
Zn-D	Zinc, dissolved	mg/L		0.0293		0.0167	0.267					0.0038				
Se-D	Selenium, dissolved	mg/L		0.00178		0.00487	0.0756					<0.00004				
Pb-D	Lead, dissolved	mg/L		0.000064		0.00008	0.000112					0.000021				
Al-D	Aluminum, dissolved	mg/L		0.0043		0.0072	0.22					0.0011				
Bi-D	Bismuth, dissolved	mg/L		<0.000005		<0.000005	<0.000005					<0.000005				
Cd-D	Cadmium, dissolved	mg/L		0.000458		0.000295	0.00795					0.000074				
Cr-D	Chromium, dissolved	mg/L		0.0002		0.0004	0.0003					<0.0001				
Fe-D	Iron, dissolved	mg/L		0.005		0.006	0.005					0.677				
Mn-D	Manganese, dissolved	mg/L		0.0587		0.067	0.551					0.25				
Mo-D	Molybdenum, dissolved	mg/L		0.0001		0.00018	0.00054					0.0133				
Ni-D	Nickel, dissolved	mg/L		0.0043		0.0115	0.0826					0.00258				
Ag-D	Silver, dissolved	mg/L		0.000009		<0.000005	0.000006					<0.000005				
S-D	Sulphur, Dissolved	mg/L		57		<10	205					86				

Station Name			BC-39	BC-51W	BC-65	BC-66	BC-67	BC-68	BC-69
Description			Laura Creek in side channel of South Klondike R.	Pacific Pit - west side	Land Application Piezometer	Land Application Piezometer	Blue WRSA Piezometer	Blue WRSA Piezometer	Blue WRSA Piezometer
Sample Date			7-Jun-2011	7-Jun-2011	7-Jun-2011	7-Jun-2011	8-Jun-2011		8-Jun-2011
Flow	Flow Rate, volumetric	L/s	0.0005						
pH-F	pH, in-field	pH units	8.2	3.78	7.6	7.23	6.63		7.32
Cond-F	Conductivity, in-field	µS/cm	268	357	206	81	57.6		470
Temp-F	Temperature, in-field	C	7	14.7	3.7	5	4		4.5
pH-L	pH, Laboratory	pH units	7.97	3.71	7.88	7.55	6.97		7.76
Cond-L	Conductivity, Laboratory	µS/cm	415	439	338	228	238		765
Hard-T	Hardness calcualted from total metal scan	mg/L	200	131					
Hard-D	Hardness calculated from dissolved metal scan	mg/L			150	98.2	262		410
Alk-T	Alkalinity, Total	mg/L	110	<0.5	120	95	74		320
Alk-OH	Alkalinity, Hydroxide OH	mg/L	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5
Alk-Carb	Alaklinity, Carbonate CO3	mg/L	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5
Alk-Bicrb	Alkalinity, Bicarbonate HCO3	mg/L	130	<0.5	150	120	91		390
TDS	Total Dissolved Solids	mg/L	280	260	200	140	260		480
TSS	Total Suspended Solids	mg/L	2	2	40	22	470		1800
Chloride	Chloride	mg/L	0.8	1.4	1.3	1.6	8.1		1.7
SO4-D	Sulphate, Dissolved	mg/L	98	170	41	12	12		110
SO4-T	Sulphate, Total	mg/L							
N-NO3	Nitrate Nitrogen, as N	mg/L	0.05	0.28	0.11	1.03	4.8		<0.02
CN-T	Cyanide, Total	mg/L	<0.0005		<0.0005	0.0017	<0.0005		<0.0005
CN-WAD	Cyanide, Weak Acid Dissociable	mg/L	<0.0005		<0.0005	0.0006	<0.0005		<0.0005
Ca-T	Calcium, total	mg/L	50.4	29.9					
Mg-T	Magnesium, total	mg/L	17.9	13.7					
Na-T	Sodium, total	mg/L	2.96	0.52					
K-T	Potassium, total	mg/L	1.31	3.09					
Cu-T	Copper, total	mg/L	0.00113	0.184					
As-T	Arsenic, total	mg/L	0.00241	0.00676					
Sb-T	Antimony, total	mg/L	0.00241	0.00367					
Hg-T	Mercury, total	mg/L	<0.00001	<0.00001					
Zn-T	Zinc, total	mg/L	0.0012	0.185					
Se-T	Selenium, total	mg/L	0.00108	0.00291					
Pb-T	Lead, total	mg/L	0.000062	0.000166				Piezometer Not Functioning - Not Possible to Obtain a Sample	
Al-T	Aluminum, total	mg/L	0.0339	2.73					
Bi-T	Bismuth, total	mg/L	<0.000005	<0.000005					
Cd-T	Cadmium, total	mg/L	0.000054	0.00258					
Cr-T	Chromium, total	mg/L	0.0002	0.0007					
Fe-T	Iron, total	mg/L	0.065	1.59					
Mn-T	Manganese, total	mg/L	0.00475	1.01					
Mo-T	Molybdenum, total	mg/L	0.00177	<0.00005					
Ni-T	Nickel, total	mg/L	0.00132	0.0704					
Ag-T	Silver, total	mg/L	<0.000005	0.000022					
Ca-D	Calcium, dissolved	mg/L			48.1	28.7	66.2		75.1
Mg-D	Magnesium, dissolved	mg/L			7.31	6.47	23.6		54
Na-D	Sodium, dissolved	mg/L			6.22	8.38	2.44		1.83
K-D	Potassium, dissolved	mg/L			1.75	1.9	1.5		6.2
Cu-D	Copper, dissolved	mg/L			0.00034	0.00607	0.00049		0.00055
As-D	Arsenic, dissolved	mg/L			0.00031	0.00419	0.00097		0.0499
Sb-D	Antimony, dissolved	mg/L			0.00184	0.0335	0.00356		0.00413
Hg-D	Mercury, dissolved	mg/L							
Zn-D	Zinc, dissolved	mg/L			0.0032	0.0158	0.0034		0.0796
Se-D	Selenium, dissolved	mg/L			0.00011	0.00094	0.00011		0.00116
Pb-D	Lead, dissolved	mg/L			0.000022	0.000101	0.000033		0.000022
Al-D	Aluminum, dissolved	mg/L			0.0053	0.0341	0.0017		0.0041
Bi-D	Bismuth, dissolved	mg/L			<0.000005	<0.000005	<0.000005		<0.000005
Cd-D	Cadmium, dissolved	mg/L			0.000024	0.000154	0.000026		0.000384
Cr-D	Chromium, dissolved	mg/L			<0.0001	0.0006	<0.0001		<0.0001
Fe-D	Iron, dissolved	mg/L			0.003	0.025	0.002		0.005
Mn-D	Manganese, dissolved	mg/L			0.00113	0.00285	0.127		0.0579
Mo-D	Molybdenum, dissolved	mg/L			0.00015	0.00645	0.00021		0.00033
Ni-D	Nickel, dissolved	mg/L			0.00133	0.00272	0.00153		0.00252
Ag-D	Silver, dissolved	mg/L			0.000006	<0.000005	<0.000005		<0.000005
S-D	Sulphur, Dissolved	mg/L			15	<10	15		38

APPENDIX A-2

GRAPHICAL DATA


BC-01: Laura Creek 50m above Ditch Road, TSS
Total Suspended Solids (mg/l)
400
350
300
250
200
150
100
50
0
15-May-91
15-Nov-91
15-May-92
15-Nov-92
15-May-93
15-Nov-93
15-May-94
15-Nov-94
15-May-95
15-Nov-95
15-May-96
15-Nov-96
15-May-97
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15-May-01
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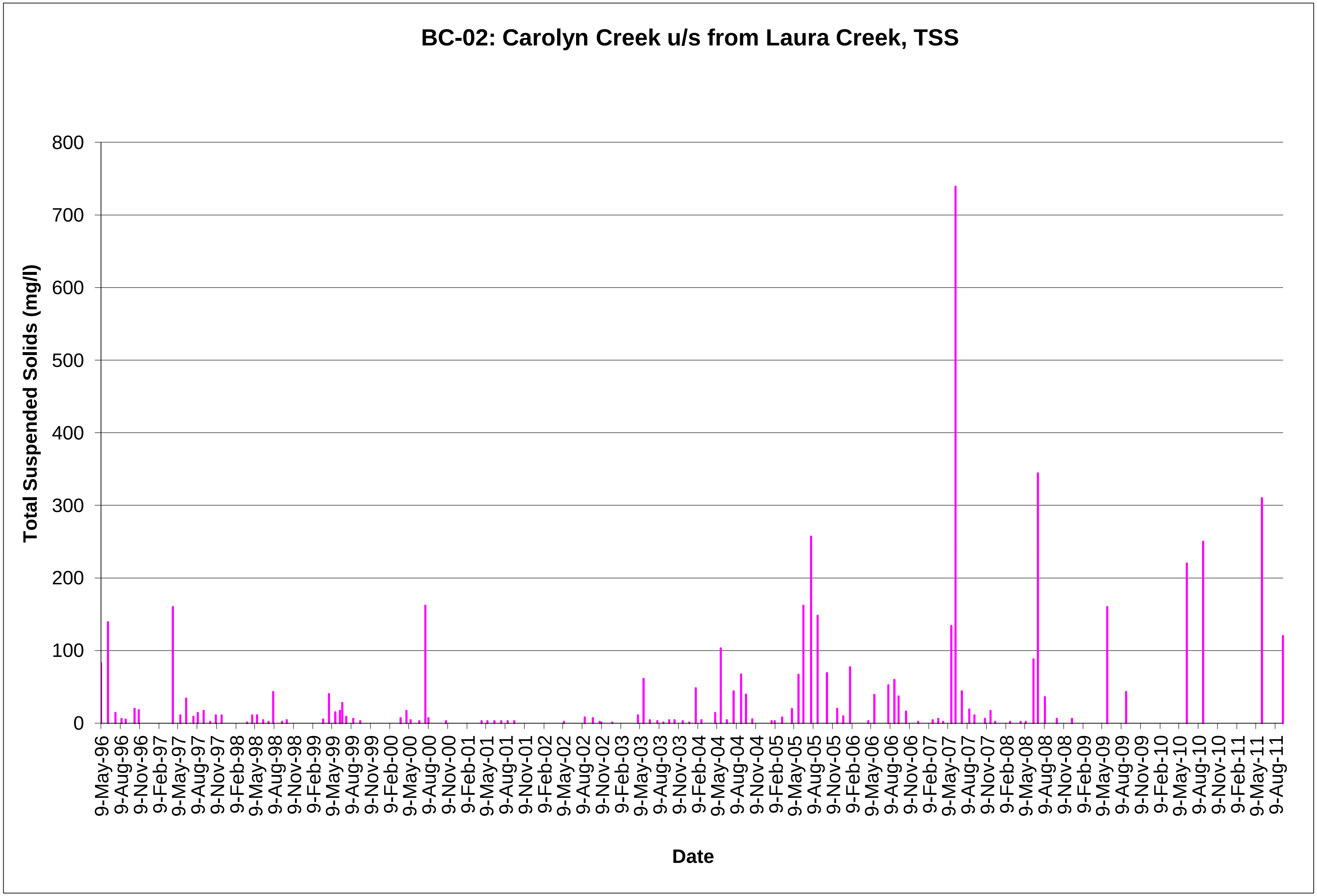
15-May-11
15-Nov-11
Date



BC-02: Carolyn Creek u/s from Laura Creek, TSS
Total Suspended Solids (mg/l)
Date
0
100
200
300
400
500
600
700
800
9-May-96
9-Aug-96
9-Nov-96
9-Feb-97
9-May-97
9-Aug-97
9-Nov-97
9-Feb-98
9-May-98
9-Aug-98
9-Nov-98
9-Feb-99
9-May-99
9-Aug-99
9-Nov-99
9-Feb-00
9-May-00
9-Aug-00
9-Nov-00
9-Feb-01
9-May-01
9-Aug-01
9-Nov-01
9-Feb-02
9-May-02
9-Aug-02
9-Nov-02
9-Feb-03
9-May-03
9-Aug-03
9-Nov-03
9-Feb-04
9-May-04
9-Aug-04
9-Nov-04
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9-Aug-08
9-Nov-08
9-Feb-09
9-May-09
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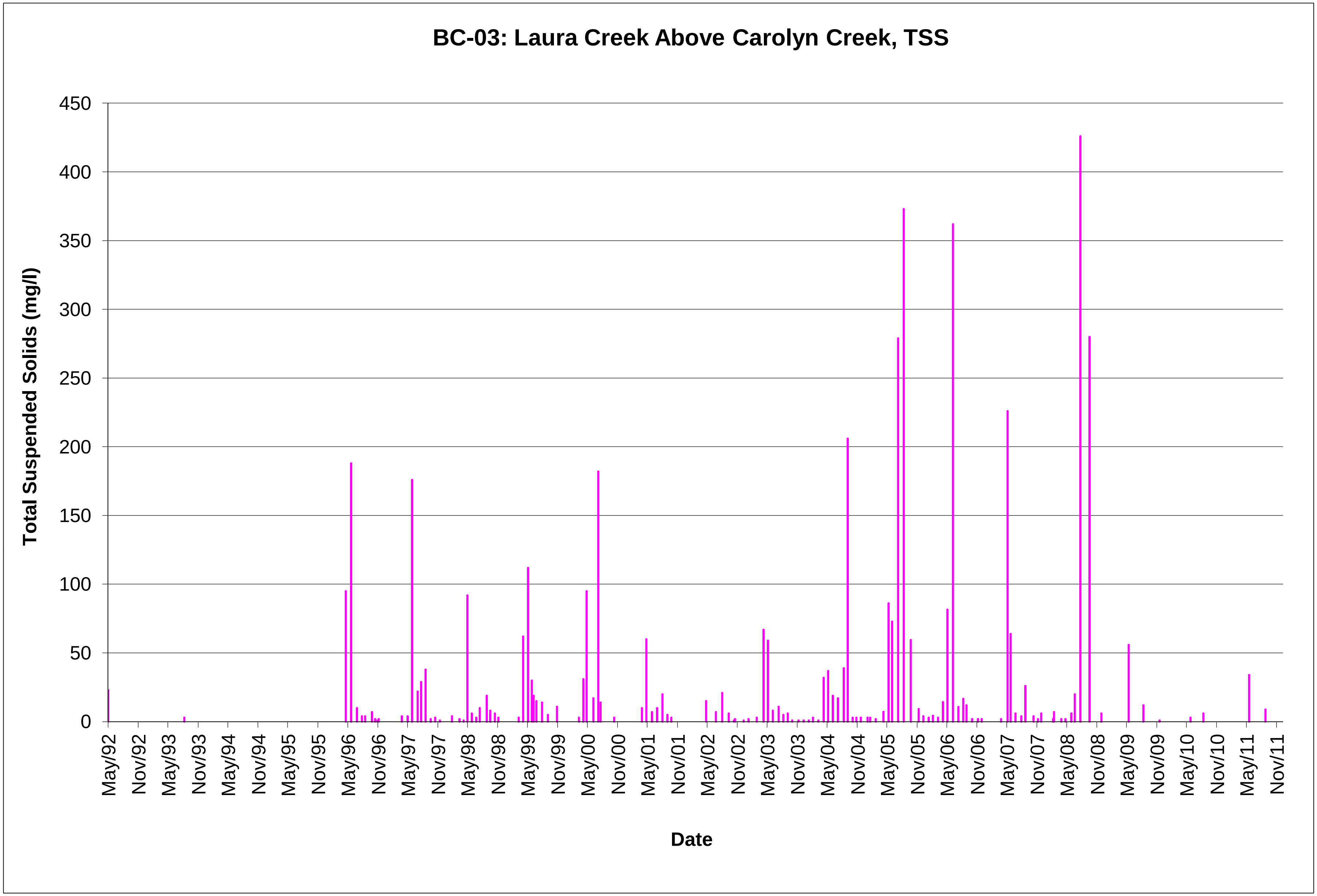
9-May-11
9-Aug-11



BC-03: Laura Creek Above Carolyn Creek, TSS
Total Suspended Solids (mg/l)
0
50
100
150
200
250
300
350
400
450
May/92
Nov/92
May/93
Nov/93
May/94
Nov/94
May/95
Nov/95
May/96
Nov/96
May/97
Nov/97
May/98
Nov/98
May/99
Nov/99
May/00
Nov/00
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Nov/01
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Nov/04
May/05
Nov/05
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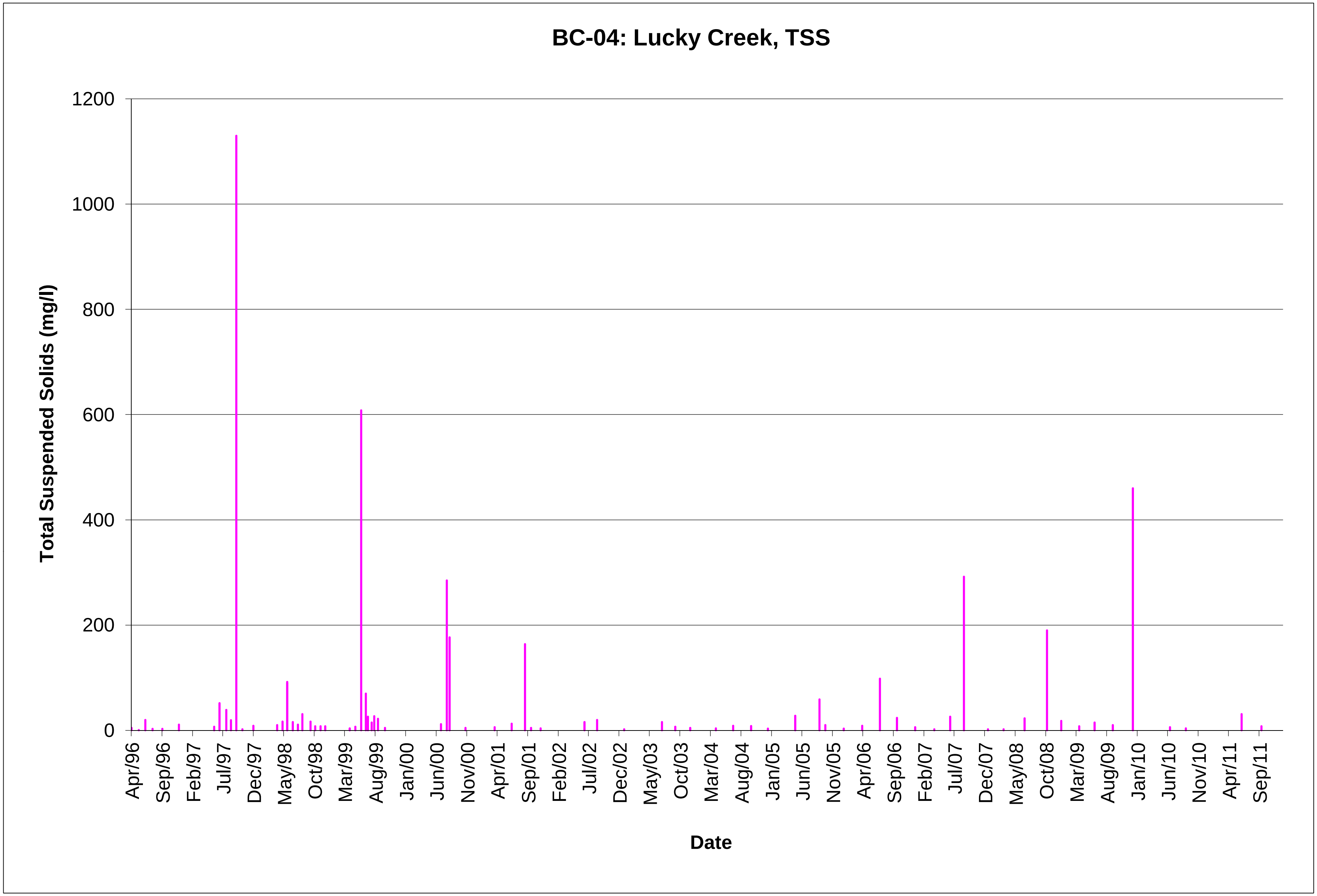
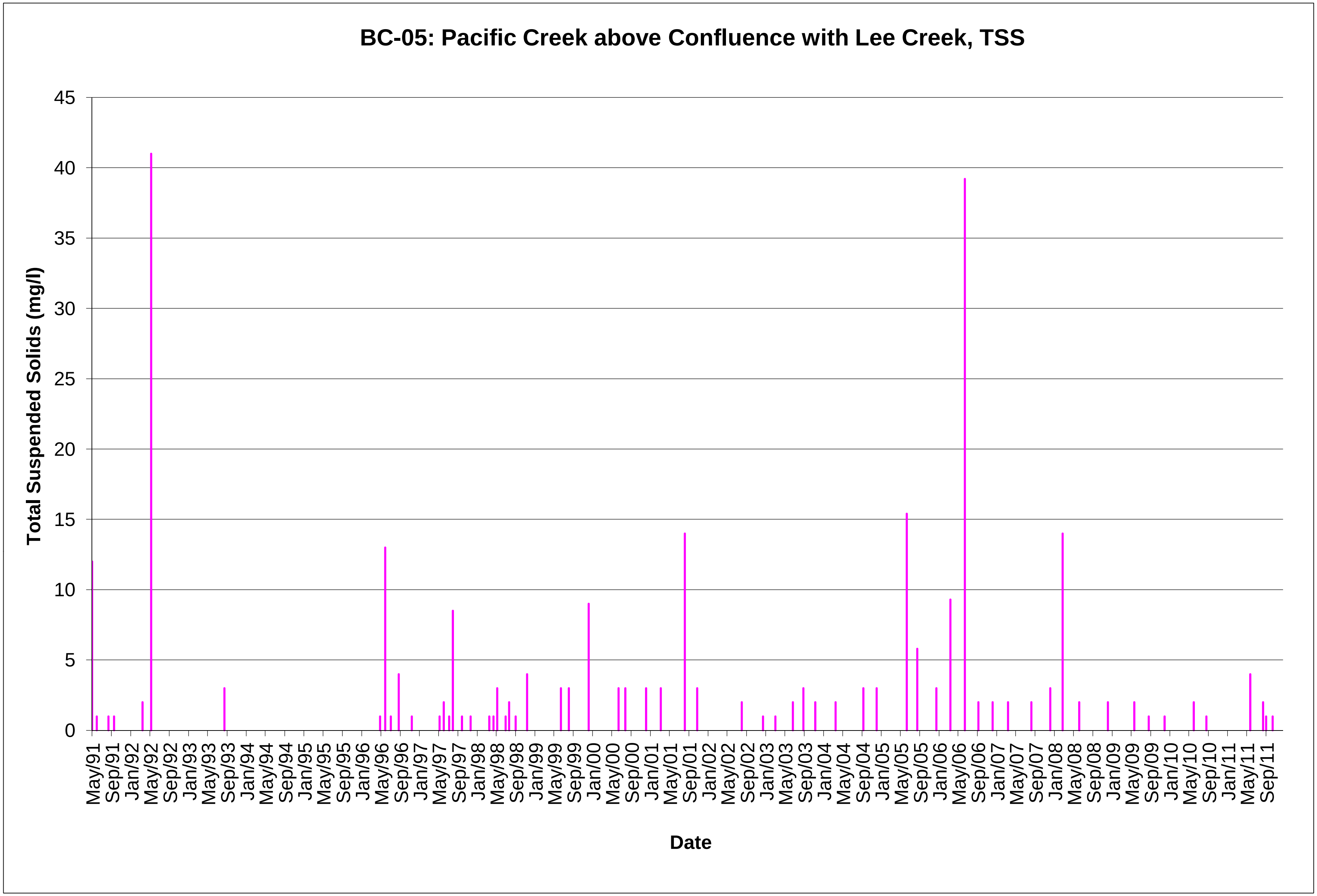
Nov/10
May/11
Nov/11
Date



BC-04: Lucky Creek, TSS
Total Suspended Solids (mg/l)
1200
1000
800
600
400
200
0
Apr/96
Sep/96
Feb/97
Jul/97
Dec/97
May/98
Oct/98
Mar/99
Aug/99
Jan/00
Jun/00
Nov/00
Apr/01
Sep/01
Feb/02
Jul/02
Dec/02
May/03
Oct/03
Mar/04
Aug/04
Jan/05
Jun/05
Nov/05
Apr/06
Sep/06
Feb/07
Jul/07
Dec/07
May/08
Oct/08
Mar/09
Aug/09
Jan/10
Jun/10
Nov/10
Apr/11
Sep/11
Date



BC-05: Pacific Creek above Confluence with Lee Creek, TSS
Total Suspended Solids (mg/l)
0
5
10
15
20
25
30
35
40
45
May/91
Sep/91
Jan/92
May/92
Sep/92
Jan/93
May/93
Sep/93
Jan/94
May/94
Sep/94
Jan/95
May/95
Sep/95
Jan/96
May/96
Sep/96
Jan/97
May/97
Sep/97
Jan/98
May/98
Sep/98
Jan/99
May/99
Sep/99
Jan/00
May/00
Sep/00
Jan/01
May/01
Sep/01
Jan/02
May/02
Sep/02
Jan/03
May/03
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Jan/04
May/04
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Jan/07
May/07
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Jan/08
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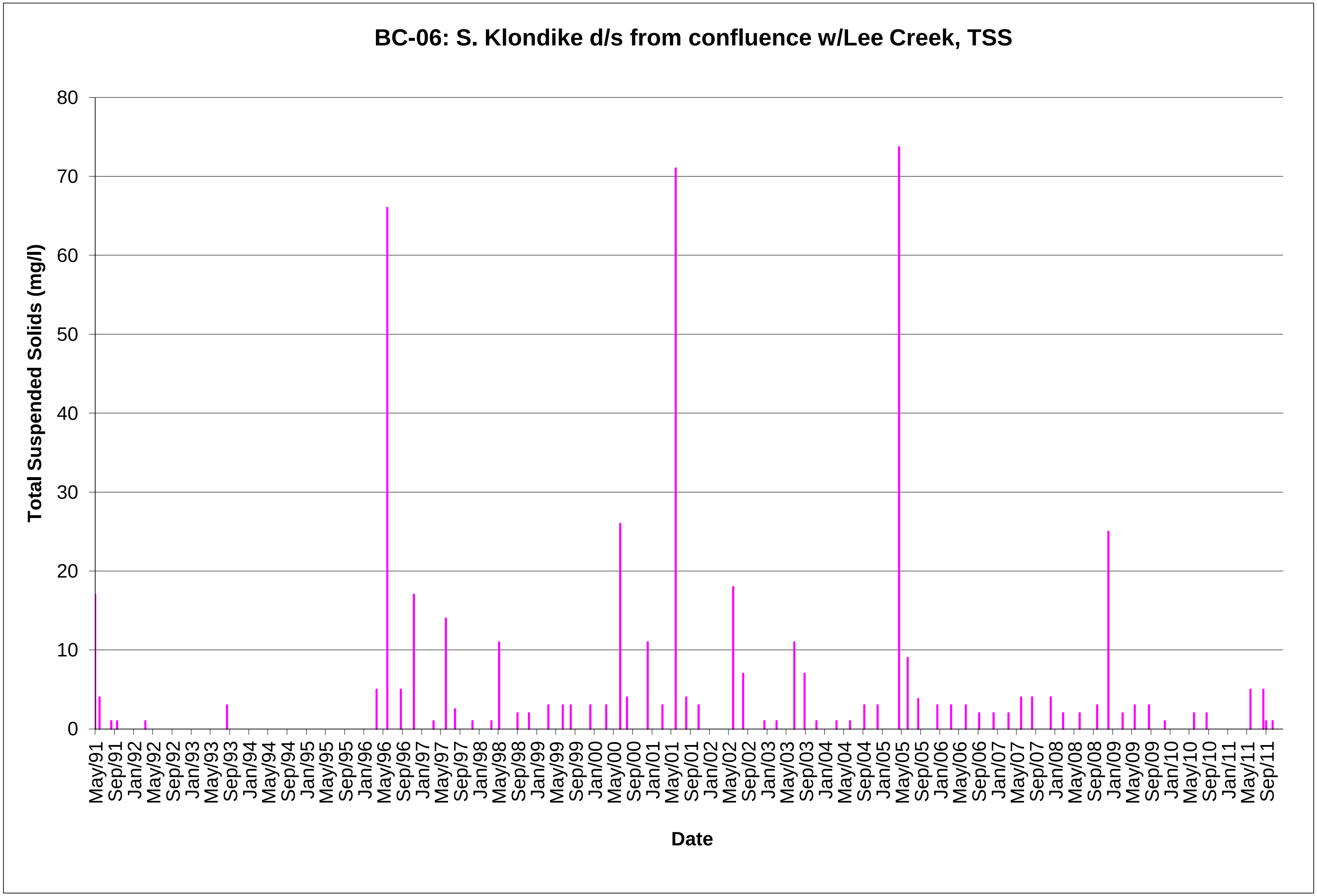
Jan/11
May/11
Sep/11
Date



BC-06: S. Klondike d/s from confluence w/Lee Creek, TSS
Total Suspended Solids (mg/l)
0
10
20
30
40
50
60
70
80
May/91
Sep/91
Jan/92
May/92
Sep/92
Jan/93
May/93
Sep/93
Jan/94
May/94
Sep/94
Jan/95
May/95
Sep/95
Jan/96
May/96
Sep/96
Jan/97
May/97
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Jan/00
May/00
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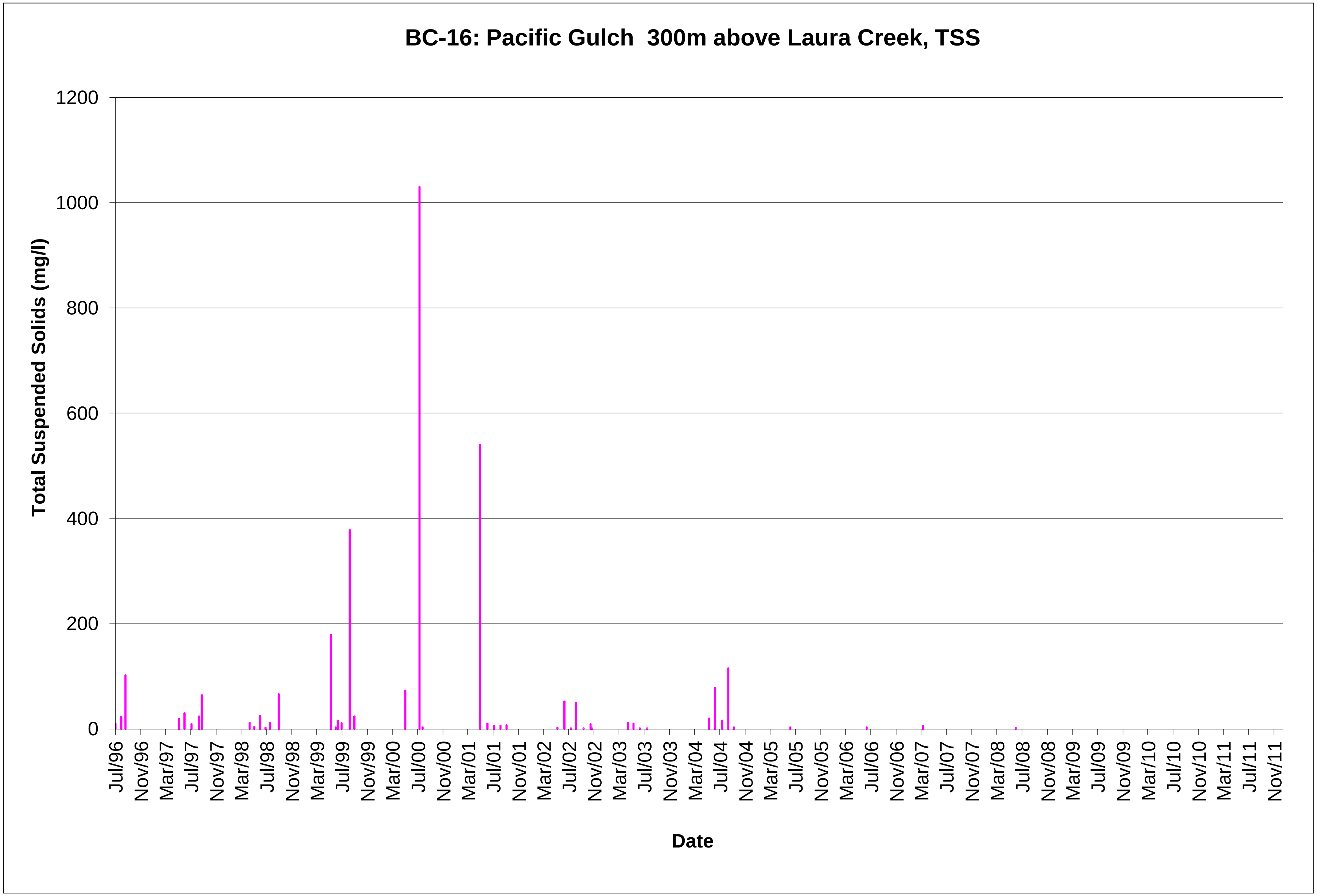
May/10
Sep/10
Jan/11
May/11
Sep/11
Date



BC-16: Pacific Gulch 300m above Laura Creek, TSS
Total Suspended Solids (mg/l)
1200
1000
800
600
400
200
0
Jul/96
Nov/96
Mar/97
Jul/97
Nov/97
Mar/98
Jul/98
Nov/98
Mar/99
Jul/99
Nov/99
Mar/00
Jul/00
Nov/00
Mar/01
Jul/01
Nov/01
Mar/02
Jul/02
Nov/02
Mar/03
Jul/03
Nov/03
Mar/04
Jul/04
Nov/04
Mar/05
Jul/05
Nov/05
Mar/06
Jul/06
Nov/06
Mar/07
Jul/07
Nov/07
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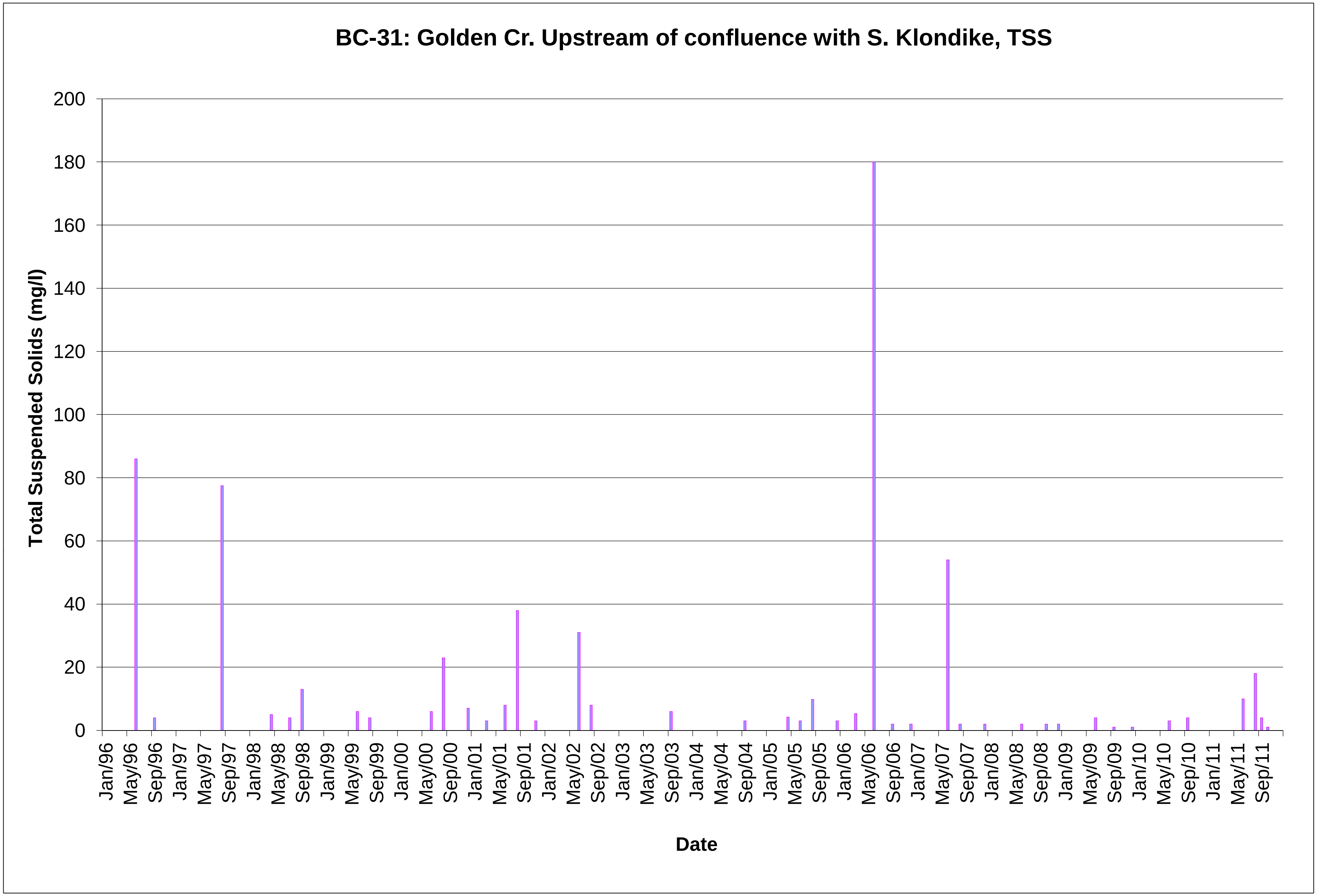
Mar/11
Jul/11
Nov/11
Date



BC-31: Golden Cr. Upstream of confluence with S. Klondike, TSS
Total Suspended Solids (mg/l)
0
20
40
60
80
100
120
140
160
180
200
Jan/96
May/96
Sep/96
Jan/97
May/97
Sep/97
Jan/98
May/98
Sep/98
Jan/99
May/99
Sep/99
Jan/00
May/00
Sep/00
Jan/01
May/01
Sep/01
Jan/02
May/02
Sep/02
Jan/03
May/03
Sep/03
Jan/04
May/04
Sep/04
Jan/05
May/05
Sep/05
Jan/06
May/06
Sep/06
Jan/07
May/07
Sep/07
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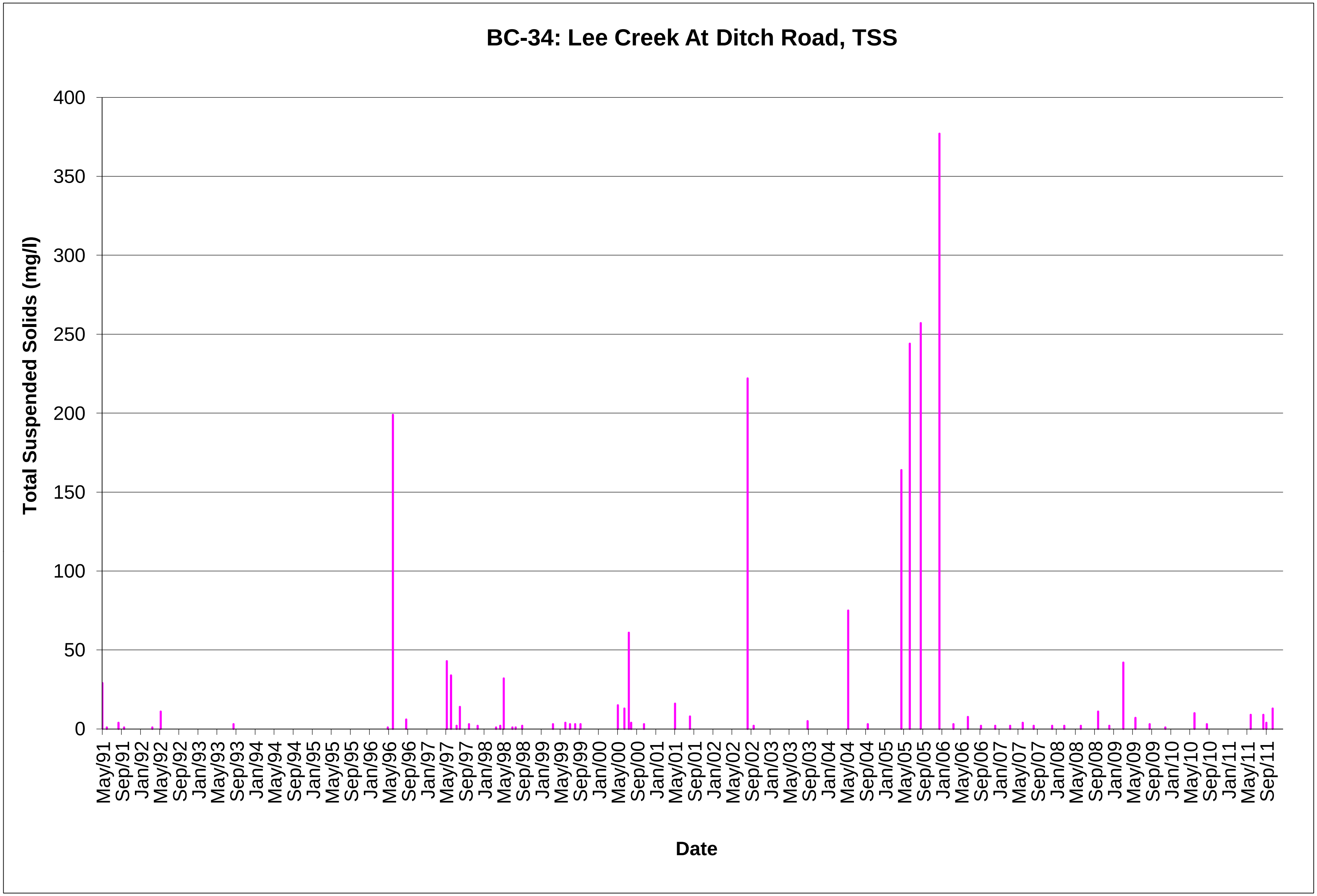
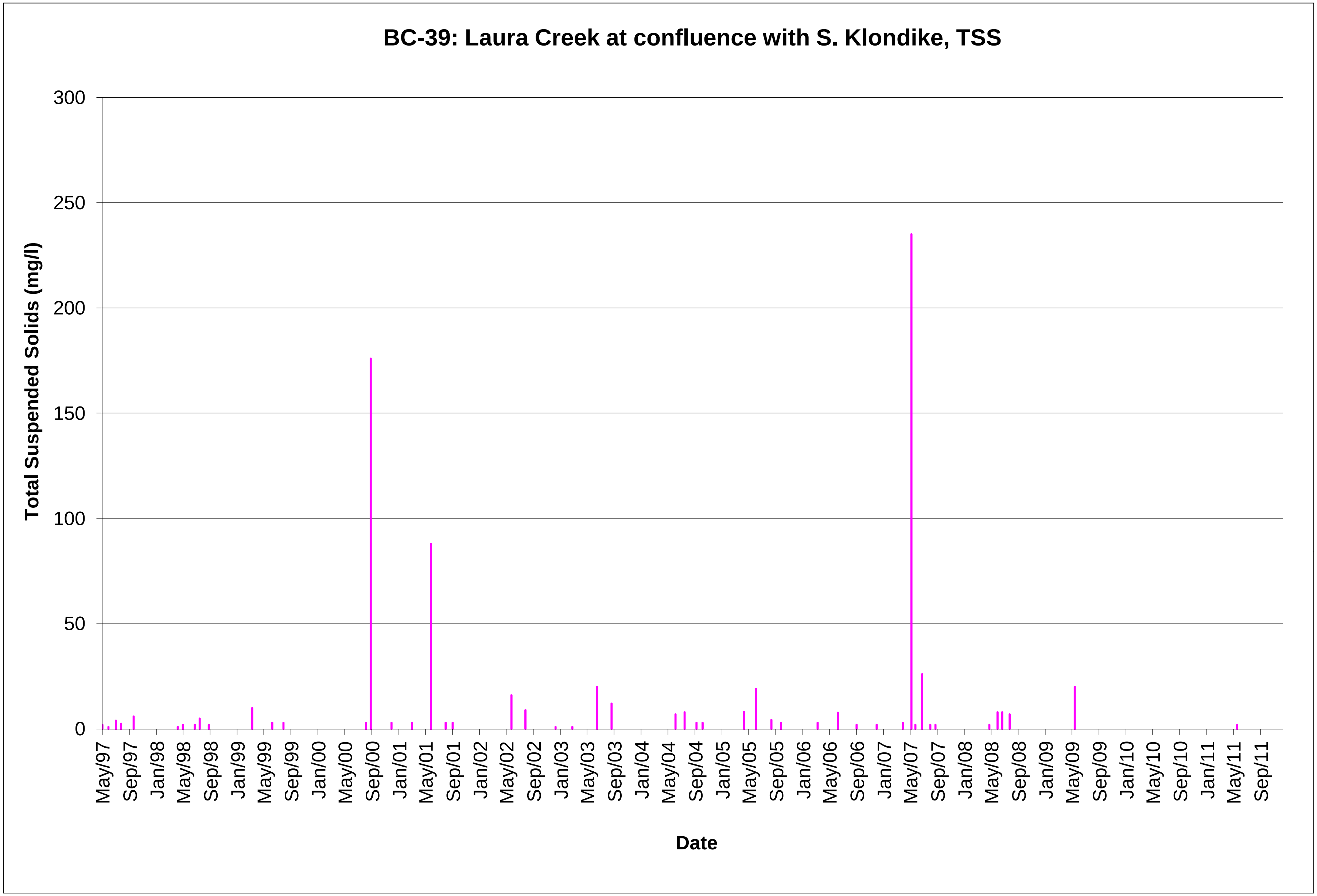
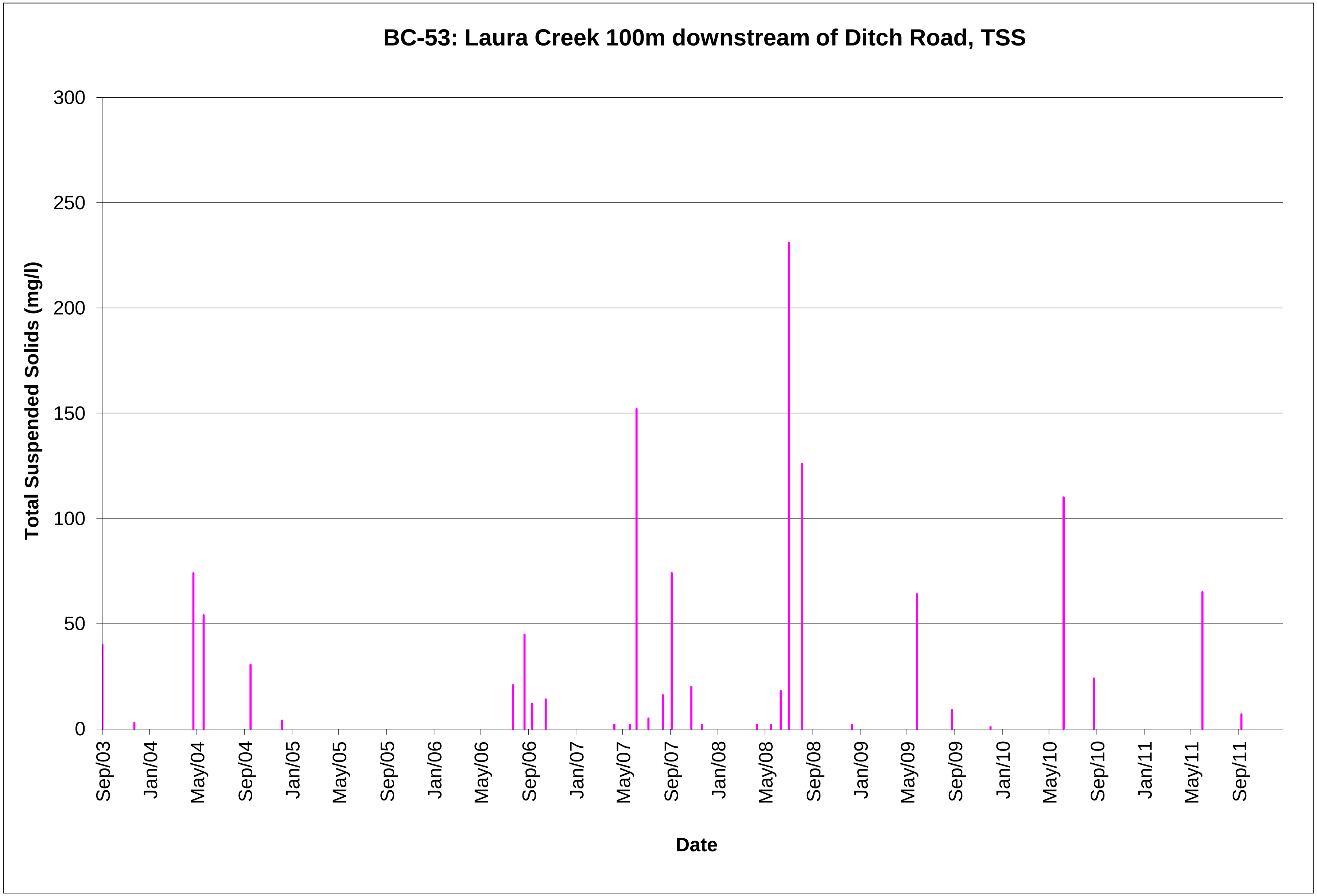
Jan/11
May/11
Sep/11
Date



BC-34: Lee Creek At Ditch Road, TSS
Total Suspended Solids (mg/l)
400
350
300
250
200
150
100
50
0
May/91
Sep/91
Jan/92
May/92
Sep/92
Jan/93
May/93
Sep/93
Jan/94
May/94
Sep/94
Jan/95
May/95
Sep/95
Jan/96
May/96
Sep/96
Jan/97
May/97
Sep/97
Jan/98
May/98
Sep/98
Jan/99
May/99
Sep/99
Jan/00
May/00
Sep/00
Jan/01
May/01
Sep/01
Jan/02
May/02
Sep/02
Jan/03
May/03
Sep/03
Jan/04
May/04
Sep/04
Jan/05
May/05
Sep/05
Jan/06
May/06
Sep/06
Jan/07
May/07
Sep/07
Jan/08
May/08
Sep/08
Jan/09
May/09
Sep/09
Jan/10
May/10
Sep/10
Jan/11
May/11
Sep/11
Date


BC-39: Laura Creek at confluence with S. Klondike, TSS
Total Suspended Solids (mg/l)
300
250
200
150
100
50
0
May/97
Sep/97
Jan/98
May/98
Sep/98
Jan/99
May/99
Sep/99
Jan/00
May/00
Sep/00
Jan/01
May/01
Sep/01
Jan/02
May/02
Sep/02
Jan/03
May/03
Sep/03
Jan/04
May/04
Sep/04
Jan/05
May/05
Sep/05
Jan/06
May/06
Sep/06
Jan/07
May/07
Sep/07
Jan/08
May/08
Sep/08
Jan/09
May/09
Sep/09
Jan/10
May/10
Sep/10
Jan/11
May/11
Sep/11
Date


BC-53: Laura Creek 100m downstream of Ditch Road, TSS
Total Suspended Solids (mg/l)
300
250
200
150
100
50
0
Sep/03
Jan/04
May/04
Sep/04
Jan/05
May/05
Sep/05
Jan/06
May/06
Sep/06
Jan/07
May/07
Sep/07
Jan/08
May/08
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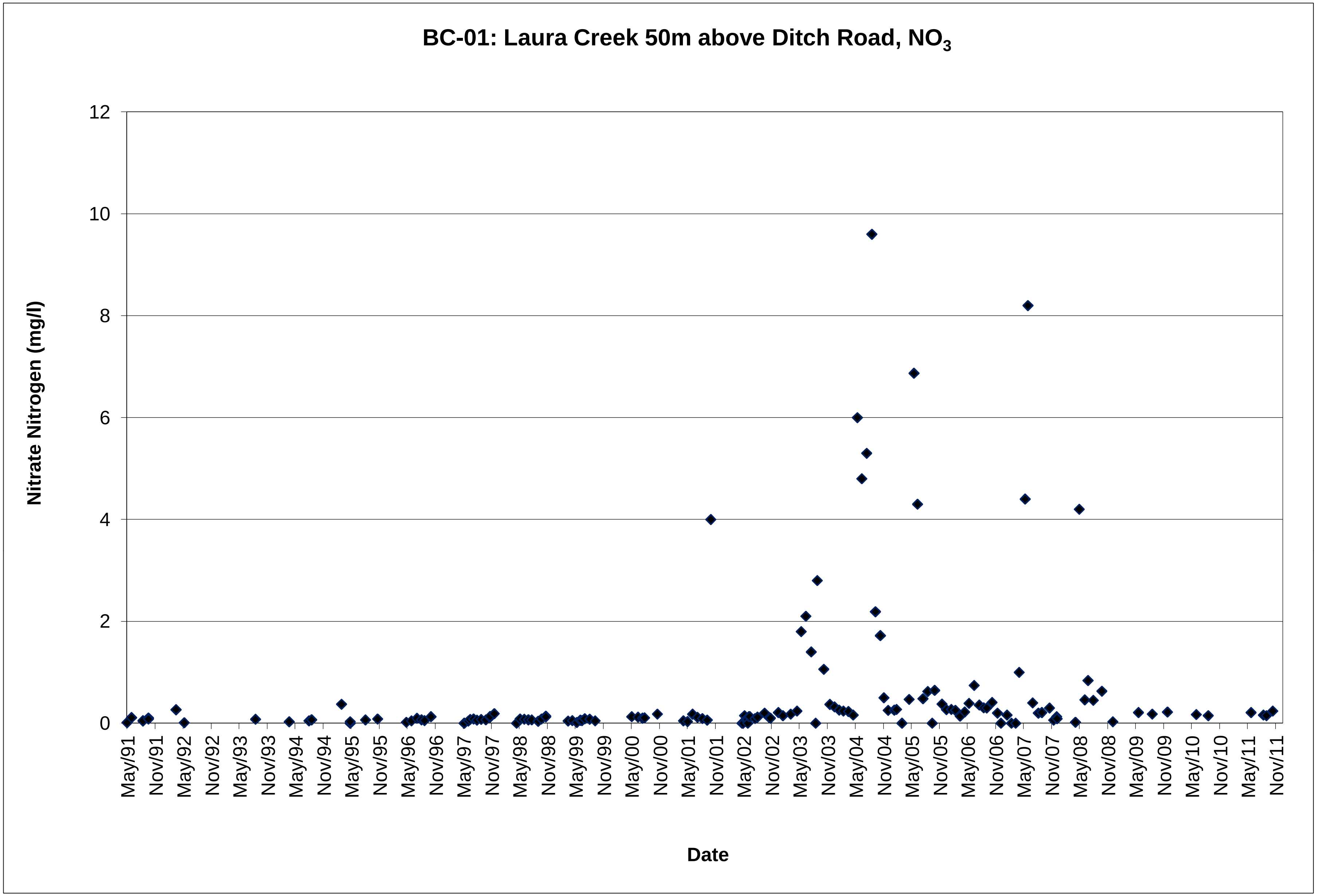
Sep/10
Jan/11
May/11
Sep/11
Date



BC-01: Laura Creek 50m above Ditch Road, NO_3
Nitrate Nitrogen (mg/l)
0
2
4
6
8
10
12
May/91
Nov/91
May/92
Nov/92
May/93
Nov/93
May/94
Nov/94
May/95
Nov/95
May/96
Nov/96
May/97
Nov/97
May/98
Nov/98
May/99
Nov/99
May/00
Nov/00
May/01
Nov/01
May/02
Nov/02
May/03
Nov/03
May/04
Nov/04
May/05
Nov/05
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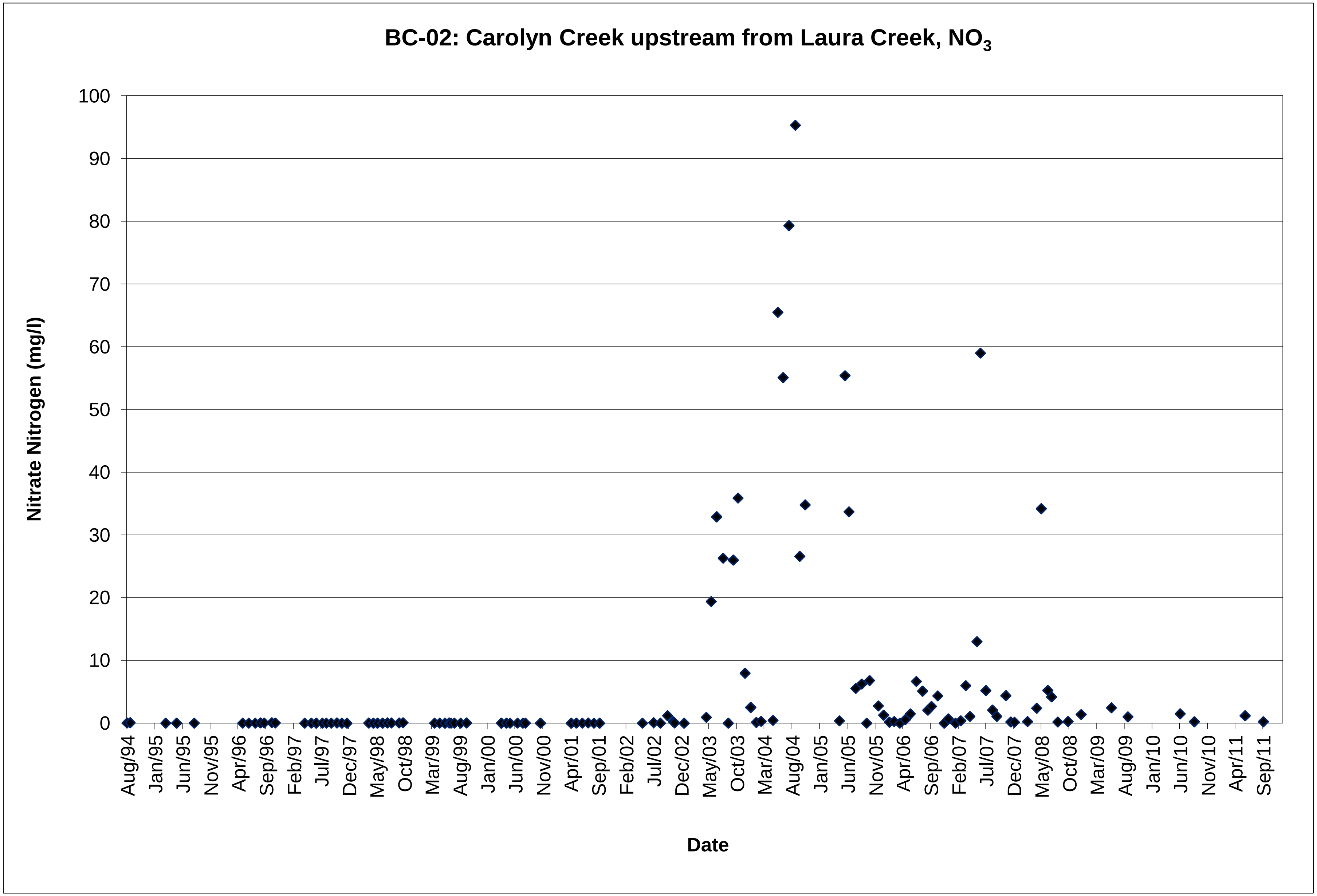
Nov/10
May/11
Nov/11
Date



BC-02: Carolyn Creek upstream from Laura Creek, NO_3
Nitrate Nitrogen (mg/l)
100
90
80
70
60
50
40
30
20
10
0
Aug/94
Jan/95
Jun/95
Nov/95
Apr/96
Sep/96
Feb/97
Jul/97
Dec/97
May/98
Oct/98
Mar/99
Aug/99
Jan/00
Jun/00
Nov/00
Apr/01
Sep/01
Feb/02
Jul/02
Dec/02
May/03
Oct/03
Mar/04
Aug/04
Jan/05
Jun/05
Nov/05
Apr/06
Sep/06
Feb/07
Jul/07
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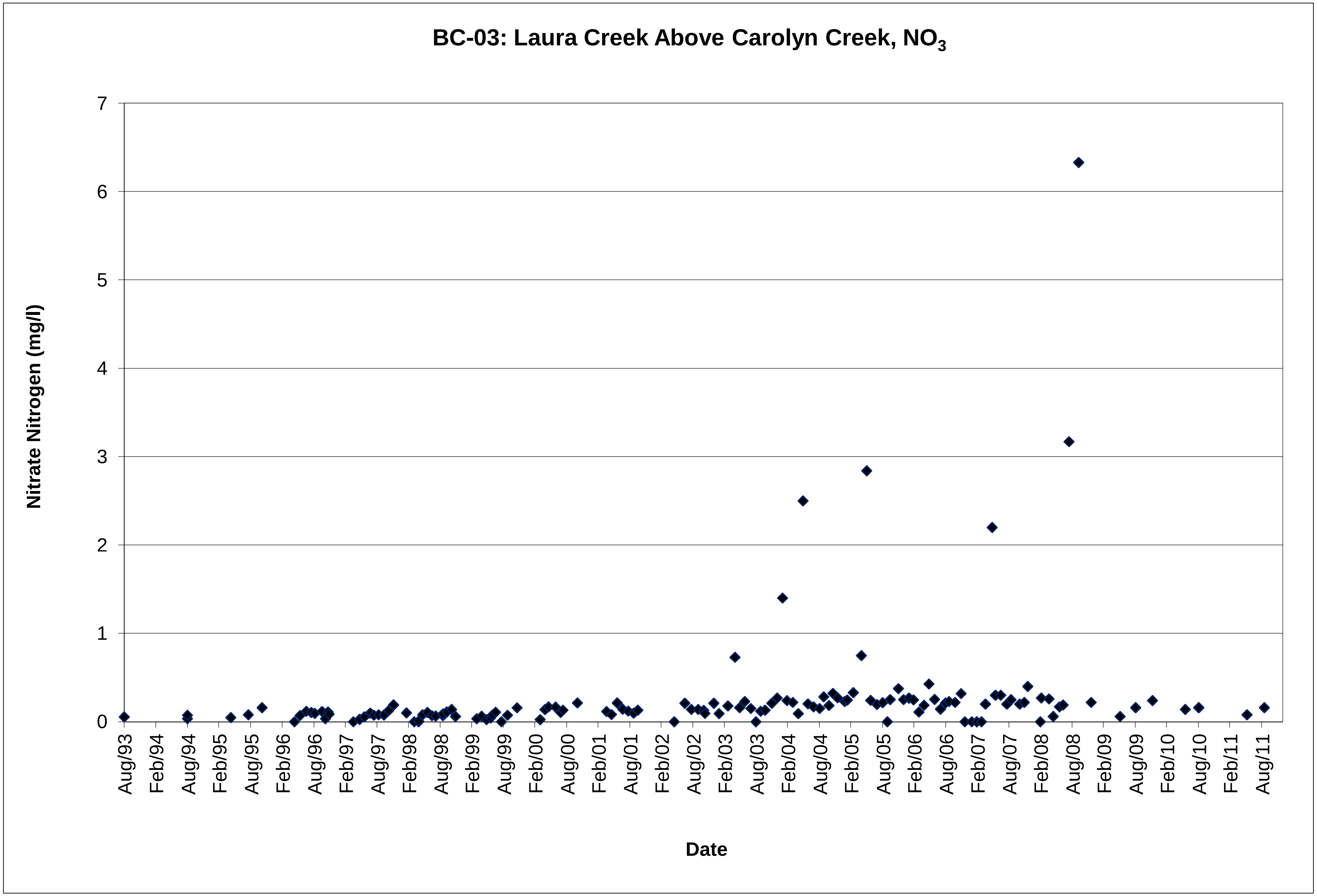
May/08
Oct/08
Mar/09
Aug/09
Jan/10
Jun/10
Nov/10
Apr/11
Sep/11
Date



BC-03: Laura Creek Above Carolyn Creek, NO_3
Nitrate Nitrogen (mg/l)
7
6
5
4
3
2
1
0
Aug/93
Feb/94
Aug/94
Feb/95
Aug/95
Feb/96
Aug/96
Feb/97
Aug/97
Feb/98
Aug/98
Feb/99
Aug/99
Feb/00
Aug/00
Feb/01
Aug/01
Feb/02
Aug/02
Feb/03
Aug/03
Feb/04
Aug/04
Feb/05
Aug/05
Feb/06
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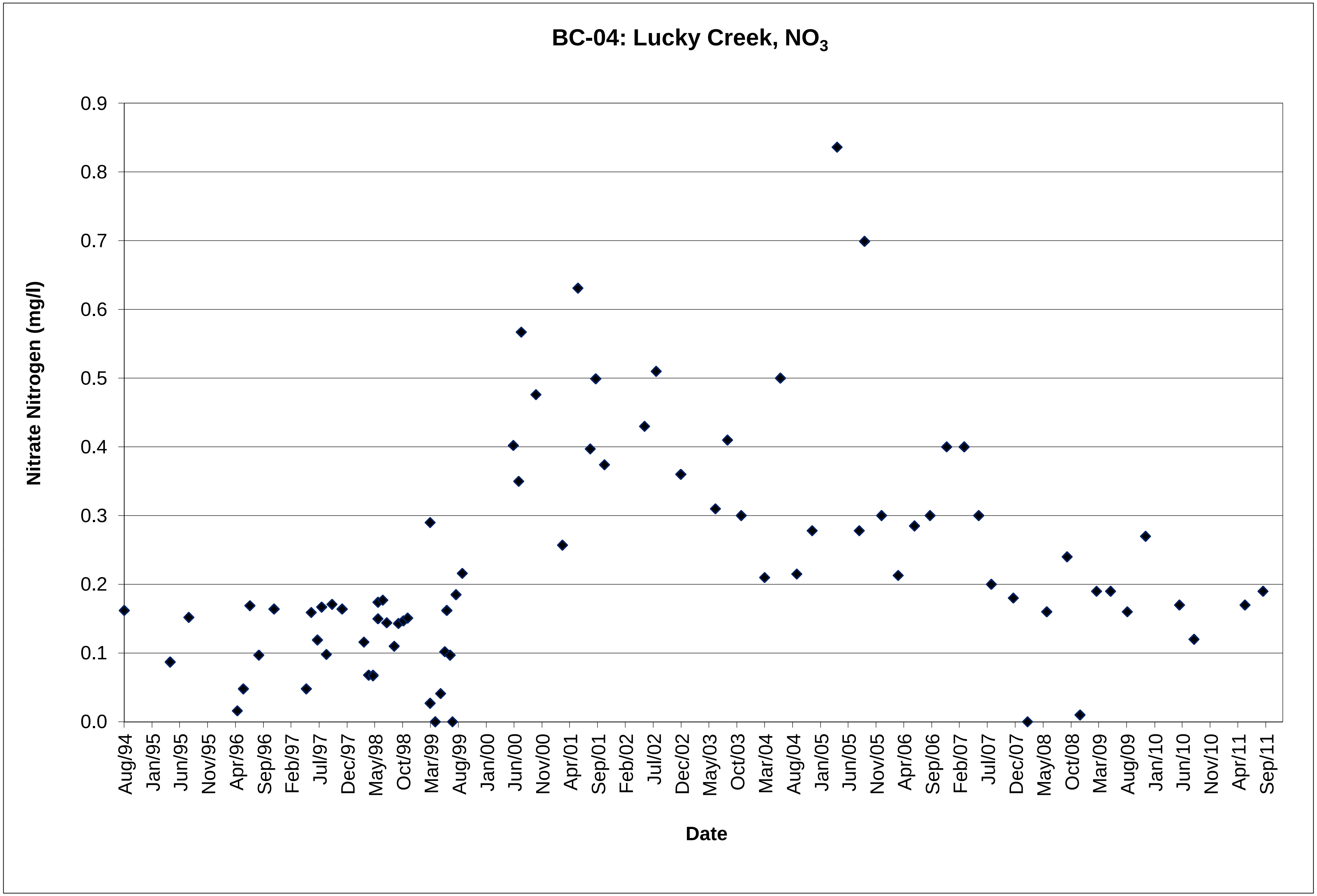
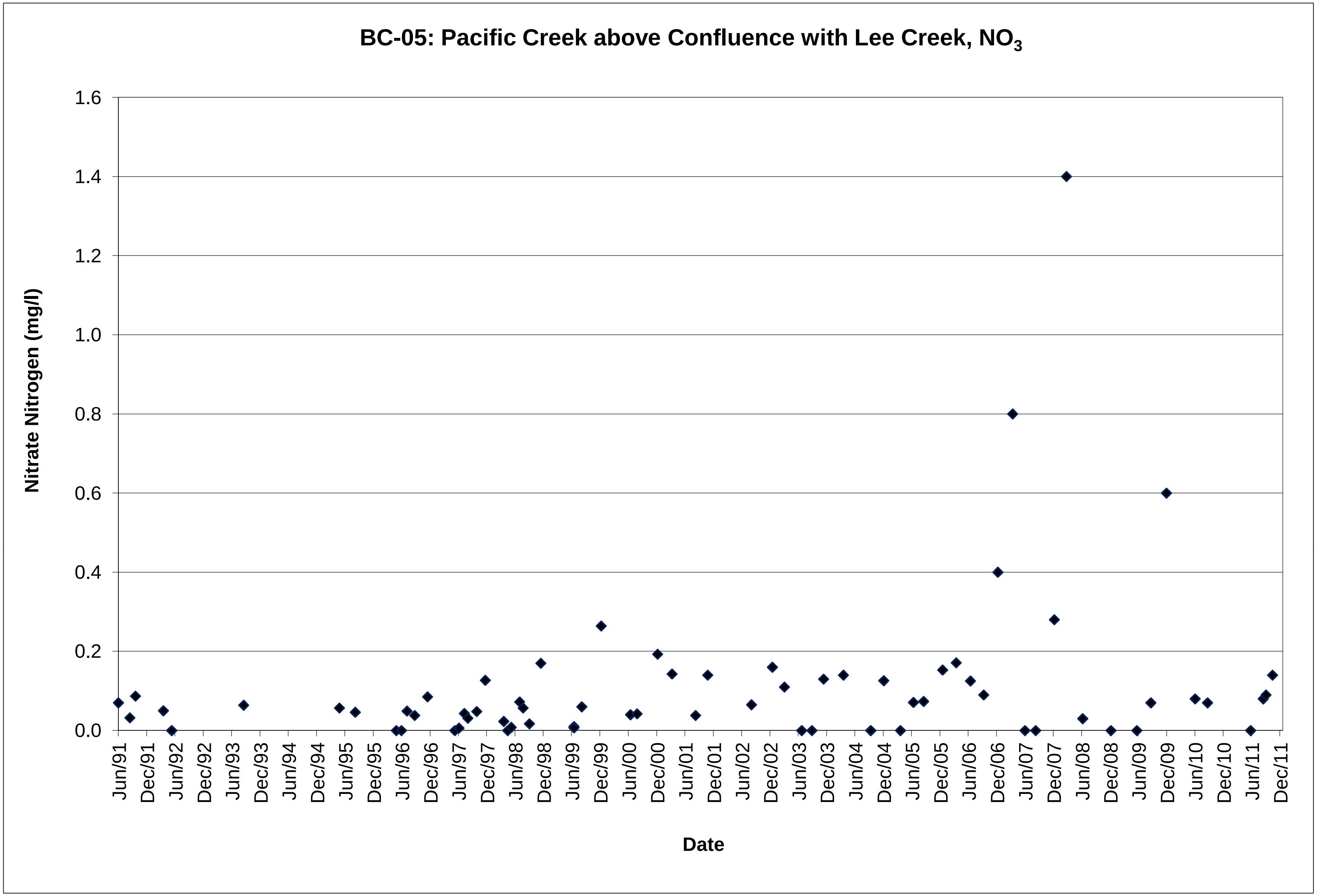
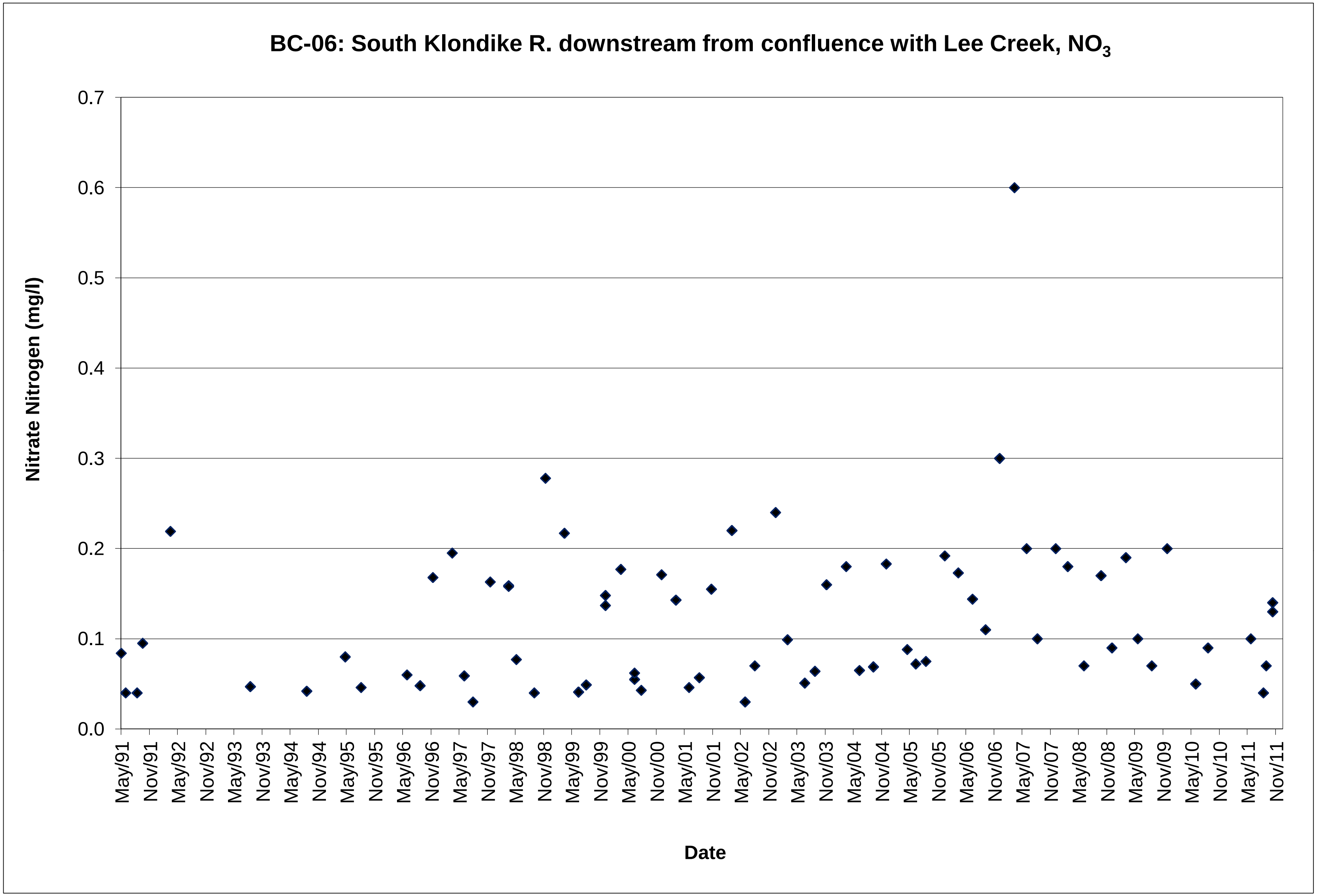
Feb/10
Aug/10
Feb/11
Aug/11
Date



BC-04: Lucky Creek, NO_3
Nitrate Nitrogen (mg/l)
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
Aug/94
Jan/95
Jun/95
Nov/95
Apr/96
Sep/96
Feb/97
Jul/97
Dec/97
May/98
Oct/98
Mar/99
Aug/99
Jan/00
Jun/00
Nov/00
Apr/01
Sep/01
Feb/02
Jul/02
Dec/02
May/03
Oct/03
Mar/04
Aug/04
Jan/05
Jun/05
Nov/05
Apr/06
Sep/06
Feb/07
Jul/07
Dec/07
May/08
Oct/08
Mar/09
Aug/09
Jan/10
Jun/10
Nov/10
Apr/11
Sep/11
Date


BC-05: Pacific Creek above Confluence with Lee Creek, NO3
Nitrate Nitrogen (mg/l)
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
Jun/91
Dec/91
Jun/92
Dec/92
Jun/93
Dec/93
Jun/94
Dec/94
Jun/95
Dec/95
Jun/96
Dec/96
Jun/97
Dec/97
Jun/98
Dec/98
Jun/99
Dec/99
Jun/00
Dec/00
Jun/01
Dec/01
Jun/02
Dec/02
Jun/03
Dec/03
Jun/04
Dec/04
Jun/05
Dec/05
Jun/06
Dec/06
Jun/07
Dec/07
Jun/08
Dec/08
Jun/09
Dec/09
Jun/10
Dec/10
Jun/11
Dec/11
Date



BC-06: South Klondike R. downstream from confluence with Lee Creek, NO_3
Nitrate Nitrogen (mg/l)
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
May/91
Nov/91
May/92
Nov/92
May/93
Nov/93
May/94
Nov/94
May/95
Nov/95
May/96
Nov/96
May/97
Nov/97
May/98
Nov/98
May/99
Nov/99
May/00
Nov/00
May/01
Nov/01
May/02
Nov/02
May/03
Nov/03
May/04
Nov/04
May/05
Nov/05
May/06
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May/08
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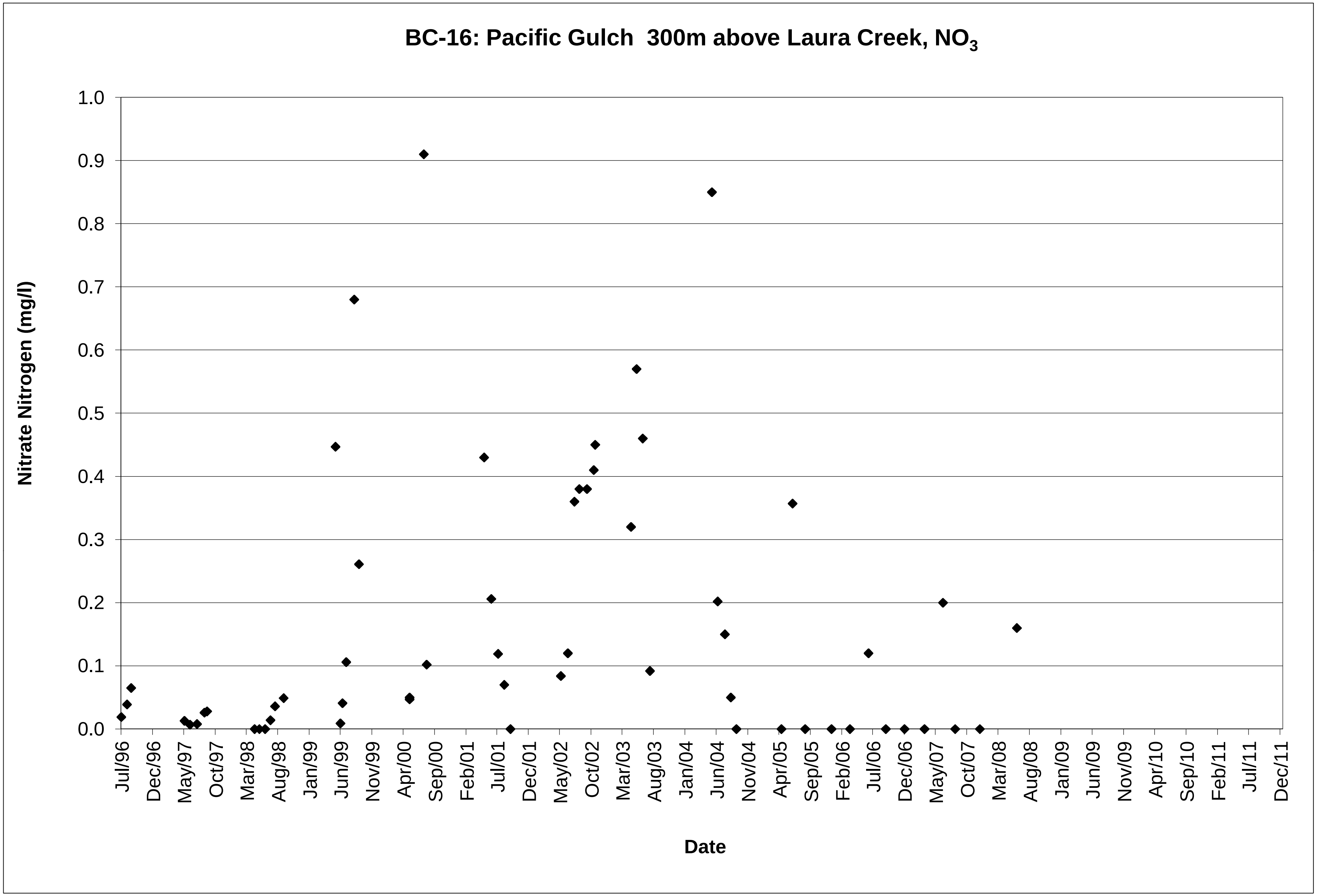
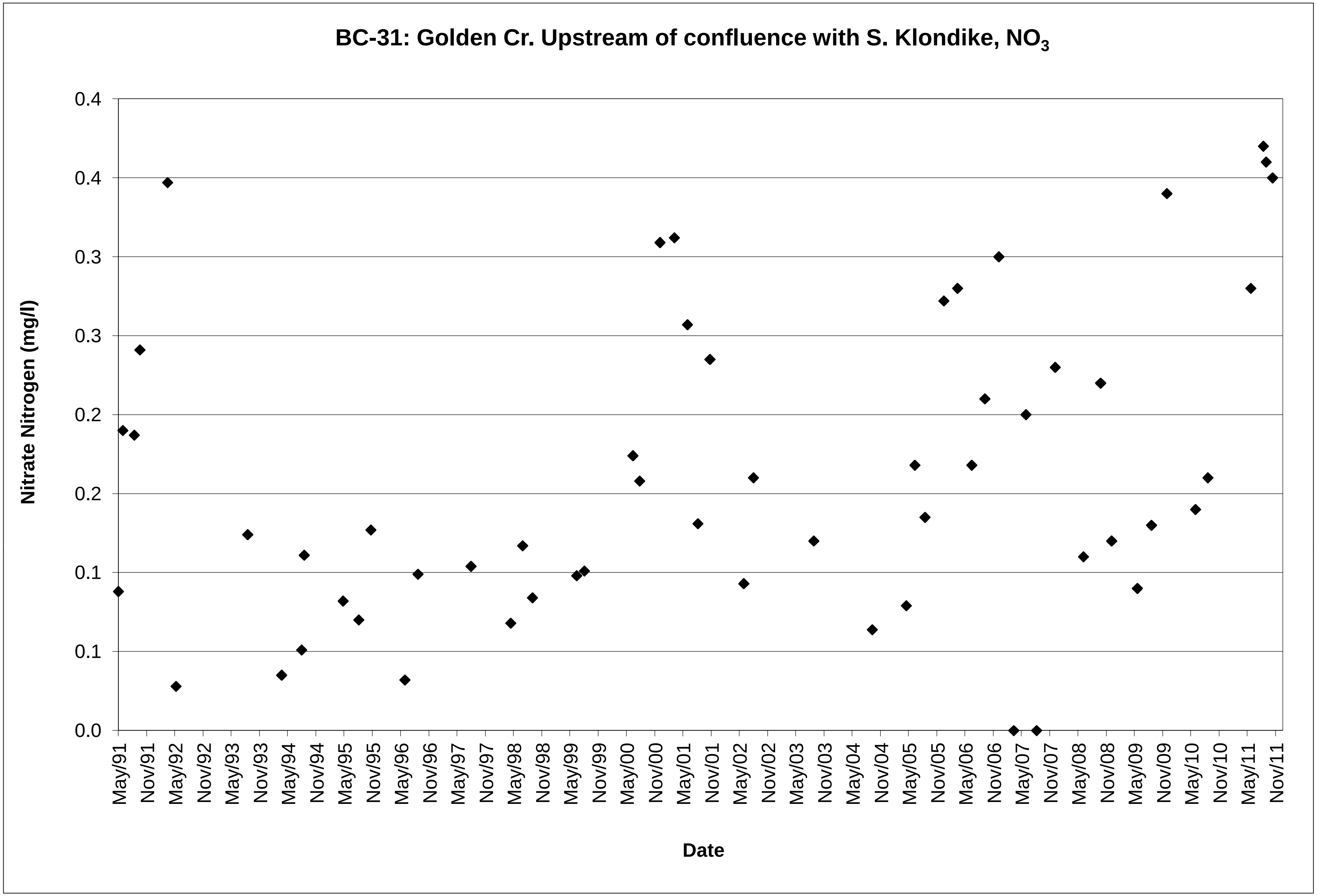
Nov/09
May/10
Nov/10
May/11
Nov/11
Date



BC-16: Pacific Gulch 300m above Laura Creek, NO3
Nitrate Nitrogen (mg/l)
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
Jul/96
Dec/96
May/97
Oct/97
Mar/98
Aug/98
Jan/99
Jun/99
Nov/99
Apr/00
Sep/00
Feb/01
Jul/01
Dec/01
May/02
Oct/02
Mar/03
Aug/03
Jan/04
Jun/04
Nov/04
Apr/05
Sep/05
Feb/06
Jul/06
Dec/06
May/07
Oct/07
Mar/08
Aug/08
Jan/09
Jun/09
Nov/09
Apr/10
Sep/10
Feb/11
Jul/11
Dec/11
Date



BC-31: Golden Cr. Upstream of confluence with S. Klondike, NO3
Nitrate Nitrogen (mg/l)
0.4
0.4
0.3
0.3
0.2
0.2
0.1
0.1
0.0
May/91
Nov/91
May/92
Nov/92
May/93
Nov/93
May/94
Nov/94
May/95
Nov/95
May/96
Nov/96
May/97
Nov/97
May/98
Nov/98
May/99
Nov/99
May/00
Nov/00
May/01
Nov/01
May/02
Nov/02
May/03
Nov/03
May/04
Nov/04
May/05
Nov/05
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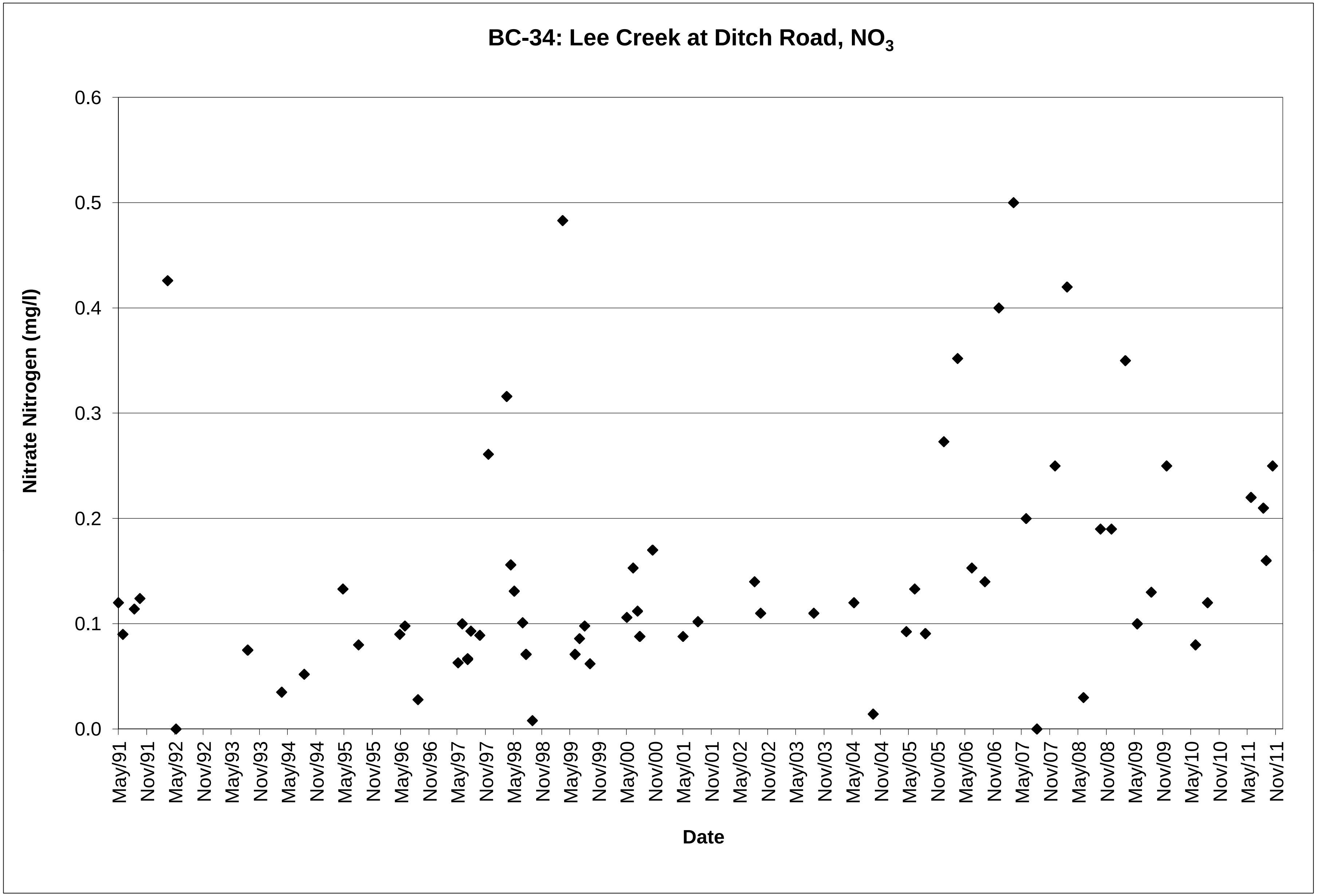
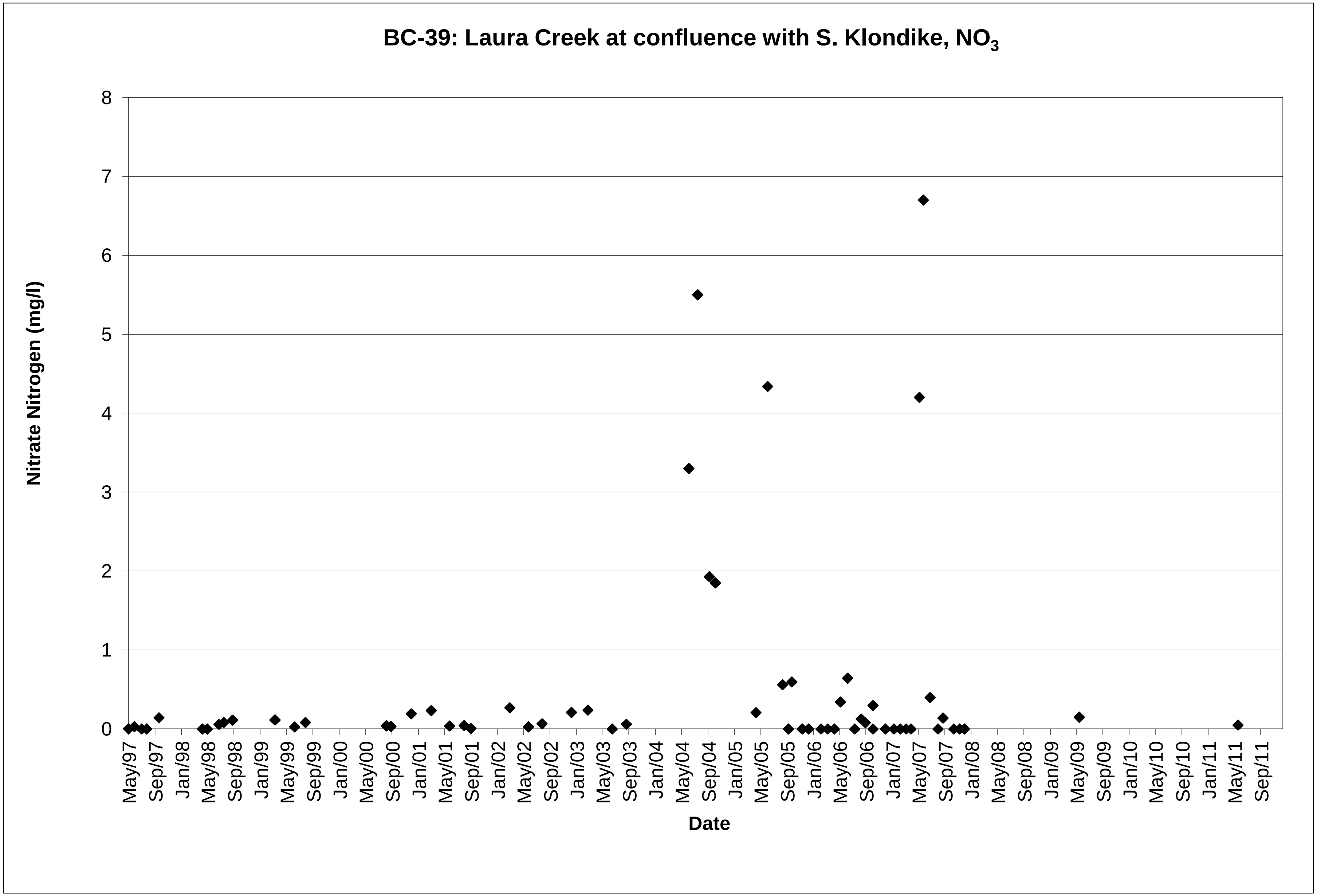
May/10
Nov/10
May/11
Nov/11
Date



BC-34: Lee Creek at Ditch Road, NO_3
Nitrate Nitrogen (mg/l)
0.0
0.1
0.2
0.3
0.4
0.5
0.6
May/91 Nov/91 May/92 Nov/92 May/93 Nov/93 May/94 Nov/94 May/95 Nov/95 May/96 Nov/96 May/97 Nov/97 May/98 Nov/98 May/99 Nov/99 May/00 Nov/00 May/01 Nov/01 May/02 Nov/02 May/03 Nov/03 May/04 Nov/04 May/05 Nov/05 May/06 Nov/06 May/07 Nov/07 May/08 Nov/08 May/09 Nov/09 May/10 Nov/10 May/11 Nov/11
Date


BC-39: Laura Creek at confluence with S. Klondike, NO_3
Nitrate Nitrogen (mg/l)
0
1
2
3
4
5
6
7
8
May/97
Sep/97
Jan/98
May/98
Sep/98
Jan/99
May/99
Sep/99
Jan/00
May/00
Sep/00
Jan/01
May/01
Sep/01
Jan/02
May/02
Sep/02
Jan/03
May/03
Sep/03
Jan/04
May/04
Sep/04
Jan/05
May/05
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May/06
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Jan/07
May/07
Sep/07
Jan/08
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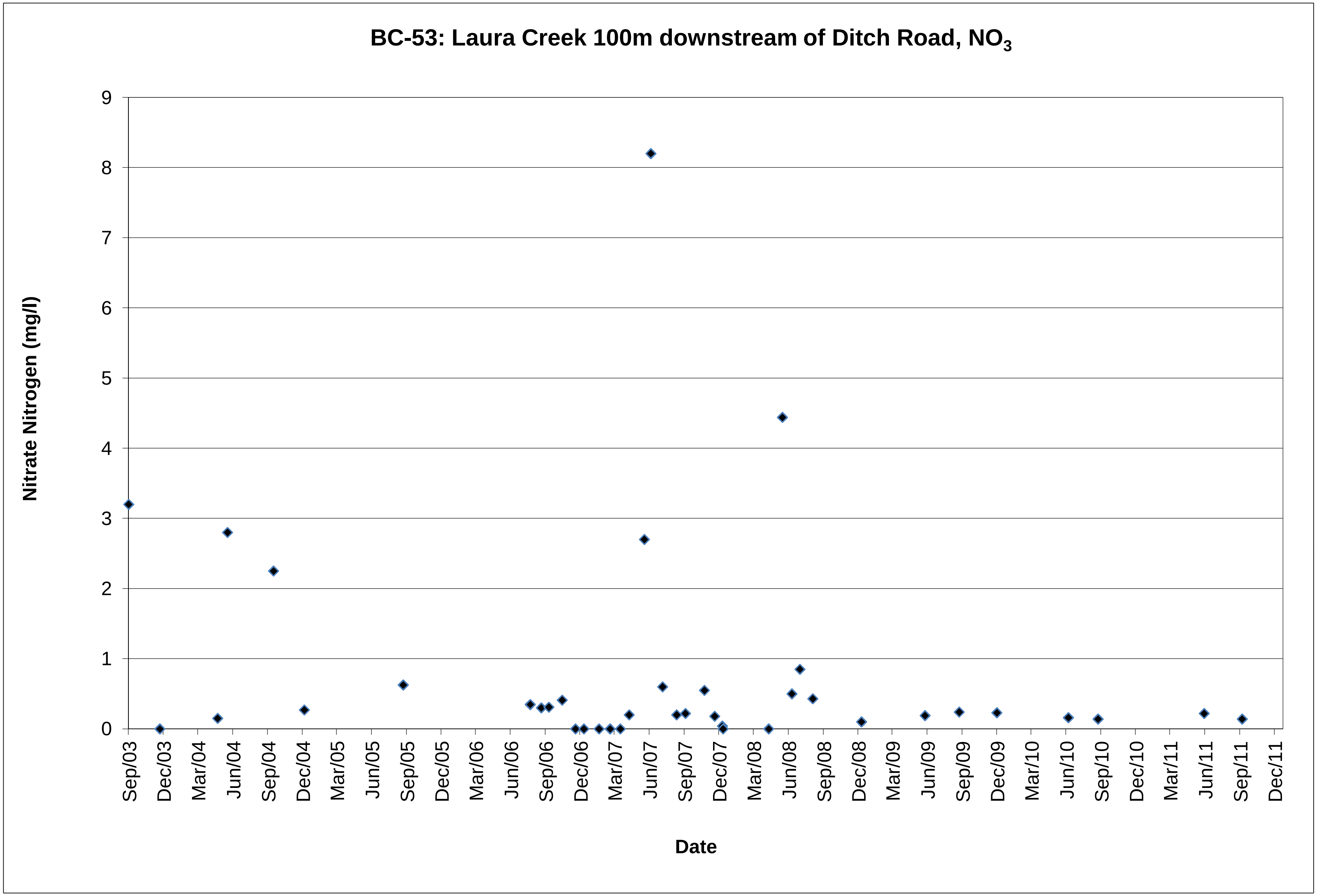
Jan/11
May/11
Sep/11
Date


BC-53: Laura Creek 100m downstream of Ditch Road, NO3
Nitrate Nitrogen (mg/l)
0
1
2
3
4
5
6
7
8
9
Sep/03
Dec/03
Mar/04
Jun/04
Sep/04
Dec/04
Mar/05
Jun/05
Sep/05
Dec/05
Mar/06
Jun/06
Sep/06
Dec/06
Mar/07
Jun/07
Sep/07
Dec/07
Mar/08
Jun/08
Sep/08
Dec/08
Mar/09
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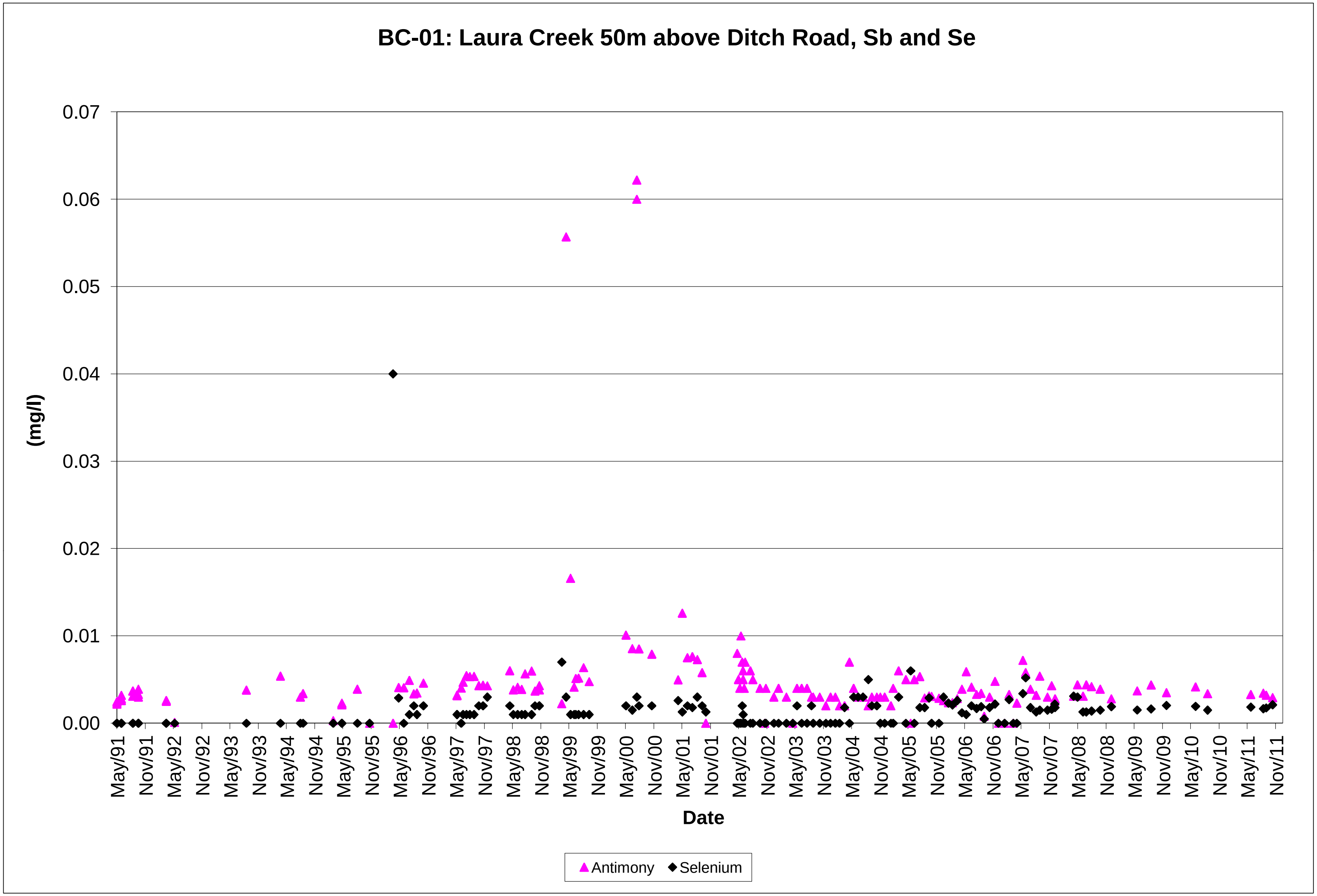
Mar/11
Jun/11
Sep/11
Dec/11
Date



BC-01: Laura Creek 50m above Ditch Road, Sb and Se
(mg/l)
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0.00
May/91
Nov/91
May/92
Nov/92
May/93
Nov/93
May/94
Nov/94
May/95
Nov/95
May/96
Nov/96
May/97
Nov/97
May/98
Nov/98
May/99
Nov/99
May/00
Nov/00
May/01
Nov/01
May/02
Nov/02
May/03
Nov/03
May/04
Nov/04
May/05
Nov/05
May/06
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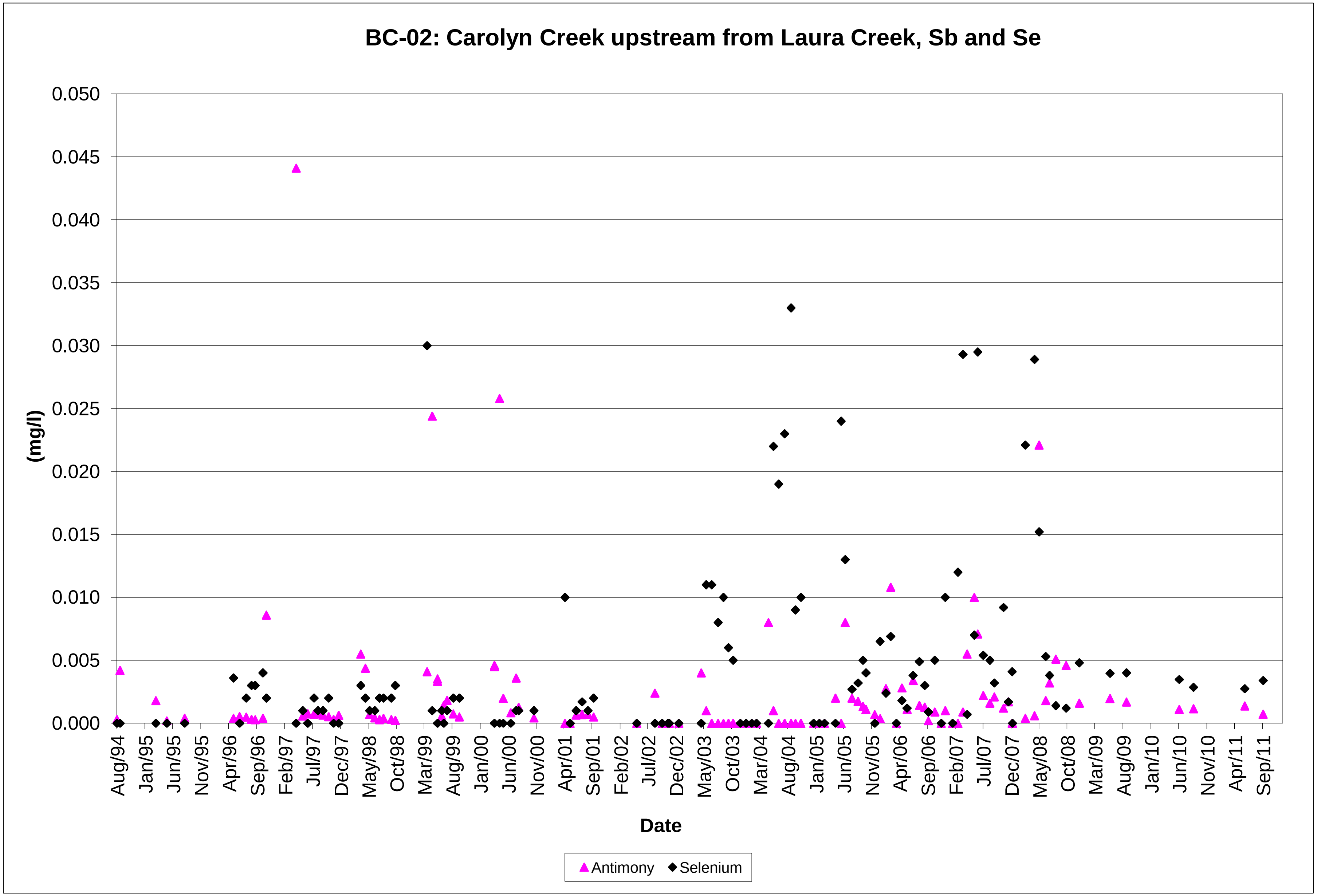
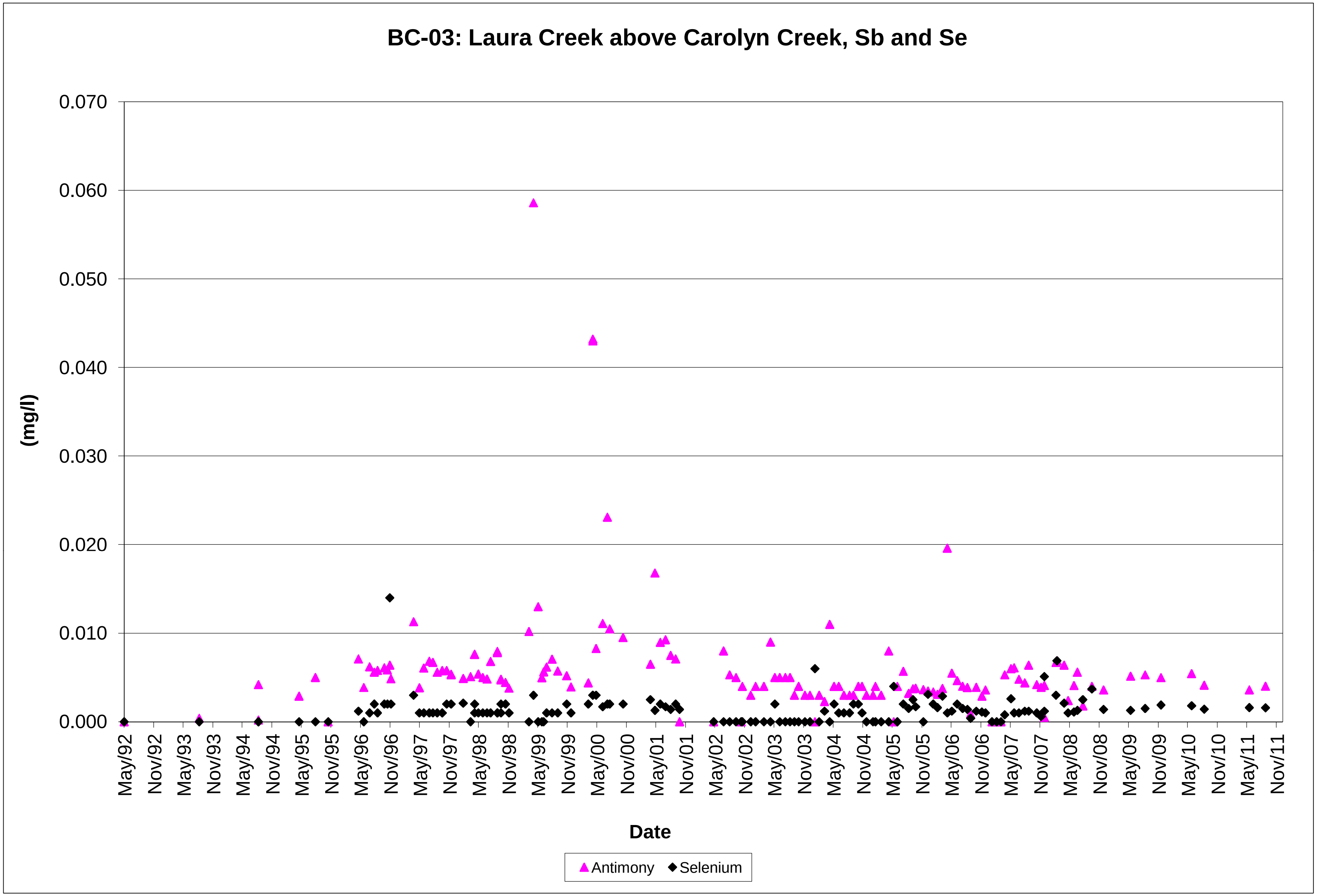
May/10
Nov/10
May/11
Nov/11
Date
Antimony
Selenium


BC-02: Carolyn Creek upstream from Laura Creek, Sb and Se
(mg/l)
0.050
0.045
0.040
0.035
0.030
0.025
0.020
0.015
0.010
0.005
0.000
Aug/94
Jan/95
Jun/95
Nov/95
Apr/96
Sep/96
Feb/97
Jul/97
Dec/97
May/98
Oct/98
Mar/99
Aug/99
Jan/00
Jun/00
Nov/00
Apr/01
Sep/01
Feb/02
Jul/02
Dec/02
May/03
Oct/03
Mar/04
Aug/04
Jan/05
Jun/05
Nov/05
Apr/06
Sep/06
Feb/07
Jul/07
Dec/07
May/08
Oct/08
Mar/09
Aug/09
Jan/10
Jun/10
Nov/10
Apr/11
Sep/11
Date
Antimony
Selenium


BC-03: Laura Creek above Carolyn Creek, Sb and Se
(mg/l)
0.070
0.060
0.050
0.040
0.030
0.020
0.010
0.000
May/92
Nov/92
May/93
Nov/93
May/94
Nov/94
May/95
Nov/95
May/96
Nov/96
May/97
Nov/97
May/98
Nov/98
May/99
Nov/99
May/00
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Nov/01
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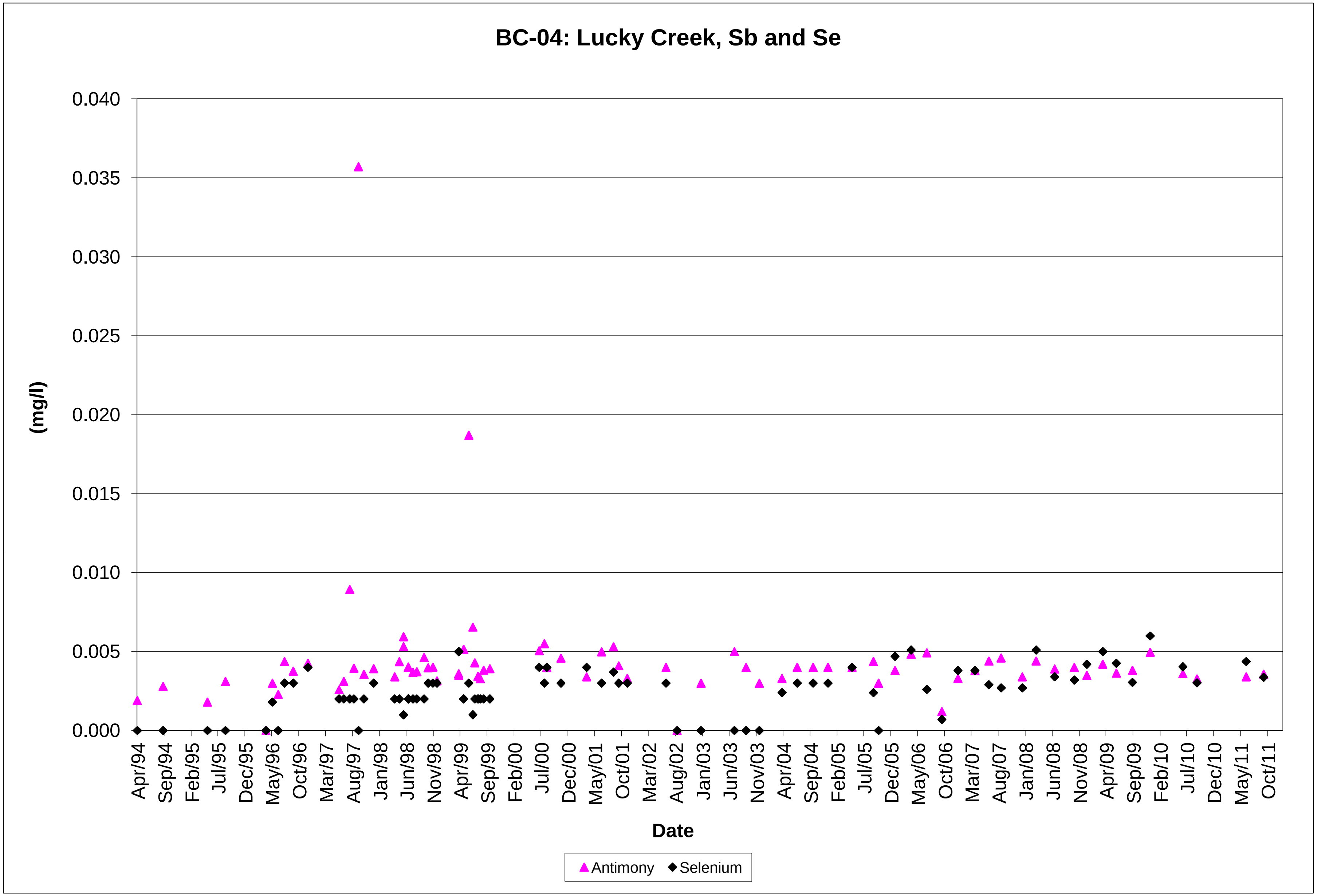
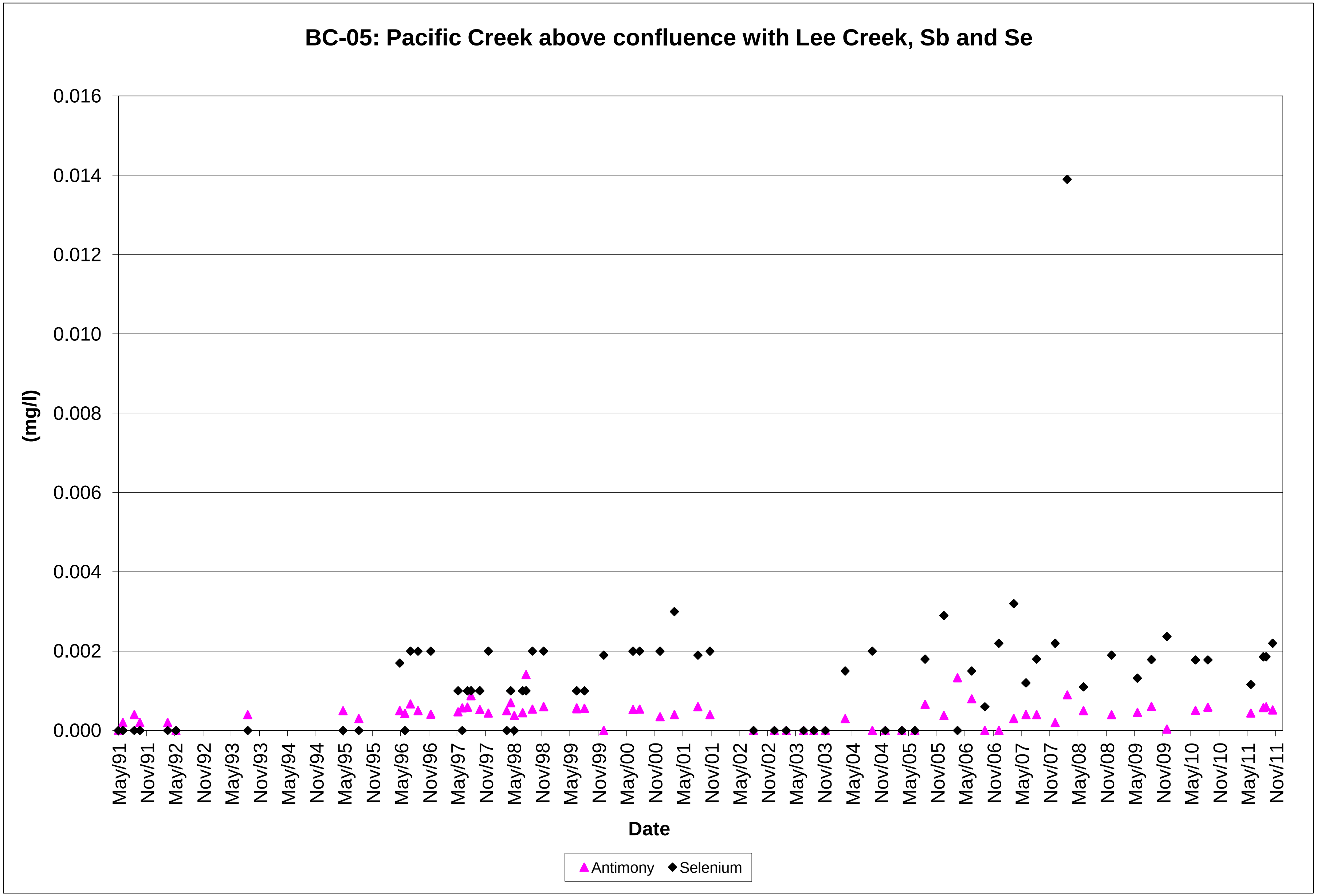
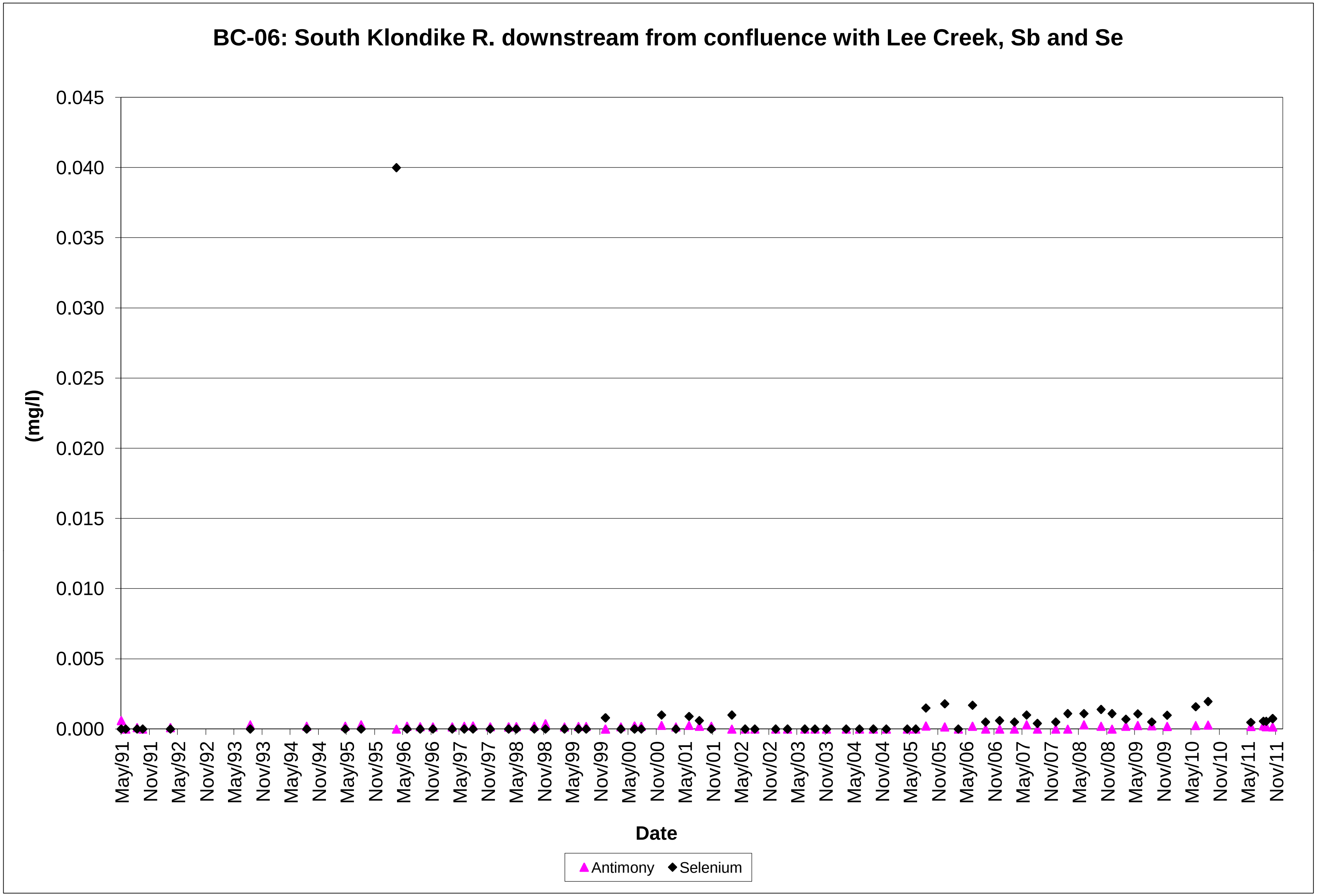
Nov/03
May/04
Nov/04
May/05
Nov/05
May/06
Nov/06
May/07
Nov/07
May/08
Nov/08
May/09
Nov/09
May/10
Nov/10
May/11
Nov/11
Date
Antimony
Selenium



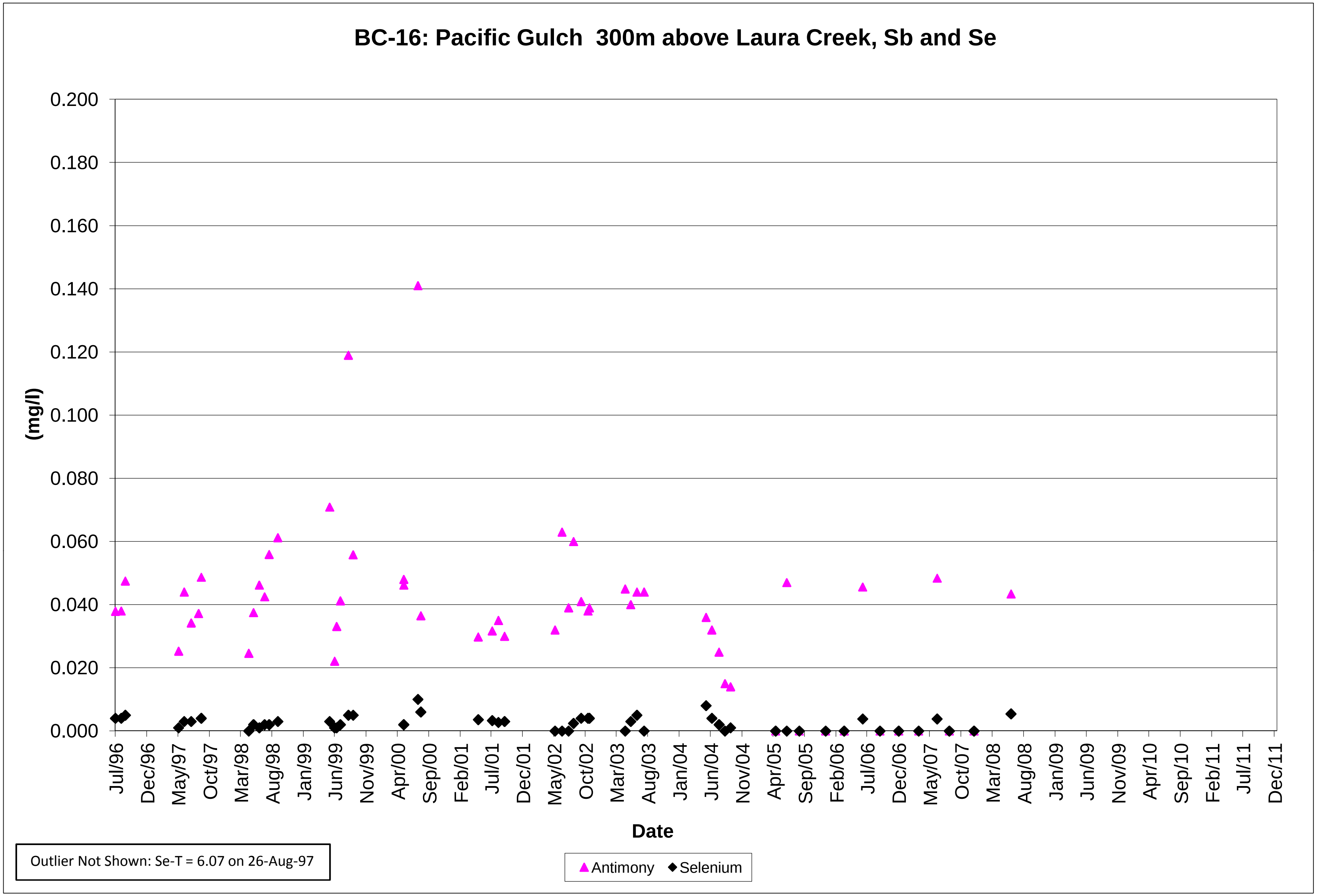
BC-04: Lucky Creek, Sb and Se
(mg/l)
0.040
0.035
0.030
0.025
0.020
0.015
0.010
0.005
0.000
Apr/94
Sep/94
Feb/95
Jul/95
Dec/95
May/96
Oct/96
Mar/97
Aug/97
Jan/98
Jun/98
Nov/98
Apr/99
Sep/99
Feb/00
Jul/00
Dec/00
May/01
Oct/01
Mar/02
Aug/02
Jan/03
Jun/03
Nov/03
Apr/04
Sep/04
Feb/05
Jul/05
Dec/05
May/06
Oct/06
Mar/07
Aug/07
Jan/08
Jun/08
Nov/08
Apr/09
Sep/09
Feb/10
Jul/10
Dec/10
May/11
Oct/11
Date
Antimony
Selenium

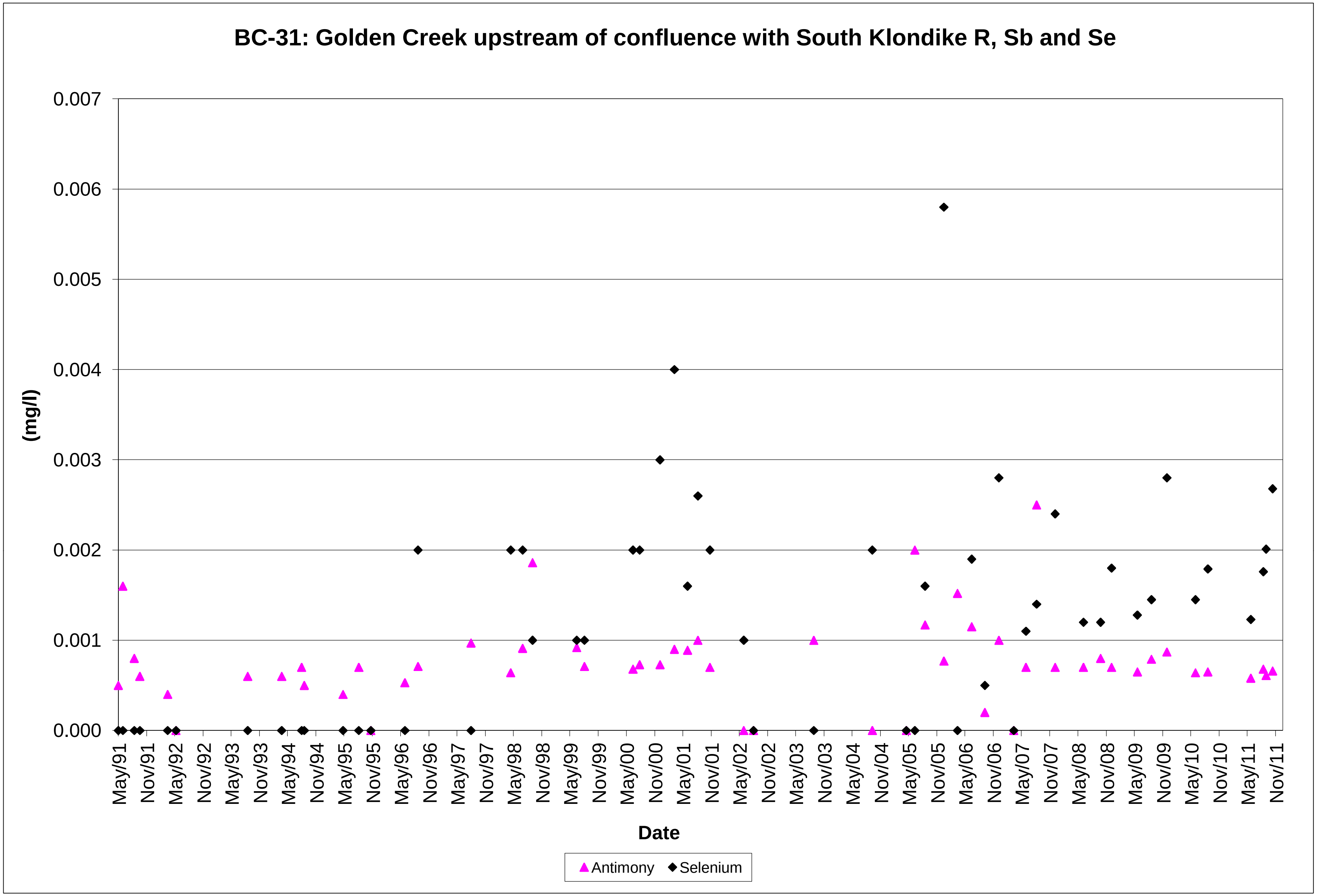


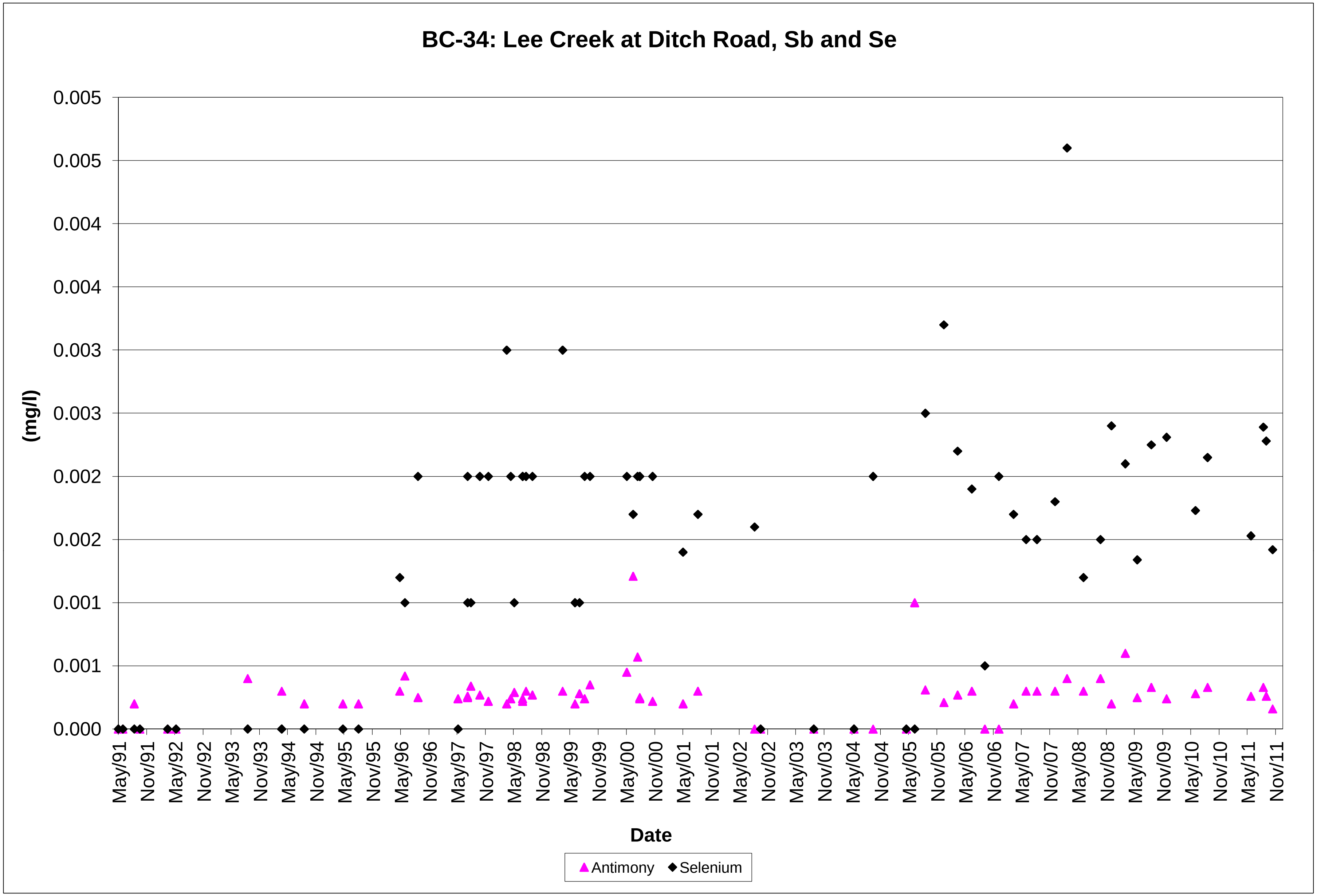
BC-05: Pacific Creek above confluence with Lee Creek, Sb and Se
(mg/l)
0.016
0.014
0.012
0.010
0.008
0.006
0.004
0.002
0.000
May/91
Nov/91
May/92
Nov/92
May/93
Nov/93
May/94
Nov/94
May/95
Nov/95
May/96
Nov/96
May/97
Nov/97
May/98
Nov/98
May/99
Nov/99
May/00
Nov/00
May/01
Nov/01
May/02
Nov/02
May/03
Nov/03
May/04
Nov/04
May/05
Nov/05
May/06
Nov/06
May/07
Nov/07
May/08
Nov/08
May/09
Nov/09
May/10
Nov/10
May/11
Nov/11
Date
Antimony
Selenium



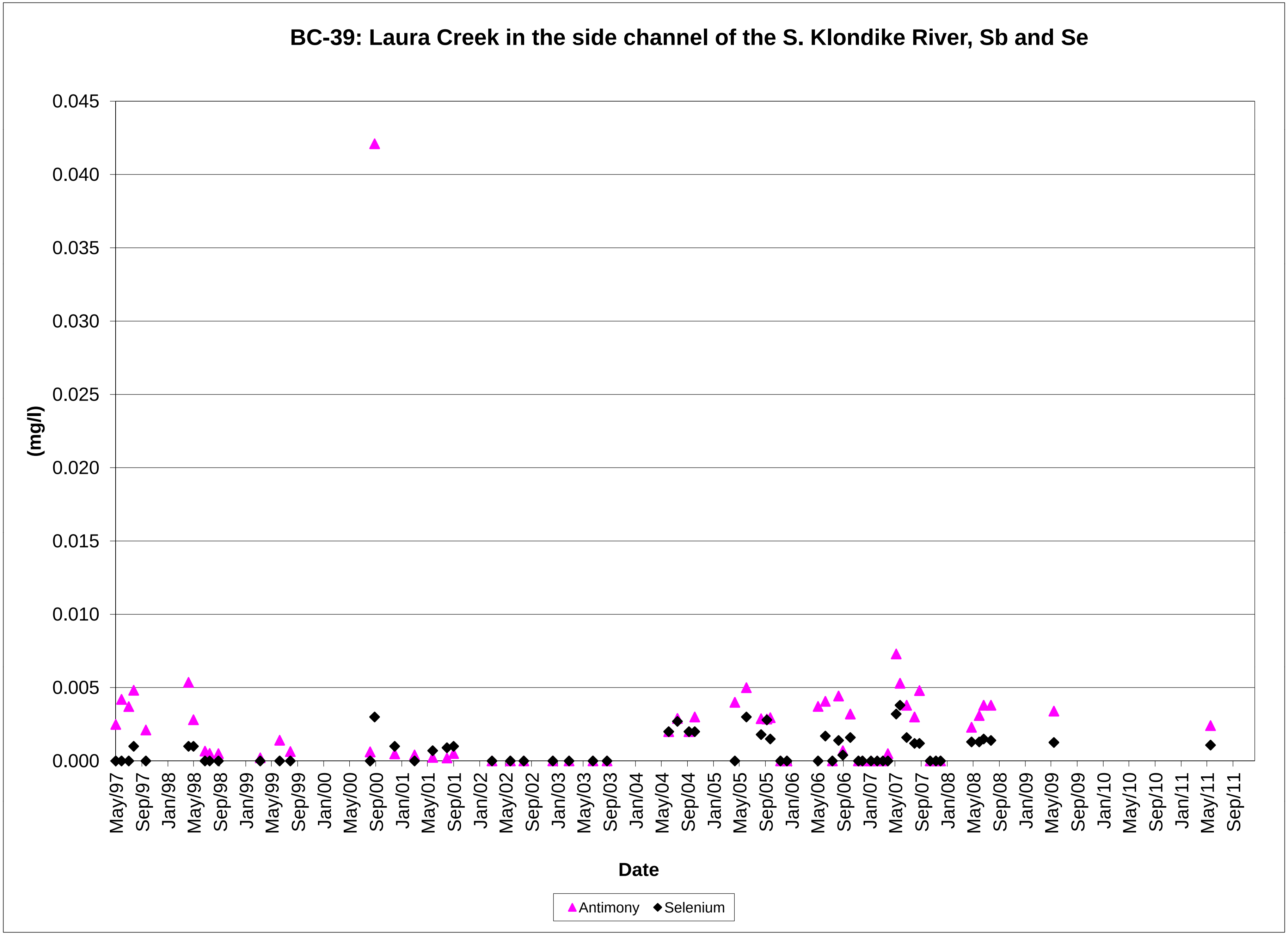
BC-06: South Klondike R. downstream from confluence with Lee Creek, Sb and Se
(mg/l)
0.045
0.040
0.035
0.030
0.025
0.020
0.015
0.010
0.005
0.000
May/91
Nov/91
May/92
Nov/92
May/93
Nov/93
May/94
Nov/94
May/95
Nov/95
May/96
Nov/96
May/97
Nov/97
May/98
Nov/98
May/99
Nov/99
May/00
Nov/00
May/01
Nov/01
May/02
Nov/02
May/03
Nov/03
May/04
Nov/04
May/05
Nov/05
May/06
Nov/06
May/07
Nov/07
May/08
Nov/08
May/09
Nov/09
May/10
Nov/10
May/11
Nov/11
Date
Antimony
Selenium


BC-16: Pacific Gulch 300m above Laura Creek, Sb and Se
(mg/l)
0.200
0.180
0.160
0.140
0.120
0.100
0.080
0.060
0.040
0.020
0.000
Jul/96
Dec/96
May/97
Oct/97
Mar/98
Aug/98
Jan/99
Jun/99
Nov/99
Apr/00
Sep/00
Feb/01
Jul/01
Dec/01
May/02
Oct/02
Mar/03
Aug/03
Jan/04
Jun/04
Nov/04
Apr/05
Sep/05
Feb/06
Jul/06
Dec/06
May/07
Oct/07
Mar/08
Aug/08
Jan/09
Jun/09
Nov/09
Apr/10
Sep/10
Feb/11
Jul/11
Dec/11
Date
Outlier Not Shown: Se-T = 6.07 on 26-Aug-97
Antimony
Selenium

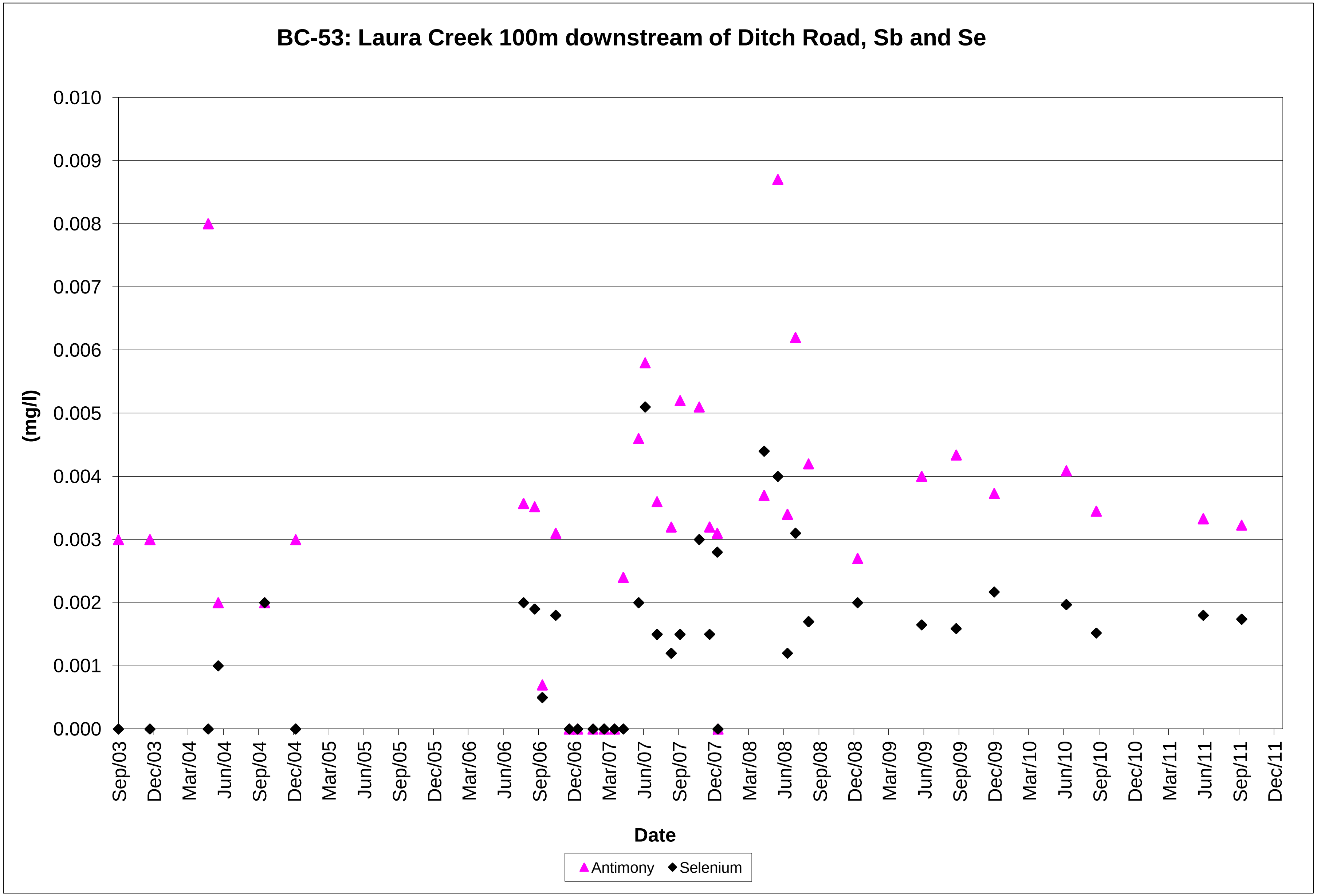

BC-31: Golden Creek upstream of confluence with South Klondike R, Sb and Se
0.007
0.006
0.005
0.004
0.003
0.002
0.001
0.000
(mg/l)
May/91
Nov/91
May/92
Nov/92
May/93
Nov/93
May/94
Nov/94
May/95
Nov/95
May/96
Nov/96
May/97
Nov/97
May/98
Nov/98
May/99
Nov/99
May/00
Nov/00
May/01
Nov/01
May/02
Nov/02
May/03
Nov/03
May/04
Nov/04
May/05
Nov/05
May/06
Nov/06
May/07
Nov/07
May/08
Nov/08
May/09
Nov/09
May/10
Nov/10
May/11
Nov/11
Date
Antimony
Selenium

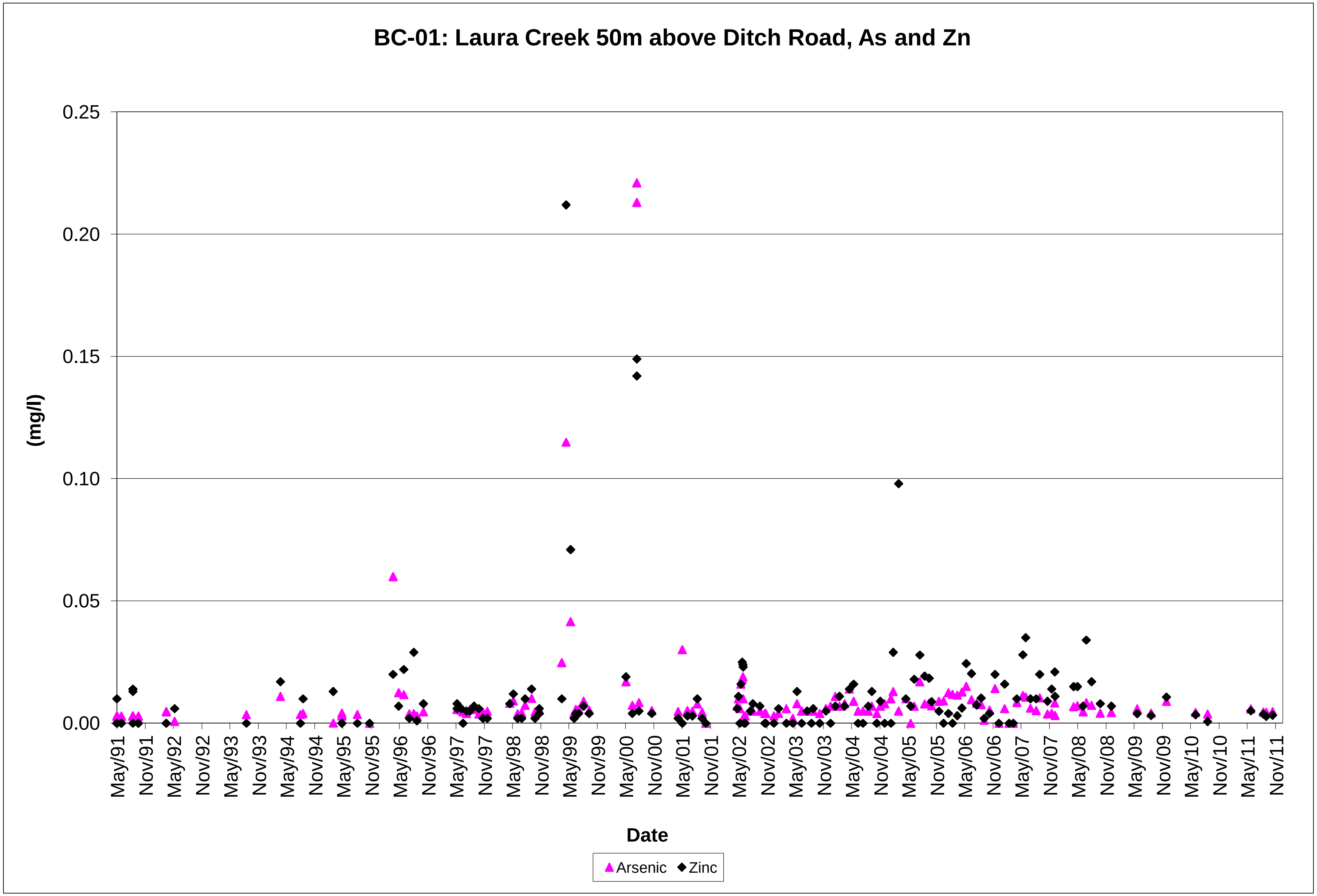


BC-34: Lee Creek at Ditch Road, Sb and Se
(mg/l)
0.005
0.005
0.004
0.004
0.003
0.003
0.002
0.002
0.001
0.001
0.000
May/91 Nov/91 May/92 Nov/92 May/93 Nov/93 May/94 Nov/94 May/95 Nov/95 May/96 Nov/96 May/97 Nov/97 May/98 Nov/98 May/99 Nov/99 May/00 Nov/00 May/01 Nov/01 May/02 Nov/02 May/03 Nov/03 May/04 Nov/04 May/05 Nov/05 May/06 Nov/06 May/07 Nov/07 May/08 Nov/08 May/09 Nov/09 May/10 Nov/10 May/11 Nov/11
Date
Antimony
Selenium

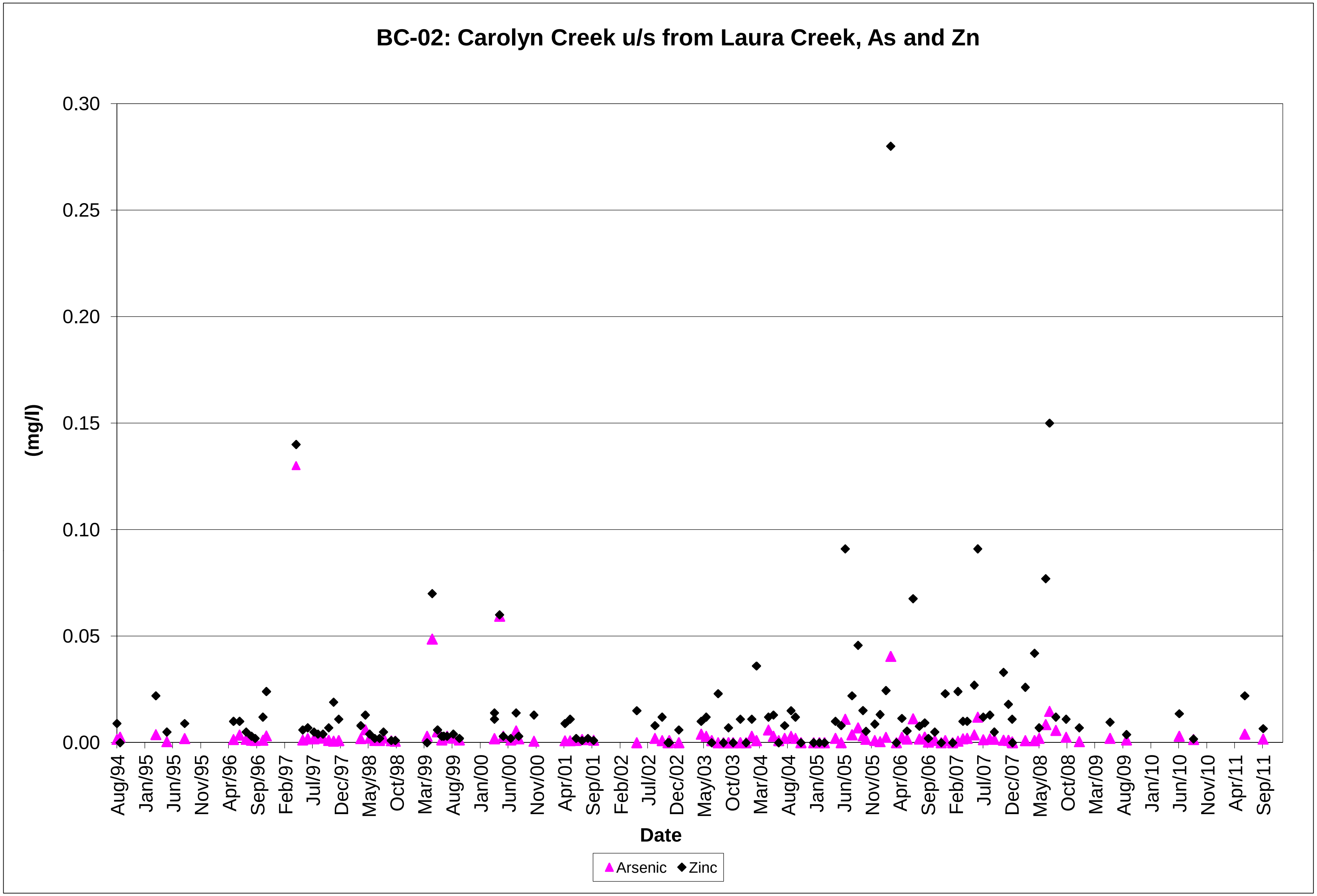


BC-39: Laura Creek in the side channel of the S. Klondike River, Sb and Se
0.045
0.040
0.035
0.030
0.025
0.020
0.015
0.010
0.005
0.000
(mg/l)
May/97 Sep/97 Jan/98 May/98 Sep/98 Jan/99 May/99 Sep/99 Jan/00 May/00 Sep/00 Jan/01 May/01 Sep/01 Jan/02 May/02 Sep/02 Jan/03 May/03 Sep/03 Jan/04 May/04 Sep/04 Jan/05 May/05 Sep/05 Jan/06 May/06 Sep/06 Jan/07 May/07 Sep/07 Jan/08 May/08 Sep/08 Jan/09 May/09 Sep/09 Jan/10 May/10 Sep/10 Jan/11 May/11 Sep/11
Date
Antimony
Selenium

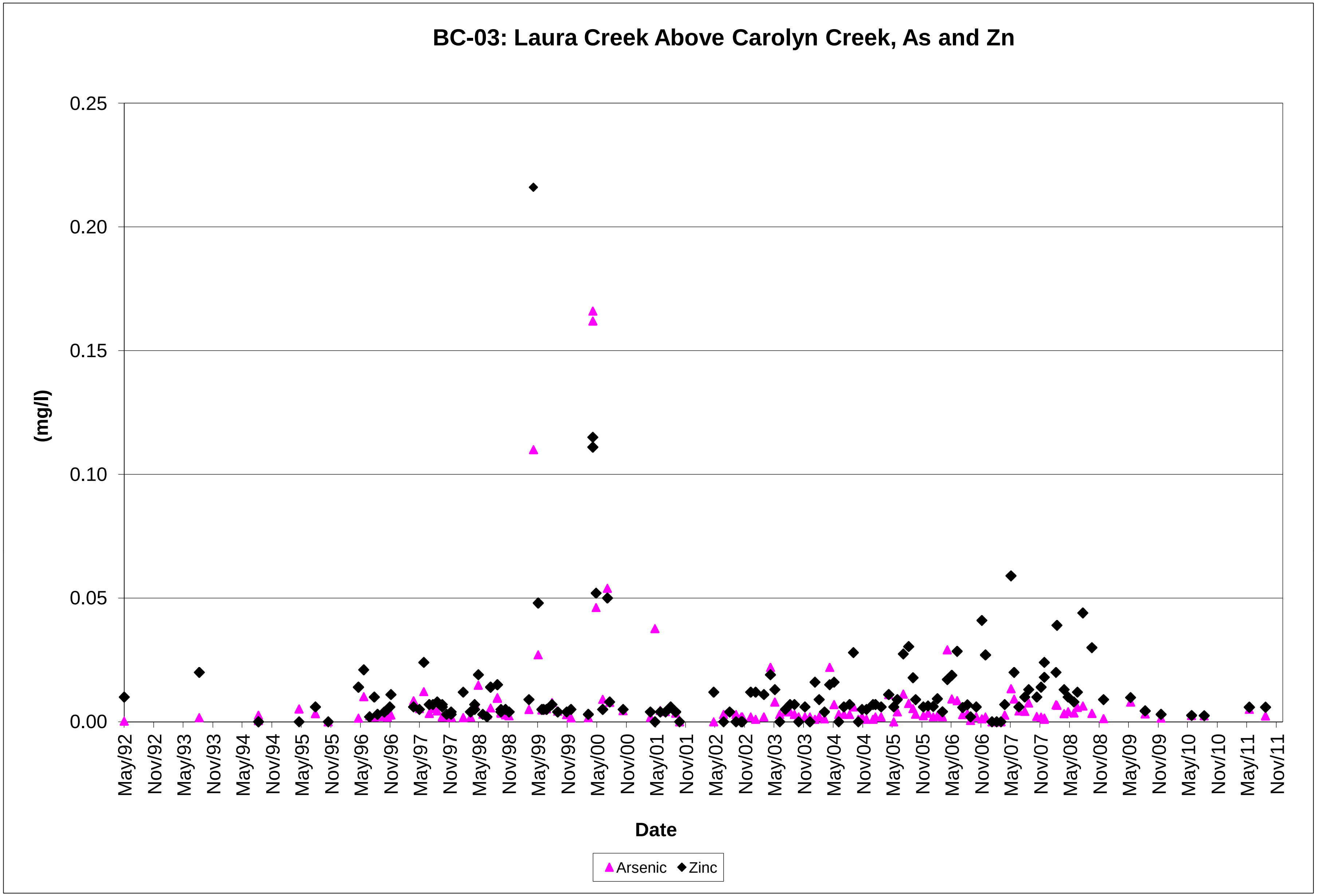

BC-53: Laura Creek 100m downstream of Ditch Road, Sb and Se
(mg/l)
0.010
0.009
0.008
0.007
0.006
0.005
0.004
0.003
0.002
0.001
0.000
Sep/03
Dec/03
Mar/04
Jun/04
Sep/04
Dec/04
Mar/05
Jun/05
Sep/05
Dec/05
Mar/06
Jun/06
Sep/06
Dec/06
Mar/07
Jun/07
Sep/07
Dec/07
Mar/08
Jun/08
Sep/08
Dec/08
Mar/09
Jun/09
Sep/09
Dec/09
Mar/10
Jun/10
Sep/10
Dec/10
Mar/11
Jun/11
Sep/11
Dec/11
Date
Antimony
Selenium

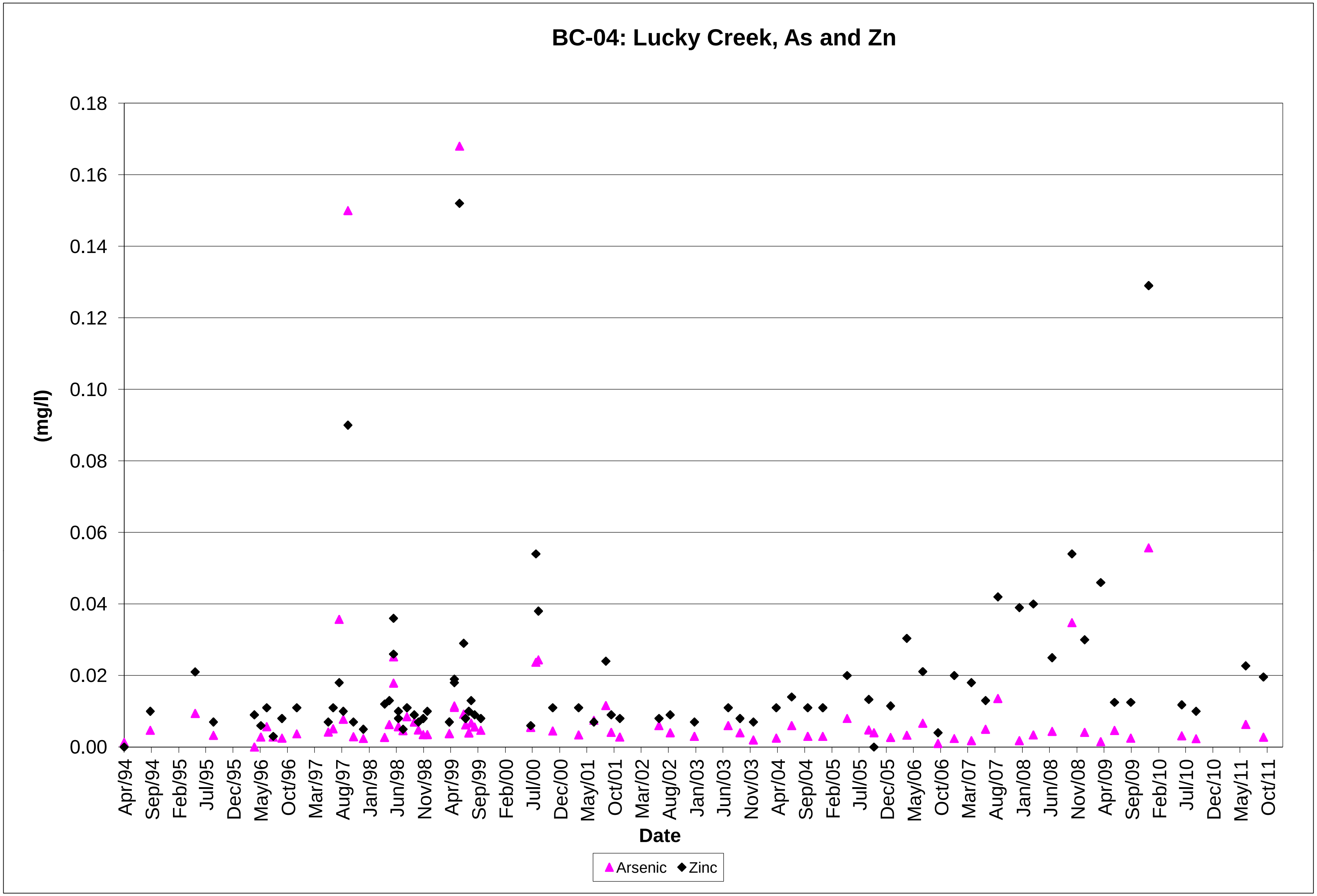


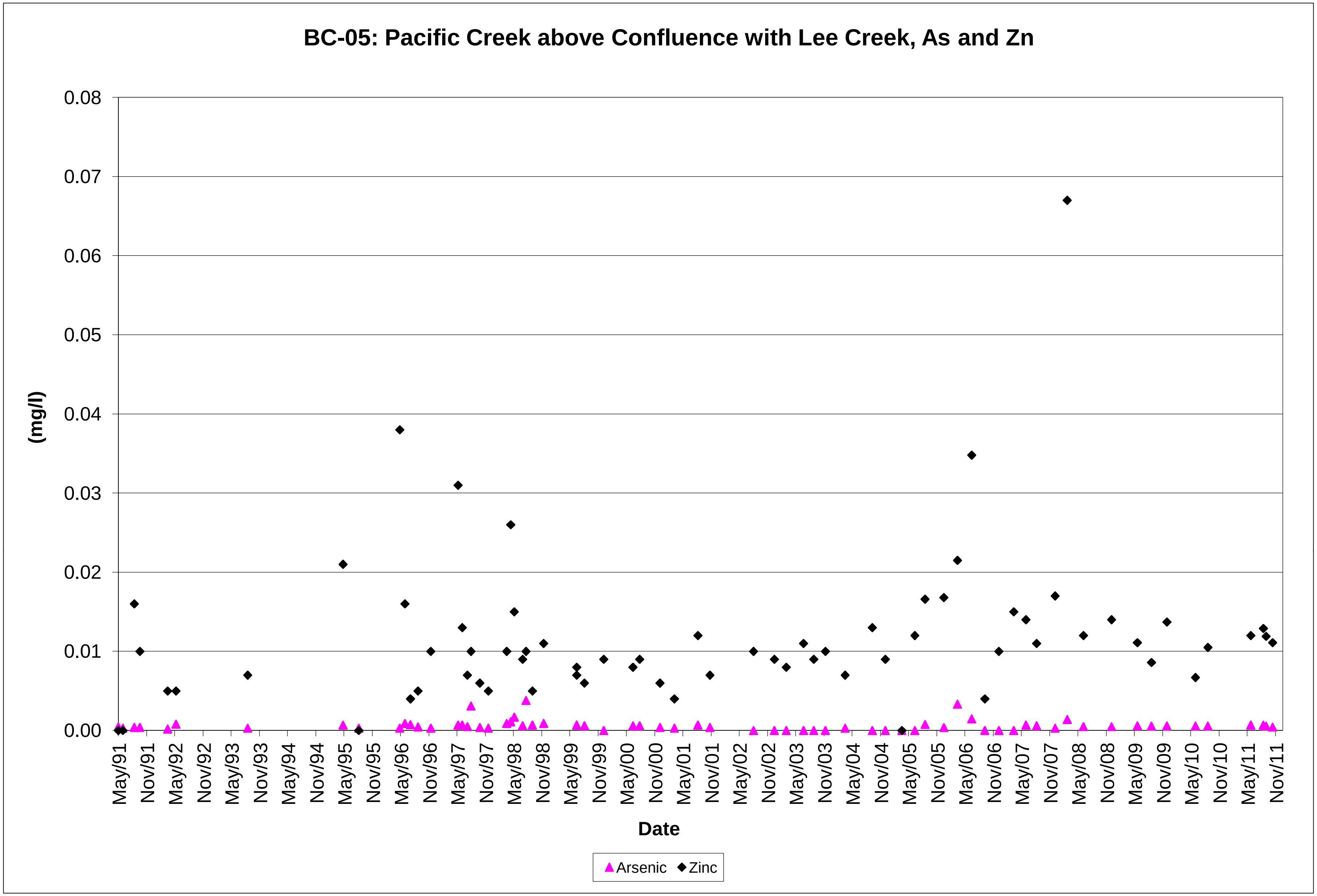
BC-01: Laura Creek 50m above Ditch Road, As and Zn
(mg/l)
0.25
0.20
0.15
0.10
0.05
0.00
May/91 Nov/91 May/92 Nov/92 May/93 Nov/93 May/94 Nov/94 May/95 Nov/95 May/96 Nov/96 May/97 Nov/97 May/98 Nov/98 May/99 Nov/99 May/00 Nov/00 May/01 Nov/01 May/02 Nov/02 May/03 Nov/03 May/04 Nov/04 May/05 Nov/05 May/06 Nov/06 May/07 Nov/07 May/08 Nov/08 May/09 Nov/09 May/10 Nov/10 May/11 Nov/11
Date
Arsenic
Zinc



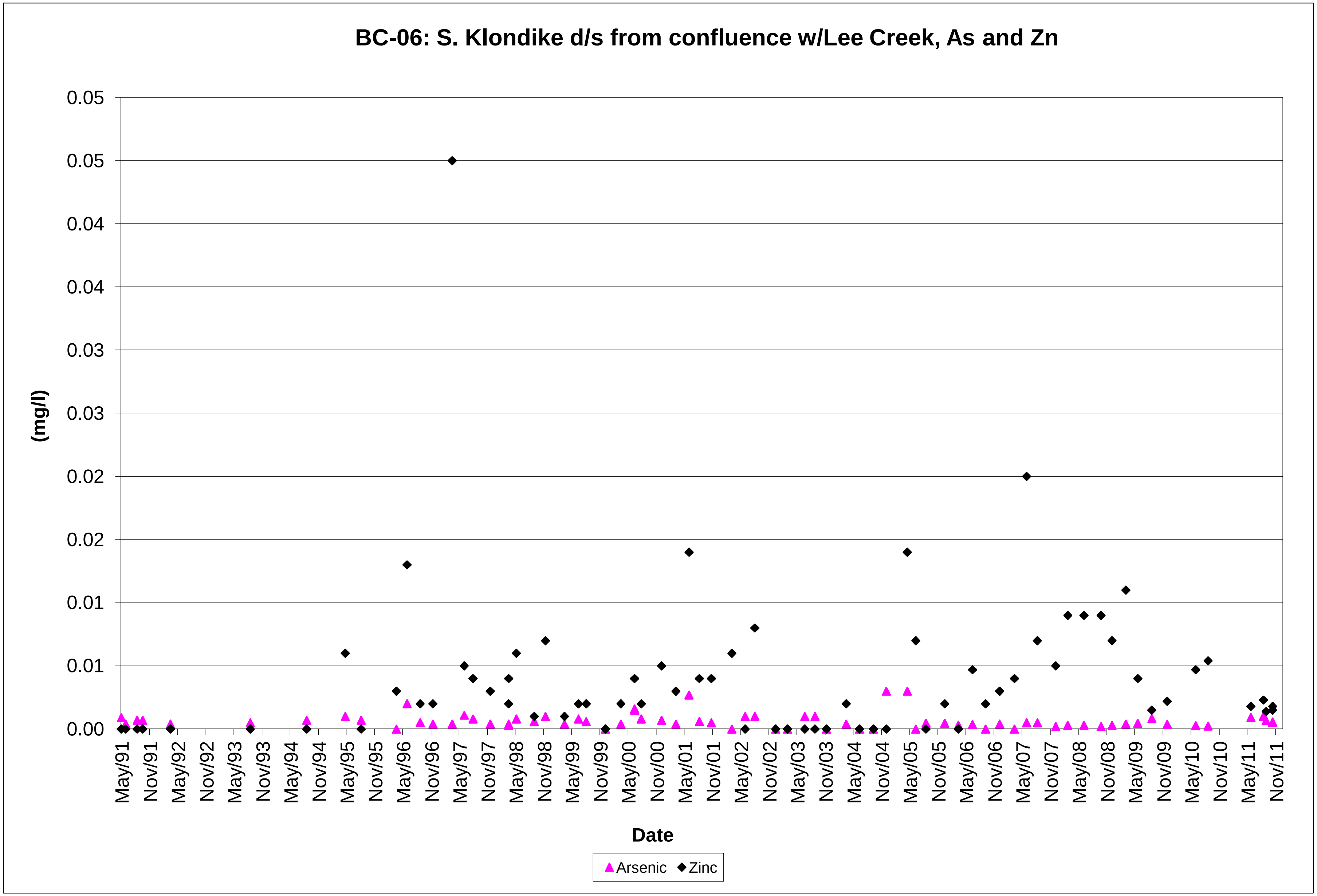
BC-02: Carolyn Creek u/s from Laura Creek, As and Zn
0.30
0.25
0.20
0.15
0.10
0.05
0.00
(mg/l)
Aug/94
Jan/95
Jun/95
Nov/95
Apr/96
Sep/96
Feb/97
Jul/97
Dec/97
May/98
Oct/98
Mar/99
Aug/99
Jan/00
Jun/00
Nov/00
Apr/01
Sep/01
Feb/02
Jul/02
Dec/02
May/03
Oct/03
Mar/04
Aug/04
Jan/05
Jun/05
Nov/05
Apr/06
Sep/06
Feb/07
Jul/07
Dec/07
May/08
Oct/08
Mar/09
Aug/09
Jan/10
Jun/10
Nov/10
Apr/11
Sep/11
Date
Arsenic
Zinc

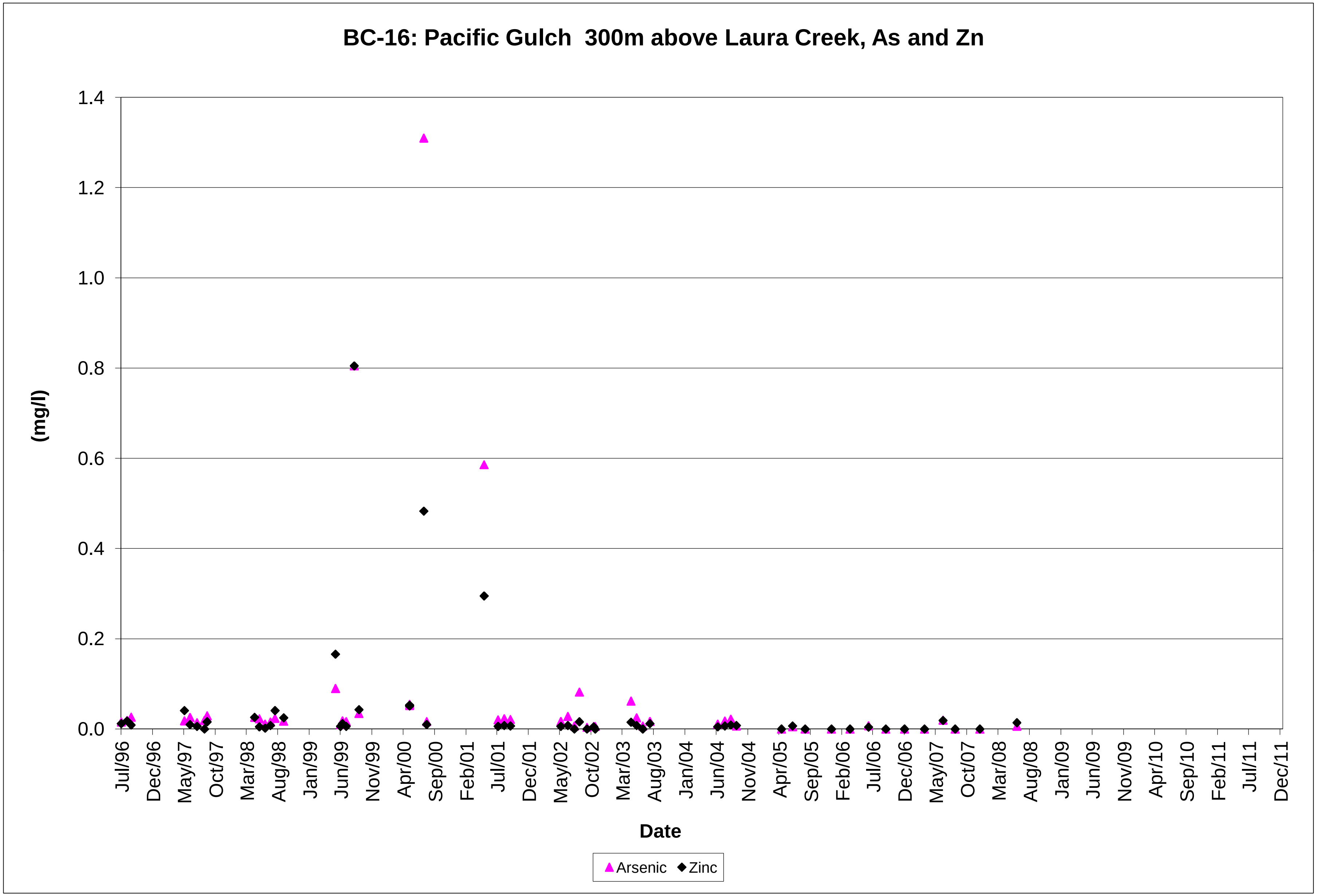

BC-03: Laura Creek Above Carolyn Creek, As and Zn
0.25
0.20
0.15
0.10
0.05
0.00
(mg/l)
May/92
Nov/92
May/93
Nov/93
May/94
Nov/94
May/95
Nov/95
May/96
Nov/96
May/97
Nov/97
May/98
Nov/98
May/99
Nov/99
May/00
Nov/00
May/01
Nov/01
May/02
Nov/02
May/03
Nov/03
May/04
Nov/04
May/05
Nov/05
May/06
Nov/06
May/07
Nov/07
May/08
Nov/08
May/09
Nov/09
May/10
Nov/10
May/11
Nov/11
Date
Arsenic
Zinc

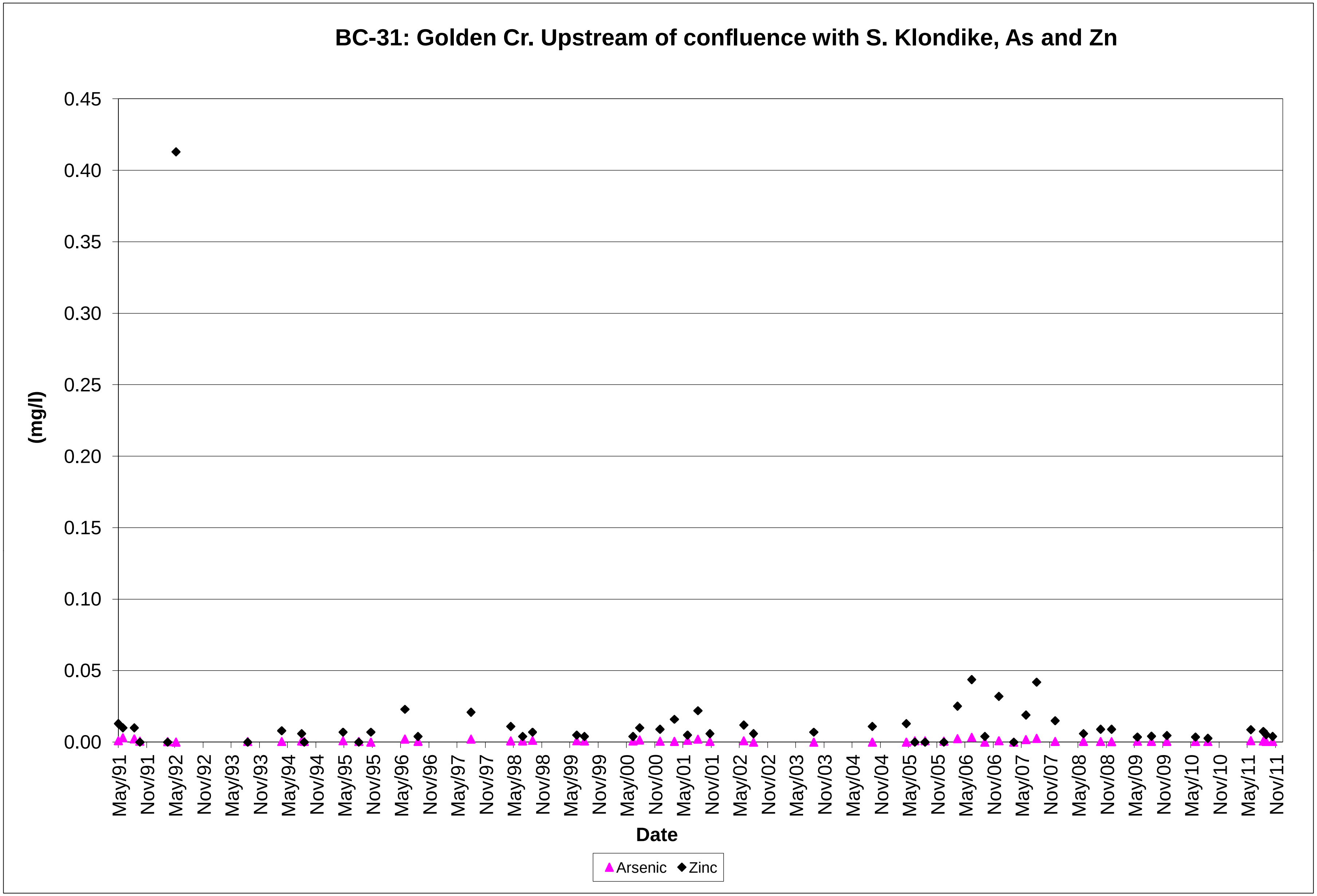

BC-04: Lucky Creek, As and Zn
(mg/l)
0.18
0.16
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
Apr/94
Sep/94
Feb/95
Jul/95
Dec/95
May/96
Oct/96
Mar/97
Aug/97
Jan/98
Jun/98
Nov/98
Apr/99
Sep/99
Feb/00
Jul/00
Dec/00
May/01
Oct/01
Mar/02
Aug/02
Jan/03
Jun/03
Nov/03
Apr/04
Sep/04
Feb/05
Jul/05
Dec/05
May/06
Oct/06
Mar/07
Aug/07
Jan/08
Jun/08
Nov/08
Apr/09
Sep/09
Feb/10
Jul/10
Dec/10
May/11
Oct/11
Date
Arsenic
Zinc

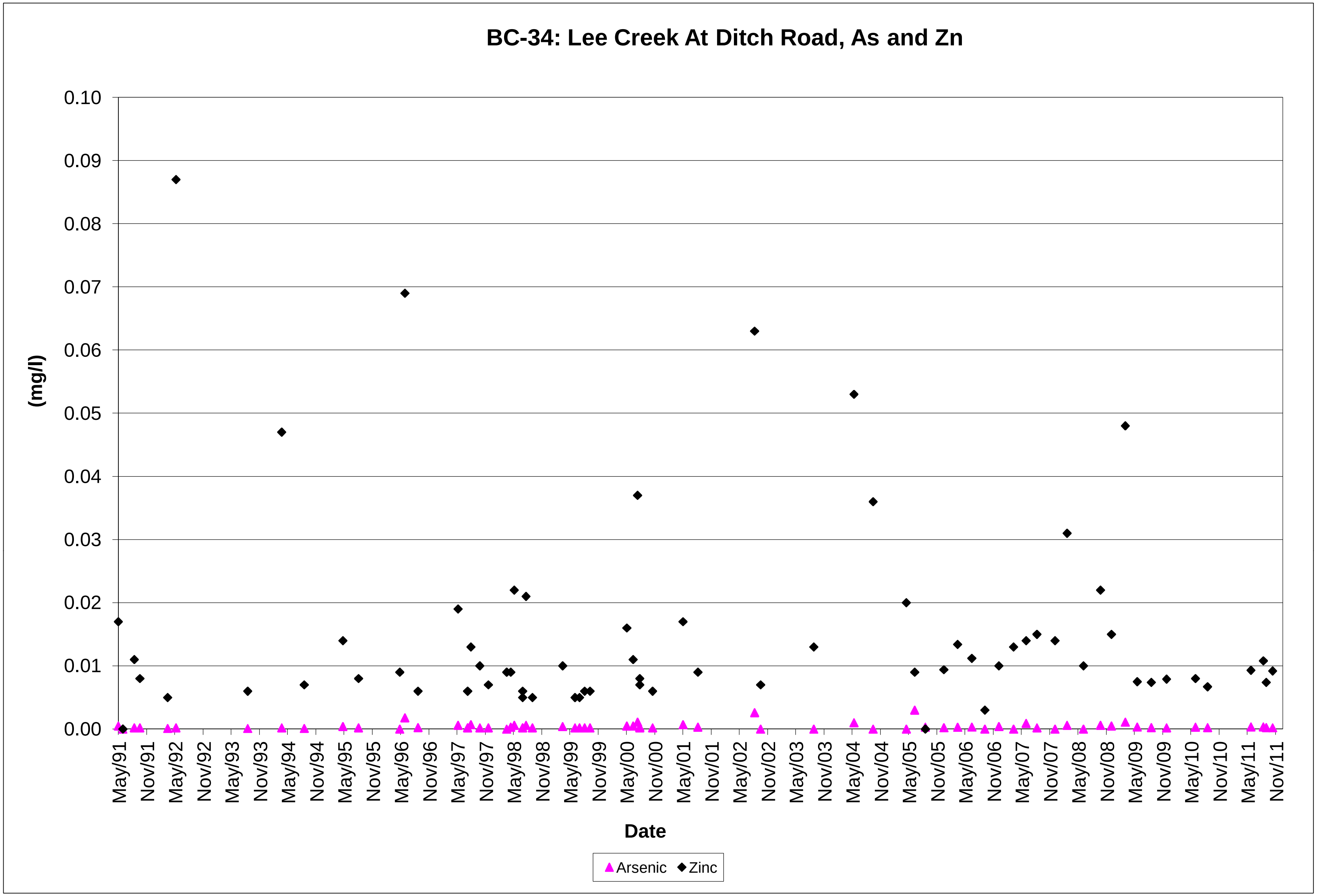


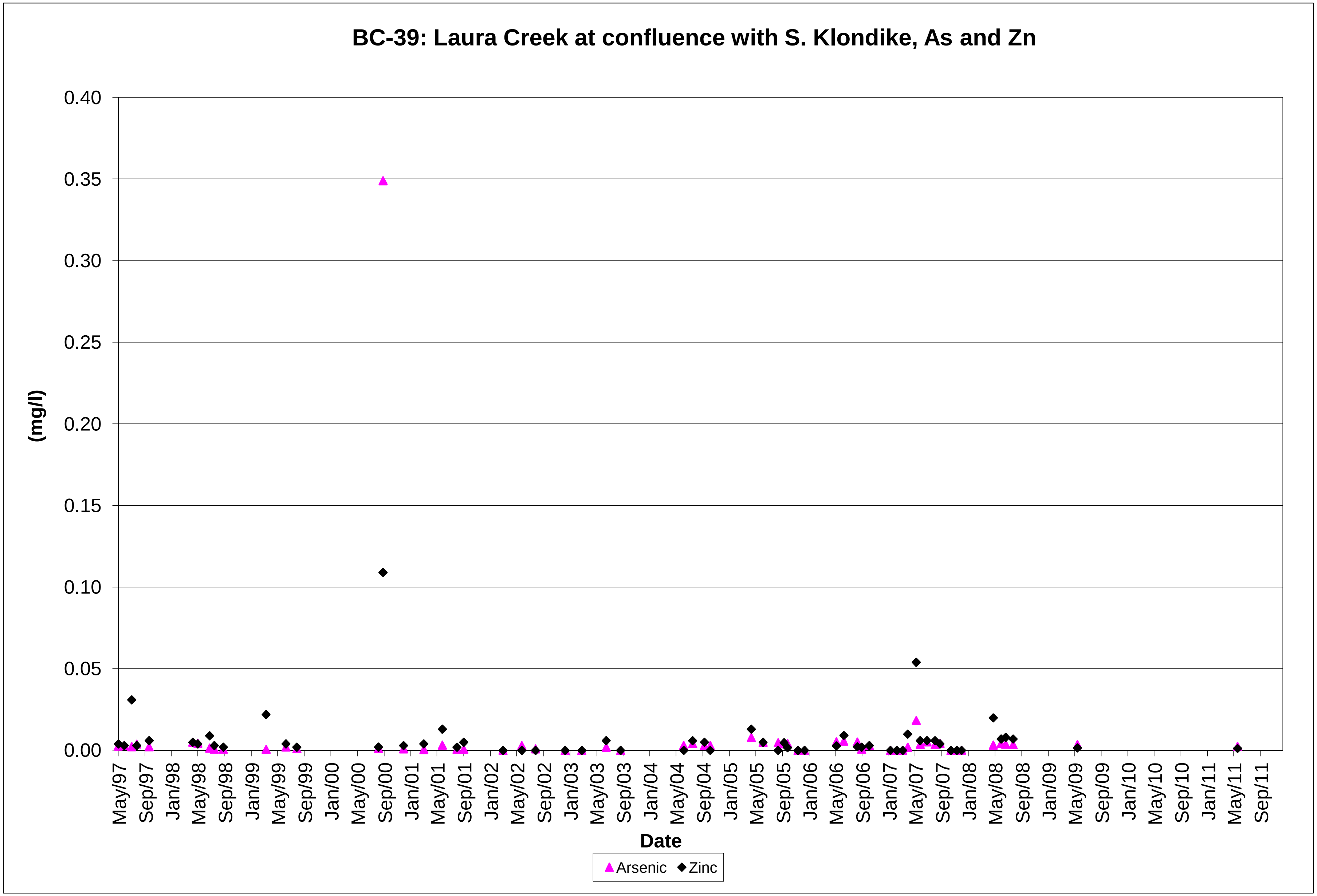
BC-05: Pacific Creek above Confluence with Lee Creek, As and Zn
(mg/l)
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0.00
May/91
Nov/91
May/92
Nov/92
May/93
Nov/93
May/94
Nov/94
May/95
Nov/95
May/96
Nov/96
May/97
Nov/97
May/98
Nov/98
May/99
Nov/99
May/00
Nov/00
May/01
Nov/01
May/02
Nov/02
May/03
Nov/03
May/04
Nov/04
May/05
Nov/05
May/06
Nov/06
May/07
Nov/07
May/08
Nov/08
May/09
Nov/09
May/10
Nov/10
May/11
Nov/11
Date
Arsenic
Zinc

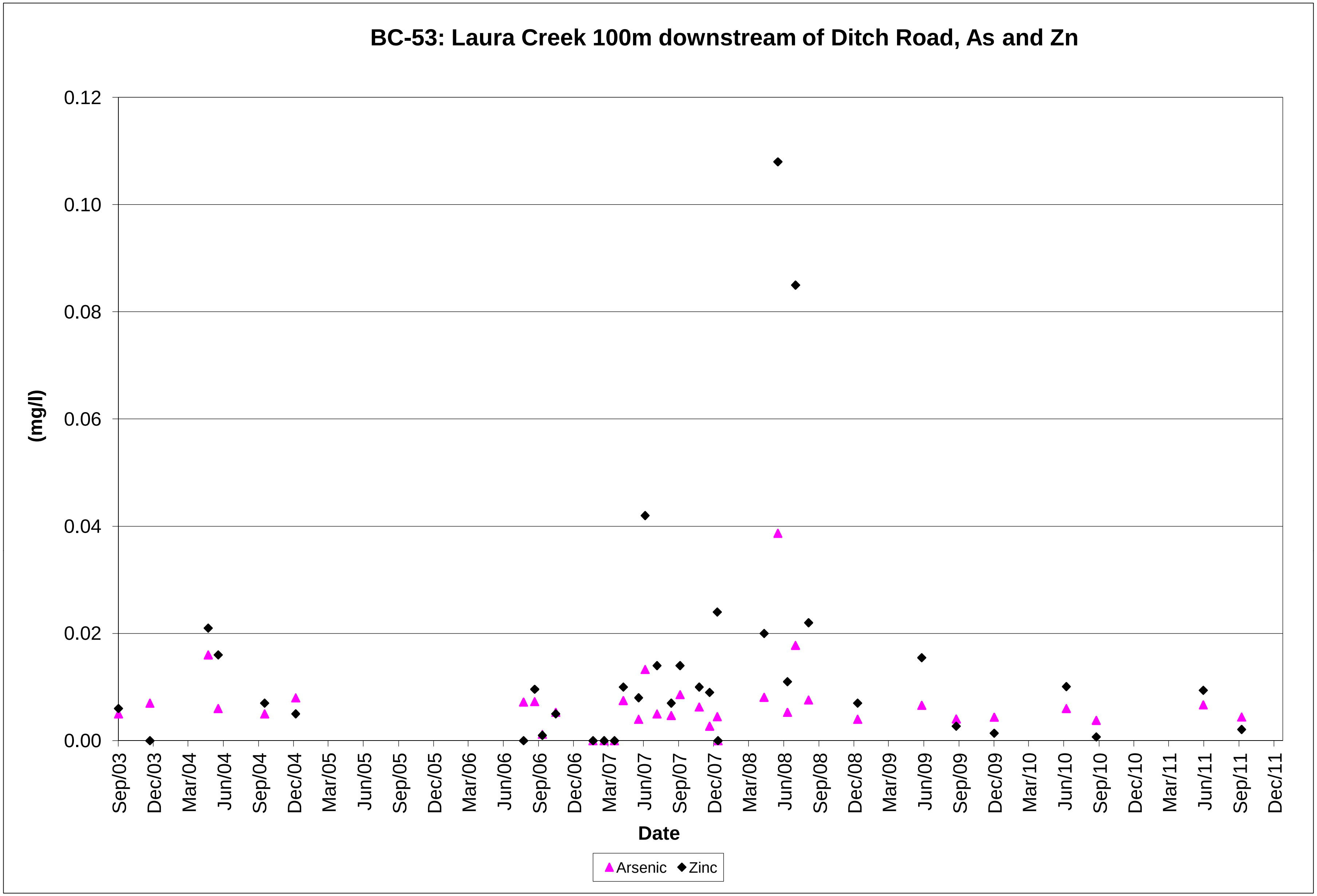

BC-06: S. Klondike d/s from confluence w/Lee Creek, As and Zn
(mg/l)
0.05
0.05
0.04
0.04
0.03
0.03
0.02
0.02
0.01
0.01
0.00
May/91
Nov/91
May/92
Nov/92
May/93
Nov/93
May/94
Nov/94
May/95
Nov/95
May/96
Nov/96
May/97
Nov/97
May/98
Nov/98
May/99
Nov/99
May/00
Nov/00
May/01
Nov/01
May/02
Nov/02
May/03
Nov/03
May/04
Nov/04
May/05
Nov/05
May/06
Nov/06
May/07
Nov/07
May/08
Nov/08
May/09
Nov/09
May/10
Nov/10
May/11
Nov/11
Date
Arsenic
Zinc


BC-16: Pacific Gulch 300m above Laura Creek, As and Zn
(mg/l)
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
Jul/96
Dec/96
May/97
Oct/97
Mar/98
Aug/98
Jan/99
Jun/99
Nov/99
Apr/00
Sep/00
Feb/01
Jul/01
Dec/01
May/02
Oct/02
Mar/03
Aug/03
Jan/04
Jun/04
Nov/04
Apr/05
Sep/05
Feb/06
Jul/06
Dec/06
May/07
Oct/07
Mar/08
Aug/08
Jan/09
Jun/09
Nov/09
Apr/10
Sep/10
Feb/11
Jul/11
Dec/11
Date
Arsenic
Zinc

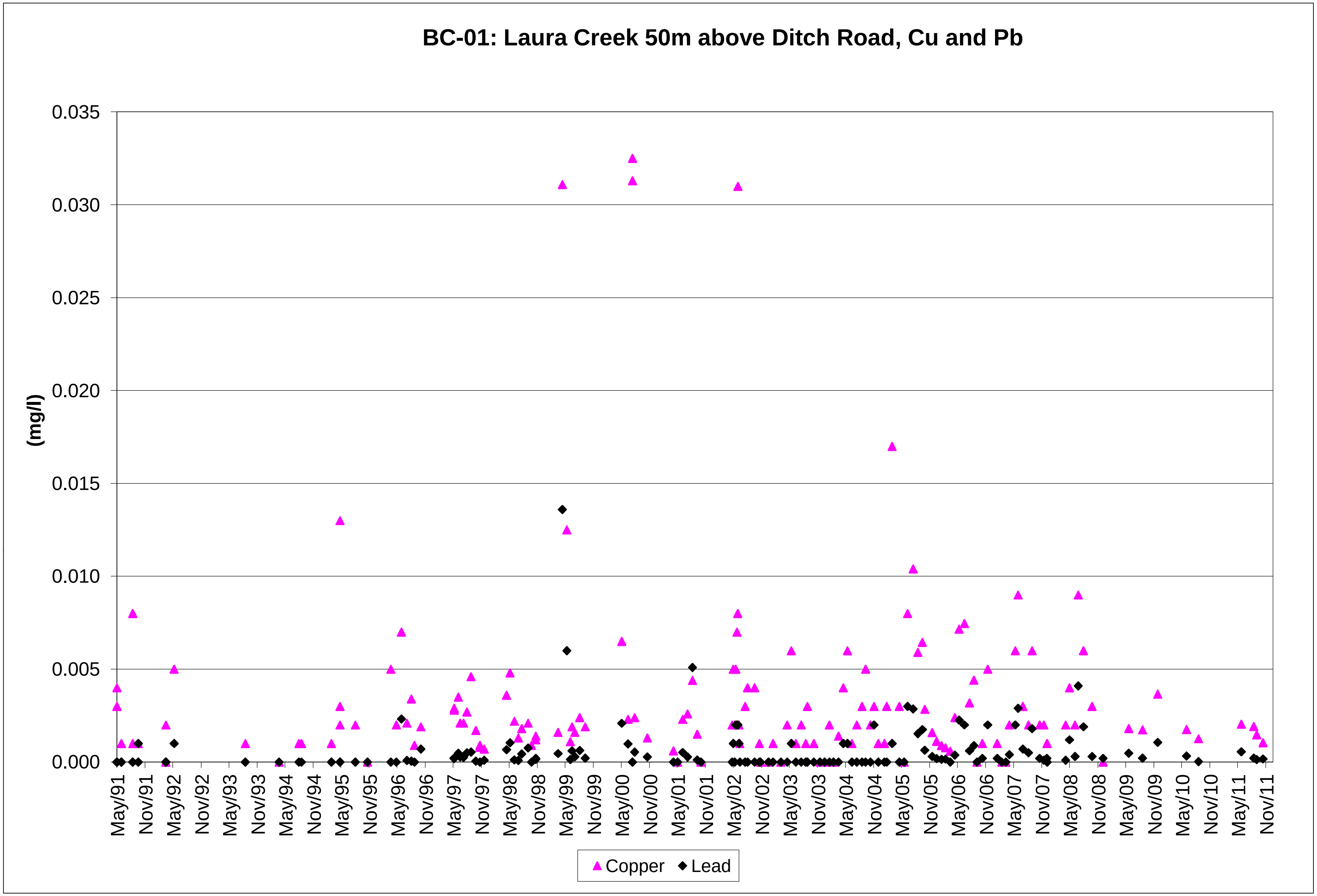

BC-31: Golden Cr. Upstream of confluence with S. Klondike, As and Zn
(mg/l)
0.45
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
May/91
Nov/91
May/92
Nov/92
May/93
Nov/93
May/94
Nov/94
May/95
Nov/95
May/96
Nov/96
May/97
Nov/97
May/98
Nov/98
May/99
Nov/99
May/00
Nov/00
May/01
Nov/01
May/02
Nov/02
May/03
Nov/03
May/04
Nov/04
May/05
Nov/05
May/06
Nov/06
May/07
Nov/07
May/08
Nov/08
May/09
Nov/09
May/10
Nov/10
May/11
Nov/11
Date
Arsenic
Zinc

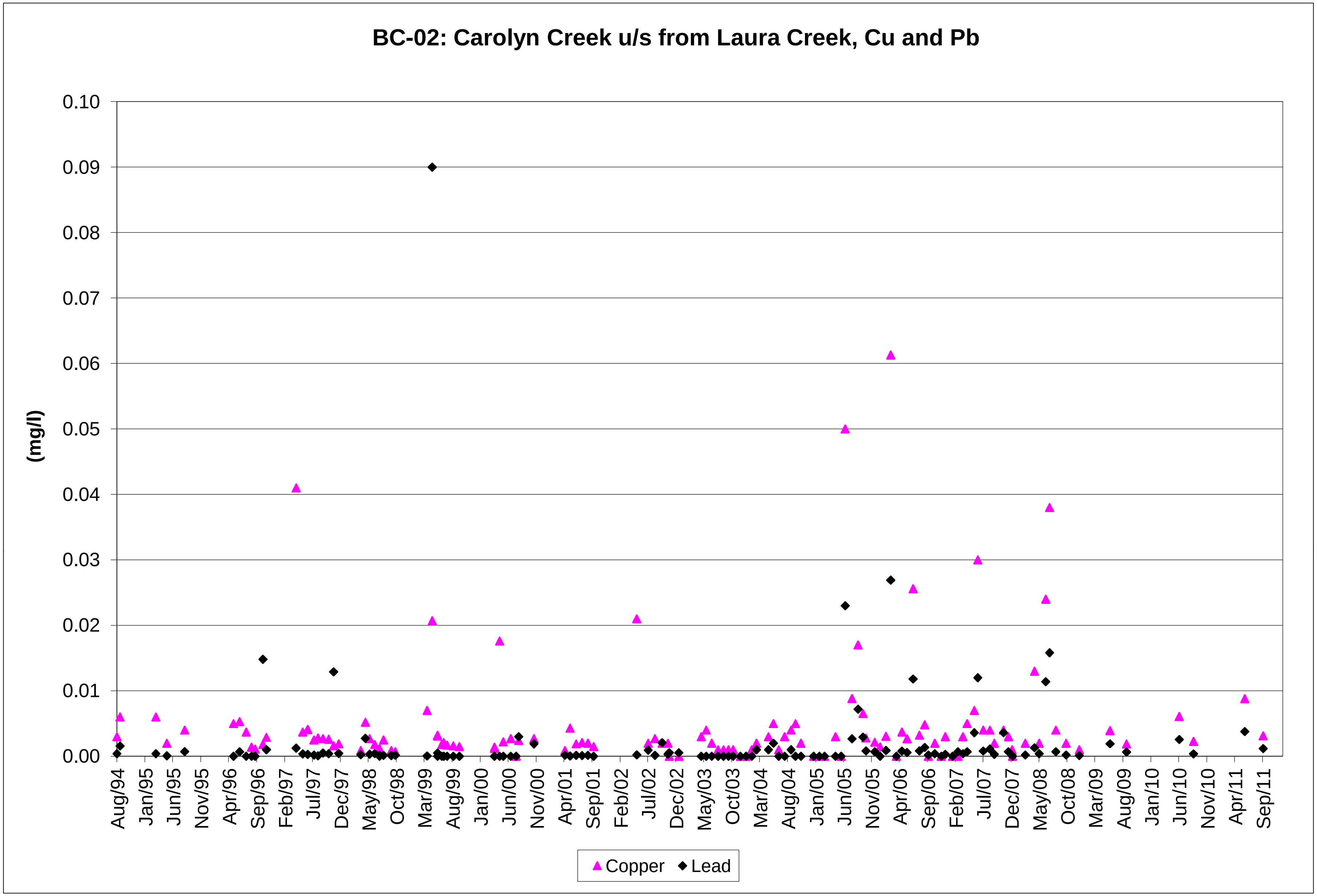

BC-34: Lee Creek At Ditch Road, As and Zn
(mg/l)
0.10
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0.00
May/91
Nov/91
May/92
Nov/92
May/93
Nov/93
May/94
Nov/94
May/95
Nov/95
May/96
Nov/96
May/97
Nov/97
May/98
Nov/98
May/99
Nov/99
May/00
Nov/00
May/01
Nov/01
May/02
Nov/02
May/03
Nov/03
May/04
Nov/04
May/05
Nov/05
May/06
Nov/06
May/07
Nov/07
May/08
Nov/08
May/09
Nov/09
May/10
Nov/10
May/11
Nov/11
Date
Arsenic
Zinc


BC-39: Laura Creek at confluence with S. Klondike, As and Zn
(mg/l)
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
May/97
Sep/97
Jan/98
May/98
Sep/98
Jan/99
May/99
Sep/99
Jan/00
May/00
Sep/00
Jan/01
May/01
Sep/01
Jan/02
May/02
Sep/02
Jan/03
May/03
Sep/03
Jan/04
May/04
Sep/04
Jan/05
May/05
Sep/05
Jan/06
May/06
Sep/06
Jan/07
May/07
Sep/07
Jan/08
May/08
Sep/08
Jan/09
May/09
Sep/09
Jan/10
May/10
Sep/10
Jan/11
May/11
Sep/11
Date
Arsenic
Zinc

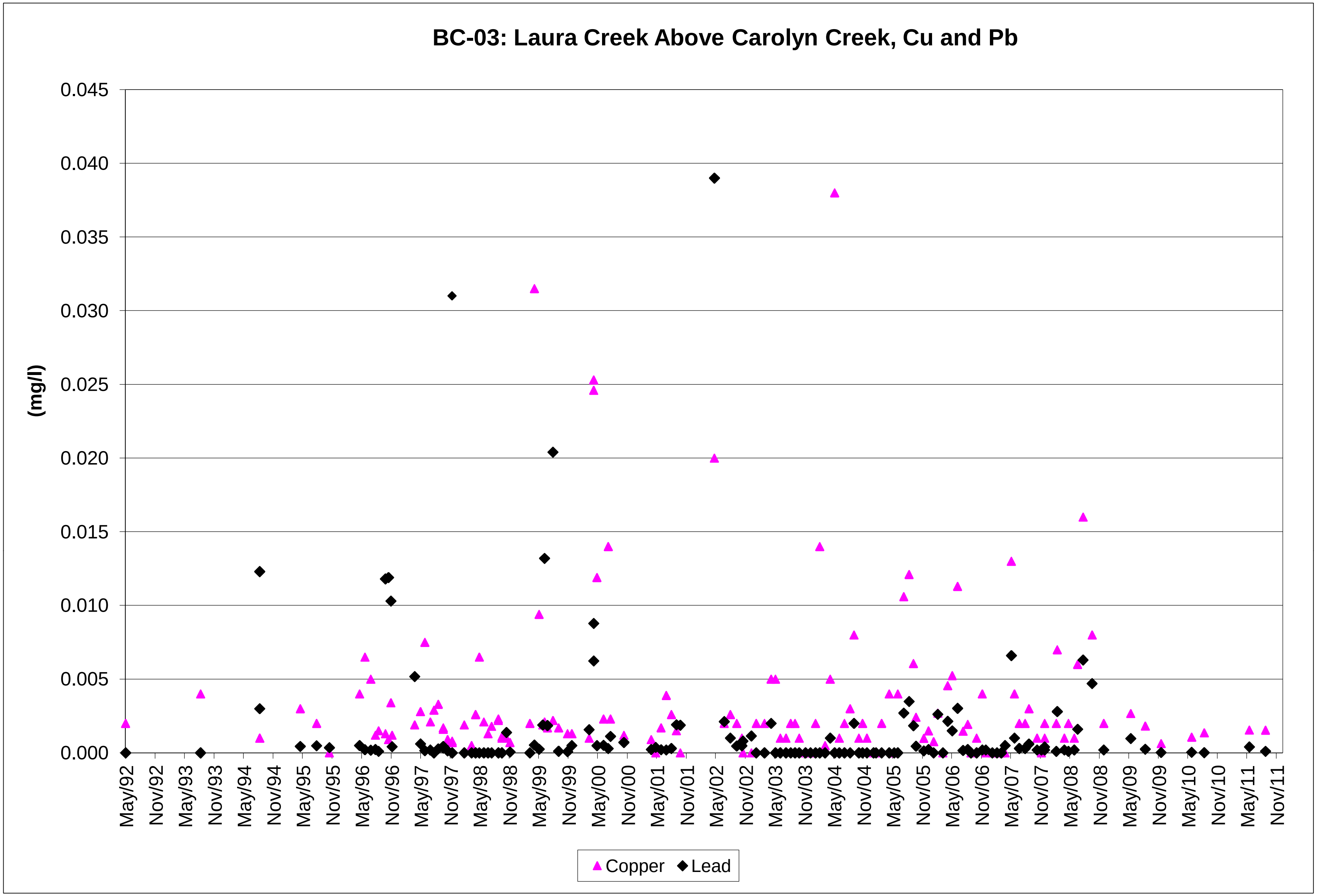


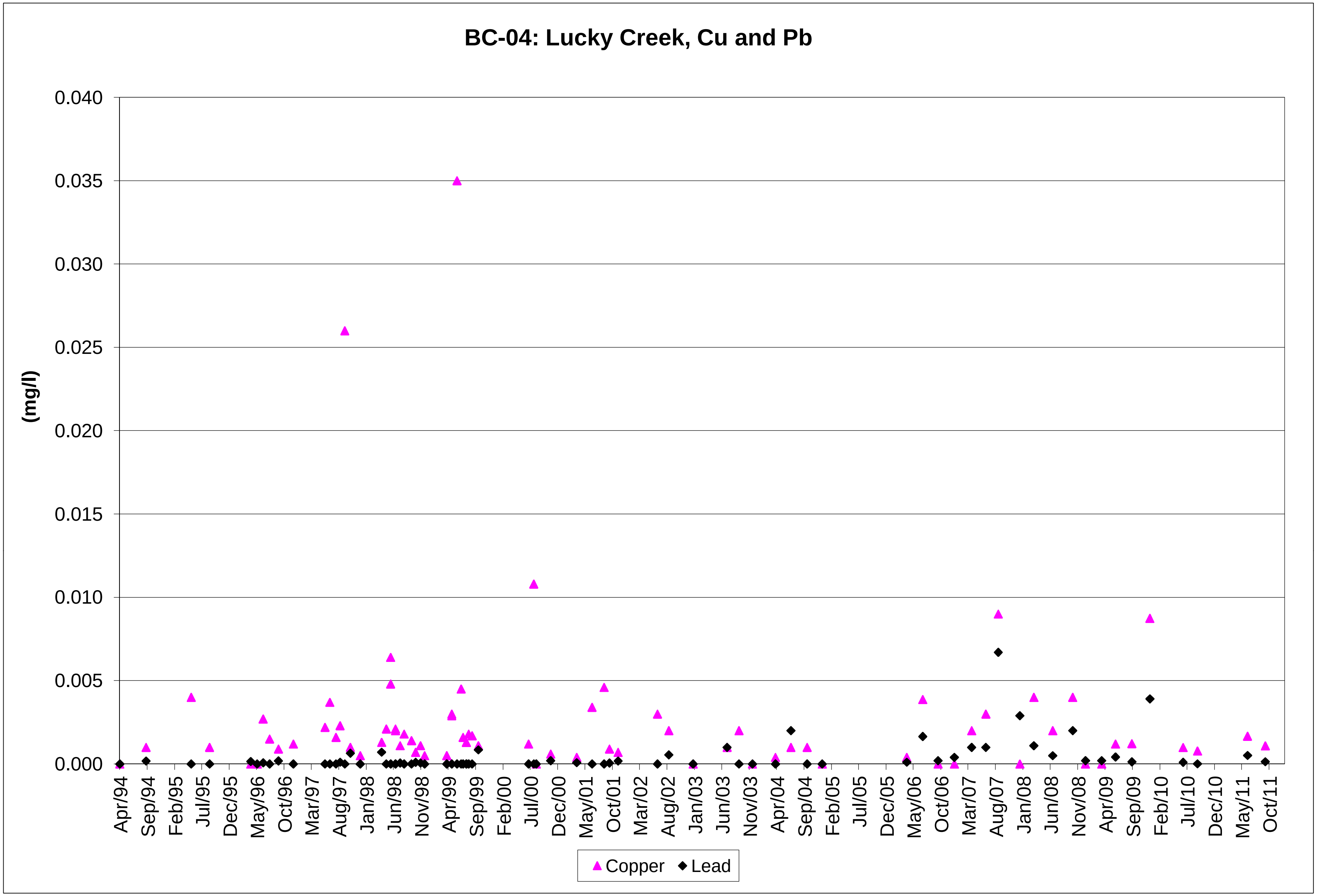
BC-53: Laura Creek 100m downstream of Ditch Road, As and Zn
(mg/l)
0.12
0.10
0.08
0.06
0.04
0.02
0.00
Sep/03
Dec/03
Mar/04
Jun/04
Sep/04
Dec/04
Mar/05
Jun/05
Sep/05
Dec/05
Mar/06
Jun/06
Sep/06
Dec/06
Mar/07
Jun/07
Sep/07
Dec/07
Mar/08
Jun/08
Sep/08
Dec/08
Mar/09
Jun/09
Sep/09
Dec/09
Mar/10
Jun/10
Sep/10
Dec/10
Mar/11
Jun/11
Sep/11
Dec/11
Date
Arsenic
Zinc

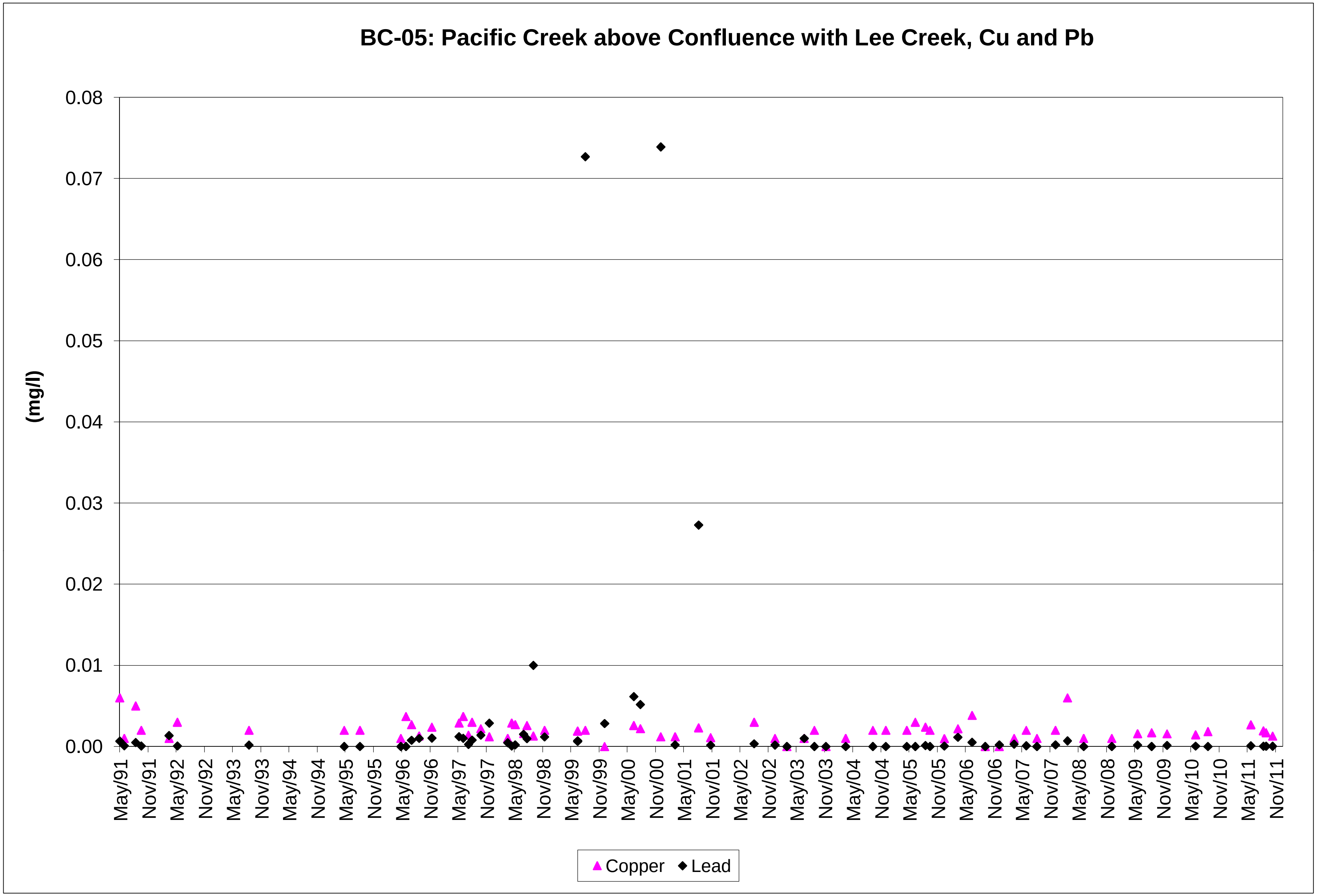

BC-01: Laura Creek 50m above Ditch Road, Cu and Pb
(mg/l)
0.035
0.030
0.025
0.020
0.015
0.010
0.005
0.000
May/91
Nov/91
May/92
Nov/92
May/93
Nov/93
May/94
Nov/94
May/95
Nov/95
May/96
Nov/96
May/97
Nov/97
May/98
Nov/98
May/99
Nov/99
May/00
Nov/00
May/01
Nov/01
May/02
Nov/02
May/03
Nov/03
May/04
Nov/04
May/05
Nov/05
May/06
Nov/06
May/07
Nov/07
May/08
Nov/08
May/09
Nov/09
May/10
Nov/10
May/11
Nov/11
Copper
Lead

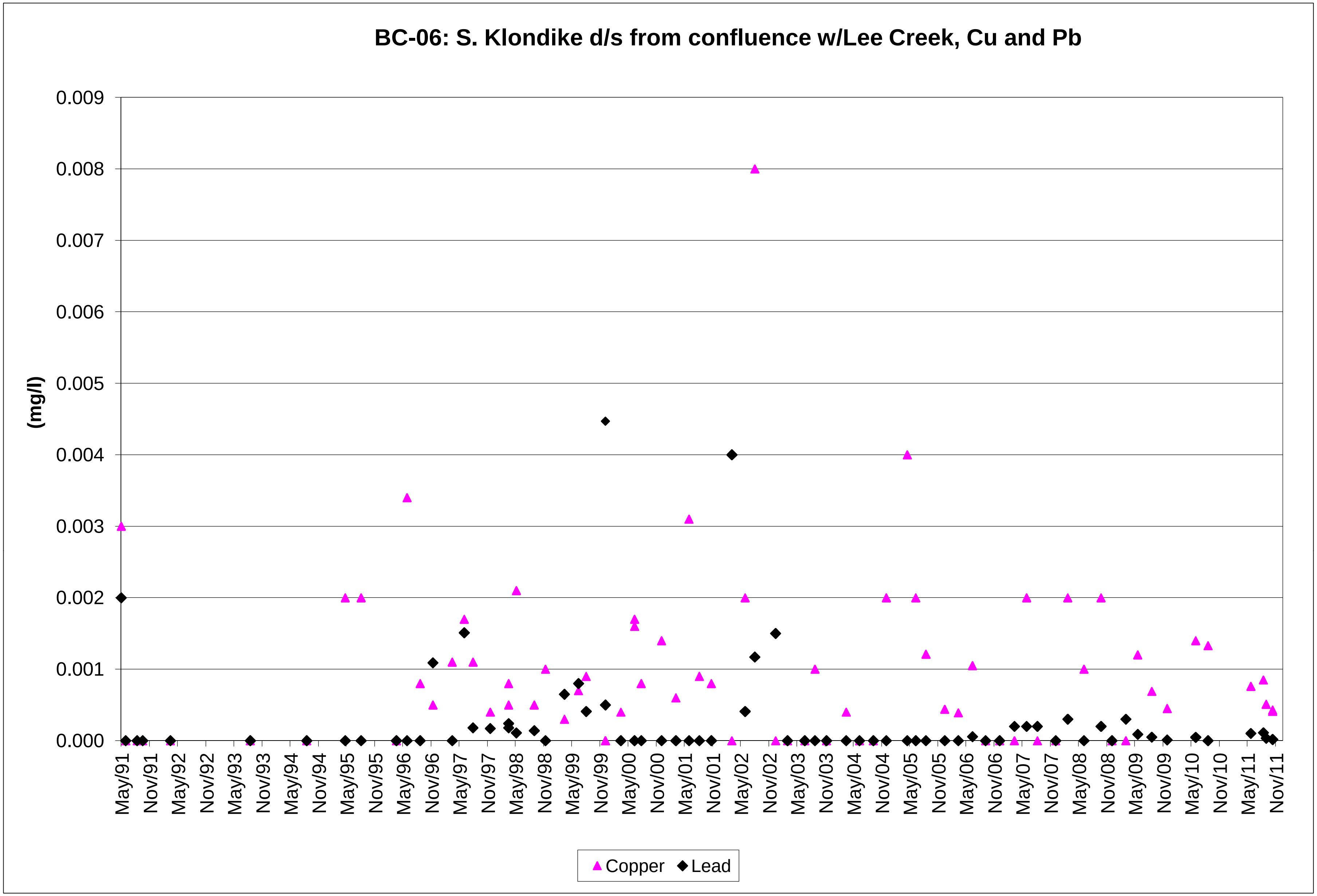


BC-02: Carolyn Creek u/s from Laura Creek, Cu and Pb
(mg/l)
0.10
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0.00
Aug/94
Jan/95
Jun/95
Nov/95
Apr/96
Sep/96
Feb/97
Jul/97
Dec/97
May/98
Oct/98
Mar/99
Aug/99
Jan/00
Jun/00
Nov/00
Apr/01
Sep/01
Feb/02
Jul/02
Dec/02
May/03
Oct/03
Mar/04
Aug/04
Jan/05
Jun/05
Nov/05
Apr/06
Sep/06
Feb/07
Jul/07
Dec/07
May/08
Oct/08
Mar/09
Aug/09
Jan/10
Jun/10
Nov/10
Apr/11
Sep/11
Copper
Lead

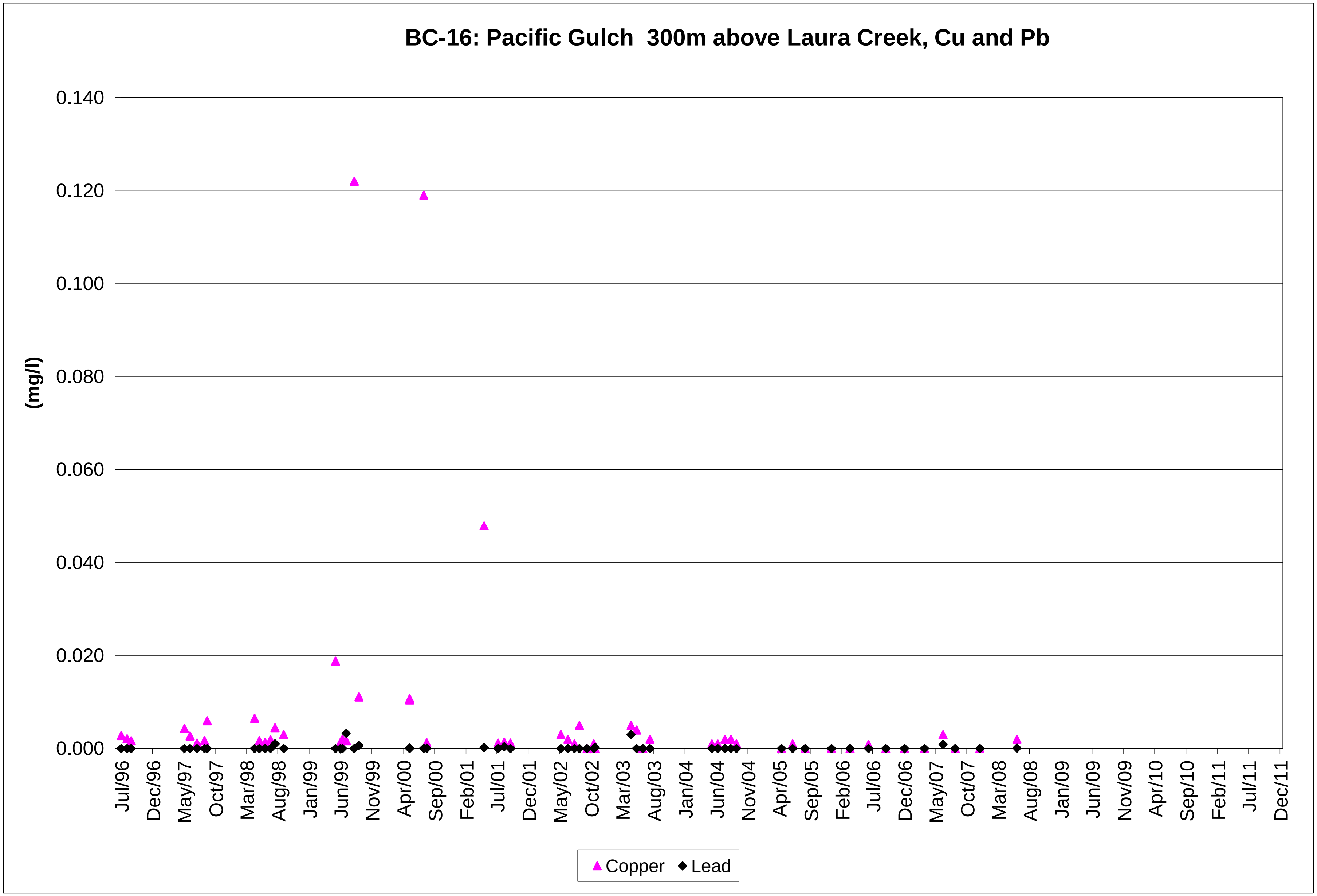

BC-03: Laura Creek Above Carolyn Creek, Cu and Pb
(mg/l)
0.045
0.040
0.035
0.030
0.025
0.020
0.015
0.010
0.005
0.000
May/92
Nov/92
May/93
Nov/93
May/94
Nov/94
May/95
Nov/95
May/96
Nov/96
May/97
Nov/97
May/98
Nov/98
May/99
Nov/99
May/00
Nov/00
May/01
Nov/01
May/02
Nov/02
May/03
Nov/03
May/04
Nov/04
May/05
Nov/05
May/06
Nov/06
May/07
Nov/07
May/08
Nov/08
May/09
Nov/09
May/10
Nov/10
May/11
Nov/11
Copper
Lead


BC-04: Lucky Creek, Cu and Pb
(mg/l)
0.040
0.035
0.030
0.025
0.020
0.015
0.010
0.005
0.000
Apr/94
Sep/94
Feb/95
Jul/95
Dec/95
May/96
Oct/96
Mar/97
Aug/97
Jan/98
Jun/98
Nov/98
Apr/99
Sep/99
Feb/00
Jul/00
Dec/00
May/01
Oct/01
Mar/02
Aug/02
Jan/03
Jun/03
Nov/03
Apr/04
Sep/04
Feb/05
Jul/05
Dec/05
May/06
Oct/06
Mar/07
Aug/07
Jan/08
Jun/08
Nov/08
Apr/09
Sep/09
Feb/10
Jul/10
Dec/10
May/11
Oct/11
Copper
Lead

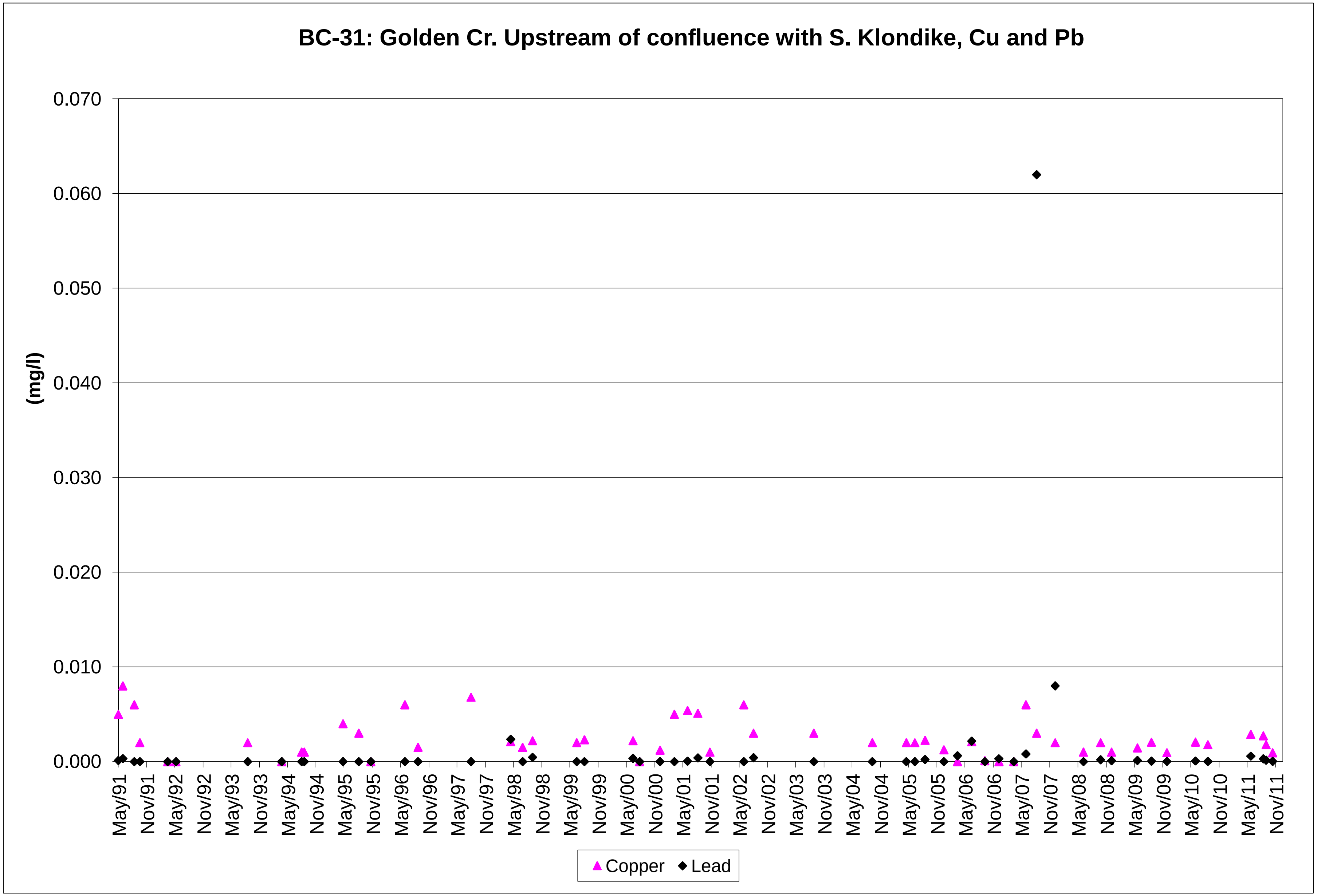

BC-05: Pacific Creek above Confluence with Lee Creek, Cu and Pb
(mg/l)
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0.00
May/91
Nov/91
May/92
Nov/92
May/93
Nov/93
May/94
Nov/94
May/95
Nov/95
May/96
Nov/96
May/97
Nov/97
May/98
Nov/98
May/99
Nov/99
May/00
Nov/00
May/01
Nov/01
May/02
Nov/02
May/03
Nov/03
May/04
Nov/04
May/05
Nov/05
May/06
Nov/06
May/07
Nov/07
May/08
Nov/08
May/09
Nov/09
May/10
Nov/10
May/11
Nov/11
Copper
Lead



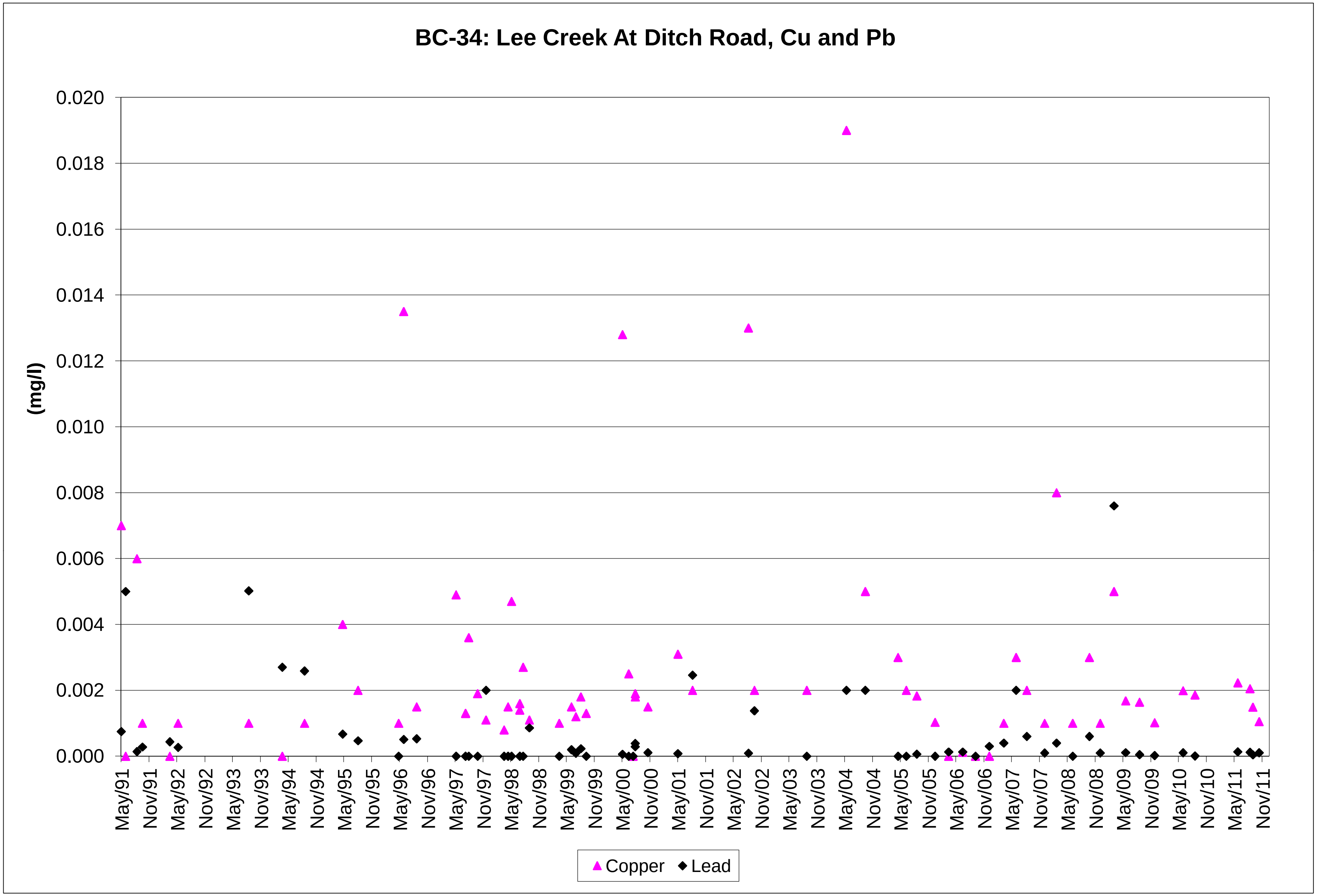
BC-06: S. Klondike d/s from confluence w/Lee Creek, Cu and Pb
(mg/l)
0.009
0.008
0.007
0.006
0.005
0.004
0.003
0.002
0.001
0.000
May/91
Nov/91
May/92
Nov/92
May/93
Nov/93
May/94
Nov/94
May/95
Nov/95
May/96
Nov/96
May/97
Nov/97
May/98
Nov/98
May/99
Nov/99
May/00
Nov/00
May/01
Nov/01
May/02
Nov/02
May/03
Nov/03
May/04
Nov/04
May/05
Nov/05
May/06
Nov/06
May/07
Nov/07
May/08
Nov/08
May/09
Nov/09
May/10
Nov/10
May/11
Nov/11
Copper
Lead

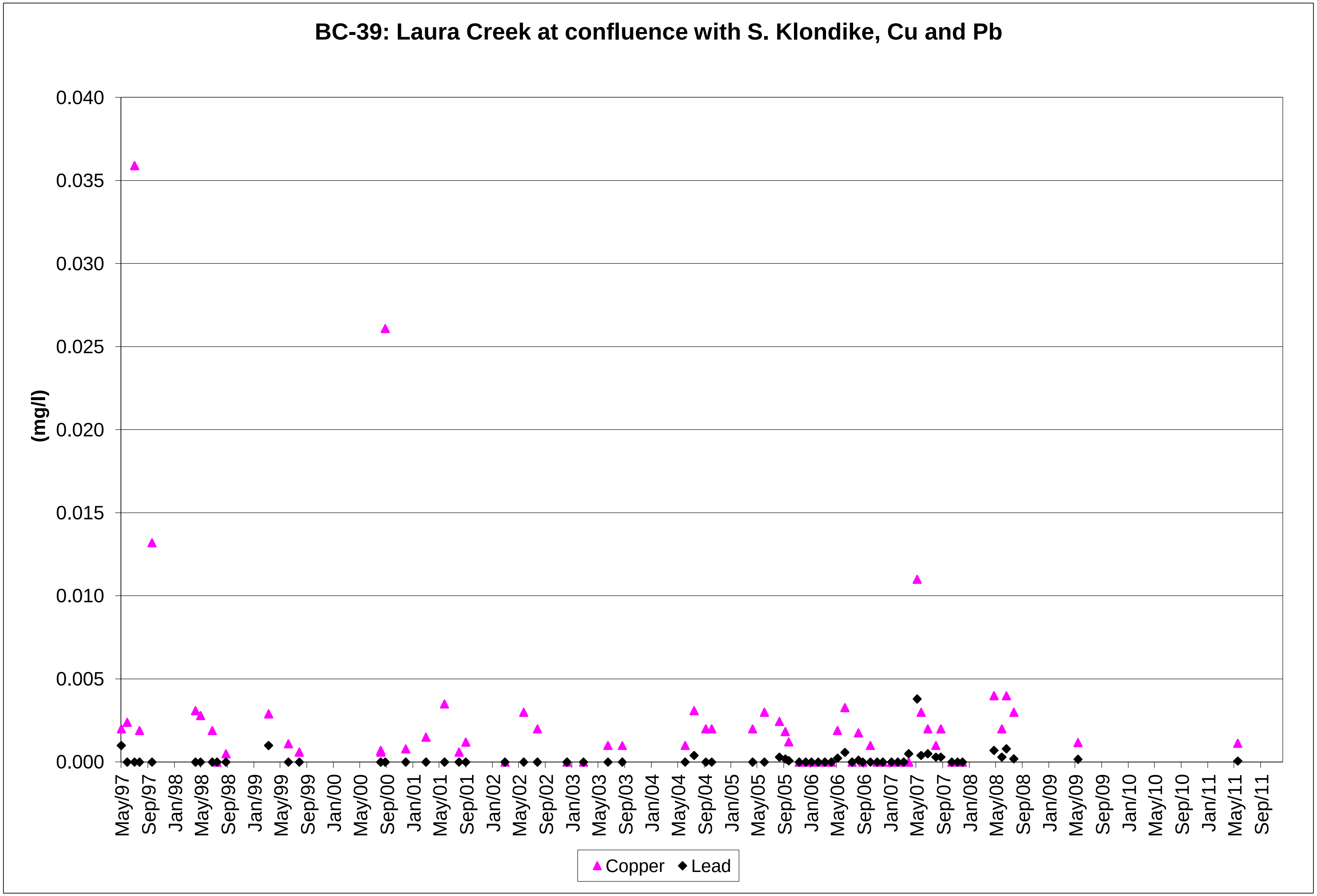


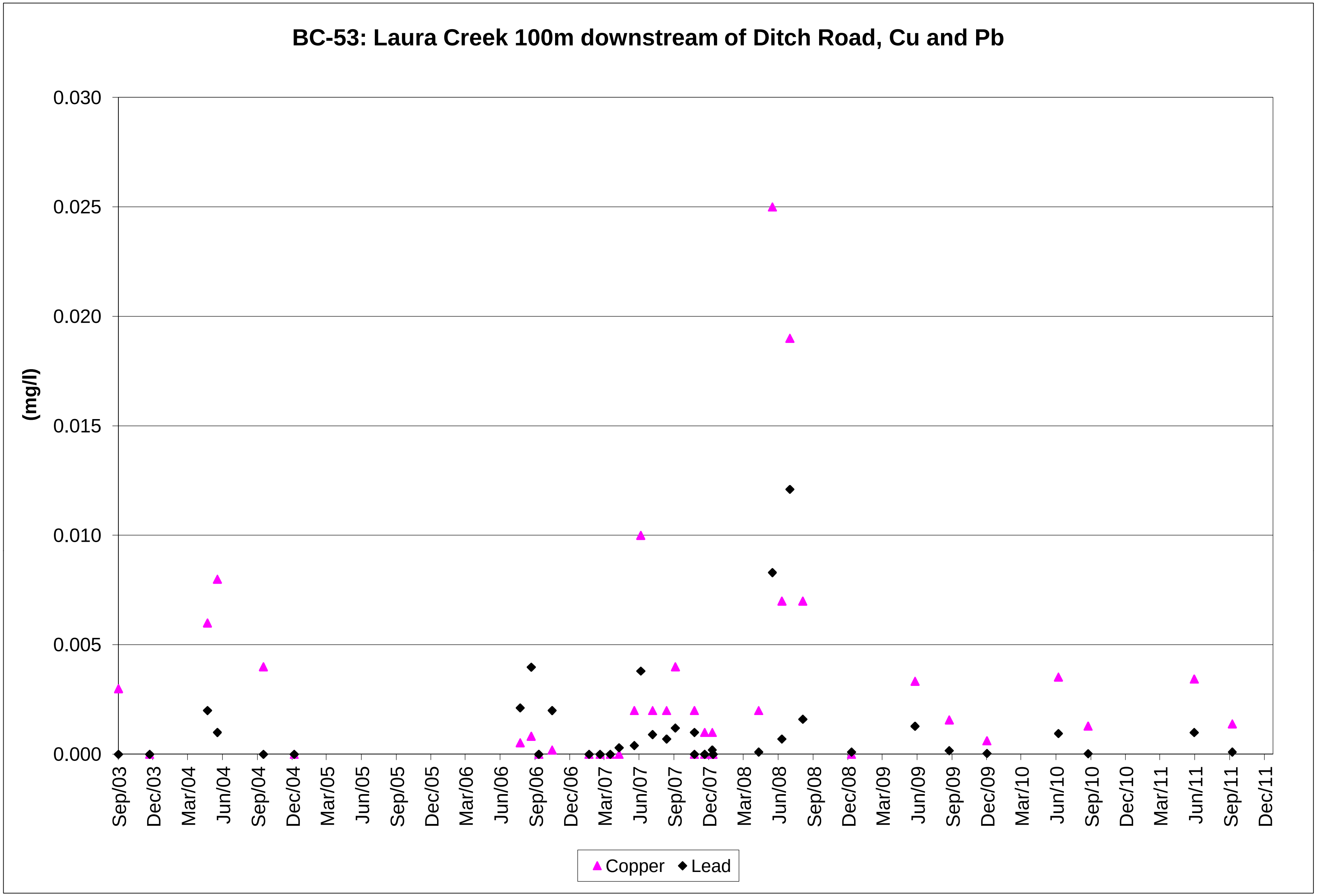
BC-16: Pacific Gulch 300m above Laura Creek, Cu and Pb
(mg/l)
0.140
0.120
0.100
0.080
0.060
0.040
0.020
0.000
Jul/96
Dec/96
May/97
Oct/97
Mar/98
Aug/98
Jan/99
Jun/99
Nov/99
Apr/00
Sep/00
Feb/01
Jul/01
Dec/01
May/02
Oct/02
Mar/03
Aug/03
Jan/04
Jun/04
Nov/04
Apr/05
Sep/05
Feb/06
Jul/06
Dec/06
May/07
Oct/07
Mar/08
Aug/08
Jan/09
Jun/09
Nov/09
Apr/10
Sep/10
Feb/11
Jul/11
Dec/11
Copper
Lead

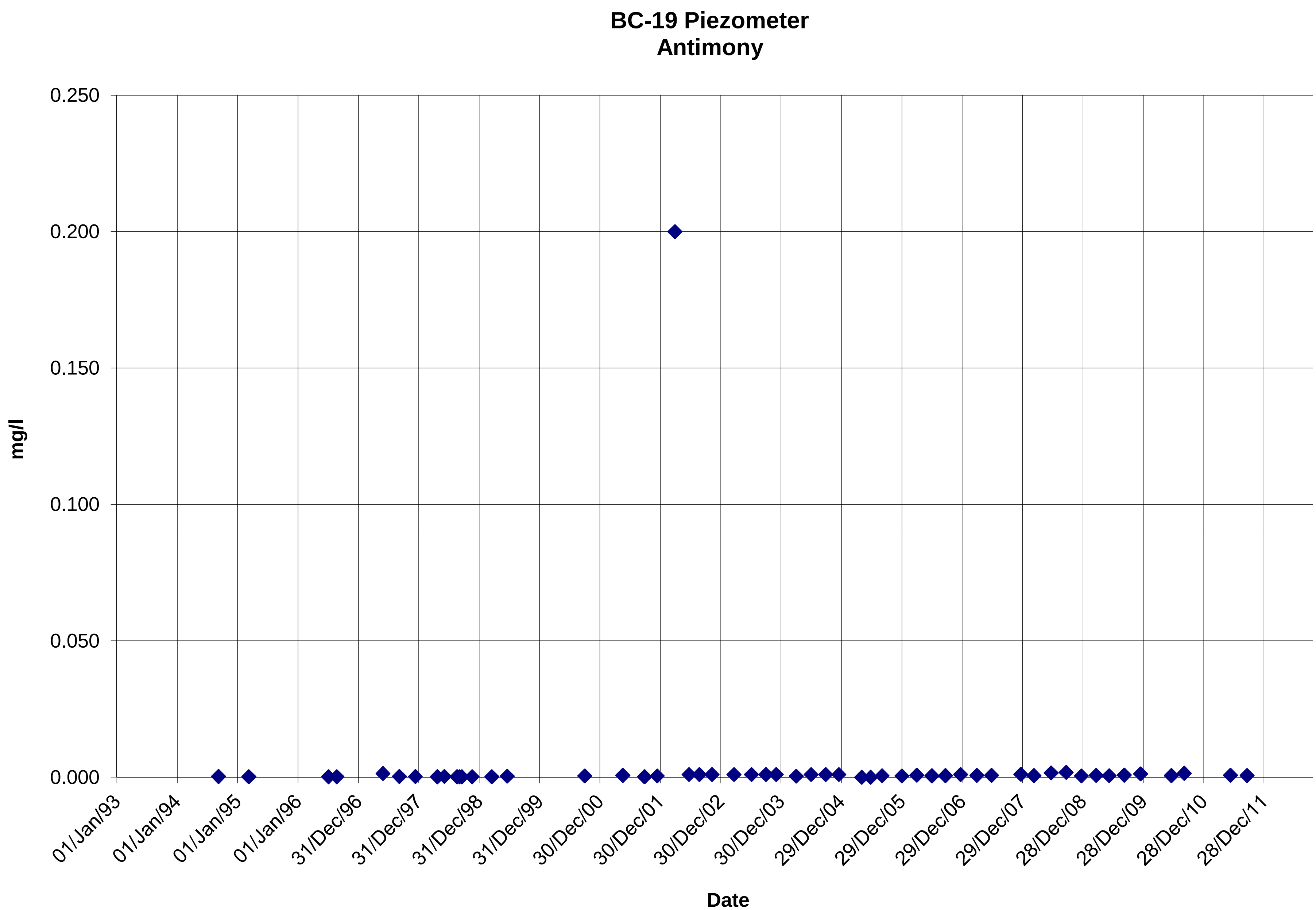


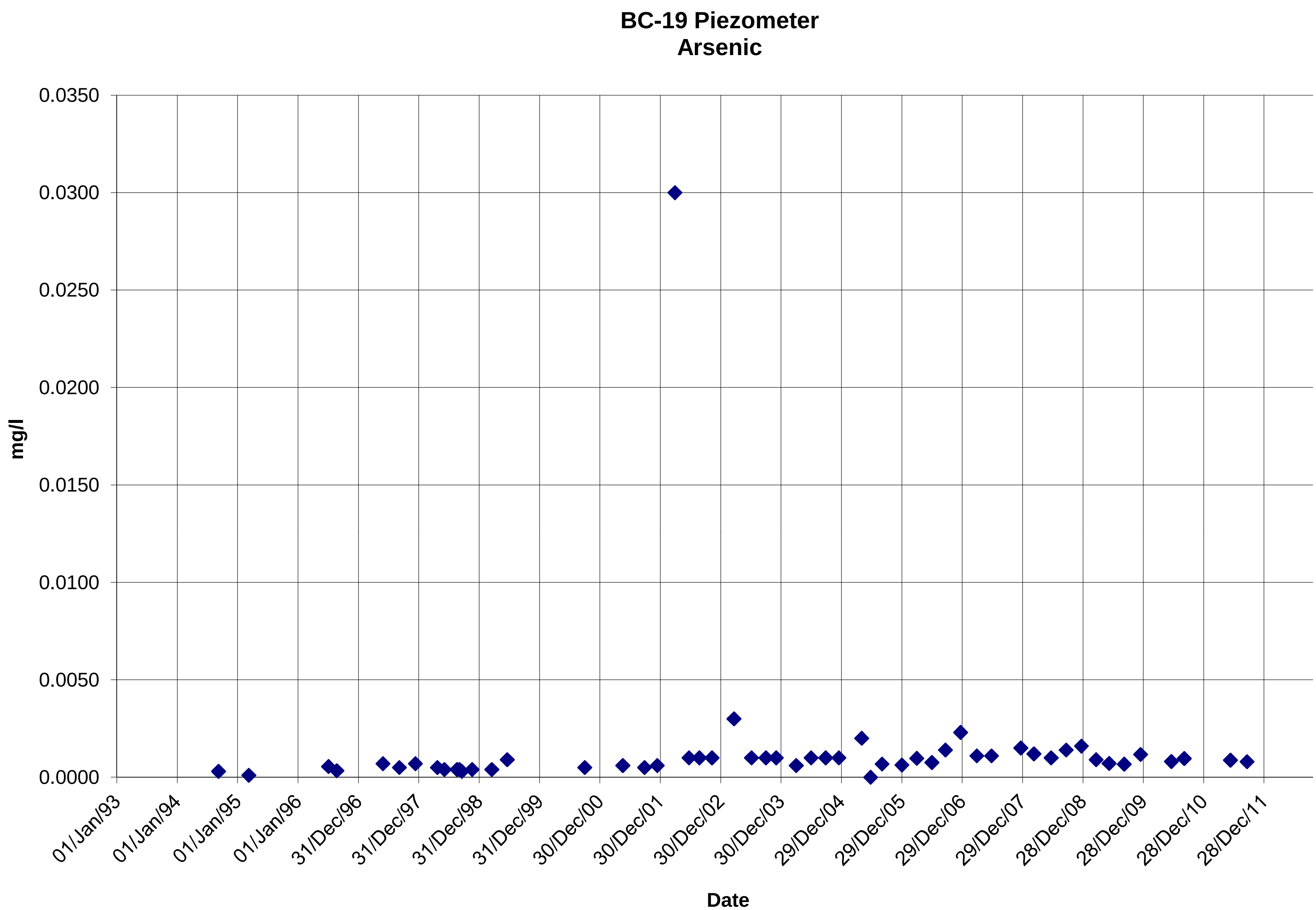
BC-31: Golden Cr. Upstream of confluence with S. Klondike, Cu and Pb
(mg/l)
0.070
0.060
0.050
0.040
0.030
0.020
0.010
0.000
May/91
Nov/91
May/92
Nov/92
May/93
Nov/93
May/94
Nov/94
May/95
Nov/95
May/96
Nov/96
May/97
Nov/97
May/98
Nov/98
May/99
Nov/99
May/00
Nov/00
May/01
Nov/01
May/02
Nov/02
May/03
Nov/03
May/04
Nov/04
May/05
Nov/05
May/06
Nov/06
May/07
Nov/07
May/08
Nov/08
May/09
Nov/09
May/10
Nov/10
May/11
Nov/11
Copper
Lead

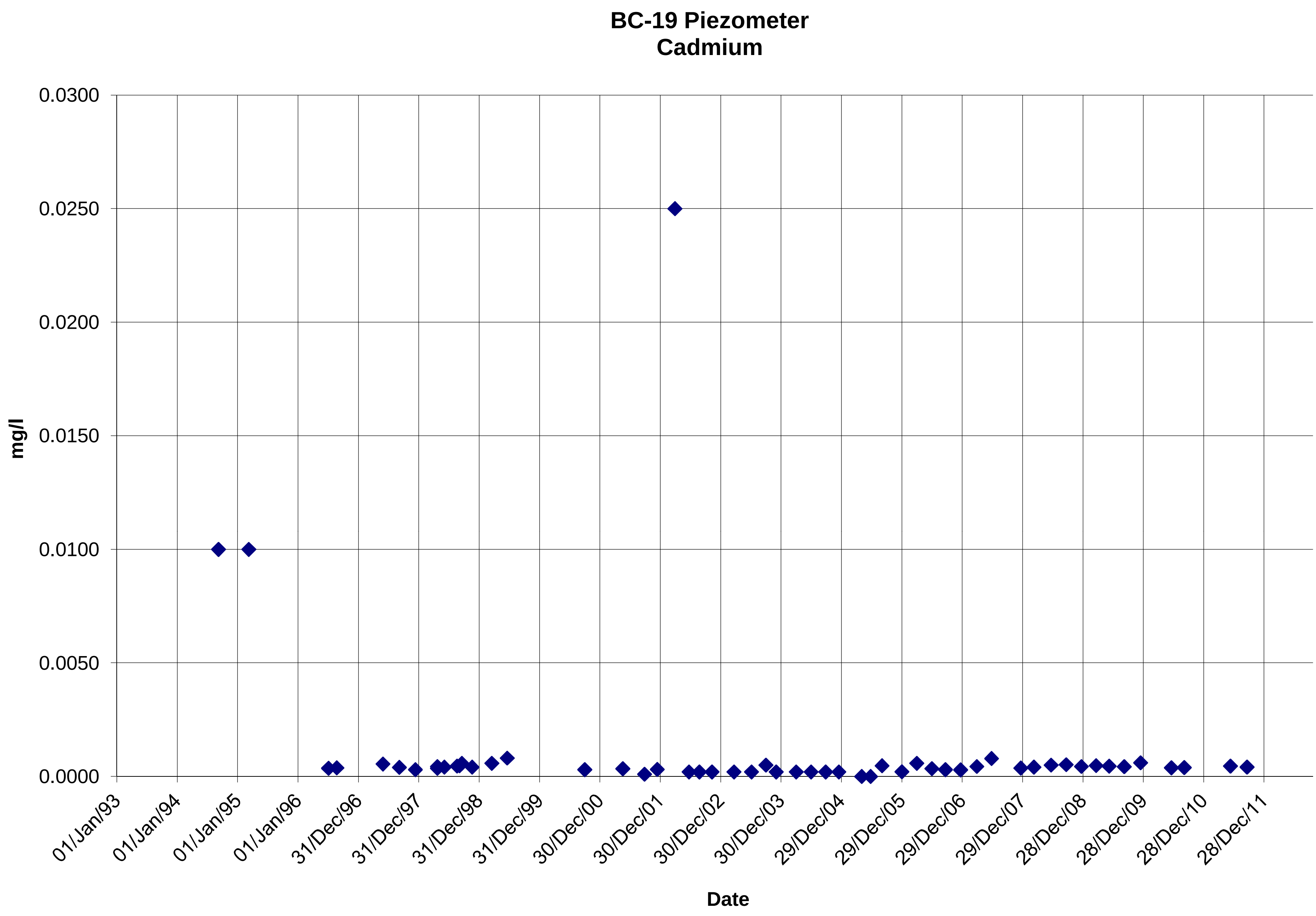

BC-34: Lee Creek At Ditch Road, Cu and Pb
(mg/l)
0.020
0.018
0.016
0.014
0.012
0.010
0.008
0.006
0.004
0.002
0.000
May/91
Nov/91
May/92
Nov/92
May/93
Nov/93
May/94
Nov/94
May/95
Nov/95
May/96
Nov/96
May/97
Nov/97
May/98
Nov/98
May/99
Nov/99
May/00
Nov/00
May/01
Nov/01
May/02
Nov/02
May/03
Nov/03
May/04
Nov/04
May/05
Nov/05
May/06
Nov/06
May/07
Nov/07
May/08
Nov/08
May/09
Nov/09
May/10
Nov/10
May/11
Nov/11
Copper
Lead


BC-39: Laura Creek at confluence with S. Klondike, Cu and Pb
(mg/l)
0.040
0.035
0.030
0.025
0.020
0.015
0.010
0.005
0.000
May/97 Sep/97 Jan/98 May/98 Sep/98 Jan/99 May/99 Sep/99 Jan/00 May/00 Sep/00 Jan/01 May/01 Sep/01 Jan/02 May/02 Sep/02 Jan/03 May/03 Sep/03 Jan/04 May/04 Sep/04 Jan/05 May/05 Sep/05 Jan/06 May/06 Sep/06 Jan/07 May/07 Sep/07 Jan/08 May/08 Sep/08 Jan/09 May/09 Sep/09 Jan/10 May/10 Sep/10 Jan/11 May/11 Sep/11
Copper
Lead

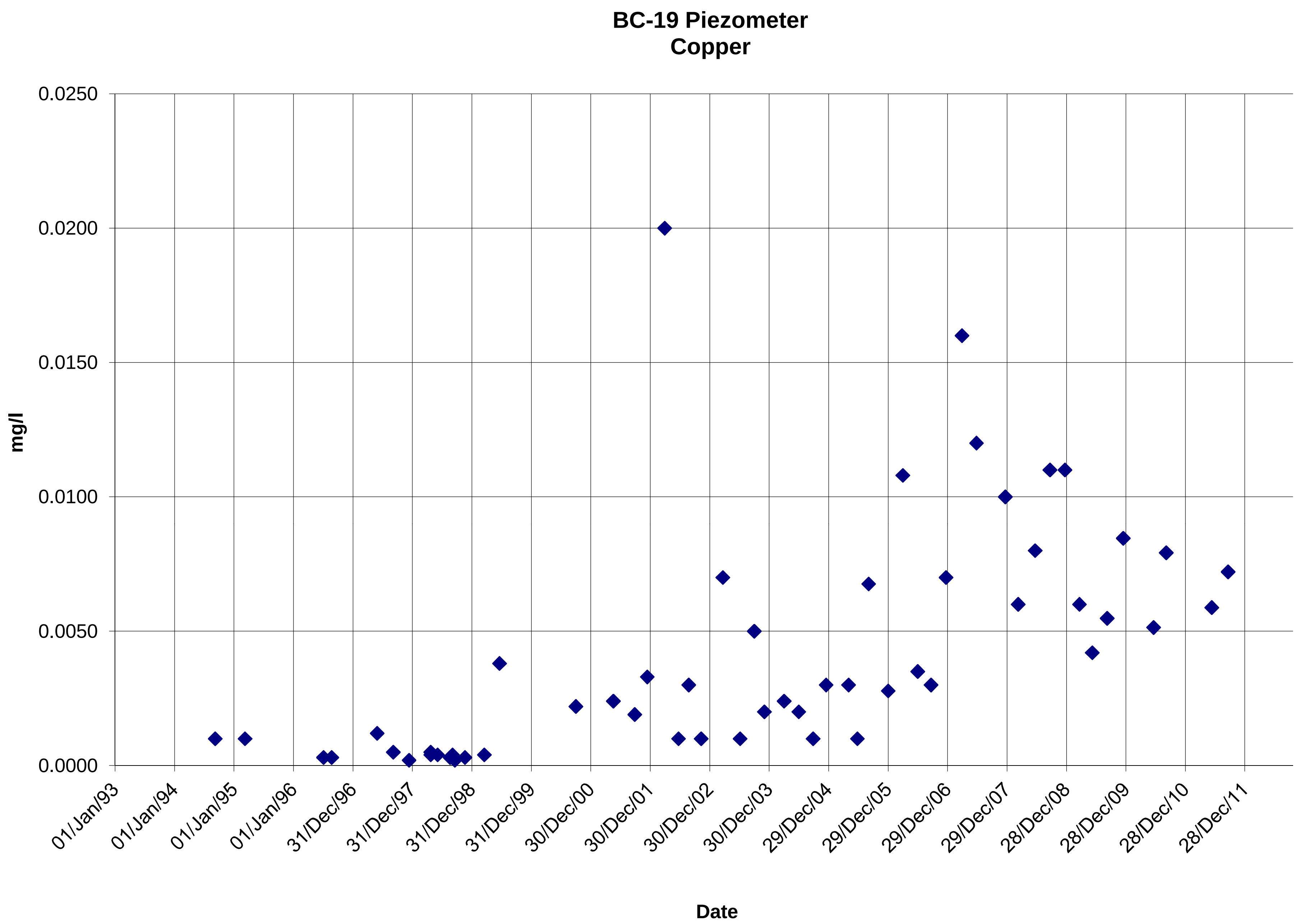

BC-53: Laura Creek 100m downstream of Ditch Road, Cu and Pb
(mg/l)
0.030
0.025
0.020
0.015
0.010
0.005
0.000
Sep/03
Dec/03
Mar/04
Jun/04
Sep/04
Dec/04
Mar/05
Jun/05
Sep/05
Dec/05
Mar/06
Jun/06
Sep/06
Dec/06
Mar/07
Jun/07
Sep/07
Dec/07
Mar/08
Jun/08
Sep/08
Dec/08
Mar/09
Jun/09
Sep/09
Dec/09
Mar/10
Jun/10
Sep/10
Dec/10
Mar/11
Jun/11
Sep/11
Dec/11
Copper
Lead

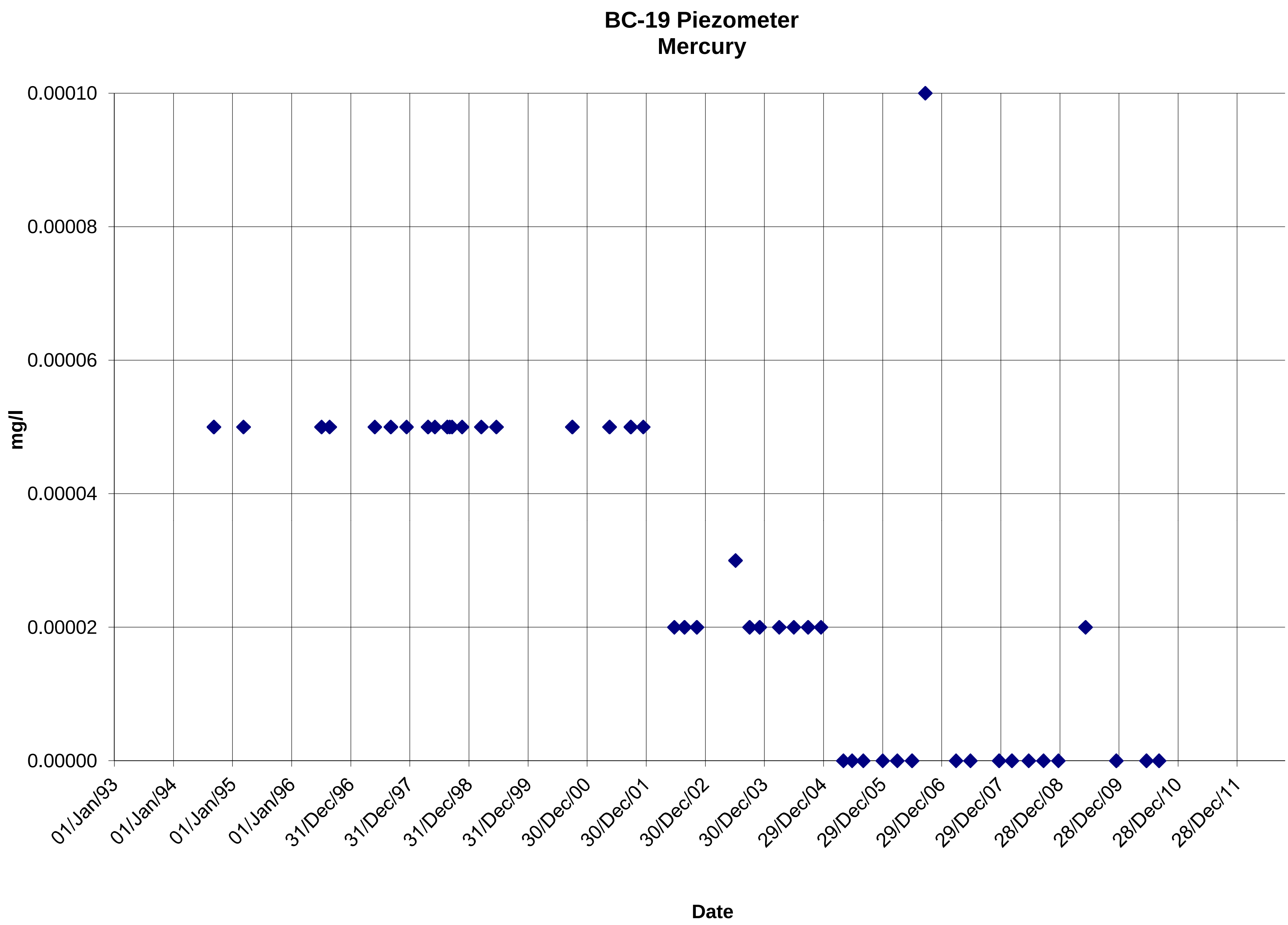

BC-19 Piezometer
Antimony
mg/l
0.250
0.200
0.150
0.100
0.050
0.000
01/Jan/93
01/Jan/94
01/Jan/95
01/Jan/96
31/Dec/96
31/Dec/97
31/Dec/98
31/Dec/99
30/Dec/00
30/Dec/01
30/Dec/02
30/Dec/03
29/Dec/04
29/Dec/05
29/Dec/06
29/Dec/07
28/Dec/08
28/Dec/09
28/Dec/10
28/Dec/11
Date


BC-19 Piezometer
Arsenic
mg/l
0.0350
0.0300
0.0250
0.0200
0.0150
0.0100
0.0050
0.0000
01/Jan/93
01/Jan/94
01/Jan/95
01/Jan/96
31/Dec/96
31/Dec/97
31/Dec/98
31/Dec/99
30/Dec/00
30/Dec/01
30/Dec/02
30/Dec/03
29/Dec/04
29/Dec/05
29/Dec/06
29/Dec/07
28/Dec/08
28/Dec/09
28/Dec/10
28/Dec/11
Date

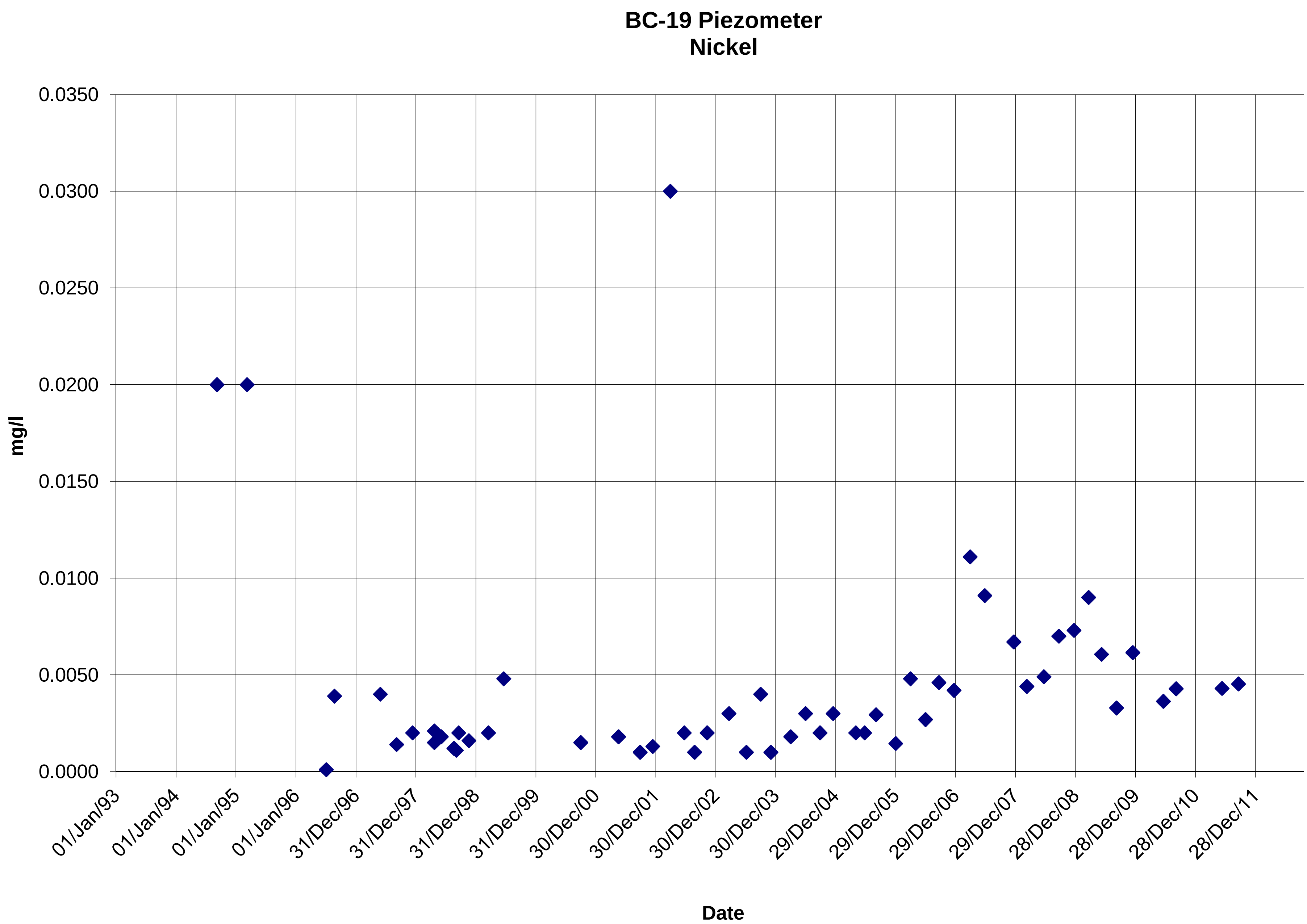


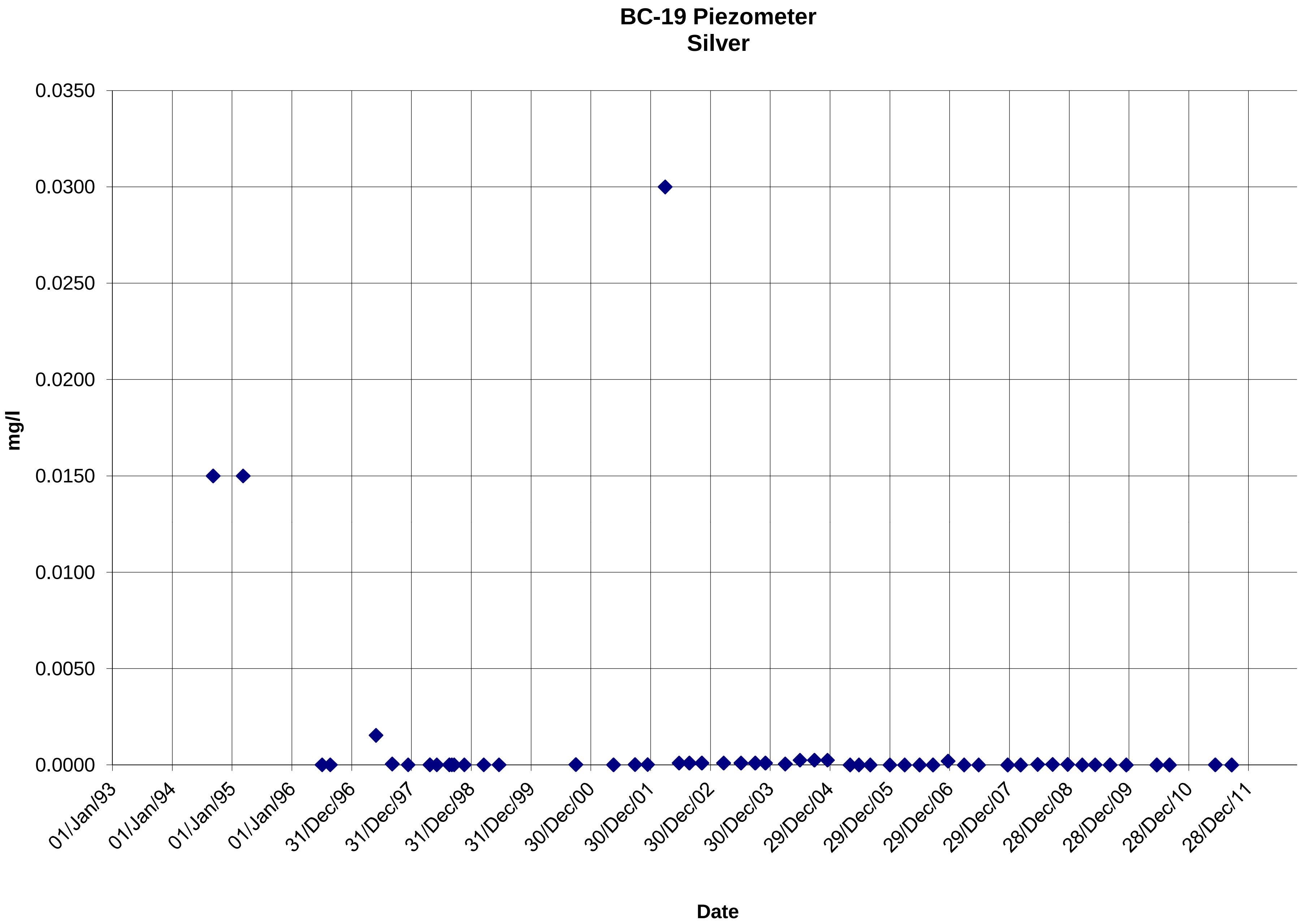
BC-19 Piezometer
Cadmium
mg/l
0.0300
0.0250
0.0200
0.0150
0.0100
0.0050
0.0000
01/Jan/93
01/Jan/94
01/Jan/95
01/Jan/96
31/Dec/96
31/Dec/97
31/Dec/98
31/Dec/99
30/Dec/00
30/Dec/01
30/Dec/02
30/Dec/03
29/Dec/04
29/Dec/05
29/Dec/06
29/Dec/07
28/Dec/08
28/Dec/09
28/Dec/10
28/Dec/11
Date


BC-19 Piezometer
Copper
mg/l
0.0250
0.0200
0.0150
0.0100
0.0050
0.0000
01/Jan/93
01/Jan/94
01/Jan/95
01/Jan/96
31/Dec/96
31/Dec/97
31/Dec/98
31/Dec/99
30/Dec/00
30/Dec/01
30/Dec/02
30/Dec/03
29/Dec/04
29/Dec/05
29/Dec/06
29/Dec/07
28/Dec/08
28/Dec/09
28/Dec/10
28/Dec/11
Date

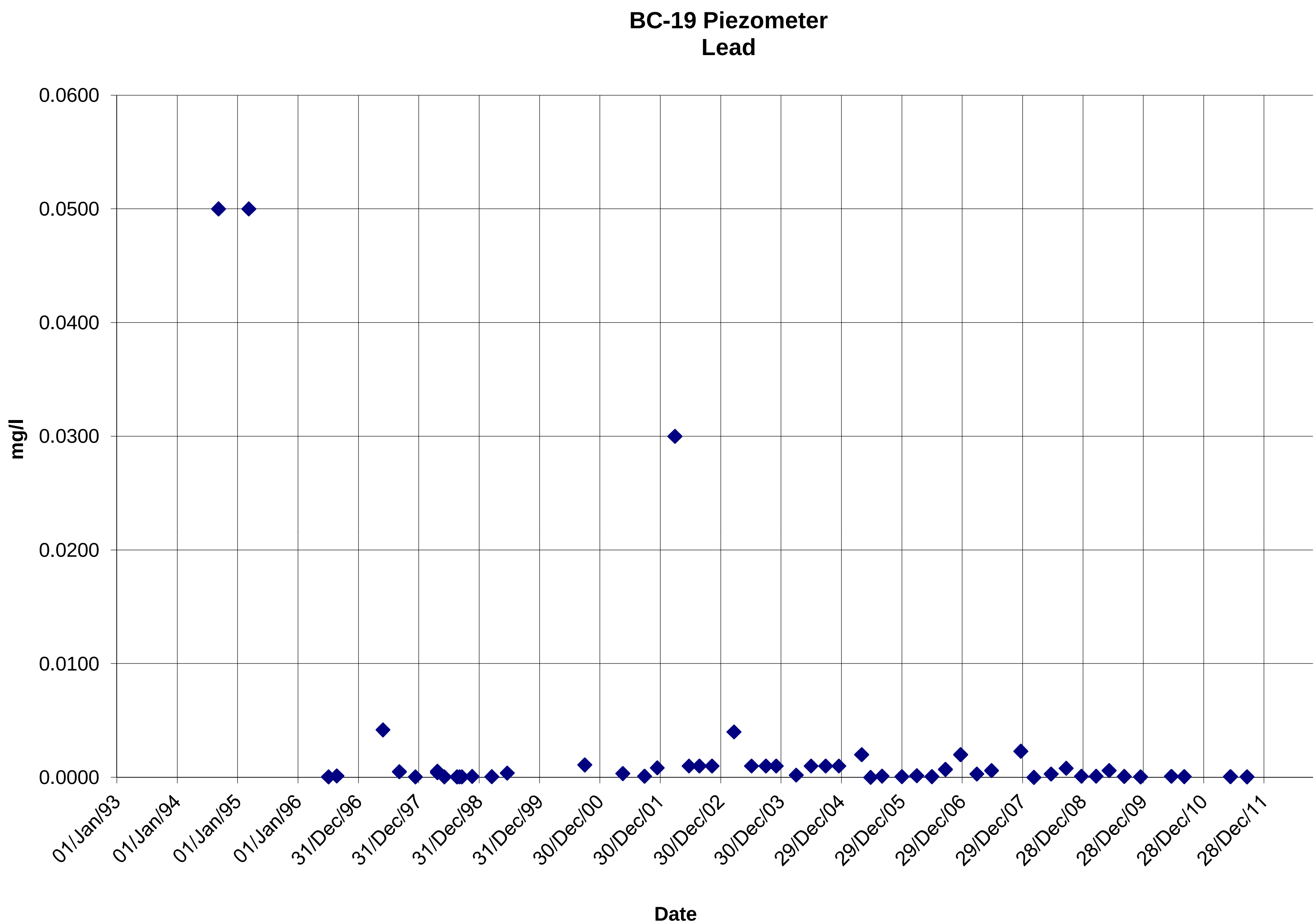


BC-19 Piezometer
Mercury
mg/l
0.00010
0.00008
0.00006
0.00004
0.00002
0.00000
01/Jan/93
01/Jan/94
01/Jan/95
01/Jan/96
31/Dec/96
31/Dec/97
31/Dec/98
31/Dec/99
30/Dec/00
30/Dec/01
30/Dec/02
30/Dec/03
29/Dec/04
29/Dec/05
29/Dec/06
29/Dec/07
28/Dec/08
28/Dec/09
28/Dec/10
28/Dec/11
Date

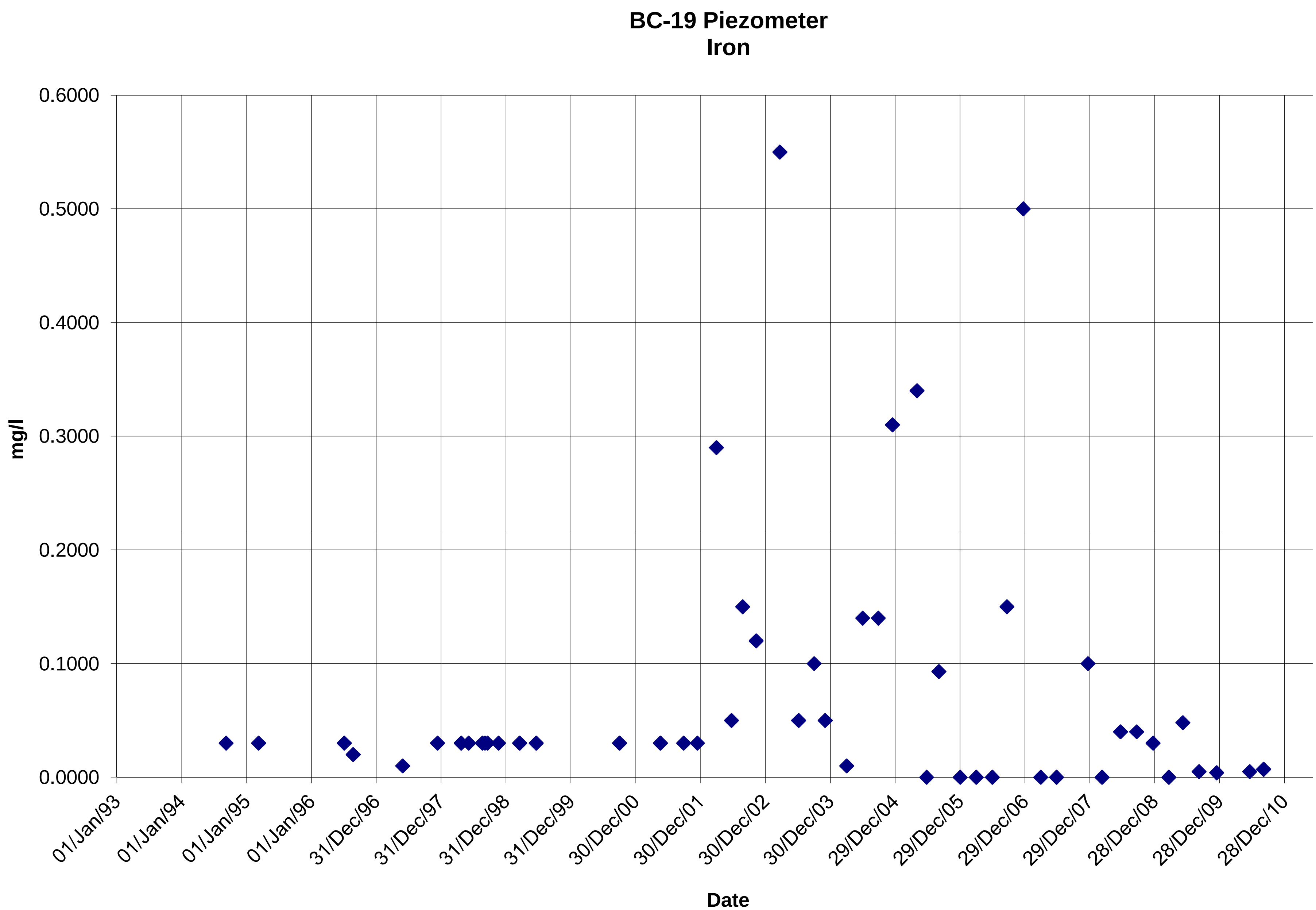

BC-19 Piezometer
Nickel
mg/l
0.0350
0.0300
0.0250
0.0200
0.0150
0.0100
0.0050
0.0000
01/Jan/93
01/Jan/94
01/Jan/95
01/Jan/96
31/Dec/96
31/Dec/97
31/Dec/98
31/Dec/99
30/Dec/00
30/Dec/01
30/Dec/02
30/Dec/03
29/Dec/04
29/Dec/05
29/Dec/06
29/Dec/07
28/Dec/08
28/Dec/09
28/Dec/10
28/Dec/11
Date

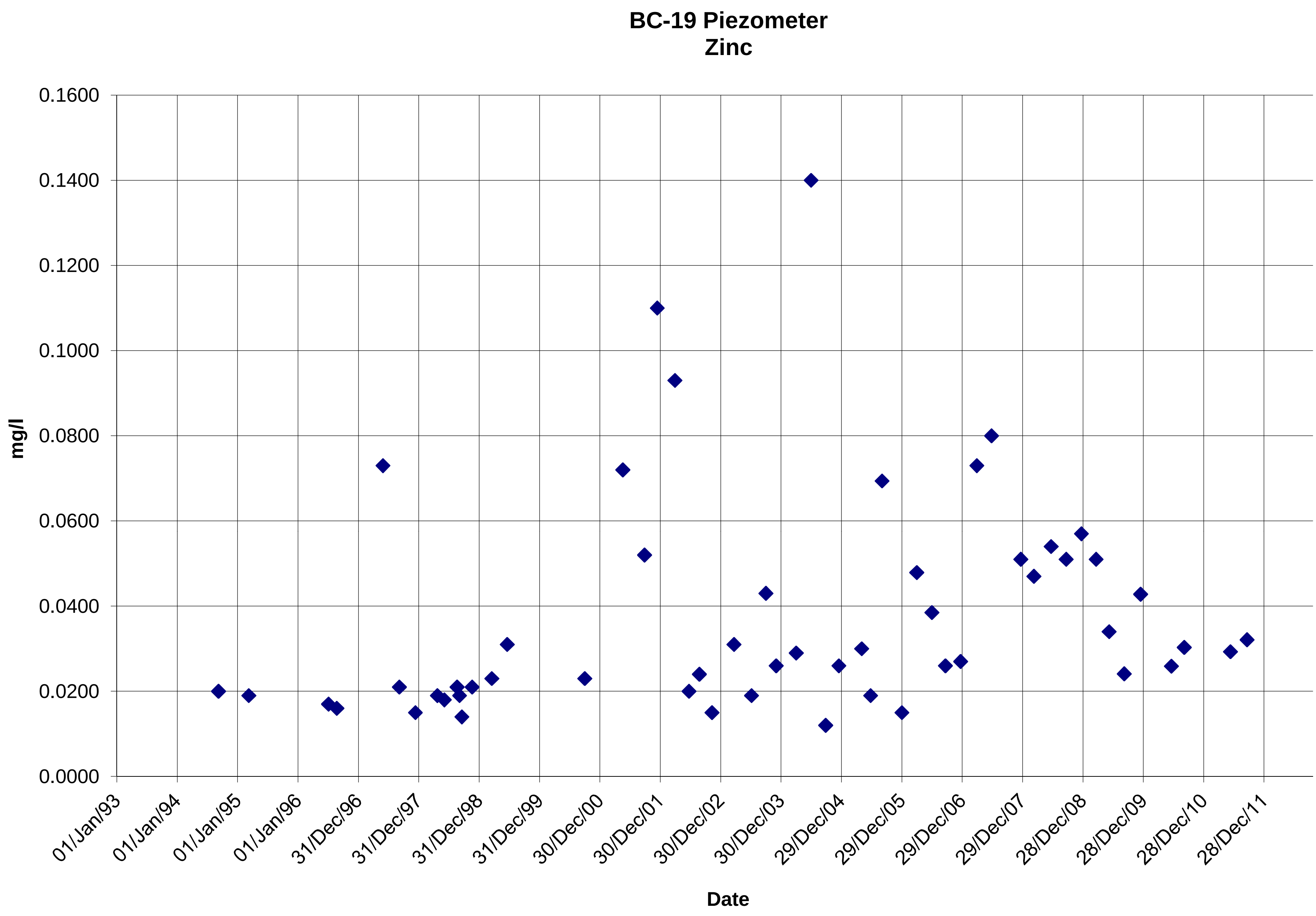


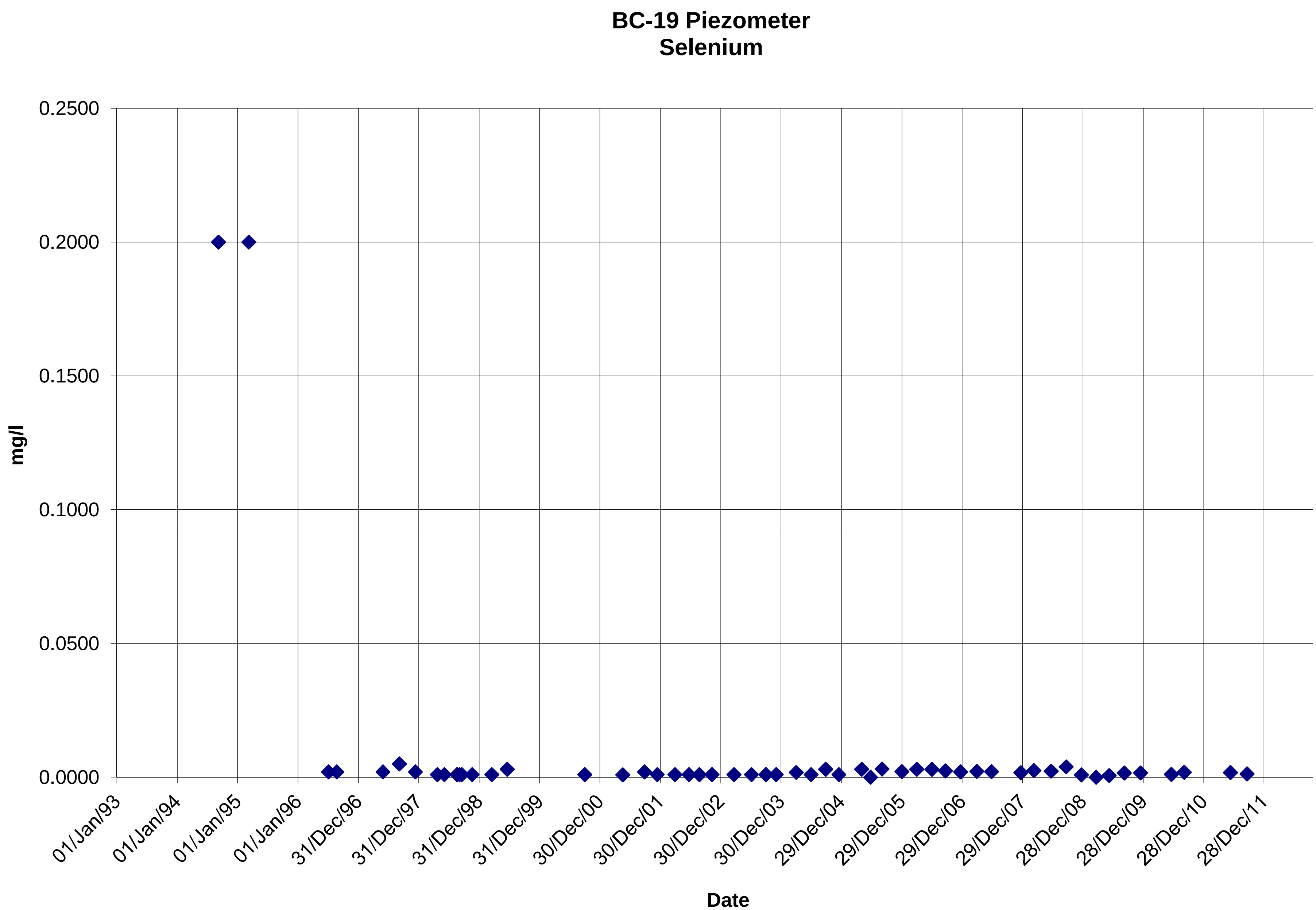
BC-19 Piezometer
Silver
mg/l
0.0350
0.0300
0.0250
0.0200
0.0150
0.0100
0.0050
0.0000
01/Jan/93
01/Jan/94
01/Jan/95
01/Jan/96
31/Dec/96
31/Dec/97
31/Dec/98
31/Dec/99
30/Dec/00
30/Dec/01
30/Dec/02
30/Dec/03
29/Dec/04
29/Dec/05
29/Dec/06
29/Dec/07
28/Dec/08
28/Dec/09
28/Dec/10
28/Dec/11
Date

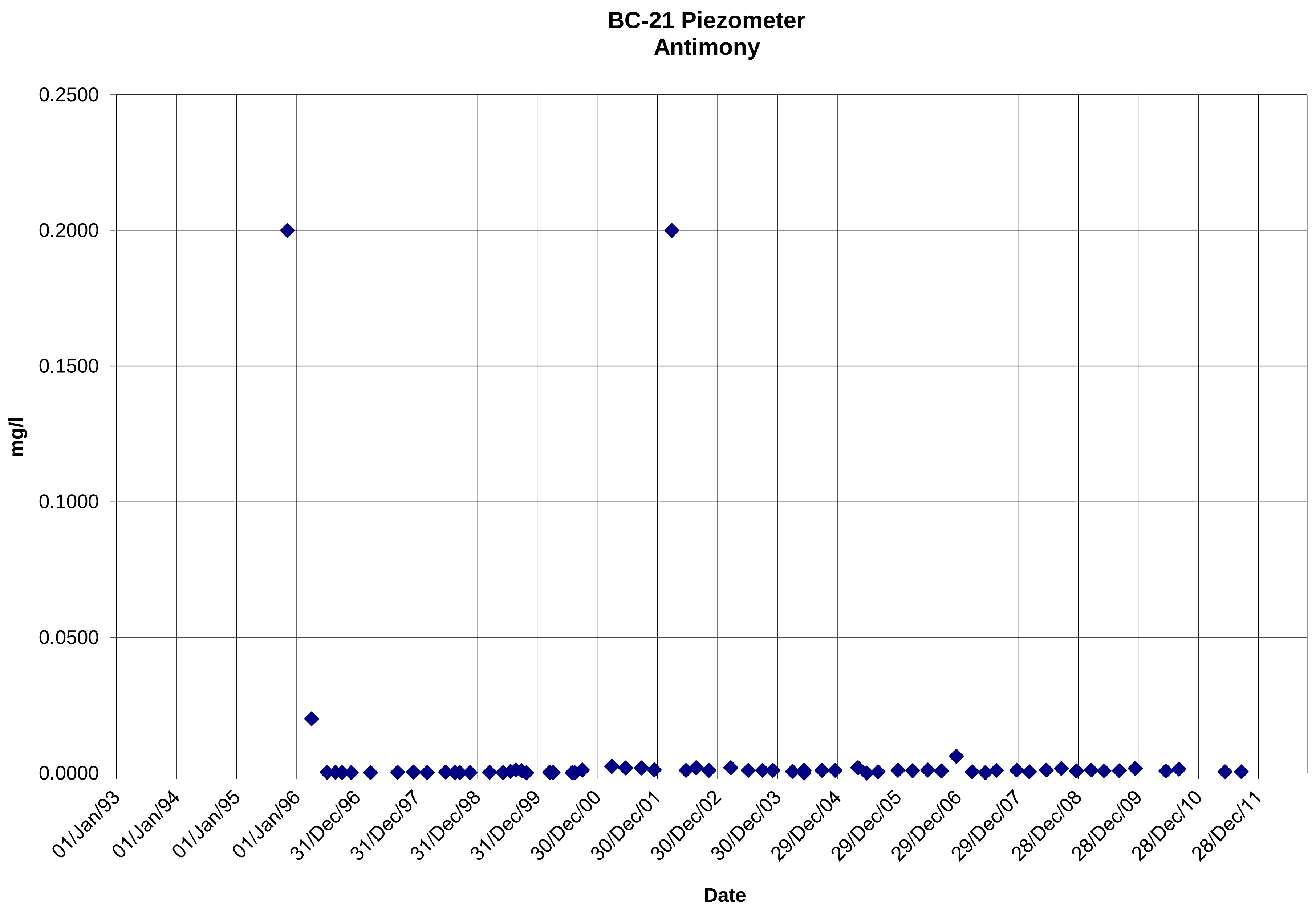


BC-19 Piezometer
Lead
mg/l
0.0600
0.0500
0.0400
0.0300
0.0200
0.0100
0.0000
01/Jan/93
01/Jan/94
01/Jan/95
01/Jan/96
31/Dec/96
31/Dec/97
31/Dec/98
31/Dec/99
30/Dec/00
30/Dec/01
30/Dec/02
30/Dec/03
29/Dec/04
29/Dec/05
29/Dec/06
29/Dec/07
28/Dec/08
28/Dec/09
28/Dec/10
28/Dec/11
Date

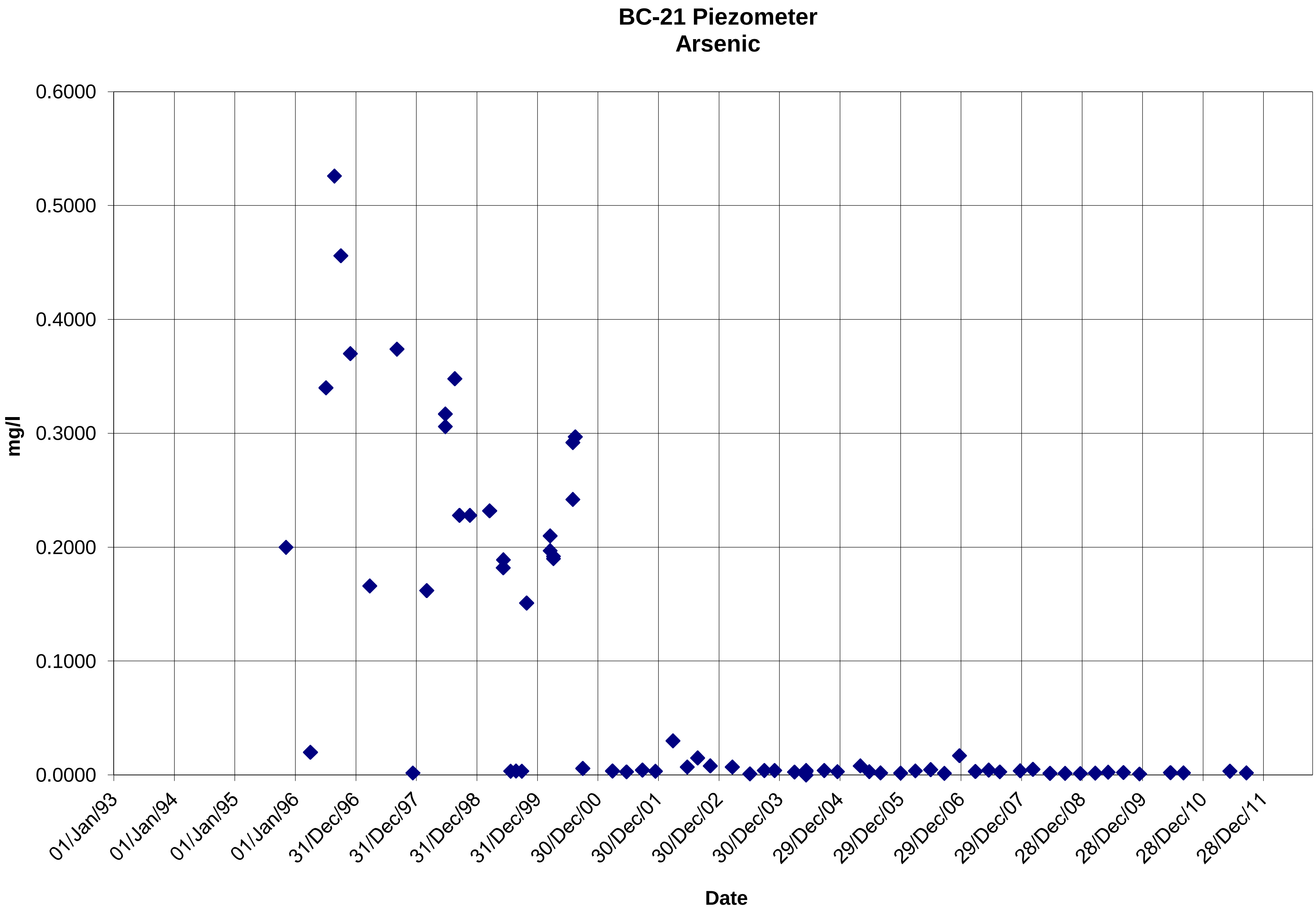

BC-19 Piezometer
Iron
mg/l
0.6000
0.5000
0.4000
0.3000
0.2000
0.1000
0.0000
01/Jan/93
01/Jan/94
01/Jan/95
01/Jan/96
31/Dec/96
31/Dec/97
31/Dec/98
31/Dec/99
30/Dec/00
30/Dec/01
30/Dec/02
30/Dec/03
29/Dec/04
29/Dec/05
29/Dec/06
29/Dec/07
28/Dec/08
28/Dec/09
28/Dec/10
Date


BC-19 Piezometer
Zinc
mg/l
0.1600
0.1400
0.1200
0.1000
0.0800
0.0600
0.0400
0.0200
0.0000
01/Jan/93
01/Jan/94
01/Jan/95
01/Jan/96
31/Dec/96
31/Dec/97
31/Dec/98
31/Dec/99
30/Dec/00
30/Dec/01
30/Dec/02
30/Dec/03
29/Dec/04
29/Dec/05
29/Dec/06
29/Dec/07
28/Dec/08
28/Dec/09
28/Dec/10
28/Dec/11
Date

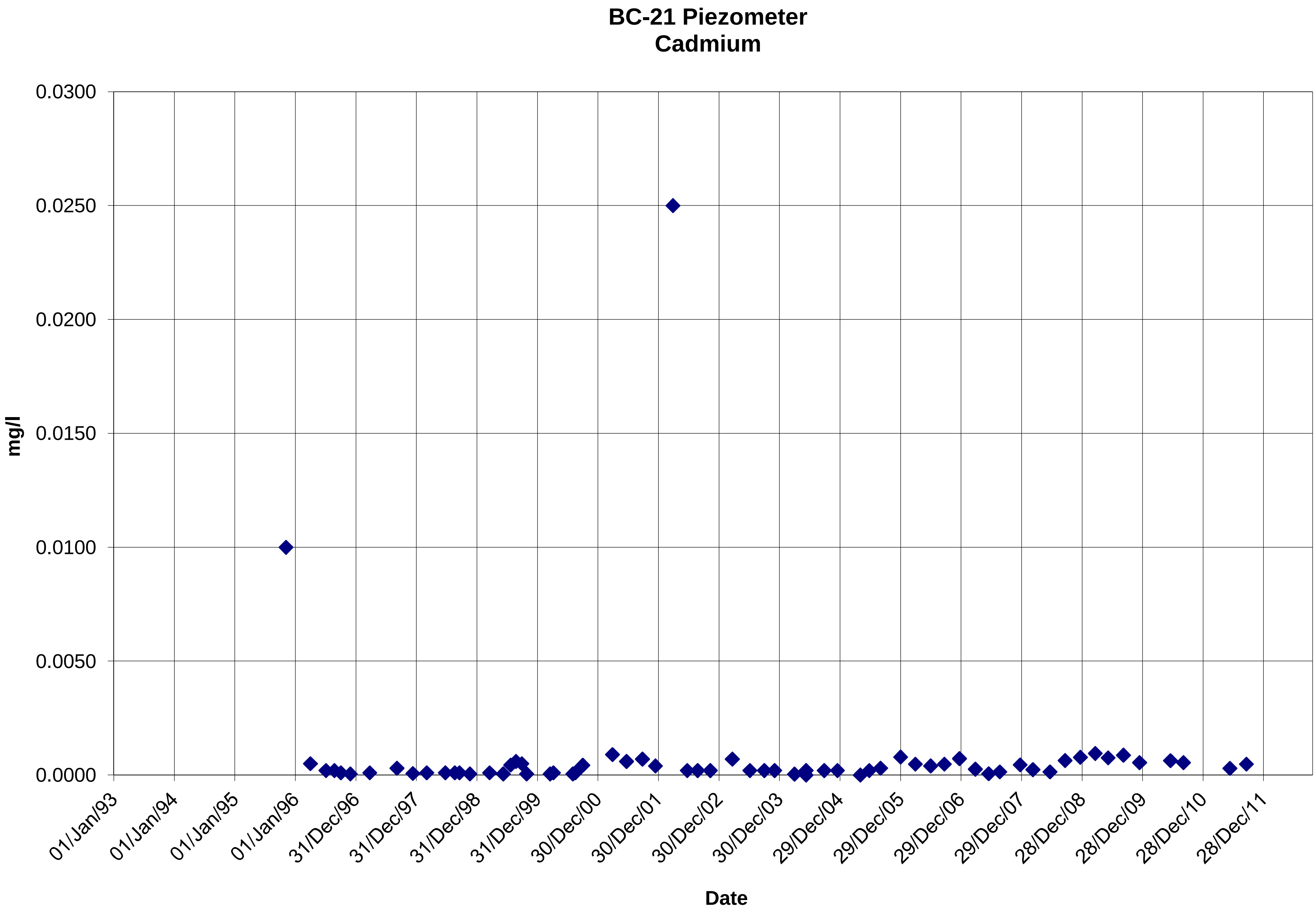

BC-19 Piezometer
Selenium
mg/l
0.2500
0.2000
0.1500
0.1000
0.0500
0.0000
01/Jan/93
01/Jan/94
01/Jan/95
01/Jan/96
31/Dec/96
31/Dec/97
31/Dec/98
31/Dec/99
30/Dec/00
30/Dec/01
30/Dec/02
30/Dec/03
29/Dec/04
29/Dec/05
29/Dec/06
29/Dec/07
28/Dec/08
28/Dec/09
28/Dec/10
28/Dec/11
Date

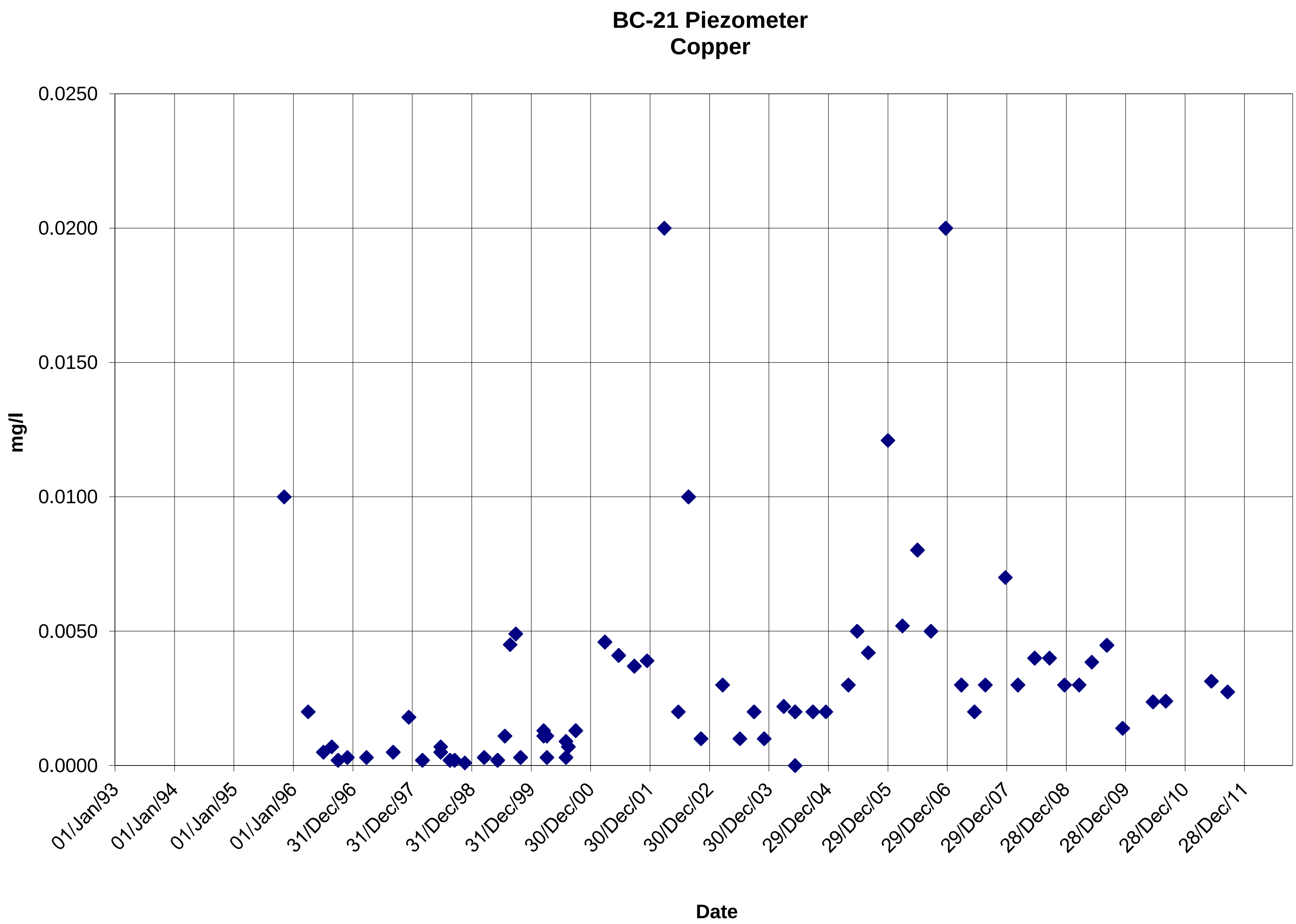


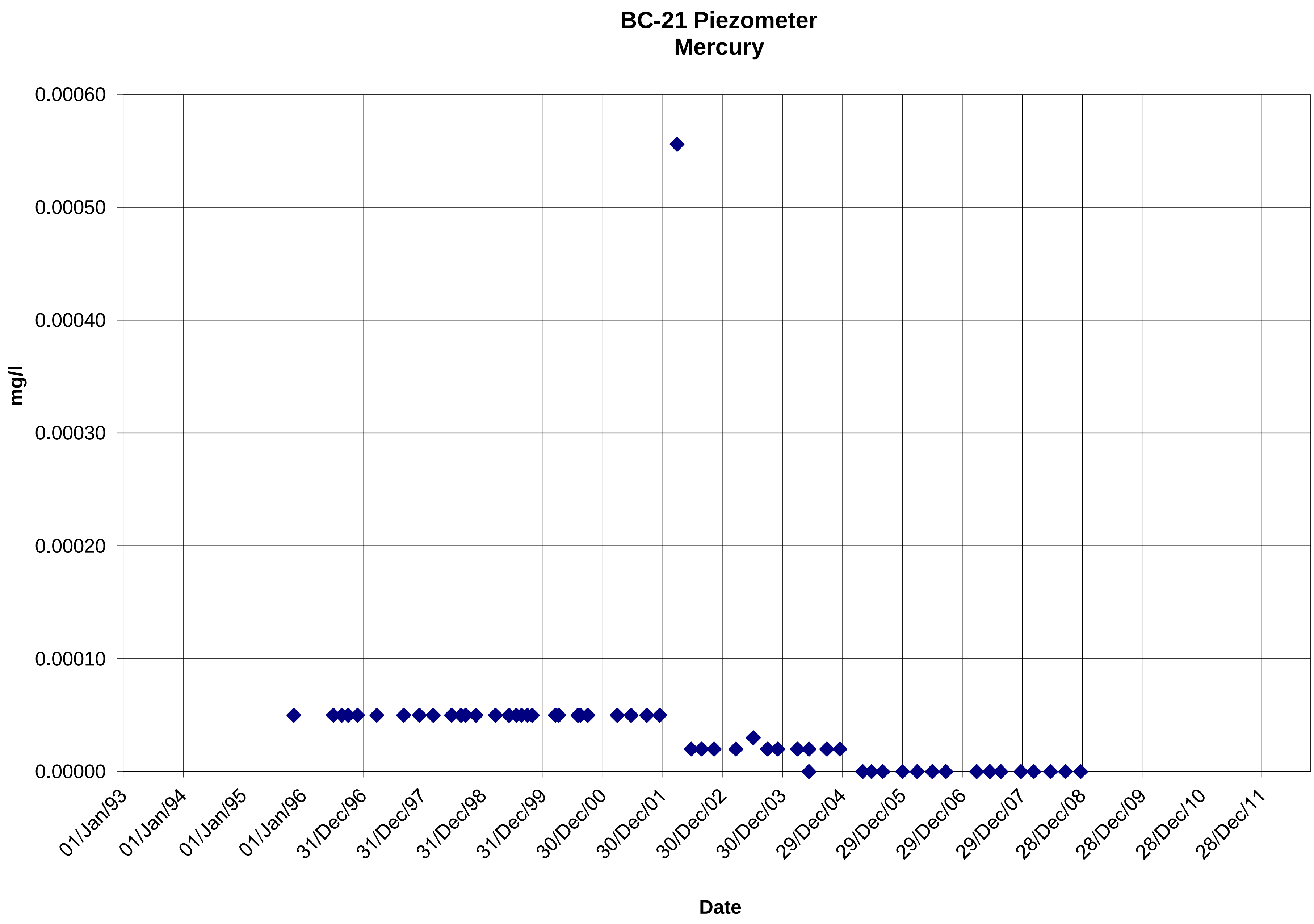
BC-21 Piezometer
Antimony
mg/l
0.2500
0.2000
0.1500
0.1000
0.0500
0.0000
01/Jan/93
01/Jan/94
01/Jan/95
01/Jan/96
31/Dec/96
31/Dec/97
31/Dec/98
31/Dec/99
30/Dec/00
30/Dec/01
30/Dec/02
30/Dec/03
29/Dec/04
29/Dec/05
29/Dec/06
29/Dec/07
28/Dec/08
28/Dec/09
28/Dec/10
28/Dec/11
Date

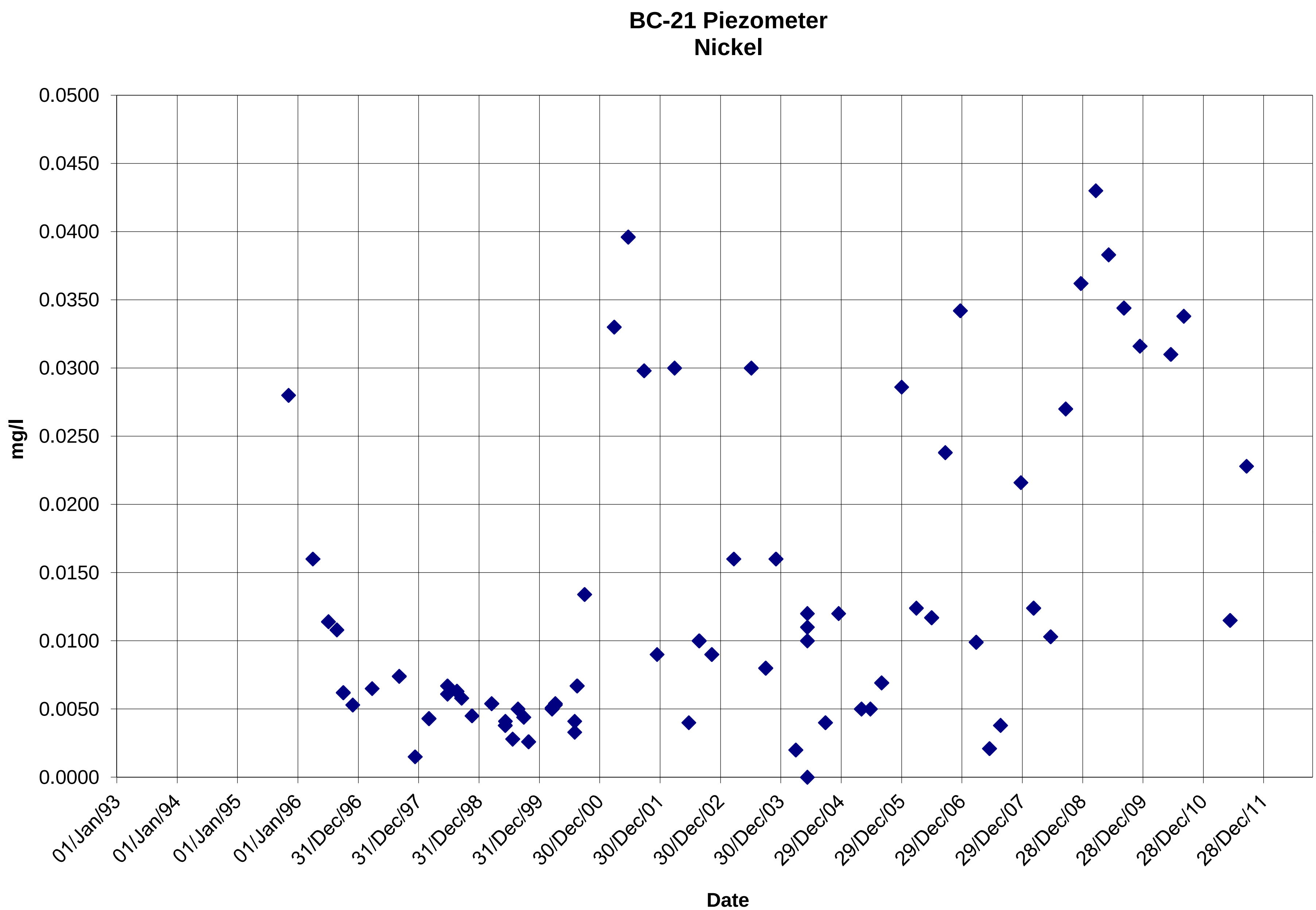


BC-21 Piezometer
Arsenic
mg/l
0.6000
0.5000
0.4000
0.3000
0.2000
0.1000
0.0000
01/Jan/93
01/Jan/94
01/Jan/95
01/Jan/96
31/Dec/96
31/Dec/97
31/Dec/98
31/Dec/99
30/Dec/00
30/Dec/01
30/Dec/02
30/Dec/03
29/Dec/04
29/Dec/05
29/Dec/06
29/Dec/07
28/Dec/08
28/Dec/09
28/Dec/10
28/Dec/11
Date


BC-21 Piezometer
Cadmium
mg/l
0.0300
0.0250
0.0200
0.0150
0.0100
0.0050
0.0000
01/Jan/93
01/Jan/94
01/Jan/95
01/Jan/96
31/Dec/96
31/Dec/97
31/Dec/98
31/Dec/99
30/Dec/00
30/Dec/01
30/Dec/02
30/Dec/03
29/Dec/04
29/Dec/05
29/Dec/06
29/Dec/07
28/Dec/08
28/Dec/09
28/Dec/10
28/Dec/11
Date


BC-21 Piezometer
Copper
mg/l
0.0250
0.0200
0.0150
0.0100
0.0050
0.0000
01/Jan/93
01/Jan/94
01/Jan/95
01/Jan/96
31/Dec/96
31/Dec/97
31/Dec/98
31/Dec/99
30/Dec/00
30/Dec/01
30/Dec/02
30/Dec/03
29/Dec/04
29/Dec/05
29/Dec/06
29/Dec/07
28/Dec/08
28/Dec/09
28/Dec/10
28/Dec/11
Date


BC-21 Piezometer
Mercury
mg/l
0.00060
0.00050
0.00040
0.00030
0.00020
0.00010
0.00000
01/Jan/93
01/Jan/94
01/Jan/95
01/Jan/96
31/Dec/96
31/Dec/97
31/Dec/98
31/Dec/99
30/Dec/00
30/Dec/01
30/Dec/02
30/Dec/03
29/Dec/04
29/Dec/05
29/Dec/06
29/Dec/07
28/Dec/08
28/Dec/09
28/Dec/10
28/Dec/11
Date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Nickel
mg/l
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0.0450
0.0400
0.0350
0.0300
0.0250
0.0200
0.0150
0.0100
0.0050
0.0000
01/Jan/93
01/Jan/94
01/Jan/95
01/Jan/96
31/Dec/96
31/Dec/97
31/Dec/98
31/Dec/99
30/Dec/00
30/Dec/01
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30/Dec/03
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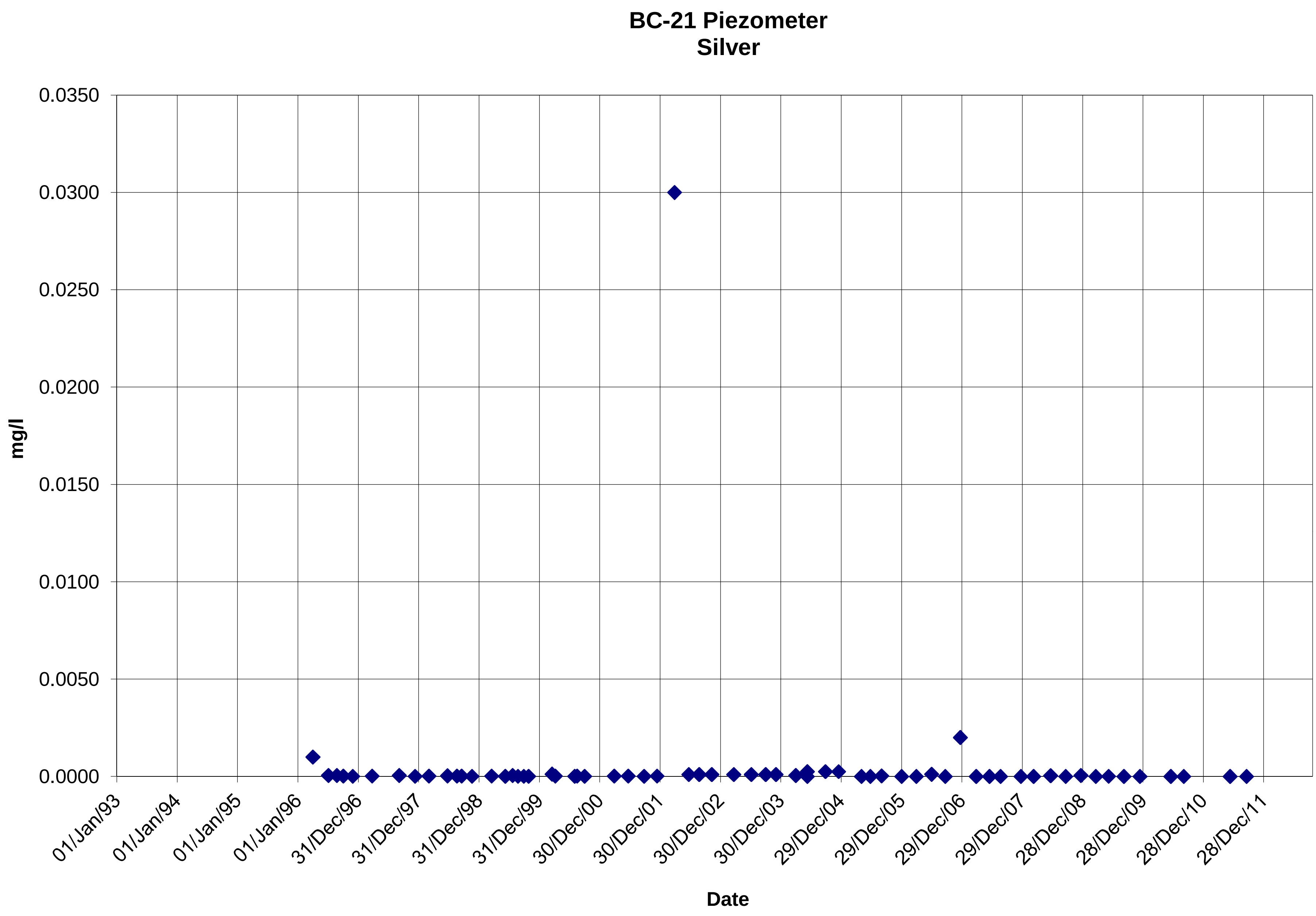
28/Dec/11
Date



BC-21 Piezometer
Silver
mg/l
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0.0300
0.0250
0.0200
0.0150
0.0100
0.0050
0.0000
01/Jan/93
01/Jan/94
01/Jan/95
01/Jan/96
31/Dec/96
31/Dec/97
31/Dec/98
31/Dec/99
30/Dec/00
30/Dec/01
30/Dec/02
30/Dec/03
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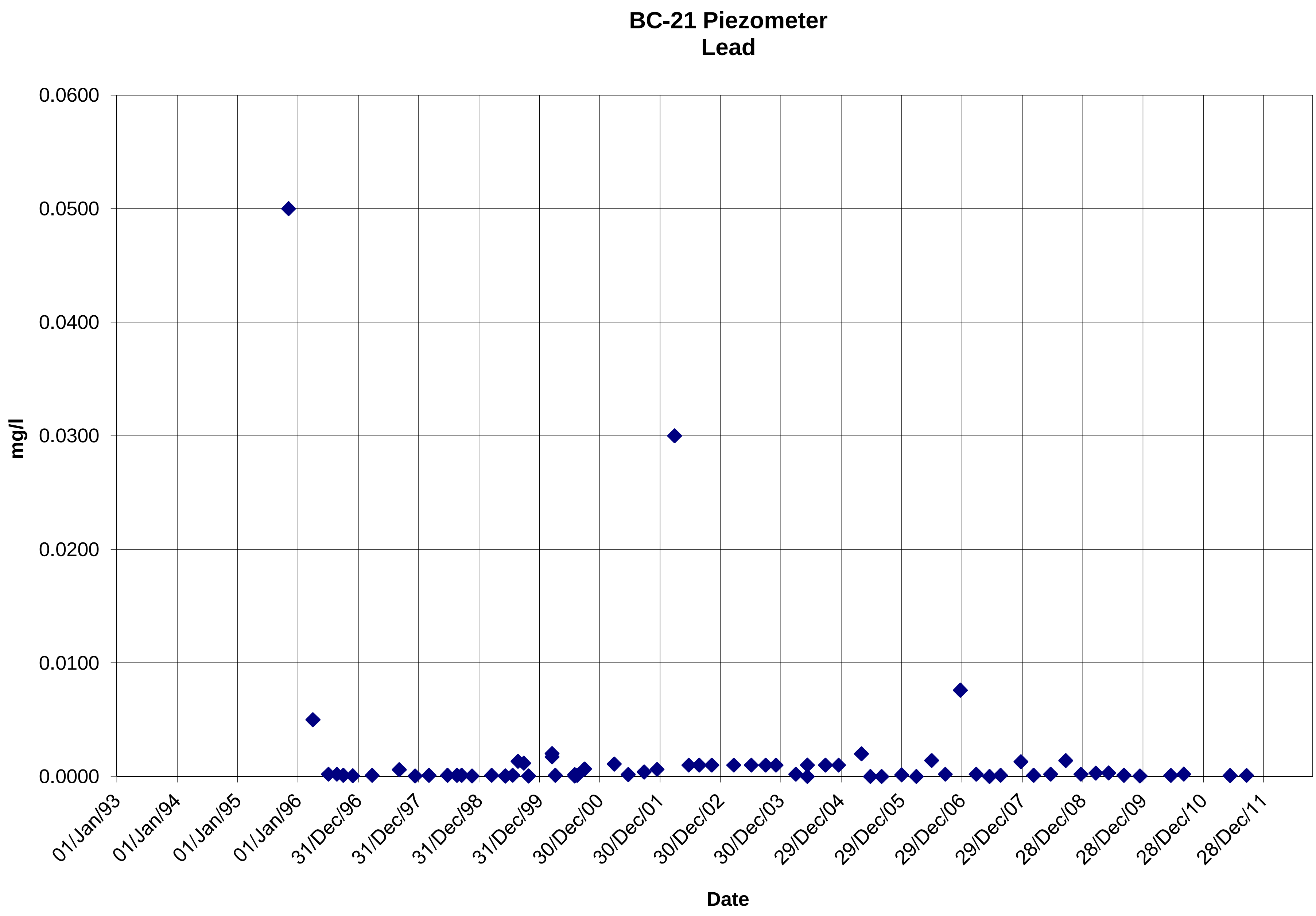
29/Dec/06
29/Dec/07
28/Dec/08
28/Dec/09
28/Dec/10
28/Dec/11
Date



BC-21 Piezometer
Lead
mg/l
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0.0500
0.0400
0.0300
0.0200
0.0100
0.0000
01/Jan/93
01/Jan/94
01/Jan/95
01/Jan/96
31/Dec/96
31/Dec/97
31/Dec/98
31/Dec/99
30/Dec/00
30/Dec/01
30/Dec/02
30/Dec/03
29/Dec/04
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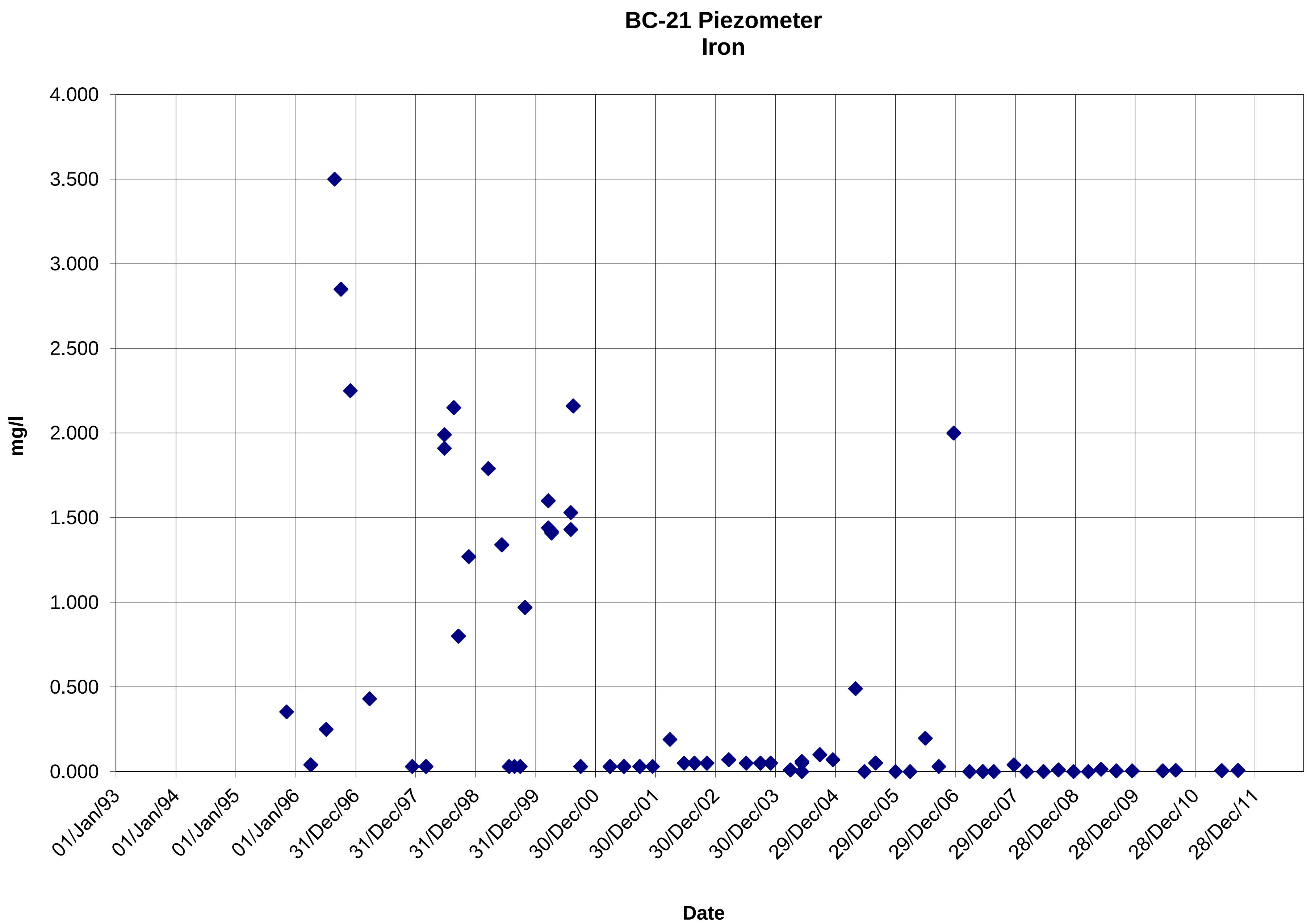
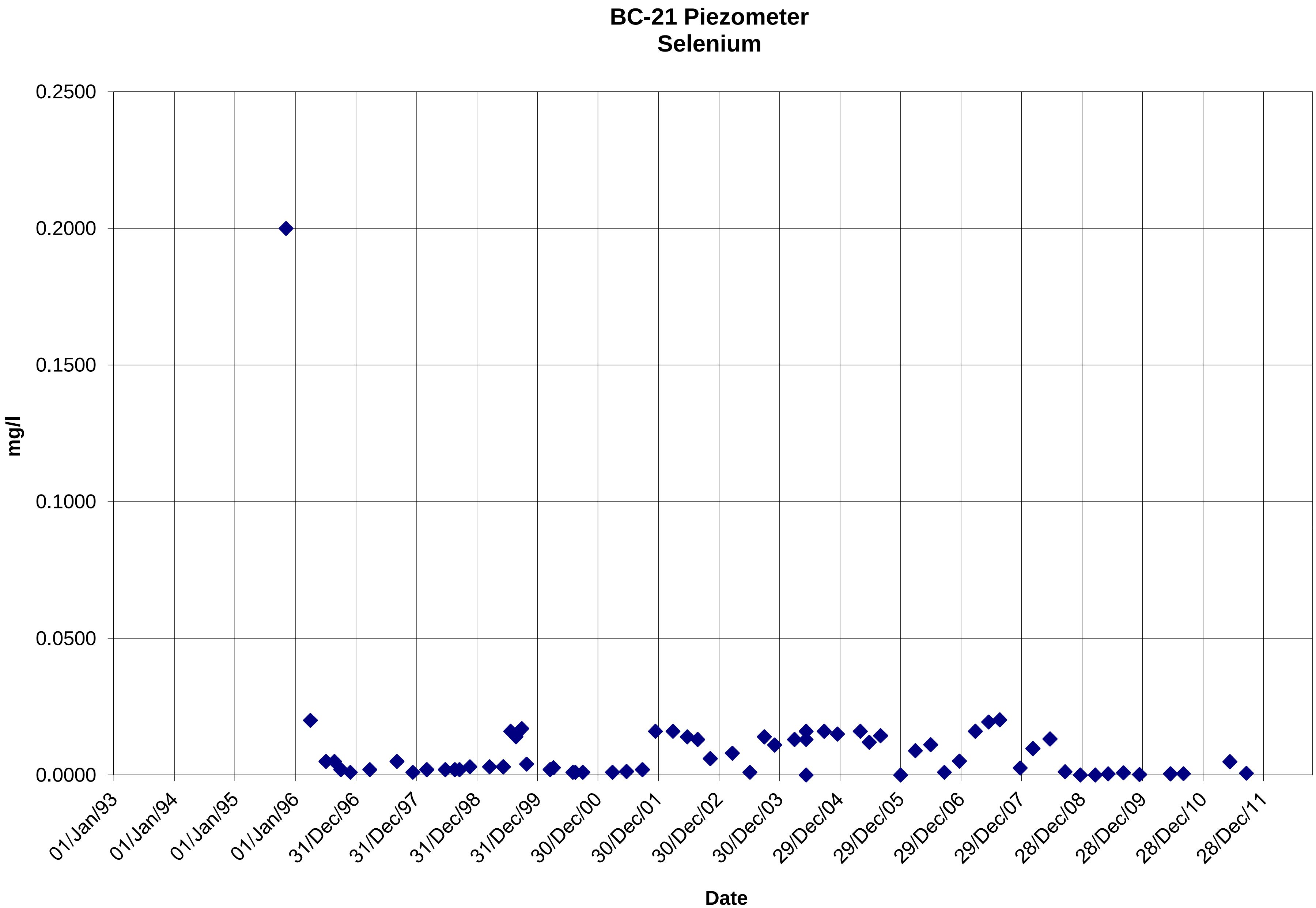
29/Dec/06
29/Dec/07
28/Dec/08
28/Dec/09
28/Dec/10
28/Dec/11
Date


BC-21 Piezometer
Iron
mg/l
4.000
3.500
3.000
2.500
2.000
1.500
1.000
0.500
0.000
01/Jan/93
01/Jan/94
01/Jan/95
01/Jan/96
31/Dec/96
31/Dec/97
31/Dec/98
31/Dec/99
30/Dec/00
30/Dec/01
30/Dec/02
30/Dec/03
29/Dec/04
29/Dec/05
29/Dec/06
29/Dec/07
28/Dec/08
28/Dec/09
28/Dec/10
28/Dec/11
Date



BC-21 Piezometer
Selenium
mg/l
0.2500
0.2000
0.1500
0.1000
0.0500
0.0000
01/Jan/93
01/Jan/94
01/Jan/95
01/Jan/96
31/Dec/96
31/Dec/97
31/Dec/98
31/Dec/99
30/Dec/00
30/Dec/01
30/Dec/02
30/Dec/03
29/Dec/04
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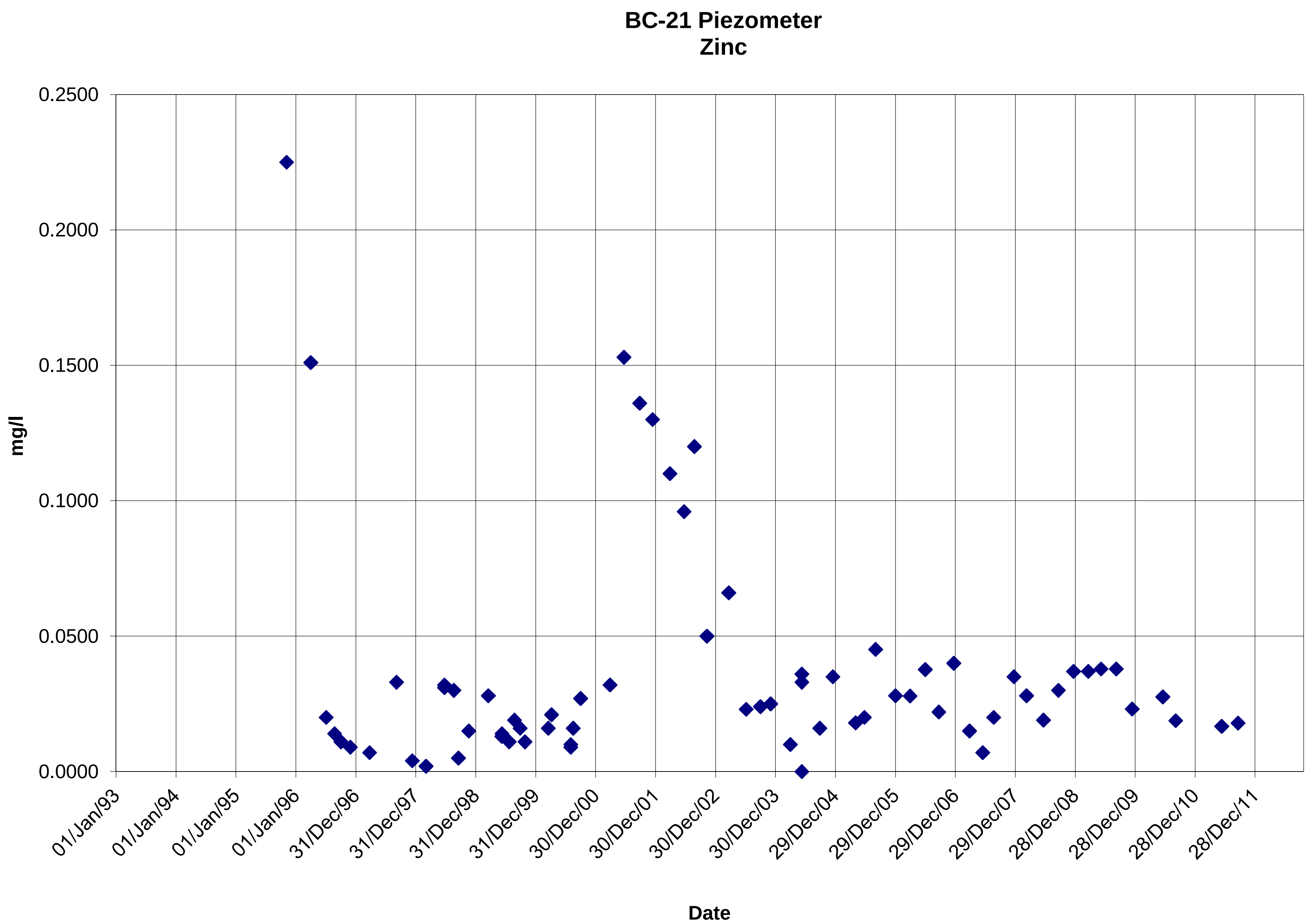
29/Dec/06
29/Dec/07
28/Dec/08
28/Dec/09
28/Dec/10
28/Dec/11
Date



BC-21 Piezometer
Zinc
mg/l
0.2500
0.2000
0.1500
0.1000
0.0500
0.0000
01/Jan/93
01/Jan/94
01/Jan/95
01/Jan/96
31/Dec/96
31/Dec/97
31/Dec/98
31/Dec/99
30/Dec/00
30/Dec/01
30/Dec/02
30/Dec/03
29/Dec/04
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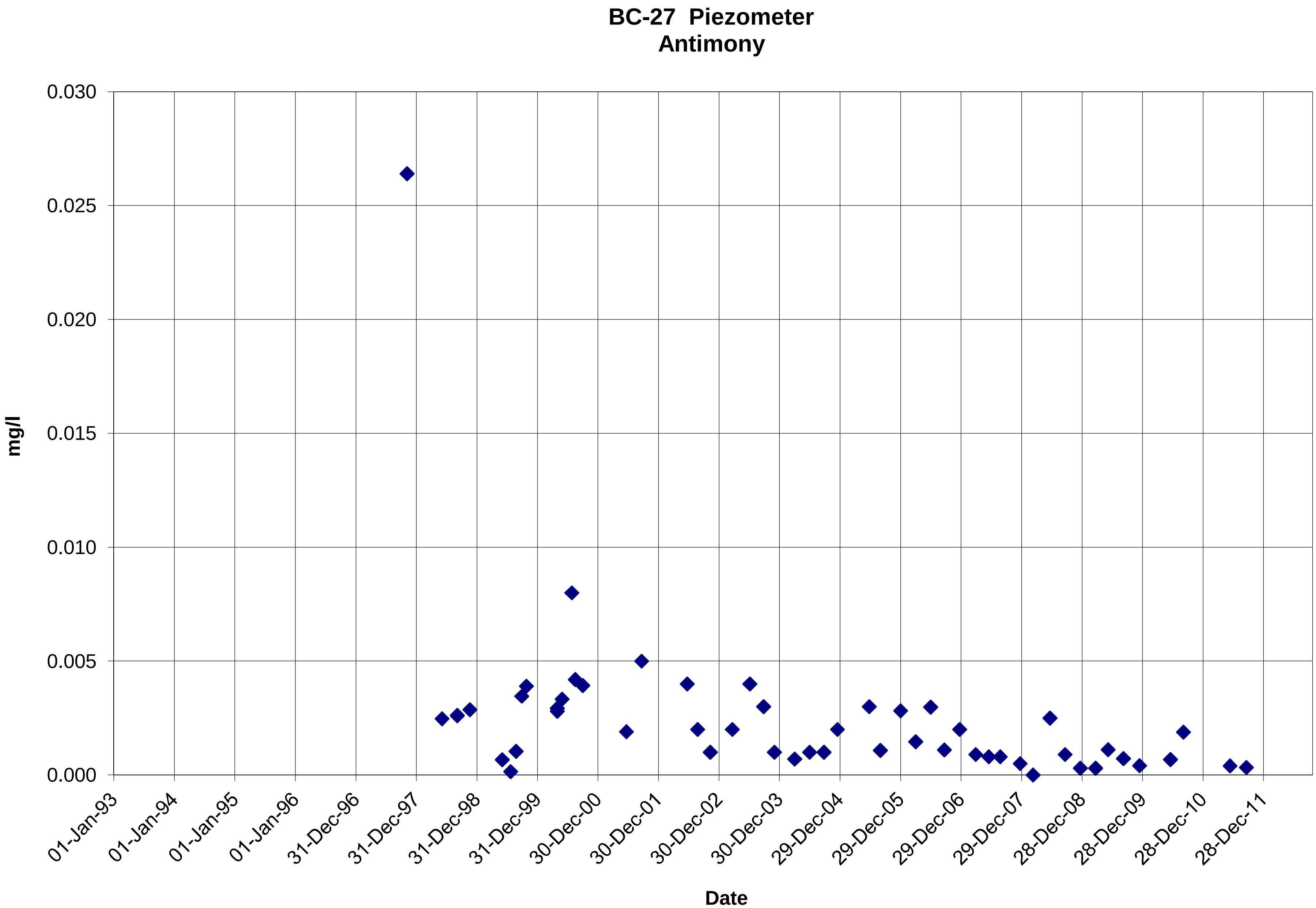
29/Dec/06
29/Dec/07
28/Dec/08
28/Dec/09
28/Dec/10
28/Dec/11
Date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Antimony
mg/l
0.030
0.025
0.020
0.015
0.010
0.005
0.000
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30-Dec-03
29-Dec-04
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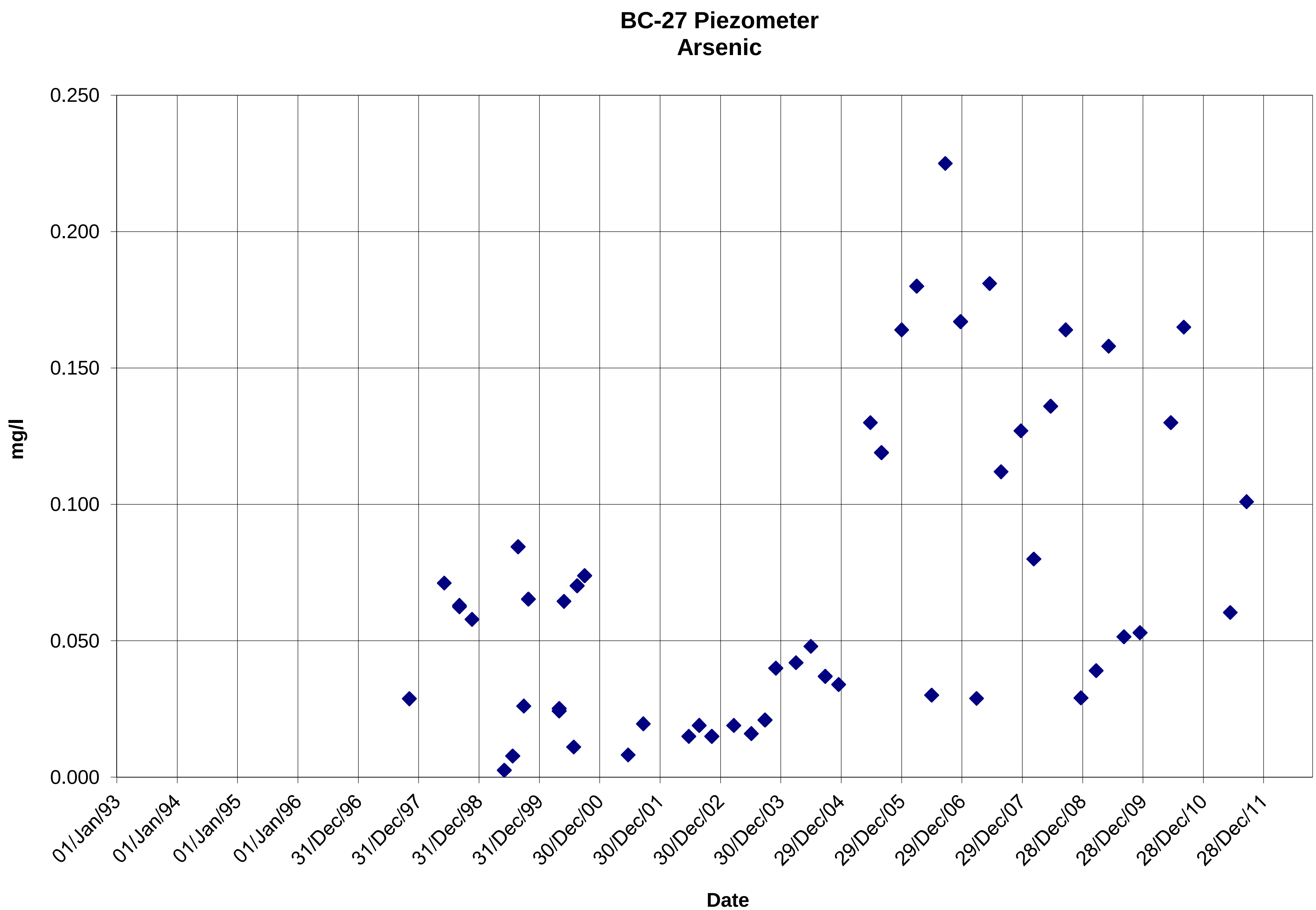
29-Dec-07
28-Dec-08
28-Dec-09
28-Dec-10
28-Dec-11
Date


BC-27 Piezometer
Arsenic
mg/l
0.250
0.200
0.150
0.100
0.050
0.000
01/Jan/93
01/Jan/94
01/Jan/95
01/Jan/96
31/Dec/96
31/Dec/97
31/Dec/98
31/Dec/99
30/Dec/00
30/Dec/01
30/Dec/02
30/Dec/03
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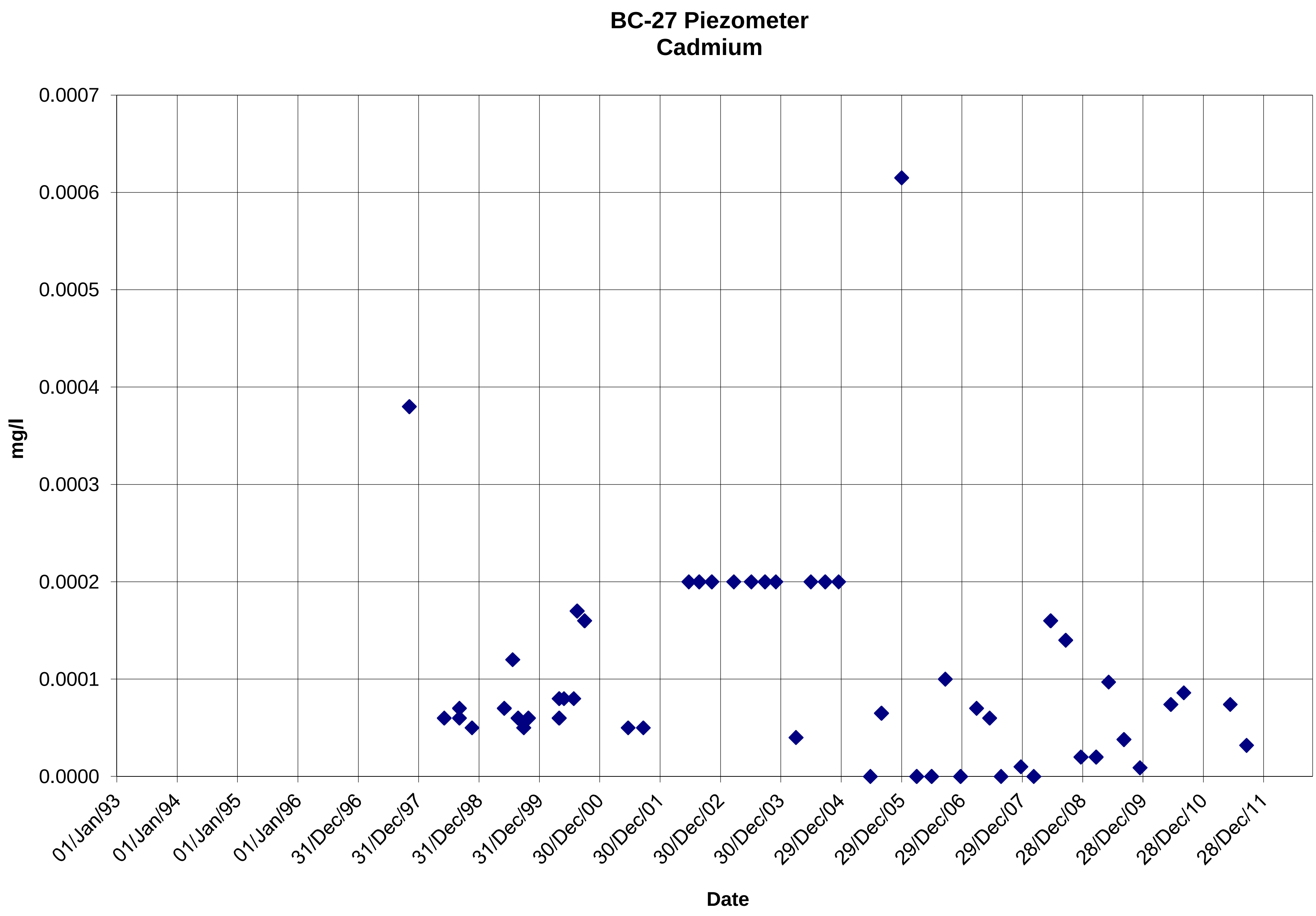
29/Dec/07
28/Dec/08
28/Dec/09
28/Dec/10
28/Dec/11
Date


BC-27 Piezometer
Cadmium
mg/l
0.0007
0.0006
0.0005
0.0004
0.0003
0.0002
0.0001
0.0000
01/Jan/93
01/Jan/94
01/Jan/95
01/Jan/96
31/Dec/96
31/Dec/97
31/Dec/98
31/Dec/99
30/Dec/00
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30/Dec/03
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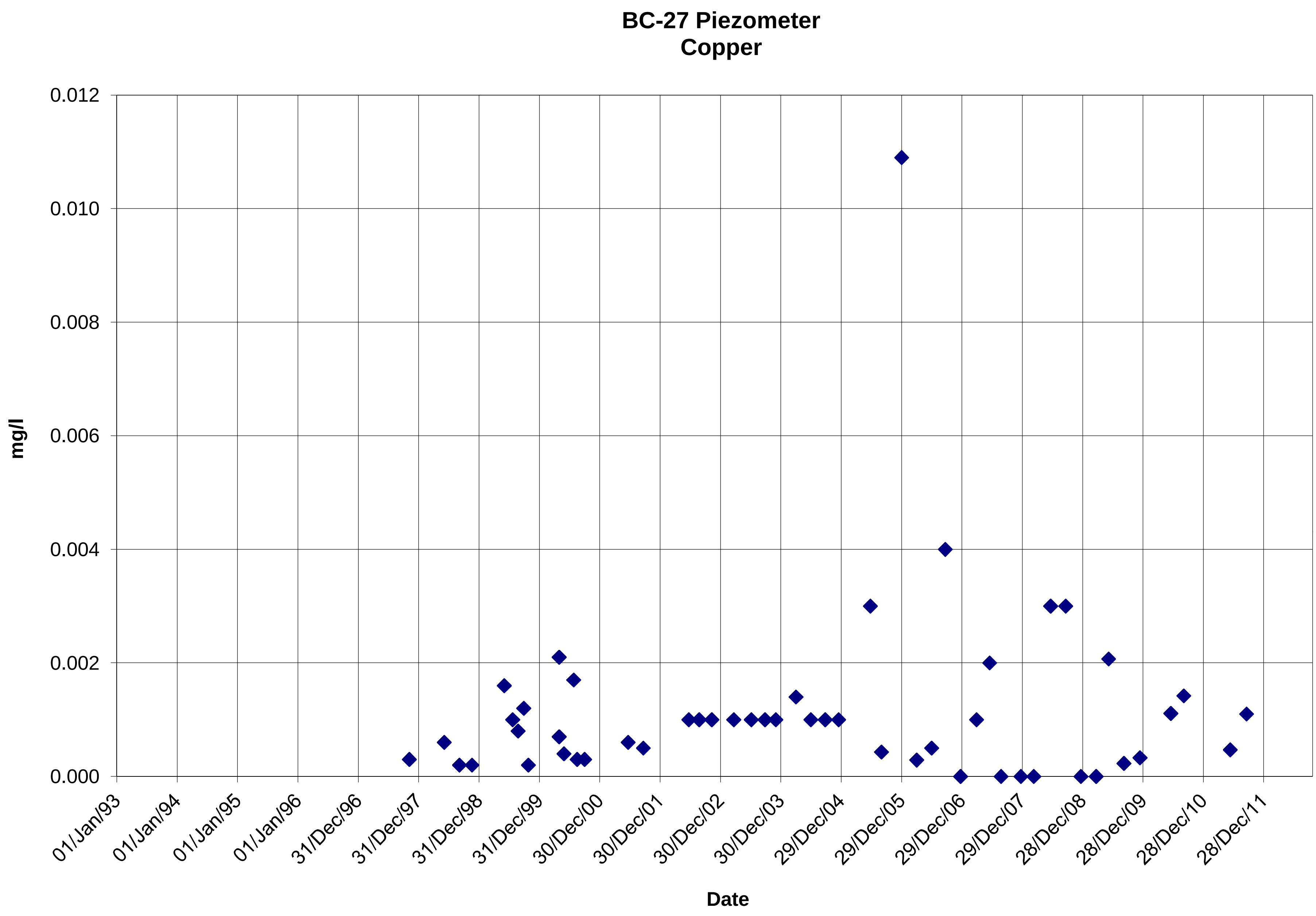
28/Dec/10
28/Dec/11
Date


BC-27 Piezometer
Copper
mg/l
0.012
0.010
0.008
0.006
0.004
0.002
0.000
01/Jan/93
01/Jan/94
01/Jan/95
01/Jan/96
31/Dec/96
31/Dec/97
31/Dec/98
31/Dec/99
30/Dec/00
30/Dec/01
30/Dec/02
30/Dec/03
29/Dec/04
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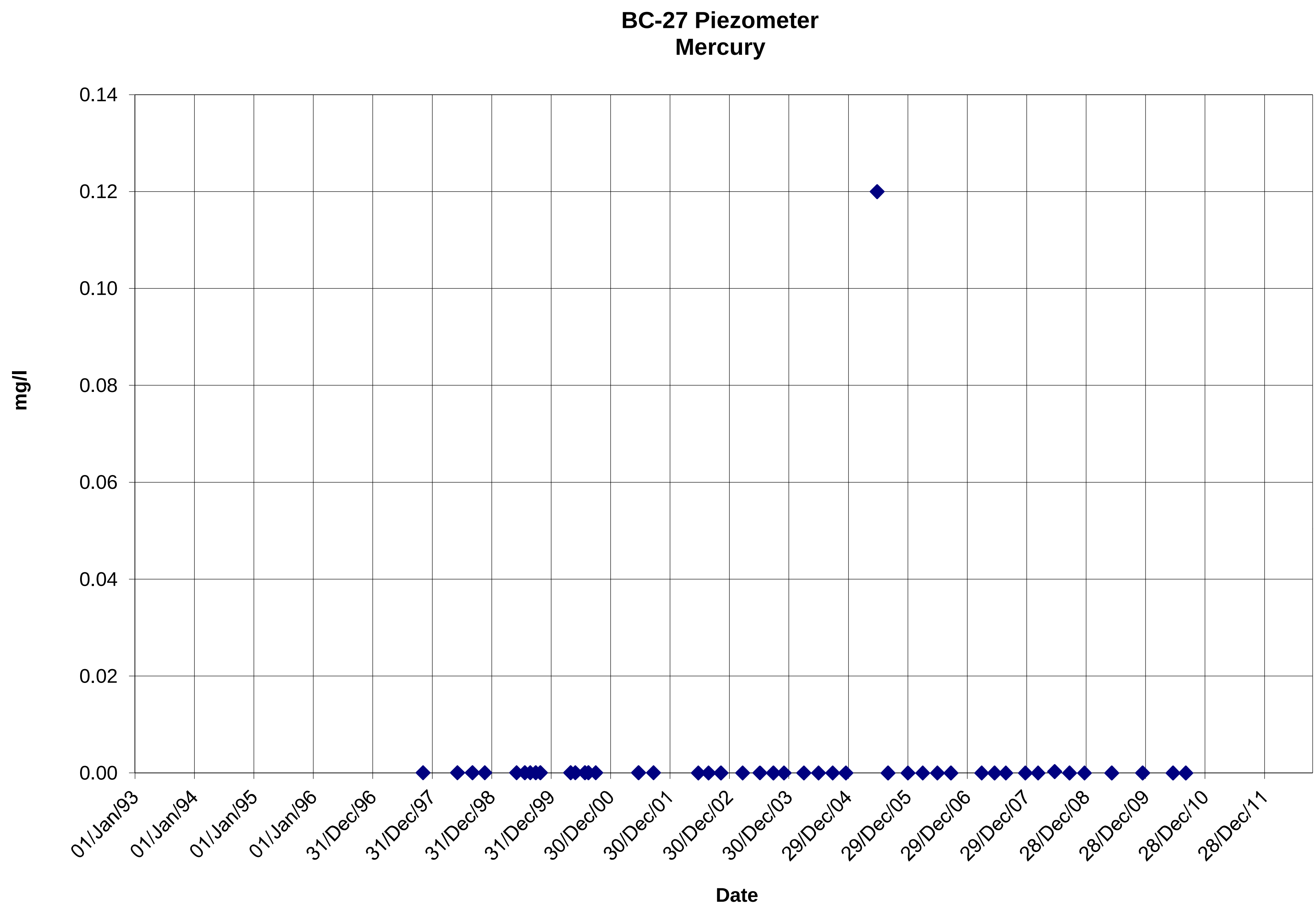
28/Dec/09
28/Dec/10
28/Dec/11
Date



BC-27 Piezometer
Mercury
mg/l
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
01/Jan/93
01/Jan/94
01/Jan/95
01/Jan/96
31/Dec/96
31/Dec/97
31/Dec/98
31/Dec/99
30/Dec/00
30/Dec/01
30/Dec/02
30/Dec/03
29/Dec/04
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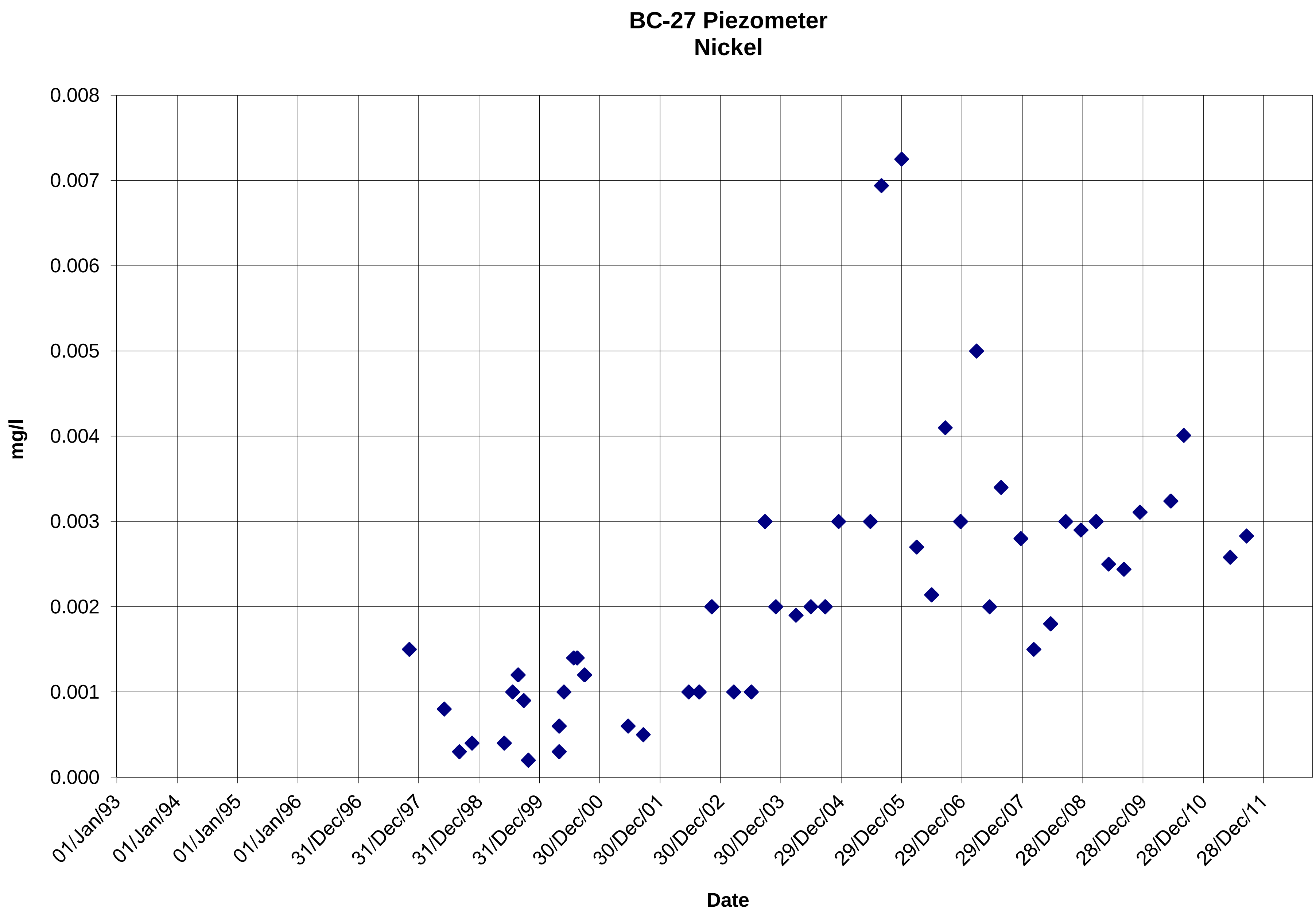
29/Dec/06
29/Dec/07
28/Dec/08
28/Dec/09
28/Dec/10
28/Dec/11
Date


BC-27 Piezometer
Nickel
mg/l
0.008
0.007
0.006
0.005
0.004
0.003
0.002
0.001
0.000
01/Jan/93
01/Jan/94
01/Jan/95
01/Jan/96
31/Dec/96
31/Dec/97
31/Dec/98
31/Dec/99
30/Dec/00
30/Dec/01
30/Dec/02
30/Dec/03
29/Dec/04
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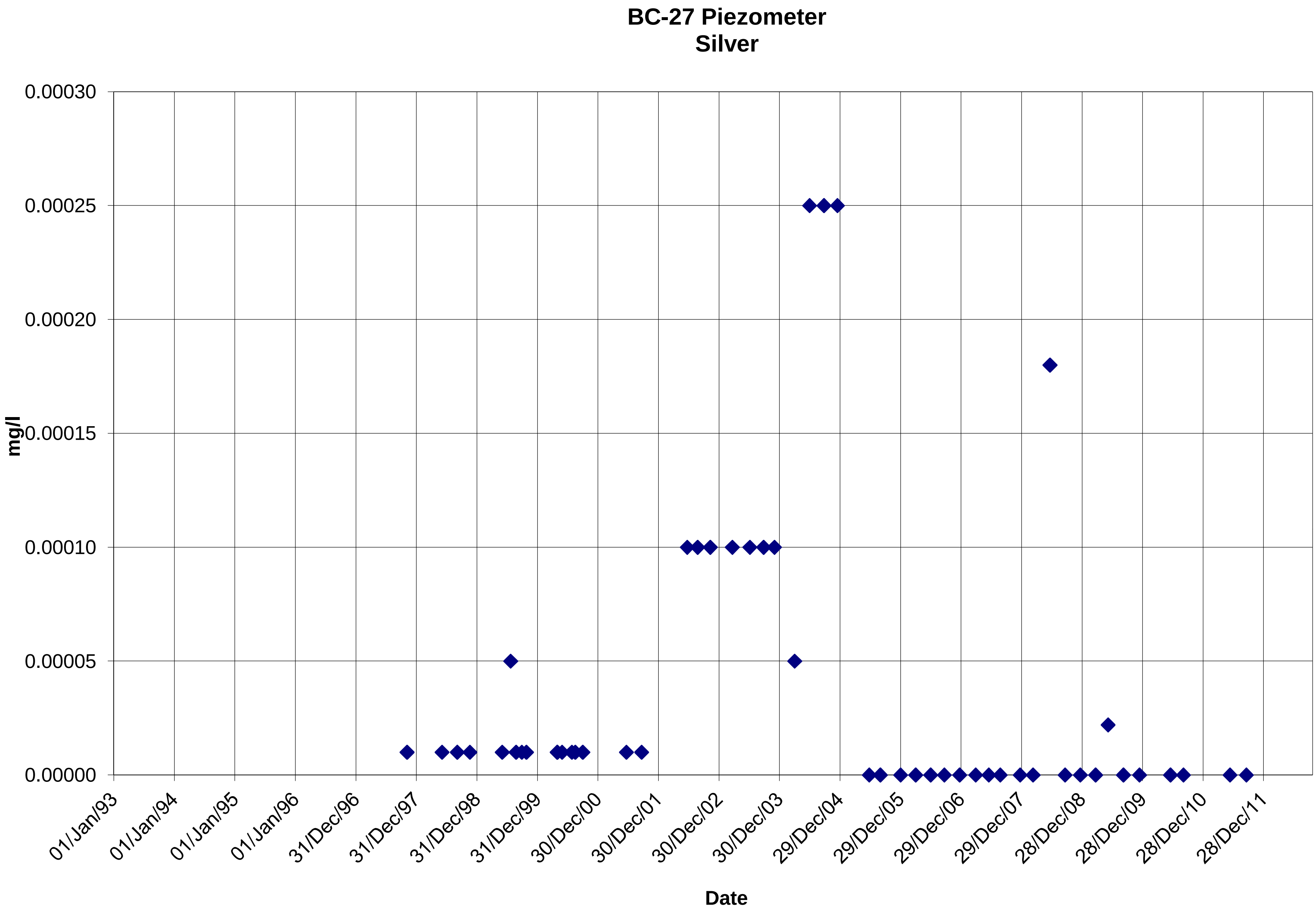
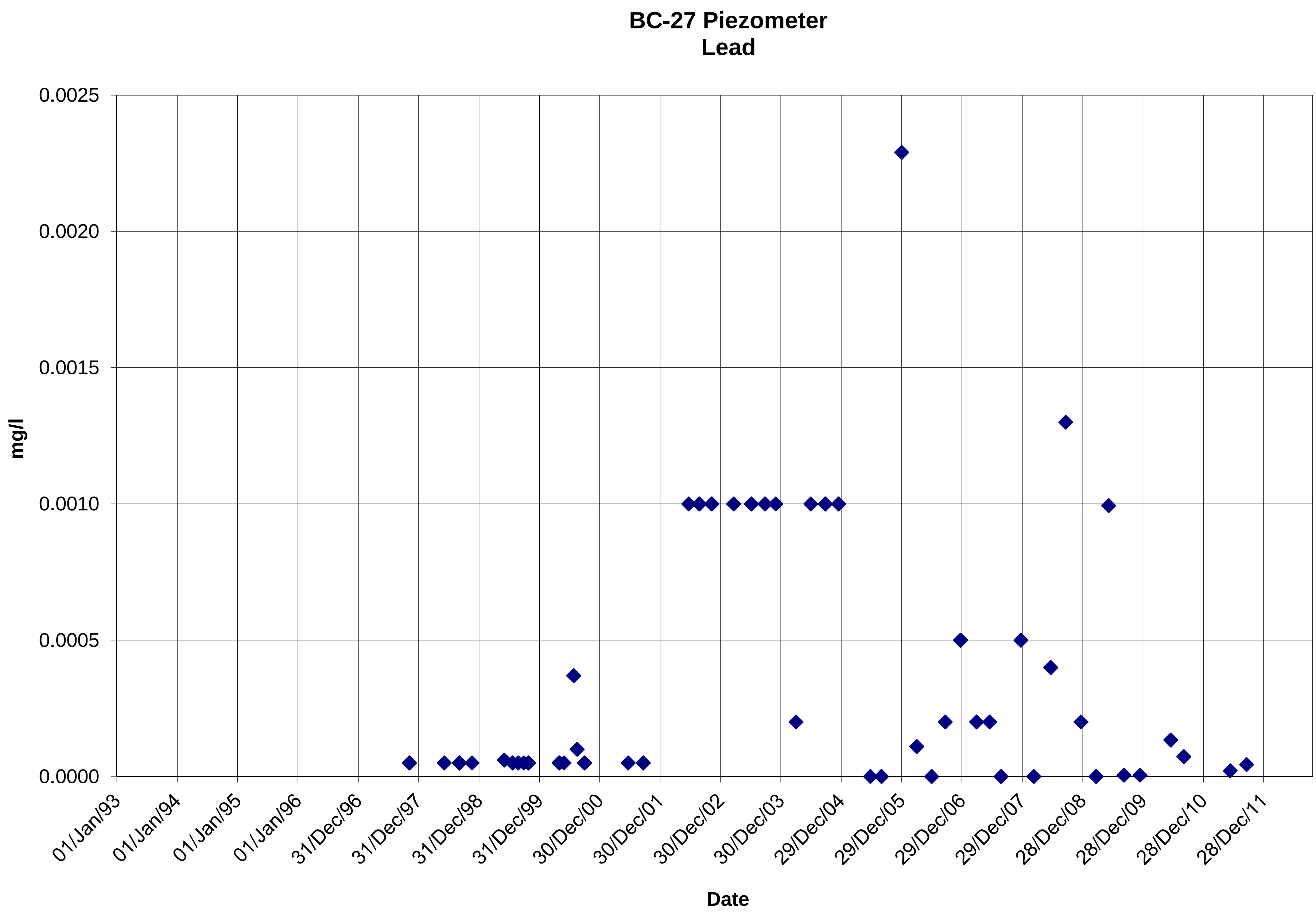
29/Dec/06
29/Dec/07
28/Dec/08
28/Dec/09
28/Dec/10
28/Dec/11
Date



BC-27 Piezometer
Silver
mg/l
0.00030
0.00025
0.00020
0.00015
0.00010
0.00005
0.00000
01/Jan/93
01/Jan/94
01/Jan/95
01/Jan/96
31/Dec/96
31/Dec/97
31/Dec/98
31/Dec/99
30/Dec/00
30/Dec/01
30/Dec/02
30/Dec/03
29/Dec/04
29/Dec/05
29/Dec/06
29/Dec/07
28/Dec/08
28/Dec/09
28/Dec/10
28/Dec/11
Date



BC-27 Piezometer
Lead
mg/l
0.0025
0.0020
0.0015
0.0010
0.0005
0.0000
01/Jan/93
01/Jan/94
01/Jan/95
01/Jan/96
31/Dec/96
31/Dec/97
31/Dec/98
31/Dec/99
30/Dec/00
30/Dec/01
30/Dec/02
30/Dec/03
29/Dec/04
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29/Dec/06
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28/Dec/08
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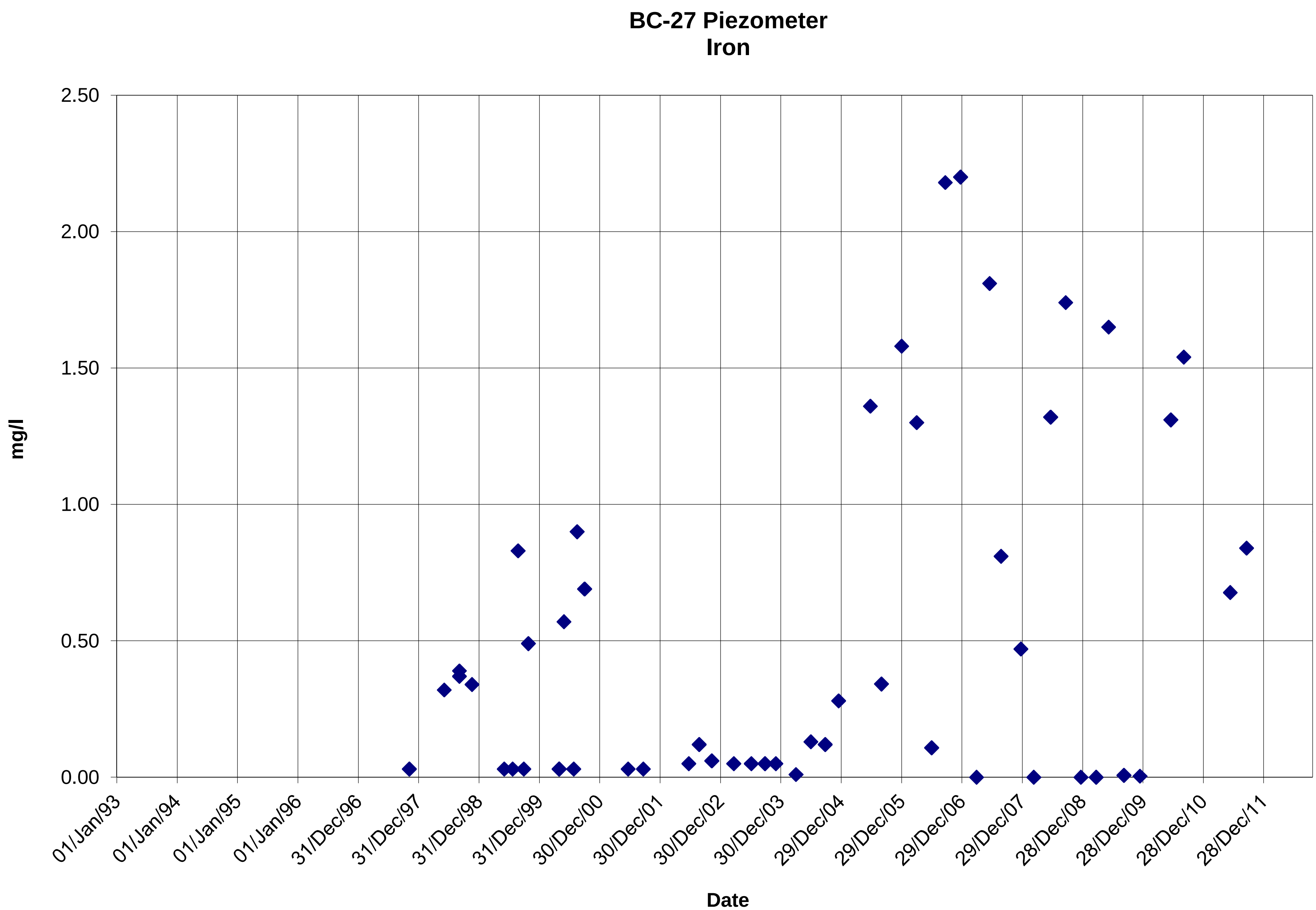
28/Dec/10
28/Dec/11
Date


BC-27 Piezometer
Iron
mg/l
2.50
2.00
1.50
1.00
0.50
0.00
01/Jan/93
01/Jan/94
01/Jan/95
01/Jan/96
31/Dec/96
31/Dec/97
31/Dec/98
31/Dec/99
30/Dec/00
30/Dec/01
30/Dec/02
30/Dec/03
29/Dec/04
29/Dec/05
29/Dec/06
29/Dec/07
28/Dec/08
28/Dec/09
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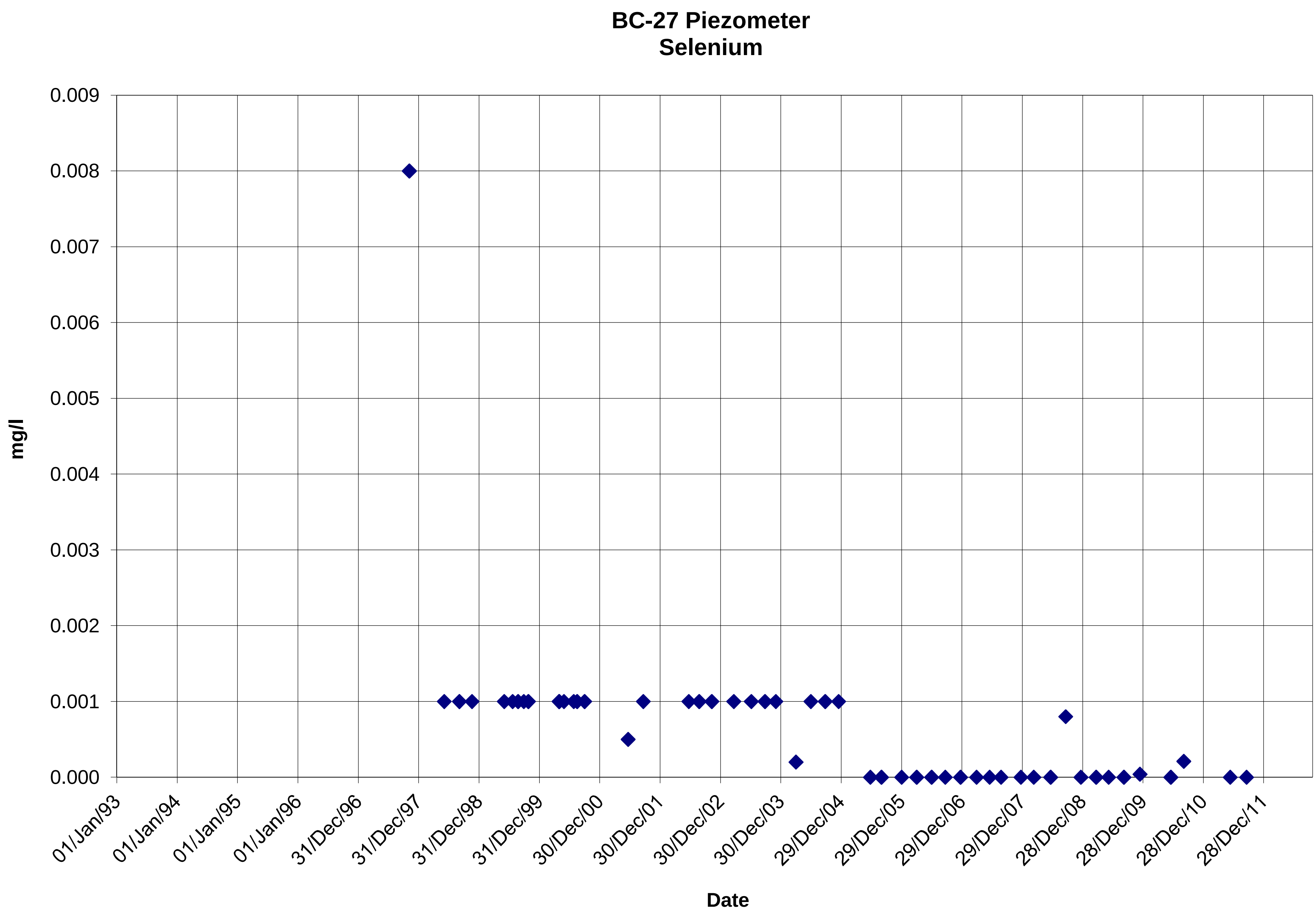
28/Dec/11
Date


BC-27 Piezometer
Selenium
mg/l
0.009
0.008
0.007
0.006
0.005
0.004
0.003
0.002
0.001
0.000
01/Jan/93
01/Jan/94
01/Jan/95
01/Jan/96
31/Dec/96
31/Dec/97
31/Dec/98
31/Dec/99
30/Dec/00
30/Dec/01
30/Dec/02
30/Dec/03
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28/Dec/08
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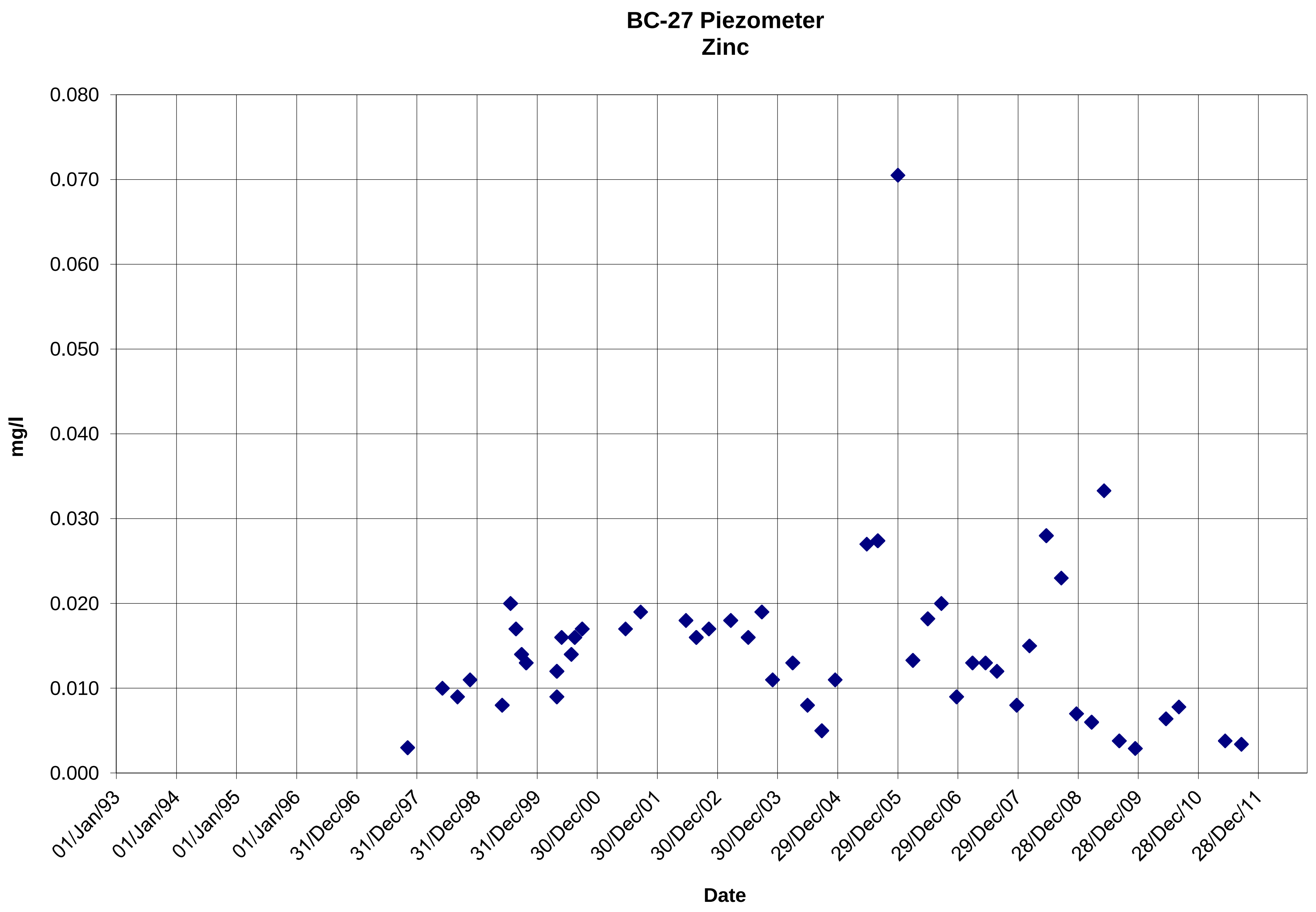
28/Dec/11
Date


BC-27 Piezometer
Zinc
mg/l
0.080
0.070
0.060
0.050
0.040
0.030
0.020
0.010
0.000
01/Jan/93
01/Jan/94
01/Jan/95
01/Jan/96
31/Dec/96
31/Dec/97
31/Dec/98
31/Dec/99
30/Dec/00
30/Dec/01
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30/Dec/03
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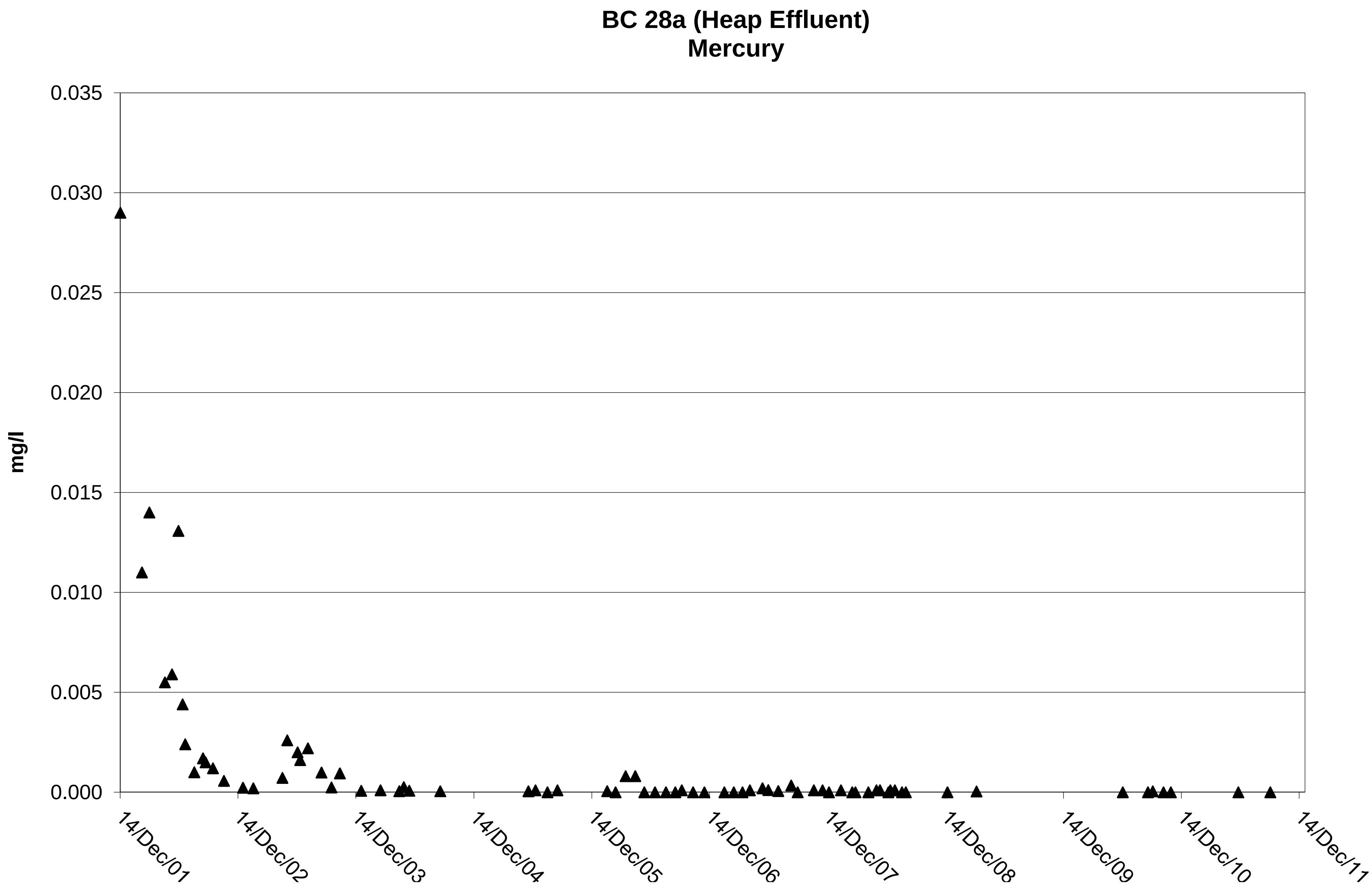
28/Dec/08
28/Dec/09
28/Dec/10
28/Dec/11
Date



BC 28a (Heap Effluent)
Mercury
mg/l
0.035
0.030
0.025
0.020
0.015
0.010
0.005
0.000
14/Dec/01
14/Dec/02
14/Dec/03
14/Dec/04
14/Dec/05
14/Dec/06
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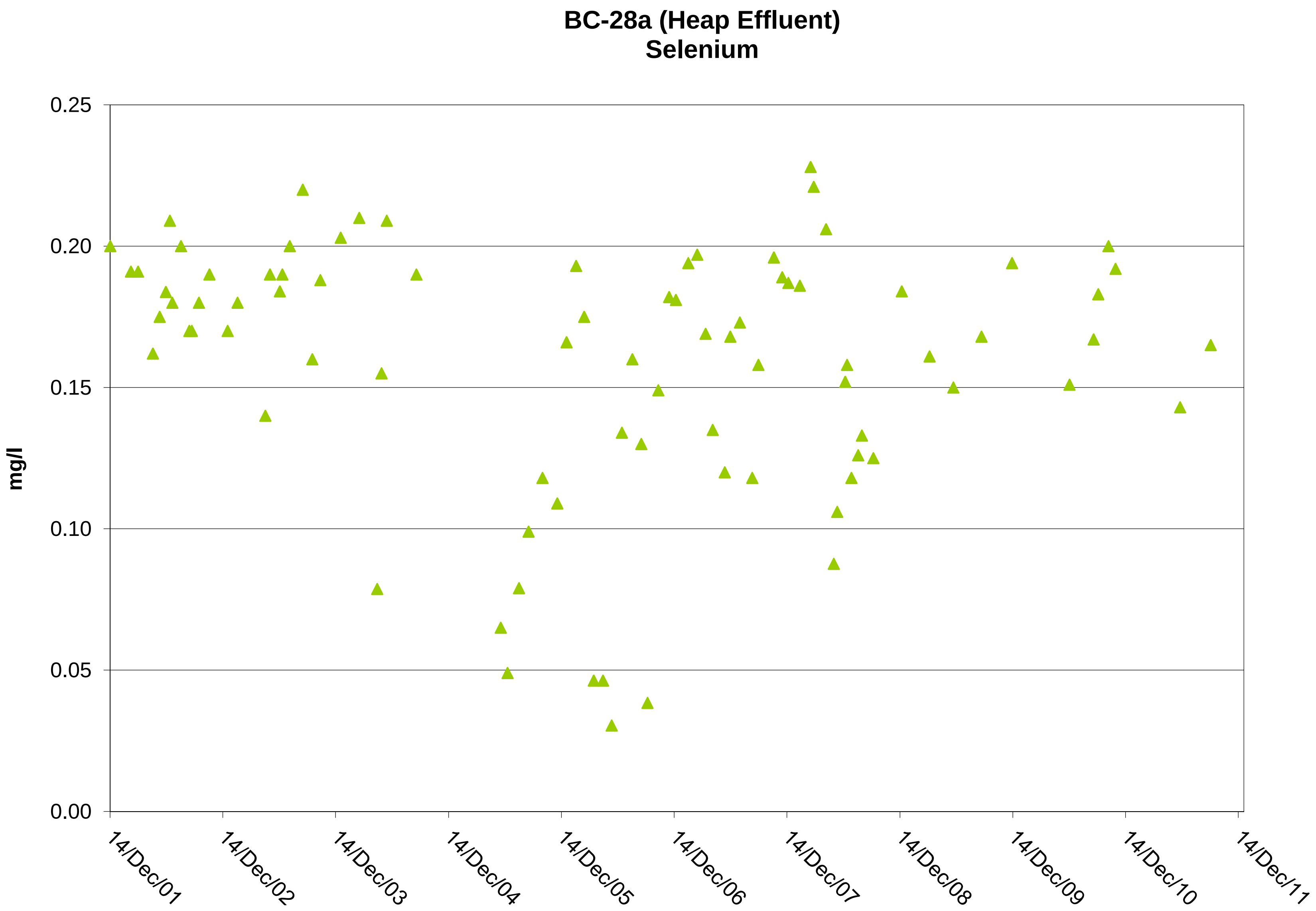
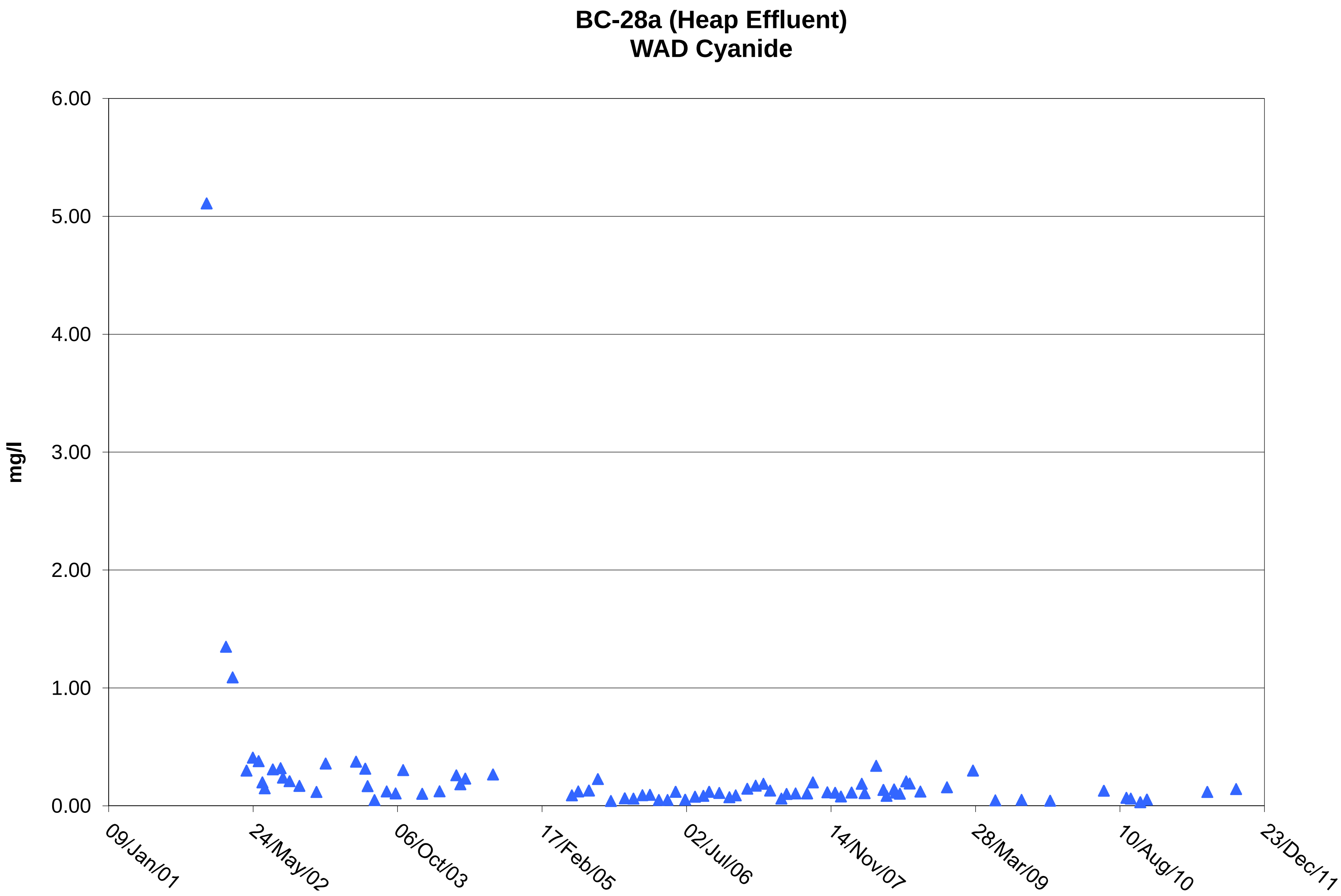
14/Dec/11

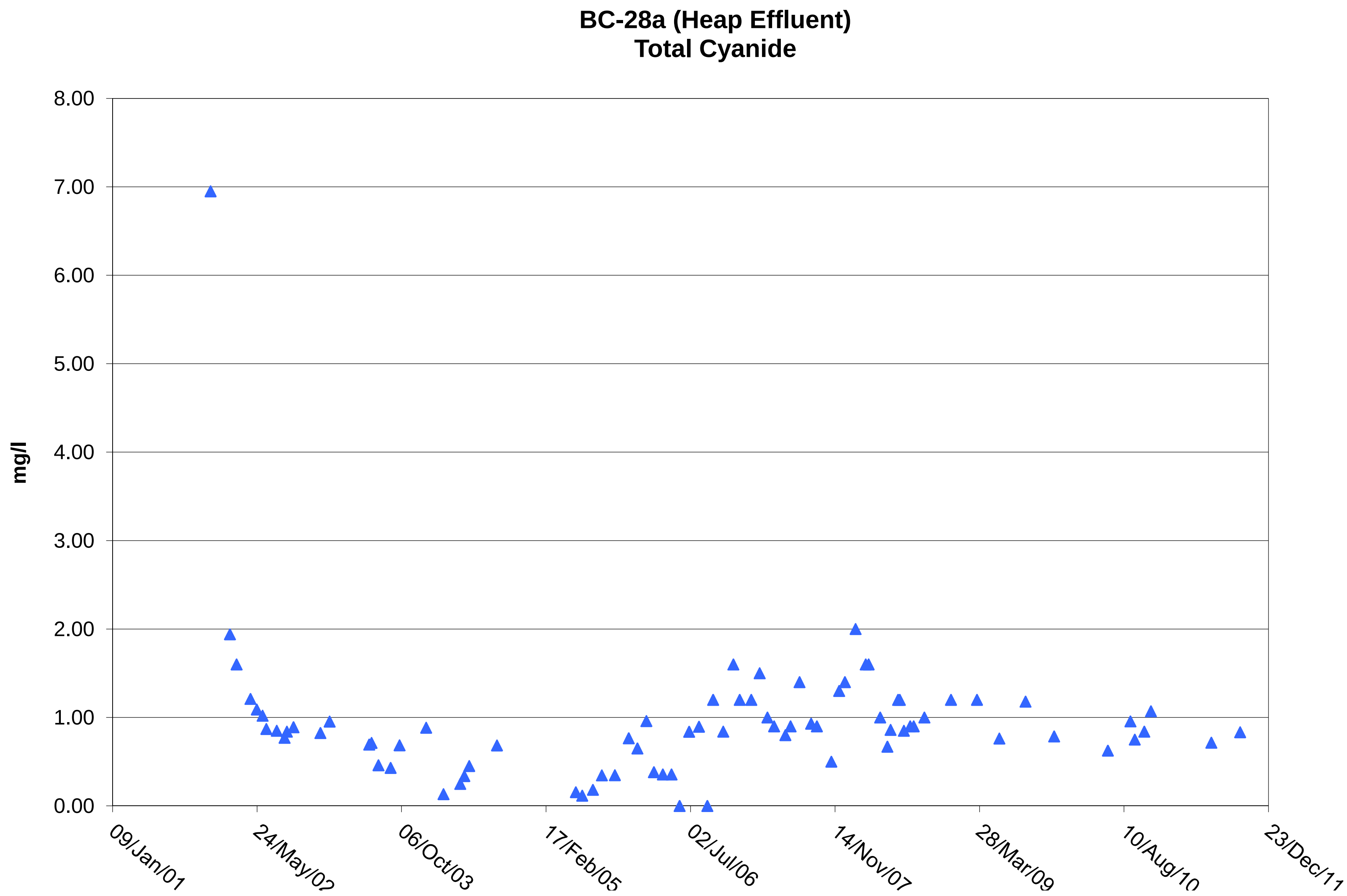
Brewery Creek Mine



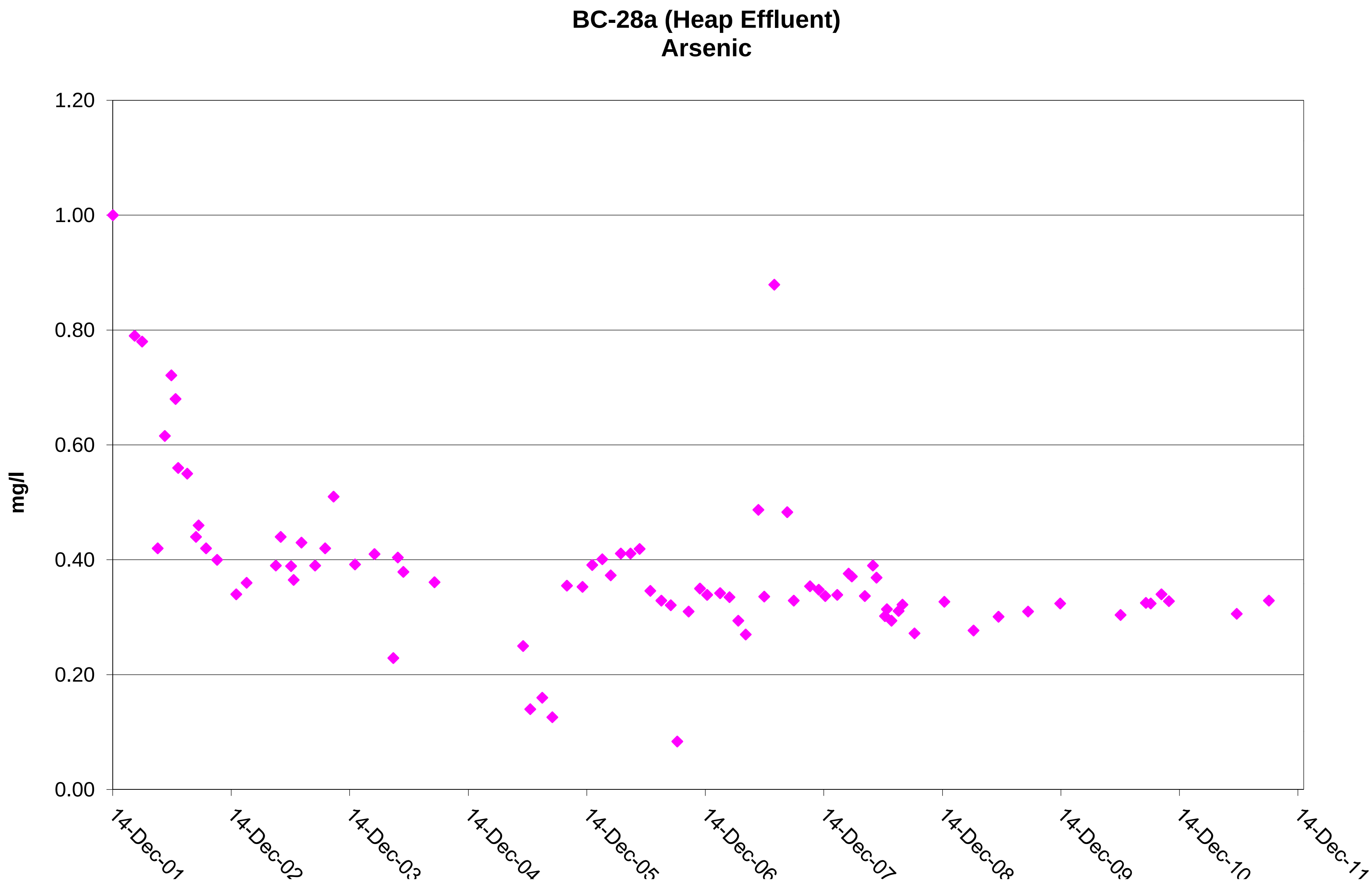
Brewery Creek Mine

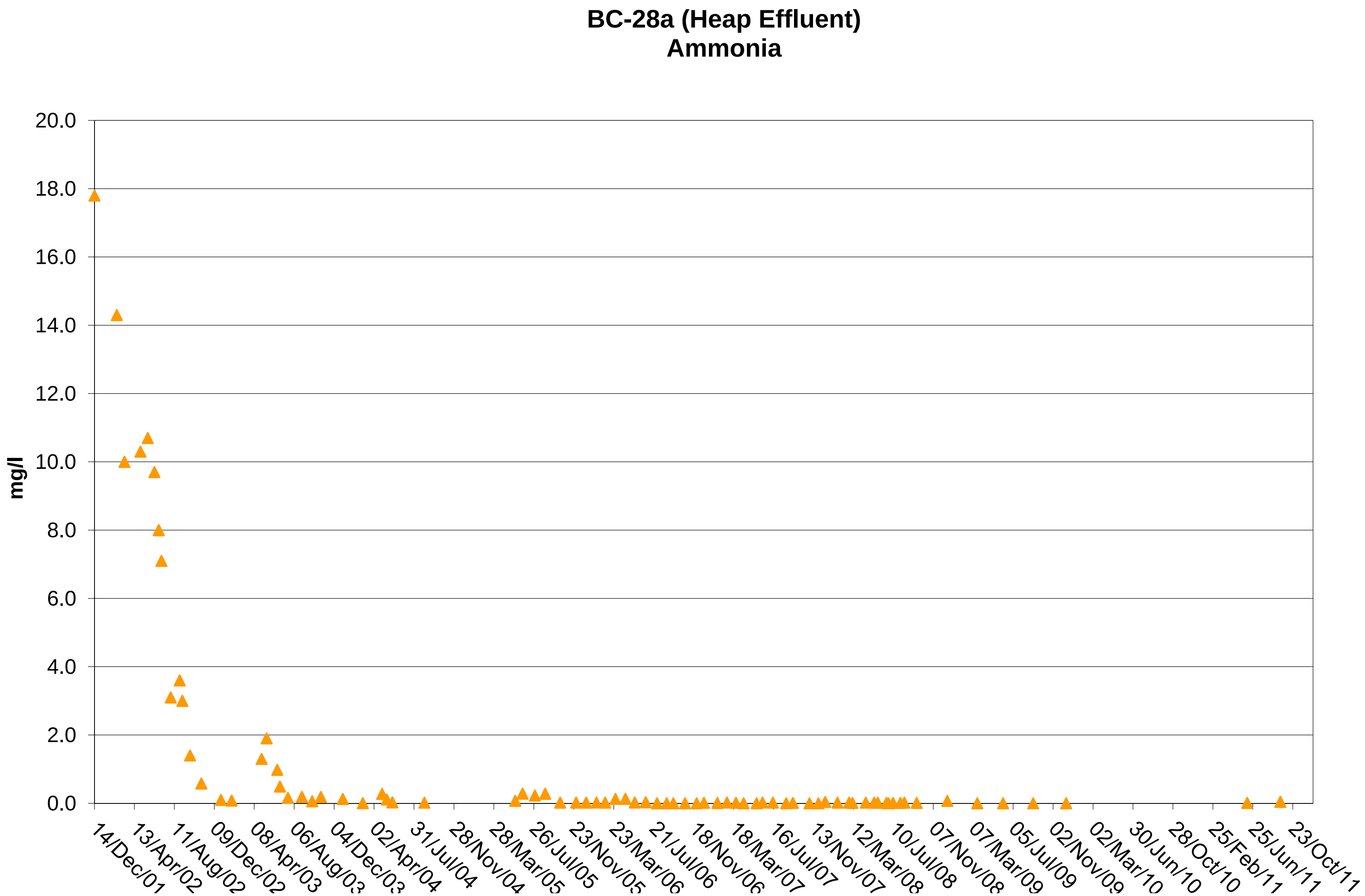


Brewery Creek Mine



Brewery Creek Mine




BC-28a (Heap Effluent)
Ammonia
mg/l
20.0
18.0
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
14/Dec/01
13/Apr/02
11/Aug/02
09/Dec/02
08/Apr/03
06/Aug/03
04/Dec/03
02/Apr/04
31/Jul/04
28/Nov/04
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07/Nov/08
07/Mar/09
05/Jul/09
02/Nov/09
02/Mar/10
30/Jun/10
28/Oct/10
25/Feb/11
25/Jun/11
23/Oct/11

APPENDIX B

BREWERY CREEK OUTSTANDING CLOSURE LIABILITIES

Outstanding Closure Liabilities at Brewery Creek Mine - September 2011

Report Prepared for

Alexco Resources Corp.

Report Prepared by

SRK Consulting (Canada) Inc.
1CA009.005
November 2011

Outstanding Closure Liabilities at Brewery Creek Mine - September 2011

Alexco Resources Corp.

Suite 1150, 200 Granville Street
Vancouver, B.C. V6C 1S4

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Suite 2200 – 1066 West Hastings Street
Vancouver, BC V6E 3X2

e-mail: vancouver@srk.com
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Tel: +1.604.681.4196
Fax: +1.604.687.5532

SRK Project Number 1CA009.005

November 2011

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List of Tables

Attachments

1 Introduction

SRK Consulting Inc. was retained to provide an independent engineer's review of the outstanding closure liabilities at the Brewery Creek Mine near Dawson, Yukon. This report presents the results of SRK's work.

The September 2011 review is the seventh in a series prepared under the terms of a reclamation security agreement between the Government of the Yukon and the site owners. The first two reports were prepared for Viceroy Minerals Corporation.

The methodology employed is consistent with that described in full in the first report, dated November 2003. Section 2 below summarizes the methods. Sections 3 and 4 present the resulting estimates of outstanding liabilities. Expected costs are covered in Section 3 and costs for possible mitigation measures are covered in Section 4. All of the calculations leading to the Section 3 and 4 estimates are presented in tables appended to this report. Section 5 presents a summary opinion of the outstanding closure liabilities at the Brewery Creek Mine, as of September 2011.

2 Methods

2.1 Site Visit

The 2011 inspection was completed by the undersigned on Sept 29, 2011. Mr. Brad Thrall, who oversees the site decommissioning and reclamation work for Alexco Resource Corporation, accompanied the undersigned during the inspection.

2.2 Development of Liability Estimate

As was the case in the previous reports, the outstanding closure liability for the site was estimated in two components:

- Costs for completing the expected decommissioning and reclamation measures; and
- Costs for mitigation measures that might be required at some time in the future.

The methods and assumptions used in developing estimates for these two components are summarized in the following paragraphs, which are taken directly from the 2003 report.

Cost Estimate Spreadsheet

The cost estimates for both the currently planned decommissioning and reclamation measures and the mitigation measures were developed in a spreadsheet. For ease of comparison to earlier (and future) estimates, the spreadsheet was based on one presented in the "2001 Decommissioning and Reclamation Plan, Volume IV".

The spreadsheet, like the "Volume IV" version, assigns direct costs to eight "cost centers", namely Mine Area Reclamation, Site Facilities Removal and Reclamation, Leach Pad Detoxification, Manpower, General and Administration, Process Water Treatment, Leach Pad Reclamation, and Post-Closure Monitoring. This structure is common in closure cost estimates produced by industry, and is readily convertible to other structures such as the RECLAIM spreadsheet used by Aboriginal Affairs and Northern Development Canada (AANDC).

A printout of the cost estimate spreadsheet is attached to this report. Electronic copies are available upon request.

Current Status and Standards for Completion

The "Volume IV" estimates for most of the cost centers were modified to take into account the current extent of completion and any deficiencies observed during the site visit. More details are provided in Section 3 below.

In assessing what activities would be needed to complete the expected decommissioning and reclamation measures, two sets of standards were taken into consideration. The first was the commitments made in the "2001 Decommissioning and Reclamation Plan" (including Volume IV). The second was the general standard of good mine closure practice elsewhere in Canada, as it is known to the undersigned. The "Draft Terrestrial Reclamation Standards for the Brewery Creek Mine" were also reviewed, and found to be generally consistent with both the plans set out in the "2001 Decommissioning and Reclamation Plan" and the standards of good practice elsewhere in Canada.

Viceroy Costs vs. Contractor Costs

The "Volume IV" estimates were based on productivities and unit costs achieved by Viceroy Minerals Corporation. However, the independent estimate of closure liabilities is to consider the case where Viceroy is no longer on the site, and the Government of the Yukon needs to bring a local contractor in to complete the work. The productivities and unit costs assumed in the "Volume IV" estimates were therefore reviewed and adjusted to values that are more typical of Yukon contractors. For most tasks, it was assumed that the equipment used by local contractors would be one to two classes smaller than that used by Viceroy.

Unit costs for equipment were obtained from the 2011-2012 edition of "The Blue Book", an equipment rate rental guide produced by the B.C. Road Builders and Heavy Construction Association. All-found rates, which include all costs, expenses and profit were used. When the guide indicated a difference between rates for new and older equipment, an average rate was used. All of the unit rates were increased by 10% as a northern allowance. Costs for mobilizing the equipment to the site were also added to the estimates as a separate line item.

Contingencies

The "Volume IV" estimates applied contingencies of between 10% and 20% to the estimated total costs from each cost center. It is important to understand what is meant by "contingencies". In common usage, contingencies are provisions for something that might never come to pass. However, the contingencies in these estimates are likely to be required. They are included to account for a number of costs and uncertainties that cannot be more explicitly detailed in this level of estimate.

The contingency percentages suggested in "Volume IV" are generally consistent with good practice elsewhere, particularly given the fact that there is now direct experience carrying out most of the required activities at this site. Some thought was given to increasing the contingency for Site Facilities Removal and Reclamation, on the grounds that there is as yet no site experience with this type of work and because costs of demolition projects elsewhere have proven difficult to estimate accurately. However, it was also noted that the current estimate takes no account of value that might be recovered from re-use or salvage of the site buildings. If that value were taken into account, it would act to offset cost overruns. The "Volume IV" contingency percentages were therefore accepted for all of the cost centers.

Net Present Value Calculations

In preparing cost estimates for activities that can take place many years in future, it is important to take into account the effects of interest and inflation. The conventional way to do that is to use a Net Present Value or "NPV" calculation. In simple terms, the NPV calculation shows how much money one would need to set aside today in order to have enough money to carry out the future activities.

To complete the NPV calculations, all of estimated costs were set out on a timeline extending from 2004 to 2021. Costs were generally put in the earliest year when an activity might be required. That approach has the effect of resulting in a cautiously high estimate of the NPV.

The timeline of costs was then used to calculate the NPV of the estimates for each cost center and each mitigation measure, i.e. how much money would need to be set aside under each cost category. The interest rate used in such calculations is a question of policy, rather than engineering. Most corporate investors would use a relatively high rate, which would result in a lower NPV. In SRK's experience, Canadian governments commonly use a much lower interest rate, roughly equivalent to the rate of return on long-term Government of Canada Savings Bonds.

The "Volume IV" estimates included an escalator for inflation. The escalator was applied to each year's cost estimates. However, a simpler method is to recognize that inflation acts counter to interest, i.e. it requires one to put aside more money now to allow for the increased future costs. Inflation can then be accounted for within the NPV calculations. For example, an apparent interest rate of x percentage and an annual inflation of y percentage can be accounted for by simply assuming an "effective interest rate" of x-y percentage in the NPV calculation.

That approach was used for the independent engineer's estimate of the outstanding liability. An apparent interest rate of 5% was selected from tables of long term bond rates, and adjusted downward by an assumed inflation rate of 2%, resulting in the effective interest rate of 3% that was used in the NPV calculations.

Mitigation Measures and Likelihood

Most of the closure activities at the Brewery Creek site are low risk. However, in the opinion of the undersigned, there are three areas where the uncertainties are greater. The three areas are the heap, the Lucky Haul road, and the Blue Dump. For each of those areas, mitigation measures that conceivably might be required at some time in the future were assessed and cost estimates were developed. Further details are provided in Section 4 below.

The likelihood that each of the mitigation measures will be required was then described using the terms "possible", "unlikely" and "very unlikely". The definitions of these terms were taken from SRK experience with qualitative risk assessments on similar projects:

- "Possible" implies that the event has happened elsewhere, perhaps several times, and could happen here;
- "Unlikely" implies that the event may have happened elsewhere, but only under conditions that are less favourable than here; and

- "Very unlikely" implies that the event is theoretically possible, or at least cannot be ruled out given currently available information, but would require a remote combination of circumstances.

Provision for Mitigation Measures in Outstanding Closure Liability

It could be argued that the estimate of outstanding liability should include provision for all of the above mitigation measures, regardless of their likelihood. The problem with such reasoning is that it is always possible to imagine a lower probability outcome requiring a more costly mitigation measure. Ultimately a policy decision is required to determine whether a probability is low enough that the risk can be accepted without a provision in the liability estimate. There is no single answer as to where the line should be drawn. It is clear that governments are less willing to accept risk than investors, and the line is drawn more cautiously when government is to be left holding the risk.

To come up with a basis for determining which mitigation costs should be included in the independent engineer's estimate of the outstanding liability, reference was made to SRK's experience with precedents involving government accepting mine closure-related risks. The precedents are three cases in British Columbia where the provincial government has participated in negotiations of final securities for closed mines.

- In the case of Equity Silver Mine, the negotiated security provides for perpetual collection and treatment of contaminated water, which is certainly "possible", but does not provide for "unlikely" or "very unlikely" increases in contaminant concentrations.
- In the case of Britannia Mine, the provincial government negotiated with former owners of the property to pay for construction and operation of a water treatment plant. Again the plant was sized to handle "possible" current flows and chemistry, but not "unlikely" increases in either.
- In the third case, which is confidential, the owner was transferring the property to a third party and wanted an "exit ticket" from the provincial government. The negotiated security included provision for "possible" activities such as groundwater cleanup and collection of acidic pit water, but did not require provision for "unlikely" increases in acid generation.

On the basis of these precedents, only "possible" mitigation measures were included in the independent engineer's estimate of outstanding liability for the Brewery Creek Mine.

3 Estimated Costs for Expected Activities

Table 1 presents a summary of the estimated costs for the expected decommissioning and reclamation activities in each of the cost centers. The table shows both the undiscounted (no interest, no inflation) estimates and the NPV estimates.

The only remaining cost items under the Mine Area Reclamation estimate is:

- Scarification and re-contouring of the perimeter roads.

A provision for additional erosion repairs and revegetation remains in the mitigation measures and is discussed in the next section.

The remaining cost items under Site Facilities Removal and Reclamation is:

- Approximately 50% of the removal of the Warehouse & Maintenance Shop Building.

Costs for the final re-grading of the pond area and liner removal and/or burial were set to zero in the current estimate. These activities were completed in 2008, but following the 2008 inspection.

The Process and Water Treatment estimate was set to zero in the 2005 estimate, and any further costs for treating heap effluent continue to be accounted for as mitigation measures (see Section 4 below). The General and Administration estimate was set to zero for the base estimate, but remains in the contingencies. Work under Leach Pad Detoxification was complete in 2003.

The Manpower estimate was decreased in each of the previous estimates and was set to zero in the 2008 estimate. Any future work at the site is expected to be on a contract basis.

The only remaining cost items under the Leach Pad Reclamation estimate for 2007 was the construction of a breach and ditches to allow free drainage from the heap to the former barren pond. That work was completed in the fall of 2008, but following the 2008 liability review inspection. These costs have been set to zero in the current estimate.

Post-Closure Monitoring began in 2004. The “Volume IV” estimates for the remaining years were generally retained, and are incremented forward by one year after each inspection. An additional allowance for preparing monthly and annual reports and an additional $10,000 for monitoring of the Blue Dump was added in 2005. The cost for long-term nutrient addition to the BTC, which was in the original estimate, was moved to a mitigation measure in 2003.

Table 1: Cost Estimates for Expected Decommissioning and Reclamation Activities

Cost Center	**Undiscounted Costs**	**Net Present Value Costs**
Mine Area Reclamation	$ 66,000	$ 64,000
Site Facilities Removal and Reclamation	$ 53,000	$ 51,000
Leach Pad Detoxification	-	-
Manpower	-	-
General and Admin	-	-
Process Water Treatment	-	-
Leach Pad Reclamation	-	-
Post-Closure Monitoring	$ 314,000	$ 270,000
Subtotal Direct Costs	$ 432,000	$ 385,000
Contingency	$ 50,000	$ 46,000
Total	$ 482,000	$ 431,000

4 Estimated Costs for Mitigation Measures

Table 2 presents a summary of the estimated costs for possible mitigation measures, and the likelihood that each mitigation measure will be needed. The terminology used to describe likelihood is defined in Section 2.2.

It is SRK's understanding that contaminant concentrations in the heap effluent samples (Station BC-28a) and the pond discharge have generally been in compliance with direct discharge criteria since 2004. Various mitigation measures for the heap drainage were considered in earlier reports, and a biological treatment cell (BTC) was constructed and operated for one year. As Table 2 indicates, any additional treatment is now considered to be "very unlikely".

Concerns regarding the slope instability below the Lucky Haul Road remain. There are two locations where the instability is occurring. In the first location near the Lucky Creek, the scarps are up to 2 m in height and extend over about 100 m of the slope. The root cause appears to be either undercutting by earlier exploration roads or thawing of permafrost along the slope toe, or a combination of the two. The only feasible mitigation measure is additional resloping. However, the previous attempts at re-sloping have not completely solved the problem, and additional work would disturb the now well-established vegetation. Also, there appears to be adequate room for any failures to run out at the toe of the slope, without reaching Lucky Creek.

In the second location between the Lucky Pit and the Bohemian Access Trail, tension cracks appear at two locations with scarps up to 1 m in height. Crack locations are noted in the photo appendix of the attached 2011 geotechnical inspection. No signs of imminent failure, significant distress or ground movement near the base of the slope were observed. As with the first location, there appears to be adequate room for any failures to run out at the toe of the slope, without reaching Lucky Creek.

Monitoring should be continued until the extent of the instability is clear, but significant further work is "unlikely".

Vegetation growth on the Blue Dump improved markedly in 2008, probably due to the wet conditions. As discussed in the 2007 report, four years of monitoring indicated that the average infiltration was about 6% of precipitation, and water quality results remained within the original water quality predictions. Therefore it continues to be "very unlikely" that any substantial modifications of the Blue WRSA cover will be required.

No progression of erosion has been noted in the past two geotechnical site inspections. At the base of the Blue dump, eroded gullies show signs of infilling and/or vegetation growth and no change was observed in the water collection channel where previous erosion occurred. Rip-rap was placed this channel in 2009, however as the rip-rap is not continuous, it remains possible for further erosion to occur and continued monitoring is recommended. The improved vegetation growth throughout the site makes it difficult to identify any additional areas that might need further work, but it also remains possible that areas of the site will need additional work over the next few years.

Table 2: Cost and Likelihood Estimates for Possible Mitigation Measures

Mitigation Measure	Undiscounted Costs	Discounted Costs (NPV)	Likelihood that Measure will be Needed
Operate BTC for one year	$ 152,000	$ 146,000	Very unlikely
Operate BTC for two years	$ 303,000	$ 286,000	Very unlikely
Operate BTC for five years	$ 758,000	$ 675,000	Very unlikely
Lucky Dump - Additional stabilization	$ 36,000	$ 35,000	Unlikely
Blue Dump cover improvements	$ 1,074,000	$ 1,033,000	Very unlikely
Misc. erosion repairs & revegetation	$ 52,000	$ 50,000	Possible

5 Estimate of Outstanding Liability

Table 3 summarizes the undersigned independent engineer's opinion as to the outstanding closure liabilities at the Brewery Creek Mine, as of September 2011. The estimate includes the full cost of the expected decommissioning and reclamation activities, as well as provision for the "possible" mitigation measures.

Table 3: Outstanding Closure Liability at Brewery Creek Mine as of September 2011

Category	Outstanding Undiscounted Liability	Outstanding Net Present Value Liability
Expected Decommissioning and Reclamation Activities	$ 482,000	$ 431,000
Possible Mitigation Measures (Misc. erosion repairs)	$ 52,000	$ 50,000
Total Outstanding Closure Liability	$ 534,000	$ 481,000

This report, "**Outstanding Closure Liabilities at Brewery Creek Mine - September 2011**", has been prepared by SRK Consulting (Canada) Inc.

Prepared by

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Reviewed by

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Practice Leader

All data used as source material plus the text, tables, figures, and attachments of this document have been reviewed and prepared in accordance with generally accepted professional engineering and environmental practices.

Attachment 1: Liability Estimate Spreadsheet

Table 1
Undiscounted Summary of All Items

Cost Center	Estimates from Sept 2003 Review	Estimates from Sept 2004 Review	Estimates from Sept 2005 Review	Estimates from Sept 2006 Review	Estimates from Sept 2007 Review	Estimates from Sept 2008 Review	Estimates from Sept 2011 Review	Contingency Factors	Notes and references
Mine Area Reclamation	$ 528,894	$ 201,269	$ 135,258	$ 132,304	$ 99,465	$ 60,840	$ 65,824	20%	See Table 6. Table 5 complete.
Site Facilities Removal and Reclamation	$ 576,829	$ 219,515	$ 140,851	$ 118,545	$ 113,673	$ 97,831	$ 53,031	10%	See Table 7.
Leach Pad Detox	$ -	$ -	$ -	$ -	$ -	$ -	$ -	20%	Complete.
Manpower	$ 260,550	$ 64,125	$ 92,813	$ 92,813	$ 26,190	$ -	$ -	10%	Complete.
General and Admin	$ 444,915	$ 44,626						10%	
Process Water Treatment	$ 58,500	$ -	$ -	$ -	$ -	$ -	$ -	20%	Complete.
Leach Pad Reclamation	$ 120,485	$ 60,054	$ 53,142	$ 37,294	$ 21,446	$ 15,110	$ -	10%	Complete.
Post-Closure Monitoring	$ 584,600	$ 562,773	$ 551,720	$ 512,280	$ 438,840	$ 368,260	$ 313,520	10%	See Table 12.
Direct Costs	$ 2,574,774	$ 1,152,362	$ 973,784	$ 893,236	$ 699,614	$ 542,041	$ 432,375		
Contingency	$ 316,217	$ 135,363	$ 110,904	$ 102,554	$ 79,908	$ 60,288	$ 49,820		
Inflation Allowance									Now covered in NPV calculation
Total	$ 2,890,990	$ 1,287,725	$ 1,084,688	$ 995,790	$ 779,522	$ 602,329	$ 482,195		
NPV									

Mitigation Measures									
Operate BTC for one year			$ 151,675	$ 151,673	$ 151,673	$ 151,673	$ 151,673		See Table 3
Operate BTC for two years		$ 303,346	$ 303,346	$ 303,346	$ 303,346	$ 303,346	$ 303,346		See Table 3
Operate BTC for five years	$ 1,362,560	$ 758,365	$ 758,365	$ 758,365	$ 758,365	$ 758,365	$ 758,365		See Table 3
Lucky Dump Areas - Additional stabilization	$ 83,064	$ 34,603	$ 36,061	$ 36,061	$ 36,061	$ 36,061	$ 37,689		See Table 3
Blue Dump cover improvement	$ 1,074,239	$ 1,074,239	$ 1,074,239	$ 1,074,239	$ 1,074,239	$ 1,074,239	$ 1,116,607		See Table 3
Miscellaneous site repairs						$ 52,000	$ 52,000		

Cases								
Base case	$ 2,890,990	$ 1,287,725	$ 1,084,688	$ 995,790	$ 779,522	$ 602,329	$ 482,195	Likely
Base case with Miscellaneous site repairs						$ 654,329	$ 534,195	Possible
Base case with Lucky area stabilization					$ 815,583	$ 638,391	$ 519,884	Unlikley
Base case with BTC for one year			$ 1,236,363	$ 1,147,463	$ 931,195	$ 754,003	$ 633,868	Very unlikely
Base case with BTC for one year and Lucky area stabilization				$ 1,183,524	$ 967,256	$ 790,064	$ 671,557	Very unlikely
Base case with BTC for two years		$ 1,591,071	$ 1,388,034	$ 1,299,136	$ 1,082,868	$ 905,676	$ 785,541	Very unlikely
Base case with BTC for two years and Lucky area stabilization		$ 1,625,674	$ 1,424,096	$ 1,335,197	$ 1,118,930	$ 941,737	$ 823,230	Very unlikely
Base case with BTC for five years	$ 4,253,550	$ 2,046,090	$ 1,843,054	$ 1,754,155	$ 1,537,887	$ 1,360,695	$ 1,240,560	Very unlikely
Base case with BTC for 5 years and Lucky area stabilization	$ 4,336,614	$ 2,080,693	$ 1,879,115	$ 1,790,216	$ 1,573,949	$ 1,396,756	$ 1,278,250	Very unlikely
Base case with BTC for 5 years, Lucky area and Blue Dump	$ 5,410,853	$ 3,154,932	$ 2,953,354	$ 2,864,455	$ 2,648,188	$ 2,470,995	$ 2,394,857	Very unlikely

Table 2
NPV Discounted Summary 3%

Cost Center	NPV	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Mine Area Reclamation	$ 63,907	$ 65,824	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Site Facilities Removal and Reclamation	$ 51,486	$ 53,031	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Leach Pad Detox	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Manpower	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
General and Admin	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Process Water Treatment	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Leach Pad Reclamation	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Post-Closure Monitoring	$ 269,786	$ 39,440	$ 30,440	$ 30,440	$ 39,440	$ 30,440	$ 30,440	$ 30,440	$ 30,440	$ 30,440	$ 21,560
Direct Costs	$ 385,179	$ 158,295	$ 30,440	$ 30,440	$ 39,440	$ 30,440	$ 30,440	$ 30,440	$ 30,440	$ 30,440	$ 21,560
Contingency	$ 45,618	$ 22,412	$ 3,944	$ 3,044	$ 3,044	$ 3,044	$ 3,044	$ 3,044	$ 3,044	$ 3,044	$ 3,044
Inflation Allowance	$ -										
Total	$ 430,797	$ 180,707	$ 34,384	$ 33,484	$ 42,484	$ 33,484	$ 33,484	$ 33,484	$ 33,484	$ 33,484	$ 24,604
NPV											

Mitigation Measures	NPV	2012	2013	2014	2015
Operate BTC for one year	$ 147,255	$ 151,673			
Operate BTC for two years	$ 290,222	$ 151,673	$ 151,673		
Operate BTC for five years	$ 563,784	$ 151,673	$ 151,673	$ 151,673	$ 151,673
Lucky Dump Areas - Additional stabilization	$ 36,592	$ 37,689			
Blue Dump cover improvement	$ 1,084,085	$ 1,116,607			
Miscellaneous site repairs	$ 50,485	$ 52,000			

Cases		
Base case	$ 430,797	Likely
Base case with Miscellaneous site repairs	$ 481,283	Possible
Base case with Lucky area stabilization	$ 467,389	Unlikely
Base case with BTC for one year	$ 578,053	Very unlikely
Base case with BTC for one year and Lucky area stabilization	$ 614,644	Very unlikely
Base case with BTC for two years	$ 721,019	Very unlikely
Base case with BTC for two years and Lucky area stabilization	$ 757,611	Very unlikely
Base case with BTC for five years	$ 994,581	Very unlikely
Base case with BTC for 5 years and Lucky area stabilization	$ 1,031,173	Very unlikely
Base case with BTC for 5 years, Lucky area and Blue Dump	$ 2,115,257	Very unlikely

Contingency Factors	
Mine Area Reclamation	20%
Site Facilities Removal and Reclamation	10%
Leach Pad Detox	20%
Manpower	10%
General and Admin	10%
Process Water Treatment	20%
Leach Pad Reclamation	10%
Post-Closure Monitoring	10%

Table 3
Mitigation Measures

Heap Area

Operate land application for additional two years		
Operating cost	$ -	See Table 12
G&A cost	$ 136,673	See Table 11
Annual total	$ 136,673	
Additional years	$ 2	
Total	$ 273,346	

Operate BTC for one year		
Construct BTC		Complete in Sept 2004
Operate BTC	$ 15,000	For nutrients and maintenance.
G&A cost	$ 136,673	See Table 11
Annual total	$ 151,673	
Additional years	$ 1	
Total	$ 151,673	

Operate BTC for two years		
Construct BTC		Complete in Sept 2004
Operate BTC	$ 15,000	For nutrients and maintenance.
G&A cost	$ 136,673	See Table 11
Annual total	$ 151,673	
Additional years	$ 2	
Total	$ 303,346	

Operate BTC for five years		
Construct BTC		Complete in Sept 2004
Operate BTC	$ 15,000	For nutrients, maintenance & monitoring.
G&A cost	$ 136,673	See Table 11
Annual total	$ 151,673	
Additional years	$ 5	
Total	$ 758,365	

Mine Area

Lucky Dump Areas - Additional stabilization		
Regrade with backhoe	80	hours
Unit Cost	$ 321.12	From Table 4
Removal cost	$ 25,689	
Re-seed (2 ha @ $2000/ha)	$ 4,000	
Engineering & Supervision	$ 10,000	
Mob/Demob	$ 2,000	
Total	$ 37,689	

Blue Dump cover improvement

Strip and compact curent cover. Add 2 m new material. Revegetate. Assume borrow source available!

Improve cover over total area	m^2	106,000				
Strip vegetation	m^2	106,000	2000	53	$ 393	$ 20,855
Compact	m^2	106,000	1000	106	$ 504	$ 53,476
2m new cover over total area	m^2	106,000				
Load growth media with front end loader (s	m^3	212,000	389	545	$ 322	$ 175,570
Haul growth media with haultrucks	m^3	212,000	100	2120	$ 304	$ 643,865
Spread growth media with dozer	m^3	212,000	1000	212	$ 393	$ 83,421
Broadcast seed and fertilizer	hectare	10.60			$ 400	$ 4,240
Regrade borrow area	m^2	50,000	1000	50	$ 164	$ 8,180
Re-seed and fertilize borrow area	hectare	5.00			$ 400	$ 2,000
Engineering & Supervision						$ 75,000
Mob/Demob						$ 50,000
Total						$ 1,116,607

General

Miscellaneous site repairs		
Mob/Demob	$ 2,000	
Backhoe and Operator	$ 30,000	hours
Supervision / inspection	$ 10,000	From Table 5
Re-seed (5 ha @ $2000/ha)	$ 10,000	
Total	$ 52,000	

Table 4
Unit Cost Table

Contractor Equipment Rates as Revised in Nov 2011

Revised Equipment Rates Unit of Equipment	Cost per Op Hour	Basis	All-Found Rates New	10-Year Old	Source	Average	With 10% Northern Increase
Smaller fleet		**Smaller fleet**					
D9 Bulldozer	$ 323	D9 Bulldozer	$ 306	$ 281	(B.C.)	$ 293	$ 323
D8 Bulldozer	$ 268	D8 Bulldozer	$ 254	$ 234	(B.C.)	$ 244	$ 268
12H Grader	$ 139	12H Grader	$ 130	$ 122	(B.C.)	$ 126	$ 139
769 Haul truck (35 tonne)	$ 205	769 Haul truck	$ 193	$ 179	(B.C.)	$ 186	$ 205
990 Front end loader	$ 275	990 Front end loader	$ 261	$ 240		$ 250	$ 275
365 Backhoe	$ 321	365 Backhoe	$ 305	$ 279	(B.C.)	$ 292	$ 321
Large fleet		**Viceroy fleet**					
D10N Bulldozer	$ 393	D10N Bulldozer	$ 374	$ 342	(B.C.)	$ 358	$ 393
14G Grader	$ 164	14G Grader	$ 154	$ 143	(B.C.)	$ 149	$ 164
777 Haul truck (70 tonne)	$ 304	777 Haul truck	$ 288	$ 264	(B.C.)	$ 276	$ 304
992 FEL	$ 322	992 FEL	$ 293	$ 293	(Sask.)	$ 293	$ 322
375 Backhoe	$ 321	365/385 Backhoe	$ 305	$ 279	(B.C.)	$ 292	$ 321
Compactor	$ 111	Compactor	$ 103	$ 99	(B.C.)	$ 101	$ 111

Viceroy Minerals Corporation Owned and Operated Equipment Rates

Unit of Equipment	Cost per Op Hour
D10N Bulldozer	$ 88
16G Grader	$ 50
Haul truck (100 ton)	$ 92
992 Front end loader	$ 118
375 Backhoe	$ 88
Labour	$ 25

Operating costs include operator, fuel, maintenance, room and board

Volume IV Equipment Rates Unit of Equipment	Cost per Op Hour
D10N Bulldozer	$ 164
14G Grader	$ 77
Haul truck (100 ton)	$ 189
992 FEL	$ 235
375 Backhoe	$ 194
Compactor	$ 44

Operating costs for Dozer, Grader, Compactor based on quoted 1999 Leach Pad Construction inflated by 3% annually through 2002. Costs include operator, fuel and maintenance. Other equipment is 50% above Viceroy Minerals Costs for owning/operating for a conservative value for estimating Contractor Rates.

Table 4
Unit Cost Table

Actual Brewery Creek Mine Production Figures

Task Description	Unit of Measure	Production per Hour	Actual BCM $/m3	Plan Costs $/m3
Stockpile to Dump Location (500 m) FEL/Backhoe (164,000 m^3 @ 422 hrs)	m^3	389	$ 0.30	$ 0.83
Blue WRSA in April/May 2001 D10N dozer (62,100 m^3 @ 202 hours)	m^3	307	$ 0.29	$ 1.28
Blue In-pit Backfill D10N dozer (19,200 m^3 @ 65 hours)	m^3	295	$ 0.30	
North Golden WRSA Recontour May 2002 D10N & 375 Backhoe (74,885 m3 @150 Dozer hours, 15 Backhoe hours)	m3	453	$ 0.23	$ 0.38

Broadcast (includes seed and fertilizer)	hectare	$ 400	Open Pits
Hydroseed (includes mulch/seed/etc.)	hectare	$ 5,000	Open Pits
Broadcast (includes seed and fertilizer)	hectare	$ 750	Leach Pad

All production rates are actual machine hours that included idle running time.

Broadcast seed and feritlizer rates from August 2002 quotation - Pickseed Edmonton, AB

Hydroseed rates are quoted rates from Adorna Flowers and Landscaping Ltd.

Note: This table corresponds to Table 7-4 in "Volume IV".

Table 5

Open Pit Mining and Waste Rock Storage Areas

Note: This table corresponds to Table 7-5 in "Volume IV".

Area and Task Description	Unit of Reclamation Measure	Estimated # of Units	Production Rate	Estimated Hours	Unit Cost	Estimated Task Cost		Percentage Complete Sept. 2011	Estimated Remaining Cost	Estimated Remaining Subtotals
Mobilization/Demobilization	Season	1			$ 80,000	$ 80,000		100%	$ -	
Future Mobilization		0			$ 20,000	$ -		0%	$ -	
Subtotal							$ 80,000			$ -
Metal Uptake Study										
Field sampling, analysis, and reporting	lot	1			$ 20,000	$ 20,000		100%	$ -	
Subtotal							$ 20,000			$ -
Upper Fosters Open Pit										
Equipment work to recontour partially backfilled open pit										
Dozer cut to fill slopes	m^3	2,400	307	complete	$ 393	complete				
Backhoe work to pull back slopes	m^3	2,900	300	complete	$ 321	complete				
Dozer recontouring areas	m^2	3,800	600	complete	$ 393	complete				
Total area to be reseeded	m^2	36,700								
Load growth media with front end loader	m^3	-	389	0	$ 322	$ -		100%	$ -	
Haul growth media with haultrucks	m^3	-	195	0	$ 304	$ -		100%	$ -	
Spread growth media with dozer	m^3	-	389	0	$ 393	$ -		100%	$ -	
Broadcast seed and fertilizer	hectare	3.67			$ 400	$ 1,468		100%	$ -	
2004-5 Erosion Repairs (5%)	m^2	1,835								
Erosion repairs with dozer	m^3	918	150	6	$ 323	$ 1,937		100%	$ -	
Re-Seeding (2 ha)	m^2	20,000								
Broadcast seed and fertilizer	hectare	2.00			$ 400	$ 800		100%	$ -	
Subtotal							$ 4,205			$ -
The Canadian Open Pit										
Equipment work to recontour partially backfilled open pit										
Dozer cut to fill slopes	m^3	63,200	295	214	$ 393	$ 84,208		100%	$ -	
Dozer work to construct diversion ditches	lot				$ 393	$ -		100%	$ -	
Construct cap for waste landfill area	lot					$ 5,000		100%	$ -	
Total area to be reseeded	m^2	91,500								
Load growth media with front end loader	m^3	31,050	389	80	$ 322	$ 25,772		100%	$ -	
Haul growth media with haultrucks	m^3	31,050	195	159	$ 304	$ 48,290		100%	$ -	
Spread growth media with dozer	m^3	87,627	389	225	$ 393	$ 88,537		100%	$ -	
Broadcast seed and fertilizer	hectare	9.15			$ 400	$ 3,660		100%	$ -	
2004-5 Erosion Repairs (5%)	m^2	4,575								
Erosion repairs with dozer	m^3	2,288	150	15	$ 323	$ 4,842		100%	$ -	
Re-Seeding (0%)	m^2	54,900								
Broadcast seed and fertilizer	hectare	5.49			$ 400	$ 2,196		100%	$ -	
Subtotal							$ 262,504			$ -

Table 5
Open Pit Mining and Waste Rock Storage Areas
Note: This table corresponds to Table 7-5 in "Volume IV".

Area and Task Description	Unit of Reclamation Measure	Estimated # of Units	Production Rate	Estimated Hours	Unit Cost	Estimated Task Cost		Percentage Complete Sept. 2011	Estimated Remaining Cost	Estimated Remaining Subtotals
The Blue Open Pit										
Equipment work to recontour partially backfilled open pit										
Dozer cut to fill slopes	m^3	19,200	295	complete	$ 393	complete				
Dozer recontouring areas	lot			30	$ 393	$ 11,805		100%	$ -	
Dozer/Backhoe work to construct diversion ditches	lot			complete	$ 393	complete				
Construction of overflow sediment control works	lot					$ 4,700		100%	$ -	
Total area requiring seds/silt cap	m^2	4,000						100%	$ -	
Load seds/silt with front end loader	m^3		389	0	$ 322	$ -		100%	$ -	
Haul seds/silt with haultrucks	m^3	-	195	0	$ 304	$ -		100%	$ -	
Spread seds/silt with dozer	m^3	-	389	0	$ 393	$ -		100%	$ -	
Compact seds/silt with roller	m^2			0	$ 111	$ -		100%	$ -	
Total area to be reseeded	m^2	49,300								
Load growth media with front end loader	m^3	-	389	0	$ 322	$ -		100%	$ -	
Haul growth media with haultrucks	m^3	-	195	0	$ 304	$ -		100%	$ -	
Spread growth media with dozer	m^3	-	389	0	$ 393	$ -		100%	$ -	
Broadcast seed and fertilizer	hectare	4.93			$ 400	$ 1,972		100%	$ -	
2004-5 Erosion Repairs (5%)	m^2	2,465								
Erosion repairs with dozer	m^3	1,500	150	10	$ 323	$ 3,228		100%	$ -	
Re-Seeding (80%)	m^2	39,440								
Broadcast seed and fertilizer	hectare	3.94			$ 400	$ 1,578		100%	$ -	
Subtotal							$ 23,282			$ -

Table 5
Open Pit Mining and Waste Rock Storage Areas
Note: This table corresponds to Table 7-5 in "Volume IV".

Area and Task Description	Unit of Reclamation Measure	Estimated # of Units	Production Rate	Estimated Hours	Unit Cost	Estimated Task Cost		Percentage Complete Sept. 2011	Estimated Remaining Cost	Estimated Remaining Subtotals
The Blue Waste Rock Storage Area										
Equipment work to recontour Waste Rock Storage Area										
Dozer cut to fill slopes	m^3	62,100	307	complete	$ 393	complete				
Dozer recontouring areas	m^2			complete		complete				
Dozer work to construct diversion ditches	lot			complete	$ 393	complete				
Backhoe work to re-construct collection ditch	lot			complete	$ 321	complete				
Total area requiring seds/silt cap	m^2									
Load seds/silt with front end loader	m^3		389	0	$ 322	$ -		100%	$ -	
Haul seds/silt with haultrucks	m^3		195	0	$ 304	$ -		100%	$ -	
Spread seds/silt with dozer	m^3		389	0	$ 393	$ -		100%	$ -	
Compact seds/silt with roller	m^2				$ 111	$ -		100%	$ -	
Construct monitor locations downstream of WRSA	lot			20	$ 321	complete				
Supplies and labour to set up monitor sites	lot					complete				
Complete Blue WRSA Field Program										
Recontour Canadian Creek Control Structure	lot					$ 25,000		100%	$ -	
Backhoe	lot			30	$ 321	$ 9,636		100%	$ -	
Dozer	lot			30	$ 393	$ 11,805		100%	$ -	
Revegetation	lot					$ 1,000		100%	$ -	
Total area to be reseeded	m^2	106,000								
Load growth media with front end loader (soil cover)	m^3	53,000	389	136	$ 322	$ 43,812		100%	$ -	
Haul growth media with haultrucks	m^3	53,000	195	272	$ 304	$ 82,609		100%	$ -	
Spread growth media with dozer	m^3	53,000	389	136	$ 393	$ 53,516		100%	$ -	
Broadcast seed and fertilizer	hectare	10.60			$ 400	$ 4,240		100%	$ -	
Erosion Repairs										
Erosion repairs with dozer	m^3	4,500	150	30	$ 323	$ 9,683		100%	$ -	
Re-Seeding (2ha+50%)	m^2	73,000								
Re-till compacted areas	hectare	1.00	0.1	10	$ 323	$ 3,228		100%	$ -	
Broadcast seed and fertilizer	hectare	7.30			$ 400	$ 2,920		100%	$ -	
Blue Dump ARD studies	lump					$ 10,000		100%	$ -	
Blue Dump cover monitoring	lump							0%	$ -	
Subtotal							$ 257,448			$ -

Table 5

Open Pit Mining and Waste Rock Storage Areas

Note: This table corresponds to Table 7-5 in "Volume IV".

Area and Task Description	Unit of Reclamation Measure	Estimated # of Units	Production Rate	Estimated Hours	Unit Cost	Estimated Task Cost		Percentage Complete Sept. 2011	Estimated Remaining Cost	Estimated Remaining Subtotals
The Kokanee Open Pits										
Equipment work to recontour partially backfilled open pit										
Dozer cut to fill slopes	m^3	39,800	295	complete	$ 393	complete				
Dozer recontouring areas	m^2	70,400	600	complete	$ 393	complete				
Dozer work to construct diversion ditches	lot				$ 393	$ -		100%	$ -	
Construction of overflow sediment control works	lot					$ 4,700		100%	$ -	
Maintenance of outflow channel	lot					$ 2,500		100%	$ -	
Total area to be reseeded	m^2	168,500								
Load growth media with front end loader	m^3	14,079	389	36	$ 322	complete				
Haul growth media with haultrucks	m^3	2,079	195	11	$ 304	complete				
Spread growth media with dozer	m^3	19,679	389	51	$ 393	complete				
Broadcast seed and fertilizer	hectare	16.85			$ 400	complete				
2004-5 Erosion Repairs (15%)	m^2	25,275								
Erosion repairs with dozer	m^3	12,638	400	32	$ 323	$ 10,329		100%	$ -	
Re-Seeding (25%)	m^2	42,125								
Broadcast seed and fertilizer	hectare	4.21			$ 400	$ 1,685		100%	$ -	
Subtotal							$ 19,214			$ -
The North Golden Open Pit										
Equipment work to recontour partially backfilled open pit										
Dozer cut to fill slopes	m^3	23,200	295	79	$ 393	complete				
Dozer recontouring areas	m^3	15,000	600	25	$ 393	complete				
Dozer work to construct diversion ditches	lot				$ 393	$ -				
Total area to be reseeded	m^2	112,200								
Load growth media with front end loader	m^3	9,985	389	26	$ 235	complete				
Haul growth media with haultrucks	m^3	6,615	195	34	$ 189	complete				
Spread growth media with dozer	m^3	7,441	389	19	$ 393	complete				
Broadcast seed and fertilizer	hectare	11.22			$ 400	complete				
Bench dump to southeast of Pit	m^3	15,000								
Small Backhoe	m^3	15,000	200	75	$ 321	$ 24,084		100%	$ -	
2004-5 Erosion Repairs (15%)	m^2	16,830								
Erosion repairs with dozer	m^3	8,415	400	21	$ 323	$ 6,778		100%	$ -	
Swale maintenance	lot					$ 2,500		100%	$ -	
Re-Seeding (50%)	m^2	56,100								
Broadcast seed and fertilizer	hectare	5.61			$ 400	$ 2,244		100%	$ -	
Subtotal							$ 35,606			$ -

Table 5
Open Pit Mining and Waste Rock Storage Areas
Note: This table corresponds to Table 7-5 in "Volume IV".

Area and Task Description	Unit of Reclamation Measure	Estimated # of Units	Production Rate	Estimated Hours	Unit Cost	Estimated Task Cost		Percentage Complete Sept. 2011	Estimated Remaining Cost	Estimated Remaining Subtotals
<u>The South Golden Open Pit</u>										
Equipment work to recontour partially backfilled open pit										
Dozer cut to fill slopes	m^3	5,600	295	19	$ 393	complete				
Backhoe cut to fill slopes	m^3	9,100	300	30	$ 321	complete				
Dozer recontouring areas	m^2			60	$ 393	complete				
Dozer work to construct highwall/road access berms	lm			10	$ 393	complete				
Dozer work to construct diversion ditches	lm				$ 393	$ -				
Construction of overflow sediment control works	lot					$ 4,700		100%	$ -	
Total area to be reseeded	m^2	13,800								
Load growth media with front end loader	m^3	9,985	389	26	$ 235	complete				
Haul growth media with haultrucks	m^3	9,985	195	51	$ 189	complete				
Spread growth media with dozer	m^3	11,459	389	29	$ 393	complete				
Broadcast seed and fertilizer	hectare	1.38			$ 400	complete				
2004-5 Erosion Repairs (5%)	m^2	690								
Erosion repairs with dozer	m^3	345	150	2	$ 322	$ 644		100%	$ -	
Re-Seeding (25%)	m^2	3,450								
Broadcast seed and fertilizer	hectare	0.35			$ 400	$ 138		100%	$ -	
Subtotal							$ 5,482			$ -

Table 5

Open Pit Mining and Waste Rock Storage Areas

Note: This table corresponds to Table 7-5 in "Volume IV".

Area and Task Description	Unit of Reclamation Measure	Estimated # of Units	Production Rate	Estimated Hours	Unit Cost	Estimated Task Cost		Percentage Complete Sept. 2011	Estimated Remaining Cost	Estimated Remaining Subtotals
The Lucky Open Pit										
Equipment work to recontour partially backfilled open pit										
Dozer cut to fill slopes	m^3	1,000	295	complete	$ 393	complete				
Dozer recontouring areas	m^2	40,800	600	68	$ 393	complete				
Backhoe work to recontour stream channel	m3	1,900	300	complete	$ 321	complete				
Construction of overflow sediment control works	lot			complete		complete				
Total area to be reseeded	m^2	42,500								
Load growth media with front end loader	m^3	5,500	389	14	$ 235	complete				
Haul growth media with haultrucks	m^3	5,500	195	28	$ 189	complete				
Spread growth media with dozer	m^3	5,900	389	15	$ 393	complete				
Broadcast seed and fertilizer	hectare	4.25			$ 400	complete				
2004-5 Erosion Repairs (15%)	m^2	6,375								
Erosion repairs with dozer	m^3	3,188	400	8	$ 323	$ 2,582		100%	$ -	
Re-Seeding (50%)	m^2	21,250								
Broadcast seed and fertilizer	hectare	2.13			$ 400	$ 850		100%	$ -	
Stabilization of Haul Road										
Remove 100 m x 20 m x 6 m	m^3	12,000								
Load with backhoe	m^3	12,000	300	40	$ 275	$ 11,018		100%	$ -	
Haul with haultrucks	m^3	12,000	150	80	$ 205	$ 16,370		100%	$ -	
Subtotal							$ 30,820			$ -
The Lower Fosters Open Pit										
Equipment work to recontour partially backfilled open pit										
Dozer recontouring areas	m^2	44,300	1000	complete	$ 393	complete				
Dozer work to construct highwall/road access berms	lot			complete	$ 393	complete				
Dozer work to construct diversion ditches	lot			complete	$ 393	complete				
Total area to be reseeded	m^2	44,300								
Broadcast seed and fertilizer	hectare	4.43			$ 400	$ 1,772		100%	$ -	
2004 Erosion Repairs (5%)	m^2	2,215								
Erosion repairs with dozer	m^3	1,108	150	7	$ 323	$ 2,259		100%	$ -	
2004 Re-Seeding (25%)	m^2	11,075								
Broadcast seed and fertilizer	hectare	1.11			$ 400	$ 443		100%	$ -	
Subtotal							$ 4,474			$ -

Table 5
Open Pit Mining and Waste Rock Storage Areas
Note: This table corresponds to Table 7-5 in "Volume IV".

Area and Task Description	Unit of Reclamation Measure	Estimated # of Units	Production Rate	Estimated Hours	Unit Cost	Estimated Task Cost		Percentage Complete Sept. 2011	Estimated Remaining Cost	Estimated Remaining Subtotals
The Pacific Open Pit & Silt Borrow Area										
Equipment work to recontour partially backfilled open pit										
Dozer cut to fill slopes	m^3	12,545	307	41	$ 393	$ 16,133		100%	$ -	
Dozer recontouring areas	m^2	24,800	600	41	$ 393	$ 16,133		100%	$ -	
Backhoe work to pull back veg/gm from trees in borrow area	lot			complete	$ 321	complete				
Dozer work to construct diversion ditches	lot				$ 393	$ -				
Construction of overflow sediment control works	lot					$ 4,700		100%	$ -	
Total area to be reseeded	m^2	116,500								
Load growth media with front end loader	m^3	4,800	389	12	$ 235	complete				
Haul growth media with haultrucks	m^3	4,800	195	25	$ 189	complete				
Spread growth media with dozer	m^3	7,100	389	18	$ 393	complete				
Broadcast seed and fertilizer	hectare	11.65			$ 400	complete				
2004 Erosion Repairs (5%)	m^2	5,825								
Erosion repairs with dozer	m^3	2,913	150	19	$ 322	$ 6,121		100%	$ -	
2004 Re-Seeding (25%)	m^2	29,125								
Broadcast seed and fertilizer	hectare	2.91			$ 400	$ 1,165		100%	$ -	
Subtotal							$ 44,253			$ -
The Moosehead Open Pit										
Equipment work to recontour partially backfilled open pit				complete	$ 393	complete				
Dozer work to construct highwall/road access berms	lot			complete	$ 393	complete				
Dozer work to construct diversion ditches	lot				$ 393	$ -				
Construct cap for waste landfill area	lot					$ 5,000		100%	$ -	
Construction of overflow sediment control works	lot					$ 4,700		100%	$ -	
Total area to be reseeded	m^2	29,600								
Load growth media with front end loader	m^3		350	0	$ 235	$ -				
Haul growth media with haultrucks	m^3		175	0	$ 189	$ -				
Spread growth media with dozer	m^3	1,435	350	4	$ 393	$ 1,574		100%	$ -	
Broadcast seed and fertilizer	hectare	2.96			$ 400	$ 1,184		100%	$ -	
2004 Erosion Repairs (5%)	m^2	1,480								
Erosion repairs with dozer	m^3	740	150	5	$ 323	$ 1,614		100%	$ -	
Haul road	m^2	22,500								
Scarify with dozer	m^2	22,500	1200	19	$ 323	$ 6,133		100%	$ -	
Load growth media with front end loader	m^3	4,500	300	15	$ 275	$ 4,132		100%	$ -	
Haul growth media with haultrucks	m^3	4,500	150	30	$ 205	$ 6,139		100%	$ -	
Spread growth media with dozer	m^3	4,500	200	23	$ 323	$ 7,424		100%	$ -	
Re-Seeding (2 ha + haul road + landfill)	m^2	40,000								
Broadcast seed and fertilizer	hectare	4.00			$ 400	$ 1,600		100%	$ -	
Subtotal							$ 39,498			$ -
Total Estimated Cost in Reclaiming Open Pits and WSRA's							**$ 826,787**			**$ -**

Table 6
Haul Road and Perimeter Access Road Reclamation
Note: This table corresponds to Table 7-6 in "Volume IV".

Area and Task Description	Unit of Reclamation Measure	Estimated # of Units	Production Rate	Estimated Hours	Unit Cost	Estimated Task Cost		Percentage Complete Sept. 2011	Estimated Remaining Cost	Estimated Remaining Subtotals
Scarify & Recontour Perimeter Roads (11,000 meters)										
Grader	m	11,000	100	110	$ 139	$ 15,261		0%	$ 15,261	
Dozer (25% of total)	m	2,750	50	55	$ 321	$ 17,661		0%	$ 17,661	
Backhoe (25% of total)	m	2,750	50	55	$ 323	$ 17,752		0%	$ 17,752	
Front end loader (25% of total)	m	2,750	50	55	$ 275	$ 15,149		0%	$ 15,149	
Subtotal							$ 65,824			$ 65,824
Removal of Main Haul Road Side Berms (8,000 meters)										
Length	m	8,000								
Height	m	3.0								
Base	m	4.2								
Total Volume	m^3	50,400								
Adjusted Volume (10% of berms remain to prevent highwall ac	m^3	45,360								
FEL (10% of adjusted volume)	m^3	4,536	300	15	$ 275	$ 4,132		100%	$ -	
Backhoe (80% of adjusted volume)	m^3	36,288	200	181	$ 323	$ 58,421		100%	$ -	
Dozer (30% of adjusted volume)	m^3	13,608	100	136	$ 321	$ 43,672		100%	$ -	
Haul (25% of adjusted volume)	m^3	11,340	150	76	$ 205	$ 15,552		100%	$ -	
Subtotal							$ 121,776			$ -
General Recontour of Haulroad Slopes (90% of existing haulroads)										
(10% of existing slopes remain same above pit walls)										
length	m	7,200								
depth (6 m @ 2H : 1V)	m^2	11								
Volume	m^3	79,200								
Consists of sloping top 6 meters back to haul road at 2H:1V										
Backhoe (100% of total length)	m^3	79,200	200	396	$ 323	$ 127,816		100%	$ -	
Haul (25% of total material)	m^3	19,800	150	132	$ 205	$ 27,011		100%	$ -	
Dozer (75% of total)	m^3	59,400	307	193	$ 321	$ 61,976		100%	$ -	
Broadcast Seed and Fertilizer (4000 ft @ 13.4 meters of slope	hectares	5.40			$ 1,000	$ 5,400		100%	$ -	
Hydroseed (4000 ft @ 13.4 meters of slope)	hectares	5.40			$ 5,000	$ 27,000		100%	$ -	
Subtotal							$ 249,202			$ -

Table 6

Haul Road and Perimeter Access Road Reclamation

Note: This table corresponds to Table 7-6 in "Volume IV".

Area and Task Description	Unit of Reclamation Measure	Estimated # of Units	Production Rate	Estimated Hours	Unit Cost	Estimated Task Cost		Percentage Complete Sept. 2011	Estimated Remaining Cost	Estimated Remaining Subtotals
Upper Lucky Creek Crossing										
Volume of material overlaying riprap	m^3									
Volume of material to bring both slopes to 2H:1V with channel	m^3									
Material volume subtotal	m^3	10,864								
Total riprap in channel	m^3	1,420								
100% of riprap currently in place	m^3									
Material overlaying riprap and side slopes										
Backhoe (100% of adjsuted volume)	m^3	10,864	300	36	$ 323	$ 11,620		100%	$ -	
Haultrucks (50% of adjusted volume)	m^3	5,432	150	36	$ 205	$ 7,367		100%	$ -	
Dozer Assist (100% of adjusted volume)	m^3	10,864	300	36	$ 321	$ 11,560		100%	$ -	
Place riprap										
Backhoe	m^3	-	100	0	$ 321	$ -				
Subtotal							$ 30,546			$ -
Six Culverts on Main Haul Road										
Excavation to remove culverts and establish drainage channel (6 culverts)	m^3	59,450								
Backhoe (100% of adjusted volume)	m^3	59,450	200	297	$ 323	$ 95,862		100%	$ -	
Haul trucks (50% of adjusted volume)	m^3	29,725	100	297	$ 205	$ 60,774		100%	$ -	
Dozer (100% of adjusted volume)	m^3	59,450	300	198	$ 321	$ 63,581		100%	$ -	
Load, Haul & Place riprap	m^3	3,200								
Make riprap	m^3	3,200	17.5	183	$ 100	$ 18,300		100%	$ -	
FEL	m^3	3,200	200	16	$ 275	$ 4,407		100%	$ -	
Haul trucks	m^3	3,200	100	32	$ 205	$ 6,548		100%	$ -	
Backhoe	m^3	3,200	100	32	$ 321	$ 10,276		100%	$ -	
Subtotal							$ 259,748			$ -
Total Estimated Cost of Reclaiming Haul and Perimeter Roads							**$ 727,098**			**$ 65,824**

Table 7

Site Facilities Removal and Reclamation

Note: This table corresponds to Table 7-7 in "Volume IV".

Area and Task Description	Estimated Hours	Unit Rate	Estimated Cost		Percent Complete	Subtotal Liability	Total Liability
Building Dismantling and Salvaging							
Accommodation Camp - Prefabricated Modular Trailer Units							
These units have been sold "as is where is" and are being prepared by buyer							
General cleanup of site	0	$ 30	$ -	complete	100%	$ -	
Subtotal				$ -			$ -
Administration Office Complex							
These units have been sold "as is where is" and are being prepared by buyer							
General cleanup of site	0	$ 30	$ -	complete	0%	$ -	
Subtotal				$ -			$ -
Engineering Office Complex							
These units have been sold "as is where is" and are being prepared by buyer							
General cleanup of site	0	$ 30	$ -	complete	0%	$ -	
Subtotal				$ -			$ -
Environmental Trailer							
This unit has been sold "as is where is" and has left the property							
General cleanup of site	0	$ 30	$ -	complete	0%	$ -	
Subtotal				$ -			$ -
Warehouse & Maintenance Shop Building (Steel Frame Building on Concrete Slab)							
Remove hazardous materials	96	$ 30	$ 2,880		50%	$ 1,440	
Remove salvageable materials and fittings	240	$ 30	$ 7,200		50%	$ 3,600	
Remove and dispose of steel roof & wall panelling & insulation	480	$ 38	$ 18,240		50%	$ 9,120	
Disassemble steel frame of building	480	$ 38	$ 18,240		50%	$ 9,120	
Disassemble interior steel framing	240	$ 38	$ 9,120		50%	$ 4,560	
Disconnect service piping and electrical cabling	120	$ 38	$ 4,560		50%	$ 2,280	
Remove scrap to landfill	192	$ 38	$ 7,296		50%	$ 3,648	
Prepare salvaged steel for shipment	72	$ 38	$ 2,736		50%	$ 1,368	
Freight to ship building	lot		$ 15,000		50%	$ 7,500	
Crane support	144	$ 100	$ 14,400		50%	$ 7,200	
General cleanup of site	24	$ 30	$ 720		0%	$ 720	
Haul and place soil cover over slab (m^3)	1100	$ 2.25	$ 2,475		0%	$ 2,475	
Subtotal				$ 102,867			$ 53,031
Surface Shop - Atco Fold Away - 12.2 m long x 9.1 m wide on concrete slab							
Remove hazardous materials	12	$ 30	$ 360		100%	$ -	
Remove salvageable materials and fittings	48	$ 30	$ 1,440		100%	$ -	
Disassemble steel frame of building	192	$ 38	$ 7,296		100%	$ -	
Disconnect service piping and electrical cabling	48	$ 38	$ 1,824		100%	$ -	
Remove scrap to landfill	24	$ 30	$ 720		100%	$ -	
Freight to ship building	lot		$ 5,000		100%	$ -	
Crane support	48	$ 100	$ 4,800		100%	$ -	
General cleanup of site	12	$ 30	$ 360		100%	$ -	
Haul and place soil cover over slab (m^3)	150	$ 2.25	$ 338		100%	$ -	
Subtotal				$ 22,138			$ -

Table 7

Site Facilities Removal and Reclamation

Note: This table corresponds to Table 7-7 in "Volume IV".

Area and Task Description	Estimated Hours	Unit Rate	Estimated Cost		Percent Complete	Subtotal Liability	Total Liability
Camp Potable Water Tank - 455 m3 steel tank							
Drain tank & disconnect piping	24	$ 30	$ 720		100%	$ -	
Disconnect steel tank	192	$ 38	$ 7,296		100%	$ -	
Haul scrap steel to landfill	24	$ 30	$ 720		100%	$ -	
Haul and place soil over foundation (m3)	100	$ 2.25	$ 225		100%	$ -	
Subtotal				$ 8,961			$ -
Exploration Office & Core Logging Facility - Wood Frame & Truss Building - 9.8m wide x 12.5 m long							
Remove hazardous materials	6	$ 30	$ 180		100%	$ -	
Remove salvageable materials and fittings	48	$ 30	$ 1,440		100%	$ -	
Disassemble wood frame of building	192	$ 30	$ 5,760		100%	$ -	
Disconnect service piping and electrical cabling	24	$ 38	$ 912		100%	$ -	
Remove scrap to landfill	24	$ 30	$ 720		100%	$ -	
General cleanup of site	12	$ 30	$ 360		100%	$ -	
Subtotal				$ 9,372			$ -
Exploration Office Shipping Containers - Two 6.1 m shipping containers with wood roof cover							
Remove salvageable materials and fittings	0	$ 30	$ -	complete	100%	$ -	
Disassemble wood frame of roof cover	0	$ 30	$ -	complete	100%	$ -	
Load and ship two containers off site	0	$ 38	$ -	complete	100%	$ -	
Freight cost to ship containers off site	0			complete	100%	$ -	
General cleanup of site	12	$ 30	$ 360		100%	$ -	
Subtotal				$ 360			$ -
ADR Plant Building - Engineered Steel Frame Building - 70 m long x 21 m wide							
Remove hazardous materials & clean plant interior	96	$ 30	$ 2,880		100%	$ -	
Remove salvageable materials, equipment & fittings	480	$ 30	$ 14,400		100%	$ -	
Remove and dispose of steel roof & wall panelling & insulation	480	$ 38	$ 18,240		100%	$ -	
Disassemble steel frame of building	384	$ 38	$ 14,592		100%	$ -	
Disassemble interior steel framing	240	$ 38	$ 9,120		100%	$ -	
Disconnect service piping and electrical cabling	240	$ 38	$ 9,120		100%	$ -	
Remove scrap to landfill	192	$ 30	$ 5,760		100%	$ -	
Prepare salvaged steel for shipment	72	$ 30	$ 2,160		100%	$ -	
Freight to ship building	lot		$ 20,000		100%	$ -	
Crane support	192	$ 100	$ 19,200		100%	$ -	
General cleanup of site	24	$ 30	$ 720		100%	$ -	
Haul and place soil cover over slab (m^3)	1875	$ 2.25	$ 4,219		100%	$ -	
Revegetation - 75m x 25m	1875	$ 0.50	$ 938		100%	$ -	
Subtotal				$ 121,348			$ -

Table 7

Site Facilities Removal and Reclamation

Note: This table corresponds to Table 7-7 in "Volume IV".

Area and Task Description	Estimated Hours	Unit Rate	Estimated Cost		Percent Complete	Subtotal Liability	Total Liability
Assay Lab Building - Engineered Steel Frame Building - 29.3 m long x 8.5 m wide							
Remove hazardous materials & clean lab interior	48	$ 30	$ 1,440		100%	$ -	
Remove salvageable materials, equipment & fittings	240	$ 30	$ 7,200		100%	$ -	
Remove and dispose of steel roof & wall panelling & insulation	144	$ 38	$ 5,472		100%	$ -	
Disassemble steel frame of building	144	$ 38	$ 5,472		100%	$ -	
Disconnect service piping and electrical cabling	48	$ 38	$ 1,824		100%	$ -	
Remove scrap to landfill	96	$ 30	$ 2,880		100%	$ -	
Prepare salvaged steel for shipment	24	$ 38	$ 912		100%	$ -	
Freight to ship building	lot		$ 10,000		100%	$ -	
Crane support	48	$ 100	$ 4,800		100%	$ -	
General cleanup of site	24	$ 30	$ 720		100%	$ -	
Haul and place soil cover over slab (m^3)	300	$ 2.25	$ 675		100%	$ -	
Revegetation - 30m x 10m	300	$ 0.50	$ 150		100%	$ -	
Subtotal				$ 41,545			$ -
Heap Leach Valve Houses - 7 Modular Steel Frame Buildings each 3.4 m x 3.7 m							
Remove salvageable materials, equipment & fittings	96	$ 30	$ 2,880		100%	$ -	
Remove and dispose of steel roof & wall panelling & insulation	120	$ 30	$ 3,600		100%	$ -	
Disassemble steel frame of building	120	$ 38	$ 4,560		100%	$ -	
Disconnect service piping and electrical cabling	96	$ 38	$ 3,648		100%	$ -	
Remove scrap to landfill	96	$ 30	$ 2,880		100%	$ -	
Crane support	48	$ 100	$ 4,800		100%	$ -	
General cleanup of site	24	$ 30	$ 720		100%	$ -	
Subtotal				$ 23,088			$ -
Lime Silo - Bolted Steel Tank - 36 m high x 10 m diameter							
Remove salvageable materials, equipment & fittings	96	$ 30	$ 2,880		100%	$ -	
Disassemble bolted steel silo	192	$ 38	$ 7,296		100%	$ -	
Disconnect and remove service piping and electrical cabling	48	$ 38	$ 1,824		100%	$ -	
Remove scrap to landfill	24	$ 30	$ 720		100%	$ -	
Crane support	48	$ 100	$ 4,800		100%	$ -	
General cleanup of site	12	$ 30	$ 360		100%	$ -	
Haul and place soil cover over slab (m^3)	200	$ 2.25	$ 450		100%	$ -	
Revegetation (m^2)	200	$ 0.50	$ 100		100%	$ -	
Subtotal				$ 18,430			$ -
ADR Plant Fresh Water Tank - Steel Welded Tank - 637 m3 Capacity							
Drain tank and disconnect piping	24	$ 38	$ 912		100%	$ -	
Disassemble steel tank	192	$ 38	$ 7,296		100%	$ -	
Haul scrap steel to land fill	24	$ 30	$ 720		100%	$ -	
Haul and place soil cover over slab (m3)	50	$ 2.25	$ 113		100%	$ -	
Revegetation (m2)	50	$ 0.50	$ 25		100%	$ -	
Subtotal				$ 9,066			$ -

Table 7

Site Facilities Removal and Reclamation

Note: This table corresponds to Table 7-7 in "Volume IV".

Area and Task Description	Estimated Hours	Unit Rate	Estimated Cost		Percent Complete	Subtotal Liability	Total Liability
Laura Creek Pumphouse - Steel Frame Building							
Remove salvageable materials, equipment & fittings	96	$ 30	$ 2,880		100%	$ -	
Remove and dispose of steel roof & wall panelling & insulation	96	$ 38	$ 3,648		100%	$ -	
Disassemble steel frame of building	48	$ 38	$ 1,824		100%	$ -	
Disconnect and remove service piping and electrical cabling	48	$ 38	$ 1,824		100%	$ -	
Remove scrap to landfill	48	$ 30	$ 1,440		100%	$ -	
Crane support	24	$ 100	$ 2,400		100%	$ -	
General cleanup of site	24	$ 30	$ 720		100%	$ -	
Haul and place soil cover over slab (m3)	50	$ 2.25	$ 113		100%	$ -	
Revegetation (m2)	50	$ 0.50	$ 25		100%	$ -	
Subtotal				$ 14,874			$ -
Electrical Distribution System							
Remove above ground electrical distribution cabling	240	$ 38	$ 9,120		100%	$ -	
Remove electrical transformers and switch gear	240	$ 38	$ 9,120		100%	$ -	
Subtotal				$ 18,240			$ -
Surface Piping							
Flush surface piping	96	$ 30	$ 2,880		100%	$ -	
Disassemble and remove surface piping	480	$ 30	$ 14,400		100%	$ -	
Dozer/FEL support	60	$ 150	$ 9,000		100%	$ -	
Subtotal				$ 26,280			$ -
Removal of Site Fencing Around Heap Leach Facilities							
Removal and disposal of fencing	336	$ 30	$ 10,080		100%	$ -	
Subtotal				$ 10,080			$ -
Removal of Land Application Piping System							
Removal and disposal of land application piping	160	$ 30	$ 4,800		100%	$ -	
Subtotal				$ 4,800			$ -
General Site Regrading/ Growth Media Placement/Runoff and Erosion Control							
Regrading of general site with grader	52	$ 123	$ 6,396		100%	$ -	
Survey of underground cable terminations	1	$ 1,000	$ 1,000		100%	$ -	
Haul and place soil cover over surface (0.15 meter)	7800	$ 2.25	$ 17,550		100%	$ -	
Revegetation (hectares)	5.18	$ 1,000	$ 5,180		100%	$ -	
Removal of culverts and resloping of culvert crossings	lot	$ 2,500	$ 17,500		100%	$ -	
Runoff ditch maintenance and rock armouring	lot	$ 50	$ 12,500		100%	$ -	
Removal of wash bay sediment control pond	lot	$ 500	$ 500		100%	$ -	
Subtotal				$ 60,626			$ -

Table 7

Site Facilities Removal and Reclamation

Note: This table corresponds to Table 7-7 in "Volume IV".

Area and Task Description	Estimated Hours	Unit Rate	Estimated Cost		Percent Complete	Subtotal Liability	Total Liability
Fuel and Reagent Storage Facilities							
Bulk Diesel Fuel Storage Tanks at Maintenance Shop Facility							
Drain and remove remaining fuel inventory to ADR facility	lot	$ 750	$ 750		100%	$ -	
Disassemble storage tanks	192	$ 38	$ 7,296		100%	$ -	
Remove fueling equipment and steel platforms	96	$ 38	$ 3,648		100%	$ -	
Crane support	72	$ 100	$ 7,200		100%	$ -	
Clean out concrete containment berm	24	$ 30	$ 720		100%	$ -	
Dispose of oil residue	lot	$ 1,000	$ 1,000		100%	$ -	
Remove concrete containment berm to landfill	12	$ 110	$ 1,320		100%	$ -	
Haul and place soil over foundation (m^3)	50	$ 2.25	$ 113		100%	$ -	
Revegetation (m^2)	50	$ 0.50	$ 25		100%	$ -	
Subtotal				$ 22,072			$ -
Bulk Diesel Fuel Storage Tanks at ADR Plant Facility							
Drain and remove remaining fuel inventory	lot	$ 1,000	$ 1,000		100%	$ -	
Disassemble storage tanks	192	$ 38	$ 7,296		100%	$ -	
Remove fueling equipment and steel platforms	48	$ 38	$ 1,824		100%	$ -	
Crane support	72	$ 100	$ 7,200		100%	$ -	
Clean out concrete containment berm	24	$ 30	$ 720		100%	$ -	
Dispose of oil residue	lot	$ 1,000	$ 1,000		100%	$ -	
Remove concrete containment berm to landfill	12	$ 110	$ 1,320		100%	$ -	
Haul and place soil over foundation (m^3)	50	$ 2.25	$ 113		100%	$ -	
Revegetation (m^2)	50	$ 0.30	$ 15		100%	$ -	
Subtotal				$ 20,488			$ -
Shipment of Remaining Inventory of Other Hydrocarbon Products	lot	$ 3,500	$ 7,000		100%	$ -	
Subtotal				$ 7,000			$ -
Shipment of Remaining Inventory of Reagents, Chemicals and Wastes							
70 pallets of remaining pond sludges	70	$ 500	$ 35,000		100%	$ -	
Subtotal				$ 35,000			$ -
Land Farming of Hydrocarbon Contaminated Soils							
Grader to turn over soils	52	$ 85	$ 4,420		100%	$ -	
Analysis	lot	$ 100	$ 2,600		100%	$ -	
Ammonium Nitrate or other fertilizer	lot	$ 50	$ 100		100%	$ -	
Subtotal				$ 7,120			$ -
Close Out of Site Sewage Septic Systems - 3 Systems							
Pump out sludge holding tanks and transport to sludge trench	lot	$ 250	$ 750		100%	$ -	
Excavate and remove three septic tanks to landfill	lot	$ 500	$ 1,500		100%	$ -	
Bury sewage sludge trench	lot	$ 1,000	$ 1,000		100%	$ -	
Subtotal				$ 3,250			$ -

Table 7

Site Facilities Removal and Reclamation

Note: This table corresponds to Table 7-7 in "Volume IV".

Area and Task Description	Estimated Hours	Unit Rate	Estimated Cost		Percent Complete	Subtotal Liability	Total Liability
Cleanup Site Boneyard							
Decontaminate scrapped equipment in boneyard	lot	$ 500	$ 500		100%	$ -	
Remove non-salvageable scrap to landfill	lot	$ 2,500	$ 2,500		100%	$ -	
Subtotal				$ 3,000			$ -
Close Out Site Landfill Area							
Clean up landfill with dozer	10	$ 327	$ 3,270		100%	$ -	
Load silt into trucks with FEL	4	$ 293	$ 1,172		100%	$ -	
Haul in silt for cover	8	$ 345	$ 2,760		100%	$ -	
Spread silt with dozer	4	$ 327	$ 1,308		100%	$ -	
Compact silt	4	$ 77	$ 308		100%	$ -	
Growth Media Placement (FEL @4 hrs., Haul Trucks @ 8 hrs., Dozer @ 4 hrs.)	lot		$ 3,108		100%	$ -	
Revegetate cover	1000	$ 0.50	$ 500		100%	$ -	
Subtotal				$ 12,426			$ -
Close Out Pond Areas							
Mobilization of D9	lot	$ 2,000	$ 2,000		100%	$ -	
Cut and fold over liners	lot	$ 5,000	$ 5,000		100%	$ -	
Cut outflow from lowest pond	20	$ 323	$ 6,455		100%	$ -	
Regrade with dozer	50	$ 323	$ 16,138		100%	$ -	
Revegetate area (m2)	lot	$ 5,000.00	$ 5,000		100%	$ -	
Subtotal				$ 34,594			$ -
Contaminated Soil Survey							
Field and lab testing	lot	$ 15,000	$ 15,000		100%	$ -	
Subtotal				$ 15,000			$ -
Total Estimated Cost of Reclaiming Ancillary and Support Facilities				**$ 652,022**			**$ 53,031**

Table 8

Heap Leach Pad Reclamation

Area and Task Description	Unit of Reclamation Measure	Estimated # of Units	Production Rate	Estimated Hours	Unit Cost	Estimated Task Cost		Percentage Complete Sept. 2006	Estimated Remaining Cost	Estimated Remaining Subtotals
Leach Pad Resloping and Drainage Ditches										
Dozer cut to fill slopes	m^3	20,000	307	65	$ 393	$ 25,577		100%	$ -	
General recontour prior to cap placement	lot			50	$ 393	$ 19,675		100%	$ -	
Dozer work to construct drainage ditches	lot				$ 393	$ -				
Backhoe work to construct ditches	lot			20	$ 321	$ 6,424		100%	$ -	
Place riprap/gravel in channels/ditches	m^3									
Load material	m^3		200	0	$ 322	$ -				
Haul material	m^3		100	0	$ 304	$ -				
Spread material	m^3		200	0	$ 321	$ -				
Breach leach pad dike material	m3	3,250	50	65	$ 194	$ 12,610		100%	$ -	
Place riprap/gravel in dike breach	m3	500			$ 5	$ 2,500		100%	$ -	
Subtotal							$ 66,786			$ -
Leach Pad Soil Cover Construction										
Total area requiring seds/silt cap	m^2	-								
Load seds/silt with front end loader	m^3		389	0	$ 322	$ -				
Haul seds/silt with haultrucks	m^3	-	195	0	$ 304	$ -				
Spread seds/silt with dozer	m^3		389	0	$ 393	$ -				
Compact seds/silt with roller	m^2				$ 111	$ -				
Subtotal							$ -			$ -
Leach Pad Revegetation										
Total area to be reseeded (sloped surface area)	m^2	323,000								
Load growth media with FEL (100% of area, 0.25 m)	m^3	80,750	389	208	$ 322	$ 67,006		100%	$ -	
Haul growth media	m^3	80,750	130	621	$ 304	$ 188,604		100%	$ -	
Spread growth media	m^3	80,750	389	208	$ 393	$ 81,847		100%	$ -	
Broadcast seed and fertilizer	hectares	32.3			$ 750	$ 24,225		100%	$ -	
Subtotal							$ 361,683			$ -
Previously Projected Cells 8 -10 (Northeast of Leach Pad)										
Dozer work to recontour surface area	m^2	30,000	600	50	$ 393	$ 19,675		100%	$ -	
Total area to be reseeded	m^2	172,800								
Load growth media with front end loader	m^3	-	389	0	$ 322	$ -		100%	$ -	
Haul growth media with haultrucks	m^3	-	130	0	$ 304	$ -		100%	$ -	
Spread growth media with dozer	m^3	25,800	200	129	$ 323	$ 41,637		100%	$ -	
Broadcast seed and fertilizer	hectares	17.3			$ 400	$ 6,912		100%	$ -	
Subtotal							$ 99,920			$ -
2005-6 Reclamation Repairs										
2005 Erosion Repairs (10%)	m^2	49,580								
Erosion repairs with dozer	m^3	24,790	300	83	$ 322	$ 26,738		100%	$ -	
2005 Re-Seeding (25%)	m^2	123,950								
Broadcast seed and fertilizer	hectare	12.40			$ 400	$ 4,958		100%	$ -	
							$ 31,696			$ -
Total Leach Pad Earthworks							**$ 560,085**			**$ -**

Note: This table corresponds to Table 7-8 in "Volume IV".

Table 9
Manpower

	$/Annum	2003	2006	2007	2008	2009	2011
Staff							
Site Manager	$ 125,000		$ 5,000	$ 5,000	$ 5,000	$ -	$ -
Administrative Manager	$ 75,000	$ -					
Process Manager/Engineer	$ 65,000		$ -	$ -	$ -	$ -	$ -
Accounts Payable	$ 35,000						
Environmental Manager	$ 75,000						
Reclamation Supervision	$ 50,000						
Mine Technician	$ 40,000						
Lab Technician	$ 40,000						
Surface Operator	$ 45,000		$ 11,250	$ 11,250	$ 14,400	$ -	$ -
Process Operators	$ 50,000						
Mechanic	$ 50,000		$ 12,500	$ 12,500	$ -	$ -	$ -
Electrician	$ 55,000						
Equipment Operator	$ 45,000		$ 22,500	$ 22,500			
Laborer	$ 35,000		$ 17,500	$ 17,500			
Salary Load	35%	$ -	$ 24,063	$ 24,063	$ 6,790	$ -	$ -
Total Manpower		$ -	$ 92,813	$ 92,813	$ 26,190	$ -	$ -

Note: This table corresponds to Table 7-10 in "Volume IV".

Table 10
General Services & Administration

Category	Area Total	Aug-04 29	Sep-04 30	Oct-04 31	Nov-04 32	Dec-04 33
General Services & Administration						
Miscellaneous Operating Supplies	$ -					
Insurance	$ 5,000			$ 5,000		
Freight	$ 3,000			$ 1,000	$ 1,000	$ 1,000
Propane	$ -					
Water Supply	$ -					
Access Road Maintenance	$ 4,246			$ 1,415	$ 1,415	$ 1,415
General Site Grounds	$ 6,357			$ 2,119	$ 2,119	$ 2,119
Waste Disposal	$ -					
Light Vehicle Costs	$ 2,689			$ 896	$ 896	$ 896
Travel & Lodging	$ 4,500			$ 1,500	$ 1,500	$ 1,500
Tele,Fax,Internet,Radio,Satellite	$ 4,500			$ 1,500	$ 1,500	$ 1,500
Office Equipment/Lease Rent	$ 3,000			$ 1,000	$ 1,000	$ 1,000
Building Maintenance	$ 1,500			$ 500	$ 500	$ 500
Safety Supplies	$ -					
Office Supplies	$ -					
Crew Rotations & Transportation	$ -					
Staff Housing	$ -					
Crew Mobilization	$ -					
Camp Operations	$ -					
CS - Technical Consultants	$ 4,500			$ 1,500	$ 1,500	$ 1,500
CS - Legal	$ 3,000			$ 1,000	$ 1,000	$ 1,000
Environmental Monitoring	$ -					
Geotechnical Inspections	$ -					
Electrical Power	$ 2,335			$ 2,335		
Total G & A	$ 44,626	$ -	$ -	$ 19,765	$ 12,431	$ 12,431

Annual totals	$ 44,626

Note: This table corresponds to Table 7-11 in "Volume IV".

Table 11

General Services & Administration for Contingency Cases where Land Application or BTC is operating

Category	Area Total	Apr-02 1	Dec-04 33	Jan-05 34	Feb-05 35	Mar-05 36	Apr-05 37	May-05 38	Jun-05 39	Jul-05 40	Aug-05 41	Sep-05 42	Oct-05 43	Nov-05 44	Dec-05 45
General Services & Administration															
Miscellaneous Operating Supplies	$ -														
Insurance	$ -														
Freight	$ 5,000							$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000			
Propane	$ -														
Water Supply	$ 8,000							$ 1,600	$ 1,600	$ 1,600	$ 1,600	$ 1,600			
Access Road Maintenance	$ 9,093						$ 600	$ 1,415	$ 1,415	$ 1,415	$ 1,415	$ 1,415	$ 1,415		
General Site Grounds	$ -														
Waste Disposal	$ 800											$ 800			
Light Vehicle Costs	$ 8,250			$ 750	$ 750	$ 750	$ 750	$ 750	$ 750	$ 750	$ 750	$ 750	$ 750	$ 750	
Travel & Lodging	$ -														
Tele,Fax,Internet,Radio,Satellite	$ -														
Office Equipment/Lease Rent	$ -														
Building Maintenance	$ -														
Safety Supplies	$ 2,750						$ 250	$ 500	$ 500	$ 500	$ 500	$ 500			
Office Supplies	$ -														
Crew Rotations & Transportation	$ -														
Staff Housing	$ 10,000							$ 2,000	$ 2,000	$ 2,000	$ 2,000	$ 2,000			
Crew Mobilization	$ 2,500						$ 2,500								
Camp Operations	$ -														
CS - Technical Consultants	$ -														
CS - Legal	$ -														
Environmental Monitoring	$ -														
Geotechnical Inspections	$ -														
Electrical Power	$ 16,343	$ -					$ 2,335	$ 2,335	$ 2,335	$ 2,335	$ 2,335	$ 2,335	$ 2,335		
Labour															
Shipper/Receiver/Accountant	$ 35,438						$ 5,063	$ 5,063	$ 5,063	$ 5,063	$ 5,063	$ 5,063	$ 5,063		
Process Operator/Technician	$ 31,500						$ 4,500	$ 4,500	$ 4,500	$ 4,500	$ 4,500	$ 4,500	$ 4,500		
Contract Maintenance	$ 7,000						$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000		
	$ 136,673														
Total G & A	$ 136,673	$ -	$ -	$ 750	$ 750	$ 750	$ 16,997	$ 20,163	$ 20,163	$ 20,163	$ 20,163	$ 20,963	$ 15,063	$ 750	$ -

Note: This table corresponds to Table 7-11B in "Volume IV".

Table 12
Post Closure Monitoring & Maintenance

Category	Area Total
Post Closure Monitoring & Maintenance	
Revegetation Inspections	$ 11,000
Reclamation Maintenance	$ -
Annual Geotechnical Inspections	$ 7,000
Environmental Studies	$ -
Long Term Nutrients BTC/IG	$ -
Contract Services Labor	$ 43,500
Lab Analysis	$ 171,564
Support Equipment (Helicopter)	$ 19,256
Laura Creek AMP	$ -
Blue Dump	$ -
Monthly & Annual Reports	$ 61,200
Total Monitoring & Maintenance	$ 313,520

Annual totals	$ 313,520

Note: This table corresponds to Table 7-14 in "Volume IV".

Table 12

Post Closure Monitoring & Maintenar

Category	Jan 2012	Feb 2012	Mar 2012	Apr 2012	May 2012	Jun 2012	Jul 2012	Aug 2012	Sep 2012	Oct 2012	Nov 2012	Dec 2012
Post Closure Monitoring & Maintenance												
Revegetation Inspections	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 5,500	$ -	$ -	$ -	$ -
Reclamation Maintenance	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Annual Geotechnical Inspections	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,500	$ -	$ -	$ -	$ -
Environmental Studies	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Long Term Nutrients BTC/IG	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Contract Services Labor	$ 375	$ 375	$ 375	$ 375	$ 375	$ 375	$ 375	$ 375	$ 375	$ 375	$ 375	$ 375
Lab Analysis	$ 1,479	$ 1,479	$ 1,479	$ 1,479	$ 1,479	$ 1,479	$ 1,479	$ 1,479	$ 1,479	$ 1,479	$ 1,479	$ 1,479
Support Equipment (Helicopter)	$ 166	$ 166	$ 166	$ 166	$ 166	$ 166	$ 166	$ 166	$ 166	$ 166	$ 166	$ 166
Laura Creek AMP												
Blue Dump												
Monthly & Annual Reports	$ 200	$ 4,000	$ 200	$ 200	$ 200	$ 200	$ 200	$ 200	$ 200	$ 200	$ 200	$ 200
Total Monitoring & Maintenance	$ 2,220	$ 6,020	$ 2,220	$ 2,220	$ 2,220	$ 2,220	$ 2,220	$ 11,220	$ 2,220	$ 2,220	$ 2,220	$ 2,220

Annual totals 39440

Note: This table corresponds to Table 7-14 in "Volu

Table 12
Post Closure Monitoring & Maintenar

Category	Jan 2013	Feb 2013	Mar 2013	Apr 2013	May 2013	Jun 2013	Jul 2013	Aug 2013	Sep 2013	Oct 2013	Nov 2013	Dec 2013
Post Closure Monitoring & Maintenance												
Revegetation Inspections	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Reclamation Maintenance	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Annual Geotechnical Inspections	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Environmental Studies	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Long Term Nutrients BTC/IG	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Contract Services Labor	$ 375	$ 375	$ 375	$ 375	$ 375	$ 375	$ 375	$ 375	$ 375	$ 375	$ 375	$ 375
Lab Analysis	$ 1,479	$ 1,479	$ 1,479	$ 1,479	$ 1,479	$ 1,479	$ 1,479	$ 1,479	$ 1,479	$ 1,479	$ 1,479	$ 1,479
Support Equipment (Helicopter)	$ 166	$ 166	$ 166	$ 166	$ 166	$ 166	$ 166	$ 166	$ 166	$ 166	$ 166	$ 166
Laura Creek AMP												
Blue Dump												
Monthly & Annual Reports	$ 200	$ 4,000	$ 200	$ 200	$ 200	$ 200	$ 200	$ 200	$ 200	$ 200	$ 200	$ 200
Total Monitoring & Maintenance	$ 2,220	$ 6,020	$ 2,220	$ 2,220	$ 2,220	$ 2,220	$ 2,220	$ 2,220	$ 2,220	$ 2,220	$ 2,220	$ 2,220

Annual totals 30440

Note: This table corresponds to Table 7-14 in "Volu

Table 12

Post Closure Monitoring & Maintenar

Category	Jan 2014	Feb 2014	Mar 2014	Apr 2014	May 2014	Jun 2014	Jul 2014	Aug 2014	Sep 2014	Oct 2014	Nov 2014	Dec 2014
Post Closure Monitoring & Maintenance												
Revegetation Inspections	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Reclamation Maintenance	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Annual Geotechnical Inspections	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Environmental Studies	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Long Term Nutrients BTC/IG	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Contract Services Labor	$ 375	$ 375	$ 375	$ 375	$ 375	$ 375	$ 375	$ 375	$ 375	$ 375	$ 375	$ 375
Lab Analysis	$ 1,479	$ 1,479	$ 1,479	$ 1,479	$ 1,479	$ 1,479	$ 1,479	$ 1,479	$ 1,479	$ 1,479	$ 1,479	$ 1,479
Support Equipment (Helicopter)	$ 166	$ 166	$ 166	$ 166	$ 166	$ 166	$ 166	$ 166	$ 166	$ 166	$ 166	$ 166
Laura Creek AMP												
Blue Dump												
Monthly & Annual Reports	$ 200	$ 4,000	$ 200	$ 200	$ 200	$ 200	$ 200	$ 200	$ 200	$ 200	$ 200	$ 200
Total Monitoring & Maintenance	$ 2,220	$ 6,020	$ 2,220	$ 2,220	$ 2,220	$ 2,220	$ 2,220	$ 2,220	$ 2,220	$ 2,220	$ 2,220	$ 2,220

Annual totals 30440

Note: This table corresponds to Table 7-14 in "Volu

Table 12
Post Closure Monitoring & Maintenar

Category	Jan 2015	Feb 2015	Mar 2015	Apr 2015	May 2015	Jun 2015	Jul 2015	Aug 2015	Sep 2015	Oct 2015	Nov 2015	Dec 2015
Post Closure Monitoring & Maintenance												
Revegetation Inspections	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 5,500	$ -	$ -	$ -	$ -
Reclamation Maintenance	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Annual Geotechnical Inspections	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,500	$ -	$ -	$ -	$ -
Environmental Studies	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Long Term Nutrients BTC/IG	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Contract Services Labor	$ 375	$ 375	$ 375	$ 375	$ 375	$ 375	$ 375	$ 375	$ 375	$ 375	$ 375	$ 375
Lab Analysis	$ 1,479	$ 1,479	$ 1,479	$ 1,479	$ 1,479	$ 1,479	$ 1,479	$ 1,479	$ 1,479	$ 1,479	$ 1,479	$ 1,479
Support Equipment (Helicopter)	$ 166	$ 166	$ 166	$ 166	$ 166	$ 166	$ 166	$ 166	$ 166	$ 166	$ 166	$ 166
Laura Creek AMP												
Blue Dump												
Monthly & Annual Reports	$ 200	$ 4,000	$ 200	$ 200	$ 200	$ 200	$ 200	$ 200	$ 200	$ 200	$ 200	$ 200
Total Monitoring & Maintenance	$ 2,220	$ 6,020	$ 2,220	$ 2,220	$ 2,220	$ 2,220	$ 2,220	$ 11,220	$ 2,220	$ 2,220	$ 2,220	$ 2,220

Annual totals 39440

Note: This table corresponds to Table 7-14 in "Volu

Table 12

Post Closure Monitoring & Maintenar

Category	Jan 2016	Feb 2016	Mar 2016	Apr 2016	May 2016	Jun 2016	Jul 2016	Aug 2016	Sep 2016	Oct 2016	Nov 2016	Dec 2016
Post Closure Monitoring & Maintenance												
Revegetation Inspections	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Reclamation Maintenance	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Annual Geotechnical Inspections	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Environmental Studies	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Long Term Nutrients BTC/IG	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Contract Services Labor	$ 375	$ 375	$ 375	$ 375	$ 375	$ 375	$ 375	$ 375	$ 375	$ 375	$ 375	$ 375
Lab Analysis	$ 1,479	$ 1,479	$ 1,479	$ 1,479	$ 1,479	$ 1,479	$ 1,479	$ 1,479	$ 1,479	$ 1,479	$ 1,479	$ 1,479
Support Equipment (Helicopter)	$ 166	$ 166	$ 166	$ 166	$ 166	$ 166	$ 166	$ 166	$ 166	$ 166	$ 166	$ 166
Laura Creek AMP												
Blue Dump												
Monthly & Annual Reports	$ 200	$ 4,000	$ 200	$ 200	$ 200	$ 200	$ 200	$ 200	$ 200	$ 200	$ 200	$ 200
Total Monitoring & Maintenance	$ 2,220	$ 6,020	$ 2,220	$ 2,220	$ 2,220	$ 2,220	$ 2,220	$ 2,220	$ 2,220	$ 2,220	$ 2,220	$ 2,220

Annual totals 30440

Note: This table corresponds to Table 7-14 in "Volu

Table 12

Post Closure Monitoring & Maintenar

Category	Jan 2017	Feb 2017	Mar 2017	Apr 2017	May 2017	Jun 2017	Jul 2017	Aug 2017	Sep 2017	Oct 2017	Nov 2017	Dec 2017
Post Closure Monitoring & Maintenance												
Revegetation Inspections	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Reclamation Maintenance	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Annual Geotechnical Inspections	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Environmental Studies	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Long Term Nutrients BTC/IG	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Contract Services Labor	$ 375	$ 375	$ 375	$ 375	$ 375	$ 375	$ 375	$ 375	$ 375	$ 375	$ 375	$ 375
Lab Analysis	$ 1,479	$ 1,479	$ 1,479	$ 1,479	$ 1,479	$ 1,479	$ 1,479	$ 1,479	$ 1,479	$ 1,479	$ 1,479	$ 1,479
Support Equipment (Helicopter)	$ 166	$ 166	$ 166	$ 166	$ 166	$ 166	$ 166	$ 166	$ 166	$ 166	$ 166	$ 166
Laura Creek AMP												
Blue Dump												
Monthly & Annual Reports	$ 200	$ 4,000	$ 200	$ 200	$ 200	$ 200	$ 200	$ 200	$ 200	$ 200	$ 200	$ 200
Total Monitoring & Maintenance	$ 2,220	$ 6,020	$ 2,220	$ 2,220	$ 2,220	$ 2,220	$ 2,220	$ 2,220	$ 2,220	$ 2,220	$ 2,220	$ 2,220

Annual totals 30440

Note: This table corresponds to Table 7-14 in "Volu

Table 12
Post Closure Monitoring & Maintenar

Category	Jan 2018	Feb 2018	Mar 2018	Apr 2018	May 2018	Jun 2018	Jul 2018	Aug 2018	Sep 2018	Oct 2018	Nov 2018	Dec 2018
Post Closure Monitoring & Maintenance												
Revegetation Inspections	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Reclamation Maintenance	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Annual Geotechnical Inspections	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Environmental Studies	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Long Term Nutrients BTC/IG	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Contract Services Labor	$ 375	$ 375	$ 375	$ 375	$ 375	$ 375	$ 375	$ 375	$ 375	$ 375	$ 375	$ 375
Lab Analysis	$ 1,479	$ 1,479	$ 1,479	$ 1,479	$ 1,479	$ 1,479	$ 1,479	$ 1,479	$ 1,479	$ 1,479	$ 1,479	$ 1,479
Support Equipment (Helicopter)	$ 166	$ 166	$ 166	$ 166	$ 166	$ 166	$ 166	$ 166	$ 166	$ 166	$ 166	$ 166
Laura Creek AMP												
Blue Dump												
Monthly & Annual Reports	$ 200	$ 4,000	$ 200	$ 200	$ 200	$ 200	$ 200	$ 200	$ 200	$ 200	$ 200	$ 200
Total Monitoring & Maintenance	$ 2,220	$ 6,020	$ 2,220	$ 2,220	$ 2,220	$ 2,220	$ 2,220	$ 2,220	$ 2,220	$ 2,220	$ 2,220	$ 2,220

Annual totals 30440

Note: This table corresponds to Table 7-14 in "Volu

Table 12

Post Closure Monitoring & Maintenar

Category	Jan 2019	Feb 2019	Mar 2019	Apr 2019	May 2019	Jun 2019	Jul 2019	Aug 2019	Sep 2019	Oct 2019	Nov 2019	Dec 2019
Post Closure Monitoring & Maintenance												
Revegetation Inspections	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Reclamation Maintenance	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Annual Geotechnical Inspections	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Environmental Studies	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Long Term Nutrients BTC/IG	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Contract Services Labor	$ 375	$ 375	$ 375	$ 375	$ 375	$ 375	$ 375	$ 375	$ 375	$ 375	$ 375	$ 375
Lab Analysis	$ 1,479	$ 1,479	$ 1,479	$ 1,479	$ 1,479	$ 1,479	$ 1,479	$ 1,479	$ 1,479	$ 1,479	$ 1,479	$ 1,479
Support Equipment (Helicopter)	$ 166	$ 166	$ 166	$ 166	$ 166	$ 166	$ 166	$ 166	$ 166	$ 166	$ 166	$ 166
Laura Creek AMP												
Blue Dump												
Monthly & Annual Reports	$ 200	$ 4,000	$ 200	$ 200	$ 200	$ 200	$ 200	$ 200	$ 200	$ 200	$ 200	$ 200
Total Monitoring & Maintenance	$ 2,220	$ 6,020	$ 2,220	$ 2,220	$ 2,220	$ 2,220	$ 2,220	$ 2,220	$ 2,220	$ 2,220	$ 2,220	$ 2,220

Annual totals 30440

Note: This table corresponds to Table 7-14 in "Volu

Table 12
Post Closure Monitoring & Maintenar

Category	Jan 2020	Feb 2020	Mar 2020	Apr 2020	May 2020	Jun 2020	Jul 2020	Aug 2020	Sep 2020	Oct 2020	Nov 2020	Dec 2020
Post Closure Monitoring & Maintenance												
Revegetation Inspections	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Reclamation Maintenance	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Annual Geotechnical Inspections	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Environmental Studies	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Long Term Nutrients BTC/IG	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Contract Services Labor	$ 375	$ 375	$ 375	$ 375	$ 375	$ 375	$ 375	$ 375	$ 375	$ 375	$ 375	$ 375
Lab Analysis	$ 1,479	$ 1,479	$ 1,479	$ 1,479	$1,479	$1,479	$1,479	$1,479	$1,479	$1,479	$1,479	$1,479
Support Equipment (Helicopter)	$ 166	$ 166	$ 166	$ 166	$ 166	$ 166	$ 166	$ 166	$ 166	$ 166	$ 166	$ 166
Laura Creek AMP												
Blue Dump												
Monthly & Annual Reports	$ 200	$ 4,000	$ 200	$ 200	$ 200	$ 200	$ 200	$ 200	$ 200	$ 200	$ 200	$ 200
Total Monitoring & Maintenance	$ 2,220	$ 6,020	$ 2,220	$ 2,220	$2,220	$2,220	$2,220	$2,220	$2,220	$2,220	$2,220	$2,220

Annual totals 30440

Note: This table corresponds to Table 7-14 in "Volu

Table 12
Post Closure Monitoring & Maintenar

Category	Jan 2021	Feb 2021	Mar 2021	Apr 2021	May 2021	Jun 2021	Jul 2021	Aug 2021
Post Closure Monitoring & Maintenance								
Revegetation Inspections	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Reclamation Maintenance	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Annual Geotechnical Inspections	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Environmental Studies	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Long Term Nutrients BTC/IG	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Contract Services Labor	$ 375	$ 375	$ 375	$ 375	$ 375	$ 375	$ 375	$ 375
Lab Analysis	$1,479	$1,479	$1,479	$1,479	$1,479	$1,479	$1,479	$1,479
Support Equipment (Helicopter)	$ 166	$ 166	$ 166	$ 166	$ 166	$ 166	$ 166	$ 166
Laura Creek AMP								
Blue Dump								
Monthly & Annual Reports	$ 200	$4,000	$ 200	$ 200	$ 200	$ 200	$ 200	$ 200
Total Monitoring & Maintenance	$2,220	$6,020	$2,220	$2,220	$2,220	$2,220	$2,220	$2,220

Annual totals 21560

Note: This table corresponds to Table 7-14 in "Volu

Attachment 2: Brewery Creek Geotechnical Inspection, September 2011

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Memo

To:	Brad Thrall	**Date:**	November 21, 2011
Company:	Alexco Resources Corp.	**From:**	Peter Mikes, P. Eng.
Copy to:	Daryl Hockley	**Project #:**	1CA009.005
Subject:	Brewery Creek Geotechnical Inspection, September 2011		

The undersigned visited the Brewery Creek mine site on September 29, 2011, as part of a review of outstanding closure liabilities. As part of the review, a geotechnical inspection of the reclamation works was completed. The site tour was completed with the guidance of Mr. Brad Thrall. Three representatives of the Yukon Government were also present. Photographs from the site visit have been attached to this report. The attached Figure 1 notes the approximate location of each photo.

The focus of earlier annual geotechnical inspections reports has been on the followings earth structures:

- Ore on Pad
- Leach pad containment dyke
- Process Ponds
- External waste dumps
- Water retaining structures

This approach has been followed for the organization of the following sections. However, the water-retaining structures (Canadian Pit east siltation structure) and the Ore on Pad area were not inspected during the site visit as no issues have been raised from past inspections.

Ore on Pad

No ore has been added to the Brewery Creek leaching pad since mining ceased in September 2000. Cyanide addition to the ore ceased in January 2002. All cells have been regraded, covered and revegetated.

The September 2004 inspection noted no signs of instability or distress. The inspection recommended the inspection of the heap leach was not required as part of the annual geotechnical inspection.

Leach Pad Containment Dyke

Only the western portion of the leach pad containment dike was inspected during the site visit. It was observed to be in good condition, with no signs of settlement, erosion or displacement. No changes were observed in the tension cracks noted in the 2010 inspection that are located immediately north of the breach, above the former Pregnant Pond Area. As the dyke has been breached, there is no significant consequence of further cracking or sloughing of the slope and no further action is recommended.

Process Ponds

At the time of inspection the Process Ponds were still retaining water with rip-rapped outfalls located at the south end of the Overflow Pond and at the north end of the former Pregnant Pond. The crest of the berm around the process ponds were briefly inspected during the site visit. Previous investigation reports noted minor settlement cracks in the berm of the upper pond. No cracks were observed during this site visit, but as the exact location of the cracks was not known, their status is uncertain.

External Dumps

Canadian and Blue Dumps

Both the Canadian and Blue Dumps have been regraded and covered, with healthy grass vegetation throughout. During the site visit, the toe of the Blue Dump was inspected to monitor for any signs of further erosion of the gullies and surface water drainage ditch at the base of the dump. Rip-rap was placed at the outfall of the surface runoff drainage ditch that runs along the toe of the dump. Photographs of this area are shown in Photos 2 to 7 in Attachment 1.

Gullies are present at the base of the dump just above the access road that runs along the toe of the Blue Dump. Most gullies are showing signs of infilling and/or vegetation growth militating against future propagation of the gully. No signs of further erosion were observed compared to the 2010 inspection.

In the ditch outlet area, the channel makes an approximate 120 degree turn before being released into an area of treed vegetation. In 2009, rip-rap was placed along the outside bank in this area in two locations approximately 10m apart to direct flow around the corner. The rip-rap has an average diameter of approximately 20 cm was placed in a 30cm layer over lengths 15m and 5m. No rip-rap was placed at the base of the channel or further upstream where signs of erosion are present (Photos 4-7).

No further erosion was observed in the channel compared to photos from the 2010 inspection. However, as rip-rap placement is not continuous, it is recommended that this area should continue to be monitored after each freshet to determine if any further remedial works/rip-rap placement is required.

Lucky Dump

Movement of the Lucky Haul Road was noted in the 2003 inspection, and Viceroy undertook a program to stabilize the affected area in 2004. The program consisted of removing waste from the crest of the road in the area where cracks were noted. Approximately 8,000 m^3 of material was reportedly moved and redistributed to the west of the area of concern.

Since that time, photo hub stations have been established at each location and for photographs have been taken by Access Consulting on a monthly basis for the past year. Photographs from the stations taken during the site inspection were compared to past photographs taken during site visits by SRK.

Slope movement has been observed in two locations below the Lucky Haul Road. These areas are noted in photos 8 to 16 in the attached appendix. In the first location (Photos 8-9), no significant changes were observed comparing the 2005 and 2011 inspection photographs.

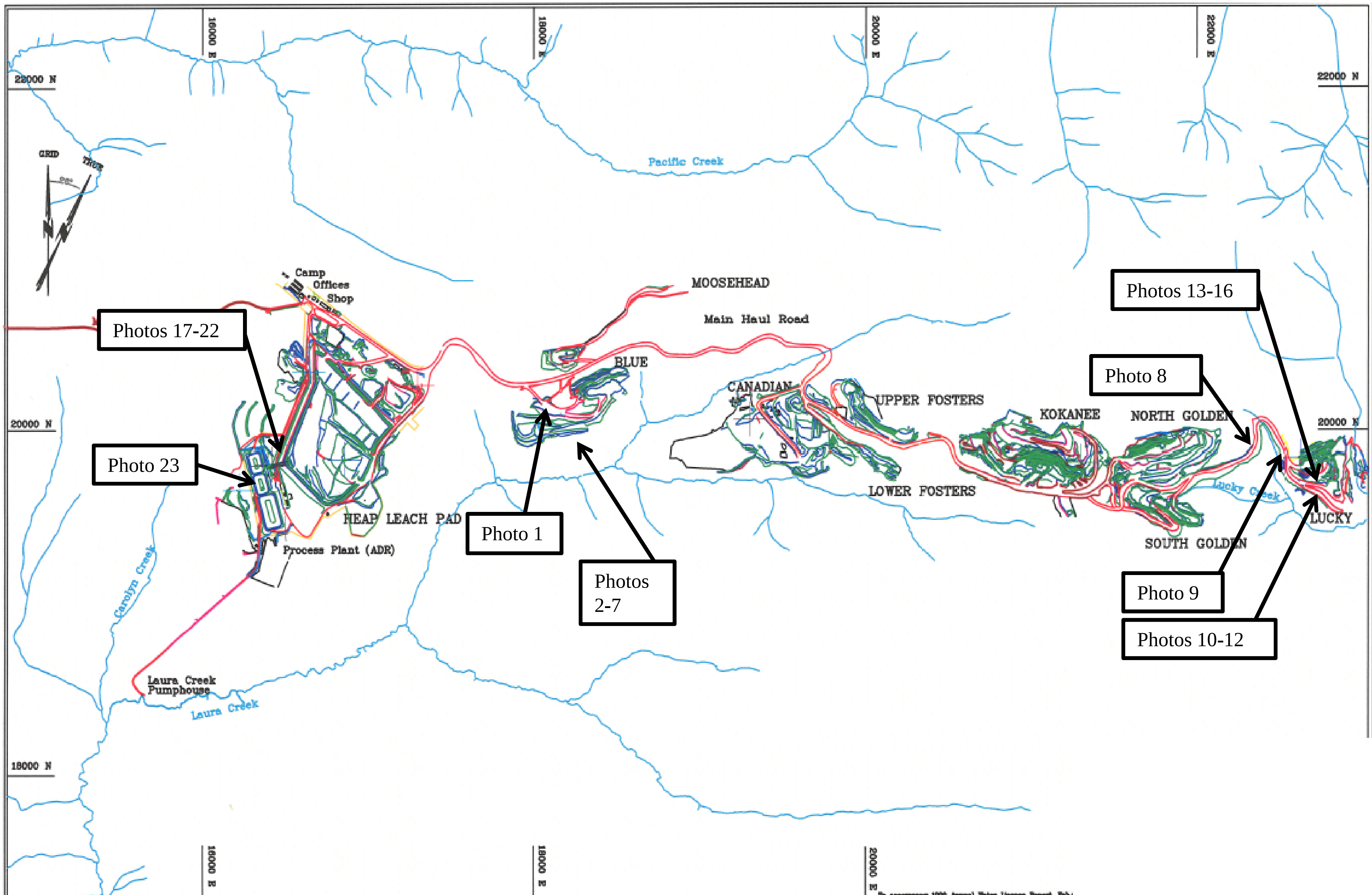
The second location (photos 10-12) is located between the Lucky Haul Road and the Bohemian Access Trail. The scarp in this area is up to 1 m in height. No sign of ground movement was observed near the base of the slope. No changes in ground conditions were observed since the 2010 inspection.

Photos 13 to 16 are taken in the ‘saddle area’ of the Lucky WRSA where differential settlement was noted in the 2010 inspection. The photos note scarps up to 1 m high that were not noted during the 2010 inspection due to snow. No signs of imminent failure or significant distress were observed. It is recommended that monitoring of the area continue.

Conclusions and Recommendations

The September 2011 geotechnical inspection found no signs of imminent failure or significant distress in any of the earth structures that were examined. Similar to the conclusions of the 2010 inspection, tension cracks in the berm near the Heap Leach Dyke, and tension cracks and sinkholes in the Lucky Dump and Lucky Haul Road areas are still worthy of further monitoring.

Consideration should be given to the establishment of settlement pins at the slope failure locations near the Lucky Haul Road, as well as the ‘saddle area’ scarp. Expanding on the monitoring program consisting of a collection of a photographic record, field measurements may then be taken to track the distance between the pins versus time, observing for any change in movement. Monitoring should be completed over a period of two years. Three pins are recommended at each location, placed in a triangular shape to be able to measure movement in multiple directions.



srk consulting

ALEXCO

2011 Geotechnical Inspection

Photograph Locations

Job No: 1CA009.005

Filename: BrewCrk.PhotoLocation.Figure.pptx

Brewery Creek

Date: Oct. 25, 2011

Approved: PM

Figure: 1

Photo 1: View of vegetative growth on the Blue Dump looking north east.

Photo 2: View of the largest gully at the toe of the Blue Dump. Vegetative growth is occurring within the rills indicating the gullies are stabilizing. No change in appearance since the 2010 inspection.

Photo 3: View of the toe of the Blue Dump looking east.

Photo 4: Rip-rap placed in 2009 near the outlet of the surface runoff collection ditch at the toe of the Blue Dump (1 of 2 locations). Compared to 2010 inspection photos, no further erosion observed.

Photo 5: View of outfall looking downstream (south). Runoff is directed into the trees.

Photo 6: View of outfall looking into the trees. The deposition of eroded materials was followed for ~25m downstream of outfall. The end of the deposition zone was not found, the ground slope increased at that point from a gentle to moderate slope.

Photo 7: View of the eroded runoff collection ditch upstream of the 2nd rip-rap location (looking downstream).

Photo 8: Taken from "Photo Hub #1", view of the slope instability below the Lucky Dump haul road.

Photo 9: View of the slope instability below the Lucky Dump haul road taken from just east of the area.

Photo 10: View of the second failure location by the Lucky Dump haul road above the Bohemian Access Trail, taken from “Photo Hub #4”.

Photo 11: View of the scarp at the second failure location. The scarps are up to 1 m in height.

Photo 12: View of the slope above the Bohemian Access Trail.

Photo 13: View of the "saddle area" of the Lucky WRSA where large differential settlements have occurred. Looking North towards Lucky Pit

Photo 14: View of scarp in the 'saddle area'. Looking east, settlement is orientated towards the north towards the 2nd failure location in photos 10 to 12.

Photo 15: View looking towards the west. The Lucky Pit is located to the right of the photo, main access road to the left, and 2nd failure (photo 10-12) further to the left. Approx. locations of scarps/cracks are noted in red. These features were not noted in the 2010 inspection, possibly due to snow cover.

Photo 16: View from same location as Photo 15. Possible slope movement on the waste rock dump further to the west, noted by the arrow. Area was covered in snow during the 2010 inspection.

Photo 17: View of breach completed in 2009 of the heap leach pad dyke at the former emergency spillway location.

Photo 18: View of gullies at the base of the heap leach pad above the dyke near the breach (visible to the right of photo). Vegetative growth is occurring within the rills indicating the gullies are stabilizing.

Photo 19: View of Tension cracks by the heap leach dyke near the breach location noted in the 2010 inspection. Vegetation is establishing within the crack indicating no further movement.

Photo 20: View of the heap leach containment dyke looking north.

Photo 21: View of the rip-rap lined channel below the breach leading to the former Pregnant Pond.

Photo 22: View of the valve controlling flow from the heap leach pad collection system to the Barren Pond. Valve is in the closed position. In the open position, water is directed into the Pregnant Pond.

Photo 23: View of the former Barren Pond looking east.