POGO MINE

2007 ANNUAL ACTIVITY AND MONITORING REPORT

Submitted To:

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1 Introduction

Teck-Pogo Inc. has prepared this report to fulfill the requirements of the Alaska Department of Natural Resources (ADNR) Pogo Mine Millsite Lease ADL416949, ADNR Plan of Operations Approval F20039500, the U.S. Environmental Protection Agency (EPA) NPDES Permit AK005334-1, the Alaska Department of Environmental Conservation (ADEC) Waste Disposal Permit, 0131-BA002, and the ADEC Non-domestic Wastewater Disposal Permit, 2004-DB0070.

The Pogo mine is an underground gold mine located 38 miles northeast of the community of Delta Junction in eastern interior Alaska (see Figure 1). Teck-Pogo Inc. operates the mine on behalf of the Pogo Joint Venture, a JV between Sumitomo Metal Mining Co., Ltd. (51%), Sumitomo Corporation (9%), and Teck Cominco Limited (40%).

The Pogo mine began operations in 2006 with a 10 year mine life. Protection of the Goodpaster River is of prime importance to mine operations. The ore is processed on site to recover gold through a gravity recovery and flotation-concentrate/leach processes. A portion of the tailings are thickened and mixed with cement to form a paste and placed underground as backfill. The remaining tailings are dewatered by pressure filtration and placed in a tailings and waste rock storage facility called the drystack. A diversion ditch has been constructed to divert surface runoff around the drystack and water storage dam. All mill process water is recycled. A water treatment plant treats mine drainage from the underground workings and surface runoff water prior to permitted discharge.

A 49 mile all-season road connects the Pogo mine to the Richardson highway near Shaw Creek, located approximately 20 miles north of Delta Junction. Mine employees travel to the mine site by bus and live at the mine during their work rotations. Potable water and sewage treatment plants provide support for the accommodations.

2 Summary of 2007 Activities

2.1 MINE OPERATIONS

Pogo Mine is a mechanical drift and fill underground gold mine accessed via three portals denoted by their elevation, the 1875, the 1690, and the 1525. After blasting, the ore is loaded by 3 and 9 yd loaders into 30 and 50 ton trucks and hauled to a 3000 ton underground ore bin. The ore is then transported out of the mine on a 2,500 foot long conveyor via the 1690 portal to the surface mill.

In the first quarter, modifications to the tailings handling system in the mill were completed to improve paste backfilling. Commercial production was achieved in April by exceeding 2,000 tons per day in both the mine and mill. The mine and mill operations are improving, but still remain below full capacity due to poor equipment availability. Production for the year was 260,000 ounces vs. the 340,000 ounce forecast.

The mine made good progress on reducing dilution by using smaller equipment in the narrow ore headings during the second half of the year. The focus underground remains on the development needed to open up the additional ore headings that are needed to reach the full production rate of 2,500 tons per day. At year end, the surface ore stockpile accumulated during the 2006 fourth quarter fire was essentially depleted.

A 50 bed expansion to the previous 199 bed permanent camp facilities was completed by year end to support the additional employees and contractors required to achieve planned production.

Mining and crushing/screening of 15,000 yards of gravel from the permitted borrow site near the north end of the airstrip provided road topping material required for underground and surface facilities. Many of the logs decks accumulated around the site during construction were chipped for insulating mulch used in conjunction with the insulated drains completed on the all-season road.

Non-mineralized development rock was placed in select areas of the existing

permitted laydown areas to augment the existing fills and raise the level of the work and storage areas above Goodpaster river flood levels.

The seepage collection system below the RTP dam was expanded by the addition of 4 wells and an infiltration gallery. The new wells provide expanded capacity and redundancy.

New surface disturbance was limited to a small area underneath the conveyor that was required to recover a truck that overturned and expansion of the drystack tailings storage area within the permitted footprint. The growth media from the drystack was salvaged and stockpiled near material site B.

At year end, Teck-Pogo had 243 employees, with an additional 88 persons employed by contractors in housekeeping and underground development.

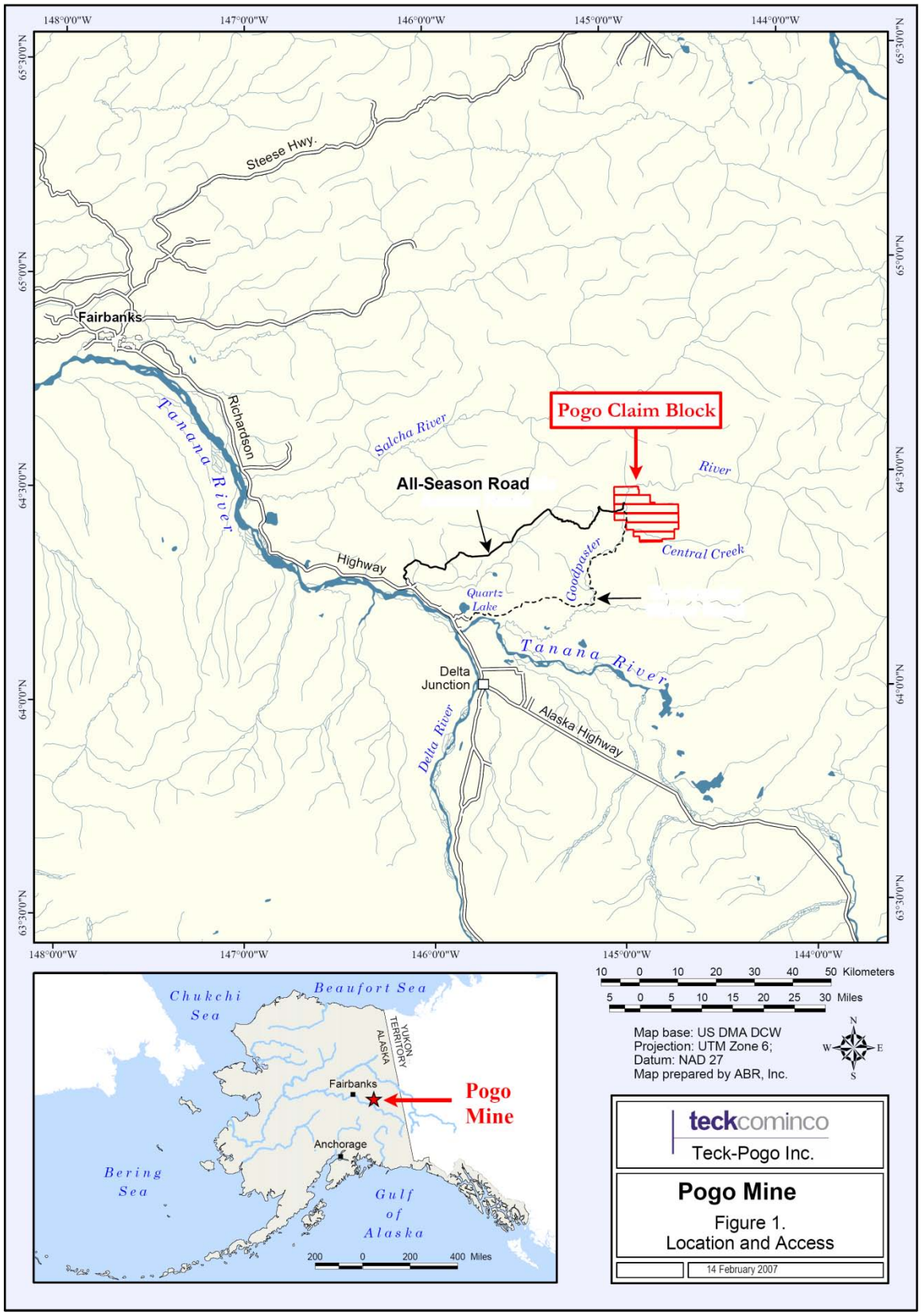


Figure 1. Location and Access

2.2 ALL-SEASON ROAD

Maintenance activities along the all-season road included re-grading the entire road and hauling and spreading previously crushed topping material from Material Site (MS) 7 and MS18. Insulated drainage blankets and french drains were completed at Mile 32 and 43.5 in order to minimize aufeis problems and improve road safety.

Throughout the year, Teck-Pogo maintained a manned security station at the access road gate at Mile 0. During the August caribou season and the Sept. 1-15 moose hunting season, Teck-Pogo stationed a third party security guard at the intersection of the TAPS right-of-way and the Pogo road to advise roving hunters that the Pogo road is closed to the public. No trespassing signs remain posted on the road.

2.3 EXPLORATION

During 2007, Teck-Pogo completed a helicopter supported exploration drilling program on the Pogo Joint Venture property. A total of 36,500 feet of drilling was completed using two drill rigs by a crew of 22 persons. 28 drill holes were completed within the Pogo millsite lease.

2.4 PERMITTING ACTIVITIES

There were no significant permitting activities required during 2007.

3 2007 Monitoring

A prescriptive program of environmental monitoring is conducted by Teck-Pogo as specified by permit requirements and in accordance with a DEC and EPA approved Quality Assurance Protection Plan (QAPP).

The objectives of the monitoring programs are:

- To monitor the water quality of the effluent discharged from the facility,
- To monitor water quality changes in the Goodpaster River and in the groundwater below the facility that may occur as a result of mining activities or discharges from the facility,
- To monitor fish tissue metals content in juvenile Chinook salmon from the Goodpaster River upstream and downstream from the project facilities,
- To monitor the mill processes associated with the treatment facilities, and
- To monitor the treatment facilities and the materials placed in the facilities.

Samples collected from the Water Treatment Plant (WTP), groundwater stations, and surface water stations were submitted to Test America Inc. Environmental Laboratory. Samples collected for the Sewage Treatment Plant (STP) influent and effluent were submitted to Analytica Laboratories.

This report covers the period of January 1, 2007 through December 31, 2007.

3.1 SUMMARY

Evaluation of the 2007 monitoring results indicates a 99.7% compliance rate with 2,144 quantitative water quality permit requirements. A summary of the results show:

- At the Mine Water Treatment Plant effluent, Outfall 011, there were no water quality or permit exceedances during the period.

- At the Off River Treatment Works (ORTW) discharge, Outfall 001, one weekly sample on May 30 following a major storm of 1.7 inches of rainfall over the previous three days showed the ORTW effluent turbidity was 0.1 NTU higher than the 5 NTU allowable increase over the Goodpaster River natural condition. The water treatment plant was not discharging to the ORTW during this time. On June 7, a flow rate exceedance of 4,900 gpm occurred as a result of a rain event that caused the Goodpaster River to rise 2.5 feet. The operator was not able to install another weir block before the natural flow out of the pond increased to 20,500 gpm. The water treatment plant was not discharging to the ORTW during this time. On October 31, the weekly sample showed a pH level of 6.32 pH units as compared to the permit lower limit of 6.5 pH units. The water treatment plant had not discharged to the ORTW during the prior week. There were no other water quality exceedances during the period.

- At the Sewage Treatment Plant effluent, Outfall 002, operational challenges resulted in two weekly samples being out of compliance. The February 7 sample returned elevated fecal coliform (17,500 vs. 400#/ml) and Biological Oxygen Demand (BOD) (56.1 vs. 45) levels. The discharge was immediately halted on February 9 when sample results were received. After maintenance and corrective action was completed, discharge commenced again on February 16 but the plant performance did not return to normal conditions and a decision was made by operations to halt discharge again even though samples results had not been received. The February 16

sample results returned a BOD of 75 vs. 45 effluent limitation. Effluent was hauled offsite throughout the period and until the plant returned to normal conditions.

- There were no adverse trends during the period in surface water samples, ground water samples, or mill process samples.

A discussion of the results for each sampling program is provided below. Data for some monitoring programs are provided in Appendix A. Time series plots for all other locations are provided in Appendix B.

3.2 TREATED EFFLUENT MONITORING

The monitoring locations for treated effluent are shown on Figure 2.

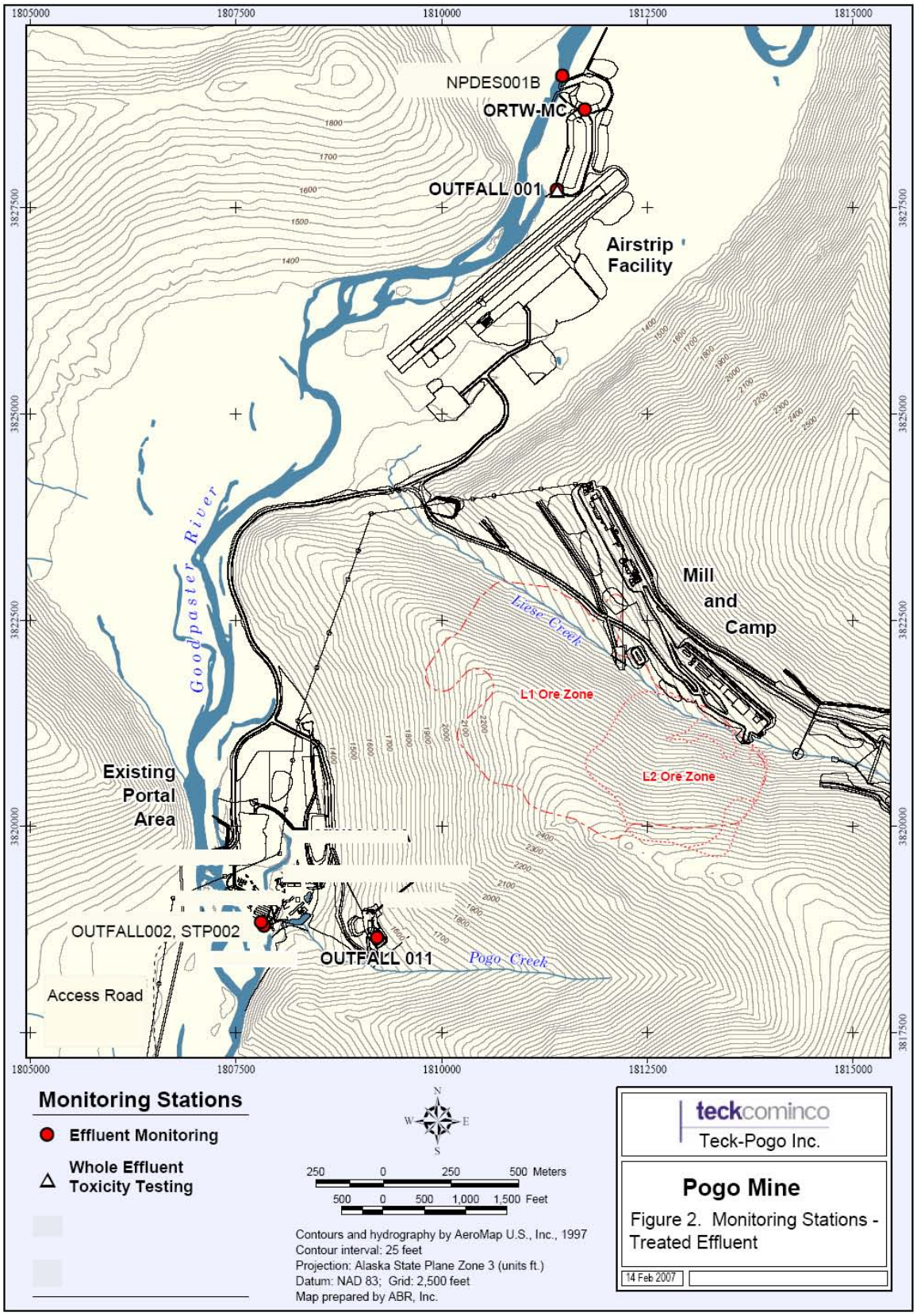
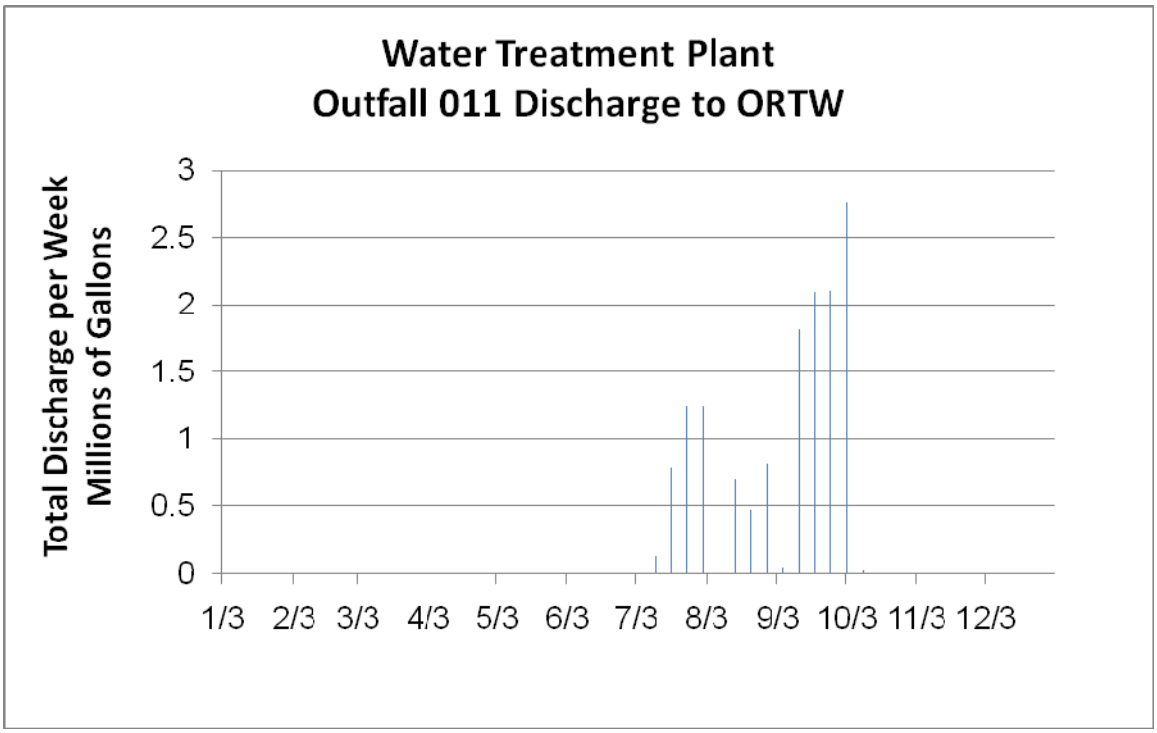


Figure 2. Monitoring Stations – Treated Effluent

3.2.1 Outfall 011- Treated Effluent from Mine Water Treatment Plant

Groundwater and drill water collected from the underground workings, together with surface runoff and groundwater collected in the RTP, are piped to the Mine Water Treatment plant located near the 1525 portal. After treatment, the water is either recycled to the mill, pumped to the RTP or discharged to the Off River Treatment Works (ORTW). There was no discharge to the ORTW from January 1 through June 30, and discharge was infrequent thereafter. The volume of water discharged from the Water Treatment Plant by week is shown below.



Daily field parameters were collected at Outfall 011 along with weekly and quarterly laboratory samples for metals, TSS, Hardness, Weak-Acid Dissociable (WAD) Cyanide, Anions, Cations, and Total Dissolved Solids (TDS).

All results were within the limits and conditions set forth in Part I.B. of EPA NPDES Permit AK005334-1.

3.2.2 Outfall 001 – Discharge from Off River Treatment Works

Treated water from the Mine Water Treatment plant is piped to the ORTW. After mixing in the ORTW, water flows over the weir of Pond 2 of the ORTW and into the Goodpaster River. The sampling location is at the weir.

Daily field parameters were collected along with weekly laboratory samples for metals, WAD Cyanide, TDS, Turbidity, Sulfate, and Hardness. In addition, daily field parameters and weekly samples (Lead, Mercury, and Turbidity) were collected upstream from the discharge point (NPDES001B) to determine background water quality.

One weekly sample on May 30 following a major storm of 1.7 inches of rainfall over the previous three days showed the ORTW effluent turbidity was 0.1 NTU higher than the 5 NTU allowable increase over the Goodpaster River natural condition. No discharge of treated water occurred from the water treatment plant during this time.

On June 7, a flow rate exceedance of 4,900 gpm occurred as a result of a rain event that caused the Goodpaster River to rise 2.5 feet. The operator was not able to install another weir block before the natural flow out of the pond increased to 20,500 gpm. There was no discharge of treated water from the water treatment plant at the time of event. On October 31, the weekly sample showed a pH level of 6.32 pH units falling below the permit lower limit of 6.5 pH units. No discharge from Outfall 011 occurred during the prior week.

Except as noted above, all results were within the limits and conditions set forth in Section I.A. of EPA NPDES Permit AK005334-1.

3.2.3 Outfall 002 – Treated Effluent from Sewage Treatment Plant

The Sewage Treatment Plant (STP) operated throughout 2007 generally in a range of between 20,000 and 35,000 gallons per day. Daily field parameters were collected to assess treated effluent prior to discharge in the mixing zone in the Goodpaster River. Weekly samples were also collected for Biological Oxygen Demand (BOD5), Total Suspended Solids (TSS), Fecal Coliform, Nitrates, and Chlorine. Influent data from STP002 was also collected for BOD5 and TSS on a quarterly basis.

Operational challenges resulted in two weekly samples being out of compliance. The February 7 sample returned elevated fecal coliform (17,500 vs. 400#/ml) and Biological Oxygen Demand (BOD) (56.1 vs. 45) levels. The discharge was immediately halted on February 9 when sample results were received. After maintenance and corrective action was completed, discharge commenced again on February 16 but did not return to normal conditions and a decision was made by operations to halt discharge again even though samples results had not been received. The February 16 sample results returned a BOD of 75 vs. 45 effluent limitation. Effluent was hauled offsite throughout the period and until the plant returned to normal conditions.

Except as noted above, all results were within the limits and conditions set forth in Section I.B. of EPA NPDES Permit AK005334-1.

3.2.4 Whole Effluent Toxicity

Whole Effluent Toxicity (WET) testing is required under NPDES Permit AK-005334-1 at Outfall 001. The annual WET test was conducted June 20 through 25 by CH2MHill's Aquatic Toxicology Laboratory in Corvallis, Oregon. A split of the same sample was also sent to ENSR Laboratory in Fort Collins, CO.

Results from both laboratories are presented in Appendix A and indicate that the toxicity for both *Ceriodaphnia dubia* and Fathead minnow was 1.0 TU_c or less, well under the toxicity trigger of 2.0 TU_c.

All results were within the limits and conditions set forth in Section I.D. of EPA NPDES Permit AK005334-1.

3.3 SURFACE WATER MONITORING

3.3.1 Goodpaster River

The four surface water stations monitored to evaluate water quality along the Goodpaster River are SW01 located above the Pogo Mine, SW41 located downstream of Outfall 001, SW42 downstream of Outfall 002, and SW15 located downstream from all Pogo facilities.

Surface water station SW12 located on the Goodpaster River at the confluence

of Central Creek was also sampled concurrently with the fish tissue monitoring program in mid September.

The location of the surface water monitoring stations is shown in Figure 3.

Surface water samples are analyzed for cyanides, ionic balances, major cations and anions, and total and dissolved metals. Physical and aggregate properties

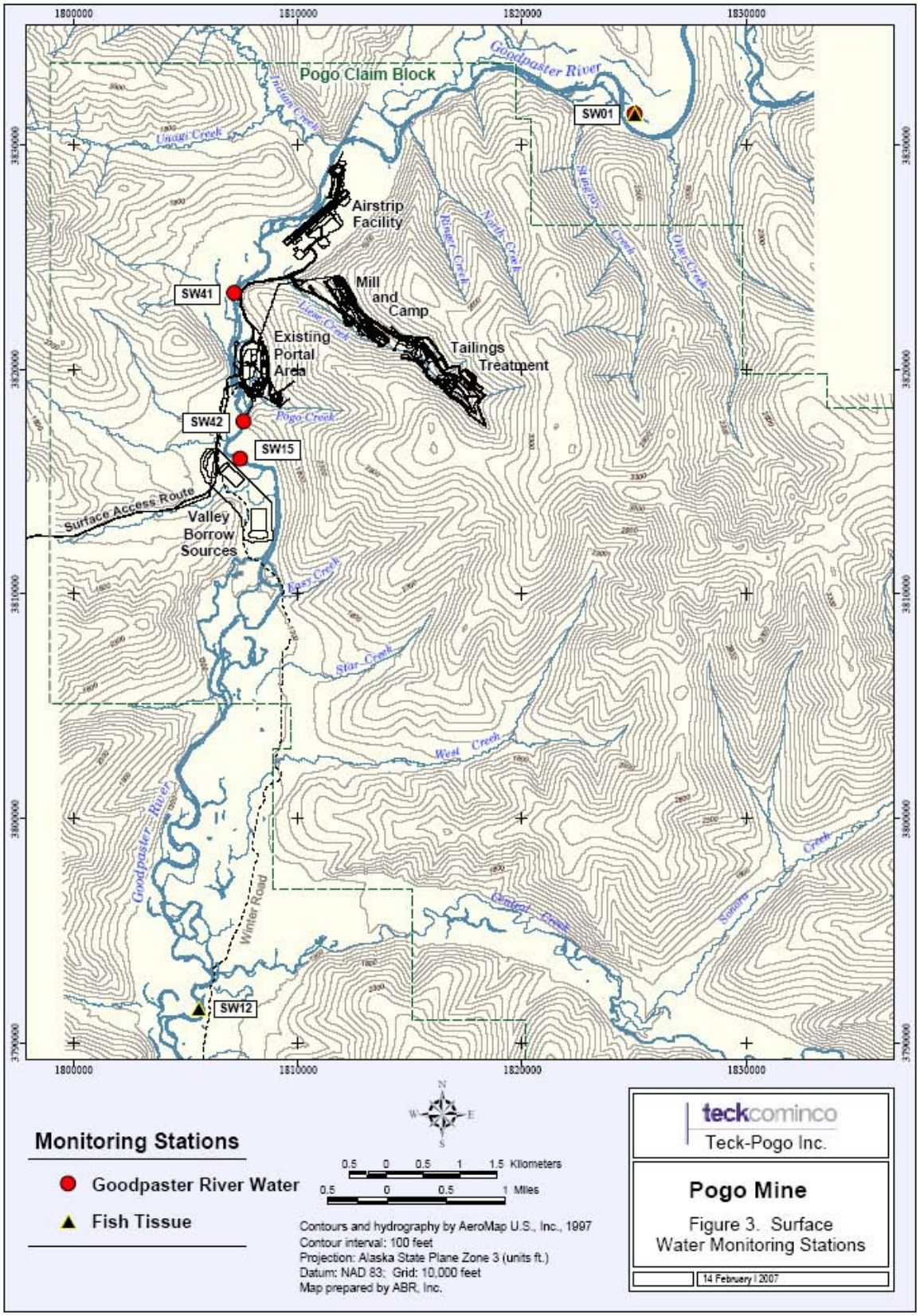


Figure 3. Monitoring Stations - Surface Water

of ammonia, conductivity, hardness, nitrates, pH, TDS, Total Settleable Solids (TSS), Turbidity, TKN, and Temperature were taken.

No adverse trends were observed.

3.3.2 Fish Tissue

In order to help assess long term trends in Goodpaster River quality, annual whole body analysis of juvenile Chinook salmon is required under NPDES permit AK-005334-1 at monitoring sites both upstream (SW01) and downstream (SW12) from the project facilities. Juvenile Chinook salmon were collected at these stations in late September. Due to the small sample size of the fish (about 3 gram wet weight), laboratory detection limits are variable not only between years, but often between individual fish from the same station.

No adverse trends were observed.

3.4 GROUNDWATER QUALITY MONITORING

The locations of the groundwater monitoring stations are shown in Figure 4.

3.4.1 Downgradient of DryStack and RTP Dam

Three wells located below the RTP Dam, MW03-500, MW03-501, and MW03-502, monitor groundwater downstream of the RTP seepage collection system. After removal of the heat trace cable from MW03-501 during the first quarter, the copper level in this well returned to background levels of 1.9 in the third quarter and 0.8 ug/L in the fourth quarter.

3.4.2 Downgradient of the Solid Waste Facility

Monitoring wells MW04-503 and MW04-504 were installed to detect potential impacts to groundwater downgradient of the originally proposed solid waste

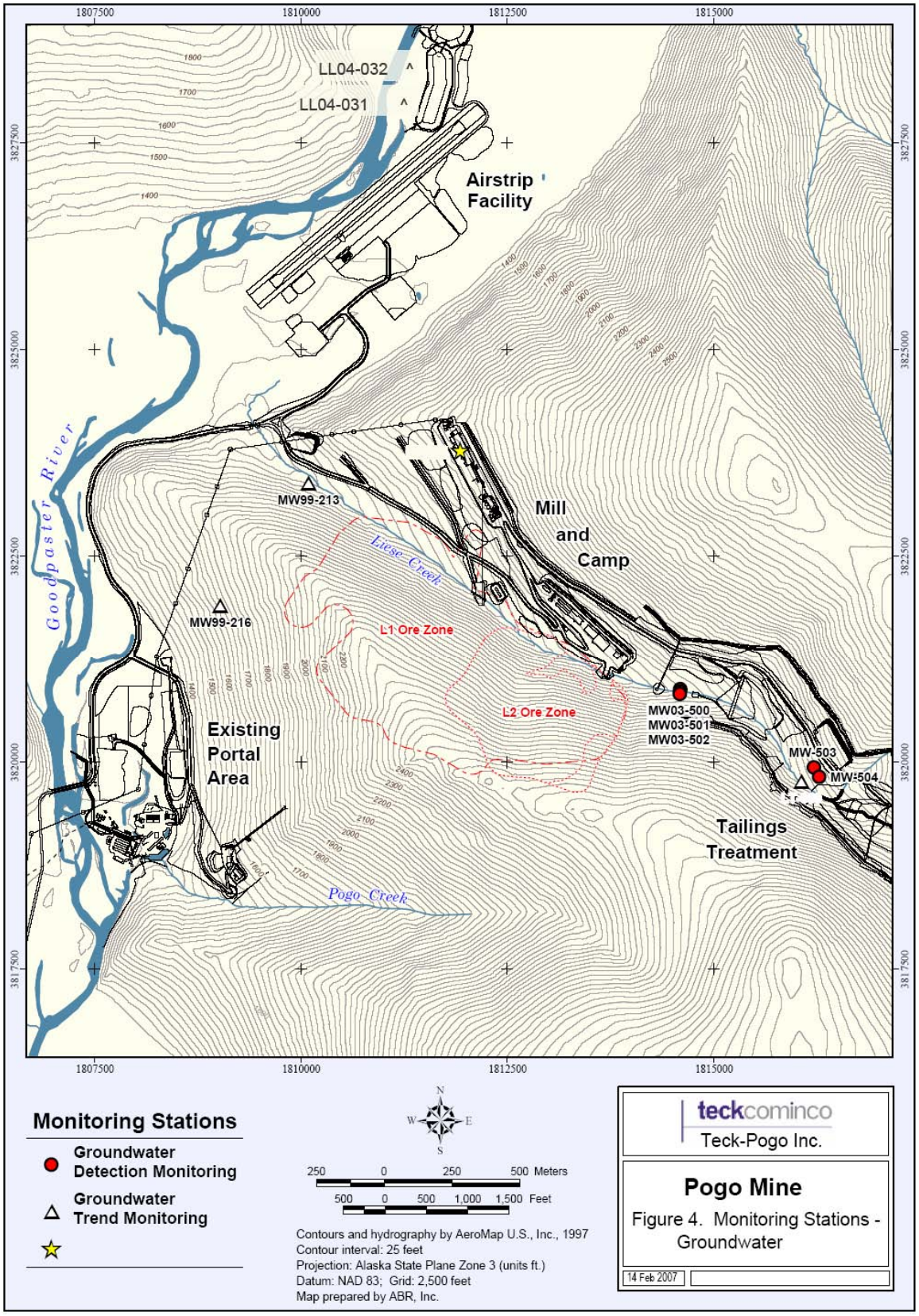


Figure 4. Monitoring Stations - Groundwater

facility. Construction of this solid waste disposal facility has been postponed and sampling of these wells has been suspended, as it is now anticipated that solid waste will be disposed in the drystack in accordance with Permit 0131-BA002. In the interim, solid waste is hauled off-site to an approved landfill.

3.4.3 Downgradient of Ore Zone

Monitoring wells MW04-213 and MW99-216 provide information on water quality trends down-gradient from the ore zones. An elevated mercury level was reported in the MW04-213 sample collected on April 4, 2007 but was not duplicated in the third quarter sample collected on September 19, 2007. Anomalous levels of arsenic, iron, lead, manganese, mercury, silver and total dissolved solids were detected at MW99-216 in the second quarter sample collected on April 4, 2007. No sample was collected at MW99-216 in the third quarter since the well was dry.

3.4.4 Downgradient of ORTW

Monitoring stations LL04-031 and LL04-032 provide information on ground water quality trends between the ORTW and the Goodpaster River. No adverse trends were observed.

3.5 PROCESS CONTROL MONITORING

The objective of these programs is to monitor the processes associated with the treatment facilities.

3.5.1 Water Balance

The beginning RTP reservoir volume for 2007 was 10.9 million gallons. During the year, 66 million gallons were collected in the RTP, 10.2 million gallons of treated water were recycled to the RTP, 38.3 million gallons were pumped from the RTP for underground drill water, 14.9 million gallons were pumped from the RTP to the mill process, and 14.2 million gallons were pumped from the RTP to the water treatment plant leaving an ending RTP volume of 17.9 million gallons. 14.2 million gallons of mine drainage and RTP water were treated and discharged via the off-river treatment works during the year.

3.5.2 CIP Tailings Cyanide Destruction

After gold is recovered from the ore in the carbon-in-pulp (CIP) tanks, and prior to disposal as part of the paste backfill, DEC permit 0131-BA002 requires that the CIP tailings shall be subjected to cyanide destruction using the SO2/air process or other suitable cyanide destruction process. After cyanide destruction, the CIP tailings are stored in the CIP stock tank prior to being mixed with cement and used for backfill in the mine. Samples to confirm cyanide destruction are taken at the stock tank and reported in Appendix A as PC001. At least 90% of the samples shall contain less than 10 mg/kg of WAD cyanide and none of the samples shall contain more than 20 mg/kg of WAD cyanide.

During 2007, 96% of the CIP stock tank samples returned values of less than 10 ppm and none returned a value greater than 20 ppm.

3.5.3 Mineralized Development Rock Geochemistry

Composite samples of development rock materials placed in the drystack facility were collected on March 30, June 28, October 3 and December 5. These samples were analyzed for whole-rock chemistry and ABA and are reported in Appendix A as PC002. No adverse trends were observed.

3.5.4 Flotation Tailings Geochemistry

Flotation tailings geochemistry samples were collected on March 6, June 12, September 11 and December 14 at PC003, the underflow of the filter-feed tank at the end of the mill circuit, prior to disposal on the drystack. The results are presented in Appendix A. No adverse trends were observed.

3.5.5 Flotation Tailings Interstitial Water Chemistry

The interstitial water from the tailings samples collected at PC003 on March 6, June 12, September 11 and December 14 were recovered and analyzed. The

results are presented in Appendix B. There were no adverse trends observed.

3.6 VISUAL MONITORING

3.6.1 Facility Inspection

The objective of the facility inspection program is to monitor the surface waste disposal facilities for signs of damage or potential damage.

Weekly visual inspections of the RTP dam were completed throughout 2007. No settlement or geotechnical concerns were observed via visual inspection.

3.6.2 Biological Survey

The objective of the visual biological survey program is to monitor wildlife interaction with the surface waste disposal facilities.

No wildlife issues with the RTP or drystack occurred during the year.

3.7 DEVELOPMENT ROCK SEGREGATION AND STORAGE

During 2007, 835 rounds were taken and sampled in accordance with the Rock Segregation Procedure. 198 rounds (24%) exceeded either the As or S threshold, with 192 rounds (97%) of these placed internally in the drystack and 6 rounds (3%) placed elsewhere. 112 rounds (13%) were not sampled due to operational challenges. Of these rounds, 107 rounds (96%) were placed in the drystack and 5 rounds (4%) were left underground. All mineralized rock was placed in the drystack tailings at least twenty feet from the margins and covered with a minimum of 2 feet of compacted tailings.

3.8 WASTE DISPOSAL

During 2007, 594,000 dry tons of flotation tailings and 85,000 tons of mineralized rock were placed in the drystack. During the year, 167,000 dry tons of tailings were placed underground as paste backfill.

The quantities of miscellaneous waste materials placed either into the drystack or underground during the year are shown below:

Material	Disposal Location	Quantity
Flotation Debris Screen Residue	Drystack	18 tons
Grinding Media Residue	Drystack	74 tons
Concrete	Drystack	30 tons
Shotcrete	Drystack	208 tons
Water Treatment Plant sludge	Underground	575 yds
Paste pump cleanup	Underground	157 yds

3.9 GEOTECHNICAL MONITORING

No flotation tailings were used to construct the drystack shell during 2007 so geotechnical tailings tests were not conducted.

4 2007 As-built Maps

Figure 5 provides an overview of all facilities within the Pogo millsite lease boundary as of yearend 2007. Figures 5a through 5d provide additional detail for the major areas of the mine.

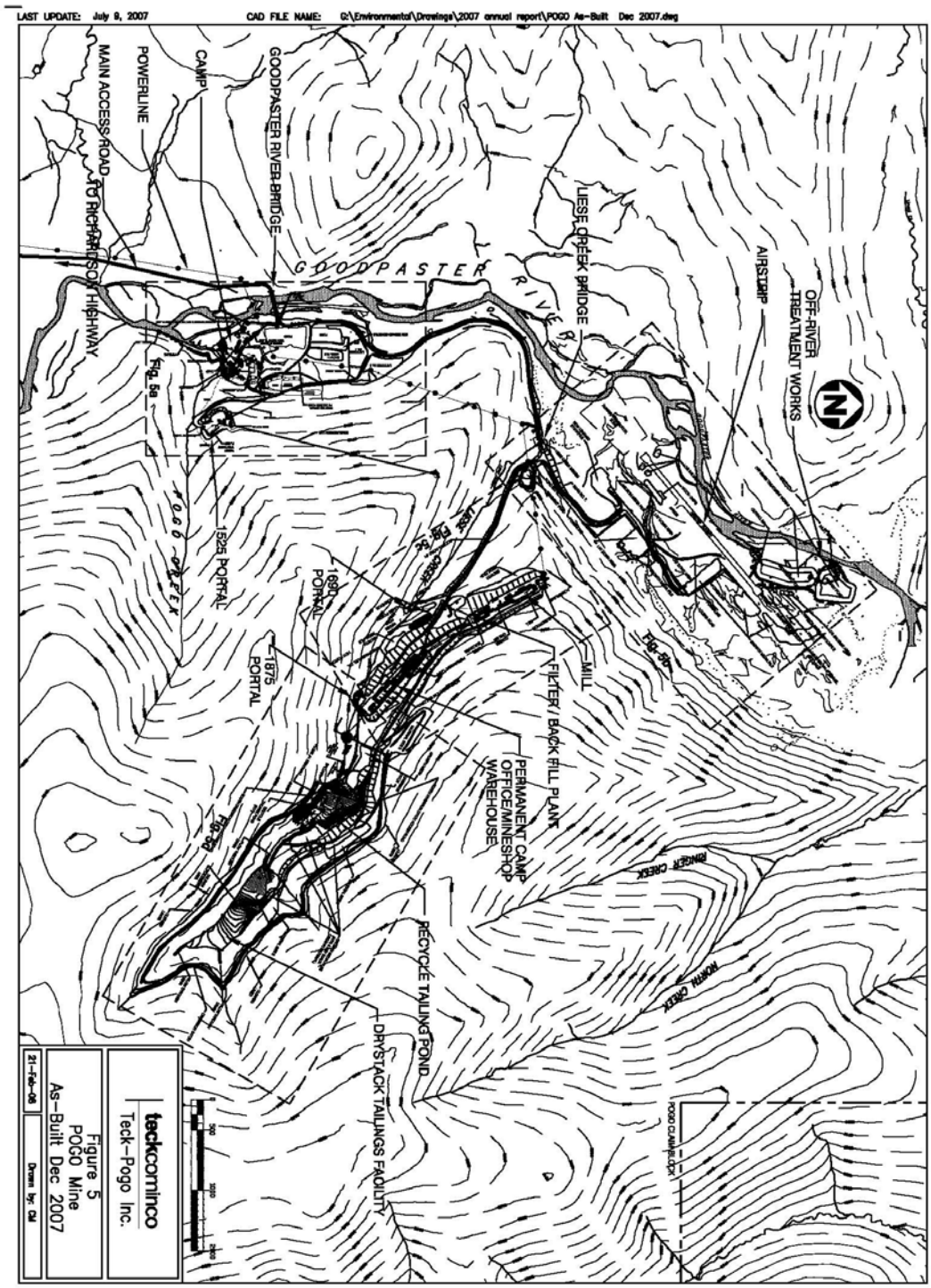


Figure 5. Pogo Mine As-built Dec 2007

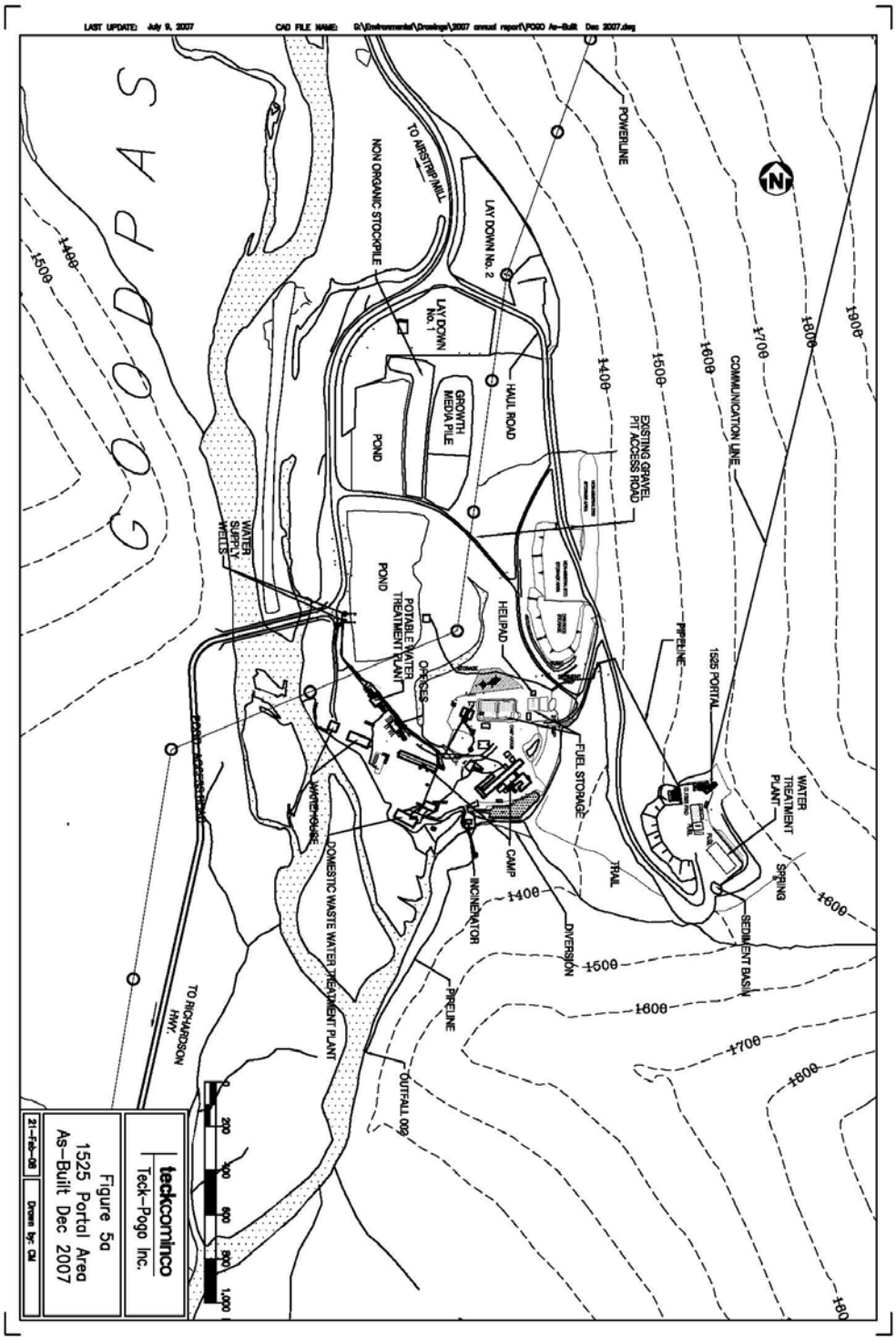


Figure 5a. 1525 Portal Area As-Built Dec 2007

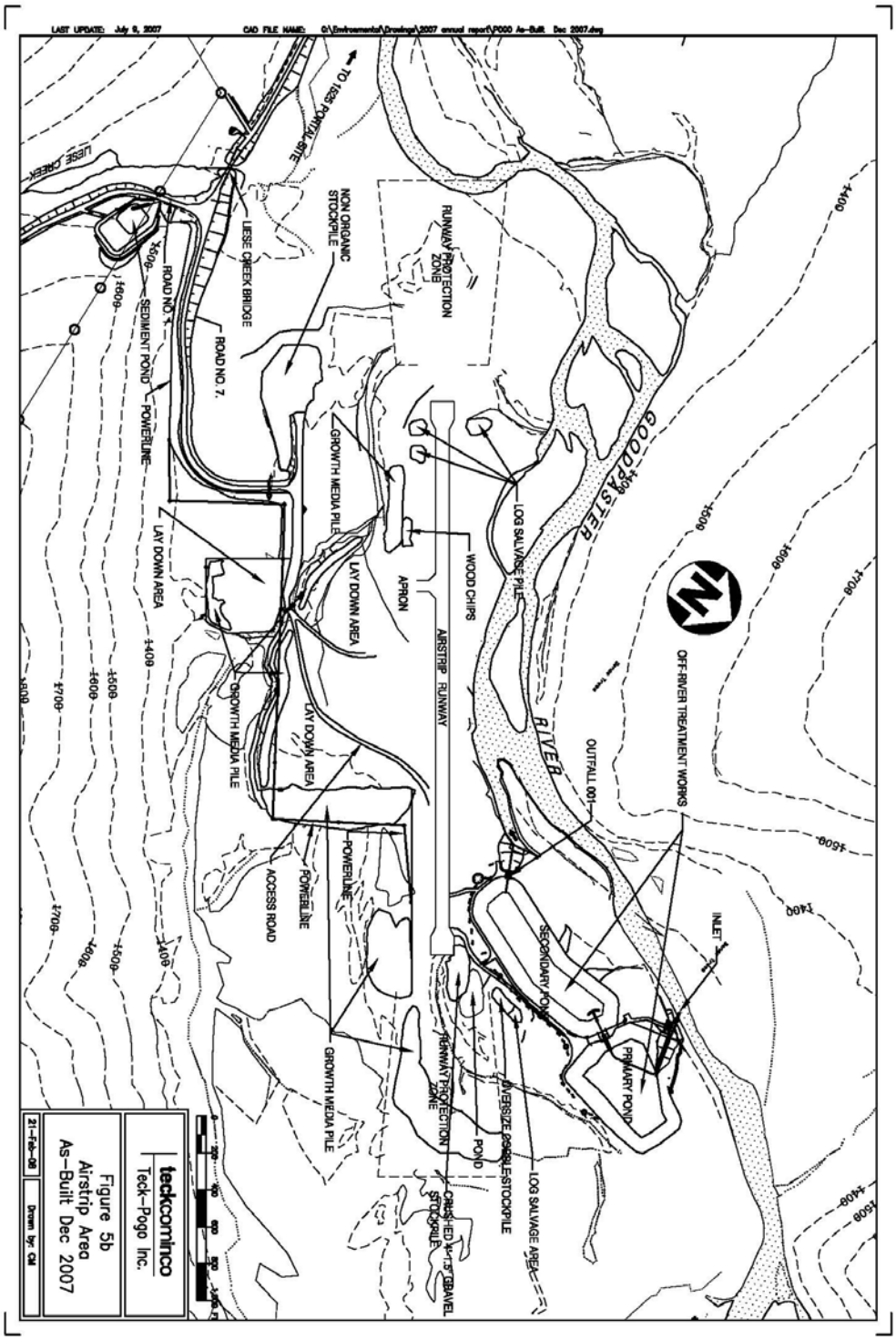


Figure 5b. Airstrip Area As-Built Dec 2007

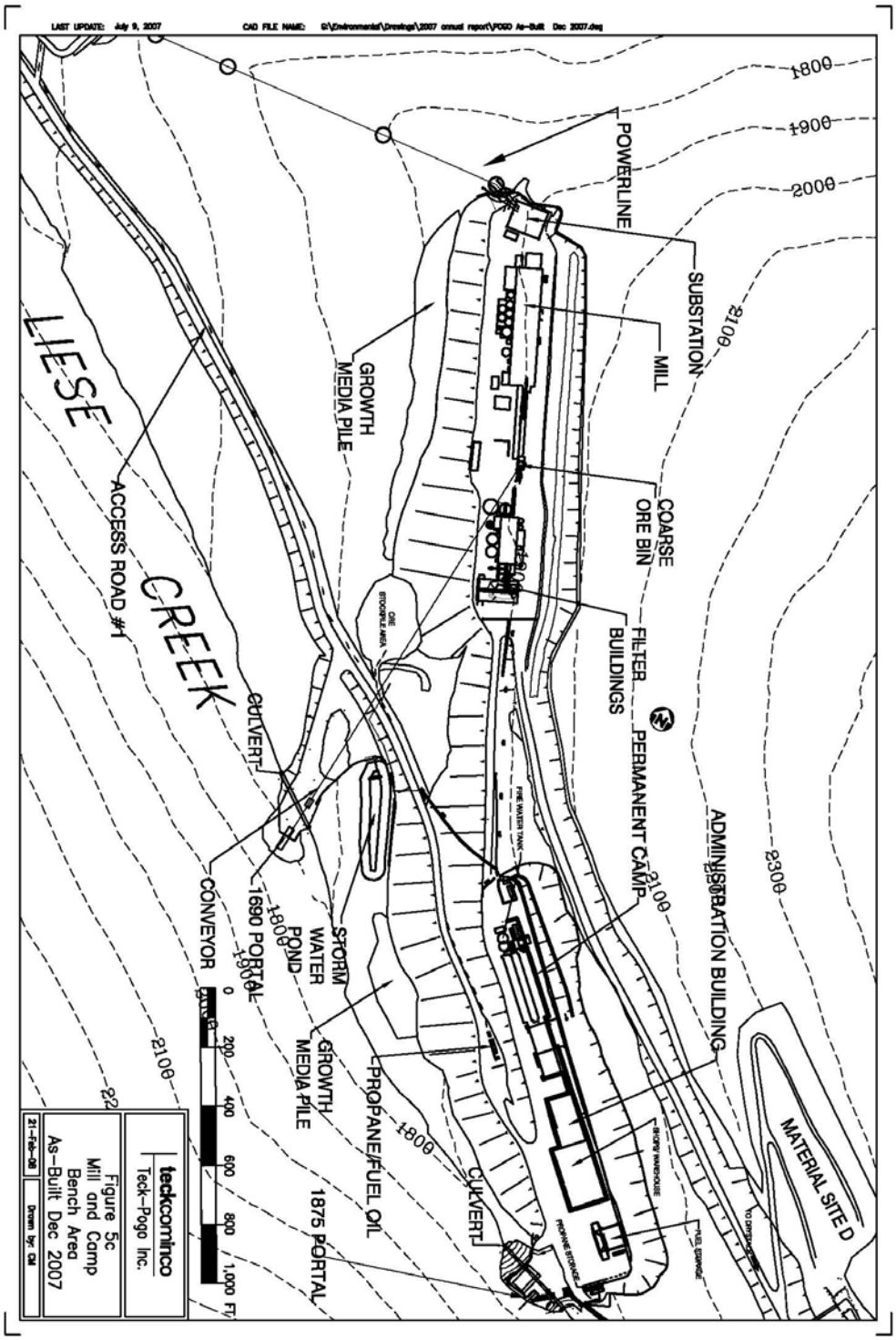


Figure 5c. Mill and Camp Bench Area As-Built Dec 2007

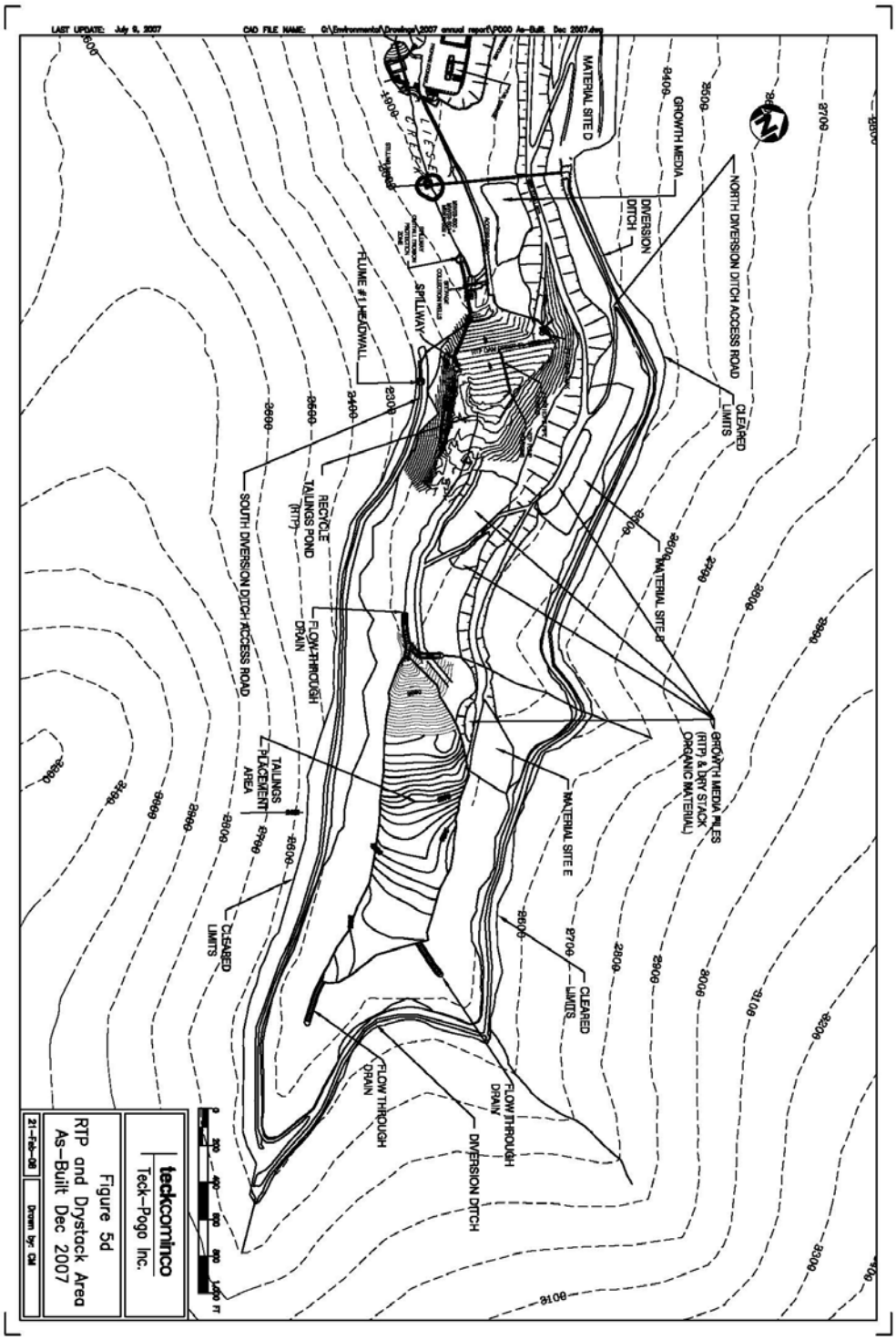


Figure 5d. RTP and Drystack Area As-Built Dec 2007

5 Reclamation and Financial Responsibility

Teck-Pogo has submitted detailed reclamation and closure plans for the all-season road and the Pogo millsite lease. Details for the all-season road reclamation were presented in Appendix H of the June 2002 Pogo Project Right-of-Way Application. Details for the Pogo millsite were presented in Appendix F of the October 2003 Pogo Project Reclamation and Closure Plan. An updated reclamation and closure cost estimate was completed by Teck-Pogo and submitted to the agencies in February 2005.

As approved by the State of Alaska, the required financial assurance totals $4,518,865 for the access road and powerline and $23,079,740 for the mine site facility. As of June 1, 2006, the Pogo Joint Venture has placed irrevocable letters of credit with the State of Alaska in full for these amounts.

A summary of the reclamation and closure costs is provided in Table 5.1.

5.1 ALL-SEASON ROAD AND TRANSMISSION LINE

Road construction was completed in late 2004. During 2006, reclamation was completed at MS 3, 5, 6, 8, 9A, 15, 19, 19A, and 20. Several sites were never developed during construction, including MS 1, 4, 9, 10, 11, 13, 14, 17, 21, 22 and 24. Sites that will either continue to be used or which require further reclamation include MS 7, 15, 16, 18, and 23.

As a result of completion of this concurrent reclamation on the road and powerline, the financial assurance currently in place for the all-season road is believed to be more than adequate. A review of reclamation and closure costs will be completed as part of the 5 year review of the Pogo plan of operations.

5.2 POGO MILLSITE LEASE

Construction of the Pogo mine began during 2004. During 2007, Teck-Pogo conducted activities in accordance with approved plans. There have been no significant changes to the facility or operations as compared to the approved plans. To date, there has been no concurrent reclamation completed. Reclamation of Material Site D had been planned for 2007. However, review of the closure plan requirements shows that colluviums from Material Site D could

be efficiently used during ultimate closure of the drystack, so the Material Site D work was put on hold. A review of reclamation and closure costs will be completed as part of the 5 year review of the Pogo plan of operations.

Table 5.1
Pogo Mine
Summary of Reclamation and Closure Cost Estimate
Updated as of Feb 2005

			Road	T-Line	Minesite
Phase I	Post Construction		$ 483,000	$ 138,000	$ 437,221
Phase II	Concurrent with Mining		$ 110,000	$ 9,000	$ 778,514
Phase III	Final Reclamation and Closure		$ 1,096,515	$ 1,570,000	$ 9,102,377
Phase IV	Post Closure Reclamation		$ 37,000	$ 6,000	$ 6,105,010
Phase V	Post Closure Monitoring				$ 1,195,000
	Total Direct Costs		$ 1,726,515	$ 1,723,000	$ 17,618,122
Contractor Profit & Overhead		10%	$ 172,652	$ 172,300	$ 1,761,812
Contingency		10%	$ 172,652	$ 172,300	$ 1,761,812
Agency Administration Costs		3%	$ 51,795	$ 51,690	$ 528,544
Contractor Mob/Demob		5%	$ 86,326	$ 86,150	$ 880,906
Engineering Redesign		3%	$ 51,795	$ 51,690	$ 528,544
	Total Indirect Costs		$ 535,220	$ 534,130	$ 5,461,618
Total Road			$ 2,261,735		
Total Transmission Line				$ 2,257,130	
Total MillSite					$ 23,079,740
Total Road & Transmission Line				$ 4,518,865	
Total Project					$ 27,598,605

6 Planned 2008 Activities

6.1 OPERATIONS

Additional work is planned in the mill to optimize the circuit and improve recovery.

A continued focus on underground development is required to open up the additional ore headings that are needed to reach the full production rate of 2,500 tons per day. The development contractor will remain on site throughout the year with 40-50 employees operating out of the construction camp.

Mining of additional gravel from the permitted borrow site near the north end of the airstrip will provide road topping material required for underground and surface facilities.

Non-mineralized development rock will be placed in select areas of the existing permitted laydown areas to augment the existing fills and raise the level of the work and storage areas above Goodpaster river flood levels.

New surface disturbance will be limited to expansion of the drystack tailings storage area within the permitted footprint.

Concurrent reclamation is planned for the transmission line over Pogo ridge and areas adjacent to the airstrip.

6.2 ALL-SEASON ROAD

In addition to routine maintenance, additional safety berms and/or guardrail will be completed. Material from MS16 and MS18 will be used as required.

6.3 EXPLORATION

A helicopter supported surface exploration program targeting 37,000 feet of drilling is planned on the Pogo Joint Venture property. Ten holes are expected

to be completed within the Pogo millsite lease.

6.4 PERMITTING ACTIVITIES

Significant permitting activities planned for 2008 include completion of the third party environmental audit and renewal of the Alaska Department of Natural Resources (ADNR) Pogo Mine Millsite Lease ADL416949, ADNR Plan of Operations Approval F20039500, the Alaska Department of Environmental Conservation (ADEC) Waste Disposal Permit, 0131-BA002, the ADEC Non-domestic Wastewater Disposal Permit, 2004-DB0070, as well as submission of application for renewal of the U.S. Environmental Protection Agency (EPA) NPDES Permit AK005334-1.

Appendix A

Floatation Tailings and Development Rock Chemistry

Appendix A. Table 1. Pogo Mine Effluent Toxicity Testing (WET) 2007

Species	NOEC (%)	LOEC (%)	IC_{25} (%)	TUc
Ceridaphinia dubia	100	90	>100	<1.00
Pimephales promelas	97.5	90	>100	<1.00

NOEC=No Observed Effect Concentration

LOEC=Low Observed Effect Concentration

IC_{25} = Inhibition Concentration (25%)

Tuc = Toxic Units (Chronic)

Appendix A. Table 2. Whole Rock Geochemistry for Rock placed into Drystack 2007

PC002	units	1st Quarter 30-Mar-07	2nd Quarter 28-Jun-07	3rd Quarter 3-Oct-07	4th Quarter 5-Dec-07
Arsenic, Total	mg/kg	5790.0	39.5	1250	617
Copper, Total	mg/kg	58.4	23.6	47.4	29.8
Iron, Total	mg/kg	3270	3700	3800	3270
Lead, Total	mg/kg	17.8	15.7	16.9	20.9
Zinc, Total	mg/kg	42	61	55	47
pH, Paste	pH units	8.6	8.3	9.0	9.1
Total Sulfur, (Leco)	%	0.54	0.24	0.46	0.26
Sulfate Sulfur (Carbonate Leach)	%	0.02	0.02	<0.01	0.03
Sulfate Sulfur (HCL Leachable)	%	<0.01	<0.01	0.02	<0.01
Sulfide Sulfur (Calculated)	%	0.52	0.22	0.46	0.23
Neutralization Potential	tCaCO3/1000t	36	34	28	26
Maximum Potential Acidity	tCaCO3/1000t	16.9	7.5	14.4	8.1
Ratio (NP/MPA)	su	2.13	4.53	1.95	3.20
Inorganic Carbon	%	2.10	1.70	0.90	1.00
Carbon	%	0.56	0.46	0.24	0.28

Appendix A. Table 3. Geochemistry of Flotation Tailings Solids placed into Drystack 2007

PC003	units	1st Quarter 6-Mar-07	2nd Quarter 12-Jun-07	3rd Quarter 11-Sep-07	4th Quarter 4-Dec-07
Arsenic, Total	mg/kg	1300.0	2400.0	1285	1030
Copper, Total	mg/kg	25.3	25.7	27.8	29.4
Iron, Total	mg/kg	2540	2450	2550	2920
Lead, Total	mg/kg	13.9	12.4	12.8	12.1
Zinc, Total	mg/kg	22	20	18	20
pH, Paste	pH units	7.5	7.6	7.8	8.1
Total Sulfur, (Leco)	%	0.19	0.26	0.19	0.16
Sulfate Sulfur (Carbonate Leach)	%	0.01	0.05	0.03	0.14
Sulfate Sulfur (HCL Leachable)	%	<0.01	0.06	0.01	<0.01
Sulfide Sulfur (Calculated)	%	0.18	0.21	0.16	0.14
Neutralization Potential	tCaCO3/1000t	34	36	31	35
Maximum Potential Acidity	tCaCO3/1000t	5.9	8.1	5.9	5.0
Ratio (NP/MPA)	su	5.73	4.43	5.22	7.00
Inorganic Carbon	%	1.7	1.60	1.7	1.8
Carbon	%	0.46	0.45	0.46	0.48

Appendix B

Time Series Plots

Table B1. Time Series for Effluent Monitoring Program

Chart B1.1. Values over time for Cyanide WAD (ug/L)

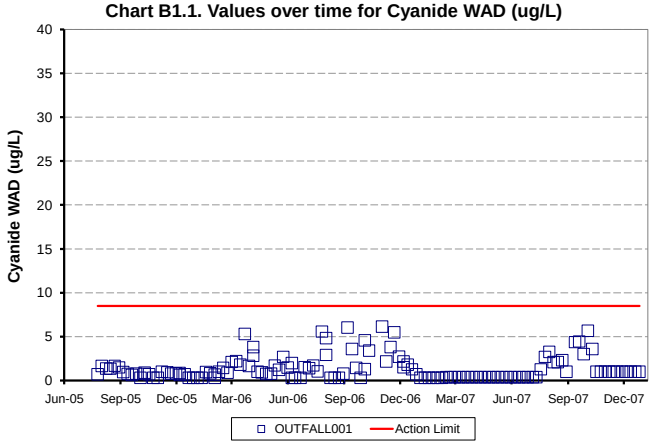


Chart B1.2. Values over time for Sulfate (mg/L)

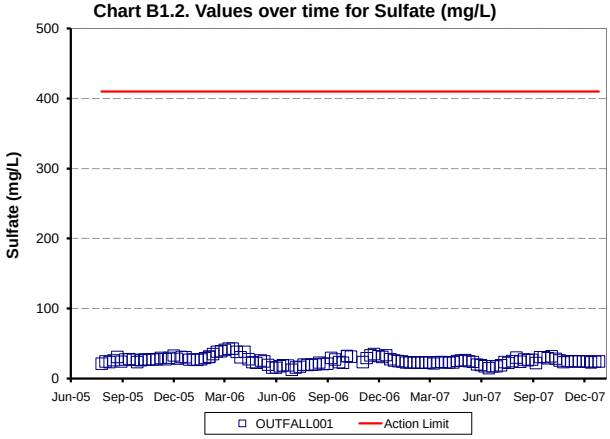


Chart B1.3. Values over time for Arsenic, total (ug/L)

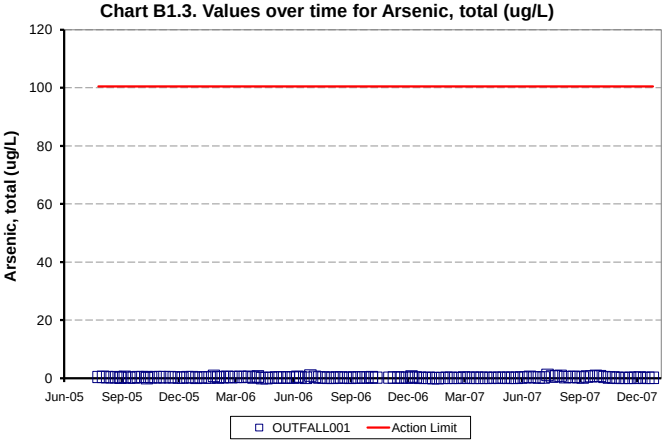


Chart B1.4. Values over time for Cadmium, total (ug/L)

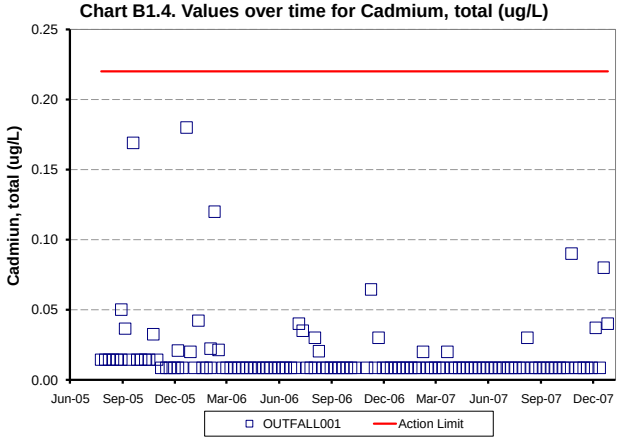


Chart B1.5. Values over time for Chromiun, total (ug/L)

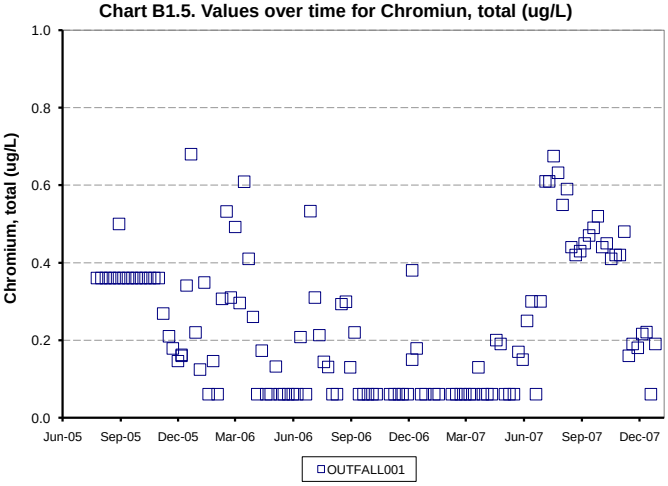


Chart B1.6. Values over time for Copper, total (ug/L)

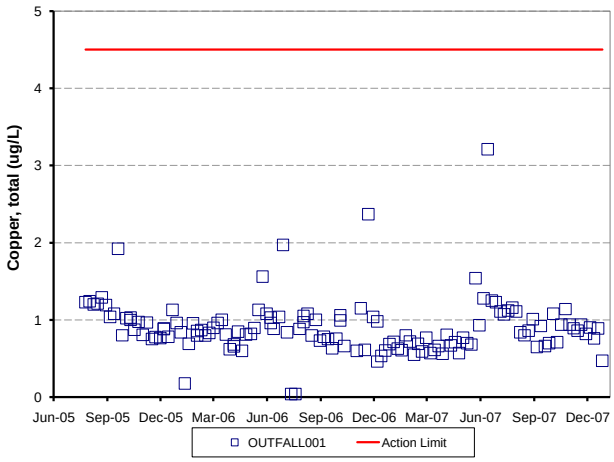


Table B1. Time Series for Effluent Monitoring Program (continued)

Chart B1.7. Values over time for Lead, total (ug/L)

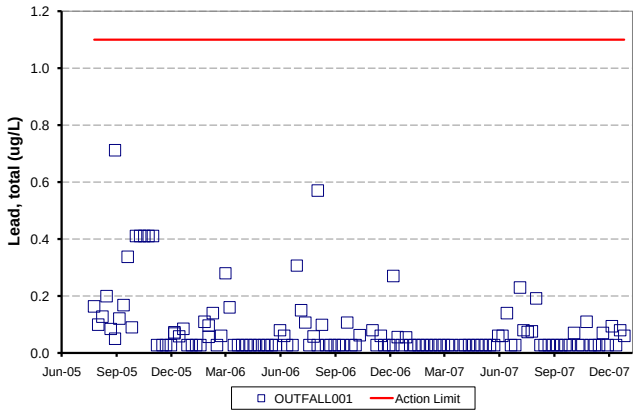


Chart B1.8. Values over time for Manganese, total (ug/L)

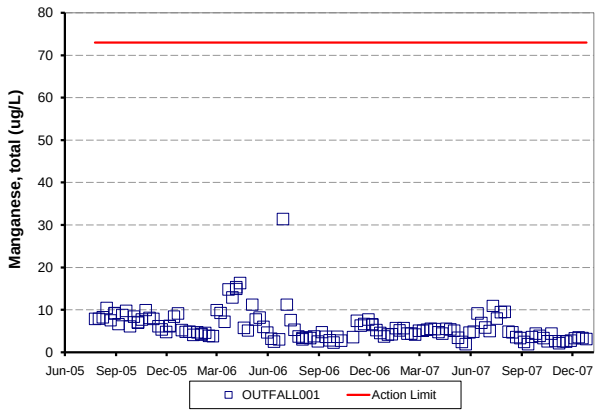


Chart B1.9. Values over time for Mercury, total (ug/L)

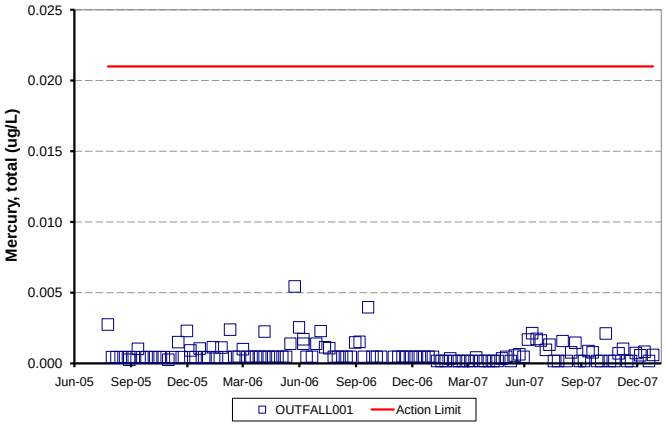


Chart B1.10. Values over time for Nickel, total (ug/L)

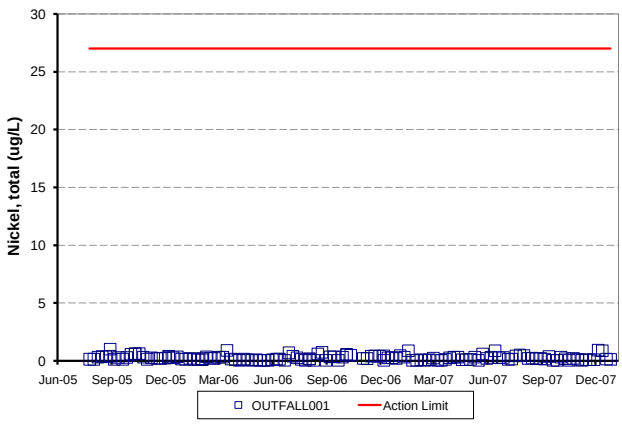


Chart B1.11. Values over time for Zinc, total (ug/L)

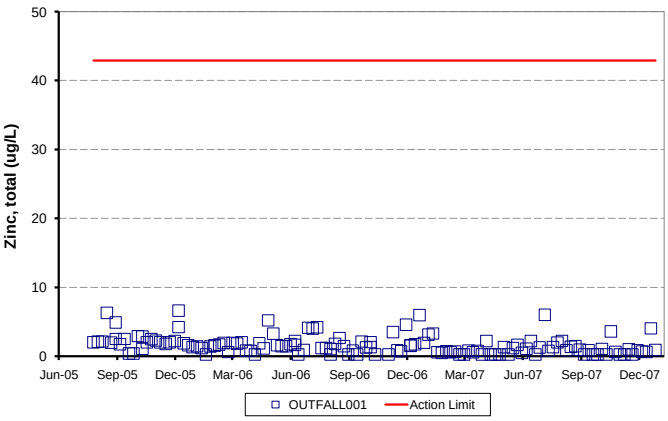


Chart B1.12. Values over time for Hardness (CaCO3) (mg/L)

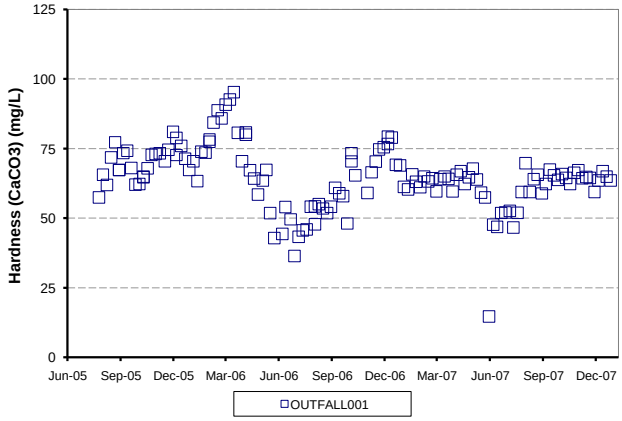


Table B1. Time Series for Effluent Monitoring Program (continued)

Chart B1.13. Values over time for pH, field (pH units)

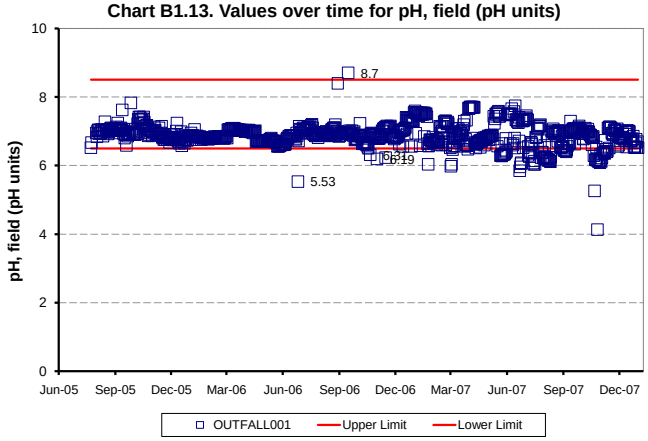


Chart B1.14. Values over time for TDS (mg/L)

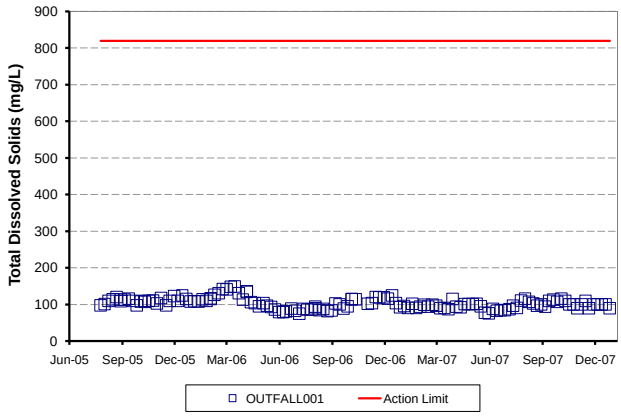


Chart B1.15. Values over time for Turbidity, field (NTU)

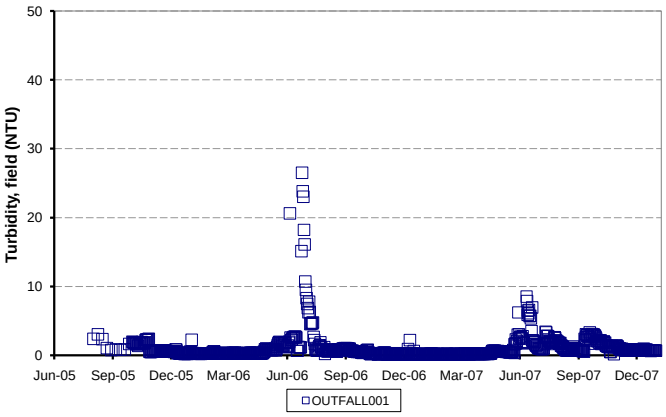


Chart B1.16. Values over time for Flow (gpm)

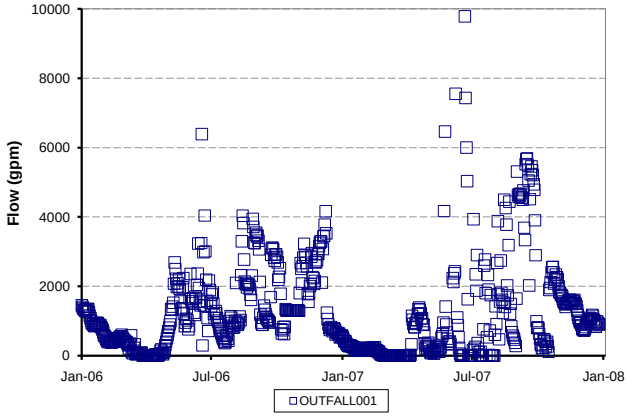


Chart B1.17. Values over time for Dilution Ratio

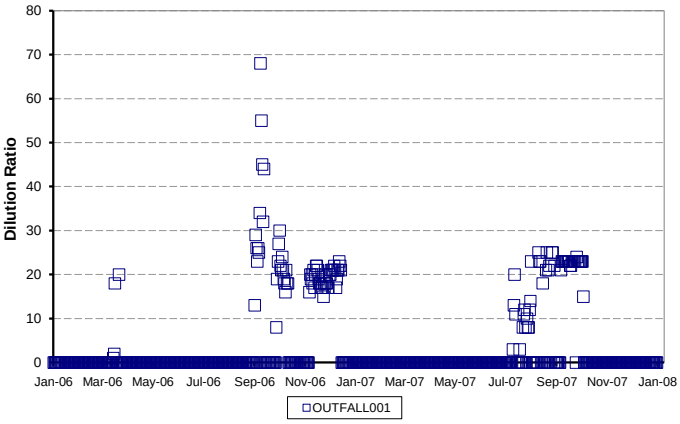


Table B1. Time Series for Effluent Monitoring Program (continued)

Chart B1.18. Values over time for Cyanide WAD (ug/L)

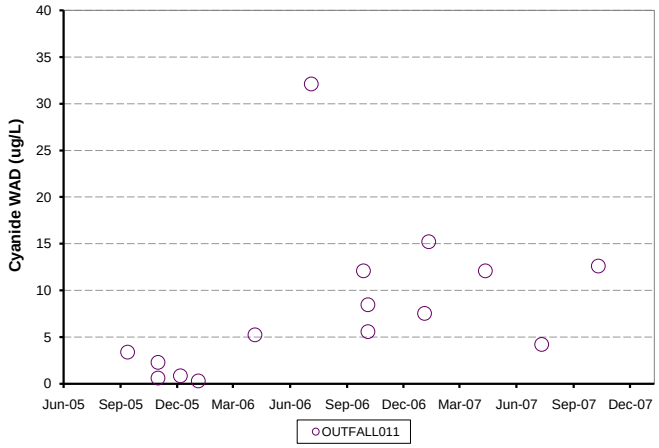


Chart B1.19. Values over time for Chloride (mg/L)

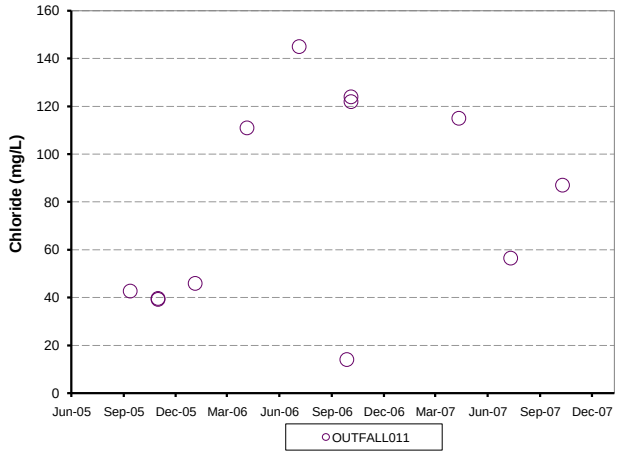


Chart B1.20. Values over time for Sulfate (mg/L)

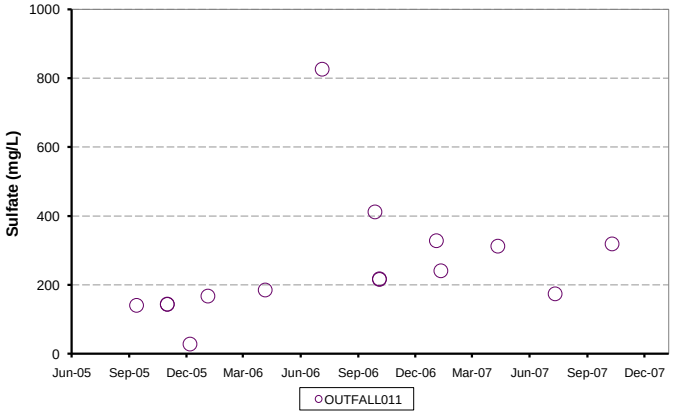


Chart B1.21. Values over time for Aluminum, total (ug/L)

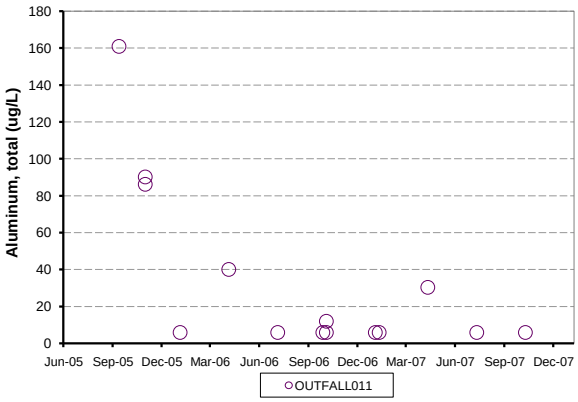


Chart B1.22. Values over time for Arsenic, total (ug/L)

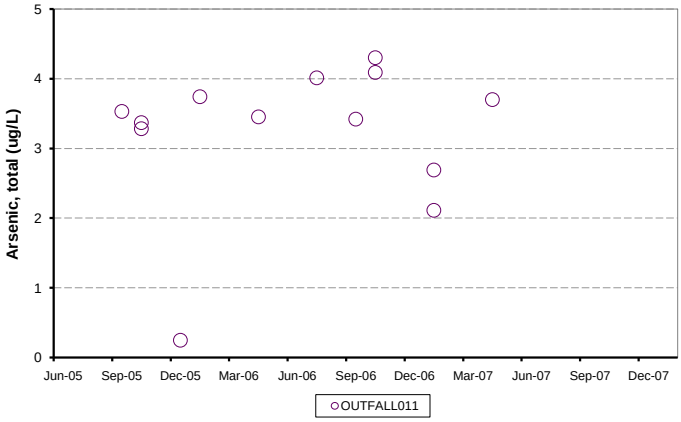


Chart B1.23. Values over time for Cadmium, total (ug/L)

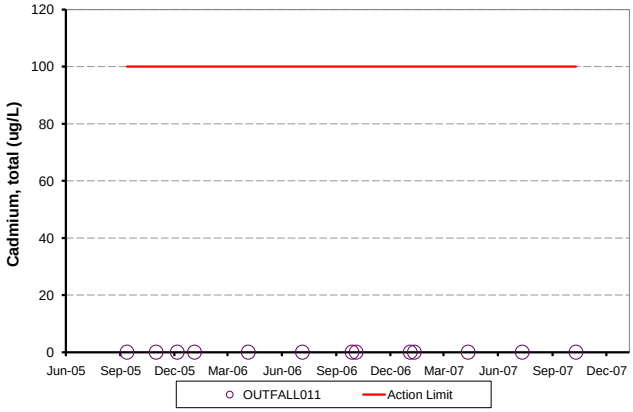


Table B1. Time Series for Effluent Monitoring Program (continued)

Chart B1.24. Values over time for Chromium, total (ug/L)

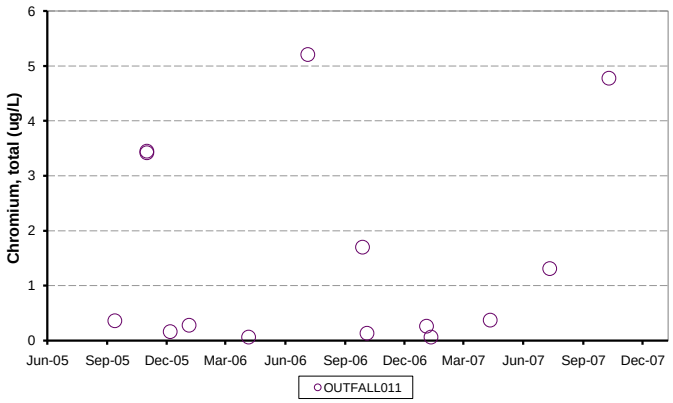


Chart B1.25. Values over time for Copper, total (ug/L)

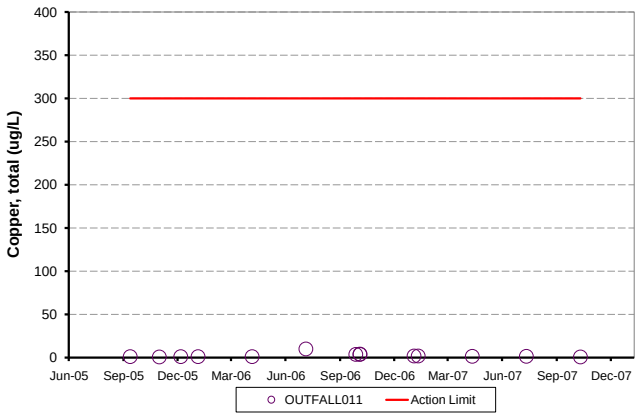


Chart B1.26. Values over time for Iron, total (ug/L)

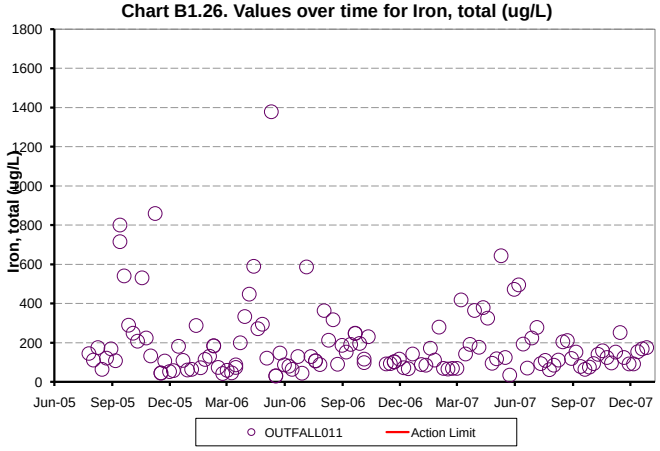


Chart B1.27. Values over time for Lead, total (ug/L)

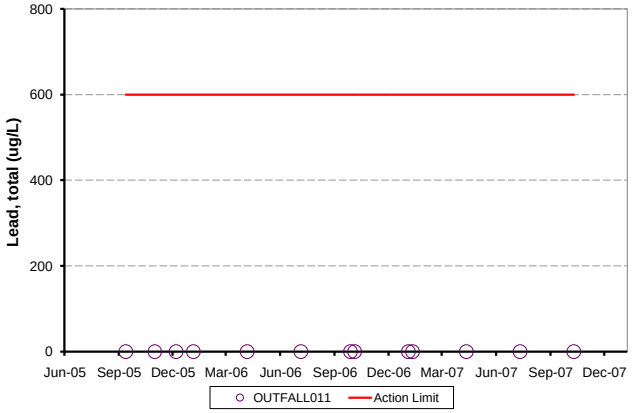


Chart B1.28. Values over time for Mercury, total (ug/L)

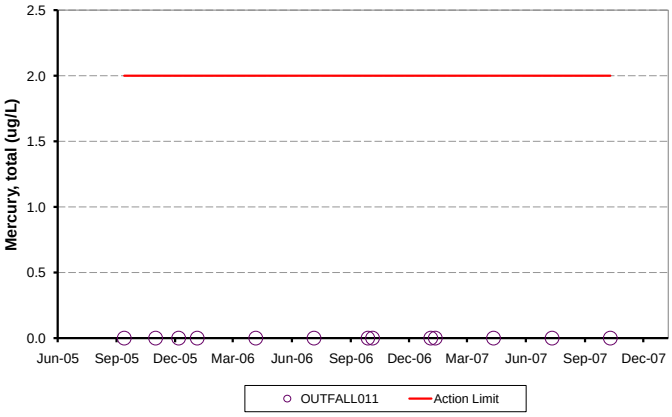


Chart B1.29. Values over time for Nickel, total (ug/L)

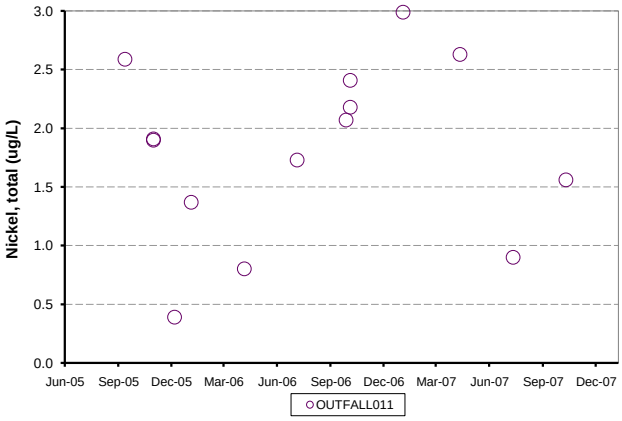


Table B1. Time Series for Effluent Monitoring Program (continued)

Chart B1.30. Values over time for Selenium, total (ug/L)

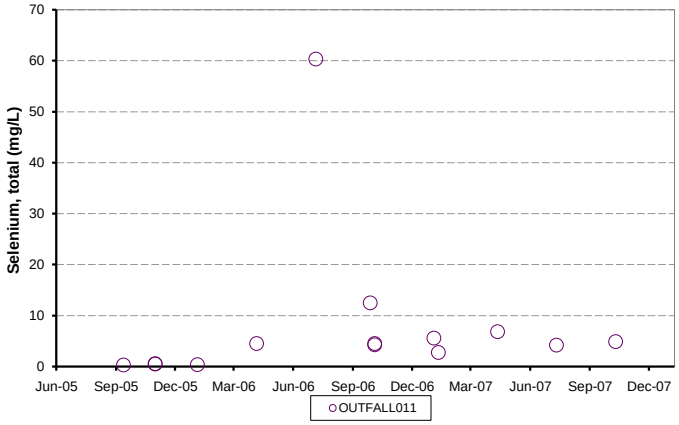


Chart B1.31. Values over time for Silver, total (ug/L)

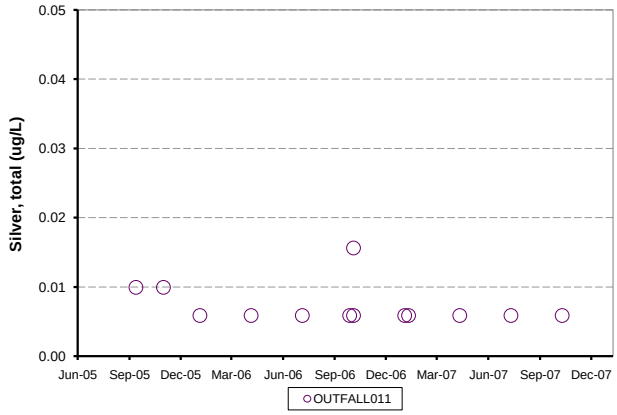


Chart B1.32. Values over time for Zinc, total (ug/L)

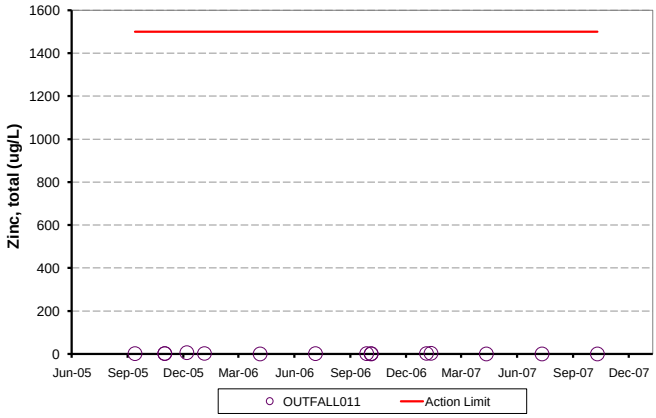


Chart B1.33. Values over time for Hardness (CaCO3) (mg/L)

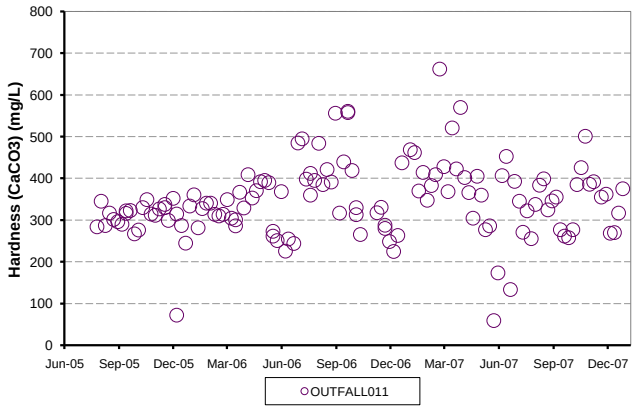


Chart B1.34. Values over time for pH, field (pH units)

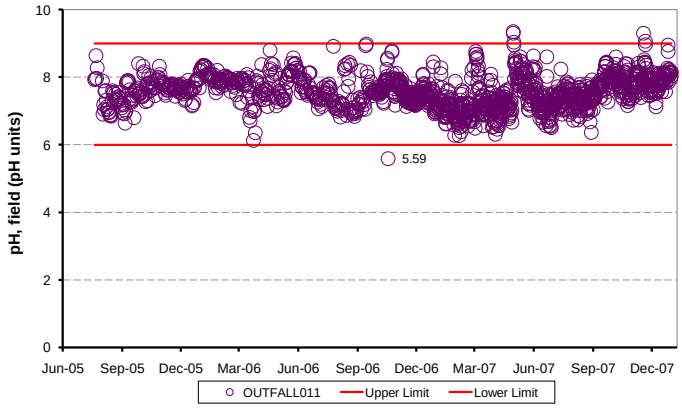


Chart B1.35. Values over time for TDS (mg/L)

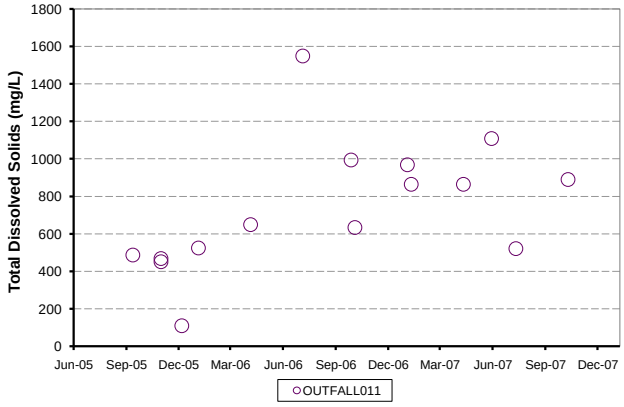


Table B1. Time Series for Effluent Monitoring Program (continued)

Chart B1.36. Values over time for TSS (mg/L)

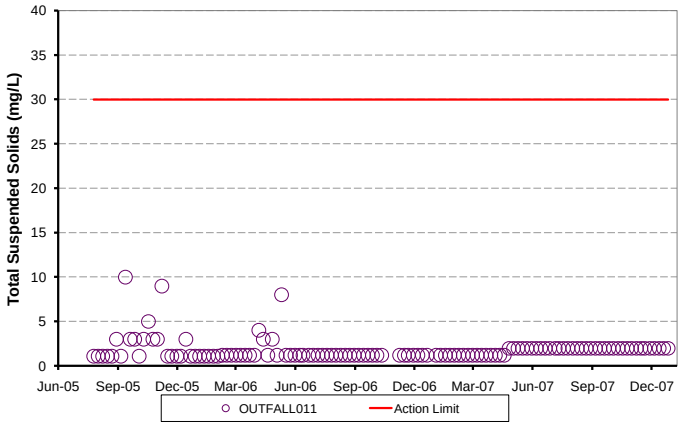


Chart B1.37. Values over time for Flow (gpm)

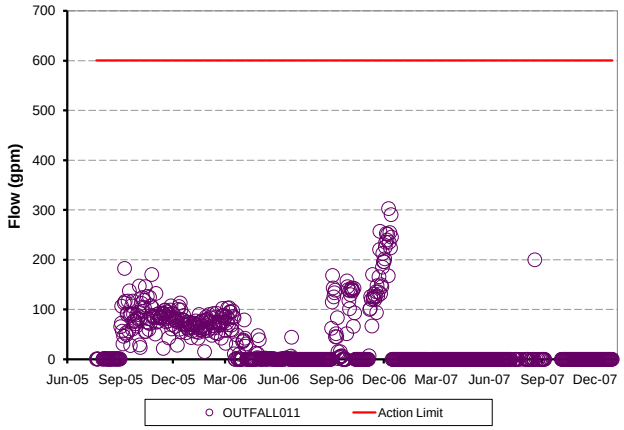


Chart B1.38. Values over time for Nitrate-N (mg/L)

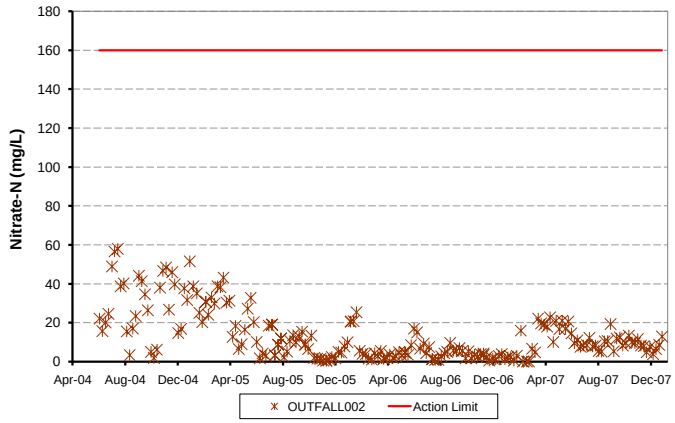


Chart B1.39. Values over time for BOD, 5 day (mg/L)

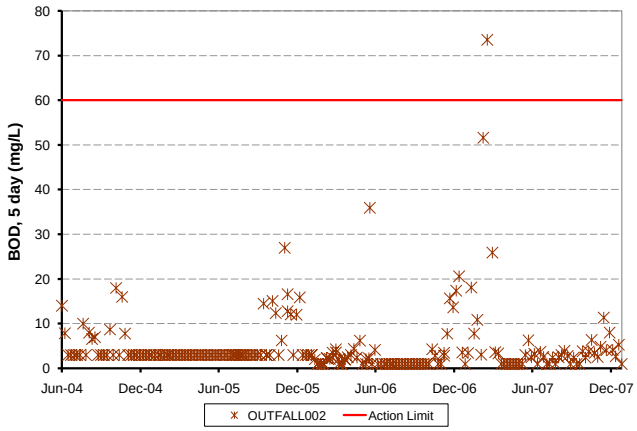


Chart B1.40. Values over time for Dissolved O2 (mg/L)

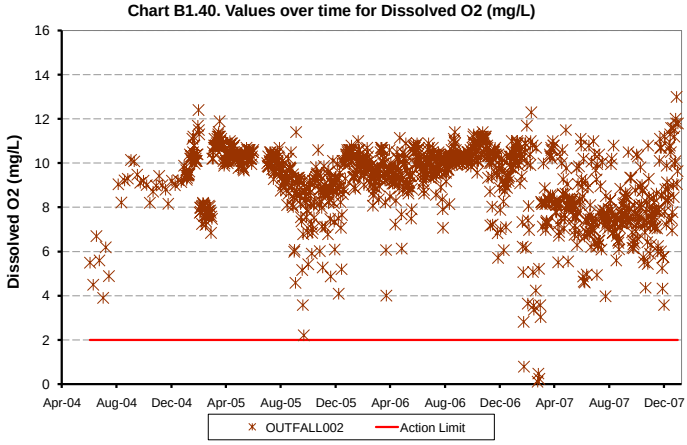


Chart B1.41. Values over time for pH, field (pH units)

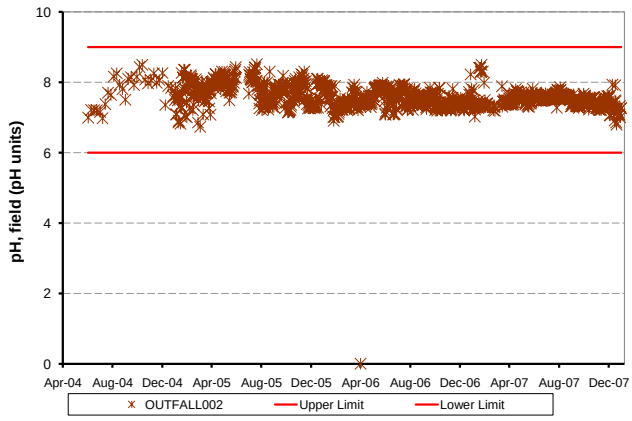


Table B1. Time Series for Effluent Monitoring Program (continued)

Chart B1.42 Values over time for TSS (mg/L)

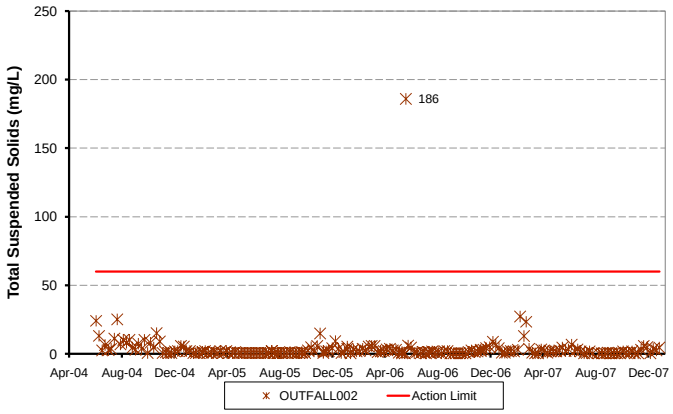


Chart B1.43 Values over time for Fecal Coliform (#/100mL)

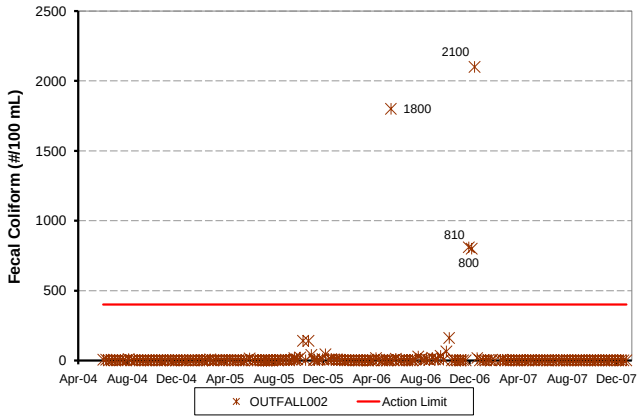


Chart B1.44. Values over time for Flow (gpd)

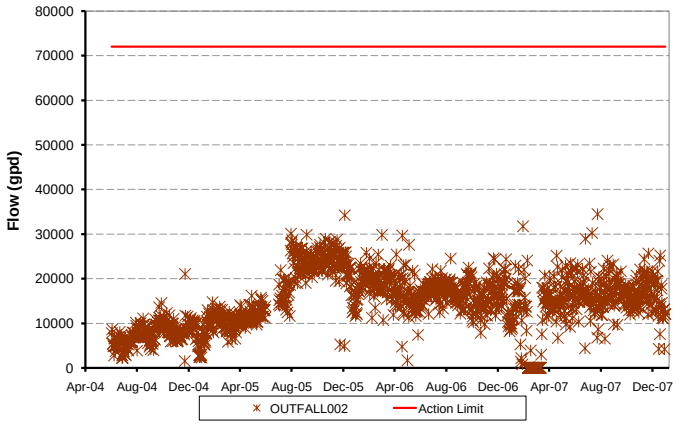


Chart B1.45. Values over time for Lead, total (ug/L)

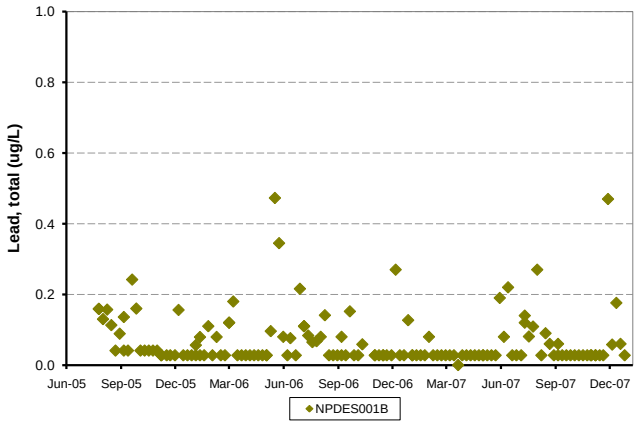


Chart B1.46. Values over time for Mercury, total (ug/L)

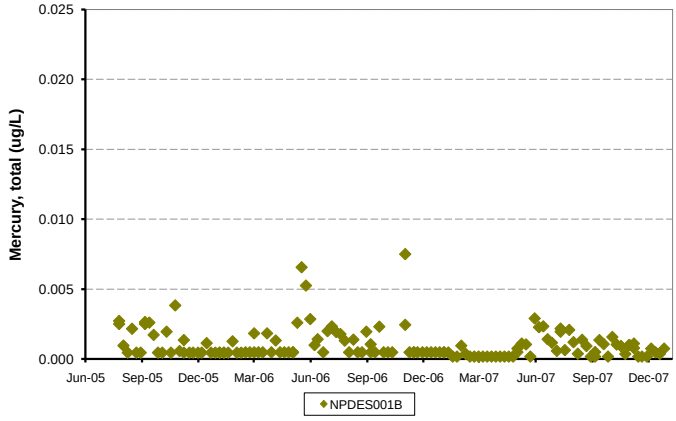


Chart B1.47. Values over time for Turbidity, field (NTU)

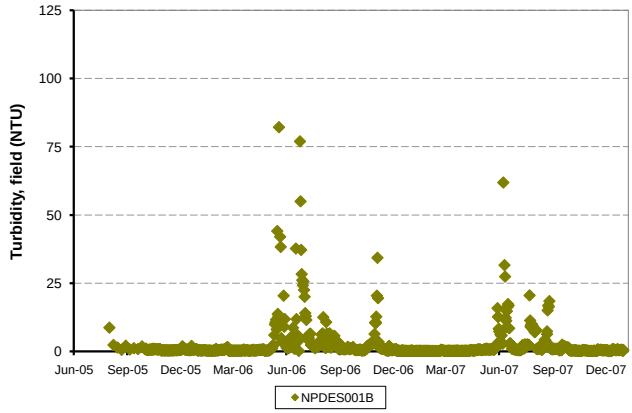
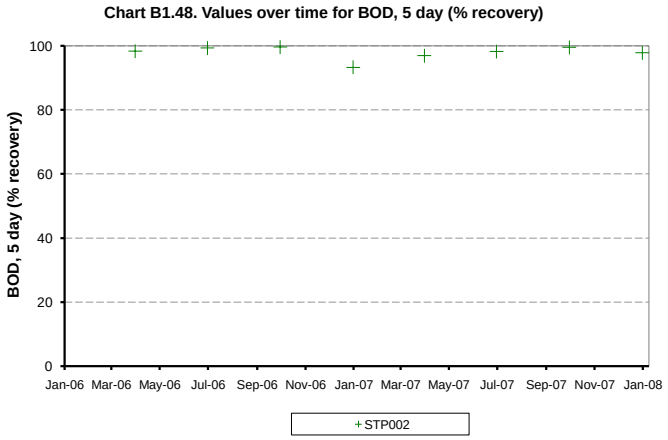


Table B1. Time Series for Effluent Monitoring Program (continued)



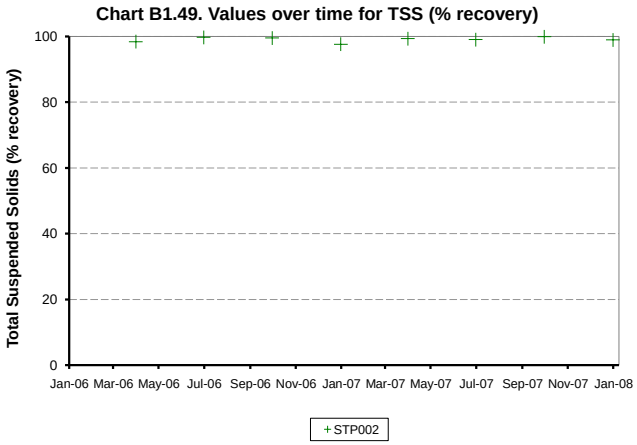


Table B2. Time Series for Groundwater Monitoring Program

Chart B2.1. Values over time for Chloride (mg/L)

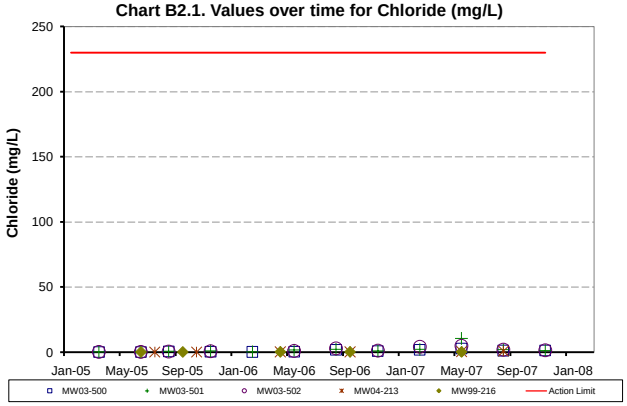


Chart B2.2. Values over time for Cyanide WAD (ug/L)

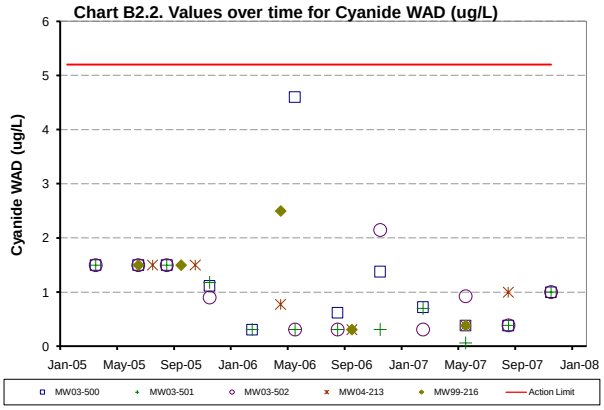


Chart B2.3. Values over time for Nitrate-N (mg/L)

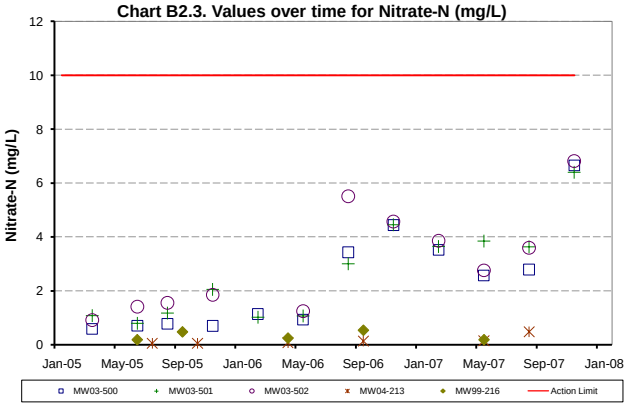


Chart B2.4. Values over time for Sulfate (mg/L)

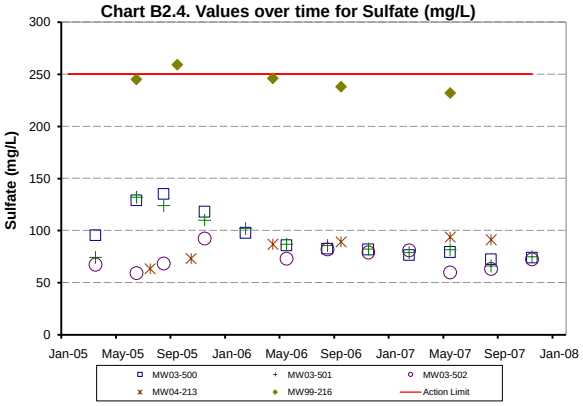


Chart B2.5. Values over time for Arsenic, dissolved (ug/L)

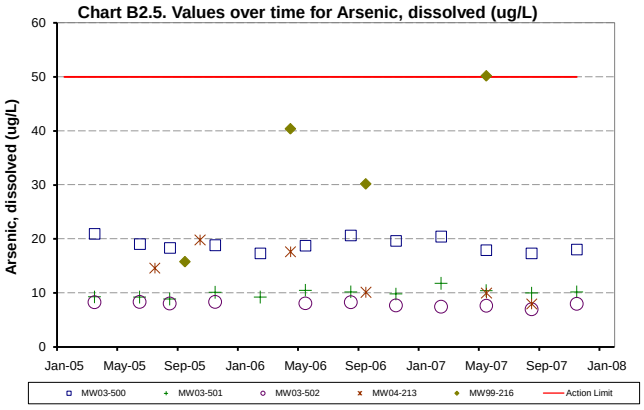


Chart B2.6. Values over time for Cadmium, dissolved (ug/L)
(Cadmium is hardness dependent. For graphing purposes, the lowest hardness value in the data series was used)

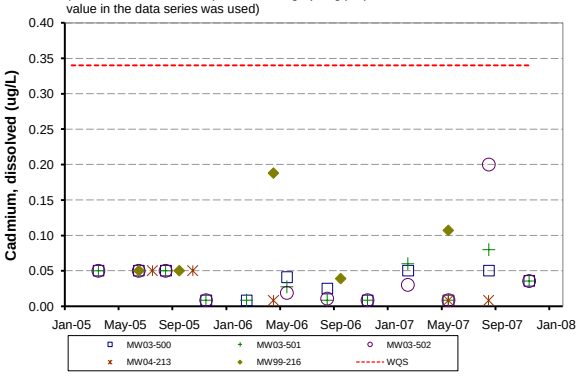


Table B2. Time Series for Groundwater Monitoring Program (continued)

Chart B2.7. Values over time for Chromium, dissolved (ug/L)

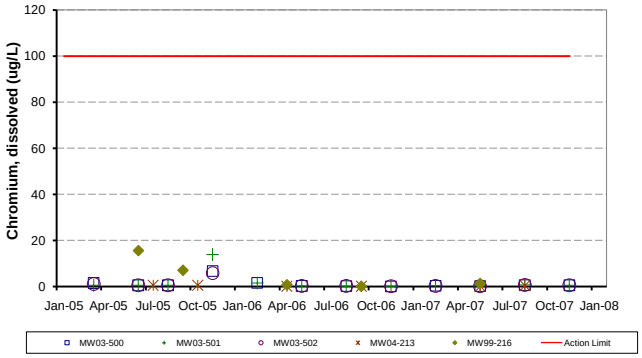


Chart B2.8. Values over time for Copper, dissolved (ug/L)
(Copper is hardness dependent. For graphing purposes, the lowest hardness value in the data series was used)

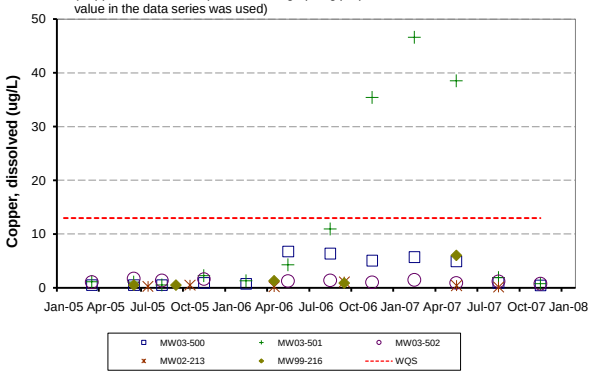


Chart B2.9. Values over time for Iron, dissolved (ug/L)

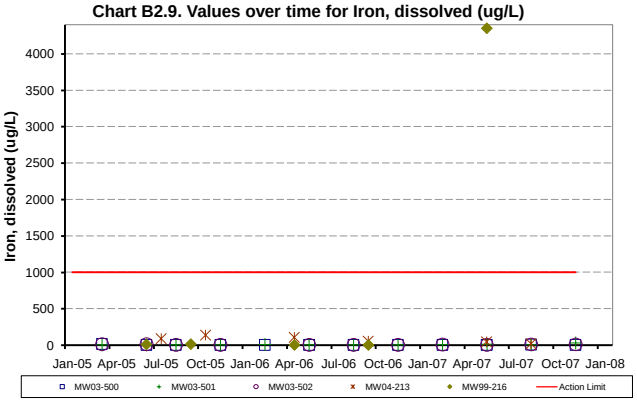


Chart B2.10. Values over time for Lead, dissolved (ug/L)
(Lead is hardness dependent. For graphing purposes, the lowest hardness value in the data series was used)

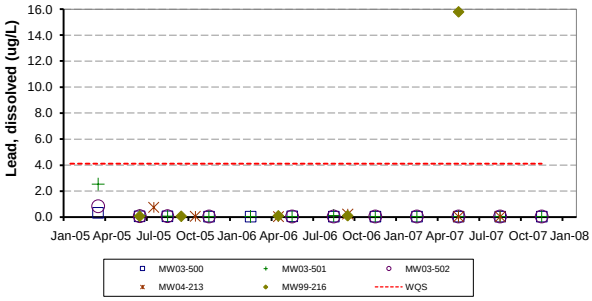


Chart B2.11. Values over time for Manganese, dissolved (ug/L)

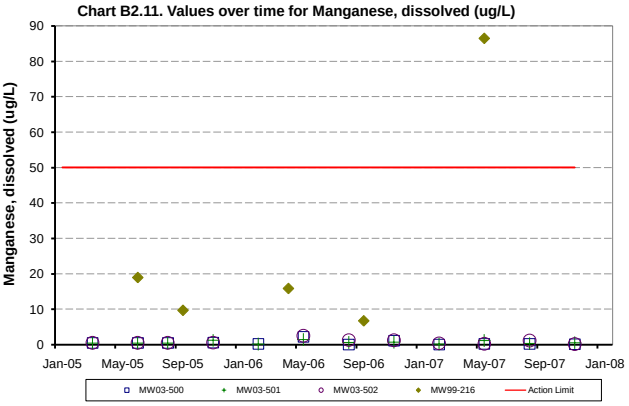


Chart B2.12. Values over time for Mercury, dissolved (ug/L)

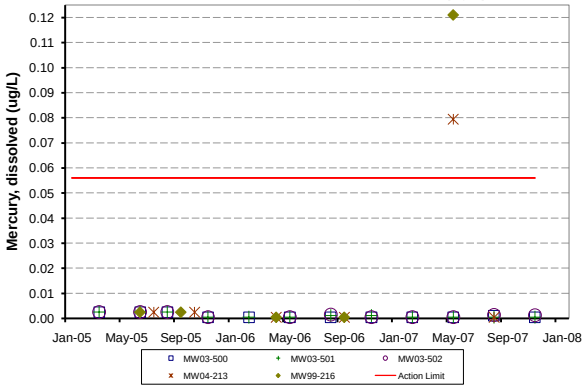


Table B2. Time Series for Groundwater Monitoring Program (continued)

Chart B2.13. Values over time for Nickel, dissolved (ug/L)
(Nickel is hardness dependent. For graphing purposes, the lowest hardness value in the data series was used)

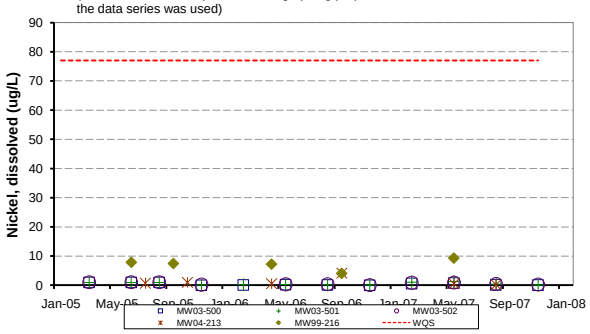


Chart B2.14. Values over time for Selenium, dissolved (ug/L)

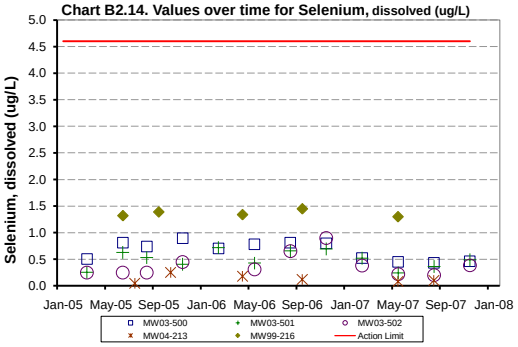


Chart B2.15. Values over time for Silver, dissolved (ug/L)

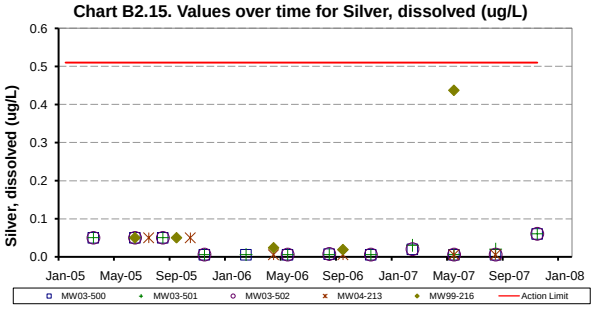


Chart B2.16. Values over time for Zinc, dissolved (ug/L)
(Zinc is hardness dependent. For graphing purposes, the lowest hardness value in the data series was used)

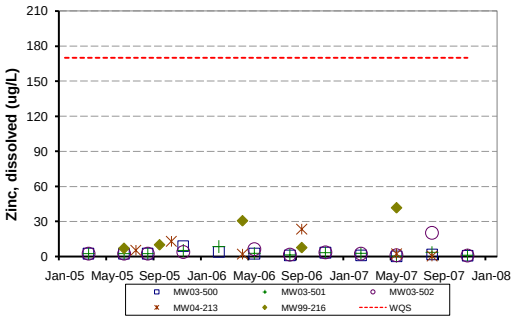


Chart B2.17. Values over time for Hardness (CaCO3) (mg/L)

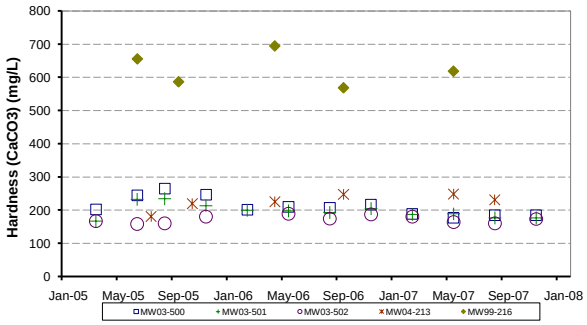


Chart B2.18. Values over time for pH, field (pH units)

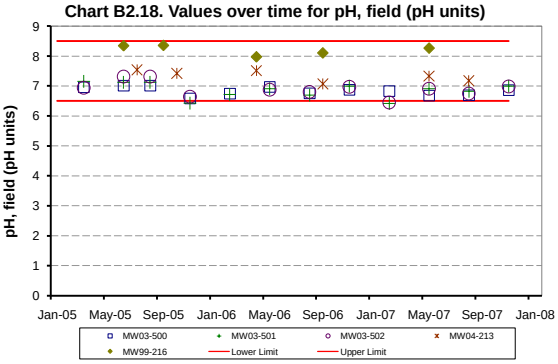


Table B2. Time Series for Groundwater Monitoring Program (continued)

Chart B2.19. Values over time for TDS (mg/L)

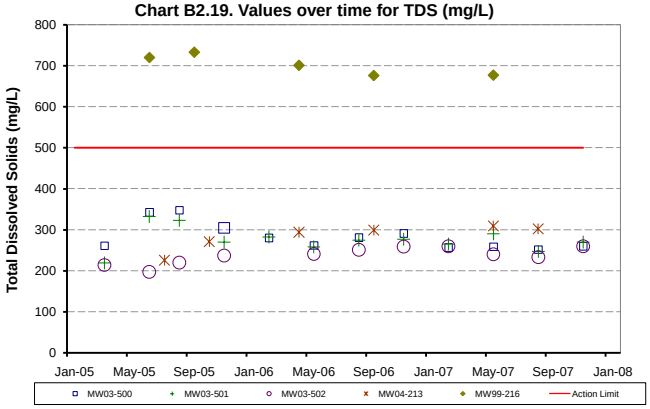


Chart B2.20. Values over time for TKN (mg/L)

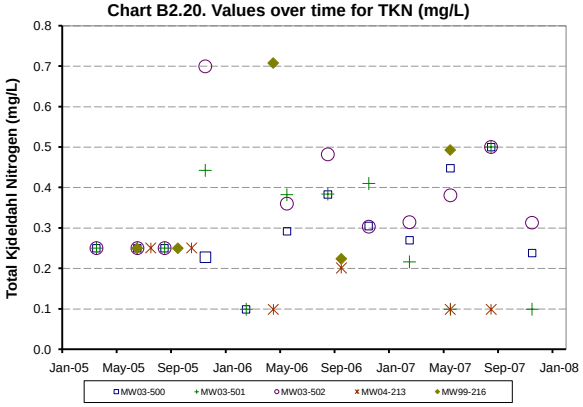


Chart B2.21. Values over time for Cyanide WAD (ug/L)

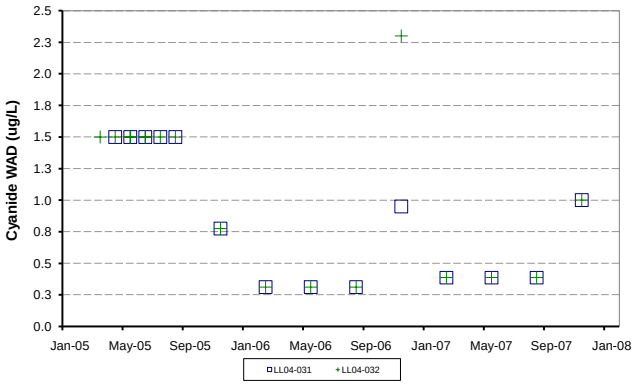


Chart B2.22. Values over time for Sulfate (mg/L)

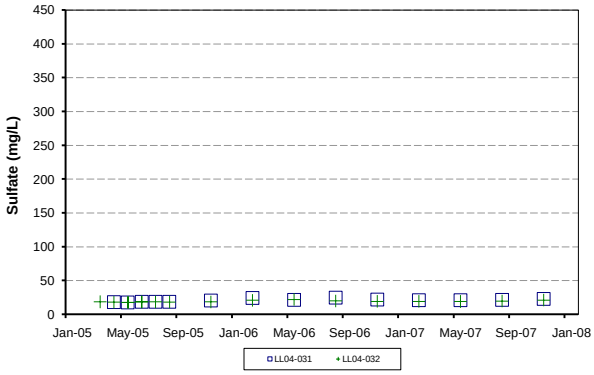


Chart B2.23. Values over time for Arsenic, total (ug/L)

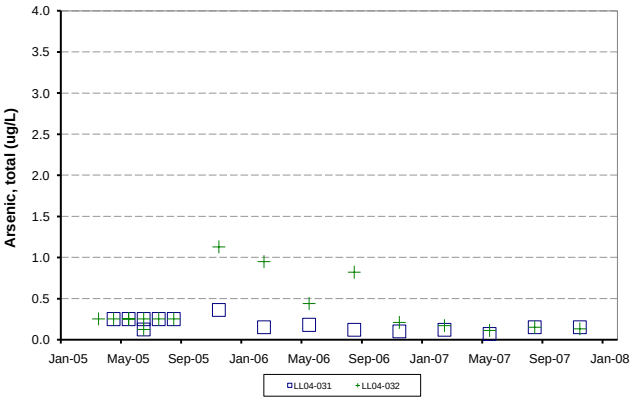


Chart B2.24. Values over time for Cadmium, total (ug/L)

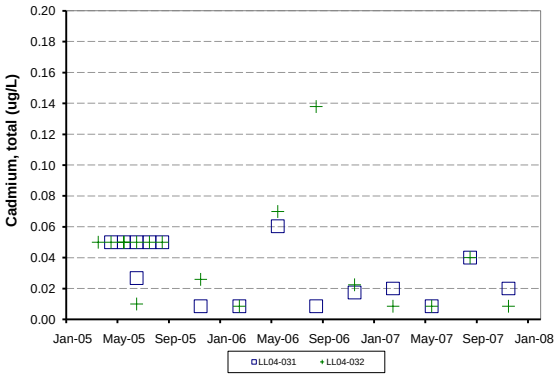


Table B2. Time Series for Groundwater Monitoring Program (continued)

Chart B2.25. Values over time for Chromium, total (ug/L)

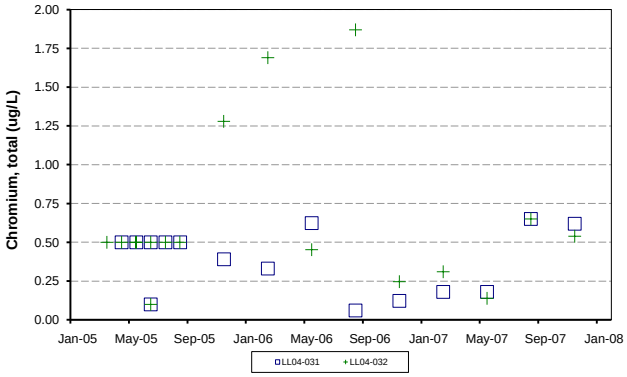


Chart B2.26. Values over time for Copper, total (ug/L)

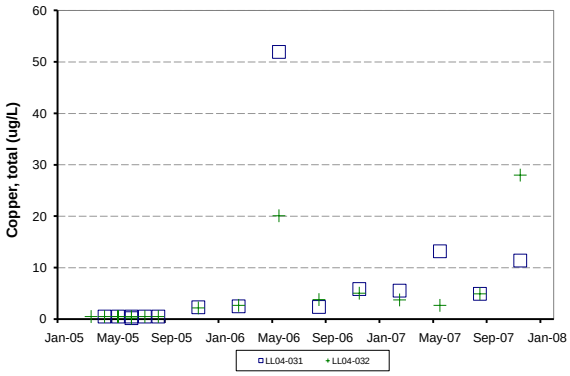


Chart B2.27. Values over time for Lead, total (ug/L)

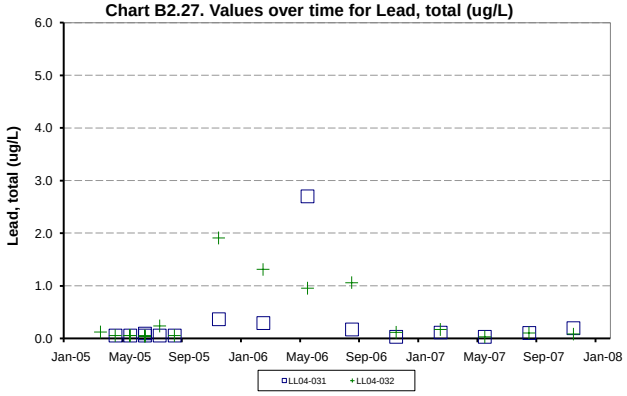


Chart B2.28. Values over time for Manganese, total (ug/L)

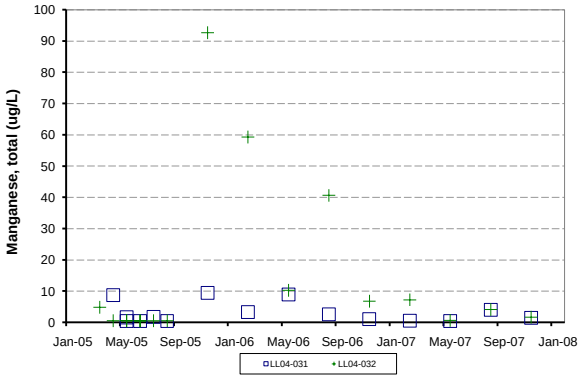


Chart B2.29. Values over time for Mercury, total (ug/L)

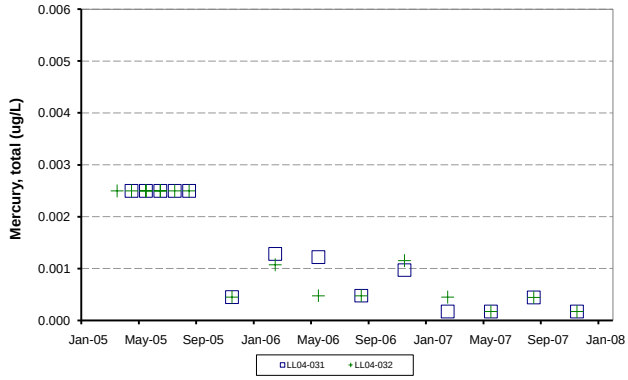


Chart B2.30. Values over time for Nickel, total (ug/L)

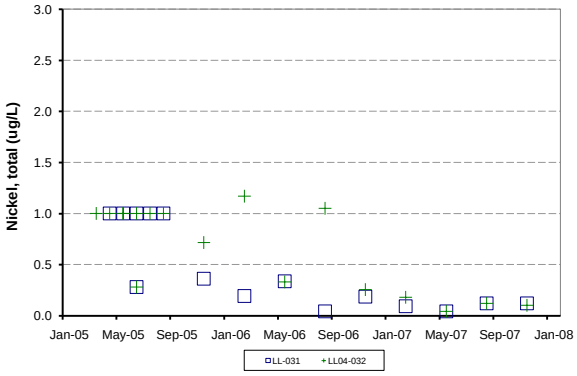


Table B2. Time Series for Groundwater Monitoring Program (continued)

Chart B2.31. Values over time for Zinc, total (ug/L)

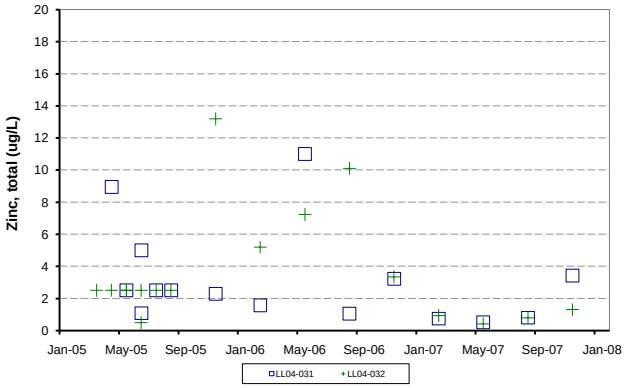


Chart B2.32. Values over time for Hardness (CaCO3) (mg/L)

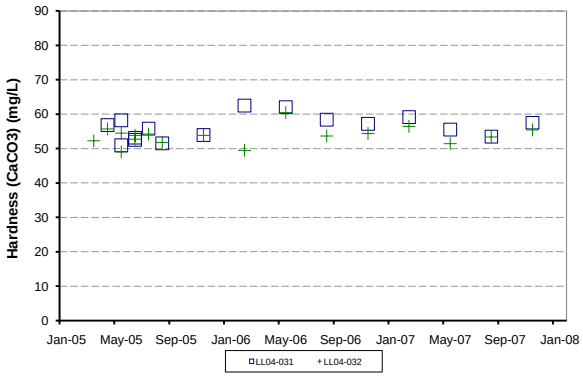


Chart B2.33. Values over time for pH, field (pH units)

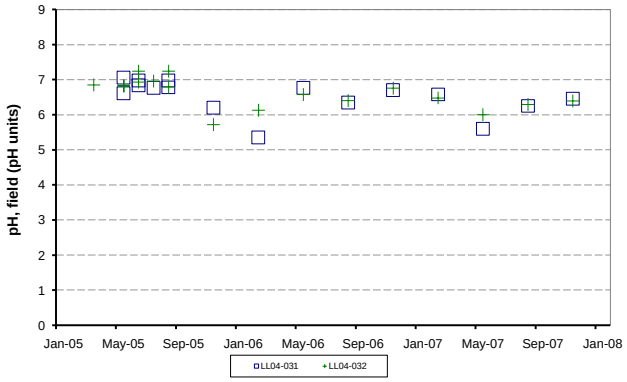


Chart B2.34. Values over time for TDS (mg/L)

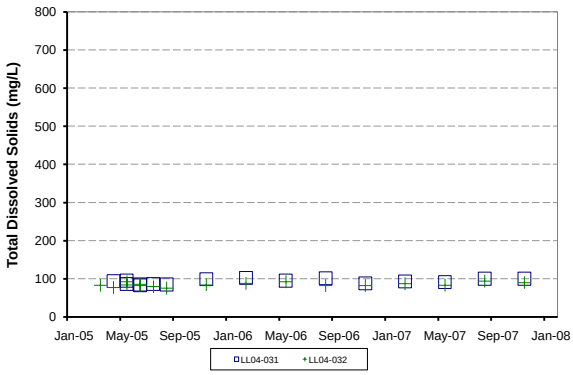


Chart B2.35. Values over time for Elevation (feet)

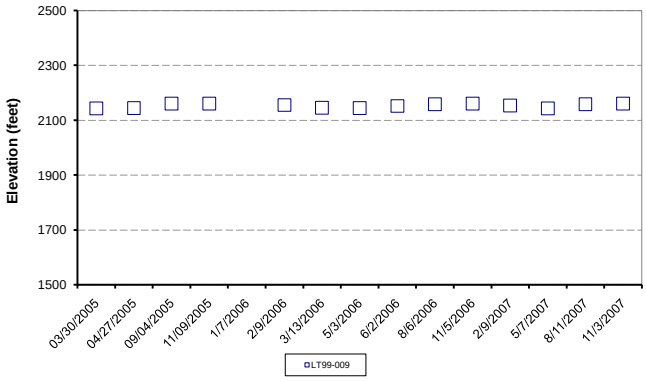
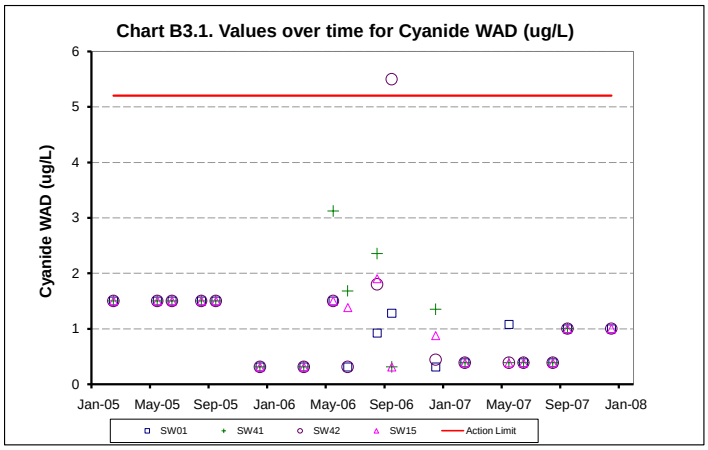
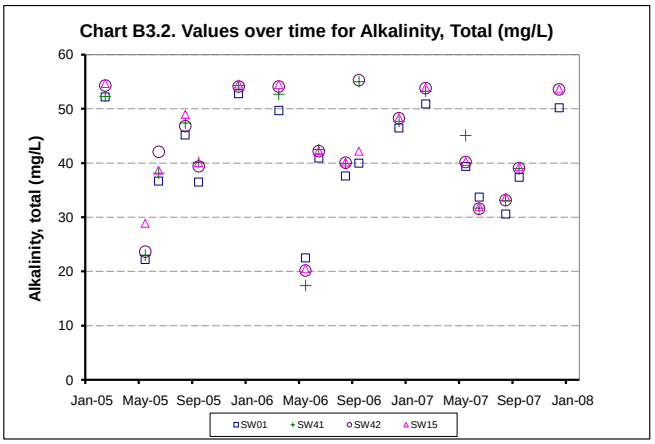
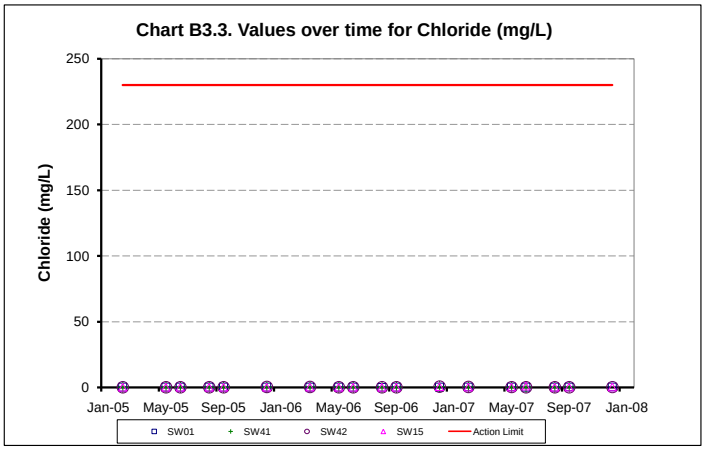
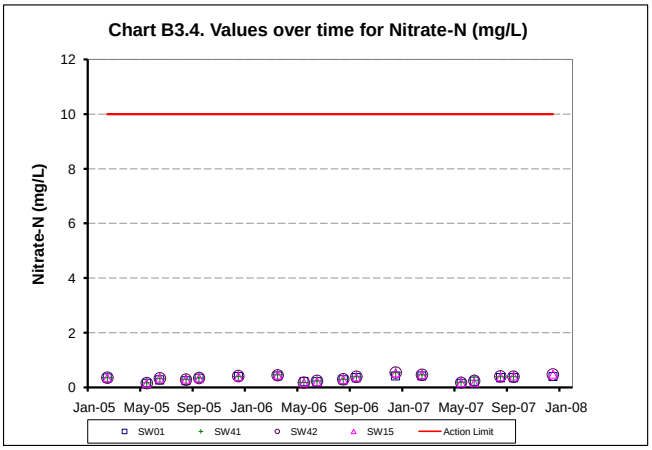


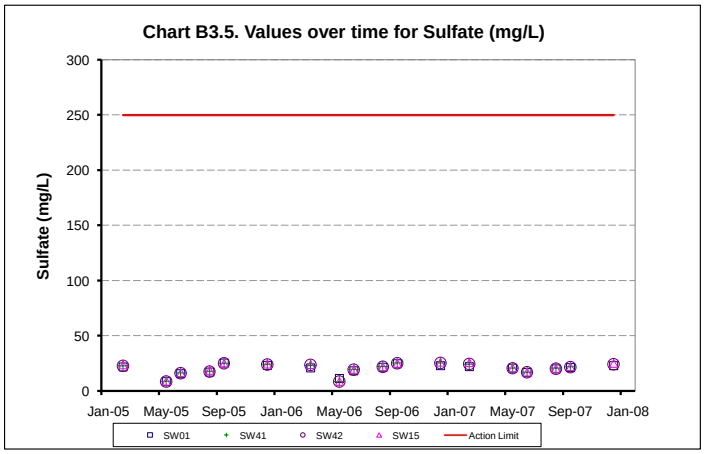
Table B3. Time Series for Receiving Environment











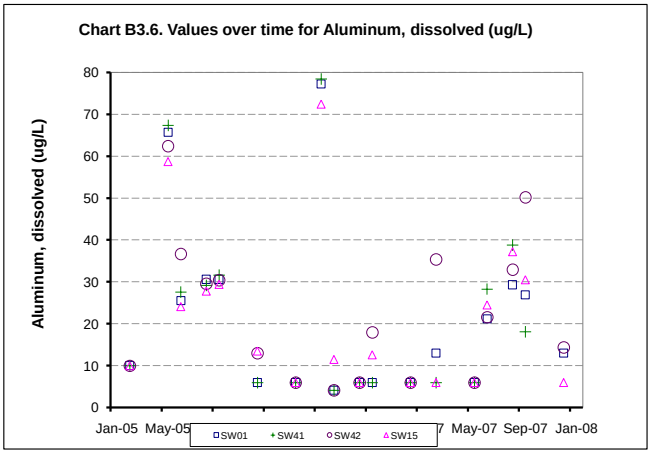
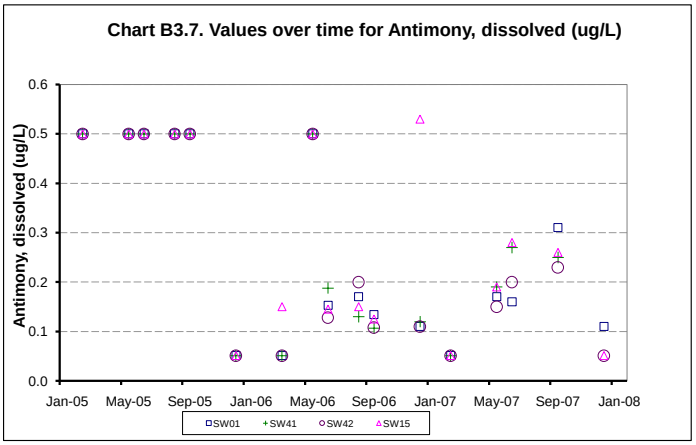
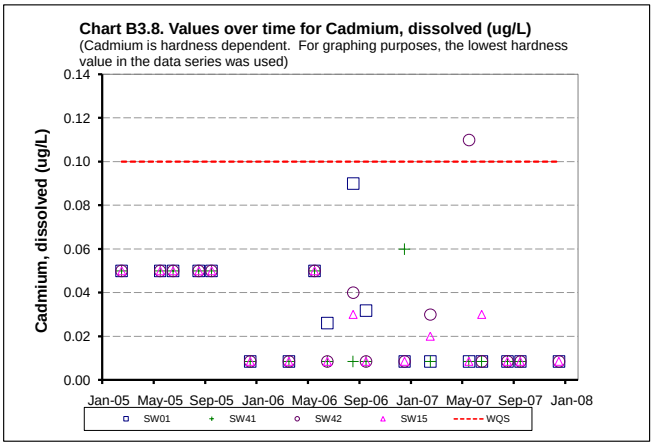
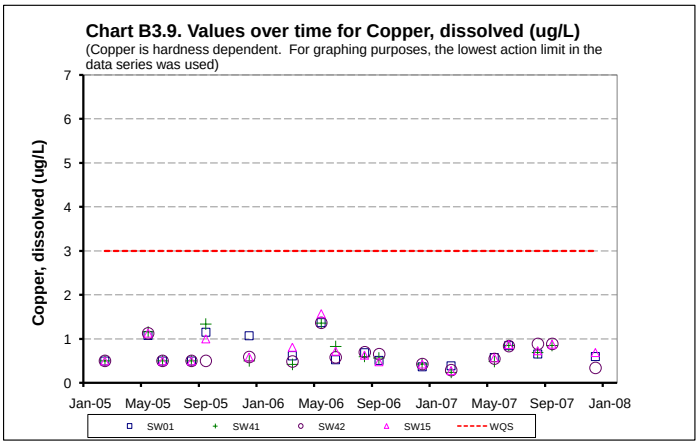
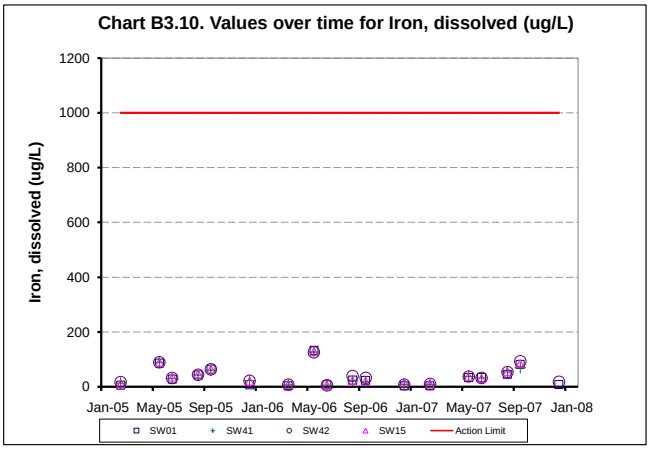


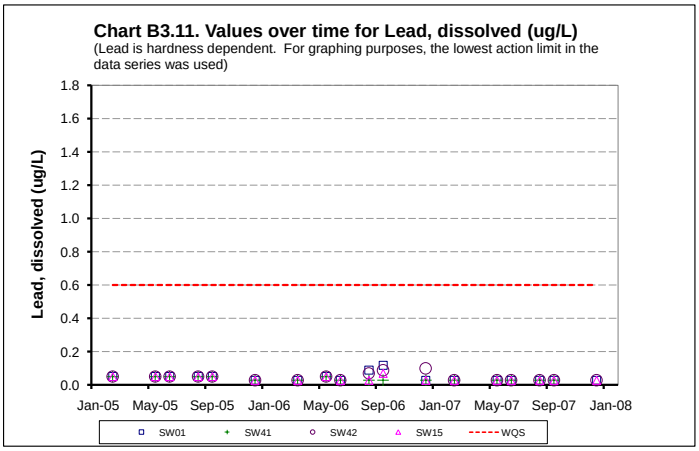
Table B3. Time Series for Receiving Environment (continued)











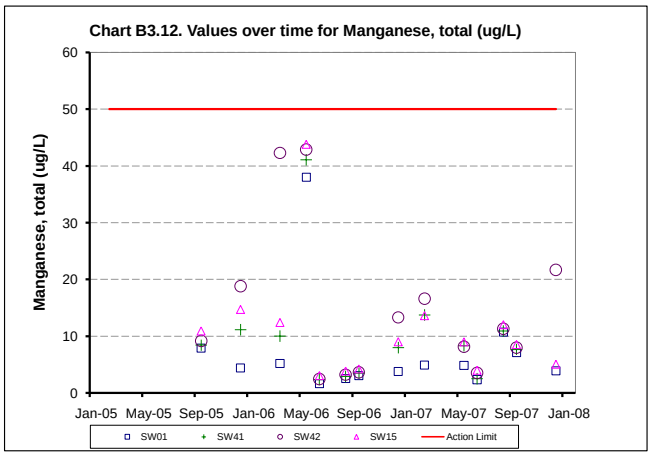
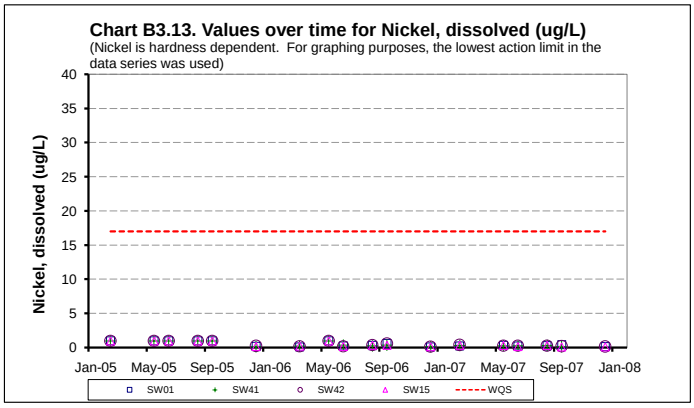
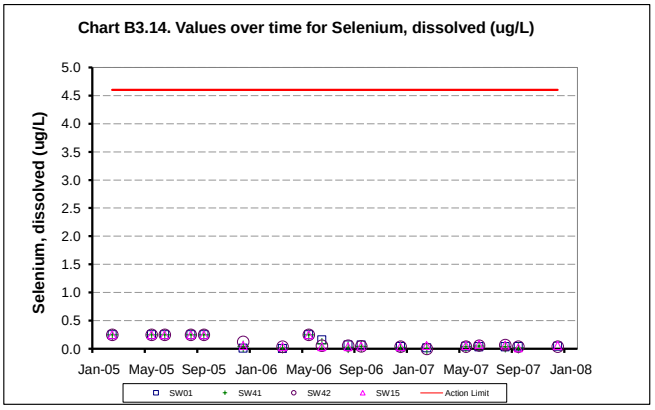
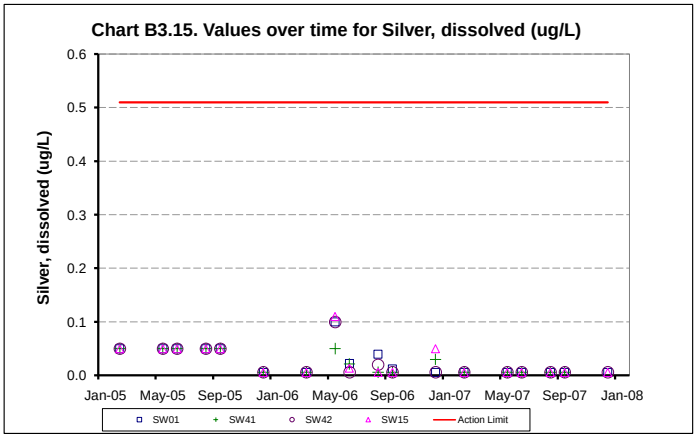
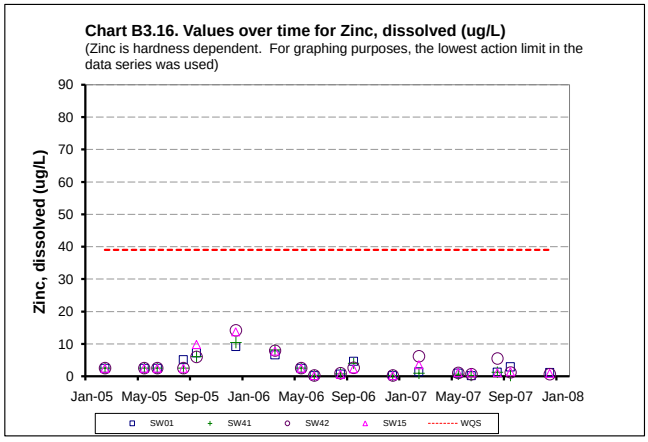


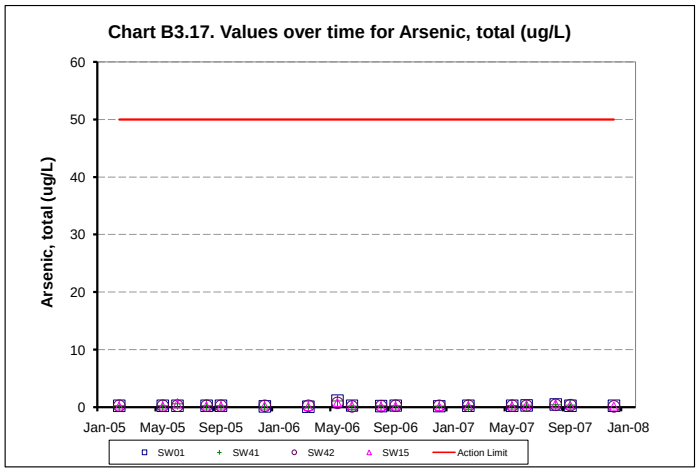
Table B3. Time Series for Receiving Environment (continued)











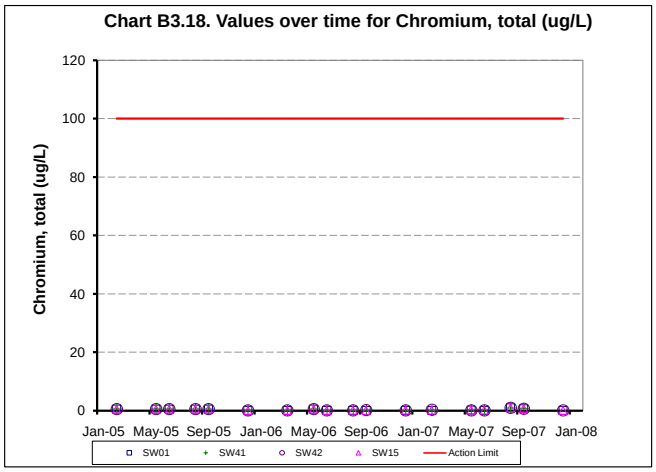
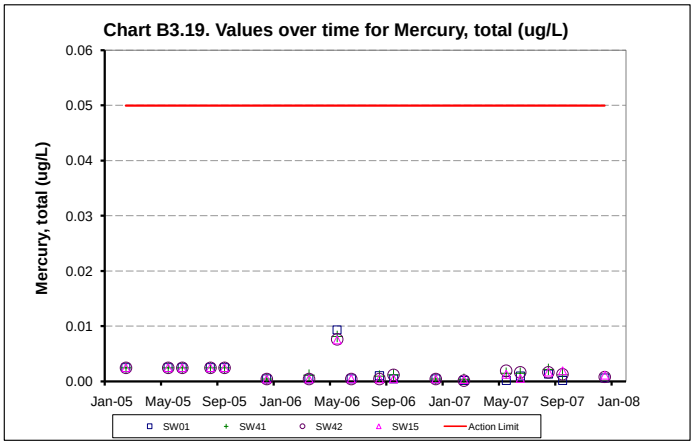
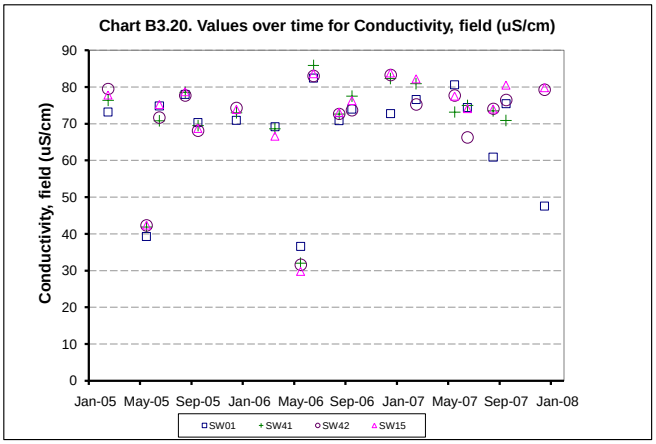
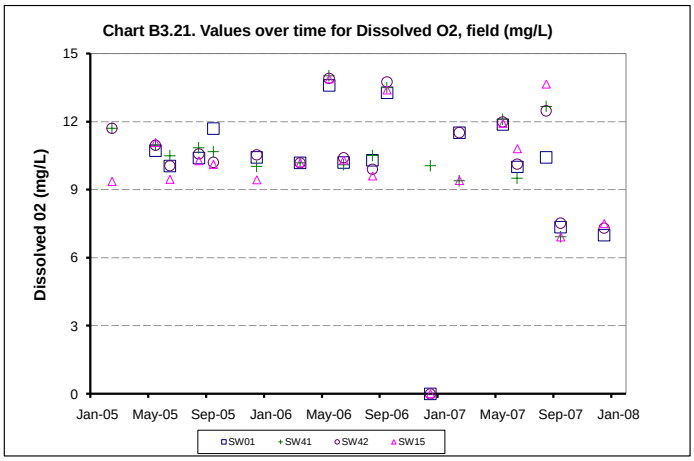
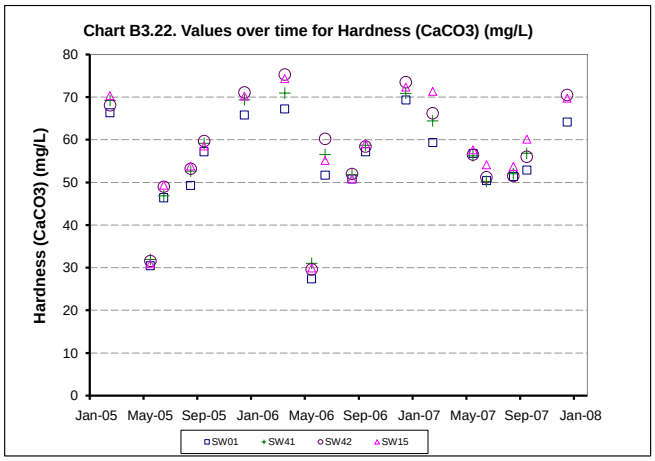


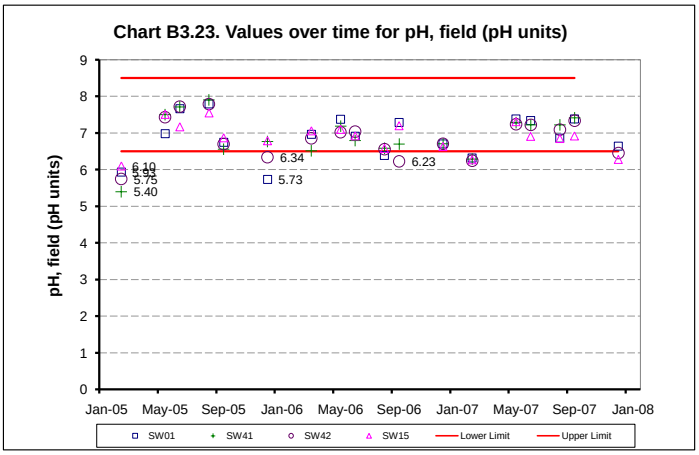
Table B3. Time Series for Receiving Environment (continued)











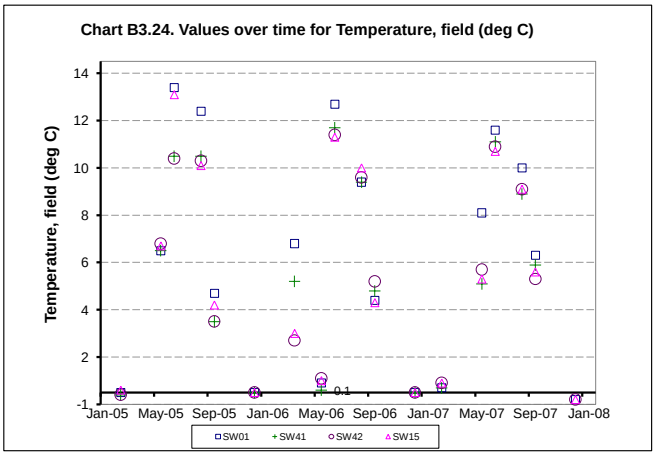
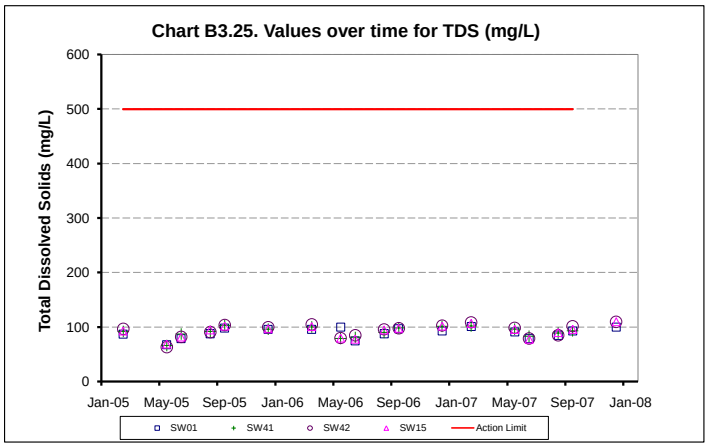
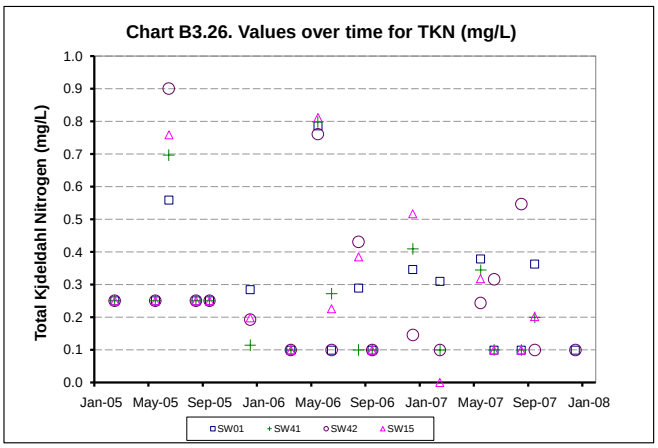
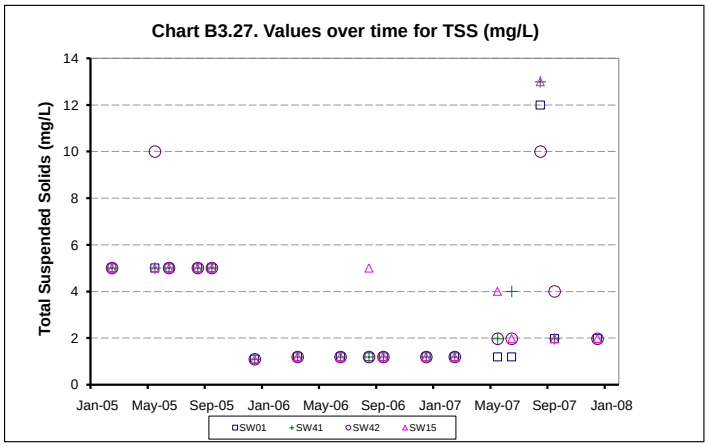


Table B3. Time Series for Receiving Environment (continued)







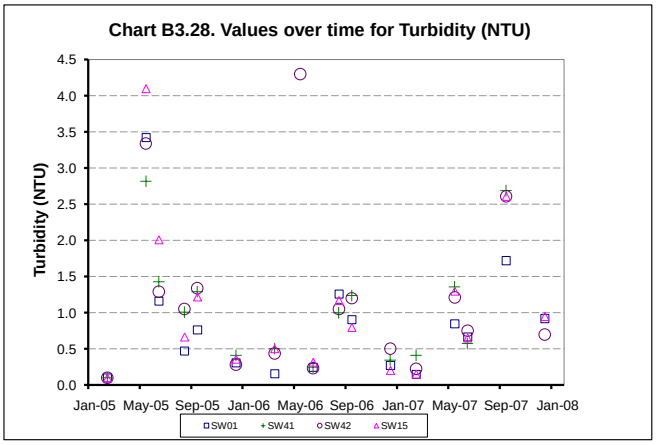
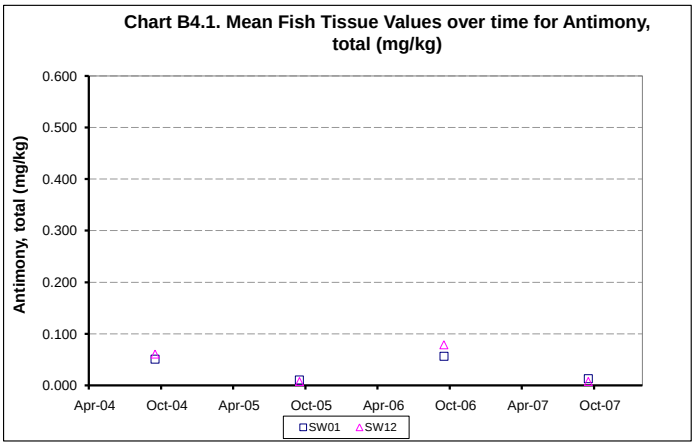
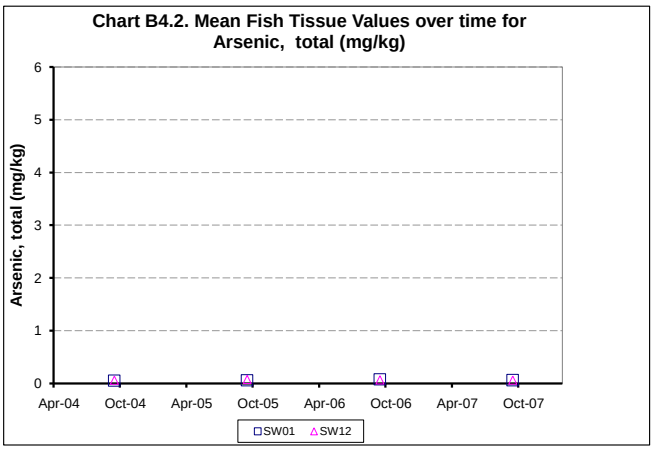
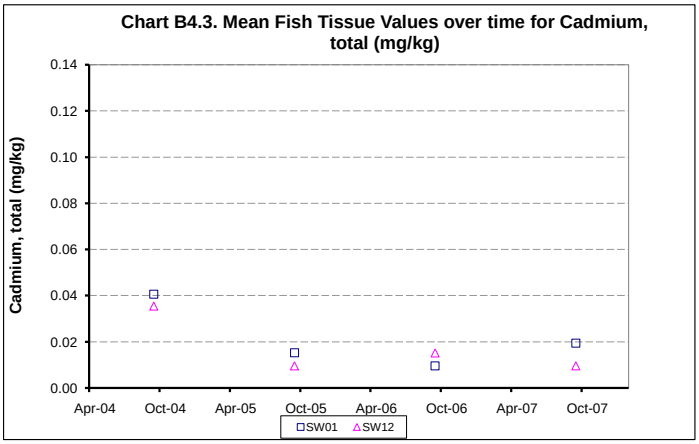
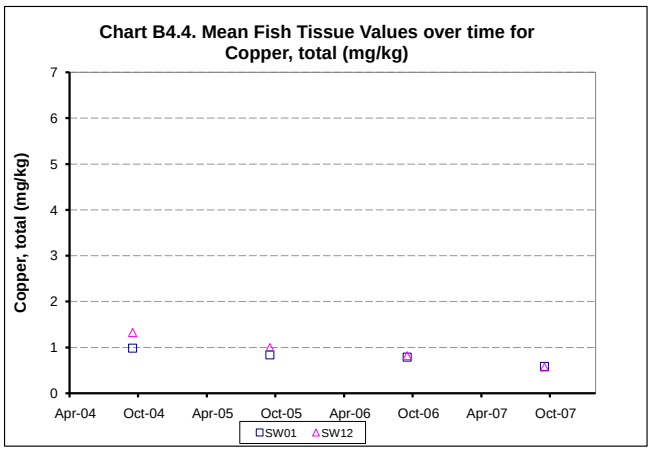


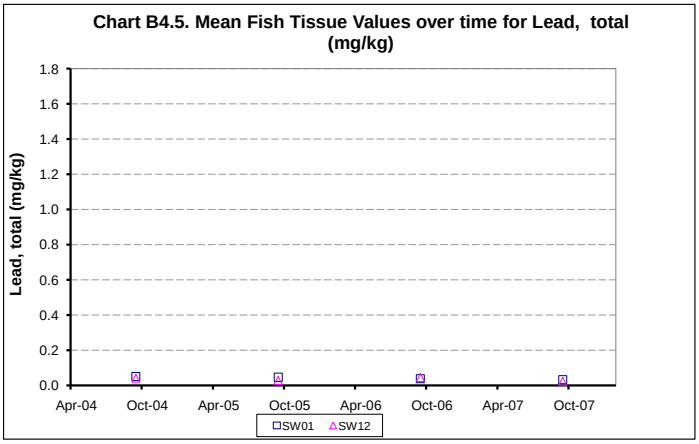
Table B4. Time Series for Fish Tissue Monitoring











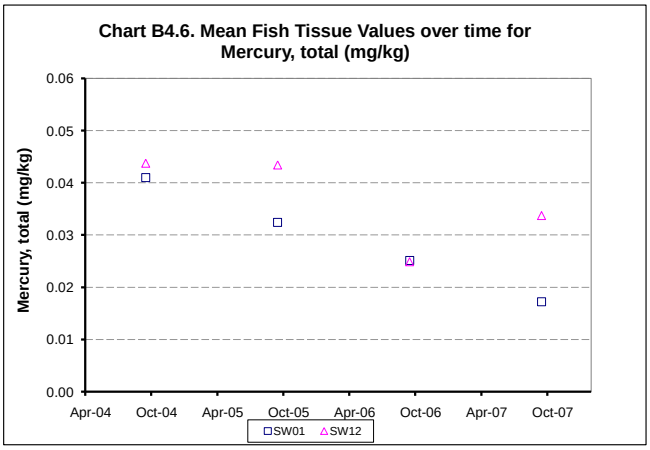
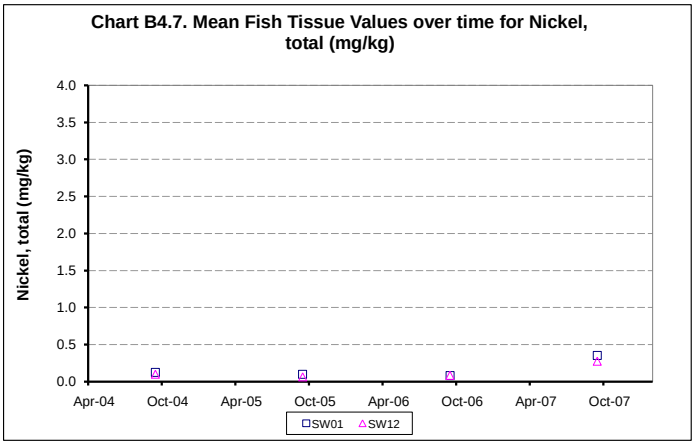
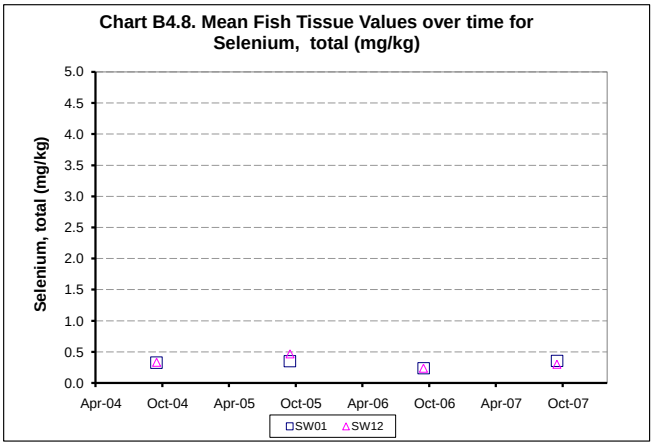
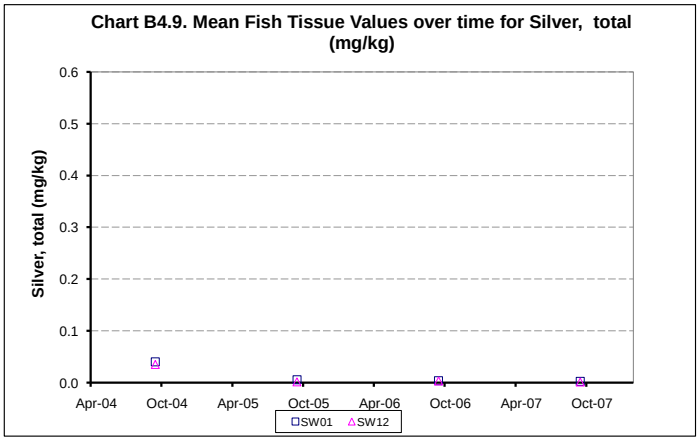


Table B4. Time Series for Fish Tissue Monitoring (continued)







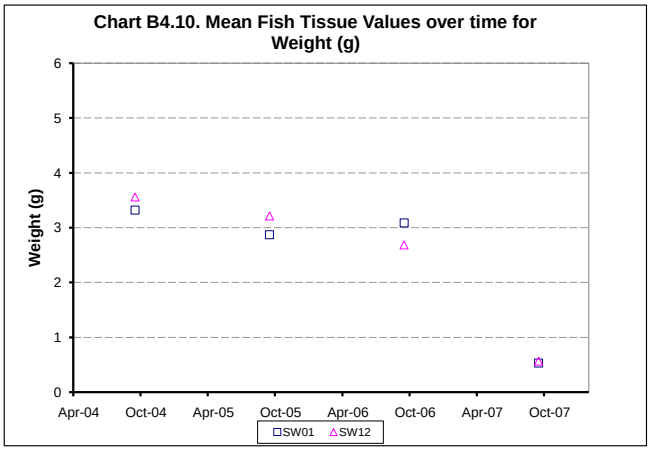
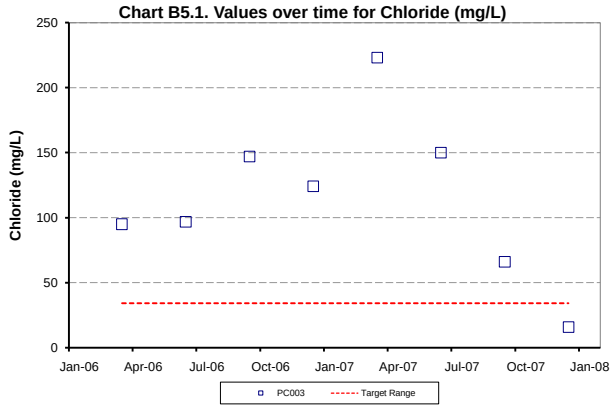
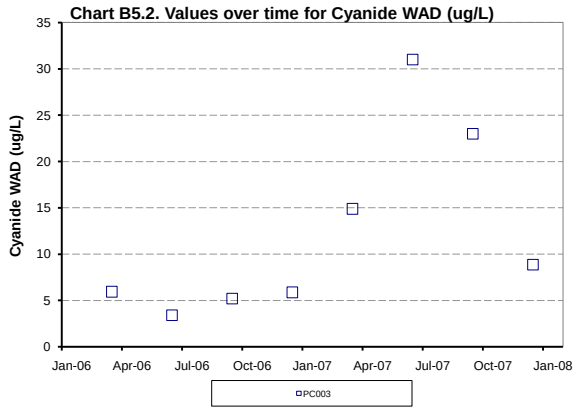
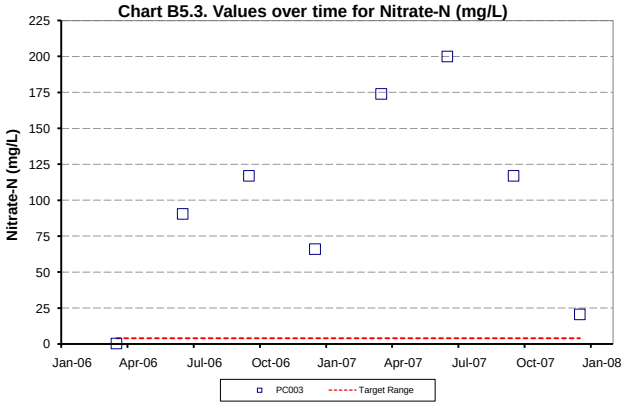
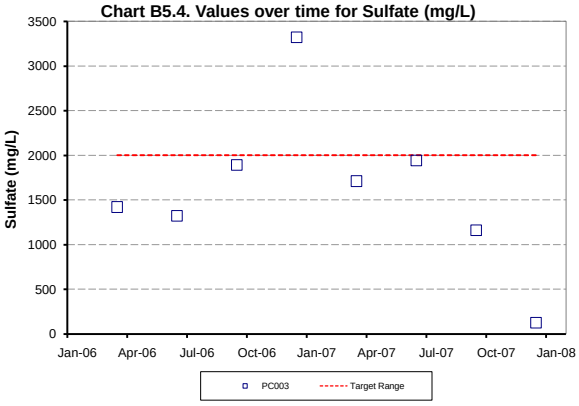


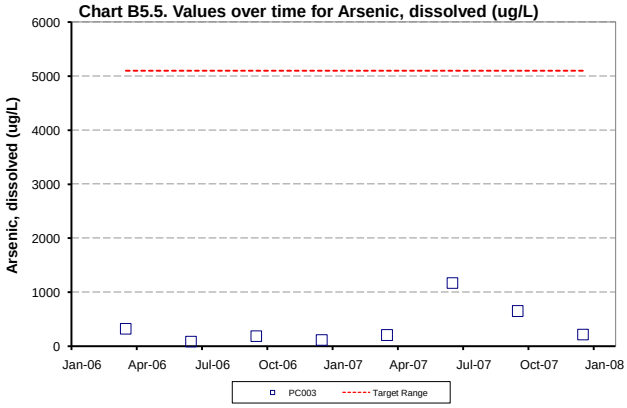
Table B5. Time Series for Flotation Interstitial Water











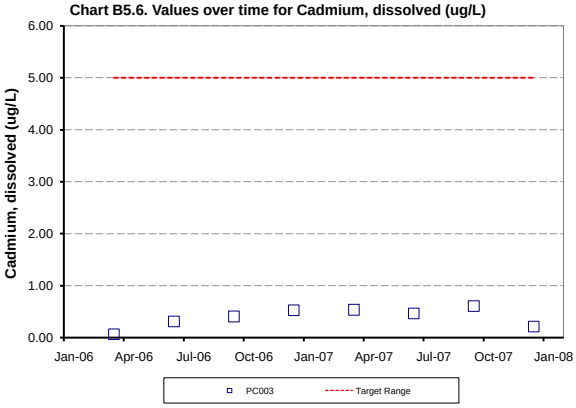


Table B5. Time Series for Flotation Interstitial Water (continued)

Chart B5.7. Values over time for Chromium, dissolved (ug/L)

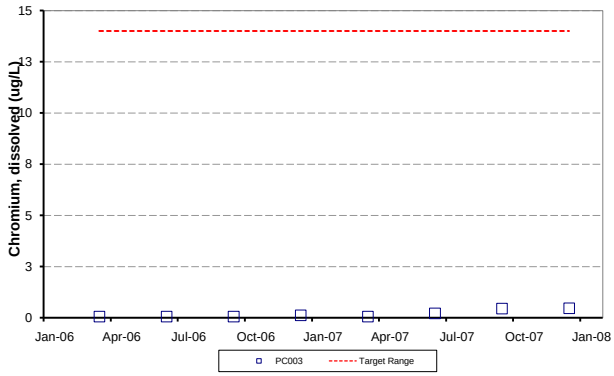


Chart B5.8. Values over time for Copper, dissolved (ug/L)

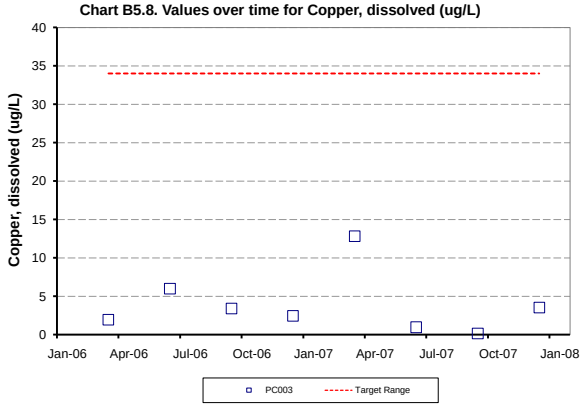


Chart B5.9. Values over time for Iron, dissolved (ug/L)

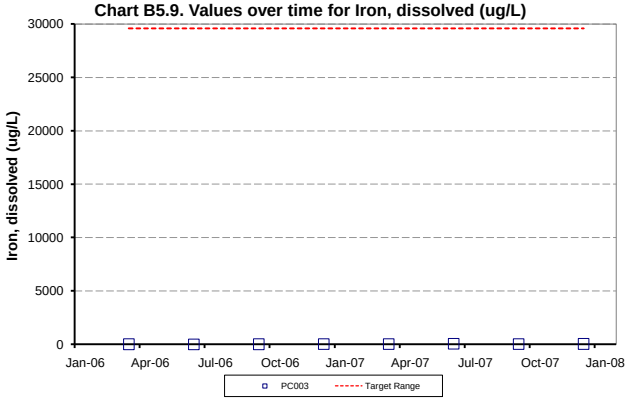


Chart B5.10. Values over time for Lead, dissolved (ug/L)

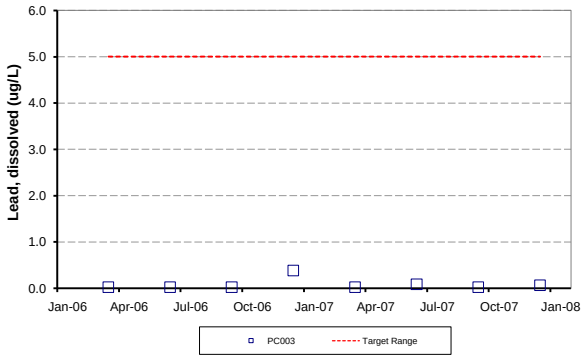


Chart B5.11. Values over time for Manganese, dissolved (ug/L)

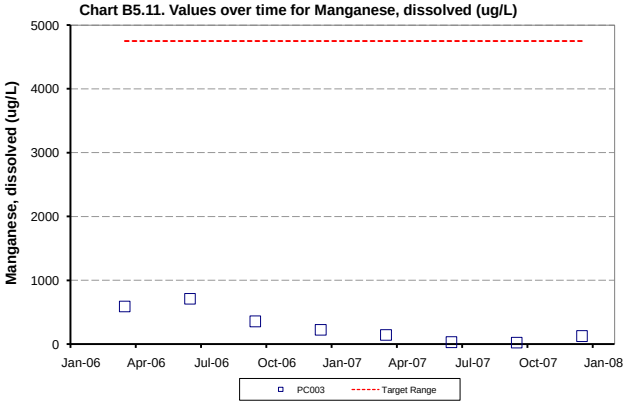


Chart B5.12. Values over time for Mercury, dissolved (ug/L)

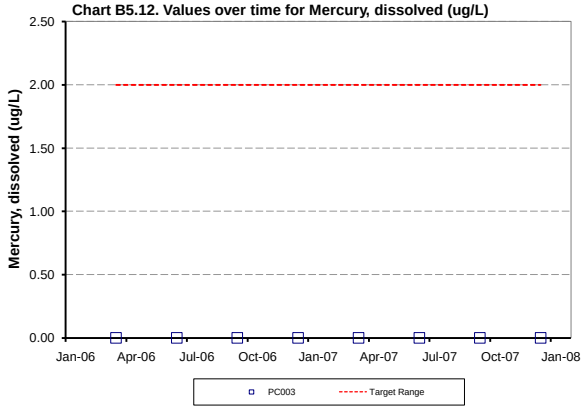


Table B5. Time Series for Flotation Interstitial Water (continued)

Chart B5.13. Values over time for Nickel, dissolved (ug/L)

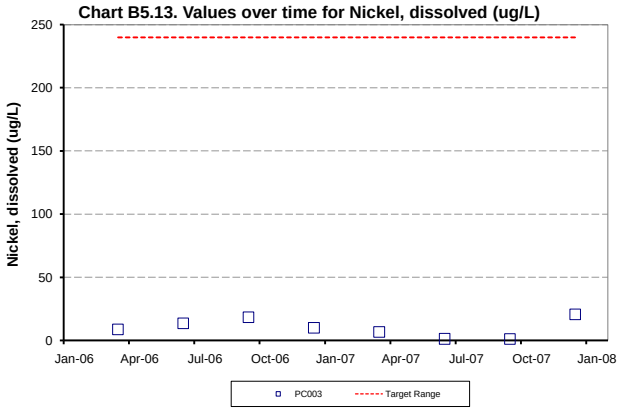


Chart B5.14. Values over time for Selenium, dissolved (ug/L)

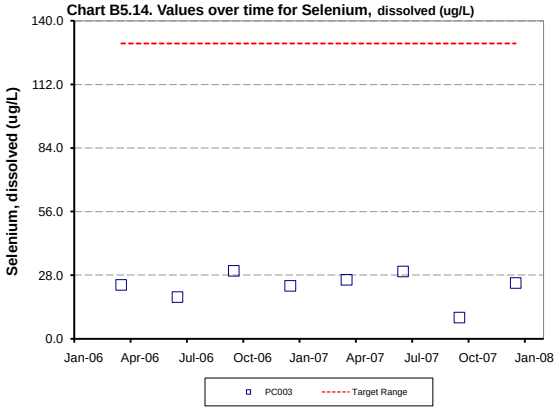


Chart B5.15. Values over time for Silver, dissolved (ug/L)

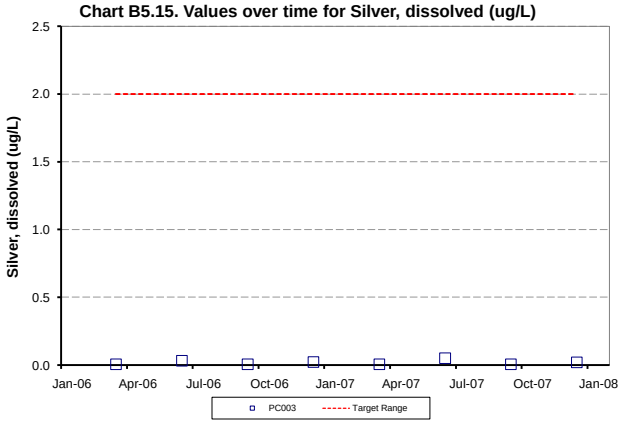


Chart B5.16. Values over time for Zinc, dissolved (ug/L)

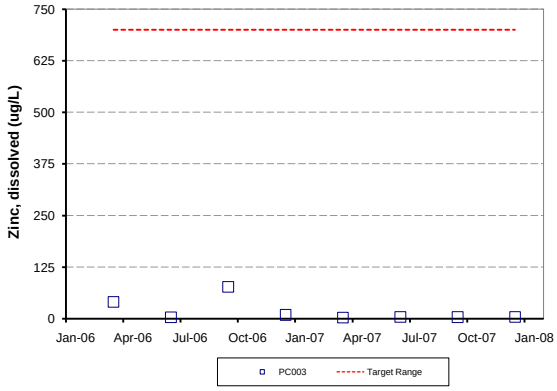


Chart B5.17. Values over time for Hardness (CaCO3) (mg/L)

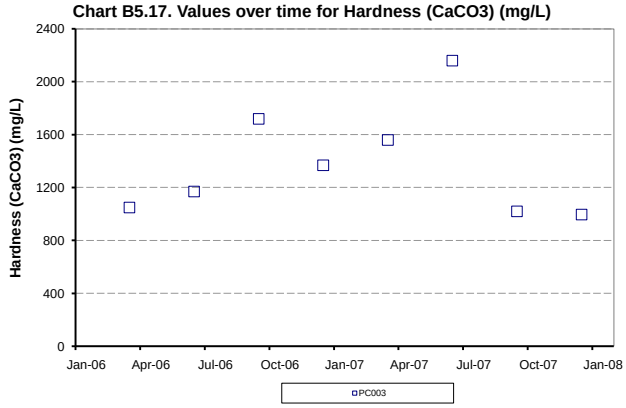


Chart B5.18. Values over time for pH, field (pH units)

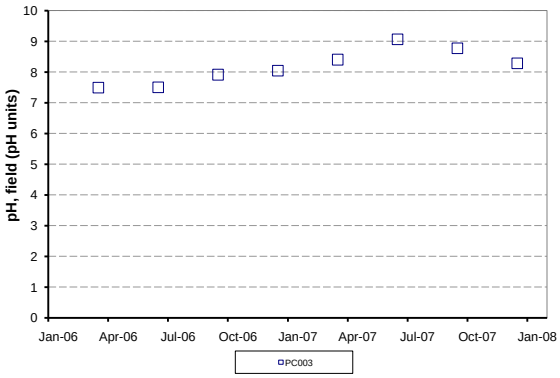
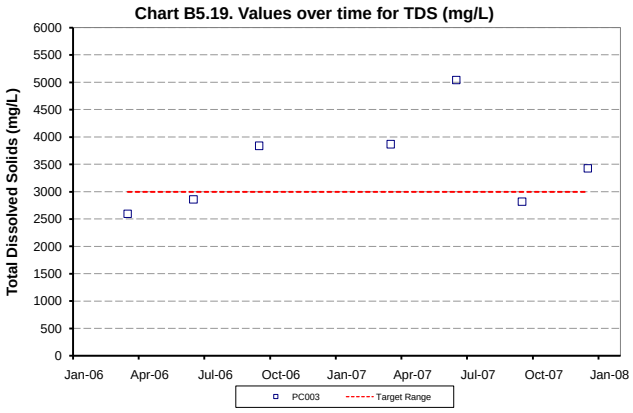


Table B5. Time Series for Flotation Interstitial Water (continued)



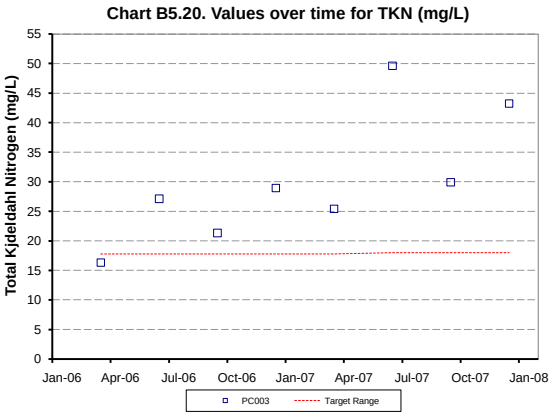
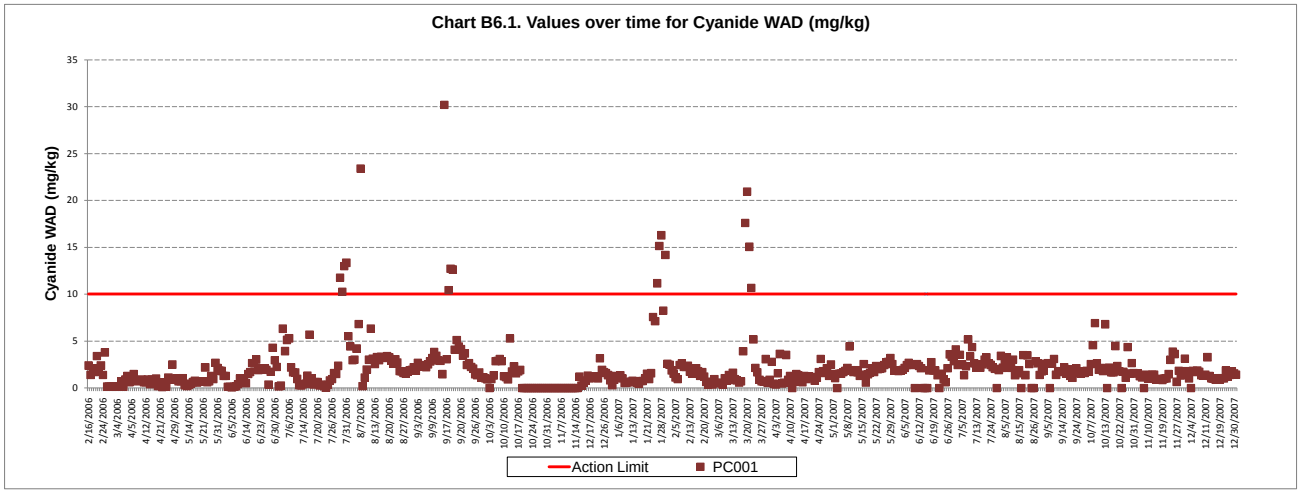


Table B6. Time Series for Backfill Tailings



Notes:
1. Sample results that exceed any action limit or Water Quality Standard (WQS) are noted on the chart by inclusion of their value.
2. The minimum hardness dependent WQS for cadmium, copper, lead, nickel, and zinc are shown by calculating the standard for the lowest hardness value in the data series. The value is only an exceedance if noted as described in number 1 above.
3. Sample results reported as less than the detection or reporting limits are presented as one-half that value.
4. To enhance the ability to discern potential trends, concentration plots showing metals measured as dissolved may contain metals measured as total. Please refer to the associated data table for these data, which have a qualifier of "T"