2011 ANNUAL ENVIRONMENTAL MONITORING AND ACTIVITIES REPORT

FARO MINE COMPLEX – FARO, YT

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Projet de restauration de la mine Faro

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Appendix D - 2011 Hydrology

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Appendix G - 2011 Adaptive Management Plan Implementation Protocol

Note: All tables and figures are included in the above appendices. Tables of contents are included in each appendix.

Acronyms & Abbreviations

AC	Alternating Current
AMP	Adaptive Management Plan Implementation Protocol
AVR	Air Vacuum Release
AYFN	Affected Yukon First Nations
BGC	BGC Engineering Inc.
C&M	Care and Maintenance
CVP	Cross Valley Pond
DES	Denison Environmental Services
DOE	Department of Environment
DVTP	Down Valley Treatment Plant
ETA	Emergency Tailings Area
FMC	Faro Mine Complex
FMTS	Faro Mill Treatment System
GSC	Grum Sulphide Cell
GTP	Grum Effluent Treatment Plant
HMI	Human Machine Interface
HDPE	High Density Polyethylene
INAC	Indian and Northern Affairs Canada
IP	Intermediate Pond
KCB	Klohn Crippen Berger Ltd.
KNG	Kejeh Neyeh Golder Corporation
LC_{50}	Lethal Concentration, 50%
LCD	Little Creek Dam
MCC	Motor Control Center
PEX	Cross-linked Polyethylene
PLC	Programmable Logic Controller
PQL	Practical Quantitation Limit
PVC	Polyvinyl Chloride
QA/QC	Quality Assessment / Quality Control
RCDC	Rose Creek Diversion Channel
RGC	Robertson GeoConsultants Inc.
RPD	Relative Percent Difference
SIS	Seepage Interception System
SRK	SRK Consulting Engineers and Scientists
TMA	Tailings Management Area
TSS	Total Suspended Solids
VFD	Variable Frequency Drive
WCB	Yukon Workers' Compensation Health and Safety Board
YEC	Yukon Energy Corporation
YG	Yukon Government Assessment and Abandoned Mines Branch

1. INTRODUCTION

1.1 Background

Mining and ore processing activities at the Faro Mine Complex stopped in February 1998, when the owner at the time, Anvil Range Mining Corporation, went into receivership. Since this time, the mine has been considered permanently closed. From February 1998 until February 2009, the mine property was managed by Deloitte and Touche Inc. acting as the court appointed interim receiver. Since March 1, 2009, the mine property has been managed through INAC and the YG. During this time, the care and maintenance component has been conducted by Denison Environmental Services.

Prior to 2004, activities at the Faro and Vangorda Plateau mine sites were regulated under two separate Water Licences, QZ95-003 (Faro) and IN89-002 (Vangorda Plateau). After the review process when these two Water Licences expired (December 31, 2003), a single water licence (QZ03-059), which authorized the continuation of care and maintenance activities and the development of a final closure and reclamation plan, was issued. This water licence expired at the end of February 2009. As of March 1, 2009, the site has been regulated under the Waters Act. Terms and standards for care and maintenance activities are defined in the C&M contract.

Concurrent to C&M activities at the Faro Mine Complex, planning for mine closure has continued, also under the management of INAC and YG. DES has played a supporting role for some aspects of closure planning, as well as undertaking significant improvements to the site.

The C&M contract includes a requirement for annual reporting of site operations activities and environmental monitoring and reporting programs. This report has been prepared to meet these requirements.

1.2 Organization of Report

This 2011 Annual Environmental Monitoring and Activities Report has been prepared according to the provisions of the revised Appendix B of the C&M contract. This report, including all data presentations and interpretations, was prepared by DES based on information provided by DES site staff, and by consultants, including BGC Engineering Inc., Robertson GeoConsultants Inc., Kejeh Neyeh Golder Corporation, Klohn Crippen Berger Ltd., EBA Engineering Consultants Ltd., SRK Consulting Engineers and Scientists, Yukon Engineering Services, Laberge Environmental Services, AECOM (formerly Gartner Lee), Access Consulting, and EDI Environmental Dynamics Inc.

This report is broadly organized into the following sections. Where applicable, the Rose Creek Drainage/Faro mine site and the Vangorda Creek Drainage/Vangorda Plateau mine site are reported separately within these sections:

- Introduction;
- Water Quality Monitoring – Rose Creek Drainage;
- Water Quality Monitoring – Vangorda Creek Drainage;
- Hydrological Monitoring;
- Meteorological Monitoring;
- Geotechnical and Facilities Monitoring;
- Adaptive Management Plan Implementation Protocol Review;
- Site Operations and Water Treatment.

Map sheets, included in the Maps section of this report, illustrate the general layout of the mine property and facilities, and illustrate water quality, geotechnical and meteorological monitoring locations.

1.3 Routine Environmental Monitoring and Reporting Program

The environmental monitoring programs required under the C&M contract are largely a continuation, refinement and significant expansion of the programs that were being carried out under the previous water licences.

The routine environmental monitoring program for 2011 was composed of the following:

- Water quality and flow rate monitoring as outlined in Appendix B of the C&M contract;
- Additional water quality and flow rate monitoring during water treatment;
- Monthly depth profile monitoring of the Cross Valley Pond;
- Pit lakes water quality monitoring (Faro, Grum and Vangorda Pits) – monthly during open water, plus one under-ice event;
- Geotechnical monitoring based on recommendations from geotechnical consultants;
- Monthly downloading and review of meteorological data;
- Monthly compilation of wildlife sightings;
- Data assessment under the Adaptive Management Plan;
- Reporting of results to emLine and through monthly reports.

Water quality and flow rate monitoring of surface, seepage, and groundwater stations was carried out as prescribed in Appendix B of the C&M contract. A summary of water quality monitoring sites and frequencies adapted from Appendix B of the C&M contract, along with a listing of dates on which monitoring was completed, is provided in Appendix A. Water quality analysis was undertaken through Maxxam Analytics for all parameters listed in Appendix B of the C&M contract, with the exception of field parameters and turbidity, which were measured on site, in the field and at the FMC Laboratory, respectively. Results of water quality monitoring are included in this report in Appendices B and C, and discussed in sections 2 and 3 for the Rose and Vangorda Creek Drainages, respectively; results of flow rate monitoring are provided in Appendix D, with discussion of the results included in section 4.

Additional water quality monitoring of effluent and water treatment plant samples was undertaken during the water treatment season on a daily basis with total and dissolved zinc analyses carried out through the FMC Laboratory, with reporting internally to site management. In addition to this, monitoring was carried out as required

- to verify water quality upon start of water treatment operations; and
- to verify water quality when modifications are made to the treatment process.

In addition to the flow rates monitoring listed as part of Appendix B of the C&M contract, water pumped from pits, ponds and a groundwater interception system was monitored using totalizers, volumetric methods and with an ultrasonic flow meter, as part of the routine hydrology program. Piped flow rates were measured on a weekly basis, and when flow rates were altered. Total monthly and annual volumes moved are included in Appendix D of this report.

Water quality in the Cross Valley Pond (total and dissolved zinc, pH, temperature, and conductivity) was monitored on a monthly basis at six locations in the Cross Valley Pond, at several depths at each location. Additional profile monitoring was performed as required to verify water quality prior to discharge and monitor for trends during discharge. Sample analysis was undertaken through the FMC Laboratory with results reported internally to site management, and to emLine. Results of Cross Valley Pond Profiles are included in Appendix B of this report.

Pit Lakes water quality monitoring was performed by Laberge Environmental Services in April 2011, and on a monthly basis from June through September, at several depths at one location within each of the Faro, Grum, and Vangorda Pits. Monitoring results are included in the water quality summary tables in Appendices B and C of this report; however, as it is understood by DES that these results are assessed as part of closure planning, assessment of the Pit Lakes monitoring results is not included in this report.

Maintenance of the Faro and Grum weather stations was carried out as required throughout 2011. Weather station data were downloaded on a monthly basis under the 2011 meteorological program. A detailed discussion of this program is included in Section 5, with downloaded data provided in Appendix E.

The 2011 routine geotechnical monitoring program in the Rose and Vangorda Creek Drainages was carried out largely as recommended for the 2009 and 2010 programs. In addition, slope stability monitoring for the east wall of the Grum Pit was incorporated into the 2011 program. A summary of 2011 geotechnical monitoring, including requested monitoring frequencies and actual monitoring dates, is provided in Appendix A. In addition, a detailed discussion of the 2011 geotechnical monitoring program is provided in Section 6, with monitoring data included in Appendix F.

Wildlife sightings at the FMC are recorded through site security on an on-going basis, and were included as a component of the terrestrial monitoring program in 2011. Records of wildlife sightings were reported to YG on a monthly basis in 2011 in environmental reports.

Routine assessment of data for Events 2, 3, 4, and 5 under the Adaptive Management Plan was conducted on a monthly basis throughout 2011, with results of assessment reported to YG in monthly environmental reports. An annual review of all events in the Adaptive Management Plan for 2011 is included in Section 7 of this report.

In addition to the above, DES provided monitoring support for the Vangorda Waste Rock Dump Cover Trials through 2011. These monitoring activities included daily moisture content readings and twice monthly datalogger downloads, the data from which was forwarded to EBA Engineering Consultants Ltd.

1.4 Non-Routine Environmental Monitoring and Reporting

This annual report includes the results of monitoring largely from the routine monitoring program. In addition to the routine monitoring program, several programs and follow-up monitoring events were undertaken as part of the 2011 overall activities as special projects. The results of special projects were summarised using a memo format and submitted in the “Special Projects” section of monthly environmental reports.

The following lists the reports submitted for projects under the non-routine environmental monitoring and reporting program in 2011. As the reports and memorandums listed have documented the findings of special projects in 2011, including lab results, photo logs, field notes and figures, where applicable, the results are not further reported in this annual review, with one exception: where sites routinely

monitored were a component of non-routine monitoring projects, the results are included in this report, as well as in the emLine database.

DES; "*Monthly Environmental Monitoring Report: Special Projects Monitoring: February 2011'*, April 1, 2011; including:

- DES; Memorandum*: "Hydrocarbon Monitoring – FCS-4 (downstream of ETA) (February 3, 2011)"*; March 10, 2011
- DES; Memorandum: *"Rose Aquifer Water Quality Monitoring – January 27 to February 2, 2011*", March 10, 2011
- DES; Memorandum: "*2011 Snow Survey Results – February 22 and 23*", March 18, 2011
- DES; Memorandum: "*Vangorda Waste Rock Dump 2010 Wells Groundwater Quality Monitoring – February 3 to 14, 2011*", March 10, 2011

DES; "*Monthly Environmental Monitoring Report: Special Projects Monitoring: March 2011'*, May 2, 2011; including:

- DES; Memorandum: "*Sheep Pad Pond Pre-Discharge Water Quality*", April 28, 2011
- DES; Memorandum: "*2011 Snow Survey Results – March 29 and 30*", April 4, 2011
- DES; Memorandum: "*Under Ice Cyanide Sampling in Rose Creek Basin*", May 2, 2011

DES; "*Monthly Environmental Monitoring Report: Special Projects Monitoring: April 2011'*, May 31, 2011; including:

- DES; Memorandum: "*Vangorda Waste Dump Water Levels*", May 9, 2011
- DES; Memorandum: "*FMC Lab Proficiency Testing – March 2011*", May 11, 2011

DES; "*Monthly Environmental Monitoring Report: Special Projects Monitoring: May 2011'*, June 30, 2011; including:

- DES; Memorandum: "*AMP Event 4 – 2011 Spring Monitoring*", June 19, 2011
- DES; Memorandum: "*Hydrocarbon Monitoring – X23 (ETA at Faro Dump toe)(May 26, 2011)*", June 30, 2011
- DES; Memorandum: "*Maxxam/CARO/FMC Lab Comparison Study – March/April/May, 2011*", June 25, 2011
- DES; Memorandum: "*S-Wells Performance Review – Water Quality*", June 30, 2011
- DES; Memorandum: "*Vangorda Waste Dump Water Levels*", June 30, 2011

DES; Memorandum: "*High Flow Mixing Study at X14 – May 30, 2011*", June 21, 2011

DES; "*Monthly Environmental Monitoring Report: Special Projects Monitoring: June 2011'*, August 1, 2011; including:

DES; Memorandum: "*Spring Seeps Monitoring – June 2, 3, 15 and 16, 2011*", July 29, 2011
DES; Memorandum: "*Grum Cover Drains Water Quality Monitoring – June 14, 2011*", July 20, 2011
DES; Memorandum: "*Vangorda Waste Dump Water Levels*", July 27, 2011

DES; "*Monthly Environmental Monitoring Report: Special Projects Monitoring: July 2011'*, August 30, 2011; including:

DES; Memorandum: "*AYFN FMC On-Site Environmental Monitoring – June 11 to 15, 2011*", August 29, 2011

DES; "*Monthly Environmental Monitoring Report: Special Projects Monitoring: August 2011"*, September 28, 2011; including:

DES; Memorandum: "*Moose Pad Pond Water Balance*", September 14, 2011
DES; Memorandum: "*Vangorda Waste Dump Water Levels – Phase 2*", September 14, 2011

DES; "*Monthly Environmental Monitoring Report: Special Projects Monitoring: September 2011'*, October 28, 2011; including:

DES; Memorandum: "*AMP Event 4 – 2011 Fall Monitoring*", October 19, 2011
DES; Memorandum: "*Fall Seeps Monitoring – September 13, 21, 22, and 27, 2011*", October 24, 2011
DES; Memorandum: "*Vangorda Waste Rock Dump Hydraulic Conductivity Testing*", October 19, 2011
DES; Memorandum: "*Vangorda Waste Dump Water Levels – Phase 2*", October 19, 2011

DES; "*Monthly Environmental Monitoring Report: Special Projects Monitoring: October 2011'*, November 30, 2011; including:

DES; Memorandum: "*Vangorda Waste Dump Water Levels – Phase 2*", November 10, 2011

DES; "*Monthly Environmental Monitoring Report: Special Projects Monitoring: December 2011'*, January 30, 2012; including:

DES; Memorandum: "*FMC Lab Proficiency Testing – October 2011*", January 18, 2012

2. WATER QUALITY MONITORING – ROSE CREEK DRAINAGE

2.1 Overview of Water Quality Monitoring Program

Water quality is monitored regularly throughout the mine property. The basis for the environmental water quality monitoring program is set out largely by Appendix B of the C&M contract and water treatment process requirements. Details of the routine water quality monitoring program for 2011 including sampling locations, required frequencies, and actual monitoring dates are included in Appendix A. In addition, the map sheets provided in the Maps section of this report illustrate locations of monitoring sites.

The monitoring program is carried out by staff employed at the mine site by DES. In 2011, water analyses were conducted primarily by Maxxam Analytics, with supplementary analyses conducted through CARO Analytical Services. Both laboratories are accredited through the Canadian Association for Laboratory Accreditation. All water quality data for 2011, including groundwater well parameters and bioassay results, are provided in Appendix B along with QA/QC results and graphs of water quality trends for contaminants of concern at select Rose Creek Drainage sites.

In addition to external laboratory services, the monitoring program also makes extensive use of the unique capability for on-site zinc analyses through the FMC Laboratory to provide immediate feedback to site management regarding effluent and treated water quality. On-site analyses of zinc concentrations in treatment plant and effluent samples are conducted on a daily or more frequent basis during periods of water treatment and/or discharge operations, with internal reporting to site management and YG in daily reports.

The following provides a review of water quality monitoring results in the Rose Creek Drainage for 2011; note that groundwater sites are minimally discussed as it is anticipated that water quality trends will be assess in depth in a separate report (by Robertson GeoConsultants), as has been done in the past.

2.2 Quality Assurance and Quality Control

2.2.1 QA/QC Program Overview

The field QA program is comprised of a series of well-defined procedures that are carefully followed to maximize the accuracy of representative sample collection by minimizing variability throughout the process. DES field staff are well-trained in these procedures and are diligent throughout the process of collecting, preserving, filtering and shipping samples. A QC component is incorporated to minimize potential imprecision and bias in the data and provide checks for both field and laboratory

methods. QC samples are collected at a frequency of approximately 10% of routine sample collection across the Faro Mine Complex, with QC sample sites selected randomly on a monthly basis.

QC samples collected during the 2011 field program consisted of the following:

- Field Blanks – An aliquot of laboratory-provided deionized water is taken to the sampling location, exposed to the sampling environment and treated in the same manner as the actual sample (preparation, filtration, preservation, shipment, analysis). Field blanks are used for the assessment of potential contamination from handling procedures and exposure to the sampling environment.
- Field Splits – A 4L sample is collected and split evenly between two sets of sample bottles using the same filtering equipment with the aim of obtaining two identical samples. Field splits are used for the assessment of laboratory repeatability.
- Field Duplicates – A second sample is collected from the same location immediately following the collection of a first sample using identical sampling methods, but different filtering equipment. Field duplicates are used for the assessment of the precision of field technique and laboratory analysis.

2.2.2 Assessment of QA/QC Results

2.2.2.1 Field Blanks

Field blank results are assessed through comparison with results of an analysis performed by Maxxam Analytics of their deionized water (for which all parameters were below low level detection limits, with the exception of pH which was reported as 5.95). If a field blank result was a detection limit or less than the PQL (5 times the method detection limit), it was considered acceptable and not examined further. If a field blank result was greater than the PQL but less than the retest limit (30 times the detection limit used by Maxxam for their deionized water analysis), the result was examined further to verify that it was correctly entered into emLine and greater than the PQL. In the event that a field blank result was greater than the retest limit, the result was again examined further and, if no explanation for the high value could be identified and it was not indicated in the results report that the result had already been retested, a retest was requested to verify the high value.

2.2.2.2 Field Duplicates / Field Splits

Results of field duplicate and split samples were assessed using the relative percent difference method. The RPD is the absolute value of the difference between the sample result and duplicate (or split) result, divided by the average of the two results, as shown in the formula below:

$$\mathrm{RPD}(\%) = \frac{2|(R_1 - R_2)|}{\mathrm{R}_1 + \mathrm{R}_2} \times 100$$

As long as both values are greater than the PQL, the RPD method provides an indication of the size of the difference between the two results, taking into account the size of the numbers; however, if one or both of the results are below the PQL, the RPD is not useful.

For field duplicates and splits assessment, an RPD of between 50 and 100% for metals prompted further investigation of the results to verify that both were greater than the PQL and correctly entered into emLine. In the event of an RPD greater than 100% for metals, or 50% for general parameters, the results were again examined further and, if no explanation for the discrepancy between the values could be identified and it was not indicated in the results report that the results had already been retested, a retest was requested to verify the discrepancy.

2.2.2.3 Lab vs. Field Comparison

Where values from both sources were available, quality comparison analysis of lab (Maxxam) and field data for pH and conductivity was performed. The RPD method described above (Section 2.2.2.2) was used for the comparison of conductivity results, while absolute difference was used for the assessment of pH results. Here, an RPD of between 20 and 50% or a difference of between 1.00 and 1.50 pH units prompted further investigation of the results to ensure they were correctly entered into emLine. An RPD of greater than 50% or a difference of greater than 1.50 pH units prompted a retest request for the lab result; however, due to the short hold time for both pH and conductivity, reliable retests were often not possible.

2.2.2.4 Highs / Lows

In 2011, a method for the assessment of high and low results flagged in emLine was developed and applied to data from March 2009 onwards. This method uses a custom report in emLine that allows high/low data for a given date range to be pulled from the database along with statistics from the most recent 10 years of posted data (maximum,

minimum, average, standard deviation, median, and number of results). The following details how the data in this report was used for highs/lows assessment from March 2009 through December 2011:

Highs

- A result in emLine is flagged as high in the database if that result is greater than the maximum value observed for that parameter at that site for the most recent 120 months (10 years) of posted data.
- Flagged high results in the high/low report were not examined further if any one of the following criteria were met:
    - The flagged high result was a detection limit;
    - The 10 year statistics were based on fewer than 10 results; or
    - The flagged high result was less than the 10 year high plus one 10 year standard deviation.
- A flagged high result in the high/low analysis report was highlighted yellow if it was greater than the 10 year high plus one 10 year standard deviation, but less than the 10 year high plus two 10 year standard deviations. Flagged results highlighted in yellow were examined further, but retests were not requested if no information explaining the reason for the high value was identified.
- A flagged high result in the high/low analysis report was highlighted red if it was greater than the 10 year high plus two 10 year standard deviations. Flagged results highlighted in red were examined further and, if no information explaining the reason for the high value was identified, a retest was requested (unless the retest would have been requested past the hold time for the parameter).
- If no information explaining a high result was identified, and the retest (if requested) confirmed the high result, one of five result flags ("Value is High", "Value is Low", "Result Questionable", "Calibration Suspect", or "Susp. Equip. Error") was added to the result in emLine. Addition of a result flag to a result in emLine prompts the database to disregard the result when evaluating highs and lows (i.e. it doesn't become the new highest high). If either of the two subsequent results for that parameter at that site were greater than, or within 20% RPD of the high result, the result was considered corroborated (i.e. not anomalously high), and the result flag was removed in emLine.
- Beginning with 2011 data, trend analysis for parameters at sites with flagged high results highlighted in red was added to the procedure for highs/lows assessment.

If no other reason for a high result could be identified, historical data was analyzed for an increasing trend; if a significant increasing trend was identified in the data, a retest was not requested, and a result flag was not added to the result in emLine. However, if the flagged high result was substantially greater than previous results, despite an increasing trend a retest may have been requested or a result flag added in emLine at the assessor's discretion.

Lows

- A result entered into emLine is flagged as low in the database if that result is less than the minimum value observed for that parameter at that site for the most recent 120 months (10 years) of posted data.
- Flagged low results in the high/low report were not examined further if any one of the following criteria were met:
    - The 10 year low was a detection limit;
    - The 10 year statistics were based on fewer than 10 results; or
    - The flagged low result was greater than the 10 year low minus one 10 year standard deviation.
- A flagged low result in the high/low analysis report was highlighted yellow if it was less than the 10 year low minus one 10 year standard deviation, but greater than the 10 year low minus two 10 year standard deviations. Flagged results highlighted in yellow were examined further, but retests were not requested if no information explaining the reason for the high value was identified.
- A flagged low result in the high/low analysis report was highlighted red if it was less than the 10 year high minus two 10 year standard deviations. Flagged results highlighted in red were examined further and, if no information explaining the reason for the high value was identified, a retest was requested (unless the retest would have been requested past the hold time for the parameter).
- If no information explaining a low result was identified, and the retest (if requested) confirmed the low result, one of five result flags ("Value is High", "Value is Low", "Result Questionable", "Calibration Suspect", or "Susp. Equip. Error") was added to the result in emLine. Addition of a result flag to a result in emLine prompts the database to disregard the result when evaluating highs and lows (i.e. it doesn't become the new lowest low). If either of the two subsequent results for that parameter at that site were less than, or within 20% RPD of the low result, the result was considered corroborated (i.e. not anomalously low), and the result flag was removed in emLine.

- Beginning with 2011 data, trend analysis for parameters at sites with flagged low results highlighted in red was added to the procedure for highs/lows assessment. If no other reason for a low result could be identified, historical data was analyzed for a decreasing trend; if a significant decreasing trend was identified in the data, a retest was not requested, and a result flag was not added to the result in emLine. However, if the flagged low result was substantially less than previous results, despite a decreasing trend a retest may have been requested or a result flag added in emLine at the assessor's discretion.

2.2.2.5 Retest Results

Any time a retest was requested from Maxxam Analytics to confirm a suspicious result, the retest result only replaced the original result in emLine if the RPD between the original and retest results was greater than 20%. If the RPD between the original and retest results was less than 20%, the original result was left in emLine, and the retest result was inserted into a comment for that parameter at that site for that date.

2.2.3 Summary of Rose Creek Drainage QA/QC Assessment

In 2011, a total of 553 routine surface, seepage, and ground water samples were collected at sites encompassed by the Rose Creek Drainage system. In addition to these routine samples, 58 quality control samples (corresponding to 10.5%), consisting of splits, blanks, and duplicates were also collected and analyzed. Extensive assessment of the results using the methods outlined in section 2.2.2 was carried out and is discussed briefly below. Documentation of these assessments is included in Appendix B, in Tables B-28 through B-38.

Blanks analysis accounted for 10 of the 58 quality control samples collected on the Faro side of the mine site in 2011. While there were several results that were flagged for further examination, there were relatively few flagged for retest (of which the majority were for dissolved lead and manganese). Dissolved lead concentrations in blank samples have been consistently elevated since the QA/QC program was implemented.

Duplicate and split analysis accounted for 27 and 21 of the 58 quality control samples collected on the Faro side in 2011, respectively. Although discrepancies between main and QA/QC sample results were observed, there were generally no observable patterns to the flagged values, and few parameters were repeatedly flagged. The main exception was TSS in groundwater samples which, for both splits and duplicates repeatedly showed discrepancies; this, however, is not entirely unexpected given the difficulty associated with evenly splitting a water sample containing high concentrations of rapidly settling solids (explaining the discrepancies in the split samples) and the fluctuations in

sediment content in groundwater as it is pumped from the well (explaining the discrepancies in the duplicate samples).

Quality comparisons of lab and field data occasionally identified discrepancies, most often in samples from surface and seepage water sites with dynamic water chemistry, such as those associated with the ETA (X23, ETA Combined, FCS-4), and in several different groundwater sites where exposure to atmospheric conditions may affect pH and conductivity through changes in water chemistry.

As mentioned previously, assessment of highs and lows for data dating from March 2009 to December 2011 was performed throughout 2011. Table B-38 in Appendix B contains the action record for this time period, indicating the parameters to which result flags were added and removed (and when), as well as dates on which monthly data was posted in emLine. Full high/low reports as well as the record of result flags are only provided digitally due to the enormity of the tables.

2.3 Groundwater Monitoring Reporting and Assessment

While 2011 groundwater results have been reported as part of the 2011 annual reporting requirements under the C&M contract, it is the understanding of DES that another consultant (Roberston GeoConsultants) has been contracted to undertake the annual assessment and review of the groundwater monitoring program as a whole, as they have historically. Therefore, detailed assessment of groundwater quality and gradients has been minimized in this 2011 Annual Report.

Groundwater quality monitoring results are included in Tables B-1 and B-2. QA/QC comparison results are shown in Tables B-28 to B-38. Supplementary groundwater monitoring data, including water levels, depth to bottom, and stick-up measurements are also included in Appendix B, in Table B-5.

2.4 Pit Lakes Monitoring, Reporting and Assessment

Faro Pit water quality was monitored at several depth intervals at one location in the Faro Pit in 2011 by Laberge Environmental Services as part of the Pit Lakes studies. The results of this monitoring are included in Tables B-1 to B-3, and QA/QC comparison results are shown in Tables B-31 to B-33. It is understood by DES that water quality results under this program are assessed as part of closure planning and as such, assessment of these results is not included as a component of this report.

2.5 Upstream of Former Mine Activities – Background Water Quality

In 2011, water quality monitoring upstream of the former mine activities was carried out at the following locations:

- FAROCR, at the outlet of the Faro Creek Diversion;
- FCO, where water collects in the Old Faro Creek Channel above the Faro Pit; and
- R7, in the North Fork of Rose Creek, upstream of the confluence with Faro Creek.

Monitoring at each of these sites, with the exception of at FCO, provide background or reference water quality and flows data. Results of water quality monitoring indicate, in all cases, that sulphate, zinc, copper, and cadmium concentrations are comparable to those observed in previous years, as can be seen in Figures B-1 to B-4, respectively.

2.6 Water Quality in Open Pits, Rock Dumps and Tailings

2.6.1 Main Pit

2.6.1.1 Pit Water

Water quality in the Faro Main Pit is monitored in the near surface zone at site X22b, located off the Faro Barge near the easternmost pit wall. In 2011, sampling activities were performed for the purpose of monitoring and assessment of pit water quality conditions, and to support management of the annual Faro Pit pumping program. Water quality at this location is generally demonstrative of buffered acid rock drainage with high levels of metals and sulphate at a neutral pH. This is expected given the presence of mineralized rock dumps and pit walls in the drainage area.

Zinc concentrations at X22b have been increasing gradually since 2004 and continued to do so at a similar rate through 2011 (Figure B-6). Although there was a deep plunge in April/May 2011 (consistent with spring freshet, and previously observed), throughout the year both total and dissolved zinc concentrations remained well within range of levels previously observed in the Faro Pit.

2011 sulphate levels were also similar to those seen in recent years and, as with zinc, dropped to a low concentration in April/May (Figure B-5). Lead concentrations were somewhat erratic in 2011 as compared with recent years, and reached the highest concentration seen since 2006 in May 2011 (Figure B-8). Total and dissolved cadmium

have been increasing gradually since 2006 and, although concentrations had levelled off in 2010, they began increasing again in 2011 (Figure B-10).

2.6.1.2 Miscellaneous Surface Seepages

Locations A30 and FD-40 are seeps into the Main Pit from the Faro Pit walls, and are both located on the northwest pit wall.

Historically, trends at site A30 have demonstrated elevated metal and sulphate concentrations and low pH in the spring, suggesting water quality is most likely affected by acid rock drainage and metals leaching. The results of monitoring at A30 in 2011 generally agreed with this trend, showing a rapid increase to high sulphate and dissolved zinc and cadmium concentrations in the spring followed by a gradual decrease to lower levels by the end of the year; the one exception was dissolved lead, which continued increasing until September 2011 before decreasing to lower concentrations (Figures B-5, B-7, B-9 and B-11).

Monthly sampling at location FD-40 was added to the routine water quality monitoring program as of January 2011. Throughout the year, sulphate and dissolved zinc and cadmium concentrations showed a generally increasing trend, with the highest concentrations observed in December 2011, while dissolved lead concentrations peaked in July before decreasing to lower levels by the end of the year (Figures B-5, B-7, B-9 and B-11).

Routine sampling at the site SP5-6, a surface ditch feeding into the Main Pit from the North East Dumps, is performed twice per year in the spring and fall. Evaluation of routine parameters at SP5-6 indicates that sulphate and dissolved metal concentrations from 2011 are comparable to those observed in recent years (Figures B-5, B-7, B-9 and B-11).

2.6.2 Zone II Pit

Water pumped from the Zone II Pit into the Main Pit is monitored at location X26, at the outflow of the Zone II pumping system. Data at this location can be used to identify changes in water chemistry that may be related to acceleration in the acid rock drainage process within the Zone II Pit, and also provides information on contaminant loading to the Faro Pit.

Currently, water from the Zone II Pit is actively pumped during the spring, summer, and fall months, permitting that the water level remains above the Zone II pump. In summer of 2010, a new well was drilled into the Zone II Pit in order to allow pumping to be

carried out continuously year-round and from a depth approximately 20 m below that of the old well. Pumping equipment for this system has been prepared on-site; however, as the new well does not have an adequate recharge rate, the new system has not yet been commissioned. It is anticipated that pumping of the Zone II Pit in 2012 will be performed using the historic pumping system while plans are developed for how to utilize the new pumping system.

In 2011, water quality monitoring at X26 was carried out in May, June, August, and September. During this period, sulphate and dissolved metals concentrations at X26 were similar to those observed in previous years (Figures B-5, B-7, B-9, and B-11). X26 maintains one of the highest average sulphate and zinc concentrations of all the monitored inflows in the Faro Pit (second only to SRK08-SPW3).

2.6.3 Rock Dumps and the Emergency Tailings Area

2.6.3.1 Northeast Rock Dumps

Wells BH13B and BH14A/B, and seepage site NE3 are located downgradient of the Northeast Rock Dumps as shown on Map Sheet 1-12.

Although the well was monitored, no samples were collected at BH13B in 2011. In the spring, despite checking the well several times throughout June and July, no sample was collected due to the well being frozen. In the fall, the well was purged to dryness and did not recharge quickly enough to provide sufficient water for sampling.

Sulphate concentrations at BH14A/B seem to be generally decreasing following a spike in September 2008, though they are still elevated relative to the concentrations observed in earlier years. Dissolved zinc levels at BH14A are still high following the spike that occurred in September 2008; however, dissolved zinc at BH14B has returned to levels that were typical of the well prior to the spike that occurred in September 2008.

Monitoring at NE3 was carried out in the spring in fall in 2011, but both times the site was dry (as has been the case since 1999) and so no samples were collected.

2.6.3.2 Zone II Rock Dump

Wells BH5, BH6, BH10(A and B), P05-04, and SRK08-P12(A and B) are located at the southern base of the Zone II Rock Dumps in the Zone II Washout area and were monitored in the fall of 2011 as prescribed in the C&M contract. All of the wells were successfully sampled and showed sulphate and dissolved zinc concentrations comparable to historical results with the exception of BH6 and P05-04, which had somewhat elevated sulphate concentrations relative to those observed in recent years.

An additional well, BH8, also located at the southern base of the Zone II Rock Dumps, was monitored in 2011 as part closure planning. Both sulphate and dissolved zinc concentrations in this well are substantially higher than those in the other wells in the Zone II Outwash area, but 2011 results were comparable to those from previous years for this well.

2.6.3.3 Intermediate Rock Dump and the S-Wells Area

Water draining from the Intermediate Rock Dump is monitored upstream of the Haul Road at groundwater well P96-6, located at the Intermediate Dump Toe near the North Fork of Rose Creek, and downstream of the Haul Road at numerous groundwater wells within the S-Wells area.

In 2011, sulphate concentrations at P96-6 reached a new maximum for the site (1040 mg/L), exceeding the previous high of 1030 mg/L, established in 2005; dissolved zinc concentrations were comparable to those seen in previous years.

Extensive groundwater monitoring was carried out in the S-Wells area in 2011, specifically at S1(A and B), S2(A and B), SRK05-SP1(A and B), SRK05-SP2, SRK05-SP3(A and B), SRK05-SP4(A and B), SRK05-SP5, SRK05-SP6, SRK05-SP7(A and B), SRK05-SP8(A and B), SRK08-SBR1, SRK08-SBR2, SRK08-SBR3, SRK08-SBR4, SRK08-SPW2, SRK08-SPW2, SRK08-SPW3, P09-SIS1, P09-SIS2, P09-SIS3, P09-SIS4, and P09-SIS5. As it is expected by DES that figures and detailed discussion of groundwater quality in this area will be included in the 2011 Annual Groundwater Review (RGC), no discussion is included here.

2.6.3.4 Main Rock Dump, ETA, and Old Faro Creek Channel

Surface seepage from the toe of the Main Rock Dump flowing to the ETA is sampled at X23, located in the Old Faro Creek channel. In addition, surface water within the ETA area itself is sampled at three locations: X7, located in the Old Faro Creek Channel downstream of the Main Access Road; ETA Combined, which refers to the water collected in the ETA collection sump; and FCS-4, located a short distance downgradient of the collection sump and comprised of all water bypassing and overflowing (during non-pumping periods) the collection sump.

Sulphate and zinc at both X23 and X7 have generally increased since sampling at these sites first began, but in 2011 concentrations stabilized and were similar to those observed in 2010 for both sites.

Monthly monitoring of sites ETA Combined and FCS-4 was added to Appendix B of the C&M Contract in September of 2010. These sites show sulphate and total zinc concentrations similar, but slightly lower than those seen at X23 and X7. Although the dataset for ETA Combined and FCS-4 is still small, as of yet there does not appear to be any apparent increasing or decreasing trends for sulphate or total zinc at either site.

In addition to seepage and surface water monitoring in this area, there are several groundwater monitoring wells located throughout the ETA and surrounding the Main Rock Dump that were monitored 2011. It is expected that figures and detailed discussion of groundwater quality in this area will be included in the 2011 Annual Groundwater Review (RGC) and as such only a brief discussion is provided below.

Wells P96-7 and SRK08-P9, located at the central toe of the Main Rock Dump and wells P96-8(A and B), located in the Old Faro Creek Channel at the toe of the Main Rock Dump, were monitored in 2011 under the C&M contract. All wells were successfully sampled with the exception of SRK08-P9, which had insufficient water during the spring monitoring event to collect a sample; it was, however, successfully sampled in the fall. P96-8A and SRK08-P9 both demonstrated sulphate and dissolved zinc concentrations in 2011 similar to those seen in recent years. P96-7 and P96-8A also demonstrated sulphate and dissolved zinc concentrations similar to recent years, but both reached new maxima for sulphate in September 2011, at levels just slightly greater than the previous highs (2500 mg/L compared to 2400 mg/L for P96-7; and 7400 mg/L compared to 7300 mg/L for P96-8A).

P09-ETA1 and P09-ETA2 are groundwater wells located in the ETA that were monitored in 2011 under the C&M contract. SRK-04-3A, SRK05-ETA-BR1, SRK05-ETA-BR2, also wells located in the ETA, were monitored in 2011 under the closure planning program. Sulphate and dissolved zinc concentrations at P09-ETA1 were similar to those observed previously at the site, with dissolved zinc having returned to the low level seen when sampling of the well began in 2009 (after a very large spike in 2010). Results of sampling at P09-ETA2 showed sulphate concentrations within the range typical of the site, but dissolved zinc concentrations that spiked in the spring before returning to levels typical of the site in the fall. 2011 sulphate and dissolved zinc concentrations for SRK04-3A, SRK05-ETA-BR1, and SRK05-BR2 were all comparable to historical values.

In 2008, two new wells were installed to monitor groundwater understood to drain from the Main Rock Dumps and the ETA at SRK08-P10 (A and B). In 2011, SRK08-P10A was monitored as part of the C&M contract (SRK08-P10B was removed from the program as it was dry). Both sulphate and dissolved zinc concentrations at this site

were comparable to historical levels, with dissolved zinc returning to low levels following a spike in 2010.

2.6.3.5 Miscellaneous Rock Dump Drainage

In 2008, two wells were installed in the area east of the guardhouse: SRK08-P11(A and B). Sampling of these wells in 2011 revealed fairly low sulphate and dissolved zinc concentrations (similar to those observed in previous years), and circum neutral pH in both cases.

2.6.4 Rose Creek Tailings Facility

2.6.4.1 Intermediate Pond

The water quality in the Intermediate Pond is monitored at station X4 which is sampled from the Intermediate Pond Barge, located near the north eastern edge of the pond. Results of water quality analysis showed that sulphate concentrations varied widely throughout the year, ranging over more than 500 mg/L. This coincides with the seasonal variation that has been observed at X4 in the past, in which lower sulphate concentrations are typically observed in the spring months. Sulphate at X4 has demonstrated a gradual increase since 1998, but since 2009 levels appear to have stabilized somewhat, as can be seen n Figure B-16, potentially as a result of diversion of flow from the ETA to the Faro Treatment Plant during the treatment season.

Although total and dissolved zinc concentrations have been relatively high in the Intermediate Pond over the past three years, they remained relatively low in 2011, with a maximum concentration of 30.1 mg/L (as compared to maxima of 51 and 60.9 mg/L in 2010 and 2009, respectively). Total and dissolved zinc at X4 typically demonstrate seasonal variability, with lower concentrations in the spring and higher concentrations in the fall and winter; however, in 2011 zinc levels were low between January and May, and highest between June and November before dropping back down to low concentrations in December (Figure B-15).

2011 total and dissolved iron concentrations at X4 showed a general decrease as compared to 2010, when levels spiked dramatically to levels much greater than had previously been observed at the site. Seasonal variability, typical of iron at this site, was also apparent in 2011, with low concentrations in the spring and high concentrations in the winter (Figure B-17).

In 2011, the pH in the Intermediate Pond also demonstrated seasonal variation, with increased acidification (with pH as low as 3.43) during the summer and fall months (Figure B-14).

2.6.4.2 Groundwater

In 2011, groundwater wells in the Rose Creek Tailings Facility and the underlying native soils were monitored as required under the Adaptive Management Plan and C&M contract; however, there was insufficient water for sample collection at P03-04, P03-08-7, P03-08-8, and P03-06-5 (fall event). The groundwater monitoring wells located at the toe of the Intermediate Dam (i.e. Wells X24-96D, X25-96(A and B), P01-03, and P01-04(A and B)) were monitored according to the C&M contract, and all were successfully sampled. Water quality at these locations is discussed in more detail in the 2011 Adaptive Management Plan Review in Section 7.

2.6.4.3 Lower Guardhouse Creek

Lower Guardhouse Creek (location GDHSECK) receives runoff from some areas of the site and flows into the Intermediate Impoundment. In 2011, sampling of the creek took place along the lower reaches, immediately upstream of the Intermediate Impoundment. Results of sampling in 2011 demonstrated sulphate and zinc concentrations comparable to those seen in recent years, with the exception of a spike in both parameters in May to new maximum concentrations. pH was circum neutral throughout the year, as is typical of the site.

2.7 Water Quality Entering Rose Creek

2.7.1 Effluent Discharge

Effluent discharge to Rose Creek from the Cross Valley Pond via siphon is monitored at location X5. Appendix B of the C&M contract requires X5 to be monitored weekly when discharging and a surface grab of the Cross Valley Pond (X5P) to be collected monthly when there is no discharge. Additionally, on a quarterly basis, testing of samples from X5/X5P for acute lethality using rainbow trout (96-hour LC_{50}) is required; in 2011, all tests passed with a 100% survival rate (Table B-4).

The Mill Water Treatment system was successfully operated in 2011 as described in Section 8 of this report. The treatment system and the “polishing” action of the Cross Valley Pond were highly effective in maintaining compliance with the effluent discharge criteria for water released via location X5 based on weekly grab samples tested by Maxxam Analytics. The periods and volumes of effluent release are described in Section 4.

In addition to the chemical analyses at the external laboratory, frequent in-house analyses for total and dissolved zinc were performed on-site by the FMC laboratory to provide site management with an immediate indication of effluent quality. This testing

was performed on a daily basis for effluent during periods of discharge, and on a monthly basis for Cross Valley Pond water quality profiling throughout the year. The water quality results from the FMC laboratory were reported internally to site management, and results of profile sampling submitted in monthly environmental reports. The Cross Valley Pond profiles are also included for quick reference in Appendix B, along with graphs of spatial trends.

2.7.2 Cross Valley Dam Seepage

Seepage from the Cross Valley Dam is monitored downgradient of the toe at location X13. There are three individual seepages that report to location X13: X11, X12 and Weir 3. Location X11 is the primary seepage stream and collects seepage from the north abutment of the Cross Valley Dam. Location X12 collects seepage from the south abutment of the Cross Valley dam. Location Weir 3 collects seepage from the central area between X11 and X12.

Water quality at location X13 was monitored throughout 2011, and nearly all parameters remained within the maximum allowable discharge limits outlined in Appendix B of the C&M contract. The exceptions were colour, which exceeded the 20 TCU limit with a result of 40 TCU in August, the highest colour result observed at X13 since sampling began at the site; and turbidity, which exceeded the 15 NTU limit with results of 15.7 and 16.0 NTU in April and June, respectively (these results are within range of those previously seen at the site).

Although dissolved zinc has remained at fairly low concentrations for several years, concentrations in 2010 and 2011 were quite erratic and much higher than in previous years, though still remaining below the compliance limit of 0.5 mg/L. Sulphate concentrations have been gradually increasing at X13 since 1997, and continued to do so throughout 2011, reaching a new maximum in March of 1300 mg/L. Both TSS and pH remained at levels typical of the site.

Quarterly bioassay samples for acute lethality testing using rainbow trout (96-hour LC_{50}) were collected in March, June, September and December at location X13. All tests passed with no mortalities. A summary of bioassay results is included in Table B-4.

Water quality at locations X11, X12, and Weir 3 was tested twice in 2011, in the summer and winter. At all three locations, sulphate has been increasing gradually since 2001/2002, and continued to do so in 2011, reaching new maxima for X11, X12, and Weir 3 of 1600, 730, and 930 mg/L, respectively. X11 has consistently shown the highest sulphate concentrations of the three seeps since monitoring of the sites began. Dissolved zinc concentrations at X11, X12, and X13 were similar to those observed in

previous years; dissolved zinc at X11 reached a new maximum in August 2011 with a result of 0.0208 mg/L.

2.7.3 Groundwater

Groundwater quality is monitored at various locations below the Cross Valley Dam. A portion of the groundwater from the underlying aquifer is thought to discharge to the surface and enter Rose Creek in the general vicinity of sampling location X14, and some portion is thought to remain in the aquifer as groundwater flow.

Groundwater was monitored and samples successfully collected at well locations P03-09, P01-02(A and B), P01-11, P09-C1, P09-C2, located at the toe of the Cross Valley Dam, and at P09-C3, X16(A and B), X17(A and B), X18(A and B), and P01-01(A and B), downgradient of the Cross Valley Dam, as prescribed in the C&M contract. In addition, groundwater monitoring was performed under the closure planning program at wells P05-01, P05-02, and P05-03; samples were successfully collected at all sites with the exception of P05-01-6, which was frozen for the spring sampling event (it was, however, successfully sampled during the fall event).

In addition to the routine monitoring of these sites for C&M and closure planning, monitoring was also carried out in January and February 2011 at a number of locations in the Down Valley area for a study of the Rose Aquifer water quality and source waters by RGC. The results of this additional monitoring were submitted in the February Environmental Report, and are also included in Tables B-1 and B-2.

It is anticipated that figures of the water quality at these groundwater monitoring locations will be included in the 2011 Annual Groundwater Review (RGC) and are therefore not included in this report.

2.8 Receiving Water Quality

2.8.1 North Fork of Rose Creek (upstream of Haul Road)

Surface water is monitored in the North Fork of Rose Creek at R7 (background), R8, R9, and R10; sulphate, zinc, iron and lead concentrations at these sites are shown in Figures B-19 to B-22.

In 2011, results of surface water sampling in the North Fork of Rose Creek demonstrated sulphate concentrations comparable to recent years, with the exception that location R9 showed much lower maximum sulphate concentrations than is typical for the site (11 mg/L in 2011 as compared to 21 mg/L in 2010, and 22 mg/L in 2009). Throughout the year, water flowing down the reach showed an increase in sulphate

concentrations between R9 and R10 (somewhat divergent from the trend of increasing sulphate between R8 and R9 that has been generally apparent since 2004) with the greatest difference being observed in February, March and April, just before spring freshet.

Total zinc concentrations in the North Fork of Rose Creek in 2011 were also similar to those observed in recent years, with the exception of location R10, which showed a spike in May to 0.080 mg/L, the highest value observed for the site since 1999. The long term trend in total zinc concentrations at the sites in the North Fork of Rose Creek has been quite erratic, and has not demonstrated a clear increasing or decreasing trend along the reach.

At all sites in 2011, total lead and iron levels were comparable to those seen in recent years and, as with zinc, no clear increasing or decreasing trend along the reach could be discerned.

2.8.2 Rock Drain

The North Fork of Rose Creek flows under the Vangorda Haul Road (the Haul Road) through a rock drain. While it is possible that haul road drainage is leached from the rock drain, it is unknown whether there is any acid mine drainage from the haul road foundation in this area, as the relatively high flows from the North Fork of Rose Creek would be expected to dilute any leachate.

Sulphate and zinc concentrations are shown in Figures B-23 and B-24, respectively, at locations upstream (R10) and downstream (NF2), of the Haul Road, in the North Fork of Rose Creek. As shown, sulphate concentrations at both R10 and NF2 demonstrated similar patterns throughout 2011, and were within range of values previously seen at the sites; the only exception was at NF2 in March 2011, when sulphate spiked to 38 mg/L, a new maximum for the site.

Total zinc concentrations at R10 remained at levels typical of the site in 2011, though were somewhat elevated in May. Total zinc concentrations at NF2 were erratic throughout the year, showing elevated concentrations in February, May, and October; however, levels remained within range of values previously observed at the site.

Based on 2011 and historical data, there seems to be a slight increase in both sulphate and total zinc concentrations along the reach between R10 and NF2.

2.8.3 North Fork of Rose Creek (downstream of Haul Road)

Water quality in and along the reach of the North Fork of Rose Creek, from locations NF2 to X2 has been intensively monitored over the past few years in order to evaluate the effectiveness of the S-Wells SIS to intercept contaminated seepage from the Main and Intermediate Rock Dumps draining to the S-Wells area and remedy deteriorating water quality in the Creek.

Throughout 2011, water quality in the Creek was monitored on a monthly basis at locations NF2 and X2. In addition, although routine water quality monitoring at NFRC SC-1, SC-2, SC-3 and SC-4 was suspended following revisions to Appendix B of the C&M contract in 2010, monthly monitoring at these sites was resumed in November 2011 in response to recommendations by SRK in their 2011 S-Wells Performance Review, submitted to YG in August 2011.

Figures B-25 to B-27 show temporal trends for sulphate, and total zinc and lead in the North Fork of Rose Creek between NF2 and X2. As can be seen, zinc and sulphate have generally decreased in the Creek downstream of the S-Wells area since the installation of the SIS, and they remained at these lower levels throughout 2011. Total lead was within range of levels previously seen along the reach, with the exception of a spike at NF2 in October 2011 to 0.0216 mg/L, the highest lead concentration seen at the site since 1996; additionally, lead at NFRC SC-4 was somewhat elevated as compared to historical results.

2.8.4 Rose Creek Diversion Channel

Rose Creek is monitored upstream (location X3) and downstream (location X10) of the constructed diversion channel that passes Rose Creek around the Rose Creek tailings facility. Beginning in September 2010, in accordance with revisions to Appendix B of the C&M Contract, an additional site, X3A, was established at the head end of the Rose Creek Diversion Channel, downstream of X3 and slightly upstream of the Rose Creek Staff Gauge #4.

Station X3 is located at the outflow of the Pumphouse Pond. Monitoring this water includes evaluating all flow from the South Fork of Rose Creek and a majority of the flow from the North Fork of Rose Creek via location X2. A small portion of the flow from the North Fork of Rose Creek bypasses the Pumphouse Pond via a secondary diversion channel that was constructed in previous years. This “bypass” flow enters the Rose Creek Diversion Channel immediately downstream of the Pumphouse Pond. Monitoring at the new station X3A allows for the evaluation of all flow entering the Rose

Creek Diversion Channel. Location X10 is located near the downstream extent of the Rose Creek diversion channel near groundwater monitoring well X16.

In 2011, sulphate and zinc concentrations at all four sites along the reach adhered to previously established seasonal trends, with maximum levels observed early and late in the year, and minimum levels observed in the late spring and early summer. For both parameters, peak concentrations at all sites were generally lower than those seen in recent years, likely a result of the SIS installed upstream at the S-Wells area; the one exception was X3A, at which zinc and sulphate concentrations spiked to 0.301 and 34.4 mg/L, respectively in November 2011. Comparison of concentrations from X2 to X10 showed no apparent increasing or decreasing trend along the reach (Figures B-28 and B-29).

Lead and iron concentrations along the reach for 2011 were also comparable to those from previous years; however, as with sulphate and zinc, iron at X3A spiked in November to 3.86 mg/L, the highest concentration seen at any point along the reach in over 10 years (Figure B-31 and B-32).

Cadmium concentrations remained relatively low throughout 2011 and were comparable to concentrations observed previously along the reach; levels were slightly elevated in May 2011 at X2, X3, and X3A, but still within range of values observed historically. As with other parameters at the site, cadmium was high in November 2011 at X3A, but did not exceed the concentrations observed in May (Figure B-30).

2.8.5 Rose Creek Immediately Downstream of Mine Area

Rose Creek immediately downstream of the confluence with effluent discharges (locations X5 and X13) is monitored at location X14. Appendix B of the C&M contract requires that X14 be sampled weekly when effluent is being released via location X5, and monthly otherwise. This station typically reports higher zinc and sulphate during periods of effluent discharge in comparison to sampling periods with no active discharge from the Cross Valley Pond.

In 2011, sulphate and zinc concentrations were similar to those observed at the site in recent years, though sulphate did spike to a new maximum for the site in May with a result of 940 mg/L.

Water quality at X14 is assessed on a monthly basis as part of Adaptive Management Plan, and results with temporal trends are presented in the 2011 Annual Adaptive Management Plan Review in Section 7.

3. WATER QUALITY MONITORING – VANGORDA CREEK DRAINAGE

3.1 Overview of Water Quality Monitoring Program

As with the Rose Creek Drainage, the water quality monitoring program for the Vangorda Creek Drainage in 2011 was completed in accordance with Appendix B of the C&M Contract and water treatment process requirements. Details of the routine water quality monitoring program for 2011, including sampling locations, required frequencies, and actual monitoring dates are included in Appendix A. In addition, the map sheets provided in the Maps section of this report illustrate locations of monitoring sites.

The monitoring program is carried out by staff employed at the mine site by DES. In 2011, water analyses were conducted primarily by Maxxam Analytics, with supplementary analyses conducted through CARO Analytical Services. Both laboratories are accredited through the Canadian Association for Laboratory Accreditation. All water quality data for 2011, including groundwater well parameters and bioassay results, are provided in Appendix C along with QA/QC results and graphs of water quality trends for contaminants of concern at select Vangorda Creek Drainage sites.

In addition to external laboratory services, the monitoring program also makes extensive use of the unique capability for on-site zinc analyses trough the FMC Laboratory to provide immediate feedback to site management regarding effluent and treated water quality. On-site analyses of zinc concentrations in treatment plant and effluent samples are conducted on a daily or more frequent basis during periods of water treatment and/or discharge operations, with results reported internally to site management.

The following provides a brief review of water quality monitoring results in the Vangorda Creek Drainage for 2011; note that groundwater sites are minimally discussed as it is anticipated that water quality trends will be assess in depth in a separate report (by Robertson GeoConsultants), as has been done in the past.

3.2 Quality Assurance and Quality Control

3.2.1 QA/QC Program Overview and Results Assessment

The QA/QC program and results assessment methods for the FMC are presented in sections 2.2.1 and 2.2.2, respectively.

3.2.2 Summary of Vangorda Creek Drainage QA/QC Assessment

In 2011, a total of 319 routine surface, seepage, and ground water samples were collected at sites encompassed by the Vangorda Creek Drainage system. In addition to these routine samples, 35 quality control samples (corresponding to 11.0%), consisting of splits, blanks, and duplicates were also collected and analyzed. Extensive assessment of the results using the methods outlined in section 2.2.2 was carried out and is discussed briefly below. Documentation of these assessments is included in Appendix C, in Tables C-6 through C-16.

Blanks analysis accounted for 11 of the 35 quality control samples collected on the Vangorda side of the mine site in 2011. While there were several results that were flagged for further examination, there were relatively few flagged for retest (of which the majority were for dissolved lead, manganese, and zinc). Dissolved lead concentrations in blank samples have been consistently elevated since the QA/QC program was implemented.

Duplicate and split analysis accounted for 16 and 8 of the 35 quality control samples collected on the Vangorda side in 2011, respectively. Although discrepancies between main and QA/QC sample results were observed, there was generally no observable patterns to the flagged values, and few parameters were repeatedly flagged.

Quality comparisons of lab and field data identified some discrepancies, primarily in groundwater sites where exposure to atmospheric conditions may affect pH and conductivity through changes in water chemistry.

As mentioned previously, assessment of highs and lows for data dating from March 2009 to December 2011 was performed throughout 2011. Table C-16 in Appendix C contains the action record for this time period, indicating the parameters to which result flags were added and removed (and when), as well as dates on which monthly data was posted in emLine. Full high/low reports as well as the record of result flags are only provided digitally due to the enormity of the tables.

3.3 Groundwater Monitoring Reporting and Assessment

While 2011 groundwater results have been reported as part of the 2011 annual reporting requirements under the C&M contract, it is the understanding of DES that another consultant (RGC) has been contracted to undertake the annual assessment and review of the groundwater monitoring program as a whole, as they have historically. Therefore, detailed assessment of groundwater quality and gradients has been minimized in this 2011 Annual Report.

Groundwater quality monitoring results for the Vangorda Creek Drainage are included in Tables C-1 and C-2. QA/QC comparison results are shown in Tables C-6 to C-16. Supplementary groundwater monitoring data, including water levels, depth to bottom, and stick-up measurements are also included in Appendix C, in Table C-5.

3.4 Pit Lakes Monitoring, Reporting and Assessment

Grum and Vangorda Pit water quality was monitored at several depth intervals at one location in each of the Pits in 2011 by Laberge Environmental Services as part of the Pit Lakes studies. The results of this monitoring are included in Tables C-1 to C-3, and QA/QC comparison results are shown in Tables C-6 to C-11. It is understood by DES that water quality results under this program are assessed as part of closure planning and as such, assessment is not included as a component of this report.

3.5 Vangorda Creek – Background / Upstream Sites

3.5.1 Upper Vangorda Creek

V1 is located in the Main Fork of Vangorda Creek immediately upstream of former mine activities and provides background reference information for Vangorda Creek upstream of the mine site. Sulphate concentrations in 2011 were generally similar to those observed in previous years, though the results in April and November (15 and 17.9 mg/L, respectively) were slightly high for the site (Figure C-1). Total zinc and cadmium concentrations at V1 were at or near detection limits throughout the year (Figure C-2 and C-3).

3.5.2 Vangorda Northeast Interceptor Ditch

V20 is located at the downstream end of the Vangorda Northeast Interceptor Ditch, which passes clean runoff water that originally flowed directly into Vangorda Creek around the east and south sides of the Vangorda Pit and Rock Dump. This diverted water then enters Shrimp Creek.

In 2011, YG requested that monitoring at V20 be conducted concurrently with sampling performed by the Selkirk First Nation of site V20A, located in Dixon Creek, upstream of confluence with water draining from the Vangorda Northeast Interceptor Ditch. As such, the site was monitored in May and October, though the site was dry for the October monitoring event and so no sample could be collected.

Based on the results from May sample, sulphate in 2011 was the lowest it has ever been for the site at 0.3 mg/L (Figure C-1). Total zinc and cadmium were somewhat

higher than usual with concentrations of 0.059 and 0.000386 mg/L, respectively, but still within range of values previously observed at the site (Figures C-2 and C-3).

3.6 Open Pits and Rock Dumps

3.6.1 Grum Pit

Water quality in the Grum Pit is monitored at the near surface zone at location V23. Since 2004, the Grum Pit has undergone in-situ biological treatment during the summer months using phytoplankton; this treatment has resulted in a gradual reduction in zinc concentrations in the Pit over the life of the project (Figure C-4). In 2011, total and dissolved zinc concentrations were comparable to those seen in recent years, and demonstrated seasonal fluctuations typical of the site, in which lower concentrations are observed during the summer months (coinciding with periods of biological treatment).

3.6.2 Grum Slot Cut

In 2011, two wells located in the Grum Slot Cut, P09-GS1A and P09-GS1B, were monitored as prescribed in the C&M contract. While sulphate and dissolved zinc concentrations at P09-GS1A have been stable since monitoring began at the wells in 2009, they have been increasing steadily at P09-GS1B.

3.6.3 Grum Rock Dump

3.6.3.1 Grum Rock Dump Drainage – Southeast Side

V15 is located in a small draw which naturally collects a portion of the surface seepage flow below the Grum Rock Dump, including drainage from the area occupied by a sulphide cell that was overlain with an engineered cover in the summer of 2010. Flow is collected in a sump, which promotes settlement of suspended sediment, before being directed to Moose Pond via a small diversion ditch through location V2A (located within the ditch just upstream of Moose Pond). Flows from Moose Pond infiltrate to Vangorda Creek via surface compliance site V2 (located in Grum Creek upstream of the confluence with Vangorda Creek), with some contaminant attenuation provided along the groundwater flow path.

In the spring of 2011, an emergency environmental situation involving complications with drainage and erosion from the Grum Sulphide Cover necessitated diversion of excess high-sediment runoff from the Grum Rock Dump from just upstream of V2A directly to V2. This event resulted in introduction of water, non-compliant in several parameters (most notably TSS and total zinc), into Vangorda Creek. Details of this

event, and the additional water sampling performed to monitor water quality in the area during that time, were provided in memoranda submitted to YG following the event.

Routine water quality monitoring locations monitored in the Grum Rock Dump Drainage area under the C&M contract in 2011 included surface and seepage water sites V14, V15, V16, Moose Seep, SRK GD01, GC Weir, V2A, and V2, and groundwater wells SRK05-9, P96-9A, BH05-9B-R (P96-9BR), SRK05-5C, SRK05-7, and SRK05-8. The water quality in this area and the investigations that have been undertaken in this area is reviewed in detail as part of the 2011 Annual Adaptive Management Plan Review (Event 4) in Section 7. Therefore, water quality in this area is only briefly summarised below.

Results of seepage water quality monitoring at V15 in 2011 showed sulphate and dissolved zinc and copper concentrations comparable to those seen in 2010, and sulphate concentrations lower than those seen in 2010, despite the rapid increasing trends observed for dissolved zinc and sulphate over the past several years.

Routine monthly sampling of seepage site SRK GD01 began in December 2010. Prior to this, the site was monitored twice per year as part of the rock dumps seepage monitoring program. In 2011, both zinc and sulphate concentrations at the site were comparable to those seen in previous years.

Twice monthly/monthly sampling began at GC Weir in April 2011 as part of increased monitoring associated with the Grum Sulphide Cover; however, the absence of historical results at the site prevents comparison with previous years' data, and while no trends were apparent for total zinc or copper, sulphate levels did increase throughout 2011. In addition to monitoring of GC Weir and V15 under the C&M contract, weekly samples at these sites were collected and analyzed in 2011 by the FMC laboratory for dissolved zinc as a means of more closely monitoring the effects of the Grum Sulphide Cover installation in this area; these results were examined in monthly environmental reports as part of AMP Event 4 review.

Monitoring at seepage sites V14 and V16 was carried out in the spring and fall in 2011, though samples were only collected during the spring event as both sites were dry in the fall. Results of water quality monitoring at both sites in the spring demonstrated a continuation of historical trends in sulphate and copper, with concentrations comparable to those observed in previous years. Zinc levels at V14 in 2011 were within the range typical of the site, but at V16 they spiked from a near minimum concentration of 0.0056 mg/L in October 2010 to 0.0462 mg/L in May 2011.

Water quality at surface water site V2A showed concentrations comparable to those seen in recent years for total zinc and copper (with the exception of the spike in copper in May). Sulphate concentrations, despite increasing steadily since monitoring of the site began in 1997, levelled off in 2011, remaining at or below those seen at the site in 2010.

In 2011, copper concentrations at Moose Seep remained consistent with trends observed in previous years. Dissolved zinc concentrations in 2011 were extremely erratic compared to previous years with large spikes occurring in July, October, and December, resulting in a new maximum concentration for the site of 0.093 mg/L (as compared to a previous high of 0.026 mg/L). Sulphate concentrations at Moose Seep in 2011 were comparable to those observed in previous years.

In 2011, sulphate and dissolved zinc and copper concentrations at SRK05-09 (also known as Moose Well 2) were erratic (as is typical for the site) with several spikes occurring throughout the year. For the other ground wells in the area (BH05-9B-R, P96-9A, SRK05-5C, SRK05-7 and SRK05-8), sulphate and dissolved zinc and copper concentrations were comparable to those observed in previous years.

At V2 in 2011, total zinc and copper concentrations were comparable to those seen in previous years, with the exception of the spike in May resulting from the release of non-compliant water directly to Vangorda Creek. Increasing sulphate concentrations at V2 have consistently triggered the AMP since it was first put into place in 2004, and this trend continued through 2011, with sulphate reaching a new maximum of 1400 mg/L in March. Bioassay samples, collected on a quarterly basis at V2 in 2011, passed at 100% concentration over 96 hours with no mortalities. The results from the bioassays are summarised in Table C-4.

3.6.3.2 Grum Rock Dump Drainage – West and Southwest Sides

In 2011, five piezometers were monitored under the C&M contract as a means of monitoring drainage from the Grum Rock Dump to the west and southwest: P09-GW1, P09-GW3, SRK08-P14, SRK08-P15, and SRK08-P16. All sites were monitored, but no sample was collected from P09-GW1, as the well contained insufficient water for sampling. For SRK08-P14 and SRK08-P16, sulphate and dissolved zinc concentrations were similar to those observed historically. Sulphate and dissolved zinc at P09-GW3 were 1100 and 0.0091 mg/L, respectively; however, as there is no historical data for this site, it is not known whether these values are high or low for the site. Dissolved zinc at SRK08-P15 was within range of values seen previously at the site; sulphate, however, has been increasing steadily at this site over the past few years and set a new maximum concentration in 2011 at 913 mg/L (previous high: 850 mg/L).

3.6.4 Vangorda Open Pit

Vangorda Pit water is monitored in the subsurface zone at location V22. The water that has accumulated in Vangorda Pit since mine shut down has included natural inflows, water pumped periodically from Little Creek Dam Pond and water pumped/siphoned periodically from the Sheep Pad Pond. Sulphate and total and dissolved zinc in the Vangorda Pit have been increasing steadily for several years, and continued to do so throughout 2011 (Figures C-5 and C-6). The pH in the Pit typically undergoes seasonal fluctuations, with neutral pH in the spring/winter (i.e. June and October) and low pH in the summer/fall (i.e. March and December); this was generally the case in 2011, though the pH in December was atypically low for the time of year at 3.4 (Figure C-7).

3.6.5 Vangorda Rock Dump

3.6.5.1 Surface Seepage

Seepage sites V28 through V30 (Drains 1 through 6) are transverse drains that direct toe seepage from the Vangorda Rock Dump at various locations into the drainage ditch that surrounds the Dump. The ditch leads to Little Creek Dam Pond, where water is collected, and then pumped to Vangorda Pit.

Water quality monitoring at each of V29, V30, V31, V32, and V33 was scheduled in the spring and fall of 2011, and all sites were successfully sampled, with the exception of V29 and V31 (fall) for which samples could not be collected as there was no flow at the sites.

In 2011, sulphate concentrations at all of the drain sites successfully sampled were comparable to those observed in previous years, though V33 (Drain 6) reached a new maximum in October, with a result of 101,000 mg/L, compared to a former maximum of 87,900 mg/L from September 2008 (Figure C-8). Dissolved zinc concentrations were also comparable to historical results, with a new maximum reached at V32 (Drain 5) of 17,600 mg/L (compared to a previous maximum of 15,000 mg/L from September 2009) (Figure C-9).

pH in the drains varies from drain to drain. V29, V30, and V31 (Drains 2, 3 and 4, respectively) typically demonstrate pH of approximately 6, though in 2011 a pH of 2.6 was observed at V31 (however, as a fall sample was not collected, the drop in pH at this site has not yet been corroborated). V32 (Drain 5) is the most acidic of the drains, demonstrating pH results of approximately 3 or less since 2003. Drainage through V33 (Drain 6) is also acidic, with pH results typically between 4.5 and 5.

3.6.5.2 Little Creek Dam

Little Creek Dam Pond (station LCD) is the collection point for surface run off and toe seepage from the Vangorda Rock Dump, local area run off from its catchment area, and direct precipitation. Since mine shut down, water from the Pond has been pumped into the Vangorda Pit on an as-required basis throughout the spring and summer. This pumping procedure has maintained an appropriate water elevation in the Little Creek Dam Pond such that the risk of release of non-compliant water to the receiving environment has been minimized.

Water quality monitoring at LCD in 2011 was required on a monthly basis during open water conditions (i.e. absence of ice cover) under the C&M contract and was thus sampled four times (monthly June through September). In 2009 and 2010, high concentrations of sulphate and total and dissolved zinc were observed at LCD, accompanied by a drop in pH as compared to historical results. In 2011, zinc and sulphate returned to pre-spike levels (200-400 mg/L and 1500-3500 mg/L, respectively), despite the pH remaining at low levels (Figure C-10).

In 2011, four groundwater wells were sampled in the spring and fall to monitor drainage from LCD to Vangorda Creek: P09-VC1, P09-VC2, P09-LCD1, and P09-LCD6 (sampling was also required at P09-LCD4, but there was insufficient water in the well for sample collection). Sulphate and zinc concentrations in these wells were comparable to those observed historically, though elevated dissolved zinc levels were observed in P09-LCD6 and P09-VC1 during the fall sampling event. 2011 analytical data for each of the sites is displayed in Appendix C, Tables C-1 and C-2.

3.6.5.3 Groundwater Seepage

Monitoring wells V34 through V37 are located around the toe of the Vangorda Rock Dump and allow monitoring of groundwater seepage below the drainage ditch that surrounds the Dump. In 2011, all of these sites were successfully sampled in the spring and fall. Despite showing spikes in 2010, dissolved zinc concentrations at V34 and V35 in 2011 dropped back down to levels comparable to those prior to 2010. Dissolved zinc at V36 continued to trend upwards in 2011, reaching a new maximum of 0.096 mg/L in June (compared to a previous maximum of 0.075 mg/L from June 2010). At V37, dissolved zinc spiked to 0.093 mg/L in October 2011, despite having remained at stable levels around approximately 0.005 mg/L since 2002 (Figure C-12). Sulphate continued to trend upwards in all four ground wells in 2011 with the exception of V36, in which sulphate concentrations were slightly less than those observed in 2010 (Figure C-11).

Monitoring piezometers P2001-2 and P2001-3, located around the toe of the Vangorda Rock Dump, also allow for monitoring of groundwater seepage below the drainage ditch that surrounds the Dump. Piezometer P2001-2 is a nested well in one drill hole, P2001-2A and P2001-2B. In 2011, P2001-2A and B and P2001-3 continued to show low metal concentrations and neutral pH. However, all three wells showed slightly elevated dissolved zinc concentrations: P2001-2A increased in June before returning to typical levels in October, while P2001-2B and P2001-3 both showed increases in October. In the P2001-2 wells, these increases were accompanied by slight increases in sulphate; sulphate levels at P2001-3, however, were within range of those seen at the site in previous years.

In the fall of 2010, five new wells PW-10-(01 through 05), also known as DH1 to DH5, were installed at various locations on the Vangorda Rock Dump (see Map Sheet 1-19). PW-10-04 and PW-10-05 were monitored three times in 2011, but not successfully sampled as they were dry or contained insufficient water for sampling. Conversely, PW-10-01, PW-10-02, and PW-10-03 were successfully sampled; analytical results for these wells are provided in Tables C-1 and C-2, and well parameters for all of the wells are provided in Table C-5.

3.7 Water Quality Entering Vangorda Creek

3.7.1 Sheep Pad Pond

Location V25BSP represents all water that enters Vangorda Creek via the Sheep Pad Pond including water discharged from the GTP Clarification Pond and natural runoff. V25BSP is a point of compliance for water entering Vangorda Creek from the Sheep Pad Ponds. Sampling is undertaken weekly during periods of discharge from the water treatment plant and monthly otherwise.

Sulphate concentrations at V25BSP in 2011 were consistent with those seen in previous years, though a new maximum of 1400 mg/L was reached in July (during release of compliant discharge from the GTP Clarification Pond). Trends show an increase in sulphate as treated water enters V25BSP and a decrease again at the cessation of water treatment (Figure C-13). In 2011, zinc concentrations at V25BSP also remained consistent with previous years, demonstrating variability typical of the site throughout the year (Figure C-14).

Bioassay samples were collected at location V25BSP in 2011. All samples passed at 100% concentration over 96 hours with no mortalities. The results from the bioassays are summarised in Table C-4.

During water treatment, weekly water quality samples were collected from the influent (V24) and effluent (V25) of the GTP. Sulphate and zinc concentrations at V24 were similar to those seen in the Vangorda Pit (V22), as expected. In addition, water quality at V25 and V25BSP was tested daily during water treatment by the FMC Laboratory.

3.7.2 Grum Creek

Discussion of the water quality entering Vangorda Creek via Grum Creek (through compliance site V2) was presented in section 3.6.3.1.

3.8 Receiving and Water Quality

3.8.1 Shrimp Creek

Station V4 is located in Shrimp Creek upstream of the confluence with the Main Fork of Vangorda Creek. This location provides reference information regarding water quality in the Shrimp Creek area and includes inflows from the upstream tributary sampled at location V20.

Zinc concentrations at V4 were stable through 2011 and similar to those seen historically (Figure C-16). Sulphate concentrations observed at V4 were variable throughout 2011, but comparable to results previously observed at the site (Figure C-15). Sulphate results at V4 appear to be higher in the winter than the summer (winter flows are largely provided by groundwater recharge to the creeks), although sampling at this site, which can be difficult to access, has been infrequent in the winter in the past five years.

3.8.2 Upper Vangorda Creek

“Upper” Vangorda Creek is the primary receiving water for mine site discharges and is sampled upstream of mine activities at V1 (discussed previously in section 3.5.1); and downstream of mine activities at V27, located just upstream of the confluence with Shrimp Creek.

Monitoring at V27 provides information regarding the effects of the mine facilities on Vangorda Creek. Surface water from the Grum Rock Dump and the Grum Interceptor Ditch/Sheep Pad Pond reports to location V27 via Grum Creek or the Vangorda Creek plunge pool. Extremely steep terrain creates unsafe access to this sampling location at some times of the year (particularly winter and spring freshet), and water sampling is conducted accordingly, with maximum consideration of worker safety.

Sulphate concentrations at V27 were within range of those observed at the site in previous years, with higher concentrations observed during periods of compliant discharge from the GTP Clarification Pond (Figure C-17). This is likely due to increases in sulphate in source waters to the GTP that, following treatment, are discharged to Vangorda Creek; this is supported by the fact that sulphate levels are higher in Vangorda Creek in years when the GTP is in operation. Generally, sulphate concentrations can be used as an indicator of possible increases in metals concentrations; in treated water, however, increases in sulphate do not correlate with increases in metals.

In 2011, total zinc concentrations at V27 were fairly stable, except during periods of discharge from the GTP Clarification Pond when levels increased slightly, and during spring freshet, when levels dropped. This variation in zinc concentrations is typical of the site, and 2011 concentrations all fell within range of those seen previously observed at the site (Figure C-18).

3.8.3 Lower Vangorda Creek

The water quality in Lower Vangorda Creek represents natural run off and some mine site drainage originating from AEX Creek, the Vangorda Haul Road, and a small portion from the Grum Rock Dump. Water quality in the West Fork of Vangorda Creek, a tributary of Vangorda Creek, is monitored at V5, while water quality in lower Vangorda Creek is monitored at V8.

3.8.3.1 West Fork

V5 is located in the West Fork of Vangorda Creek just upstream of the confluence with the Main Fork. V5 receives drainage from AEX Creek (location V17A, not monitored in 2011) and as such is susceptible to influences from surface drainage from the north portion of the Ore Transfer Pad. Both AEX Creek and the West Fork of Vangorda Creek receive runoff from the Haul Road and the Mine Access Road. There is also a small portion of the Grum Rock Dump that drains into the West Fork of Vangorda Creek between AEX Creek and V5.

Sulphate concentrations at V5 in 2011 demonstrated the pre-existing seasonal trend of higher concentrations in the winter months and ranged from 24 to 200 mg/L throughout the year (Figure C-17). Zinc concentrations at V5 have remained consistently low since 1999 and this trend continued throughout 2011, with the exception of a large spike in May to 0.210 mg/L, the highest zinc concentration seen at the site since 1998 (Figure C-18).

3.8.3.2 Lower Vangorda Creek

Location V8 is in lower Vangorda Creek downstream of the confluence of the West Fork (location V5) and the Main Fork. In 2011, water quality parameters varied within the historic range that has been observed at V8, except in May, when several parameters spiked as a result of the release of high-sediment runoff from the Grum Rock Dump into Vangorda Creek (discussed in section 3.6.3.1).

Further discussion of water quality at V8 and in Vangorda Creek is presented in the 2011 Annual Adaptive Management Plan Review (Event 2) in Section 7.

4. HYDROLOGICAL MONITORING

This section documents water usage in the Rose Creek and Vangorda Creek drainages in 2011. Supporting documentation, including tables and figures, are included in Appendix D.

4.1 Rose Creek Drainage

In 2011, water use in the Rose Creek Drainage consisted of:

- Pumping from the Zone II Pit to the Faro Pit;
- Pumping from the Faro Pit to the Faro Treatment Plant;
- Pumping from the S-Wells area to the Faro Pit;
- Pumping from the ETA to the Faro Treatment Plant and the Intermediate Pond;
- Pumping from the Intermediate Pond to the Faro Pit; and
- Pumping of a groundwater well for drinking water supply (new in 2011).

A description of each of these pumping systems is presented below and the tables relevant to this section are presented in Appendix D.

The C&M Contract requires that total water use in the Rose Creek Drainage not exceed 10% of historic use of 4.1 million m^3 per year (suggested by the former Water Licence Application document). This requirement was satisfied with a 2011 total pumped volume that was moderately less than 2010 and substantially below the maximum allowable volume.

Table D-1 summarizes the total water obtained from the Rose Creek Drainage historically and in 2011 (monthly and annual flow totals are presented in table D-2). Volumes pumped in 2011 are based on measurements of pipe flow using ultrasonic and magnetic flow meters, as well as fixed area transit time, and volumetric fill rates. Table D-1 shows that the volume of water pumped from the Rose Creek Drainage in 2011 (approximately 3.2 million m^3) was less than the volume that was pumped in 2010 (approximately 3.3 million m^3) and substantially lower (78%) than the maximum water use limit suggested in the former water license (4.1million m^3). As a result of moderate snowpack and below average precipitation (Table D-3), less water needed to be pumped in the Rose Creek Drainage to achieve the desired water levels.

Table D-3 presents measured monthly precipitation at the Faro airport over the available period of record, 1978 to 2011. The total precipitation recorded for 2011 was 98% of the 33 year average.

4.1.1 Zone II Pit

The Zone II Pit is backfilled with waste rock but still serves as a collection point for runoff water. A down-hole pump, operated only during the summer, is used to pump water from the backfilled pit on an as-required basis to maintain the water level safely below the overflow level of approximately -39 m. Water level measurements (Figure D-1) are obtained by static-line piezometer from an open riser pipe, which was installed in 1997 and a second well that was installed in 2010. In 2011, the Zone II pump was operated from May 24 until September 30 and pumped a total volume of approximately 58,000 m^3 of water.

4.1.2 S-Wells

At the end of February 2009, the S-Wells area trench interception collection and pumping system was commissioned. Groundwater intercepted prior to recharging to the North Fork of Rose Creek in the shallow aquifer, was pumped to the Faro Pit. Totalizers installed at each of three pumping wells installed provide a record of flows.

In 2011, this pumping system was in operation continuously throughout the year (with minor interruptions) with variable pumping rate. The flow totalizer indicates that approximately 73,000 m^3 of water was pumped to Faro Pit.

4.1.3 Faro Pit

The recycle water system which provided water from the Faro Pit to the Faro Mill was installed during the summer of 1997 and was used to provide an estimated minimum 95% of the water required for processing while the Faro Mill was operating prior to February 1998. The system has been used to maintain the in-pit water level within the desired range since mine operations ceased.

The recommended maximum elevation for the Faro Pit is 1177.808 masl which is approximately 18 metres below the lowest point in the pit perimeter. This elevation is anticipated to provide a large enough safety margin to prevent the overflow of Faro Pit into the Zone II Pit in the event of a breach of the Faro Creek Diversion as well as preclude the possibility of seepage through the fractured rock between the two pits.

In 2011, the Faro Pit was pumped from April 18 until September 19. Pumped volumes were recorded by a magnetic flow meter and totals collected at the end of each month. The measured Faro Pit water levels from 2005 through 2011 are illustrated in Figure D-2. The water levels of the Faro Pit at the end of the pumping season and the end of the year were at 1140.672 and 1141.574 masl, respectively, corresponding to a water level

drop of approximately 1.3 m during the pumping period and a rise of 0.10 m over the year.

4.1.4 Emergency Tailings Area

The ETA has been shown to contribute a significant contaminant load to the downgradient areas, through seepage and groundwater migration. Studies have shown that a portion of this water was not being collected and there was therefore a possibility of contamination of the aquifer under the Rose Creek Tailings. As a result, a collection system consisting of a dual sump (with 15 hp and 30 hp pumps) with cut-off trench, and a gravity feed pipeline to the Intermediate Pond was installed during the winter of 2006/2007. The ETA collection system was historically operated through the summer with all of the collected water being discharged into the Intermediate Pond. In 2011, this water was pumped directly to the Faro Mill Treatment System during the treatment season, from May 16 to September 19. From volumetric (bucket flow) measurements taken periodically at the end of the ETA pipeline, the total volume pumped was determined to be 76,000 m^3.

4.1.5 Intermediate Pond

In previous years, the Intermediate Pond water level was managed by periodically siphoning, and treating the water through the Down Valley Treatment Plant and discharging to the Cross Valley Pond. In 2007, a diesel powered, barge-mounted, vertical turbine pump was installed in the Intermediate Pond in order to pump water to the Faro Mill. In 2010, this system was upgraded to an electrically-driven, dual pump system which allowed for better control over the water level in the pond and water treatment to be carried out wholly through the Faro Mill Treatment System; this system was successfully operated in 2011.

The Intermediate Pond pumping during the 2011 season (from April 15 to September 19) was monitored by an inline magnetic flow meter and total pumped volumes were recorded each month. The 1.19 million m^3 of water removed from the Intermediate Pond in 2011 was comparable to the 1.16 million m^3 that was pumped in the previous year, and the pond had been lowered to the target elevation for the season (Figure D-3) when the system was shut down.

4.1.6 Drinking Water Well

In February of 2011, a new drinking water well was commissioned to supply potable water to the guardhouse and associated buildings. Water for this system is provided by a 66 metre well located approximately 350 metres to the northeast of the guardhouse.

Totals water use for this system was recorded using an inline magnetic flow meter. In 2011, total water use from this source was recorded as 600 m^3.

4.1.7 Cross Valley Pond

The CVP water level is maintained below the spillway by the operation of a siphon that discharges water into Rose Creek. The CVP is the body of water into which the water treated by the Faro Mill Treatment System (and, formerly, the DVTP) is directed. It is the only water body in the Rose Creek Drainage from which controlled discharge to the environment takes place. Flow measurements of the discharge from the CVP using a Dynasonics Ultrasonic Flowmeter were taken, weekly, at the siphon control point (X5) and these measurements were used to calculate the total amount of water released to the environment (Table D-2). In 2011, the total volume discharge from the CVP through X5 was measured as approximately 4.9 million m^3, which was slightly greater than the volume discharged in 2010 (4.4 million m^3). In addition to the siphon, water also leaves the CVP through a number of seeps which are collected in a channel where a flat-bottomed weir is installed (X13); this data is presented in Table D-4.

Figure D-4 illustrates the water level measurements in the CVP from 2005 to 2011. The pond level was 0.69 m lower at year end than at the beginning of the year.

4.1.8 Freshwater

Some components of the fresh water supply system that were previously used (during mine operations) to supply water to the Faro Mill Treatment System from Rose Creek remain in place. The system is, however, inoperable.

The fresh water supply system includes the following (unused) components which remain largely in place:

1. Pumphouse Pond located at the confluence of the North and South Forks of Rose Creek. The pond continues to pass all of the flow from the South Fork and most of the flow from the North Fork of Rose Creek (high flows in the North Fork partially spill into the North Fork Diversion). The North Fork channel into the Pumphouse Pond includes several settling/groundwater recharge ponds. The pond itself represents overwintering habitat for fish.

2. Pumphouse Building. The building is largely empty. Some pumps and motors have been previously removed for sale and/or alternate use.

3. Freshwater Pipeline. The steel pipeline is buried where it passes under the (former) copper sulphate and bulk explosives manufacturing yard and access road and is then overland to the Faro Mill Treatment System.

4. Portions of the former freshwater dam on the South Fork of Rose Creek. The dam was breached to original ground level in 2004.

5. Two groundwater wells, PW3 and PW6, located near the pumphouse pond. These wells were capped and surface structures removed in 2005.

4.1.9 Continuous Flow Rate Monitoring

Continuous flow rate monitoring was performed at five sites in the Rose Creek drainage in 2011:

- FCD-1 (at the head end of the Faro Diversion);
- R7 (in the North Fork of Rose Creek upstream of the FMC);
- X2 (in the North Fork of Rose Creek upstream of the tailings facility);
- X14 (in Rose Creek downstream of the tailings facility); and
- X23 (at a seepage point below the Faro Waste Rock Dump).

The flow records for 2011 were subject to an annual technical review by a hydrologist who compared these measurements against the field measurements that were made at the same location. The processed data was used to construct graphs of water level and discharge over the monitoring period and this data was compared against flow/level measurements made by other means. These graphs are presented in Figures D-8 to D-12.

4.1.10 Additional Flow Rate Monitoring

Flow rates were monitored at surface water and seepage sites throughout the Rose Creek Drainage at frequencies prescribed in Appendix B of the C&M contract, by in-stream (depth / velocity profiles), volumetric, weir, staff gauge (with rating curve), or estimation methods. At some sites, flow rate monitoring frequencies were reduced in the winter when site conditions prevented obtainment of usable data. Flow rates for each site, with an indication of the measurement method used, are included in Table D-4 in Appendix D.

4.2 Vangorda Creek Drainage

Water use in the Vangorda Creek Drainage in 2011 consisted of pumping of:

- Little Creek Dam Pond;
- Vangorda pit; and
- Freshwater Supply Pond.

A description of each of these pumping systems is presented below and the tables relevant to this section are presented in Appendix D.

4.2.1 Little Creek Dam Pond

Little Creek Dam Pond acts as a collection point for contaminated runoff and seepage from the Vangorda Waste Rock Dump. This water is pumped to the Vangorda Pit on an as-required basis through the summer in order to maintain the water level below the prescribed "safe" elevations. In 2011, the pond was pumped to Vangorda pit three times (May, July, and September) for an estimated total volume of approximately 57,000 m^3 (Table D-2).

Figure D-5 illustrates the water level measurements in Little Creek Dam Pond from 2005 to 2011. At the end of the year, the pond level was approximately 0.61 m lower than at the beginning of the year.

4.2.2 Vangorda Pit

From mine shut down in 1998 to 2001, the water level in the Vangorda pit rose to its recommended "maximum" allowable elevation. This elevation provides approximately 30 m of safety freeboard below the estimated overflow elevation. Principle inflows into the pit include local area runoff, leakage and underflow from the Vangorda Creek Diversion, direct precipitation and water pumped from Little Creek Dam Pond. After this time seasonal pumping was performed on an as required basis to maintain water levels at an acceptable level.

In 2011 pumping operations at the Vangorda pit ran from June 15 to September 13. During this period, weekly flow measurements were performed using a Dynasonics Ultrasonic Flowmeter from which the 2011 total pumped volume of approximately 384,000 m^3 was determined. At the end of the year, the pit level was approximately 0.12 m higher than at the beginning of the year (Figure D-6).

4.2.3 Grum/Vangorda Freshwater Supply Pond

During years when the GTP is operated, a relatively small amount of freshwater is drawn from Vangorda Creek Drainage for mixing lime in the plant. This water is drawn from the Grum/Vangorda Freshwater Supply Pond which stores some surface runoff

that flows into the Grum Interceptor Ditch just upgradient of the water treatment plant. Water is pumped from the pond to the plant on an on-demand basis to maintain an adequate supply of mix water in a storage tank located in the plant.

The quantity of water used for mixing of lime in 2011 is estimated to be 900 m^3 based on the typical lime density used at the GTP and the amount of lime consumed plus 25% for miscellaneous consumption.

4.2.4 Grum Pit

The water level in the Grum Pit (shown in Figure D-7) is the subject of AMP Event 6, and is discussed in detail in the 2011 review of the AMP, in section 7.7.

4.2.5 Continuous Flow Rate Monitoring

Continuous flow rate monitoring was performed at three sites in the Vangorda Creek drainage in 2011:

- V1 (Vangorda Creek up stream of the Vangorda Pit);
- V8 (Vangorda Creek downstream of the town of Faro and Vangorda Falls); and
- V27 (Vangorda Creek upstream of the confluence with Shrimp Creek).

The flow records for 2011 were subject to an annual technical review by a hydrologist who compared these measurements against the field measurements that were made at the same location. The processed data was used to construct graphs of water level and discharge over the monitoring period and this data was compared against flow/level measurements made by other means. These graphs are presented in Figures D-13 to D-15.

4.2.6 Additional Flow Rate Monitoring

Flow rates were monitored at surface water and seepage sites throughout the Vangorda Creek Drainage at frequencies prescribed in Appendix B of the C&M contract, by in-stream (depth / velocity profiles), weir, or estimation methods. Most of the sites were monitored on monthly basis. At some sites, flow rate monitoring frequencies were reduced in the winter when site conditions prevented obtainment of usable data. Flow rates and measurement methods are included in Appendix D (Table D-5).

5. METEOROLOGICAL MONITORING

5.1 General

Three climate stations were in operation at the Faro Mine Complex in 2011:

- Faro Climate Station;
- Grum Climate Station; and
- Vangorda Climate Station.

The Faro Climate Station is located on the plateau of the Faro Waste Rock Dump (see Map Sheet 3-1).

The Grum Climate Station is situated in a formal gravel pit, located north of the Grum Overburden vegetation trials (see Map Sheet 3-2).

The Vangorda Climate Station is located on the top of the Vangorda Waste Rock Dump and was installed as a component of the cover trials projects. While regular station checks and data downloads were undertaken by DES, the set up and data analysis of the Vangorda Climate Station was undertaken through EBA Engineering Consultants, and is therefore not included in this report.

5.2 Faro and Grum Climate Station Sensors

The Faro and Grum Climate Stations sensors measure the following climate parameters:

- Temperature;
- Relative humidity;
- Wind speed;
- Wind direction;
- Soil moisture;
- Soil temperature (at two depths);
- Soil heat flux;
- Net radiation;
- Albedo;
- Solar radiation (incoming);
- Snow depth; and
- Precipitation.

Averages of sensor measurements taken every 5 seconds were logged on an hourly basis in 2011. Climate stations data was downloaded on a monthly basis. This data was reported in tables, monthly, along with figures of temperature, precipitation and wind roses. Figures graphing the results of 2011 meteorological monitoring at the Faro and Grum climate station are included in Appendix E.

5.3 Faro and Grum Climate Station Operations and Maintenance

Throughout 2011, the climate stations sensors functioned successfully; however, some problems prevented collection of a complete data set.

At the Faro weather station, problems including failure of the wind speed sensor, failure of the solar panel, and failure of the battery (all of which were promptly repaired) resulted in a number of data vacancies for the year. At the Grum climate station all components functioned properly, however, a programming error resulted in the loss of some data for the month of September.

It is recommended that telemetric capability be added to both of these climate stations in order to allow for better data collection and station monitoring to be performed.

5.4 Snow Pack Monitoring

Snow pack monitoring was undertaken in February and March of 2011 with the objective of providing a preliminary indication of volumes of water that would have to be managed during spring freshet. Monitoring consisted for two components:

- Snow depth gauge readings, taken from a series of snow depth gauges installed at successive elevations on each aspect (north, south, east and west) of the Faro Rock Dump, and on the south and west aspects of the Vangorda Rock Dump; and
- Snow surveys, performed on two snow courses on each of the Vangorda Rock Dump and Faro Rock Dump, and one snow course in the forested area upgradient of the Intermediate Pond.

Results of the monitoring were reported to YG in the February and March 2011 Monthly Environmental Reports and, therefore, are not repeated here.

In addition to the snow pack monitoring, maintenance work was performed on the snow depth gauges on both Rock Dumps throughout the summer and fall of 2011. This work consisted of straightening, repainting, and replacing snow depth gauges where required.

6. GEOTECHNICAL MONITORING

Physical stability monitoring is a daily component of site activities, as observations of structures constructed to manage water are checked continually as work progresses around the site, in addition to the formal daily and monthly inspections. Visual inspections of dams and diversions are supplemented with instrumentation monitoring. The 2011 routine geotechnical instrumentation monitoring program is set out in Appendix A of this report, along with actual dates during which monitoring took place. Sites monitored under the 2011 geotechnical monitoring program are shown in Map Sheets 2-1 to 2-9 in the Maps section of this report. Results of geotechnical instrumentation monitoring are provided in Appendix F.

2011 geotechnical monitoring was divided among the following programs:

- Rose Creek Drainage (or Faro Side);
- Faro Pit Slope Stability Monitoring;
- Vangorda Creek Drainage (or Vangorda Side); and
- Grum Pit Slope Stability.

6.1 Rose Creek Drainage (Faro Side)

The routine geotechnical monitoring program undertaken in 2011 in the Faro Creek Drainage section of the FMC was largely as recommended by BGC Engineering Inc. for the 2010 program in the "*2009 Annual Geotechnical Evaluation and Instrument Review – Various Facilities at Faro Mine, Yukon*", (a component of the 2009 Annual Environmental Monitoring and Activities Report, submitted under separate cover, in 2 volumes). Instrumentation monitoring for the backslope of the Rose Creek Diversion (performed every other year) was carried out as recommended for the 2009 program by BGC in their "*2008 Annual Geotechnical Evaluation and Instrument Review*".

Faro side geotechnical monitoring in 2011 focused primarily on the stability of the following structures:

- Intermediate Dam;
- Cross Valley Dam;
- Secondary Tailings Dam;
- Faro Creek Diversion Channel;
- North Fork of Rose Creek Rock Drain;

- K8 Rock Drain;
- Rose Creek Diversion Channel; and
- North Wall Interceptor Ditch.

Daily and monthly inspections, as well as monitoring of thermistors, hydraulic and pneumatic piezometers, slope indicators, water level elevations, water stage, and discharge were completed by DES staff, with collected data forwarded to the appropriate geotechnical consultant for interpretation.

In May 2011, Kejeh Neyeh Golder was contracted to perform the spring Faro Side geotechnical inspection and instrumentation monitoring review for data collected and forwarded to KNG in April and May 2011. The site visit for purposes of inspection took place on May 23-25, at a time when water levels were high across the site due to spring freshet and when retention pond elevations were high. The findings of the 2011 annual inspection and instrumentation review are included in:

Golder Associates; "*Geotechnical 2011 Data Review, Faro Mine Complex, Faro, Yukon";* September 2011.

KNG noted that:

> *"In general, the Faro Mine Complex tailings management and water management infrastructure which are covered by this spring inspection effort including tailings dams and diversion channels are considered geotechnically stable and are performing satisfactorily during the seasonally high storage impoundment, creek and diversion channel flow conditions."*

Specific comments and recommendations are listed in the report on a structure by structure basis.

Subsequent to the spring inspection and data review by KNG, annual geotechnical inspections and monthly geotechnical data interpretation for the entire FMC for fall 2011/spring 2012 was contracted to Klohn Crippen Berger directly by YG. Representatives from KCB visited the site on August 23-24 and September 20-21, 2011 for inspections of site geotechnical structures, including those on the Faro Side; and since August, geotechnical instrumentation data collected by DES has been routinely submitted to KCB for interpretation. As KCB is contracted directly through YG, reports are submitted directly to YG from KCB, and thus are not included as part of this 2011 Annual Report.

6.2 Faro Pit Slope Stability

Surface water runoff from areas north and east of the Faro Pit are conveyed around the Faro Pit in the Faro Creek Diversion, paralleling the pit's east crest for a portion of the flow path. The east wall has experienced instability in the past, and therefore assessments were continued in 2011 to allow for ongoing evaluation of the integrity of the east wall.

The 2011 Faro Pit slope stability monitoring program was based largely on that followed for 2010 as recommended by Golder and Associates, and included:

- Crest regression measurements (by DES staff);
- Prism surveys (by Yukon Engineering Services);
- Visual inspection, including photo documentation of the east wall (by DES staff); and
- Forwarding of the above data to KCB for review.

As KCB is contracted directly through YG, the annual review of the Faro Pit slope stability data was submitted directly to YG by KCB, and thus is not included as part of this 2011 Annual Report.

6.3 Vangorda Creek Drainage (Vangorda Side)

The routine geotechnical monitoring program undertaken in 2011 in the Vangorda Creek Drainage section of the FMC was largely based on recommendations from SRK for the 2010 monitoring program in their "*2009 Annual Inspection – Waste and Water Management Facilities – Vangorda / Grum, Faro Mine Complex, Yukon"*; February 2010, (a component of the 2009 Annual Environmental Monitoring and Activities Report, submitted under separate cover).

Vangorda side geotechnical monitoring in 2011 focused primarily on the stability of the following structures:

- Little Creek Dam;
- Vangorda Waste Rock Dump (including seepage collection system);
- The Vangorda Creek Diversion;
- The Sludge Pond Embankment (GTP);
- The GTP Clarification Pond;

- The Grum Interceptor Ditch and Sheep Pad Settling Pond; and
- The Grum Dump and V15 Collection Ditch.

Daily and monthly inspections, as well as monitoring of thermistors, hydraulic and pneumatic piezometers, water level elevations, water stage, and discharge were completed by DES staff, with collected data forwarded to the appropriate geotechnical consultant for interpretation.

In May 2011, SRK was contracted to perform the spring Vangorda Side geotechnical inspection and instrumentation monitoring review for data collected and forwarded to SRK in April and May 2011. The site visit for purposes of inspection took place on May 24-25, at a time when water levels were high across the site due to spring freshet. The findings of the 2011 annual inspection and instrumentation review, including specific comments and recommendations for each structure, are included in:

SRK Consulting Inc; *"2011 Geotechnical Inspection – Waste and Water Management Facilities Vangorda/Grum – Faro Mine Complex, Yukon"*; August 2011.

Subsequent to the spring inspection and data review by SRK, annual geotechnical inspections and monthly geotechnical data interpretation for the entire FMC for fall 2011/spring 2012 was contracted to Klohn Crippen Berger directly by YG. Representatives from KCB visited the site on August 23-24 and September 20-21, 2011 for inspections of site geotechnical structures, including those on the Vangorda Side; and since August, geotechnical instrumentation data collected by DES has been routinely submitted to KCB for interpretation. As KCB is contracted directly through YG, reports are submitted directly to YG from KCB, and thus are not included as part of this 2011 Annual Report.

6.4 Grum Pit Slope Stability

In June and July, 2010, pins were installed to monitor slope stability along the east crest of the Grum Pit, in two locations (see Map Sheet 2-8). In 2011, monitoring of these pins, as well as collection of photos of the east wall of Grum Pit, was carried out by DES staff on a monthly basis. Results of this monitoring were submitted to YG in environmental monthly reports, and to Klohn Crippen Berger for annual review; the data is also presented in Appendix F of this 2011 Annual Report. As KCB is contracted directly through YG, the annual review of the Grum Pit slope stability data will be submitted directly to YG by KCB, and thus is not included as part of this report.

7. ADAPTIVE MANAGEMENT PLAN IMPLEMENTATION PROTOCOL REVIEW

7.1 Overview of Adaptive Management Plan

The AMP was developed in 2002 and 2003 by parties to the environmental assessment and water licensing processes to fulfill requirements of the former FMC water license. This plan, first implemented in 2004, was intended to provide a short-term management strategy for waters and facilities at the FMC that were recognized as representing potential environmental risks, but not requiring immediate intervention, until a Final Closure and Reclamation Plan could be developed and implemented. As the Final Closure and Reclamation Plan was still under development at the time of expiry of the water license, regular review of the AMP was incorporated as a component of the current C&M contract to allow for continued adaptive management of the areas identified in the plan.

The AMP is specifically designed to "identify the indicators and triggers for action, the measures of statistically significant changes to be tracked, the monitoring locations and parameters, the sampling frequencies, the methods to be used to analyze and evaluate the data, and the actions to be taken" for eight potential events:

- Event 1 – Degraded Groundwater Quality in Rose Creek Valley Aquifer
- Event 2 – Degraded Water Quality in Vangorda Creek Downstream of Mine Facilities
- Event 3 – Degraded Water Quality in Rose Creek Downstream of the Mine Facilities
- Event 4 – Degraded Seepage Quality from the Grum Rock Dump
- Event 5 – Degraded Water Quality in the North Fork of Rose Creek
- Event 6 – Water Level in Grum Pit Reaches Maximum Desired Elevation
- Event 7 – Disruption of Fannin Sheep Migration Through the Mine Site
- Event 8 – Wind Dispersed Tailings Result in Adverse Effects in the Terrestrial Environment

At the time of AMP development, these events represented possible future environmental conditions that would require a management response, if they were to occur. Since implementation of the AMP, some of the events have been triggered, and follow-up actions implemented; for others, implementation is in the planning stages.

In this section, each AMP event is reviewed individually, including a brief summary of event history, and a discussion of trends and triggers observed and actions taken for each event in 2011.

7.2 AMP Event 1 – Degraded Water Quality in Rose Creek Valley Aquifer

7.2.1 Description

Groundwater in the Rose Creek Valley aquifer collects seepage and contaminants released from the surface tailings impoundments and has the potential to become contaminated to such a degree that discharge from the aquifer to Rose Creek may result in sustained adverse effects in Rose Creek and downstream areas. The environmental consequences of degraded water quality in the Rose Creek Valley aquifer include the potential exposure of aquatic resources, terrestrial resources and human users of these resources to increased levels of contaminants in Rose Creek, Anvil Creek, and the Pelly River. Currently, zinc is the primary contaminant of concern and zinc and sulphate are the primary indicators of acid rock drainage.

Since degradation of groundwater quality is anticipated to occur progressively from the source area (tailings deposit) in a downgradient direction (Cross Valley Dam and downstream), the trigger locations for the implementation of the AMP are designed to provide for the early detection of emerging trends or "plumes". For this reason, the trigger locations include sites downgradient of, and directly underlying the tailings deposit as follows:

- Multi-level groundwater well P03-09, downgradient of the Cross Valley Dam;
- Groundwater wells X24 and X25, at the Intermediate Dam, below the downstream extent of the tailings deposit;
- Multi-level groundwater well P03-08, approximately mid-length of the Intermediate Impoundment (ports extending to the aquifer underlying the tailings deposit); and
- Multi-level groundwater well P03-04, at the Secondary Impoundment Dam, approximately mid-length of the tailings facility.

Groundwater quality in the Rose Creek Valley aquifer is presently monitored at the trigger locations as well as various other locations within and downstream of the tailings area on an annual or bi-annual basis for the parameters specified in Appendix B of the C&M contract.

7.2.2 Background

Since the implementation of the AMP, Event 1 has undergone extensive modification based on annual reviews, further investigations in the tailings area and Rose Creek Valley aquifer, and changes to the site monitoring program. This section aims to briefly

summarize the history of Event 1 to provide a base understanding for the 2011 review that follows; detailed discussion of specific historical events or information related to Event 1 can be found in previous annual AMP reviews.

2005 – Activation of sulphate and zinc triggers in the X24 and X25 wells in 2004 prompted data analysis which revealed that the increased concentrations were potentially a result of contaminant loading to the aquifer from drainage in the Old Faro Creek Channel (Faro Rock Dumps and ETA). Predictive modelling was also performed to assess the potential for contaminant loading to the receiving environment and any associated impacts. The model tested four scenarios:

- 'Base Case,' using fall 2004 concentrations at X24 and X25, forecast dissolved zinc concentrations in Rose Creek of 0.03 mg/L, which were not predicted to have a detrimental effect on water quality in the creek in the near future.
- Sensitivity Runs 1, 2, and 3 modeled 20%, 50%, and 100% increases in sulphate and dissolved zinc concentrations at X24 and X25, respectively. The model predicted maximum dissolved zinc concentrations in Rose Creek of 0.041 mg/L, which were within range of concentrations seen in the Creek at X14 at the time.

Based on these results, it was determined that further action to the triggers was not required, other than ongoing monitoring and assessment of all related water quality data.

2006 – Dissolved iron was removed as an AMP Event 1 indicator after investigations into a 2005 trigger revealed that elevated levels may have been the result of variation in sampling methodology during the reference period, rather than changes in water chemistry. This decision was supported by aquatic risk assessment work which indicated that iron was not a contaminant of concern in the receiving environment.

2007 – As of the end of 2006, a statistically significant dataset had been established for the multi-level groundwater wells assessed under Event 1, allowing for calculation of trigger activation thresholds for these wells. In 2007 and 2008, these thresholds were used in the assessment of the multi-level well data; since 2009, however, the wells have only been evaluated for trends.

2008 – Event 1 monitoring locations X24-96A, B, and C were decommissioned and removed from the AMP monitoring program following investigations into ongoing sampling issues related to sediment accumulation within the wells. No issues were identified for X24-96D and it was deemed adequate for continued routine monitoring and assessment of Event 1.

2008 – A geochemical assessment of the groundwater in the Rose Creek Valley aquifer was performed to further the understanding of the deterioration of water quality in the aquifer. The study determined that seepage from the Old Faro Creek Channel was largely the cause of the deteriorating water quality, and that the seepage interception system installed in the ETA in 2006 would likely reduce contaminant loading and significantly improve water quality in the northern portion of the aquifer.

7.2.3 2011 Data Review

7.2.3.1 Summary of Implementation Protocol Information

The following is a summary of the AMP Implementation Protocol information for Event 1 as of 2011 to serve as a quick reference for the review that follows.

Indicators	Locations	Thresholds	Frequency
$Zn_{(D)}$, SO_4	X24-96D, X25-96A/B	• 3 consecutive results > 75th percentile of reference period; or • Statistically significant trend projects > 75th percentile of reference period within 3 years.	Bi-Annual (Spring/Fall)
$Zn_{(D)}$, SO_4	P03-04, -08 and -09	• Statistically significant trend.	Annual

7.2.3.2 X24 & X25 Wells

The results of sulphate and zinc monitoring at X24-96D and X25-96A/B are provided in Tables G-2 to G-4, and graphed in Figure G-1 in Appendix G. While all available data for the wells is shown, only data from 1998 onwards is assessed under the AMP (1998-2002 data for the reference period, and 2003 onwards for trends analysis).

As of the end of 2011, no new triggers had been activated at X24-96D or X25-96A/B; however, the triggers that were activated as of the end of 2010 remained activated through 2011:

- Sulphate and dissolved zinc at X24-96D (for both threshold exceedance and increasing trend projecting threshold exceedance within three years); and
- Sulphate at X25-96A and X25-96B (for both threshold exceedance and increasing trend projecting threshold exceedance within three years).

Trigger activation at these sites for 2009 through 2011 is summarized in Table G-1 in Appendix G.

Fall 2011 (September) concentrations at these sites were also compared with those from fall 2004 to evaluate them against the 2005 model, with the following results:

- Sulphate and dissolved zinc at X24-96D increased 63% and 142%, respectively, as compared to fall 2004 concentrations.
- Sulphate at X25-96A increased 84% with respect to fall 2004 concentrations, while dissolved zinc at the site decreased to 23% of the 2004 concentrations.
- Sulphate and dissolved zinc at X25-96B increased 119% and 57%, respectively, as compared to fall 2004 concentrations.

As the concentrations tested in the 2005 model showed no observable impact to Rose Creek, the upper levels have become, in effect, alternate threshold values for these sites. However, comparison of 2011 data to the modelled concentrations shows that sulphate and dissolved zinc concentrations at these wells have now begun to exceed the limits of the model and, therefore, a review of the model may be required to establish the effects of further degraded water quality at these sites on the receiving environment.

7.2.3.3 P03-04 Multi-Level Well

Multi-level well P03-04 in the secondary tailings impoundment consists of nine ports at different depths. As of March 2009, when the current C&M contract came into effect, ports 1, 3, 5, 7, and 9 were removed from the groundwater sampling program and thus were not monitored in 2011. The remaining ports were monitored, but as the wells contained insufficient water for sampling, no water quality results were obtained. Historical results for these wells are, nonetheless, contained in Appendix G in Tables G-5 to G-8 and graphed in Figure G-2. As no 2011 water quality data is available for this site, the AMP status for both sulphate and dissolved zinc at ports 2, 4, 6, and 8 remains as not activated, as at the end of 2010.

7.2.3.4 P03-08 Multi-Level Well

Multi-level well P03-08 in the intermediate tailings impoundment consists of eight ports at different depths. As of March 2009, when the current C&M contract came into effect, ports 1, 3, and 5 were removed from the groundwater sampling program and thus were not monitored in 2011. Ports 7 and 8 were monitored in 2011, but as the wells contained insufficient water for sampling, no water quality results were obtained and so the AMP status on these sites remains as not activated, as at the end of 2010. Ports 2, 4, and 6 were successfully monitored and sampled in 2011, and assessment of the data indicated that no triggers were activated.

Results for the monitored ports at this site are shown in Appendix G in Tables G-9 to G-13 and graphed in Figure G-3. In general, both sulphate and dissolved zinc concentrations in all monitored ports at P03-08 are relatively low and show decreasing trends.

7.2.3.5 P03-09 Multi-Level Well

Multi-level well P03-09 in the secondary tailings impoundment consists of nine ports at different depths. As of March 2009, when the current C&M contract came into effect, ports 1, 3, 5, and 7 were removed from the groundwater sampling program and thus were not monitored in 2011. All other ports were successfully monitored and sampled.

Assessment of the 2011 data for increasing trends indicated that the following trigger was reactivated:

- Sulphate at P03-09-2 (for statistically significant increasing trend).

In addition, the following triggers remained in effect:

- Sulphate at P03-09-4, P03-09-6, P03-09-8, and P03-09-9 (for statistically significant increasing trend).

Dissolved zinc concentrations in all of the monitored ports remained stable at or near detection limits, as they have since installation in 2003, and no triggers for dissolved zinc are activated at this time.

7.2.3.6 Event 1 Water Quality Reference Stations

Based on recommendations in the original AMP, annual reviews, and consultant reports, water quality for multilevel wells P03-06, X21, P01-03, and P01-04 was also assessed under Event 1 in 2011 for significant increasing trends. Tables and figures with data for these wells are provided in Appendix G.

P03-06 Multi-Level Well

Multilevel well P03-06 in the Intermediate Tailings Impoundment consists of 7 ports at different depths. In 2011, statistically significant increasing trends were observed for both sulphate and dissolved zinc at P03-06-1, P03-06-2, P03-06-3, and P03-06-4, but no significant increasing trends were observed at P03-06-5. While P03-06-6 was successfully sampled in 2011, the data set is small (5 points) and since the last sample was collected in 2007 (port has been dry) trends were not evaluated for this site; however 2011 concentrations were comparable to historical results at the site. P03-06-7 has been dry since installation.

Through 2011, both sulphate and dissolved zinc continued to increase at P03-06 in the ports screened in the alluvial aquifer. It is expected that stabilization or decrease in contaminant concentrations will be observable at P03-06 over time as drainage from the Faro Rock Dumps and ETA is intercepted and redirected to the Faro Mill Treatment System and Intermediate Pond. Operation of the ETA pumping system is discussed in section 8.

X21 Single Level Wells

X21-96A/B are located in the Intermediate Tailings Impoundment, in the northeast section, west of the Secondary Dam.

X21-96A is the shallower of the two wells, completed in the tailings, and has shown increasing sulphate and dissolved zinc concentrations since 2002. In 2011, both parameters showed large drops in the spring followed by spikes in the fall, with dissolved zinc reaching 659 mg/L, a concentration higher than has been seen at the site since 2000.

X21-96B, completed in the aquifer beneath the tailings, has shown gradual increases in sulphate and dissolved zinc since monitoring of the site began, with both reaching new maxima in 2011 of 1920 and 18.3 mg/L, respectively.

P01-03 Single Level Well

P01-03 is located in the northern abutment of the Intermediate Dam Toe, south of X24. Sulphate and dissolved zinc concentrations at this site are increasing and reached concentrations of 2700 and 0.052 mg/L in 2011, respectively.

P01-04 Single Level Wells

P01-04A/B are located on the southern abutment of the Intermediate Dam Toe, south of the X25 wells. While sulphate concentrations at P01-04A have remained low and relatively stable, P01-04B has been gradually increasing since 2005, and reached a new maximum concentration in 2011 of 1120 mg/L. Zinc at both sites has remained at or near detection limits since monitoring of the sites began in 2001.

7.3 AMP Event 2 – Degraded Water Quality in Vangorda Creek Downstream of Mine Activities

7.3.1 Description

The water quality in Vangorda Creek downstream of the Vangorda Plateau mine facilities could be negatively affected by surface water runoff from the mine facilities and groundwater seepage. The water quality in Vangorda Creek downstream of the mine facilities is monitored on a monthly basis at AMP trigger location V8 at the foot bridge in the Town of Faro for the parameters specified in Appendix B of the C&M contract. Water quality is also monitored in Vangorda Creek upstream of V8 at locations V5 (West Fork) and V27 (Main Stem), the water quality at which was previously discussed in section 3.

The environmental consequences of degraded water quality in Vangorda Creek is the potential exposure of aquatic resources, terrestrial resources and human users of these resources to increased levels of contaminants in Vangorda Creek and, possibly, the Pelly River. Zinc is currently the primary contaminant of concern and zinc and sulphate are currently the primary indicators of acid rock drainage. Review of total copper and TSS results is also part of the AMP assessment in this area.

7.3.2 Background

Since the implementation of the AMP, Event 2 has undergone slight modifications based on annual reviews and further investigations into water quality in this area. This section briefly summarizes the history of Event 2 to provide a base understanding for the 2011 review that follows; detailed discussion of specific historical events or information related to Event 2 can be found in previous annual AMP reviews.

2006 – As part of the 2005 annual review, an assessment was carried out that identified statistically significant seasonal differences in sulphate concentrations at V8 during the AMP reference period (1998-2002). In response to this, the AMP threshold value for sulphate was modified to account for the lower sulphate levels during open water (May to October) and higher levels during the winter (November to April).

7.3.3 2011 Data Review

7.3.3.1 Summary of Implementation Protocol Information

The table below provides a summary of the AMP Implementation Protocol information for Event 2 as of 2011 to serve as a quick reference for the review that follows.

Indicators	Locations	Thresholds	Frequency
$Zn_{(T)}$, $Cu_{(T)}$, TSS	V8	• 3 consecutive results > 75th percentile of reference period; or • Statistically significant trend projects > 75th percentile of reference period within 3 years.	Monthly
SO_4	V8	• 3 consecutive results > 75th percentile of reference period (75 mg/L); or • Statistically significant trend projects > 75th percentile of reference period within 3 years.	Monthly (May – October)
SO_4	V8	• 3 consecutive results > 75th percentile of reference period (171 mg/L); or • Statistically significant trend projects > 75th percentile of reference period within 3 years.	Monthly (November – April)

7.3.3.2 Review

Assessment under the AMP of the relevant water quality data from V8 was carried out on a monthly basis throughout 2011, with all activated triggers reported to YG in monthly reports. A summary of Event 2 triggers throughout the year is provided in Table G-29 and water quality data for V8 for 2003-2011 is provided in Table G-30 and graphed in Figure G-8, in Appendix G.

In 2011, the sulphate trigger activation threshold at V8 was exceeded in all but four months of the year, and the trigger activated for three consecutive results above the threshold in April, May, September, and October. In 2011, water treated through the Grum Effluent Treatment Plant was released from the Grum Clarification Pond between July 6th and 26th, August 17th and 20th, and September 9th and 20th. It is likely that the observed sulphate concentrations from July and September (which were at the highest levels seen in 2011) can be attributed to this release of compliant discharge. An increasing trend in sulphate is also observed at V8, but it is not statistically significant at this time.

TSS was triggered for significant increasing trend at V8 for all months in 2011 except April and December, and for three consecutive results above the trigger activation threshold in July, August, and September (following elevated levels in May and June); both triggers for TSS have been activated intermittently over the past several years. The high levels observed during open water (when the threshold was exceeded in 2011) are likely attributable to a natural landslide located along the West Fork of Vangorda Creek, downstream of the FMC, as TSS in the West Fork (at V5) rise to elevated levels in the summer, while TSS in the Main Stem of the creek (at V27) remains at or below detection limits throughout the year. The high TSS concentration observed at V8 on

May 18 (1500 mg/L) was a result of the release of high-sediment runoff from the Grum Rock Dump into Vangorda Creek.

Total zinc and copper concentrations at V8 both demonstrate decreasing trends and did not activate any triggers in 2011 (though copper exceeded the threshold value once, in May, during the release of high-sediment runoff from the Grum Rock Dump).

7.4 AMP Event 3 – Degraded Water Quality in Rose Creek Downstream of Mine Activities

7.4.1 Description

Water quality in Rose Creek downstream of the mine facilities could be negatively affected by surface runoff from the mine facilities and groundwater seepage from the Rose Creek Tailings Facility. The water quality in this area is presently measured monthly at Station X14, and weekly during periods of effluent release (effluent is released upstream at location X5), for the parameters specified in Appendix B of the C&M contract. Water quality data from X5, X10, and X13 (previously discussed in section 2) is also used for the assessment of Event 3.

The environmental consequences of degraded water quality in Rose Creek is the potential exposure of aquatic resources, terrestrial resources and human resource users to increased levels of contaminants in Rose Creek, Anvil Creek and the Pelly River. Zinc is currently the primary contaminant of concern and zinc and sulphate are currently the primary indicators of acid rock drainage. Review of data for total copper is also part of the AMP assessment in this area.

7.4.2 2011 Data Review

7.4.2.1 Summary of Implementation Protocol Information

The table below provides a summary of the AMP Implementation Protocol information for Event 3 as of 2011 to serve as a quick reference for the review that follows.

Indicators	Locations	Thresholds	Frequency
$Zn_{(T)}$, $Cu_{(T)}$, SO_4	X14	• 3 consecutive results >75th percentile of reference period; or • Statistically significant trend projects >75th percentile of reference period within 3 years.	Weekly during X5 discharge / Monthly otherwise

Given the variations in sampling frequency at X14 from monthly to weekly during periods of discharge, the AMP Protocol for X14 was modified to ensure consistency with

the reference period sample frequency and the basis for the determination of the thresholds. When carrying out the assessment of consecutive weekly samples during periods of discharge, the weekly concentrations are averaged for the month. This subsequent monthly average value is then assessed as per the AMP Protocol.

7.4.2.2 Review

Assessment under the AMP of the relevant water quality data from X14 was carried out on a monthly basis throughout 2011, with all activated triggers reported to YG in monthly reports. A summary of Event 3 triggers throughout the year is provided in Table G-31 and water quality data for X14 for 2003-2011 is provided in Table G-32 and graphed in Figure G-9, in Appendix G.

Throughout all of 2011, sulphate was triggered under the AMP for significant increasing trend, and from January through May was also triggered for three consecutive results above the trigger activation threshold of 166 mg/L. These triggers are not new, and both have been recurring for the past several years. Elevated sulphate concentrations at X14 are generally caused by three mechanisms:

- High sulphate in groundwater base flow (which naturally contains higher sulphate and hardness than surface runoff), evident during winter low flow periods;
- High sulphate in Cross Valley Toe seepage, also evident in winter during low flow; and
- Compliant discharge from the Cross Valley Pond via the X5 siphon (typically during the spring and summer) which also contains elevated sulphate.

In 2011, compliant discharge from the CVP occurred from March through September, and in November and December, explaining the threshold exceedances in March, April, May, November, and December. During discharge from June through September, there was sufficient surface runoff and precipitation to reduce sulphate concentrations at X14 to below the trigger activation threshold. The high sulphate concentrations observed in January and February were most likely due to low flow base contributions, and were similar to those seen during the same period in recent years.

Total zinc at X14 in 2011 was similar to that seen in previous years and, while concentrations did exceed the trigger activation threshold in March, April, November, and December due to the release of compliant discharge, no trigger for three consecutive exceedances was activated. A statistically significant increasing trend was observed at the site until July 2011, but the projected trigger date was more than three years away.

No triggers were activated in 2011 for total copper at X14, and concentrations were similar to those seen at the site for the past several years.

7.5 AMP Event 4 – Degraded Seepage Quality from the Grum Rock Dump

7.5.1 Description

Surface and subsurface seepage from the Grum Rock Dump contains contaminants that are released from the rock dump. The water quality of Grum Dump seepage is measured twice monthly May through October and monthly November through April at V2 for the parameters specified in Appendix B of the C&M contract. This seepage water flows into Vangorda Creek and has the potential to become contaminated to such a degree that the receiving environment in Vangorda Creek is adversely affected. The trigger for the implementation of contingency measures is surface water quality in Grum Creek prior to discharging into Vangorda Creek.

In addition to water quality data from V2, monitoring at other sites in the Moose Pond area and downgradient of the Grum Rock Dump provides additional water quality data used for the assessment of Event 4 of the AMP.

7.5.2 Background

This section aims to briefly summarize the history of Event 4 to provide a base understanding for the 2011 review that follows; detailed discussion of specific historical events or information related to Event 4 can be found in previous annual AMP reviews and historical Event 4 Status Reports (prepared annually by SRK).

2004 – Review of reference period data (1998-2002) during AMP development indicated that both sulphate thresholds at V2 had been exceeded during the reference period due to elevated sulphate concentrations since 2000. As a result, both sulphate triggers were immediately activated upon implementation of the AMP in 2004.

2005 – Review of water quality data in response to the sulphate triggers at V2 indicated that sulphate and zinc at V2 and V2A had been increasing over several years, but that substantial zinc attenuation was occurring between the two sites along the groundwater flow path. It also indicated that the Grum Rock Dump was generating high zinc loads, but that attenuation along the surface and shallow subsurface flow paths was significantly reducing the overall zinc load to Vangorda Creek from the dump. Recommendations in the review prompted increased monitoring in the area and a change to an interim zinc threshold of 0.5 mg/L (as opposed to the original 0.240 mg/L) in three consecutive samples until a contaminated water collection and transfer system could be developed and implemented in the area.

2007 – In response to elevated dissolved zinc concentrations noted at V15 in 2006, a diversion ditch was installed at the site to divert the contaminated seepage into an existing ditch routing water from Grum Creek to Moose Pond. Review of water quality data from 2007 onwards indicated that this partial diversion of V15 seepage was successful in controlling the amount of zinc reporting to station V2.

2010 – A low infiltration cover was installed on the Grum Rock Dump by Pelly Construction Ltd. to control seepage through the Grum Sulphide Cell and reduce surface and groundwater contamination downgradient of the Dump.

7.5.3 2011 Data Review

7.5.3.1 Summary of Implementation Protocol Information

The table below provides a summary of the AMP Implementation Protocol information for Event 4 as of 2011 to serve as a quick reference for the review that follows.

Indicators	Locations	Thresholds	Frequency
$Zn_{(T)}$, $Cu_{(T)}$, SO_4	V2	• 3 consecutive results >75th percentile of reference period; or • Statistically significant trend projects >75th percentile of reference period within 3 years.	Twice Monthly (May-October) Monthly (November-April)

Given the variations in sampling frequency at V2 from twice monthly to monthly, the AMP Protocol for V2 was modified to ensure consistency with the reference period sample frequency and the basis for the determination of the thresholds. When carrying out the assessment of twice monthly samples, the twice monthly concentrations are averaged for the month. This subsequent monthly average value is then assessed as per the AMP Protocol.

7.5.3.2 V2

Assessment under the AMP of the relevant water quality data for Event 4 was carried out on a monthly basis throughout 2011, with all activated triggers reported to YG in monthly reports. A summary of Event 4 triggers throughout the year is provided in Table G-33, and water quality data for V2 and other sites in the surrounding area is provided in Tables G-34 to G-39 and graphed in Figures G-10 to G-13, in Appendix G.

In 2011, water quality at station V2 showed that sulphate concentrations continued to exceed the initial trigger activation threshold of 567 mg/L established in the AMP, as well as demonstrating a statistically significant increasing trend. In March 2011, a new

maximum sulphate concentration of 1400 mg/L was reached at V2, after which concentrations generally decreased to levels comparable to those seen in recent years. Since 2002, sulphate concentrations at V2 have closely mirrored those observed at V15, and this pattern continued through 2011 (Figure G-11).

Beyond those identified for sulphate, no additional triggers were activated under Event 4 in 2011. Zinc concentrations at V2 in 2011 were similar to those observed historically, between 0.01 and 0.04 mg/L (with one exception, discussed below), despite increasing concentrations at V15, indicating that the diversion of flows from V15 to Moose Pond continued to be successful in controlling zinc levels in the downstream receiving environment (Figures G-10 and G-12). Copper concentrations as well were comparable to historical concentrations, remaining at or near detection limits throughout the year (again, with one exception, discussed below).

In May 2011, the concentrations of total zinc, copper, and TSS at V2 spiked to 1.93, 0.179, and 2600 mg/L, respectively, as a result of complications with drainage and erosion from the Grum Sulphide Cover, which resulted in diversion of excess high-sediment runoff from the Grum Rock Dump from just upstream of V2A directly to V2. While this event did not trigger the AMP, and dissolved metals concentrations remained at normal levels, a large volume of non-compliant water was introduced into Vangorda Creek. Details of this event, and the additional water sampling performed to monitor water quality in the area during that time, were provided in memoranda submitted to YG following the event.

Sulphate and zinc concentrations at other sites in the area were also examined as part of the AMP Event 4 annual review, and a discussion of the results is included below.

7.5.3.3 Grum Dump Toe Seeps

Although zinc and sulphate concentrations in the Grum Dump Toe seeps generally showed increasing trends up until 2009, concentrations for both parameters in dump seepage largely demonstrated stabilization in 2010 and 2011, with levels comparable to historic ranges. This stabilization may be a result of installation of the Grum Sulphide Cover.

7.5.3.4 V15

Results of seepage water quality monitoring at V15 in 2011 showed dissolved zinc and sulphate concentrations lower than or comparable to those seen in 2009 and 2010. The observed trend in dissolved zinc at V15 is characteristic of a classic case of breakthrough of attenuated chemical species, and the 2011 results may be an indicator

of breakthrough stabilization; however, it is also possible that installation of the Grum Sulphide Cover has reduced contamination of seepage from the dump effecting the stabilization of zinc at V15 and other Grum Dump seepage sites.

In 2011, in response to increasing contaminant levels observed at V15 in previous years, and the potential adverse effects to receiving water quality in Vangorda Creek, a collection sump and pumping system was installed in the Moose Pond Area. This system was designed to collect contaminated seepage water from the V15 diversion ditch and pump it to Vangorda Pit. This system was not operated in 2011 and commissioning is dependent on direction from YG.

7.5.3.5 V2A

Sulphate concentrations at V2A, despite increasing steadily since monitoring of the site began, levelled off in 2011, remaining at or below concentrations seen at the site in 2010. Total zinc concentrations at the site were comparable to historical data and ranged from between 0.107 mg/L to 1.47 mg/L throughout the year. Both zinc and sulphate concentrations at V2A were similar (just slightly higher) to those observed at GC Weir, and much lower than those seen at V15.

7.5.3.6 Downgradient of Moose Pond: SRK05-9 and Moose Seep

As mentioned previously, significant attenuation of contaminant concentrations occurs along the groundwater flowpath between Moose Pond and V2, though sulphate concentrations remain elevated. Ground and seepage water quality is monitored in this area at SRK05-9 and Moose Seep, respectively.

In 2011, sulphate concentrations remained elevated, with statistically significant increasing trends observed at both sites. Dissolved zinc concentrations, while generally remaining at levels near detection limits, demonstrated several spikes throughout the year. In particular, dissolved zinc at Moose Seep was observed at higher levels than had previously been seen at the site in July, October, and December (concentrations of 0.093, 0.0414, and 0.027 mg/L, respectively) and, as of the end of 2011, dissolved zinc was significantly increasing at this site. Dissolved zinc at SRK05-9 was within range of values previously observed, and fluctuated between 0.0037 mg/L and 0.0555 mg/L throughout the year; zinc at this site is also increasing, but not significantly.

7.5.3.7 Surface Flow to Vangorda Creek, Downstream of Moose Pond Area

Surface water from several sites immediately downstream of the Moose Pond area flows into Vangorda Creek and is sampled twice a year as part of AMP#4 monitoring in the spring and fall. These sites include:

- GD05 d/s, located in No Fork Creek downgradient of Grum Dump Toe seepage site SRK-GD05;
- Sheep Creek, located in Sheep Creek;
- Sweet Creek, located in Sweet Creek;
- WTA02, located on the Grum Dump Toe access road near the upper end of Sheep Creek.
- WGD01, located above Sheep Creek west of the Grum Dump.

Zinc and sulphate concentrations at these locations in 2011 were generally comparable to those observed historically.

7.6 AMP Event 5 – Degraded Water Quality in the North Fork of Rose Creek

7.6.1 Description

Water quality in the North Fork of Rose Creek could be negatively affected by rock dump seepage, seepage or overflow from the Zone II Pit, seepage from the disturbed area between the creek and the Zone II Pit and the rock drain at the haul road crossing, and contaminated groundwater from the Main/Intermediate Rock Dumps. The water quality in the North Fork of Rose Creek is measured monthly at Station X2 for the parameters specified in Appendix B of the C&M contract. The flow rate is also measured monthly at X2.

The environmental consequence of degraded water quality in the North Fork of Rose Creek is the potential exposure of aquatic resources, terrestrial resources and human users of these resources to increased levels of contaminants in the North Fork of Rose Creek, the Rose Creek Diversion Channel, and, possibly, further downstream in Rose Creek, Anvil Creek and the Pelly River. Zinc is currently the primary contaminant of concern and zinc and sulphate are currently the primary indicators of acid rock drainage. Consideration of degraded water quality also includes other metals and contaminants which could source from the rock dumps, open pits and other mine facilities.

7.6.2 Background

This section aims to briefly summarize the history of Event 5 to provide a base understanding for the 2011 review that follows; detailed discussion of specific historical events or information related to Event 5 can be found in previous annual AMP reviews.

2006 – As part of the 2005 annual review, an assessment was carried out that identified statistically significant seasonal differences in sulphate concentrations at X2 during the AMP reference period (1998-2002). In response to this, the AMP threshold value for

sulphate was modified to account for the lower sulphate levels during open water (May to October) and higher levels during the winter (November to April).

2006-2008 – Throughout this period, AMP triggers were repeatedly activated under Event 5 for statistically significant increasing trend and three consecutive results exceeding the threshold for both zinc and sulphate at X2.

2008 – In response to the continued trigger activation at X2, a detailed assessment was carried out which confirmed the presence of highly impacted groundwater in the S-Wells area adjacent to the North Fork of Rose Creek and which projected continued deterioration of the groundwater quality, particularly with respect to zinc concentrations. The likely source of the contaminant loading to the S-Wells area was identified as the Main and Intermediate Rock Dumps.

2008 – In August and September, investigations of subsurface bedrock topography and surface and ground water quality in the S-Wells area was carried out, including significant drilling activity, to determine the extent of contamination in the area and provide information for the development of options for collection and treatment of contaminated water. The results of the investigations showed that significant levels of zinc were present in both groundwater and surface water nearby and in close proximity to the North Fork of Rose Creek. In response, it was decided that a seepage interception and pumping system would be installed to capture the contaminated waters at the S-Wells and pump the water to the Faro Pit.

2008-2009 – Through the winter, the SIS was installed in the S-Wells area, with initial start-up of the system taking place at the end of February 2009.

2009 – In the spring, contaminated seepage from the toe of the Intermediate Rock Dump was observed bypassing the SIS. In response, DES constructed a rock drain from near the toe of the Intermediate Dump to the SIS collector ditch to intercept the seepage.

2009-2010 – Following review of the 2009 water quality data and evaluation of the SIS performance, SRK undertook several design modifications to the SIS to address identified issues. Specifically, the existing sump was deepened and the pump system lowered to deepen the drawdown relative to the base of the shallow aquifer; a second, larger pipeline was installed to the Faro Pit to accommodate increased flows during freshet; both pipelines were extended out into the Faro Pit; and additional monitoring wells were installed downgradient of the SIS.

7.6.3 2011 Data Review

7.6.3.1 Summary of Implementation Protocol Information

The table below provides a summary of the AMP Implementation Protocol information for Event 5 as of 2011 to serve as a quick reference for the review that follows.

Indicators	Locations	Thresholds	Frequency
$Zn_{(T)}$, $Cu_{(T)}$	X2	• 3 consecutive results > 75th percentile of reference period; or • Statistically significant trend projects > 75th percentile of reference period within 3 years.	Monthly
SO_4	X2	• 3 consecutive results > 75th percentile of reference period (75 mg/L); or • Statistically significant trend projects > 75th percentile of reference period within 3 years.	Monthly (May – October)
SO_4	X2	• 3 consecutive results > 75th percentile of reference period (171 mg/L); or • Statistically significant trend projects > 75th percentile of reference period within 3 years.	Monthly (November – April)

7.6.3.2 Review

Assessment under the AMP of the relevant water quality data for Event 5 was carried out on a monthly basis throughout 2011, with discussion of the results reported to YG in monthly reports. A summary of Event 5 triggers throughout the year is provided in Table G-40, and water quality data for X2 is provided in Table G-41 and graphed in Figures G-14, in Appendix G.

In 2011, no triggers were activated under AMP Event 5. Sulphate at X2 was comparable to that seen at the site since installation of the SIS in the S-Wells area. Although sulphate concentrations exceeded the trigger activation threshold three times in 2011, the results were not consecutive, and therefore the trigger was not reactivated in 2011.

As of December 2010, zinc at X2 was triggered under the AMP for significant increasing trend, but this trigger was deactivated as of January 2011 and remained inactive throughout the year. In addition, zinc concentrations remained below the trigger activation threshold throughout 2011 (with one exception, in May when a concentration of 0.083 mg/L was observed), so no triggers for zinc were activated in 2011. Zinc at X2 has generally remained stable and at low concentrations since the installation of the SIS in the S-Wells area.

Copper at X2 was comparable to previous years, remaining near detection limits throughout the year.

7.7 AMP Event 6 – Water Level in Grum Pit Reaches Maximum Desired Elevation

7.7.1 Description

Water quality in the Grum Pit is currently non-compliant with the Effluent Discharge Standards as listed in Appendix B of the C&M contract and cannot, therefore, be directly released to the receiving environment. In addition, the water elevation in the Grum Pit has been rising since mine shut down in 1998. In order to ensure that appropriate responses were implemented in the event that the in-pit water level rose to a maximum desired operating range, an AMP for the area was developed.

The environmental consequences of the water elevation in the Grum Pit reaching the maximum desired elevation include the absence of adequate emergency storage capacity for containment of a flood event and, ultimately, a release of non-compliant water to the receiving environment, Vangorda Creek. This could result in the exposure of aquatic resources, terrestrial resources and human users of these resources to increased levels of contaminants in Vangorda Creek and the Pelly River.

The indicator for this AMP event is water level elevation in the Grum Pit and the projected timeframe to reach the desired maximum water level elevation. For water quality in Grum Pit, zinc is currently the primary contaminant of concern and zinc and sulphate are the primary indicators of acid rock drainage.

7.7.2 Background

This section aims to briefly summarize the history of Event 6 to provide a base understanding for the 2011 review that follows; detailed discussion of specific historical events or information related to Event 6 can be found in previous annual AMP reviews and studies.

2003 – A study was carried out by Gartner Lee (now AECOM) for development of Event 6 recommending a maximum desired operating elevation in the Grum Pit of 1213.4 masl and an AMP trigger elevation of 1210.8 masl, both well below the estimated overflow elevation of 1232.3 masl. The study also established an elevation / capacity relationship and a filling curve for the Grum Pit. This study formed the basis for AMP Event 6.

2009 – An assessment of the stability of the Grum Pit walls was completed by Golder in response to mass failures along instability zones on the east pit wall. The assessment

determined that mass had fallen into the pit, reducing its capacity at the lower elevations, and that approximately 483,969 m^3 of failure debris remained above the pit. The instability zone was assessed as having reached an advanced stage in the failure process, such that further shifting would be more likely to creep than rapidly deteriorate. Further failure was deemed unlikely unless progressive failure of the east wall back-scarp continued to extend behind the crest wall.

2010 – A series pins were installed in June and July to monitor the slope stability along the east crest of the Grum Pit, in two locations; these have been monitored monthly since installation.

2009 – A desktop study was carried out by SRK in which it was noted that the AMP trigger elevation was based on the assumption that pit water could drain through the subsurface at the point of overburden / bedrock contact, and the threshold elevation was set based on the lowest point of this contact, in the Grum Slot Cut. In response, a groundwater drilling program was designed to investigate the soils and permeability in the overburden / bedrock contact area and underlying bedrock.

Two monitoring wells were installed in the deep bedrock and in the area of the overburden / bedrock contact (P09-GS1A and P09-GS1B, respectively). Testing of the wells revealed that the aquifer in the Grum Slot Cut area is unconfined and hydraulically connected with the Grum Pit, with a downward flow gradient towards the pit. Review of historic records indicated that a hydraulic barrier to flow is present in the Grum Slot Cut, as long as water levels in the pit remain below those observed in the Grum Slot Cut ground water (which was measured at ~1227.5 masl in August 2009).

2010 – A memo submitted to YG from John Brodie proposed a revised overflow elevation of 1227 m, based on the August 2009 Grum Slot Cut groundwater elevation of 1227.5 m, and a revised AMP trigger elevation of 1222 masl.

2010 – Monthly water level measurements indicated seasonal variation in groundwater elevations in the Grum Slot Cut, suggesting that low water levels in the late winter could restrain the suggested revised maximum water level in the Grum Pit.

Investigations into flood scenarios were carried out by hydrologist Pat Bryan in order to better evaluate an appropriate maximum elevation for the Grum Pit. The results of these investigations were discussed in detail in the 2009/2010 AMP review. Based on the results of the study and the minimum groundwater elevation observed in the Grum Slot Cut in 2010 (1221.28 masl), a revised maximum desired operating level of between 1216.1 and 1214.3 masl (reflecting best and conservative estimates of runoff,

respectively), with maintenance of the original AMP trigger elevation, was suggested in the 2009/2010 AMP review.

2004-2010 – During the summer seasons, the Grum Pit was biologically treated through the addition of fertilizer which encourages the growth phytoplankton that remove zinc from the water column.

7.7.3 2011 Data Review

7.7.3.1 Summary of Implementation Protocol Information

The table below provides a summary of the AMP Implementation Protocol information for Event 6 as of 2011 to serve as a quick reference for the review that follows.

Indicators	Locations	Thresholds	Frequency
Pit water elevation & projected timeframe to maximum desired water elevation	Grum Pit	• Water level of 1,210.8 masl; or • Projected timeframe of 1 year or less to maximum desired water level (1213.4 masl).	• Monthly; and • Annually

7.7.3.2 Grum Pit Water Level

Water elevations in the Grum Pit were measured throughout 2011 on a twice monthly basis, and are shown in Figure G-15. On October 3, 2011 the elevation in the Grum Pit was measured at 1210.794 masl, just 6 mm below the AMP trigger elevation; by the next measurement on October 11, 2011, the elevation had risen to 1210.849 masl, thus triggering Event 6 under the AMP. The activation of this trigger was reported to YG in the environmental monthly report for October 2011.

Over the course of the year the water in the pit rose from 1208.637 masl to 1211.449 masl, corresponding to a net rise of 3.082 m. A linear projection of the Grum Pit water levels (using data from May 2009 onwards) suggests that the current maximum desired operating elevation for the Grum Pit will be reached by April 2013 (as shown in Figure G-15), which means the second trigger under Event 6 remains inactive.

Throughout 2011, water levels in the two monitoring wells located in the Grum Slot Cut were measured on a monthly basis and were presented as part of the geotechnical data in Table F-76 and Figure F-68 in Appendix F. Results of these measurements confirmed the seasonal variability observed in 2010, with 2011 levels ranging from a low of 1220.84 masl in April (the lowest observed water level to date) to a high of 1228.04 in June.

In 2011, a study of the storage capacity of the Grum Pit below the elevation of 1230 masl was conducted by Golder and Associates. This study, the results of which are included in Appendix G, combined 2009 pit topography and bathymetry data to construct a stage storage curve for the pit. Based on this storage curve, the 2011 net rise in Grum Pit corresponds to a net inflow of approximately 464,084 m^3 with an average inflow rate of 14.7 L/s for the year. This volume is somewhat high, but not unexpected given that 2011 was a high precipitation year. Comparing the end of year elevation (1211.449 masl) with the minimum observed water elevation in the Grum Slot Cut monitoring wells (1220.84 masl), this storage curve estimates the potential remaining storage capacity in the Grum Pit at approximately 1,589,460 m^3 before overflow may occur.

7.7.3.3 Grum Pit Slope Stability

In 2011, the slope stability pins on the east crest of the Grum Pit were monitored on a monthly basis. As mentioned in Section 6, the results of this monitoring were submitted to Klohn Crippen Berger for annual review and were also presented in Tabels F-74 and F-75, and Figures F-66 and F-67, in Appendix F of this 2011 Annual Report. As KCB is contracted directly through YG, the annual review of the Faro Pit slope stability data will be submitted directly to YG by KCB, and thus is not included as part of this 2011 Annual Report.

7.7.3.4 Grum Pit Water Quality

The biological treatment of the Grum Pit Lake was continued in 2011 with the addition of fertilizer to the pit on a weekly basis for a total of 6 weeks. However, despite this water treatment, the water in the Grum Pit did not meet effluent discharge standards for zinc (0.5 mg/L) in 2011, based on samples collected from the near surface by DES and depth profile monitoring completed by Laberge Environmental Services.

Total zinc concentrations at the surface of Grum Pit at V23 ranged between 2.08 and 4.25 mg/L in 2011, while at depth ranged from a low of 0.254 mg/L at 1 meter below the surface in July to a high of 5.85 mg/L at 30 meters below the surface in September. The full results of water quality monitoring in 2011 at the surface (V23) and at various depths (GL-1, 3, 5, 15, 30, 60) in the Grum Pit were presented in Appendix C in Tables C-1 to C-3. Zinc results are also included in Tables G-42 and G-43, and graphs showing temporal (at surface) and spatial (depth profiles) trends are included in Figures G-16 and G-17, respectively, in Appendix G.

As zinc concentrations in the Grum Pit are currently too high to permit compliant discharge directly to the receiving environment, treatment of water through the Grum

Treatment Plant may be an option under consideration for discharging water from the Grum Pit. As mentioned in the 2008 AMP review, if this is the case, biotreatment of the Grum Pit should be stopped one year prior to lime treatment, as biotreatment was observed to interfere with the lime treatment processes currently used at the Faro Mine Complex (and thus was discontinued in the Faro Pit).

7.8 AMP Event 7 – Disruption of Fannin Sheep Migration Through the Mine Site

7.8.1 Description

It is well documented that the Fannin sheep seasonal migration route between winter and summer areas passes through the Vangorda Plateau mine site and that the sheep have continued their migration pattern through the period of mine operations and care and maintenance activities. Mine personnel routinely observe the sheep migration during the course of their activities on the mine site.

The experience gained during the 1998 to 2002 care and maintenance period indicates that the proposed continuation of care and maintenance activities should not disrupt the sheep migration patterns. The wide ranging land use by the Fannin sheep suggests that a disruption or irregularity in the migration pattern would more likely be caused by off-site effects.

However, regardless of the source, an irregularity or disruption in the migration pattern could negatively affect the health of the herd by delaying or preventing their established pattern of land use. Alternatively, an irregularity in the sheep migration could be an indicator of a previously unidentified effect on the health of the herd.

7.8.2 2011 Data Review

7.8.2.1 Summary of Implementation Protocol Information

The table below provides a summary of the AMP Implementation Protocol information for Event 7 as of 2011 to serve as a quick reference for the review that follows.

Indicators	Locations	Thresholds	Frequency
Locations, time, and conditions of Fannin Sheep sightings, number and behaviour of animals	Vangorda Plateau	• Determination of specific thresholds will be done by the licensee in conjunction with the YG DOE	Ongoing

7.8.2.2 Review

Sheep sightings were logged and forwarded to the YG DOE Conservation Officer based in Faro for comment. No disruptions to Fannin Sheep migration were identified in 2011, and no triggers activated under AMP Event 7. The logs of 2011 sightings are included in Table G-44 in Appendix G.

7.9 AMP Event 8 – Wind Dispersed Tailings Result in Adverse Effects in the Terrestrial Environment

7.9.1 Description

At the time the AMP Implementation Protocol was originally developed, the available information demonstrated that wind dispersed contaminants (i.e. heavy metals) were present in the terrestrial environment near the mine site. This information is described in the Water Licence Renewal Environmental Assessment Report. However, at that time, this data did not clearly identify the source of the contaminants (i.e., tailings, waste rock, mining activities or emissions from the concentrator during operating periods, for example), the extent of their distribution, or whether the effects have increased, diminished or remained static through the care and maintenance timeframe (i.e. post-1998) in comparison to the operating period of the mine.

At the time of AMP implementation, an item in the Water License required the filing of results of a terrestrial effects study by the end of 2005. The study was to include an investigation of the wind dispersion of tailings and would form the basis of AMP Event 8. As such, the trigger for the event at the time of AMP implementation was “the terrestrial effects study report concludes that current and on-going wind dispersion is having a negative effect on the environment such that short term mitigation measures for a reduction in wind dispersion are recommended.”

7.9.2 Background

This section aims to briefly summarize the history of Event 8 to provide a base understanding for the 2011 review that follows; detailed discussion of specific historical events or information related to Event 8 can be found in previous annual AMP reviews.

2006 – The requirement in the Water License for a terrestrial effects study was fulfilled with the submission of two reports: “*Anvil Range Mine Complex – Terrestrial Effects Study: Investigation into Metal Concentration in Vegetation, Wildlife and Soils*”, prepared by Gartner Lee (now AECOM); and “*Summary Report Anvil Range Mine Tier 2 Risk Assessment of Current Conditions*”. These reports concluded that:

- Past operations at the mine had resulted in metals concentrations in the mine area higher than background concentrations.
- Concentrations of metals originating from the mine were generally higher near the mine and decreased with distance from the mine.
- Although higher-than-background metals concentrations were measured in plants, small mammals and other wildlife in the vicinity of the mine site, no adverse health effects were anticipated in fish or animals at the site.
- Humans who use the site for approximately 1.5 months per year for gathering berries and trapping animals, and who hunt on and eat animals from the site were not at risk from adverse health effects.
- There was no need for short-term mitigation measures at the site in order to ensure adequate protection of animals and people from the risks of wind dispersed tailings.

2008 – Despite the terrestrial effects reports finding no need for short-term mitigation measures for wind dispersion of tailings, a Tailings Dust Control Project was initiated to address the ongoing concerns related to dusting from the tailings area at the site. Preparations for application of Soil Sement, a water soluble liquid polymer, to areas of the tailings were completed in 2008, but actual application was not performed until 2009.

2009 & 2010 – The first application of Soil Sement to the tailings, with focus on the Original Tailings Impoundment, was completed in 2009. Application was continued into 2010, with focus on the Secondary Tailings Impoundment.

2009 – Air quality monitoring was conducted at 11 locations throughout the FMC. However, results of the study could not be assessed due to analytical complications.

7.9.3 2011 Data Review

7.9.3.1 Summary of Implementation Protocol Information

The terrestrial effects studies conducted under the former Water License found no need for short term mitigation measures for reduction in wind dispersion of tailings, and so the trigger under AMP Event 8 has been considered inactive since the study was completed. As no monitoring program or assessment strategy for Event 8 has been clearly defined since the studies, there is no means for effectively assessing the need for mitigation in relation to wind dispersed tailings under the AMP. As such, discussion under this event over the past several years has simply been focused on any activities related to tailings dust management at the FMC.

It is recommended that consideration be given to the removal of Event 8 from the AMP as the current approach to this event is inconsistent with the overall methodology of the AMP.

7.9.3.2 Review

As 2011 was a high precipitation year, minimal mitigation activities related to wind dispersed tailings were conducted at the FMC. Spot treatment of areas off of which wind-blown tailings dust was observed on May 24th was conducted in May.

8. CARE AND MAINTENANCE OPERATIONS

8.1 Contaminated Water Management

Refer to section 4 and Table D-2 and Figures D-1 to D-7 for pumping volumes and pond elevations, respectively.

8.1.1 Vangorda Pit Dewatering

The following outlines the activities performed throughout the year related to dewatering of the Vangorda Pit:

- Nothing significant to report from January through May.
- June 1st – Work began to prepare the booster station for the Vangorda Pump System assembly. Plywood covers and tarps that protect the booster area during the winter were removed. The HIAB was used to begin transporting pump system parts to the booster station along with large electrical cables for the 350 hp motors.
- June 6th – Both pumps for the Vangorda Pump System were assembled. Booster pump loaded onto HIAB in the Faro yard and ready to transport to the Vangorda area.
- June 7th – Vangorda Pit Barge loaded onto the float trailer in the yard using the Link-Belt excavator. The barge had been in the Faro yard since the fall for sandblasting and painting.
- June 8th – Vangorda Pit Barge and Link-Belt excavator floated to the Vangorda Pit to continue assembly of the pump system. Work continued to assemble the booster station. Link-Belt used to pull main pipeline into position for final connections.
- June 9th – Float truck hauled several loads of parts to Vangorda for assembly of the pump system. Work completed on assembly of the booster station. Barge installed and secured in the water with guy wires and all handrails and a section of walkway installed to provide safe access while installing pump system components.
- June 13th and June 14th – Assembly of the Barge Pump System was completed.
- June 15th – Work continued with several employees to assemble the Vangorda Pit Pump System and equipment in the GTP. There were several delays in starting the Vangorda Pit Pump System due to an unknown problem with the booster pressure switch. Pressure switch over-ridden for initial filling of the

Clarification Pond which takes approximately three days. Pump system up and running at 5:45 pm.

- June 16th – Vangorda Pump System operated well until 6:00 pm when the pump system shut down for an unknown reason. Electrician and several other staff investigated. No problems discovered and after electrician checked several different items, the pump system was re-started at 8:00 pm.
- June 17th – Electrician and Millwright on site in the morning to continue investigation into why the barge pump stopped on the evening of June 16th. Pump system shut down by the GTP operator at 8:30 pm on Friday due to a blown gasket that resulted in a very bad water leak at the booster station. Pump system and GTP left off for the remainder of the weekend.
- June 20th – Failed booster gasket replaced and the pump system was restarted at 9:40 am. While on normal inspection rounds at 4:15 pm, the GTP operator witnessed the barge pump shut off again for an unknown reason. Booster pump shut off immediately. Electrician responded to reset the barge sub-station breaker and the pumps were restarted at 5:30 pm. At 11:15 pm, night shift operators discovered a new leak on the barge-to-walkway flex hose. Operators reported the issue to security who reported the problem to the Superintendent. Operators asked to closely monitor through the night in hopes to have the Clarification Pond full by early the next morning when the system would be shut down and then able to change out the flex hose.
- June 21st to June 22nd – Welder fabricated and installed chains and brackets to act as guardrails across the barge pontoon between walkways.
- June 27th – Work carried out to replace the failed flex hose that connects the Vangorda Pit Barge to the pipeline on the walkway. The site welder modified a cart to add longer legs to straddle the pipeline along the walkway in order to transport the new flex hose out to the barge. Flex hose is too heavy to carry manually.
- July 4th – Tried starting the Vangorda Pump System but it would not start. Electrician off on personal leave, so Nu-line was contacted to send an electrician to Faro in the evening.
- July 5th – Nu-line Electrician on site to troubleshoot the Vangorda Pit Pump System issues. Electrician spent the morning investigating and by early afternoon had the issue resolved. Pump system started at 2:15 pm and began pumping water to the GTP for treatment.

- July 6th – Vangorda Pump System shut down due to the power bump at 9:00 pm. While draining the pipeline, a gasket failed at the booster station. Operators were advised to shut the GTP down for the night and it would be repaired and re-started in the morning.
- July 7th – Gasket replaced at the booster station and the Vangorda Pit Pump System was started back up at 9:15 am.
- July 7th – Vangorda Pump System shut down due to another power bump at 1:45 pm. Pipeline drained to prep for restart and the system was restarted and resumed pumping at 2:15 pm.
- July 21st – Flange bolts tightened up to stop a small leak at the Vangorda Pump System booster.
- July 26th – Pump system shut down at 6:00 am after lime supply at the GTP was exhausted.
- Aug. 30th – Millwright repaired a short section of pipe and a drain valve on the Vangorda Pit Barge.
- Sep. 6th – Vangorda Pump System re-started at 11:20 am to draw the Pit water elevation down to the final end of season target level.
- Sep. 8th – Pump system shut down for approximately one hour to repair a broken piece of pipe at the booster station that provides water to the Singer valve pilot system.
- Sep. 12th – A leak was observed at the booster station. Leak stopped by tightening up the flange at the discharge side of the booster.
- Sep. 13th – End of season target water elevation met. Pump system shut down at 9:00 am and system decommissioning began.
- Sep. 15th – Welder began fabrication of stands that will be used to keep Vangorda Pit pumps in a vertical position for winter storage. New mechanical seals installed require the pumps to be kept vertical. Stand completed on Sep. 20th.
- Sep. 27th – Decommissioning of the booster station completed. 350 hp electric motor brought back to the Faro side and put in heated storage for the winter.
- Sep. 27th and 28th – Work carried out to dismantle the old shelter that was used to cover the Vangorda Pit Barge. The shelter is no longer used so it will be disassembled and any salvageable parts will be put into storage / inventory.

- Oct. 20th – Link-Belt excavator used to begin clearing brush along the Vangorda Pit Pipeline in preparation for the spill mitigation work recommended in the latest spills audit. The containment ditch along the new section of pipeline installed in the spring of 2009 will be continued further uphill to add containment to the existing pipeline. Work continued and was completed on November 24th. The purpose of the ditch is to contain water from the pipeline should a break occur during pumping of Vangorda Pit water to the GTP. The ditch would direct the water down the hill and back to the Vangorda Pit as opposed to running down the Hill and into the Vangorda Creek. Small riprap was hauled from the Tim Moon Pit to line the ditch for stability after it was excavated. Excavators were used and well as dump trucks and the grader to complete the work.

8.1.2 Intermediate Pond Dewatering

The following outlines the activities performed throughout the year related to dewatering of the Intermediate Pond:

- In January, Precision Service and Pump had the PLC and HMI programming modified to incorporate the addition of a pH meter on the Mill effluent line.
- Nothing to report in February.
- Mar. 8th – Two service saddle clamps were installed on the new section of IP Pipeline near the head end of the Mill treatment circuit. One saddle clamp will be used as a sample port for the environmental crew, the other for lime addition to the IP water.
- Mar. 22nd – Link-Belt excavator used to clear snow from the new foundation pad built at lower elevation in the IP pond, in preparation for ice removal and barge install in early April.
- Apr. 4th – Due to re-alignment of the IP Pipeline in the fall of 2010, the 14" pipeline ended up short on the discharge side of the valve house sea-can. Fusion of a short section of pipe was carried out to extend the line so it could be re-connected to the sea-can.
- Apr. 6th and 7th – Flanges along the IP Pipeline were reconnected and tightened up. Work also carried out to auger and cut holes in the ice at the IP so the excavator could be used to break up the ice and remove it in anticipation of the planned IP Barge install on April 11th.
- Apr. 7th – IP Barge loaded onto the float truck with the Omega crane. Barge was secured on the float truck for transport to the IP on April 11th.

- Apr. 11th – Electrician installed a flood light on the MCC Sea-can to provide light to the IP Barge area.
- Apr. 11th – Omega crane set-up at the IP and used to unload the barge and place it in the Pond. Problems starting the Link-Belt excavator and adverse weather slowed the Barge Pump System installation process. Both HIABs used to assist in transporting parts of the pump system down to the IP area.
- Apr. 12th – Delayed in the morning while Omega crane was started. Breaker tripped during the night so bloc heater was not active. Once started, the Omega crane was used to place all components of the IP Barge Pump System in place. Work continued to assemble all components. By the end of the day, pumps and motors were in place with mechanical seals installed and ready to set after the pump clearance. Walkway and shore anchor in place. Electrician completed wiring the motors.
- Apr. 13th – Final assembly of the pump system completed by early afternoon. Pumps started at 1:15 pm but shut down at 1:30 pm due to a leak observed on the 14" pipeline to the mill. Fusion machine, HIAB and Link-Belt excavator used to remove the section of pipe with the hole and fuse it back together. Once the pipe was repaired, pumps were restarted at 4:45 pm. Water arrived at the Mill by about 5:15 pm and treatment began.
- Apr. 14th – Temporary shelter constructed over the electric motors of IP Pump System to protect them until the Welder has an opportunity to construct a permanent, removable shelter. Cables attached from the shoreline anchors to the barge to secure it in place. Investigating IP flow meter issue. Local display on the flow meter is showing flow but for some reason is not communicating instantaneous flow rate data to the HMI display in the MCC sea can.
- Apr. 21st – Flow rate decreased to try to maintain 2.5 cm per day maximum drawdown rate. Cooler temperatures resulted in decreasing flow yet again on Apr. 22nd. On Apr. 24th the flow rate was increased. Flow increased again on Apr. 27th, warmer temperatures leading to increased melting.
- Apr. 29th – IP Pumps shut down at 9:40 am to prepare for a scheduled site power outage. Pumps re-started at 4:45 pm after site power was restored.
- May 4th – Calibration of the IP Sea-can stationary oxygen monitors carried out. Confirmed operation of the IP Sea-can beacon lights that indicate low oxygen conditions in the sea-can.
- May 5th – Welder began fabrication of permanent structures to provide protection for the IP Pump motors. Each motor will be covered by a separate structure and

it will be light enough to remove with two people, if necessary, for pump / motor maintenance, etc. By May 12th, this work was completed and the new shelters were installed.

- May 9th – IP pumps down for several hours during power outage.
- May 16th – Electrician investigated issue with the IP flow meter. Instantaneous flow readings not being displayed on the HMI. Communications with the supplier and several tests carried out. Eventually concluded that there is an issue with the PLC. Quote has been received for a new PLC as of May 31st.
- May 31st – IP pumps shut down for most of the day while the Welder completed final assembly of the third Thickener tank discharge in the Mill.
- IP pumps operated well for the duration of June. Pump flow adjusted as necessary through the month to stay within the maximum recommended pond draw down limit of 2.5 cm per day.
- June 16th – Barge angle adjusted to provide clearance over a large boulder below one corner of the barge.
- June 22nd – Pump system shut down first thing in the morning. Several pipe connections disconnected to allow addition of the second walkway and pontoon. Pump motor wiring disconnected during the move. HIAB used to transport walkway and pontoon to the IP, 345 excavator used to lift and install components. Rain through the day slowed the work. Final pipe fusion and installation to be completed June 23. Pump system left off for the night.
- June 23rd – Completed installation of additional pipe section to extend the IP Barge to deeper water. Electrician re-wired the motors that were disconnected while work was carried out. Re-started the pumps at 11:40 am and resumed pumping to the Mill. Mill Operator checked the system at 12:30 pm and observed a large kink in the barge to walkway flex hose. The pump system was shut down at 1:00 pm and further investigation carried out on the flex hose. Decision was made to replace it with a spare. Once the kinked hose was removed, visual inspection inside revealed that the flex hose had failed. The new flex hose was installed and pumping resumed at 2:30 pm.
- Pumps ran for the entire month of July except during shut downs caused by power outages or surges. Flow rate adjusted several times during the month to maintain the 2.5 cm per day maximum pond drawdown rate.
- July 6th – Power bump at 9:00 pm caused IP Pumps to shut down. Pump System re-started at 9:15 pm.

- July 7th – IP Pumps shut down at 1:45 pm due to the power bump. Pumps reset and restarted at 2:00 pm.
- July 9th – IP Pump flow reduced on Saturday morning, from 7330 L/min (max.) to 6000 L/min.
- Aug. 5th – Pump System flow reduced from ~6000 L/min to ~5400 L/min.
- Aug. 10th – Case backhoe used to remove a large rock from under the IP walkway pontoon. Due to limited cable length for the pump motors, the pontoon is closer to shore than preferred and was nearly touching a large rock.
- Aug. 18th – Pump flow increased to ~6,000 L/min. Pump rate remained at ~6,000 L/min for the balance of August.
- Sep. 1st – Pumps shut down at 6:10 am for planned power outage. Back up and running at 2:20 pm.
- Sep. 19th – Pump System shut down in the morning. End of season target elevation has been met. Pipeline draining and system decommissioning began. Pump motors removed to heated storage for the winter. Welder completed the IP Pump stands on Sep. 29th and the pumps were removed from the barge in early October.
- Oct. 3rd – IP Pumps removed from the barge and placed in the new pump stands for storage beside the IP Sea-can for the winter. Prep work carried out with the 345 excavator in the spillway to prep a ramp for pulling out the barge. No alteration of the spillway was made, just moved some rip rap to avoid damaging the barge. Barge pulled out of the water, up across the road and out of the way for snow removal. IP System is fully decommissioned for the winter.
- Oct. 4th – Began work with the excavators to adjust the alignment of the IP and FMTS effluent pipelines running along the TMA. Once the alignment was adjusted to the desired location, re-grading of a few sections were required as a result of settling through the spring / summer. Extra pipe was removed from the Mill effluent pipeline and used to repair several sections where there were leaks. A flange was also moved to better facilitate drainage. This work continued until Oct. 11th when all fusion repairs were complete and the pipeline adjusted as best as possible to grade.
- Oct. 4th – Excavator used to lift the 14” pipeline near the discharge of the IP Sea-can. Blocking was placed under the pipeline to eliminate a low spot that was holding water.

- Nov. 14th – Electrician investigated an issue with the breaker for the make-up air unit at the IP MCC Sea-can. The make-up air unit is not required in the winter but initial attempts to isolate the breaker failed. Electrician adjusted the breaker and locked the unit out for the winter.

8.1.3 Faro Pit Dewatering

- Nothing of significance to report from January through March.
- Apr. 28th – Faro Pit Barge Pump #2 steamed to clear ice from the pump discharge. Prep work completed in the Mill to bring Faro Pit pumping online. Pump started at about 11:20 am but was shut off at 12:10 pm due to a suspected ice blockage in the pipeline. Investigation revealed that the ice blockage had freed up so the pump was turned back on at 1:15 pm and water arrived at the Mill by 1:30 pm. New flow meter operating well, flow set to 7600 L/min.
- Apr. 29th – Faro Pit Pump shut off at 9:30 am to prepare for power outage. Pump re-started at 4:30 pm after power was restored to the site.
- May 2nd – Faro Pit water supply pipeline for the gland water system in the Mill was steamed to clear ice in the line, connections made and gland water supply from the Faro Pit commenced early in the afternoon.
- May 9th – Faro Pit Pump down for several hours due to a power outage.
- May 31st – Faro Pit Pump shut down for most of the day while the Welder completed final assembly of the third Thickener tank discharge.
- No issues or maintenance concerns in June.
- Faro Pit Pump System continued to operate for the month of July except during shut downs caused by power outages or bumps. Flow was adjusted several times to balance Faro Pit influent with the IP influent, while trying to maintain acceptable effluent water quality.
- July 6th – Power bump at 9:00 pm caused Faro Barge Pump to shut down. Pump system re-started at 9:05 pm.
- July 26th – Faro Pit Pump shut down on a voltage imbalance fault at 5:30 pm. The spare pump (#1) was started at 5:45 pm.
- July 27th – Electrician investigated pump fault on pump #2 but found no issues. Spare pump (#1) shut off and resumed pumping with the duty pump.
- Aug. 1st – Faro Pit Barge Pump shut down at 11:30 am due to a site power surge. Pump re-started at 12:00 pm. No other Mill equipment or pump systems

shut down. Faro Pit flow decreased slightly after re-start to compensate for increased water from the IP (at 12:00 pm).

- Aug. 2nd – Faro Pit flow increased slightly after confirming water quality from the morning samples.
- Aug. 10th and 11th – Work carried out at the Faro Pit MCC building to repair roof and building siding and eliminate water leaks.
- Sep. 1st – Faro Pit Pump shut down at 9:45am for planned power outage. Pump system re-started at 2:20 pm once power was restored to the site.
- Sep. 13th – Faro Pit Pump flow reduced from ~11,000 L/min to ~10,000 L/min to try to achieve better water quality for the last week of the season. Faro Pit target elevation met.
- Sep. 19th – Faro Pit Pump System shut down for the season. Target elevation met. Pipeline not drained as water from the pipeline continue to be used to clean and wash the Mill equipment / floors.
- Oct. 12th – Faro Pit power cable was disconnected from the transformer and re-routed under the road in a carrier pipe that had been previously installed. This was an action item from early in the year to eliminate the cable running on the surface of the road and only protected by a cable mat.
- Nothing to report in November or December.

8.1.4 Grum Bio-Treatment

- Nothing to report from January through May.
- June 2nd – Fertilizer totes transported to the Grum Pit with the HIAB.
- June 15th – Fertilization of the Grum Pit began and continued weekly for the month of June. Fertilization carried out by Laberge Environmental Services.
- Laberge Environmental Services on site weekly in July to carry out bio-treatment of the Grum Pit.
- July 4th – Another tote of fertilizer was transported to the Grum Pit for Laberge to use as part of the Grum Pit summer treatment program.
- Laberge on site several times in August to carry out bio-treatment in Grum Pit.
- Sep. 7th – Laberge on site to complete treatment and monitoring of the Grum Pit for the season.

- Sep. 12th – HIAB used to pick up a partially full fertilizer tote and one empty tote and return to the Faro side for storage. Fertilization program done for the year.
- Nothing to report during October, November or December.

8.1.5 S-Wells

- Throughout 2011, the SPW1 groundwater well pump was left off due to issues with iron precipitate formation in the pipeline. SPW2 and SPW3 continued to pump for the entire year except during power outages or shut downs for maintenance purposes.
- Jan. 15th – SPW2 groundwater well shut off due to a low temperature alarm. Heat trace for the groundwater wells that faulted out in December has not been replaced so a short section of the SPW2 well pipeline was frozen. The steamer was used to thaw the pipeline and pumping resumed by 11:45 am.
- Jan. 23rd – Pump system off during power outage from early in the morning to approximately 1:30 pm. On-call staff on site to monitor start-up once grid power was restored. SPW2 started, but flow meter did not register flow for approximately 20 minutes. SPW3 started but kicked out on a pump fault after 10 minutes – suspect some ice/slush in the line possibly caused a high pressure fault. SPW3 pump re-started and continued to run. Verified operation one hour later and all systems were operating.
- Feb. 6th – At approximately 8:00 am, the SPW3 (sump) pump shut down on a "pump fault" alarm. On-call staff member was on site at 8:30 am and observed the alarm status. The pump was reset, the alarm was cleared and the pump was re-started. No indication as to why the pump fault occurred.
- Mar. 28th – Alarm condition discovered on the upper level oxygen monitor in the S-Wells Sea-can in the morning. Upper monitor was displaying an oxygen content of 27%. Condition reported to the safety officer who checked the area with the portable gas monitor. Oxygen level verified safe with the portable meter. Upper level monitor was re-calibrated and tested.
- Apr. 1st – Power out while YEC performed testing at the main sub-station. After power was restored, the S-wells Pump System was checked to confirm it re-started automatically.
- Apr. 29th – A small brown out during the night caused the S-wells Sump Pump to shut down around 3:00 am. During the 5:00 am rounds, the Mill Operator observed the failure and tried to re-start the pump. Initially the pump would not re-start so the Superintendent was called and advised the Mill Operator on a

procedure to try to get the pump re-started. Operator got the pump restarted at around 5:30 am.

- Apr. 29th – S-Wells Pump System off during a scheduled site power outage. Once power was restored to the site, SPW3 (sump) pump did not re-start. Investigation revealed that there was no power to the VFD display. Electrician performed some testing and confirmed AC power into the VFD; suspect something wrong with the VFD itself. Sump pump was started on manual control with some bypass back into the sump to prevent over pressuring the pipeline.
- Apr. 30th – Operating the SPW3 Sump Pump on manual control with some bypass back into the sump to avoid over pressuring the pipeline. Mill Operators checking the system more frequently while running on manual control. Contacted Precision Service and Pumps to assist with troubleshooting and sourcing a replacement VFD.
- Pooled areas downstream of the sump trench were dewatered as necessary through the summer months. Pooled water was pumped back up into the sump trench with a 2" submersible Flygt pump.
- May 2nd – S-Wells pump system shut down for several hours in the morning while the site electrician performed testing on the VFD. No fix found, the VFD will not work. A new VFD was rush ordered. During the shutdown, the Millwright dis-assembled the entire Singer valve and pilot system and inspected and cleaned all parts. Some precipitate found in one part of the pilot system that was probably the cause of the issue with the singer not bypassing during an over pressure situation. The 2" pipeline was used to test the Singer and with a minor adjustment, overpressure bypass was re-established at the correct pressure set point. Once cleaning and testing was complete, the S-Wells System was re-started at 12:00 pm on manual control using the 4" pipeline for pumping. Sump inflow from melt starting to exceed pumping capacity through the 2" pipeline. Flow left at maximum for several hours to lower the sump water level. Once water level was around 0.5 m in the sump, the bypass valve on the 4" line was opened a bit to bypass water back into the sump to reduce flow to the Pit. Several adjustments made to maintain water level in the sump between 0.5 and 0.75 meters while running on manual control.
- May 3rd - S-Wells Sump Pump (SPW3) continued to run on manual control. Adjusting bypass to the sump to keep water level between 0.5 and 0.75 m so as not to run the pump dry. Monitoring frequency increased while operating sump on manual control.

- May 9th – Electrician installed the new VFD that arrived to site in the morning. Working on programming the VFD with the required parameters to operate with the HMI and PLC. No documentation on VFD settings from the original install so communication is ongoing with the original VFD supplier to try to get VFD parameters set. By the end of the day the system was still not functioning to operate on automatic control. Several days spent corresponding with the supplier of the VFD and by May 12th issues with programming were resolved and the SPW3 pump was back on automated sump level control through the VFD and PLC.
- May 31st – Electrician shut down the S-Wells System for half a day to install the new transfer switch that will allow for the use of a back-up generator at the S-Wells electrical shed.
- Continued to pump through the 4" SPW3 pipeline until June 9th when sump inflow reduced to a point where the 2" pipeline could be recommissioned. Continuous rainy weather towards the latter part of June increase sump inflow beyond the capacity of the 2" pipeline and the 4" pipeline was recommissioned on June 29th.
- July 7th – S-Wells pumps had to be reset after the 1:45 pm power bump. Pumps restarted at 2:30 pm.
- July 7th – S-Wells pump system shut down for half an hour in the morning to allow the Millwright to remove a short section of the 2" SPW3 pipeline for the purpose of investigating scale build up in the pipe. Scale in the pipe is built up approximately 3/8" thick and is causing significant restriction. Pictures taken and another sample of the scale was collected to be weighed and analyzed.
- July 12th – Marker posts painted and installed at the S-wells to clearly mark the location of the short well casings.
- Until August 22nd, the Pump System operated using the 4" pipeline to pump water to the Faro Pit. On August 22nd, after flushing the 2" pipeline in the sea-can and up the face of the waste rock pile with the steamer snake, the 2" pipeline was re-commissioned to test the flow rate vs. pressure vs. VFD speed to see if removal of the precipitate build up would increase the capacity of the 2" line. Pump VFD speed is consistent with previous readings or slightly higher with pressure dropping by approximately 10 psi. The 2" pipeline was able to keep up with sump and SPW2 inflow and was left to operate for the remainder of the month.

- Aug. 23rd and 24th – Electrician investigated a fault in the 600 volt heat trace. The faulty section was identified. Quotes were obtained to purchase a new section.
- Aug. 30th – All insulation joints stripped last week for cleaning the 2" pipeline were re-insulated and sealed back up.
- The 2" pipeline was utilized for the full month of September and continued to be used throughout the remainder of the year.
- Sep. 1st – S-Wells pump system off at 10:05 am when the power to site was isolated. S-Wells re-started automatically once power was restored at 1:35 pm.
- Oct. 26th and 27th – Millwright installed a new pressure transducer on the SPW3 pipeline to allow for pressure data logging in the PLC. Precision to program the PLC / HMI with changes when they are on site for the new V15 and Zone II Pump System set-up.
- Through the latter part of November, sump level began to increase and the SPW3 sump flow rate continued to decline. Suspected an issue with the pump as vibration had been observed in the past few weeks coming from the SPW3 pump. On Nov. 30th the decision was made to change out the pump for the new spare. Upon removal, it was discovered that the riser pipe and pump were coated in a significant amount of precipitate. The sump extension installed to lower the pump in the sump (installed by divers) is also built up with much sludge and precipitate. On re-installation of the sump pump, a two foot section of riser had to be removed because of all the sludge that dropped into the sump extension pipe when the original pump was removed. The system was re-started and the flow rate immediately increased to near new flow rate of 2.9 L/s, but at this maximum flow rate, pressure has increased above the recommended continuous operating range due to ongoing issues with precipitate formation in the pipeline. The system was monitored until the end of the day and continuous operating pressure once the system stabilized was around 195 psi.
- Nov. 14th – Electrician replaced the heater in the S-Wells AVR shack. The fan on the existing heater had failed.
- Dec. 1st – SPW2 turned on at 5:45 am. Flow rate from SPW3 stabilized by mid-morning. Millwright and electrician replaced the Singer pressure relief valve with the new spare. The existing valve will be dismantled, inspected and cleaned. Pressure settings adjusted on the Singer valve and hourly monitoring was carried out at the S-Wells to ensure the system was functioning correctly. Adjustments made to the SPW2 groundwater well flow rate and by the end of the day the

system had stabilized. New SPW3 Sump Pump operated well for the balance of December.

8.1.6 ETA

- Glaciation occurred downstream of the concrete sump location throughout January, February and March.
- Nothing to report in April.
- May 9th – 30 hp Flygt pump used last year was installed at the ETA to pump water to the Mill. Pump grounded out immediately when trying to start it up. Several more pumps were installed during the week to find one that had sufficient capacity to deliver the water to the Mill. All pumps are rated the same, but due to age / wear-and-tear, some have more pumping capacity than others.
- May 12th – Work carried out to unplug the 6" pipeline from the lower collection pool to the concrete sump.
- 30 hp Flygt pump continued to pump ETA water directly to the Faro Mill for treatment for the entire month of June. Seepage continued to bypass the concrete collection sump.
- June 4th – During morning rounds, Mill Operator discovered that the ETA Pump was off. Attempted to reset the breaker and restart the pump but it would not re-start. ETA Pump left off for the remainder of the weekend. Electrician investigated on Monday and found a fuse to be blown. Fuse replaced and the pump was restarted.
- June 16th – Two 30 hp Flygt pumps sent out to Industrial Electric for inspection and quote on repair. Both pumps failed while installing at the ETA this spring.
- June 27th – A plywood cover was constructed to cover the concrete sump at the ETA.
- Sep 1st – ETA pump shut off at 6:00 am to prepare for the planned power outage. Pump turned back on at 2:25 pm.
- Sep. 15th – Upper seepage collection pool pipeline was back-flushed to remove sediment from the pipe and re-establish full flow.
- 30 hp Flygt pump continued to pump ETA water directly to the Faro Mill for treatment until the FMTS was shut down on Sep. 19th. The ETA pipeline was drained and the pump was lifted out of the water in the concrete sump.

- Oct. 6th – ETA pump removed from the concrete collection sump using the Link-Belt excavator and brought to winter storage.
- Nothing to report during November or December.

8.1.7 Zone II Pit

- Pumping from the old Zone II well to the Faro Pit began on May 23rd.
- Zone II Pump operated until June 16th when it was shut down at 4:30 pm due to low water level.
- Zone II Pump did not operate during July due to low water level.
- During the latter part of August, measurement of the old Zone II well was not possible due to a restriction in the well casing that would not allow the static line to be raised or lowered.
- Aug. 2nd – Zone II Pump started to lower water level in the well.
- Aug. 3rd – Zone II Pipeline was observed to be leaking along the roadway. Further investigation revealed a failed hugger clamp. The pump was shut off, the clamp was replaced and the system was restarted.
- Aug. 8th – Zone II Pump shut off at 11:20 am due to low water level.
- Sep. 26th – Zone II Pump started at 11:55 am to dewater the well for the final time this season.
- Sep. 30th – Zone II Pump shut off on Friday at 4:00 pm due to low water level.
- Through the latter part of October, work was carried out by site employees to fuse and install the pipeline required for the new Zone II Pump System.
- Oct. 3rd – Zone II well head was disconnected from the pipeline and the well was pumped out to remove water in the pump riser pipe below the frost line. Winterization completed on Oct. 4th.
- Precision Service and Pump representatives on site Nov. 1st through Nov. 4th to commission the new Zone II Pump System. Discovered that the new Zone II well recharge rate is much too slow for continuous pumping at the specified rate. System tested and drained until a decision is made on how to proceed.
- Nov. 15th – Completed fusion of all new Zone II pipeline sections.
- Nov. 16th – Work began to install insulation over all fusion joints. Insulation of fusion joints completed by Nov. 22nd.

8.1.8 Little Creek Dam Pond

- Nothing to report from January through April.
- May 19th – Flygt pump installed at Little Creek Dam and began to pump water to the Vangorda Pit.
- 13 hp Flygt pump shut off on June 2nd due to low water level. Pump cable is shorter than the 30 hp pump used last year so the pond level could not be drawn down as far until modifications are made.
- July 4th – Due to a short power cable, the starter panel for the pump system was set in place down the dam face which will allow the pump and pontoon to be pushed farther out into the pond and achieve a lower water level. Pump turned on at 4:35 pm to dewater the holding pond.
- July 12th – Pump shut down due to low water level.
- Sep. 7th – Flygt pump started to carry out a final draw down of the pond for the season.
- Sep. 12th – LCD pump shut down at 10:50 am due to low water level in the holding pond.
- Oct. 3rd – LCD pump and pontoon removed from the pond using the Kenworth HIAB. Pontoon left at the LCD MCC building and the pump was brought back to the Faro side to be put in storage. Pump steam cleaned to remove mud accumulated during removal prior to being put in storage.

8.1.9 V15 / Moose Pond Area

- An excavator and/or Case backhoe were used several times in January to remove ice that was frozen in the ditch causing water to back up and seep onto the road. The steam truck was also used to steam the access road culvert. Steaming of the culvert was carried out a few times during the first week or two, but by month end was required almost every day.
- Jan. 4th – Electrical shed for the V15 pump system (PAW) was connected to grid power. Heater turned on and an exterior plug in was made available to plug in equipment or tools if / when necessary.
- Jan. 25th – Thaw pipe for the culvert was broken while digging ice with the excavator. A new section of pipe was threaded and attached to the existing thaw pipe to repair it.

- Jan. 25th –Work resumed running heat trace and installing insulation kits over the new V15 pipeline fusion joints (PAW). Prior to insulation kits being installed the compressor was used to blow out the line and also pressure test it. Work carried on through to the end of January and into February.
- An excavator was used several times during February to remove ice that was frozen in the ditch causing water to back up and seep onto the road. The steam truck was also used to steam the access road culvert on an almost daily basis.
- During the first week of February, all heat trace and pipeline fusion joint insulation kits were installed on the new V15 pipeline. The electrician tested the heat trace to confirm that it functioned correctly. It was discovered that the indicator lights on the heat trace controllers do not function. By the end of February, all work is complete on the V15 pump system until a decision is made to start-up. Approximately two days of work will be required to complete final installation of the pump, pump wiring and valve assembly prior to start-up.
- An excavator was used several times in March to remove ice that was frozen in the ditch causing water to back up and seep onto the road. The steam truck was also used to steam the access road culvert on an almost daily basis.
- Apr. 4th – Ice build-up removed from the ditch leading from the main access road culvert to the Moose Pond.
- Some steaming carried out in April to thaw the access road culverts, but by month end the culvert was flowing freely.
- In May, site personnel and resources were diverted to respond to an emergency situation that occurred at the Moose Pond due to issues with drainage and erosion from the Grum Sulphide Cover.
- May 2nd – 345 excavator used to fix a section of the bank at the top of the hill on the Moose Pond access road. Dirt that slumped down the bank had filled over the new V15 pump system pipe bed. Some ice / snow removal also carried out in the cobble lined ditch between the road culvert and the V15 seepage collection pool.
- May 19th – Heat trace junction boxes along the new V15 pipeline were repositioned to stand upright. Warm weather causing pipeline to shift and several junction boxes had fallen over.
- Monitoring of runoff from the GSC continued during June.
- June 20th to June 21st – Carpenter constructed an insulated box to house a heater and cover the AVR on the V15 pipeline.

- July 14th – Welder fabricated a stand pipe and the environmental crew installed it at the Moose Pond. A level logger was installed in the stand pipe to monitor Moose Pond water elevation.
- Welder completed fabrication of the steel sump on Sep. 14th. The sump was loaded on the float and transported to the V15 area. The 345 was used to excavate the 20 foot hole required to install the sump beside the V15 channel. The 345 removed the sump from the float and installed in the hole prior to backfilling. Sump left exposed for 6 feet below grade to allow for eventual installation of the pipes that will direct water from the V15 channel or the GC weir channel into the sump.
- Sep. 14th – Emergency spillway ditch across the Moose Pond access road was filled in since a semi-permanent water run-off solution was developed for the GSC.
- Through the latter part of October, work was carried out by site employees to install the new sump and related pipework required for the new V15 Pump System.
- Oct. 5th – V15 Pipeline heat trace control stands adjusted as some had twisted over onto their sides as a result of pipe expansion / contraction. The pipeline was also re-aligned due to a slump in one area.
- Precision Service and Pump representatives on site Nov. 1st through Nov. 4th to commission the new V15 Pump System. System was tested to confirm operation then drained and shut off until needed.
- Nov. 7th – Settling of foundation dirt observed around the new sea-can. Suspect water seepage through an old pipe buried in the roadbed is providing a conduit for washing away sandy material. The road bed was excavated on Nov. 8th to remove the old piece of culvert material. The roadway was backfilled and the hole that settled around the seacan was also filled in.
- Nov. 7th – The new V15 Pump was removed from the sump. A smaller Flygt pump was installed and set-up on a float to keep the sump dewatered as seepage is still infiltrating the vertical sump. The water is being pumped out through the new pipework in the seacan to a 3” line that was connected to the outside to discharge the water into the V15 channel downstream of the seacan. Automatic dewatering continued through the remainder of the month.
- Nov. 9th – Excavator used to remove some ice blockage from the V15 seepage channel.

- Nov. 26th – On-call staff reported that ice blockage was causing the seepage ditch to back-up with water. On Nov. 27th, site staff responded and used an excavator to free the ice blockage to resume water flow through the seepage channel.
- No issues during December with the V15 seepage channel. The small Flygt pump set up on a float control continued to be used through December to keep the new V15 sump dewatered. Daily monitoring of the sump, sump pump and seepage channel carried out through December. A light plant was also moved to the V15 area prior to the Christmas break to use as back-up power source for the sump pump, if required due to a power outage.
- Dec. 7th – V15 Sea-can lost power during the night. Electrician could not find a reason for the fault. Power was restored. Millwright had to thaw out the V15 temporary pumping system; a check valve had held a bit of water and froze in the closed position. Once thawed, the system was restarted and monitored to make sure there were no more issues.
- Dec. 8th – Electrician modified the power cord for the sump pump to allow it to be connected inside the sea-can to grid power or connected to one of the site light plants.

8.2 Water Treatment

Refer to section 4 and Table D-2 and Figures D-1 to D7 for pumping volumes and pond elevations, respectively.

8.2.1 CVP Discharge (X5)

- No water was discharged from the Cross Valley Pond in January or February.
- Mar. 21st – Link-Belt excavator used to re-align the 16” CVP siphon. Siphon had been moved to the other side of the access road to facilitate ice removal from the North Interceptor Ditch. Prep work carried out in anticipation of starting the siphon. Welder installed 2” nipple on the siphon intake elbow to allow for steaming of the intake.
- Mar. 22nd – Siphoning began from the CVP using the 16” siphon. Due to low flow rate from the large siphon, to meet X14 water quality criteria, problems were encountered maintaining siphon flow. Several days were spent trying to keep the 16” siphon operating until the decision was made to install the 10” siphon. On Mar. 28th, the 10” siphon was installed and was charged and started the morning of Mar. 29th. Again, problems were encountered maintaining flow through the

siphon until it was discovered that there was a problem with the intake assembly. Once the intake was modified, the 10" siphon maintained flow.

- Apr. 1st – 10" siphon stopped flowing throughout the night, it was recharged and resumed flowing at 9:00 am, observed a small air leak at crest valve, monitored the siphon throughout the day, observed it still to be operating at 8:15 pm but flow was decreasing.
- Apr. 2nd – 10" siphon operated overnight, but flow was less than ½ pipe in the morning. Shut down the siphon at 9:00 am, checked and corrected air leakage issues as well as the position of the deflector on upstream end of siphon. Re-established siphon to full pipe flow discharge at 10:30 am.
- Siphon left at full open for the duration of April, except for a short period on Apr. 19th when it was shut down to install the wooden pontoons to keep the siphon intake afloat as ice melted away.
- 10" siphon operated at full open from May 1st to May 5th at 1:00 pm. 16" siphon was started on May 5th at 1:00 pm and ran for the duration of the month.
- May 2nd – Began work to install old pontoons under the 16" pipeline using the vacuum truck to float the pipe and the HIAB to assist with pontoon placement. HDPE end caps ordered and permanent pontoons will be built once the caps are on site.
- May 3rd – 10" CVP siphon shut down at 8:30 am and the 16" siphon started at 8:45 am. Flow increased slightly with the 16" siphon compared to the 10" to try and maintain water level in the pond. Additional flow from the Faro Pit plus melting was resulting in increasing water level. After the X14 sample was analyzed, results indicated total zinc level was slightly above the recommended upper limit of 0.15 mg/L. The 16" siphon was immediately shut down and the 10" was re-started.
- May 4th and 5th – 16" siphon intake winched out onto the ice where it could be worked on safely. Repairs / modifications made to pull water from closer to the surface of the pond.
- May 17th – Work began to fuse sections of HDPE pipe to be used as permanent pontoons for the 16" and 10" CVP siphons.
- May 30th – Both the 16" and 10" pontoons complete and installed in the CVP.
- May 31st – Clean-up of old timbers and garbage carried out at CVP spillway area.
- 16" siphon ran at full open until June 7th.

- June 7th – Due to water elevation and past year experience with sludge issues with low water level, the siphon was turned down slightly to maintain the water level at current elevation.
- 16" siphon ran at approximately 15,000 L/min for the first half of July. On July 13th, the siphon was turned up to ~20,000 L/min to maintain CVP water elevation. Siphon continued to operate at ~20,000 L/min for the remainder of July.
- Aug. 1st – Siphon flow set at ~20,000 L/min to achieve a steady elevation of approximately 1027.5 masl.
- Aug. 8th – X5 siphon control valve set to full open to maintain pond elevation. Siphon remained full open for the remainder of the month.
- Siphon left to operate full open for the beginning of the month. Once the FMTS was shut down, siphon flow was reduced slightly to ensure the 10 cm / day maximum drawdown rate was not exceeded.
- Sep. 30th – 16" siphon operated until 5:15 pm on Friday when it was shut off for the season. Final elevation measured at 1026.939 masl.
- Oct. 3rd – 16" Siphon shut down.
- Nov. 22nd – Siphon intake steamed to clear ice. Vacuum truck used to prime the siphon. Discharge began at 2:00 pm. Siphon discharge continued through until the end of November.
- 16" siphon was shut down on Dec. 1st after running through the latter part of November. The siphon was started again on Dec. 5th and ran until Dec. 9th.
- Dec. 14th – Both the 10" and 16" siphon discharge ends were removed from the North Interceptor Ditch and pushed across the siphon intake access road to facilitate ice removal. Steam truck used to clear ice from valves at the siphon discharge prior to chipping ice with the 345 excavator to free the rest of the pipe.

8.2.2 Faro Mill Treatment System

- During the first two weeks of January the Millwright worked to complete installation of a new dry lime chute from the auger to the mix tank. A slurry recirculation pump was also installed and plumbed in to provide warm slurry for washing down the walls of the dry lime chute with the goal of optimizing slaking by eliminating dry lime contact with cold water as in the previous arrangement. Cold water will still be added to the mix tank but will not come in contact with the dry lime. This work is complete and ready for the 2011 treatment season.
- Jan. 3rd to 6th – Welder fabricated a lockable guard for the dry lime auger below the silo.
- Jan. 11th – Welder completed a repair to the secondary discharge box off the south side of the thickener.
- Jan. 11th – A crack was discovered in the Mill floor just to the south of the lime mix tank. The crack is new, recent within the last few days. The crack extends from the tank, west of the southwest lime silo support column, all the way to the southeast silo support column.
- Feb. 22nd to 24th – Welder completed repairs to patch holes identified in the Thickener overflow ring. The test holes cut to flow water from the overflow ring to the primary discharge box were also enlarged to maximize water discharge capacity.
- Mar. 7th – Finished installation of the extended lime loop. Welder completed fabricating brackets to secure the pipeline extension in place.
- Mar. 7th – Instrumentation spool pieces installed in place of a section of the Faro Pit influent line at the head end of the Mill circuit. New spool pieces will allow for the installation of a flow meter to track flow volume from the Faro Pit.
- Mar. 9th – Flow meter installed between two sections of the spool piece for the Faro Pit influent pipeline.
- Mar. 9th – Work resumed installing the new gland water pipeline loop in the Mill.
- Mar. 16th – Work completed on the installation of the new gland water loop in the Mill. Work began to remove a section of Teflon skirting around the perimeter of the Thickener tank that was impeding the flow of surface water to the overflow launder. Removal of the Teflon skirting was completed on Mar. 17th.
- Mar. 16th – Millwright and Welder installed an additional brace on the 8” pipeline from the ETA where it entered the Mill treatment circuit. An old steel elbow from

the former 14" IP pipeline was removed from the head end mix box and all discharge pipes (IP, Faro Pit, ETA) were pointed towards each other in the mix box to promote mixing prior to splitting between the two parallel pH conditioning cells.

- Mar. 17th – Welder installed permanent sample ports on the Thickener and Clarifier discharge boxes. A brace was also installed on the new pipeline for the lime mix tank slurry re-circulation pump.
- Mar. 21st – An air line was sourced to extend current the air line to Operator's office to supply air to the newly installed red jacket valve at the supplementary lime addition point in the Thickener discharge box.
- Mar. 21st – Millwright began re-assembly and maintenance of pumps in the Mill in preparation for start-up in early April.
- Mar. 22nd – Set-up and preparation of fusion machine carried out by the ETA to begin fusing broken sections of the 24" effluent line. Fusion work continued into April to repair and remove excess pipe as a result of the re-alignment carried out in the fall of 2010.
- Mar.29th – Began investigating options to repair the holes in the skirting of the center well of the Mill Thickener tank. Sludge upwelling within the Thickener tank was observed last year as a result of these holes.
- Mar. 30th and 31st – Installation of heaters and lights began in the new flocculent shelter and operators office extension in the Faro Mill.
- Work carried out for the first two weeks of April to prepare all pumps and systems in the Mill for start-up of water treatment.
- Apr. 4th – A new flange was fused onto the 24" Mill discharge line at the IP where the pipeline connects to the tee that allows for re-circulating of effluent back into the IP. This flange was broken while performing pipeline re-alignment in the fall of 2010.
- Apr. 4th to 6th – Work carried out to repair a hole in the skirting around the centre well of the Thickener tank in the Mill. The hole was observed to be causing an upwelling of sludge from the tank which would impact water quality when using the newly established radial overflow.
- Apr. 4th to Apr. 5th – A heater and new lighting installed in the new flocculent holding tank/pump shelter.
- Apr. 5th and 6th – Fusion and installation of a section of 14" HDPE pipe carried out to plumb a secondary discharge off the southeast side of the Thickener tank.

New section of pipe will tee into the Clarifier discharge line with a saddle clamp. This secondary discharge will increase the capacity of the overflow launder by removing water from two points around the perimeter of the tank instead of just one.

- Apr. 13th – Vacuum truck used to begin supplying water to the Mill for mixing lime. Several loads of water delivered throughout the day. Water arrived to the Mill at approximately 5:15 pm due to delays with the discovery of a leak in the IP pipeline. Treatment began using manual pH control for the night.
- Apr. 14th – Work continued to bring the Mill up to full system operation. Modifications made to the lime slurry mix system over the fall / winter of 2010 reduced lime dust issues significantly. Lime probes installed and red jacket valve automated lime addition began. Existing red jacket required replacement due to internal failure immediately after start-up. Floc mixed and addition began mid-day. Underflow pumps prepped and ready to pump sludge. Mill effluent being re-circulated back to the IP until water quality stabilizes and reaches discharge criteria. Once the Thickener was full another leak was discovered in the overflow launder. While draining the tank down below the launder to make repairs, a large leak in the side of the tank was also discovered in the primary discharge box. Thickener drained below the leak and was found to be an old discharge port that was poorly welded and broke due to water pressure with increased tank water level. The welder stayed late to make the necessary repairs.
- Apr. 15th – Confirmed acceptable Mill effluent water quality for discharge to the CVP. Commenced discharge of treated Mill effluent to the CVP at 4:00 pm.
- Apr. 17th – In the evening, a gland line froze to the lime distribution pump. Operator had trouble switching over to the second distribution pump. Water Treatment Foreman responded with a site visit to re-establish water flow to the gland and resume pumping through the lime loop for lime addition. During the short period when no lime was available to be added to Mill inflow, the IP Pump flow rate was reduced to near zero. Once lime addition was re-established the IP Pumps were turned back up to re-establish flow.
- Apr. 18th – Packing replaced on the lime distribution pump that failed on Apr. 17th. Thickener rake drive also re-assembled and tested to verify operation.
- Apr. 19th and 20th – Electrical connections were made for the new flow meter on the Faro Pit influent pipeline in the Mill.
- Apr. 18th to 21st – Intermittent work completed to wire small heaters into the insulated eye wash bottle boxes at several locations throughout the Mill.

- Apr. 21st – Due to Thickener tank settling over the years, more water is overflowing opposite the primary discharge box which then requires the overflow launder to carry a bulk of the water all the way around the circumference of the tank to the primary discharge. To achieve overflow near the primary discharge box and reduce launder flow from the backside of the tank, slots were cut in the overflow ring to promote overflow near the primary discharge box. The overflow will be monitored and more slots cut if required at higher flow rates.
- Apr. 28th – A mesh guard was welded over the Mill dry lime auger. A solid guard was recently fabricated but it is necessary to monitor dry lime movement through the auger so the mesh screen was installed under the solid guard.
- Apr. 28th – With additional flow from the Faro Pit Pump System, and about 75% of the flow to the Thickener tank, the overflow launder is near capacity on the low side of the tank (side of tank closest to lime bay doors). Investigating options to increase capacity of the launder in this area.
- Apr. 29th – All pumps in the Mill were stopped prior to the power outage. Several pumps were dismantled to drain them to avoid freezing. Gland loop and all lines were drained. Prior to the power being restored, all pumps were re-assembled and gland lines hooked up. Once power was restored the Millwright checked all pumps to ensure they were operating normally. Full treatment resumed at approximately 5:00 pm.
- May 9th to 11th – Superior roofing on site in conjunction with a structural engineer to inspect roof beams as per recommendations made in the 2009 Cotterall report.
- May 9th – Work began to fabricate a structure in the Mill underflows that will provide a framework for insulated tarps for the purpose of heating the tunnels during cold weather operation. Work completed on May 16th.
- May 15th – Mill Operators reported an issue with the Thickener rakes which would not go down. On-call staff directed the Operators to just spin the rakes to clear sludge from the tank without lowering and on Sunday the issue would be investigated. The on-call staff member investigated the problem on Sunday and repaired a limit switch. The lower limit was set and Mill operators were able to lower the rakes to fully clean sludge from the tank.
- May 3rd – With new discharge point for the IP Pipeline at the head end of the Mill, it has been observed that there is a consistent discrepancy in pH between each side of the primary and secondary conditioning cells (roughers / scavengers). In order achieve consistent treatment, the north side set of primary and secondary

cells was isolated and all influent water was directed to the south bank. Continued operation using only the south bank of conditioning cells for the balance of May.

- May 9th – Power out and Mill treatment stopped for several hours during the day.
- May 12th – Brace fabricated and installed for the supplementary lime addition valve at the Thickener tank discharge.
- May 13th – Faro Mill treatment shut down at 9:30 am in anticipation of the scheduled power outage. Once power was re-established to the site, all Mill systems were started back up and treatment resumed.
- May 17th – Began work to plumb a third discharge point off the Thickener tank launder. Capacity of the launder was inadequate to treat the amount of water required through the Thickener tank. Work progressed and was completed on May 31st. Capacity of the overflow launder with the addition of the third discharge is now near the capacity of the Thickener prior to re-commissioning the overflow launder.
- June 25th – Belts came off the dry lime auger motor below the silo. Millwright called in to site to re-install the belts.
- Continued operation for the entire month of June using only the south bank of primary and secondary pH conditioning cells.
- Intermittently through June, the Electrician worked installing controls necessary to moderate secondary lime addition at the thickener discharge.
- June 7th – Life rings placed at the Mill Thickener and Clarifier tank catwalks, as per a recommendation from the WCB inspection last month.
- June 25th – Operators observed water bubbling up through the Mill floor in several locations. The water flow and quantity seem to be getting worse each year.
- June 29th – Welder began work on installation of chain barriers to permanently block off “restricted access” areas within the Mill.
- July 5th – As a result of holes cut in the Mill roof during the Engineer’s structural inspection, water is infiltrating the emergency shower in the lime bay and was running over a light fixture. The Nu-line electrician that was on site and safety officer made a protective cover for the light to eliminate the hazard.
- July 11th – Two pH probes at the head end of the Mill circuit were replaced with new ones. Existing probes were over a year old needed replacement.

- July 13th – Millwright re-packed one of the lime distribution pumps in the Mill. Excessive leak began on June 12th from the duty pump so the spare pump was started up prior to repairs to the duty pump.
- July 16th – Mill Operators reported that one of the leaks as a result of holes cut in the Mill roof for inspection purposes was causing water to pool up on top of the lime silo.
- July 20th – A temporary roof structure was erected on top of the Mill lime silo to re-direct water off the silo. Water infiltrating the roof where a hole was cut for engineer inspection. The hole cut was not patched / sealed properly and water was leaking down a beam onto the silo.
- July 4th – Welder continued work to install chain barriers to permanently block off "restricted access" areas within the Mill.
- July 6th – All Mill equipment and pump systems (Faro Pit, IP) restarted after the brief power outage that occurred at 9:00 pm.
- July 7th – No equipment in the Mill affected by the power bump in the early afternoon.
- July 8th – A piece of scrap steel bar was observed in the dry lime auger on Friday afternoon. Mill Operator followed the lock-out procedure to isolate the auger and managed to remove the piece of steel.
- July 18th – Faro Pit Pump shut down at 11:55 am and all water directed to the Clarifier tank in the Mill. Thickener underflow pump operated to lower the water level in the Thickener so the Welder could re-open some of the discharge holes in the side of the tank. With the new overflow ring, capacity has been reduced slightly to meet target elevation in the Faro Pit by the end of the year, a combination of the overflow ring and previously used discharge holes in the side of the tank will be utilized. Faro Pit Pump turned back on at 3:30 pm and flow re-established through both the north and south pH conditioning cells. Flow from the Faro Pit was increased from ~7500 L/min to ~12,000 L/min to increase Pit drawdown rate. Rain throughout the summer is suspected to be contributing to the slower drawdown rate.
- July 18th – Electrician and Millwright installed all parts required for secondary / supplementary lime addition for the Mill effluent water. Due to tight lime supply while Vangorda is operating, secondary lime addition will not be started until Vangorda is shut down.

- July 20th – Millwright and Mill Operator installed a level control valve on the gland water box. This will help reduce the amount of water going to the Faro sludge cell. Excessive rain in the last month has added to the water flow into the sludge cells and resulted in the need to begin decanting water from the final sludge cell earlier than previous years.
- Several days spent in August permanently barricading and installing signage for restricted areas in the Faro Mill. Restricted areas have been identified where hazards exist, according to audits and investigations carried out in the past. Authorization must be given by a Foreman or management representative prior to anyone entering these restricted areas.
- Aug. 6th – Excess leakage occurring through the gland on the lime distribution pump. Mill Operator reduced water pressure to the gland and snugged up the adjustment bolts to reduce leakage. Millwright investigated and switched to the spare pump and replaced the packing on Aug. 8th. Once packing was replaced the Millwright switched back to the duty pump and drained the spare.
- Aug. 11th – Electrician and Millwright completed installation of a new flood light outside the Mill Lime Bay.
- Aug. 17th – Millwright performed routine maintenance on the Mill air compressor.
- Aug. 23rd – Welder repaired a section of walkway grating in the Mill leading to the lime holding tanks.
- Aug. 25th – Emergency shower in the Mill was covered with Enviro-liner and a small 2” x 4” structure to keep water off it and prevent mould growth. Hole cut in the Mill roof for roof repair inspection is causing water to run onto the emergency shower structure. A small amount of mould already grown was sprayed with a bleach solution to prevent it from spreading further.
- Aug. 3rd – Secondary lime addition began at the Thickener discharge at 1:00 pm to raise pH in the CVP, as discussed and planned with YG through the spring. Mill effluent pH raised to 10.8 at the IP spillway. Secondary lime addition continued through the duration of August and CVP depth profile sampling for pH and zinc was carried out as per the sampling plan developed in the early summer. The secondary lime addition worked very well at reducing zinc (total) numbers in CVP discharge while also raising pH of the surface layer of the entire CVP.
- Sep. 10th – Mill dry lime auger below the silo quit working. Electrician was on site to repair other site infrastructure so investigated and repaired the auger issue as well.

- Sep. 10th – A leak developed on the Mill lime transfer pipeline. Operators monitored the leak through the weekend.
- Sep. 12th – Leaky lime transfer pipeline was repaired.
- Sep. 12th – Two Nu-line electricians on site to begin emergency and work light installation in the Mill. Work continued through September from Mondays through Fridays.
- Secondary lime addition continued through the duration of water treatment in September. CVP depth profile sampling for pH and zinc was carried out as per the sampling plan developed in the early summer. The secondary lime addition worked very well at reducing zinc (total) numbers in the CVP discharge while also raising pH of the surface layer of the entire CVP.
- Sep. 14th – One of the new U20 sea-cans was dumped at the Mill to test the performance of the new delivery system. New fittings and hoses arrived to site yesterday and the necessary pieces were installed to take air from the blower to fluidize lime in the sea-can. Lime was dumped into the hopper through the 8" discharge hose off the sea-can so the lime transfer rate could be observed with different amounts of air from the blower. The test worked very well and significantly reduced dust even though the lime was still being dumped into the open hopper. Once the necessary fittings are installed on the hopper and the lid doesn't need to be opened, there should be no dust at all. The test was a great success.
- Sep. 19th – FMTS shut down for the season. Decommissioning of pumps, pipelines and equipment began. By the end of the month, the Mill was completely decommissioned for the winter.

  Total lime used throughout season at FMTS: 580 metric tonnes.

  Total flocculent used throughout season at FMTS: 2912.5 kilograms.
- Sep. 22nd – Began labelling of all pipelines in the Mill to identify product in pipelines and direction of flow. Work completed by Sep. 27th.
- Sep. 29th – Mill effluent pipeline and IP pipelines were drained using the excavator and pipe roller. More work is required to re-position and re-grade some spots along the pipeline were settling occurred after the pipeline relocation project last fall.
- Nu-line on site through October to install new emergency and work lighting in the Mill.
- Nothing to report in November or December.

8.2.3 Grum Effluent Treatment Plant

- Jan. 24th – Millwright began work to clean and repair a three way valve used for the flocculent mix system at the GTP. The flocculent transfer pump was also cleaned and investigated for repair due to leaking seals.
- Jan. 31st – Work began to modify the lime blower rotary valve plenum to accept the new rotary valve. Millwright modifying the motor base and the Welder is modifying the plenum.
- Feb. 2nd – Lime rotary valve motor base modification complete. Welder began work to modify the discharge plenum below the rotary valve. Slightly different shape of the replacement rotary valve requires the discharge plenum to be modified.
- Feb 3rd – Welder finished modification of the lime rotary valve plenum. Millwright installed the rotary valve and plenum to check for fit. All parts fit with the new rotary valve. The valve and plenum were removed and set aside until the treatment plant is ready to start-up.
- Feb. 23rd and 24th – Millwright received parts to rebuild a small pump that is a component of the Grum Treatment Plant flocculent mixing and distribution system. The pump was rebuilt and re-installed at the GTP.
- Nothing to report in March or April.
- May 4th – GTP Clarification Pond header pipe installed. Stands put in place and geotextile was placed around the stands to keep the gravel / sand material from washing away from under the stands.
- May 31st – Began to clean out the existing GTP operator's trailer. Existing trailer is unfit for use due to a leaking roof and mould issues. The trailer is beyond repair and will be replaced with the former DVTP trailer that is now unused.
- During the beginning of June the Millwright worked to service, assemble and install all pumps and agitators required to operate the GTP.
- June 1st – GTP operator trailer entranceway was removed in preparation for removal of entire trailer due to issues with mould and ceiling leaks. Electrical cables to the trailer disconnected by the Electrician.
- June 6th – Existing GTP trailer removed and two loads of fill hauled to the plant to level a foundation for the larger DVTP trailer. DVTP trailer was placed on the pad on cribbing. Existing trailer was taken to the dump.

- June 7th – Summer students worked to clean up behind the GTP. Old junk taken to dump.
- June 8th – Loader and dump truck used to haul sand to the GTP to level and grade the area around the new operator trailer. Carpenter and a helper built new landings for the entranceways to the trailer.
- June 14th – Welder carried out a modification to the fresh water holding tank in the GTP to increase capacity.
- June 15th – Treatment through the GTP began at approximately 6:15pm.
- June 21st – Due to problems with pump system operation, more time was required to fill the GTP Clarification Pond. Treatment shut down at 11:40 am, Clarification Pond full. Installation of wave break booms began in the Clarification Pond.
- June 23rd – Bioassays collected and sent out in the afternoon with Small's. Plan to re-start pumping and treatment approximately July 4th, pending favourable water quality results. Completed installation of Clarification Pond wave break booms.
- July 1st – Acceptable water quality results received for the Clarification Pond bioassay samples. Plan to re-start the Vangorda Pit Pump System and GTP on July 4th.
- July 4th – Treatment system not started up due to problems getting the Vangorda Pit Pump System started.
- July 5th – Treatment resumed through the GTP at 2:45 pm. Discharge began from the Clarification Pond at 8:45 pm.
- July 18th – Problems with the lime blower discovered about 9:00 pm. Plant Operator managed to repair the blower and resumed blowing lime into the silo.
- July 19th – Millwright investigated the lime blower and changed a section of damaged chain that runs the rotary valve.
- July 26th – GTP shut down at 6:00 am after reaching season end target and exhausting lime supply in the silo. All equipment and pumps were drained and shut off. Plant will be left intact for several weeks in the event of increased recharge in the Vangorda Pit. Possible that the pump system may need to be started up in late August to ensure end of September water level is still on target.

- Aug. 8th and 9th – Work carried out to re-fuse sections of the 4" pipeline used to decant water from the GTP Clarification Pond back into the Vangorda Pit pipeline.
- Aug. 9th and 10th – Completed removal of the wave breaks booms in the Clarification Pond in anticipation of decanting water.
- Aug. 10th – Pontoon walkway and pH probe removed from the discharge end of the Clarification Pond using the Kenworth HIAB. A smaller pontoon was installed to suspend a 30 hp Flygt pump to decant water and begin consolidation of sludge. Samples collected to confirm surface water was acceptable for discharge to the environment.
- Aug. 10th and 11th – Summer students cleaned up and removed garbage from behind the GTP.
- Aug. 11th – 30 hp Flygt pump started at 8:30 am after morning water quality analysis confirmed compliant water.
- Aug. 16th - Electrician investigated the 30 hp Flygt pump at the GTP Clarification pond. Electrician determined that the pump had a dead short. The pump was changed out with a spare using the HIAB. Decanting of clean surface water resumed at 12:10 pm.
- Aug. 20th - 30 hp Flygt pump shut off. Water quality beginning to deteriorate as the pump gets closer to the bottom of the pond.
- Sep. 1st – Millwright and helpers continued work on the GTP lime hopper rotary valve to drain water out of the hopper. Once the rotary valve and hopper were cleaned out, a load of lime was dumped in preparation for re-starting the GTP.
- Treatment Plant started up again and operated from Sep. 6th to Sep. 13th. Once the Vangorda Pit target elevation was met, the pump system and treatment plant were shut down. Work carried out for several days after shut down to decommission the plant and prepare it for winter. Decommissioning complete by the end of September.

  Total lime used throughout season at GTP: 167.5 metric tonnes.

  Total flocculent used throughout season at GTP: 300 kilograms.
- Sep. 13th – 30 hp Flygt pump started to begin decanting fresh water from the surface of the GTP Clarification Pond after the second round of treatment through the GTP.

- Sep. 20th - Decant of clean surface water continued until 2:30 pm when the pump was shut off. The balance of water pumped back to the Vangorda Pit using the 16" Vangorda Pit pipeline to remove as much moisture from the sludge as possible. Decant of water was carried out daily until the end of September.
- Oct. 3rd - 30 hp Flygt pump and the pontoon were removed from the GTP Clarification Pond using the Kenworth HIAB. Electrician disconnected and isolated the electrical supply prior to removal. Pontoon was left at the GTP Clarification Pond, cable and pump was brought back to the Faro side and steam cleaned prior to be putting in storage for the winter.
- Oct. 27th and 31st – Welder re-built a short section of the GTP lime auger case.
- Nothing to report in November or December.

8.2.4 Down Valley Treatment System

- May 31st – Work began to clean out the DVTP operator trailer in preparation to move it to the GTP.
- June 2nd – Fork pockets welded into the former DVTP trailer to allow the loader to lift the trailer onto the float truck. Several old lights and the damaged linoleum were removed from the trailer as well.
- June 6th - Former DVTP trailer loaded onto the float with the Volvo loader and transported to the GTP.

8.2.5 Sludge Management Summary

Faro Mill Treatment System

- Jan. 31st – Link-Belt excavator used to begin bulking of sludge in the sludge containment cells on the Original Tailings Impoundment. A light plant was brought to the sludge cell parking area to provide power for the Link-Belt block heater.
- Feb. 2nd, 3rd and 8th – Link-Belt excavator used to bulk sludge in the sludge containment cells on the Original Faro Tailings Impoundment.
- The Link-Belt excavator was used during March to complete bulking of sludge in the Faro Mill sludge holding cells on the Original Tailings Impoundment. Bulking work was completed on March 31st to provide room for 2011 sludge production.
- During the last week of July, work was carried out with the 345 excavator to install a culvert and redirect rain runoff around the sludge cells. Heavy rain through the summer has increased inflow to the sludge cells.

- July 19th – 4" trash pump set up to begin decanting water from the final sludge cell. Increased precipitation through the summer has led to an increased amount of water reporting to the sludge cell. This extra water has required decanting water from the final cell earlier than previous years.
- July 25th – Electric Flygt pump and a light plant were brought to the sludge cell to eliminate the use of a gas pump for decanting water from the final sludge cell.
- During August and September, the light plant and electric Flygt pump continued to operate to decant water that migrated to the final sludge cell. The electric Flygt pump was operated as necessary during the month to keep the final sludge cell de-watered.
- Sep. 10th – Light plant quit running on Saturday morning. Mill operators attempted to restart the light plant but it would not stay running. Decant pump left off for the remainder of the weekend. Investigation revealed a failed fuel supply hose. A new hose was installed and the unit was put back into service.
- Sep. 29th – Light Plant and Flygt pump removed from the sludge cell area and put into storage. Dewatering is complete for the season.
- Nov. 29th – Work began with the 345 excavator to begin mixing sludge to promote freezing in the Faro sludge cells. The two final (easternmost) cells have very little sludge and bulking of sludge went relatively quickly. By November 30th, the two final sludge cells were cleaned and ready for next years' sludge production.
- Work continued intermittently in December to mix, freeze and bulk sludge in the Faro sludge cell.

Grum Effluent Treatment Plant

- Throughout January, an excavator was used to mix the sludge in the Grum Treatment Plant Clarification Pond to promote freezing. By months end, 75% of the Clarification Pond sludge had been mixed and frozen. Work will continue into early February before the sludge will be frozen enough to haul in a dump truck.
- For the first few weeks of February, the 345 excavator was used to mix the sludge in the GTP Clarification Pond to promote freezing. Hauling of sludge using the International dump truck began on Feb. 16th. Sludge hauled on Feb. 16th and 17th, but suspended for the rest of the month due to other site activities.
- Feb. 28th – D-5 bulldozer used for several hours to flatten out piles of sludge dumped in the sludge holding cell.

- During most of March, the 345 excavator and a dump truck were used to haul sludge from the GTP Clarification Pond to the sludge holding cell on the Grum Overburden pile. As of March 28th, all sludge produced during the 2010 treatment season was relocated.
- June 27th and June 28th – Link-Belt excavator used to begin construction of a new section of road on the Grum Overburden pile to the sludge cell to reduce sludge haul distance and grade. The new section of road will also eliminate traffic during the sludge haul along the northeast wall of the Grum Pit where stability is questionable. Construction of the new section of road was completed in July.
- Nov. 30th – Link-Belt excavator used to begin mixing sludge and ice at the bottom of the GTP Clarification Pond access ramp. Work is slow at the beginning due to very little work space. It took several weeks to establish a solid, frozen foundation to allow access to more of the sludge for mixing and freezing.
- Link-Belt excavator continued to be used through December to mix sludge at the bottom of the access ramp to the GTP Clarification Pond. Mild weather and increased snow fall through the early part of the winter has resulted in little freezing of the sludge to date.
- Dec. 8th – Sludge distribution header removed from the Clarification Pond.

Down Valley Treatment System

- Nothing to report.

8.3 Infrastructure Maintenance

8.3.1 Diversions and Fresh Water Systems

8.3.1.1 Rose Creek Diversion Channel

- Nothing to report from January to April.
- Apr. 27th – Frost cracks observed in the road surface at the east end of the tailings area. One on the upper road just inside the access gate by the former fresh water pump house, one on the lower road across Rose Creek from the former fresh water pump house.
- May 17th – RCDC essentially ice free. Sudden warm weather resulted in increasing flow and water level through until May 24th.

- Peak flow through the RCDC occurred on May 24th after which water level began to recede.
- July 20th – 345 excavator used to push long steel rods into the bank of the RCDC at the X10 sample location. During the next few days, the Welder fabricated and installed a framework for the installation of an additional staff gauge for flow monitoring purposes.
- Aug. 19th and 26th – Ecological Logistics and Research Ltd. on site to carry out a fish survey at the Rose Creek Diversion Channel.
- Some brushing carried out in late August by the Summer Work and Training Program crew upstream of the RCDC fuse plug. Last year's brushing program along the RCDC focussed effort between the fuse plug and downstream towards the IP Dam.

8.3.1.2 Faro Diversion

- Fresh water observed on top of the ice along the upper stretch of the Faro Diversion for most of January and February.
- Feb. 24th – Link-Belt excavator walked up the Faro Diversion access road in preparation to dig ice out of the diversion channel. Glaciation had filled the diversion ditch to capacity and removal was required. Light plant also brought up the diversion road to provide power to the Link-Belt block heater.
- Feb. 25th – Several hours spent digging ice and trying to get water to flow. More work will be required.
- Feb. 25th to 27th – Inspections carried out on the diversion by on-call staff in the morning and again in the afternoon.
- Feb 28th – Work continued with the Link-Belt excavator to remove ice from the diversion channel.
- Fresh water observed on top of the ice along the upper stretch of the Faro Diversion for most of March.
- The Link-Belt excavator was used twice during March to remove built up ice from the diversion channel.
- Nothing to report April.
- May 18th to 20th – Work carried out with the Link-Belt excavator to free up ice jams as the diversion flow increased and ice began to melt and break up.
- Nothing to report in June.

- During the latter part of July, cobble rip rap was hauled up to the Faro Diversion area and stockpiled. Some of the cobble was used to re-cover sections of the liner that are exposed in the upper reaches of the diversion channel.
- Aug. 1st to Aug. 2nd – the 345 excavator was used to carefully place cobble rip rap over areas of exposed liner at the head end of the diversion channel. Larger boulders that have migrated or moved to the middle of the diversion channel and creating pools / riffles were also removed carefully to eliminate ice damming. Volvo rock truck used to haul rip rap from stockpile that was established in July.
- Aug. 3rd – 345 excavator was used to begin prep work for Faro Diversion road improvement work.
- Aug. 4th – Excavator began loading gravel trucks to carry out repairs and modification to the road along the Faro Diversion channel. Packer brought up the diversion road to pack the road after the grader was used to spread material. This road work continued to the end of the month with several days of interruption during the middle of the month due to heavy, persistent rain.
- Nothing to report for September through December.

8.3.1.3 Vangorda Flume

- No maintenance required from January through April.
- Peak flow occurred around May 24th.
- May 4th – 345 excavator used to install the Swimming Hole pump at the collection pool just north of the Vangorda Pit. Electrician inspected equipment and energized the pump system. Pump was energized but a hugger clamp was leaking and required replacement.
- May 5th – Repairs carried out on the Swimming Hole discharge pipeline and the pump was started.
- May 18th and 19th – Excavator used to remove ice jams in the Flume as a result of warm weather and increased flow.
- May 19th – Swimming Hole Pump switched over to automatic float control to keep the small holding pond dewatered. Swimming Hole Pump continued to operate on automatic float control for the remainder of the summer.
- June 14th – Dead moose calf reported by Environment Canada employees that were on site for inspection purpose. Moose calf appears to have been swept down the Vangorda flume while trying to cross it. Conservation officer contacted

and advised that DES removed it to a location away from work activities and site traffic. Removal and disposal carried out on June 15th.

- June 20th – At 3:45 pm, the GTP operator discovered that the swimming hole Pump was not operating. Electrician responded and reset the circuit breaker and restarted the pump at 5:45 pm.
- Aug. 16th and 17th – 6" pipeline for the Swimming Hole was cut off at the Flume road crossing. The 6" pipeline was replaced with a 4" pipeline and the former 6" pipe was used as a carrier under the roadway. The two site HDPE pipe fusion machines do not have the ability to fuse 6" pipe. The existing 6" Swimming Hole pipe was held together with hugger clamps which continually leaked and required replacement. The small fusion machine was used to fuse the 4" pipe solid to eliminate hugger clamps and potential for leakage and disconnection of the huggers.
- Sep. 28th and 29th – Mobilized the packer and the D-5 to the Vangorda Flume road and hauling of material began to raise a section of the Vangorda Flume road near the Swimming Hole, as requested by YG.
- Oct. 5th – Electrician switched Swimming Hole Pump from automatic float control to manual control. The collection pond was dewatered by manually turning the pump on and off for the remainder of October.
- Oct. 5th – Work continued along the Vangorda Flume road to haul dump truck loads of gravel fill to lift a section of the road near the Swimming Hole discharge.
- Oct. 25th – A small ice dam was removed from near the lower end of the Flume.
- Nov. 1st – Swimming Hole Pump operated from 11:00 am until 5:15 pm to dewater the holding pond.
- Nov. 2nd – Minor maintenance required to remove a few small ice dams.
- Nov. 3rd – Two workers steamed ice dams to get water flowing in the bottom of the Flume.
- Nov. 3rd – Excavator used to remove the Swimming Hole Pump. Pump returned to winter storage in the Pump Bay.
- Nov. 4th – Two workers continued work to remove ice dams in the Flume. Flume was monitored for the rest of the year and required no further maintenance through December.

8.3.1.4 North Interceptor Ditch

- Regular steaming of the X5 culverts and the six foot culvert by the DVTP carried out during the first quarter of 2011. By April, frequency of culvert steaming began to decline.
- Excavator used several times during February and March to remove ice buildup from the North Interceptor Ditch between the 6' culvert by the DVTP to the twin culverts at the X5 location. The Volvo loader was used to haul ice away from the edge of the road to a downstream stockpile location.
- No maintenance required for the balance of the calendar year.

8.3.1.5 Sheep Pad Pond

- Mar. 30th – Began installation of a pump in the lower Sheep Pad Pond to reduce water level and create capacity for spring runoff.
- Mar. 31st – Transformers at the Sheep Pad Pond were tested to see if they were in operable condition to supply power to the 30 hp pump. Corroded fuses were replaced and the breaker was energized. Breaker faulted out on a ground fault. After investigating it was determined that one of the transformers in the bank is faulty and will not work. Returned to installation of the siphon to draw down the pond. Workers on site late to fuse a section of the siphon intake and install it in the pond. Siphon was charged with the vacuum truck and started at 7:15 pm. Siphon monitored until 9:00 pm to ensure water flow would pass through the V25BSP.
- April 1st, 2nd and 3rd – Monitored siphon operation at the lower Sheep Pad Pond. Operating siphon through the night to avoid freezing it up. Shut down during the day to reduce draw down rate in the lower pond. Continued night siphoning until Apr. 7th when the siphon was shut down due to low water level in the lower Sheep Pad Pond.
- May 12th - Lower Sheep Pad Pond siphon started up at 1:45 pm to draw the pond down one last time to increase retention time for spring freshet runoff. Water samples collected early in the week confirmed acceptable total zinc and TSS for discharge.
- May 16th – Siphon in the lower pond was shut off at 5:30 pm due to low water level.
- Natural runoff discharge from the Sheep Pad Pond commenced on May 20th.

- June 7th – Siphon intake in the lower Sheep Pad Pond disconnected and removed from the Pond for the summer. A low spot on the downstream side of the siphon was also blocked up to achieve positive gradient and fully drain the line.
- Sep. 27th and 28th – Discharge end of the Sheep Pad Pond siphon blocked up and marked so it can be found easily in the spring.

8.3.2 Roads, Ditches and Culverts

- Plowing of snow carried out on site roads as required during the year. The grader was used to plow roads and the loader was used around the shop area to move snow piles to a drainage ditch on the north side of the Cat Bays. The D-5 bulldozer was also used to push snow banks off of road edges around the Grum area. International plow truck, Case backhoe and Skidsteer also used regularly for snow removal. The grader wing was installed in the last week of March and was used to begin pushing snow banks back along all site roads to expose shoulders and aid in drying the road surface.
- The steam truck was used regularly to thaw culverts and ditches / diversions throughout January, February and March.
- Jan. 6th – Prepared signage and posts to be installed along haul road at the public crossing locations.
- Jan. 27th – Case backhoe used to remove snow banks from around the access gates at the S-wells and the TMA.
- Feb. 2nd and Feb. 3rd – D9 bulldozer floated to Grum and used to push snow banks back along the main haul road by the former Grum Pit ore transfer pad. Drifting snow had narrowed the road to one lane and the grader was unable to push snow back far enough to widen the road to two lanes.
- The steam truck was used regularly to thaw site culverts throughout April. By the last weekend in April, most culverts began to flow free without requiring steaming.
- Apr. 18th to 20th – 345 Excavator used to remove several feet of glaciation that had accumulated on the Vangorda Pit access ramp over the winter.
- Apr. 20th and 21st – Loader used to plow access into the Horse Corral gravel pit as well as the Rose Creek gravel pit in preparation to repair several sections of road that have settled due to excavation through the late fall and early winter.

- Apr. 26th – D-5 used to spread piles of gravel excavated from the Y intersection on the DVTP access road as part of the pipeline re-alignment job in late 2010.
- Apr. 28th – Loader, dump truck and grader used to load, haul and spread gravel on a section of the DVTP road that was dug up last fall for the purpose of burying the re-aligned pipelines. The section of road was developing very large ruts due to melting of frost and water pooling. More work will be required once the ground thaws and snow is melted.
- During the first week of the May, the D-5 and grader were used throughout the site to push snow banks back to expose road shoulders and keep water flowing in ditches.
- May 9th – Work began to improve the DVTP and ETA road access intersection. Work involved hauling gravel material to build up the road grade and contour down to the existing road levels in each direction. Dump trucks, D-5, D-9 and the Link-Belt excavator were all used and work continued intermittently until the end of the month. Work will continue to improve access through this intersection and up to the ETA area in anticipation of construction expected work this summer. More work will also be required along the road to the IP to improve ditches as a result of the new pipeline bed construction.
- May 10th – D-9 used at the Rose Creek gravel pit to bulk up pit run for the purpose of road improvement work.
- May 17th – Ditches along the haul road between the Grum and Vangorda Pit were near capacity with flow of runoff as a result of sudden warm weather. Maintenance was required at several culverts and one was removed due to being undersized.
- May 19th – Several loads of gravel hauled to improve the heavy equipment access through the gate on the north side of the Guardhouse septic field. This access will be used for heavy equipment to keep traffic and dust to a minimum in front of the Guardhouse.
- May 22nd – Main mine access road began to wash out on Sunday night by the former fresh water holding pond. Site staff responded along with a YG highways employee to try and steam the culvert that was blocked with ice. Several hours were spent trying to thaw the culvert but it could not be done. Mine site traffic was re-routed onto site through the haul road access gate. On May 23rd, the culvert had freed itself and eliminated the flow of water across the road.
- May 24th and 25th – YG highways department carried out road repairs to the section of partially washed out road. Traffic flow resumed mid-day on May 24th.

- Road signage installed intermittently throughout June and July to improve overall site safety signage. Site safety signage installation completed in August.
- June 1st – Continued hauling gravel fill and spreading it on the road at the DVTP and ETA access intersection. Repairs required as a result of the pipeline relocation project last fall. D-9 used in the afternoon to begin road upgrades to the ETA area. Link-Belt excavator also being used to improve ETA road access. Work continued at the ETA intersection until it was completed on June 14th.
- June 6th to June 8th – 235 excavator and Tim Moon's rock truck (with T. Moon operator) used at the Grum area to haul rip rap out of the quarry and stockpile along the main haul road for emergency use.
- June 14th – Began road modification work at the IP Pump System intersection. Blind corner and hill being modified to improve safety and float truck access to the IP Pump System area. D-9 and dump truck being used to carry out work.
- June 16th – Completed road modification work at the IP Pump System intersection. Blind corner and hill modified to improve safety and float truck access to the IP Pump System area. D-9, D-5 and dump truck used to carry out work. Only final touch up required with the grader.
- June 20th – Welder completed repairs to gravel screen for sorting pit run. Screen brought to the Horse Corral Pit and set up to sort road material and cobble rip rap. D-9 used to prep an area and bulk pit run for screening. 235 floated to the Horse Corral to screen gravel and cobble rip rap.
- June 23rd – S-Wells gate post excavated and the welder attached a square steel plate to the bottom of the post. Re-buried the post with the plate on the bottom, this should prevent settling and misalignment of the gate lock.
- June 27th – Modified a steep dip in the road just after the 6' culvert by the DVTP. Through the winter it was discovered that this section of road was too steep and narrow for heavy truck traffic to safely navigate.
- Throughout July, a significant amount of work was carried out improving roads in the Down Valley / IP / ETA area. Several sharp, blind corners were eliminated improving safety and will contribute to reduced effort for snow clearing and spring maintenance due to the existing poor drainage ditches.
- Aug. 1st – Packer was used Down Valley to pack areas of road improvement work by the IP, along the IP pipeline and by the DVTP.

- Aug. 2nd – Grader used along the ETA access road to spread stockpiles of gravel hauled last week. Access road is now crowned with drainage ditches along the edge. Packer also used to compact gravel fill used to cap the road surface.
- Aug. 2nd – Began road widening around a guy wire on the back road leading to the GTP. Gravel truck and excavator being used to complete road modification. Road widening completed on Aug. 4th.
- Aug. 17th – As part of ongoing site safety improvements, an old cable mat was picked up from behind the GTP and placed in between the old warehouse / dry and the Mill crushing building. This corridor is narrow with a blind corner and it was suggested at a safety meeting that something be done to ensure vehicles are travelling through this area at a safe speed.
- Aug. 17th – The 235 excavator floated from the Horse Corral Pit to the Tim Moon pit at the southwest side of the GSC area. Rip Rap hauled using the Volvo rock truck to a location just off the haul road by the Grum Slot Cut for ease of access in case an emergency situation were to arise. This work carried on until Aug. 25th when better weather conditions allowed for returning to work up the Faro Diversion access road.
- Aug. 23rd – Grader used to cut potholes, caused by steady rain, out of main Guardhouse parking lot. Several loads of screened gravel were hauled and dumped, the grader spread it out and the packer was used afterwards to compact it.
- Aug. 29th – Link-Belt used to re-establish the berm beside the former AEX road access gate and eliminate the quad access point that had been recently established. A small berm was also built under the gate to reduce distance from the gate to the ground and prevent quad access.
- Work continued in September to haul gravel and lift the height of the Faro Diversion access road in several low spots. Grader spreading material and the packer was used to compact the gravel.
- Sep. 8th – Minor improvement work carried out on the fresh water well access road.
- Sep. 15th - Work began with the 345 excavator to upgrade and improve the haul road ditch running from the GSC emergency runoff pond access road down to the Vangorda Pit. Rock truck used to haul rip rap to armour the culvert intake area and create several energy dissipation berms. Work continued intermittently until completion on Sep. 29th.

- International dump truck with the plow was used during the last week of October to clear roadways of accumulated snow. Grader has been locked out for several weeks due to an issue with the last engine oil sample showing glycol content.
- Volvo loader, Case Skidsteer and Case backhoe also used for snow removal work during the last week of October.
- Nov. 3rd – Extra culverts that were removed during construction of the new GSC emergency settling pond were picked up and returned to the pipe yard on the Faro side.

8.3.3 Stationary Infrastructure

- Weekly inspections carried out on the four above ground holding tanks (gas, diesel, waste oil) throughout the year.
- Periodic cleaning and organization carried out in Bay 7 through 11 and the Cat Bays in January. A significant amount of time was spent to re-organize the first large Cat bay by removing steel piled on the floor to racks by the cold storage building. Tires were also moved to centralize and create more room at the east end of the Cat bays for cutting edge organization.
- Periodic maintenance carried out on the waste oil furnaces in January. All waste oil from the outside holding tanks used. Diesel fuel used to supply oil heaters except for small amounts of waste produced from servicing of vehicles and equipment.
- Water well – Work continued through most of January to fuse and install HDPE pipe, install and wire heat trace, install pipeline insulation kits, excavate and install a backwash sump pit and complete all other tasks associated with commissioning of the new water well system. Precision Service and Pump employees on site from Jan. 17th to 21st to complete the commissioning of the system.
- The sewer line from the Dry and the Guardhouse to the Septic field froze up several times in January. Each time, the steam truck was used to snake the sewer line to thaw it out.
- Setup of the new lunchroom trailer was carried out in January. Whiteboards, bulletin boards, tables and chairs installed and ready to use.
- Jan. 3rd and 4th – Millwright installed the fuel line and filter and commissioned the furnace in the new lunchroom trailer.

- Jan. 4th – New lunchroom trailer and the water well sea-can were steam cleaned to remove dirt accumulated from transportation to the FMC.
- Jan. 5th – Housing condition and inventory audit completed at 248 Dawson prior to YG taking over the residence.
- Jan. 5th – While excavating a small trench to bury the Guardhouse and lab water supply line from the new well system, the Guardhouse water supply line was inadvertently damaged with the excavator tooth. The damaged section of line was removed and replaced with a temporary flexible hose until the new well system was commissioned.
- Jan. 10th – Large icicles hanging from the Guardhouse on the east side were knocked off to eliminate hazard for workers below working on the well pipeline.
- Jan. 12th – Welder began work to fabricate a lockable cage for the gas cylinders used by the lab. The gas cylinders are outside the lab and outside the gated area so protection is required. This work carried over into February.
- Jan. 13th – Millwright completed installation of a hard line recessed into the floor of the welding shop for supply of waste oil to the furnace. This was a recommendation from the latest Spills audit.
- Jan. 17th – Both furnaces in the dry were found to be off in the morning. The dry was cold and water lines were frozen. After investigating the issue it was found that the diesel fuel in the dry holding tank had gelled due to the extremely cold weather over the weekend. It is possible that the fuel in the tank was a mix of summer and winter fuel and did not have enough conditioner to prevent freezing. Conditioner was added to the tank and mixed up and the filters were changed. Fuel flow was re-established and the furnaces were re-started. Several hours were spent thawing frozen water lines but no damage occurred.
- Jan. 19th – Grader operator observed and reported around 5:00 pm that due to very strong gusty wind at Grum, power lines near the bottom of the GTP access ramp at the slot cut touched and created a large arc flash and sparking. Confirmed power still on at the Grum GTP but power to the Moose Pond / V15 electrical shack was out.
- Jan. 19th - Welding screens installed in front of waste oil tank and diesel tank for furnace in the welding shop, as per a recommendation from the spills audit.
- Jan. 21st - 3:00 pm, Worker checking 248 Dawson (Guest House) observed oil smell. DES contacted Griffith's; a service technician inspected the furnace operation at 6:30 pm. Smell had dissipated by this time; technician believes

there may have been a back draft condition before the chimney warmed up enough for the furnace to exhaust properly. The technician observed accumulation of soot around the exhaust pipes of the furnace which indicating the combustion chamber, exhaust pipe and chimney need cleaning.

- Jan. 23rd – Power outage occurred early in the morning. On-call staff responded and re-established power to the Guardhouse by starting the back-up ONAN generator. Grid power remained off until approximately 1:30 pm. On-call staff back on site at 1:30 pm to monitor re-starting of the S-Wells system. ONAN generator set left to run for the night for maintenance purposes. Staff member on site at 9:00 pm to check operation of the ONAN generator set and S-wells Pump System.
- Jan. 25th – Link-Belt excavator used to remove heavy ice build-up from the side of the Norcan building. Large pieces of ice hanging on the exterior walls were becoming a safety hazard.
- Jan. 26th to Jan. 31st – Millwright modified the second shop door to allow exit from inside the Electrical/Millwright shop but restricted entry from outside. Previously the secondary door was locked with a padlock preventing exit from inside if needed.
- Periodic cleaning and organization carried out in Bay 7 through 11 and the Cat Bays during February. While re-organizing, inventory updating was also completed to prepare for the fiscal year-end inventory audit.
- Periodic maintenance carried out on the waste oil furnaces during February. All waste oil from the outside holding tanks was used. Diesel fuel used to supply oil heaters except for small amounts of waste produced from servicing of vehicles and equipment.
- The sewer line from the Dry and the Guardhouse to the Septic field froze up several times during February. Each time, the steam truck was used to snake the sewer line to thaw it out.
- The new lunchroom started being used on Feb. 21st. Re-grading of a section of the originally installed drain was required due to incorrect installation. Re-routing of the water line was also carried out so both lines could be contained in the same utility corridor from the dry to the lunchroom. As of the end of February, water and sink drain lines were not yet complete, but should be done by March 2nd.
- The new water well system was commissioned in January but chlorine addition was not able to be established due to problems with the flow meter that regulates

chlorine addition. A new flow meter arrived to site and was installed on Feb. 2nd. The proper chlorine addition rate was finally established on Feb. 3rd. A replacement solenoid valve was also received and installed on Feb. 2nd to allow use of the second conditioner. The system functioned as designed with no other issues through the month of February.

- Feb. 2nd – An incident report was filled out for a very loud noise (bang) that was heard in the Guardhouse around 2:30 pm. Several investigations were carried out in and around the Guardhouse to determine what the noise was but nothing was found. A follow up investigation was carried out at 5:30 pm, but again, nothing was found.
- Feb. 3rd – Cleaning of the garage and electrical room carried out in the Guardhouse.
- Feb. 4th – At approximately 11:20 am, a power surge in the Guardhouse caused the internet and server to shut down. Lights dimmed momentarily then became bright momentarily. The server and internet were reset and everything came back on line without an issue. The surge had no effect on the S-wells pump system.
- Feb. 7th – Diesel fuel pump would not start in the morning. Electrician investigated and found the main power switch internals to be corroded which wouldn't allow the contacts to close. The switch internals were cleaned to repair the problem.
- Feb. 7th – Electrician wired in a small baseboard heater to supplement heating requirements in the new water well sea-can. The heater that came in the sea-can was not able to sufficiently heat the area during very cold weather.
- Feb. 9th – David Kennedy, a representative from FSC Architects and Engineers, was on site to conduct an inspection of the diesel fuel station and containment area. An electrical engineer from Associated Engineering was also on site to complete an investigation in the Mill MCC rooms to evaluate cost / safety efficiency upgrades proposed in the Mill MCC consolidation project.
- Feb. 9th – A leak in one of the FMC Laboratory sink drains was repaired.
- Feb. 10th – Electrician replaced some broken extension cord plugs on the vehicle parking line outside the main gate.
- Feb. 10th – Snowmachines used to access the Rose Hill Repeater tower for a regular inspection.

- Feb. 14th – Water line to the dry was frozen again, at the steel transition flange from the HDPE pipeline to the PEX line in the utility corridor. Decision was made to eliminate the utility corridor and run heat traced, insulated HDPE right into the dry furnace room. A secondary (back-up) section of heat trace was also installed with a plug in available in the furnace room so if there is a problem with the primary heat trace the secondary can be run to supplement heat requirement.
- Feb. 15th – Welder fabricated and installed a piece of steel grating to replace a section of the new wooden walkway from the dry to the lunchroom. The steel grating was installed for ease of access to the new water line that enters the dry.
- Feb. 15th and 16th – Electrician worked to install additional outlets and circuits in the new lunchroom trailer. The trailer arrived to site with all outlets run off one 15 amp circuit which was not adequate.
- Feb. 15th and 16th – Re-organization of environmental supplies carried out in the storage room in the Guardhouse garage. The upper level floor was re-enforced and a handrail was added around the perimeter. Shelving was also built to maximize storage space.
- Feb. 16th and 17th – Electrician prepped the new batteries and charger for the CKRW building in the town of Faro. To avoid interruptions during the work day, the batteries and charging system was switched over first thing on the morning of Feb. 17th, prior to start of the normal work hours.
- Feb. 17th – Welder completed ongoing fabrication of a lockable cage to secure the compressed gas cylinders used by the FMC Laboratory.
- Feb. 22nd – Guardhouse and dry sewer lines frozen again in the afternoon. Steamer used to thaw the lines.
- Feb. 23rd and 24th – Electrician and Millwright investigated troubles with Guardhouse hot water heater. The tank was flushed to remove accumulated sediment and the upper thermostat was replaced. Both hot water heaters for the dry were also flushed to remove sediment.
- Feb. 28th – Guardhouse and dry sewer lines frozen again in the afternoon. Steamer used to thaw the lines.
- Feb. 28th – YEC on site to read the electrical meters in the main substation.
- Mar. 22nd – Power out at the site at 2:35 pm. YEC was contacted and noted they were trying to restore power. The following documents activities until power was restored:

- 2:45 pm – DES heard a noise and observed smoke and water dripping from a conduit from between T1 transformer and the original substation building in the yard area east of the mill. Also observed more noise and smoke at 2:47PM.
- 2:50 pm – Call to YEC, no one available, then placed a call to Mike Sam at Faro YEC plant using the sat phone; there was poor reception, but was able to convey the message that DES had concerns at the Faro Mine Complex substation.
- 3:10 pm – Significant noise (bang) heard, also some orange flames and blue smoke observed between T1 transformer and substation building.
- 3:12 pm – Spoke to Lawrence Joudry at YEC, noted what had just been observed, and he noted that YEC would keep FMC isolated, he was tied up and asked to call back in a ½ hour or so.
- 3:30 pm – Switched to on-site generator (ONAN) power.
- 3:50 pm – Talked again with YEC, they were not sure what the problem was, very busy trying to restore power etc.
- 4:15 pm – Gary Jones called, discussed our substation observations further, Gary advised that he was leaving Whitehorse to come to Faro and would connect in the evening with DES personnel to inspect the FMC substation.
- 5:00 pm – Electrician inspected substation area – no ongoing issues observed.
- 8:00 pm – YEC representative (Gary Jones) on site, inspected conduit containing 4160 volt cables between T1 transformer and the switchgear in the original substation. From the external inspection YEC determined the problem was a malfunction of the feed cables. A further inspection involving dismantling of the conduit was required to understand what has happened.
- YEC isolated the 138 kV power feed to the T1 transformer and by 9:30 pm power was restored to the entire site using only the T2 transformer.

- Periodic maintenance carried out on the waste oil furnaces during March. All waste oil from the outside holding tanks was used. Diesel fuel used to supply oil heaters except for small amounts of waste produced from servicing of vehicles and equipment.

- The sewer line from the Dry and the Guardhouse to the Septic field froze up several times during March. Each time, the steam truck was used to snake the sewer line to thaw it out. Each time it was very difficult to remove the steam line once the sewer line was thawed. Hot water was flushed through the line each morning in an attempt to prevent freezing but sometimes this did not work. One length of steam line was left in the sewer line due to inability to retrieve it.
- The new lunchroom used full time in March and fully functional with water and drain lines for the sink. All work required to fix plumbing and install heat trace was completed in the first week of March.
- The new water well system operated well for the month of March. Chlorine concentrations continued to be checked on a daily basis and were within the acceptable range every day.
- Mar. 3rd – Permanent radio installed in the welding shop as requested by the site Welder. External speaker hooked up to the permanent radio is much easier to hear than a hand held radio.
- Mar. 6th – While investigating sewer issues on Sunday, a leak was discovered under the FMC Laboratory, originating from the reverse osmosis unit. Further investigation revealed that a filter canister on the reverse osmosis unit had cracked. The filter canister was replaced with a replacement unit.
- Starting March 8th and continuing through to the end of March, emergency lighting and exit sign updates were carried out in the Norcan building and the Guardhouse. Lighting improvements were also carried out in the Norcan building upstairs storage rooms.
- Mar. 14th – Power indicator lights at the Rose Hill repeater tower went out over the weekend. Investigation carried out to determine if there was a problem. No issue was found; all lights, heaters and battery chargers were operating and the both battery banks were charged to full capacity. New lights installed to replace the burned out lights.
- Mar. 14th to Mar. 24th – Inventory audit carried out for year-end purposes. A YG representative was on site to verify the audit findings.
- Mar. 15th – Guardhouse sewer line frozen again. Three employees worked most of the day to try and thaw the sewer line. Problems with the steamer unit burner, and with the hose getting stuck caused delays. By 7:00 pm the line was still not thawed so two other workers that were in town for WHMIS training during the day came back up to site at 7:30 pm and worked until 10:00 pm to thaw the sewer line.

- Mar. 16th – Hot water heater in the Guardhouse investigated and determined that only the upper element was working due to a failed thermostat switch. Changes were made so that the lower element would work instead of the upper.
- Mar. 21st – Several drums of waste diesel pumped out of equipment fuel tanks was transferred to the waste oil heating tank.
- Mar. 23rd – Emergency lighting and exit sign upgrades in the Guardhouse and lab completed.
- Mar. 28th and 31st – Floor sink installed in the Guardhouse janitorial room so mop buckets would not have to be lifted into a sink to dump.
- Apr. 1st – YEC on site to perform additional isolation work at the T1 transformer at the main sub-station. An oil sample was collected but YEC indicated additional testing would be required prior to determining permanent repair plans.
- Apr. 7th – Energy North Construction representatives on site to carry out air testing for suspected mould issues in the Guardhouse ceiling insulation. Four town houses also tested while Energy North was in Faro.
- Apr. 14th – Carpenter sent to 450 Campbell to investigate a water leak in the basement. Water leak repaired but flooring required removal to allow it to dry.
- Apr. 29th – Power shut off to the site at 10:55 am. YEC had some troubles in Faro that required switching to isolate the site so the outage began later than expected. YEC representative and Orbis representatives carried out testing at the main sub-station through the day. Several tests had to be stopped part way through and started again due to heavy snow fall that was interfering with results. By 3:45 pm YEC and Orbis had completed testing and left the site. Required switching was done in the town of Faro and power was restored to the site at 4:10 pm. During the outage, the ONAN generator was started to provide power to the Guardhouse area.
- May 9th – Power outage occurred at approximately 12:15 pm. YEC contacted and they advised it was a YEC issue. ONAN generator started at 12:45 pm to supply power to the Guardhouse for laboratory analysis purposes and general office work. Grid power restored to site by 1:45 pm. ONAN generator left running until laboratory analysis was complete. ONAN shut down at 3:00 pm and the Guardhouse was switched back to grid power.
- May 13th – Scheduled power outage occurred between 9:50 am and 12:30 pm.

- May 3rd – A small section of an old wooden office / room structure was removed between Bay 11 and the Cat bays. The wooden structure was restricting the travel way between these two areas.
- May 4th – Washing machine in the dry stopped working. Old washer from 306 Campbell that was in storage at the Guardhouse was used as a replacement. Once the old washer was turned on a large leak was discovered which turned out to be a plugged water drain line. Water drain line was unplugged and repaired on May 5th.
- May 16th – Pooled water pumped out of the diesel fuel tank containment berm.
- May 30th – Hazardous low hanging light in the Guardhouse communications room was removed and replaced with a low profile light fixture.
- May 30th – Inspection carried out at the Rose Hill repeater tower. All systems functioning, no issues.
- May 30th – Gas tank filter changed and a leaky fitting was tightened up.
- During the latter part of June, summer students used yellow paint to re-coat the main gate, the septic fence and many other items around the yard to improve visibility.
- June 1st – HIAB and man-basket used so the electrician could remove fuses and isolate the failed transformer bank at the Grum shop prior to re-energizing the Grum administration building and camp.
- June 2nd – Old batteries in the communications room were removed to the battery storage area in the old warehouse.
- June 6th and June 7th – Yukon Chimney sweep was in Faro to clean chimneys and furnace fireboxes at the four houses in town.
- June 7th – Flow meter settings adjusted in the water well sea-can to allow chlorine addition to be adjusted.
- June 9th – Problems encountered during the night with the water well. Water well pump power indicator light was on but was well was not supplying water to the tank. On-call staff responded and forced a conditioner to cycle which seemed to resolve the problem.
- June 10th – Silty colour to the water in the water well holding tank.
- June 12th – Conditioner issue resolved, proper brining re-established in the softener tank and conditioners forced into back-flushing. The water holding tank was also flushed and pumped dry to remove sediment. Issues late Sunday night

after the tank cleaning, no water in the Guardhouse but supply pumps were running. More discussion with Precision representative late Sunday night to troubleshoot the water supply problem. Air lock was suspected in the supply pumps so each one was bled to relieve air from the pump impeller area. Once the air was bled, both pumps were re-started and water flow was re-established to the Guardhouse.

- June 13th – Nu-line linesman crew on site to install new transformers for the Guardhouse electrical supply and take the current Guardhouse transformers to Grum shops to replace the failed units there. Power out to the Guardhouse for several hours in the afternoon while Nu-line changed 4160 to 600 volt transformers for the Guardhouse feed. Problems in the Guardhouse after re-energizing the transformers. Electrician investigated and after several blown fuses for the main feed from the tin electrical shed to the Guardhouse, it was discovered that the main cable splice in a junction box on the outside of the tin shed was improperly insulated which caused the arcing and grounding problem. A hole was burnt in the junction box as a result of the arc. Cable splices were re-insulated and re-secured and the Electrician re-energized the Guardhouse.
- June 14th – Discussion carried out with Nu-line regarding cable that grounded out in the tin electrical shed beside the Guardhouse on June 13th. Nu-line agreed to send out two electricians to investigate all cable splices and work performed during the winter when modifications were made to the Guardhouse electrical system.
- June 14th – Nu-line replaced failed transformers at the Grum shop area. Also disconnected some ties on a power line by the Grum slot to isolate a section of power line that was being blown around by wind and causing the lines to contact each other.
- June 15th – Problems with the fresh water well building in the morning. Electrician investigated and found a failed solenoid valve that caused a fuse to blow. Fuse replaced, solenoid changed.
- June 16th – Incident occurred while an employee was replacing ceiling tiles in the laboratory office. Wires were being adjusted to install ceiling tiles and it was discovered that wires were not terminated properly and they were still live. Electrician investigated and eliminated the hazard by terminating wires in a junction box.
- June 16th – Steam line that was stuck in the Guardhouse sewer line from the winter was removed. Steam line was excessively stretched from forced removal so was taken to the dump.

- June 20th – HIAB and man-basket used to lift two AFAB roofing employees onto the Guardhouse roof to inspect for potential leaks or sub-standard roofing. AFAB also on site to look at Guardhouse ceiling insulation mould for the purpose of providing a quote for mitigation work required.
- June 21st – Boreal Engineering on site to inspect the Norcan shop roof and the roof above the Grinding and Flotation floors of the Faro Mill for the purpose of writing a tender package for roof repair.
- June 21st and June 22nd – Priming and painting carried out in the environmental office in the Guardhouse.
- June 22nd – Several concrete slabs sourced to use for support under the new fuel tank location beside the new lunchroom. Current fuel tank for the Dry furnaces and water heaters in too close to buildings and does not meet code requirements.
- June 23rd – Flammable materials cabinet from the old Mill tool crib was brought to the Norcan shop to use for aerosol can storage, as per a recommendation from the last WCB inspection.
- June 27th – Shop air line hose connections fixed permanently using the approved style of crimp fitting to replace the previously used hose clamps.
- June 27th – More work carried out to prepare a foundation pad to move the current location of the dry fuel tank. Concrete foundation pads installed, levelled and prepped for the new tank location that gives sufficient clearance around all buildings. Several thousand litres of fuel was drained out of the dry fuel tank in preparation to move it.
- June 28th – Re-insulated one pipe connection for the Guardhouse and laboratory supply pipeline. Due to cold temperatures in the winter, several joints were temporarily insulated with the plan to install permanent insulation during warmer summer weather.
- June 28th and June 29th – Nu-line employees replaced undersize junction boxes and fixing cable splices for several connections in the tin shed beside the Guardhouse.
- Several areas around site were seeded with grass in July to stabilize banks that were disturbed in the last year from road improvement activities.
- Summer students painted gates, fences, handrails other various structures with high visibility yellow paint in July. Safety signage was also installed at various locations around the property in July.

- Work carried out in July to construct and install barn style doors on the former water well building. All tanks, pumps and equipment were removed and the building was made ready to use as additional warm storage space.
- July 4th to July 6th – New piping being installed for the dry furnace and water heater fuel supply.
- July 4th – Water drained from the Guardhouse fire suppression system holding tank. Added water preservative and began re-filling the holding tank with fresh water from the new water well system.
- July 5th – Completed re-filling the Guardhouse fire suppression system water holding tank with fresh water from the new well.
- July 6th and 7th – Welder fabricated and installed a new bracket in Bay 7 for hanging all wire rope slings in an organized manner. Previous hangers were too small and slings were crowded and hard to get at.
- July 12th – Carbon monoxide alarm in the Guardhouse went off at 3:05 pm. It was discovered that the ambulance had been left running inside the garage for too long which resulted in increased carbon monoxide levels in the Guardhouse. All employees evacuated until the building was allowed to vent for half an hour. After venting, the portable gas monitor was used to verify acceptable atmosphere prior to employees returning to work. The ambulance will not be left running in the garage in the future.
- July 12th and 13th – Fuel tank for the dry was moved using the Kenworth HIAB to its new position away from buildings. Millwright worked to complete plumbing of fuel lines to supply the furnaces and water heaters.
- July 14th – Maintenance carried out at the Faro Guest house (248 Dawson) and the student house (638 Yates). Several toilet components replaced in the main floor bathroom at guest house to repair the toilet.
- July 14th – Incident occurred when the Lynden Transport truck arrived to site with the lime sea-cans. Driver pulled into the yard too fast and hit a bump protector around a sewer stand post beside the tin electrical shed beside the Guardhouse. Driver did not say anything and site personnel didn't discover the damage until after the truck driver was gone. DES followed up with an incident report / investigation and Lynden was contacted to discuss the matter. Millwright re-glued the PVC sewer stand pipe (that Lynden broke) in place and the Case backhoe was used to re-install the bump protection around it. Some gravel / rock did enter the sewer line as a result.

- July 18th and 19th – Window mounted air conditioner installed in the laboratory to reduce inside temperature during the summer. Laboratory equipment operation results in uncomfortable working conditions in the laboratory during warm weather.
- July 21st and July 25th – New lunchroom roof leaks repaired. Several cracks were discovered in the tin as well as small pin holes. Cracks were sealed, a few sections of tin were replaced and a rubberized roof coating was painted over repair areas to ensure they are sealed. HIAB and man-basket used and the employee on the roof was tied off with a harness and self-retracting winch.
- July 27th and 28th – Repairs were made to a damaged section of siding on the old oil storage building. The damage has been present since DES began C&M, but it was decided to fix the damage for visual appearance purposes.
- July 28th – Workers began installation of a new roll up garage door for the heated storage bay in the Cat bays. Existing electric door failed several times through the winter and was very hard to repair. Electrician suspected mechanical and electrical components were at the end of their useful life so a manual roll up door was purchased to fit into the heated bay and eliminate the electrical door.
- A new waste oil centrifuge was purchased in July and testing of the new unit was carried out in August. The unit is in the early stages of manufacturing so communication with the manufacturer was necessary to identify the best set-up and operation parameters to optimize the cleaning of waste oil. By months' end, the centrifuge was not set-up in a permanent location, but testing was successful and was very effective at cleaning sludge and water/glycol out of the waste oil.
- Aug. 1st to Aug. 4th – Continued installation of a new insulated, manually operated roll-up garage door on the heated storage bay in the Cat Bays. Minor trim work was completed on Aug. 8th to finish the installation.
- Aug. 4th and Aug. 8th – Organizing of steel carried out in the racks. Steel order was sorted out and a load of garbage from the steel rack area was cleaned up and brought to the dump.
- Aug. 8th – Millwright investigated furnaces in the dry and performed minor maintenance. Shift workers had observed a diesel smell during the weekend.
- Aug. 10th and 11th – Welder and Carpenter worked to install benches and stands necessary for the hydraulic hose press in the Norcan shop. Electrician investigated requirements for wiring in new receptacles to provide power to the cut-off saw and hose press.

- Aug. 16th – Work carried out to jack up and level the new water well sea-can. Settling of the foundation pad occurred through the spring and summer.
- Aug. 22nd – Chlorine concentration started to drop through the weekend. Investigated and found a large air bubble in the chlorine addition line. Well tank was pumped out to verify operation of the chlorine pump. On Aug. 24th, the chlorine line was purged of air to establish correct chlorine addition rate.
- Aug. 23rd – Work began to construct an insulated box around pipe flanges off the water well sea-can. A trench was also dug with the Case backhoe for the purpose of burying the well conditioner back-flush line. A short section of the steel carrier pipe into the back-flush sump was also cut off by the site welder to compensate for burying the pipeline. Markers were placed over the pipeline while it was being buried to keep traffic off of it. Construction of the insulated box was completed on Aug. 25th.
- Aug. 24th – A few loads of fill was hauled in to improve the ramp for the steam truck to access the new well building. Case backhoe used to spread the material and the packer was used to compact it.
- Aug. 29th – As part of an action item from monthly safety meetings, the roof eaves of the Norcan shop were removed on the north side of the building to prevent ice damming and glaciation on the roof.
- Aug. 29th to 30th – Nu-line electrician on site to assist the site electrician with wiring new receptacles along the parking lot fence.
- Aug. 31st – Completed installation of the new venting for the small exhaust hood in the lab.
- Summer students carried out recycling throughout the month of August and September to reduce the amount of garbage going to the landfill. Cardboard and plastic oil pails / cans brought to the recycle centre in Faro.
- The new water well system operated well for the month of September. Chlorine concentration continued to be checked on a daily basis and was within the acceptable range every day.
- Sep. 1st – Nu-line electrician assisting the site electrician to complete wiring of the new parking lot rail receptacles.
- Sep. 1st – Carpenter and a helper completed modifications to the former well pumphouse building. The well has been decommissioned and the building is being used for environmental equipment storage.

- Sep. 6th to Sep. 8th – Nu-line electrician working to complete the wiring for the new parking rail receptacles.
- Sep. 8th – Sand hauled to the yard area in preparation for the sewer line replacement work.
- Sep. 9th – Boreal engineering, Superior Roofing and Canol Mobile Welding on site to begin the Mill roof repair work. Superior Roofing remained on site until Sep. 21st when the roof repairs were complete and a final inspection was carried out by Boreal Engineering.
- Sep. 9th – Fresh water well pump system malfunctioned. The gas pump also stopped working and no gas was available on site. A power surge likely caused both systems to go down. On-call staff attempted to contact the site Electrician but were unsuccessful. On Sep. 10th, the site Electrician was successfully contacted and responded to site. Electrician repaired the problem in the well sea-can to resume water supply to the Guardhouse and dry. A power wire that fed the gas pump failed so the electrician re-wired the pump using the one available spare that was installed during initial system installation.
- Sep. 12th – Emergency lights and exit signs installed in the new lunchroom trailer.
- Sep. 12th to Sep. 14th – Case backhoe and Link-Belt used to excavate the parking lot in front of the Guardhouse to expose the sewer line. Excavation started at the dry and continued towards the septic field.
- Sep. 13th – Painting of all well casings and markers carried out along the RCDC, the IP Dam and the CVP Dam with high visibility paint.
- Sep. 14th – Total Fire on site to carry out yearly inspection and testing of all fire extinguishers on site.
- Sep. 14th – Fuel tank at 450 Campbell was inspected due to diesel odour in the house. A leak was discovered in the tank. Hurlburt Enterprises Inc. was contacted to see if they could provide an emergency tank replacement when they came to site the next day.
- Sep. 14th – A small walkway was built and installed over the fresh water pipeline and lab electrical supply cable to access the fire pump building.
- Sep. 15th – Fuel tank at 450 Campbell was replaced by Hurlburt Enterprises Inc. Leaky tank inside the house was removed and a new tank installed outside, as per new regulations. Diesel fuel had soaked into drywall and wood around the old tank. On Sep. 19th, the diesel-soaked materials were removed from the house and disposed of. Absorball was spread down on the cement to soak up spilled

fuel. On Sep. 29th, workers again shovelled up the Absorball and replaced with fresh Odourgone (Diesel smell neutralizer) and Absoball.

- Sep. 15th and Sep. 17th – Hurlburt Enterprises Inc. on site to perform sewer line replacement. Summer students assisted to clean all old insulation out of the trench and began grading the new pipe bed.
- Sep. 19th – One Equipment Operator and a Labourer were kept busy throughout the day finishing the sewer line ground work and clean up.
- Sep. 19th – Minor maintenance repairs carried out at 638 Yates.
- Sep. 21st – Fence repairs completed at 282 Dawson. The fence was noted on the original housing condition report from 2009 as requiring replacement. Some bracing was added to the fence and one broken post replaced to ensure it would not fall over through the winter.
- Sep. 21st, 22nd and 26th – Fabricated a plywood box to cover an exposed section of the new sewer line off the dry.
- Sep. 22nd – Began boxing up documents and files from the server room in preparation for mould remediation work scheduled to begin early October. Packing of office contents and documents continued through to the end of September. Guardhouse garage also cleaned up and all supplies removed so Energy North could use the space for equipment and supplies.
- Sep. 22nd – The town of Faro vacuum truck was on site to suck out the septic tank and also an outhouse used over at the Grum core stabilization project.
- Sep. 22nd – New deadbolt installed on the back door to the guardhouse.
- Sep. 26th – Total North arrived to site mid-day to begin installation of vehicle and equipment radios as part of the communications upgrade project. Total North on site until Sep.29th to complete radio install and programming.
- Sep. 27th – New carbon monoxide detectors installed in the lunchroom and dry.
- Through October, as time permitted, the site Welder completed fabrication of an additional compressed gas cylinder storage cage that will be used for the extra gas bottles required for the laboratory.
- Total North on site several times in October to install the new radio and phone systems. DES provided site support as required (HIAB and man-basket, etc.), but was minimally involved as contract for communications upgrade was between Total North and YG.

- Work carried out in October, when staff was available, to install the new waste oil processing system which includes the new centrifuge.
- Oct. 3rd – Full site tour carried out to pick up garbage and delineators / signs prior to snowfall. Garbage taken to the dump and all other items picked up were taken to the appropriate storage area.
- Oct. 4th – Fall clean up and organization of the heated bay and Cat bays carried out. Pump bay also cleaned up and organized.
- Oct. 5th – A trench was dug under supervision of the Electrician to bury the cabling required at the Vangorda lunch room for the new communications system being installed by Total North. A 3" piece of HDPE was buried that Total North could use as a cable conduit.
- Oct. 5th – Diesel containment berm pumped out to remove water before freeze-up.
- Oct. 5th – Water well pipeline heat trace controllers adjusted to stand upright. Several controller boxes had twisted onto their side as a result of pipe expansion / contraction.
- Oct. 6th – Energy North on site to begin mould remediation work in the Guardhouse. Prior to their arrival, all files, supplies, photocopiers and desks / cabinets were removed from the upstairs offices. Energy North continued work through October with several weekends worked to complete the job as fast as possible. Mould remediation work in the Guardhouse upstairs was essentially completed on Oct. 26th but work continued in the garage area into November.
- Oct. 6th – Installed new signage as requested by YG. Three large (4 x 8) "No Hunting" signs were installed to replace the existing signs and several others were installed at various locations around site. Work continued on Oct. 11th and 12th to complete the additional signage installation.
- Oct. 13th – Extra dirt from the sewer line replacement job was bermed up in front of the protective wood box around a section of the sewer line beside the dry. Extra dirt out by the septic field was also scooped up with the loader and hauled away.
- Oct. 17th – Duncan Plumbing and Heating and Dynamic Systems representatives on site late in the day to unload supplies required for work for the Norcan shop ventilation improvements. This work was carried out under sub-contract from Superior Roofing in relation to the Mill roof repair job coordinated through Boreal Engineering. Work was completed on Oct. 25th.

- Oct. 18th – An emergency light and exit sign was installed in the women's dry.
- Oct. 20th – Fuse blew on a power pole that feeds power to the old warehouse and Cat bays, including the heated storage bay. Electrician investigated and could not find any reason for the failure. HIAB and man-basket used to install a new fuse and re-energize the shops.
- Oct. 24th – Re-painted all upstairs offices and hallways following the Energy North mould remediation work. Work completed on Oct. 31st.
- Oct. 24th – EBA on site to carry out hazmat assessment sampling. Two workers on site until Oct. 28th.
- Cleaning and re-organizing of the bays carried out intermittently through November. Once project work completed near the end of the month, most supplies were moved out of Bay 11 and put into longer term storage.
- Guardhouse mould remediation work continued on Nov. 2nd and 3rd. All work completed mid-day on Nov. 3rd and the contractor demobilized from site. Work carried on until mid-November with site employees to re-assemble shelving and complete painting upstairs as well as in the garage. Electrician installed new fluorescent lights on the wall in the communication room as ceiling mount lights were no longer an option because of changes made during the mould remediation.
- Nov. 21st – Problems with water supply to the dry and Guardhouse. Upon inspection it was discovered that the electric heater thermostat in the water well sea-can had failed and the heater was not producing enough heat in the extreme cold weather to keep the supply pumps from freezing. Both supply pumps and a short section of PVC line had split due to ice formation. Two new supply pumps were ordered and arrived to site on Nov. 24th. Electrician bypassed the electric heater thermostat so that the heater would produce heat continuously.
- Nov. 1st – Klondike Business Solutions representative on site to repair the colour photocopier.
- Nov. 1st – Painting of the upstairs Guardhouse completed and furniture and equipment was moved back into offices.
- Nov. 7th – Welder began work to fabricate covers for some open vertical culverts sunk in the ground behind the Mill that were identified by the site Safety Officer. Work completed on Nov. 16th.
- Nov. 7th and Nov. 8th – Total North representatives on site to continue work on the new phone system.

- Nov. 8th – Roll up garage door latches in the Guardhouse garage were repaired by the site Welder.
- Nov. 12th – Small waste oil leak discovered in the Welding shop. On-call staff cleaned up the oil with floor dry and isolated the suspected location of the leak. Millwright investigated after the weekend and found that the furnace fuel pre-heater unit was leaking.
- Nov. 14th – Observed Bay 7 door was out of the track. Attempts to get the door back in the track failed. The door was opened all the way and on Nov. 16th brackets were welded below the door to prevent it from coming down. The electrician locked out the breaker for the door so it cannot be used.
- Nov. 16th – Electrician installed emergency lighting in the new heated storage bay in the Cat Bays. Two workers assisted for a short time to pull the required cabling into position.
- Nov. 21st – Furnaces for the dry not operating in the morning, possibly due to poor fuel. Both furnaces were operating by end of day. Main fuel tank for the dry was replaced with temporary tidy tank until the main tank could be drained of poor fuel. Portable space heaters set up in the dry in case furnaces quit again.
- Nov. 22nd – Dry furnaces continued to be supplied with fuel from a temporary tidy tank. Upon investigation, the only damage found as a result of the freeze up in the dry was that all shower valves required replacement.
- Nov. 22nd – Millwright repaired the lift mechanism for the garage door on the heated storage bay in the Cat Bays. Gears had become misaligned and the hoist chain was binding up.
- Nov. 24th – Poor fuel from the dry fuel tank was transferred into the portable Bushmaster tank and taken to the shop to be processed and burned in the waste oil furnaces. Main fuel tank refilled with good fuel and re-established supply to the dry furnaces / water heaters.
- Nov. 28th – Wall mount heater in the laboratory breezeway failed. Electrician investigated and determined that a new heater would need to be ordered.
- Nov. 28th – Electrician began work to replace lighting in the main sub-station. Fluorescent lighting also being changed in several other locations around site. Old style T-12 lamps are being phased out by manufacturers / suppliers and are now becoming unavailable. The T-12 lamps are being replaced with the more efficient T-8 lamps. As lights are burning out the old T-12 ballasts are being changed over to the new style T-8.

- Nov. 29th – Electrician wired in an external thermostat to the heater in the water distribution sea-can. During mild weather the sea-can is too hot with the heater on full time.
- Nov. 29th – Several workers removed a swinging boom that was in Bay 11 and formerly used as part of an equipment exhaust system to vent equipment exhaust outside the shop. The boom was installed in the Norcan shop with flexible hose purchased for exhaust venting. HIAB and forklift used in combination to remove the boom.
- General clean-up and organization carried out in the Norcan shop and the Cat Bays during December. All equipment and tools locked up for the Christmas shut down period.
- Dec. 7th – New water distribution pumps installed with a new PVC header from the supply tank. Electrician wired in the new distribution pumps once installed. Fresh water supply system now back to full capacity with two pumps.
- Dec. 6th – Failed start / stop / time-out switch for the diesel fuel dispensing station was repaired by the site electrician.
- Dec. 6th – Millwright replaced the fuel pump on one of the furnaces in the dry.
- Dec. 13th – Work completed to install the exhaust vent boom in the Norcan shop. Unit tested once installed and works great to vent exhaust outside the shop if a piece of equipment needs to run in the shop for maintenance or repair.
- Dec. 13th – Repairs made to the door to the ladies dry. Trim work around the door was also repaired.

8.4 Tailings Dust Monitoring and Management

Daily monitoring of the tailings area was carried out daily for the duration of 2011. For several days during the last week and a half of May, airborne dust was visible coming off the secondary tailings impoundment. The rest of the year was cool and wet enough that no dust issues arose.

- May 25th – A pick-up with a 1000 L tote was used to mix batches of Soil Cement to spot treat areas along the Original dam where dust was observed on May 24th. Areas on the tailings observed to be sources of dust were areas already treated in 2009. Soil Cement seemed to be effective through 2010, but a second application appears to be necessary in 2011 to suppress dust in these areas.

Faro Mine Complex
2011 Annual Environmental Monitoring and Activities Report - Maps

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2-8 Grum Pit

2-9 Vangorda Waste Rock Dump and Little Creek Dam

Meteorological Monitoring Locations

3-1 Faro

3-2 Grum

Rose Creek Drainage

Vangorda Creek Drainage

Town of Faro

1.0 km 2.5 km 4.0 km

Denison Environmental Services

Faro Mine Complex

Drawn	Date
TP	08/02/12

Map Sheet 1-1

Denison Environmental Services

Faro Mine Complex
Rose Creek Drainage

Drawn	Date
TP	08/02/12

Map Sheet 1-2

Legend
- Groundwater Well (Multilevel)
- Groundwater Well (Single Level)
- Seepage Water
- Surface Water

X14
X10
X16A X16B
P01-01A&B
X18A&B
X17B X17A
X5
X5P

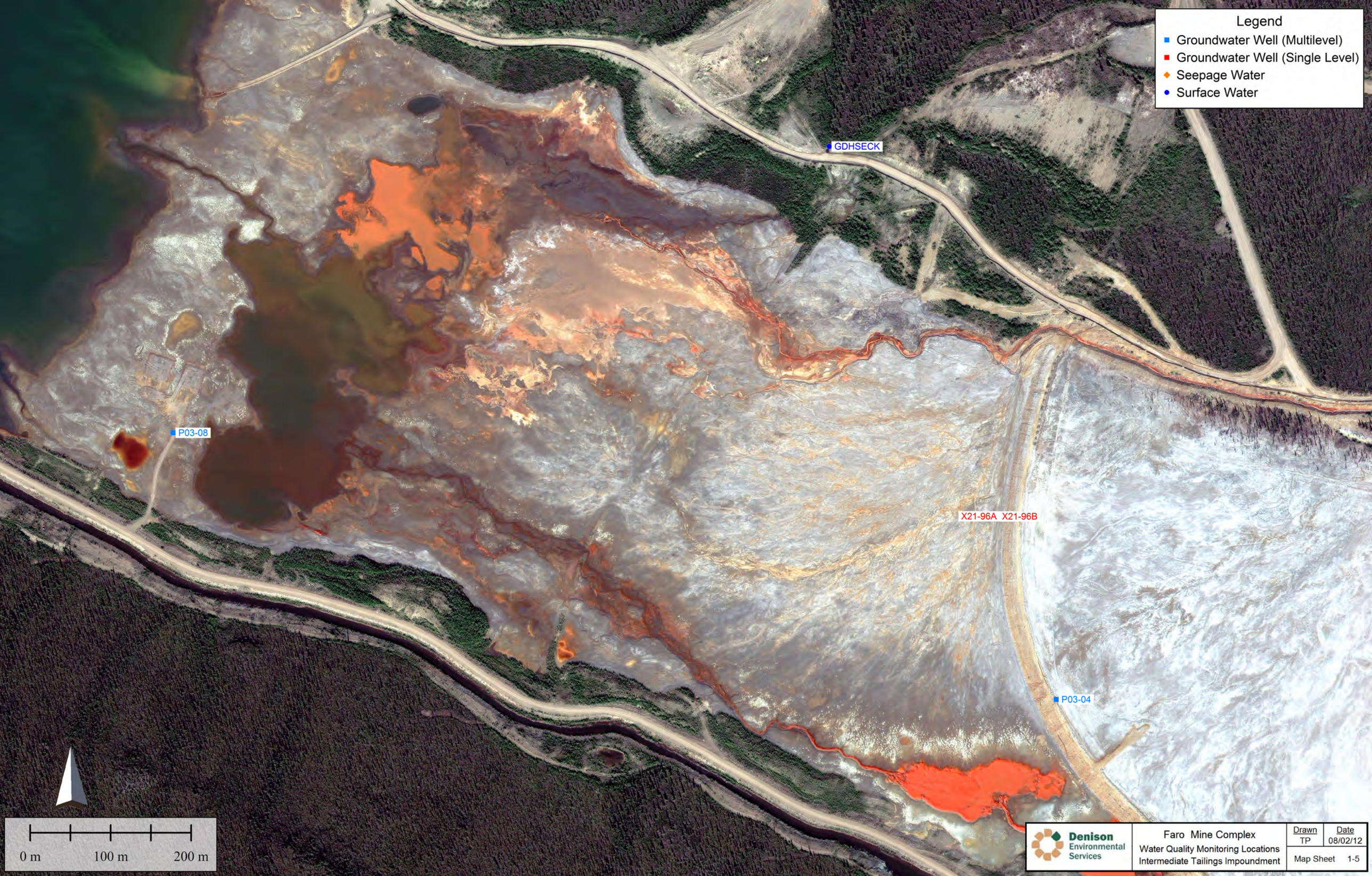
0 m 100 m 200 m

Denison Environmental Services

Faro Mine Complex
Water Quality Monitoring Locations
Down Valley Area

Drawn	Date
TP	07/02/12
Map Sheet	1-3

X17B
X17A
X5
X5P
P05-01
P09-C1
P01-11
X11
P05-02
X13
P09-C2
P03-09
Weir 3
P05-03
P09-C3
X12
P01-02A&B
X4
X24-96D
P01-03
X25-96A&B
P01-04A&B
P03-08
Legend
Groundwater Well (Multilevel)
Groundwater Well (Single Level)
Seepage Water
Surface Water
0 m
100 m
200 m
Denison Environmental Services
Faro Mine Complex
Water Quality Monitoring Locations
Cross Valley and Intermediate Ponds
Drawn
TP
Date
07/02/12
Map Sheet 1-4



Denison Environmental Services

Faro Mine Complex
Water Quality Monitoring Locations
Intermediate Tailings Impoundment

Drawn	Date
TP	08/02/12
Map Sheet	1-5

Denison Environmental Services

Faro Mine Complex
Water Quality Monitoring Locations
Secondary Tailings Impoundment

Drawn	Date
TP	08/02/12

Map Sheet 1-6

Denison Environmental Services

Faro Mine Complex
Water Quality Monitoring Locations
Upstream of Tailings Area

Drawn	Date
TP	08/02/12

Map Sheet 1-7

Legend
- Groundwater Well (Multilevel)
- Groundwater Well (Single Level)
- Seepage Water
- Surface Water

SRK08-SBR3
SRK08-SBR2
SRK08-SPW3
SRK08-SPW1
P09-SIS4
SRK05-SP3B
SRK08-SP7B
NFRC SC-2
NFRC SC-3
SRK05-SP1A
SRK05-SP2
NF2
NFRC SC-1

10 m 30 m 50 m 70 m

Denison Environmental Services

Faro Mine Complex
Water Quality Monitoring Locations
S-Wells Area (1 of 4)

Drawn	Date
TP	08/02/12
Map Sheet	1-8-A

Legend
Groundwater Well (Multilevel)
Groundwater Well (Single Level)
Seepage Water
Surface Water
SRK05-SP6
SRK08-SBR4
S1A&B
SRK08-SBR1
P09-SIS1
P09-SIS3
SRK05-SP4A
SRK05-SP3A
SRK08-SP7A
SRK05-SP1B
10 m
30 m
50 m
70 m
Denison Environmental Services
Faro Mine Complex
Water Quality Monitoring Locations
S-Wells Area (2 of 4)
Drawn
TP
Date
08/02/12
Map Sheet
1-8-B

Denison Environmental Services

Faro Mine Complex
Water Quality Monitoring Locations
S-Wells Area (3 of 4)

Drawn	Date
TP	08/02/12
Map Sheet	1-8-C

Legend
Groundwater Well (Multilevel)
Groundwater Well (Single Level)
Seepage Water
Surface Water
S2A&B
P09-SIS2
P09-SIS5
10 m
30 m
50 m
70 m
Denison Environmental Services
Faro Mine Complex
Water Quality Monitoring Locations
S-Wells Area (4 of 4)
Drawn
TP
Date
08/02/12
Map Sheet
1-8-D

Denison Environmental Services

Faro Mine Complex
Water Quality Monitoring Locations
ETA Area

Drawn	Date
TP	08/02/12

Map Sheet 1-9

Legend
- Groundwater Well (Multilevel)
- Groundwater Well (Single Level)
- Seepage Water
- Surface Water

SRK08-P11A SRK08-P11B

0 m 100 m 200 m

Denison Environmental Services

Faro Mine Complex
Water Quality Monitoring Locations
Guardhouse Area

Drawn	Date
TP	08/02/12
Map Sheet	1-10

Legend
- Groundwater Well (Multilevel)
- Groundwater Well (Single Level)
- Seepage Water
- Surface Water

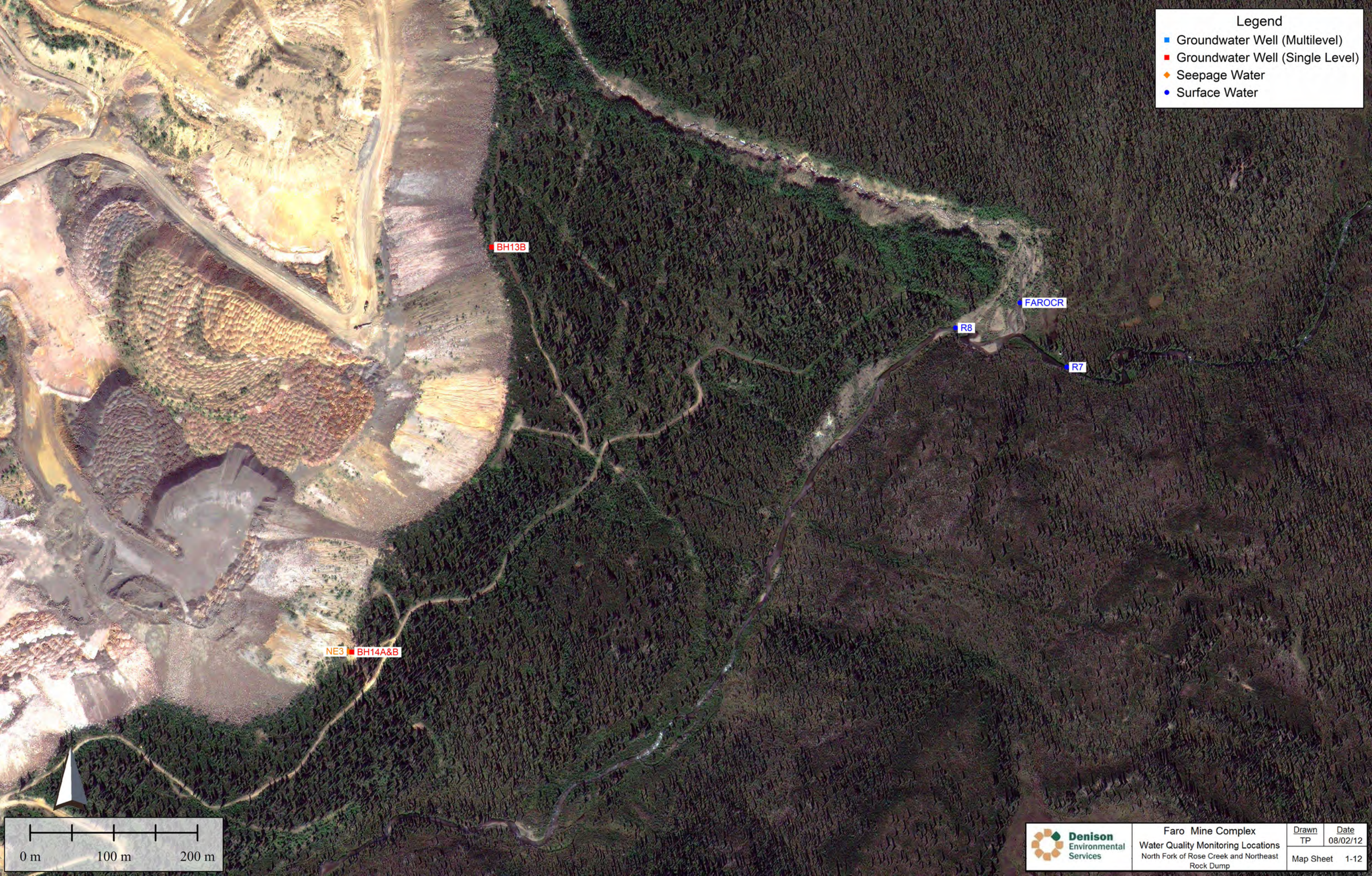
FCO
FD-40
A30
X22b
X26
BH13B
SP5-6

0 m 150 m 300 m 450 m

Denison Environmental Services

Faro Mine Complex
Water Quality Monitoring Locations
Faro Pit

Drawn	Date
TP	08/02/12
Map Sheet	1-11



Denison Environmental Services

Faro Mine Complex
Water Quality Monitoring Locations
North Fork of Rose Creek and Northeast Rock Dump

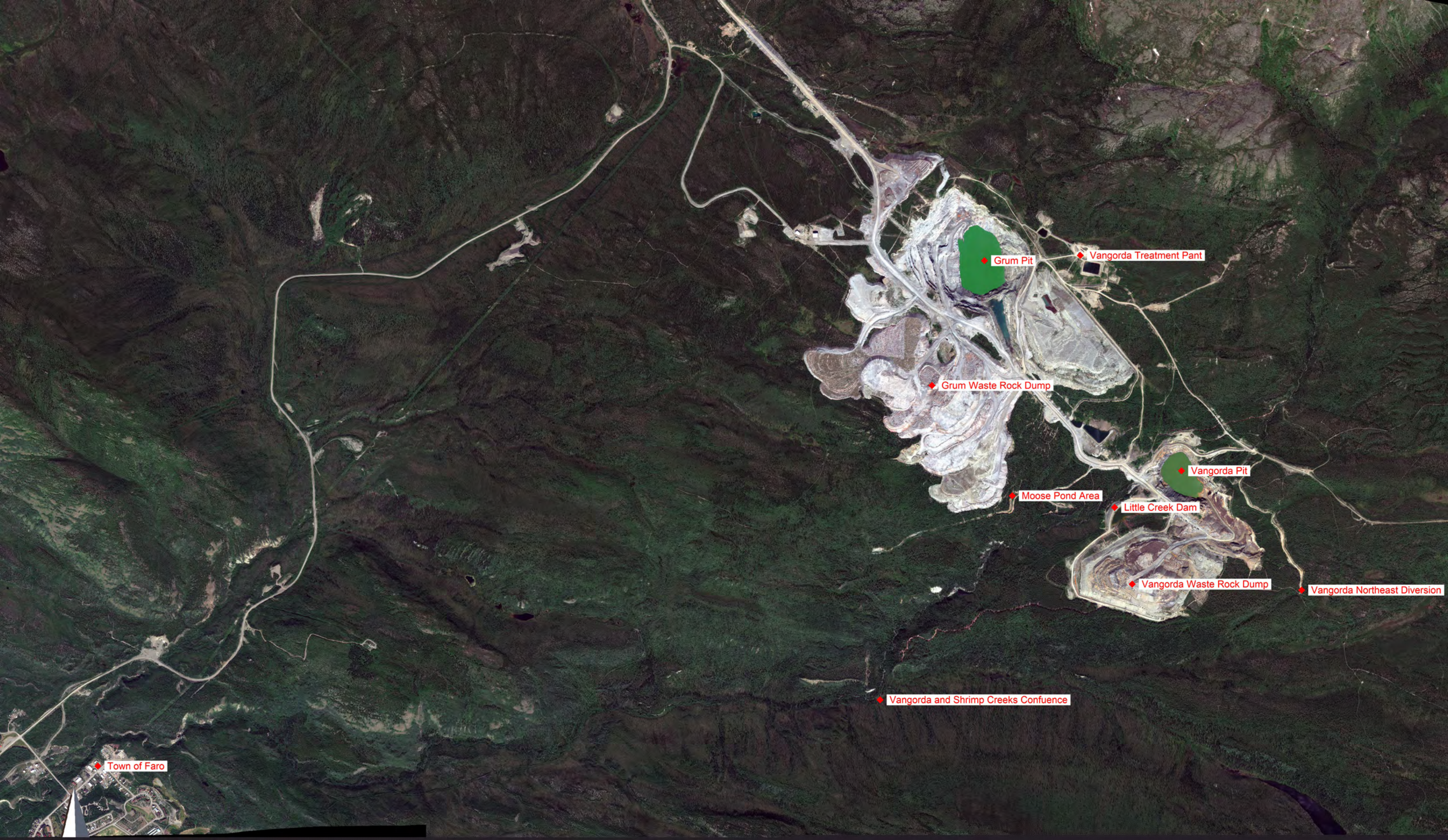
Drawn	Date
TP	08/02/12
Map Sheet	1-12

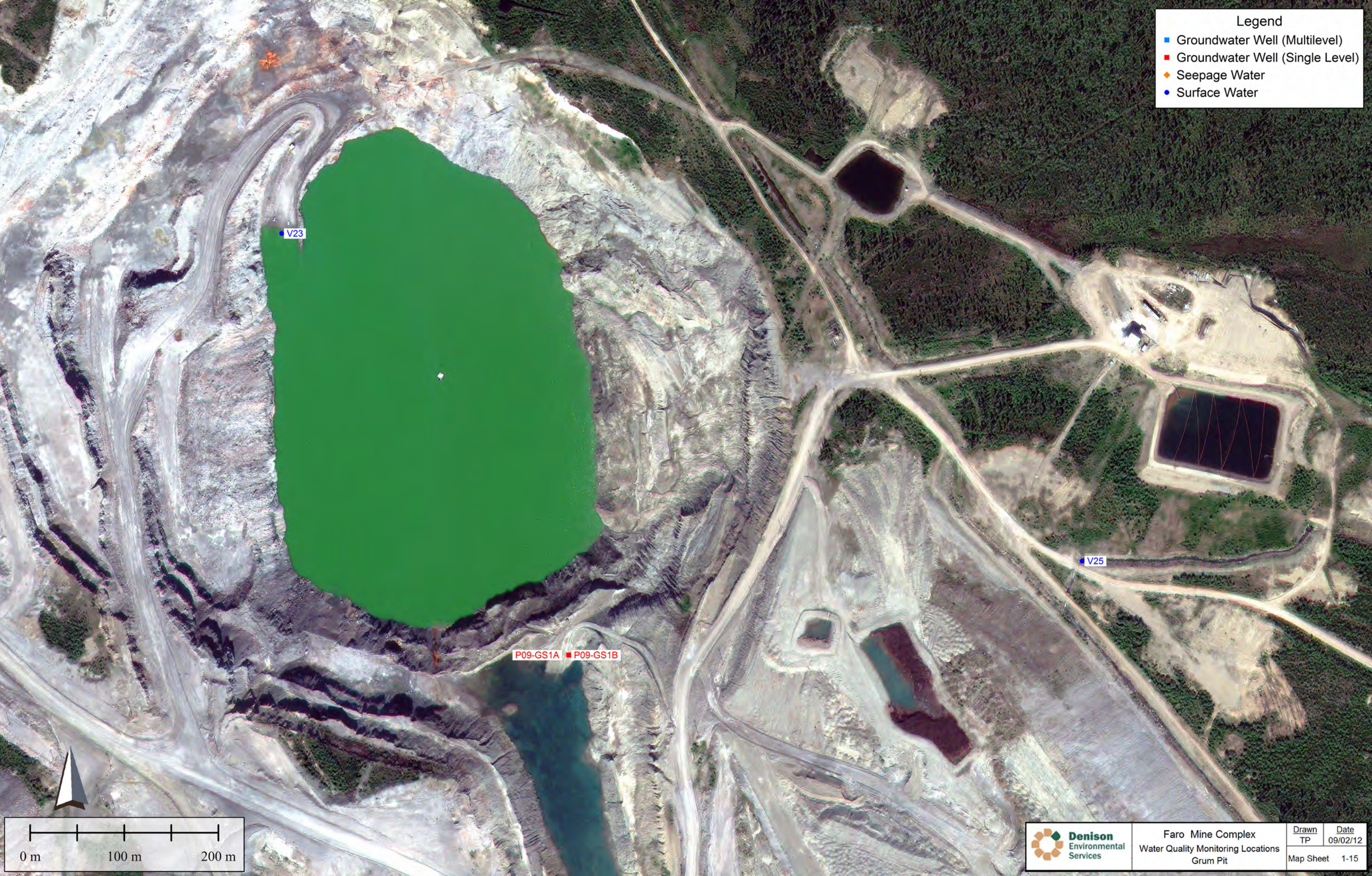
Denison Environmental Services

Faro Mine Complex
Water Quality Monitoring Locations
North Fork of Rose Creek and Zone II Outwash

Drawn	Date
TP	08/02/12

Map Sheet 1-13


Grum Pit
Vangorda Treatment Pant
Grum Waste Rock Dump
Vangorda Pit
Moose Pond Area
Little Creek Dam
Vangorda Waste Rock Dump
Vangorda Northeast Diversion
Vangorda and Shrimp Creeks Confuence
Town of Faro



Denison Environmental Services

Faro Mine Complex
Water Quality Monitoring Locations
Grum Pit

Drawn	Date
TP	09/02/12
Map Sheet	1-15

Legend
- Groundwater Well (Multilevel)
- Groundwater Well (Single Level)
- Seepage Water
- Surface Water

P09-GW1
P09-GW3
SRK GD01
SRK08-P14
SRK08-P15

50 m 150 m 250 m

Denison Environmental Services

Faro Mine Complex
Water Quality Monitoring Locations
Grum Waste Rock Dump

Drawn	Date
TP	09/02/12
Map Sheet	1-16

Legend
Groundwater Well (Multilevel)
Groundwater Well (Single Level)
Seepage Water
Surface Water
SRK08-P14
SRK08-P15
SRK08-P16
SRK05-7
SRK05-8
SRK05-9
SRK05-5C
P96-9A
BH05-9B-R
V14
V15
V16
V2
V2A
GC Weir
MOOSE SEEP
0 m
100 m
200 m
Denison Environmental Services
Faro Mine Complex
Water Quality Monitoring Locations
Moose Pond Area
Drawn
TP
Date
09/02/12
Map Sheet
1-17

Legend
Groundwater Well (Multilevel)
Groundwater Well (Single Level)
Seepage Water
Surface Water
V1
V25BSP
P09-VC2
P09-VC1
V22
V24
P09-LCD1
P09-LCD4
P09-LCD6
LCD
V37
V33
V32
PW-10-01
V31
V36
0 m
100 m
200 m
Denison Environmental Services
Faro Mine Complex
Water Quality Monitoring Locations
Vangorda Pit and Little Creek Dam
Drawn TP
Date 09/02/12
Map Sheet 1-18

Denison Environmental Services

Faro Mine Complex
Water Quality Monitoring Locations
Vangorda Waste Rock Dump

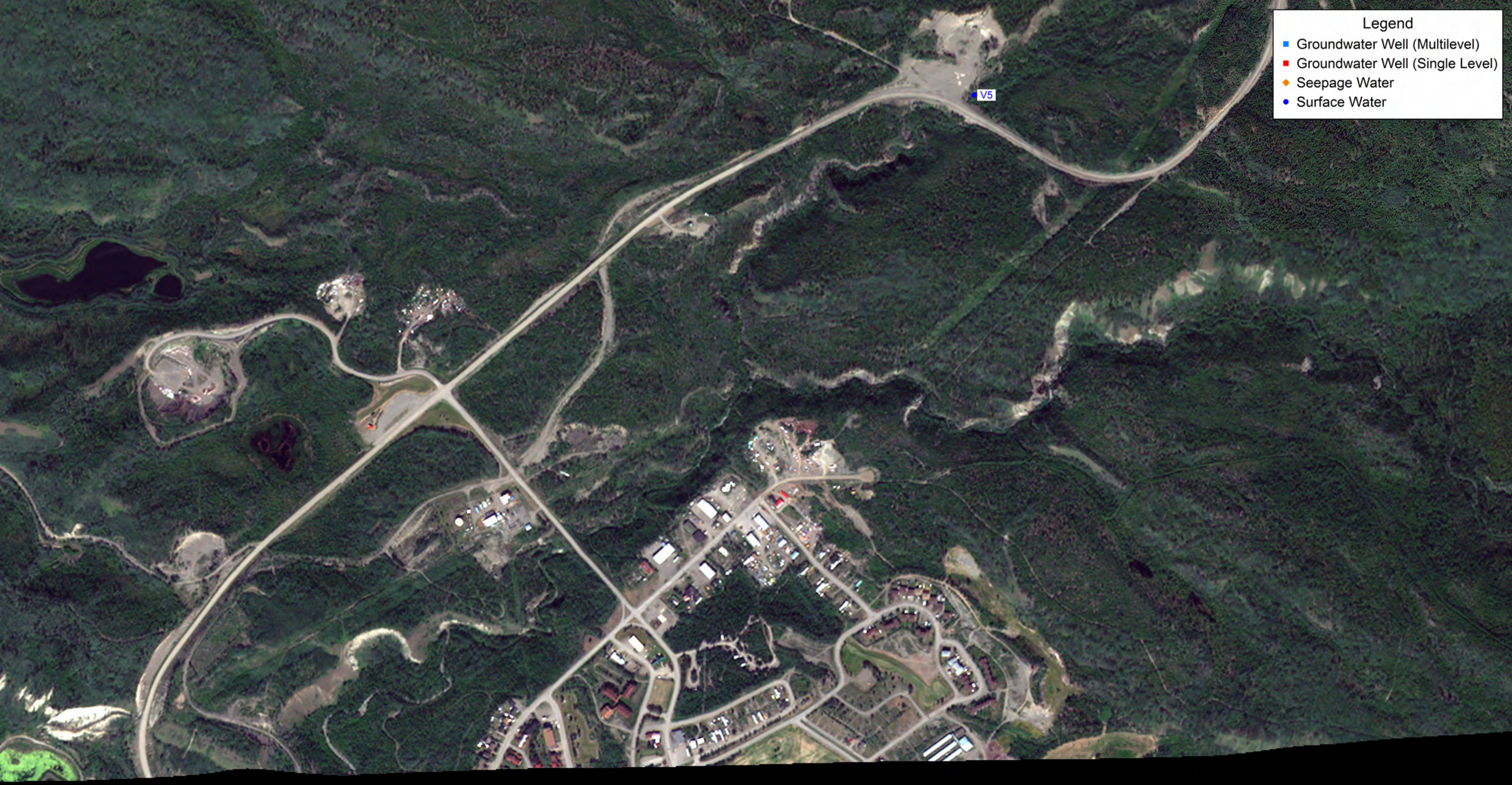
Drawn	Date
TP	09/02/12
Map Sheet	1-19

Denison Environmental Services

Faro Mine Complex
Water Quality Monitoring Locations
Vangorda and Shrimp Creek Confluence

Drawn	Date
TP	09/02/12

Map Sheet 1-20



Denison Environmental Services

Faro Mine Complex
Water Quality Monitoring Locations
Town of Faro

Drawn	Date
TP	09/02/12

Map Sheet 1-21

Legend
- Benchmark
- Discharge Monitoring Station
- Groundwater Well (Single Level)
- Pneumatic Piezometer
- Prism Survey Pin
- Regression Velocity Pin
- Slope Indicator
- Staff Gauge
- Thermistor
- Weir Flow

Cross Valley Pond Pin
CVDT-1
CVDP-5 & 6
94 CVDC-1
CVDC-4
P01-11
X11
X13
CVDC-6
Weir 3
CVDT-2
CVDP-1, 2 & 3
CVDC-7
X12
P01-02
BH88-4
CVDC-9
Intermediate Pond Pin
96-4
96-2
P01-03
94-IDC-1
96-3
91ID-4
96-1
P01-04
91-ID-6
BKS04-06
91-ID-7
BGC05-08
SP-5
BKS04-07
CD-26
CD-26
91-ID3

0 m 100 m 200 m

Denison Environmental Services

Faro Mine Complex
Geotechnical Monitoring Locations
Cross Valley and Intermediate Dams

Drawn	Date
TP	13/02/12
Map Sheet	2-1

Denison Environmental Services

Faro Mine Complex
Geotechnical Monitoring Locations
Diversion Canal

Drawn	Date
TP	13/02/12
Map Sheet	2-2

Legend
- Benchmark
- Discharge Monitoring Station
- Groundwater Well (Single Level)
- Pneumatic Piezometer
- Prism Survey Pin
- Regression Velocity Pin
- Slope Indicator
- Staff Gauge
- Thermistor
- Weir Flow

P03-03
P81-6
P03-02
P03-01
P81-7
P81-8
RCDC-4

0 m 100 m 200 m

Denison Environmental Services

Faro Mine Complex
Geotechnical Monitoring Locations
Secondary Tailings Dam

Drawn	Date
TP	13/02/12

Map Sheet 2-3

Legend

- Benchmark
- Discharge Monitoring Station
- Groundwater Well (Single Level)
- Pneumatic Piezometer
- Prism Survey Pin
- Regression Velocity Pin
- Slope Indicator
- Staff Gauge
- Thermistor
- Weir Flow

NF1

NF2

NFRD-23

X2

0 m 100 m 200 m

Denison Environmental Services

Faro Mine Complex
Geotechnical Monitoring Locations
North Fork Rock Drain

Drawn	Date
TP	13/02/12

Map Sheet 2-4

Legend
- Benchmark
- Discharge Monitoring Station
- Groundwater Well (Single Level)
- Pneumatic Piezometer
- Prism Survey Pin
- Regression Velocity Pin
- Slope Indicator
- Staff Gauge
- Thermistor
- Weir Flow

NWID

0 m 100 m 200 m

Denison Environmental Services

Faro Mine Complex
Geotechnical Monitoring Locations
Guardhouse Area

Drawn	Date
TP	13/02/12
Map Sheet	2-5

Legend
Benchmark
Discharge Monitoring Station
Groundwater Well (Single Level)
Pneumatic Piezometer
Prism Survey Pin
Regression Velocity Pin
Slope Indicator
Staff Gauge
Thermistor
Weir Flow
15356
15717
15355
15737
FCD-3
15354
15742
13908
13872
13873
13874
13875
13876
13877
FCD-4
15352
13878
15351
13879
13880
0 m
100 m
200 m
Denison Environmental Services
Faro Mine Complex
Geotechnical Monitoring Locations
Faro Pit North East Wall
Drawn TP
Date 13/02/12
Map Sheet 2-6

FCD-1

FCD-2

Legend

- Benchmark
- Discharge Monitoring Station
- Groundwater Well (Single Level)
- Pneumatic Piezometer
- Prism Survey Pin
- Regression Velocity Pin
- Slope Indicator
- Staff Gauge
- Thermistor
- Weir Flow

0 m 100 m 200 m

Denison Environmental Services

Faro Mine Complex
Geotechnical Monitoring Locations
Faro Diversion

Drawn	Date
TP	13/02/12

Map Sheet 2-7

Legend
- Benchmark
- Discharge Monitoring Station
- Groundwater Well (Single Level)
- Pneumatic Piezometer
- Prism Survey Pin
- Regression Velocity Pin
- Slope Indicator
- Staff Gauge
- Thermistor
- Weir Flow

GP-N6
GP-N1
GP-S1
GP-S4
P09-GS1A
P09-GS1B

0 m 100 m 200 m

Denison Environmental Services

Faro Mine Complex
Geotechnical Monitoring Locations
Grum Pit

Drawn	Date
TP	13/02/12

Map Sheet 2-8

P09-LCD-1
BH94-LCD6
P09-LCD-3
BH94-LCD3
P09-LCD-4
BH94-LCD5
P09-LCD-6
BH94-LCD2
P09-LCD-7
BH94-LCD4
BH94-LCD1
V37
V33
V46
V47
V32
PW-10-01
V31
V44
V45
V36
P2001-3
P2001-2A&B
PW-10-02
V41
V42
V43
PW-10-05
PW-10-03
V40
V39
V30
V35
V29
PW-10-04
V34
V28

Legend
- Benchmark
- Discharge Monitoring Station
- Groundwater Well (Single Level)
- Pneumatic Piezometer
- Prism Survey Pin
- Regression Velocity Pin
- Slope Indicator
- Staff Gauge
- Thermistor
- Weir Flow

0 m 100 m 200 m

Denison Environmental Services

Faro Mine Complex
Geotechnical Monitoring Locations
Vangorda Waste Rock Dump and
Little Creek Dam

Drawn	Date
TP	13/02/12
Map Sheet	2-9

Legend

▲ Meteorological Station

Faro Climate Station

125 m 500 m 875 m

Denison Environmental Services

Faro Mine Complex

Meteorological Monitoring Locations

Faro

Drawn	Date
TP	13/02/12

Map Sheet 3-1

Denison Environmental Services

Faro Mine Complex
Meteorological Monitoring Locations
Grum

Drawn	Date
TP	13/02/12
Map Sheet	3-2

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A-2 2011 Rose Creek Drainage Geotechnical Monitoring Program Summary

A-3 2011 Vangorda Creek Drainage Geotechnical Monitoring Program Summary

Faro Mine Complex
2011 Annual Environmental Monitoring and Activities Report - Appendix A

TABLES

2011 Routine Environmental Monitoring Program Summaries

Table A-1 2011 Water Quality Monitoring Program Summary

Station Name	Frequency	Samples Colle-cted	January				February				March				April				May				June				July				August				September				October				November				December			
			Sche-duled	Sam-pled	Date	Comments	Sche-duled	Sam-pled	Date	Comments	Sche-duled	Sam-pled	Date	Comments	Sche-duled	Sam-pled	Date	Comments	Sche-duled	Sam-pled	Date	Comments	Sche-duled	Sam-pled	Date	Comments	Sche-duled	Sam-pled	Date	Comments	Sche-duled	Sam-pled	Date	Comments	Sche-duled	Sam-pled	Date	Comments	Sche-duled	Sam-pled	Date	Comments	Sche-duled	Sam-pled	Date	Comments	Sche-duled	Sam-pled	Date	Comments
Rose Creek Drainage - Surface Water																																																		
ETA Combined	M	12	Y	Y	06-Jan-11		Y	Y	03-Feb-11		Y	Y	16-Mar-11		Y	Y	14-Apr-11		Y	Y	05-May-11		Y	Y	21-Jun-11		Y	Y	20-Jul-11		Y	Y	24-Aug-11		Y	Y	21-Sep-11		Y	Y	19-Oct-11		Y	Y	17-Nov-11		Y	Y	07-Dec-11	
FAROCR	M	7	Y	N	20-Jan-11	Frozen	Y	N	15-Feb-11	Frozen	Y	N	16-Mar-11	Frozen	Y	N	12-Apr-11	Frozen	Y	N	09-May-11	Frozen	Y	Y	22-Jun-11		Y	Y	21-Jul-11		Y	Y	23-Aug-11		Y	Y	22-Sep-11		Y	Y	19-Oct-11		Y	Y	15-Nov-11		Y	Y	06-Dec-11	
FCO	3X	3	N				N				Y	N	14-Mar-11	Frozen	N				Y	Y	26-May-11		N				N				N				N				Y	Y	27-Oct-11									
FCS-4	M	12	Y	Y	06-Jan-11		Y	Y	03-Feb-11		Y	Y	16-Mar-11		Y	Y	14-Apr-11		Y	Y	05-May-11		Y	Y	16-Jun-11		Y	Y	14-Jul-11		Y	Y	23-Aug-11		Y	Y	21-Sep-11		Y	Y	19-Oct-11		Y	Y	17-Nov-11		Y	Y	07-Dec-11	
GDHSECK	3X	3	N								Y	Y	14-Mar-11		N				Y	Y	26-May-11		N				N				N				N				Y	Y	27-Oct-11		N				N			
NF2	M	12			19-Jan-11				02-Feb-11		Y	Y	16-Mar-11		Y	Y	13-Apr-11		Y	Y	12-May-11		Y	Y	20-Jun-11		Y	Y	05-Jul-11		Y	Y	25-Aug-11		Y	Y	21-Sep-11		Y	Y	20-Oct-11		Y	Y	14-Nov-11		Y	Y	05-Dec-11	
NFRC-SC1	M	2	N				N				N				N				N				N				N				N				N				N				Y	Y	14-Nov-11		Y	Y	05-Dec-11	
NFRC-SC2	M	2	N				N				N				N				N				N				N				N				N				N				Y	Y	14-Nov-11		Y	Y	05-Dec-11	
NFRC-SC3	M	2	N				N				N				N				N				N				N				N				N				N				Y	Y	14-Nov-11		Y	Y	05-Dec-11	
NFRC-SC4	M	2	N				N				N				N				N				N				N				N				N				N				Y	Y	14-Nov-11		Y	Y	05-Dec-11	
R7	M	12	Y	Y	20-Jan-11		Y	Y	15-Feb-11		Y	Y	16-Mar-11		Y	Y	12-Apr-11		Y	Y	09-May-11		Y	Y	22-Jun-11		Y	Y	21-Jul-11		Y	Y	24-Aug-11		Y	Y	22-Sep-11		Y	Y	19-Oct-11		Y	Y	15-Nov-11		Y	Y	06-Dec-11	
R8	M	12	Y	Y	20-Jan-11		Y	Y	15-Feb-11		Y	Y	16-Mar-11		Y	Y	12-Apr-11		Y	Y	09-May-11		Y	Y	22-Jun-11		Y	Y	21-Jul-11		Y	Y	24-Aug-11		Y	Y	22-Sep-11		Y	Y	19-Oct-11		Y	Y	15-Nov-11		Y	Y	06-Dec-11	
R9	M	12	Y	Y	20-Jan-11		Y	Y	15-Feb-11		Y	Y	16-Mar-11		Y	Y	12-Apr-11		Y	Y	09-May-11		Y	Y	22-Jun-11		Y	Y	21-Jul-11		Y	Y	23-Aug-11		Y	Y	22-Sep-11		Y	Y	19-Oct-11		Y	Y	16-Nov-11		Y	Y	06-Dec-11	
R10	M	12	Y	Y	20-Jan-11		Y	Y	15-Feb-11		Y	Y	16-Mar-11		Y	Y	12-Apr-11		Y	Y	09-May-11		Y	Y	22-Jun-11		Y	Y	21-Jul-11		Y	Y	23-Aug-11		Y	Y	22-Sep-11		Y	Y	19-Oct-11		Y	Y	16-Nov-11		Y	Y	06-Dec-11	
X2	M	12	Y	Y	19-Jan-11		Y	Y	01-Feb-11		Y	Y	16-Mar-11		Y	Y	13-Apr-11		Y	Y	11-May-11		Y	Y	20-Jun-11		Y	Y	13-Jul-11		Y	Y	25-Aug-11		Y	Y	21-Sep-01		Y	Y	20-Oct-11		Y	Y	14-Nov-11		Y	Y	06-Dec-11	
X3	M	12	Y	Y	18-Jan-11		Y	Y	02-Feb-11		Y	Y	14-Mar-11		Y	Y	13-Apr-11		Y	Y	05-May-11		Y	Y	20-Jun-11		Y	Y	13-Jul-11		Y	Y	25-Aug-11		Y	Y	21-Sep-01		Y	Y	27-Oct-11		Y	Y	15-Nov-11		Y	Y	07-Dec-11	
X3A	M	12	Y	Y	19-Jan-11		Y	Y	01-Feb-11		Y	Y	16-Mar-11		Y	Y	13-Apr-11		Y	Y	11-May-11		Y	Y	20-Jun-11		Y	Y	13-Jul-11		Y	Y	25-Aug-11		Y	Y	21-Sep-01		Y	Y	20-Oct-11		Y	Y	14-Nov-11		Y	Y	06-Dec-11	
X4	M	12	Y	Y	20-Jan-11		Y	Y	03-Feb-11		Y	Y	14-Mar-11		Y	Y	21-Apr-11		Y	Y	04-May-11		Y	Y	21-Jun-11		Y	Y	21-Jul-11		Y	Y	23-Aug-11		Y	Y	21-Sep-01		Y	Y	19-Oct-11		Y	Y	15-Nov-11		Y	Y	05-Dec-11	
X5	WD	31	N			No discharge	N			No discharge	Y	Y	Mar 24 & 29		Y	Y	Apr 5,12,19 & 26		Y	Y	May 3,10,17,24 & 31		Y	Y	n 7, 14, 21 & 28		Y	Y	Jul 5, 12, 19 & 26		Y	Y	Aug 2, 9, 16, 23 & 30		Y	Y	Sep 6, 13, 20 & 27		N			No discharge	Y	Y	Nov 23 & 29		Y	Y	08-Dec-11	
X5 (Bioassay)	Q	3	N				N				N		15-Mar-11	No Discharge	N				N				Y	Y	28-Jun-11		N				N				Y	Y	20-Sep-11		N				N				Y	Y	08-Dec-11	
X5P	M	12	Y	Y	18-Jan-11		Y	Y	03-Feb-11		Y	Y	15-Mar-11		Y	Y	14-Apr-11		Y	Y	05-May-11		Y	Y	20-Jun-11		Y	Y	14-Jul-11		Y	Y	23-Aug-11		Y	Y	21-Sep-11		Y	Y	19-Oct-11		Y	Y	15-Nov-11		Y	Y	05-Dec-11	
X5P (Bioassay)	Q (when not discharging)	1	N				N				Y	Y	15-Mar-11		N				N				N			Sampled at X5	N				N			Sampled at X5	N				N				N				N			Sampled at X5
X7	SF	2	N				N				N				N				N				Y	Y	28-Jun-11		N				N				N				Y	Y	18-Oct-11		N				N			
X10	M	12	Y	Y	18-Jan-11		Y	Y	01-Feb-11		Y	Y	14-Mar-11		Y	Y	13-Apr-11		Y	Y	05-May-11		Y	Y	20-Jun-11		Y	Y	14-Jul-11		Y	Y	24-Aug-11		Y	Y	21-Sep-11		Y	Y	20-Oct-11		Y	Y	15-Nov-11		Y	Y	06-Dec-11	
X14	WD/M	37	Y	Y	18-Jan-11		Y	Y	01-Feb-11		Y	Y	Mar 14, 24 & 29		Y	Y	Apr 5, 12,19 & 26		Y	Y	May 3,4,10,17,24 & 31		Y	Y	Jun 7,14,21 & 28		Y	Y	Jul 5,12,19 & 26		Y	Y	Aug 2, 9, 16, 23, 25 & 30		Y	Y	Sep 6,13, 20 & 27		Y	Y	25-Oct-11		Y	Y	Nov 23 & 29		Y	Y	08-Dec-11	
X22b	M	12	Y	Y	19-Jan-11		Y	Y	15-Feb-11		Y	Y	16-Mar-11		Y	Y	14-Apr-11		Y	Y	04-May-11		Y	Y	15-Jun-11		Y	Y	20-Jul-11		Y	Y	23-Aug-11		Y	Y	25-Sep-11		Y	Y	19-Oct-11		Y	Y	17-Nov-11		Y	Y	07-Dec-11	
Rose Creek Drainage - Seepage																																																		
A30	M	12	Y	Y	06-Jan-11		Y	Y	14-Feb-11		Y	Y	14-Mar-11		Y	Y	14-Apr-11		Y	Y	12-May-11		Y	Y	15-Jun-11		Y	Y	20-Jul-11		Y	Y	24-Aug-11		Y	Y	20-Sep-11		Y	Y	19-Oct-11		Y	Y	15-Nov-11		Y	Y	07-Dec-11	
FD-40	M	12	Y	Y	06-Jan-11		Y	Y	14-Feb-11		Y	Y	14-Mar-11		Y	Y	14-Apr-11		Y	Y	12-May-11		Y	Y	15-Jun-11		Y	Y	20-Jul-11		Y	Y	24-Aug-11		Y	Y	20-Sep-11		Y	Y	19-Oct-11		Y	Y	15-Nov-11		Y	Y	07-Dec-11	
SP5-6	SF	2	N				N				N				N				N				Y	Y	28-Jun-11		N				N				N				Y	Y	18-Oct-11		N				N			
Weir 3	WS	2	N				Y	Y	03-Feb-11		N				N				N				N				N				N				N				N				N				N			
X11	WS	2	N				Y	Y	03-Feb-11		N				N				N				N				N				N				Y	Y	04-Aug-11		N				N				N			
X12	WS	2	N				Y	Y	03-Feb-11		N				N				N				N				N				N				Y	Y	04-Aug-11		N				N				N			
X13	M	12	Y	Y	06-Jan-11		Y	Y	03-Feb-11		Y	Y	15-Mar-11		Y	Y	13-Apr-11		Y	Y	04-May-11		Y	Y	16-Jun-11		Y	Y	14-Jul-11		Y	Y	25-Aug-11		Y	Y	20-Sep-11		Y	Y	19-Oct-11		Y	Y	17-Nov-11		Y	Y	01-Dec-11	
X13 (Bioassay)	Q	4	N				N				Y	Y	15-Mar-11		N				N				Y	Y	28-Jun-11		N				N				N				Y	Y	20-Sep-11		N				Y	Y	01-Dec-11	
X23	M	7	Y	N	06-Jan-11	Frozen	Y	N	03-Feb-11	Frozen	Y	N	16-Mar-11	Frozen	Y	N	14-Apr-11	Frozen	Y	Y	12-May-11		Y	Y	16-Jun-11		Y	Y	21-Jul-11`		Y	Y	24-Aug-11		Y	Y	20-Sep-11		Y	Y	19-Oct-11		Y	Y	17-Nov-11		Y	N	07-Dec-11	Frozen
Rose Creek Drainage - Groundwater - Zone 2 Outwash/Pit																																																	
BH5	A (Fall)	1	N				N				N				N				N				N				N				N				N		28-Sep-11		N				N				N			
BH6	A (Fall)	1	N				N				N				N				N				N				N				N				N		28-Sep-11		N				N				N			
BH10A	A (Fall)	1	N				N				N				N				N				N				N				N				N		29-Sep-11		N				N				N			
BH10B	A (Fall)	1	N				N				N				N				N				N				N				N				N		29-Sep-11		N				N				N			
P05-04A	A (Fall)	1	N				N				N				N				N				N				N				N				N		28-Sep-11		N				N				N			
SRK08-P12A	A (Fall)	1	N				N				N				N				N				N				N				N				N		29-Sep-11		N				N				N			
SRK08-P12B	A (Fall)	1	N				N				N				N				N				N				N				N				N		29-Sep-11		N				N				N			
X26	MD	4	N				N				N				N				Y	Y	26-May-11		Y	Y	15-Jun-11		N				Y	Y	03-Aug-11		Y	Y	27-Sep-11		N				N				N			
Rose Creek Drainage - Groundwater - Northeast Dumps																																																	
BH13B	SF	0	N				N				N				N				N				Y	N	09-Jun-11	Frozen	N				N				Y	N	28-Sep-11	Dry	N				N				N			
BH14A	SF	2	N				N				N				N				N				Y	Y	09-Jun-11		N				N				N				Y	Y	17-Oct-11		N				N			
BH14B	SF	2	N				N				N				N				N				Y	Y	10-Jun-11		N				N				N				Y	Y	17-Oct-11		N				N			
Rose Creek Drainage - Groundwater - Mill Area																																																	
SRK08-P10A	SF	2	N				N				N				N				N				Y	Y	09-Jun-11		N				N				N		17-Sep-11		N				N				N			
SRK08-P11A	SF	2	N				N				N				N				N				Y	Y	08-Jun-11		N				N				Y	Y	17-Sep-11		N				N				N			
SRK08-P11B	SF	2	N				N				N				N				N				Y	Y	08-Jun-11		N				N				Y	Y	17-Sep-01		N				N				N			
Rose Creek Drainage - Groundwater - Main Dump																																																	
SRK08-P9	SF	1	N				N				N				N				N				Y	N	08-Jun-11	Dry	N				N				Y	Y	17-Sep-11		N				N				N			
Rose Creek Drainage - Groundwater - Intermediate Dump																																																	
P96-6	SF	2	N				N				N				N				N				Y	Y	09-Jun-11		N				N				Y	Y	28-Sep-11		N				N				N			
Rose Creek Drainage - Groundwater - ETA Area																																																	
P96-8A	SF	2	N				N				N				N				N				Y	Y	08-Jun-11		N				N				N				Y	Y	11-Sep-11		N				N			
P96-8B	SF	2	N				N				N				N				N				Y	Y	08-Jun-11		N				N				N				Y	Y	11-Sep-11		N				N			
P09-ETA1	A (Fall)	1	N				N				N				N				N				N				N				N				N				Y	Y	18-Sep-11		N				N			
P09-ETA2	SF	2	N				N				N				N				N				Y	Y	08-Jun-11		N				N				N				Y	Y	18-Sep-11		N				N			
Rose Creek Drainage - Groundwater - S-Wells																																																	
P96-7	SF	2	N				N				N				N				N				Y	Y	15-Jun-11		N				N				N				Y	Y	10-Sep-11		N				N			
P09-SIS1	Q	4	N				N				N				N				N				Y	Y	09-Jun-11		Y	Y	20-Jul-11		N				N				Y	Y	18-Sep-11		N				Y	Y	30-Nov-11		N	
P09-SIS2	Q	4	N				N				N				N				N				Y	Y	07-Jun-11		Y	Y	16-Jul-11		N				N				Y	Y	07-Sep-11		N				Y	Y	29-Nov-11		N	
P09-SIS3	Q	4	N				N				N				N				N				Y	Y	08-Jun-11		Y	Y	17-Jul-11		N				N				Y	Y	07-Sep-11		N				Y	Y	29-Nov-11		N	
P09-SIS4	Q	1	N				N				N				N				N				Y	N	08-Jun-11	Insufficient water	Y	Y	17-Jul-11		N				N				Y	N	07-Sep-11	Insufficient water	N				Y	N	29-Nov-11	Insufficient water	N	
P09-SIS5	SF	0	N				N				N				N				N				Y	N	06-Jun-11	Insufficient water	N				N				Y	N	07-Sep-11	Insufficient water	N				N				N	
S1A	SF	2	N				N				N				N				N				Y	Y	07-Jun-11		N				N				Y	Y	15-Sep-11		N				N				N	
S1B	SF	0	N				N				N				N				N				Y	N	07-Jun-11	Dry	N				N				Y	N	15-Sep-11	Dry	N				N				N	
S2A	SF	2	N				N				N				N				N				Y	Y	07-Jun-11		N				N				Y	Y	11-Sep-11		N				N				N	
S2B	SF	2	N				N				N				N				N				Y	Y	07-Jun-11		N				N				Y	Y	11-Sep-11		N				N				N	
SRK05-SP1A	A (Fall)	1	N				N				N				N				N				N				N				N				Y	Y	10-Sep-11		N				N				N	
SRK05-SP1B	A (Fall)	1	N				N				N				N				N				N				N				N				Y	Y	10-Sep-11		N				N				N	
SRK05-SP2	A (Fall)	1	N				N				N				N				N				N				N				N				Y	Y	10-Sep-11		N				N				N	
SRK05-SP3A	A (Fall)	1	N				N				N				N				N				N				N				N				Y	Y	10-Sep-11		N				N				N	
SRO05-SP3B	A (Fall)	1	N				N				N				N				N				N				N				N				Y	Y	10-Sep-11		N				N				N	
SRK05-SP4A	SF	2	N				N				N				N				N				Y	Y	06-Jun-11		N				N				Y	Y	15-Sep-11		N				N				N	
SRK05-SP4B	SF	1	N				N				N				N				N				Y	N	06-Jun-11	Frozen	N				N				Y	Y	15-Sep-11		N				N				N	
SRK05-SP5	SF	2	N				N				N				N				N				Y	Y	07-Jun-11		N				N				Y	Y	07-Sep-11		N				N				N	
SRK05-SP6	A (Fall)	0	N				N				N				N				N				N				N				N				N				Y	N	10-Oct-11	Dry	N				N			
SRK08-SP7A	Q	4	N				N				N				N				N				Y	Y	06-Jun-11		Y	Y	16-Jul-11		N				N				Y	Y	07-Sep-11		N				Y	Y	29-Nov-11		N	
SRK08-SP7B	Q	4	N				N				N				N				N				Y	Y	06-Jun-11		Y	Y	16-Jul-11		N				N				Y	Y	07-Sep-11		N				Y	Y	29-Nov-11		N	
SRK08-SP8A	SF	2	N				N				N				N				N				Y	Y	06-Jun-11		N				N				N				Y	Y	07-Sep-11		N				N			
SRK08-SP8B	SF	2	N				N				N				N				N				Y	Y	06-Jun-11		N				N				N				Y	Y	07-Sep-11		N				N			
SRK08-SBR1	A (Fall)	0	N				N				N				N				N				N				N				N				Y	N	07-Sep-11	Blocked	N				N				N	
SRK08-SBR2	A (Fall)	1	N				N				N				N				N				N				N				N				N				Y	Y	17-Oct-11		N				N			
SRK08-SBR3	A (Fall)	1	N				N				N				N				N				N				N				N				Y	Y	10-Sep-11		N				N				N	
SRK08-SBR4	A (Fall)	1	N				N				N				N				N				N				N				N				Y	Y	14-Sep-11		N				N				N	
SRK08-SPW1	M	13	Y	Y	06-Jan-11		Y	Y	01-Feb-11		Y	Y	08-Mar-11		Y	Y	13-Apr-11		Y	Y	May 4 &12	Additional sampling	Y	Y	16-Jun-11		Y	Y	20-Jul-11		Y	Y	03-Aug-11		Y	Y	07-Sep-11		Y	Y	18-Oct-11		Y	Y	16-Nov-11		Y	Y	01-Dec-11	
SRK08-SPW2	M	12	Y	Y	06-Jan-11		Y	Y	01-Feb-11		Y	Y	08-Mar-11		Y	Y	13-Apr-11		Y	Y	04-May-11		Y	Y	16-Jun-11		Y	Y	20-Jul-11		Y	Y	03-Aug-11		Y	Y	07-Sep-11		Y	Y	18-Oct-11		Y	Y	16-Nov-11		Y	Y	01-Dec-11	

Table A-1 2011 Water Quality Monitoring Program Summary

Station Name	Frequency	Samples Collected	January				February				March				April				May				June				July				August				September				October				November				December			
			Scheduled	Sampled	Date	Comments	Scheduled	Sampled	Date	Comments	Scheduled	Sampled	Date	Comments	Scheduled	Sampled	Date	Comments	Scheduled	Sampled	Date	Comments	Scheduled	Sampled	Date	Comments	Scheduled	Sampled	Date	Comments	Scheduled	Sampled	Date	Comments	Scheduled	Sampled	Date	Comments	Scheduled	Sampled	Date	Comments	Scheduled	Sampled	Date	Comments	Scheduled	Sampled	Date	Comments
SRK08-SPW3	M	12	Y	Y	06-Jan-11		Y	Y	01-Feb-11		Y	Y	08-Mar-11		Y	Y	13-Apr-11		Y	Y	04-May-11		Y	Y	16-Jun-11		Y	Y	20-Jul-11		Y	Y	03-Aug-11		Y	Y	07-Sep-11		Y	Y	18-Oct-11		Y	Y	16-Nov-11		Y	Y	01-Dec-11	
Rose Creek Drainage - Groundwater - Upstream of Tailings																																																	
TH86-2	A (Fall)	1	N				N				N				N				N				N				N				N				Y	Y	17-Sep-11		N				N				N			
TH86-5	A (Fall)	1	N				N				N				N				N				N				N				N				Y	Y	17-Sep-11		N				N				N			
TH86-17	A (Fall)	1	N				N				N				N				N				N				N				N				Y	Y	17-Sep-11		N				N				N			
Rose Creek Drainage - Groundwater - Second Impoundment																																																	
P03-01-2	A (Fall)	1	N				N				N				N				N				N				N				N				N				Y	Y	04-Oct-11		N				N			
P03-01-4	A (Fall)	1	N				N				N				N				N				N				N				N				N				Y	Y	04-Oct-11		N				N			
P03-01-6	A (Fall)	1	N				N				N				N				N				N				N				N				N				Y	Y	05-Oct-11		N				N			
P03-01-8	A (Fall)	1	N				N				N				N				N				N				N				N				N				Y	Y	05-Oct-11		N				N			
P03-01-9	A (Fall)	0	N				N				N				N				N				N				N				N				N				Y	N	05-Oct-11	Dry	N				N			
P03-03-2	A (Fall)	1	N				N				N				N				N				N				N				N				N				Y	Y	05-Oct-11		N				N			
P03-03-4	A (Fall)	1	N				N				N				N				N				N				N				N				N				Y	Y	05-Oct-11		N				N			
P03-03-6	A (Fall)	0	N				N				N				N				N				N				N				N				N				Y	N	05-Oct-11	Insufficient water	N				N			
P03-03-8	A (Fall)	0	N				N				N				N				N				N				N				N				N				Y	N	05-Oct-11	Insufficient water	N				N			
P03-03-9	A (Fall)	0	N				N				N				N				N				N				N				N				N				Y	N	05-Oct-11	Dry	N				N			
P03-04-2	A (Fall)	0	N				N				N				N				N				N				N				N				N				Y	N	05-Oct-11	Insufficient water	N				N			
P03-04-4	A (Fall)	0	N				N				N				N				N				N				N				N				N				Y	N	11-Oct-11	Insufficient water	N				N			
P03-04-6	A (Fall)	0	N				N				N				N				N				N				N				N				N				Y	N	11-Oct-11	Insufficient water	N				N			
P03-04-8	A (Fall)	0	N				N				N				N				N				N				N				N				N				Y	N	11-Oct-11	Insufficient water	N				N			
P03-05-2	A (Fall)	1	N				N				N				N				N				N				N				N				N				Y	Y	05-Oct-11		N				N			
P03-05-4	A (Fall)	1	N				N				N				N				N				N				N				N				N				Y	Y	05-Oct-11		N				N			
P03-05-6	A (Fall)	1	N				N				N				N				N				N				N				N				N				Y	Y	06-Oct-11		N				N			
P03-05-8	A (Fall)	1	N				N				N				N				N				N				N				N				N				Y	Y	06-Oct-11		N				N			
P03-06-1	SF	2	N				N				N				N				Y	Y	29-May-11	Completed	N				N				N				N				Y	Y	06-Oct-11		N				N			
P03-06-2	SF	2	N				N				N				N				Y	Y	29-May-11	Completed	N				N				N				N				Y	Y	06-Oct-11		N				N			
P03-06-3	SF	2	N				N				N				N				Y	Y	29-May-11	Completed	N				N				N				N				Y	Y	06-Oct-11		N				N			
P03-06-4	SF	2	N				N				N				N				Y	Y	29-May-11	Completed	N				N				N				N				Y	Y	06-Oct-11		N				N			
P03-06-5	SF	1	N				N				N				N				Y	Y	28-May-11	Completed	N				N				N				N				Y	N	06-Oct-11	Insufficient water	N				N			
P03-06-6	SF	1	N				N				N				N				Y	Y	28-May-11	Completed	N				N				N				N				Y	N	06-Oct-11	Insufficient water	N				N			
P03-06-7	SF	0	N				N				N				N				N				Y	N	29-Jun-11	Dry	N				N				N				Y	N	06-Oct-11	Dry	N				N			
Rose Creek Drainage - Groundwater - Intermediate Impoundment																																																	
P03-08-2	A (Fall)	2	N				N	Y	02-Feb-11	Special Project	N				N				N				N				N				N				N				Y	Y	12-Oct-11		N				N			
P03-08-4	A (Fall)	1	N				N				N				N				N				N				N				N				N				Y	Y	12-Oct-11		N				N			
P03-08-6	A (Fall)	1	N				N				N				N				N				N				N				N				N				Y	Y	12-Oct-11		N				N			
P03-08-7	A (Fall)	0	N				N				N				N				N				N				N				N				N				Y	N	11-Oct-11	Insufficient water	N				N			
P03-08-8	A (Fall)	0	N				N				N				N				N				N				N				N				N				Y	N	12-Oct-11	Insufficient water	N				N			
X21-96A	SF	2	N				N				N				N				N				Y	Y	09-Jun-11		N				N				N				Y	Y	13-Oct-11		N				N			
X21-96B	SF	2	N				N				N				N				N				Y	Y	09-Jun-11		N				N				N				Y	Y	13-Oct-11		N				N			
Rose Creek Drainage - Groundwater - Intermediate Dam																																																
P01-03	SF	2	N								N				N				N				N				Y	Y	12-Jul-11		N				Y	Y	28-Sep-11		N				N				N			
P01-04A	SF	2	N								N				N				N				N				Y	Y	12-Jul-11		N				Y	Y	26-Sep-11		N				N				N			
P01-04B	SF	3	N				N	Y	01-Feb-11		N				N				N				N				Y	Y	12-Jul-11		N				Y	Y	26-Sep-11		N				N				N			
X24-96D	SF	2	N								N				N				N				Y	Y	02-Jun-11		N				N				Y	Y	28-Sep-11		N				N				N			
X25-96A	SF	3	N				N	Y	01-Feb-11		N				N				N				Y	Y	02-Jun-11		N				N				Y	Y	28-Sep-11		N				N				N			
X25-96B	SF	3	N				N	Y	01-Feb-11		N				N				N				Y	Y	02-Jun-11		N				N				Y	Y	28-Sep-11		N				N				N			
Rose Creek Drainage - Groundwater - CVD																																																
P01-02A	SF	3	N				N	Y	01-Feb-11		N				N				N				Y	Y	01-Jun-11		N				N				Y	Y	23-Sep-11		N				N				N			
P01-02B	SF	2	N				N				N				N				N				Y	Y	01-Jun-11		N				N				Y	Y	23-Sep-11		N				N				N			
P01-11	SF	2	N				N				N				N				N				Y	Y	01-Jun-11		N				N				Y	Y	24-Sep-11		N				N				N			
P09-C1	SF	2	N				N				N				N				N				Y	Y	01-Jun-11		N				N				Y	Y	24-Sep-11		N				N				N			
P09-C2	SF	2	N				N				N				N				N				Y	Y	02-Jun-11		N				N				Y	Y	26-Sep-11		N				N				N			
P09-C3	SF	2	N				N				N				N				N				Y	Y	28-Jun-11		N				N				Y	Y	24-Sep-11		N				N				N			
P03-09-2	A (Fall)	1	N				N				N				N				N				N				N				N				Y	Y	25-Sep-11		N				N				N			
P03-09-4	A (Fall)	1	N				N				N				N				N				N				N				N				Y	Y	25-Sep-11		N				N				N			
P03-09-6	A (Fall)	1	N				N				N				N				N				N				N				N				Y	Y	25-Sep-11		N				N				N			
P03-09-8	A (Fall)	1	N				N				N				N				N				N				N				N				Y	Y	25-Sep-11		N				N				N			
P03-09-9	A (Fall)	1	N				N				N				N				N				N				N				N				Y	Y	25-Sep-11		N				N				N			
Rose Creek Drainage - Groundwater - Downgradient of CVD																																																
X16A	SF	3	N				N	Y	01-Feb-11		N				N				N				Y	Y	02-Jun-11		N				N				Y	Y	25-Sep-11		N				N				N			
X16B	SF	3	N				N	Y	01-Feb-11		N				N				N				Y	Y	02-Jun-11		N				N				Y	Y	25-Sep-11		N				N				N			
X17A	SF	3	N				N	Y	02-Feb-11		N				N				Y	Y	31-May-11		N				N				N				Y	Y	26-Sep-11		N				N				N			
X17B	SF	3	N				N	Y	02-Feb-11		N				N				Y	Y	31-May-11						N				N				Y	Y	26-Sep-11		N				N				N			
X18A	SF	2	N								N				N				N				Y	Y	02-Jun-11		N				N				Y	Y	23-Sep-11		N				N				N			
X18B	SF	3	N				N	Y	02-Feb-11		N				N				N				Y	Y	02-Jun-11		N				N				Y	Y	23-Sep-11		N				N				N			
P01-01A	SF	2	N				N				N				N				N				Y	Y	02-Jun-11		N				N				Y	Y	23-Sep-11		N				N				N			
P01-01B	SF	2	N	Y	27-Jan-11	Special project	N				N				N				N				N				Y	Y	21-Jul-11		N				Y	Y	23-Sep-11		N				N				N			
Rose Creek Drainage - Groundwater - Closure Support																																																
BH8	A (Fall)	1	N				N				N				N				N				N				N				N				N				Y	Y	12-Oct-11		N				N			
P05-01-1	SF	2	N				N				N				N				N				Y	Y	29-Jun-11		N				N				N				Y	Y	12-Oct-11		N				N			
P05-01-2	SF	2	N				N				N				N				N				Y	Y	29-Jun-11		N				N				N				Y	Y	12-Oct-11		N				N			
P05-01-3	SF	2	N				N				N				N				N				Y	Y	29-Jun-11		N				N				N				Y	Y	12-Oct-11		N				N			
P05-01-4	SF	2	N				N				N				N				N				Y	Y	29-Jun-11		N				N				N				Y	Y	12-Oct-11		N				N			
P05-01-5	SF	2	N				N				N				N				N				Y	Y	29-Jun-11		N				N				N				Y	Y	12-Oct-11		N				N			
P05-01-6	SF	1	N				N				N				N				N				N				Y	N	20-Jul-11	Frozen	N				N				Y	Y	12-Oct-11		N				N			
P05-02	SF	3	N	Y	27-Jan-11	Special project	N				N				N				N				Y	Y	09-Jun-11		N				N				Y	Y	23-Sep-11		N				N				N			
P05-03	SF	3	N	Y	27-Jan-11	Special project	N				N				N				N				Y	Y	09-Jun-11		N				N				Y	Y	24-Sep-11		N				N				N			
SRK04-3A	A (Fall)	1	N				N				N				N				N				N				N				N				Y	Y	17-Sep-11		N				N				N			
SRK05-ETA-BR1	A (Fall)	1	N				N				N				N				N				N				N				N				Y	Y	17-Sep-11		N				N				N			
SRK05-ETA-BR2	A (Fall)	1	N				N				N				N				N				N				N				N				Y	Y	17-Sep-11		N				N				N			
Vangorda Creek Drainage - Surface Water																																																
LCD	MO	4	N			Ice cover	N			Ice cover	N			Ice cover	N			Ice cover	N			Ice cover	Y	Y	13-Jul-11		Y	Y	10-Aug-11		Y	Y	13-Sep-11		N			Ice cover	N			Ice cover	N			Ice cover
V1	M	12	Y	Y	21-Jan-11		Y	Y	17-Feb-11		Y	Y	22-Mar-11		Y	Y	21-Apr-11		Y	Y	17-May-11		Y	Y	15-Jun-11		Y	Y	13-Jul-11		Y	Y	10-Aug-11		Y	Y	13-Sep-11		Y	Y	18-Oct-11		Y	Y	23-Nov-11		Y	Y	08-Dec-11	
V2	2M/M	19	Y	Y	04-Jan-11		Y	Y	03-Feb-11		Y	Y	03-Mar-11		Y	Y	11-Apr-11		Y	Y	May 10,18 & 25	Additional Grum cover monitoring	Y	Y	Jun 6 & 23		Y	Y	Jul 5 & 21		Y	Y	Aug 3 & 18		Y	Y	Sep 7 & 20		Y	Y	Oct 11 & 27		Y	Y	08-Nov-11		Y	Y	01-Dec-11	
V2 (Bioassay)	Q	4	N				N				Y	Y	03-Mar-11		N				N				Y	Y	23-Jun-11		N				N				Y	Y	20-Sep-11		N				N				Y	Y	01-Dec-11	
V2A	2M/M	17	Y	N	04-Jan-11	Frozen	Y	Y	03-Feb-11		Y	N	03-Mar-11	Frozen	Y	Y	11-Apr-11		Y	Y	May 10, 19 & 25	Additional Grum cover monitoring	Y	Y	Jun 6 & 22		Y	Y	Jul 5 & 21		Y	Y	Aug 3 & 18		Y	Y	Sep 7 & 20		Y	Y	Oct 11 & 27		Y	Y	08-Nov-11		Y	Y	01-Dec-11	
V4	M	9	Y	Y	25-Jan-11		Y	Y	17-Feb-11		Y	N	28-Mar-11	Frozen	Y	N	21-Apr-11	Frozen	Y	N	12-May-11	Frozen	Y	Y	16-Jun-11		Y	Y	11-Jul-11		Y	Y	10-Aug-11		Y	Y	12-Sep-11		Y	Y	18-Oct-11		Y	Y	24-Nov-11		Y	Y	12-Dec-11	

Table A-1 2011 Water Quality Monitoring Program Summary

Station Name	Frequency	Samples Collected	January				February				March				April				May				June				July				August				September				October				November				December			
			Scheduled	Sampled	Date	Comments	Scheduled	Sampled	Date	Comments	Scheduled	Sampled	Date	Comments	Scheduled	Sampled	Date	Comments	Scheduled	Sampled	Date	Comments	Scheduled	Sampled	Date	Comments	Scheduled	Sampled	Date	Comments	Scheduled	Sampled	Date	Comments	Scheduled	Sampled	Date	Comments	Scheduled	Sampled	Date	Comments	Scheduled	Sampled	Date	Comments	Scheduled	Sampled	Date	Comments
V5	M	13	Y	Y	25-Jan-11		Y	Y	17-Feb-11		Y	Y	22-Mar-11	Completed	Y	Y	21-Apr-11		Y	Y	May 11 & 18	Additional Grum cover monitoring	Y	Y	15-Jun-11		Y	Y	13-Jul-11		Y	Y	10-Aug-11		Y	Y	12-Sep-11		Y	Y	18-Oct-11		Y	Y	23-Nov-11		Y	Y	13-Dec-11	
V8	M	13	Y	Y	25-Jan-11		Y	Y	17-Feb-11		Y	Y	22-Mar-11	Completed	Y	Y	21-Apr-11		Y	Y	May 11 & 18	Additional Grum cover monitoring	Y	Y	15-Jun-11		Y	Y	13-Jul-11		Y	Y	10-Aug-11		Y	Y	12-Sep-11		Y	Y	25-Oct-11		Y	Y	23-Nov-11		Y	Y	08-Dec-11	
V22	Q	4	N				N				Y	Y	23-Mar-11		N				N				Y	Y	28-Jun-11		N				N				Y	Y	11-Sep-11		N				N				Y	Y	22-Dec-11	
V23	Q	4	N				N				Y	Y	23-Mar-11		N				N				Y	Y	28-Jun-11		N				N				Y	Y	11-Sep-11		N				N				Y	Y	22-Dec-11	
V24	WD	5	N			No discharge	N			No discharge	N			No discharge	N			No discharge	N			No discharge	N			No discharge	Y	Y	Jul 7, 12, 19 &26		N			No water treatment	N			No water treatment	N			No discharge	N			No discharge	N			No discharge
V25	WD	8	N			No discharge	N			No discharge	N			No discharge	N			No discharge	N			No discharge	N			No discharge	Y	Y	Jul 7, 12, 19 &26		Y	Y	Aug 11 & 18		Y	Y	20-Sep-11		N			No discharge	N			No discharge	N			No discharge
V25BSP	WD/M	16	Y	N	24-Jan-11	Frozen	Y	N	17-Feb-11	Frozen	Y	N	23-Mar-11	Frozen	Y	Y	02-Apr-11	Draining Sheep Pad Ponds	Y	Y	12-May-11		Y	Y	Jun 15 & 23	Weekly to coincide with bioassay	Y	Y	Jul 7, 12, 19 & 26		Y	Y	Aug 10, 11 & 18		Y	Y	Sep 11 & 20		Y	Y	18-Oct-11		Y	Y	23-Nov-11		Y	Y	08-Dec-11	
V25BSP (Bioassay)	Q	4	N				N				Y	N	23-Mar-11	Frozen	N				N				Y	Y	23-Jun-11		N				N				Y	Y	11-Sep-11		N				N				Y	Y	08-Dec-11	
Van. Clar Pond (Bioassay)			N				N				N				N				N				N		23-Jun-11		N				N				N				N				N				N			
V27	M	12	Y	Y	25-Jan-11		Y	Y	17-Feb-11		Y	Y	28-Mar-11		Y	Y	21-Apr-11		Y	Y	12-May-11		Y	Y	16-Jun-11		Y	Y	11-Jul-11		Y	Y	10-Aug-11		Y	Y	12-Sep-11		Y	Y	18-Oct-11		Y	Y	24-Nov-11		Y	Y	12-Dec-11	
Vangorda Creek Drainage - Seepage																																																		
Moose Seep	2M/M	18	Y	Y	04-Jan-11		Y	Y	03-Feb-11		Y	Y	03-Mar-11		Y	Y	11-Apr-11		Y	Y	May 10 &18		Y	Y	Jun 6 & 22		Y	Y	Jul 5 & 21		Y	Y	Aug 3 & 18		Y	Y	Sep 7 & 20		Y	Y	Oct 11 & 27		Y	Y	08-Nov-11		Y	Y	01-Dec-11	
SRK GD01	M	12	Y	Y	24-Jan-11		Y	Y	17-Feb-11		Y	Y	28-Mar-11		Y	Y	20-Apr-11		Y	Y	17-May-11		Y	Y	16-Jun-11		Y	Y	11-Jul-11		Y	Y	10-Aug-11		Y	Y	13-Sep-11		Y	Y	18-Oct-11		Y	Y	23-Nov-11		Y	Y	13-Dec-11	
V14	SF	1	N				N				N				N				Y	Y	22-May-11		N				N				N				N				N				Y	N	05-Oct-11	Dry	N				N		
V15	2M	25	Y	Y	Jan 4 & 18		Y	Y	Feb 3 & 16		Y	Y	Mar 3 & 23		Y	Y	Apr 11 & 26		Y	Y	May 10, 18 & 25	Additional Grum cover monitoring	Y	Y	Jun 6 & 22		Y	Y	Jul 5 & 21		Y	Y	Aug 3 & 18		Y	Y	Sep 7 & 20		Y	Y	Oct 11 & 27		Y	Y	Nove 8 & 22		Y	Y	Dec 1 & 14	
V16	SF	1	N				N				N				N				Y	Y	22-May-11		N				N				N				N				Y	N	05-Oct-11	Dry	N				N			
V29	SF	0	N				N				N				N				N				Y	N	28-Jun-11	Dry	N				N				N				Y	N	17-Oct-11	Dry	N				N			
V30	SF	2	N				N				N				N				N				Y	Y	28-Jun-11		N				N				N				Y	Y	17-Oct-11		N				N			
V31	SF	2	N				N				N				N				N				Y	Y	28-Jun-11		N				N				N				Y	N	17-Oct-11	No Flow	N				N			
V32	SF	2	N				N				N				N				N				Y	Y	28-Jun-11		N				N				N				Y	Y	17-Oct-11		N				N			
V33	SF	2	N				N				N				N				N				Y	Y	28-Jun-11		N				N				N				Y	Y	17-Oct-11		N				N			
Vangorda Creek Drainage - Groundwater																																																		
P2001-2A	SF	2	N				N				N				N				N				Y	Y	11-Jun-11		N				N				N				Y	Y	12-Oct-11		N				N			
P2001-2B	SF	2	N				N				N				N				N				Y	Y	13-Jun-11		N				N				N				Y	Y	06-Oct-11		N				N			
P2001-3	SF	2	N				N				N				N				N				Y	Y	08-Jun-11		N				N				N				Y	Y	17-Oct-11		N				N			
P96-9A	SF	2	N				N				N				N				N				Y	Y	10-Jun-11		N				N				N				Y	Y	04-Oct-11		N				N			
BH05-9B-R	SF	2	N				N				N				N				N				Y	Y	10-Jun-11		N				N				N				Y	Y	04-Oct-11		N				N			
SRK05-5C	SF	2	N				N				N				N				N				Y	Y	10-Jun-11		N				N				N				Y	Y	04-Oct-11		N				N			
SRK05-7	SF	2	N				N				N				N				N				Y	Y	14-Jun-11		N				N				N				Y	Y	05-Oct-11		N				N			
SRK05-8	SF	2	N				N				N				N				N				Y	Y	11-Jun-11		N				N				N				Y	Y	04-Oct-11		N				N			
SRK05-9	2M	24	Y	Y	Jan 4 & 18		Y	Y	Feb 3 & 16		Y	Y	Mar 3 & 23		Y	Y	Apr 11 & 26		Y	Y	May 10 & 18		Y	Y	Jun 6 & 22		Y	Y	Jul 5 & 21		Y	Y	Aug 3 & 18		Y	Y	Sep 7 & 20		Y	Y	Oct 11 & 27		Y	Y	Nov 8 & 22		Y	Y	Dec 1 & 14	
P09-GW1	A (Spring)	0	N				N				N				N				N				Y	N	13-Jun-11	Insufficient water	N				N				N				N				N				N			
P09-GW3	A (Spring)	1	N				N				N				N				N				Y	Y	13-Jun-11		N				N				N				N				N				N			
P09-GS1A	SF	2	N				N				N				N				N				N				Y	Y	05-Jul-11		N				N				Y	Y	13-Oct-11		N				N			
P09-GS1B	SF	2	N				N				N				N				N				Y	Y	29-Jun-11		N				N				N				Y	Y	06-Oct-11		N				N			
P09-LCD1	SF	2	N				N				N				N				N				Y	Y	13-Jun-11		N				N				N				Y	Y	12-Oct-11		N				N			
P09-LCD4	SF	0	N				N				N				N				N				Y	N	14-Jun-11	Insufficient water	N				N				N				Y	N	24-Oct-11	Insufficient water	N				N			
P09-LCD6	SF	2	N				N				N				N				N				Y	Y	13-Jun-11		N				N				N				Y	Y	12-Oct-11		N				N			
P09-VC1	SF	2	N				N				N				N				N				Y	Y	11-Jun-11		N				N				N				Y	Y	20-Oct-11		N				N			
P09-VC2	SF	2	N				N				N				N				N				Y	Y	11-Jun-11		N				N				N				Y	Y	05-Oct-11		N				N			
V34	SF	2	N				N				N				N				N				Y	Y	10-Jun-11		N				N				N				Y	Y	06-Oct-11		N				N			
V35	SF	2	N				N				N				N				N				Y	Y	10-Jun-11		N				N				N				Y	Y	12-Oct-11		N				N			
V36	SF	2	N				N				N				N				N				Y	Y	08-Jun-11		N				N				N				Y	Y	05-Oct-11		N				N			
V37	SF	2	N				N				N				N				N				Y	Y	11-Jun-11		N				N				N				Y	Y	12-Oct-11		N				N			
SRK08-P14	A (Fall)	1	N				N				N				N				N								N				N				N				Y	Y	04-Oct-11		N				N			
SRK08-P15	A (Fall)	1	N				N				N				N				N								N				N				N				Y	Y	04-Oct-11		N				N			
SRK08-P16	A (Fall)	0	N				N				N				N				N	Y	23-May-11	AMP4 seep sampling					N				N				N				Y	N	04-Oct-11	Insufficient water	N				N			

Table A-2: 2011 Rose Creek Drainage
Geotechnical Monitoring Program Summary

Site	Scheduled	Performed	Comments
Diversion Canal			
Thermistors			
CD-15	May June September	May 27 June 15 October 4	
CD-21	May June September	May 26 June 15 October 3	
BGC05-04	May June September	May 27 June 15 October 3	
BGC05-07	May June September		Thermistor offline.
CD-26	May June September	May 26 June 15 October 3	
SP-3	June September	June 21 October 3	
SP-5	June September	June 15 October 3	
BS-5	June September	July 11 September 30	Water level in Rose Creek too high to cross safely in June.
BS-9	June September	July 11 September 30	Water level in Rose Creek too high to cross safely in June.
BS-10	June September	July 11 September 30	Water level in Rose Creek too high to cross safely in June.
BS-12	June September	July 11 September 30	Water level in Rose Creek too high to cross safely in June.
Slope Indicators			
CD-10	May September	May 31 June 21 October 3	
CD-15	May September	May 31 June 21 October 3	
CD-19	May September	May 31 October 3	
CD-21	May September	May 31 June 21 October 3	
BH94CD-1	May September	May 31	Tube blocked at 1.5m.
BH91-CD1	May September	May 31 June 21 October 3	
BGC05-05	May September	May 31 June 21 October 3	
BGC05-08	May September	May 31 June 21 October 3	
SP-2	June September	June 22 October 3	
SP-5	June September	June 22 July 13 October 3	
BS-5	June September	July 11 September 30	Water level in Rose Creek too high to cross safely in June.
BS-9	June September	July 11 September 30	Water level in Rose Creek too high to cross safely in June.
BS-10	June September	July 11 September 30	Water level in Rose Creek too high to cross safely in June.
Piezometers			
CD-13	May June September	May 27 June 15 October 3	
CD-15	May June September	May 27 June 15 October 4	
CD-21	May June September	May 26 June 15 June 26 October 3	CD-21 (deep) not measured; cable missing since 2005.

Table A-2: 2011 Rose Creek Drainage
Geotechnical Monitoring Program Summary

Site	Scheduled	Performed	Comments
BGC05-02	May June September	May 27 June 15 October 3	
BGC05-03	May June September	May 27 June 15 October 11	
BGC05-06	May June September	May 27 June 15 October 3	
CD-26	May June September	May 10, 17, 24 & 30 June 15 October 3	More readings taken in May at request of YG.
BS-5	June September	July 11 September 30	Water level in Rose Creek too high to cross safely in June.
BS-9	June September	July 11 September 30	Water level in Rose Creek too high to cross safely in June.
		Staff Gauges	
RCSG-4	April - Daily May - Daily June - Daily July - Daily August - Daily September - Daily	April 5 - 7, 10 - 11, 13 - 15, 17 - 20, 22, 24 - 30 May 1, 3 - 4, 9 - 20, 22 - 24, 26, 27 - 31 June 1 - 30 July 1 - 7, 9 - 31 August 1 - 31 September 1 - 27 October 3, 4, 17 & 20 November 2 & 7	
		Cross Valley Dam	
		Thermistors	
CVDC-6	May June September	May 26 June 14 October 4	
BH88-4	May June September	May 26 June 13 October 11	
		Piezometers	
CVDC-4	May June September	April 24 May 10, 17, 24 & 30 June 13 October 3	More readings taken in May at request of YG.
CVDC-7	May June September	April 27 May 3, 9, 17, 24 & 30 June 13 October 3	More readings taken in May at request of YG.
CVDC-9	May June September	April 27 May 3, 9, 17, 24 & 30 June 13 October 3	More readings taken in May at request of YG.
CVDT-1	May June September	May 10, 17 & 24 June 2 & 13 October 3	More readings taken in May at request of YG.
CVDT-2	May June September	May 10, 17 & 24 June 2 & 13 October 3	More readings taken in May at request of YG.
CVDP-1	May June September	April 27 May 3, 9, 17, 24 & 30 June 13 October 3	More readings taken in May at request of YG.
CVDP-3	May June September	April 27 May 3, 9, 17, 24 & 30 June 13 October 3	More readings taken in May at request of YG. No readings taken September due to a cracked wire.
CVDP-5	May June September	May 9, 17, 24 & 30 June 13 October 3	More readings taken in May at request of YG.
CVDP-6	May June September	May 9, 17, 24 & 30 June 13 October 3	More readings taken in May at request of YG.
94 CVDC-1	May June September	April 27 May 9, 17, 24 & 30 June 13 October 3	More readings taken in May at request of YG.
P01-11	May June September	April 27 May 17, 24 & 30 June 13 October 3	More readings taken in May at request of YG.

Table A-2: 2011 Rose Creek Drainage
Geotechnical Monitoring Program Summary

Site	Scheduled	Performed	Comments
Weir Flows			
X11	January - Weekly February - Weekly March - Weekly April - Weekly May - Weekly June - Weekly July - Weekly August - Weekly September - Weekly October - Weekly November - Weekly December - Weekly	January 6, 20 & 27 February3, 9, 16 & 24 March 3, 9, 17, 24 & 31 April 7, 13, 21 & 28 May 5, 12, 20 & 26 June 2, 9, 16, 23 & 29 July 7, 14, 21 & 28 August 4, 11, 18 & 25 September 1, 8, 15, 22 & 29 October 13, 20 & 27 November 3, 9, 17 & 24 December 1, 7 & 15	Only 3 weir flows measured in December due to site Christmas shut down.
X12	January - Weekly February - Weekly March - Weekly April - Weekly May - Weekly June - Weekly July - Weekly August - Weekly September - Weekly October - Weekly November - Weekly December - Weekly	January 6, 20 & 27 February3, 9, 16 & 24 March 3, 9, 17, 24 & 31 April 7, 13, 21 & 28 May 5, 12, 20 & 26 June 2, 9, 16, 23 & 29 July 7, 14, 21 & 28 August 4, 11, 18 & 25 September 1, 8, 15, 22 & 29 October 13, 20 & 27 November 3, 9, 17 & 24 December 1, 7 & 15	Only 3 weir flows measured in December due to site Christmas shut down.
X13	January - Weekly February - Weekly March - Weekly April - Weekly May - Weekly June - Weekly July - Weekly August - Weekly September - Weekly October - Weekly November - Weekly December - Weekly	January 6, 20 & 27 February3, 9, 16 & 24 March 3, 9, 17, 24 & 31 April 7, 13, 21 & 28 May 5, 12, 20 & 26 June 2, 9, 16, 23 & 29 July 7, 14, 21 & 28 August 4, 11, 18 & 25 September 1, 8, 15, 22 & 29 October 13, 20 & 27 November 3, 9, 17 & 24 December 1, 7 & 15	Only 3 weir flows measured in December due to site Christmas shut down.
Weir #3	January - Weekly February - Weekly March - Weekly April - Weekly May - Weekly June - Weekly July - Weekly August - Weekly September - Weekly October - Weekly November - Weekly December - Weekly	January 6, 20 & 27 February3, 9, 16 & 24 March 3, 9, 17, 24 & 31 April 7, 13, 21 & 28 May 5, 12, 20 & 26 June 2, 9, 16, 23 & 29 July 7, 14, 21 & 28 August 4, 11, 18 & 25 September 1, 8, 15, 22 & 29 October 13, 20 & 27 November 3, 9, 17 & 24 December 1, 7 & 15	Only 3 weir flows measured in December due to site Christmas shut down.
Elevation			
Polishing Pond	January - Weekly February - Weekly March - Weekly April - Weekly May - Weekly June - Weekly July - Weekly August - Weekly September - Weekly October - Weekly November - Weekly December - Weekly	January 3, 10, 17, 24 & 31 February 7, 14, 21 & 28 March 7, 14, 21 & 28 April 4, 11, 15, 18, 21, 22, 23, 25 & 28 May 2, 5, 9, 12, 16, 19, 23, 26 & 30 June 2, 6, 9, 13, 16, 20, 23 & 27 July 4, 7, 11, 14, 18, 21, 25 & 28 August 1, 4, 8, 11, 15, 18, 22, 25 & 29 September 1, 5, 8, 12, 15, 19 & 26 October 3, 11, 17, 24 & 31 November 7, 14, 22 & 28 December 5 & 13	Elevations measured more frequently throughout summer to monitor draw down rates. Only 2 elevations measured in December due to site Christmas shut down.
Intermediate Dam			
Piezometer			
BH91-ID4	May June September	April 27 May 9, 17, 24 & 30 June 13 October 3	More readings taken in May at request of YG.
BH91-ID6	May June September	April 27 May 3, 11, 17, 24 & 30 June 13 October 3	More readings taken in May at request of YG.

Table A-2: 2011 Rose Creek Drainage
Geotechnical Monitoring Program Summary

Site	Scheduled	Performed	Comments
BH91-ID7	May June September	April 27 May 9, 17, 24 & 30 June 13 October 3	More readings taken in May at request of YG.
BH94-IDC-1	May June September	May 10, 17, 24 & 30 June 13 October 3	More readings taken in May at request of YG.
BH96-1	May June September	May 10, 17, 24 & 30 June 13 October 3	More readings taken in May at request of YG.
BH96-2	May June September	April 27 May 3, 9, 17, 24 & 30 June 13 October 3	More readings taken in May at request of YG.
BH96-3	May June September	April 27 May 3, 9, 17, 24 & 30 June 13 October 3	More readings taken in May at request of YG.
BH96-4	May June September	April 27 May 3, 9, 17, 24 & 30 June 13 September 28	More readings taken in May at request of YG.
P01-03	May June September	May 10, 17, 24 & 30 June 13 July 12 October 3	More readings taken in May at request of YG.
P01-04	May June September	May 10, 17, 24 & 30 June 13 July 12 October 3	More readings taken in May at request of YG.
BKS04-06	May June September	May 11, 17, 24 & 30 June 13 October 3	More readings taken in May at request of YG.
BKS04-07	May June September	May 11, 17, 24 & 30 June 13 October 3	More readings taken in May at request of YG.
BH91-ID3	May June September	April 27 May 3, 9, 17, 24 & 30 June 13 August 13 October 3	More readings taken in May at request of YG.
Elevation			
Intermediate Pond	January - Weekly February - Weekly March - Weekly April - Weekly May - Weekly June - Weekly July - Weekly August - Weekly September - Weekly October - Weekly November - Weekly December - Weekly	January 3, 10, 17, 24 & 31 February 7, 14, 21 & 28 March 7, 14, 21 & 28 April 4, 11, 15, 18, 21, 22, 23, 25 & 28 May 2, 5, 9, 12, 16, 19, 23, 26 & 30 June 2, 6, 9, 13, 16, 20, 23 & 27 July 4, 7, 11, 14, 18, 21, 25 & 28 August 1, 4, 8, 11, 15, 18, 22, 25 & 29 September 1, 5, 8, 12, 15, 19 & 26 October 3, 11, 17, 24 & 31 November 7, 14, 22 & 28 December 5 & 13	Elevations measured more frequently throughout summer to monitor draw down rates. Only 2 elevations measured in December due to site Christmas shut down.
Secondary Tailings Dam			
Piezometer			
P81-06	May June September	May 27 June 15	No reading in September.
P81-07	May June September	May 27 June 15	No reading in September.
P81-08	May June September	May 27 June 15	No reading in September.
P03-01	May June September	May 27 June 21 October 4	
P03-02	May June September	May 27 June 21 October 5	
P03-03	May June September	May 27 June 21	No reading in September.

Table A-2: 2011 Rose Creek Drainage
Geotechnical Monitoring Program Summary

Site	Scheduled	Performed	Comments
North Fork Rock Drain			
Staff Gauge			
NFRD-23	April - Daily May - Daily June - Daily July - Weekly August - Weekly September - Weekly October - Weekly	April 5 - 7, 10 - 11, 13 - 15, 17 - 21, 22 - 23, 26 - 30 May 1, 3 - 4, 9 - 31 June 1 - 29 July 1 - 7, 10 - 12, 18 & 25 August 1, 8, 15, 22 & 29 September 6, 12, 19 & 24 October 3 & 17 November 2	
X2	April - Daily May - Daily June - Daily July - Weekly August - Weekly September - Weekly October - Weekly	April 5 - 7, 9 - 15, 17 - 22, 24 - 30 May 1, 3 - 4, 9 - 31 June 1 - 29 July 1 - 7, 10 - 12, 18 & 25 August 1, 8, 15, 22 & 29 September 6, 12, 19 & 24 October 3 & 17 November 2	
Elevation			
Pond (NF1)	May - Weekly June - Weekly July - Weekly August - Twice a Month September - Twice a Month	May 12 June 20 & 27 July 4, 11, 20 & 25 August 8 & 22 September 5 & 19	Benchmark underwater during spring freshet.
Toe of Drain (NF2)	May - Weekly June - Weekly July - Weekly August - Twice a Month September - Twice a Month	May 12 & 26 June 13, 20 & 27 July 4, 11, 20 & 25 August 8 & 22 September 5 & 19	
Faro Creek Diversion Channel			
Staff Gauge			
FCD-1	April - Twice a Month May - Twice a Month June - Twice a Month July - Twice a Month August - Twice a Month September - Twice a Month October - Twice a Month	April 14 & 28 May 16 & 25 June 14 July 4, 5, 7, 11, 24, 25 & 27 August 7, 22 & 24 September 6 & 26 October 6 November 2	
FCD-2	April - Twice a Month May - Twice a Month June - Twice a Month July - Twice a Month August - Twice a Month September - Twice a Month October - Twice a Month	April 14 & 28 May 16 & 25 June 14 July 4, 5, 7, 11, 24, 25 & 27 August 7, 22 & 24 September 6 & 26 October 6 November 2	
FCD-3	April - Twice a Month May - Twice a Month June - Twice a Month July - Twice a Month August - Twice a Month September - Twice a Month October - Twice a Month	April 14 & 28 May 16 & 25 June 14 July 4, 5, 7, 11, 24, 25 & 27 August 7, 22 & 24 September 6 & 26 October 6 November 2	
FCD-4	April - Twice a Month May - Twice a Month June - Twice a Month July - Twice a Month August - Twice a Month September - Twice a Month October - Twice a Month	April 14 & 28 May 16 & 25 June 14 July 4, 5, 7, 11, 24, 25 & 27 August 7, 22 & 24 September 6 & 26 October 6 November 2	
Faro Pit			
Regression			
15356	June September	July 24 August 21 October 6 November 3	
15717	June September	August 21 October 6 November 3	Installed in August 2011 by YES per recommendation by Golder.

Table A-2: 2011 Rose Creek Drainage
Geotechnical Monitoring Program Summary

Site	Scheduled	Performed	Comments
15355	June September	July 24 August 21 October 6 November 3	
15737	June September	August 21 October 6 November 3	Installed in August 2011 by YES per recommendation by Golder.
15354	June September	July 24 August 21 October 6 November 3	
15742	June September	August 21 October 6 November 3	Installed across road from 13908 in August 2011 by YES per recommendation by Golder.
13908	June September	August 21 October 6 November 3	15353 tag replaced by YES in August 2011.
15352	June September	July 24 August 21 October 6 November 3	
15351	June September	July 24 August 21 October 6 November 3	
Prism Survey			
13872	August	August 1 - 4	Survey performed by YES.
13873	August	August 1 - 4	Survey performed by YES.
13874	August	August 1 - 4	Survey performed by YES.
13875	August	August 1 - 4	Survey performed by YES.
13876	August	August 1 - 4	Survey performed by YES.
13877	August	August 1 - 4	Survey performed by YES.
13878	August	August 1 - 4	Survey performed by YES.
13879	August	August 1 - 4	Survey performed by YES.
13880	August	August 1 - 4	Survey performed by YES.
YG Requested			
Piezometers			
P01-02	Not usually part of geotechnical schedule	April 27 May 3, 9, 17, 24 & 30 June 1	
CVDP-2	Not usually part of geotechnical schedule	October 1	
Stream Flows			
NWID	Not usually part of geotechnical schedule	October 25 December 7	October flow - 7.4 L/s December flow - Frozen Flows requested by the YG.

Table A-3: 2011 Vangorda Creek Drainage Geotechnical Monitoring Program Summary

Site	Scheduled	Performed	Comments
Grum Pit			
Slope Stability			
GP-S1 - GP-S4	January February March April May June July August September October November December	January 5 February 1 March 7 April 5 May 3 June 9 July 1 August 7 September 5 October 6 November 3 December 6	
GP-N1 - GP-N6	January February March April May June July August September October November December	January 5 February 1 March 7 April 5 May 3 June 9 July 1 August 7 September 5 October 6 November 3 December 6	
Piezometers			
P09-GS1A	January February March April May June July August September October November December	January 24 February 17 April 20 May 19 June 28 July 20 August 8 October 6 December 6	No measurements taken in March, September or November.
P09-GS1B	January February March April May June July August September October November December	January 24 February 17 April 20 May 19 June 28 July 20 August 8 October 6 December 6	No measurements taken in March, September or November.
Vangorda Waste Rock Dump			
Piezometers			
V34 (GW-94-01)	May September	February 3 April 21 & 25 May 9, 16, 23 & 30 June 7 & 13 July 2 August 8 & 22 September 4, 11, 20 & 26 October 3, 11, 17 & 31 November 3	More readings taken in 2011 at request of YG.
V35 (GW-94-02)	May September	February 3 April 21 & 25 May 9, 16, 23 & 30 June 7 & 13 July 2 August 8 & 22 September 4, 11, 20 & 26 October 3, 11, 17 & 31 November 3	More readings taken in 2011 at request of YG.

Table A-3: 2011 Vangorda Creek Drainage Geotechnical Monitoring Program Summary

Site	Scheduled	Performed	Comments
V36 (GW-94-03)	May September	February 3 April 21 & 25 May 9, 16, 23 & 30 June 7 & 13 July 2 August 8 & 22 September 4, 11, 20 & 26 October 3, 11, 17 & 31 November 3	More readings taken in 2011 at request of YG.
V37 (GW-94-04)	May September	February 3 April 21 & 25 May 9, 16, 23 & 30 June 7 & 13 July 2 August 8 & 22 September 4, 11, 20 & 26 October 3, 11, 17 & 31 November 3	More readings taken in 2011 at request of YG.
V38 (GW-94-05)	May September		Well no longer exists, no measurements taken.
V39 (P-94-01A)	May September	January 24 February 3 April 12, 18 & 25 May 9, 16, 23 & 30 June 7 & 13 July 2 August 8 & 22 September 4, 11, 20 & 26 October 3, 11, 17 & 27 November 3	More readings taken in 2011 at request of YG.
V40 (P-94-01B)	May September	January 24 February 3 April 12, 18 & 25 May 9, 16, 23 & 30 June 7 & 13 July 2 August 8 & 22 September 4, 11, 20 & 26 October 3, 11, 17 & 27 November 3	More readings taken in 2011 at request of YG.
V41 (P-94-02A)	May September	January 24 February 3 April 12, 18 & 25 May 9, 16, 23 & 30 June 7 & 13 July 2 August 8 & 22 September 4, 11, 20 & 26 October 3, 11, 17 & 27 November 3	More readings taken in 2011 at request of YG.
V42 (P-94-02B)	May September	January 24 February 3 April 12, 18 & 25 May 9, 16, 23 & 30 June 7 & 13 July 2 August 8 & 22 September 4, 11, 20 & 26 October 3, 11, 17 & 27 November 3	More readings taken in 2011 at request of YG.
V43 (P-94-02C)	May September	January 24 February 3 April 12, 18 & 25 May 9, 16, 23 & 30 June 7 & 13 July 2 August 8 & 22 September 4, 11, 20 & 26 October 3, 11, 17 & 27 November 3	More readings taken in 2011 at request of YG.

Table A-3: 2011 Vangorda Creek Drainage Geotechnical Monitoring Program Summary

Site	Scheduled	Performed	Comments
V44 (P-94-03A)	May September	January 24 February 3 April 12, 18 & 25 May 9, 16, 23 & 30 June 7 & 13 July 2 August 8 & 22 September 4, 11, 20 & 26 October 3, 11, 17 & 27 November 3	More readings taken in 2011 at request of YG.
V45 (P-94-03B)	May September	January 24 February 3 April 12, 18 & 25 May 9, 16, 23 & 30 June 7 & 13 July 2 August 8 & 22 September 4, 11, 20 & 26 October 3, 11, 17 & 27 November 3	More readings taken in 2011 at request of YG.
V46 (P-94-04A)	May September		Readings taken periodically throughout year, but bottom and/or frozen at ~3m (i.e. no movement).
V47 (P-94-04B)	May September	January 24 February 3 April 12, 18 & 25 May 9, 16, 23 & 30 June 7 & 13 July 2 August 8 & 22 September 4, 11, 20 & 26 October 3, 11, 17 & 27 November 3	More readings taken in 2011 at request of YG.
P2001-02A	May September	February 3 April 21 & 25 May 9, 16, 23 & 30 June 7 & 13 July 2 August 8 & 22 September 4, 11, 20 & 26 October 3, 11, 17 & 31 November 3	More readings taken in 2011 at request of YG.
P2001-02B	May September	February 3 April 21 & 25 May 9, 16, 23 & 30 June 7 & 13 July 2 August 8 & 22 September 4, 11, 20 & 26 October 3, 11, 17 & 31 November 3	More readings taken in 2011 at request of YG.
P2001-03	May September	February 3 April 21 & 25 May 9, 16, 23 & 30 June 7 & 13 July 2 August 8 & 22 September 4, 11, 20 & 26 October 3, 11, 17 & 31 November 3	More readings taken in 2011 at request of YG.
PW-10-01	May September	January 24 April 12, 18 & 25 May 2, 9, 16, 23 & 30 June 7 & 13 July 2 August 10 & 22 September 4, 11, 20 & 26 October 3, 11, 17 & 27 November 3	More readings taken in 2011 at request of YG.

Table A-3: 2011 Vangorda Creek Drainage Geotechnical Monitoring Program Summary

Site	Scheduled	Performed	Comments
PW-10-02	May September	January 24 April 12, 18 & 25 May 2, 9, 16, 23 & 30 June 7 & 13 July 2 August 10 & 22 September 4, 11, 20 & 26 October 3, 11, 17 & 27 November 3	More readings taken in 2011 at request of YG.
PW-10-03	May September	January 24 April 12, 18 & 25 May 2, 9, 16, 23 & 30 June 7 & 13 July 2 August 10 & 22 September 4, 11, 20 & 26 October 3, 11, 17 & 27 November 3	More readings taken in 2011 at request of YG.
PW-10-04	May September	January 24 February 3 March 28 May 9, 16, 23 & 30 June 7 & 13 July 2 August 10 & 22 September 4, 11, 20 & 26 October 3, 11, 17 & 31 November 3	More readings taken in 2011 at request of YG.
PW-10-05	May September	January 24 April 12, 18 & 25 May 2, 9, 16, 23 & 30 June 7 & 13 July 2 August 10 & 22 September 4, 11, 20 & 26 October 3, 11, 17 & 27 November 3	More readings taken in 2011 at request of YG.
Weir Flows			
V28		May 16, 23 & 30 June 7, 14 & 28 July 3 & 22 August 3 & 19 September 2, 9, 16 & 26 October 4, 11, 17 & 31 November 3	More readings taken in 2011 at request of YG.
V29		May 16, 23 & 30 June 7, 14 & 28 July 3 & 22 August 3 & 19 September 2, 9, 16 & 26 October 4, 11, 17 & 31 November 3	More readings taken in 2011 at request of YG.
V30	May - Twice A Month June - Twice A Month July - Twice A Month August - Twice A Month September - Twice A Month October - Twice A Month	May 16, 23 & 30 June 7, 14 & 28 July 3 & 22 August 3 & 19 September 2, 9, 16 & 26 October 4, 11, 17 & 31 November 3	More readings taken in 2011 at request of YG.
V31	May - Twice A Month June - Twice A Month July - Twice A Month August - Twice A Month September - Twice A Month October - Twice A Month	May 16, 23 & 30 June 7, 14 & 28 July 3 & 22 August 3 & 19 September 2, 9, 16 & 26 October 4, 11, 17 & 31 November 3	More readings taken in 2011 at request of YG.
V32	May - Twice A Month June - Twice A Month July - Twice A Month August - Twice A Month September - Twice A Month October - Twice A Month	May 16, 23 & 30 June 7, 14 & 28 July 3 & 22 August 3 & 19 September 2, 9, 16 & 26 October 4, 11, 17 & 31 November 3	More readings taken in 2011 at request of YG.

Table A-3: 2011 Vangorda Creek Drainage Geotechnical Monitoring Program Summary

Site	Scheduled	Performed	Comments
V33	May - Twice A Month June - Twice A Month July - Twice A Month August - Twice A Month September - Twice A Month October - Twice A Month	May 16, 23 & 30 June 7, 14 & 28 July 3 & 22 August 3 & 19 September 2, 9, 16 & 26 October 4, 11, 17 & 31 November 3	More readings taken in 2011 at request of YG.
Little Creek Dam			
Piezometers			
BH94 LCD1	May September	May 27 September 26	
BH94 LCD2	May September	May 27 September 26	
BH94 LCD3	May September	May 27 September 26	
Thermistors			
BH94 LCD4	May September	May 27 September 26	
BH94 LCD5	May September	May 27 September 26	
BH94 LCD6	May September	May 27 September 26	
YG Requested			
Piezometers			
P09-LCD-1	Not usually part of geotechnical schedule	June 7 July 2 & 13 August 8 & 22 September 4, 11, 20 & 26 October 3, 11, 17 & 31 November 3	
P09-LCD-2	Not usually part of geotechnical schedule	June 7 & 13 July 2 August 8 & 22 September 4, 11, 20 & 26 October 3, 11, 17 & 31 November 3	
P09-LCD-3	Not usually part of geotechnical schedule	June 7 & 13 July 2 August 8 & 22 September 4, 11, 20 & 26 October 3, 11, 17 & 31 November 3	
P09-LCD-4	Not usually part of geotechnical schedule	May 9, 16, 23 & 30 June 7 & 13 July 2 & 13 August 8 & 22 September 4, 11, 20 & 26 October 3, 11, 17 & 31 November 3	
P09-LCD-6	Not usually part of geotechnical schedule	June 7 & 13 July 2 August 8 & 22 September 4, 11, 20 & 26 October 3, 11, 17 & 31 November 3	
P09-LCD-7	Not usually part of geotechnical schedule	June 7 & 13 July 2 August 8 & 22 September 4, 11, 20 & 26 October 3, 11, 17 & 31 November 3	

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Rose Creek Drainage Water Quality:

Pit Lakes and Surface, Seepage, and Ground Water

Denison Environmental Services

Table B-1: 2011 Rose Creek Drainage Water Quality
General Parameters

Station	Date	Sample Type	Acid(pH4.5) mg/L	Acid(pH8.3) mg/L	ALK mg/L	ALKPP mg/L	B2008H µg/L	B2BENZ µg/L	B2EBNZ µg/L	B2MPXY µg/L	B2TOLU µg/L	CaCO3 mg/L	CaCO3-d mg/L	Chloride mg/L	Chlorophyll a µg/L	CN 4500 mg/L	CNTHIO mg/L	CO3 mg/L	Coliform counts/100ml	Colour TCU	COND µmho/cm	CONDF µS/cm	DO mg/L	DO-% %	DOC mg/L	Ecoli counts/100ml	HCO3 mg/L as CaCO3	HMW PAH µg/L	Ion Balance (blank)	LMW PAH µg/L	MTBE µg/L	NH3 mg/L	NO2 mg/L	NO2/3 mg/L	NO3 mg/L	OH mg/L	oPO4 mg/L	ORP mV	pH (blank)	pHF (blank)	SO4-d mg/L	TDS mg/L	TEMP-F °C	TOC mg/L	Total PAH µg/L	TSS mg/L	TURB NTU	VPH µg/L
A30	**06/01/2011**	**Seepage**	<0.5	14.6	24.00	<0.5						120.0	<0.5					<0.5			287	297					30		1.00							<0.5		30.000	6.70	6.83	110.00			1.4		60.0		
A30	**14/02/2011**	**Seepage**	<0.5	13.3	27.00	<0.5						108.0	<0.5					<0.5			270	354					33		1.00							<0.5		221.000	7.12	6.95	92.00			0.2		38.0		
A30	**14/03/2011**	**Seepage**	<0.5	6.5	29.00	<0.5						82.2	<0.5					<0.5			205	182					36		1.00							<0.5		136.000	6.87	6.96	66.00			1.5		5.0		
A30	**14/04/2011**	**Seepage**	<0.5	3.2	36.00	<0.5						78.7	<0.5					<0.5			190	180					44		1.00							<0.5		53.000	7.23	7.43	55.00			1.8		37.0		
A30	**12/05/2011**	**Seepage**	<0.5	12.3	32.00	<0.5						89.2	1.1					<0.5			210	241					39									<0.5		208.000	6.98	7.63				1.0		4.0		
A30	**15/06/2011**	**Seepage**	50.4	254.0	<0.5	<0.5						440.0	<0.5					<0.5			1300	1353					<0.5		0.91							<0.5		508.000	3.38	2.95	700.00			3.6		4.0		
A30	**20/07/2011**	**Seepage**	37.1	170.0	<0.5	<0.5						340.0	0.8					<0.5			1050	1065					<0.5		0.95							<0.5		499.000	3.42	3.10	500.00			5.8		<1.0		
A30	**24/08/2011**	**Seepage**	19.2	185.0	<0.5	<0.5						346.0	<0.5					<0.5			1040	1035					<0.5		0.94							<0.5		489.000	3.64	3.21	520.00			5.3		5.0		
A30	**20/09/2011**	**Seepage**	3.6	155.0	<0.5	<0.5						348.0	<0.5					<0.5			959	970					<0.5		1.00							<0.5		266.000	4.41	4.61	490.00			4.5		18.0		
A30	**19/10/2011**	**Seepage**	<0.5	72.1	0.90	<0.5						261.0	<0.5					<0.5			672	610					1		1.10							<0.5		242.000	4.93	4.29	289.00			0.5		<1.0		
A30	**15/11/2011**	**Seepage**	<0.5	24.9	2.91	<0.5						123.0	<0.5					<0.5			335	360					4		0.95							<0.5		240.000	5.81	5.84	152.00			1.6		3.0		
A30	**07/12/2011**	**Seepage**	<0.5	9.8	7.87	<0.5						93.2	<0.5					<0.5			223	232					10		1.00							<0.5		193.000	6.62	6.05	110.00			1.6		<4.0		
A30 Average			9.4	76.7	13.39	0.25						202.4	0.4					0.3			562	573					16		0.99							0.3		257.083	5.59	5.49	280.36			2.4		14.8		
A30 Max			50.4	254.0	36.00	<0.5						440.0	1.1					<0.5			1300	1353					44		1.10							<0.5		508.000	7.23	7.63	700.00			5.8		60.0		
A30 Min			<0.5	3.2	<0.5	<0.5						78.7	<0.5					<0.5			190	180					<0.5		0.91							<0.5		30.000	3.38	2.95	55.00			0.2		<1.0		
BH10A	**29/09/2011**	**Ground**	<0.5	155.0	220.00	<0.5						354.0	4.0					<0.5			781	834					270		1.20							<0.5			6.08	5.73	163.00			2.5		9.0		
BH10B	**29/09/2011**	**Ground**	<0.5	302.0	400.00	<0.5						501.0	3.5					<0.5			1100	1125					490		1.00							<0.5			6.04	5.45	196.00			2.8		6.0		
BH14A	**09/06/2011**	**Ground**	<0.5	56.5	380.00	<0.5						2630.0	8.8					<0.5			3740	3893					460		1.10							<0.5			7.38	6.80	2000.00			2.8		140.0		
BH14A	**17/10/2011**	**Ground**	<0.5	72.8	420.00	<0.5						3010.0	11.0					<0.5			4080	4243					510		1.00							<0.5			7.38	6.61	2460.00			3.3		730.0		
BH14A Average			0.3	64.7	400.00	0.25						2820.0	9.9					0.3			3910	4068					485		1.05							0.3			7.38	6.71	2230.00			3.1		435.0		
BH14A Max			<0.5	72.8	420.00	<0.5						3010.0	11.0					<0.5			4080	4243					510		1.10							<0.5			7.38	6.80	2460.00			3.3		730.0		
BH14A Min			<0.5	56.5	380.00	<0.5						2630.0	8.8					<0.5			3740	3893					460		1.00							<0.5			7.38	6.61	2000.00			2.8		140.0		
BH14B	**10/06/2011**	**Ground**	<0.5	32.2	410.00	<0.5						2690.0	13.0					<0.5			3790	4077					500		1.10							<0.5			7.44	6.87	1900.00			2.9		460.0		
BH14B	**17/10/2011**	**Ground**	<0.5	56.2	410.00	<0.5						2810.0	12.0					<0.5			3830	4073					500		0.93							<0.5			7.61	6.81	2520.00			2.9		1200.0		
BH14B Average			0.3	44.2	410.00	0.25						2750.0	12.5					0.3			3810	4075					500		1.02							0.3			7.53	6.84	2210.00			2.9		830.0		
BH14B Max			<0.5	56.2	410.00	<0.5						2810.0	13.0					<0.5			3830	4077					500		1.10							<0.5			7.61	6.87	2520.00			2.9		1200.0		
BH14B Min			<0.5	32.2	410.00	<0.5						2690.0	12.0					<0.5			3790	4073					500		0.93							<0.5			7.44	6.81	1900.00			2.9		460.0		
BH5	**28/09/2011**	**Ground**	<0.5	128.0	160.00	<0.5						252.0	1.7					<0.5			569	605					200		1.10							<0.5			6.15	5.73	116.00			2.7		960.0		
BH6	**28/09/2011**	**Ground**	<0.5	42.3	90.00	<0.5						280.0	1.5					<0.5			573	594					110		1.10							<0.5			7.02	6.29	181.00			2.9		180.0		
BH8	**12/10/2011**	**Ground**	5.4	1450.0	<0.5	<0.5						1570.0	0.9					<0.5			3910	4215					<0.5		0.93							<0.5			4.18	5.40	3340.00			2.8		400.0		
DRYSINK	**17/03/2011**	**Surface**			280.00	<0.5	<0.4	<0.4	<0.4	<0.4	3.5	278.0		2.4				<0.5		<5.0	562	566					340	<0.05		<0.5	<4.0	<0.005	<0.02	<0.02	<0.5		7.76	7.48	24.00	290	17.0		<0.5		0.40	<300.0
DRYSINK	**26/04/2011**	**Surface**			280.00	<0.5	<0.4	<0.4	<0.4	<0.4	1.4	246.0		1.3				<0.5	0	<5.0	565	549				0	340	<0.05		<0.5	<4.0	<0.005	<0.02	<0.02	<0.5		7.78	7.44	31.00	330	14.4				0.40	<300.0
DRYSINK	**02/08/2011**	**Surface**																	0		550					0												7.37			14.4						
DRYSINK Average					280.00	0.25	0.2	0.2	0.2	0.2	2.5	262.0		1.9				0.3	0	2.5	564	555				0	340	0.03		0.3	2.0	0.003	0.01	0.01	0.3		7.77	7.43	27.50	310	15.3		0.250		0.31	150.0
DRYSINK Max					280.00	<0.5	<0.4	<0.4	<0.4	<0.4	3.5	278.0		2.4				<0.5	0	<5.0	565	566				0	340	<0.05		<0.5	<4.0	<0.005	<0.02	<0.02	<0.5		7.78	7.48	31.00	330	17.0		<0.5		0.40	<300.0
DRYSINK Min					280.00	<0.5	<0.4	<0.4	<0.4	<0.4	1.4	246.0		1.3				<0.5	0	<5.0	562	549				0	340	<0.05		<0.5	<4.0	<0.005	<0.02	<0.02	<0.5		7.76	7.37	24.00	290	14.4		<0.5		0.40	<300.0
ETA Combined	**06/01/2011**	**Surface**			23.00	<0.5						3670.0	4150.0	11.0				<0.5			7340	>3999.0					28		0.99							<0.5			5.67	6.38	6900.00	10000	2.4				170.0		
ETA Combined	**03/02/2011**	**Surface**			12.00	<0.5						4080.0	4030.0	13.0				<0.5			7270	>3999.0					15									<0.5			5.57	5.93	6800.00	9500	1.9				170.0		
ETA Combined	**16/03/2011**	**Surface**			48.00	<0.5						4630.0	4240.0	15.0				<0.5			7370	7500					58		0.96							0.670	0.027	<0.02	<0.02	<0.5		5.73	5.97	6900.00	9700	2.6				200.0		
ETA Combined	**14/04/2011**	**Surface**			1.90	<0.5						4390.0	4300.0	18.0				<0.5			7170	7590					2		0.90							2.200	<0.005	0.03	0.03	<0.5		5.08	6.26	7300.00	8000	3.3				200.0		
ETA Combined	**05/05/2011**	**Surface**			<0.5	<0.5						1030.0	950.0	6.7				<0.5			2460	2470					<0.5		1.10							0.340	<0.005	0.14	0.14	<0.5		3.52	3.68	1400.00	2300	2.9				760.0		
ETA Combined	**21/06/2011**	**Surface**			<0.5	<0.5						3910.0	3710.0	11.0				<0.5			7060	>3999.0					<0.5		0.76							1.330	0.014	1.25	1.23	<0.5		4.33	5.87	6700.00	7200	9.6				120.0		
ETA Combined	**20/07/2011**	**Surface**			<0.5	<0.5						4580.0	4110.0	11.0				<0.5			6920	>3999.0					<0.5		0.85							2.000	0.015	0.81	0.80	<0.5		4.60	5.57	6700.00	6800	11.4				160.0		
ETA Combined	**24/08/2011**	**Surface**			<0.5	<0.5						2680.0	2470.0	11.0				<0.5			6720	>3999.0					<0.5		0.57							1.700	<0.005	0.81	0.81	<0.5		4.75	5.88	6100.00	9300	10.4				210.0		
ETA Combined	**21/09/2011**	**Surface**			<0.5	<0.5						4050.0	4160.0	13.0				<0.5			7400	7280					<0.5		0.87							1.300	0.006	0.61	0.61	<0.5		4.49	5.98	6700.00	9200	5.0				150.0		
ETA Combined	**19/10/2011**	**Surface**			2.20	<0.5						4080.0	4060.0	14.0				<0.5			7400	6990					3		0.86							1.400	0.013	0.62	0.60	<0.5		5.02	5.88	6810.00	8600	2.0				170.0		
ETA Combined	**17/11/2011**	**Surface**			49.00	<0.5						3590.0	3360.0	21.0				<0.5			7490	5100					60		0.89							2.100	<0.005	0.10	0.10	<0.5		5.75	6.20	6940.00	10100	0.1				231.0		
ETA Combined	**07/12/2011**	**Surface**			62.30	<0.5						3760.0	3640.0	14.0				<0.5			7550	8690					76		0.85							2.000	<0.005	0.05	0.05	<0.5		5.72	6.11	7750.00	7460	0.6				191.0		
ETA Combined Average					16.64	0.25						3704.2	3598.3	13.2				0.3			6846	5468					20		0.87							1.393	0.011	0.37	0.37	0.3		5.02	5.81	6416.67	8180	4.3				227.7		
ETA Combined Max					62.30	<0.5						4630.0	4300.0	21.0				<0.5			7550	8690					76		1.10							2.200	0.043	1.25	1.23	<0.5		5.75	6.38	7750.00	10100	11.4				760.0		
ETA Combined Min					<0.5	<0.5						1030.0	950.0	6.7				<0.5			2460	2470					<0.5		0.57							0.340	<0.005	<0.02	<0.02	<0.5		3.52	3.68	1400.00	2300	0.1				120.0		
FAROCR	**22/06/2011**	**Surface**			12.00	<0.5						13.1	12.5	<0.5				<0.5			35	25			6.60		15		1.00							0.038	<0.005	<0.02	<0.02	<0.5		7.38	7.23	0.80	30	8.4	5.90			2.0	1.78	
FAROCR	**21/07/2011**	**Surface**			16.00	<0.5						18.2	19.3	0.9				<0.5			43	31			5.80		20		1.00							0.038	<0.005	<0.02	<0.02	<0.5		7.03	7.48	1.60	42	9.3	5.80			<1.0	0.80	
FAROCR	**23/08/2011**	**Surface**			17.00	<0.5						19.1	17.8	0.9				<0.5			45	64			4.80		20		1.00							0.023	<0.005	<0.02	<0.02	<0.5		7.43	7.85	4.20	32	8.7	4.20			<1.0	1.25	
FAROCR	**22/09/2011**	**Surface**			22.00	<0.5						22.1	22.4	<0.5				<0.5			60	87			2.60		27		1.00							0.043	<0.005	<0.02	<0.02	<0.5		7.41	7.48	3.10	44	3.7	2.50			2.0	1.52	
FAROCR	**19/10/2011**	**Surface**			31.00	<0.5						30.0	29.9	<0.5				<0.5			69				1.50		38		1.00							0.021	<0.005	<0.02	<0.02	<0.5		7.23	7.41	4.40	42	0.1	1.80			<1.0	0.23	
FAROCR	**15/11/2011**	**Surface**			33.80	<0.5						30.6	31.3	<0.5				<0.5			74	220			2.73		41		1.00							0.014	<0.005	<0.02	<0.02	<0.5		7.55	7.85	7.66	66	<0.0	2.54			1.9	0.14	
FAROCR	**06/12/2011**	**Surface**			33.00	<0.5						34.8	31.0	<0.5				<0.5			81	70			1.55		40		1.00							0.033	<0.005	0.04	0.04	<0.5		7.59	7.67	5.82	46	0.2	1.18			<1.0	0.29	
FAROCR Average					23.54	0.25						24.0	23.5	0.4				0.3			58	83			3.65		29		1.00							0.030	0.003	0.01	0.01	0.3		7.37	7.57	3.94	43	4.3	3.42			1.1	0.86	
FAROCR Max					33.80	<0.5						34.8	31.3	0.9				<0.5			81	220			6.60		41		1.00							0.043	<0.005	0.04	0.04	<0.5		7.59	7.85	7.66	66	9.3	5.90			2.0	1.78	
FAROCR Min					12.00	<0.5						13.1	12.5	<0.5				<0.5			35	25			1.50		15		1.00							0.014	<0.005	<0.02	<0.02	<0.5		7.03	7.23	0.80	30	<0.0	1.18			<1.0	0.14	
FCO	**26/05/2011**	**Surface**			5.80	<0.5						43.5	45.4	<0.5				<0.5			118	110					7		1.00							0.033	<0.005	<0.02	<0.02	<0.5		6.82	7.82	46.00	96	0.8				29.0		
FCO	**27/10/2011**	**Surface**			13.00	<0.5						45.5	49.3	<0.5				<0.5			133	130					16		1.00							0.050	<0.005	0.06	0.06	<0.5		7.09	7.54	43.40	78	0.2				4.0		
FCO Average					9.40	0.25						44.5	47.4	0.3				0.3			126	120					12		1.00							0.042	0.003	0.04	0.04	0.3		6.96	7.18	44.70	87	2.7				16.5		
FCO Max					13.00	<0.5						45.5	49.3	<0.5				<0.5			133	130					16		1.00							0.050	<0.005	0.06	0.06	<0.5		7.09	7.95	46.00	96	10.6				29.0		
FCO Min					5.80	<0.5						43.5	45.4	<0.5				<0.5			118	110					7		1.00							0.033	<0.005	<0.02	<0.02	<0.5		6.82	5.97	43.40	78	0.0				4.0		
FCS-4	**06/01/2011**	**Surface**			9.40	<0.5						3750.0	4350.0	12.0				<0.5			6880	>3999.0					12		1.00							0.310	0.022	<0.02	<0.02	<0.5		5.68	6.96	6300.00	9500	0.7				330.0		
FCS-4	**03/02/2011**	**Surface**			6.00	<0.5						4180.0	4060.0	13.0				<0.5			6700	>3999.0					7									0.800	<0.005	<0.02	<0.02	<0.5		5.52	6.73	6200.00	8000	1.1				200.0		
FCS-4	**16/03/2011**	**Surface**			<0.5	<0.5						4500.0	4190.0	15.0				<0.5			6720	3580					<0.5		0.97							0.890	0.026	0.03	<0.02	<0.5		4.41	7.13	6200.00	8700	1.5				200.0		
FCS-4	**14/04/2011**	**Surface**			<0.5	<0.5						4110.0	4370.0	16.0				<0.5			6580	7100					<0.5		0.99							1.200	<0.005	<0.02	<0.02	<0.5		4.54	6.56	6100.00	7100	3.3				290.0		
FCS-4	**05/05/2011**	**Surface**			<0.5	<0.5						1210.0	1200.0	6.8				<0.5			2550	2600					<0.5		1.10							<0.5	<0.005	0.13	0.13	<0.5		3.61	4.10	1500.00	2500	2.6				1800.0		
FCS-4	**16/06/2011**	**Surface**			14.00	<0.5						4280.0	4070.0	17.0				<0.5			5860	>3999.0					17		0.90							0.810	<0.005	<0.02	<0.02	<0.5		5.70	6.58	5300.00	5900	10.2				320.0		
FCS-4	**14/07/2011**	**Surface**			4.10	<0.5						4080.0	4080.0	16.0				<0.5			6070	>3999.0					5		0.88							0.830	<0.005	0.11	0.11	<0.5		5.36	6.37	5400.00	6000	15.2				320.0		
FCS-4	**23/08/2011**	**Surface**			45.00	<0.5						4040.0	3960.0	17.0				<0.5			6030	>3999.0					55		0.92							0.820	0.024	0.03	<0.02	<0.5		6.15	6.79	4900.00	6000	11.8				340.0		
FCS-4	**21/09/2011**	**Surface**			<0.5	<0.5						4130.0	4090.0	13.0				<0.5			7220	7550					<0.5		0.88							1.300	<0.005	0.51	0.51	<0.5		4.61	6.26	6300.00	10000	5.0				190.0		
FCS-4	**19/10/2011**	**Surface**			<0.5	<0.5						4040.0	4060.0	14.0				<0.5			6710	6830					1		0.84							1.400	0.009	0.51	0.50	<0.5		5.16	5.80	6700.00	8000	1.4				220.0		
FCS-4	**17/11/2011**	**Surface**			7.39	<0.5						4140.0	4020.0	16.0				<0.5			7280	3400					9		0.87							1.400	<0.005	0.29	0.29	<0.5		5.40	6.83	6760.00	9330	<0.0				241.0		
FCS-4	**07/12/2011**	**Surface**			12.90	<0.5						4120.0	4300.0	14.0				<0.5			7150	8380					16		0.93							1.500	0.012	0.20	0.19	<0.5		5.44	6.67	6820.00	5750	0.1				241.0		
FCS-4 Average					8.34	0.25						3881.7	3895.8	14.2				0.3			6313	4953					10		0.93							0.959	0.009	0.15	0.15	0.3		5.13	6.39	5706.67	7232	4.2				391.0		
FCS-4 Max					45.00	<0.5						4500.0	4370.0	17.0				<0.5			7280	8380					55		1.10							1.500	0.026	0.51	0.51	<0.5		6.15	7.13	6820.00	10000	15.2				1800.0		
FCS-4 Min					<0.5	<0.5						1210.0	1200.0	6.8				<0.5			2550	2600					<0.5		0.84							0.310	<0.005	<0.02	<0.02	<0.5		3.61	4.10	1500.00	2500	<0.0				190.0		
FD-40	**06/01/2011**	**Seepage**	<0.5	57.8	35.00	<0.5						419.0	<0.5					<0.5			849	858					42		1.00							<0.5	109.000	6.65	6.61	420.00			0.9		15.0		
FD-40	**14/02/2011**	**Seepage**	<0.5	50.7	13.00	<0.5						309.0	<0.5					<0.5			714	740					16		1.10							<0.5	254.000	6.73	6.78	300.00			0.4		8.0		
FD-40	**14/03/2011**	**Seepage**	<0.5	37.8	16.00	<0.5						326.0	<0.5					<0.5			670	649					20		1.20							<0.5	165.000	6.49	6.18	290.00			1.7		10.0		
FD-40	**14/04/2011**	**Seepage**	<0.5	56.6	8.80	<0.5						373.0	<0.5					<0.5			832	910					11		1.10							<0.5	149.000	6.51	6.96	370.00			4.0		6.0		
FD-40	**12/05/2011**	**Seepage**	<0.5	65.8	9.70	<0.5						345.0	<0.5					<0.5			815	880					12									<0.5	222.000	6.32	7.20				1.0		5.0		
FD-40	**15/06/2011**	**Seepage**	<0.5	88.2	1.20	<0.5						375.0	1.6					<0.5			866	837					2		1.00							<0.5	290.000	5.29	5.12	440.00			5.4		10.0		
FD-40	**20/07/2011**	**Seepage**	32.6	165.0	<0.5	<0.5						405.0	0.6					<0.5			1130	1108					<0.5		0.90							<0.5	466.000	3.41	3.04	580.00			5.6		39.0		
FD-40	**24/08/2011**	**Seepage**	<0.5	122.0	<0.5	<0.5						405.0	0.7					<0.5			1030	1025					<0.5		0.90							<0.5	443.000	4.26	3.69	550.00			6.4		21.0		
FD-40	**20/09/2011**	**Seepage**	<0.5	76.3	3.50	<0.5						443.0	<0.5					<0.5			982	970					4		1.00							<0.5	228.000	5.96	5.60	510.00			3.8		10.0		
FD-40	**19/10/2011**	**Seepage**	<0.5	81.2	6.20	<0.5						532.0	<0.5					<0.5			1090	1120					8		1.10							<0.5	226.000	6.19	5.05	565.00			0.5		8.0		
FD-40	**15/11/2011**	**Seepage**	<0.5	112.0	3.58	<0.5						438.0	<0.5					<0.5			1280	1070					4		0.70							<0.5	229.000	5.77	6.27	691.00			1.0		14.0		
FD-40	**07/12/2011**	**Seepage**	<0.5	98.7	1.46	<0.5						741.0	<0.5					<0.5			1370	1390					2		1.10							<0.5	203.000	5.40	5.43	805.00			1.1		28.5		
FD-40 Average			2.

Denison Environmental Services

Table B-1: 2011 Rose Creek Drainage Water Quality
General Parameters

Station	Date	Sample Type	Acid(pH4.5) mg/L	Acid(pH8.3) mg/L	ALK mg/L	ALKPP mg/L	B2008H µg/L	B2BENZ µg/L	B2EBNZ µg/L	B2MPXY µg/L	B2TOLU µg/L	CaCO3 mg/L	CaCO3-d mg/L	Chloride mg/L	Chlorophyll a µg/L	CN 4500 mg/L	CNTHIO mg/L	CO3 mg/L	Coliform counts/100ml	Colour TCU	COND µmho/cm	CONDF µS/cm	DO mg/L	DO-% %	DOC mg/L	Ecoli counts/100ml	HCO3 mg/L as CaCO3	HMW PAH µg/L	Ion Balance (blank)	LMW PAH µg/L	MTBE µg/L	NH3 mg/L	NO2 mg/L	NO2/3 mg/L	NO3 mg/L	OH mg/L	oPO4 mg/L	ORP mV	pH (blank)	pHF (blank)	SO4-d mg/L	TDS mg/L	TEMP-F °C	TOC mg/L	Total PAH µg/L	TSS mg/L	TURB NTU	VPH µg/L
FL-15	**13/04/2011**	**Surface**	<0.5	23.6	86.00	<0.5						686.0	746.0	4.8				<0.5			1390	1430	11.40					100		1.10			1.000	0.010	0.50	0.49	<0.5	<0.005	170.000	7.44	7.46	640.00	1100	2.5			<1.0		
FL-15	**15/06/2011**	**Surface**	<0.5	29.1	78.00	<0.5						738.0	722.0	2.2				<0.5			1390	1450	5.00					95		1.00			1.000	0.007	0.49	0.48	<0.5	<0.005	150.000	7.01	7.87	680.00	1100	5.1			<4.0		
FL-15	**13/07/2011**	**Surface**	<0.5	36.1	83.00	<0.5						715.0	720.0	2.4				<0.5			1380	1480						100		1.00			1.100	<0.005	0.46	0.46	<0.5	<0.005	165.000	7.17	7.48	680.00	1100	5.8			<1.0		
FL-15	**10/08/2011**	**Surface**	<0.5	30.0	82.00	<0.5						737.0	723.0	2.7				<0.5			1350	1394	7.70	70.80				100		1.00			0.780	<0.005	0.25	0.25	<0.5	<0.005	160.000	7.07	7.59	700.00	1100	5.4			<1.0		
FL-15	**07/09/2011**	**Surface**	<0.5	41.8	81.00	<0.5						769.0	687.0	2.6	<5.0			<0.5			1400	1401	6.30	55.60				99		0.88			0.950	<0.005	0.47	0.47	<0.5	<0.005	165.000	7.56	7.23	770.00	1200	4.5			<1.0		
FL-15 Average			0.3	32.1	82.00	0.25						729.0	719.6	2.9	2.5			0.3			1382	1431	7.60	63.20				99		1.00			0.966	0.005	0.43	0.43	0.3	0.003	162.000	7.25	7.53	694.00	1120	4.7			0.8		
FL-15 Max			<0.5	41.8	86.00	<0.5						769.0	746.0	4.8	<5.0			<0.5			1400	1480	11.40	70.80				100		1.10			1.100	0.010	0.50	0.49	<0.5	<0.005	170.000	7.56	7.87	770.00	1200	5.8			<4.0		
FL-15 Min			<0.5	23.6	78.00	<0.5						686.0	687.0	2.2	<5.0			<0.5			1350	1394	5.00	55.60				95		0.88			0.780	<0.005	0.25	0.25	<0.5	<0.005	150.000	7.01	7.23	640.00	1100	2.5			<1.0		
FL-3	**13/04/2011**	**Surface**	<0.5	26.2	82.00	<0.5						681.0	693.0	2.3	<5.0			<0.5			1360	1400	13.70					100		1.00			0.980	0.010	0.53	0.52	<0.5	<0.005	155.000	7.47	7.80	640.00	1100	1.5			<1.0		
FL-3	**15/06/2011**	**Surface**	<0.5	27.4	63.00	<0.5						618.0	636.0	8.0	<5.0			<0.5			1220	1240	5.37					77		0.89			0.850	0.008	<0.02	<0.02	<0.5	<0.005	150.000	7.21	7.87	710.00	920	10.3			<4.0		
FL-3	**13/07/2011**	**Surface**	<0.5	28.8	67.00	<0.5						638.0	679.0	1.8	<5.0			<0.5			1230	1260						82		1.10			0.850	<0.005	0.47	0.47	<0.5	<0.005	170.000	7.18	7.78	610.00	970	13.0			<1.0		
FL-3	**10/08/2011**	**Surface**	<0.5	25.3	69.00	<0.5						642.0	639.0	1.9	6.0			<0.5			1240	1253	8.70	95.20				84		0.99			0.770	<0.005	0.15	0.15	<0.5	<0.005	160.000	7.02	7.62	630.00	820	12.5			<1.0		
FL-3	**07/09/2011**	**Surface**	<0.5	29.9	68.00	<0.5						701.0	586.0	1.9	<5.0			<0.5			1290	1287	6.80	69.40				83		0.86			0.880	<0.005	0.54	0.54	<0.5	<0.005	160.000	7.53	6.99	680.00	1000	9.5			<1.0		
FL-3 Average			0.3	27.5	69.80	0.25						656.0	646.6	3.2	3.2			0.3			1268	1288	8.64	82.30				85		0.97			0.866	0.005	0.34	0.34	0.3	0.003	159.000	7.28	7.61	654.00	962	9.4			0.8		
FL-3 Max			<0.5	29.9	82.00	<0.5						701.0	693.0	8.0	6.0			<0.5			1360	1400	13.70	95.20				100		1.10			0.980	0.010	0.54	0.54	<0.5	<0.005	170.000	7.53	7.87	710.00	1100	13.0			<4.0		
FL-3 Min			<0.5	25.3	63.00	<0.5						618.0	586.0	1.8	<5.0			<0.5			1220	1240	5.37	69.40				77		0.86			0.770	<0.005	<0.02	<0.02	<0.5	<0.005	150.000	7.02	6.99	610.00	820	1.5			<1.0		
FL-30	**13/04/2011**	**Surface**	<0.5	15.8	94.00	<0.5						734.0	753.0	8.1				<0.5			1480	1550	3.80					110		1.00			1.600	<0.005	<0.02	<0.02	<0.5	<0.005	85.000	6.93	7.46	720.00	1200	4.6			30.0		
FL-30	**15/06/2011**	**Surface**	<0.5	19.1	100.00	<0.5						794.0	792.0	7.7				<0.5			1490	1560	0.95					120		1.10			1.600	0.009	<0.02	<0.02	<0.5	<0.005	135.000	6.65	7.41	700.00	1100	4.9			32.0		
FL-30	**13/07/2011**	**Surface**	<0.5	39.1	100.00	<0.5						777.0	806.0	8.4				<0.5			1490	1540						120		1.10			1.400	<0.005	<0.02	<0.02	<0.5	<0.005	135.000	6.71	7.21	730.00	1100	5.0			36.0		
FL-30	**10/08/2011**	**Surface**	<0.5	22.7	97.00	<0.5						785.0	792.0	7.5				<0.5			1470	1540	2.00	19.00				120		1.10			1.600	<0.005	<0.02	<0.02	<0.5	<0.005	15.000	6.79	7.46	740.00	1000	5.2			31.0		
FL-30	**07/09/2011**	**Surface**	<0.5	38.3	87.00	<0.5						825.0	733.0	7.5				<0.5			1500	1535	2.40	23.30				110		0.86			0.990	<0.005	<0.02	<0.02	<0.5	<0.005	30.000	7.21	6.88	880.00	1200	4.5			32.0		
FL-30 Average			0.3	27.0	95.60	0.25						783.0	775.2	7.8				0.3			1486	1545	2.29	21.15				116		1.03			1.438	0.004	0.01	0.01	0.3	0.003	80.000	6.86	7.28	754.00	1120	4.8			32.2		
FL-30 Max			<0.5	39.1	100.00	<0.5						825.0	806.0	8.4				<0.5			1500	1560	3.80	23.30				120		1.10			1.600	0.009	<0.02	<0.02	<0.5	<0.005	135.000	7.21	7.46	880.00	1200	5.2			36.0		
FL-30 Min			<0.5	15.8	87.00	<0.5						734.0	733.0	7.5				<0.5			1470	1535	0.95	19.00				110		0.86			0.990	<0.005	<0.02	<0.02	<0.5	<0.005	15.000	6.65	6.88	700.00	1000	4.5			30.0		
FL-5	**13/04/2011**	**Surface**	<0.5	22.7	82.00	<0.5						680.0	700.0	2.3	<5.0			<0.5			1360	1400	12.40					100		1.00			1.000	0.010	0.50	0.49	<0.5	<0.005	160.000	7.46	7.42	650.00	1100	2.0			<1.0		
FL-5	**15/06/2011**	**Surface**	<0.0	31.3	75.00	<0.5						668.0	652.0	1.8	<5.0			<0.5			1300	1340	5.32					92		1.00			0.930	0.007	0.50	0.49	<0.5	<0.005	145.000	7.17	7.86	610.00	1000	7.9			<4.0		
FL-5	**13/07/2011**	**Surface**	<0.5	34.0	69.00	<0.5						614.0	648.0	1.8	<5.0			<0.5			1240	1270						84		1.00			0.570	<0.005	0.47	0.47	<0.5	<0.005	170.000	7.24	7.70	630.00	1000	12.5			<1.0		
FL-5	**10/08/2011**	**Surface**	<0.5	22.9	69.00	<0.5						649.0	629.0	2.0	<5.0			<0.5			1230	1259	8.20	89.20				84		1.00			0.800	0.007	0.24	0.23	<0.5	<0.005	165.000	7.15	7.64	610.00	680	12.8			<1.0		
FL-5	**07/09/2011**	**Surface**	<0.5	30.3	66.00	<0.5						689.0	592.0	2.0	<5.0			<0.5			1290	1288	6.70	70.10				81		0.88			0.730	0.008	0.53	0.52	<0.5	<0.005	155.000	7.56	7.30	670.00	1000	4.5			<1.0		
FL-5 Average			0.2	28.2	72.20	0.25						660.0	644.2	2.0	2.5			0.3			1284	1311	8.16	79.65				88		0.98			0.806	0.007	0.45	0.44	0.3	0.003	159.000	7.32	7.58	634.00	956	7.9			0.8		
FL-5 Max			<0.5	34.0	82.00	<0.5						689.0	700.0	2.3	<5.0			<0.5			1360	1400	12.40	89.20				100		1.00			1.000	0.010	0.53	0.52	<0.5	<0.005	170.000	7.56	7.86	670.00	1100	12.8			<4.0		
FL-5 Min			<0.0	22.7	66.00	<0.5						614.0	592.0	1.8	<5.0			<0.5			1230	1259	5.32	70.10				81		0.88			0.570	<0.005	0.24	0.23	<0.5	<0.005	145.000	7.15	7.30	610.00	680	2.0			<1.0		
FL-60	**13/04/2011**	**Surface**	<0.5	20.0	95.00	<0.5						764.0	769.0	7.7				<0.5			1510	1600	2.60					120		1.10			1.600	<0.005	<0.02	<0.02	<0.5	<0.005	85.000	7.23	6.97	730.00	1200	4.6			31.0		
FL-60	**15/06/2011**	**Surface**	<0.5	19.6	100.00	<0.5						802.0	814.0	1.9				<0.5			1520	1610	1.88					120		1.30			1.700	<0.005	0.48	0.47	<0.5	<0.005	140.000	6.72	7.30	630.00	1200	4.9			30.0		
FL-60	**13/07/2011**	**Surface**	<0.5	42.0	110.00	<0.5						805.0	791.0	8.4				<0.5			1510	1600						130		1.10			1.700	<0.005	<0.02	<0.02	<0.5	<0.005	130.000	6.70	7.16	720.00	1200	5.0			37.0		
FL-60	**10/08/2011**	**Surface**	<0.5	22.2	98.00	<0.5						795.0	814.0	7.2				<0.5			1470	1561	1.40	13.00				120		1.10			1.800	<0.005	<0.02	<0.02	<0.5	<0.005	20.000	6.78	7.32	760.00	900	5.2			32.0		
FL-60	**07/09/2011**	**Surface**	<0.5	34.2	94.00	<0.5						806.0	741.0	7.1				<0.5			1530	1560	2.50	20.20				110		0.94			1.800	<0.005	<0.02	<0.02	<0.5	<0.005	15.000	7.38	6.73	800.00	1200	4.5			33.0		
FL-60 Average			0.3	27.6	99.40	0.25						794.4	785.8	6.5				0.3			1508	1586	2.10	16.60				120		1.11			1.720	0.003	0.10	0.10	0.3	0.003	78.000	6.96	7.10	728.00	1140	4.8			32.6		
FL-60 Max			<0.5	42.0	110.00	<0.5						806.0	814.0	8.4				<0.5			1530	1610	2.60	20.20				130		1.30			1.800	<0.005	0.48	0.47	<0.5	<0.005	140.000	7.38	7.32	800.00	1200	5.2			37.0		
FL-60 Min			<0.5	19.6	94.00	<0.5						764.0	741.0	1.9				<0.5			1470	1560	1.40	13.00				110		0.94			1.600	<0.005	<0.02	<0.02	<0.5	<0.005	15.000	6.70	6.73	630.00	900	4.5			30.0		
FL-80	**13/04/2011**	**Surface**	<0.5	19.5	100.00	<0.5						812.0	787.0	7.3				<0.5			1560	1680	2.50					130		1.00			1.700	<0.005	<0.02	<0.02	<0.5	<0.005	90.000	6.91	6.85	780.00	1300	4.5			34.0		
FL-80	**15/06/2011**	**Surface**	<0.5	25.2	110.00	<0.5						821.0	845.0	7.9				<0.5			1580	1650	0.91					130		1.10			2.000	0.009	<0.02	<0.02	<0.5	<0.005	130.000	6.63	7.44	740.00	1300	5.9			31.0		
FL-80	**13/07/2011**	**Surface**	<0.5	32.8	110.00	<0.5						822.0	821.0	8.1				<0.5			1560	1640						140		1.10			1.900	0.008	<0.02	<0.02	<0.5	<0.005	80.000	6.79	7.15	750.00	1300	5.9			45.0		
FL-80	**10/08/2011**	**Surface**	<0.5	21.2	110.00	<0.5						831.0	834.0	7.2				<0.5			1520	1624	2.00	19.00				130		1.10			2.100	<0.005	<0.02	<0.02	<0.5	<0.005	15.000	6.77	7.23	780.00	1100	5.3			33.0		
FL-80	**07/09/2011**	**Surface**	<0.5	29.9	98.00	<0.5						865.0	765.0	7.1				<0.5			1580	1618	1.50	15.20				120		0.92			1.300	0.006	<0.02	<0.02	<0.5	<0.005	20.000	7.39	6.69	850.00	1200	4.5			33.0		
FL-80 Average			0.3	25.7	105.60	0.25						830.2	810.4	7.5				0.3			1560	1642	1.73	17.10				130		1.04			1.800	0.006	0.01	0.01	0.3	0.003	67.000	6.90	7.07	780.00	1240	5.2			35.2		
FL-80 Max			<0.5	32.8	110.00	<0.5						865.0	845.0	8.1				<0.5			1580	1680	2.50	19.00				140		1.10			2.100	0.009	<0.02	<0.02	<0.5	<0.005	130.000	7.39	7.44	850.00	1300	5.9			45.0		
FL-80 Min			<0.5	19.5	98.00	<0.5						812.0	765.0	7.1				<0.5			1520	1618	0.91	15.20				120		0.92			1.300	<0.005	<0.02	<0.02	<0.5	<0.005	15.000	6.63	6.69	740.00	1100	4.5			31.0		
GDHSECK	**14/03/2011**	**Surface**			250.00	<0.5						858.0	880.0	3.0				<0.5			1350	830						310		1.10			0.017	<0.005	<0.02	<0.02	<0.5			8.17	7.91	540.00	1100	0.5			<1.0		
GDHSECK	**26/05/2011**	**Surface**			110.00	<0.5						1220.0	1250.0	2.3				<0.5			1960	1846						140		0.98			0.023	0.026	0.56	0.53	<0.5			7.80	7.77	1200.00	1800	1.6			2.0		
GDHSECK	**27/10/2011**	**Surface**			180.00	<0.5						689.0	726.0	1.5				<0.5			1200	1350						220		1.10			0.039	<0.005	0.04	0.04	<0.5			8.12	8.00	488.00	900	0.2			<1.0		
GDHSECK Average					180.00	0.25						922.3	952.0	2.3				0.3			1503	1342						223		1.06			0.026	0.010	0.20	0.19	0.3			8.03	7.89	742.67	1267	0.8			1.0		
GDHSECK Max					250.00	<0.5						1220.0	1250.0	3.0				<0.5			1960	1846						310		1.10			0.039	0.026	0.56	0.53	<0.5			8.17	8.00	1200.00	1800	1.6			2.0		
GDHSECK Min					110.00	<0.5						689.0	726.0	1.5				<0.5			1200	830						140		0.98			0.017	<0.005	<0.02	<0.02	<0.5			7.80	7.77	488.00	900	0.2			<1.0		
LRSINK	**09/03/2011**	**Surface**																		0		670				0													7.90			13.2						
LRSINK	**17/03/2011**	**Surface**			230.00	<0.5	<0.4	<0.4	<0.4	<0.4	3.5	287.0		2.3				<0.5		<5.0	456	555						280	<0.05		<0.5	<4.0		<0.005	<0.02	<0.02	<0.5			8.04	7.37	24.00	320	21.5		<0.5		0.50	<300.0
LRSINK	**26/04/2011**	**Surface**			280.00	<0.5	<0.4	<0.4	<0.4	<0.4	1.9	247.0		1.3				<0.5	0	<5.0	565	557				0		340	<0.05		<0.5	<4.0		<0.005	<0.02	<0.02	<0.5			7.74	7.31	29.00	340	18.1		<0.5		0.70	<300.0
LRSINK	**02/08/2011**	**Surface**																	0			550				0													7.09			21.9						
LRSINK Average					255.00	0.25	0.2	0.2	0.2	0.2	2.7	267.0		1.8				0.3	0	2.5	511	583				0		310	0.03		0.3	2.0		0.003	0.01	0.01	0.3			7.89	7.42	26.50	330	18.7		0.250		0.49	150.0
LRSINK Max					280.00	<0.5	<0.4	<0.4	<0.4	<0.4	3.5	287.0		2.3				<0.5	0	<5.0	565	670				0		340	<0.05		<0.5	<4.0		<0.005	<0.02	<0.02	<0.5			8.04	7.90	29.00	340	21.9		<0.5		0.70	<300.0
LRSINK Min					230.00	<0.5	<0.4	<0.4	<0.4	<0.4	1.9	247.0		1.3				<0.5	0	<5.0	456	550				0		280	<0.05		<0.5	<4.0		<0.005	<0.02	<0.02	<0.5			7.74	7.09	24.00	320	13.2		<0.5		0.50	<300.0
NF2	**19/01/2011**	**Surface**			130.00	<0.5						138.0	156.0	<0.5				<0.5			298	220	1.20					160		1.10			<0.05	<0.005	0.30	0.30	<0.5			7.59	7.91	22.00	180	0.4	1.10		<1.0	0.67	
NF2	**02/02/2011**	**Surface**			140.00	<0.5						144.0	144.0	<0.5				<0.5			300	302	1.00					170					<0.05	<0.005	0.24	0.24	<0.5			7.71	7.78	19.00	150	2.0	1.40		<1.0	0.83	
NF2	**16/03/2011**	**Surface**			160.00	<0.5						188.0	175.0	1.4				<0.5			375	300	1.50					190		0.95			0.016	<0.005	0.56	0.56	<0.5			7.69	7.68	38.00	220	0.3	1.30		<1.0	0.82	
NF2	**13/04/2011**	**Surface**			140.00	<0.5						151.0	161.0	<0.5				<0.5			302	316	2.50					170		1.10			0.014	<0.005	0.22	0.22	<0.5			7.90	7.73	17.00	170	0.9	1.50		<1.0	0.69	
NF2	**12/05/2011**	**Surface**			89.00	<0.5						90.5	92.5	1.4				<0.5			208	227	9.90					110					0.036	<0.005	0.28	0.28	<0.5			7.65	8.10	16.00	140	0.8	9.80		<1.0	1.67	
NF2	**20/06/2011**	**Surface**			48.00	<0.5						48.2	49.8	<0.5				<0.5			112	103	3.20					58		1.00			0.015	<0.005	<0.02	<0.02	<0.5			7.63	6.19	6.90	72	9.0	3.20		6.0	0.90	
NF2	**21/07/2011**	**Surface**			56.00	<0.5						63.1	62.8	0.7				<0.5			125	118	4.50					68		1.00			0.072	<0.005	<0.02	<0.02	<0.5			7.63	9.47	7.80	88	6.3	4.50		<1.0	0.70	
NF2	**25/08/2011**	**Surface**			66.00	<0.5						70.7	70.3	0.7				<0.5			152	136	2.90					80		1.00			0.025	<0.005	<0.02	<0.02	<0.5			7.73	7.48	8.60	100	6.5	4.20		<1.0	0.49	
NF2	**21/09/2011**	**Surface**			80.00	<0.5						86.4	90.0	<0.5				<0.5			171	184	2.70					97		1.00			0.058	0.007	0.03	<0.02	<0.5			7.94	7.28	12.00	120	3.9	2.20		<1.0	0.85	
NF2	**20/10/2011**	**Surface**			100.00	<0.5						113.0	112.0	<0.5				<0.5			220	210	2.10					120		1.00			0.028	<0.005	0.13	0.13	<0.5			7.82	7.14	19.10	120	0.2	2.00		13.0	2.63	
NF2	**14/11/2011**	**Surface**			107.00	<0.5						104.0	112.0	<0.5				<0.5			240	203	2.52					131		1.00			0.027	<0.005	0.19	0.19	<0.5			8.06	7.54	20.40	148	0.3	2.87		1.6	0.81	
NF2	**05/12/2011**	**Surface**			109.00	<0.5						121.0	114.0	<0.5				<0.5			246	250	2.89					133		1.00			0.039	<0.005	0.19	0.19	<0.5			7.77	7.55	17.20	128	0.4	1.65		<1.0	0.89	
NF2 Average					102.08	0.25						109.8	111.6	0.5				0.3			229	214	3.08					124		1.02			0.032	0.003	0.18	0.18	0.3			7.76	7.65	17.00	136	2.6	2.98		2.1	1.00	
NF2 Max					160.00	<0.5						188.0	175.0	1.4				<0.5			375	316	9.90					190		1.10			0.072	0.007	0.56	0.56	<0.5			8.06	9.47	38.00	220	9.0	9.80		13.0	2.63	
NF2 Min					48.00	<0.5						48.2	49.8	<0.5				<0.5			112	103	1.00					58		0.95			0.014	<0.005	<0.02	<0.02	<0.5			7.59	6.19	6.90	72	0.2	1.10		<1.0	0.49	
NFRC SC-1	**14/11/2011**	**Surface**			106.00	<0.5						106.0	109.0	<0.5				<0.5			240	203	2.61					130		1.00			0.041	<0.005	0.19	0.19	<0.5			8.10	7.54	21.60	148	0.3	2.68		1.7	0.70	
NFRC SC-1	**05/12/2011**	**Surface**			108.00	<0.5						118.0	114.0	<0.5				<0.5			245	243	1.78					132		1.00			0.032	<0.005	0.20	0.20	<0.5			7.73	7.62	17.70	138	0.1	1.97		1.1	0.75	
NFRC SC-1 Average					107.00	0.25						112.0	111.5	0.3				0.3			243	223	2.20					131		1.00			0.037	0.003	0.19	0.19	0.3			7.92	7.58	19.65	143	0.2	2.33		1.4	0.73	
NFRC SC-1 Max					108.00	<0.5						118.0	114.0	<0.5				<0.5			245	243	2.61					132		1.00			0.041	<0.005	0.20	0.20	<0.5			8.10	7.62	21.60	148	0.3	2.68		1.7	0.75	
NFRC SC-1 Min					106.00	<0.5						106.0	109.0	<0.5				<0.5			240	203	1.78					130		1.00			0.032	<0.005	0.19	0.19	<0.5			7.73	7.54	17.70	138	0.1	1.97		1.1	0.70	
NFRC SC-2	**14/11/2011**	**Surface**			105.00	<0.5						110.0	108.0	<0.5				<0.5			236	204	3.01					128		1.00			0.021	<0.005	0.20	0.20	<0.5		

Denison Environmental Services

Table B-1: 2011 Rose Creek Drainage Water Quality
General Parameters

Station	Date	Sample Type	Acid(pH4.5) mg/L	Acid(pH8.3) mg/L	ALK mg/L	ALKPP mg/L	B2008H µg/L	B2BENZ µg/L	B2EBNZ µg/L	B2MPXY µg/L	B2TOLU µg/L	CaCO3 mg/L	CaCO3-d mg/L	Chloride mg/L	Chlorophyll a µg/L	CN 4500 mg/L	CNTHIO mg/L	CO3 mg/L	Coliform counts/100ml	Colour TCU	COND µmho/cm	CONDF µS/cm	DO mg/L	DO-% %	DOC mg/L	Ecoli counts/100ml	HCO3 mg/L as CaCO3	HMW PAH µg/L	Ion Balance (blank)	LMW PAH µg/L	MTBE µg/L	NH3 mg/L	NO2 mg/L	NO2/3 mg/L	NO3 mg/L	OH mg/L	oPO4 mg/L	ORP mV	pH (blank)	pHF (blank)	SO4-d mg/L	TDS mg/L	TEMP-F °C	TOC mg/L	Total PAH µg/L	TSS mg/L	TURB NTU	VPH µg/L
P01-02A	**01/02/2011**	**Ground**	<0.5	7.8	270.00	<0.5							430.0	0.9				<0.5			758	340					330									<0.5			7.90	7.88	160.00			1.3		950.0		
P01-02A	**01/06/2011**	**Ground**	<0.5	4.4	260.00	<0.5							394.0	0.7				<0.5			741	808					320		1.00							<0.5			7.87	7.48	140.00			4.4		61.0		
P01-02A	**23/09/2011**	**Ground**	<0.5	8.7	260.00	<0.5							415.0	1.1				<0.5			772	783					320		1.00							<0.5			8.11	7.60	170.00			4.8		3.0		
P01-02A Average			0.3	7.0	263.33	0.25							413.0	0.9				0.3			757	644					323		1.00							0.3			7.96	7.65	156.67			3.5		338.0		
P01-02A Max			<0.5	8.7	270.00	<0.5							430.0	1.1				0.3			772	808					330		1.00							0.3			8.11	7.88	170.00			4.8		950.0		
P01-02A Min			<0.5	4.4	260.00	<0.5							394.0	0.7				<0.5			741	340					320		1.00							<0.5			7.87	7.48	140.00			1.3		3.0		
P01-02B	**01/06/2011**	**Ground**	<0.5	2.8	220.00	<0.5							281.0	<0.5				<0.5			556	587					260		0.97							<0.5			7.86	7.51	91.00			4.9		93.0		
P01-02B	**23/09/2011**	**Ground**	<0.5	7.1	220.00	<0.5							290.0	1.0				<0.5			560	573					260		1.00							<0.5			8.13	7.58	92.00			4.8		6.0		
P01-02B Average			0.3	5.0	220.00	0.25							285.5	0.6				0.3			558	580					260		0.99							0.3			8.00	7.55	91.50			4.8		49.5		
P01-02B Max			<0.5	7.1	220.00	<0.5							290.0	1.0				<0.5			560	587					260		1.00							<0.5			8.13	7.58	92.00			4.9		93.0		
P01-02B Min			<0.5	2.8	220.00	<0.5							281.0	<0.5				<0.5			556	573					260		0.97							<0.5			7.86	7.51	91.00			4.8		6.0		
P01-03	**12/07/2011**	**Ground**	<0.5	219.0	360.00	<0.5							2720.0	3.9				<0.5			3900	5635					440		0.95							<0.5			6.45	6.33	2700.00			4.0		13000.0		
P01-03	**28/09/2011**	**Ground**	<0.5	94.8	350.00	<0.5							2220.0	4.4				<0.5			3720	3816					420		0.87							<0.5			6.77	6.55	2420.00			3.2		3700.0		
P01-03 Average			0.3	156.9	355.00	0.25							2470.0	4.2				0.3			3810	4726					430		0.91							0.3			6.61	6.44	2560.00			3.6		8350.0		
P01-03 Max			<0.5	219.0	360.00	<0.5							2720.0	4.4				<0.5			3900	5635					440		0.95							<0.5			6.77	6.55	2700.00			4.0		13000.0		
P01-03 Min			<0.5	94.8	350.00	<0.5							2220.0	3.9				<0.5			3720	3816					420		0.87							<0.5			6.45	6.33	2420.00			3.2		3700.0		
P01-04A	**12/07/2011**	**Ground**	<0.5	121.0	590.00	<0.5							497.0	8.1				<0.5			1080	1489					720		1.00							<0.5			7.16	6.60	30.00			4.5		<1.0		
P01-04A	**26/09/2011**	**Ground**	<0.5	78.1	590.00	<0.5							525.0	8.3				<0.5			1090	1096					720									<0.5			7.52	6.89	28.70			3.8		2.0		
P01-04A Average			0.3	99.6	590.00	0.25							511.0	8.2				0.3			1085	1293					720		1.00							0.3			7.34	6.75	29.35			4.1		1.3		
P01-04A Max			<0.5	121.0	590.00	<0.5							525.0	8.3				<0.5			1090	1489					720		1.00							<0.5			7.52	6.89	30.00			4.5		2.0		
P01-04A Min			<0.5	78.1	590.00	<0.5							497.0	8.1				<0.5			1080	1096					720		1.00							<0.5			7.16	6.60	28.70			3.8		<1.0		
P01-04B	**01/02/2011**	**Ground**	<0.5	31.1	320.00	<0.5							1330.0	1.8				<0.5			2090	1280					390									<0.5			7.36	7.30	980.00			4.9		18.0		
P01-04B	**12/07/2011**	**Ground**	<0.5	48.3	330.00	<0.5							1320.0	1.9				<0.5			2150	3100					400		1.00							<0.5			7.28	6.90	1100.00			4.2		220.0		
P01-04B	**26/09/2011**	**Ground**	<0.5	39.9	330.00	<0.5							1400.0	2.0				<0.5			2170	2254					400									<0.5			7.53	7.10	1120.00			3.7		310.0		
P01-04B Average			0.3	39.8	326.67	0.25							1350.0	1.9				0.3			2137	2211					397		1.00							0.3			7.39	7.10	1066.67			4.2		182.7		
P01-04B Max			<0.5	48.3	330.00	<0.5							1400.0	2.0				<0.5			2170	3100					400		1.00							<0.5			7.53	7.30	1120.00			4.9		310.0		
P01-04B Min			<0.5	31.1	320.00	<0.5							1320.0	1.8				<0.5			2090	1280					390		1.00							<0.5			7.28	6.90	980.00			3.7		18.0		
P01-11	**01/06/2011**	**Ground**	<0.5	66.6	370.00	<0.5							1800.0	3.2				<0.5			2960	3305					450		0.94							<0.5			7.21	6.84	1700.00			4.8		1500.0		
P01-11	**24/09/2011**	**Ground**	<0.5	77.4	390.00	<0.5							2020.0	2.9				<0.5			3160	3294					480		1.10							<0.5			7.46	6.92	1600.00			4.8		4400.0		
P01-11 Average			0.3	72.0	380.00	0.25							1910.0	3.1				0.3			3060	3300					465		1.02							0.3			7.34	6.88	1650.00			4.8		2950.0		
P01-11 Max			<0.5	77.4	390.00	<0.5							2020.0	3.2				<0.5			3160	3305					480		1.10							<0.5			7.46	6.92	1700.00			4.8		4400.0		
P01-11 Min			<0.5	66.6	370.00	<0.5							1800.0	2.9				<0.5			2960	3294					450		0.94							<0.5			7.21	6.84	1600.00			4.8		1500.0		
P03-01-2	**04/10/2011**	**Ground**	<0.5	4.8	210.00	<0.5							214.0	0.6				<0.5			425	428					250		0.95							<0.5			7.92	7.79	35.10			4.0		37.0		
P03-01-4	**04/10/2011**	**Ground**	<0.5	33.8	25.00	<0.5							73.4	<0.5				<0.5			222	222					31		1.00							<0.5			6.45	6.58	57.50			4.4		2.0		
P03-01-6	**05/10/2011**	**Ground**	<0.5	320.0	3.70	<0.5							168.0	1.0				<0.5			929	1074					5		1.00							<0.5			5.67	6.33	526.00			4.0		47.0		
P03-01-8	**05/10/2011**	**Ground**	27.9	3350.0	<0.5	<0.5							1490.0	2.1				<0.5			7700	8317					<0.5		0.78							<0.5			3.88	6.24	6820.00			4.2		360.0		
P03-03-2	**05/10/2011**	**Ground**	<0.5	1020.0	<0.5	<0.5							263.0	0.7				<0.5			2130	2137					<0.5		0.94							<0.5			4.44	5.05	1510.00			3.5		12.0		
P03-03-4	**05/10/2011**	**Ground**	<0.5	373.0	0.80	<0.5							433.0	1.3				<0.5			1370	1472					1		0.99							<0.5			5.32	5.52	845.00			3.8		17.0		
P03-05-2	**05/10/2011**	**Ground**	<0.5	176.0	48.00	<0.5							970.0	3.2				<0.5			1800	1870					59		1.00							<0.5			6.70	6.16	1130.00			5.0		30.0		
P03-05-4	**05/10/2011**	**Ground**	<0.5	46.0	110.00	<0.5							762.0	1.5				<0.5			1390	1421					140		0.94							<0.5			7.35	6.27	739.00			4.9		16.0		
P03-05-6	**06/10/2011**	**Ground**	31.4	3860.0	<0.5	<0.5							2340.0	1.5				<0.5			7600	7795					<0.5		0.90							<0.5			3.79	5.86	7190.00			4.2		410.0		
P03-05-8	**06/10/2011**	**Ground**	25.9	7140.0	<0.5	<0.5							3540.0	3.9				<0.5			11400	11539					<0.5		0.99							<0.5			3.59	5.66	11900.00			4.7		930.0		
P03-06-1	**29/06/2011**	**Ground**	<0.5	470.0	64.00	<0.5							2330.0	3.6				<0.5			4090	4289					78		1.10							<0.5			5.77	5.72	2600.00			6.8		85.0		
P03-06-1	**06/10/2011**	**Ground**	<0.5	692.0	39.00	<0.5							2030.0	4.2				<0.5			4130	4390					48		0.95							<0.5			5.80	5.20	3050.00			3.9		140.0		
P03-06-1 Average			0.3	581.0	51.50	0.25							2180.0	3.9				0.3			4110	4340					63		1.03							0.3			5.79	5.46	2825.00			5.3		112.5		
P03-06-1 Max			<0.5	692.0	64.00	<0.5							2330.0	4.2				<0.5			4130	4390					78		1.10							<0.5			5.80	5.72	3050.00			6.8		140.0		
P03-06-1 Min			<0.5	470.0	39.00	<0.5							2030.0	3.6				<0.5			4090	4289					48		0.95							<0.5			5.77	5.20	2600.00			3.9		85.0		
P03-06-2	**29/05/2011**	**Ground**	<0.5	1660.0	<0.5	<0.5							2080.0	2.0				<0.5			4800	8224					<0.5		0.94							<0.5			4.71	5.29	4300.00			5.0		3800.0		
P03-06-2	**06/10/2011**	**Ground**	<0.5	691.0	20.00	<0.5							1960.0	4.0				<0.5			4300	4518					25		0.90							<0.5			5.58	5.13	3150.00			4.2		720.0		
P03-06-2 Average			0.3	1175.5	10.13	0.25							2020.0	3.0				0.3			4550	6371					13		0.92							0.3			5.15	5.21	3725.00			4.6		2260.0		
P03-06-2 Max			<0.5	1660.0	20.00	<0.5							2080.0	4.0				<0.5			4800	8224					25		0.94							<0.5			5.58	5.29	4300.00			5.0		3800.0		
P03-06-2 Min			<0.5	691.0	<0.5	<0.5							1960.0	2.0				<0.5			4300	4518					<0.5		0.90							<0.5			4.71	5.13	3150.00			4.2		720.0		
P03-06-3	**29/05/2011**	**Ground**	<0.5	1770.0	<0.5	<0.5							1860.0	1.3				<0.5			4630	7112					<0.5		0.95							<0.5			4.77	5.60	4200.00			9.3		7500.0		
P03-06-3	**06/10/2011**	**Ground**	<0.5	1330.0	7.10	<0.5							1760.0	2.8				<0.5			4830	5017					9		0.92							<0.5			5.33	5.51	4040.00			4.1		1200.0		
P03-06-3 Average			0.3	1550.0	3.68	0.25							1810.0	2.1				0.3			4730	6065					4		0.94							0.3			5.05	5.56	4120.00			6.7		4350.0		
P03-06-3 Max			<0.5	1770.0	7.10	<0.5							1860.0	2.8				<0.5			4830	7112					9		0.95							<0.5			5.33	5.60	4200.00			9.3		7500.0		
P03-06-3 Min			<0.5	1330.0	<0.5	<0.5							1760.0	1.3				<0.5			4630	5017					<0.5		0.92							<0.5			4.77	5.51	4040.00			4.1		1200.0		
P03-06-4	**29/05/2011**	**Ground**	<0.5	741.0	1.20	<0.5							1220.0	1.8				<0.5			2720	5232					1		1.00							<0.5			5.16	6.30	2100.00			4.0		850.0		
P03-06-4	**06/10/2011**	**Ground**	<0.5	564.0	47.00	<0.5							1180.0	3.2				<0.5			2700	3009					58		0.94							<0.5			6.18	6.17	1850.00			4.0		230.0		
P03-06-4 Average			0.3	652.5	24.10	0.25							1200.0	2.5				0.3			2710	4121					30		0.97							0.3			5.67	6.24	1975.00			4.0		540.0		
P03-06-4 Max			<0.5	741.0	47.00	<0.5							1220.0	3.2				<0.5			2720	5232					58		1.00							<0.5			6.18	6.30	2100.00			4.0		850.0		
P03-06-4 Min			<0.5	564.0	1.20	<0.5							1180.0	1.8				<0.5			2700	3009					1		0.94							<0.5			5.16	6.17	1850.00			4.0		230.0		
P03-06-5	**28/05/2011**	**Ground**	<0.5	777.0	<0.5	<0.5							1060.0	2.0				<0.5			2760	7302					<0.5		0.98							<0.5			4.72	6.16	2100.00			5.9		1800.0		
P03-06-6	**28/05/2011**	**Ground**	<0.5	1490.0	<0.5	<0.5							3800.0	2.3				<0.5			6000	7509					<0.5		1.10							<0.5			4.15	5.68	5400.00			10.3		3000.0		
P03-08-2	**02/02/2011**	**Ground**	<0.5	12.2	270.00	<0.5							352.0	3.2				<0.5			696	370					330		0.94							<0.5			7.59	7.32	120.00			3.6		89.0		
P03-08-2	**12/10/2011**	**Ground**	<0.5	15.4	260.00	<0.5							357.0	<0.5				<0.5			653	703					310		0.99							<0.5			7.94	6.97	114.00			3.7		5.0		
P03-08-2 Average			0.3	13.8	265.00	0.25							354.5	1.7				0.3			675	537					320		0.97							0.3			7.77	7.15	117.00			3.7		47.0		
P03-08-2 Max			<0.5	15.4	270.00	<0.5							357.0	3.2				<0.5			696	703					330		0.99							<0.5			7.94	7.32	120.00			3.7		89.0		
P03-08-2 Min			<0.5	12.2	260.00	<0.5							352.0	<0.5				<0.5			653	370					310		0.94							<0.5			7.59	6.97	114.00			3.6		5.0		
P03-08-4	**12/10/2011**	**Ground**	<0.5	42.8	290.00	<0.5							587.0	1.5				<0.5			1130	1292					360		1.10							<0.5			7.53	6.66	339.00			4.0		1700.0		
P03-08-6	**12/10/2011**	**Ground**	<0.5	0.8	43.00	<0.5							166.0	7.7				<0.5			805	899					52		1.10							<0.5			7.60	7.49	321.00			4.2		1000.0		
P03-09-2	**25/09/2011**	**Ground**	<0.5	40.7	310.00	<0.5							1060.0	1.8				<0.5			1890	1891					380		1.00							<0.5			7.77	6.98	820.00			4.3		8.0		
P03-09-4	**25/09/2011**	**Ground**	<0.5	38.5	320.00	<0.5							727.0	3.2				<0.5			1340	1383					390		1.10							<0.5			7.77	7.13	410.00			4.4		21.0		
P03-09-6	**25/09/2011**	**Ground**	<0.5	36.0	320.00	<0.5							1020.0	2.2				<0.5			1830	1620					390		1.00							<0.5			7.77	7.03	770.00			4.6		28.0		
P03-09-8	**25/09/2011**	**Ground**	<0.5	44.6	320.00	<0.5							1130.0	2.2				<0.5			1960	1998					390		1.00							<0.5			7.73	6.90	860.00			4.7		78.0		
P03-09-9	**25/09/2011**	**Ground**	<0.5	47.3	310.00	<0.5							1110.0	2.4				<0.5			1880	1255					380		1.00							<0.5			7.76	7.06	830.00			4.7		7500.0		
P05-01-1	**29/06/2011**	**Ground**	<0.5	96.4	380.00	<0.5							1850.0	3.6				<0.5			2820	3047					470		1.00							<0.5			7.12	6.60	1600.00			4.6		20.0		
P05-01-1	**12/10/2011**	**Ground**	<0.5	142.0	380.00	<0.5							2160.0	3.1				<0.5			3100	3353					460		1.10							<0.5			7.42	6.59	1700.00			4.0		43.0		
P05-01-1 Average			0.3	119.2	380.00	0.25							2005.0	3.4				0.3			2960	3200					465		1.05							0.3			7.27	6.60	1650.00			4.3		31.5		
P05-01-1 Max			<0.5	142.0	380.00	<0.5							2160.0	3.6				<0.5			3100	3353					470		1.10							<0.5			7.42	6.60	1700.00			4.6		43.0		
P05-01-1 Min			<0.5	96.4	380.00	<0.5							1850.0	3.1				<0.5			2820	3047					460		1.00							<0.5			7.12	6.59	1600.00			4.0		20.0		
P05-01-2	**29/06/2011**	**Ground**	<0.5	93.8	380.00	<0.5							1960.0	3.5				<0.5			2920	3286					470		1.00							<0.5			7.06	6.79	1600.00			4.6		30.0		
P05-01-2	**12/10/2011**	**Ground**	<0.5	136.0	380.00	<0.5							2110.0	3.1				<0.5			3030	3293					460		1.10							<0.5			7.34	6.60	1730.00			4.0		59.0		
P05-01-2 Average			0.3	114.9	380.00	0.25							2035.0	3.3				0.3			2975	3290					465		1.05							0.3			7.20	6.70	1665.00			4.3		44.5		
P05-01-2 Max			<0.5	136.0	380.00	<0.5							2110.0	3.5				<0.5			3030	3293					470		1.10							<0.5			7.34	6.79	1730.00			4.6		59.0		
P05-01-2 Min			<0.5	93.8	380.00	<0.5							1960.0	3.1				<0.5			2920	3286					460		1.00							<0.5			7.06	6.60	1600.00			4.0		30.0		
P05-01-3	**29/06/2011**	**Ground**	<0.5	88.1	370.00	<0.5							1890.0	<50.0				<0.5			2890	3263					450		1.00							<0.5			7.05	7.37	1600.00			4.9		120.0		
P05-01-3	**12/10/2011**	**Ground**	<0.5	67.9	380.00	<0.5							2120.0	3.0				<0.5			2930	3299					460		1.10							<0.5			7.38	6.73	1710.00			4.1		74.0		
P05-01-3 Average			0.3	78.0	375.00	0.25							2005.0	14.0				0.3			2910	3281					455		1.05							0.3			7.22	7.05	1655.00			4.5		97.0		
P05-01-3 Max			<0.5	88.1	380.00	<0.5							2120.0	<50.0				<0.5			2930	3299					460		1.10							<0.5			7.38	7.37	1710.00			4.9		120.0		
P05-01-3 Min			<0.5	67.9	370.00	<0.5							1890.0	3.0				<0.5			2890	3263					450		1.00							<0.5			7.05	6.73	1600.00			4.1		74.0		
P05-01-4	**29/06/2011**	**Ground**	<0.5	89.1	370.00	<0.5							1930.0	3.6				<0.5			2930	3251					460		1.00							<0.5			7.10	6.80	1600.00			5.3		210.0		
P05-01-4	**12/10/2011**	**Ground**	<0.5	60.1	370.00	<0.5							2100.0	2.9				<0.5			2970	3344					450		1.10							<0.5			7.65	6.74	1690.00			4.4		1300.0		
P05-01-4 Average			0.3	74.6	370.00	0.25							2015.0	3.3				0.3			2950	3298					455		1.05							0.3			7.38	6.77	1645.00			4.9		755.0		
P05-01-4 Max			<0.5	89.1	370.00	<0.5							2100.0	3.6				<0.5			2970	3344					460		1.10							<0.5			7.65	6.80	1690.00			5.3		1300.0		
P05-01-4 Min			<0.5	60.1	370.00	<0.5							1930.0	2.9				<0.5			2930	3251					450		1.00							<0.5			7.10	6.74	1600.00			4.4		210.0		
P05-01-5	**29/06/2011**	**Ground**	<0.5	85.2	380.00	<0.5							1910.0	3.2				<0.5			2840	3119					460		1.00							<0.5			7.15	6.61	1600.00			5.0		21.0		
P05-01-5	**12/10/2011**	**Ground**	<0.5	79.3	380.00	<0.5							2070.0	2.8				<0.5			2860	3162					470		1.10							<0.5			7.50	6.73	1580.00			4.2		29.0		
P05-01-5 Average			0.3	82.3	380.00	0.25							1990.0	3.0				0.3			2850	3141					465		1.05							0.3			7.33	6.67	1590.00			4.6		25.0		
P05-01-5 Max			<0.5	85.2	380.00	<0.5							2070.0	3.2				<0.5			2860	3162					470		1.10							<0.5			7.50	6.73	1600.00			5.0		29.0		
P05-01-5 Min			<0.5	79.3	380.00	<0.5							1910.0	2.8				<0.5			2840	3119					460		1.00							<0.5			7.15	6.61	1580.00			4.2		21.0		
P05-01-6	**12/10/2011**	**Ground**	<0.5	88.8	390.00	<0.5							2010.0	3.0				<0.5			2890	3162					470		1.00							<0.5			7.62	6.72	1660.00			4.2		620.0		
P05-02	**27/01/2011**	**Ground**	<0.5	55.9	370.00	<0.5							1780.0	3.0				<0.5			2770	3006					450		1.00							<0.5			7.14	6.79	1400.00			1.3		750.0		
P05-02	**09/06/2011**	**Ground**	<0.5	53.3

Denison Environmental Services

Table B-1: 2011 Rose Creek Drainage Water Quality
General Parameters

Station	Date	Sample Type	Acid(pH4.5) mg/L	Acid(pH8.3) mg/L	ALK mg/L	ALKPP mg/L	B2008H µg/L	B2BENZ µg/L	B2EBNZ µg/L	B2MPXY µg/L	B2TOLU µg/L	CaCO3 mg/L	CaCO3-d mg/L	Chloride mg/L	Chlorophyll a µg/L	CN 4500 mg/L	CNTHIO mg/L	CO3 mg/L	Coliform counts/100ml	Colour TCU	COND µmho/cm	CONDF µS/cm	DO mg/L	DO-% %	DOC mg/L	Ecoli counts/100ml	HCO3 mg/L as CaCO3	HMW PAH µg/L	Ion Balance (blank)	LMW PAH µg/L	MTBE µg/L	NH3 mg/L	NO2 mg/L	NO2/3 mg/L	NO3 mg/L	OH mg/L	oPO4 mg/L	ORP mV	pH (blank)	pHF (blank)	SO4-d mg/L	TDS mg/L	TEMP-F °C	TOC mg/L	Total PAH µg/L	TSS mg/L	TURB NTU	VPH µg/L
P05-03	**27/01/2011**	**Ground**	<0.5	26.5	300.00	<0.5							846.0	1.7				<0.5			1540	1680					370		0.99							<0.5			7.35	7.41	610.00			2.5		62.0		
P05-03	**09/06/2011**	**Ground**	<0.5	32.0	320.00	<0.5							994.0	1.6				<0.5			1790	1755					390		0.91							<0.5			7.81	6.93	840.00			4.3		490.0		
P05-03	**24/09/2011**	**Ground**	<0.5	30.6	290.00	<0.5							778.0	1.8				<0.5			1390	1447					350		1.00							<0.5			7.59	7.12	510.00			4.4		270.0		
P05-03 Average			0.3	29.7	303.33	0.25							872.7	1.7				0.3			1573	1627					370		0.97							0.3			7.58	7.15	653.33			3.7		274.0		
P05-03 Max			<0.5	32.0	320.00	<0.5							994.0	1.8				<0.5			1790	1755					390		1.00							<0.5			7.81	7.41	840.00			4.4		490.0		
P05-03 Min			<0.5	26.5	290.00	<0.5							778.0	1.6				<0.5			1390	1447					350		0.91							<0.5			7.35	6.93	510.00			2.5		62.0		
P05-04	**28/09/2011**	**Ground**	<0.5	43.3	140.00	<0.5							246.0	1.1				<0.5			484	517					170		1.00							<0.5			6.94	6.50	108.00			3.5		500.0		
P09-C1	**01/06/2011**	**Ground**	<0.5	62.4	420.00	<0.5							1660.0	3.3				<0.5			2740	2958					510		1.10							<0.5			7.11	6.88	1300.00			5.1		47.0		
P09-C1	**24/09/2011**	**Ground**	<0.5	61.7	440.00	<0.5							1660.0	3.8				<0.5			2800	2872					530		1.10							<0.5			7.62	6.71	1300.00			4.4		150.0		
P09-C1 Average			0.3	62.1	430.00	0.25							1660.0	3.6				0.3			2770	2915					520		1.10							0.3			7.37	6.80	1300.00			4.7		98.5		
P09-C1 Max			<0.5	62.4	440.00	<0.5							1660.0	3.8				<0.5			2800	2958					530		1.10							<0.5			7.62	6.88	1300.00			5.1		150.0		
P09-C1 Min			<0.5	61.7	420.00	<0.5							1660.0	3.3				<0.5			2740	2872					510		1.10							<0.5			7.11	6.71	1300.00			4.4		47.0		
P09-C2	**02/06/2011**	**Ground**	<0.5	456.0	1600.00	<0.5							1000.0	26.0				<0.5			2740	2892					2000		1.00							<0.5			6.86	6.40	5.40			6.3		120.0		
P09-C2	**26/09/2011**	**Ground**	<0.5	389.0	1700.00	<0.5							1080.0	26.0				<0.5			2750	2790					2000									<0.5			6.79	6.35	6.50			4.6		52.0		
P09-C2 Average			0.3	422.5	1650.00	0.25							1040.0	26.0				0.3			2745	2841					2000		1.00							0.3			6.83	6.38	5.95			5.4		86.0		
P09-C2 Max			<0.5	456.0	1700.00	<0.5							1080.0	26.0				<0.5			2750	2892					2000		1.00							<0.5			6.86	6.40	6.50			6.3		120.0		
P09-C2 Min			<0.5	389.0	1600.00	<0.5							1000.0	26.0				<0.5			2740	2790					2000		1.00							<0.5			6.79	6.35	5.40			4.6		52.0		
P09-C3	**28/06/2011**	**Ground**	<0.5	90.7	600.00	<0.5							543.0	6.8				<0.5			1180	1227					740		1.00							<0.5			7.28	7.25	77.00			4.4		6.0		
P09-C3	**24/09/2011**	**Ground**	<0.5	83.5	560.00	<0.5							544.0	6.6				<0.5			1160	1173					680		1.10							<0.5			7.49	6.74	80.00			4.2		4.0		
P09-C3 Average			0.3	87.1	580.00	0.25							543.5	6.7				0.3			1170	1200					710		1.05							0.3			7.39	7.00	78.50			4.3		5.0		
P09-C3 Max			<0.5	90.7	600.00	<0.5							544.0	6.8				<0.5			1180	1227					740		1.10							<0.5			7.49	7.25	80.00			4.4		6.0		
P09-C3 Min			<0.5	83.5	560.00	<0.5							543.0	6.6				<0.5			1160	1173					680		1.00							<0.5			7.28	6.74	77.00			4.2		4.0		
P09-ETA1	**18/09/2011**	**Ground**	<0.5	2.6	190.00	<0.5							182.0	0.9				<0.5			422	475					230		0.98							<0.5			7.96	7.35	29.00			5.3		34.0		
P09-ETA2	**08/06/2011**	**Ground**	<0.5	854.0	96.00	<0.5							3250.0	13.0				<0.5			5170	9781					120		0.97							<0.5			6.18	6.29	4300.00			3.0		1500.0		
P09-ETA2	**18/09/2011**	**Ground**	<0.5	393.0	320.00	<0.5							3880.0	15.0				<0.5			5330	5550					390		0.98							<0.5			6.60	6.48	4100.00			4.7		80.0		
P09-ETA2 Average			0.3	623.5	208.00	0.25							3565.0	14.0				0.3			5250	7666					255		0.98							0.3			6.39	6.39	4200.00			3.8		790.0		
P09-ETA2 Max			<0.5	854.0	320.00	<0.5							3880.0	15.0				<0.5			5330	9781					390		0.98							<0.5			6.60	6.48	4300.00			4.7		1500.0		
P09-ETA2 Min			<0.5	393.0	96.00	<0.5							3250.0	13.0				<0.5			5170	5550					120		0.97							<0.5			6.18	6.29	4100.00			3.0		80.0		
P09-SIS1	**09/06/2011**	**Ground**	<0.5	1010.0	140.00	<0.5							7510.0	6.4				<0.5			9640	8728					170		0.87							<0.5			6.79	6.34	9800.00			3.6		7000.0		
P09-SIS1	**20/07/2011**	**Ground**	<0.5	526.0	430.00	<0.5							6630.0	5.1				<0.5			6830	7434					520		0.89							<0.5			6.64	6.55	8000.00			10.1		840.0		
P09-SIS1	**18/09/2011**	**Ground**	<0.5	434.0	260.00	<0.5							6840.0	6.0				<0.5			8180	8249					320		0.91							<0.5			6.67	6.40	7700.00			6.5		3600.0		
P09-SIS1	**30/11/2011**	**Ground**	<0.5	264.0	318.00	<0.5							5750.0	5.9				<0.5			7040	6457					387		0.99							<0.5			6.93	6.14	5900.00			3.6		7930.0		
P09-SIS1 Average			0.3	558.5	287.00	0.25							6682.5	5.9				0.3			7923	7717					349		0.92							0.3			6.76	6.36	7850.00			5.9		4842.5		
P09-SIS1 Max			<0.5	1010.0	430.00	<0.5							7510.0	6.4				<0.5			9640	8728					520		0.99							<0.5			6.93	6.55	9800.00			10.1		7930.0		
P09-SIS1 Min			<0.5	264.0	140.00	<0.5							5750.0	5.1				<0.5			6830	6457					170		0.87							<0.5			6.64	6.14	5900.00			3.6		840.0		
P09-SIS2	**07/06/2011**	**Ground**	<0.5	941.0	140.00	<0.5							7480.0	6.4				<0.5			9510	9850					170		0.87							<0.5			6.53	6.04	9600.00			4.7		2200.0		
P09-SIS2	**16/07/2011**	**Ground**	<0.5	907.0	150.00	<0.5							6490.0	6.4				<0.5			8850	9357					180									<0.5			6.31	5.97	8400.00			6.9		1900.0		
P09-SIS2	**07/09/2011**	**Ground**	<0.5	744.0	160.00	<0.5							5840.0	6.1				<0.5			8750	12250					200		0.76							<0.5			6.54	6.01	8500.00			5.8		2700.0		
P09-SIS2	**29/11/2011**	**Ground**	<0.5	786.0	166.00	<0.5							6730.0	7.1				<0.5			8900	8177					202		0.91							<0.5			6.53	5.71	8250.00			2.7		10900.0		
P09-SIS2 Average			0.3	844.5	154.00	0.25							6635.0	6.5				0.3			9003	9909					188		0.85							0.3			6.48	5.93	8687.50			5.0		4425.0		
P09-SIS2 Max			<0.5	941.0	166.00	<0.5							7480.0	7.1				<0.5			9510	12250					202		0.91							<0.5			6.54	6.04	9600.00			6.9		10900.0		
P09-SIS2 Min			<0.5	744.0	140.00	<0.5							5840.0	6.1				<0.5			8750	8177					170		0.76							<0.5			6.31	5.71	8250.00			2.7		1900.0		
P09-SIS3	**08/06/2011**	**Ground**	<0.5	1020.0	130.00	<0.5							7220.0	6.1				<0.5			9340	9882					160		0.87							<0.5			6.91	6.12	9400.00			4.4		460.0		
P09-SIS3	**17/07/2011**	**Ground**	<0.5	810.0	140.00	<0.5							5830.0	6.2				<0.5			8150	8583					170									<0.5			6.32	6.31	7800.00			3.0		650.0		
P09-SIS3	**07/09/2011**	**Ground**	<0.5	770.0	170.00	<0.5							5910.0	7.2				<0.5			8790	11909					210		0.80							<0.5			6.60	6.15	8100.00			5.0		310.0		
P09-SIS3	**29/11/2011**	**Ground**	<0.5	660.0	165.00	<0.5							6180.0	7.9				<0.5			8590	7253					201		0.87							<0.5			6.54	5.90	7890.00			2.5		1270.0		
P09-SIS3 Average			0.3	815.0	151.25	0.25							6285.0	6.9				0.3			8718	9407					185		0.85							0.3			6.59	6.12	8297.50			3.7		672.5		
P09-SIS3 Max			<0.5	1020.0	170.00	<0.5							7220.0	7.9				<0.5			9340	11909					210		0.87							<0.5			6.91	6.31	9400.00			5.0		1270.0		
P09-SIS3 Min			<0.5	660.0	130.00	<0.5							5830.0	6.1				<0.5			8150	7253					160		0.80							<0.5			6.32	5.90	7800.00			2.5		310.0		
P09-SIS4	**17/07/2011**	**Ground**	<0.5	321.0	330.00	<0.5							4380.0	7.5				<0.5			6170	6514					400									<0.5			6.64	6.64	5200.00			6.8		900.0		
P09-SIS6	**18/09/2011**	**Ground**	<0.5	131.0	510.00	<0.5							4050.0	7.4				<0.5			5070	5410					630		0.99							<0.5			7.01	6.44	3600.00			5.3		1000.0		
P96-6	**09/06/2011**	**Ground**	<0.5	196.0	410.00	<0.5							915.0	<0.5				<0.5			1540	1580					500		1.00							<0.5			6.66	6.10	520.00			2.4		93.0		
P96-6	**28/09/2011**	**Ground**	<0.5	28.7	280.00	<0.5							1260.0	1.1				<0.5			2050	2106					340		0.94							<0.5			7.12	6.28	1040.00			2.0		6.0		
P96-6 Average			0.3	112.4	345.00	0.25							1087.5	0.7				0.3			1795	1843					420		0.97							0.3			6.89	6.19	780.00			2.2		49.5		
P96-6 Max			<0.5	196.0	410.00	<0.5							1260.0	1.1				<0.5			2050	2106					500		1.00							<0.5			7.12	6.28	1040.00			2.4		93.0		
P96-6 Min			<0.5	28.7	280.00	<0.5							915.0	<0.5				<0.5			1540	1580					340		0.94							<0.5			6.66	6.10	520.00			2.0		6.0		
P96-7	**15/06/2011**	**Ground**	<0.5	20.3	220.00	<0.5							2110.0	0.7				<0.5			2760	2936					260		1.10							<0.5			7.74	7.45	1700.00			3.0		410.0		
P96-7	**10/09/2011**	**Ground**	<0.5	16.9	200.00	<0.5							2290.0	0.6				<0.5			3430	4255					250		0.84							<0.5			7.95	6.74	2500.00			2.1		120.0		
P96-7 Average			0.3	18.6	210.00	0.25							2200.0	0.7				0.3			3095	3596					255		0.97							0.3			7.85	7.10	2100.00			2.6		265.0		
P96-7 Max			<0.5	20.3	220.00	<0.5							2290.0	0.7				<0.5			3430	4255					260		1.10							<0.5			7.95	7.45	2500.00			3.0		410.0		
P96-7 Min			<0.5	16.9	200.00	<0.5							2110.0	0.6				<0.5			2760	2936					250		0.84							<0.5			7.74	6.74	1700.00			2.1		120.0		
P96-8A	**08/06/2011**	**Ground**	<0.5	891.0	38.00	<0.5							6110.0	11.0				<0.5			7530	8226					46		1.00							<0.5			5.73	5.38	7000.00			3.5		24.0		
P96-8A	**11/09/2011**	**Ground**	<0.5	1180.0	46.00	<0.5							5380.0	12.0				<0.5			8040	11800					56		0.96							<0.5			5.80	5.42	7700.00			6.7		26.0		
P96-8A Average			0.3	1035.5	42.00	0.25							5745.0	11.5				0.3			7785	10013					51		0.98							0.3			5.77	5.40	7350.00			5.1		25.0		
P96-8A Max			<0.5	1180.0	46.00	<0.5							6110.0	12.0				<0.5			8040	11800					56		1.00							<0.5			5.80	5.42	7700.00			6.7		26.0		
P96-8A Min			<0.5	891.0	38.00	<0.5							5380.0	11.0				<0.5			7530	8226					46		0.96							<0.5			5.73	5.38	7000.00			3.5		24.0		
P96-8B	**08/06/2011**	**Ground**	<0.5	777.0	2.80	<0.5							4760.0	9.7				<0.5			6450	6875					3		0.99							<0.5			5.18	5.27	5700.00			4.1		81.0		
P96-8B	**11/09/2011**	**Ground**	4.9	1010.0	<0.5	<0.5							4920.0	12.0				<0.5			7330	11150					<0.5		0.96							<0.5			4.71	4.42	7400.00			7.9		26.0		
P96-8B Average			2.6	893.5	1.53	0.25							4840.0	10.9				0.3			6890	9013					2		0.98							0.3			4.95	4.85	6550.00			6.0		53.5		
P96-8B Max			4.9	1010.0	2.80	<0.5							4920.0	12.0				<0.5			7330	11150					3		0.99							<0.5			5.18	5.27	7400.00			7.9		81.0		
P96-8B Min			<0.5	777.0	<0.5	<0.5							4760.0	9.7				<0.5			6450	6875					<0.5		0.96							<0.5			4.71	4.42	5700.00			4.1		26.0		
R10	**20/01/2011**	**Surface**			130.00	<0.5						134.0	157.0	<0.5				<0.5			292	280	0.90				160		1.10	<0.005	<0.005	0.25	0.25	<0.5			<0.5			7.68	7.78	20.00	160	0.0	0.90		<1.0	0.80
R10	**15/02/2011**	**Surface**			130.00	<0.5						130.0	146.0	0.6				<0.5			290	306	1.00				160		1.00	0.028			0.23	<0.5			<0.5			7.95	7.92	18.00	150	0.2	1.10		<1.0	0.53
R10	**16/03/2011**	**Surface**			140.00	<0.5						149.0	151.0	1.0				<0.5			309	300	1.30				170		1.00	0.015	<0.005	0.26	0.26	<0.5			<0.5			7.64	8.05	16.00	180	0.3	1.10		<1.0	0.47
R10	**12/04/2011**	**Surface**			140.00	<0.5						140.0	165.0	<0.5				<0.5			293	292	1.60				170		1.10	0.014	<0.005	0.23	0.23	<0.5			<0.5			7.75	7.69	15.00	160	0.1	1.30		<1.0	0.44
R10	**09/05/2011**	**Surface**			93.00	<0.5						96.3	94.0	2.1				<0.5			205	206	10.60				110		1.00	0.022	<0.005	0.08	0.08	<0.5			<0.5			7.54	7.67	13.00	120	1.5	10.40		3.0	2.01
R10	**22/06/2011**	**Surface**			43.00	<0.5						46.8	44.9	<0.5				<0.5			96	92	5.40				52		1.00	0.034	<0.005	<0.02	<0.02	<0.5			<0.5			7.70	7.73	6.10	68	7.0	5.40		6.0	1.12
R10	**21/07/2011**	**Surface**			57.00	<0.5						61.3	59.0	0.7				<0.5			126	132	4.80				69		1.00	0.076	<0.005	<0.02	<0.02	<0.5			<0.5			7.71	7.11	7.10	90	11.0	4.80		2.0	1.04
R10	**23/08/2011**	**Surface**			64.00	<0.5						68.9	68.9	<0.5				<0.5			144	188	3.70				78		1.00	0.024	0.007	<0.02	<0.02	<0.5			<0.5			7.79	8.15	8.00	80	7.7	3.60		<1.0	0.51
R10	**22/09/2011**	**Surface**			77.00	<0.5						81.2	82.2	1.0				<0.5			167	208	2.60				94		1.00	0.064	<0.005	<0.02	<0.02	<0.5			<0.5			8.01	8.04	9.40	110	3.2	2.50		<1.0	0.53
R10	**19/10/2011**	**Surface**			93.00	<0.5						99.9	104.0	<0.5				<0.5			205	180	1.90				110		1.00	0.016	<0.005	0.10	0.10	<0.5			<0.5			7.88	7.50	14.80	110	0.2	1.90		<1.0	0.52
R10	**16/11/2011**	**Surface**			103.00	<0.5						113.0	111.0	<0.5				<0.5			232	186	3.14				126		1.00	0.049	<0.005	0.19	0.19	<0.5			<0.5			7.76	7.82	16.70	144	0.2	5.15		1.1	0.59
R10	**06/12/2011**	**Surface**			109.00	<0.5						117.0	114.0	1.0				<0.5			239	239	1.53				134		1.00	0.033	<0.005	0.19	0.19	<0.5			<0.5			7.84	7.48	16.90	126	0.1	1.46		<1.0	0.84
R10 Average					98.25	0.25						103.1	108.1	0.7				0.3			217	217	3.21				119		1.02	0.031	0.003	0.12	0.13	0.3						7.77	7.75	13.42	125	2.6	3.30		1.3	0.78
R10 Max					140.00	<0.5						149.0	165.0	2.1				<0.5			309	306	10.60				170		1.10	0.076	0.007	0.26	0.26	<0.5						8.01	8.15	20.00	180	11.0	10.40		6.0	2.01
R10 Min					43.00	<0.5						46.8	44.9	<0.5				<0.5			96	92	0.90				52		1.00	<0.005	<0.005	<0.02	<0.02	<0.5						7.54	7.11	6.10	68	0.0	0.90		<1.0	0.44
R7	**20/01/2011**	**Surface**			130.00	<0.5						131.0	149.0	<0.5				<0.5			267	292	1.00				160		1.10	<0.05	<0.005	0.15	0.15	<0.5						7.80	7.64	10.00	150	0.0	0.90		<1.0	0.69
R7	**15/02/2011**	**Surface**			130.00	<0.5						123.0	123.0	1.8				<0.5			269	285	1.10				160		1.00	0.018			0.16	<0.5						8.04	8.01	10.00	140	0.2	1.10		<1.0	0.58
R7	**16/03/2011**	**Surface**			140.00	<0.5						139.0	140.0	0.9				<0.5			291	281	1.40				170		0.97	0.021	<0.005	0.19	0.19	<0.5						8.28	7.73	9.30	170	0.4	1.00		<1.0	0.48
R7	**12/04/2011**	**Surface**			130.00	<0.5						134.0	144.0	<0.5				<0.5			273	284	2.50				160		1.10	0.012	<0.005	0.18	0.18	<0.5						7.94	8.03	9.20	150	0.6	2.80		<1.0	0.53
R7	**09/05/2011**	**Surface**			95.00	<0.5						85.2	98.1	0.7				<0.5			199	217	12.10				120			0.062	<0.005	0.07	0.07	<0.5						7.63	7.80	4.20	130	1.3	9.30		2.0	2.17
R7	**22/06/2011**	**Surface**			43.00	<0.5						46.5	45.4	<0.5				<0.5			94	94	5.40				52		1.00	0.038	<0.005	<0.02	<0.02	<0.5						7.70	7.98	4.70	64	7.3	5.30		6.0	1.16
R7	**21/07/2011**	**Surface**			59.00	<0.5						63.8	63.4	0.7				<0.5			124	123	5.30				72		1.00	0.035	<0.005	<0.02	<0.02	<0.5						7.69	8.83	6.00	90	7.2	4.70		2.0	0.54
R7	**24/08/2011**	**Surface**			68.00	<0.5						67.9	71.6	<0.5				<0.5			144	140	3.10				83		1.00	0.039	<0.005	<0.02	<0.02	<0.5						7.99	7.60	8.90	86	7.0	3.20		2.0	0.34
R7	**22/09/2011**	**Surface**			78.00	<0.5						82.1	82.0	<0.5				<0.5			162	192	2.50				95		1.00	0.037	<0.005	<0.02	<0.02	<0.5						8.03	7.52	11.00	130	3.4	1.70		<1.0	0.63
R7	**19/10/2011**	**Surface**			93.00	<0.5						94.1	101.0	<0.5				<0.5			192	170	1.50				110		1.00	0.025	<0.005	0.06	0.06	<0.5						7.88	7.89	8.70	110	1.2	1.90		<1.0	0.65
R7	**15/11/2011**	**Surface**			105.00	<0.5						101.0	103.0	<0.5				<0.5			220	220	2.60				128		1.00	0.014	<0.005	0.12	0.12	<0.5						7.98	7.36	9.63	116	<0.0	2.29		<1.0	0.61
R7	**06/12/2011**	**Surface**			107.00	<0.5						110.0	108.0	<0.5				<0.5			227	223	2.04				131		1.00	0.033	<0.005	0.11	0.11

Denison Environmental Services

Table B-1: 2011 Rose Creek Drainage Water Quality
General Parameters

Station	Date	Sample Type	Acid(pH4.5) mg/L	Acid(pH8.3) mg/L	ALK mg/L	ALKPP mg/L	B2008H µg/L	B2BENZ µg/L	B2EBNZ µg/L	B2MPXY µg/L	B2TOLU µg/L	CaCO3 mg/L	CaCO3-d mg/L	Chloride mg/L	Chlorophyll a µg/L	CN 4500 mg/L	CNTHIO mg/L	CO3 mg/L	Coliform counts/100ml	Colour TCU	COND µmho/cm	CONDF µS/cm	DO mg/L	DO-% %	DOC mg/L	Ecoli counts/100ml	HCO3 mg/L as CaCO3	HMW PAH µg/L	Ion Balance (blank)	LMW PAH µg/L	MTBE µg/L	NH3 mg/L	NO2 mg/L	NO2/3 mg/L	NO3 mg/L	OH mg/L	oPO4 mg/L	ORP mV	pH (blank)	pHF (blank)	SO4-d mg/L	TDS mg/L	TEMP-F °C	TOC mg/L	Total PAH µg/L	TSS mg/L	TURB NTU	VPH µg/L
R8	20/01/2011	Surface			130.00	<0.5						120.0	145.0	<0.5				<0.5			267	270		1.10			160		1.10			<0.05	<0.005	0.15	0.15	<0.5			7.83	7.74	11.00	150	0.0	1.00		<1.0	0.77	
R8	15/02/2011	Surface			130.00	<0.5						122.0	134.0	1.6				<0.5			273	295		1.10			160		1.00			0.020		0.16	<0.5			8.04	8.00	9.60	130	0.2	1.30		<1.0	0.57	
R8	16/03/2011	Surface			140.00	<0.5						144.0	142.0	0.7				<0.5			288	280		0.90			170		1.00			0.039	<0.005	0.19	0.19	<0.5			7.83	8.02	9.50	170	0.3	0.90		<1.0	0.51	
R8	12/04/2011	Surface			140.00	<0.5						134.0	151.0	2.9				<0.5			272	279		1.20			160		1.10			0.006	<0.005	0.18	0.18	<0.5			7.96	8.04	9.50	170	1.1	1.10		<1.0	0.49	
R8	09/05/2011	Surface			94.00	<0.5						84.9	92.3	3.1				<0.5			194	218		10.40			110		1.00			0.035	<0.005	0.09	0.09	<0.5			7.60	7.87	5.40	120	1.1	9.40		2.0	1.85	
R8	22/06/2011	Surface			37.00	<0.5						41.6	41.1	<0.5				<0.5			83	85		5.70			45		1.00			0.018	<0.005	<0.02	<0.02	<0.5			7.67	7.69	6.40	64	6.9	6.60		6.0	1.22	
R8	21/07/2011	Surface			53.00	<0.5						57.7	55.5	0.9				<0.5			115	113		4.90			65		1.00			0.026	<0.005	<0.02	<0.02	<0.5			7.64	7.90	5.40	88	9.3	5.10		<1.0	0.60	
R8	24/08/2011	Surface			62.00	<0.5						61.5	62.2	<0.5				<0.5			132	123		3.10			76		1.00			0.026	<0.005	<0.02	<0.02	<0.5			8.02	7.56	6.30	82	7.0	3.50		<1.0	0.46	
R8	22/09/2011	Surface			71.00	<0.5						74.9	75.5	<0.5				<0.5			152	180		2.70			87		1.00			0.070	<0.005	<0.02	<0.02	<0.5			7.98	7.64	6.60	96	3.2	2.60		<1.0	0.47	
R8	19/10/2011	Surface			86.00	<0.5						91.8	95.1	<0.5				<0.5			181	160		2.40			110		1.00			0.018	<0.005	0.06	0.06	<0.5			7.88	7.76	8.20	92	0.2	2.00		<1.0	0.57	
R8	15/11/2011	Surface			101.00	<0.5						100.0	97.2	<0.5				<0.5			205	200		3.86			123		1.00			0.024	<0.005	0.10	0.10	<0.5			7.82	7.63	9.45	116	<0.0	2.35		<1.0	0.76	
R8	06/12/2011	Surface			105.00	<0.5						108.0	103.0	<0.5				<0.5			219	212		1.69			129		1.00			0.036	<0.005	0.11	0.11	<0.5			7.89	7.66	9.08	118	0.0	1.35		<1.0	1.07	
R8 Average					95.75	0.25						95.0	99.5	0.9				0.3			198	201		3.25			116		1.02			0.029	0.003	0.08	0.09	0.3			7.85	7.79	8.04	116	2.4	3.10		1.1	0.78	
R8 Max					140.00	<0.5						144.0	151.0	3.1				<0.5			288	295		10.40			170		1.10			0.070	<0.005	0.19	0.19	<0.5			8.04	8.04	11.00	170	9.3	9.40		6.0	1.85	
R8 Min					37.00	<0.5						41.6	41.1	<0.5				<0.5			83	85		0.90			45		1.00			0.006	<0.005	<0.02	<0.02	<0.5			7.60	7.56	5.40	64	0.0	0.90		<1.0	0.46	
R9	20/01/2011	Surface			130.00	<0.5						134.0	149.0	<0.5				<0.5			289	290		1.10			160		1.00			<0.05	<0.005	0.25	0.25	<0.5			7.84	7.81	20.00	150	0.0	0.90		<1.0	0.75	
R9	15/02/2011	Surface			130.00	<0.5						142.0	145.0	2.1				<0.5			289	293		1.00			160		1.00			0.014		0.23	<0.5			8.03	7.99	17.00	150	0.2	1.00		<1.0	0.56	
R9	16/03/2011	Surface			150.00	1.30						150.0	150.0	1.0				1.6			311	290		1.00			170		0.97			0.019	<0.005	0.26	0.26	<0.5			8.33	8.02	16.00	180	0.2	1.00		<1.0	0.39	
R9	12/04/2011	Surface			140.00	<0.5						137.0	149.0	<0.5				<0.5			283	282		1.70			160		1.00			0.007	<0.005	0.23	0.23	<0.5			7.96	8.08	15.00	160	0.1	0.80		<1.0	0.39	
R9	09/05/2011	Surface			93.00	<0.5						91.1	99.9	0.8				<0.5			203	209		10.80			110		1.00			0.027	<0.005	0.09	0.09	<0.5			7.72	7.78	12.00	130	1.3	9.90		3.0	1.73	
R9	22/06/2011	Surface			44.00	<0.5						45.6	44.9	1.5				<0.5			99	93		5.10			53		1.00			0.031	<0.005	<0.02	<0.02	<0.5			8.02	7.67	5.00	62	7.1	5.20		7.0	1.28	
R9	21/07/2011	Surface			57.00	<0.5						60.8	63.1	0.6				<0.5			125	131		4.50			70		1.00			0.042	<0.005	<0.02	<0.02	<0.5			7.79	7.80	6.50	82	12.0	6.00		<1.0	0.58	
R9	23/08/2011	Surface			65.00	<0.5						70.0	63.9	0.7				<0.5			143	157		3.10			79		1.00			0.026	<0.005	<0.02	<0.02	<0.5			7.90	7.93	9.10	88	7.7	4.10		<1.0	0.53	
R9	22/09/2011	Surface			75.00	<0.5						82.0	84.5	<0.5				<0.5			175	230		2.40			92		1.00			0.031	<0.005	0.03	0.03	<0.5			7.90	7.51	12.00	92	3.3	3.30		<1.0	0.65	
R9	19/10/2011	Surface			93.00	<0.5						101.0	104.0	<0.5				<0.5			205	180		1.90			110		1.00			0.023	<0.005	0.11	0.11	<0.5			7.79	7.66	14.00	110	0.1	2.10		<1.0	0.50	
R9	16/11/2011	Surface			103.00	<0.5						115.0	117.0	0.7				<0.5			233	187		1.85			125		1.00			0.027	<0.005	0.18	0.18	<0.5			7.87	7.89	14.50	144	0.2	1.66		<1.0	0.66	
R9	06/12/2011	Surface			108.00	<0.5						118.0	107.0	0.7				<0.5			239	236		1.26			132		1.00			0.039	<0.005	0.18	0.18	<0.5			7.90	7.61	16.00	128	0.2	1.58		<1.0	0.84	
R9 Average					99.00	0.34						103.9	106.4	0.8				0.4			216	215		2.98			118		1.00			0.026	0.003	0.12	0.13	0.3			7.92	7.81	13.09	123	2.7	3.13		1.3	0.74	
R9 Max					150.00	1.30						150.0	150.0	2.1				1.6			311	293		10.80			170		1.00			<0.05	<0.005	0.26	0.26	<0.5			8.33	8.08	20.00	180	12.0	9.90		7.0	1.73	
R9 Min					44.00	<0.5						45.6	44.9	<0.5				<0.5			99	93		1.00			53		0.97			0.007	<0.005	<0.02	<0.02	<0.5			7.72	7.51	5.00	62	0.0	0.80		<1.0	0.39	
S1A	07/06/2011	Ground	<0.5	18.5	67.00	<0.5						208.0	0.9					<0.5			1090	585					81		0.34							<0.5			7.15	6.82	570.00		3.9			430.0		
S1A	15/09/2011	Ground	<0.5	23.2	75.00	<0.5						130.0	0.9					<0.5			274	285					91		1.00							<0.5			7.30	6.64	62.00		3.0			84.0		
S1A Average			0.3	20.9	71.00	0.25						169.0	0.9					0.3			682	435					86		0.67							0.3			7.23	6.73	316.00		3.5			257.0		
S1A Max			<0.5	23.2	75.00	<0.5						208.0	0.9					<0.5			1090	585					91		1.00							<0.5			7.30	6.82	570.00		3.9			430.0		
S1A Min			<0.5	18.5	67.00	<0.5						130.0	0.9					<0.5			274	285					81		0.34							<0.5			7.15	6.64	62.00		3.0			84.0		
S2A	07/06/2011	Ground	<0.5	272.0	340.00	<0.5						678.0	1.6					<0.5			1270	1387					410		1.00							<0.5			6.91	6.03	380.00		4.3			160.0		
S2A	11/09/2011	Ground	<0.5	300.0	340.00	<0.5						671.0	2.4					<0.5			1300	1660					410		0.89							<0.5			6.37	5.81	480.00		2.8			580.0		
S2A Average			0.3	286.0	340.00	0.25						674.5	2.0					0.3			1285	1524					410		0.95							0.3			6.64	5.92	430.00		3.6			370.0		
S2A Max			<0.5	300.0	340.00	<0.5						678.0	2.4					<0.5			1300	1660					410		1.00							<0.5			6.91	6.03	480.00		4.3			580.0		
S2A Min			<0.5	272.0	340.00	<0.5						671.0	1.6					<0.5			1270	1387					410		0.89							<0.5			6.37	5.81	380.00		2.8			160.0		
S2B	07/06/2011	Ground	<0.5	645.0	210.00	<0.5						5630.0	6.5					<0.5			7140	7630					260		0.93							<0.5			6.85	6.37	6600.00		5.6			620.0		
S2B	11/09/2011	Ground	<0.5	737.0	160.00	<0.5						4080.0	6.2					<0.5			7110	9649					200		0.72							<0.5			6.61	5.83	6700.00		2.9			500.0		
S2B Average			0.3	691.0	185.00	0.25						4855.0	6.4					0.3			7125	8640					230		0.83							0.3			6.73	6.10	6650.00		4.3			560.0		
S2B Max			<0.5	737.0	210.00	<0.5						5630.0	6.5					<0.5			7140	9649					260		0.93							<0.5			6.85	6.37	6700.00		5.6			620.0		
S2B Min			<0.5	645.0	160.00	<0.5						4080.0	6.2					<0.5			7110	7630					200		0.72							<0.5			6.61	5.83	6600.00		2.9			500.0		
SECURSINK	09/03/2011	Surface																		0		680				0												8.04				11.4					
SECURSINK	17/03/2011	Surface			270.00	2.90	<0.4	<0.4	<0.4	<0.4	3.1	281.0		1.9				3.4		<5.0	538	578					330	<0.05		<0.5	<4.0		<0.005	<0.02	<0.02	<0.5			8.33	7.52	25.00	310	13.7		<0.5		0.30	<300.0
SECURSINK	26/04/2011	Surface			280.00	<0.5	<0.4	<0.4	<0.4	<0.4	1.2	256.0		1.2				<0.5	0	<5.0	553	548				0	340	<0.05		<0.5	<4.0		<0.005	<0.02	<0.02	<0.5			7.72	7.37	32.00	330	15.2		<0.5		0.30	<300.0
SECURSINK	02/08/2011	Surface																	0			560				0												7.25				15.7					
SECURSINK Average					275.00	1.58	0.2	0.2	0.2	0.2	2.2	268.5		1.6				1.8	0	2.5	546	592				0	335	0.03		0.3	2.0		0.003	0.01	0.01	0.3			8.03	7.55	28.50	320	14.0		0.250		0.24	150.0
SECURSINK Max					280.00	2.90	<0.4	<0.4	<0.4	<0.4	3.1	281.0		1.9				3.4	0	<5.0	553	680				0	340	<0.05		<0.5	<4.0		<0.005	<0.02	<0.02	<0.5			8.33	8.04	32.00	330	15.7		<0.5		0.30	<300.0
SECURSINK Min					270.00	<0.5	<0.4	<0.4	<0.4	<0.4	1.2	256.0		1.2				<0.5	0	<5.0	538	548				0	330	<0.05		<0.5	<4.0		<0.005	<0.02	<0.02	<0.5			7.72	7.25	25.00	310	11.4		<0.5		0.30	<300.0
SP5-6	28/06/2011	Seepage	<0.5	19.5	160.00	<0.5						601.0	2.3					<0.5			1090	976					190		0.95							<0.5	120.000	7.52	6.80	470.00		3.8			<1.0		
SP5-6	18/10/2011	Seepage	<0.5	8.9	210.00	<0.5						1120.0	2.4					<0.5			1730	1860					250		1.10							<0.5			7.96	6.82	792.00		2.6			2.0		
SP5-6 Average			0.3	14.2	185.00	0.25						860.5	2.4					0.3			1410	1418					220		1.03							0.3	120.000	7.74	6.81	631.00		3.2			1.3		
SP5-6 Max			<0.5	19.5	210.00	<0.5						1120.0	2.4					<0.5			1730	1860					250		1.10							<0.5	120.000	7.96	6.82	792.00		3.8			2.0		
SP5-6 Min			<0.5	8.9	160.00	<0.5						601.0	2.3					<0.5			1090	976					190		0.95							<0.5	120.000	7.52	6.80	470.00		2.6			<1.0		
SRK04-3A	17/09/2011	Ground			88.00	<0.5						4910.0						<0.5			7920	8470					110									<0.5			5.87	5.34	7400.00		4.5					
SRK05-ETA-BR1	17/09/2011	Ground			85.00	<0.5						4130.0						<0.5			7940	8350					100									<0.5			5.54	5.45	7800.00		4.7					
SRK05-ETA-BR2	17/09/2011	Ground			120.00	<0.5						1340.0						<0.5			2310	2566					140									<0.5			7.06	6.89	1300.00		4.1					
SRK05-SP1A	10/09/2011	Ground			220.00	<0.5						1080.0	5.3					<0.5			1810	2264					270		1.10							<0.5			6.11	5.58	860.00		2.0					
SRK05-SP1B	10/09/2011	Ground			370.00	<0.5						575.0	1.8					<0.5			1020	1264					450		1.10							<0.5			6.80	5.68	190.00		2.0					
SRK05-SP2	10/09/2011	Ground			180.00	<0.5						265.0	0.7					<0.5			472	575					220		1.10							<0.5			6.85	6.45	69.00		2.3					
SRK05-SP3A	10/09/2011	Ground			310.00	<0.5						896.0	3.2					<0.5			1480	1770					380		0.99							<0.5			6.26	5.73	660.00		4.8					
SRK05-SP3B	10/09/2011	Ground			300.00	<0.5						724.0	2.7					<0.5			1250	1544					370		1.00							<0.5			6.12	5.66	460.00		2.0					
SRK05-SP4A	06/06/2011	Ground	<0.5	289.0	280.00	<0.5						481.0	1.5					<0.5			1060	1156					340		0.91							<0.5			6.63	5.85	310.00		1.9			490.0		
SRK05-SP4A	15/09/2011	Ground	<0.5	247.0	300.00	<0.5						540.0	2.5					<0.5			1090	1157					370		1.00							<0.5			6.26	5.84	290.00		2.5			8.0		
SRK05-SP4A Average			0.3	268.0	290.00	0.25						510.5	2.0					0.3			1075	1157					355		0.96							0.3			6.45	5.85	300.00		2.2			249.0		
SRK05-SP4A Max			<0.5	289.0	300.00	<0.5						540.0	2.5					<0.5			1090	1157					370		1.00							<0.5			6.63	5.85	310.00		2.5			490.0		
SRK05-SP4A Min			<0.5	247.0	280.00	<0.5						481.0	1.5					<0.5			1060	1156					340		0.91							<0.5			6.26	5.84	290.00		1.9			8.0		
SRK05-SP4B	16/09/2011	Ground	<0.5	353.0	140.00	<0.5						4770.0	6.7					<0.5			6040	>3999.0					170		0.96							<0.5			6.41	5.89	5100.00		7.0			2400.0		
SRK05-SP5	07/06/2011	Ground	<0.5	722.0	230.00	<0.5						3900.0	6.7					<0.5			7090	5619					290		0.62							<0.5			6.98	5.85	6400.00		5.2			1900.0		
SRK05-SP5	07/09/2011	Ground	<0.5	488.0	260.00	<0.5						3440.0	4.9					<0.5			5570	7004					320		0.85							<0.5			6.41	5.83	4200.00		3.8			250.0		
SRK05-SP5 Average			0.3	605.0	245.00	0.25						3670.0	5.8					0.3			6330	6312					305		0.74							0.3			6.70	5.84	5300.00		4.5			1075.0		
SRK05-SP5 Max			<0.5	722.0	260.00	<0.5						3900.0	6.7					<0.5			7090	7004					320		0.85							<0.5			6.98	5.85	6400.00		5.2			1900.0		
SRK05-SP5 Min			<0.5	488.0	230.00	<0.5						3440.0	4.9					<0.5			5570	5619					290		0.62							<0.5			6.41	5.83	4200.00		3.8			250.0		
SRK08-P10A	09/06/2011	Ground	<0.5	115.0	590.00	<0.5						2310.0	120.0					<0.5			3650	3744					720		1.10							<0.5			7.04	6.44	1500.00		3.0			4700.0		
SRK08-P10A	17/09/2011	Ground	<0.5	182.0	590.00	<0.5						2100.0	140.0					<0.5			3680	3790					720		0.98							<0.5			6.70	6.41	1600.00		2.9			4200.0		
SRK08-P10A Average			0.3	148.5	590.00	0.25						2205.0	130.0					0.3			3665	3767					720		1.04							0.3			6.87	6.43	1550.00		3.0			4450.0		
SRK08-P10A Max			<0.5	182.0	590.00	<0.5						2310.0	140.0					<0.5			3680	3790					720		1.10							<0.5			7.04	6.44	1600.00		3.0			4700.0		
SRK08-P10A Min			<0.5	115.0	590.00	<0.5						2100.0	120.0					<0.5			3650	3744					720		0.98							<0.5			6.70	6.41	1500.00		2.9			4200.0		
SRK08-P11A	08/06/2011	Ground	<0.5	13.1	190.00	<0.5						464.0	0.8					<0.5			861	1606					230		1.10							<0.5			7.88	7.06	240.00		3.0			2000.0		
SRK08-P11A	17/09/2011	Ground	<0.5	11.3	170.00	<0.5						321.0	0.8					<0.5			642	665					210		0.95							<0.5			7.58	7.10	170.00		3.0			120.0		
SRK08-P11A Average			0.3	12.2	180.00	0.25						392.5	0.8					0.3			752	1136					220		1.03							0.3			7.73	7.08	205.00		3.0			1060.0		
SRK08-P11A Max			<0.5	13.1	190.00	<0.5						464.0	0.8					<0.5			861	1606					230		1.10							<0.5			7.88	7.10	240.00		3.0			2000.0		
SRK08-P11A Min			<0.5	11.3	170.00	<0.5						321.0	0.8					<0.5			642	665					210		0.95							<0.5			7.58	7.06	170.00		3.0			120.0		
SRK08-P11B	08/06/2011	Ground	<0.5	21.8	160.00	<0.5						570.0	1.7					<0.5			1030	1920					200		1.00							<0.5			7.58	6.97	400.00		2.7			16000.0		
SRK08-P11B	17/09/2011	Ground	<0.5	19.9	150.00	<0.5						444.0	0.8					<0.5			897	900					180		0.95							<0.5			7.20	6.91	320.00		4.1			480.0		
SRK08-P11B Average			0.3	20.9	155.00	0.25						507.0	1.3					0.3			964	1410					190		0.98							0.3			7.39	6.94	360.00		3.4			8240.0		
SRK08-P11B Max			<0.5	21.8	160.00	<0.5						570.0	1.7					<0.5			1030	1920					200		1.00							<0.5			7.58	6.97	400.00		4.1			16000.0		
SRK08-P11B Min			<0.5	19.9	150.00	<0.5						444.0	0.8					<0.5			897	900					180		0.95							<0.5			7.20	6.91	320.00		2.7			480.0		
SRK08-P12A	29/09/2011	Ground	<0.5	348.0	590.00	<0.5						646.0	1.8					<0.5			1290	1315					730		1.00							<0.5			6.21	5.80	131.00		1.5			1100.0		
SRK08-P12B	29/09/2011	Ground	<0.5	211.0	310.00	<0.5						357.0	1.3					<0.5			702	1080					370		1.00							<0.5			6.25	5.71	74.40		1.2			44000.0		
SRK08-P9	17/09/2011	Ground	<0.5	22.7	270.00	<0.5						1160.0	1.6					<0.5			2030	2287					330		0.88							<0.5			7.53	7.18	1000.00		4.3			220.0		
SRK08-SBR2	17/10/2011	Ground	<0.5	309.0	340.00	<0.5						779.0	2.2					<0.5			1430	1496					410		1.00							<0.5			6.43	6.29	499.00		4.8			3700.0		
SRK08-SBR3	10/09/2011	Ground	<0.5	97.8	710.00	<0.5						2070.0	1.6					<0.5			3300	4063					860		0.94							<0.5			7.49	6.62	1600.00		2.1			570.0		
SRK08-SBR4	14/09/2011	Ground	<0.5	59.9	350.00	<0.5						1050.0	2.2					<0.5			1740	1728					430		0.96							<0.5			7.37	6.15	770.00		2.4			92.0		
SRK08-SP7A	06/06/2011	Ground	<0.5	121.0	160.00	<0.5						839.0	3.0					<0.5			1630	1801					190		0.90							<0.5			6.50	6.04	840.00		2.2			280.0		
SRK08-SP7A	16/07/2011	Ground	<0.5	121.0	120.00	<0.5						668.0	2.4					<0.5			1380	1627					150									<0.5			6.81	6.15	700.00		2.9			14.0

Denison Environmental Services

Table B-1: 2011 Rose Creek Drainage Water Quality
General Parameters

Station	Date	Sample Type	Acid(pH4.5) mg/L	Acid(pH8.3) mg/L	ALK mg/L	ALKPP mg/L	B2008H µg/L	B2BENZ µg/L	B2EBNZ µg/L	B2MPXY µg/L	B2TOLU µg/L	CaCO3 mg/L	CaCO3-d mg/L	Chloride mg/L	Chlorophyll a µg/L	CN 4500 mg/L	CNTHIO mg/L	CO3 mg/L	Coliform counts/100ml	Colour TCU	COND µmho/cm	CONDF µS/cm	DO mg/L	DO-% %	DOC mg/L	Ecoli counts/100ml	HCO3 mg/L as CaCO3	HMW PAH µg/L	Ion Balance (blank)	LMW PAH µg/L	MTBE µg/L	NH3 mg/L	NO2 mg/L	NO2/3 mg/L	NO3 mg/L	OH mg/L	oPO4 mg/L	ORP mV	pH (blank)	pHF (blank)	SO4-d mg/L	TDS mg/L	TEMP-F °C	TOC mg/L	Total PAH µg/L	TSS mg/L	TURB NTU	VPH µg/L
SRK08-SP7B	06/06/2011	Ground	<0.5	17.2	74.00	<0.5							93.8	<0.5				<0.5			237	239					90		1.00							<0.5			6.91	6.60	41.00			1.5		480.0		
SRK08-SP7B	16/07/2011	Ground	<0.5	18.8	74.00	<0.5							89.2	0.7				<0.5			215	220					91									<0.5			6.85	6.47	29.00			2.6		3.0		
SRK08-SP7B	07/09/2011	Ground	<0.5	8.8	65.00	<0.5							79.0	0.9				<0.5			175	275					79		1.00							<0.5			6.93	8.42	20.00			4.9		680.0		
SRK08-SP7B	29/11/2011	Ground	<0.5	9.9	69.90	<0.5							75.5	<0.5				<0.5			187	224					85		1.00							<0.5			6.94	7.20	27.00			1.9		81.2		
SRK08-SP7B Average			0.3	13.7	70.73	0.25							84.4	0.5				0.3			204	239					86		1.00							0.3			6.91	7.17	29.25			2.7		311.1		
SRK08-SP7B Max			<0.5	18.8	74.00	<0.5							93.8	0.9				<0.5			237	275					91		1.00							<0.5			6.94	8.42	41.00			4.9		680.0		
SRK08-SP7B Min			<0.5	8.8	65.00	<0.5							75.5	<0.5				<0.5			175	220					79		1.00							<0.5			6.85	6.47	20.00			1.5		3.0		
SRK08-SP8A	06/06/2011	Ground	<0.5	157.0	300.00	<0.5							1040.0	2.1				<0.5			1840	1809					370		0.95							<0.5			7.00	4.09	850.00			1.4		100.0		
SRK08-SP8A	07/09/2011	Ground	<0.5	190.0	310.00	<0.5							1310.0	2.9				<0.5			2100	2888					380		0.99							<0.5			6.62	6.02	1100.00			1.6		34.0		
SRK08-SP8A Average			0.3	173.5	305.00	0.25							1175.0	2.5				0.3			1970	2349					375		0.97							0.3			6.81	5.06	975.00			1.5		67.0		
SRK08-SP8A Max			<0.5	190.0	310.00	<0.5							1310.0	2.9				<0.5			2100	2888					380		0.99							<0.5			7.00	6.02	1100.00			1.6		100.0		
SRK08-SP8A Min			<0.5	157.0	300.00	<0.5							1040.0	2.1				<0.5			1840	1809					370		0.95							<0.5			6.62	4.09	850.00			1.4		34.0		
SRK08-SP8B	06/06/2011	Ground	<0.5	107.0	230.00	<0.5							601.0	1.4				<0.5			1300	1582					280		0.86							<0.5			7.00	6.08	510.00			0.9		3800.0		
SRK08-SP8B	07/09/2011	Ground	<0.5	146.0	250.00	<0.5							1500.0	2.7				<0.5			2320	3392					310		1.00							<0.5			6.47	6.30	1200.00			1.7		7000.0		
SRK08-SP8B Average			0.3	126.5	240.00	0.25							1050.5	2.1				0.3			1810	2487					295		0.93							0.3			6.74	6.19	855.00			1.3		5400.0		
SRK08-SP8B Max			<0.5	146.0	250.00	<0.5							1500.0	2.7				<0.5			2320	3392					310		1.00							<0.5			7.00	6.30	1200.00			1.7		7000.0		
SRK08-SP8B Min			<0.5	107.0	230.00	<0.5							601.0	1.4				<0.5			1300	1582					280		0.86							<0.5			6.47	6.08	510.00			0.9		3800.0		
SRK08-SPW1	06/01/2011	Ground	<0.5	205.0	280.00	<0.5							571.0	1.7				<0.5			1060	1103					350		1.10							<0.5			6.83	6.57	270.00			2.0		31.0		
SRK08-SPW1	01/02/2011	Ground	<0.5	194.0	300.00	<0.5							578.0	3.7				<0.5			1090	1093					360		1.10							<0.5			6.82	6.48	270.00			2.2		24.0		
SRK08-SPW1	08/03/2011	Ground	<0.5	198.0	300.00	<0.5							625.0	4.3				<0.5			1070	1200					370		1.20							<0.5			6.31	6.29	290.00			2.6		12.0		
SRK08-SPW1	13/04/2011	Ground	<0.5	69.4	280.00	<0.5							510.0	3.2				<0.5			1070	1210					350		1.10							<0.5			7.08	6.18	250.00			2.4		32.0		
SRK08-SPW1	04/05/2011	Ground	<0.5	204.0	280.00	<0.5							566.0	2.4				<0.5			1070	1160					340		1.10							<0.5			6.87	6.29	290.00			2.4		43.0		
SRK08-SPW1	12/05/2011	Ground	<0.5	305.0	300.00	<0.5							597.0	2.7				<0.5			1100	1120					370		1.10							<0.5			6.52	6.11	310.00			3.5		21.0		
SRK08-SPW1	16/06/2011	Ground	<0.5	247.0	300.00	<0.5							536.0	3.1				<0.5			1100	900					370		0.98							<0.5			6.46	6.27	300.00			3.2		24.0		
SRK08-SPW1	20/07/2011	Ground	<0.5	251.0	300.00	<0.5							585.0	2.1				<0.5			1110	1102					360		1.10							<0.5			6.33	6.17	300.00			2.6		30.0		
SRK08-SPW1	03/08/2011	Ground	<0.5	204.0	300.00	<0.5							610.0	2.7				<0.5			1100	1062					370		1.10							<0.5			6.39	6.27	300.00			2.2		29.0		
SRK08-SPW1	07/09/2011	Ground	<0.5	183.0	300.00	<0.5							570.0	1.7				<0.5			1140	1491					360		1.10							<0.5			6.48	6.05	290.00			2.4		32.0		
SRK08-SPW1	18/10/2011	Ground	<0.5	176.0	300.00	<0.5							583.0	3.5				<0.5			1120	1260					370		1.10							<0.5			6.57	5.94	289.00			2.7		19.0		
SRK08-SPW1	16/11/2011	Ground	<0.5	101.0	271.00	<0.5							595.0	2.6				<0.5			1120	1230					331		1.10							<0.5			6.43	6.13	304.00			2.0		22.3		
SRK08-SPW1	01/12/2011	Ground	<0.5	75.4	294.00	<0.5							572.0	2.5				<0.5			1120	1300					359		1.00							<0.5			6.41	6.04	316.00			2.6		16.4		
SRK08-SPW1 Average			0.3	185.6	292.69	0.25							576.8	2.8				0.3			1098	1172					358		1.09							0.3			6.58	6.21	290.69			2.5		25.8		
SRK08-SPW1 Max			<0.5	305.0	300.00	<0.5							625.0	4.3				<0.5			1140	1491					370		1.20							<0.5			7.08	6.57	316.00			3.5		43.0		
SRK08-SPW1 Min			<0.5	69.4	271.00	<0.5							510.0	1.7				<0.5			1060	900					331		0.98							<0.5			6.31	5.94	250.00			2.0		12.0		
SRK08-SPW2	06/01/2011	Ground	<0.5	327.0	200.00	<0.5							2620.0	3.0				<0.5			3810	>3999.0					250		0.91							<0.5			6.85	6.38	2900.00			3.7		4.0		
SRK08-SPW2	01/02/2011	Ground	<0.5	302.0	220.00	<0.5							2630.0	2.9				<0.5			3890	4300					270		0.97							<0.5			6.47	6.17	2800.00			3.5		5.0		
SRK08-SPW2	08/03/2011	Ground	<0.5	284.0	210.00	<0.5							2570.0	6.2				<0.5			3650	4020					260		0.95							<0.5			6.34	6.26	2800.00			3.4		5.0		
SRK08-SPW2	13/04/2011	Ground	<0.5	220.0	210.00	<0.5							2280.0	3.3				<0.5			3530	3790					260		0.88							<0.5			7.06	6.10	2600.00			3.0		5.0		
SRK08-SPW2	04/05/2011	Ground	<0.5	341.0	210.00	<0.5							2390.0	3.2				<0.5			3600	3790					260		0.98							<0.5			6.91	6.25	2500.00			3.9		25.0		
SRK08-SPW2	16/06/2011	Ground	<0.5	325.0	210.00	<0.5							2130.0	4.4				<0.5			3440	2568					250		0.88							<0.5			6.64	6.28	2500.00			3.3		4.0		
SRK08-SPW2	20/07/2011	Ground	<0.5	313.0	210.00	<0.5							2250.0	3.2				<0.5			3430	3121					250		1.10							<0.5			6.58	6.11	2000.00			3.1		3.0		
SRK08-SPW2	03/08/2011	Ground	<0.5	243.0	200.00	<0.5							2240.0	3.2				<0.5			3340	3250					240		1.10							<0.5			6.70	6.23	2100.00			2.4		9.0		
SRK08-SPW2	07/09/2011	Ground	<0.5	232.0	190.00	<0.5							2070.0	6.3				<0.5			3480	5010					240		0.88							<0.5			6.64	6.14	2400.00			4.4		10.0		
SRK08-SPW2	17/10/2011	Ground	<0.5	238.0	190.00	<0.5							2290.0	3.0				<0.5			3420	3630					230		0.88							<0.5			6.97	6.89	2670.00			2.9		13.0		
SRK08-SPW2	16/11/2011	Ground	<0.5	251.0	202.00	<0.5							2300.0	3.1				<0.5			3610	3920					246		0.94							<0.5			6.62	6.07	2490.00			2.7		6.0		
SRK08-SPW2	01/12/2011	Ground	<0.5	237.0	238.00	<0.5							3080.0	3.7				<0.5			4350	4960					290		1.00							<0.5			6.66	6.81	3060.00			3.0		3.8		
SRK08-SPW2 Average			0.3	276.1	207.50	0.25							2404.2	3.8				0.3			3629	3863					254		0.96							0.3			6.70	6.31	2568.33			3.3		7.7		
SRK08-SPW2 Max			<0.5	341.0	238.00	<0.5							3080.0	6.3				<0.5			4350	5010					290		1.10							<0.5			7.06	6.89	3060.00			4.4		25.0		
SRK08-SPW2 Min			<0.5	220.0	190.00	<0.5							2070.0	2.9				<0.5			3340	2568					230		0.88							<0.5			6.34	6.07	2000.00			2.4		3.0		
SRK08-SPW3	06/01/2011	Ground	<0.5	586.0	210.00	<0.5							3880.0	4.1				<0.5			5280	>3999.0					260		1.00							<0.5			6.80	6.31	4100.00			3.5		21.0		
SRK08-SPW3	01/02/2011	Ground	<0.5	455.0	230.00	<0.5							3220.0	3.8				<0.5			4670	5100					280		1.10							<0.5			6.37	6.18	3200.00			3.8		7.0		
SRK08-SPW3	08/03/2011	Ground	<0.5	461.0	220.00	<0.5							3310.0	3.6				<0.5			4630	4960					270		0.99							<0.5			6.34	6.09	3600.00			3.8		9.0		
SRK08-SPW3	13/04/2011	Ground	<0.5	449.0	210.00	<0.5							3840.0	5.0				<0.5			5360	5870					250		1.10							<0.5			6.96	5.93	3900.00			3.5		9.0		
SRK08-SPW3	04/05/2011	Ground	<0.5	484.0	180.00	<0.5							3070.0	4.1				<0.5			4500	>3999.0					220		0.95							<0.5			6.98	6.40	3500.00			3.9		31.0		
SRK08-SPW3	16/06/2011	Ground	<0.5	554.0	190.00	<0.5							3580.0	5.2				<0.5			5150	3890					240		0.86							<0.5			6.58	5.98	4500.00			5.0		60.0		
SRK08-SPW3	20/07/2011	Ground	<0.5	530.0	200.00	<0.5							3940.0	5.5				<0.5			5300	>3999.0					240		0.98							<0.5			6.55	6.04	4300.00			4.9		160.0		
SRK08-SPW3	03/08/2011	Ground	<0.5	442.0	190.00	<0.5							3500.0	5.1				<0.5			5390	>3999.0					230		0.89							<0.5			6.67	5.96	4300.00			5.0		11.0		
SRK08-SPW3	07/09/2011	Ground	<0.5	398.0	200.00	<0.5							3090.0	4.5				<0.5			4810	6489					240		0.87							<0.5			6.48	5.94	3800.00			4.8		33.0		
SRK08-SPW3	17/10/2011	Ground	<0.5	538.0	180.00	<0.5							3840.0	5.1				<0.5			5400	5540					220		0.94							<0.5			6.88	6.20	4420.00			4.4		36.0		
SRK08-SPW3	16/11/2011	Ground	<0.5	439.0	186.00	<0.5							3560.0	4.9				<0.5			5460	5890					228		0.86							<0.5			6.51	6.27	4530.00			3.6		10.1		
SRK08-SPW3	01/12/2011	Ground	<0.5	540.0	208.00	<0.5							4570.0	5.7				<0.5			6150	7050					254		0.96							<0.5			6.51	5.86	5190.00			4.0		30.6		
SRK08-SPW3 Average			0.3	489.7	200.33	0.25							3616.7	4.7				0.3			5175	5065					244		0.96							0.3			6.64	6.10	4111.67			4.2		34.8		
SRK08-SPW3 Max			<0.5	586.0	230.00	<0.5							4570.0	5.7				<0.5			6150	7050					280		1.10							<0.5			6.98	6.40	5190.00			5.0		160.0		
SRK08-SPW3 Min			<0.5	398.0	180.00	<0.5							3070.0	3.6				<0.5			4500	3890					220		0.86							<0.5			6.34	5.86	3200.00			3.5		7.0		
TH86-17	17/09/2011	Ground			72.00	<0.5							76.2					<0.5			173	175					87									<0.5			7.33	7.10	12.00			6.3				
TH86-2	17/09/2011	Ground			120.00	<0.5							140.0					<0.5			310	319					150									<0.5			7.52	7.36	34.00			4.9				
TH86-5	17/09/2011	Ground			450.00	<0.5							404.0					<0.5			862	867					550									<0.5			6.97	6.51	19.00			5.5				
Weir 3	03/02/2011	Seepage	<0.5	37.6	330.00	<0.5							1200.0	3.9				<0.5			2000	2030					400		1.00							<0.5			7.47	7.33	910.00			2.7		10.0		
Weir 3	04/08/2011	Seepage	<0.5	19.6	310.00	<0.5							1070.0	2.7				<0.5			1900	1853					380		0.91							<0.5	95.000		7.70	7.01	930.00			6.8		<1.0		
Weir 3 Average			0.3	28.6	320.00	0.25							1135.0	3.3				0.3			1950	1942					390		0.96							0.3	95.000		7.59	7.17	920.00			4.8		5.3		
Weir 3 Max			<0.5	37.6	330.00	<0.5							1200.0	3.9				<0.5			2000	2030					400		1.00							<0.5	95.000		7.70	7.33	930.00			6.8		10.0		
Weir 3 Min			<0.5	19.6	310.00	<0.5							1070.0	2.7				<0.5			1900	1853					380		0.91							<0.5	95.000		7.47	7.01	910.00			2.7		<1.0		
X10	18/01/2011	Surface			140.00	<0.5						152.0	170.0	<0.5				<0.5	311	311		1.60	170	1.10	<0.005	<0.005	0.27	0.27	<0.5		7.54	7.77	28.00	190	0.2	1.40	<1.0	0.67
X10	01/02/2011	Surface			130.00	<0.5						164.0	171.0	<0.5				<0.5	317	150	1.90		160	1.10	<0.05	<0.005	0.23	0.23	<0.5		7.78	7.95	27.00	170	1.3	1.10	<1.0	0.75
X10	14/03/2011	Surface			150.00	<0.5						167.0	185.0	0.7				<0.5	332	170	1.00		180	1.10	0.017	<0.005	0.29	0.29	<0.5		7.91	7.45	29.00	220	0.1	0.90	<1.0	0.37
X10	13/04/2011	Surface			150.00	<0.5						168.0	172.0	<0.5				<0.5	326	315	1.20		180	1.00	0.022	<0.005	0.22	0.22	<0.5		8.09	8.05	27.00	190	0.5	1.10	<1.0	0.50
X10	05/05/2011	Surface			130.00	<0.5						139.0	140.0	0.7				<0.5	298	250	2.20		160	0.95	0.024	<0.005	0.14	0.14	<0.5		7.88	7.96	26.00	170	0.7	2.20	<1.0	0.99
X10	20/06/2011	Surface			51.00	<0.5						52.6	52.5	<0.5				<0.5	123	115	3.10		62	1.00	0.032	<0.005	<0.02	<0.02	<0.5		7.77		8.80	76	10.0	3.00	3.0	1.07
X10	14/07/2011	Surface			82.00	<0.5						90.9	85.5	<0.5				<0.5	183	180	2.50		100	1.00	0.025	<0.005	<0.02	<0.02	<0.5		8.01	7.67	14.00	100	10.4	3.40	<1.0	0.48
X10	24/08/2011	Surface			78.00	<0.5						89.4	85.2	0.6				<0.5	180	182	3.10		96	1.00	0.042	<0.005	<0.02	<0.02	<0.5		8.06	7.71	13.00	110	8.0	3.30	<1.0	0.49
X10	21/09/2011	Surface			95.00	<0.5						109.0	110.0	0.7				<0.5	219	226	2.40		120	1.00	0.065	<0.005	0.03	0.03	<0.5		8.22	7.29	19.00	130	3.8	2.30	<1.0	0.85
X10	20/10/2011	Surface			110.00	<0.5						129.0	134.0	<0.5				<0.5	263	230	2.00		130	1.00	0.010	<0.005	0.09	0.09	<0.5		7.67	7.50	23.20	140	0.4	1.90	<1.0	1.73
X10	15/11/2011	Surface			116.00	<0.5						119.0	124.0	<0.5				<0.5	270	216	2.46		142	1.00	0.030	<0.005	0.18	0.18	<0.5		8.20	7.83	25.60	172	0.1	2.43	<1.0	0.78
X10	06/12/2011	Surface			119.00	<0.5						138.0	132.0	0.7				<0.5	274	270	1.62		145	1.00	0.049	<0.005	0.18	0.18	<0.5		7.89	7.73	24.00	146	0.2	1.62	<1.0	1.21
X10 Average					112.58	0.25						126.5	130.1	0.4				0.3	258	218	2.09		137	1.02	0.029	0.003	0.14	0.14	0.3		7.92	7.72	22.05	151	3.0	2.05	0.7	0.82
X10 Max					150.00	<0.5						168.0	185.0	0.7				<0.5	332	315	3.10		180	1.10	0.065	<0.005	0.29	0.29	<0.5		8.22	8.05	29.00	220	10.4	3.40	3.0	1.73
X10 Min					51.00	<0.5						52.6	52.5	<0.5				<0.5	123	115	1.00		62	0.95	<0.005	<0.005	<0.02	<0.02	<0.5		7.54	7.29	8.80	76	0.1	0.90	<1.0	0.37
X11	03/02/2011	Seepage	<0.5	43.0	360.00	<0.5							1800.0	2.4				<0.5	2970	2910			440	0.99					<0.5		7.45	7.17	1600.00		2.4		13.0	
X11	04/08/2011	Seepage	<0.5	34.7	370.00	<0.5							1810.0	3.2				<0.5	2930	2775			450	0.99					<0.5	58.000	7.52	6.97	1600.00		6.5		11.0	
X11 Average			0.3	38.9	365.00	0.25							1805.0	2.8				0.3	2950	2843			445	0.99					0.3	58.000	7.49	7.07	1600.00		4.5		12.0	
X11 Max			<0.5	43.0	370.00	<0.5							1810.0	3.2				<0.5	2970	2910			450	0.99					<0.5	58.000	7.52	7.17	1600.00		6.5		13.0	
X11 Min			<0.5	34.7	360.00	<0.5							1800.0	2.4				<0.5	2930	2775			440	0.99					<0.5	58.000	7.45	6.97	1600.00		2.4		11.0	
X12	03/02/2011	Seepage	<0.5	17.8	250.00	<0.5							983.0	1.1				<0.5	1670	1660			300	1.00					<0.5		7.60	7.50	730.00		1.1		<1.0	
X12	04/08/2011	Seepage	<0.5	5.2	250.00	<0.5							703.0	1.9				<0.5	1280	1252			300	0.96					<0.5	119.000	7.92		500.00		7.7		<1.0	
X12 Average			0.3	11.5	250.00	0.25							843.0	1.5				0.3	1475	1456			300	0.98					0.3	119.000	7.76	7.50	615.00		4.4		0.5	
X12 Max			<0.5	17.8	250.00	<0.5							983.0	1.9				<0.5	1670	1660			300	1.00					<0.5	119.000	7.92	7.50	730.00		7.7		<1.0	
X12 Min			<0.5	5.2	250.00	<0.5							703.0	1.1				<0.5	1280	1252			300	0.96					<0.5	119.000	7.60	7.50	500.00		1.1		<1.0	

Note: Statistics calculated with DLs at half value.

Denison Environmental Services

Table B-1: 2011 Rose Creek Drainage Water Quality
General Parameters

Station	Date	Sample Type	Acid(pH4.5) mg/L	Acid(pH8.3) mg/L	ALK mg/L	ALKPP mg/L	B2008H µg/L	B2BENZ µg/L	B2EBNZ µg/L	B2MPXY µg/L	B2TOLU µg/L	CaCO3 mg/L	CaCO3-d mg/L	Chloride mg/L	Chlorophyll a µg/L	CN 4500 mg/L	CNTHIO mg/L	CO3 mg/L	Coliform counts/100ml	Colour TCU	COND µmho/cm	CONDF µS/cm	DO mg/L	DO-% %	DOC mg/L	Ecoli counts/100ml	HCO3 mg/L as CaCO3	HMW PAH µg/L	Ion Balance (blank)	LMW PAH µg/L	MTBE µg/L	NH3 mg/L	NO2 mg/L	NO2/3 mg/L	NO3 mg/L	OH mg/L	oPO4 mg/L	ORP mV	pH (blank)	pHF (blank)	SO4-d mg/L	TDS mg/L	TEMP-F °C	TOC mg/L	Total PAH µg/L	TSS mg/L	TURB NTU	VPH µg/L
X13	06/01/2011	Seepage	<0.5	34.1	340.00	<0.5							1510.0	2.1			<0.0005	<0.5		20.0	2390	2387					410		1.00			0.870				<0.5		22.000	7.63	7.28	1200.00			1.5			11.0	42.50
X13	03/02/2011	Seepage	<0.5	23.1	330.00	<0.5							1440.0	5.4		<0.001		<0.5		20.0	2180	2370					400		1.10			0.790				<0.5			7.46	7.20	1000.00			2.7			8.0	48.80
X13	15/03/2011	Seepage	<0.5	33.9	350.00	<0.5							1310.0	2.7		<0.005	0.001	<0.5		20.0	2520	2427					430		0.85			0.620				<0.5		46.000	7.69	7.20	1300.00			2.4			6.0	49.20
X13	13/04/2011	Seepage	<0.5	<0.5	340.00	<0.5							1690.0	2.9		<0.005		<0.5		20.0	2360	2357					410		1.10			0.670				<0.5		16.000	7.89	7.14	1200.00			3.9			9.0	41.90
X13	04/05/2011	Seepage	<0.5	44.3	350.00	<0.5							1490.0	2.5		<0.005		<0.5		20.0	2490	2553					420					0.740				<0.5			7.76	7.04	1200.00			6.1			8.0	34.10
X13	16/06/2011	Seepage	<0.5	44.0	340.00	<0.5							1450.0	2.1		<0.005		<0.5		10.0	2320	2317					410		1.00			0.730				<0.5		63.000	7.49	6.85	1200.00			7.0			10.0	16.00
X13	14/07/2011	Seepage	<0.5	33.6	340.00	<0.5							1430.0	2.8		<0.005		<0.5		20.0	2310	2612					420		1.00			0.740				<0.5			7.61	7.06	1200.00			8.6			8.0	5.69
X13	25/08/2011	Seepage	<0.5	22.8	310.00	<0.5							1160.0	2.6		<0.005		<0.5		40.0	1920	1936					370		1.10			0.490				<0.5			7.78	6.86	850.00			5.0			7.0	5.79
X13	20/09/2011	Seepage	<0.5	50.4	330.00	<0.5							1350.0	2.3		<0.005		<0.5		20.0	2290	2530					410		0.96			0.830				<0.5			7.52	7.06	1200.00			5.1			11.0	7.07
X13	19/10/2011	Seepage	<0.5	38.4	340.00	<0.5							1340.0	2.3		<0.005		<0.5		10.0	2270	2310					420		0.96			0.750				<0.5		141.000	7.39	6.72	1130.00			3.5			9.0	1.80
X13	17/11/2011	Seepage	<0.5	18.9	347.00	<0.5							1390.0	3.4		<0.005		<0.5		20.0	2420	2640					423		0.95			0.790				<0.5		148.000	7.41	7.24	1210.00			1.1			11.8	7.04
X13	01/12/2011	Seepage	<0.5	25.2	339.00	<0.5							1310.0	2.1		<0.005		<0.5		20.0	2220	2530					414		0.95			0.740				<0.5			7.53	6.66	1130.00			1.4			11.8	1.03
X13 Average			0.3	30.7	338.00	0.25							1405.8	2.8		0.002	0.000	0.3		20.0	2308	2414					411		1.00			0.730				0.3		68.857	7.60	7.03	1151.67			4.0			9.2	16.90
X13 Max			<0.5	50.4	350.00	<0.5							1690.0	5.4		<0.005	0.001	<0.5		40.0	2520	2640					430		1.10			0.870				<0.5		148.000	7.89	7.28	1300.00			8.6			11.8	49.20
X13 Min			<0.5	<0.5	310.00	<0.5							1160.0	2.1		<0.001	<0.0005	<0.5		10.0	1920	1936					370		0.85			0.490				<0.5		16.000	7.39	6.66	850.00			1.1			6.0	1.03
X14	18/01/2011	Surface			170.00	<0.5						342.0	385.0	<0.5				<0.5			707	719			1.60		210		1.10			0.085	<0.005	0.22	0.22	<0.5			7.51	7.35	190.00	500	0.1	1.30			2.0	0.25
X14	01/02/2011	Surface			170.00	<0.5						394.0	358.0	0.6				<0.5			744	150			1.50		210		1.00			0.048	<0.005	0.16	0.16	<0.5			7.72	7.97	190.00	460	1.1	1.30			<1.0	2.81
X14	14/03/2011	Surface			200.00	<0.5						579.0	589.0	1.4		<0.005		<0.5			1010	590			1.40		250		1.10			0.140	<0.005	0.20	0.20	<0.5			7.74	7.16	350.00	750	0.4	1.30			<1.0	0.42
X14	24/03/2011	Surface			240.00	<0.5						831.0	902.0	1.4				<0.5			1500	1435			1.40		290		1.00			0.370	<0.005	0.21	0.21	<0.5			7.69	7.69	710.00	1300	1.1	1.50			5.0	2.49
X14	29/03/2011	Surface			220.00	<0.5						784.0	707.0	1.3				<0.5			1410	1410			2.00		270		0.96			0.330	0.010	0.23	0.22	<0.5			7.85	7.69	550.00	1100	2.5	1.60			4.0	5.08
X14	05/04/2011	Surface			220.00	<0.5						749.0	788.0	5.6				<0.5			1380	1471			1.80		270		1.00			0.310	<0.005	0.19	0.19	<0.5			7.76	7.58	580.00	1100	0.5	1.40			2.0	2.19
X14	12/04/2011	Surface			220.00	<0.5						738.0	810.0	1.1				<0.5			1370	1430			1.70		270		1.10			0.320	<0.005	0.18	0.18	<0.5			7.76	7.36	580.00	1100	0.8	1.30			2.0	2.03
X14	19/04/2011	Surface			220.00	<0.5						831.0	853.0	2.3				<0.5			1390	1323			1.30		270		1.10			0.290	<0.005	0.16	0.16	<0.5			7.58	7.49	580.00	1100	1.2	1.30			<1.0	3.16
X14	26/04/2011	Surface			210.00	<0.5						726.0	694.0	1.2				<0.5			1290	1303			1.80		250		0.99			0.260	<0.005	0.15	0.15	<0.5			7.70	7.40	530.00	1000	1.9	1.80			2.0	2.43
X14	03/05/2011	Surface			240.00	<0.5						1090.0	1110.0	2.2				<0.5			1830	1935			2.00		290		0.99			0.420	<0.005	0.11	0.11	<0.5			7.78	6.99	940.00	1600	3.4	2.30			4.0	4.65
X14	04/05/2011	Surface			160.00	<0.5						547.0	552.0	1.4				<0.5			1060	1134			1.80		190		0.98			0.250	<0.005	0.16	0.16	<0.5			7.91	7.49	430.00	820	3.7	1.60			2.0	1.88
X14	10/05/2011	Surface			120.00	<0.5						528.0	499.0	1.2				<0.5			969	1043			4.00		150		1.00			0.280	<0.005	0.16	0.16	<0.5			7.65	7.95	380.00	710	1.2	4.40			3.0	1.84
X14	17/05/2011	Surface			77.00	<0.5						198.0	215.0	0.7				<0.5			435	456			14.60		94					0.072	<0.005	0.13	0.13	<0.5			7.84	7.73	150.00	290	0.8	13.80			11.0	3.29
X14	24/05/2011	Surface			25.00	<0.5						40.3	43.5	0.9				<0.5			95	117			12.50		30		1.00			0.037	<0.005	<0.02	<0.02	<0.5			7.32	8.07	19.00	62	3.3	13.10			22.0	5.95
X14	31/05/2011	Surface			32.00	<0.5						57.9	56.9	0.7				<0.5			136	133			5.10		39		1.00			0.076	<0.005	<0.02	<0.02	<0.5			7.66	8.80	31.00	100	4.2	5.20			9.0	3.29
X14	07/06/2011	Surface			57.00	<0.5						115.0	116.0	<0.5				<0.5			268	280			3.30		70		1.00			0.063	<0.005	0.04	0.04	<0.5			7.70	7.63	72.00	170	5.9	3.10			2.0	1.15
X14	14/06/2011	Surface			65.00	<0.5						129.0	139.0	<0.5				<0.5			288	256			3.90		80		1.00			0.037	<0.005	0.03	0.03	<0.5			7.85	7.91	78.00	200	9.1	4.50			<1.0	0.61
X14	21/06/2011	Surface			58.00	<0.5						91.5	93.7	<0.5				<0.5			222	220			4.10		70					0.055	<0.005	<0.02	<0.02	<0.5			7.86	7.50	55.00	72	8.2	4.20			8.0	2.25
X14	28/06/2011	Surface			65.00	<0.5						120.0	114.0	1.2				<0.5			246	260			3.90		79		1.00			0.055	<0.005	0.03	0.03	<0.5			7.97	8.18	53.00	160	8.7	3.80			2.0	0.93
X14	05/07/2011	Surface			77.00	<0.5						137.0	143.0	<0.5				<0.5			293	273			3.90		94					0.078	<0.005	0.03	0.03	<0.5			7.90	7.97	68.00	200	6.7	4.60			2.0	1.39
X14	12/07/2011	Surface			82.00	<0.5						154.0	161.0	0.6				<0.5			338	292			4.60		100		1.00			0.090	<0.005	0.03	0.03	<0.5			7.71	7.87	81.00	250	9.1	4.60			<1.0	0.77
X14	19/07/2011	Surface			82.00	<0.5						157.0	161.0	1.0				<0.5			356	335			4.10		100		0.95			0.077	<0.005	0.03	0.03	<0.5			7.86	7.85	91.00	230	8.8	3.80			<1.0	0.87
X14	26/07/2011	Surface			88.00	<0.5						183.0	171.0	<0.5				<0.5			395	375			2.90		110		0.88			0.073	<0.005	0.04	0.04	<0.5			7.88	8.06	110.00	260	9.1	3.60			<1.0	0.82
X14	02/08/2011	Surface			87.00	<0.5						194.0	181.0	2.6				<0.5			375	435			3.30		110		0.94			0.074	<0.005	0.04	0.04	<0.5			7.73	9.00	110.00	240	7.5	3.20			<1.0	1.13
X14	09/08/2011	Surface			95.00	<0.5						201.0	201.0	1.3				<0.5			440	351			2.70		120		0.96			0.099	<0.005	0.04	0.04	<0.5			7.95	7.82	120.00	300	8.3	2.40			<1.0	0.97
X14	16/08/2011	Surface			81.00	<0.5						179.0	172.0	0.8				<0.5			370	341			4.00		98		1.00			0.094	<0.005	0.04	0.04	<0.5			7.77	8.27	95.00	300	7.3	3.60			<1.0	0.42
X14	23/08/2011	Surface			82.00	<0.5						163.0	170.0	0.9				<0.5			355	346			4.40		100		0.98			0.095	<0.005	0.03	0.03	<0.5			7.86	7.97	98.00	230	6.3	3.80			<1.0	0.68
X14	25/08/2011	Surface			85.00	<0.5						173.0	173.0	0.8				<0.5			374	372			2.90		100		0.98			0.073	<0.005	0.03	0.03	<0.5			8.02	7.71	98.00	260	7.8	3.80			2.0	0.63
X14	30/08/2011	Surface			91.00	<0.5						192.0	202.0	<0.5				<0.5			414	390			3.90		110		0.99			0.067	<0.005	0.05	0.05	<0.5			8.03	8.03	120.00	290	4.8	3.00			<4.0	0.71
X14	06/09/2011	Surface			99.00	<0.5						230.0	236.0	1.2				<0.5			474	422			3.30		120		1.10			0.076	<0.005	0.06	0.06	<0.5			8.01	7.85	130.00	350	5.6	3.60			<1.0	0.91
X14	13/09/2011	Surface			97.00	<0.5						217.0	212.0	1.3				<0.5			453	438			2.70		120		0.97			0.067	<0.005	0.05	0.05	<0.5			8.00	7.91	130.00	300	5.0	3.90			<1.0	0.75
X14	20/09/2011	Surface			100.00	<0.5						233.0	248.0	1.4				<0.5			506	570			2.40		130		1.00			0.110	<0.005	0.06	0.06	<0.5			8.06	7.96	150.00	360	4.8	2.50			2.0	0.85
X14	27/09/2011	Surface			110.00	<0.5						241.0	244.0	1.1				<0.5			541	525			2.30		130		0.91			0.140	<0.005	0.06	0.06	<0.5			7.78	7.58	170.00	390	2.6	2.90			<1.0	1.16
X14	25/10/2011	Surface			120.00	<0.5						195.0	195.0	0.7				<0.5			376	445			2.00		150		1.10			0.032	<0.005	0.10	0.10	<0.5			7.91	7.55	70.80	230	0.2	1.80			<1.0	1.90
X14	23/11/2011	Surface			168.00	<0.5						620.0	525.0	0.8				<0.5			1020	998			<5.0		205		1.10			0.230	<0.005	0.18	0.18	<0.5			7.85	7.64	349.00	750	<0.0	<5.0			5.0	1.74
X14	29/11/2011	Surface			177.00	<0.5						583.0	601.0	0.8				<0.5			1150	1088			1.37		216		0.96			0.280	<0.005	0.14	0.14	<0.5			7.70	7.37	477.00	882	1.1	1.75			2.1	1.81
X14	08/12/2011	Surface			179.00	<0.5						625.0	599.0	1.0				<0.5			1160	1118			1.43		219		0.94			0.400	<0.005	0.15	0.15	<0.5			7.56	7.39	494.00	928	2.2	1.76			<4.0	3.39
X14 Average					126.19	0.25						366.7	368.1	1.1		0.003		0.3			696	670			3.36		154		1.00			0.153	0.003	0.10	0.10	0.3			7.80	7.78	254.86	523	4.2	3.40			2.8	1.82
X14 Max					240.00	<0.5						1090.0	1110.0	5.6		<0.005		<0.5			1830	1935			14.60		290		1.10			0.420	0.010	0.23	0.22	<0.5			8.06	9.00	940.00	1600	9.1	13.80			22.0	5.95
X14 Min					25.00	<0.5						40.3	43.5	<0.5		<0.005		<0.5			95	117			1.30		30		0.88			0.032	<0.005	<0.02	<0.02	<0.5			7.32	6.99	19.00	62	<0.0	1.30			<1.0	0.25
X16A	01/02/2011	Ground	<0.5	3.9	170.00	<0.5							202.0	0.7				<0.5			364	220					210									<0.5			7.89	7.95	26.00		3.3				37.0	
X16A	02/06/2011	Ground	<0.5	2.3	140.00	<0.5							160.0	<0.5				<0.5			328	389					170		0.98							<0.5			7.80	7.71	28.00		4.5				61.0	
X16A	25/09/2011	Ground	<0.5	3.5	150.00	<0.5							166.0	0.7				<0.5			335	343					180		0.97							<0.5			8.09	7.76	23.00		5.5				28.0	
X16A Average			0.3	3.2	153.33	0.25							176.0	0.6				0.3			342	317					187		0.98							0.3			7.93	7.81	25.67		4.5				42.0	
X16A Max			<0.5	3.9	170.00	<0.5							202.0	0.7				<0.5			364	389					210		0.98							<0.5			8.09	7.95	28.00		5.5				61.0	
X16A Min			<0.5	2.3	140.00	<0.5							160.0	<0.5				<0.5			328	220					170		0.97							<0.5			7.80	7.71	23.00		3.3				28.0	
X16B	01/02/2011	Ground	<0.5	4.2	200.00	<0.5							235.0	0.6				<0.5			409	220					240									<0.5			7.88	7.87	27.00		3.3				2.0	
X16B	02/06/2011	Ground	<0.5	1.7	190.00	<0.5							208.0	<0.5				<0.5			409	428					230		0.97							<0.5			7.90	7.64	27.00		4.1				18.0	
X16B	25/09/2011	Ground		1.9	190.00	<0.5							209.0	0.8				<0.5			393	401					230		1.00							<0.5			8.19	7.88	24.00		3.4				12.0	
X16B Average			0.3	2.6	193.33	0.25							217.3	0.6				0.3			404	350					233		0.99							0.3			7.99	7.80	26.00		3.6				10.7	
X16B Max			<0.5	4.2	200.00	<0.5							235.0	0.8				<0.5			409	428					240		1.00							<0.5			8.19	7.88	27.00		4.1				18.0	
X16B Min			<0.5	1.7	190.00	<0.5							208.0	<0.5				<0.5			393	220					230		0.97							<0.5			7.88	7.64	24.00		3.3				2.0	
X17A	02/02/2011	Ground	<0.5	5.0	270.00	<0.5							285.0	1.2				<0.5			568	586					330		0.92							<0.5			7.84	7.55	46.00		2.5				230.0	
X17A	31/05/2011	Ground	<0.5	12.7	270.00	<0.5							349.0	1.0				<0.5			649	1198					330		0.96							<0.5			8.08	7.81	95.00		3.8				1800.0	
X17A	26/09/2011	Ground	<0.5	1.7	240.00	<0.5							273.0	0.9				<0.5			522	534					290									<0.5			8.03	7.85	47.80		2.5				120.0	
X17A Average			0.3	6.5	260.00	0.25							302.3	1.0				0.3			580	773					317		0.94							0.3			7.98	7.74	62.93		2.9				716.7	
X17A Max			<0.5	12.7	270.00	<0.5							349.0	1.2				<0.5			649	1198					330		0.96							<0.5			8.08	7.85	95.00		3.8				1800.0	
X17A Min			<0.5	1.7	240.00	<0.5							273.0	0.9				<0.5			522	534					290		0.92							<0.5			7.84	7.55	46.00		2.5				120.0	
X17B	02/02/2011	Ground	<0.5	19.4	380.00	<0.5							627.0	5.2				<0.5			1260	1220					460		1.10							<0.5			7.55	6.86	290.00		4.6				9.0	
X17B	31/05/2011	Ground	<0.5	26.0	410.00	<0.5							576.0	6.5				<0.5			1190	1254					500		0.95							<0.5			7.96	7.09	260.00		3.3				14.0	
X17B	26/09/2011	Ground	<0.5	25.0	380.00	<0.5							348.0	5.7				<0.5			810	774					460									<0.5			7.70	7.20	69.90		2.9				1200.0	
X17B Average			0.3	23.5	390.00	0.25							517.0	5.8				0.3			1087	1083					473		1.03							0.3			7.74	7.05	206.63		3.6				407.7	
X17B Max			<0.5	26.0	410.00	<0.5							627.0	6.5				<0.5			1260	1254					500		1.10							<0.5			7.96	7.20	290.00		4.6				1200.0	
X17B Min			<0.5	19.4	380.00	<0.5							348.0	5.2				<0.5			810	774					460		0.95							<0.5			7.55	6.86	69.90		2.9				9.0	
X18A	02/06/2011	Ground	<0.5	21.6	290.00	<0.5							1160.0	1.6				<0.5			1870	1993					360		1.00							<0.5			7.58	6.88	860.00		4.1				27.0	
X18A	23/09/2011	Ground	<0.5	35.0	300.00	<0.5							1020.0	1.7				<0.5			1690	1729					370		1.10							<0.5			7.82	7.21	680.00		3.1				41.0	
X18A Average			0.3	28.3	295.00	0.25							1090.0	1.7				0.3			1780	1861					365		1.05							0.3			7.70	7.05	770.00		3.6				34.0	
X18A Max			<0.5	35.0	300.00	<0.5							1160.0	1.7				<0.5			1870	1993					370		1.10							<0.5			7.82	7.21	860.00		4.1				41.0	
X18A Min			<0.5	21.6	290.00	<0.5							1020.0	1.6				<0.5			1690	1729					360		1.00							<0.5			7.58	6.88	680.00		3.1				27.0	
X18B	02/02/2011	Ground	<0.5	19.8	280.00	<0.5							1050.0	2.6				<0.5			1710	1744					340		1.00							<0.5			7.48	6.90	760.00		5.0				46.0	
X18B	02/06/2011	Ground	<0.5	26.4	300.00	<0.5							1240.0	2.8				<0.5			1900	2130					360		1.10							<0.5			7.29	6.95	860.00		4.9				32.0	
X18B	23/09/2011	Ground	<0.5	26.1	260.00	<0.5							441.0	1.2				<0.5			791	914					320		1.10							<0.5			7.87	7.31	160.00		2.4				54.0	
X18B Average			0.3	24.1	280.00	0.25							910.3	2.2				0.3			1467	1596					340		1.07							0.3			7.55	7.05	593.33		4.1				44.0	
X18B Max			<0.5	26.4	300.00	<0.5							1240.0	2.8				<0.5			1900	2130					360		1.10							<0.5			7.87	7.31	860.00		5.0				54.0	
X18B Min			<0.5	19.8	260.00	<0.5							441.0	1.2				<0.5			791	914					320		1.00							<0.5			7.29	6.90	160.00		2.4				32.0	
X2	19/01/2011	Surface			140.00	<0.5						147.0	172.0	1.4				<0.5			311	160	1.40				170		1.10			<0.005	<0.005	0.28	0.28	<0.5			7.61	8.20	28.00	190	0.2	1.20			<1.0	0.84
X2	01/02/2011	Surface			140.00	<0.5						172.0	165.0	<0.5				<0.5			312	140	1.70				170		1.10			<0.05	<0.005	0.25	0.25	<0.5			7.51	8.01	26.00	160	1.0	1.40			<1.0	0.83
X2	16/03/2011	Surface			140.00	<0.5						172.0	158.0	1.6				<0.5			352	330	1.60				180		0.93			0.021	<0.005	0.36	0.36	<0.5			7.50	7.52	31.00	190	0.8	1.50			<1.0	0.85
X2	13/04/2011	Surface			140.00	<0.5						158.0	167.0	<0.5				<0.5			321	305	1.50				170		1.00			0.018	<0.005	0.21	0.21	<0.5			7.91	7.63	26.00	180	0.7	1.00			<1.0	0.76
X2	11/05/2011	Surface			97.00	<0.5						103.0	106.0	2.0				<0.5			228	224	8.60				120					0.010	<0.005	0.21	0.21	<0.5			7.63	7.82

Denison Environmental Services

Table B-1: 2011 Rose Creek Drainage Water Quality
General Parameters

Station	Date	Sample Type	Acid(pH4.5) mg/L	Acid(pH8.3) mg/L	ALK mg/L	ALKPP mg/L	B2008H µg/L	B2BENZ µg/L	B2EBNZ µg/L	B2MPXY µg/L	B2TOLU µg/L	CaCO3 mg/L	CaCO3-d mg/L	Chloride mg/L	Chlorophyll a µg/L	CN 4500 mg/L	CNTHIO mg/L	CO3 mg/L	Coliform counts/100ml	Colour TCU	COND µmho/cm	CONDF µS/cm	DO mg/L	DO-% %	DOC mg/L	Ecoli counts/100ml	HCO3 mg/L as CaCO3	HMW PAH µg/L	Ion Balance (blank)	LMW PAH µg/L	MTBE µg/L	NH3 mg/L	NO2 mg/L	NO2/3 mg/L	NO3 mg/L	OH mg/L	oPO4 mg/L	ORP mV	pH (blank)	pHF (blank)	SO4-d mg/L	TDS mg/L	TEMP-F °C	TOC mg/L	Total PAH µg/L	TSS mg/L	TURB NTU	VPH µg/L
X21-96B	**09/06/2011**	**Ground**	<0.5	276.0	69.00	<0.5							1130.0	4.6				<0.5			2350	11400					84		1.10								<0.5		6.23	6.20	1400.00			3.2		120.0		
X21-96B	**13/10/2011**	**Ground**	<0.5	679.0	130.00	<0.5							1270.0	4.1				<0.5			3310	3328					160		1.00								<0.5		6.22	6.15	1920.00			3.3		130.0		
X21-96B Average			0.3	477.5	99.50	0.25							1200.0	4.4				0.3			2830	7364					122		1.05								0.3		6.23	6.18	1660.00			3.3		125.0		
X21-96B Max			<0.5	679.0	130.00	<0.5							1270.0	4.6				<0.5			3310	11400					160		1.10								<0.5		6.23	6.20	1920.00			3.3		130.0		
X21-96B Min			<0.5	276.0	69.00	<0.5							1130.0	4.1				<0.5			2350	3328					84		1.00								<0.5		6.22	6.15	1400.00			3.2		120.0		
X22b	**19/01/2011**	**Surface**			91.00	<0.5						639.0	720.0	1.8				<0.5			1310	850					110		0.99			1.300	0.008	0.47	0.46	<0.5			7.33	7.04	700.00	1100	3.5			<1.0		
X22b	**15/02/2011**	**Surface**			86.00	<0.5								2.3				<0.5			1360	1371					110		1.00	0.940				0.49	<0.5			7.48	7.66	680.00	1100	0.4			<1.0		
X22b	**16/03/2011**	**Surface**			77.00	<0.5						666.0	631.0	3.7				<0.5			1320	1400					93		0.95	0.720	0.007	0.49	0.49	<0.5			7.48	7.18	640.00	1000	0.4			<1.0		
X22b	**14/04/2011**	**Surface**			95.00	<0.5						444.0	442.0	1.0				<0.5			915	800					120		0.93	0.340	<0.005	0.33	0.33	<0.5			7.54	7.52	400.00	670	0.3			2.0		
X22b	**04/05/2011**	**Surface**			56.00	<0.5						399.0	414.0	1.2				<0.5			818	922					69		1.10	0.390	<0.005	0.27	0.27	<0.5			7.19	7.18	330.00	650	2.0			6.0		
X22b	**15/06/2011**	**Surface**			68.00	<0.5						627.0	616.0	0.6				<0.5			1210	1127					83		0.98	0.810	0.008	0.47	0.46	<0.5			7.15	6.34	610.00	960	10.8			2.0		
X22b	**20/07/2011**	**Surface**			68.00	<0.5						627.0	656.0	2.0				<0.5			1250	1197					82		1.00	0.800	0.008	0.47	0.46	<0.5			7.51	5.95	610.00	1000	14.1			2.0		
X22b	**23/08/2011**	**Surface**			70.00	<0.5						652.0	600.0	1.7				<0.5			1250	1147					85		0.85	0.860	0.006	0.47	0.47	<0.5			7.52	7.61	700.00	1000	12.1			2.0		
X22b	**25/09/2011**	**Surface**			75.00	<0.5						656.0	664.0	1.8				<0.5			1300	1206					91		1.00	0.880	0.008	0.53	0.52	<0.5			7.56	7.39	640.00	1100	6.5			<1.0		
X22b	**19/10/2011**	**Surface**			76.00	<0.5						689.0	688.0	1.8				<0.5			1310	1370					93		1.10	0.940	0.008	0.52	0.51	<0.5			7.32	6.20	594.00	1100	3.1			<1.0		
X22b	**17/11/2011**	**Surface**			78.10	<0.5						695.0	699.0	2.2				<0.5			1350	1510					95		1.00	0.900	0.009	0.56	0.55	<0.5			7.39	7.48	678.00	1100	<0.0			<1.0		
X22b	**07/12/2011**	**Surface**			79.20	<0.5						718.0	684.0	2.0				<0.5			1340	1424					97		0.94	0.930	<0.005	0.54	0.54	<0.5			7.33	7.18	715.00	1080	0.1			<4.0		
X22b Average					76.61	0.25						619.3	619.5	1.8				0.3			1228	1194					94		0.99	0.818	0.006	0.47	0.46	0.3			7.40	7.06	608.08	988	4.4			1.6		
X22b Max					95.00	<0.5						718.0	720.0	3.7				<0.5			1360	1510					120		1.10	1.300	0.009	0.56	0.55	<0.5			7.56	7.66	715.00	1100	14.1			6.0		
X22b Min					56.00	<0.5						399.0	414.0	0.6				<0.5			818	800					69		0.85	0.340	<0.005	0.27	0.27	<0.5			7.15	5.95	330.00	650	<0.0			<1.0		
X23	**12/05/2011**	**Seepage**	262.0	1780.0	<0.5	<0.5							4700.0	12.0				<0.5			7930	8410					<0.5								<0.5	412.000	2.93	3.33				3.1		360.0		
X23	**16/06/2011**	**Seepage**	<0.5	1300.0	5.10	<0.5							5570.0	12.0				<0.5			8270	>3999.0					6		0.85						<0.5	92.000	5.42	6.31	8300.00			9.8		230.0		
X23	**21/07/2011**	**Seepage**	<0.5	1300.0	26.00	<0.5							5210.0	14.0				<0.5			8130	>3999.0					32		0.85						<0.5		5.32	6.36	7700.00			7.0		200.0		
X23	**24/08/2011**	**Seepage**	<0.5	1090.0	23.00	<0.5							4910.0	14.0				<0.5			8040	>3999.0					28		0.84						<0.5	57.000	5.94	6.14	7400.00			10.1		240.0		
X23	**20/09/2011**	**Seepage**	<0.5	1330.0	60.00	<0.5							4840.0	11.0				<0.5			8430	8880					73		0.80						<0.5	43.000	6.17	6.24	7800.00			6.6		220.0		
X23	**19/10/2011**	**Seepage**	<0.5	1250.0	32.00	<0.5							5220.0	14.0				<0.5			8410	7850					40		0.88						<0.5	118.000	5.93	6.63	7590.00			0.8		200.0		
X23	**17/11/2011**	**Seepage**	<0.5	1090.0	41.10	<0.5							5840.0	14.0				<0.5			8320	2340					50		0.89						<0.5	168.000	6.12	6.79	8310.00			<0.0		122.0		
X23 Average			37.6	1305.7	26.78	0.25							5184.3	13.0				0.3			8219	5640					33		0.85						0.3	148.333	5.40	5.97	7850.00			6.2		224.6		
X23 Max			262.0	1780.0	60.00	<0.5							5840.0	14.0				<0.5			8430	8880					73		0.89						<0.5	412.000	6.17	6.79	8310.00			10.1		360.0		
X23 Min			<0.5	1090.0	<0.5	<0.5							4700.0	11.0				<0.5			7930	2340					<0.5		0.80						<0.5	43.000	2.93	3.33	7400.00			0.8		122.0		
X24-96D	**02/06/2011**	**Ground**	<0.5	128.0	440.00	<0.5							2650.0	3.5				<0.5			3670	4133					530		1.00						<0.5		6.74	6.20	2300.00			3.5		490.0		
X24-96D	**28/09/2011**	**Ground**	<0.5	99.9	440.00	<0.5							2380.0	3.9				<0.5			3870	4034					540		0.91						<0.5		6.94	6.26	2360.00			3.1		35.0		
X24-96D Average			0.3	114.0	440.00	0.25							2515.0	3.7				0.3			3770	4084					535		0.96						0.3		6.84	6.23	2330.00			3.3		262.5		
X24-96D Max			<0.5	128.0	440.00	<0.5							2650.0	3.9				<0.5			3870	4133					540		1.00						<0.5		6.94	6.26	2360.00			3.5		490.0		
X24-96D Min			<0.5	99.9	440.00	<0.5							2380.0	3.5				<0.5			3670	4034					530		0.91						<0.5		6.74	6.20	2300.00			3.1		35.0		
X25-96A	**01/02/2011**	**Ground**	<0.5	23.4	300.00	<0.5							810.0	1.3				<0.5			1480	870					360								<0.5		7.53	7.50	580.00			4.4		3.0		
X25-96A	**02/06/2011**	**Ground**	<0.5	20.9	280.00	<0.5							792.0	1.6				<0.5			1490	1613					350		0.96						<0.5		7.52	7.07	590.00			5.2		10.0		
X25-96A	**28/09/2011**	**Ground**	<0.5	10.5	290.00	<0.5							809.0	1.8				<0.5			1590	1644					350		0.90						<0.5		7.79	7.38	652.00			3.8		24.0		
X25-96A Average			0.3	18.3	290.00	0.25							803.7	1.6				0.3			1520	1376					353		0.93						0.3		7.61	7.32	607.33			4.4		12.3		
X25-96A Max			<0.5	23.4	300.00	<0.5							810.0	1.8				<0.5			1590	1644					360		0.96						<0.5		7.79	7.50	652.00			5.2		24.0		
X25-96A Min			<0.5	10.5	280.00	<0.5							792.0	1.3				<0.5			1480	870					350		0.90						<0.5		7.52	7.07	580.00			3.8		3.0		
X25-96B	**01/02/2011**	**Ground**	<0.5	13.0	270.00	<0.5							654.0	2.2				<0.5			1340	720					330								<0.5		7.79	7.76	480.00			3.6		8.0		
X25-96B	**02/06/2011**	**Ground**	<0.5	10.1	260.00	<0.5							690.0	1.0				<0.5			1390	1477					320		1.00						<0.5		7.71	7.25	510.00			3.9		5.0		
X25-96B	**28/09/2011**	**Ground**	<0.5	3.4	270.00	<0.5							673.0	2.0				<0.5			1420	7457					320		0.93						<0.5		8.02	7.41	542.00			3.6		10.0		
X25-96B Average			0.3	8.8	266.67	0.25							672.3	1.7				0.3			1383	3218					323		0.97						0.3		7.84	7.47	510.67			3.7		7.7		
X25-96B Max			<0.5	13.0	270.00	<0.5							690.0	2.2				<0.5			1420	7457					330		1.00						<0.5		8.02	7.76	542.00			3.9		10.0		
X25-96B Min			<0.5	3.4	260.00	<0.5							654.0	1.0				<0.5			1340	720					320		0.93						<0.5		7.71	7.25	480.00			3.6		5.0		
X26	**26/05/2011**	**Ground**	<0.5	382.0	290.00	<0.5							3480.0	4.6				<0.5			4650	>3999.0					350		0.98						<0.5		6.84	6.59	3700.00			4.0		150.0		
X26	**15/06/2011**	**Ground**	<0.5	240.0	390.00	<0.5							2700.0	4.3				<0.5			4020	3988					480		0.90						<0.5		6.86	6.29	2900.00			4.5		76.0		
X26	**03/08/2011**	**Ground**	<0.5	347.0	370.00	<0.5							3130.0	4.4				<0.5			4670	>3999.0					450		1.10						<0.5		6.55	6.38	3000.00			5.4		130.0		
X26	**27/09/2011**	**Ground**	<0.5	425.0	400.00	<0.5							3680.0	5.6				<0.5			4950	5190					490								<0.5		6.45	6.07	3110.00			3.2		30.0		
X26 Average			0.3	348.5	362.50	0.25							3247.5	4.7				0.3			4573	4294					443		0.99						0.3		6.68	6.33	3177.50			4.3		96.5		
X26 Max			<0.5	425.0	400.00	<0.5							3680.0	5.6				<0.5			4950	5190					490		1.10						<0.5		6.86	6.59	3700.00			5.4		150.0		
X26 Min			<0.5	240.0	290.00	<0.5							2700.0	4.3				<0.5			4020	3988					350		0.90						<0.5		6.45	6.07	2900.00			3.2		30.0		
X3	**18/01/2011**	**Surface**			130.00	<0.5						141.0	155.0	<0.5				<0.5			302	301	1.50				160		1.00	<0.005	<0.005	0.25	0.25	<0.5			7.55	7.52	27.00	180	0.0	1.40		<1.0	0.86	
X3	**02/02/2011**	**Surface**			130.00	<0.5						146.0	146.0	<0.5				<0.5			301	311	1.00				160			<0.05	<0.005	0.22	0.22	<0.5			7.86	7.99	26.00	150	2.2	0.90		<1.0	1.02	
X3	**14/03/2011**	**Surface**			140.00	<0.5						166.0	172.0	0.7				<0.5			325	160	1.20				170	1.00		0.019	<0.005	0.29	0.29	<0.5			7.75	7.51	29.00	180	0.2	1.00		<1.0	0.69	
X3	**13/04/2011**	**Surface**			140.00	<0.5						157.0	171.0	<0.5				<0.5			310	306	1.30				170	1.10		0.020	<0.005	0.22	0.22	<0.5			8.05	7.69	25.00	180	1.3	1.80		<1.0	0.89	
X3	**05/05/2011**	**Surface**			130.00	<0.5						140.0	137.0	0.8				<0.5			297	250	2.60				160	0.94		0.023	<0.005	0.15	0.15	<0.5			7.92	7.58	26.00	180	0.8	2.50		<1.0	1.32	
X3	**20/06/2011**	**Surface**			46.00	<0.5						47.1	46.7	<0.5				<0.5			110	104	2.80				56	1.00		0.027	<0.005	<0.02	<0.02	<0.5			7.73	7.55	7.80	68	8.9	3.10		9.0	1.08	
X3	**13/07/2011**	**Surface**			69.00	<0.5						77.8	77.0	<0.5				<0.5			163	157	2.60				85	1.00		0.025	<0.005	<0.02	<0.02	<0.5			7.81	6.86	13.00	90	10.4	3.50		<1.0	0.50	
X3	**25/08/2011**	**Surface**			68.00	<0.5						74.8	74.8	0.6				<0.5			160	147	2.80				83	1.00		0.038	<0.005	<0.02	<0.02	<0.5			8.05	7.76	12.00	92	8.8	4.10		2.0	0.44	
X3	**21/09/2011**	**Surface**			86.00	<0.5						95.9	96.8	0.6				<0.5			199	207	2.80				100	1.00		0.042	<0.005	0.03	0.03	<0.5			8.13	7.42	14.00	120	4.2	2.60		<1.0	0.40	
X3	**27/10/2011**	**Surface**			99.00	<0.5						115.0	113.0	<0.5				<0.5			232	230	2.90				120	1.00		0.016	<0.005	0.14	0.14	<0.5			7.94	7.60	19.30	120	0.1	1.90		<1.0	0.92	
X3	**15/11/2011**	**Surface**			103.00	<0.5						117.0	116.0	<0.5				<0.5			246	200	2.21				126	1.00		0.030	<0.005	0.17	0.17	<0.5			7.64	7.65	22.20	144	0.2	2.28		<1.0	0.53	
X3	**07/12/2011**	**Surface**			118.00	<0.5						129.0	125.0	<0.5				<0.5			263	270	1.55				144	1.00		0.059	<0.005	0.19	0.19	<0.5			7.69	7.56	25.50	162	0.2	1.86		<4.0	1.04	
X3 Average					104.92	0.25						117.2	119.2	0.4				0.3			242	220	2.11				128	1.00		0.027	0.003	0.14	0.14	0.3			7.84	7.56	20.57	139	3.1	2.25		1.5	0.81	
X3 Max					140.00	<0.5						166.0	172.0	0.8				<0.5			325	311	2.90				170	1.10		0.059	<0.005	0.29	0.29	<0.5			8.13	7.99	29.00	180	10.4	4.10		9.0	1.32	
X3 Min					46.00	<0.5						47.1	46.7	<0.5				<0.5			110	104	1.00				56	0.94		<0.005	<0.005	<0.02	<0.02	<0.5			7.55	6.86	7.80	68	0.0	0.90		<1.0	0.40	
X3A	**18/01/2011**	**Surface**			130.00	<0.5						147.0	158.0	<0.5				<0.5			298	304	1.20				160	1.00		0.006	<0.005	0.25	0.25	<0.5			7.43	7.57	27.00	170	0.1	1.20		<1.0	0.81	
X3A	**01/02/2011**	**Surface**			130.00	<0.5						161.0	161.0	<0.5				<0.5			296	120	1.30				160	1.10		<0.05	<0.005	0.22	0.22	<0.5			7.76	8.04	27.00	160	1.0	1.00		<1.0	0.75	
X3A	**16/03/2011**	**Surface**			140.00	<0.5						168.0	162.0	2.2				<0.5			347	190	1.20				180	0.95		0.028	<0.005	0.32	0.32	<0.5			7.61	7.82	30.00	210	0.3	1.10		<1.0	0.64	
X3A	**13/04/2011**	**Surface**			140.00	<0.5						157.0	166.0	<0.5				<0.5			319	304	2.00				170	1.00		0.025	<0.005	0.22	0.22	<0.5			7.59	7.85	28.00	170	0.9	0.90		<1.0	1.38	
X3A	**05/05/2011**	**Surface**			130.00	<0.5						142.0	140.0	0.8				<0.5			302	300	2.30				160	0.93		0.031	<0.005	0.15	0.15	<0.5			7.90	7.58	27.00	170	1.6	2.50		<1.0	1.29	
X3A	**20/06/2011**	**Surface**			46.00	<0.5						47.3	50.8	<0.5				<0.5			114	107	3.20				56	1.00		0.021	<0.005	<0.02	<0.02	<0.5			7.72	7.73	9.10	72	8.9	3.10		6.0	1.08	
X3A	**13/07/2011**	**Surface**			72.00	<0.5						81.1	80.7	0.6				<0.5			170	162	3.40				88	1.00		0.230	<0.005	<0.02	<0.02	<0.5			7.73	6.86	13.00	90	10.5	2.50		14.0	0.55	
X3A	**25/08/2011**	**Surface**			70.00	<0.5						78.3	77.7	0.8				<0.5			166	158	3.00				86	1.00		0.028	<0.005	<0.02	<0.02	<0.5			7.97	7.57	14.00	100	10.0	4.20		<1.0	0.58	
X3A	**21/09/2011**	**Surface**			87.00	<0.5						101.0	105.0	0.6				<0.5			207	225	2.20				110	1.00		0.044	<0.005	0.03	0.03	<0.5			7.91	7.37	16.00	140	4.0	2.30		<1.0	1.62	
X3A	**20/10/2011**	**Surface**			110.00	<0.5						125.0	135.0	<0.5				<0.5			245	280	2.30				130	1.20		0.014	<0.005	0.12	0.12	<0.5			7.90	7.07	25.30	210	0.4	2.30		2.0	4.73	
X3A	**15/11/2011**	**Surface**			101.00	<0.5						123.0	125.0	0.7				<0.5			272	225	2.31				123	1.00		0.033	0.007	0.16	0.15	<0.5			7.42	7.62	34.40	156	0.2	2.46		7.8	18.00	
X3A	**06/12/2011**	**Surface**			115.00	<0.5						131.0	124.0	<0.5				<0.5			268	262	1.61				140	1.00		0.032	0.008	0.15	0.15	<0.5			7.80	7.62	22.10	140	0.2	1.99		<1.0	1.08	
X3A Average					105.92	0.25						121.8	123.8	0.6				0.3			250	220	2.17				130	1.02		0.043	0.003	0.14	0.14	0.3			7.73	7.56	22.74	149	3.2	2.13		2.8	2.71	
X3A Max					140.00	<0.5						168.0	166.0	2.2				<0.5			347	304	3.40				180	1.20		0.230	0.008	0.32	0.32	<0.5			7.97	8.04	34.40	210	10.5	4.20		14.0	18.00	
X3A Min					46.00	<0.5						47.3	50.8	<0.5				<0.5			114	107	1.20				56	0.93		0.006	<0.005	<0.02	<0.02	<0.5			7.42	6.86	9.10	72	0.1	0.90		<1.0	0.55	
X4	**18/01/2011**	**Surface**			35.00	<0.5							525.0	551.0	1.6			<0.5			1160	1240					43	1.00		0.240	<0.005	0.13	0.13	<0.5			6.12	6.60	660.00	970	0.2			28.0		
X4	**03/02/2011**	**Surface**			29.00	<0.5							716.0	627.0	2.3			<0.5			1320	1400					36			0.210	<0.005	0.12	0.12	<0.5			6.31	6.25	690.00	1100	0.7			30.0		
X4	**14/03/2011**	**Surface**			43.00	<0.5							532.0	515.0	4.9	<0.005		<0.5			1150	670					52	1.10		0.140	0.012	0.13	0.12	<0.5			6.35	6.49	560.00	990	0.5			19.0		
X4	**21/04/2011**	**Surface**			22.00	<0.5							521.0	551.0	2.0			<0.5			1090	1033					26	1.10		0.140	<0.005	0.12	0.12	<0.5			6.27	6.72	580.00	820	3.7			36.0		
X4	**04/05/2011**	**Surface**			15.00	<0.5							476.0	502.0	3.2			<0.5			1060	1174					18	1.10		0.180	0.009	0.11	0.10	<0.5			6.12	6.70	530.00	870	3.5			38.0		
X4	**20/06/2011**	**Surface**			<0.5	<0.5							596.0	608.0	<0.5			<0.5			1380	1269					<0.5	0.90		0.160	<0.005	0.07	0.07	<0.5			3.68	3.43	780.00	1100	14.7			3.0		
X4	**21/07/2011**	**Surface**			32.00	<0.5							663.0	720.0	1.1			<0.5			1340	1326					39	0.99		0.180	<0.005	0.06	0.06	<0.5			4.08	3.77	780.00	1200	12.1			2.0		
X4	**23/08/2011**	**Surface**			<0.5	<0.5							714.0	664.0	1.3			<0.5			1430	1306					<0.5	0.90		0.230	<0.005	0.04	0.04	<0.5			5.09	5.18	840.00	1300	13.7			41.0		
X4	**21/09/2011**	**Surface**			<0.5	<0.5							799.0	836.0	1.2			<0.5			1600	1571					<0.5	1.00		0.230	<0.005	0.04	0.04	<0.5			4.17	4.07	920.00	1400	6.7			2.0		
X4	**19/10/2011**	**Surface**			<0.5	<0.5							839.0	856.0	1.1			<0.5			1670	1760					<0.5	1.00		0.250	<0.005	0.05	0.05	<0.5			4.77	3.78	984.00	1500	1.1			6.0		
X4	**15/11/2011**	**Surface**			<0.5	<0.5							862.0	823.0	1.1			<0.5			1710	1518					<0.5	0.89		0.250	<0.005	0.04	0.04	<0.5			4.64	4.34	1090.00	1560	0.8			1.6		
X4	**05/12/2011**	**Surface**			52.60	<0.5							663.0	621.0	3.9			<0.5			1460	1545					64	0.95		<0.5	0.028	0.10	0.07

Denison Environmental Services

Table B-1: 2011 Rose Creek Drainage Water Quality
General Parameters

Station	Date	Sample Type	Acid(pH4.5) mg/L	Acid(pH8.3) mg/L	ALK mg/L	ALKPP mg/L	B2008H µg/L	B2BENZ µg/L	B2EBNZ µg/L	B2MPXY µg/L	B2TOLU µg/L	CaCO3 mg/L	CaCO3-d mg/L	Chloride mg/L	Chlorophyll a µg/L	CN 4500 mg/L	CNTHIO mg/L	CO3 mg/L	Coliform counts/100ml	Colour TCU	COND µmho/cm	CONDF µS/cm	DO mg/L	DO-% %	DOC mg/L	Ecoli counts/100ml	HCO3 mg/L as CaCO3	HMW PAH µg/L	Ion Balance (blank)	LMW PAH µg/L	MTBE µg/L	NH3 mg/L	NO2 mg/L	NO2/3 mg/L	NO3 mg/L	OH mg/L	oPO4 mg/L	ORP mV	pH (blank)	pHF (blank)	SO4-d mg/L	TDS mg/L	TEMP-F °C	TOC mg/L	Total PAH µg/L	TSS mg/L	TURB NTU	VPH µg/L
X5	24/03/2011	Surface			280.00	<0.5						1490.0	1630.0	2.4		<0.005		<0.5		<5.0	2370	2225					340		1.10			0.740	<0.005	0.15	0.15	<0.5			7.35	6.88	1300.00	2200	3.0				<1.0	1.72
X5	29/03/2011	Surface			260.00	<0.5						1290.0	1100.0	2.0		<0.005		<0.5		<5.0	2080	2201					320		0.91			0.710	0.012	0.22	0.21	<0.5			7.67	7.24	1000.00	1800	3.4				<1.0	1.68
X5	05/04/2011	Surface			270.00	<0.5						1360.0	1380.0	2.0		<0.005		<0.5		<5.0	2130	2140					330		1.00			0.730	<0.005	0.16	0.16	<0.5			7.63	7.08	1100.00	1900	1.0				2.0	2.10
X5	12/04/2011	Surface			270.00	<0.5						1380.0	1460.0	8.1		0.008		<0.5		<5.0	2240	2400					330		1.10			0.700	<0.005	0.15	0.15	<0.5			7.27	6.92	1200.00	2100	2.2				<1.0	1.58
X5	19/04/2011	Surface			280.00	<0.5						1560.0	1520.0	2.9		<0.005		<0.5		<5.0	2330	2233					340		1.10			0.740	<0.005	0.12	0.12	<0.5			7.11	6.83	1200.00	2100	3.7				<1.0	2.23
X5	26/04/2011	Surface			250.00	<0.5						1310.0	1290.0	2.5		<0.005		<0.5		<5.0	2170	2138					310		0.96			0.640	<0.005	0.09	0.09	<0.5			7.26	6.80	1200.00	2000	3.5				2.0	2.48
X5	03/05/2011	Surface			310.00	<0.5						1700.0	1790.0	2.8		<0.005		<0.5		<5.0	2740	3030					380		1.00			0.850	<0.005	0.05	0.05	<0.5			7.41	6.62	1500.00	2600	5.0				2.0	4.90
X5	10/05/2011	Surface			120.00	<0.5						892.0	906.0	1.4		<0.005		<0.5		<5.0	1600	1606					140		0.96			0.640	<0.005	0.27	0.27	<0.5			7.78	7.83	860.00	1300	1.8				<1.0	1.40
X5	17/05/2011	Surface			120.00	<0.5						954.0	960.0	1.6		<0.005		<0.5		<5.0	1640	1693					140					0.490	<0.005	0.23	0.23	<0.5			7.50	7.08	900.00	1400	3.2				<1.0	1.54
X5	24/05/2011	Surface			120.00	<0.5						817.0	899.0	1.3		<0.005		<0.5		<5.0	1530	1480					150		0.94			0.470	<0.005	0.16	0.16	<0.5			7.55	7.14	870.00	1300	5.0				<1.0	1.70
X5	31/05/2011	Surface			110.00	<0.5						825.0	866.0	1.5		<0.005		<0.5		<5.0	1490	1358					130		1.00			0.510	<0.005	0.23	0.22	<0.5			7.78	7.19	750.00	1200	10.1				<4.0	1.70
X5	07/06/2011	Surface			120.00	<0.5						891.0	911.0	1.6		<0.005		<0.5		<5.0	1620	1800					140		1.00			0.590	<0.005	0.24	0.24	<0.5			7.57	7.21	820.00	1400	11.7				<1.0	2.14
X5	14/06/2011	Surface			140.00	<0.5						1130.0	1130.0	1.7		<0.005		<0.5		<5.0	1860	1505					170		1.00			0.550	<0.005	0.25	0.25	<0.5			7.45	6.89	1000.00	1600	14.7				<1.0	2.30
X5	21/06/2011	Surface			140.00	<0.5						1110.0	1060.0	1.8		0.007		<0.5		<5.0	1910	1697					170					0.640	0.006	0.25	0.24	<0.5			7.81	6.84	1100.00	1700	13.6				<1.0	3.50
X5	28/06/2011	Surface			110.00	<0.5						1050.0	1080.0	2.6		<0.005		<0.5		<5.0	1720	1910					140		1.00			0.680	0.006	0.27	0.26	<0.5			7.82	7.53	970.00	1500	15.0				2.0	6.19
X5	05/07/2011	Surface			78.00	<0.5						1050.0	1040.0	1.7		<0.005		<0.5		<5.0	294	1423					95					0.720	0.007	0.26	0.25	<0.5			7.89	7.62	920.00	1500	11.6				<1.0	6.12
X5	12/07/2011	Surface			93.00	<0.5						1030.0	1050.0	1.9		<0.005		<0.5		10.0	1680	1382					110		1.00			0.660	0.007	0.26	0.26	<0.5			7.81	7.72	950.00	1500	14.8				<1.0	4.72
X5	19/07/2011	Surface			92.00	<0.5						993.0	980.0	1.9		<0.005		<0.5		10.0	1710	1580					110		0.98			0.580	0.007	0.29	0.29	<0.5			7.86	7.38	930.00	1400	14.1				<1.0	4.02
X5	26/07/2011	Surface			92.00	<0.5						964.0	910.0	1.4		<0.005		<0.5		<5.0	1700	1491					110		0.87			0.520	0.006	0.31	0.31	<0.5			7.75	7.81	970.00	1400	14.4				<1.0	4.84
X5	02/08/2011	Surface			94.00	<0.5						1010.0	874.0	2.1		<0.005		<0.5		<5.0	1630	1556					110		0.88			0.650	0.007	0.31	0.30	<0.5			7.64	7.90	930.00	1500	12.7				<1.0	7.06
X5	09/08/2011	Surface			95.00	<0.5						1070.0	1000.0	2.6		<0.005		<0.5		<5.0	1710	1372					120		1.00			0.630	0.006	0.26	0.26	<0.5			7.80	7.74	930.00	1400	12.5				2.0	4.57
X5	16/08/2011	Surface			73.00	<0.5						1010.0	996.0	1.9		<0.005		<0.5		<5.0	1630	1450					89		1.10			0.650	<0.005	0.33	0.32	<0.5			7.79	8.02	880.00	1700	11.6				2.0	1.77
X5	23/08/2011	Surface			100.00	<0.5						958.0	1060.0	2.6		<0.03		<0.5		<5.0	1760	1637					120		0.96			0.660	<0.005	0.26	0.26	<0.5			7.78	7.67	1000.00	1600	10.5				<1.0	1.19
X5	30/08/2011	Surface			92.00	<0.5						1020.0	1110.0	<0.5		<0.005		<0.5		<5.0	1750	1760					110		1.00			0.610	<0.005	0.27	0.27	<0.5			7.90	8.10	1000.00	1500	10.2				<4.0	2.37
X5	06/09/2011	Surface			110.00	<0.5						1170.0	1130.0	2.2		<0.005		<0.5		<5.0	1810	1576					140		1.10			0.630	0.006	0.29	0.29	<0.5			7.81	7.72	970.00	1600	9.2				<1.0	2.36
X5	13/09/2011	Surface			110.00	<0.5						1030.0	1070.0	2.2		<0.005		<0.5		<5.0	1790	1631					130		1.00			0.650	<0.005	0.28	0.28	<0.5			7.94	7.74	940.00	1600	8.0				2.0	1.78
X5	20/09/2011	Surface			120.00	<0.5						1130.0	1110.0	1.9		<0.005		<0.5		<5.0	1870	1970					150		0.99			0.680	<0.005	0.27	0.27	<0.5			7.69	7.80	1000.00	1700	6.9				2.0	1.67
X5	27/09/2011	Surface			190.00	<0.5						1280.0	1340.0	2.4		<0.005		<0.5		<5.0	2180	1817					230		1.00			0.760	<0.005	0.18	0.18	<0.5			7.22	6.95	1170.00	2000	4.1				2.0	3.85
X5	23/11/2011	Surface			253.00	<0.5						1280.0	1370.0	2.3		<0.005		<0.5		<5.0	2330	2220					309		0.93			0.770	<0.005	0.16	0.16	<0.5			7.69	7.46	1300.00	2130	1.6				<1.0	1.48
X5	29/11/2011	Surface			267.00	<0.5						1620.0	1550.0	2.3		<0.005		<0.5		<5.0	2480	2260					326		0.96			0.790	<0.005	0.11	0.11	<0.5			7.36	7.14	1430.00	2310	3.7				1.4	2.98
X5	08/12/2011	Surface			278.00	<0.5						1530.0	1460.0	2.6		<0.005		<0.5		<5.0	2530	2279					340		0.89			0.890	<0.005	0.09	0.09	<0.5			7.14	6.90	1470.00	2390	1.8				<4.0	4.07
X5 Average					162.48	0.25						1158.2	1162.3	2.2		0.003		0.3		3.0	1880	1833					198		0.99			0.662	0.004	0.22	0.22	0.3			7.61	7.35	1050.32	1720	7.9				1.1	2.77
X5 Max					310.00	<0.5						1700.0	1790.0	8.1		<0.03		<0.5		10.0	2740	3030					380		1.10			0.890	0.012	0.33	0.32	<0.5			7.94	8.10	1500.00	2600	15.0				<4.0	7.06
X5 Min					73.00	<0.5						817.0	866.0	<0.5		<0.005		<0.5		<5.0	294	1358					89		0.87			0.470	<0.005	0.05	0.05	<0.5			7.11	6.62	750.00	1200	1.0				<1.0	1.19
X5P	18/01/2011	Surface			290.00	<0.5						1230.0	1240.0	1.7				<0.5			2040	2002					350		0.97			1.800	<0.005	0.24	0.24	<0.5			7.60	7.00	1100.00	1800	0.0				<1.0	
X5P	03/02/2011	Surface			280.00	<0.5						1240.0	1190.0	1.9				<0.5			2050	2040					340					0.800	<0.005	0.21	0.21	<0.5			7.76	7.22	1000.00	1800	1.8				<1.0	
X5P	15/03/2011	Surface			310.00	<0.5						1160.0	1150.0	2.1				<0.5			1910	1930					380		1.00			0.580	<0.005	0.37	0.37	<0.5			7.66	7.53	880.00	1600	0.2				<1.0	
X5P	14/04/2011	Surface			270.00	<0.5						1290.0	1280.0	2.1				<0.5			2000	1782					330		0.91			0.640	<0.005	0.18	0.18	<0.5			7.74	7.16	1200.00	1700	3.0				<1.0	
X5P	05/05/2011	Surface			69.00	<0.5						947.0	948.0	0.8				<0.5			1610	1688					84		1.00			0.300	<0.005	0.08	0.08	<0.5			7.81	8.38	870.00	1400	0.5				7.0	
X5P	20/06/2011	Surface			110.00	<0.5						1000.0	994.0	1.4				<0.5			1730	1544					140		0.94			0.590	<0.005	0.27	0.27	<0.5			7.75	7.39	970.00	1400	14.4				4.0	
X5P	14/07/2011	Surface			90.00	<0.5						998.0	984.0	1.8				<0.5			1690	1768					110		0.96			0.580	0.009	0.25	0.24	<0.5			7.78	7.59	950.00	1500	17.2				2.0	
X5P	23/08/2011	Surface			89.00	<0.5						1020.0	999.0	2.1				<0.5			1720	1539					110		0.96			0.620	<0.005	0.28	0.28	<0.5			7.79	8.17	970.00	1500	13.4				5.0	
X5P	21/09/2011	Surface			140.00	<0.5						1190.0	1190.0	2.1				<0.5			1910	1823					170		1.00			0.650	<0.005	0.25	0.25	<0.5			7.86	6.85	1100.00	1700	6.8				3.0	
X5P	19/10/2011	Surface			210.00	<0.5						1380.0	1410.0	2.0				<0.5			2130	2280					250		1.00			0.780	<0.005	0.16	0.16	<0.5			7.76	7.21	1200.00	2000	1.2				4.0	
X5P	15/11/2011	Surface			250.00	<0.5						1340.0	1280.0	2.3				<0.5			2240						305		0.91			0.840	<0.005	0.20	0.20	<0.5			8.07	7.45	1230.00	2040	0.1				<1.0	
X5P	05/12/2011	Surface			252.00	<0.5						1370.0	1250.0	2.6				<0.5			2210	2319					308		0.90			0.850	<0.005	0.18	0.18	<0.5			7.53	7.21	1210.00	1920	0.3				3.1	
X5P Average					196.67	0.25						1180.4	1159.6	1.9				0.3			1937	1883					240		0.96			0.753	0.003	0.22	0.22	0.3			7.76	7.43	1056.67	1697	4.9				2.6	
X5P Max					310.00	<0.5						1380.0	1410.0	2.6				<0.5			2240	2319					380		1.00			1.800	0.009	0.37	0.37	<0.5			8.07	8.38	1230.00	2040	17.2				7.0	
X5P Min					69.00	<0.5						947.0	948.0	0.8				<0.5			1610	1539					84		0.90			0.300	<0.005	0.08	0.08	<0.5			7.53	6.85	870.00	1400	0.0				<1.0	
X7	28/06/2011	Surface			83.00	<0.5						4970.0	4640.0	15.0				<0.5			8140	>3999.0					100		0.88			2.600	0.020	<0.02	<0.02	<0.5			5.83	5.44	8100.00	9800	3.0				73.0	
X7	18/10/2011	Surface			26.00	<0.5						3840.0	3980.0	8.4				<0.5			8620	7970					32		0.88			2.900	0.009	0.04	0.03	<0.5			5.34	5.28	8560.00	11000	3.7				55.0	
X7 Average					54.50	0.25						4405.0	4310.0	11.7				0.3			8380	5985					66		0.88			2.750	0.015	0.03	0.02	0.3			5.59	5.36	8330.00	10400	3.4				64.0	
X7 Max					83.00	<0.5						4970.0	4640.0	15.0				<0.5			8620	7970					100		0.88			2.900	0.020	0.04	0.03	<0.5			5.83	5.44	8560.00	11000	3.7				73.0	
X7 Min					26.00	<0.5						3840.0	3980.0	8.4				<0.5			8140	3999					32		0.88			2.600	0.009	<0.02	<0.02	<0.5			5.34	5.28	8100.00	9800	3.0				55.0	

Note: Statistics calculated with DLs at half value.

Table B-2: 2011 Rose Creek Drainage Water Quality
Dissolved Metals

Station	Date	Sample Type	Ag-d µg/L	Al-d µg/L	As-d µg/L	Ba-d µg/L	B-d µg/L	Be-d µg/L	Bi-d µg/L	Ca-d mg/L	Cd-d µg/L	Co-d µg/L	Cr-d µg/L	Cu-d µg/L	Fe-d µg/L	Hg-d µg/L	K-d mg/L	Li-d mg/L	Mg-d mg/L	Mn-d µg/L	Mo-d µg/L	Na-d mg/L	Ni-d µg/L	Pb-d µg/L	P-d mg/L	Sb-d µg/L	S-d mg/L	Se-d µg/L	Si-d µg/L	Sn-d µg/L	Sr-d µg/L	Ti-d µg/L	Tl-d µg/L	U-d µg/L	V-d µg/L	Zn-d µg/L	Zr-d µg/L
A30	06/01/2011	Seepage	0.030	109.0	<0.1	20.0	<50.0	<0.1	<1.0	23.4	9.60	6.4	<1.0	26.20	85		2.06	0.019	15.00	240.00	<1.0	2.65	27.0	4.600		<0.5	41.0	0.20	7430	<5.0	109.0	<5.0	<0.05	0.70	<5.0	7720.0	<0.5
A30	14/02/2011	Seepage	<0.02	58.0	<0.1	20.0	<50.0	<0.1	<1.0	21.9	7.50	5.1	<1.0	19.30	<5.0		0.79	0.010	13.00	156.00	<1.0	2.41	21.0	3.000		<0.5	33.0	0.30	6550	<5.0	101.0	<5.0	<0.05	0.60	<5.0	6160.0	<0.5
A30	14/03/2011	Seepage	<0.02	32.0	<0.1	21.0	<50.0	<0.1	<1.0	17.3	4.00	<0.5	<1.0	9.50	<5.0		0.78		9.49	7.00	<1.0	2.31	13.0	1.900		<0.5	23.0	0.20	5870	<5.0	86.0	<5.0	<0.05	0.40	<5.0	3800.0	<0.5
A30	14/04/2011	Seepage	<0.02	11.0	<0.1	22.0	<50.0	<0.1	<1.0	17.5	2.37	<0.5	<1.0	5.10	<5.0		0.72	0.006	8.47	3.00	<1.0	2.21	9.0	0.800		<0.5	19.0	0.20	5920	<5.0	77.0	<5.0	<0.05	0.30	<5.0	2750.0	<0.5
A30	12/05/2011	Seepage	<0.02	12.0	<0.1	24.0	<50.0	<0.1	<1.0	20.2	2.43	<0.5	<1.0	4.60	<5.0		0.72	0.007	9.43	6.00	<1.0	2.10	10.0	1.000		<0.5	24.0	0.20	6230	<5.0	87.0	<5.0	<0.05	0.30	<5.0	2780.0	<0.5
A30	15/06/2011	Seepage	0.660	14300.0	0.9	20.0	<200.0	6.3	<3.0	51.8	111.00	186.0	8.0	1420.00	7850		1.80	0.038	75.30	4730.00	<3.0	3.10	187.0	499.000		<2.0	244.0	<0.3	11000	<20.0	246.0	<20.0	0.300	15.00	<20.0	70900.0	<2.0
A30	20/07/2011	Seepage	0.780	10500.0	0.5	20.0	<50.0	4.3	<1.0	48.1	81.20	147.0	5.0	1020.00	2870		1.50	0.035	53.40	3780.00	<1.0	3.24	140.0	545.000		<0.5	184.0	0.20	11700	<5.0	226.0	<5.0	0.890	11.30	<5.0	51200.0	<0.5
A30	24/08/2011	Seepage	0.700	11000.0	0.9	22.0	<300.0	4.3	<5.0	49.2	77.70	156.0	13.0	1090.00	1800		1.50	0.035	54.30	3540.00	48.00	3.20	151.0	555.000		<3.0	169.0	<0.5	11500	<30.0	241.0	<30.0	0.900	11.90	<30.0	53300.0	<3.0
A30	20/09/2011	Seepage	0.660	10800.0	0.4	21.0	<50.0	4.1	<1.0	54.4	75.70	117.0	3.0	994.00	465		1.53	0.031	51.60	3680.00	<1.0	3.43	140.0	507.000		<0.5	165.0	0.20	12900	<5.0	244.0	<5.0	0.490	10.40	<5.0	56100.0	<0.5
A30	19/10/2011	Seepage	0.300	3580.0	<0.5	17.0	<300.0	2.0	<5.0	42.8	40.10	47.0	<5.0	429.00	74		1.30	<0.03	37.60	1340.00	<5.0	3.00	92.0	137.000		<3.0	115.0	<0.5	11200	<30.0	162.0	<30.0	<0.3	3.40	<30.0	33200.0	<3.0
A30	15/11/2011	Seepage	0.117	665.0	0.1	23.2	<50.0	0.6	<1.0	20.2	15.50	10.7	<1.0	143.00	8		1.02	0.015	17.70	373.00	<1.0	2.41	40.6	41.300		<0.5	48.2	0.12	5410	<5.0	104.0	<5.0	<0.05	1.00	<5.0	12300.0	<0.5
A30	07/12/2011	Seepage	0.064	161.0	<0.1	20.0	<50.0	0.2	<1.0	18.1	5.90	2.4	<1.0	45.20	<5.0		0.72	0.011	11.60	83.60	<1.0	2.21	21.4	13.400		<0.5	34.2	<0.1	5940	<5.0	76.6	<5.0	<0.05	0.35	<5.0	6970.0	<0.5
A30 Average			0.279	4269.0	0.3	20.9	52.1	1.8	0.9	32.1	36.08	56.5	2.9	433.83	1097		1.20	0.020	29.74	1494.88	4.71	2.69	71.0	192.417		0.52	91.6	0.19	8471	5.21	146.6	5.2	0.242	4.64	5.2	25598.3	0.52
A30 Max			0.780	14300.0	0.9	24.0	<300.0	6.3	<5.0	54.4	111.00	186.0	13.0	1420.00	7850		2.06	0.038	75.30	4730.00	48.00	3.43	187.0	555.000		<3.0	244.0	<0.5	12900	<30.0	246.0	<30.0	0.900	15.00	<30.0	70900.0	<3.0
A30 Min			<0.02	11.0	<0.1	17.0	<50.0	<0.1	<1.0	17.3	2.37	<0.5	<1.0	4.60	<5.0		0.72	0.006	8.47	3.00	<1.0	2.10	9.0	0.800		<0.5	19.0	<0.1	5410	<5.0	76.6	<5.0	<0.05	0.30	<5.0	2750.0	<0.5
BH10A	29/09/2011	Ground	0.007	45.8	4.9	11.0	<50.0	0.8	<0.005	89.0	0.04	20.4	0.2	0.25	37600		4.21	0.065	31.90	1010.00	0.06	11.30	26.0	0.318		<0.02	83.0	<0.04	14700	0.09	485.0	<0.5	<0.002	0.07	<0.2	4790.0	<0.1
BH10B	29/09/2011	Ground	<0.005	57.6	35.8	9.7	<50.0	1.7	<0.005	128.0	0.04	9.2	0.2	0.19	34700		6.27	0.123	44.00	797.00	<0.05	18.60	22.0	0.409		0.03	83.0	<0.04	15700	0.06	817.0	<0.5	<0.002	0.01	<0.2	3190.0	<0.1
BH14A	09/06/2011	Ground	<0.03	13.0	0.5	16.9	<300.0	<0.05	<0.03	611.0	1.24	0.1	<0.5	0.70	32		3.60	0.062	269.00	3.00	0.60	16.00	61.9	28.300		<0.1	699.0	0.40	9570	0.07	2680.0	<3.0	0.020	115.00	<1.0	7080.0	<0.5
BH14A	17/10/2011	Ground	0.050	25.0	0.4	20.9	<300.0	<0.05	<0.03	637.0	1.87	0.1	<0.5	3.10	76	<0.05	4.20	0.082	345.00	4.60	0.50	16.90	106.0	50.500		0.20	870.0	0.80	9980	0.13	3140.0	<3.0	<0.01	141.00	<1.0	11100.0	<0.5
BH14A Average			0.033	19.0	0.5	18.9	150.0	0.0	0.0	624.0	1.56	0.1	0.3	1.90	54	0.03	3.90	0.072	307.00	3.80	0.55	16.45	84.0	39.400		0.13	784.5	0.60	9775	0.10	2910.0	1.5	0.013	128.00	0.5	9090.0	0.25
BH14A Max			0.050	25.0	0.5	20.9	<300.0	<0.05	<0.03	637.0	1.87	0.1	<0.5	3.10	76	<0.05	4.20	0.082	345.00	4.60	0.60	16.90	106.0	50.500		0.20	870.0	0.80	9980	0.13	3140.0	<3.0	0.020	141.00	<1.0	11100.0	<0.5
BH14A Min			<0.03	13.0	0.4	16.9	<300.0	<0.05	<0.03	611.0	1.24	0.1	<0.5	0.70	32	<0.05	3.60	0.062	269.00	3.00	0.50	16.00	61.9	28.300		<0.1	699.0	0.40	9570	0.07	2680.0	<3.0	<0.01	115.00	<1.0	7080.0	<0.5
BH14B	10/06/2011	Ground	<0.03	4.0	0.3	28.0	<300.0	<0.05	<0.03	636.0	0.36	0.8	<0.5	1.40	11		4.20	0.063	267.00	18.50	<0.3	16.20	4.6	123.000		<0.1	714.0	0.40	9260	0.14	3030.0	<3.0	0.030	163.00	<1.0	283.0	<0.5
BH14B	17/10/2011	Ground	<0.03	2.0	0.4	21.4	<300.0	<0.05	<0.03	667.0	0.11	0.1	<0.5	1.90	9	<0.05	4.30	0.067	279.00	3.30	<0.3	15.50	3.6	27.900		<0.1	774.0	0.50	9180	0.16	3140.0	<3.0	<0.01	166.00	<1.0	220.0	<0.5
BH14B Average			0.015	3.0	0.4	24.7	150.0	0.0	0.0	651.5	0.24	0.4	0.3	1.65	10	0.03	4.25	0.065	273.00	10.90	0.15	15.85	4.1	75.450		0.05	744.0	0.45	9220	0.15	3085.0	1.5	0.018	164.50	0.5	251.5	0.25
BH14B Max			<0.03	4.0	0.4	28.0	<300.0	<0.05	<0.03	667.0	0.36	0.8	<0.5	1.90	11	<0.05	4.30	0.067	279.00	18.50	<0.3	16.20	4.6	123.000		<0.1	774.0	0.50	9260	0.16	3140.0	<3.0	0.030	166.00	<1.0	283.0	<0.5
BH14B Min			<0.03	2.0	0.3	21.4	<300.0	<0.05	<0.03	636.0	0.11	0.1	<0.5	1.40	9	<0.05	4.20	0.063	267.00	3.30	<0.3	15.50	3.6	27.900		<0.1	714.0	0.40	9180	0.14	3030.0	<3.0	<0.01	163.00	<1.0	220.0	<0.5
BH5	28/09/2011	Ground	<0.005	49.7	0.4	31.7	<50.0	0.3	<0.005	62.7	1.13	14.9	0.2	0.41	16600		2.93	0.031	23.20	1430.00	<0.05	8.09	23.1	0.472		<0.02	54.0	<0.04	10800	0.03	304.0	<0.5	0.066	0.20	<0.2	2960.0	<0.1
BH6	28/09/2011	Ground	<0.005	33.3	0.1	44.1	<50.0	0.1	<0.005	77.7	2.12	44.2	<0.1	0.39	6570		2.26	0.029	21.00	1750.00	0.07	4.99	42.3	1.230		<0.02	76.0	<0.04	8240	0.09	386.0	<0.5	0.057	1.18	<0.2	5010.0	<0.1
BH8	12/10/2011	Ground	0.300	27100.0	13.0	12.9	<1000.0	16.6	<0.1	282.0	631.00	663.0	9.0	4890.00	601000		7.00	0.105	209.00	13500.00	3.00	29.00	630.0	924.000		5.00	1030.0	1.30	7550	0.70	1130.0	<10.0	6.010	49.10	<4.0	215000.0	<2.0
DRYSINK	26/04/2011	Surface	<10.0	<50.0	<30.0	2.0	<10.0	<3.0	<50.0	70.9	<5.0	<20.0	<10.0	<20.0	<10.0		0.70	<0.02	22.60	5.00	<20.0	18.50	<20.0	<30.0	<0.05	<50.0	9.3	<100.0	7700	<30.0	899.0	<5.0			<10.0	18.0	<20.0
ETA Combined	06/01/2011	Surface	0.210	878.0	25.1	13.0	<200.0	0.8	<4.0	452.0	7.40	971.0	<4.0	2.40	1110000		13.60	0.139	734.00	86200.00	<4.0	70.20	818.0	5.600		<2.0	2420.0	<0.4	16200	<20.0	3760.0	<20.0	0.300	4.60	<20.0	424000.0	<2.0
ETA Combined	03/02/2011	Surface	0.260	762.0	25.4	12.0	<200.0	0.9	<4.0	416.0	7.50	988.0	<4.0	2.50	987000		12.60	0.132	726.00	90300.00	<4.0	67.00	834.0	4.300		<2.0	2290.0	<0.4	14900	<20.0	3950.0	<20.0	0.300	4.10	<20.0	430000.0	<2.0
ETA Combined	16/03/2011	Surface	<0.5	823.0	23.0	16.0	<5000.0	<1.0	<0.5	447.0	9.00	1010.0	<10.0	6.00	946000		12.00	0.135	758.00	90300.00	<5.0	67.00	872.0	5.300		<2.0	2220.0	<4.0	16300	<1.0	4080.0	<50.0	0.300	5.10	<20.0	445000.0	<10.0
ETA Combined	14/04/2011	Surface	0.200	766.0	21.7	14.5	<1000.0	0.6	<0.1	460.0	8.30	987.0	<2.0	10.00	895000		13.00	0.118	765.00	92000.00	<1.0	65.00	815.0	1.900		<0.4	2400.0	1.10	15700	<0.2	4080.0	<10.0	0.300	4.72	<4.0	394000.0	<2.0
ETA Combined	05/05/2011	Surface	0.200	16800.0	7.8	23.5	<1000.0	1.1	<0.1	170.0	105.00	238.0	11.0	734.00	141000		4.00	0.042	128.00	16200.00	<1.0	13.00	200.0	1200.000		0.60	488.0	<0.8	4920	<0.2	821.0	<10.0	0.970	2.75	<4.0	129000.0	<2.0
ETA Combined	21/06/2011	Surface	<0.3	1450.0	14.0	13.0	<3000.0	1.3	<0.3	363.0	137.00	1050.0	<5.0	314.00	325000		11.00	0.145	682.00	80500.00	<3.0	48.00	1070.0	183.000		<1.0	1770.0	<2.0	12700	<0.5	3130.0	<30.0	1.200	5.00	<10.0	482000.0	<5.0
ETA Combined	20/07/2011	Surface	<0.3	1250.0	14.0	12.0	<3000.0	0.8	<0.3	397.0	107.00	1120.0	<5.0	250.00	449000		13.00	0.130	756.00	85600.00	<3.0	55.00	1100.0	177.000		<1.0	1960.0	<2.0	14200	<0.5	3230.0	<30.0	1.400	4.40	<10.0	488000.0	<5.0
ETA Combined	24/08/2011	Surface	<0.3	117.0	9.0	9.0	<3000.0	<0.5	<0.3	259.0	63.70	683.0	<5.0	53.00	285000		9.00	0.096	443.00	55500.00	<3.0	31.00	683.0	12.800		<1.0	1320.0	<2.0	8670	<0.5	2230.0	<30.0	0.800	2.00	<10.0	325000.0	<5.0
ETA Combined	21/09/2011	Surface	<0.3	596.0	20.0	12.0	<3000.0	0.8	<0.3	391.0	75.70	1130.0	<5.0	94.00	488000		14.00	0.149	773.00	83900.00	<3.0	57.00	1110.0	3.800		<1.0	1930.0	<2.0	13000	<0.5	3240.0	<30.0	1.000	3.90	<10.0	466000.0	<5.0
ETA Combined	19/10/2011	Surface	<0.3	781.0	18.0	10.0	<3000.0	0.9	<0.3	400.0	71.20	1090.0	<5.0	91.00	579000		14.00	0.146	742.00	82300.00	<3.0	60.00	1080.0	9.800		<1.0	1870.0	<2.0	13100	<0.5	3240.0	<30.0	0.600	4.00	<10.0	456000.0	<5.0
ETA Combined	17/11/2011	Surface	<0.3	1290.0	30.0	11.0	<3000.0	0.7	<0.3	405.0	12.40	926.0	<5.0	12.00	1220000		13.00	0.116	571.00	74800.00	<3.0	69.00	798.0	2.100		<1.0	1920.0	<2.0	13600	<0.5	3400.0	<30.0	0.200	4.80	<10.0	422000.0	<5.0
ETA Combined	07/12/2011	Surface	0.300	1710.0	32.5	11.8	<1000.0	0.9	<0.1	393.0	14.90	1060.0	<2.0	25.00	1250000		14.00	0.067	646.00	87000.00	<1.0	72.00	899.0	3.000		<0.4	2040.0	<0.8	12000	<0.2	3910.0	<10.0	0.320	5.60	<4.0	461000.0	<2.0
ETA Combined Average			0.193	2268.6	20.0	13.2	1100.0	0.8	0.4	379.4	51.59	937.8	3.1	132.83	722917		11.93	0.118	643.67	77050.00	1.42	56.18	856.6	134.050		0.58	1885.7	0.86	12941	1.86	3255.9	12.5	0.641	4.25	5.5	410166.7	2.08
ETA Combined Max			<0.5	16800.0	32.5	23.5	<5,000.0	1.3	<4.0	460.0	137.00	1130.0	11.0	734.00	1250000		14.00	0.149	773.00	92000.00	<5.0	72.00	1110.0	1200.000		<2.0	2420.0	<4.0	16300	<20.0	4080.0	<50.0	1.400	5.60	<20.0	488000.0	<10.0
ETA Combined Min			0.200	117.0	7.8	9.0	<200.0	<0.5	<0.1	170.0	7.40	238.0	<2.0	2.40	141000		4.00	0.042	128.00	16200.00	<1.0	13.00	200.0	1.900		<0.4	488.0	<0.4	4920	<0.2	821.0	<10.0	0.200	2.00	<4.0	129000.0	<2.0
FAROCR	22/06/2011	Surface	0.008	90.7	0.3	14.5	<50.0	0.0	<0.005	3.7	0.07	0.1	0.8	2.05	61		0.19	0.002	0.80	2.50	0.69	1.35	1.3	5.120		0.05	<10.0	0.12	5480	0.02	23.0	0.7	0.015	0.31	<0.2	14.6	0.20
FAROCR	21/07/2011	Surface	<0.005	65.3	0.2	16.8	<50.0	0.0	<0.005	5.8	0.03	0.0	<0.1	1.52	48		0.17	0.002	1.16	0.84	0.16	1.54	0.8	2.720		0.05	<10.0	0.19	7650	<0.01	29.6	<0.5	0.007	0.43	<0.2	7.2	0.20
FAROCR	23/08/2011	Surface	<0.005	38.8	0.2	17.1	<50.0	0.0	<0.005	5.3	0.04	0.0	<0.1	1.05	29		0.17	0.002	1.14	0.90	0.17	1.52	0.6	1.590		0.04	<10.0	0.18	6960	<0.01	29.3	<0.5	0.003	0.33	0.3	4.2	<0.1
FAROCR	22/09/2011	Surface	<0.005	28.1	0.2	20.2	<50.0	0.0	<0.005	6.6	0.03	0.0	<0.1	0.92	28		0.25	0.002	1.44	0.80	0.24	1.72	0.8	0.657		0.05	<10.0	0.17	7310	<0.01	34.7	<0.5	0.005	0.32	0.4	4.4	<0.1
FAROCR	19/10/2011	Surface	<0.005	18.1	0.3	23.9	<50.0	<0.01	<0.005	8.8	0.02	0.0	<0.1	0.80	13		0.30	0.003	1.94	0.74	0.49	2.06	0.9	0.470		0.06	<10.0	0.36	7150	<0.01	43.3	<0.5	0.005	0.52	<0.2	5.1	<0.1
FAROCR	15/11/2011	Surface	<0.005	10.2	0.4	29.5	<50.0	<0.01	<0.005	9.0	0.02	0.0	<0.1	0.82	8		0.35	0.003	2.16	0.26	0.62	1.97	1.0	0.301		0.07	<10.0	0.43	6210	<0.01	51.0	<0.5	0.007	0.50	<0.2	5.0	<0.1
FAROCR	06/12/2011	Surface	<0.005	9.8	0.4	25.2	<50.0	<0.01	<0.005	8.7	0.04	0.0	<0.1	0.65	8		0.33	0.003	2.23	1.27	0.74	1.98	0.8	0.284		0.07	<10.0	0.53	5700	<0.01	52.3	<0.5	0.004	0.75	<0.2	4.3	<0.1
FAROCR Average			0.003	37.3	0.3	21.0	25.0	0.0	0.0	6.8	0.03	0.0	0.2	1.12	28		0.25	0.002	1.55	1.04	0.44	1.73	0.9	1.592		0.06	5.0	0.28	6637	0.01	37.6	0.3	0.007	0.45	0.2	6.4	0.09
FAROCR Max			0.008	90.7	0.4	29.5	<50.0	0.0	<0.005	9.0	0.07	0.1	0.8	2.05	61		0.35	0.003	2.23	2.50	0.74	2.06	1.3	5.120		0.07	<10.0	0.53	7650	0.02	52.3	0.7	0.015	0.75	0.4	14.6	0.20
FAROCR Min			<0.005	9.8	0.2	14.5	<50.0	<0.01	<0.005	3.7	0.02	0.0	<0.1	0.65	8		0.17	0.002	0.80	0.26	0.16	1.35	0.6	0.284		0.04	<10.0	0.12	5480	<0.01	23.0	<0.5	0.003	0.31	<0.2	4.2	<0.1
FCO	26/05/2011	Surface	0.016	185.0	0.4	36.2	<50.0	0.1	<0.005	10.8	2.36	7.7	<0.1	74.10	211		0.89	0.004	4.47	209.00	<0.05	1.48	9.6	4.670		0.08	15.0	0.05	4410	<0.01	54.2	<0.5	0.021	0.23	<0.2	1260.0	0.20
FCO	27/10/2011	Surface	0.006	968.0	0.2	34.4	<50.0	0.3	<0.005	12.7	3.29	5.4	0.4	103.00	473		0.44	0.006	4.26	93.20	0.06	2.83	12.0	2.470		0.04	15.0	<0.04	8060	<0.01	64.6	0.6	0.009	0.47	<0.2	2100.0	<0.1
FCO Average			0.011	576.5	0.3	35.3	25.0	0.2	0.0	11.8	2.83	6.5	0.2	88.55	342		0.67	0.005	4.37	151.10	0.04	2.16	10.8	3.570		0.06	15.0	0.04	6235	0.01	59.4	0.4	0.015	0.35	0.1	1680.0	0.13
FCO Max			0.016	968.0	0.4	36.2	<50.0	0.3	<0.005	12.7	3.29	7.7	0.4	103.00	473		0.89	0.006	4.47	209.00	0.06	2.83	12.0	4.670		0.08	15.0	0.05	8060	<0.01	64.6	0.6	0.021	0.47	<0.2	2100.0	0.20
FCO Min			0.006	185.0	0.2	34.4	<50.0	0.1	<0.005	10.8	2.36	5.4	<0.1	74.10	211		0.44	0.004	4.26	93.20	<0.05	1.48	9.6	2.470		0.04	15.0	<0.04	4410	<0.01	54.2	<0.5	0.009	0.23	<0.2	1260.0	<0.1

Note: Statistics calculated with DLs at half value.
Note: Metals reported in mg/L shaded in gray.

Table B-2: 2011 Rose Creek Drainage Water Quality
Dissolved Metals

Station	Date	Sample Type	Ag-d µg/L	Al-d µg/L	As-d µg/L	Ba-d µg/L	B-d µg/L	Be-d µg/L	Bi-d µg/L	Ca-d mg/L	Cd-d µg/L	Co-d µg/L	Cr-d µg/L	Cu-d µg/L	Fe-d µg/L	Hg-d µg/L	K-d mg/L	Li-d mg/L	Mg-d mg/L	Mn-d µg/L	Mo-d µg/L	Na-d mg/L	Ni-d µg/L	Pb-d µg/L	P-d mg/L	Sb-d µg/L	S-d mg/L	Se-d µg/L	Si-d µg/L	Sn-d µg/L	Sr-d µg/L	Ti-d µg/L	Tl-d µg/L	U-d µg/L	V-d µg/L	Zn-d µg/L	Zr-d µg/L
FCS-4	**06/01/2011**	**Surface**	0.170	12.0	8.6	11.0	<200.0	<0.4	<4.0	484.0	8.72	804.0	<4.0	1.00	884000		13.40	0.132	762.00	81900.00	<4.0	71.90	705.0	1.000		<2.0	2260.0	<0.4	14000	<20.0	3750.0	<20.0	0.300	6.80	<20.0	345000.0	<2.0
FCS-4	**03/02/2011**	**Surface**	0.210	<10.0	9.0	11.0	<200.0	<0.4	<4.0	436.0	8.26	757.0	<4.0	1.90	751000		12.50	0.130	721.00	82400.00	<4.0	66.40	680.0	<0.8		<2.0	2110.0	<0.4	12900	<20.0	3790.0	<20.0	0.300	6.20	<20.0	331000.0	<2.0
FCS-4	**16/03/2011**	**Surface**	<0.5	42.0	9.0	13.0	<5000.0	<1.0	<0.5	429.0	9.80	792.0	<10.0	<5.0	689000		11.00	0.122	758.00	84800.00	<5.0	66.00	723.0	0.600		<2.0	2070.0	<4.0	12100	<1.0	3920.0	<50.0	0.300	6.60	<20.0	351000.0	<10.0
FCS-4	**14/04/2011**	**Surface**	0.200	10.0	3.5	12.4	<1000.0	<0.2	<0.1	506.0	17.80	776.0	<2.0	9.00	665000		13.00	0.115	753.00	84200.00	<1.0	65.00	691.0	0.700		<0.4	2180.0	1.50	13300	<0.2	3990.0	<10.0	0.380	5.90	<4.0	311000.0	<2.0
FCS-4	**05/05/2011**	**Surface**	0.200	15200.0	4.0	21.6	<1000.0	1.2	<0.1	237.0	96.90	231.0	4.0	650.00	119000		4.00	0.046	148.00	17500.00	<1.0	14.00	198.0	854.000		<0.4	562.0	<0.8	6050	<0.2	1030.0	<10.0	0.820	5.53	<4.0	122000.0	<2.0
FCS-4	**16/06/2011**	**Surface**	<0.1	13.0	1.8	10.0	<1000.0	<0.2	<0.1	478.0	13.10	424.0	<2.0	18.00	222000		12.00	0.109	698.00	66800.00	<1.0	56.00	445.0	1.400		<0.4	1620.0	<0.8	9990	<0.2	3370.0	<10.0	0.770	7.28	<4.0	153000.0	<2.0
FCS-4	**14/07/2011**	**Surface**	<0.1	5.0	1.4	11.1	<1000.0	<0.2	<0.1	465.0	25.70	494.0	<2.0	12.00	178000		12.00	0.121	709.00	67900.00	<1.0	59.00	530.0	0.400		<0.4	1580.0	<0.8	9320	<0.2	3410.0	<10.0	0.930	5.40	<4.0	185000.0	<2.0
FCS-4	**23/08/2011**	**Surface**	0.080	8.0	1.1	9.9	<500.0	<0.1	<0.05	441.0	11.30	392.0	2.0	8.70	193000		12.00	0.109	694.00	64400.00	<0.5	56.00	426.0	0.530		<0.2	1590.0	<0.4	8330	<0.1	3340.0	<5.0	0.560	7.91	<2.0	141000.0	<1.0
FCS-4	**21/09/2011**	**Surface**	<0.3	14.0	7.0	12.0	<3000.0	<0.5	<0.3	409.0	62.50	1010.0	<5.0	24.00	443000		14.00	0.138	746.00	81100.00	<3.0	56.00	976.0	1.200		<1.0	1820.0	<2.0	11700	<0.5	3220.0	<30.0	0.800	3.70	<10.0	412000.0	<5.0
FCS-4	**19/10/2011**	**Surface**	<0.3	13.0	6.0	10.0	<3000.0	<0.5	<0.3	406.0	60.60	984.0	<5.0	29.00	483000		13.00	0.147	739.00	78600.00	<3.0	60.00	984.0	<0.3		<1.0	1870.0	<2.0	11700	<0.5	3210.0	<30.0	0.700	3.50	<10.0	413000.0	<5.0
FCS-4	**17/11/2011**	**Surface**	<0.3	24.0	8.0	11.0	<3000.0	<0.5	<0.3	409.0	42.30	939.0	<5.0	23.00	663000		14.00	0.144	727.00	81100.00	<3.0	65.00	916.0	0.700		<1.0	1920.0	<2.0	11700	<0.5	3460.0	<30.0	0.500	5.00	<10.0	406000.0	<5.0
FCS-4	**07/12/2011**	**Surface**	0.300	23.0	8.5	10.9	<1000.0	<0.2	<0.1	397.0	40.30	1040.0	<2.0	24.00	727000		15.00	0.068	802.00	88700.00	<1.0	70.00	964.0	0.400		<0.4	1990.0	<0.8	9920	<0.2	3960.0	<10.0	0.410	5.66	<4.0	436000.0	<2.0
FCS-4 Average			0.163	1280.8	5.7	12.0	829.2	0.3	0.4	424.8	33.11	720.3	2.2	66.93	501417		12.16	0.115	688.08	73283.33	1.15	58.78	686.5	71.790		0.47	1797.7	0.73	10918	1.82	3370.8	9.8	0.564	5.79	4.7	300500.0	1.67
FCS-4 Max			<0.5	15200.0	9.0	21.6	<5,000.0	1.2	<4.0	506.0	96.90	1040.0	<10.0	650.00	884000		15.00	0.147	802.00	88700.00	<5.0	71.90	984.0	854.000		<2.0	2260.0	<4.0	14000	<20.0	3990.0	<50.0	0.930	7.91	<20.0	436000.0	<10.0
FCS-4 Min			0.080	5.0	1.1	9.9	<200.0	<0.1	<0.05	237.0	8.26	231.0	<2.0	1.00	119000		4.00	0.046	148.00	17500.00	<0.5	14.00	198.0	<0.3		<0.2	562.0	<0.4	6050	<0.1	1030.0	<5.0	0.300	3.50	<2.0	122000.0	<1.0
FD-40	**06/01/2011**	**Seepage**	0.030	604.0	<0.1	12.0	<50.0	1.5	<1.0	83.3	47.50	29.1	<1.0	193.00	39		2.23	0.030	51.20	1410.00	<1.0	4.42	117.0	8.000		<0.5	167.0	0.30	11900	<5.0	256.0	<5.0	<0.05	1.00	<5.0	35100.0	<0.5
FD-40	**14/02/2011**	**Seepage**	0.030	606.0	<0.1	10.0	<50.0	1.8	<1.0	58.1	41.70	27.7	<1.0	198.00	<5.0		1.55	0.030	39.70	1440.00	<1.0	3.81	99.0	6.800		<0.5	116.0	0.30	11200	<5.0	191.0	<5.0	<0.05	0.90	<5.0	30900.0	<0.5
FD-40	**14/03/2011**	**Seepage**	0.040	615.0	0.2	13.0	<50.0	1.7	<1.0	62.8	45.80	32.6	<1.0	216.00	<10.0		1.70		41.00	1580.00	<1.0	3.98	108.0	7.400		<0.5	125.0	0.20	12700	<5.0	205.0	<5.0	<0.05	0.90	<5.0	31200.0	<0.5
FD-40	**14/04/2011**	**Seepage**	0.060	727.0	<0.1	11.0	<50.0	1.9	<1.0	69.5	55.30	41.0	<1.0	258.00	7		2.19	0.027	48.50	2060.00	<1.0	4.44	124.0	7.200		<0.5	157.0	<0.1	12500	<5.0	228.0	<5.0	<0.05	1.10	<5.0	38600.0	<0.5
FD-40	**12/05/2011**	**Seepage**	0.030	571.0	0.3	12.0	<50.0	1.4	<1.0	68.2	44.60	37.1	<1.0	216.00	29		1.87	0.024	42.50	1740.00	<1.0	3.92	112.0	9.000		<0.5	134.0	0.20	11800	<5.0	214.0	<5.0	<0.05	0.80	<5.0	31800.0	<0.5
FD-40	**15/06/2011**	**Seepage**	0.090	2530.0	<0.3	12.0	<200.0	2.6	<3.0	64.6	60.20	57.0	<3.0	426.00	125		1.80	0.030	51.80	2170.00	<3.0	3.70	138.0	91.900		<2.0	164.0	<0.3	11900	<20.0	243.0	<20.0	<0.2	3.20	<20.0	45600.0	<2.0
FD-40	**20/07/2011**	**Seepage**	0.210	6250.0	0.4	14.0	<50.0	3.0	<1.0	67.6	72.90	112.0	4.0	739.00	4590		1.58	0.033	57.50	3170.00	<1.0	3.78	143.0	160.000		<0.5	206.0	0.30	10900	<5.0	258.0	<5.0	0.390	5.60	<5.0	51100.0	<0.5
FD-40	**24/08/2011**	**Seepage**	0.200	4660.0	<0.5	13.0	<300.0	2.6	<5.0	71.4	62.20	84.0	23.0	584.00	2080		1.60	<0.03	55.10	2350.00	11.00	3.50	147.0	128.000		<3.0	173.0	<0.5	10600	<30.0	263.0	<30.0	<0.3	4.00	<30.0	46700.0	<3.0
FD-40	**20/09/2011**	**Seepage**	0.090	1200.0	0.2	11.0	<50.0	1.6	<1.0	87.5	55.90	38.1	<1.0	285.00	24		1.74	0.024	54.60	2080.00	<1.0	4.13	134.0	50.400		<0.5	177.0	0.30	11600	<5.0	276.0	<5.0	0.090	1.60	<5.0	46800.0	<0.5
FD-40	**19/10/2011**	**Seepage**	0.060	1140.0	<0.3	15.0	<100.0	1.7	<3.0	102.0	62.40	43.0	<3.0	317.00	55		1.90	0.028	67.20	1980.00	<3.0	5.20	158.0	23.100		<1.0	206.0	<0.3	12600	<10.0	331.0	<10.0	<0.1	1.50	<10.0	50800.0	<1.0
FD-40	**15/11/2011**	**Seepage**	0.046	948.0	0.3	17.8	<50.0	1.2	<1.0	85.9	46.60	18.0	<1.0	164.00	<5.0		1.88	0.023	54.40	865.00	<1.0	4.86	121.0	15.700		<0.5	154.0	0.37	8220	<5.0	314.0	<5.0	<0.05	1.24	<5.0	33400.0	<0.5
FD-40	**07/12/2011**	**Seepage**	<0.1	4190.0	<0.5	12.9	<250.0	3.7	<5.0	137.0	96.60	89.6	8.8	565.00	55		2.23	0.033	96.70	3890.00	<5.0	5.62	261.0	16.900		<2.5	296.0	<0.5	14500	<25.0	398.0	<25.0	<0.25	2.99	<25.0	75800.0	<2.5
FD-40 Average			0.078	2003.4	0.2	12.8	52.1	2.1	1.0	79.8	57.64	50.8	3.5	346.75	585		1.86	0.027	55.02	2061.25	1.71	4.28	138.5	43.700		0.52	172.9	0.24	11702	5.21	264.8	5.2	0.088	2.07	5.2	43150.0	0.52
FD-40 Max			0.210	6250.0	<0.5	17.8	<300.0	3.7	<5.0	137.0	96.60	112.0	23.0	739.00	4590		2.23	0.033	96.70	3890.00	11.00	5.62	261.0	160.000		<3.0	296.0	<0.5	14500	<30.0	398.0	<30.0	0.390	5.60	<30.0	75800.0	<3.0
FD-40 Min			0.030	571.0	<0.1	10.0	<50.0	1.2	<1.0	58.1	41.70	18.0	<1.0	164.00	<5.0		1.55	0.023	39.70	865.00	<1.0	3.50	99.0	6.800		<0.5	116.0	<0.1	8220	<5.0	191.0	<5.0	<0.05	0.80	<5.0	30900.0	<0.5
FL-1	**13/04/2011**	**Surface**	0.014	11.2	0.1	16.0	<50.0	0.2	<0.005	102.0	18.30	31.7	<0.1	4.29	6		5.38	0.044	54.20	1840.00	0.34	11.80	97.5	0.831		0.13	165.0	0.18	6300	<0.01	453.0	<0.5	0.270	1.21	<0.2	16900.0	<0.1
FL-1	**15/06/2011**	**Surface**	<0.03	7.0	0.2	15.0	<300.0	<0.05	<0.03	131.0	17.80	56.5	<0.5	17.50	13		7.40	0.050	75.20	3210.00	0.50	18.40	136.0	0.320		0.20	235.0	<0.2	4130	0.08	533.0	<3.0	0.380	0.91	<1.0	22100.0	<0.5
FL-1	**13/07/2011**	**Surface**	<0.03	3.0	0.4	16.2	<300.0	<0.05	<0.03	136.0	19.60	56.6	<0.5	7.10	20		7.10	0.055	73.30	3110.00	<0.3	17.10	135.0	0.600		0.20	214.0	<0.2	4010	<0.05	584.0	<3.0	0.440	0.76	<1.0	22100.0	<0.5
FL-1	**10/08/2011**	**Surface**	<0.03	3.0	0.2	16.1	<300.0	<0.05	<0.03	131.0	19.70	56.5	<0.5	5.50	25		7.10	0.053	75.50	3190.00	0.40	17.10	137.0	0.440		0.20	210.0	<0.2	3840	0.10	576.0	<3.0	0.480	0.50	<1.0	22200.0	<0.5
FL-1	**07/09/2011**	**Surface**	<0.03	4.0	0.2	17.9	<300.0	0.1	<0.03	131.0	20.70	55.5	<0.5	5.60	18		7.30	0.057	70.30	3120.00	<0.3	15.50	136.0	0.500		0.20	207.0	<0.2	3430	<0.05	636.0	<3.0	0.470	0.37	<1.0	22900.0	<0.5
FL-1 Average			0.015	5.6	0.2	16.2	125.0	0.1	0.0	126.2	19.22	51.4	0.2	8.00	16		6.86	0.052	69.70	2894.00	0.31	15.98	128.3	0.538		0.19	206.2	0.12	4342	0.05	556.4	1.3	0.408	0.75	0.4	21240.0	0.21
FL-1 Max			<0.03	11.2	0.4	17.9	<300.0	0.2	<0.03	136.0	20.70	56.6	<0.5	17.50	25		7.40	0.057	75.50	3210.00	0.50	18.40	137.0	0.831		0.20	235.0	<0.2	6300	0.10	636.0	<3.0	0.480	1.21	<1.0	22900.0	<0.5
FL-1 Min			0.014	3.0	0.1	15.0	<50.0	<0.05	<0.005	102.0	17.80	31.7	<0.1	4.29	6		5.38	0.044	54.20	1840.00	<0.3	11.80	97.5	0.320		0.13	165.0	0.18	3430	<0.01	453.0	<0.5	0.270	0.37	<0.2	16900.0	<0.1
FL-15	**13/04/2011**	**Surface**	0.019	7.1	0.1	16.2	<50.0	0.1	<0.005	155.0	15.10	59.6	<0.1	4.69	3		9.45	0.061	87.30	3750.00	0.45	21.70	157.0	0.029		0.22	281.0	0.12	3610	<0.01	678.0	<0.5	0.421	1.16	<0.2	20900.0	<0.1
FL-15	**15/06/2011**	**Surface**	<0.03	8.0	<0.1	15.6	<300.0	0.1	<0.03	155.0	17.20	59.7	<0.5	11.20	6		8.90	0.060	81.70	3760.00	0.40	21.00	158.0	<0.03		0.20	255.0	<0.2	4070	<0.05	617.0	<3.0	0.440	1.05	<1.0	22900.0	<0.5
FL-15	**13/07/2011**	**Surface**	<0.03	6.0	0.2	16.1	<300.0	0.1	<0.03	156.0	17.60	59.0	<0.5	10.00	7		8.70	0.062	80.60	3630.00	<0.3	20.00	155.0	0.110		0.20	232.0	<0.2	3950	<0.05	660.0	<3.0	0.460	1.14	<1.0	22700.0	<0.5
FL-15	**10/08/2011**	**Surface**	<0.03	6.0	0.2	15.3	<300.0	0.1	<0.03	154.0	16.70	57.1	<0.5	7.00	7		8.70	0.059	82.30	3770.00	0.40	20.50	149.0	0.310		0.20	251.0	<0.2	3700	<0.05	625.0	<3.0	0.440	1.00	<1.0	22800.0	<0.5
FL-15	**07/09/2011**	**Surface**	<0.03	7.0	0.2	16.7	<300.0	0.1	<0.03	152.0	17.00	55.4	<0.5	4.30	12		8.80	0.061	74.60	3480.00	<0.3	18.10	146.0	0.270		0.20	218.0	<0.2	3320	<0.05	662.0	<3.0	0.440	0.72	<1.0	22500.0	<0.5
FL-15 Average			0.016	6.8	0.1	16.0	125.0	0.1	0.0	154.4	16.72	58.2	0.2	7.44	7		8.91	0.061	81.30	3678.00	0.31	20.26	153.0	0.147		0.20	247.4	0.10	3730	0.02	648.4	1.3	0.440	1.01	0.4	22360.0	0.21
FL-15 Max			<0.03	8.0	0.2	16.7	<300.0	0.1	<0.03	156.0	17.60	59.7	<0.5	11.20	12		9.45	0.062	87.30	3770.00	0.45	21.70	158.0	0.310		0.22	281.0	<0.2	4070	<0.05	678.0	<3.0	0.460	1.16	<1.0	22900.0	<0.5
FL-15 Min			0.019	6.0	0.1	15.3	<50.0	0.1	<0.005	152.0	15.10	55.4	<0.1	4.30	3		8.70	0.059	74.60	3480.00	<0.3	18.10	146.0	0.029		0.20	218.0	0.12	3320	<0.01	617.0	<0.5	0.421	0.72	<0.2	20900.0	<0.1
FL-3	**13/04/2011**	**Surface**	0.016	7.5	0.1	16.4	<50.0	0.1	<0.005	147.0	15.90	54.8	<0.1	0.27	3		8.54	0.061	79.20	3160.00	0.53	20.00	142.0	0.090		0.23	265.0	0.13	3820	<0.01	658.0	<0.5	0.442	1.21	<0.2	19300.0	<0.1
FL-3	**15/06/2011**	**Surface**	<0.03	5.0	<0.1	15.3	<300.0	0.1	<0.03	134.0	19.00	56.2	<0.5	17.40	6		7.30	0.051	73.50	3030.00	<0.3	17.90	137.0	0.170		0.20	231.0	<0.2	4240	<0.05	543.0	<3.0	0.390	0.96	<1.0	21900.0	<0.5
FL-3	**13/07/2011**	**Surface**	<0.03	4.0	0.3	17.2	<300.0	0.1	<0.03	142.0	20.80	60.2	<0.5	9.10	21		7.80	0.058	79.10	3340.00	0.40	18.60	144.0	0.360		0.20	214.0	<0.2	4150	<0.05	618.0	<3.0	0.460	0.80	<1.0	23400.0	<0.5
FL-3	**10/08/2011**	**Surface**	<0.03	3.0	0.2	15.7	<300.0	0.1	<0.03	132.0	19.30	55.8	<0.5	5.10	12		7.10	0.052	75.40	3180.00	0.40	17.20	136.0	0.400		0.20	217.0	<0.2	3810	<0.05	572.0	<3.0	0.430	0.49	<1.0	22100.0	<0.5
FL-3	**07/09/2011**	**Surface**	<0.03	3.0	<0.1	17.6	<300.0	0.1	<0.03	125.0	20.70	52.8	<0.5	5.20	9		6.90	0.056	66.70	2940.00	<0.3	14.80	128.0	0.430		0.20	200.0	<0.2	3400	<0.05	623.0	<3.0	0.450	0.36	<1.0	22100.0	<0.5
FL-3 Average			0.015	4.5	0.1	16.4	125.0	0.1	0.0	136.0	19.14	56.0	0.2	7.41	10		7.53	0.056	74.78	3130.00	0.33	17.70	137.4	0.290		0.21	225.4	0.11	3884	0.02	602.8	1.3	0.434	0.76	0.4	21760.0	0.21
FL-3 Max			<0.03	7.5	0.3	17.6	<300.0	0.1	<0.03	147.0	20.80	60.2	<0.5	17.40	21		8.54	0.061	79.20	3340.00	0.53	20.00	144.0	0.430		0.23	265.0	<0.2	4240	<0.05	658.0	<3.0	0.460	1.21	<1.0	23400.0	<0.5
FL-3 Min			0.016	3.0	0.1	15.3	<50.0	0.1	<0.005	125.0	15.90	52.8	<0.1	0.27	3		6.90	0.051	66.70	2940.00	<0.3	14.80	128.0	0.090		0.20	200.0	0.13	3400	<0.01	543.0	<0.5	0.390	0.36	<0.2	19300.0	<0.1
FL-30	**13/04/2011**	**Surface**	<0.005	1.4	0.2	13.6	<50.0	0.0	<0.005	194.0	0.06	37.9	<0.1	0.06	24900		12.40	0.072	64.90	3550.00	1.29	26.60	81.5	0.011		0.03	256.0	0.18	2990	<0.01	717.0	<0.5	0.217	3.12	<0.2	4960.0	<0.1
FL-30	**15/06/2011**	**Surface**	0.006	13.7	0.2	12.8	<50.0	0.1	<0.005	198.0	0.63	40.9	<0.1	0.19	23500		13.60	0.072	72.70	3880.00	1.09	30.00	88.5	0.061		0.04	298.0	0.16	3210	<0.01	692.0	<0.5	0.202	2.70	<0.2	5640.0	<0.1
FL-30	**13/07/2011**	**Surface**	<0.005	4.8	0.3	13.0	<50.0	0.1	<0.005	199.0	0.61	45.1	<0.1	0.23	24400		13.80	0.077	75.00	4050.00	1.12	31.30	97.7	0.053		0.05	290.0	0.14	3380	<0.01	700.0	<0.5	0.205	2.69	<0.2	5680.0	<0.1
FL-30	**10/08/2011**	**Surface**	<0.005	5.0	0.2	12.5	<50.0	0.1	<0.005	197.0	0.32	42.2	<0.1	0.09	24400		13.60	0.072	72.90	3940.00	1.08	29.80	91.6	0.132		0.04	289.0	0.16	3110	0.02	685.0	<0.5	0.196	2.59	<0.2	5630.0	<0.1
FL-30	**07/09/2011**	**Surface**	<0.005	3.8	0.2	13.4	<50.0	0.1	<0.005	183.0	0.50	41.1	<0.1	0.19	24100		12.80	0.074	67.00	3740.00	1.24	27.10	88.6	0.098		0.05	269.0	0.16	2760	<0.01	739.0	<0.5	0.220	2.74	<0.2	5800.0	<0.1
FL-30 Average			0.003	5.7	0.2	13.1	25.0	0.1	0.0	194.2	0.42	41.4	0.1	0.15	24260		13.24	0.073	70.50	3832.00	1.16	28.96	89.6	0.071		0.04	280.4	0.16	3090	0.01	706.6	0.3	0.208	2.77	0.1	5542.0	0.05
FL-30 Max			0.006	13.7	0.3	13.6	<50.0	0.1	<0.005	199.0	0.63	45.1	<0.1	0.23	24900		13.80	0.077	75.00	4050.00	1.29	31.30	97.7	0.132		0.05	298.0	0.18	3380	0.02	739.0	<0.5	0.220	3.12	<0.2	5800.0	<0.1
FL-30 Min			<0.005	1.4	0.2	12.5	<50.0	0.0	<0.005	183.0	0.06	37.9	<0.1	0.06	23500		12.40	0.072	64.90	3550.00	1.08	26.60	81.5	0.011		0.03	256.0	0.14	2760	<0.01	685.0	<0.5	0.196	2.59	<0.2	4960.0	<0.1
FL-5	**13/04/2011**	**Surface**	0.018	7.4	0.1	16.8	<50.0	0.0	<0.005	143.0	15.80	58.4	<0.1	2.41	3		9.06	0.061	83.40	3350.00	0.49	21.10	150.0	0.042		0.24	273.0	0.12	3390	<0.01	671.0	<0.5	0.471	1.20	<0.2	19900.0	<0.1
FL-5	**15/06/2011**	**Surface**	<0.03	15.0	<0.1	15.4	<300.0	0.1	<0.03	138.0	17.60	56.5	<0.5	16.80	7		7.70	0.056	74.40	3160.00	0.50	18.60	143.0	0.110		0.20	236.0	<0.2	4090	<0.05	578.0	<3.0	0.420	1.02	<1.0	21400.0	<0.5
FL-5	**13/07/2011**	**Surface**	<0.03	4.0	0.2	17.0	<300.0	0.1	<0.03	135.0	19.80	58.3	<0.5	7.90	14		7.40	0.055	75.70	3250.00	<0.3	18.00	140.0	0.300		0.20	219.0	<0.2	4000	<0.05	598.0	<3.0	0.450	0.76	<1.0	22600.0	<0.5
FL-5	**10/08/2011**	**Surface**	<0.03	3.0	<0.1	15.7	<300.0	0.1	<0.03	133.0	19.70	53.3	<0.5	4.70	8		6.80	0.053	72.20	3030.00	<0.3	16.30	129.0	0.300		0.20	207.0	<0.2	3850	<0.05	575.0	<3.0	0.420	0.46	<1.0	21200.0	<0.5
FL-5	**07/09/2011**	**Surface**	<0.03	2.0	<0.1	17.3	<300.0	0.1	<0.03	127.0	20.80	52.1	<0.5	4.90	8		6.70	0.057	66.70	2880.00	<0.3	14.70	126.0	0.390		0.20	202.0	<0.2	3510	<0.05	611.0	<3.0	0.450	0.34	<1.0	21600.0	<0.5
FL-5 Average			0.016	6.3	0.1	16.4	125.0	0.1	0.0	135.2	18.74	55.7	0.2	7.34	8		7.53	0.056	74.48	3134.00	0.29	17.74	137.6	0.228		0.21	227.4	0.10	3768	0.02	606.6	1.3	0.442	0.76	0.4	21340.0	0.21
FL-5 Max			<0.03	15.0	0.2	17.3	<300.0	0.1	<0.03	143.0	20.80	58.4	<0.5	16.80	14		9.06	0.061	83.40	3350.00	0.50	21.10	150.0	0.390		0.24	273.0	<0.2	4090	<0.05	671.0	<3.0	0.471	1.20	<1.0	22600.0	<0.5
FL-5 Min			0.018	2.0	0.1	15.4	<50.0	0.0	<0.005	127.0	15.80	52.1	<0.1	2.41	3		6.70	0.053	66.70	2880.00	<0.3	14.70	126.0	0.042		0.20	202.0	0.12	3390	<0.01	575.0	<0.5	0.420	0.34	<0.2	19900.0	<0.1

Note: Statistics calculated with DLs at half value.
Note: Metals reported in mg/L shaded in g

Table B-2: 2011 Rose Creek Drainage Water Quality
Dissolved Metals

Station	Date	Sample Type	Ag-d µg/L	Al-d µg/L	As-d µg/L	Ba-d µg/L	B-d µg/L	Be-d µg/L	Bi-d µg/L	Ca-d mg/L	Cd-d µg/L	Co-d µg/L	Cr-d µg/L	Cu-d µg/L	Fe-d µg/L	Hg-d µg/L	K-d mg/L	Li-d mg/L	Mg-d mg/L	Mn-d µg/L	Mo-d µg/L	Na-d mg/L	Ni-d µg/L	Pb-d µg/L	P-d mg/L	Sb-d µg/L	S-d mg/L	Se-d µg/L	Si-d µg/L	Sn-d µg/L	Sr-d µg/L	Ti-d µg/L	Tl-d µg/L	U-d µg/L	V-d µg/L	Zn-d µg/L	Zr-d µg/L
FL-60	**13/04/2011**	**Surface**	<0.005	1.4	0.7	13.2	<50.0	0.1	<0.005	200.0	0.07	37.3	<0.1	<0.05	27200		12.60	0.076	65.30	3560.00	1.32	26.90	80.6	0.010		0.03	257.0	0.15	3050	<0.01	732.0	<0.5	0.211	3.70	<0.2	4600.0	<0.1
FL-60	**15/06/2011**	**Surface**	<0.005	11.3	0.8	12.6	<50.0	0.1	<0.005	205.0	0.11	41.2	<0.1	0.18	27100		14.40	0.077	73.30	4000.00	1.33	32.00	87.3	0.117		0.04	306.0	<0.04	3420	<0.01	699.0	<0.5	0.219	3.47	<0.2	4740.0	<0.1
FL-60	**13/07/2011**	**Surface**	<0.005	8.2	0.8	13.1	<50.0	0.1	<0.005	199.0	0.13	41.5	<0.1	0.10	27300		13.20	0.079	71.20	3780.00	1.44	30.50	86.6	0.031		0.04	280.0	0.11	3350	<0.01	741.0	<0.5	0.222	3.68	<0.2	4420.0	<0.1
FL-60	**10/08/2011**	**Surface**	<0.005	7.8	0.9	12.4	<50.0	0.1	<0.005	207.0	0.16	40.6	<0.1	0.09	28200		13.70	0.074	72.60	3800.00	1.26	30.60	86.9	0.151		0.04	288.0	0.13	3220	0.02	710.0	<0.5	0.203	3.62	<0.2	4730.0	<0.1
FL-60	**07/09/2011**	**Surface**	<0.005	8.3	0.9	13.6	<50.0	0.1	<0.005	187.0	0.33	39.3	<0.1	0.12	27000		12.90	0.079	66.40	3640.00	1.29	27.20	83.8	0.146		0.04	267.0	0.12	2810	<0.01	766.0	<0.5	0.220	3.85	<0.2	4860.0	<0.1
FL-60 Average			0.003	7.4	0.8	13.0	25.0	0.1	0.0	199.6	0.16	40.0	0.1	0.10	27360		13.36	0.077	69.76	3756.00	1.33	29.44	85.0	0.091		0.04	279.6	0.11	3170	0.01	729.6	0.3	0.215	3.66	0.1	4670.0	0.05
FL-60 Max			<0.005	11.3	0.9	13.6	<50.0	0.1	<0.005	207.0	0.33	41.5	<0.1	0.18	28200		14.40	0.079	73.30	4000.00	1.44	32.00	87.3	0.151		0.04	306.0	0.15	3420	0.02	766.0	<0.5	0.222	3.85	<0.2	4860.0	<0.1
FL-60 Min			<0.005	1.4	0.7	12.4	<50.0	0.1	<0.005	187.0	0.07	37.3	<0.1	<0.05	27000		12.60	0.074	65.30	3560.00	1.26	26.90	80.6	0.010		0.03	257.0	<0.04	2810	<0.01	699.0	<0.5	0.203	3.47	<0.2	4420.0	<0.1
FL-80	**13/04/2011**	**Surface**	<0.005	1.9	1.7	14.1	<50.0	0.1	<0.005	195.0	0.03	36.2	<0.1	<0.05	29400		14.60	0.079	73.10	3950.00	1.18	31.10	84.5	0.046		0.03	297.0	0.10	2930	<0.01	811.0	<0.5	0.242	5.16	<0.2	3930.0	<0.1
FL-80	**15/06/2011**	**Surface**	<0.005	10.5	1.7	13.4	<50.0	0.1	<0.005	217.0	0.08	35.9	<0.1	0.53	32800		14.40	0.080	73.60	3890.00	1.15	33.20	83.9	0.151		0.03	311.0	<0.04	3560	0.04	767.0	<0.5	0.242	5.21	<0.2	3750.0	<0.1
FL-80	**13/07/2011**	**Surface**	<0.005	6.3	1.3	14.1	<50.0	0.1	<0.005	206.0	0.10	38.1	<0.1	0.19	31100		14.20	0.082	74.50	3910.00	1.19	32.90	87.6	0.122		0.04	304.0	0.08	3440	<0.01	787.0	<0.5	0.239	5.37	<0.2	3660.0	<0.1
FL-80	**10/08/2011**	**Surface**	<0.005	7.4	1.4	13.3	<50.0	0.1	<0.005	215.0	0.10	35.9	<0.1	0.08	32900		13.80	0.077	72.50	3750.00	1.09	31.20	83.5	0.176		0.03	294.0	0.08	3350	0.02	774.0	<0.5	0.230	5.19	<0.2	3790.0	<0.1
FL-80	**07/09/2011**	**Surface**	<0.005	7.6	1.4	14.1	<50.0	0.1	<0.005	197.0	0.30	35.3	<0.1	0.09	31300		13.20	0.082	66.50	3580.00	1.13	28.00	80.7	0.105		0.04	274.0	0.11	2940	<0.01	832.0	<0.5	0.237	5.30	<0.2	4080.0	<0.1
FL-80 Average			0.003	6.7	1.5	13.8	25.0	0.1	0.0	206.0	0.12	36.3	0.1	0.18	31500		14.04	0.080	72.04	3816.00	1.15	31.28	84.0	0.120		0.03	296.0	0.08	3244	0.02	794.2	0.3	0.238	5.25	0.1	3842.0	0.05
FL-80 Max			<0.005	10.5	1.7	14.1	<50.0	0.1	<0.005	217.0	0.30	38.1	<0.1	0.53	32900		14.60	0.082	74.50	3950.00	1.19	33.20	87.6	0.176		0.04	311.0	0.11	3560	0.04	832.0	<0.5	0.242	5.37	<0.2	4080.0	<0.1
FL-80 Min			<0.005	1.9	1.3	13.3	<50.0	0.1	<0.005	195.0	0.03	35.3	<0.1	<0.05	29400		13.20	0.077	66.50	3580.00	1.09	28.00	80.7	0.046		0.03	274.0	<0.04	2930	<0.01	767.0	<0.5	0.230	5.16	<0.2	3660.0	<0.1
GDHSECK	**14/03/2011**	**Surface**	0.009	2.9	0.4	59.9	<50.0	<0.01	<0.005	256.0	3.11	0.4	<0.1	2.60	10		7.19	0.009	58.40	47.50	0.26	11.30	5.6	7.490		0.36	226.0	0.09	7730	0.02	892.0	<0.5	0.046	3.27	<0.2	2040.0	<0.1
GDHSECK	**26/05/2011**	**Surface**	<0.03	16.0	0.4	38.1	<300.0	<0.05	<0.03	277.0	9.11	3.5	<0.5	2.90	39		5.60	0.020	135.00	456.00	<0.3	15.80	41.8	3.860		0.30	415.0	0.70	5200	<0.05	1190.0	<3.0	0.130	1.62	<1.0	17000.0	<0.5
GDHSECK	**27/10/2011**	**Surface**	<0.005	3.0	0.2	30.1	<50.0	<0.01	<0.005	189.0	2.03	0.1	<0.1	1.19	20		4.21	0.010	61.50	23.10	0.24	9.16	7.8	1.220		0.35	202.0	0.18	6010	<0.01	750.0	<0.5	0.025	1.71	<0.2	2900.0	<0.1
GDHSECK Average			0.009	7.3	0.3	42.7	66.7	0.0	0.0	240.7	4.75	1.3	0.1	2.23	23		5.67	0.013	84.97	175.53	0.22	12.09	18.4	4.190		0.34	281.0	0.32	6313	0.02	944.0	0.7	0.067	2.20	0.2	7313.3	0.12
GDHSECK Max			<0.03	16.0	0.4	59.9	<300.0	<0.05	<0.03	277.0	9.11	3.5	<0.5	2.90	39		7.19	0.020	135.00	456.00	<0.3	15.80	41.8	7.490		0.36	415.0	0.70	7730	<0.05	1190.0	<3.0	0.130	3.27	<1.0	17000.0	<0.5
GDHSECK Min			<0.005	2.9	0.2	30.1	<50.0	<0.01	<0.005	189.0	2.03	0.1	<0.1	1.19	10		4.21	0.009	58.40	23.10	0.24	9.16	5.6	1.220		0.30	202.0	0.09	5200	<0.01	750.0	<0.5	0.025	1.62	<0.2	2040.0	<0.1
LRSINK	**26/04/2011**	**Surface**	<10.0	<50.0	<30.0	2.0	<10.0	<3.0	<50.0	71.1	<5.0	<20.0	<10.0	<20.0	<10.0		0.70	<0.02	22.50	6.00	<20.0	18.40	<20.0	<30.0	<0.05	<50.0	9.3	<100.0	7660	<30.0	895.0	<5.0			<10.0	11.0	<20.0
NF2	**19/01/2011**	**Surface**	0.015	1.9	0.3	75.0	<50.0	<0.01	0.0	45.9	0.01	0.1	<0.1	0.32	41		1.10	0.008	10.00	26.00	0.70	3.41	0.5	0.097		0.05	<10.0	0.42	4820	<0.01	188.0	<0.5	<0.002	2.49	<0.2	10.7	0.20
NF2	**02/02/2011**	**Surface**	<0.005	2.3	0.3	72.1	<50.0	<0.01	0.0	42.9	0.02	0.1	<0.1	0.93	51		1.33	0.008	8.97	27.10	0.74	3.36	0.5	0.272		0.06	<10.0	0.38	5520	0.03	185.0	<0.5	0.003	2.54	<0.2	17.4	<0.1
NF2	**16/03/2011**	**Surface**	<0.005	5.7	0.5	67.4	<50.0	<0.01	<0.005	51.5	0.14	0.2	0.2	2.12	48		1.44	0.010	11.30	19.00	0.91	5.03	1.6	1.130		0.10	11.0	0.53	6630	0.05	230.0	<0.5	0.013	3.50	<0.2	45.3	<0.1
NF2	**13/04/2011**	**Surface**	0.007	5.5	0.3	77.1	<50.0	<0.01	0.0	48.5	0.04	0.1	<0.1	3.23	65		2.49	0.009	9.69	42.10	0.74	3.80	1.1	1.580		0.07	<10.0	0.43	6760	0.06	209.0	<0.5	0.005	2.82	<0.2	21.6	<0.1
NF2	**12/05/2011**	**Surface**	0.010	60.3	0.8	45.3	<50.0	0.0	0.0	27.8	0.11	0.2	<0.1	3.93	249		1.94	0.005	5.63	14.70	0.54	2.61	1.3	3.830		0.06	<10.0	0.35	4350	0.02	119.0	<0.5	0.008	1.34	<0.2	68.7	<0.1
NF2	**20/06/2011**	**Surface**	<0.005	19.4	0.4	28.0	<50.0	<0.01	<0.005	14.9	0.02	0.0	<0.1	0.76	62		0.40	0.002	3.07	2.67	0.28	1.16	0.5	0.457		0.07	<10.0	0.20	4050	<0.01	59.6	<0.5	0.003	0.51	<0.2	4.8	<0.1
NF2	**21/07/2011**	**Surface**	<0.005	21.1	0.5	35.8	<50.0	<0.01	<0.005	18.7	0.02	0.0	<0.1	0.96	84		0.37	0.002	3.88	5.54	0.32	1.53	0.6	0.327		0.07	<10.0	0.19	5550	<0.01	74.0	<0.5	<0.002	0.58	<0.2	14.0	<0.1
NF2	**25/08/2011**	**Surface**	<0.005	11.6	0.4	38.8	<50.0	<0.01	<0.005	21.1	0.02	0.0	<0.1	0.65	80		0.46	0.002	4.26	8.40	0.35	1.68	0.5	0.298		0.07	<10.0	0.18	4650	<0.01	88.7	<0.5	0.003	0.71	<0.2	11.3	<0.1
NF2	**21/09/2011**	**Surface**	<0.005	9.5	0.5	48.7	<50.0	<0.01	<0.005	27.2	0.02	0.2	<0.1	0.74	102		0.91	0.003	5.39	33.10	0.46	2.01	0.6	0.332		0.07	<10.0	0.25	5440	<0.01	108.0	<0.5	0.004	1.06	<0.2	33.0	<0.1
NF2	**20/10/2011**	**Surface**	<0.005	5.7	0.8	63.1	<50.0	<0.01	<0.005	33.9	0.02	0.3	<0.1	0.40	271		0.82	0.005	6.68	121.00	0.64	2.44	0.7	0.994		0.08	<10.0	0.36	5610	<0.01	139.0	<0.5	0.003	1.70	<0.2	13.7	<0.1
NF2	**14/11/2011**	**Surface**	<0.005	5.5	0.4	64.6	<50.0	<0.01	<0.005	33.0	0.02	0.1	<0.1	0.50	87		0.92	0.006	7.22	47.40	0.68	2.46	0.6	1.080		0.08	<10.0	0.39	5150	<0.01	154.0	<0.5	0.004	1.75	<0.2	15.5	<0.1
NF2	**05/12/2011**	**Surface**	<0.005	2.9	0.4	64.1	<50.0	<0.01	<0.005	33.8	0.01	0.1	<0.1	0.42	64		0.86	0.006	7.18	25.40	0.64	2.60	0.4	0.094		0.07	<10.0	0.41	5160	<0.01	151.0	<0.5	<0.002	1.92	<0.2	9.1	<0.1
NF2 Average			0.005	12.6	0.5	56.7	25.0	0.0	0.0	33.3	0.04	0.1	0.1	1.25	100		1.09	0.005	6.94	31.03	0.58	2.67	0.7	0.874		0.07	5.5	0.34	5308	0.02	142.1	0.3	0.004	1.74	0.1	22.1	0.06
NF2 Max			0.015	60.3	0.8	77.1	<50.0	0.0	0.0	51.5	0.14	0.3	0.2	3.93	271		2.49	0.010	11.30	121.00	0.91	5.03	1.6	3.830		0.10	11.0	0.53	6760	0.06	230.0	<0.5	0.013	3.50	<0.2	68.7	0.20
NF2 Min			<0.005	1.9	0.3	28.0	<50.0	<0.01	<0.005	14.9	0.01	0.0	<0.1	0.32	41		0.37	0.002	3.07	2.67	0.28	1.16	0.4	0.094		0.05	<10.0	0.18	4050	<0.01	59.6	<0.5	<0.002	0.51	<0.2	4.8	<0.1
NFRC SC-1	**14/11/2011**	**Surface**	<0.005	2.9	0.3	61.3	<50.0	<0.01	<0.005	32.2	0.02	0.1	<0.1	0.39	49		0.83	0.006	6.88	41.40	0.67	2.36	0.5	0.160		0.08	<10.0	0.39	5180	0.03	147.0	<0.5	0.004	1.66	<0.2	12.6	<0.1
NFRC SC-1	**05/12/2011**	**Surface**	<0.005	3.3	0.5	64.0	<50.0	<0.01	<0.005	33.9	0.02	0.1	<0.1	0.61	75		0.86	0.006	7.01	26.80	0.67	2.58	0.5	0.253		0.07	<10.0	0.44	5150	<0.01	154.0	<0.5	0.003	1.94	<0.2	11.4	<0.1
NFRC SC-1 Average			0.003	3.1	0.4	62.7	25.0	0.0	0.0	33.1	0.02	0.1	0.1	0.50	62		0.85	0.006	6.95	34.10	0.67	2.47	0.5	0.207		0.08	5.0	0.42	5165	0.02	150.5	0.3	0.004	1.80	0.1	12.0	0.05
NFRC SC-1 Max			<0.005	3.3	0.5	64.0	<50.0	<0.01	<0.005	33.9	0.02	0.1	<0.1	0.61	75		0.86	0.006	7.01	41.40	0.67	2.58	0.5	0.253		0.08	<10.0	0.44	5180	0.03	154.0	<0.5	0.004	1.94	<0.2	12.6	<0.1
NFRC SC-1 Min			<0.005	2.9	0.3	61.3	<50.0	<0.01	<0.005	32.2	0.02	0.1	<0.1	0.39	49		0.83	0.006	6.88	26.80	0.67	2.36	0.5	0.160		0.07	<10.0	0.39	5150	<0.01	147.0	<0.5	0.003	1.66	<0.2	11.4	<0.1
NFRC SC-2	**14/11/2011**	**Surface**	0.006	9.8	0.4	65.4	<50.0	<0.01	0.0	31.7	0.04	0.2	<0.1	1.20	127		0.94	0.006	7.05	50.40	0.63	2.51	0.9	1.730		0.09	<10.0	0.44	5080	0.03	154.0	<0.5	0.003	1.74	<0.2	19.3	<0.1
NFRC SC-2	**05/12/2011**	**Surface**	<0.005	4.3	0.5	72.4	<50.0	<0.01	<0.005	33.4	0.02	0.1	0.3	0.49	96		0.83	0.006	6.87	28.80	0.71	2.52	0.5	0.255		0.07	<10.0	0.42	5080	<0.01	155.0	<0.5	<0.002	1.93	<0.2	11.8	<0.1
NFRC SC-2 Average			0.004	7.1	0.4	68.9	25.0	0.0	0.0	32.6	0.03	0.1	0.2	0.85	112		0.89	0.006	6.96	39.60	0.67	2.52	0.7	0.993		0.08	5.0	0.43	5080	0.02	154.5	0.3	0.002	1.84	0.1	15.6	0.05
NFRC SC-2 Max			0.006	9.8	0.5	72.4	<50.0	<0.01	0.0	33.4	0.04	0.2	0.3	1.20	127		0.94	0.006	7.05	50.40	0.71	2.52	0.9	1.730		0.09	<10.0	0.44	5080	0.03	155.0	<0.5	0.003	1.93	<0.2	19.3	<0.1
NFRC SC-2 Min			<0.005	4.3	0.4	65.4	<50.0	<0.01	<0.005	31.7	0.02	0.1	<0.1	0.49	96		0.83	0.006	6.87	28.80	0.63	2.51	0.5	0.255		0.07	<10.0	0.42	5080	<0.01	154.0	<0.5	<0.002	1.74	<0.2	11.8	<0.1
NFRC SC-3	**14/11/2011**	**Surface**	<0.005	6.7	0.4	68.7	<50.0	<0.01	0.0	33.1	0.05	0.1	<0.1	0.61	93		0.88	0.006	7.19	50.50	0.62	2.47	0.6	1.830		0.07	<10.0	0.41	5300	0.03	157.0	<0.5	0.003	1.78	<0.2	18.2	<0.1
NFRC SC-3	**05/12/2011**	**Surface**	<0.005	2.6	0.4	63.0	<50.0	<0.01	<0.005	34.0	0.01	0.1	<0.1	0.34	88		0.80	0.006	7.00	29.30	0.71	2.49	0.4	0.068		0.07	<10.0	0.42	5080	<0.01	151.0	<0.5	<0.002	1.98	<0.2	10.5	<0.1
NFRC SC-3 Average			0.003	4.7	0.4	65.9	25.0	0.0	0.0	33.6	0.03	0.1	0.1	0.48	91		0.84	0.006	7.10	39.90	0.67	2.48	0.5	0.949		0.07	5.0	0.42	5190	0.02	154.0	0.3	0.002	1.88	0.1	14.4	0.05
NFRC SC-3 Max			<0.005	6.7	0.4	68.7	<50.0	<0.01	0.0	34.0	0.05	0.1	<0.1	0.61	93		0.88	0.006	7.19	50.50	0.71	2.49	0.6	1.830		0.07	<10.0	0.42	5300	0.03	157.0	<0.5	0.003	1.98	<0.2	18.2	<0.1
NFRC SC-3 Min			<0.005	2.6	0.4	63.0	<50.0	<0.01	<0.005	33.1	0.01	0.1	<0.1	0.34	88		0.80	0.006	7.00	29.30	0.62	2.47	0.4	0.068		0.07	<10.0	0.41	5080	<0.01	151.0	<0.5	<0.002	1.78	<0.2	10.5	<0.1
NFRC SC-4	**14/11/2011**	**Surface**	<0.005	5.7	0.4	66.0	<50.0	<0.01	0.0	32.6	0.05	0.2	<0.1	0.62	72		0.96	0.006	7.31	57.70	0.68	2.53	0.8	1.470		0.08	<10.0	0.37	5160	0.02	157.0	<0.5	0.003	1.75	<0.2	27.8	<0.1
NFRC SC-4	**05/12/2011**	**Surface**	<0.005	3.7	0.4	61.0	<50.0	<0.01	<0.005	32.0	0.02	0.1	0.5	0.60	86		0.85	0.006	7.05	37.10	0.67	2.56	0.5	0.389		0.07	<10.0	0.44	4840	<0.01	153.0	<0.5	<0.002	1.93	<0.2	13.8	<0.1
NFRC SC-4 Average			0.003	4.7	0.4	63.5	25.0	0.0	0.0	32.3	0.04	0.1	0.3	0.61	79		0.91	0.006	7.18	47.40	0.68	2.55	0.7	0.930		0.08	5.0	0.41	5000	0.01	155.0	0.3	0.002	1.84	0.1	20.8	0.05
NFRC SC-4 Max			<0.005	5.7	0.4	66.0	<50.0	<0.01	0.0	32.6	0.05	0.2	0.5	0.62	86		0.96	0.006	7.31	57.70	0.68	2.56	0.8	1.470		0.08	<10.0	0.44	5160	0.02	157.0	<0.5	0.003	1.93	<0.2	27.8	<0.1
NFRC SC-4 Min			<0.005	3.7	0.4	61.0	<50.0	<0.01	<0.005	32.0	0.02	0.1	<0.1	0.60	72		0.85	0.006	7.05	37.10	0.67	2.53	0.5	0.389		0.07	<10.0	0.37	4840	<0.01	153.0	<0.5	<0.002	1.75	<0.2	13.8	<0.1
P01-01A	**02/06/2011**	**Ground**	<0.005	1.0	0.3	46.1	<50.0	<0.01	<0.005	326.0	0.82	1.6	<0.1	0.36	13		6.59	0.013	68.70	6230.00	0.98	22.30	8.6	0.039		0.04	320.0	<0.04	7200	<0.01	1040.0	<0.5	0.018	9.05	<0.2	2.3	<0.1
P01-01A	**23/09/2011**	**Ground**	<0.005	1.9	0.2	42.6	<50.0	<0.01	0.0	373.0	0.53	2.0	<0.1	0.26	43		7.67	0.014	81.50	8550.00	1.01	27.60	10.4	0.137		0.04	372.0	<0.04	7390	<0.01	1220.0	<0.5	0.010	9.22	<0.2	3.7	0.50
P01-01A Average			0.003	1.5	0.2	44.4	25.0	0.0	0.0	349.5	0.68	1.8	0.1	0.31	28		7.13	0.013	75.10	7390.00	1.00	24.95	9.5	0.088		0.04	346.0	0.02	7295	0.01	1130.0	0.3	0.014	9.14	0.1	3.0	0.28
P01-01A Max			<0.005	1.9	0.3	46.1	<50.0	<0.01	0.0	373.0	0.82	2.0	<0.1	0.36	43		7.67	0.014	81.50	8550.00	1.01	27.60	10.4	0.137		0.04	372.0	<0.04	7390	<0.01	1220.0	<0.5	0.018	9.22	<0.2	3.7	0.50
P01-01A Min			<0.005	1.0	0.2	42.6	<50.0	<0.01	<0.005	326.0	0.53	1.6	<0.1	0.26	13		6.59	0.013	68.70	6230.00	0.98	22.30	8.6	0.039		0.04	320.0	<0.04	7200	<0.01	1040.0	<0.5	0.010	9.05	<0.2	2.3	<0.1
P01-01B	**27/01/2011**	**Ground**	<0.03	5.0	2.7	66.1	<300.0	<0.05	<0.03	210.0	0.09	0.3	<0.5	<0.3	657		4.30	0.011	45.00	440.00	1.60	23.00	1.5	0.590		0.20	209.0	<0.2	5460	<0.05	786.0	<3.0	<0.01	8.13	<1.0	4.0	0.60
P01-01B	**21/07/2011**	**Ground**	<0.005	1.2	2.2	52.0	<50.0	0.0	<0.005	243.0	0.01	0.2	<0.1	0.08	793		4.32	0.010	44.50	187.00	0.84	23.00	0.7	0.090		0.03	198.0	<0.04	6420	<0.01	788.0	<0.5	<0.002	8.70	<0.2	1.3	0.60
P01-01B	**23/09/2011**	**Ground**	0.012	2.1	2.4	55.2	<50.0	0.0	0.0	238.0	0.03	0.2	<0.1	0.08	827		4.80	0.012	47.70	123.00	0.92	28.40	0.6	0.053		0.03	201.0	<0.04	5920	<0.01	899.0	<0.5	<0.002	7.95	<0.2	0.9	1.10
P01-01B Average			0.010	2.8	2.4	57.8	66.7	0.0	0.0	230.3	0.04	0.2	0.1	0.10	759		4.47	0.011	45.73	250.00	1.12	24.80	0.9	0.244		0.09	202.7	0.05	5933	0.01	824.3	0.7	0.002	8.26	0.2	2.1	0.77
P01-01B Max			<0.03	5.0	2.7	66.1	<300.0	<0.05	<0.03	243.0	0.09	0.3	<0.5	<0.3	827		4.80	0.012	47.70	440.00	1.60	28.40	1.5	0.590		0.20	209.0	<0.2	6420	<0.05	899.0	<3.0	<0.01	8.70	<1.0	4.0	1.10
P01-01B Min			<0.005	1.2	2.2	52.0	<50.0	0.0	<0.005	210.0	0.01	0.2	<0.1	0.08	657		4.30	0.010	44.50	123.00	0.84	23.00	0.6	0.053		0.03	198.0	<0.04	5460	<0.01	786.0	<0.5	<0.002	7.95	<0.2	0.9	0.60

Note: Statistics calculated with DLs at half value.
Note: Metals reported in mg/L shaded in gray.

Denison Environmental Services

Table B-2: 2011 Rose Creek Drainage Water Quality
Dissolved Metals

Faro Mine Closure

Station	Date	Sample Type	Ag-d µg/L	Al-d µg/L	As-d µg/L	Ba-d µg/L	B-d µg/L	Be-d µg/L	Bi-d µg/L	Ca-d mg/L	Cd-d µg/L	Co-d µg/L	Cr-d µg/L	Cu-d µg/L	Fe-d µg/L	Hg-d µg/L	K-d mg/L	Li-d mg/L	Mg-d mg/L	Mn-d µg/L	Mo-d µg/L	Na-d mg/L	Ni-d µg/L	Pb-d µg/L	P-d mg/L	Sb-d µg/L	S-d mg/L	Se-d µg/L	Si-d µg/L	Sn-d µg/L	Sr-d µg/L	Ti-d µg/L	Tl-d µg/L	U-d µg/L	V-d µg/L	Zn-d µg/L	Zr-d µg/L
P01-02A	01/02/2011	Ground	<0.005	301.0	1.5	76.0	<50.0	0.0	0.0	122.0	0.22	1.4	0.5	5.02	1500		3.21	0.008	30.40	1310.00	0.94	8.82	4.1	3.510		0.08	61.0	<0.04	5780	0.03	355.0	9.1	0.024	2.81	0.9	6.2	0.20
P01-02A	01/06/2011	Ground	<0.005	1.6	0.6	67.5	<50.0	<0.01	<0.005	113.0	0.08	0.6	<0.1	0.32	11		2.91	0.006	27.20	1280.00	1.30	7.89	2.2	0.088		0.03	55.0	<0.04	5500	<0.01	332.0	<0.5	0.014	2.71	<0.2	0.9	<0.1
P01-02A	23/09/2011	Ground	0.006	3.7	0.6	67.1	<50.0	<0.01	0.0	118.0	0.10	0.7	<0.1	0.37	13		3.05	0.007	29.10	1690.00	1.46	9.45	2.8	0.429		0.03	58.0	<0.04	5440	<0.01	363.0	<0.5	0.015	2.71	<0.2	2.3	0.50
P01-02A Average			0.004	102.1	0.9	70.2	25.0	0.0	0.0	117.7	0.13	0.9	0.2	1.90	508		3.06	0.007	28.90	1426.67	1.23	8.72	3.0	1.342		0.05	58.0	0.02	5573	0.01	350.0	3.2	0.018	2.74	0.4	3.1	0.25
P01-02A Max			0.006	301.0	1.5	76.0	<50.0	0.0	0.0	122.0	0.22	1.4	0.5	5.02	1500		3.21	0.008	30.40	1690.00	1.46	9.45	4.1	3.510		0.08	61.0	<0.04	5780	0.03	363.0	9.1	0.024	2.81	0.9	6.2	0.50
P01-02A Min			<0.005	1.6	0.6	67.1	<50.0	<0.01	<0.005	113.0	0.08	0.6	<0.1	0.32	11		2.91	0.006	27.20	1280.00	0.94	7.89	2.2	0.088		0.03	55.0	<0.04	5440	<0.01	332.0	<0.5	0.014	2.71	<0.2	0.9	<0.1
P01-02B	01/06/2011	Ground	<0.005	1.4	5.3	37.0	<50.0	<0.01	<0.005	70.6	0.01	0.1	<0.1	0.06	1130		2.03	0.006	25.50	115.00	0.69	6.52	0.4	0.118		0.04	31.0	<0.04	4550	<0.01	266.0	<0.5	<0.002	2.93	<0.2	1.1	<0.1
P01-02B	23/09/2011	Ground	0.010	0.9	4.1	33.4	<50.0	<0.01	0.0	71.4	0.02	0.1	<0.1	0.06	1240		2.05	0.006	27.20	113.00	0.65	7.80	0.4	0.066		0.03	30.0	<0.04	4390	<0.01	275.0	<0.5	<0.002	2.70	<0.2	0.7	0.40
P01-02B Average			0.006	1.2	4.7	35.2	25.0	0.0	0.0	71.0	0.01	0.1	0.1	0.06	1185		2.04	0.006	26.35	114.00	0.67	7.16	0.4	0.092		0.04	30.5	0.02	4470	0.01	270.5	0.3	0.001	2.82	0.1	0.9	0.23
P01-02B Max			0.010	1.4	5.3	37.0	<50.0	<0.01	0.0	71.4	0.02	0.1	<0.1	0.06	1240		2.05	0.006	27.20	115.00	0.69	7.80	0.4	0.118		0.04	31.0	<0.04	4550	<0.01	275.0	<0.5	<0.002	2.93	<0.2	1.1	0.40
P01-02B Min			<0.005	0.9	4.1	33.4	<50.0	<0.01	<0.005	70.6	0.01	0.1	<0.1	0.06	1130		2.03	0.006	25.50	113.00	0.65	6.52	0.4	0.066		0.03	30.0	<0.04	4390	<0.01	266.0	<0.5	<0.002	2.70	<0.2	0.7	<0.1
P01-03	12/07/2011	Ground	<0.06	<9.0	0.5	14.0	<200.0	<0.3	<3.0	790.0	1.83	184.0	<3.0	<0.6	22100	<0.2	7.70	0.026	180.00	89900.00	<3.0	38.70	68.0	0.800		<2.0	943.0	<0.3	11800	<20.0	2150.0	<20.0	<0.2	6.40	<20.0	55.0	<2.0
P01-03	28/09/2011	Ground	<0.05	<8.0	<0.3	11.0	<100.0	<0.3	<3.0	625.0	1.63	165.0	<3.0	<0.5	28900		6.90	0.026	160.00	79700.00	<3.0	35.00	56.0	<0.5		<1.0	846.0	<0.3	10300	<10.0	1900.0	<10.0	<0.1	5.40	<10.0	52.0	<1.0
P01-03 Average			0.028	4.3	0.3	12.5	75.0	0.2	1.5	707.5	1.73	174.5	1.5	0.28	25500	0.10	7.30	0.026	170.00	84800.00	1.50	36.85	62.0	0.525		0.75	894.5	0.15	11050	7.50	2025.0	7.5	0.075	5.90	7.5	53.5	0.75
P01-03 Max			<0.06	<9.0	0.5	14.0	<200.0	<0.3	<3.0	790.0	1.83	184.0	<3.0	<0.6	28900	<0.2	7.70	0.026	180.00	89900.00	<3.0	38.70	68.0	0.800		<2.0	943.0	<0.3	11800	<20.0	2150.0	<20.0	<0.2	6.40	<20.0	55.0	<2.0
P01-03 Min			<0.05	<8.0	<0.3	11.0	<100.0	<0.3	<3.0	625.0	1.63	165.0	<3.0	<0.5	22100	<0.2	6.90	0.026	160.00	79700.00	<3.0	35.00	56.0	<0.5		<1.0	846.0	<0.3	10300	<10.0	1900.0	<10.0	<0.1	5.40	<10.0	52.0	<1.0
P01-04A	12/07/2011	Ground	0.060	<3.0	0.2	395.0	<50.0	0.2	<1.0	126.0	0.30	<0.5	<1.0	<0.2	579	<0.05	3.37	0.149	44.60	250.00	<1.0	68.50	<1.0	<0.2		<0.5	13.0	<0.1	9150	<5.0	1690.0	<5.0	<0.05	0.30	<5.0	<5.0	56.20
P01-04A	26/09/2011	Ground	0.050	4.0	0.2	418.0	<50.0	0.2	<1.0	131.0	0.33	<0.5	<1.0	<0.2	653		2.98	0.149	47.90	254.00	<1.0	72.20	<1.0	<0.2		<0.5	14.0	<0.1	8900	<5.0	1730.0	<5.0	<0.05	0.30	<5.0	<5.0	55.70
P01-04A Average			0.055	2.8	0.2	406.5	25.0	0.2	0.5	128.5	0.32	0.3	0.5	0.10	616	0.03	3.18	0.149	46.25	252.00	0.50	70.35	0.5	0.100		0.25	13.5	0.05	9025	2.50	1710.0	2.5	0.025	0.30	2.5	2.5	55.95
P01-04A Max			0.060	4.0	0.2	418.0	<50.0	0.2	<1.0	131.0	0.33	<0.5	<1.0	<0.2	653	<0.05	3.37	0.149	47.90	254.00	<1.0	72.20	<1.0	<0.2		<0.5	14.0	<0.1	9150	<5.0	1730.0	<5.0	<0.05	0.30	<5.0	<5.0	56.20
P01-04A Min			0.050	<3.0	0.2	395.0	<50.0	0.2	<1.0	126.0	0.30	<0.5	<1.0	<0.2	579	<0.05	2.98	0.149	44.60	250.00	<1.0	68.50	<1.0	<0.2		<0.5	13.0	<0.1	8900	<5.0	1690.0	<5.0	<0.05	0.30	<5.0	<5.0	55.70
P01-04B	01/02/2011	Ground	<0.03	<1.0	1.6	22.1	<300.0	<0.05	<0.03	421.0	<0.03	0.5	<0.5	<0.3	10800		5.60	0.021	68.60	4970.00	0.40	47.80	1.5	0.170		<0.1	364.0	<0.2	7400	<0.05	1060.0	<3.0	<0.01	5.21	<1.0	1.2	<0.5
P01-04B	12/07/2011	Ground	<0.02	6.0	1.5	20.0	<50.0	<0.1	<1.0	414.0	0.03	0.7	<1.0	0.30	11500	<0.05	5.26	0.019	69.70	5490.00	<1.0	45.40	2.0	0.500		<0.5	401.0	<0.1	8010	<5.0	1080.0	<5.0	<0.05	5.40	<5.0	6.0	<0.5
P01-04B	26/09/2011	Ground	<0.02	<3.0	1.5	19.0	<50.0	<0.1	<1.0	434.0	0.04	0.7	<1.0	<0.2	12700		5.60	0.020	76.30	5800.00	<1.0	48.50	2.0	<0.2		<0.5	408.0	<0.1	7420	<5.0	1060.0	<5.0	<0.05	5.00	<5.0	<5.0	3.90
P01-04B Average			0.012	2.7	1.5	20.4	66.7	0.0	0.3	423.0	0.03	0.6	0.4	0.18	11667	0.03	5.49	0.020	71.53	5420.00	0.47	47.23	1.8	0.257		0.18	391.0	0.07	7610	1.68	1066.7	2.2	0.018	5.20	1.8	3.2	1.47
P01-04B Max			<0.03	6.0	1.6	22.1	<300.0	<0.1	<1.0	434.0	0.04	0.7	<1.0	<0.3	12700	<0.05	5.60	0.021	76.30	5800.00	<1.0	48.50	2.0	0.500		<0.5	408.0	<0.2	8010	<5.0	1080.0	<5.0	<0.05	5.40	<5.0	6.0	3.90
P01-04B Min			<0.02	<1.0	1.5	19.0	<50.0	<0.05	<0.03	414.0	0.03	0.5	<0.5	<0.2	10800	<0.05	5.26	0.019	68.60	4970.00	0.40	45.40	1.5	0.170		<0.1	364.0	<0.1	7400	<0.05	1060.0	<3.0	<0.01	5.00	<1.0	1.2	<0.5
P01-11	01/06/2011	Ground	<0.03	5.0	33.3	30.8	<300.0	<0.05	<0.03	553.0	<0.03	5.7	<0.5	<0.3	47000		7.90	0.018	101.00	24800.00	4.50	32.80	10.4	0.200		<0.1	576.0	<0.2	10100	<0.05	1310.0	<3.0	<0.01	10.80	<1.0	5.3	<0.5
P01-11	24/09/2011	Ground	<0.03	3.0	37.3	28.8	<300.0	<0.05	<0.03	608.0	0.18	7.1	<0.5	<0.3	52200		8.00	0.021	123.00	32700.00	0.90	46.60	13.0	0.350		<0.1	589.0	<0.2	11200	<0.05	1510.0	<3.0	<0.01	10.40	<1.0	6.2	<0.5
P01-11 Average			0.015	4.0	35.3	29.8	150.0	0.0	0.0	580.5	0.10	6.4	0.3	0.15	49600		7.95	0.020	112.00	28750.00	2.70	39.70	11.7	0.275		0.05	582.5	0.10	10650	0.03	1410.0	1.5	0.005	10.60	0.5	5.8	0.25
P01-11 Max			<0.03	5.0	37.3	30.8	<300.0	<0.05	<0.03	608.0	0.18	7.1	<0.5	<0.3	52200		8.00	0.021	123.00	32700.00	4.50	46.60	13.0	0.350		<0.1	589.0	<0.2	11200	<0.05	1510.0	<3.0	<0.01	10.80	<1.0	6.2	<0.5
P01-11 Min			<0.03	3.0	33.3	28.8	<300.0	<0.05	<0.03	553.0	<0.03	5.7	<0.5	<0.3	47000		7.90	0.018	101.00	24800.00	0.90	32.80	10.4	0.200		<0.1	576.0	<0.2	10100	<0.05	1310.0	<3.0	<0.01	10.40	<1.0	5.3	<0.5
P03-01-2	04/10/2011	Ground	<0.005	1.7	1.1	115.0	<50.0	<0.01	<0.005	67.1	0.01	4.7	<0.1	0.10	582		2.70	0.005	11.20	660.00	3.01	5.24	0.9	0.081		<0.02	<10.0	<0.04	5000	<0.01	295.0	<0.5	<0.002	2.86	<0.2	13.9	<0.1
P03-01-4	04/10/2011	Ground	<0.005	10.2	0.1	25.1	<50.0	0.0	<0.005	22.3	2.14	109.0	<0.1	2.81	5		1.43	0.013	4.28	7530.00	0.06	2.16	195.0	0.213		0.04	27.0	0.05	6820	<0.01	109.0	<0.5	0.009	0.09	<0.2	3390.0	<0.1
P03-01-6	05/10/2011	Ground	<0.03	21.0	7.5	47.9	<300.0	<0.05	<0.03	38.5	<0.03	24.1	<0.5	<0.3	189000		3.60	<0.003	17.40	3630.00	<0.3	14.70	25.8	0.340		<0.1	148.0	<0.2	6450	0.09	168.0	<3.0	0.030	0.03	<1.0	6130.0	<0.5
P03-01-8	05/10/2011	Ground	<0.05	8.0	1.2	3.6	<500.0	<0.1	<0.05	217.0	0.10	2.3	<1.0	0.60	1410000		55.40	0.081	230.00	10500.00	83.70	631.00	2.0	4.730		0.50	1790.0	<0.4	2020	<0.1	638.0	<5.0	0.110	<0.02	<2.0	61600.0	<1.0
P03-03-2	05/10/2011	Ground	<0.05	1410.0	1.3	6.0	<500.0	1.1	<0.05	64.7	5.99	58.7	<1.0	19.30	577000		3.90	0.008	24.60	7180.00	<0.5	7.40	91.8	1.060		<0.2	411.0	<0.4	15900	<0.1	293.0	<5.0	0.120	0.91	<2.0	91800.0	<1.0
P03-03-4	05/10/2011	Ground	<0.03	37.0	3.8	40.3	<300.0	0.1	<0.03	125.0	7.44	195.0	<0.5	0.50	183000		3.90	0.030	29.20	31400.00	<0.3	14.10	203.0	0.420		<0.1	259.0	<0.2	15500	0.14	440.0	<3.0	0.060	0.13	<1.0	12400.0	<0.5
P03-05-2	05/10/2011	Ground	<0.5	<20.0	9.0	56.0	<5000.0	<1.0	<0.5	297.0	<0.5	617.0	<10.0	<5.0	65000		<5.0	0.098	55.00	63500.00	7.00	13.00	703.0	0.600		<2.0	<1000.0	<4.0	16400	<1.0	1100.0	<50.0	<0.2	0.90	<20.0	13700.0	<10.0
P03-05-4	05/10/2011	Ground	<0.03	3.0	0.9	63.6	<300.0	<0.05	<0.03	238.0	0.29	12.9	<0.5	<0.3	1800		2.70	0.011	40.80	19900.00	<0.3	12.90	6.2	0.430		0.20	232.0	<0.2	8330	0.48	586.0	<3.0	<0.01	3.11	<1.0	9.3	<0.5
P03-05-6	06/10/2011	Ground	<0.05	11.0	1.9	7.3	<500.0	<0.1	<0.05	374.0	0.07	0.2	<1.0	<0.5	2090000		44.20	0.017	341.00	30500.00	0.60	240.00	1.1	7.980		1.40	2030.0	<0.4	4720	0.80	370.0	<5.0	<0.02	0.08	<2.0	22.0	<1.0
P03-05-8	06/10/2011	Ground	<0.5	186.0	3.0	4.0	<5000.0	<1.0	<0.5	429.0	<0.5	<0.5	<10.0	<5.0	4630000		57.00	0.125	599.00	80700.00	<5.0	145.00	<2.0	141.000		<2.0	4150.0	<4.0	<10000.0	<1.0	644.0	<50.0	<0.2	<0.2	<20.0	90.0	<10.0
P03-06-1	29/06/2011	Ground	<0.1	178.0	0.9	14.0	392.0	<0.5	<5.0	613.0	25.80	1120.0	<5.0	3.00	179000		5.70	0.043	193.00	170000.00	33.00	33.80	1760.0	5.000		<3.0	1090.0	<0.5	18300	<30.0	2040.0	<30.0	<0.3	2.20	<30.0	11700.0	<3.0
P03-06-1	06/10/2011	Ground	<0.08	390.0	0.7	12.0	<200.0	0.6	<4.0	535.0	33.20	1560.0	<4.0	2.80	345000		5.10	<0.02	169.00	167000.00	<4.0	26.30	2180.0	6.700		<2.0	1140.0	<0.4	22300	<20.0	1940.0	<20.0	<0.2	1.40	<20.0	14200.0	<2.0
P03-06-1 Average			0.045	284.0	0.8	13.0	246.0	0.4	2.3	574.0	29.50	1340.0	2.3	2.90	262000		5.40	0.027	181.00	168500.00	17.50	30.05	1970.0	5.850		1.25	1115.0	0.23	20300	12.50	1990.0	12.5	0.125	1.80	12.5	12950.0	1.25
P03-06-1 Max			<0.1	390.0	0.9	14.0	392.0	0.6	<5.0	613.0	33.20	1560.0	<5.0	3.00	345000		5.70	0.043	193.00	170000.00	33.00	33.80	2180.0	6.700		<3.0	1140.0	<0.5	22300	<30.0	2040.0	<30.0	<0.3	2.20	<30.0	14200.0	<3.0
P03-06-1 Min			<0.08	178.0	0.7	12.0	<200.0	<0.5	<4.0	535.0	25.80	1120.0	<4.0	2.80	179000		5.10	<0.02	169.00	167000.00	<4.0	26.30	1760.0	5.000		<2.0	1090.0	<0.4	18300	<20.0	1940.0	<20.0	<0.2	1.40	<20.0	11700.0	<2.0
P03-06-2	29/05/2011	Ground	<0.1	1130.0	1.7	19.0	<300.0	0.7	<5.0	550.0	32.30	933.0	<5.0	4.00	1030000		6.60	0.070	172.00	127000.00	<5.0	25.20	1130.0	11.000		<3.0	1430.0	<0.5	22100	<30.0	1820.0	<30.0	<0.3	2.30	<30.0	17800.0	<3.0
P03-06-2	06/10/2011	Ground	<0.08	376.0	0.7	13.0	<200.0	0.5	<4.0	523.0	30.20	1440.0	<4.0	10.00	359000		4.90	<0.02	159.00	159000.00	<4.0	25.20	2030.0	9.900		<2.0	1110.0	<0.4	21800	<20.0	1900.0	<20.0	<0.2	0.80	<20.0	13500.0	<2.0
P03-06-2 Average			0.045	753.0	1.2	16.0	125.0	0.6	2.3	536.5	31.25	1186.5	2.3	7.00	694500		5.75	0.040	165.50	143000.00	2.25	25.20	1580.0	10.450		1.25	1270.0	0.23	21950	12.50	1860.0	12.5	0.125	1.55	12.5	15650.0	1.25
P03-06-2 Max			<0.1	1130.0	1.7	19.0	<300.0	0.7	<5.0	550.0	32.30	1440.0	<5.0	10.00	1030000		6.60	0.070	172.00	159000.00	<5.0	25.20	2030.0	11.000		<3.0	1430.0	<0.5	22100	<30.0	1900.0	<30.0	<0.3	2.30	<30.0	17800.0	<3.0
P03-06-2 Min			<0.08	376.0	0.7	13.0	<200.0	0.5	<4.0	523.0	30.20	933.0	<4.0	4.00	359000		4.90	<0.02	159.00	127000.00	<4.0	25.20	1130.0	9.900		<2.0	1110.0	<0.4	21800	<20.0	1820.0	<20.0	<0.2	0.80	<20.0	13500.0	<2.0
P03-06-3	29/05/2011	Ground	<0.1	731.0	1.3	19.0	<300.0	1.3	<5.0	485.0	50.80	769.0	<5.0	3.00	1130000		6.80	0.073	157.00	99900.00	<5.0	21.40	819.0	5.000		<3.0	1370.0	<0.5	21200	<30.0	1590.0	<30.0	<0.3	3.00	<30.0	21500.0	<3.0
P03-06-3	06/10/2011	Ground	<0.04	342.0	1.2	10.0	<100.0	0.9	<2.0	476.0	23.90	600.0	<2.0	0.80	1050000		6.10	0.029	138.00	86200.00	<2.0	20.70	660.0	1.200		<1.0	1360.0	<0.2	15400	<10.0	1520.0	<10.0	<0.1	2.10	<10.0	18900.0	<1.0
P03-06-3 Average			0.035	536.5	1.3	14.5	100.0	1.1	1.8	480.5	37.35	684.5	1.8	1.90	1090000		6.45	0.051	147.50	93050.00	1.75	21.05	739.5	3.100		1.00	1365.0	0.18	18300	10.00	1555.0	10.0	0.100	2.55	10.0	20200.0	1.00
P03-06-3 Max			<0.1	731.0	1.3	19.0	<300.0	1.3	<5.0	485.0	50.80	769.0	<5.0	3.00	1130000		6.80	0.073	157.00	99900.00	<5.0	21.40	819.0	5.000		<3.0	1370.0	<0.5	21200	<30.0	1590.0	<30.0	<0.3	3.00	<30.0	21500.0	<3.0
P03-06-3 Min			<0.04	342.0	1.2	10.0	<100.0	0.9	<2.0	476.0	23.90	600.0	<2.0	0.80	1050000		6.10	0.029	138.00	86200.00	<2.0	20.70	660.0	1.200		<1.0	1360.0	<0.2	15400	<10.0	1520.0	<10.0	<0.1	2.10	<10.0	18900.0	<1.0
P03-06-4	29/05/2011	Ground	<0.1	1020.0	2.1	32.0	<300.0	<0.5	<5.0	346.0	8.75	224.0	<5.0	6.00	495000		4.50	0.037	86.80	44100.00	<5.0	19.10	213.0	216.000		<3.0	684.0	<0.5	10500	<30.0	1030.0	<30.0	<0.3	17.20	<30.0	7110.0	<3.0
P03-06-4	06/10/2011	Ground	<0.04	16.0	1.0	19.0	<100.0	<0.2	<2.0	339.0	4.10	221.0	<2.0	0.50	307000		3.70	0.011	81.00	39100.00	<2.0	16.80	197.0	0.800		<1.0	610.0	<0.2	7910	<10.0	1120.0	<10.0	<0.1	22.80	<10.0	5580.0	<1.0
P03-06-4 Average			0.035	518.0	1.6	25.5	100.0	0.2	1.8	342.5	6.43	222.5	1.8	3.25	401000		4.10	0.024	83.90	41600.00	1.75	17.95	205.0	108.400		1.00	647.0	0.18	9205	10.00	1075.0	10.0	0.100	20.00	10.0	6345.0	1.00
P03-06-4 Max			<0.1	1020.0	2.1	32.0	<300.0	<0.5	<5.0	346.0	8.75	224.0	<5.0	6.00	495000		4.50	0.037	86.80	44100.00	<5.0	19.10	213.0	216.000		<3.0	684.0	<0.5	10500	<30.0	1120.0	<30.0	<0.3	22.80	<30.0	7110.0	<3.0
P03-06-4 Min			<0.04	16.0	1.0	19.0	<100.0	<0.2	<2.0	339.0	4.10	221.0	<2.0	0.50	307000		3.70	0.011	81.00	39100.00	<2.0	16.80	197.0	0.800		<1.0	610.0	<0.2	7910	<10.0	1030.0	<10.0	<0.1	17.20	<10.0	5580.0	<1.0
P03-06-5	28/05/2011	Ground	<0.1	139.0	9.7	25.0	<300.0	<0.5	<5.0	176.0	0.49	88.0	<5.0	5.00	441000		4.50	0.035	152.00	32400.00	<5.0	28.10	111.0	274.000		<3.0	674.0	<0.5	7020	<30.0	432.0	<30.0	<0.3	13.40	<30.0	122000.0	<3.0
P03-06-6	28/05/2011	Ground	0.700	83.0	24.9	18.0	<300.0	<0.5	<5.0	248.0	16.20	431.0	<5.0	7.00	485000		9.70	0.119	773.00	111000.00	<5.0	62.60	556.0	564.000		7.00	2040.0	<0.5	7070	<30.0	313.0	<30.0	<0.3	1.10	<30.0	654000.0	<3.0
P03-08-2	02/02/2011	Ground	<0.005	8.2	0.3	189.0	<50.0	<0.01	0.0	94.5	0.10	0.9	<0.1	2.66	17		1.39	0.002	28.20	2670.00	0.85	7.09	16.7	0.413		0.11	42.0	<0.04	3230	<0.01	337.0	<0.5	0.017	1.52	<0.2	4.2	<0.1
P03-08-2	12/10/2011	Ground	<0.005	4.9	0.3	182.0	<50.0	<0.01	<0.005	97.8	0.24	1.1	<0.1	2.39	11		1.42	0.002	27.50	2890.00	0.95	5.25	15.8	0.181		0.09	45.0	<0.04	4170	<0.01	344.0	<0.5	0.025	3.46	<0.2	3.4	<0.1
P03-08-2 Average			0.003	6.6	0.3	185.5	25.0	0.0	0.0	96.2	0.17	1.0	0.1	2.53	14		1.41	0.002	27.85	2780.00	0.90	6.17	16.3	0.297		0.10	43.5	0.02	3700	0.01	340.5	0.3	0.021	2.49	0.1	3.8	0.05
P03-08-2 Max			<0.005	8.2	0.3	189.0	<50.0	<0.01	0.0	97.8	0.24	1.1	<0.1	2.66	17		1.42	0.002	28.20	2890.00	0.95	7.09	16.7	0.413		0.11	45.0	<0.04	4170	<0.01	344.0	<0.5	0.025	3.46	<0.2	4.2	<0.1
P03-08-2 Min			<0.005	4.9	0.3	182.0	<50.0	<0.01	<0.005	94.5	0.10	0.9	<0.1	2.39	11		1.39	0.002	27.50	2670.00	0.85	5.25	15.8	0.181		0.09	42.0	<0.04	3230	<0.01	337.0	<0.5	0.017	1.52	<0.2	3.4	<0.1
P03-08-4	12/10/2011	Ground	<0.005	13.3	3.7	32.5	<50.0	0.0	<0.005	171.0	0.02	0.5	1.7	0.42	36200		3.29	0.004	38.90	2830.00	6.49	38.80	1.8	2.150		1.72	143.0	0.11	8590	0.05	626.0	0.8	0.019	7.51	0.4	16.4	0.50
P03-08-6	12/10/2011	Ground	0.008	25.3	1.2	92.3	<50.0	<0.01	0.0	61.6	0.09	1.8	0.2	2.94	536		4.81	0.021	3.03	135.00	7.00	116.00	1.3	44.300		1.56	138.0	<0.04	1540	1.59	62.5

Denison Environmental Services

Table B-2: 2011 Rose Creek Drainage Water Quality
Dissolved Metals

Faro Mine Closure

Station	Date	Sample Type	Ag-d µg/L	Al-d µg/L	As-d µg/L	Ba-d µg/L	B-d µg/L	Be-d µg/L	Bi-d µg/L	Ca-d mg/L	Cd-d µg/L	Co-d µg/L	Cr-d µg/L	Cu-d µg/L	Fe-d µg/L	Hg-d µg/L	K-d mg/L	Li-d mg/L	Mg-d mg/L	Mn-d µg/L	Mo-d µg/L	Na-d mg/L	Ni-d µg/L	Pb-d µg/L	P-d mg/L	Sb-d µg/L	S-d mg/L	Se-d µg/L	Si-d µg/L	Sn-d µg/L	Sr-d µg/L	Ti-d µg/L	Tl-d µg/L	U-d µg/L	V-d µg/L	Zn-d µg/L	Zr-d µg/L
P03-09-2	25/09/2011	Ground	<0.03	<1.0	0.3	42.4	<300.0	<0.05	<0.03	319.0	0.77	6.6	<0.5	0.40	27		5.00	0.015	65.00	13700.00	0.90	36.20	21.2	0.190		<0.1	293.0	<0.2	7700	<0.05	819.0	<3.0	0.020	9.13	<1.0	5.0	<0.5
P03-09-4	25/09/2011	Ground	<0.005	2.1	1.6	30.6	<50.0	0.0	<0.005	204.0	0.02	0.2	<0.1	0.12	7360		3.99	0.036	52.90	994.00	0.53	42.30	0.6	0.126		<0.02	166.0	<0.04	7420	<0.01	989.0	<0.5	<0.002	2.11	<0.2	1.2	0.90
P03-09-6	25/09/2011	Ground	<0.03	<1.0	0.3	40.9	<300.0	<0.05	<0.03	303.0	0.47	1.8	<0.5	<0.3	42		4.90	0.019	64.10	13200.00	1.30	36.50	19.3	<0.03		<0.1	273.0	<0.2	7440	<0.05	859.0	<3.0	<0.01	8.16	<1.0	2.2	<0.5
P03-09-8	25/09/2011	Ground	<0.03	2.0	0.4	31.3	<300.0	<0.05	<0.03	341.0	0.50	4.6	<0.5	<0.3	635		5.00	0.016	67.00	16300.00	1.20	36.80	17.6	0.060		<0.1	300.0	<0.2	7760	<0.05	849.0	<3.0	<0.01	9.02	<1.0	3.2	<0.5
P03-09-9	25/09/2011	Ground	<0.03	2.0	0.6	36.1	<300.0	<0.05	<0.03	336.0	0.39	4.7	<0.5	0.40	73		5.00	0.016	65.90	15200.00	1.20	36.90	20.9	0.220		0.40	297.0	<0.2	7790	<0.05	839.0	<3.0	0.020	8.62	<1.0	4.5	<0.5
P05-01-1	29/06/2011	Ground	<0.05	3.0	<0.2	41.9	<500.0	0.2	<0.05	543.0	<0.05	<0.05	<1.0	<0.5	14300		7.60	0.082	120.00	25100.00	<0.5	54.00	<0.2	0.150		<0.2	571.0	<0.4	10500	<0.1	1870.0	<5.0	<0.02	0.62	<2.0	3.0	2.00
P05-01-1	12/10/2011	Ground	<0.03	2.0	3.1	29.7	<300.0	0.1	<0.03	644.0	<0.03	0.0	<0.5	<0.3	27900		7.80	0.032	133.00	32000.00	<0.3	41.50	0.4	0.040		<0.1	704.0	<0.2	11300	<0.05	1460.0	<3.0	<0.01	1.82	<1.0	1.2	0.80
P05-01-1 Average			0.020	2.5	1.6	35.8	200.0	0.1	0.0	593.5	0.02	0.0	0.4	0.20	21100		7.70	0.057	126.50	28550.00	0.20	47.75	0.3	0.095		0.08	637.5	0.15	10900	0.04	1665.0	2.0	0.008	1.22	0.8	2.1	1.40
P05-01-1 Max			<0.05	3.0	3.1	41.9	<500.0	0.2	<0.05	644.0	<0.05	<0.05	<1.0	<0.5	27900		7.80	0.082	133.00	32000.00	<0.5	54.00	0.4	0.150		<0.2	704.0	<0.4	11300	<0.1	1870.0	<5.0	<0.02	1.82	<2.0	3.0	2.00
P05-01-1 Min			<0.03	2.0	<0.2	29.7	<300.0	0.1	<0.03	543.0	<0.03	0.0	<0.5	<0.3	14300		7.60	0.032	120.00	25100.00	<0.3	41.50	<0.2	0.040		<0.1	571.0	<0.2	10500	<0.05	1460.0	<3.0	<0.01	0.62	<1.0	1.2	0.80
P05-01-2	29/06/2011	Ground	<0.05	<2.0	0.6	29.0	<500.0	<0.1	<0.05	586.0	<0.05	<0.05	<1.0	<0.5	25200		7.30	0.029	120.00	28700.00	<0.5	39.80	0.3	0.130		<0.2	602.0	<0.4	10400	<0.1	1340.0	<5.0	<0.02	1.76	<2.0	<1.0	<1.0
P05-01-2	12/10/2011	Ground	<0.03	<1.0	1.1	29.2	<300.0	0.1	<0.03	628.0	<0.03	<0.03	<0.5	<0.3	32200		7.60	0.033	131.00	29300.00	<0.3	40.50	0.3	0.090		<0.1	650.0	<0.2	10800	1.02	1460.0	<3.0	<0.01	2.00	<1.0	1.1	0.60
P05-01-2 Average			0.020	0.8	0.9	29.1	200.0	0.1	0.0	607.0	0.02	0.0	0.4	0.20	28700		7.45	0.031	125.50	29000.00	0.20	40.15	0.3	0.110		0.08	626.0	0.15	10600	0.54	1400.0	2.0	0.008	1.88	0.8	0.8	0.55
P05-01-2 Max			<0.05	<2.0	1.1	29.2	<500.0	<0.1	<0.05	628.0	<0.05	<0.05	<1.0	<0.5	32200		7.60	0.033	131.00	29300.00	<0.5	40.50	0.3	0.130		<0.2	650.0	<0.4	10800	1.02	1460.0	<5.0	<0.02	2.00	<2.0	1.1	<1.0
P05-01-2 Min			<0.03	<1.0	0.6	29.0	<300.0	0.1	<0.03	586.0	<0.03	<0.03	<0.5	<0.3	25200		7.30	0.029	120.00	28700.00	<0.3	39.80	0.3	0.090		<0.1	602.0	<0.2	10400	<0.1	1340.0	<3.0	<0.01	1.76	<1.0	<1.0	0.60
P05-01-3	29/06/2011	Ground	<0.05	<2.0	1.0	27.8	<500.0	<0.1	<0.05	567.0	<0.05	0.1	<1.0	<0.5	28700		7.20	0.029	115.00	26400.00	<0.5	38.00	<0.2	0.060		<0.2	588.0	<0.4	10200	<0.1	1340.0	<5.0	<0.02	1.89	<2.0	<1.0	<1.0
P05-01-3	12/10/2011	Ground	<0.03	10.0	1.1	28.9	<300.0	0.1	<0.03	630.0	0.04	0.0	<0.5	<0.3	32500		7.90	0.034	133.00	29500.00	0.40	40.80	0.7	0.110		<0.1	670.0	<0.2	10900	<0.05	1540.0	<3.0	<0.01	2.04	<1.0	1.5	0.70
P05-01-3 Average			0.020	5.5	1.1	28.4	200.0	0.1	0.0	598.5	0.03	0.1	0.4	0.20	30600		7.55	0.032	124.00	27950.00	0.33	39.40	0.4	0.085		0.08	629.0	0.15	10550	0.04	1440.0	2.0	0.008	1.97	0.8	1.0	0.60
P05-01-3 Max			<0.05	10.0	1.1	28.9	<500.0	<0.1	<0.05	630.0	<0.05	0.1	<1.0	<0.5	32500		7.90	0.034	133.00	29500.00	<0.5	40.80	0.7	0.110		<0.2	670.0	<0.4	10900	<0.1	1540.0	<5.0	<0.02	2.04	<2.0	1.5	<1.0
P05-01-3 Min			<0.03	<2.0	1.0	27.8	<300.0	0.1	<0.03	567.0	0.04	0.0	<0.5	<0.3	28700		7.20	0.029	115.00	26400.00	0.40	38.00	<0.2	0.060		<0.1	588.0	<0.2	10200	<0.05	1340.0	<3.0	<0.01	1.89	<1.0	<1.0	0.70
P05-01-4	29/06/2011	Ground	<0.05	<2.0	3.6	21.0	<500.0	<0.1	<0.05	571.0	<0.05	0.7	<1.0	<0.5	36000		7.40	0.027	121.00	30100.00	0.70	37.80	0.9	0.190		<0.2	592.0	<0.4	10200	<0.1	1360.0	<5.0	<0.02	2.51	<2.0	4.0	<1.0
P05-01-4	12/10/2011	Ground	<0.03	2.0	3.8	21.0	<300.0	<0.05	<0.03	623.0	<0.03	0.7	<0.5	0.40	40900		7.60	0.030	132.00	31700.00	0.50	38.00	2.2	0.100		<0.1	667.0	<0.2	11000	<0.05	1450.0	<3.0	<0.01	2.65	<1.0	2.4	<0.5
P05-01-4 Average			0.020	1.5	3.7	21.0	200.0	0.0	0.0	597.0	0.02	0.7	0.4	0.33	38450		7.50	0.029	126.50	30900.00	0.60	37.90	1.6	0.145		0.08	629.5	0.15	10600	0.04	1405.0	2.0	0.008	2.58	0.8	3.2	0.38
P05-01-4 Max			<0.05	2.0	3.8	21.0	<500.0	<0.1	<0.05	623.0	<0.05	0.7	<1.0	<0.5	40900		7.60	0.030	132.00	31700.00	0.70	38.00	2.2	0.190		<0.2	667.0	<0.4	11000	<0.1	1450.0	<5.0	<0.02	2.65	<2.0	4.0	<1.0
P05-01-4 Min			<0.03	<2.0	3.6	21.0	<300.0	<0.05	<0.03	571.0	<0.03	0.7	<0.5	0.40	36000		7.40	0.027	121.00	30100.00	0.50	37.80	0.9	0.100		<0.1	592.0	<0.2	10200	<0.05	1360.0	<3.0	<0.01	2.51	<1.0	2.4	<0.5
P05-01-5	29/06/2011	Ground	<0.05	<2.0	2.4	21.7	<500.0	<0.1	<0.05	564.0	0.54	25.2	<1.0	<0.5	12300		7.70	0.024	121.00	33300.00	<0.5	35.10	27.1	0.090		<0.2	581.0	<0.4	9660	<0.1	1400.0	<5.0	0.030	7.33	<2.0	5.0	<1.0
P05-01-5	12/10/2011	Ground	<0.03	<1.0	2.6	21.0	<300.0	<0.05	<0.03	619.0	0.55	25.5	<0.5	0.80	15500		7.70	0.027	127.00	34600.00	0.40	35.20	29.5	0.150		<0.1	637.0	<0.2	10600	<0.05	1440.0	<3.0	0.030	7.76	<1.0	5.7	<0.5
P05-01-5 Average			0.020	0.8	2.5	21.4	200.0	0.0	0.0	591.5	0.55	25.4	0.4	0.53	13900		7.70	0.026	124.00	33950.00	0.33	35.15	28.3	0.120		0.08	609.0	0.15	10130	0.04	1420.0	2.0	0.030	7.55	0.8	5.4	0.38
P05-01-5 Max			<0.05	<2.0	2.6	21.7	<500.0	<0.1	<0.05	619.0	0.55	25.5	<1.0	0.80	15500		7.70	0.027	127.00	34600.00	<0.5	35.20	29.5	0.150		<0.2	637.0	<0.4	10600	<0.1	1440.0	<5.0	0.030	7.76	<2.0	5.7	<1.0
P05-01-5 Min			<0.03	<1.0	2.4	21.0	<300.0	<0.05	<0.03	564.0	0.54	25.2	<0.5	<0.5	12300		7.70	0.024	121.00	33300.00	0.40	35.10	27.1	0.090		<0.1	581.0	<0.2	9660	<0.05	1400.0	<3.0	0.030	7.33	<1.0	5.0	<0.5
P05-01-6	12/10/2011	Ground	<0.03	9.0	2.0	24.4	<300.0	<0.05	<0.03	590.0	0.10	33.9	<0.5	<0.3	12500		7.90	0.024	131.00	36800.00	<0.3	36.10	34.2	0.380		<0.1	617.0	<0.2	9830	<0.05	1490.0	<3.0	0.030	7.80	<1.0	7.7	<0.5
P05-02	27/01/2011	Ground	<0.03	7.0	2.9	31.3	<300.0	<0.05	<0.03	538.0	0.17	12.5	<0.5	<0.3	9260		7.40	0.017	106.00	23500.00	0.70	41.30	12.6	0.220		0.20	576.0	<0.2	8460	<0.05	1250.0	<3.0	0.040	7.54	<1.0	49.4	<0.5
P05-02	09/06/2011	Ground	<0.1	65.0	4.3	30.2	<1000.0	<0.2	<0.1	503.0	0.80	10.9	<2.0	<1.0	8960		6.00	0.017	100.00	22800.00	<1.0	36.00	11.7	1.000		<0.4	503.0	<0.8	9810	<0.2	1100.0	<10.0	<0.04	6.47	<4.0	44.0	<2.0
P05-02	23/09/2011	Ground	<0.005	3.7	3.2	31.3	<50.0	0.0	<0.005	560.0	0.23	13.6	<0.1	0.09	9570		8.19	0.021	114.00	30200.00	0.38	42.30	14.9	0.213		0.05	576.0	<0.04	9850	<0.01	1330.0	0.9	0.043	6.64	0.3	53.3	<0.1
P05-02 Average			0.023	25.2	3.5	30.9	225.0	0.0	0.0	533.7	0.40	12.3	0.4	0.25	9263		7.20	0.018	106.67	25500.00	0.53	39.87	13.1	0.478		0.15	551.7	0.17	9373	0.04	1226.7	2.5	0.034	6.88	0.9	48.9	0.43
P05-02 Max			<0.1	65.0	4.3	31.3	<1,000.0	<0.2	<0.1	560.0	0.80	13.6	<2.0	<1.0	9570		8.19	0.021	114.00	30200.00	<1.0	42.30	14.9	1.000		<0.4	576.0	<0.8	9850	<0.2	1330.0	<10.0	0.043	7.54	<4.0	53.3	<2.0
P05-02 Min			<0.005	3.7	2.9	30.2	<50.0	0.0	<0.005	503.0	0.17	10.9	<0.1	0.09	8960		6.00	0.017	100.00	22800.00	0.38	36.00	11.7	0.213		0.05	503.0	<0.04	8460	<0.01	1100.0	0.9	<0.04	6.47	0.3	44.0	<0.1
P05-03	27/01/2011	Ground	<0.03	3.0	3.6	215.0	<300.0	<0.05	<0.03	249.0	0.10	2.3	<0.5	<0.3	5250		4.10	0.007	54.40	9710.00	2.50	26.10	3.6	0.190		<0.1	249.0	<0.2	6610	<0.05	660.0	<3.0	<0.01	8.88	<1.0	5.8	<0.5
P05-03	09/06/2011	Ground	<0.1	47.0	3.4	230.0	<1000.0	<0.2	<0.1	294.0	0.20	3.0	<2.0	<1.0	6170		4.00	<0.01	63.00	12300.00	2.00	27.00	4.3	0.300		<0.4	271.0	<0.8	8070	<0.2	714.0	<10.0	<0.04	9.71	<4.0	6.0	<2.0
P05-03	24/09/2011	Ground	<0.005	4.7	2.6	162.0	<50.0	<0.01	<0.005	234.0	0.29	2.5	<0.1	0.15	3770		4.26	0.008	47.20	10200.00	3.09	25.10	3.9	0.388		<0.02	197.0	<0.04	7230	<0.01	604.0	<0.5	0.014	7.58	<0.2	6.1	<0.1
P05-03 Average			0.023	18.2	3.2	202.3	225.0	0.0	0.0	259.0	0.20	2.6	0.4	0.27	5063		4.12	0.007	54.87	10736.67	2.53	26.07	3.9	0.293		0.09	239.0	0.17	7303	0.04	659.3	2.3	0.013	8.72	0.9	6.0	0.43
P05-03 Max			<0.1	47.0	3.6	230.0	<1,000.0	<0.2	<0.1	294.0	0.29	3.0	<2.0	<1.0	6170		4.26	<0.01	63.00	12300.00	3.09	27.00	4.3	0.388		<0.4	271.0	<0.8	8070	<0.2	714.0	<10.0	<0.04	9.71	<4.0	6.1	<2.0
P05-03 Min			<0.005	3.0	2.6	162.0	<50.0	<0.01	<0.005	234.0	0.10	2.3	<0.1	0.15	3770		4.00	0.007	47.20	9710.00	2.00	25.10	3.6	0.190		<0.02	197.0	<0.04	6610	<0.01	604.0	<0.5	<0.01	7.58	<0.2	5.8	<0.1
P05-04	28/09/2011	Ground	<0.005	40.4	0.1	47.5	<50.0	0.1	<0.005	69.8	2.52	0.6	<0.1	0.71	22		1.55	0.015	17.40	14.20	0.07	4.51	7.8	0.176		0.03	41.0	0.38	6830	0.02	354.0	<0.5	0.013	1.44	<0.2	1370.0	<0.1
P09-C1	01/06/2011	Ground	<0.03	4.0	0.9	42.8	<300.0	0.3	<0.03	484.0	0.18	0.1	<0.5	<0.3	12600		8.00	0.171	109.00	19300.00	<0.3	74.70	0.6	0.070		<0.1	508.0	<0.2	10600	<0.05	2280.0	<3.0	<0.01	0.70	<1.0	2.0	1.40
P09-C1	24/09/2011	Ground	<0.03	3.0	0.6	38.8	<300.0	0.3	<0.03	477.0	0.18	0.3	<0.5	<0.3	12300		7.90	0.180	113.00	21900.00	<0.3	91.80	0.4	0.040		<0.1	498.0	<0.2	10300	<0.05	2390.0	<3.0	<0.01	0.58	<1.0	<0.5	4.30
P09-C1 Average			0.015	3.5	0.8	40.8	150.0	0.3	0.0	480.5	0.18	0.2	0.3	0.15	12450		7.95	0.176	111.00	20600.00	0.15	83.25	0.5	0.055		0.05	503.0	0.10	10450	0.03	2335.0	1.5	0.005	0.64	0.5	1.1	2.85
P09-C1 Max			<0.03	4.0	0.9	42.8	<300.0	0.3	<0.03	484.0	0.18	0.3	<0.5	<0.3	12600		8.00	0.180	113.00	21900.00	<0.3	91.80	0.6	0.070		<0.1	508.0	<0.2	10600	<0.05	2390.0	<3.0	<0.01	0.70	<1.0	2.0	4.30
P09-C1 Min			<0.03	3.0	0.6	38.8	<300.0	0.3	<0.03	477.0	0.18	0.1	<0.5	<0.3	12300		7.90	0.171	109.00	19300.00	<0.3	74.70	0.4	0.040		<0.1	498.0	<0.2	10300	<0.05	2280.0	<3.0	<0.01	0.58	<1.0	<0.5	1.40
P09-C2	02/06/2011	Ground	0.334	20.2	0.1	667.0	132.0	4.0	<0.005	224.0	1.90	0.0	0.3	<0.05	3350		11.90	1.410	108.00	130.00	0.16	317.00	0.2	0.063		0.07	<10.0	<0.04	11700	<0.01	4720.0	2.5	<0.002	0.50	<0.2	0.9	133.00
P09-C2	26/09/2011	Ground	0.180	21.0	<0.1	725.0	100.0	2.6	<1.0	230.0	1.08	<0.5	<1.0	<0.2	3610		10.60	0.901	124.00	119.00	<1.0	348.00	<1.0	<0.2		<0.5	<3.0	<0.1	10800	<5.0	4800.0	<5.0	<0.05	0.40	<5.0	<5.0	158.00
P09-C2 Average			0.257	20.6	0.1	696.0	116.0	3.3	0.3	227.0	1.49	0.1	0.4	0.06	3480		11.25	1.156	116.00	124.50	0.33	332.50	0.3	0.082		0.16	3.3	0.04	11250	1.25	4760.0	2.5	0.013	0.45	1.3	1.7	145.50
P09-C2 Max			0.334	21.0	0.1	725.0	132.0	4.0	<1.0	230.0	1.90	<0.5	<1.0	<0.2	3610		11.90	1.410	124.00	130.00	<1.0	348.00	<1.0	<0.2		<0.5	<10.0	<0.1	11700	<5.0	4800.0	<5.0	<0.05	0.50	<5.0	<5.0	158.00
P09-C2 Min			0.180	20.2	<0.1	667.0	100.0	2.6	<0.005	224.0	1.08	0.0	0.3	<0.05	3350		10.60	0.901	108.00	119.00	0.16	317.00	0.2	0.063		0.07	<3.0	<0.04	10800	<0.01	4720.0	2.5	<0.002	0.40	<0.2	0.9	133.00
P09-C3	28/06/2011	Ground	0.022	3.7	1.4	284.0	<50.0	0.3	<0.005	125.0	0.11	0.1	<0.1	<0.05	2340		4.02	0.128	56.00	232.00	0.53	66.80	0.3	0.049		<0.02	32.0	<0.04	8540	<0.01	2420.0	0.6	<0.002	1.02	<0.2	2.4	10.70
P09-C3	24/09/2011	Ground	0.070	2.0	1.2	275.0	<300.0	0.3	<0.03	128.0	0.41	0.1	<0.5	<0.3	2230		4.00	0.136	54.60	227.00	<0.3	75.30	<0.1	0.040		<0.1	<50.0	<0.2	8250	<0.05	2450.0	<3.0	<0.01	0.80	<1.0	<0.5	38.00
P09-C3 Average			0.046	2.9	1.3	279.5	87.5	0.3	0.0	126.5	0.26	0.1	0.2	0.09	2285		4.01	0.132	55.30	229.50	0.34	71.05	0.2	0.045		0.03	28.5	0.06	8395	0.02	2435.0	1.1	0.003	0.91	0.3	1.3	24.35
P09-C3 Max			0.070	3.7	1.4	284.0	<300.0	0.3	<0.03	128.0	0.41	0.1	<0.5	<0.3	2340		4.02	0.136	56.00	232.00	0.53	75.30	0.3	0.049		<0.1	<50.0	<0.2	8540	<0.05	2450.0	<3.0	<0.01	1.02	<1.0	2.4	38.00
P09-C3 Min			0.022	2.0	1.2	275.0	<50.0	0.3	<0.005	125.0	0.11	0.1	<0.1	<0.05	2230		4.00	0.128	54.60	227.00	<0.3	66.80	<0.1	0.040		<0.02	32.0	<0.04	8250	<0.01	2420.0	0.6	<0.002	0.80	<0.2	<0.5	10.70
P09-ETA1	18/09/2011	Ground	<0.005	3.1	0.1	6.2	<50.0	<0.01	<0.005	56.7	0.01	0.1	<0.1	0.16	153		0.26	<0.0005	9.71	9.01	0.08	15.20	0.2	0.630		<0.02	<10.0	<0.04	9310	0.03	460.0	<0.5	<0.002	0.09	<0.2	9.5	<0.1
P09-ETA2	08/06/2011	Ground	0.090	50.0	64.2	7.0	<100.0	0.4	<2.0	499.0	0.10	315.0	<2.0	1.40	432000		7.70	0.065	486.00	41900.00	<2.0	38.70	261.0	8.700		<1.0	1470.0	<0.2	9500	<10.0	3290.0	<10.0	<0.1	4.80	<10.0	151000.0	<1.0
P09-ETA2	18/09/2011	Ground	0.060	22.0	79.2	11.0	<100.0	0.3	<2.0	562.0	0.15	206.0	<2.0	1.30	169000		9.50	0.076	602.00	42400.00	<2.0	48.00	215.0	2.700		<1.0	1520.0	<0.2	11500	<10.0	3770.0	<10.0	<0.1	8.20	<10.0	84300.0	<1.0
P09-ETA2 Average			0.075	36.0	71.7	9.0	50.0	0.4	1.0	530.5	0.13	260.5	1.0	1.35	300500		8.60	0.071	544.00	42150.00	1.00	43.35	238.0	5.700		0.50	1495.0	0.10	10500	5.00	3530.0	5.0	0.050	6.50	5.0	117650.0	0.50
P09-ETA2 Max			0.090	50.0	79.2	11.0	<100.0	0.4	<2.0	562.0	0.15	315.0	<2.0	1.40	432000		9.50	0.076	602.00	42400.00	<2.0	48.00	261.0	8.700		<1.0	1520.0	<0.2	11500	<10.0	3770.0	<10.0	<0.1	8.20	<10.0	151000.0	<1.0
P09-ETA2 Min			0.060	22.0	64.2	7.0	<100.0	0.3	<2.0	499.0	0.10	206.0	<2.0	1.30	169000		7.70	0.065	486.00	41900.00	<2.0	38.70	215.0	2.700		<1.0	1470.0	<0.2	9500	<10.0	3290.0	<10.0	<0.1	4.80	<10.0	84300.0	<1.0

Note: Statistics calculated with DLs at half value.
Note: Metals reported in mg/L shaded in gray.

Denison Environmental Services

Table B-2: 2011 Rose Creek Drainage Water Quality
Dissolved Metals

Faro Mine Closure

Station	Date	Sample Type	Ag-d µg/L	Al-d µg/L	As-d µg/L	Ba-d µg/L	B-d µg/L	Be-d µg/L	Bi-d µg/L	Ca-d mg/L	Cd-d µg/L	Co-d µg/L	Cr-d µg/L	Cu-d µg/L	Fe-d µg/L	Hg-d µg/L	K-d mg/L	Li-d mg/L	Mg-d mg/L	Mn-d µg/L	Mo-d µg/L	Na-d mg/L	Ni-d µg/L	Pb-d µg/L	P-d mg/L	Sb-d µg/L	S-d mg/L	Se-d µg/L	Si-d µg/L	Sn-d µg/L	Sr-d µg/L	Ti-d µg/L	Tl-d µg/L	U-d µg/L	V-d µg/L	Zn-d µg/L	Zr-d µg/L
P09-SIS1	**09/06/2011**	**Ground**	0.460	48.0	1.6	20.0	129.0	<0.1	<1.0	497.0	279.00	571.0	<1.0	21.00	433		13.40	0.162	1520.00	141000.00	2.00	40.70	3870.0	0.500		<0.5	3020.0	<0.1	14300	<5.0	2320.0	<5.0	<0.05	2.40	<5.0	738000.0	<0.5
P09-SIS1	**20/07/2011**	**Ground**	0.160	18.0	0.5	28.0	<200.0	<0.4	<4.0	508.0	72.10	499.0	<4.0	4.40	3980		9.90	0.138	1300.00	73400.00	<4.0	47.60	1500.0	1.600		<2.0	2510.0	<0.4	10500	<20.0	2300.0	<20.0	<0.2	6.10	<20.0	289000.0	<2.0
P09-SIS1	**18/09/2011**	**Ground**	0.220	20.0	1.2	37.0	<200.0	<0.4	<4.0	543.0	70.90	468.0	<4.0	6.80	5770		13.10	0.172	1330.00	71700.00	<4.0	47.50	1460.0	2.000		<2.0	2650.0	<0.4	11200	<20.0	2340.0	<20.0	<0.2	4.20	<20.0	251000.0	<2.0
P09-SIS1	**30/11/2011**	**Ground**	0.210	21.0	<0.5	37.9	<250.0	<0.5	<5.0	482.0	53.40	475.0	<5.0	<1.0	5010		12.70	0.152	1100.00	75700.00	<5.0	48.10	1380.0	<1.0		<2.5	2190.0	0.55	10900	<25.0	1960.0	<25.0	<0.25	3.16	<25.0	244000.0	<2.5
P09-SIS1 Average			0.263	26.8	0.9	30.7	113.5	0.2	1.8	507.5	118.85	503.3	1.8	8.18	3798		12.28	0.156	1312.50	90450.00	2.13	45.98	2052.5	1.150		0.88	2592.5	0.25	11725	8.75	2230.0	8.8	0.088	3.97	8.8	380500.0	0.88
P09-SIS1 Max			0.460	48.0	1.6	37.9	<250.0	<0.5	<5.0	543.0	279.00	571.0	<5.0	21.00	5770		13.40	0.172	1520.00	141000.00	<5.0	48.10	3870.0	2.000		<2.5	3020.0	0.55	14300	<25.0	2340.0	<25.0	<0.25	6.10	<25.0	738000.0	<2.5
P09-SIS1 Min			0.160	18.0	0.5	20.0	129.0	<0.1	<1.0	482.0	53.40	468.0	<1.0	<1.0	433		9.90	0.138	1100.00	71700.00	2.00	40.70	1380.0	0.500		<0.5	2190.0	<0.1	10500	<5.0	1960.0	<5.0	<0.05	2.40	<5.0	244000.0	<0.5
P09-SIS2	**07/06/2011**	**Ground**	<0.3	38.0	<1.0	21.0	<3000.0	<0.5	<0.3	482.0	272.00	1310.0	<5.0	11.00	719		16.00	0.209	1530.00	140000.00	<3.0	49.00	3640.0	0.800		<1.0	2710.0	<2.0	12900	<0.5	2210.0	<30.0	<0.1	3.80	<10.0	643000.0	<5.0
P09-SIS2	**16/07/2011**	**Ground**	<0.2	35.0	3.0	19.0	<500.0	<1.0	<10.0	406.0	213.00	952.0	<10.0	5.00	2570		14.30	0.188	1330.00	114000.00	<10.0	49.00	2870.0	<2.0		<5.0	2710.0	<1.0	12200	<50.0	1940.0	<50.0	<0.5	3.00	<50.0	535000.0	<5.0
P09-SIS2	**07/09/2011**	**Ground**	0.300	47.0	<1.0	16.0	<500.0	<1.0	<10.0	350.0	184.00	873.0	<10.0	5.00	883		13.00	0.171	1210.00	102000.00	<10.0	46.40	2500.0	<2.0		<5.0	2280.0	<1.0	10100	<50.0	1740.0	<50.0	<0.5	3.00	<50.0	459000.0	<5.0
P09-SIS2	**29/11/2011**	**Ground**	<0.4	104.0	3.5	24.0	<1000.0	<2.0	<20.0	519.0	237.00	1200.0	<20.0	7.20	2200		17.90	0.211	1320.00	122000.00	<20.0	50.30	2980.0	<4.0		<10.0	2910.0	<2.0	14200	<100.0	2170.0	<100.0	<1.0	3.80	<100.0	552000.0	<10.0
P09-SIS2 Average			0.188	56.0	1.9	20.0	625.0	0.6	5.0	439.3	226.50	1083.8	5.6	7.05	1593		15.30	0.195	1347.50	119500.00	5.38	48.68	2997.5	1.200		2.63	2652.5	0.75	12350	25.06	2015.0	28.8	0.263	3.40	26.3	547250.0	3.13
P09-SIS2 Max			<0.4	104.0	3.5	24.0	<3,000.0	<2.0	<20.0	519.0	272.00	1310.0	<20.0	11.00	2570		17.90	0.211	1530.00	140000.00	<20.0	50.30	3640.0	<4.0		<10.0	2910.0	<2.0	14200	<100.0	2210.0	<100.0	<1.0	3.80	<100.0	643000.0	<10.0
P09-SIS2 Min			<0.2	35.0	<1.0	16.0	<500.0	<0.5	<0.3	350.0	184.00	873.0	<5.0	5.00	719		13.00	0.171	1210.00	102000.00	<3.0	46.40	2500.0	0.800		<1.0	2280.0	<1.0	10100	<0.5	1740.0	<30.0	<0.1	3.00	<10.0	459000.0	<5.0
P09-SIS3	**08/06/2011**	**Ground**	0.440	40.0	0.7	23.0	109.0	<0.1	<1.0	496.0	273.00	581.0	<1.0	14.70	201		12.50	0.167	1450.00	138000.00	2.00	38.40	3760.0	<0.2		<0.5	2970.0	0.90	12800	<5.0	2260.0	36.0	<0.05	2.70	<5.0	708000.0	<0.5
P09-SIS3	**17/07/2011**	**Ground**	0.300	34.0	<1.0	18.0	<500.0	<1.0	<10.0	389.0	220.00	416.0	<10.0	15.00	213		12.10	0.165	1180.00	99300.00	<10.0	37.40	2890.0	<2.0		<5.0	2430.0	<1.0	11300	<50.0	1890.0	<50.0	<0.5	2.00	<50.0	517000.0	<5.0
P09-SIS3	**07/09/2011**	**Ground**	0.300	50.0	<1.0	16.0	<500.0	<1.0	<10.0	320.0	211.00	444.0	<10.0	15.00	74		13.40	0.161	1230.00	106000.00	<10.0	41.10	2720.0	<2.0		<5.0	2300.0	<1.0	10100	<50.0	1740.0	<50.0	<0.5	2.00	<50.0	478000.0	<5.0
P09-SIS3	**29/11/2011**	**Ground**	<0.4	66.0	<2.0	<20.0	<1000.0	<2.0	<20.0	477.0	257.00	549.0	<20.0	22.80	159		16.50	0.181	1210.00	108000.00	<20.0	41.50	2930.0	<4.0		<10.0	2820.0	<2.0	13800	<100.0	2090.0	<100.0	<1.0	3.10	<100.0	511000.0	<10.0
P09-SIS3 Average			0.310	47.5	0.7	16.8	277.3	0.5	5.1	420.5	240.25	497.5	5.1	16.88	162		13.63	0.169	1267.50	112825.00	5.50	39.60	3075.0	1.025		2.56	2630.0	0.73	12000	25.63	1995.0	34.0	0.256	2.45	25.6	553500.0	2.56
P09-SIS3 Max			0.440	66.0	<2.0	23.0	<1,000.0	<2.0	<20.0	496.0	273.00	581.0	<20.0	22.80	213		16.50	0.181	1450.00	138000.00	<20.0	41.50	3760.0	<4.0		<10.0	2970.0	<2.0	13800	<100.0	2260.0	<100.0	<1.0	3.10	<100.0	708000.0	<10.0
P09-SIS3 Min			0.300	34.0	0.7	16.0	109.0	<0.1	<1.0	320.0	211.00	416.0	<1.0	14.70	74		12.10	0.161	1180.00	99300.00	2.00	37.40	2720.0	<0.2		<0.5	2300.0	0.90	10100	<5.0	1740.0	36.0	<0.05	2.00	<5.0	478000.0	<0.5
P09-SIS4	**17/07/2011**	**Ground**	<0.2	<30.0	<1.0	12.0	<500.0	<1.0	<10.0	374.0	26.70	<5.0	<10.0	8.00	<50.0		8.30	0.107	837.00	12800.00	<10.0	32.00	927.0	<2.0		<5.0	1740.0	<1.0	9670	<50.0	1890.0	<50.0	<0.5	9.00	<50.0	158000.0	<5.0
P09-SIS6	**18/09/2011**	**Ground**	0.030	5.0	0.5	19.0	<50.0	<0.1	<1.0	489.0	5.95	8.7	<1.0	2.80	46		8.86	0.094	687.00	24500.00	<1.0	42.80	284.0	2.200		<0.5	1350.0	<0.1	11100	<5.0	1930.0	<5.0	<0.05	16.50	<5.0	15800.0	<0.5
P96-6	**09/06/2011**	**Ground**	<0.005	6.9	0.2	27.9	<50.0	0.2	<0.005	245.0	0.69	0.1	<0.1	0.48	5		4.43	0.047	73.40	28.30	0.06	8.31	39.0	0.171		<0.02	186.0	2.62	14600	0.04	823.0	<0.5	0.003	29.90	<0.2	1270.0	<0.1
P96-6	**28/09/2011**	**Ground**	<0.03	6.0	0.4	25.6	<300.0	<0.05	<0.03	329.0	0.46	<0.03	<0.5	0.60	12		4.60	0.038	106.00	2.10	3.60	7.10	21.2	1.230		<0.1	375.0	3.40	9610	0.11	922.0	<3.0	<0.01	55.30	<1.0	656.0	<0.5
P96-6 Average			0.009	6.5	0.3	26.8	87.5	0.1	0.0	287.0	0.58	0.0	0.2	0.54	9		4.52	0.042	89.70	15.20	1.83	7.71	30.1	0.701		0.03	280.5	3.01	12105	0.08	872.5	0.9	0.004	42.60	0.3	963.0	0.15
P96-6 Max			<0.03	6.9	0.4	27.9	<300.0	0.2	<0.03	329.0	0.69	0.1	<0.5	0.60	12		4.60	0.047	106.00	28.30	3.60	8.31	39.0	1.230		<0.1	375.0	3.40	14600	0.11	922.0	<3.0	<0.01	55.30	<1.0	1270.0	<0.5
P96-6 Min			<0.005	6.0	0.2	25.6	<50.0	<0.05	<0.005	245.0	0.46	<0.03	<0.1	0.48	5		4.43	0.038	73.40	2.10	0.06	7.10	21.2	0.171		<0.02	186.0	2.62	9610	0.04	823.0	<0.5	0.003	29.90	<0.2	656.0	<0.1
P96-7	**15/06/2011**	**Ground**	<0.03	3.0	0.5	10.6	<300.0	<0.05	<0.03	562.0	0.10	0.3	<0.5	1.50	11		5.80	0.034	171.00	18.90	0.70	19.00	3.0	1.910		<0.1	654.0	0.80	4910	0.09	721.0	<3.0	<0.01	29.30	<1.0	42.3	<0.5
P96-7	**10/09/2011**	**Ground**	<0.03	6.0	0.3	14.7	<300.0	<0.05	<0.03	565.0	0.04	0.1	0.6	0.70	14		6.00	0.031	214.00	7.40	0.80	16.80	1.1	0.150		<0.1	756.0	0.50	5110	<0.05	700.0	<3.0	<0.01	26.50	<1.0	28.5	<0.5
P96-7 Average			0.015	4.5	0.4	12.7	150.0	0.0	0.0	563.5	0.07	0.2	0.4	1.10	13		5.90	0.033	192.50	13.15	0.75	17.90	2.1	1.030		0.05	705.0	0.65	5010	0.06	710.5	1.5	0.005	27.90	0.5	35.4	0.25
P96-7 Max			<0.03	6.0	0.5	14.7	<300.0	<0.05	<0.03	565.0	0.10	0.3	0.6	1.50	14		6.00	0.034	214.00	18.90	0.80	19.00	3.0	1.910		<0.1	756.0	0.80	5110	0.09	721.0	<3.0	<0.01	29.30	<1.0	42.3	<0.5
P96-7 Min			<0.03	3.0	0.3	10.6	<300.0	<0.05	<0.03	562.0	0.04	0.1	<0.5	0.70	11		5.80	0.031	171.00	7.40	0.70	16.80	1.1	0.150		<0.1	654.0	0.50	4910	<0.05	700.0	<3.0	<0.01	26.50	<1.0	28.5	<0.5
P96-8A	**08/06/2011**	**Ground**	<3.0	779.0	24.0	17.0	<30000.0	<5.0	<3.0	463.0	77.00	1350.0	<50.0	<30.0	37200		<30.0	<0.3	1200.00	113000.00	<30.0	63.00	1320.0	44.000		<10.0	<5000.0	<20.0	<50000.0	<5.0	4310.0	<300.0	<1.0	3.00	<100.0	606000.0	<50.0
P96-8A	**11/09/2011**	**Ground**	<0.5	816.0	<2.0	16.0	<5000.0	<1.0	<0.5	391.0	115.00	1270.0	<10.0	16.00	78900		20.00	0.219	1070.00	105000.00	<5.0	52.00	1330.0	47.000		<2.0	2470.0	<4.0	10600	<1.0	4030.0	<50.0	<0.2	1.40	<20.0	552000.0	<10.0
P96-8A Average			0.875	797.5	12.5	16.5	8750.0	1.5	0.9	427.0	96.00	1310.0	15.0	15.50	58050		17.50	0.185	1135.00	109000.00	8.75	57.50	1325.0	45.500		3.00	2485.0	6.00	17800	1.50	4170.0	87.5	0.300	2.20	30.0	579000.0	15.00
P96-8A Max			<3.0	816.0	24.0	17.0	<30,000.0	<5.0	<3.0	463.0	115.00	1350.0	<50.0	<30.0	78900		<30.0	<0.3	1200.00	113000.00	<30.0	63.00	1330.0	47.000		<10.0	<5,000.0	<20.0	<50,000.0	<5.0	4310.0	<300.0	<1.0	3.00	<100.0	606000.0	<50.0
P96-8A Min			<0.5	779.0	<2.0	16.0	<5,000.0	<1.0	<0.5	391.0	77.00	1270.0	<10.0	16.00	37200		20.00	0.219	1070.00	105000.00	<5.0	52.00	1320.0	44.000		<2.0	2470.0	<4.0	10600	<1.0	4030.0	<50.0	<0.2	1.40	<20.0	552000.0	<10.0
P96-8B	**08/06/2011**	**Ground**	<3.0	2320.0	27.0	26.0	<30000.0	<5.0	<3.0	455.0	148.00	879.0	<50.0	64.00	1040		<30.0	<0.3	880.00	74800.00	<30.0	49.00	1460.0	7.000		<10.0	<5000.0	<20.0	<50000.0	<5.0	3270.0	<300.0	<1.0	2.00	<100.0	574000.0	<50.0
P96-8B	**11/09/2011**	**Ground**	<0.5	4470.0	<2.0	12.0	<5000.0	4.0	<0.5	363.0	164.00	1410.0	<10.0	150.00	2120		20.00	0.232	976.00	101000.00	<5.0	55.00	1570.0	36.200		<2.0	2350.0	<4.0	14800	<1.0	3670.0	<50.0	0.800	2.30	<20.0	645000.0	<10.0
P96-8B Average			0.875	3395.0	14.0	19.0	8750.0	3.3	0.9	409.0	156.00	1144.5	15.0	107.00	1580		17.50	0.191	928.00	87900.00	8.75	52.00	1515.0	21.600		3.00	2425.0	6.00	19900	1.50	3470.0	87.5	0.650	2.15	30.0	609500.0	15.00
P96-8B Max			<3.0	4470.0	27.0	26.0	<30,000.0	<5.0	<3.0	455.0	164.00	1410.0	<50.0	150.00	2120		<30.0	<0.3	976.00	101000.00	<30.0	55.00	1570.0	36.200		<10.0	<5,000.0	<20.0	<50,000.0	<5.0	3670.0	<300.0	<1.0	2.30	<100.0	645000.0	<50.0
P96-8B Min			<0.5	2320.0	<2.0	12.0	<5,000.0	4.0	<0.5	363.0	148.00	879.0	<10.0	64.00	1040		20.00	0.232	880.00	74800.00	<5.0	49.00	1460.0	7.000		<2.0	2350.0	<4.0	14800	<1.0	3270.0	<50.0	0.800	2.00	<20.0	574000.0	<10.0
R10	**20/01/2011**	**Surface**	<0.005	2.5	0.3	77.5	<50.0	<0.01	0.0	44.9	0.01	0.0	<0.1	0.27	34		1.17	0.008	10.80	14.90	0.74	3.66	0.3	0.052		0.05	<10.0	0.44	4460	<0.01	188.0	<0.5	<0.002	2.52	<0.2	5.2	<0.1
R10	**15/02/2011**	**Surface**	<0.005	2.3	0.4	71.1	<50.0	<0.01	0.0	43.6	0.02	0.0	<0.1	0.32	31		1.08	0.008	8.89	11.20	0.83	3.09	0.3	0.221		0.06	<10.0	0.39	6550	<0.01	190.0	<0.5	<0.002	2.70	<0.2	7.1	<0.1
R10	**16/03/2011**	**Surface**	<0.005	1.6	0.4	77.2	<50.0	<0.01	<0.005	44.7	0.01	0.0	<0.1	0.39	23		1.10	0.009	9.60	12.50	0.84	3.54	0.3	0.114		0.05	<10.0	0.43	6060	<0.01	201.0	<0.5	<0.002	3.02	<0.2	9.2	<0.1
R10	**12/04/2011**	**Surface**	<0.005	3.0	0.3	75.1	<50.0	<0.01	<0.005	50.1	0.02	0.1	0.2	0.86	34		1.33	0.008	9.74	15.90	0.80	3.66	0.5	0.482		0.05	<10.0	0.40	7350	<0.01	193.0	<0.5	<0.002	2.79	<0.2	12.3	<0.1
R10	**09/05/2011**	**Surface**	0.007	65.5	0.8	55.4	<50.0	0.0	<0.005	27.9	0.12	0.3	<0.1	3.01	258		1.86	0.005	5.94	31.30	0.55	2.07	1.0	1.620		0.07	<10.0	0.29	4480	<0.01	122.0	<0.5	0.003	1.32	<0.2	78.4	<0.1
R10	**22/06/2011**	**Surface**	0.008	39.5	0.5	28.9	<50.0	<0.01	<0.005	13.2	0.09	0.1	0.3	1.83	81		0.40	0.002	2.93	8.19	0.26	1.28	0.7	1.930		0.09	<10.0	0.19	4030	0.02	58.1	<0.5	0.007	0.44	<0.2	9.5	<0.1
R10	**21/07/2011**	**Surface**	<0.005	37.5	0.5	36.3	<50.0	<0.01	<0.005	17.1	0.02	0.1	0.2	1.05	106		0.56	0.002	3.95	13.30	0.30	1.56	0.6	0.827		0.08	<10.0	0.18	5060	<0.01	73.8	0.8	0.003	0.59	<0.2	8.7	<0.1
R10	**23/08/2011**	**Surface**	0.011	14.7	0.5	39.5	<50.0	<0.01	<0.005	20.7	0.05	0.2	<0.1	0.69	86		0.88	0.002	4.15	39.30	0.34	1.64	0.6	0.286		0.08	<10.0	0.20	4920	<0.01	86.2	<0.5	<0.002	0.73	<0.2	27.5	<0.1
R10	**22/09/2011**	**Surface**	<0.005	9.6	0.5	46.2	<50.0	<0.01	<0.005	24.7	0.01	0.0	<0.1	0.45	93		0.61	0.003	4.98	19.10	0.41	1.86	0.4	0.186		0.06	<10.0	0.26	5330	<0.01	100.0	<0.5	<0.002	0.98	<0.2	4.1	<0.1
R10	**19/10/2011**	**Surface**	<0.005	5.3	0.5	51.9	<50.0	<0.01	<0.005	31.4	0.01	0.0	<0.1	0.33	96		0.73	0.004	6.27	23.80	0.55	2.29	0.3	0.099		0.06	<10.0	0.31	5440	<0.01	125.0	<0.5	<0.002	1.51	<0.2	6.5	<0.1
R10	**16/11/2011**	**Surface**	<0.005	3.9	0.4	59.1	<50.0	<0.01	<0.005	33.5	0.02	0.0	<0.1	0.52	59		0.81	0.005	6.76	17.10	0.62	2.40	0.4	0.255		0.06	<10.0	0.40	5480	<0.01	143.0	<0.5	<0.002	1.73	<0.2	10.1	<0.1
R10	**06/12/2011**	**Surface**	<0.005	3.1	0.5	65.1	<50.0	<0.01	<0.005	34.8	0.01	0.0	<0.1	0.28	76		0.78	0.006	6.53	18.40	0.68	2.33	0.3	0.035		0.06	<10.0	0.45	5260	<0.01	154.0	<0.5	<0.002	2.02	<0.2	4.8	<0.1
R10 Average			0.004	15.7	0.5	56.9	25.0	0.0	0.0	32.2	0.03	0.1	0.1	0.83	81		0.94	0.005	6.71	18.75	0.58	2.45	0.5	0.509		0.06	5.0	0.33	5368	0.01	136.2	0.3	0.002	1.70	0.1	15.3	0.05
R10 Max			0.011	65.5	0.8	77.5	<50.0	0.0	0.0	50.1	0.12	0.3	0.3	3.01	258		1.86	0.009	10.80	39.30	0.84	3.66	1.0	1.930		0.09	<10.0	0.45	7350	0.02	201.0	0.8	0.007	3.02	<0.2	78.4	<0.1
R10 Min			<0.005	1.6	0.3	28.9	<50.0	<0.01	<0.005	13.2	0.01	0.0	<0.1	0.27	23		0.40	0.002	2.93	8.19	0.26	1.28	0.3	0.035		0.05	<10.0	0.18	4030	<0.01	58.1	<0.5	<0.002	0.44	<0.2	4.1	<0.1

Note: Statistics calculated with DLs at half value.
Note: Metals reported in mg/L shaded in gray.

Denison Environmental Services

Table B-2: 2011 Rose Creek Drainage Water Quality
Dissolved Metals

Faro Mine Closure

Station	Date	Sample Type	Ag-d µg/L	Al-d µg/L	As-d µg/L	Ba-d µg/L	B-d µg/L	Be-d µg/L	Bi-d µg/L	Ca-d mg/L	Cd-d µg/L	Co-d µg/L	Cr-d µg/L	Cu-d µg/L	Fe-d µg/L	Hg-d µg/L	K-d mg/L	Li-d mg/L	Mg-d mg/L	Mn-d µg/L	Mo-d µg/L	Na-d mg/L	Ni-d µg/L	Pb-d µg/L	P-d mg/L	Sb-d µg/L	S-d mg/L	Se-d µg/L	Si-d µg/L	Sn-d µg/L	Sr-d µg/L	Ti-d µg/L	Tl-d µg/L	U-d µg/L	V-d µg/L	Zn-d µg/L	Zr-d µg/L
R7	20/01/2011	Surface	<0.005	2.7	0.4	76.4	<50.0	<0.01	0.0	45.3	<0.005	0.0	<0.1	0.25	38		1.01	0.008	8.71	9.36	0.74	3.31	0.2	0.077		0.05	<10.0	0.46	4950	<0.01	175.0	<0.5	<0.002	2.31	<0.2	1.3	<0.1
R7	15/02/2011	Surface	<0.005	3.1	0.4	71.8	<50.0	<0.01	<0.005	36.4	0.01	0.0	<0.1	0.62	35		1.06	0.008	7.90	7.00	0.83	3.02	0.2	0.288		0.06	<10.0	0.41	5530	<0.01	178.0	<0.5	<0.002	2.43	<0.2	2.1	<0.1
R7	16/03/2011	Surface	<0.005	2.2	0.4	77.0	<50.0	<0.01	<0.005	42.5	0.02	0.0	<0.1	0.62	26		1.55	0.009	8.29	11.40	0.83	3.47	0.3	0.405		0.06	<10.0	0.43	6050	<0.01	186.0	<0.5	<0.002	2.71	<0.2	6.5	<0.1
R7	12/04/2011	Surface	0.008	3.7	0.4	77.5	<50.0	<0.01	<0.005	43.6	0.01	0.0	<0.1	1.01	30		1.70	0.009	8.63	8.50	0.85	3.57	0.3	2.050		0.05	<10.0	0.40	6470	0.02	185.0	<0.5	<0.002	2.63	<0.2	3.0	<0.1
R7	09/05/2011	Surface	0.037	36.2	0.9	59.6	<50.0	<0.01	0.0	29.6	0.02	0.1	<0.1	1.67	292		2.17	0.005	5.89	15.70	0.60	3.67	0.7	0.858		0.07	<10.0	0.29	4910	<0.01	122.0	<0.5	<0.002	1.34	<0.2	10.3	<0.1
R7	22/06/2011	Surface	0.006	30.4	0.5	29.3	<50.0	<0.01	<0.005	13.6	0.01	0.0	0.2	1.15	77		0.35	0.001	2.80	6.35	0.30	1.21	0.5	0.260		0.08	<10.0	0.19	3930	<0.01	55.3	<0.5	<0.002	0.42	<0.2	2.3	<0.1
R7	21/07/2011	Surface	0.024	20.0	0.6	36.2	<50.0	<0.01	<0.005	18.7	0.02	0.1	<0.1	1.13	100		0.49	0.002	4.07	14.70	0.34	1.59	0.4	0.381		0.08	<10.0	0.20	4900	<0.01	71.3	<0.5	<0.002	0.59	<0.2	11.6	<0.1
R7	24/08/2011	Surface	<0.005	13.1	0.5	38.4	<50.0	<0.01	<0.005	20.9	0.10	0.7	<0.1	0.73	116		0.47	0.002	4.70	71.70	0.37	1.61	1.1	0.363		0.08	<10.0	0.19	4390	0.02	85.4	<0.5	0.006	0.71	<0.2	287.0	<0.1
R7	22/09/2011	Surface	<0.005	8.7	0.5	47.8	<50.0	<0.01	<0.005	24.8	0.01	0.0	<0.1	0.40	102		0.59	0.003	4.86	17.20	0.46	1.80	0.3	0.143		0.06	<10.0	0.27	5110	0.08	96.5	<0.5	<0.002	0.96	<0.2	1.1	<0.1
R7	19/10/2011	Surface	<0.005	6.1	0.6	52.7	<50.0	<0.01	<0.005	31.1	0.01	0.0	<0.1	0.61	116		0.66	0.004	5.73	22.00	0.57	2.18	0.3	0.086		0.06	<10.0	0.34	5520	<0.01	117.0	<0.5	<0.002	1.39	<0.2	1.7	<0.1
R7	15/11/2011	Surface	<0.005	5.3	0.5	66.8	<50.0	<0.01	0.0	31.0	0.02	0.0	<0.1	0.66	66		0.81	0.006	6.32	15.90	0.70	2.33	0.7	0.378		0.07	<10.0	0.38	5050	0.03	145.0	<0.5	<0.002	1.71	<0.2	4.2	<0.1
R7	06/12/2011	Surface	<0.005	3.3	0.5	65.8	<50.0	<0.01	<0.005	33.0	0.01	0.0	<0.1	1.02	81		0.92	0.006	6.12	21.40	0.66	2.50	0.3	0.205		0.06	<10.0	0.42	5170	0.03	149.0	<0.5	<0.002	1.86	<0.2	6.1	<0.1
R7 Average			0.008	11.2	0.5	58.3	25.0	0.0	0.0	30.9	0.02	0.1	0.1	0.82	90		0.98	0.005	6.17	18.43	0.60	2.52	0.4	0.458		0.07	5.0	0.33	5165	0.02	130.5	0.3	0.001	1.59	0.1	28.1	0.05
R7 Max			0.037	36.2	0.9	77.5	<50.0	<0.01	0.0	45.3	0.10	0.7	0.2	1.67	292		2.17	0.009	8.71	71.70	0.85	3.67	1.1	2.050		0.08	<10.0	0.46	6470	0.08	186.0	<0.5	0.006	2.71	<0.2	287.0	<0.1
R7 Min			<0.005	2.2	0.4	29.3	<50.0	<0.01	<0.005	13.6	<0.005	0.0	<0.1	0.25	26		0.35	0.001	2.80	6.35	0.30	1.21	0.2	0.077		0.05	<10.0	0.19	3930	<0.01	55.3	<0.5	<0.002	0.42	<0.2	1.1	<0.1
R8	20/01/2011	Surface	<0.005	2.5	0.4	78.0	<50.0	<0.01	0.0	43.8	0.01	0.0	<0.1	0.30	36		1.00	0.008	8.66	9.71	0.74	3.25	0.2	0.076		0.05	<10.0	0.43	4750	<0.01	176.0	<0.5	<0.002	2.32	<0.2	2.2	<0.1
R8	15/02/2011	Surface	<0.005	1.9	0.4	71.3	<50.0	<0.01	<0.005	40.8	0.01	0.0	<0.1	0.57	37		1.01	0.008	7.85	7.49	0.87	3.00	0.5	0.125		0.05	<10.0	0.40	6550	<0.01	178.0	<0.5	<0.002	2.42	<0.2	2.3	<0.1
R8	16/03/2011	Surface	0.007	4.4	0.4	78.4	<50.0	<0.01	<0.005	42.5	0.02	0.0	<0.1	0.54	27		2.07	0.009	8.64	10.30	0.83	3.84	0.3	0.241		0.06	<10.0	0.41	6060	0.02	190.0	<0.5	<0.002	2.78	<0.2	4.2	<0.1
R8	12/04/2011	Surface	<0.005	2.0	0.4	75.2	<50.0	<0.01	<0.005	46.2	0.01	0.0	<0.1	0.37	29		1.30	0.008	8.72	9.78	0.86	3.53	0.3	0.275		0.05	<10.0	0.42	7150	<0.01	184.0	<0.5	<0.002	2.64	<0.2	2.7	<0.1
R8	09/05/2011	Surface	0.007	34.1	0.9	58.6	<50.0	<0.01	<0.005	28.0	0.02	0.0	<0.1	1.08	271		1.63	0.005	5.47	12.90	0.62	2.05	0.6	0.575		0.06	<10.0	0.30	4820	<0.01	119.0	<0.5	<0.002	1.31	<0.2	6.1	<0.1
R8	22/06/2011	Surface	0.015	38.9	0.5	28.4	<50.0	<0.01	<0.005	12.1	0.12	0.1	0.2	2.27	80		0.38	0.001	2.62	9.01	0.29	1.26	0.7	1.700		0.08	<10.0	0.18	4020	<0.01	52.1	<0.5	0.007	0.41	<0.2	12.2	<0.1
R8	21/07/2011	Surface	<0.005	25.8	0.6	35.1	<50.0	<0.01	<0.005	16.5	0.02	0.0	<0.1	1.21	87		0.35	0.002	3.45	10.70	0.31	1.55	0.7	0.554		0.08	<10.0	0.21	5540	<0.01	65.3	<0.5	0.003	0.55	<0.2	4.3	<0.1
R8	24/08/2011	Surface	<0.005	14.7	0.5	36.7	<50.0	<0.01	<0.005	18.8	<0.005	0.0	<0.1	0.73	84		0.38	0.002	3.71	13.60	0.35	1.56	0.5	0.315		0.08	<10.0	0.19	4780	<0.01	76.3	<0.5	0.003	0.64	<0.2	4.1	<0.1
R8	22/09/2011	Surface	<0.005	10.4	0.5	45.1	<50.0	<0.01	<0.005	22.9	0.01	0.0	<0.1	0.50	94		0.55	0.003	4.44	17.80	0.43	1.79	0.4	0.356		0.06	<10.0	0.27	5440	<0.01	89.3	<0.5	<0.002	0.87	<0.2	1.9	<0.1
R8	19/10/2011	Surface	<0.005	10.1	0.6	51.8	<50.0	<0.01	0.0	29.0	0.01	0.0	<0.1	1.47	112		0.63	0.004	5.50	24.80	0.55	2.25	0.8	0.197		0.06	<10.0	0.34	5530	<0.01	109.0	<0.5	<0.002	1.29	<0.2	3.1	<0.1
R8	15/11/2011	Surface	<0.005	4.1	0.4	61.8	<50.0	<0.01	<0.005	29.2	<0.005	0.0	<0.1	0.28	59		0.74	0.005	5.88	16.50	0.63	2.24	0.3	0.081		0.07	<10.0	0.36	5060	<0.01	131.0	<0.5	<0.002	1.53	<0.2	0.9	<0.1
R8	06/12/2011	Surface	<0.005	3.1	0.5	63.1	<50.0	<0.01	<0.005	31.6	0.01	0.0	<0.1	0.33	79		0.74	0.006	5.80	18.90	0.70	2.34	0.3	0.084		0.06	<10.0	0.44	5290	<0.01	137.0	<0.5	<0.002	1.79	<0.2	1.5	<0.1
R8 Average			0.004	12.7	0.5	57.0	25.0	0.0	0.0	30.1	0.02	0.0	0.1	0.80	83		0.90	0.005	5.90	13.46	0.60	2.39	0.4	0.382		0.06	5.0	0.33	5416	0.01	125.6	0.3	0.002	1.55	0.1	3.8	0.05
R8 Max			0.015	38.9	0.9	78.4	<50.0	<0.01	0.0	46.2	0.12	0.1	0.2	2.27	271		2.07	0.009	8.72	24.80	0.87	3.84	0.8	1.700		0.08	<10.0	0.44	7150	0.02	190.0	<0.5	0.007	2.78	<0.2	12.2	<0.1
R8 Min			<0.005	1.9	0.4	28.4	<50.0	<0.01	<0.005	12.1	<0.005	0.0	<0.1	0.28	27		0.35	0.001	2.62	7.49	0.29	1.26	0.2	0.076		0.05	<10.0	0.18	4020	<0.01	52.1	<0.5	<0.002	0.41	<0.2	0.9	<0.1
R9	20/01/2011	Surface	<0.005	2.3	0.4	76.0	<50.0	<0.01	<0.005	43.4	0.02	0.0	<0.1	7.16	31		1.06	0.008	9.98	11.40	0.72	3.32	0.3	0.086		0.06	<10.0	0.44	4280	<0.01	184.0	<0.5	<0.002	2.51	<0.2	1.2	<0.1
R9	15/02/2011	Surface	<0.005	2.2	0.4	72.7	<50.0	<0.01	0.0	43.2	<0.005	0.0	<0.1	0.31	32		1.09	0.008	9.01	8.78	0.86	3.10	0.2	0.233		0.07	<10.0	0.41	6510	<0.01	190.0	<0.5	<0.002	2.70	<0.2	1.0	<0.1
R9	16/03/2011	Surface	<0.005	4.2	0.4	77.4	<50.0	<0.01	<0.005	44.3	0.01	0.0	<0.1	0.54	26		1.13	0.009	9.66	8.98	0.83	3.48	0.2	0.106		0.06	<10.0	0.44	6000	<0.01	199.0	<0.5	<0.002	2.92	<0.2	0.7	<0.1
R9	12/04/2011	Surface	<0.005	3.4	0.4	72.7	<50.0	<0.01	<0.005	43.8	0.02	0.0	<0.1	1.14	27		1.39	0.008	9.52	9.43	0.84	3.60	0.5	0.840		0.06	<10.0	0.38	6410	<0.01	191.0	<0.5	<0.002	2.74	<0.2	8.5	<0.1
R9	09/05/2011	Surface	0.019	33.4	0.8	57.1	<50.0	<0.01	0.0	29.8	0.02	0.1	<0.1	1.21	253		1.87	0.005	6.18	15.10	0.56	2.23	0.8	0.510		0.07	<10.0	0.28	4940	<0.01	126.0	<0.5	<0.002	1.42	<0.2	7.2	<0.1
R9	22/06/2011	Surface	0.025	41.1	0.5	29.4	<50.0	<0.01	<0.005	13.1	0.10	0.1	0.2	1.95	85		0.41	0.002	2.94	8.91	0.25	1.27	0.8	2.610		0.09	<10.0	0.18	4020	0.02	58.5	<0.5	0.009	0.44	<0.2	10.6	<0.1
R9	21/07/2011	Surface	<0.005	23.4	0.5	35.6	<50.0	<0.01	<0.005	18.4	0.02	0.1	<0.1	1.23	88		0.85	0.002	4.14	12.80	0.32	1.65	0.6	0.470		0.08	<10.0	0.21	5190	<0.01	74.1	<0.5	0.003	0.63	<0.2	8.3	<0.1
R9	23/08/2011	Surface	<0.005	16.8	0.5	38.7	<50.0	<0.01	<0.005	19.0	0.02	0.0	<0.1	0.65	88		0.42	0.002	3.99	14.10	0.34	1.56	0.4	0.844		0.07	<10.0	0.18	4700	<0.01	83.3	<0.5	<0.002	0.73	<0.2	2.0	<0.1
R9	22/09/2011	Surface	<0.005	9.8	0.5	46.2	<50.0	<0.01	<0.005	25.5	0.01	0.0	<0.1	0.61	95		0.62	0.003	5.09	18.00	0.43	1.89	0.4	0.145		0.06	<10.0	0.27	5400	<0.01	99.5	<0.5	<0.002	1.00	<0.2	1.4	<0.1
R9	19/10/2011	Surface	<0.005	7.3	0.5	52.8	<50.0	<0.01	<0.005	31.5	0.01	0.0	<0.1	0.40	99		0.71	0.004	6.23	23.90	0.55	2.32	0.3	0.308		0.06	<10.0	0.34	5410	<0.01	125.0	<0.5	<0.002	1.47	<0.2	3.5	<0.1
R9	16/11/2011	Surface	<0.005	4.2	0.4	59.8	<50.0	<0.01	<0.005	35.4	0.01	0.0	<0.1	0.52	67		0.81	0.005	6.93	16.40	0.60	2.43	0.3	0.336		0.07	<10.0	0.41	5900	0.02	143.0	<0.5	<0.002	1.81	<0.2	5.7	<0.1
R9	06/12/2011	Surface	<0.005	3.1	0.4	64.2	<50.0	<0.01	<0.005	31.9	0.01	0.0	<0.1	0.37	63		0.79	0.006	6.55	18.10	0.69	2.38	0.3	0.047		0.06	<10.0	0.42	4920	<0.01	152.0	<0.5	<0.002	1.95	<0.2	0.9	<0.1
R9 Average			0.006	12.6	0.5	56.9	25.0	0.0	0.0	31.6	0.02	0.0	0.1	1.34	80		0.93	0.005	6.69	13.83	0.58	2.44	0.4	0.545		0.07	5.0	0.33	5307	0.01	135.5	0.3	0.002	1.69	0.1	4.3	0.05
R9 Max			0.025	41.1	0.8	77.4	<50.0	<0.01	0.0	44.3	0.10	0.1	0.2	7.16	253		1.87	0.009	9.98	23.90	0.86	3.60	0.8	2.610		0.09	<10.0	0.44	6510	0.02	199.0	<0.5	0.009	2.92	<0.2	10.6	<0.1
R9 Min			<0.005	2.2	0.4	29.4	<50.0	<0.01	<0.005	13.1	<0.005	0.0	<0.1	0.31	26		0.41	0.002	2.94	8.78	0.25	1.27	0.2	0.047		0.06	<10.0	0.18	4020	<0.01	58.5	<0.5	<0.002	0.44	<0.2	0.7	<0.1
S1A	07/06/2011	Ground	<0.005	3.7	0.1	51.3	<50.0	0.0	<0.005	25.6	0.45	1.2	<0.1	0.49	1190		2.54	0.032	34.90	2880.00	<0.05	3.71	4.8	0.065		<0.02	53.0	<0.04	8870	<0.01	198.0	<0.5	0.004	0.09	<0.2	974.0	<0.1
S1A	15/09/2011	Ground	<0.005	5.8	0.1	26.6	<50.0	0.0	<0.005	15.3	0.35	0.9	<0.1	0.60	1090		1.98	0.027	22.30	2120.00	<0.05	2.80	3.9	0.533		<0.02	28.0	<0.04	7510	<0.01	129.0	<0.5	0.003	0.07	<0.2	678.0	<0.1
S1A Average			0.003	4.8	0.1	39.0	25.0	0.0	0.0	20.5	0.40	1.1	0.1	0.55	1140		2.26	0.029	28.60	2500.00	0.03	3.26	4.3	0.299		0.01	40.5	0.02	8190	0.01	163.5	0.3	0.004	0.08	0.1	826.0	0.05
S1A Max			<0.005	5.8	0.1	51.3	<50.0	0.0	<0.005	25.6	0.45	1.2	<0.1	0.60	1190		2.54	0.032	34.90	2880.00	<0.05	3.71	4.8	0.533		<0.02	53.0	<0.04	8870	<0.01	198.0	<0.5	0.004	0.09	<0.2	974.0	<0.1
S1A Min			<0.005	3.7	0.1	26.6	<50.0	0.0	<0.005	15.3	0.35	0.9	<0.1	0.49	1090		1.98	0.027	22.30	2120.00	<0.05	2.80	3.9	0.065		<0.02	28.0	<0.04	7510	<0.01	129.0	<0.5	0.003	0.07	<0.2	678.0	<0.1
S2A	07/06/2011	Ground	<0.005	19.6	0.2	17.4	<50.0	0.1	<0.005	161.0	0.67	12.8	<0.1	0.44	16700		4.97	0.055	66.90	2460.00	<0.05	9.51	29.9	0.171		<0.02	136.0	<0.04	15800	0.02	615.0	<0.5	0.006	2.82	<0.2	2100.0	<0.1
S2A	11/09/2011	Ground	<0.005	18.3	0.2	19.1	<50.0	0.2	<0.005	162.0	0.71	13.9	<0.1	0.32	19600		5.13	0.058	64.60	2410.00	0.07	9.11	31.0	0.169		<0.02	157.0	<0.04	14200	<0.01	649.0	<0.5	0.006	2.29	<0.2	2180.0	<0.1
S2A Average			0.003	19.0	0.2	18.3	25.0	0.1	0.0	161.5	0.69	13.4	0.1	0.38	18150		5.05	0.056	65.75	2435.00	0.05	9.31	30.5	0.170		0.01	146.5	0.02	15000	0.01	632.0	0.3	0.006	2.56	0.1	2140.0	0.05
S2A Max			<0.005	19.6	0.2	19.1	<50.0	0.2	<0.005	162.0	0.71	13.9	<0.1	0.44	19600		5.13	0.058	66.90	2460.00	0.07	9.51	31.0	0.171		<0.02	157.0	<0.04	15800	0.02	649.0	<0.5	0.006	2.82	<0.2	2180.0	<0.1
S2A Min			<0.005	18.3	0.2	17.4	<50.0	0.1	<0.005	161.0	0.67	12.8	<0.1	0.32	16700		4.97	0.055	64.60	2410.00	<0.05	9.11	29.9	0.169		<0.02	136.0	<0.04	14200	<0.01	615.0	<0.5	0.006	2.29	<0.2	2100.0	<0.1
S2B	07/06/2011	Ground	<0.3	19.0	<1.0	16.0	<3000.0	<0.5	<0.3	420.0	22.90	496.0	<5.0	5.00	23400		13.00	0.154	1110.00	105000.00	<3.0	33.00	1690.0	0.500		<1.0	1970.0	<2.0	12900	<0.5	1860.0	<30.0	<0.1	0.60	<10.0	400000.0	<5.0
S2B	11/09/2011	Ground	<0.3	51.0	<1.0	18.0	<3000.0	<0.5	<0.3	384.0	14.80	285.0	<5.0	<3.0	22600		9.00	0.112	759.00	73300.00	<3.0	24.00	918.0	0.400		<1.0	1460.0	<2.0	10300	<0.5	1670.0	<30.0	<0.1	0.50	<10.0	242000.0	<5.0
S2B Average			0.150	35.0	0.5	17.0	1500.0	0.3	0.2	402.0	18.85	390.5	2.5	3.25	23000		11.00	0.133	934.50	89150.00	1.50	28.50	1304.0	0.450		0.50	1715.0	1.00	11600	0.25	1765.0	15.0	0.050	0.55	5.0	321000.0	2.50
S2B Max			<0.3	51.0	<1.0	18.0	<3,000.0	<0.5	<0.3	420.0	22.90	496.0	<5.0	5.00	23400		13.00	0.154	1110.00	105000.00	<3.0	33.00	1690.0	0.500		<1.0	1970.0	<2.0	12900	<0.5	1860.0	<30.0	<0.1	0.60	<10.0	400000.0	<5.0
S2B Min			<0.3	19.0	<1.0	16.0	<3,000.0	<0.5	<0.3	384.0	14.80	285.0	<5.0	<3.0	22600		9.00	0.112	759.00	73300.00	<3.0	24.00	918.0	0.400		<1.0	1460.0	<2.0	10300	<0.5	1670.0	<30.0	<0.1	0.50	<10.0	242000.0	<5.0
SECURSINK	26/04/2011	Surface	<10.0	<50.0	<30.0	2.0	<10.0	<3.0	<50.0	70.9	<5.0	<20.0	<10.0	<20.0	<10.0		0.70	<0.02	22.50	5.00	<20.0	18.30	<20.0	<30.0	<0.05	<50.0	9.4	<100.0	7650	<30.0	894.0	<5.0			<10.0	11.0	<20.0
SP5-6	28/06/2011	Seepage	<0.02	121.0	0.2	20.0	<50.0	<0.1	<1.0	104.0	3.89	9.6	<1.0	9.10	63		3.46	0.028	83.00	371.00	2.00	5.73	37.0	1.900		<0.5	159.0	0.60	5830	<5.0	420.0	<5.0	0.080	3.60	<5.0	3450.0	<0.5
SP5-6	18/10/2011	Seepage	<0.02	145.0	0.3	23.0	<50.0	<0.1	<1.0	190.0	4.75	12.5	<1.0	6.70	637		4.97	0.036	156.00	633.00	<1.0	9.86	41.0	0.600		<0.5	320.0	0.50	6100	<5.0	750.0	<5.0	0.070	10.40	<5.0	4220.0	<0.5
SP5-6 Average			0.010	133.0	0.3	21.5	25.0	0.1	0.5	147.0	4.32	11.1	0.5	7.90	350		4.22	0.032	119.50	502.00	1.25	7.80	39.0	1.250		0.25	239.5	0.55	5965	2.50	585.0	2.5	0.075	7.00	2.5	3835.0	0.25
SP5-6 Max			<0.02	145.0	0.3	23.0	<50.0	<0.1	<1.0	190.0	4.75	12.5	<1.0	9.10	637		4.97	0.036	156.00	633.00	2.00	9.86	41.0	1.900		<0.5	320.0	0.60	6100	<5.0	750.0	<5.0	0.080	10.40	<5.0	4220.0	<0.5
SP5-6 Min			<0.02	121.0	0.2	20.0	<50.0	<0.1	<1.0	104.0	3.89	9.6	<1.0	6.70	63		3.46	0.028	83.00	371.00	<1.0	5.73	37.0	0.600		<0.5	159.0	0.50	5830	<5.0	420.0	<5.0	0.070	3.60	<5.0	3450.0	<0.5
SRK04-3A	17/09/2011	Ground	0.400	3070.0	32.0	<10.0	<500.0	3.0	<10.0	414.0	123.00	1570.0	<10.0	6.00	792000		17.20	0.191	941.00	108000.00	<10.0	58.40	1420.0	30.000		<5.0	2610.0	<1.0	19300	<50.0	4230.0	<50.0	<0.5	7.00	<50.0	612000.0	<5.0
SRK05-ETA-BR1	17/09/2011	Ground	0.500	1190.0	12.0	<10.0	<500.0	<1.0	<10.0	411.0	48.90	1350.0	<10.0	6.00	1510000		14.30	0.148	753.00	101000.00	<10.0	59.70	1220.0	51.000		<5.0	2810.0	<1.0	17300	<50.0	4250.0	<50.0	<0.5	6.00	<50.0	591000.0	<5.0
SRK05-ETA-BR2	17/09/2011	Ground	<0.02	<3.0	0.3	42.0	<50.0	<0.1	<1.0	415.0	0.05	21.6	<1.0	<0.2	16700		3.43	0.012	73.70	2740.00	<1.0	28.90	20.0	0.400		<0.5	550.0	<0.1	8340	<5.0	6220.0	<5.0	<0.05	0.70	<5.0	7540.0	<0.5
SRK05-SP1A	10/09/2011	Ground	<0.02	104.0	4.7	15.0	<50.0	2.4	<1.0	273.0	0.07	7.7	<1.0	0.40	74900		5.28	0.091	95.70	2320.00	<1.0	16.00	28.0	<0.2		<0.5	326.0	<0.1	15900	<5.0	1200.0	<5.0	<0.05	0.30	<5.0	2190.0	<0.5
SRK05-SP1B	10/09/2011	Ground	<0.02	9.0	24.7	58.0	<50.0	<0.1	<1.0	139.0	0.06	2.5	<1.0	0.70	19600		4.59	0.036	55.60	812.00	<1.0	9.19	7.0	<0.2		<0.5	79.0	<0.1	13400	<5.0	694.0	<5.0	<0.05	1.10	<5.0	304.0	<0.5

Note: Statistics calculated with DLs at half value.
Note: Metals reported in mg/L shaded in gray.

Table B-2: 2011 Rose Creek Drainage Water Quality
Dissolved Metals

Station	Date	Sample Type	Ag-d µg/L	Al-d µg/L	As-d µg/L	Ba-d µg/L	B-d µg/L	Be-d µg/L	Bi-d µg/L	Ca-d mg/L	Cd-d µg/L	Co-d µg/L	Cr-d µg/L	Cu-d µg/L	Fe-d µg/L	Hg-d µg/L	K-d mg/L	Li-d mg/L	Mg-d mg/L	Mn-d µg/L	Mo-d µg/L	Na-d mg/L	Ni-d µg/L	Pb-d µg/L	P-d mg/L	Sb-d µg/L	S-d mg/L	Se-d µg/L	Si-d µg/L	Sn-d µg/L	Sr-d µg/L	Ti-d µg/L	Tl-d µg/L	U-d µg/L	V-d µg/L	Zn-d µg/L	Zr-d µg/L
SRK05-SP2	**10/09/2011**	**Ground**	<0.02	14.0	<0.1	75.0	<50.0	<0.1	<1.0	77.5	0.21	7.5	<1.0	1.00	51		1.97	0.015	17.50	1860.00	<1.0	6.46	7.0	<0.2		<0.5	25.0	<0.1	9210	<5.0	343.0	<5.0	<0.05	1.90	<5.0	221.0	<0.5
SRK05-SP3A	**10/09/2011**	**Ground**	<0.02	45.0	2.1	16.0	<50.0	0.9	<1.0	225.0	0.08	6.0	<1.0	<0.2	32300		5.04	0.061	81.10	1410.00	<1.0	12.10	20.0	0.300		<0.5	212.0	<0.1	14200	<5.0	902.0	<5.0	<0.05	2.40	<5.0	1550.0	<0.5
SRK05-SP3B	**10/09/2011**	**Ground**	<0.02	63.0	0.4	19.0	<50.0	0.7	<1.0	193.0	0.12	8.6	<1.0	0.30	33200		4.73	0.061	58.80	1760.00	<1.0	9.33	24.0	0.300		<0.5	150.0	<0.1	14400	<5.0	789.0	<5.0	<0.05	2.00	<5.0	1600.0	<0.5
SRK05-SP4A	**06/06/2011**	**Ground**	<0.02	31.0	3.3	15.0	<50.0	0.9	<1.0	124.0	0.08	8.5	<1.0	<0.2	22800		4.40	0.058	41.90	1120.00	<1.0	7.70	21.0	0.500		<0.5	99.0	<0.1	13600	<5.0	613.0	<5.0	<0.05	0.80	<5.0	1230.0	<0.5
SRK05-SP4A	**15/09/2011**	**Ground**	<0.005	36.2	3.8	15.9	<50.0	1.0	<0.005	135.0	0.11	9.9	<0.1	0.08	24400		4.48	0.060	49.40	1240.00	0.14	8.85	23.9	0.254		0.03	119.0	<0.04	15300	<0.01	630.0	<0.5	<0.002	0.79	<0.2	1330.0	<0.1
SRK05-SP4A Average			0.006	33.6	3.5	15.5	25.0	0.9	0.3	129.5	0.09	9.2	0.3	0.09	23600		4.44	0.059	45.65	1180.00	0.32	8.28	22.5	0.377		0.14	109.0	0.04	14450	1.25	621.5	1.4	0.013	0.79	1.3	1280.0	0.15
SRK05-SP4A Max			<0.02	36.2	3.8	15.9	<50.0	1.0	<1.0	135.0	0.11	9.9	<1.0	<0.2	24400		4.48	0.060	49.40	1240.00	<1.0	8.85	23.9	0.500		<0.5	119.0	<0.1	15300	<5.0	630.0	<5.0	<0.05	0.80	<5.0	1330.0	<0.5
SRK05-SP4A Min			<0.005	31.0	3.3	15.0	<50.0	0.9	<0.005	124.0	0.08	8.5	<0.1	0.08	22800		4.40	0.058	41.90	1120.00	0.14	7.70	21.0	0.254		0.03	99.0	<0.04	13600	<0.01	613.0	<0.5	<0.002	0.79	<0.2	1230.0	<0.1
SRK05-SP4B	**16/09/2011**	**Ground**	0.200	437.0	1.1	28.0	<200.0	<0.4	<4.0	482.0	43.80	8.0	<4.0	13.60	1130		11.00	0.131	865.00	18200.00	<4.0	38.20	1410.0	1.800		<2.0	1890.0	<0.4	13800	<20.0	2150.0	<20.0	<0.2	3.70	<20.0	217000.0	<2.0
SRK05-SP5	**07/06/2011**	**Ground**	<0.2	<30.0	<1.0	12.0	<500.0	<1.0	<10.0	298.0	93.90	503.0	<10.0	4.00	976		9.50	0.104	766.00	73500.00	<10.0	23.20	1690.0	<2.0		<5.0	1510.0	<1.0	12900	<50.0	1300.0	<50.0	<0.5	3.00	<50.0	309000.0	<5.0
SRK05-SP5	**07/09/2011**	**Ground**	<0.2	40.0	<1.0	13.0	<500.0	<1.0	<10.0	267.0	82.80	418.0	<10.0	4.00	127		8.90	0.096	673.00	60500.00	<10.0	24.90	1410.0	<2.0		<5.0	1290.0	<1.0	10900	<50.0	1210.0	<50.0	<0.5	3.00	<50.0	252000.0	<5.0
SRK05-SP5 Average			0.100	27.5	0.5	12.5	250.0	0.5	5.0	282.5	88.35	460.5	5.0	4.00	552		9.20	0.100	719.50	67000.00	5.00	24.05	1550.0	1.000		2.50	1400.0	0.50	11900	25.00	1255.0	25.0	0.250	3.00	25.0	280500.0	2.50
SRK05-SP5 Max			<0.2	40.0	<1.0	13.0	<500.0	<1.0	<10.0	298.0	93.90	503.0	<10.0	4.00	976		9.50	0.104	766.00	73500.00	<10.0	24.90	1690.0	<2.0		<5.0	1510.0	<1.0	12900	<50.0	1300.0	<50.0	<0.5	3.00	<50.0	309000.0	<5.0
SRK05-SP5 Min			<0.2	<30.0	<1.0	12.0	<500.0	<1.0	<10.0	267.0	82.80	418.0	<10.0	4.00	127		8.90	0.096	673.00	60500.00	<10.0	23.20	1410.0	<2.0		<5.0	1290.0	<1.0	10900	<50.0	1210.0	<50.0	<0.5	3.00	<50.0	252000.0	<5.0
SRK08-P10A	**09/06/2011**	**Ground**	<0.03	141.0	0.8	21.6	<300.0	<0.05	<0.03	796.0	0.27	1.6	<0.5	1.70	168		13.80	0.007	78.80	13.50	<0.3	120.00	6.7	1.160		<0.1	560.0	<0.2	9730	<0.05	1540.0	5.0	0.020	42.00	<1.0	37.3	1.80
SRK08-P10A	**17/09/2011**	**Ground**	<0.03	28.0	0.6	21.3	<300.0	<0.05	<0.03	714.0	0.23	1.8	0.6	2.60	29		13.70	0.007	78.10	10.20	0.60	125.00	8.6	0.490		<0.1	591.0	<0.2	8600	<0.05	1490.0	<3.0	0.020	44.50	<1.0	21.5	1.70
SRK08-P10A Average			0.015	84.5	0.7	21.5	150.0	0.0	0.0	755.0	0.25	1.7	0.4	2.15	99		13.75	0.007	78.45	11.85	0.38	122.50	7.7	0.825		0.05	575.5	0.10	9165	0.03	1515.0	3.3	0.020	43.25	0.5	29.4	1.75
SRK08-P10A Max			<0.03	141.0	0.8	21.6	<300.0	<0.05	<0.03	796.0	0.27	1.8	0.6	2.60	168		13.80	0.007	78.80	13.50	0.60	125.00	8.6	1.160		<0.1	591.0	<0.2	9730	<0.05	1540.0	5.0	0.020	44.50	<1.0	37.3	1.80
SRK08-P10A Min			<0.03	28.0	0.6	21.3	<300.0	<0.05	<0.03	714.0	0.23	1.6	<0.5	1.70	29		13.70	0.007	78.10	10.20	<0.3	120.00	6.7	0.490		<0.1	560.0	<0.2	8600	<0.05	1490.0	<3.0	0.020	42.00	<1.0	21.5	1.70
SRK08-P11A	**08/06/2011**	**Ground**	<0.005	72.7	0.2	69.1	<50.0	<0.01	<0.005	145.0	0.01	0.1	0.3	0.95	112		3.25	0.011	24.90	3.59	0.31	6.35	1.5	0.234		0.07	102.0	0.29	7020	<0.01	587.0	3.1	0.005	2.30	0.3	2.8	0.20
SRK08-P11A	**17/09/2011**	**Ground**	<0.005	2.9	0.2	58.7	<50.0	<0.01	<0.005	99.5	0.01	0.0	<0.1	1.32	9		2.80	0.010	17.70	0.56	0.24	5.06	0.9	0.328		0.08	60.0	0.20	6450	<0.01	373.0	<0.5	0.003	1.47	<0.2	2.8	<0.1
SRK08-P11A Average			0.003	37.8	0.2	63.9	25.0	0.0	0.0	122.3	0.01	0.1	0.2	1.14	61		3.03	0.010	21.30	2.08	0.28	5.71	1.2	0.281		0.08	81.0	0.25	6735	0.01	480.0	1.7	0.004	1.89	0.2	2.8	0.13
SRK08-P11A Max			<0.005	72.7	0.2	69.1	<50.0	<0.01	<0.005	145.0	0.01	0.1	0.3	1.32	112		3.25	0.011	24.90	3.59	0.31	6.35	1.5	0.328		0.08	102.0	0.29	7020	<0.01	587.0	3.1	0.005	2.30	0.3	2.8	0.20
SRK08-P11A Min			<0.005	2.9	0.2	58.7	<50.0	<0.01	<0.005	99.5	0.01	0.0	<0.1	0.95	9		2.80	0.010	17.70	0.56	0.24	5.06	0.9	0.234		0.07	60.0	0.20	6450	<0.01	373.0	<0.5	0.003	1.47	<0.2	2.8	<0.1
SRK08-P11B	**08/06/2011**	**Ground**	<0.005	306.0	1.1	49.9	<50.0	0.0	<0.005	161.0	0.91	2.8	1.1	2.33	1930		3.23	0.011	40.70	904.00	0.26	8.44	18.0	1.100		0.08	153.0	0.11	7650	0.02	582.0	10.5	0.029	1.71	1.4	145.0	<0.1
SRK08-P11B	**17/09/2011**	**Ground**	<0.005	8.1	0.2	39.9	<50.0	<0.01	<0.005	125.0	0.28	0.2	<0.1	1.32	85		3.05	0.010	31.80	157.00	0.20	6.57	4.4	0.112		0.06	124.0	0.08	6990	<0.01	475.0	<0.5	0.016	1.38	<0.2	109.0	<0.1
SRK08-P11B Average			0.003	157.1	0.7	44.9	25.0	0.0	0.0	143.0	0.60	1.5	0.6	1.83	1008		3.14	0.011	36.25	530.50	0.23	7.51	11.2	0.606		0.07	138.5	0.10	7320	0.01	528.5	5.4	0.023	1.55	0.8	127.0	0.05
SRK08-P11B Max			<0.005	306.0	1.1	49.9	<50.0	0.0	<0.005	161.0	0.91	2.8	1.1	2.33	1930		3.23	0.011	40.70	904.00	0.26	8.44	18.0	1.100		0.08	153.0	0.11	7650	0.02	582.0	10.5	0.029	1.71	1.4	145.0	<0.1
SRK08-P11B Min			<0.005	8.1	0.2	39.9	<50.0	<0.01	<0.005	125.0	0.28	0.2	<0.1	1.32	85		3.05	0.010	31.80	157.00	0.20	6.57	4.4	0.112		0.06	124.0	0.08	6990	<0.01	475.0	<0.5	0.016	1.38	<0.2	109.0	<0.1
SRK08-P12A	**29/09/2011**	**Ground**	0.007	35.4	0.7	31.6	<50.0	0.9	<0.005	177.0	0.03	7.9	0.2	0.17	14600		3.27	0.103	49.60	836.00	<0.05	23.30	11.8	0.065		<0.02	51.0	<0.04	11400	0.05	1110.0	<0.5	0.062	0.51	<0.2	890.0	0.40
SRK08-P12B	**29/09/2011**	**Ground**	<0.005	48.1	0.1	94.2	<50.0	0.4	<0.005	101.0	0.06	2.5	0.2	0.31	2290		3.27	0.076	25.40	404.00	<0.05	13.50	4.7	0.074		<0.02	30.0	<0.04	9490	0.03	652.0	<0.5	0.046	1.01	<0.2	133.0	<0.1
SRK08-P9	**17/09/2011**	**Ground**	<0.005	3.2	0.2	34.1	<50.0	<0.01	<0.005	342.0	0.08	0.3	0.4	1.38	12		5.09	0.015	75.00	6.74	2.02	9.50	31.8	0.151		0.07	399.0	1.47	7130	0.03	5440.0	<0.5	0.018	10.90	<0.2	12.5	<0.1
SRK08-SBR2	**17/10/2011**	**Ground**	<0.03	57.0	1.3	21.2	<300.0	0.4	<0.03	172.0	1.35	18.4	<0.5	0.80	19700		5.00	0.053	84.60	3020.00	<0.3	10.40	54.6	1.980		<0.1	172.0	<0.2	14200	<0.05	670.0	<3.0	<0.01	1.80	<1.0	6120.0	<0.5
SRK08-SBR3	**10/09/2011**	**Ground**	<0.03	7.0	0.2	14.9	<300.0	<0.05	<0.03	400.0	0.04	6.8	<0.5	0.90	13		7.60	0.076	261.00	50.80	<0.3	50.40	44.9	0.170		<0.1	560.0	0.80	4410	0.07	1200.0	<3.0	0.060	37.10	<1.0	64.6	<0.5
SRK08-SBR4	**14/09/2011**	**Ground**	<0.005	8.5	2.2	12.4	<50.0	0.2	<0.005	232.0	0.29	4.8	<0.1	0.32	5790		6.59	0.088	116.00	1680.00	0.09	11.40	41.0	0.195		0.29	292.0	<0.04	13700	<0.01	978.0	<0.5	<0.002	1.46	<0.2	3060.0	<0.1
SRK08-SP7A	**06/06/2011**	**Ground**	<0.02	10.0	4.6	10.0	<50.0	0.3	<1.0	206.0	0.07	10.0	<1.0	<0.2	26600		6.01	0.050	79.00	2040.00	<1.0	11.40	26.0	0.300		<0.5	294.0	<0.1	13300	<5.0	750.0	<5.0	<0.05	0.50	<5.0	791.0	<0.5
SRK08-SP7A	**16/07/2011**	**Ground**	<0.02	11.0	4.8	10.0	<50.0	0.3	<1.0	166.0	0.06	8.2	<1.0	<0.2	22000		5.14	0.049	61.50	1720.00	<1.0	9.81	21.0	<0.2		<0.5	250.0	<0.1	12900	<5.0	631.0	<5.0	<0.05	0.30	<5.0	682.0	<0.5
SRK08-SP7A	**07/09/2011**	**Ground**	<0.02	14.0	4.2	10.0	<50.0	0.3	<1.0	182.0	0.05	8.0	2.0	<0.2	21900		5.39	0.049	65.60	1760.00	<1.0	10.10	22.0	<0.2		<0.5	266.0	<0.1	14500	<5.0	682.0	<5.0	<0.05	0.40	<5.0	659.0	<0.5
SRK08-SP7A	**29/11/2011**	**Ground**	<0.02	10.5	4.6	13.9	<50.0	0.3	<1.0	152.0	0.09	7.2	<1.0	0.74	19100		5.52	0.048	50.60	1460.00	<1.0	8.60	19.8	<0.2		<0.5	189.0	<0.1	12500	<5.0	546.0	<5.0	<0.05	0.33	<5.0	692.0	<0.5
SRK08-SP7A Average			0.010	11.4	4.6	11.0	25.0	0.3	0.5	176.5	0.07	8.4	0.9	0.26	22400		5.52	0.049	64.18	1745.00	0.50	9.98	22.2	0.150		0.25	249.8	0.05	13300	2.50	652.3	2.5	0.025	0.38	2.5	706.0	0.25
SRK08-SP7A Max			<0.02	14.0	4.8	13.9	<50.0	0.3	<1.0	206.0	0.09	10.0	2.0	0.74	26600		6.01	0.050	79.00	2040.00	<1.0	11.40	26.0	0.300		<0.5	294.0	<0.1	14500	<5.0	750.0	<5.0	<0.05	0.50	<5.0	791.0	<0.5
SRK08-SP7A Min			<0.02	10.0	4.2	10.0	<50.0	0.3	<1.0	152.0	0.05	7.2	<1.0	<0.2	19100		5.14	0.048	50.60	1460.00	<1.0	8.60	19.8	<0.2		<0.5	189.0	<0.1	12500	<5.0	546.0	<5.0	<0.05	0.30	<5.0	659.0	<0.5
SRK08-SP7B	**06/06/2011**	**Ground**	<0.02	11.0	1.0	43.0	<50.0	<0.1	<1.0	12.4	0.02	0.9	<1.0	<0.2	2140		1.70	0.017	15.30	1160.00	<1.0	2.49	5.0	<0.2		<0.5	16.0	<0.1	6650	<5.0	107.0	<5.0	<0.05	<0.1	<5.0	1680.0	<0.5
SRK08-SP7B	**16/07/2011**	**Ground**	<0.02	14.0	0.8	38.0	<50.0	<0.1	<1.0	11.6	0.03	0.9	<1.0	0.40	1980		1.52	0.016	14.60	1050.00	<1.0	2.89	5.0	<0.2		<0.5	12.0	<0.1	6780	<5.0	102.0	<5.0	<0.05	<0.1	<5.0	1490.0	<0.5
SRK08-SP7B	**07/09/2011**	**Ground**	<0.02	17.0	1.7	40.0	<50.0	<0.1	<1.0	10.6	0.02	0.6	<1.0	0.40	1570		1.56	0.013	12.70	853.00	<1.0	2.63	4.0	<0.2		<0.5	9.0	<0.1	6930	<5.0	86.0	<5.0	<0.05	<0.1	<5.0	1190.0	<0.5
SRK08-SP7B	**29/11/2011**	**Ground**	<0.02	24.1	1.2	40.4	<50.0	<0.1	<1.0	10.4	0.03	0.7	<1.0	1.10	1650		1.70	0.015	12.00	826.00	<1.0	2.24	5.7	0.320		<0.5	9.2	<0.1	6490	<5.0	85.3	<5.0	<0.05	<0.1	<5.0	1250.0	<0.5
SRK08-SP7B Average			0.010	16.5	1.2	40.4	25.0	0.1	0.5	11.3	0.02	0.8	0.5	0.50	1835		1.62	0.015	13.65	972.25	0.50	2.56	4.9	0.155		0.25	11.6	0.05	6713	2.50	95.1	2.5	0.025	0.05	2.5	1402.5	0.25
SRK08-SP7B Max			<0.02	24.1	1.7	43.0	<50.0	<0.1	<1.0	12.4	0.03	0.9	<1.0	1.10	2140		1.70	0.017	15.30	1160.00	<1.0	2.89	5.7	0.320		<0.5	16.0	<0.1	6930	<5.0	107.0	<5.0	<0.05	<0.1	<5.0	1680.0	<0.5
SRK08-SP7B Min			<0.02	11.0	0.8	38.0	<50.0	<0.1	<1.0	10.4	0.02	0.6	<1.0	<0.2	1570		1.52	0.013	12.00	826.00	<1.0	2.24	4.0	<0.2		<0.5	9.0	<0.1	6490	<5.0	85.3	<5.0	<0.05	<0.1	<5.0	1190.0	<0.5
SRK08-SP8A	**06/06/2011**	**Ground**	<0.02	9.0	6.3	14.0	<50.0	0.3	<1.0	240.0	0.03	5.1	<1.0	0.30	23500		4.78	0.082	107.00	1710.00	<1.0	16.70	16.0	0.300		<0.5	292.0	<0.1	13400	<5.0	1160.0	7.0	<0.05	1.10	<5.0	311.0	<0.5
SRK08-SP8A	**07/09/2011**	**Ground**	<0.02	20.0	5.3	20.0	<50.0	0.2	<1.0	309.0	0.05	6.2	<1.0	5.20	29500		5.18	0.093	130.00	2280.00	<1.0	18.90	19.0	0.500		<0.5	408.0	<0.1	15100	<5.0	1420.0	<5.0	<0.05	1.30	<5.0	431.0	<0.5
SRK08-SP8A Average			0.010	14.5	5.8	17.0	25.0	0.3	0.5	274.5	0.04	5.7	0.5	2.75	26500		4.98	0.088	118.50	1995.00	0.50	17.80	17.5	0.400		0.25	350.0	0.05	14250	2.50	1290.0	4.8	0.025	1.20	2.5	371.0	0.25
SRK08-SP8A Max			<0.02	20.0	6.3	20.0	<50.0	0.3	<1.0	309.0	0.05	6.2	<1.0	5.20	29500		5.18	0.093	130.00	2280.00	<1.0	18.90	19.0	0.500		<0.5	408.0	<0.1	15100	<5.0	1420.0	7.0	<0.05	1.30	<5.0	431.0	<0.5
SRK08-SP8A Min			<0.02	9.0	5.3	14.0	<50.0	0.2	<1.0	240.0	0.03	5.1	<1.0	0.30	23500		4.78	0.082	107.00	1710.00	<1.0	16.70	16.0	0.300		<0.5	292.0	<0.1	13400	<5.0	1160.0	<5.0	<0.05	1.10	<5.0	311.0	<0.5
SRK08-SP8B	**06/06/2011**	**Ground**	<0.02	13.0	2.0	17.0	<50.0	<0.1	<1.0	144.0	0.06	4.4	<1.0	<0.2	14900		3.50	0.050	58.80	1210.00	<1.0	9.48	9.0	<0.2		<0.5	159.0	<0.1	10500	<5.0	670.0	<5.0	<0.05	1.20	<5.0	276.0	<0.5
SRK08-SP8B	**07/09/2011**	**Ground**	<0.02	21.0	3.4	19.0	<50.0	<0.1	<1.0	342.0	0.06	8.0	<1.0	0.40	34500		5.14	0.073	156.00	3000.00	<1.0	18.90	18.0	<0.2		<0.5	464.0	<0.1	15000	<5.0	1260.0	<5.0	<0.05	1.90	<5.0	600.0	<0.5
SRK08-SP8B Average			0.010	17.0	2.7	18.0	25.0	0.1	0.5	243.0	0.06	6.2	0.5	0.25	24700		4.32	0.062	107.40	2105.00	0.50	14.19	13.5	0.100		0.25	311.5	0.05	12750	2.50	965.0	2.5	0.025	1.55	2.5	438.0	0.25
SRK08-SP8B Max			<0.02	21.0	3.4	19.0	<50.0	<0.1	<1.0	342.0	0.06	8.0	<1.0	0.40	34500		5.14	0.073	156.00	3000.00	<1.0	18.90	18.0	<0.2		<0.5	464.0	<0.1	15000	<5.0	1260.0	<5.0	<0.05	1.90	<5.0	600.0	<0.5
SRK08-SP8B Min			<0.02	13.0	2.0	17.0	<50.0	<0.1	<1.0	144.0	0.06	4.4	<1.0	<0.2	14900		3.50	0.050	58.80	1210.00	<1.0	9.48	9.0	<0.2		<0.5	159.0	<0.1	10500	<5.0	670.0	<5.0	<0.05	1.20	<5.0	276.0	<0.5

Note: Statistics calculated with DLs at half value.
Note: Metals reported in mg/L shaded in gray.

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Denison Environmental Services

Table B-2: 2011 Rose Creek Drainage Water Quality
Dissolved Metals

Faro Mine Closure

Station	Date	Sample Type	Ag-d µg/L	Al-d µg/L	As-d µg/L	Ba-d µg/L	B-d µg/L	Be-d µg/L	Bi-d µg/L	Ca-d mg/L	Cd-d µg/L	Co-d µg/L	Cr-d µg/L	Cu-d µg/L	Fe-d µg/L	Hg-d µg/L	K-d mg/L	Li-d mg/L	Mg-d mg/L	Mn-d µg/L	Mo-d µg/L	Na-d mg/L	Ni-d µg/L	Pb-d µg/L	P-d mg/L	Sb-d µg/L	S-d mg/L	Se-d µg/L	Si-d µg/L	Sn-d µg/L	Sr-d µg/L	Ti-d µg/L	Tl-d µg/L	U-d µg/L	V-d µg/L	Zn-d µg/L	Zr-d µg/L
SRK08-SPW1	06/01/2011	Ground	<0.02	33.0	4.0	16.0	<50.0	1.1	<1.0	140.0	0.19	10.0	<1.0	1.00	24600		5.40	0.069	53.90	1320.00	<1.0	10.60	26.0	0.500		<0.5	118.0	<0.1	15900	<5.0	641.0	<5.0	<0.05	0.80	<5.0	1730.0	<0.5
SRK08-SPW1	01/02/2011	Ground	<0.02	33.0	4.1	15.0	<50.0	1.1	<1.0	140.0	0.12	9.6	<1.0	1.30	25100		4.71	0.063	55.30	1330.00	<1.0	10.80	26.0	0.300		<0.5	114.0	<0.1	16100	<5.0	657.0	<5.0	<0.05	0.70	<5.0	1520.0	<0.5
SRK08-SPW1	08/03/2011	Ground	<0.02	37.0	4.8	15.0	<50.0	1.2	<1.0	149.0	0.17	11.2	<1.0	1.40	26100		5.10	0.069	61.10	1500.00	<1.0	12.00	30.0	0.600		<0.5	132.0	<0.1	16700	<5.0	658.0	<5.0	<0.05	0.90	<5.0	1770.0	<0.5
SRK08-SPW1	13/04/2011	Ground	<0.02	27.0	4.2	16.0	<50.0	1.0	<1.0	117.0	0.20	9.4	<1.0	1.20	21600		4.80	0.061	52.70	1290.00	<1.0	10.30	24.0	0.300		<0.5	119.0	<0.1	14800	<5.0	654.0	<5.0	<0.05	0.80	<5.0	1450.0	<0.5
SRK08-SPW1	04/05/2011	Ground	<0.02	32.0	4.4	15.0	<50.0	0.9	<1.0	136.0	0.17	10.2	<1.0	0.90	24200		5.22	0.060	55.00	1390.00	<1.0	10.60	26.0	0.600		<0.5	128.0	<0.1	16600	<5.0	657.0	<5.0	<0.05	0.80	<5.0	1460.0	<0.5
SRK08-SPW1	12/05/2011	Ground	<0.02	35.0	4.2	15.0	<50.0	1.2	<1.0	147.0	0.13	10.5	<1.0	1.00	26500		4.99	0.065	55.60	1340.00	<1.0	10.70	26.0	0.900		<0.5	123.0	<0.1	17600	<5.0	663.0	<5.0	<0.05	0.80	<5.0	1480.0	<0.5
SRK08-SPW1	16/06/2011	Ground	<0.02	35.0	4.1	16.0	<50.0	1.0	<1.0	131.0	0.14	9.7	<1.0	0.90	23700		4.58	0.060	51.00	1220.00	<1.0	9.65	24.0	0.800		<0.5	114.0	<0.1	15400	<5.0	607.0	<5.0	<0.05	0.80	<5.0	1400.0	<0.5
SRK08-SPW1	20/07/2011	Ground	<0.02	37.0	8.0	16.0	<50.0	1.0	<1.0	143.0	0.15	10.9	<1.0	0.90	26200		4.75	0.059	55.60	1440.00	<1.0	10.60	28.0	1.100		<0.5	120.0	<0.1	16400	<5.0	647.0	<5.0	<0.05	0.80	<5.0	1550.0	<0.5
SRK08-SPW1	03/08/2011	Ground	<0.02	35.0	3.9	16.0	<50.0	1.1	<1.0	153.0	0.13	10.5	<1.0	0.70	27200		5.00	0.069	55.30	1430.00	<1.0	10.60	27.0	0.300		<0.5	107.0	<0.1	15400	<5.0	727.0	<5.0	<0.05	0.90	<5.0	1600.0	<0.5
SRK08-SPW1	07/09/2011	Ground	<0.02	35.0	3.9	15.0	<50.0	0.9	<1.0	140.0	0.14	8.9	<1.0	1.30	24400		4.71	0.059	53.80	1340.00	<1.0	9.89	23.0	1.600		<0.5	127.0	<0.1	16400	<5.0	646.0	<5.0	<0.05	0.70	<5.0	1330.0	<0.5
SRK08-SPW1	18/10/2011	Ground	<0.02	35.0	3.9	15.0	<50.0	1.0	<1.0	141.0	0.72	12.9	<1.0	1.40	27800		4.88	0.061	56.00	1740.00	<1.0	11.10	27.0	0.700		<0.5	126.0	<0.1	16400	<5.0	664.0	<5.0	<0.05	0.80	<5.0	2710.0	<0.5
SRK08-SPW1	16/11/2011	Ground	<0.02	82.7	4.2	15.1	<50.0	1.0	<1.0	146.0	0.19	10.8	<1.0	2.47	27000		4.49	0.057	56.20	1440.00	<1.0	10.70	27.5	0.590		<0.5	140.0	<0.1	17000	<5.0	676.0	<5.0	<0.05	0.77	<5.0	1870.0	<0.5
SRK08-SPW1	01/12/2011	Ground	<0.025	31.8	3.9	14.3	<63.0	1.1	<1.3	139.0	0.24	10.7	<1.3	1.78	25600		4.90	0.059	54.80	1430.00	<1.3	10.60	27.3	0.290		<0.63	125.0	<0.13	15900	<6.3	657.0	<6.3	<0.063	0.80	<6.3	1720.0	<0.63
SRK08-SPW1 Average			0.010	37.6	4.4	15.3	25.5	1.0	0.5	140.2	0.21	10.4	0.5	1.25	25385		4.89	0.062	55.10	1400.77	0.51	10.63	26.3	0.660		0.26	122.5	0.05	16200	2.55	658.0	2.6	0.026	0.80	2.6	1660.8	0.26
SRK08-SPW1 Max			<0.025	82.7	8.0	16.0	<63.0	1.2	<1.3	153.0	0.72	12.9	<1.3	2.47	27800		5.40	0.069	61.10	1740.00	<1.3	12.00	30.0	1.600		<0.63	140.0	<0.13	17600	<6.3	727.0	<6.3	<0.063	0.90	<6.3	2710.0	<0.63
SRK08-SPW1 Min			<0.02	27.0	3.9	14.3	<50.0	0.9	<1.0	117.0	0.12	8.9	<1.0	0.70	21600		4.49	0.057	51.00	1220.00	<1.0	9.65	23.0	0.290		<0.5	107.0	<0.1	14800	<5.0	607.0	<5.0	<0.05	0.70	<5.0	1330.0	<0.5
SRK08-SPW2	06/01/2011	Ground	0.110	9.0	<0.2	16.0	<100.0	<0.2	<2.0	252.0	30.70	233.0	<2.0	2.00	2750		9.30	0.107	483.00	37900.00	<2.0	20.70	862.0	0.500		<1.0	968.0	<0.2	11100	<10.0	1030.0	<10.0	<0.1	3.80	<10.0	141000.0	<1.0
SRK08-SPW2	01/02/2011	Ground	0.130	12.0	0.5	16.0	<200.0	<0.4	<4.0	248.0	32.00	242.0	<4.0	2.20	2880		8.00	0.098	489.00	40100.00	<4.0	21.20	892.0	<0.8		<2.0	953.0	<0.4	11700	<20.0	1070.0	<20.0	<0.2	3.60	<20.0	152000.0	<2.0
SRK08-SPW2	08/03/2011	Ground	<0.04	10.0	<0.2	17.0	<100.0	<0.2	<2.0	239.0	32.70	262.0	<2.0	2.30	2720		8.50	0.099	479.00	39500.00	<2.0	21.40	918.0	0.600		<1.0	988.0	<0.2	11200	<10.0	1010.0	<10.0	<0.1	3.70	<10.0	155000.0	<1.0
SRK08-SPW2	13/04/2011	Ground	0.100	<10.0	<0.4	17.0	<200.0	<0.4	<4.0	222.0	30.30	214.0	<4.0	2.10	2910		7.70	0.084	418.00	35700.00	<4.0	18.50	767.0	<0.8		<2.0	878.0	<0.4	11700	<20.0	960.0	<20.0	<0.2	3.40	<20.0	139000.0	<2.0
SRK08-SPW2	04/05/2011	Ground	<0.08	12.0	<0.4	17.0	<200.0	<0.4	<4.0	230.0	31.50	239.0	<4.0	3.20	3280		7.20	0.086	441.00	39600.00	<4.0	18.20	857.0	1.000		<2.0	924.0	<0.4	11400	<20.0	944.0	<20.0	<0.2	3.60	<20.0	158000.0	<2.0
SRK08-SPW2	16/06/2011	Ground	<0.08	13.0	0.7	18.0	<200.0	<0.4	<4.0	205.0	29.50	212.0	<4.0	3.30	3050		6.90	0.076	394.00	32900.00	<4.0	16.50	787.0	1.300		<2.0	784.0	<0.4	11000	<20.0	867.0	<20.0	<0.2	3.60	<20.0	129000.0	<2.0
SRK08-SPW2	20/07/2011	Ground	0.060	15.0	<0.4	18.0	<50.0	<0.1	<1.0	215.0	28.60	216.0	<1.0	2.80	3340		7.30	0.085	416.00	35500.00	<1.0	18.50	803.0	1.100		<0.5	836.0	<0.1	11200	<5.0	928.0	<5.0	<0.05	3.50	<5.0	123000.0	<0.5
SRK08-SPW2	03/08/2011	Ground	<0.08	11.0	<0.4	20.0	<200.0	<0.4	<4.0	222.0	31.80	204.0	<4.0	2.00	3740		7.50	0.086	410.00	35300.00	<4.0	19.00	778.0	<0.8		<2.0	731.0	<0.4	10600	<20.0	964.0	<20.0	<0.2	3.20	<20.0	135000.0	<2.0
SRK08-SPW2	07/09/2011	Ground	<0.08	138.0	<0.4	17.0	<200.0	<0.4	<4.0	203.0	27.90	161.0	<4.0	3.10	3530		6.60	0.074	379.00	30400.00	<4.0	18.00	633.0	0.900		<2.0	830.0	<0.4	10800	<20.0	844.0	<20.0	<0.2	2.70	<20.0	114000.0	<2.0
SRK08-SPW2	17/10/2011	Ground	0.200	<20.0	<0.5	19.0	<300.0	<0.5	<5.0	226.0	32.20	200.0	<5.0	5.00	4380		8.70	0.086	419.00	33400.00	<5.0	20.80	756.0	<1.0		<3.0	830.0	<0.5	11800	<30.0	1020.0	<30.0	<0.3	3.40	<30.0	132000.0	<3.0
SRK08-SPW2	16/11/2011	Ground	<0.1	<15.0	<0.5	19.3	<250.0	<0.5	<5.0	215.0	31.60	197.0	<5.0	7.70	4130		6.77	0.079	427.00	34700.00	<5.0	20.60	734.0	<1.0		<2.5	910.0	<0.5	12100	<25.0	941.0	<25.0	<0.25	3.07	<25.0	137000.0	<2.5
SRK08-SPW2	01/12/2011	Ground	0.170	17.0	<0.5	27.3	<250.0	<0.5	<5.0	297.0	41.80	290.0	<5.0	4.70	4580		11.60	0.100	567.00	49000.00	<5.0	26.70	1050.0	<1.0		<2.5	1140.0	<0.5	13500	<25.0	1280.0	<25.0	<0.25	4.60	<25.0	177000.0	<2.5
SRK08-SPW2 Average			0.083	21.6	0.3	18.5	93.8	0.2	1.8	231.2	31.72	222.5	1.8	3.37	3441		8.01	0.088	443.50	37000.00	1.83	20.01	819.8	0.675		0.94	897.7	0.18	11508	9.38	988.2	9.4	0.094	3.51	9.4	141000.0	0.94
SRK08-SPW2 Max			0.200	138.0	0.7	27.3	<300.0	<0.5	<5.0	297.0	41.80	290.0	<5.0	7.70	4580		11.60	0.107	567.00	49000.00	<5.0	26.70	1050.0	1.300		<3.0	1140.0	<0.5	13500	<30.0	1280.0	<30.0	<0.3	4.60	<30.0	177000.0	<3.0
SRK08-SPW2 Min			<0.04	9.0	<0.2	16.0	<50.0	<0.1	<1.0	203.0	27.90	161.0	<1.0	2.00	2720		6.60	0.074	379.00	30400.00	<1.0	16.50	633.0	0.500		<0.5	731.0	<0.1	10600	<5.0	844.0	<5.0	<0.05	2.70	<5.0	114000.0	<0.5
SRK08-SPW3	06/01/2011	Ground	0.180	22.0	<0.4	16.0	<200.0	<0.4	<4.0	299.0	125.00	425.0	<4.0	6.70	4870		10.70	0.135	761.00	71900.00	<4.0	25.10	1890.0	1.300		<2.0	1540.0	<0.4	12900	<20.0	1300.0	<20.0	<0.2	4.70	<20.0	302000.0	<2.0
SRK08-SPW3	01/02/2011	Ground	0.220	23.0	1.1	16.0	<200.0	<0.4	<4.0	263.0	101.00	383.0	<4.0	6.50	6790		8.70	0.115	624.00	61200.00	<4.0	22.10	1500.0	1.100		<2.0	1250.0	<0.4	13100	<20.0	1180.0	<20.0	<0.2	3.90	<20.0	254000.0	<2.0
SRK08-SPW3	08/03/2011	Ground	<0.08	24.0	0.5	16.0	<200.0	<0.4	<4.0	278.0	113.00	435.0	<4.0	6.40	6790		8.30	0.120	635.00	60700.00	<4.0	23.10	1620.0	1.300		<2.0	1300.0	<0.4	13100	<20.0	1180.0	<20.0	<0.2	4.10	<20.0	275000.0	<2.0
SRK08-SPW3	13/04/2011	Ground	0.300	<30.0	<1.0	16.0	<500.0	<1.0	<10.0	283.0	144.00	521.0	<10.0	10.00	3870		13.20	0.113	761.00	77600.00	<10.0	21.30	1930.0	<2.0		<5.0	1550.0	<1.0	13000	<50.0	1270.0	<50.0	<0.5	4.00	<50.0	339000.0	<5.0
SRK08-SPW3	04/05/2011	Ground	<0.2	<30.0	<1.0	19.0	<500.0	<1.0	<10.0	276.0	108.00	403.0	<10.0	18.00	5730		7.70	0.095	578.00	59500.00	<10.0	19.00	1460.0	<2.0		<5.0	1200.0	<1.0	12300	<50.0	1100.0	<50.0	<0.5	3.00	<50.0	272000.0	<5.0
SRK08-SPW3	16/06/2011	Ground	<0.08	26.0	1.0	17.0	<200.0	<0.4	<4.0	274.0	129.00	450.0	<4.0	13.90	4920		9.40	0.116	704.00	63300.00	<4.0	24.00	1790.0	2.700		<2.0	1400.0	<0.4	12600	<20.0	1200.0	<20.0	<0.2	3.20	<20.0	283000.0	<2.0
SRK08-SPW3	20/07/2011	Ground	0.150	30.0	5.4	18.0	<100.0	<0.3	<3.0	298.0	129.00	516.0	<3.0	9.80	4300		10.80	0.123	776.00	75700.00	<3.0	26.70	1900.0	2.100		<1.0	1480.0	<0.3	13100	<10.0	1320.0	<10.0	<0.1	4.00	<10.0	291000.0	<1.0
SRK08-SPW3	03/08/2011	Ground	<0.2	<30.0	<1.0	16.0	<500.0	<1.0	<10.0	256.0	125.00	463.0	<10.0	4.00	3810		9.90	0.115	695.00	69300.00	<10.0	23.60	1690.0	<2.0		<5.0	1180.0	2.00	10200	<50.0	1220.0	<50.0	<0.5	3.00	<50.0	291000.0	<5.0
SRK08-SPW3	07/09/2011	Ground	0.120	22.0	<0.4	16.0	<200.0	<0.4	<4.0	250.0	97.00	358.0	<4.0	6.70	6070		8.40	0.100	600.00	54900.00	<4.0	22.90	1260.0	1.500		<2.0	1250.0	<0.4	12600	<20.0	1090.0	<20.0	<0.2	2.80	<20.0	223000.0	<2.0
SRK08-SPW3	17/10/2011	Ground	<0.3	<40.0	<1.0	15.0	<600.0	<1.0	<10.0	289.0	134.00	506.0	<10.0	9.00	2530		9.70	0.111	758.00	72300.00	<10.0	27.50	1750.0	<3.0		<6.0	1500.0	<1.0	11700	<60.0	1320.0	<60.0	<0.6	4.00	<60.0	305000.0	<6.0
SRK08-SPW3	16/11/2011	Ground	<0.25	<38.0	<1.3	15.0	<630.0	<1.3	<13.0	272.0	116.00	457.0	<13.0	7.80	2860		8.77	0.108	699.00	67700.00	<13.0	25.30	1570.0	<2.5		<6.3	1420.0	<1.3	11600	<63.0	1220.0	<63.0	<0.63	3.60	<63.0	294000.0	<6.3
SRK08-SPW3	01/12/2011	Ground	0.400	<38.0	<1.3	19.0	<630.0	<1.3	<13.0	358.0	165.00	589.0	<13.0	12.70	4620		10.80	0.127	893.00	86700.00	<13.0	29.70	2170.0	6.100		<6.3	1730.0	<1.3	14400	<63.0	1630.0	<63.0	<0.63	5.40	<63.0	373000.0	<6.3
SRK08-SPW3 Average			0.160	20.8	1.0	16.6	185.8	0.4	3.7	283.0	123.83	458.8	3.7	9.29	4763		9.70	0.115	707.00	68400.00	3.71	24.19	1710.8	1.821		1.86	1400.0	0.50	12550	18.58	1252.5	18.6	0.186	3.81	18.6	291833.3	1.86
SRK08-SPW3 Max			0.400	<40.0	5.4	19.0	<630.0	<1.3	<13.0	358.0	165.00	589.0	<13.0	18.00	6790		13.20	0.135	893.00	86700.00	<13.0	29.70	2170.0	6.100		<6.3	1730.0	2.00	14400	<63.0	1630.0	<63.0	<0.63	5.40	<63.0	373000.0	<6.3
SRK08-SPW3 Min			<0.08	22.0	<0.4	15.0	<100.0	<0.3	<3.0	250.0	97.00	358.0	<3.0	4.00	2530		7.70	0.095	578.00	54900.00	<3.0	19.00	1260.0	1.100		<1.0	1180.0	<0.3	10200	<10.0	1090.0	<10.0	<0.1	2.80	<10.0	223000.0	<1.0
TH86-17	17/09/2011	Ground	<0.02	<3.0	0.5	46.0	<50.0	<0.1	<1.0	22.2	<0.01	<0.5	<1.0	0.60	965		0.73	<0.005	5.05	90.00	<1.0	1.81	4.0	<0.2		<0.5	4.0	<0.1	4560	<5.0	99.0	<5.0	<0.05	0.50	<5.0	16.0	<0.5
TH86-2	17/09/2011	Ground	<0.02	<3.0	0.9	73.0	<50.0	<0.1	<1.0	42.5	0.02	0.6	<1.0	0.50	378		1.33	<0.005	8.33	21.00	3.00	2.58	11.0	<0.2		<0.5	11.0	0.40	4010	<5.0	202.0	<5.0	<0.05	3.40	<5.0	<5.0	<0.5
TH86-5	17/09/2011	Ground	<0.02	<3.0	27.1	160.0	<50.0	<0.1	<1.0	123.0	<0.01	<0.5	4.0	0.30	7620		2.62	0.057	23.40	501.00	8.00	19.10	9.0	<0.2		<0.5	8.0	<0.1	9650	<5.0	860.0	<5.0	<0.05	2.40	<5.0	<5.0	<0.5
Weir 3	03/02/2011	Seepage	<0.03	3.0	1.5	59.6	<300.0	<0.05	0.1	356.0	0.13	8.2	<0.5	0.40	4390		5.80	0.011	74.20	17800.00	0.80	31.20	25.9	0.080		<0.1	354.0	<0.2	6340	<0.05	887.0	<3.0	0.020	6.90	<1.0	10.6	<0.5
Weir 3	04/08/2011	Seepage	<0.03	3.0	0.6	49.0	<300.0	<0.05	<0.03	319.0	0.13	5.5	<0.5	0.50	540		6.20	0.011	66.50	12700.00	0.80	28.50	22.8	0.420		<0.1	299.0	<0.2	7550	<0.05	823.0	<3.0	0.020	11.40	<1.0	12.4	<0.5
Weir 3 Average			0.015	3.0	1.1	54.3	150.0	0.0	0.0	337.5	0.13	6.8	0.3	0.45	2465		6.00	0.011	70.35	15250.00	0.80	29.85	24.4	0.250		0.05	326.5	0.10	6945	0.03	855.0	1.5	0.020	9.15	0.5	11.5	0.25
Weir 3 Max			<0.03	3.0	1.5	59.6	<300.0	<0.05	0.1	356.0	0.13	8.2	<0.5	0.50	4390		6.20	0.011	74.20	17800.00	0.80	31.20	25.9	0.420		<0.1	354.0	<0.2	7550	<0.05	887.0	<3.0	0.020	11.40	<1.0	12.4	<0.5
Weir 3 Min			<0.03	3.0	0.6	49.0	<300.0	<0.05	<0.03	319.0	0.13	5.5	<0.5	0.40	540		5.80	0.011	66.50	12700.00	0.80	28.50	22.8	0.080		<0.1	299.0	<0.2	6340	<0.05	823.0	<3.0	0.020	6.90	<1.0	10.6	<0.5
X10	18/01/2011	Surface	<0.005	1.6	0.1	68.1	<50.0	<0.01	0.2	50.0	0.02	0.1	<0.1	0.42	45		1.31	0.007	11.00	50.90	0.63	3.30	0.7	0.085		0.06	<10.0	0.35	5510	0.02	201.0	<0.5	<0.002	2.55	<0.2	34.5	<0.1
X10	01/02/2011	Surface	<0.005	1.9	0.1	68.7	<50.0	<0.01	<0.005	50.8	0.01	0.0	<0.1	0.35	44		1.53	0.007	10.60	13.40	0.57	3.20	0.6	0.153		0.05	<10.0	0.38	5980	<0.01	203.0	<0.5	<0.002	2.46	<0.2	30.9	<0.1
X10	14/03/2011	Surface	<0.005	1.9	0.1	79.2	<50.0	<0.01	<0.005	54.0	0.02	0.0	<0.1	0.37	24		1.33	0.008	12.10	6.17	0.64	3.48	0.7	0.060		0.06	13.0	0.40	6550	<0.01	227.0	<0.5	0.003	3.02	<0.2	33.1	<0.1
X10	13/04/2011	Surface	<0.005	2.0	0.1	72.6	<50.0	<0.01	<0.005	51.1	0.02	0.0	<0.1	0.57	21		1.35	0.008	10.80	6.31	0.62	3.30	0.6	0.376		0.06	11.0	0.38	6300	<0.01	222.0	<0.5	<0.002	2.71	<0.2	26.9	<0.1
X10	05/05/2011	Surface	<0.005	8.7	0.2	63.2	<50.0	<0.01	<0.005	41.9	0.04	0.0	<0.1	1.16	117		1.34	0.006	8.55	14.50	0.66	2.78	0.8	1.810		0.08	<10.0	0.35	5710	<0.01	176.0	<0.5	<0.002	2.47	<0.2	36.3	<0.1
X10	20/06/2011	Surface	<0.005	18.2	0.4	29.2	<50.0	<0.01	<0.005	15.3	0.02	0.0	<0.1	0.69	93		0.45	0.001	3.45	9.26	0.29	1.16	0.4	0.287		0.07	<10.0	0.16	3450	<0.01	70.1	<0.5	<0.002	0.65	<0.2	5.6	<0.1
X10	14/07/2011	Surface	<0.005	11.8	0.4	41.1	<50.0	<0.01	<0.005	24.7	0.01	0.1	<0.1	0.79	170		0.54	0.002	5.80	21.90	0.39	1.59	0.6	0.420		0.07	<10.0	0.26	4400	<0.01	108.0	<0.5	<0.002	1.01	<0.2	12.6	<0.1
X10	24/08/2011	Surface	<0.005	11.1	0.4	41.3	<50.0	<0.01	<0.005	24.8	0.01	0.1	<0.1	0.78	161		0.56	0.002	5.67	18.30	0.36	1.62	0.5	0.533		0.08	<10.0	0.17	4320	<0.01	110.0	<0.5	0.003	0.97	<0.2	11.3	<0.1
X10	21/09/2011	Surface	<0.005	6.1	0.4	51.5	<50.0	<0.01	<0.005	32.3	0.01	0.1	<0.1	0.50	225		0.75	0.003	7.08	28.80	0.42	1.88	0.5	0.186		0.06	<10.0	0.27	4890	<0.01	132.0	<0.5	<0.002	1.40	<0.2	14.3	<0.1
X10	20/10/2011	Surface	<0.005	7.2	0.3	53.4	<50.0	<0.01	<0.005	38.8	0.04	0.2	<0.1	0.55	176		0.93	0.004	8.97	80.80	0.57	2.51	0.7	0.173		0.07	<10.0	0.37	5160	<0.01	154.0	<0.5	<0.002	1.81	<0.2	49.1	<0.1
X10	15/11/2011	Surface	<0.005	2.8	0.2	66.9	<50.0	<0.01	<0.005	35.8	0.02	0.1	<0.1	0.47	82		1.03	0.005	8.35	47.80	0.52	2.39	0.6	0.257		0.07	<10.0	0.36	4780	0.04	180.0	<0.5	<0.002	1.99	<0.2	38.3	<0.1
X10	06/12/2011	Surface	<0.005	2.7	0.3	68.4	<50.0	<0.01	<0.005	38.5	0.02	0.1	<0.1	0.54	81		0.99	0.005	8.65	36.80	0.61	2.62	0.6	0.118		0.06	<10.0	0.37	4960	<0.01	187.0	<0.5	<0.002	2.36	<0.2	30.0	<0.1
X10 Average			0.003	6.3	0.3	58.6	25.0	0.0	0.0	38.2	0.02	0.1	0.1	0.60	103		1.01	0.005	8.42	27.91	0.52	2.49	0.6	0.372		0.07	6.2	0.32	5168	0.01	164.2	0.3	0.001	1.95	0.1	26.9	0.05
X10 Max			<0.005	18.2	0.4	79.2	<50.0	<0.01	0.2	54.0	0.04	0.2	<0.1	1.16	225		1.53	0.008	12.10	80.80	0.66	3.48	0.8	1.810		0.08	13.0	0.40	6550	0.04	227.0	<0.5	0.003	3.02	<0.2	49.1	<0.1
X10 Min			<0.005	1.6	0.1	29.2	<50.0	<0.01	<0.005	15.3	0.01	0.0	<0.1	0.35	21		0.45	0.001	3.45	6.17	0.29	1.16	0.4	0.060		0.05	<10.0	0.16	3450	<0.01	70.1	<0.5	<0.002	0.65	<0.2	5.6	<0.1

Note: Statistics calculated with DLs at half value.
Note: Metals reported in mg/L shaded in gray.

Denison Environmental Services

Table B-2: 2011 Rose Creek Drainage Water Quality
Dissolved Metals

Faro Mine Closure

Station	Date	Sample Type	Ag-d µg/L	Al-d µg/L	As-d µg/L	Ba-d µg/L	B-d µg/L	Be-d µg/L	Bi-d µg/L	Ca-d mg/L	Cd-d µg/L	Co-d µg/L	Cr-d µg/L	Cu-d µg/L	Fe-d µg/L	Hg-d µg/L	K-d mg/L	Li-d mg/L	Mg-d mg/L	Mn-d µg/L	Mo-d µg/L	Na-d mg/L	Ni-d µg/L	Pb-d µg/L	P-d mg/L	Sb-d µg/L	S-d mg/L	Se-d µg/L	Si-d µg/L	Sn-d µg/L	Sr-d µg/L	Ti-d µg/L	Tl-d µg/L	U-d µg/L	V-d µg/L	Zn-d µg/L	Zr-d µg/L
X11	03/02/2011	Seepage	<0.03	3.0	2.4	42.4	<300.0	<0.05	<0.03	518.0	0.13	41.7	<0.5	0.50	5750		8.30	0.024	124.00	33900.00	0.40	37.60	47.4	0.220		<0.1	612.0	<0.2	6590	<0.05	1460.0	<3.0	0.040	5.54	<1.0	18.0	<0.5
X11	04/08/2011	Seepage	0.040	3.0	2.0	39.3	<300.0	<0.05	<0.03	534.0	0.22	44.4	<0.5	0.50	5740		8.60	0.024	117.00	35900.00	0.40	34.00	51.6	6.580		<0.1	532.0	<0.2	8470	2.03	1490.0	<3.0	0.050	6.78	<1.0	20.8	<0.5
X11 Average			0.028	3.0	2.2	40.9	150.0	0.0	0.0	526.0	0.18	43.1	0.3	0.50	5745		8.45	0.024	120.50	34900.00	0.40	35.80	49.5	3.400		0.05	572.0	0.10	7530	1.03	1475.0	1.5	0.045	6.16	0.5	19.4	0.25
X11 Max			0.040	3.0	2.4	42.4	<300.0	<0.05	<0.03	534.0	0.22	44.4	<0.5	0.50	5750		8.60	0.024	124.00	35900.00	0.40	37.60	51.6	6.580		<0.1	612.0	<0.2	8470	2.03	1490.0	<3.0	0.050	6.78	<1.0	20.8	<0.5
X11 Min			<0.03	3.0	2.0	39.3	<300.0	<0.05	<0.03	518.0	0.13	41.7	<0.5	0.50	5740		8.30	0.024	117.00	33900.00	0.40	34.00	47.4	0.220		<0.1	532.0	<0.2	6590	<0.05	1460.0	<3.0	0.040	5.54	<1.0	18.0	<0.5
X12	03/02/2011	Seepage	<0.03	<1.0	0.2	39.6	<300.0	<0.05	<0.03	282.0	<0.03	0.1	<0.5	0.60	17		7.80	0.008	68.00	139.00	<0.3	25.80	1.0	0.160		<0.1	284.0	<0.2	4700	<0.05	819.0	<3.0	<0.01	8.47	<1.0	3.1	<0.5
X12	04/08/2011	Seepage	<0.005	1.6	0.3	47.1	<50.0	<0.01	<0.005	208.0	0.02	0.1	0.2	0.34	19		6.78	0.009	45.00	126.00	0.47	15.00	0.6	0.130		0.06	187.0	0.17	6030	<0.01	662.0	<0.5	0.004	10.70	<0.2	7.5	<0.1
X12 Average			0.009	1.1	0.3	43.4	87.5	0.0	0.0	245.0	0.02	0.1	0.2	0.47	18		7.29	0.009	56.50	132.50	0.31	20.40	0.8	0.145		0.06	235.5	0.14	5365	0.02	740.5	0.9	0.005	9.59	0.3	5.3	0.15
X12 Max			<0.03	1.6	0.3	47.1	<300.0	<0.05	<0.03	282.0	<0.03	0.1	<0.5	0.60	19		7.80	0.009	68.00	139.00	0.47	25.80	1.0	0.160		<0.1	284.0	<0.2	6030	<0.05	819.0	<3.0	<0.01	10.70	<1.0	7.5	<0.5
X12 Min			<0.005	<1.0	0.2	39.6	<50.0	<0.01	<0.005	208.0	0.02	0.1	0.2	0.34	17		6.78	0.008	45.00	126.00	<0.3	15.00	0.6	0.130		0.06	187.0	0.17	4700	<0.01	662.0	<0.5	0.004	8.47	<0.2	3.1	<0.1
X13	06/01/2011	Seepage	<0.03	8.0	2.0	57.6	<300.0	<0.05	<0.03	452.0	0.53	17.7	<0.5	3.20	5110	<0.05	6.80	0.017	91.90	23900.00	0.70	34.50	35.0	1.890		<0.1	412.0	<0.2	8090	<0.05	1120.0	<3.0	0.030	7.89	<1.0	54.7	<0.5
X13	03/02/2011	Seepage	<0.03	2.0	1.6	50.4	<300.0	<0.05	<0.03	426.0	0.18	19.2	<0.5	0.80	4410	<0.05	6.60	0.016	90.70	22900.00	0.80	33.50	33.5	0.310		<0.1	441.0	<0.2	7120	<0.05	1070.0	<3.0	0.020	8.59	<1.0	18.3	<0.5
X13	15/03/2011	Seepage	<0.03	2.0	1.1	58.6	<300.0	<0.05	<0.03	392.0	0.25	15.0	<0.5	<0.3	3060	<0.05	5.50	0.015	79.70	20300.00	1.10	29.80	31.8	0.090		0.20	393.0	1.10	7990	<0.05	990.0	<3.0	0.020	8.25	<1.0	11.5	<0.5
X13	13/04/2011	Seepage	<0.03	3.0	1.3	55.9	<300.0	<0.05	<0.03	512.0	0.28	18.4	<0.5	<0.3	4430	<0.05	7.10	0.015	100.00	25700.00	1.00	35.40	38.5	0.180		<0.1	503.0	<0.2	10200	<0.05	1180.0	<3.0	0.030	8.57	<1.0	20.0	<0.5
X13	04/05/2011	Seepage	<0.03	4.0	1.6	52.1	<300.0	<0.05	<0.03	449.0	0.34	17.7	<0.5	0.40	4810	<0.05	6.40	0.016	90.30	24700.00	0.90	32.40	34.0	0.310		<0.1	437.0	<0.2	8950	0.07	1090.0	<3.0	0.040	8.07	<1.0	25.1	<0.5
X13	16/06/2011	Seepage	0.050	3.0	1.5	48.8	<300.0	<0.05	<0.03	426.0	0.22	17.6	<0.5	1.00	3580	<0.05	8.90	0.029	94.10	23400.00	0.80	34.40	34.0	0.470		0.30	440.0	<0.2	8390	0.06	1050.0	<3.0	0.030	8.85	<1.0	30.5	<0.5
X13	14/07/2011	Seepage	<0.03	3.0	1.7	49.8	<300.0	<0.05	<0.03	432.0	0.22	17.5	<0.5	<0.3	4290	<0.05	6.10	0.016	86.50	22700.00	0.70	31.60	32.4	0.120		<0.1	425.0	<0.2	8850	<0.05	1060.0	<3.0	0.020	8.43	<1.0	70.6	<0.5
X13	25/08/2011	Seepage	<0.03	6.0	1.4	48.2	<300.0	<0.05	<0.03	348.0	0.20	11.5	<0.5	<0.3	3080	<0.05	5.40	0.013	70.70	17200.00	0.90	26.70	25.5	0.430		<0.1	314.0	<0.2	7780	0.39	844.0	<3.0	0.020	6.86	<1.0	14.2	<0.5
X13	20/09/2011	Seepage	<0.03	14.0	1.8	54.2	<300.0	<0.05	<0.03	405.0	0.27	14.2	<0.5	<0.3	5390	<0.05	5.80	0.015	82.60	21700.00	0.70	30.20	30.8	0.170		<0.1	366.0	<0.2	8440	<0.05	1000.0	<3.0	0.020	8.17	<1.0	14.1	<0.5
X13	19/10/2011	Seepage	<0.03	8.0	1.4	46.4	<300.0	<0.05	<0.03	407.0	0.33	14.5	<0.5	0.60	4440	<0.05	5.70	0.015	78.80	21000.00	0.90	30.50	30.3	0.480		<0.1	371.0	<0.2	8310	<0.05	959.0	<3.0	0.030	7.61	<1.0	90.0	<0.5
X13	17/11/2011	Seepage	<0.03	3.0	1.8	50.9	<300.0	<0.05	<0.03	416.0	0.32	15.3	<0.5	<0.3	5560	<0.05	6.50	0.015	86.40	23500.00	0.80	32.30	32.8	0.090		<0.1	416.0	<0.2	7990	<0.05	1040.0	<3.0	0.020	7.82	<1.0	23.6	<0.5
X13	01/12/2011	Seepage	<0.03	2.0	1.4	50.8	<300.0	<0.05	<0.03	388.0	0.28	14.5	<0.5	0.60	4290	<0.05	6.10	0.014	82.50	21500.00	0.90	31.20	32.7	0.250		<0.1	372.0	<0.2	7800	<0.05	934.0	<3.0	0.020	8.35	<1.0	45.1	<0.5
X13 Average			0.018	4.8	1.6	52.0	150.0	0.0	0.0	421.1	0.29	16.1	0.3	0.63	4371	0.03	6.41	0.016	86.18	22375.00	0.85	31.88	32.6	0.399		0.08	407.5	0.18	8326	0.06	1028.1	1.5	0.025	8.12	0.5	34.8	0.25
X13 Max			0.050	14.0	2.0	58.6	<300.0	<0.05	<0.03	512.0	0.53	19.2	<0.5	3.20	5560	<0.05	8.90	0.029	100.00	25700.00	1.10	35.40	38.5	1.890		0.30	503.0	1.10	10200	0.39	1180.0	<3.0	0.040	8.85	<1.0	90.0	<0.5
X13 Min			<0.03	2.0	1.1	46.4	<300.0	<0.05	<0.03	348.0	0.18	11.5	<0.5	<0.3	3060	<0.05	5.40	0.013	70.70	17200.00	0.70	26.70	25.5	0.090		<0.1	314.0	<0.2	7120	<0.05	844.0	<3.0	0.020	6.86	<1.0	11.5	<0.5
X14	18/01/2011	Surface	<0.005	1.3	0.3	68.1	<50.0	<0.01	0.0	114.0	0.06	2.2	<0.1	0.37	298		2.13	0.009	24.20	3100.00	0.78	8.02	5.6	0.045		0.06	82.0	0.34	5790	0.04	349.0	<0.5	0.006	3.43	<0.2	35.0	<0.1
X14	01/02/2011	Surface	<0.005	2.0	0.3	66.0	<50.0	<0.01	0.0	105.0	0.07	2.1	<0.1	0.29	257		2.04	0.009	23.40	3010.00	0.66	8.02	5.1	0.123		0.06	81.0	0.35	5290	<0.01	352.0	<0.5	0.006	3.31	<0.2	26.6	<0.1
X14	14/03/2011	Surface	<0.005	1.5	0.4	70.6	<50.0	<0.01	<0.005	174.0	0.12	4.4	<0.1	0.55	470		3.73	0.011	37.30	5940.00	0.78	13.40	10.1	0.103		0.06	149.0	0.37	6530	0.02	504.0	<0.5	0.011	4.50	<0.2	26.0	<0.1
X14	24/03/2011	Surface	<0.03	6.0	0.4	61.0	<300.0	<0.05	<0.03	263.0	0.08	24.2	<0.5	0.70	303		4.10	0.014	59.80	15100.00	0.80	19.70	32.4	0.110		<0.1	273.0	0.30	6800	<0.05	720.0	<3.0	0.060	5.13	<1.0	132.0	<0.5
X14	29/03/2011	Surface	<0.03	2.0	0.3	62.8	<300.0	<0.05	<0.03	203.0	0.11	12.6	<0.5	0.50	172		3.90	0.014	48.60	9700.00	0.70	15.10	21.3	0.060		<0.1	201.0	0.30	5460	<0.05	659.0	<3.0	0.070	4.99	<1.0	106.0	<0.5
X14	05/04/2011	Surface	<0.03	4.0	0.3	61.6	<300.0	<0.05	0.1	235.0	0.14	15.5	<0.5	1.40	308		4.20	0.014	49.00	10500.00	1.20	16.50	22.8	2.630		<0.1	204.0	0.30	6880	0.07	648.0	<3.0	0.070	5.17	<1.0	115.0	<0.5
X14	12/04/2011	Surface	<0.03	4.3	0.3	60.5	<300.0	<0.05	0.1	237.0	0.10	18.7	<0.5	0.80	244		4.00	0.013	53.20	11700.00	0.90	16.70	25.2	0.090		<0.1	223.0	0.30	7200	<0.05	646.0	<3.0	0.070	4.89	<1.0	110.0	<0.5
X14	19/04/2011	Surface	<0.03	3.0	0.2	61.4	<300.0	<0.05	<0.03	255.0	0.06	20.0	0.8	0.60	306		4.30	0.013	52.50	12100.00	1.00	17.40	26.4	0.380		0.20	205.0	0.40	6780	0.07	668.0	<3.0	0.050	4.51	<1.0	108.0	<0.5
X14	26/04/2011	Surface	<0.03	6.0	0.6	60.8	<300.0	<0.05	<0.03	199.0	0.11	17.7	<0.5	1.30	264		3.70	0.011	48.00	10800.00	1.10	15.30	25.5	0.230		<0.1	178.0	0.40	5580	0.14	619.0	<3.0	0.040	4.53	<1.0	105.0	<0.5
X14	03/05/2011	Surface	<0.03	3.0	0.3	47.2	<300.0	<0.05	<0.03	329.0	0.10	49.4	<0.5	0.50	289		4.80	0.015	69.20	25500.00	0.50	21.40	55.5	0.170		<0.1	325.0	<0.2	7620	<0.05	855.0	<3.0	0.060	4.51	<1.0	177.0	<0.5
X14	04/05/2011	Surface	<0.005	5.4	0.2	52.1	<50.0	<0.01	0.0	165.0	0.10	9.3	<0.1	0.75	187		3.74	0.016	34.20	6100.00	0.64	11.30	12.7	0.258		0.09	154.0	0.30	5370	<0.01	507.0	<0.5	0.077	3.07	<0.2	65.0	<0.1
X14	10/05/2011	Surface	<0.005	18.3	0.3	40.2	<50.0	<0.01	<0.005	146.0	0.11	6.8	<0.1	1.67	240		3.86	0.016	32.90	4340.00	0.51	10.70	9.6	0.298		0.10	151.0	0.21	4320	<0.01	465.0	<0.5	0.099	2.24	<0.2	90.7	<0.1
X14	17/05/2011	Surface	<0.005	58.3	0.6	38.1	<50.0	<0.01	0.0	63.2	0.08	2.6	<0.1	2.76	329		2.49	0.006	13.80	1550.00	0.39	4.20	4.5	1.800		0.13	51.0	0.20	3650	<0.01	210.0	0.9	0.050	1.14	<0.2	51.6	<0.1
X14	24/05/2011	Surface	0.010	63.9	0.5	19.9	<50.0	0.0	<0.005	12.6	0.04	0.5	<0.1	1.85	185		1.18	0.001	2.93	279.00	0.17	1.09	1.5	1.440		0.06	<10.0	0.08	2180	<0.01	47.1	0.9	0.009	0.30	<0.2	15.5	<0.1
X14	31/05/2011	Surface	<0.005	39.3	0.4	20.7	<50.0	<0.01	<0.005	16.2	0.04	0.4	<0.1	1.04	96		0.73	0.002	4.00	250.00	0.22	1.32	1.1	1.390		0.06	<10.0	0.14	2890	<0.01	62.5	<0.5	0.013	0.44	<0.2	10.8	<0.1
X14	07/06/2011	Surface	<0.005	16.7	0.3	28.3	<50.0	<0.01	<0.005	32.8	0.02	1.4	<0.1	0.90	93		0.87	0.003	8.39	844.00	0.36	2.51	2.2	0.366		0.07	24.0	0.19	3680	<0.01	120.0	<0.5	0.032	0.83	<0.2	19.4	<0.1
X14	14/06/2011	Surface	0.008	18.0	0.4	29.0	<50.0	<0.01	<0.005	39.5	0.03	1.2	<0.1	1.09	105		1.68	0.003	9.84	781.00	0.38	3.20	2.3	0.332		0.09	25.0	0.24	4160	0.02	134.0	<0.5	0.033	1.01	<0.2	20.2	<0.1
X14	21/06/2011	Surface	<0.005	22.6	0.4	30.6	<50.0	<0.01	<0.005	27.0	0.04	1.0	<0.1	1.04	95		0.65	0.002	6.37	608.00	0.37	1.86	2.2	0.879		0.08	17.0	0.19	3780	0.05	103.0	<0.5	0.019	0.71	<0.2	23.8	<0.1
X14	28/06/2011	Surface	<0.005	23.4	0.4	32.9	<50.0	<0.01	<0.005	30.5	0.03	0.9	<0.1	1.06	116		0.83	0.003	9.06	572.00	0.34	2.64	1.6	0.558		0.07	23.0	0.27	4430	<0.01	118.0	<0.5	0.024	0.82	<0.2	18.2	<0.1
X14	05/07/2011	Surface	<0.005	20.2	0.3	40.1	<50.0	<0.01	<0.005	41.1	0.04	1.1	<0.1	1.16	179		0.91	0.003	9.90	715.00	0.37	2.67	2.6	1.440		0.09	27.0	0.27	4660	<0.01	147.0	<0.5	0.032	1.08	<0.2	24.2	<0.1
X14	12/07/2011	Surface	<0.005	13.1	0.4	39.7	<50.0	<0.01	<0.005	45.2	0.04	1.1	<0.1	0.92	170		1.04	0.004	11.70	715.00	0.89	3.31	1.9	0.520		0.08	31.0	0.26	4560	<0.01	164.0	<0.5	0.050	1.09	<0.2	21.4	<0.1
X14	19/07/2011	Surface	<0.005	15.2	0.4	39.3	<50.0	<0.01	<0.005	46.0	0.03	1.1	<0.1	0.82	176		1.04	0.005	11.10	767.00	0.37	2.99	1.8	0.642		0.10	37.0	0.22	4740	<0.01	175.0	<0.5	0.060	0.90	<0.2	25.4	<0.1
X14	26/07/2011	Surface	<0.005	10.2	0.4	40.8	<50.0	<0.01	<0.005	48.1	0.04	1.2	<0.1	0.63	194		1.09	0.005	12.40	842.00	0.36	3.18	1.8	1.010		0.08	38.0	0.25	4260	0.06	184.0	<0.5	0.070	1.14	<0.2	27.6	<0.1
X14	02/08/2011	Surface	<0.005	14.1	0.5	42.4	<50.0	<0.01	<0.005	51.2	0.05	1.4	<0.1	0.83	208		1.16	0.005	13.00	915.00	0.49	3.47	2.2	7.900		0.09	40.0	0.25	4580	<0.01	193.0	<0.5	0.070	1.22	<0.2	34.7	<0.1
X14	09/08/2011	Surface	<0.005	7.6	0.5	48.7	<50.0	<0.01	<0.005	55.1	0.03	1.7	<0.1	0.59	208		1.44	0.007	15.50	1100.00	0.35	4.15	2.3	0.558		0.09	51.0	0.27	4160	<0.01	228.0	<0.5	0.084	1.37	<0.2	25.4	<0.1
X14	16/08/2011	Surface	<0.005	10.5	0.4	44.1	<50.0	<0.01	<0.005	49.0	0.03	0.9	<0.1	0.80	186		1.07	0.006	12.10	634.00	0.42	3.33	1.6	0.380		0.10	36.0	0.22	4400	<0.01	196.0	<0.5	0.064	1.13	<0.2	13.8	<0.1
X14	23/08/2011	Surface	<0.005	10.4	0.4	41.1	<50.0	<0.01	<0.005	48.3	0.02	1.4	<0.1	0.80	168		1.11	0.005	12.00	881.00	0.38	3.34	2.2	0.305		0.09	35.0	0.22	4540	<0.01	179.0	<0.5	0.053	1.00	0.3	17.6	<0.1
X14	25/08/2011	Surface	<0.005	9.4	0.4	40.4	<50.0	<0.01	<0.005	49.2	0.02	1.4	<0.1	0.65	168		1.11	0.005	12.30	933.00	0.37	3.33	2.1	0.292		0.09	36.0	0.19	4250	<0.01	186.0	<0.5	0.055	1.08	<0.2	17.4	<0.1
X14	30/08/2011	Surface	<0.005	6.5	0.4	42.7	<50.0	<0.01	<0.005	57.0	0.02	1.5	<0.1	0.55	182	<0.01	1.57	0.006	14.60	1010.00	0.48	3.94	2.3	0.271		0.12	45.0	0.26	4620	0.03	212.0	<0.5	0.069	1.30	<0.2	18.3	<0.1
X14	06/09/2011	Surface	<0.005	8.7	0.4	46.9	<50.0	<0.01	0.0	67.9	0.03	2.2	<0.1	0.57	228		1.50	0.007	16.20	1410.00	0.43	4.53	3.1	1.050		0.08	56.0	0.28	4770	<0.01	244.0	<0.5	0.070	1.41	<0.2	24.5	<0.1
X14	13/09/2011	Surface	<0.005	6.9	0.3	45.6	<50.0	<0.01	<0.005	59.2	0.03	1.8	<0.1	0.51	192		1.34	0.006	15.50	1150.00	0.40	3.96	2.5	0.521		0.08	49.0	0.22	4470	<0.01	219.0	<0.5	0.063	1.35	<0.2	19.9	<0.1
X14	20/09/2011	Surface	<0.005	5.5	0.4	46.4	<50.0	<0.01	<0.005	70.6	0.03	2.6	<0.1	0.49	231		1.54	0.007	17.40	1550.00	0.43	4.51	3.3	0.454		0.07	57.0	0.30	4560	<0.01	248.0	<0.5	0.073	1.62	<0.2	24.0	<0.1
X14	27/09/2011	Surface	<0.005	4.6	0.4	43.9	<50.0	<0.01	<0.005	70.5	0.04	5.0	<0.1	0.47	214		1.57	0.006	16.50	2810.00	0.40	4.46	5.7	0.119		0.06	55.0	0.27	4550	<0.01	260.0	<0.5	0.051	1.77	<0.2	31.4	<0.1
X14	25/10/2011	Surface	<0.005	3.9	0.3	54.7	<50.0	<0.01	<0.005	57.3	0.03	0.7	<0.1	0.40	239		1.19	0.005	12.60	859.00	0.55	3.87	1.8	0.306		0.07	27.0	0.37	5620	<0.01	205.0	<0.5	0.004	2.15	<0.2	24.6	<0.1
X14	23/11/2011	Surface	<0.03	4.0	0.2	60.8	<300.0	<0.05	<0.03	151.0	0.09	13.9	<0.5	0.50	151		3.00	0.011	36.00	8050.00	0.60	10.70	14.8	0.280		<0.1	136.0	0.30	5530	0.10	480.0	<3.0	0.080	3.13	<1.0	90.6	<0.5
X14	29/11/2011	Surface	<0.03	2.0	0.3	54.3	<300.0	<0.05	<0.03	180.0	0.08	18.7	<0.5	0.40	285		3.00	0.012	36.70	9990.00	0.60	10.40	18.6	0.060		<0.1	171.0	0.30	5900	<0.05	506.0	<3.0	0.080	2.84	<1.0	92.6	<0.5
X14	08/12/2011	Surface	<0.005	1.8	0.2	51.7	<50.0	<0.01	<0.005	171.0	0.07	22.2	<0.1	0.28	191		3.14	0.008	41.90	11900.00	0.54	12.40	20.8	0.026		0.07	176.0	0.29	5010	<0.01	583.0	<0.5	0.062	3.47	<0.2	88.5	<0.1
X14 Average			0.006	12.3	0.4	46.9	55.4	0.0	0.0	107.1	0.06	7.3	0.1	0.83	214	0.01	2.18	0.008	24.43	4567.70	0.55	7.54	9.7	0.740		0.08	94.0	0.26	4961	0.02	335.0	0.6	0.051	2.29	0.2	50.7	0.10
X14 Max			<0.03	63.9	0.6	70.6	<300.0	<0.05	0.1	329.0	0.14	49.4	0.8	2.76	470	<0.01	4.80	0.016	69.20	25500.00	1.20	21.40	55.5	7.900		0.20	325.0	0.40	7620	0.14	855.0	<3.0	0.099	5.17	<1.0	177.0	<0.5
X14 Min			<0.005	1.3	0.2	19.9	<50.0	<0.01	<0.005	12.6	0.02	0.4	<0.1	0.28	93	<0.01	0.65	0.001	2.93	250.00	0.17	1.09	1.1	0.026		0.06	<10.0	0.08	2180	<0.01	47.1	<0.5	0.004	0.30	<0.2	10.8	<0.1
X16A	01/02/2011	Ground	<0.005	2.7	0.2	84.4	<50.0	<0.01	<0.005	59.3	0.07	0.0	<0.1	0.35	16		2.42	0.002	13.20	6.02	1.99	2.51	0.3	0.188		0.19	<10.0	1.06	4250	0.03	155.0	<0.5	0.004	1.83	<0.2	7.1	<0.1
X16A	02/06/2011	Ground	<0.005	2.0	0.2	83.4	<50.0	<0.01	<0.005	46.9	0.07	0.0	<0.1	0.39	7		0.98	0.002	10.50	1.63	2.03	1.66	0.3	0.099		0.18	11.0	0.93	3820	<0.01	136.0	<0.5	0.003	1.73	<0.2	4.4	<0.1
X16A	25/09/2011	Ground	<0.005	2.5	0.2	82.5	<50.0	<0.01	<0.005	48.2	0.08	0.0	<0.1	0.45	8		1.21	0.003	11.00	4.85	1.91	2.08	0.4	0.094		0.21	<10.0	0.82	4150	0.03	154.0	<0.5	0.004	1.37	<0.2	6.1	<0.1
X16A Average			0.003	2.4	0.2	83.4	25.0	0.0	0.0	51.5	0.07	0.0	0.1	0.40	10		1.54	0.002	11.57	4.17	1.98	2.08	0.3	0.127		0.19	7.0	0.94	4073	0.02	148.3	0.3	0.004	1.64	0.1	5.9	0.05
X16A Max			<0.005	2.7	0.2	84.4	<50.0	<0.01	<0.005	59.3	0.08	0.0	<0.1	0.45	16		2.42	0.003	13.20	6.02	2.03	2.51	0.4	0.188		0.21	11.0	1.06	4250	0.03	155.0	<0.5	0.004	1.83	<0.2	7.1	<0.1
X16A Min			<0.005	2.0	0.2	82.5	<50.0	<0.01	<0.005	46.9	0.07	0.0	<0.1	0.35	7		0.98	0.002	10.50	1.63	1.91	1.66	0.3	0.094		0.18	<10.0	0.82	3820	<0.01	136.0	<0.5	0.003	1.37	<0.2	4.4	<0.1

Note: Statistics calculated with DLs at half value.
Note: Metals reported in mg/L shaded in gray.

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Denison Environmental Services

Table B-2: 2011 Rose Creek Drainage Water Quality
Dissolved Metals

Faro Mine Closure

Station	Date	Sample Type	Ag-d µg/L	Al-d µg/L	As-d µg/L	Ba-d µg/L	B-d µg/L	Be-d µg/L	Bi-d µg/L	Ca-d mg/L	Cd-d µg/L	Co-d µg/L	Cr-d µg/L	Cu-d µg/L	Fe-d µg/L	Hg-d µg/L	K-d mg/L	Li-d mg/L	Mg-d mg/L	Mn-d µg/L	Mo-d µg/L	Na-d mg/L	Ni-d µg/L	Pb-d µg/L	P-d mg/L	Sb-d µg/L	S-d mg/L	Se-d µg/L	Si-d µg/L	Sn-d µg/L	Sr-d µg/L	Ti-d µg/L	Tl-d µg/L	U-d µg/L	V-d µg/L	Zn-d µg/L	Zr-d µg/L
X16B	01/02/2011	Ground	<0.005	1.4	0.1	132.0	<50.0	<0.01	0.0	66.7	0.03	0.0	0.2	0.36	2		1.88	0.003	16.80	2.45	1.35	2.21	0.5	0.368		0.12	<10.0	1.85	4990	0.02	190.0	<0.5	0.008	1.97	<0.2	4.1	<0.1
X16B	02/06/2011	Ground	<0.005	1.5	0.2	125.0	<50.0	<0.01	<0.005	58.3	0.01	0.0	<0.1	0.31	3		1.18	0.003	15.10	0.21	1.47	1.74	0.4	0.065		0.11	<10.0	1.79	4560	<0.01	177.0	<0.5	0.004	1.99	<0.2	0.8	<0.1
X16B	25/09/2011	Ground	<0.005	2.3	0.1	132.0	<50.0	<0.01	0.0	58.9	0.01	0.0	<0.1	0.25	2		1.14	0.003	15.10	0.16	1.57	2.08	0.5	0.101		0.10	<10.0	1.39	4490	<0.01	185.0	<0.5	0.004	1.70	<0.2	0.9	<0.1
X16B Average			0.003	1.7	0.1	129.7	25.0	0.0	0.0	61.3	0.02	0.0	0.1	0.31	2		1.40	0.003	15.67	0.94	1.46	2.01	0.5	0.178		0.11	5.0	1.68	4680	0.01	184.0	0.3	0.005	1.89	0.1	1.9	0.05
X16B Max			<0.005	2.3	0.2	132.0	<50.0	<0.01	0.0	66.7	0.03	0.0	0.2	0.36	3		1.88	0.003	16.80	2.45	1.57	2.21	0.5	0.368		0.12	<10.0	1.85	4990	0.02	190.0	<0.5	0.008	1.99	<0.2	4.1	<0.1
X16B Min			<0.005	1.4	0.1	125.0	<50.0	<0.01	<0.005	58.3	0.01	0.0	<0.1	0.25	2		1.14	0.003	15.10	0.16	1.35	1.74	0.4	0.065		0.10	<10.0	1.39	4490	<0.01	177.0	<0.5	0.004	1.70	<0.2	0.8	<0.1
X17A	02/02/2011	Ground	<0.005	1.2	0.5	183.0	<50.0	<0.01	0.0	77.4	0.06	0.0	<0.1	0.28	5		1.37	0.004	22.30	35.50	1.19	2.77	0.6	0.101		0.06	17.0	0.05	4100	0.02	242.0	<0.5	<0.002	2.72	<0.2	1.6	<0.1
X17A	31/05/2011	Ground	<0.005	1.6	0.5	213.0	<50.0	<0.01	<0.005	98.7	0.08	0.0	<0.1	0.17	4		1.43	0.004	24.80	47.70	1.00	2.91	0.7	0.175		0.05	33.0	0.05	5510	0.07	278.0	<0.5	<0.002	2.95	<0.2	2.3	<0.1
X17A	26/09/2011	Ground	<0.005	1.5	0.5	161.0	<50.0	<0.01	<0.005	77.4	0.03	0.0	<0.1	0.16	29		1.31	0.004	19.50	31.70	1.27	2.61	0.5	0.022		0.06	17.0	0.64	4740	<0.01	221.0	<0.5	<0.002	2.76	<0.2	0.7	<0.1
X17A Average			0.003	1.4	0.5	185.7	25.0	0.0	0.0	84.5	0.06	0.0	0.1	0.20	13		1.37	0.004	22.20	38.30	1.15	2.76	0.6	0.099		0.06	22.3	0.25	4783	0.03	247.0	0.3	0.001	2.81	0.1	1.5	0.05
X17A Max			<0.005	1.6	0.5	213.0	<50.0	<0.01	0.0	98.7	0.08	0.0	<0.1	0.28	29		1.43	0.004	24.80	47.70	1.27	2.91	0.7	0.175		0.06	33.0	0.64	5510	0.07	278.0	<0.5	<0.002	2.95	<0.2	2.3	<0.1
X17A Min			<0.005	1.2	0.5	161.0	<50.0	<0.01	<0.005	77.4	0.03	0.0	<0.1	0.16	4		1.31	0.004	19.50	31.70	1.00	2.61	0.5	0.022		0.05	17.0	0.05	4100	<0.01	221.0	<0.5	<0.002	2.72	<0.2	0.7	<0.1
X17B	02/02/2011	Ground	<0.005	1.9	0.2	111.0	<50.0	<0.01	<0.005	173.0	0.03	0.1	<0.1	0.27	4190		3.72	0.035	47.60	640.00	0.41	39.90	0.4	0.155		0.03	134.0	<0.04	5080	<0.01	624.0	<0.5	<0.002	0.97	<0.2	2.1	0.60
X17B	31/05/2011	Ground	<0.005	3.0	0.2	154.0	<50.0	<0.01	<0.005	162.0	0.03	0.1	<0.1	<0.05	3300		3.42	0.037	41.60	550.00	0.40	34.10	0.3	0.219		<0.02	97.0	<0.04	6480	0.04	579.0	<0.5	<0.002	2.19	<0.2	1.9	0.90
X17B	26/09/2011	Ground	<0.005	1.9	0.2	186.0	<50.0	<0.01	<0.005	98.5	<0.005	0.0	<0.1	<0.05	1050		2.47	0.021	24.90	283.00	0.76	9.78	0.1	0.103		<0.02	22.0	<0.04	5560	<0.01	403.0	<0.5	<0.002	2.76	<0.2	1.2	0.20
X17B Average			0.003	2.3	0.2	150.3	25.0	0.0	0.0	144.5	0.02	0.1	0.1	0.11	2847		3.20	0.031	38.03	491.00	0.52	27.93	0.3	0.159		0.02	84.3	0.02	5707	0.02	535.3	0.3	0.001	1.97	0.1	1.7	0.57
X17B Max			<0.005	3.0	0.2	186.0	<50.0	<0.01	<0.005	173.0	0.03	0.1	<0.1	0.27	4190		3.72	0.037	47.60	640.00	0.76	39.90	0.4	0.219		0.03	134.0	<0.04	6480	0.04	624.0	<0.5	<0.002	2.76	<0.2	2.1	0.90
X17B Min			<0.005	1.9	0.2	111.0	<50.0	<0.01	<0.005	98.5	<0.005	0.0	<0.1	<0.05	1050		2.47	0.021	24.90	283.00	0.40	9.78	0.1	0.103		<0.02	22.0	<0.04	5080	<0.01	403.0	<0.5	<0.002	0.97	<0.2	1.2	0.20
X18A	02/06/2011	Ground	<0.005	1.5	9.3	141.0	<50.0	<0.01	<0.005	343.0	0.03	1.7	<0.1	0.10	4070		6.38	0.015	74.60	4880.00	0.75	22.40	4.7	0.049		0.04	331.0	<0.04	7510	<0.01	1350.0	<0.5	<0.002	9.27	<0.2	1.0	0.20
X18A	23/09/2011	Ground	<0.005	1.7	9.3	137.0	<50.0	<0.01	<0.005	291.0	0.03	0.7	<0.1	0.15	3290		6.63	0.012	70.80	2220.00	0.69	25.40	2.0	0.213		0.03	271.0	<0.04	6960	<0.01	1260.0	<0.5	<0.002	7.93	<0.2	1.4	0.60
X18A Average			0.003	1.6	9.3	139.0	25.0	0.0	0.0	317.0	0.03	1.2	0.1	0.13	3680		6.51	0.014	72.70	3550.00	0.72	23.90	3.3	0.131		0.04	301.0	0.02	7235	0.01	1305.0	0.3	0.001	8.60	0.1	1.2	0.40
X18A Max			<0.005	1.7	9.3	141.0	<50.0	<0.01	<0.005	343.0	0.03	1.7	<0.1	0.15	4070		6.63	0.015	74.60	4880.00	0.75	25.40	4.7	0.213		0.04	331.0	<0.04	7510	<0.01	1350.0	<0.5	<0.002	9.27	<0.2	1.4	0.60
X18A Min			<0.005	1.5	9.3	137.0	<50.0	<0.01	<0.005	291.0	0.03	0.7	<0.1	0.10	3290		6.38	0.012	70.80	2220.00	0.69	22.40	2.0	0.049		0.03	271.0	<0.04	6960	<0.01	1260.0	<0.5	<0.002	7.93	<0.2	1.0	0.20
X18B	02/02/2011	Ground	<0.03	<1.0	0.2	86.9	<300.0	<0.05	<0.03	300.0	0.14	0.6	<0.5	1.30	134		6.90	0.011	72.50	1360.00	0.50	20.10	15.7	0.110		<0.1	279.0	<0.2	5550	<0.05	959.0	<3.0	<0.01	5.98	<1.0	4.2	<0.5
X18B	02/06/2011	Ground	<0.005	1.8	0.3	80.9	<50.0	<0.01	<0.005	367.0	0.23	0.8	<0.1	0.45	233		7.12	0.012	78.80	2120.00	0.58	20.70	18.5	0.134		0.06	349.0	<0.04	7470	<0.01	1170.0	<0.5	0.007	13.30	<0.2	4.1	<0.1
X18B	23/09/2011	Ground	<0.005	0.8	0.3	43.8	<50.0	<0.01	<0.005	128.0	0.19	0.3	<0.1	0.60	52		4.93	0.009	29.40	982.00	0.75	11.70	7.1	0.069		0.06	71.0	0.48	5980	<0.01	448.0	<0.5	0.006	5.20	<0.2	2.2	0.20
X18B Average			0.007	1.0	0.3	70.5	66.7	0.0	0.0	265.0	0.18	0.6	0.1	0.78	140		6.32	0.011	60.23	1487.33	0.61	17.50	13.8	0.104		0.06	233.0	0.20	6333	0.01	859.0	0.7	0.006	8.16	0.2	3.5	0.17
X18B Max			<0.03	1.8	0.3	86.9	<300.0	<0.05	<0.03	367.0	0.23	0.8	<0.5	1.30	233		7.12	0.012	78.80	2120.00	0.75	20.70	18.5	0.134		<0.1	349.0	0.48	7470	<0.05	1170.0	<3.0	<0.01	13.30	<1.0	4.2	<0.5
X18B Min			<0.005	0.8	0.2	43.8	<50.0	<0.01	<0.005	128.0	0.14	0.3	<0.1	0.45	52		4.93	0.009	29.40	982.00	0.50	11.70	7.1	0.069		0.06	71.0	<0.04	5550	<0.01	448.0	<0.5	0.006	5.20	<0.2	2.2	<0.1
X2	19/01/2011	Surface	<0.005	1.6	0.2	74.0	<50.0	<0.01	<0.005	50.2	0.02	0.2	<0.1	0.29	49		1.16	0.008	11.40	69.50	0.67	3.63	0.6	0.071		0.05	11.0	0.44	5050	<0.01	194.0	<0.5	0.003	2.46	<0.2	18.2	<0.1
X2	01/02/2011	Surface	<0.005	2.3	0.2	71.9	<50.0	<0.01	0.0	49.1	0.02	0.2	<0.1	0.34	60		1.67	0.009	10.20	67.70	0.69	3.39	0.7	0.197		0.06	<10.0	0.38	6430	<0.01	198.0	<0.5	<0.002	2.53	<0.2	20.4	<0.1
X2	16/03/2011	Surface	<0.005	1.8	0.2	71.4	<50.0	<0.01	<0.005	44.5	0.03	0.2	<0.1	0.65	72		1.23	0.010	11.30	114.00	0.79	3.79	0.9	0.187		0.06	12.0	0.41	5510	0.02	211.0	<0.5	0.003	3.00	<0.2	28.5	<0.1
X2	13/04/2011	Surface	<0.005	2.3	0.2	76.6	<50.0	<0.01	<0.005	49.6	0.02	0.2	<0.1	0.47	65		1.38	0.009	10.50	86.20	0.72	3.61	0.7	0.176		0.06	<10.0	0.44	6890	<0.01	215.0	<0.5	<0.002	2.80	<0.2	38.4	<0.1
X2	11/05/2011	Surface	<0.005	62.1	0.8	59.2	<50.0	<0.01	0.0	31.3	0.13	0.2	<0.1	5.84	269		1.86	0.006	6.78	45.40	0.62	2.56	1.8	1.450		0.07	<10.0	0.33	4690	<0.01	136.0	<0.5	0.004	1.59	<0.2	81.9	<0.1
X2	20/06/2011	Surface	<0.005	20.3	0.5	31.4	<50.0	<0.01	<0.005	15.6	0.03	0.0	<0.1	0.99	71		0.44	0.002	3.49	7.44	0.33	1.25	0.5	1.220		0.08	<10.0	0.20	3940	0.02	63.4	<0.5	0.004	0.54	<0.2	7.8	<0.1
X2	13/07/2011	Surface	<0.005	15.4	0.5	39.2	<50.0	<0.01	<0.005	21.5	0.02	0.0	<0.1	0.78	81		0.46	0.003	4.56	12.90	0.41	1.56	0.5	0.459		0.08	<10.0	0.25	4890	<0.01	88.0	<0.5	<0.002	0.72	<0.2	6.5	<0.1
X2	25/08/2011	Surface	<0.005	12.4	0.5	38.3	<50.0	<0.01	<0.005	21.3	<0.005	0.1	<0.1	0.83	85		0.49	0.002	4.48	14.90	0.33	1.70	0.5	0.529		0.07	<10.0	0.18	4690	<0.01	89.7	<0.5	0.003	0.71	<0.2	8.4	<0.1
X2	21/09/2011	Surface	0.011	10.0	0.5	47.6	<50.0	<0.01	0.0	26.9	0.02	0.1	<0.1	0.63	119		0.66	0.004	5.43	29.70	0.44	1.95	0.6	0.884		0.06	<10.0	0.27	5330	<0.01	109.0	<0.5	0.003	1.03	<0.2	30.4	<0.1
X2	20/10/2011	Surface	<0.005	4.8	0.7	62.5	<50.0	<0.01	<0.005	36.1	0.02	0.3	<0.1	0.34	230		0.85	0.005	7.58	151.00	0.60	2.66	0.8	0.780		0.08	<10.0	0.35	5870	<0.01	141.0	<0.5	0.004	1.71	<0.2	15.3	<0.1
X2	14/11/2011	Surface	<0.005	5.9	0.3	68.5	<50.0	<0.01	0.0	34.3	0.04	0.2	<0.1	0.98	62		1.08	0.006	7.63	67.90	0.64	2.57	0.8	1.130		0.10	<10.0	0.38	5350	0.03	163.0	<0.5	0.004	1.80	<0.2	26.0	<0.1
X2	06/12/2011	Surface	<0.005	3.3	0.4	60.7	<50.0	<0.01	<0.005	35.1	0.02	0.1	<0.1	0.33	76		0.91	0.006	8.18	50.50	0.63	2.69	0.5	0.074		0.06	<10.0	0.40	5550	<0.01	150.0	<0.5	<0.002	1.73	<0.2	11.8	<0.1
X2 Average			0.003	11.9	0.4	58.4	25.0	0.0	0.0	34.6	0.03	0.2	0.1	1.04	103		1.02	0.006	7.63	59.76	0.57	2.61	0.7	0.596		0.07	6.1	0.34	5349	0.01	146.5	0.3	0.003	1.72	0.1	24.5	0.05
X2 Max			0.011	62.1	0.8	76.6	<50.0	<0.01	0.0	50.2	0.13	0.3	<0.1	5.84	269		1.86	0.010	11.40	151.00	0.79	3.79	1.8	1.450		0.10	12.0	0.44	6890	0.03	215.0	<0.5	0.004	3.00	<0.2	81.9	<0.1
X2 Min			<0.005	1.6	0.2	31.4	<50.0	<0.01	<0.005	15.6	<0.005	0.0	<0.1	0.29	49		0.44	0.002	3.49	7.44	0.33	1.25	0.5	0.071		0.05	<10.0	0.18	3940	<0.01	63.4	<0.5	<0.002	0.54	<0.2	6.5	<0.1
X21-96A	09/06/2011	Ground	<0.08	93.0	12.0	<4.0	<200.0	1.0	<4.0	279.0	0.40	31.0	10.0	<0.8	1300000		6.60	0.029	128.00	77000.00	<4.0	79.30	29.0	22.200		<2.0	1350.0	<0.4	9280	<20.0	657.0	<20.0	<0.2	2.50	<20.0	30000.0	<2.0
X21-96A	13/10/2011	Ground	<1.0	2580.0	37.0	<50.0	<3000.0	16.0	<50.0	375.0	14.30	47.0	<50.0	<10.0	9900000		11.00	<0.3	478.00	422000.00	<50.0	49.00	88.0	458.000		<30.0	6140.0	<5.0	22400	<300.0	984.0	<300.0	<3.0	<5.0	<300.0	659000.0	<30.0
X21-96A Average			0.270	1336.5	24.5	13.5	800.0	8.5	13.5	327.0	7.35	39.0	17.5	2.70	5600000		8.80	0.090	303.00	249500.00	13.50	64.15	58.5	240.100		8.00	3745.0	1.35	15840	80.00	820.5	80.0	0.800	2.50	80.0	344500.0	8.00
X21-96A Max			<1.0	2580.0	37.0	<50.0	<3,000.0	16.0	<50.0	375.0	14.30	47.0	<50.0	<10.0	9900000		11.00	<0.3	478.00	422000.00	<50.0	79.30	88.0	458.000		<30.0	6140.0	<5.0	22400	<300.0	984.0	<300.0	<3.0	<5.0	<300.0	659000.0	<30.0
X21-96A Min			<0.08	93.0	12.0	<4.0	<200.0	1.0	<4.0	279.0	0.40	31.0	10.0	<0.8	1300000		6.60	0.029	128.00	77000.00	<4.0	49.00	29.0	22.200		<2.0	1350.0	<0.4	9280	<20.0	657.0	<20.0	<0.2	2.50	<20.0	30000.0	<2.0
X21-96B	09/06/2011	Ground	<0.04	<6.0	5.7	13.0	<100.0	<0.2	<2.0	331.0	0.15	26.0	13.0	1.10	203000		5.50	0.017	74.20	37400.00	<2.0	60.90	29.0	<0.4		<1.0	544.0	<0.2	11100	<10.0	876.0	<10.0	<0.1	3.30	<10.0	312.0	<1.0
X21-96B	13/10/2011	Ground	<0.02	8.0	7.2	16.0	<50.0	<0.1	<1.0	361.0	0.27	78.0	<1.0	0.50	408000		4.90	0.021	88.90	50800.00	<1.0	55.30	48.0	0.600		<0.5	721.0	0.20	10900	<5.0	1070.0	<5.0	<0.05	3.70	<5.0	18300.0	<0.5
X21-96B Average			0.015	5.5	6.5	14.5	37.5	0.1	0.8	346.0	0.21	52.0	6.8	0.80	305500		5.20	0.019	81.55	44100.00	0.75	58.10	38.5	0.400		0.38	632.5	0.15	11000	3.75	973.0	3.8	0.038	3.50	3.8	9306.0	0.38
X21-96B Max			<0.04	8.0	7.2	16.0	<100.0	<0.2	<2.0	361.0	0.27	78.0	13.0	1.10	408000		5.50	0.021	88.90	50800.00	<2.0	60.90	48.0	0.600		<1.0	721.0	0.20	11100	<10.0	1070.0	<10.0	<0.1	3.70	<10.0	18300.0	<1.0
X21-96B Min			<0.02	<6.0	5.7	13.0	<50.0	<0.1	<1.0	331.0	0.15	26.0	<1.0	0.50	203000		4.90	0.017	74.20	37400.00	<1.0	55.30	29.0	<0.4		<0.5	544.0	<0.2	10900	<5.0	876.0	<5.0	<0.05	3.30	<5.0	312.0	<0.5
X22b	19/01/2011	Surface	0.050	8.0	<0.1	16.7	<300.0	<0.05	<0.03	151.0	14.80	52.4	<0.5	9.50	28		8.70	0.058	83.00	3160.00	0.50	20.90	143.0	1.100		0.20	267.0	<0.2	2850	<0.05	630.0	<3.0	0.470	1.18	<1.0	20700.0	<0.5
X22b	15/02/2011	Surface	<0.03	7.0	<0.1	16.6	<300.0	<0.05	<0.03	152.0	17.40	50.8	<0.5	7.00	8		8.90	0.064	78.80	3250.00	0.70	18.90	134.0	0.510		0.30	270.0	<0.2	4480	<0.05	669.0	<3.0	0.480	1.32	<1.0	20900.0	<0.5
X22b	16/03/2011	Surface	<0.03	10.0	0.2	16.1	<300.0	0.1	<0.03	135.0	16.60	45.6	<0.5	12.30	6		6.90	0.057	71.30	2760.00	<0.3	17.00	125.0	0.280		0.20	221.0	<0.2	4620	<0.05	609.0	<3.0	0.480	1.26	<1.0	20600.0	<0.5
X22b	14/04/2011	Surface	<0.005	1.4	0.1	13.3	<50.0	<0.01	<0.005	116.0	3.86	8.0	<0.1	0.39	107		3.99	0.033	37.30		0.16	9.41	28.5	0.692		0.10	131.0	0.22	6590	<0.01	479.0	<0.5	0.585	0.62	<0.2	4530.0	<0.1
X22b	04/05/2011	Surface	<0.03	4.0	<0.1	22.2	<300.0	<0.05	<0.03	102.0	9.78	21.1	<0.5	3.80	16		4.40	0.032	38.80	1230.00	<0.3	9.60	53.3	4.770		0.20	133.0	0.30	3980	<0.05	471.0	<3.0	0.400	0.64	<1.0	10300.0	<0.5
X22b	15/06/2011	Surface	<0.03	7.0	0.2	15.6	<300.0	0.1	<0.03	133.0	18.90	53.9	<0.5	17.40	11		7.20	0.051	68.70	2910.00	0.60	15.50	132.0	0.400		0.20	225.0	<0.2	4110	<0.05	563.0	<3.0	0.410	0.98	<1.0	20600.0	<0.5
X22b	20/07/2011	Surface	<0.03	4.0	<0.1	17.0	<300.0	0.1	<0.03	139.0	19.60	55.7	<0.5	6.10	30		7.30	0.051	74.90	3200.00	<0.3	16.50	135.0	2.440		0.20	224.0	<0.2	4390	<0.05	584.0	<3.0	0.440	0.69	<1.0	21500.0	<0.5
X22b	23/08/2011	Surface	0.070	7.0	0.4	15.8	<300.0	0.1	<0.03	124.0	19.40	51.7	<0.5	5.10	15		8.60	0.052	70.30	2920.00	<0.3	15.80	126.0	1.260		<0.1	221.0	0.30	3670	0.06	572.0	<3.0	0.410	0.40	2.0	20200.0	<0.5
X22b	25/09/2011	Surface	0.041	4.2	0.3	14.3	<50.0	0.1	0.0	139.0	19.70	56.0	<0.1	6.44	5		7.60	0.053	77.20	3680.00	0.38	18.00	139.0	0.346		0.18	236.0	0.10	4050	<0.01	628.0	1.5	0.403	0.34	<0.2	25400.0	<0.1
X22b	19/10/2011	Surface	<0.03	7.0	0.2	16.0	<300.0	0.1	<0.03	146.0	19.60	56.0	<0.5	6.90	14		8.10	0.059	78.70	3340.00	<0.3	18.80	145.0	0.160		0.20	238.0	<0.2	3930	<0.05	599.0	<3.0	0.430	0.47	<1.0	22100.0	<0.5
X22b	17/11/2011	Surface	<0.03	11.0	0.2	17.1	<300.0	0.1	<0.03	143.0	20.80	59.6	<0.5	11.20	13		8.80	0.060	83.00	3550.00	<0.3	19.40	153.0	0.260		0.20	233.0	<0.2	3750	<0.05	654.0	<3.0	0.440	0.57	<1.0	24500.0	<0.5
X22b	07/12/2011	Surface	0.019	7.4	0.2	15.8	<50.0	0.1	<0.005	141.0	20.50	57.8	<0.1	8.00	11		8.21	0.045	80.60	3380.00	0.28	19.20	144.0	0.178		0.19	248.0	0.14	3510	<0.01	668.0	<0.5	0.451	0.60	<0.2	21000.0	<0.1
X22b Average			0.024	6.5	0.2	16.4	118.8	0.1	0.0	135.1	16.75	47.4	0.2	7.84	22		7.39	0.051	70.22	3034.55	0.29	16.58	121.5	1.033		0.19	220.6	0.15	4161	0.02	593.8	1.3	0.450	0.76	0.5	19360.8	0.20
X22b Max			0.070	11.0	0.4	22.2	<300.0	0.1	<0.03	152.0	20.80	59.6	<0.5	17.40	107		8.90	0.064	83.00	3680.00	0.70	20.90	153.0	4.770		0.30	270.0	0.30	6590	0.06	669.0	<3.0	0.585	1.32	2.0	25400.0	<0.5
X22b Min			<0.005	1.4	0.1	13.3	<50.0	<0.01	<0.005	102.0	3.86	8.0	<0.1	0.39	5		3.99	0.032	37.30	1230.00	0.16	9.41	28.5	0.160		<0.1	131.0	0.10	2850	<0.01	471.0	<0.5	0.400	0.34	<0.2	4530.0	<0.1

Note: Statistics calculated with DLs at half value.
Note: Metals reported in mg/L shaded in gray.

Denison Environmental Services

Table B-2: 2011 Rose Creek Drainage Water Quality
Dissolved Metals

Faro Mine Closure

Station	Date	Sample Type	Ag-d µg/L	Al-d µg/L	As-d µg/L	Ba-d µg/L	B-d µg/L	Be-d µg/L	Bi-d µg/L	Ca-d mg/L	Cd-d µg/L	Co-d µg/L	Cr-d µg/L	Cu-d µg/L	Fe-d µg/L	Hg-d µg/L	K-d mg/L	Li-d mg/L	Mg-d mg/L	Mn-d µg/L	Mo-d µg/L	Na-d mg/L	Ni-d µg/L	Pb-d µg/L	P-d mg/L	Sb-d µg/L	S-d mg/L	Se-d µg/L	Si-d µg/L	Sn-d µg/L	Sr-d µg/L	Ti-d µg/L	Tl-d µg/L	U-d µg/L	V-d µg/L	Zn-d µg/L	Zr-d µg/L
X23	12/05/2011	Seepage	0.500	27400.0	242.0	<20.0	<1000.0	9.0	<20.0	437.0	502.00	1410.0	42.0	4420.00	387000		15.00	0.206	876.00	91300.00	<20.0	58.00	1570.0	300.000		<10.0	2520.0	<2.0	11600	<100.0	3440.0	<100.0	2.000	36.00	<100.0	796000.0	<10.0
X23	16/06/2011	Seepage	0.500	<50.0	<2.0	<20.0	<800.0	<2.0	<20.0	397.0	205.00	1540.0	<20.0	129.00	152000		16.50	0.219	1110.00	104000.00	<20.0	59.00	1710.0	<3.0		<8.0	2500.0	<2.0	7000	<80.0	3900.0	<80.0	1.700	9.00	<80.0	771000.0	<8.0
X23	21/07/2011	Seepage	0.400	<30.0	<1.0	14.0	<500.0	<1.0	<10.0	419.0	173.00	1380.0	<10.0	47.00	151000		15.20	0.191	1010.00	100000.00	<10.0	55.80	1580.0	<2.0		<5.0	2480.0	<1.0	7090	<50.0	3760.0	<50.0	1.600	8.00	<50.0	677000.0	<5.0
X23	24/08/2011	Seepage	<1.0	<200.0	<5.0	<50.0	<3000.0	<5.0	<50.0	390.0	125.00	1320.0	<50.0	296.00	166000		15.00	<0.3	957.00	97300.00	<50.0	50.00	1500.0	42.000		<30.0	2130.0	<5.0	6690	<300.0	3560.0	<300.0	<3.0	9.00	<300.0	649000.0	<30.0
X23	20/09/2011	Seepage	0.400	<30.0	<1.0	11.0	<500.0	<1.0	<10.0	388.0	114.00	1120.0	<10.0	16.00	179000		14.80	0.154	941.00	106000.00	<10.0	50.70	1430.0	<2.0		<5.0	2120.0	<1.0	5590	<50.0	3350.0	<50.0	1.700	6.00	<50.0	710000.0	<5.0
X23	19/10/2011	Seepage	<0.5	<80.0	<3.0	<30.0	<1000.0	<3.0	<30.0	425.0	117.00	1360.0	<30.0	18.00	216000		15.00	0.189	1010.00	99000.00	<30.0	55.00	1500.0	<5.0		<10.0	2200.0	<3.0	7670	<100.0	3680.0	<100.0	2.000	8.00	<100.0	710000.0	<10.0
X23	17/11/2011	Seepage	0.640	<75.0	<2.5	<25.0	<1300.0	<2.5	<25.0	452.0	114.00	1480.0	<25.0	15.80	197000		16.50	0.192	1140.00	120000.00	<25.0	61.70	1580.0	<5.0		<13.0	2770.0	<2.5	6960	<130.0	4130.0	<130.0	1.800	6.40	<130.0	778000.0	<13.0
X23 Average			0.456	3947.5	35.6	13.9	578.6	2.3	11.8	415.4	192.86	1372.9	16.4	705.97	206857		15.43	0.186	1006.29	102514.29	11.79	55.74	1552.9	50.071		5.79	2388.6	1.18	7514	57.86	3688.6	57.9	1.757	11.77	57.9	727285.7	5.79
X23 Max			<1.0	27400.0	242.0	<50.0	<3,000.0	9.0	<50.0	452.0	502.00	1540.0	<50.0	4420.00	387000		16.50	<0.3	1140.00	120000.00	<50.0	61.70	1710.0	300.000		<30.0	2770.0	<5.0	11600	<300.0	4130.0	<300.0	<3.0	36.00	<300.0	796000.0	<30.0
X23 Min			0.400	<30.0	<1.0	11.0	<500.0	<1.0	<10.0	388.0	114.00	1120.0	<10.0	15.80	151000		14.80	0.154	876.00	91300.00	<10.0	50.00	1430.0	<2.0		<5.0	2120.0	<1.0	5590	<50.0	3350.0	<50.0	1.600	6.00	<50.0	649000.0	<5.0
X24-96D	02/06/2011	Ground	<0.04	<6.0	<0.2	19.0	<100.0	<0.2	<2.0	781.0	11.20	152.0	<2.0	2.70	51		8.50	0.028	171.00	85500.00	<2.0	43.10	318.0	<0.4		<1.0	911.0	<0.2	11900	<10.0	2110.0	<10.0	0.200	5.40	<10.0	187.0	<1.0
X24-96D	28/09/2011	Ground	<0.05	<8.0	<0.3	18.0	<100.0	<0.3	<3.0	684.0	3.39	191.0	<3.0	2.50	229		7.20	0.030	164.00	87200.00	<3.0	40.20	303.0	<0.5		<1.0	880.0	<0.3	10800	<10.0	2070.0	<10.0	0.200	4.90	<10.0	136.0	<1.0
X24-96D Average			0.023	3.5	0.1	18.5	50.0	0.1	1.3	732.5	7.30	171.5	1.3	2.60	140		7.85	0.029	167.50	86350.00	1.25	41.65	310.5	0.225		0.50	895.5	0.13	11350	5.00	2090.0	5.0	0.200	5.15	5.0	161.5	0.50
X24-96D Max			<0.05	<8.0	<0.3	19.0	<100.0	<0.3	<3.0	781.0	11.20	191.0	<3.0	2.70	229		8.50	0.030	171.00	87200.00	<3.0	43.10	318.0	<0.5		<1.0	911.0	<0.3	11900	<10.0	2110.0	<10.0	0.200	5.40	<10.0	187.0	<1.0
X24-96D Min			<0.04	<6.0	<0.2	18.0	<100.0	<0.2	<2.0	684.0	3.39	152.0	<2.0	2.50	51		7.20	0.028	164.00	85500.00	<2.0	40.20	303.0	<0.4		<1.0	880.0	<0.2	10800	<10.0	2070.0	<10.0	0.200	4.90	<10.0	136.0	<1.0
X25-96A	01/02/2011	Ground	<0.005	2.1	0.2	57.6	<50.0	<0.01	<0.005	225.0	0.10	7.0	<0.1	0.98	15		5.22	0.005	60.10	9440.00	1.64	24.50	7.7	0.072		0.04	230.0	<0.04	6140	<0.01	693.0	<0.5	0.016	13.60	<0.2	3.9	<0.1
X25-96A	02/06/2011	Ground	<0.02	<3.0	0.2	53.0	<50.0	<0.1	<1.0	227.0	0.09	4.5	2.0	0.80	322		4.48	<0.005	54.60	9830.00	<1.0	21.30	6.0	<0.2		<0.5	209.0	<0.1	7220	<5.0	639.0	<5.0	<0.05	11.30	<5.0	<5.0	<0.5
X25-96A	28/09/2011	Ground	<0.02	<3.0	0.2	55.0	<50.0	<0.1	<1.0	226.0	0.13	6.7	<1.0	0.90	71		4.61	<0.005	59.10	10400.00	<1.0	21.10	8.0	<0.2		<0.5	251.0	<0.1	7240	<5.0	670.0	<5.0	<0.05	12.10	<5.0	<5.0	<0.5
X25-96A Average			0.008	1.7	0.2	55.2	25.0	0.0	0.3	226.0	0.11	6.1	0.9	0.89	136		4.77	0.003	57.93	9890.00	0.88	22.30	7.2	0.091		0.18	230.0	0.04	6867	1.67	667.3	1.8	0.022	12.33	1.7	3.0	0.18
X25-96A Max			<0.02	<3.0	0.2	57.6	<50.0	<0.1	<1.0	227.0	0.13	7.0	2.0	0.98	322		5.22	<0.005	60.10	10400.00	1.64	24.50	8.0	<0.2		<0.5	251.0	<0.1	7240	<5.0	693.0	<5.0	<0.05	13.60	<5.0	<5.0	<0.5
X25-96A Min			<0.005	2.1	0.2	53.0	<50.0	<0.01	<0.005	225.0	0.09	4.5	<0.1	0.80	15		4.48	<0.005	54.60	9440.00	<1.0	21.10	6.0	0.072		0.04	209.0	<0.04	6140	<0.01	639.0	<0.5	0.016	11.30	<0.2	3.9	<0.1
X25-96B	01/02/2011	Ground	<0.005	1.5	0.7	29.0	<50.0	<0.01	<0.005	204.0	0.03	0.2	<0.1	0.15	1100		3.88	0.010	35.00	260.00	0.42	47.10	0.7	0.093		<0.02	188.0	<0.04	4510	<0.01	523.0	<0.5	0.006	6.74	<0.2	0.9	<0.1
X25-96B	02/06/2011	Ground	<0.02	<3.0	0.6	30.0	<50.0	<0.1	<1.0	218.0	<0.03	<0.5	<1.0	<0.2	995		3.54	0.009	35.30	229.00	<1.0	45.40	<1.0	<0.2		<0.5	186.0	<0.1	5110	<5.0	530.0	<5.0	<0.05	6.30	<5.0	<5.0	<0.5
X25-96B	28/09/2011	Ground	0.040	5.0	0.6	28.0	<50.0	<0.1	<1.0	210.0	0.04	<0.5	<1.0	0.80	880		3.35	0.009	35.80	221.00	<1.0	44.20	<1.0	0.500		<0.5	206.0	<0.1	5300	<5.0	508.0	<5.0	<0.05	6.50	<5.0	8.0	<0.5
X25-96B Average			0.018	2.7	0.6	29.0	25.0	0.0	0.3	210.7	0.03	0.2	0.4	0.35	992		3.59	0.009	35.37	236.67	0.47	45.57	0.6	0.231		0.17	193.3	0.04	4973	1.67	520.3	1.8	0.019	6.51	1.7	3.8	0.18
X25-96B Max			0.040	5.0	0.7	30.0	<50.0	<0.1	<1.0	218.0	0.04	<0.5	<1.0	0.80	1100		3.88	0.010	35.80	260.00	<1.0	47.10	<1.0	0.500		<0.5	206.0	<0.1	5300	<5.0	530.0	<5.0	<0.05	6.74	<5.0	8.0	<0.5
X25-96B Min			<0.005	1.5	0.6	28.0	<50.0	<0.01	<0.005	204.0	0.03	0.2	<0.1	0.15	880		3.35	0.009	35.00	221.00	0.42	44.20	0.7	0.093		<0.02	186.0	<0.04	4510	<0.01	508.0	<0.5	0.006	6.30	<0.2	0.9	<0.1
X26	26/05/2011	Ground	0.070	11.0	4.1	7.0	122.0	0.3	<1.0	551.0	29.00	665.0	<1.0	2.10	116000		17.50	0.289	511.00	19500.00	<1.0	89.00	1670.0	81.000		0.80	1300.0	<0.1	8020	<5.0	3950.0	<5.0	1.890	17.60	<5.0	90500.0	<0.5
X26	15/06/2011	Ground	<0.04	7.0	3.4	7.0	<100.0	0.3	<2.0	502.0	23.80	475.0	<2.0	1.40	47100		14.30	0.225	351.00	12100.00	<2.0	53.80	1400.0	42.300		<1.0	937.0	<0.2	6720	<10.0	2860.0	<10.0	1.300	14.70	<10.0	71100.0	<1.0
X26	03/08/2011	Ground	<0.08	13.0	3.8	7.0	<200.0	<0.4	<4.0	498.0	31.10	601.0	<4.0	<0.8	105000		17.60	0.283	458.00	18000.00	<4.0	72.60	1590.0	58.200		<2.0	1040.0	<0.4	5940	<20.0	3340.0	<20.0	1.900	14.10	<20.0	116000.0	<2.0
X26	27/09/2011	Ground	0.060	<8.0	4.1	7.0	<100.0	<0.3	<3.0	570.0	31.60	640.0	<3.0	0.60	148000		17.10	0.267	549.00	18900.00	<3.0	82.10	1560.0	81.500		<1.0	1300.0	<0.3	7040	<10.0	3130.0	<10.0	1.700	13.70	<10.0	122000.0	2.00
X26 Average			0.048	8.8	3.9	7.0	80.5	0.2	1.3	530.3	28.88	595.3	1.3	1.13	104025		16.63	0.266	467.25	17125.00	1.25	74.38	1555.0	65.750		0.70	1144.3	0.13	6930	5.63	3320.0	5.6	1.698	15.03	5.6	99900.0	0.94
X26 Max			<0.08	13.0	4.1	7.0	<200.0	<0.4	<4.0	570.0	31.60	665.0	<4.0	2.10	148000		17.60	0.289	549.00	19500.00	<4.0	89.00	1670.0	81.500		<2.0	1300.0	<0.4	8020	<20.0	3950.0	<20.0	1.900	17.60	<20.0	122000.0	<2.0
X26 Min			<0.04	7.0	3.4	7.0	<100.0	0.3	<1.0	498.0	23.80	475.0	<1.0	0.60	47100		14.30	0.225	351.00	12100.00	<1.0	53.80	1400.0	42.300		0.80	937.0	<0.1	5940	<5.0	2860.0	<5.0	1.300	13.70	<5.0	71100.0	<0.5
X3	18/01/2011	Surface	<0.005	1.8	0.3	69.1	<50.0	<0.01	<0.005	46.0	0.02	0.1	<0.1	1.76	56		1.20	0.007	9.86	50.80	0.69	3.29	0.6	0.085		0.06	<10.0	0.38	5100	<0.01	196.0	<0.5	<0.002	2.63	<0.2	14.0	<0.1
X3	02/02/2011	Surface	0.008	2.0	0.2	68.7	<50.0	<0.01	<0.005	43.3	0.01	0.1	<0.1	0.38	43		1.14	0.007	9.24	45.30	0.60	3.05	0.6	0.307		0.05	<10.0	0.35	5300	0.06	190.0	<0.5	0.003	2.52	<0.2	13.4	<0.1
X3	14/03/2011	Surface	<0.005	1.7	0.2	79.6	<50.0	<0.01	<0.005	49.5	0.02	0.1	<0.1	0.53	29		1.35	0.009	11.70	72.90	0.73	3.72	0.8	0.116		0.06	12.0	0.42	6140	<0.01	227.0	<0.5	<0.002	3.16	<0.2	20.1	<0.1
X3	13/04/2011	Surface	<0.005	1.5	0.2	73.2	<50.0	<0.01	<0.005	51.5	0.02	0.1	<0.1	0.41	47		1.34	0.008	10.30	58.80	0.67	3.53	0.5	0.092		0.06	<10.0	0.40	6820	<0.01	214.0	<0.5	0.003	2.84	<0.2	17.1	<0.1
X3	05/05/2011	Surface	<0.005	17.3	0.3	68.6	<50.0	<0.01	<0.005	40.8	0.11	0.2	<0.1	1.67	139		1.43	0.007	8.57	67.60	0.70	3.08	0.9	0.267		0.06	<10.0	0.32	5580	<0.01	187.0	<0.5	<0.002	2.63	<0.2	77.3	<0.1
X3	20/06/2011	Surface	<0.005	15.8	0.4	27.9	<50.0	<0.01	<0.005	14.1	0.02	0.0	<0.1	0.73	73		0.47	0.002	2.79	8.46	0.24	1.22	0.4	0.964		0.05	<10.0	0.14	3620	<0.01	68.0	<0.5	<0.002	0.61	<0.2	2.9	<0.1
X3	13/07/2011	Surface	<0.005	13.4	0.5	37.9	<50.0	<0.01	<0.005	23.2	0.01	0.0	<0.1	0.69	99		0.56	0.002	4.63	16.40	0.29	1.63	0.4	0.306		0.06	<10.0	0.22	4630	<0.01	107.0	<0.5	<0.002	0.97	<0.2	3.4	<0.1
X3	25/08/2011	Surface	<0.005	9.7	0.4	37.4	<50.0	<0.01	<0.005	22.4	0.01	0.0	<0.1	0.52	97		0.57	0.002	4.60	14.80	0.29	1.73	0.4	0.208		0.07	<10.0	0.12	4290	<0.01	106.0	<0.5	<0.002	0.90	<0.2	3.4	<0.1
X3	21/09/2011	Surface	<0.005	9.5	0.4	48.0	<50.0	<0.01	<0.005	29.0	0.01	0.1	<0.1	0.84	131		0.76	0.003	5.91	23.70	0.37	1.97	0.4	0.307		0.06	<10.0	0.22	4930	0.03	129.0	<0.5	<0.002	1.37	<0.2	6.2	<0.1
X3	27/10/2011	Surface	0.007	6.1	0.4	53.5	<50.0	<0.01	<0.005	33.6	0.07	0.2	<0.1	0.99	140		1.42	0.004	7.03	63.70	0.43	2.52	1.1	0.973		0.06	<10.0	0.30	4990	0.05	161.0	<0.5	0.006	1.99	<0.2	53.3	<0.1
X3	15/11/2011	Surface	<0.005	3.9	0.3	64.1	<50.0	<0.01	<0.005	34.3	0.02	0.1	<0.1	0.45	56		1.05	0.005	7.43	48.40	0.50	2.54	0.6	0.476		0.07	<10.0	0.36	5000	0.02	176.0	<0.5	<0.002	1.92	<0.2	14.2	<0.1
X3	07/12/2011	Surface	<0.005	3.2	0.3	62.2	<50.0	<0.01	<0.005	37.1	0.01	0.1	<0.1	0.35	77		0.99	0.005	7.85	47.00	0.49	2.66	0.4	0.059		0.06	<10.0	0.40	5040	<0.01	173.0	<0.5	<0.002	2.11	<0.2	9.2	<0.1
X3 Average			0.003	7.2	0.3	57.5	25.0	0.0	0.0	35.4	0.03	0.1	0.1	0.78	82		1.02	0.005	7.49	43.16	0.50	2.58	0.6	0.347		0.06	5.6	0.30	5120	0.02	161.2	0.3	0.002	1.97	0.1	19.5	0.05
X3 Max			0.008	17.3	0.5	79.6	<50.0	<0.01	<0.005	51.5	0.11	0.2	<0.1	1.76	140		1.43	0.009	11.70	72.90	0.73	3.72	1.1	0.973		0.07	12.0	0.42	6820	0.06	227.0	<0.5	0.006	3.16	<0.2	77.3	<0.1
X3 Min			<0.005	1.5	0.2	27.9	<50.0	<0.01	<0.005	14.1	0.01	0.0	<0.1	0.35	29		0.47	0.002	2.79	8.46	0.24	1.22	0.4	0.059		0.05	<10.0	0.12	3620	<0.01	68.0	<0.5	<0.002	0.61	<0.2	2.9	<0.1
X3A	18/01/2011	Surface	<0.005	2.5	0.2	69.4	<50.0	<0.01	<0.005	47.0	0.02	0.1	<0.1	0.32	137		1.26	0.007	9.79	74.60	0.63	3.18	0.5	0.049		0.06	<10.0	0.39	5450	<0.01	198.0	<0.5	<0.002	2.59	<0.2	20.0	<0.1
X3A	01/02/2011	Surface	0.007	2.2	0.2	69.8	<50.0	<0.01	<0.005	48.5	0.02	0.1	<0.1	0.39	54		1.73	0.007	9.76	57.00	0.60	3.21	0.6	0.154		0.05	<10.0	0.36	5950	<0.01	202.0	<0.5	<0.002	2.55	<0.2	16.3	<0.1
X3A	16/03/2011	Surface	<0.005	1.2	0.2	70.8	<50.0	<0.01	<0.005	46.7	0.03	0.1	<0.1	0.45	30		1.21	0.008	11.00	76.30	0.64	3.33	0.6	0.098		0.05	<10.0	0.38	5640	<0.01	211.0	<0.5	<0.002	2.88	<0.2	17.9	<0.1
X3A	13/04/2011	Surface	<0.005	2.3	0.2	74.3	<50.0	<0.01	<0.005	50.1	0.02	0.1	<0.1	0.59	112		1.27	0.007	9.93	74.20	0.67	3.31	0.5	0.227		0.05	<10.0	0.36	6450	<0.01	221.0	<0.5	<0.002	2.99	<0.2	22.1	<0.1
X3A	05/05/2011	Surface	<0.005	15.9	0.3	67.8	<50.0	<0.01	<0.005	41.6	0.09	0.2	<0.1	1.74	145		1.42	0.007	8.79	76.60	0.69	3.03	0.9	0.571		0.06	<10.0	0.36	5780	<0.01	186.0	<0.5	0.003	2.55	<0.2	71.3	<0.1
X3A	20/06/2011	Surface	<0.005	17.3	0.3	29.0	<50.0	<0.01	<0.005	15.2	0.02	0.1	<0.1	0.75	219		0.47	0.002	3.10	20.80	0.25	1.21	0.5	0.446		0.06	<10.0	0.15	3790	<0.01	67.9	<0.5	0.003	0.61	<0.2	16.6	<0.1
X3A	13/07/2011	Surface	<0.005	12.8	0.4	39.8	<50.0	<0.01	<0.005	23.9	0.02	0.3	<0.1	0.71	602		0.57	0.002	5.10	46.90	0.33	1.68	0.6	0.277		0.07	<10.0	0.21	4530	<0.01	106.0	<0.5	0.003	0.99	<0.2	56.0	<0.1
X3A	25/08/2011	Surface	<0.005	10.5	0.4	39.0	<50.0	<0.01	<0.005	23.2	0.01	0.1	<0.1	0.66	393		0.56	0.002	4.79	36.00	0.31	1.69	0.5	0.327		0.06	<10.0	0.15	4340	<0.01	107.0	<0.5	0.003	0.92	<0.2	37.9	<0.1
X3A	21/09/2011	Surface	<0.005	7.1	0.4	48.8	<50.0	<0.01	<0.005	31.2	0.02	0.1	<0.1	0.49	759		0.78	0.003	6.54	43.10	0.37	1.99	0.5	0.279		0.06	<10.0	0.25	5020	<0.01	132.0	<0.5	0.003	1.38	<0.2	63.4	<0.1
X3A	20/10/2011	Surface	<0.005	5.9	0.5	57.8	<50.0	<0.01	<0.005	40.7	0.18	1.6	<0.1	0.38	6100		1.06	0.004	8.19	396.00	0.46	2.47	1.9	0.403		0.06	18.0	0.29	5130	<0.01	179.0	<0.5	0.004	1.58	<0.2	529.0	<0.1
X3A	15/11/2011	Surface	<0.005	3.7	0.3	64.8	<50.0	<0.01	<0.005	36.4	0.11	0.6	<0.1	0.47	4640		1.10	0.005	8.19	231.00	0.50	2.49	1.3	0.474		0.06	14.0	0.34	4830	0.02	185.0	<0.5	0.004	1.92	<0.2	386.0	<0.1
X3A	06/12/2011	Surface	0.015	2.9	0.4	65.2	<50.0	<0.01	<0.005	35.9	0.02	0.1	<0.1	0.68	128		1.23	0.005	8.35	60.20	0.56	2.81	0.5	0.284		0.06	<10.0	0.35	4750	0.03	174.0	<0.5	<0.002	2.16	<0.2	14.8	<0.1
X3A Average			0.004	7.0	0.3	58.0	25.0	0.0	0.0	36.7	0.05	0.3	0.1	0.64	1110		1.06	0.005	7.79	99.39	0.50	2.53	0.7	0.299		0.06	6.8	0.30	5138	0.01	164.1	0.3	0.002	1.93	0.1	104.3	0.05
X3A Max			0.015	17.3	0.5	74.3	<50.0	<0.01	<0.005	50.1	0.18	1.6	<0.1	1.74	6100		1.73	0.008	11.00	396.00	0.69	3.33	1.9	0.571		0.07	18.0	0.39	6450	0.03	221.0	<0.5	0.004	2.99	<0.2	529.0	<0.1
X3A Min			<0.005	1.2	0.2	29.0	<50.0	<0.01	<0.005	15.2	0.01	0.1	<0.1	0.32	30		0.47	0.002	3.10	20.80	0.25	1.21	0.5	0.049		0.05	<10.0	0.15	3790	<0.01	67.9	<0.5	<0.002	0.61	<0.2	14.8	<0.1

Note: Statistics calculated with DLs at half value.
Note: Metals reported in mg/L shaded in gray.

Denison Environmental Services

Table B-2: 2011 Rose Creek Drainage Water Quality
Dissolved Metals

Faro Mine Closure

Station	Date	Sample Type	Ag-d µg/L	Al-d µg/L	As-d µg/L	Ba-d µg/L	B-d µg/L	Be-d µg/L	Bi-d µg/L	Ca-d mg/L	Cd-d µg/L	Co-d µg/L	Cr-d µg/L	Cu-d µg/L	Fe-d µg/L	Hg-d µg/L	K-d mg/L	Li-d mg/L	Mg-d mg/L	Mn-d µg/L	Mo-d µg/L	Na-d mg/L	Ni-d µg/L	Pb-d µg/L	P-d mg/L	Sb-d µg/L	S-d mg/L	Se-d µg/L	Si-d µg/L	Sn-d µg/L	Sr-d µg/L	Ti-d µg/L	Tl-d µg/L	U-d µg/L	V-d µg/L	Zn-d µg/L	Zr-d µg/L
X4	18/01/2011	Surface	<0.03	2.0	<0.1	12.8	<300.0	<0.05	<0.03	176.0	0.95	50.3	<0.5	<0.3	79000		3.40	0.013	27.30	13500.00	<0.3	8.30	42.2	0.130		<0.1	219.0	<0.2	5140	<0.05	521.0	<3.0	0.160	0.74	<1.0	8060.0	<0.5
X4	03/02/2011	Surface	<0.02	16.0	<0.1	12.0	61.0	<0.1	<1.0	189.0	2.64	66.0	<1.0	4.00	63000		4.01	0.017	37.50	16900.00	<1.0	10.80	57.0	3.600		<0.5	277.0	<0.1	5860	<5.0	649.0	<5.0	0.430	0.50	<5.0	11000.0	<0.5
X4	14/03/2011	Surface	<0.03	3.0	<0.1	13.7	<300.0	<0.05	<0.03	159.0	1.19	48.7	<0.5	0.40	65600		3.60	0.014	28.50	12800.00	<0.3	8.70	41.6	0.380		<0.1	215.0	<0.2	5070	<0.05	525.0	<3.0	0.180	0.51	<1.0	8180.0	<0.5
X4	21/04/2011	Surface	<0.03	13.0	0.2	17.3	<300.0	<0.05	0.1	176.0	1.11	44.2	<0.5	5.60	62500		4.50	0.012	27.50	11900.00	<0.3	8.40	37.9	7.190		<0.1	203.0	<0.2	5520	0.40	507.0	<3.0	0.250	0.97	<1.0	7740.0	<0.5
X4	04/05/2011	Surface	<0.03	5.0	<0.1	15.0	<300.0	<0.05	<0.03	157.0	1.48	45.9	<0.5	2.70	52100		3.40	0.012	26.70	11600.00	<0.3	7.80	39.5	0.720		<0.1	196.0	<0.2	5320	<0.05	480.0	<3.0	0.290	0.42	<1.0	8430.0	<0.5
X4	20/06/2011	Surface	<0.03	422.0	2.1	11.5	<300.0	0.2	<0.03	164.0	17.60	85.7	<0.5	92.80	18600		3.00	0.015	48.50	14100.00	<0.3	7.50	80.7	1190.000		0.20	262.0	<0.2	4410	<0.05	577.0	<3.0	2.160	1.52	<1.0	26600.0	<0.5
X4	21/07/2011	Surface	<0.03	452.0	2.9	10.1	<300.0	0.2	<0.03	200.0	14.80	87.9	<0.5	93.50	16800		3.40	0.015	53.30	16300.00	<0.3	9.10	82.1	1500.000		0.60	267.0	<0.2	5650	<0.05	635.0	<3.0	2.680	1.63	<1.0	23300.0	<0.5
X4	23/08/2011	Surface	<0.03	261.0	1.1	9.6	<300.0	0.1	<0.03	186.0	11.20	81.5	<0.5	62.00	19300		3.30	0.015	48.30	17100.00	<0.3	9.00	71.4	1060.000		0.30	296.0	<0.2	5060	<0.05	645.0	4.0	2.020	1.23	<1.0	18500.0	<0.5
X4	21/09/2011	Surface	<0.03	548.0	4.2	7.0	<300.0	0.2	<0.03	230.0	15.40	115.0	<0.5	106.00	24400		4.00	0.019	63.60	21800.00	<0.3	11.20	98.4	1570.000		0.70	322.0	<0.2	5620	<0.05	761.0	<3.0	2.460	1.62	<1.0	26100.0	<0.5
X4	19/10/2011	Surface	<0.03	415.0	1.1	6.0	<300.0	0.2	<0.03	228.0	14.50	122.0	<0.5	82.40	29200		4.00	0.020	69.80	21900.00	<0.3	12.40	110.0	1070.000		0.20	330.0	<0.2	5520	<0.05	786.0	<3.0	1.970	1.36	<1.0	28900.0	<0.5
X4	15/11/2011	Surface	<0.03	330.0	1.0	6.9	<300.0	0.2	<0.03	211.0	15.40	122.0	<0.5	77.20	36900		4.50	0.025	72.10	23500.00	<0.3	12.20	105.0	1060.000		0.20	397.0	<0.2	5170	<0.05	875.0	<3.0	2.060	1.46	<1.0	30100.0	<0.5
X4	05/12/2011	Surface	0.050	3.0	0.2	9.9	<300.0	<0.05	<0.03	193.0	2.18	90.8	<0.5	0.70	91800		3.50	0.016	33.90	21100.00	<0.3	10.10	69.1	0.360		0.20	260.0	<0.2	5480	0.10	652.0	<3.0	0.410	1.14	<1.0	8910.0	<0.5
X4 Average			0.018	205.8	1.1	11.0	142.6	0.1	0.1	189.1	8.20	80.0	0.3	43.95	46600		3.72	0.016	44.75	16875.00	0.18	9.63	69.6	621.865		0.24	270.3	0.10	5318	0.27	634.4	1.8	1.256	1.09	0.7	17151.7	0.25
X4 Max			0.050	548.0	4.2	17.3	<300.0	0.2	<1.0	230.0	17.60	122.0	<1.0	106.00	91800		4.50	0.025	72.10	23500.00	<1.0	12.40	110.0	1570.000		0.70	397.0	<0.2	5860	<5.0	875.0	<5.0	2.680	1.63	<5.0	30100.0	<0.5
X4 Min			<0.02	2.0	<0.1	6.0	61.0	<0.05	<0.03	157.0	0.95	44.2	<0.5	<0.3	16800		3.00	0.012	26.70	11600.00	<0.3	7.50	37.9	0.130		<0.1	196.0	<0.1	4410	<0.05	480.0	<3.0	0.160	0.42	<1.0	7740.0	<0.5
X5	24/03/2011	Surface	<0.03	5.0	0.4	28.7	<300.0	<0.05	<0.03	477.0	0.16	68.2	<0.5	0.40	62	<0.05	6.90	0.022	107.00	34600.00	0.70	33.60	80.2	0.040		<0.1	517.0	<0.2	8070	<0.05	1190.0	<3.0	0.190	6.50	<1.0	346.0	<0.5
X5	29/03/2011	Surface	<0.03	2.0	0.2	38.7	<300.0	<0.05	<0.03	312.0	0.09	31.4	<0.5	0.60	52	<0.05	6.40	0.023	78.90	18100.00	0.90	24.30	45.0	0.140		0.20	361.0	0.30	5690	<0.05	1050.0	<3.0	0.270	6.52	<1.0	289.0	<0.5
X5	05/04/2011	Surface	<0.03	2.0	0.2	34.1	<300.0	<0.05	<0.03	409.0	0.18	40.4	<0.5	1.10	131	<0.05	6.90	0.022	86.30	22400.00	2.20	28.90	53.2	0.240		<0.1	405.0	<0.2	7680	0.10	1080.0	<3.0	0.210	6.95	<1.0	272.0	<0.5
X5	12/04/2011	Surface	<0.03	2.0	<0.1	31.1	<300.0	<0.05	<0.03	427.0	0.14	50.8	<0.5	0.50	41	<0.05	6.90	0.021	94.60	26600.00	1.20	30.00	61.4	0.070		<0.1	462.0	<0.2	7900	<0.05	1140.0	<3.0	0.220	7.16	<1.0	266.0	<0.5
X5	19/04/2011	Surface	<0.03	4.0	0.3	30.4	<300.0	<0.05	<0.03	459.0	0.21	53.5	<0.5	0.80	225	<0.05	7.60	0.021	89.50	29000.00	0.70	29.00	63.1	0.510		0.20	436.0	<0.2	8350	0.12	1130.0	<3.0	0.160	6.21	<1.0	267.0	<0.5
X5	26/04/2011	Surface	<0.03	10.0	0.4	27.9	<300.0	<0.05	<0.03	377.0	0.20	49.6	<0.5	0.90	268	<0.05	6.20	0.016	83.80	25400.00	1.50	26.40	58.3	0.800		<0.1	390.0	0.30	6480	0.15	1060.0	<3.0	0.120	5.71	<1.0	241.0	<0.5
X5	03/05/2011	Surface	<0.05	6.0	<0.2	22.6	<500.0	<0.1	<0.05	538.0	0.14	91.2	<1.0	<0.5	482	<0.1	9.10	0.020	108.00	45400.00	<0.5	33.00	98.2	0.620		<0.2	521.0	<0.4	9660	<0.1	1320.0	<5.0	0.070	5.24	<2.0	305.0	<1.0
X5	10/05/2011	Surface	<0.03	2.0	0.2	14.8	<300.0	<0.05	<0.03	262.0	0.13	17.1	<0.5	<0.3	148	<0.05	6.30	0.031	61.40	8680.00	0.50	19.20	20.3	<0.03		<0.1	274.0	<0.2	3490	<0.05	785.0	<3.0	0.270	2.11	<1.0	179.0	<0.5
X5	17/05/2011	Surface	<0.03	14.0	0.3	15.6	<300.0	<0.05	0.1	278.0	0.16	20.0	<0.5	0.90	114	<0.05	6.50	0.028	64.80	10300.00	0.40	17.70	23.1	0.640		0.60	311.0	<0.2	3280	<0.05	835.0	<3.0	0.440	2.04	<1.0	169.0	<0.5
X5	24/05/2011	Surface	<0.03	5.0	<0.1	15.9	<300.0	<0.05	<0.03	256.0	0.14	26.5	<0.5	0.50	128	<0.05	4.30	0.019	63.20	12900.00	0.40	17.40	30.0	0.160		0.20	312.0	<0.2	3960	<0.05	670.0	<3.0	0.270	2.04	<1.0	183.0	<0.5
X5	31/05/2011	Surface	0.015	4.1	0.2	16.0	<50.0	<0.01	<0.005	243.0	0.22	15.3	<0.1	0.99	62	<0.01	5.10	0.027	63.00	8020.00	0.39	15.80	17.6	0.519		0.18	287.0	0.12	2800	0.02	737.0	<0.5	0.405	1.97	<0.2	176.0	<0.1
X5	07/06/2011	Surface	<0.005	1.5	0.2	16.5	<50.0	<0.01	<0.005	255.0	0.16	18.7	<0.1	0.31	47	<0.01	5.08	0.031	66.90	9910.00	0.37	16.60	20.3	0.077		0.17	295.0	0.10	3040	<0.01	789.0	<0.5	0.508	2.05	<0.2	170.0	<0.1
X5	14/06/2011	Surface	<0.03	5.0	1.0	17.4	<300.0	<0.05	<0.03	311.0	0.21	30.8	<0.5	0.50	64	<0.05	6.00	0.030	86.40	15600.00	0.80	21.50	33.7	0.350		0.20	368.0	<0.2	3920	<0.05	923.0	<3.0	0.520	2.53	<1.0	284.0	<0.5
X5	21/06/2011	Surface	<0.03	4.0	0.2	17.5	<300.0	<0.05	<0.03	302.0	0.19	27.0	<0.5	<0.3	46	<0.05	5.50	0.033	74.40	13700.00	<0.3	17.60	28.6	0.210		<0.1	350.0	<0.2	3630	<0.05	931.0	<3.0	0.630	1.74	<1.0	257.0	<0.5
X5	28/06/2011	Surface	<0.03	13.0	0.3	17.1	<300.0	<0.05	<0.03	287.0	0.16	20.9	<0.5	<0.3	144	<0.05	6.30	0.035	87.60	10700.00	0.80	21.00	21.5	0.160		0.20	388.0	<0.2	3250	<0.05	884.0	<3.0	0.670	1.85	<1.0	207.0	<0.5
X5	05/07/2011	Surface	<0.03	5.0	0.2	17.2	<300.0	<0.05	<0.03	289.0	0.16	19.5	<0.5	0.50	47	<0.05	5.80	0.034	76.80	9890.00	0.40	18.40	20.9	1.030		0.20	342.0	0.30	3090	<0.05	894.0	<3.0	0.700	2.05	<1.0	195.0	<0.5
X5	12/07/2011	Surface	<0.005	3.7	0.2	15.3	<50.0	<0.01	<0.005	284.0	0.17	14.5	<0.1	0.57	37	<0.01	6.03	0.036	82.40	7330.00	0.44	19.30	14.8	0.204		0.19	368.0	0.15	2520	0.02	929.0	<0.5	0.818	1.46	<0.2	132.0	<0.1
X5	19/07/2011	Surface	<0.005	3.6	0.2	15.5	<50.0	<0.01	<0.005	272.0	0.16	12.4	<0.1	0.31	26	<0.01	6.06	0.036	73.10	6510.00	0.40	16.30	12.3	0.298		0.23	358.0	0.12	2370	0.02	909.0	<0.5	0.874	1.21	<0.2	125.0	<0.1
X5	26/07/2011	Surface	<0.005	3.4	0.2	15.3	<50.0	<0.01	<0.005	247.0	0.20	12.6	<0.1	0.24	70	<0.01	5.90	0.037	71.30	6230.00	0.37	16.20	12.6	0.855		0.22	333.0	0.13	2310	0.05	839.0	<0.5	0.785	1.32	<0.2	184.0	<0.1
X5	02/08/2011	Surface	<0.03	3.0	0.3	15.8	<300.0	<0.05	<0.03	217.0	0.20	14.4	<0.5	<0.3	34	<0.05	6.40	0.037	81.00	7530.00	0.50	18.50	14.9	0.540		0.20	333.0	<0.2	2080	<0.05	876.0	<3.0	0.810	1.48	<1.0	239.0	<0.5
X5	09/08/2011	Surface	<0.005	2.9	0.2	16.7	<50.0	<0.01	<0.005	267.0	0.13	14.1	<0.1	0.40	86	<0.02	6.43	0.041	80.80	7190.00	0.40	19.60	13.7	0.208		0.22	363.0	0.19	2360	0.03	1030.0	<0.5	0.797	1.47	<0.2	108.0	<0.1
X5	16/08/2011	Surface	<0.005	3.6	0.2	13.9	<50.0	<0.01	<0.005	273.0	0.04	9.0	<0.1	0.74	21	<0.01	6.56	0.040	76.50	4540.00	0.42	17.70	9.3	0.195		0.24	354.0	0.14	2050	<0.01	960.0	<0.5	0.798	1.19	<0.2	27.9	<0.1
X5	23/08/2011	Surface	<0.005	3.2	0.2	14.4	<50.0	<0.01	<0.005	289.0	0.08	17.6	<0.1	0.17	9	<0.01	6.03	0.038	81.80	8880.00	0.41	19.70	17.9	0.129		0.20	369.0	0.15	2700	<0.01	977.0	<0.5	0.711	1.55	<0.2	73.1	<0.1
X5	30/08/2011	Surface	0.024	5.4	0.2	13.2	<50.0	<0.01	<0.005	304.0	0.06	14.5	<0.1	0.40	11		7.64	0.040	84.50	7410.00	0.40	21.00	14.6	0.263		0.22	394.0	0.15	2620	0.11	1040.0	<0.5	0.712	1.48	<0.2	49.9	<0.1
X5	06/09/2011	Surface	<0.03	5.0	0.4	15.3	<300.0	<0.05	<0.03	315.0	0.10	19.5	<0.5	1.30	178	<0.05	6.80	0.039	84.10	10300.00	0.40	20.90	20.4	0.690		0.20	366.0	<0.2	2960	<0.05	1050.0	<3.0	0.700	1.82	2.0	89.8	<0.5
X5	13/09/2011	Surface	<0.03	10.0	<0.1	14.0	<300.0	<0.05	<0.03	293.0	0.08	16.3	1.5	0.70	74	<0.05	6.30	0.039	81.10	8520.00	0.70	19.20	17.2	0.790		0.20	337.0	<0.2	2600	<0.05	939.0	<3.0	0.660	1.43	<1.0	75.1	<0.5
X5	20/09/2011	Surface	<0.03	5.0	0.5	14.4	<300.0	<0.05	<0.03	305.0	0.06	21.2	<0.5	0.40	171	<0.05	6.50	0.038	85.20	10600.00	0.40	20.50	21.2	0.960		0.20	376.0	<0.2	3090	<0.05	928.0	<3.0	0.610	1.97	<1.0	87.8	<0.5
X5	27/09/2011	Surface	<0.03	3.0	0.5	17.6	<300.0	<0.05	<0.03	386.0	0.15	45.5	<0.5	0.40	222	<0.05	7.20	0.032	91.10	23300.00	0.50	23.80	43.4	0.210		<0.1	428.0	<0.2	4920	<0.05	1100.0	<3.0	0.420	3.20	<1.0	181.0	<0.5
X5	23/11/2011	Surface	<0.03	2.0	0.3	26.1	<300.0	<0.05	<0.03	395.0	0.21	52.6	<0.5	1.20	98	<0.05	7.00	0.028	94.30	26800.00	0.50	27.10	51.5	0.260		0.20	443.0	<0.2	5980	0.08	1140.0	<3.0	0.300	4.92	<1.0	276.0	<0.5
X5	29/11/2011	Surface	<0.03	2.0	0.4	24.2	<300.0	<0.05	<0.03	467.0	0.15	65.6	<0.5	0.40	538	<0.05	7.00	0.025	93.90	32600.00	0.50	26.10	59.0	0.060		<0.1	490.0	<0.2	7170	<0.05	1180.0	<3.0	0.220	4.41	<1.0	232.0	<0.5
X5	08/12/2011	Surface	<0.03	2.0	0.2	23.4	<300.0	<0.05	<0.03	417.0	0.11	74.7	<0.5	<0.3	941	<0.05	6.90	0.025	102.00	37300.00	<0.3	29.80	66.1	<0.03		<0.1	448.0	<0.2	5890	<0.05	1300.0	<3.0	0.200	5.11	<1.0	290.0	<0.5
X5 Average			0.013	4.6	0.3	19.9	116.9	0.0	0.0	329.5	0.15	31.8	0.2	0.52	148	0.02	6.44	0.031	82.44	16330.32	0.59	22.13	34.3	0.363		0.17	380.0	0.13	4384	0.04	987.6	1.2	0.486	3.12	0.4	192.8	0.20
X5 Max			<0.05	14.0	1.0	38.7	<500.0	<0.1	<0.05	538.0	0.22	91.2	1.5	1.30	941	<0.1	9.10	0.041	108.00	45400.00	2.20	33.60	98.2	1.030		0.60	521.0	<0.4	9660	0.15	1320.0	<5.0	0.874	7.16	<2.0	346.0	<1.0
X5 Min			<0.005	1.5	<0.1	13.2	<50.0	<0.01	<0.005	217.0	0.04	9.0	<0.1	0.17	9	<0.01	4.30	0.016	61.40	4540.00	<0.3	15.80	9.3	<0.03		<0.1	274.0	0.10	2050	<0.01	670.0	<0.5	0.070	1.19	<0.2	27.9	<0.1
X5P	18/01/2011	Surface	<0.03	3.0	0.3	45.7	<300.0	<0.05	<0.03	362.0	<0.03	30.5	<0.5	<0.3	58		6.70	0.024	82.40	18200.00	1.20	28.00	44.2	<0.03		0.20	380.0	0.30	6480	<0.05	1030.0	<3.0	0.250	7.13	<1.0	238.0	<0.5
X5P	03/02/2011	Surface	<0.03	<1.0	0.2	43.7	<300.0	<0.05	<0.03	344.0	<0.03	30.2	<0.5	0.70	75		6.50	0.024	80.60	18000.00	1.10	27.00	43.4	0.150		0.20	353.0	<0.2	5380	<0.05	1040.0	<3.0	0.250	5.37	<1.0	245.0	<0.5
X5P	15/03/2011	Surface	<0.03	4.0	0.4	75.7	<300.0	<0.05	<0.03	330.0	<0.03	24.5	<0.5	0.90	13		6.70	0.024	80.30	14200.00	1.00	23.80	35.3	0.060		0.30	326.0	1.10	8490	<0.05	1020.0	<3.0	0.230	6.72	<1.0	218.0	<0.5
X5P	14/04/2011	Surface	<0.03	5.0	0.2	40.7	<300.0	<0.05	<0.03	381.0	0.24	25.0	<0.5	1.40	42		6.70	0.020	79.70	16400.00	0.70	27.50	36.5	1.250		0.20	387.0	0.40	8360	<0.05	1040.0	<3.0	0.200	7.03	<1.0	206.0	<0.5
X5P	05/05/2011	Surface	<0.03	3.0	0.2	18.3	<300.0	<0.05	<0.03	339.0	0.04	4.4	<0.5	1.30	13		2.20	0.008	24.50	1910.00	0.50	8.30	13.7	1.150		0.20	313.0	0.30	9380	<0.05	943.0	<3.0	0.160	2.41	<1.0	16.6	<0.5
X5P	20/06/2011	Surface	<0.03	6.0	0.6	16.8	<300.0	<0.05	<0.03	280.0	0.22	16.9	<0.5	0.70	29		5.50	0.032	71.40	9080.00	0.50	16.40	18.5	0.810		0.20	316.0	0.30	2900	<0.05	846.0	<3.0	0.620	1.73	<1.0	213.0	<0.5
X5P	14/07/2011	Surface	<0.03	4.0	0.5	15.4	<300.0	<0.05	<0.03	266.0	0.18	12.2	<0.5	1.00	22		6.00	0.037	77.70	6500.00	0.40	18.10	13.3	0.250		0.20	313.0	<0.2	2270	<0.05	884.0	<3.0	0.860	1.47	<1.0	168.0	<0.5
X5P	23/08/2011	Surface	<0.005	2.3	0.2	13.1	<50.0	<0.01	<0.005	269.0	0.06	12.6	<0.1	0.39	12		6.03	0.040	79.80	6540.00	0.38	18.30	12.8	0.106		0.20	372.0	0.13	2200	<0.01	974.0	<0.5	0.736	1.31	<0.2	59.0	<0.1
X5P	21/09/2011	Surface	<0.03	3.0	0.3	16.6	<300.0	<0.05	<0.03	334.0	0.08	26.0	<0.5	<0.3	89		6.70	0.040	87.20	13000.00	0.40	20.50	25.9	0.540		<0.1	361.0	<0.2	3430	<0.05	1020.0	<3.0	0.610	1.97	<1.0	106.0	<0.5
X5P	19/10/2011	Surface	<0.03	<1.0	0.4	19.6	<300.0	<0.05	<0.03	413.0	0.30	46.3	<0.5	0.40	137		6.60	0.031	91.80	22900.00	0.60	25.60	44.9	0.360		0.20	409.0	<0.2	5550	<0.05	1110.0	<3.0	0.400	4.04	<1.0	427.0	<0.5
X5P	15/11/2011	Surface	<0.03	<1.0	0.5	33.4	<300.0	<0.05	<0.03	358.0	0.14	42.0	<0.5	0.60	106		7.50	0.034	94.30	24100.00	0.80	26.10	42.9	0.800		0.20	452.0	0.30	5600	<0.05	1190.0	<3.0	0.380	4.74	<1.0	251.0	<0.5
X5P	05/12/2011	Surface	0.500	<5.0	2.0	28.1	<1000.0	<0.3	<0.1	356.0	0.20	41.2	<3.0	2.00	74		10.00	0.026	87.00	21500.00	<1.0	27.00	42.8	0.500		<0.5	383.0	<1.0	5880	<0.3	1040.0	<10.0	0.270	5.88	<5.0	291.0	<3.0
X5P Average			0.054	2.9	0.5	30.6	168.8	0.0	0.0	336.0	0.13	26.0	0.3	0.81	56		6.43	0.028	78.06	14360.83	0.67	22.22	31.2	0.499		0.20	363.8	0.31	5493	0.03	1011.4	1.7	0.414	4.15	0.6	203.2	0.34
X5P Max			0.500	6.0	2.0	75.7	<1,000.0	<0.3	<0.1	413.0	0.30	46.3	<3.0	2.00	137		10.00	0.040	94.30	24100.00	1.20	28.00	44.9	1.250		<0.5	452.0	1.10	9380	<0.3	1190.0	<10.0	0.860	7.13	<5.0	427.0	<3.0
X5P Min			<0.005	<1.0	0.2	13.1	<50.0	<0.01	<0.005	266.0	<0.03	4.4	<0.1	<0.3	12		2.20	0.008	24.50	1910.00	0.38	8.30	12.8	<0.03		<0.1	313.0	0.13	2200	<0.01	846.0	<0.5	0.160	1.31	<0.2	16.6	<0.1
X7	28/06/2011	Surface	<0.3	1240.0	37.0	12.0	<3000.0	1.2	<0.3	393.0	23.60	1290.0	<5.0	<3.0	971000		12.00	0.122	888.00	99500.00	<3.0	54.00	1110.0	21.100		2.00	2250.0	<2.0	15800	<0.5	4000.0	<30.0	0.300	4.50	<10.0	507000.0	<5.0
X7	18/10/2011	Surface	<0.3	1640.0	32.0	8.0	<3000.0	1.2	<0.3	387.0	25.60	1220.0	<5.0	5.00	1560000		13.00	0.136	732.00	94700.00	<3.0	53.00	1040.0	22.600		<1.0	2520.0	<2.0	16500	<0.5	3640.0	<30.0	0.300	4.50	<10.0	500000.0	<5.0
X7 Average			0.150	1440.0	34.5	10.0	1500.0	1.2	0.2	390.0	24.60	1255.0	2.5	3.25	1265500		12.50	0.129	810.00	97100.00	1.50	53.50	1075.0	21.850		1.25	2385.0	1.00	16150	0.25	3820.0	15.0	0.300	4.50	5.0	503500.0	2.50
X7 Max			<0.3	1640.0	37.0	12.0	<3,000.0	1.2	<0.3	393.0	25.60	1290.0	<5.0	5.00	1560000		13.00	0.136	888.00	99500.00	<3.0	54.00	1110.0	22.600		2.00	2520.0	<2.0	16500	<0.5	4000.0	<30.0	0.300	4.50	<10.0	507000.0	<5.0
X7 Min			<0.3	1640.0	32.0	8.0	<3,000.0	1.2	<0.3	387.0	23.60	1220.0	<5.0	<3.0	971000		12.00	0.122	732.00	94700.00	<3.0	53.00	1040.0	21.100		<1.0	2250.0	<2.0	15800	<0.5	3640.0	<30.0	0.300	4.50	<10.0	500000.0	<5.0

Note: Statistics calculated with DLs at half value.
Note: Metals reported in mg/L shaded in gray.

Denison Environmental Services

Table B-3: 2011 Rose Creek Drainage Water Quality
Total Metals

Faro Mine Closure

Station	Date	Sample Type	Ag µg/L	Al µg/L	As µg/L	B µg/L	Ba µg/L	Be µg/L	Bi µg/L	Ca mg/L	Cd µg/L	Co µg/L	Cr µg/L	Cu µg/L	F mg/L	Fe µg/L	Hg µg/L	K mg/L	Li mg/L	Mg mg/L	Mn µg/L	Mo µg/L	Na mg/L	Ni µg/L	P mg/L	Pb µg/L	S mg/L	Sb µg/L	Se µg/L	Si µg/L	Sn µg/L	Sr µg/L	Ti µg/L	Tl µg/L	U µg/L	V µg/L	Zn µg/L	Zr µg/L
DRYSINK	**17/03/2011**	**Surface**	<0.02	4.0	0.2	<50.0	2.0	<0.1	<1.0	72.0	0.03	<0.5	<1.0	29.30	1.07	66		0.46	0.012	23.90	25.00	<1.0	19.40	<1.0		2.400	8.0	<0.5	<0.1	8600	<5.0	954.0	<5.0	<0.05	<0.1	<5.0	37.0	<0.5
DRYSINK	**26/04/2011**	**Surface**	<0.02	<3.0	<0.1	<50.0	2.0	<0.1	<1.0	63.9	<0.01	<0.5	<1.0	19.10	1.05	12	<0.05	0.39		21.00	19.00	<1.0	16.70	<1.0		0.900	11.0	<0.5	<0.1	8560	<5.0	864.0	<5.0	<0.05	<0.1	<5.0	19.0	<0.5
DRYSINK Average			0.010	2.8	0.1	25.0	2.0	0.1	0.5	68.0	0.02	0.3	0.5	24.20	1.06	39	0.03	0.43	0.012	22.45	22.00	0.50	18.05	0.5		1.650	9.5	0.25	0.05	8580	2.50	909.0	2.5	0.025	0.05	2.5	28.0	0.25
DRYSINK Max			<0.02	4.0	0.2	<50.0	2.0	<0.1	<1.0	72.0	0.03	<0.5	<1.0	29.30	1.07	66	<0.05	0.46	0.012	23.90	25.00	<1.0	19.40	<1.0		2.400	11.0	<0.5	<0.1	8600	<5.0	954.0	<5.0	<0.05	<0.1	<5.0	37.0	<0.5
DRYSINK Min			<0.02	<3.0	<0.1	<50.0	2.0	<0.1	<1.0	63.9	<0.01	<0.5	<1.0	19.10	1.05	12	<0.05	0.39	0.012	21.00	19.00	<1.0	16.70	<1.0		0.900	8.0	<0.5	<0.1	8560	<5.0	864.0	<5.0	<0.05	<0.1	<5.0	19.0	<0.5
ETA Combined	**06/01/2011**	**Surface**	<0.2	866.0	29.0	<500.0	14.0	<1.0	<10.0	406.0	8.40	910.0	<10.0	3.00		1030000		11.70	0.124	644.00	83400.00	<10.0	60.90	773.0		15.000	2090.0	<5.0	<1.0	14700	<50.0	3690.0	<50.0	<0.5	5.00	<50.0	413000.0	<5.0
ETA Combined	**03/02/2011**	**Surface**	0.280	897.0	28.1	<200.0	12.0	0.9	<4.0	427.0	7.41	1000.0	<4.0	3.00		1010000		12.50	0.138	731.00	92000.00	<4.0	67.10	854.0		15.100	2280.0	<2.0	<0.4	15100	<20.0	4030.0	<20.0	0.300	4.90	<20.0	431000.0	<2.0
ETA Combined	**16/03/2011**	**Surface**	6.300	897.0	27.0	<5000.0	17.0	<1.0	<0.5	492.0	7.60	1080.0	<10.0	10.00		1060000		13.00	0.129	826.00	97200.00	<5.0	71.00	948.0		17.300	2440.0	<2.0	<4.0	17600	486.00	4150.0	<50.0	0.300	5.60	<20.0	475000.0	<10.0
ETA Combined	**14/04/2011**	**Surface**	0.300	1300.0	24.1	<1000.0	16.3	0.7	<0.1	451.0	6.90	1010.0	<2.0	15.00		888000		14.00	0.116	794.00	91700.00	<1.0	68.00	856.0		27.200	2300.0	<0.4	<0.8	15500	<0.2	4130.0	<10.0	0.300	5.02	<4.0	389000.0	<2.0
ETA Combined	**05/05/2011**	**Surface**	15.100	23100.0	303.0	<1000.0	1220.0	1.7	0.5	174.0	106.00	261.0	31.0	1050.00		214000		<5.0	0.058	145.00	17500.00	<1.0	14.00	228.0		14900.000	<1000.0	28.00	1.20	13600	<4.0	924.0	279.0	7.680	3.30	19.0	138000.0	<2.0
ETA Combined	**21/06/2011**	**Surface**	<0.3	8520.0	32.0	<3000.0	13.0	2.0	<0.3	359.0	136.00	1050.0	<5.0	348.00		326000		12.00	0.134	731.00	79900.00	<3.0	53.00	1070.0		543.000	1870.0	<1.0	<2.0	13400	<0.5	3040.0	<30.0	1.300	6.70	<10.0	481000.0	<5.0
ETA Combined	**20/07/2011**	**Surface**	<0.5	10200.0	68.0	<5000.0	18.0	2.0	<0.5	422.0	125.00	1260.0	19.0	382.00		517000		13.00	0.152	856.00	97000.00	<5.0	63.00	1270.0		1890.000	2430.0	3.00	<4.0	17700	2.00	3580.0	<50.0	2.500	8.40	<20.0	575000.0	<10.0
ETA Combined	**24/08/2011**	**Surface**	<0.3	1870.0	18.0	<3000.0	12.0	1.0	<0.3	258.0	57.00	712.0	<5.0	94.00		294000		9.00	0.090	494.00	56100.00	<3.0	36.00	712.0		178.000	1170.0	<1.0	<2.0	8540	<0.5	2230.0	<30.0	0.800	3.50	<10.0	322000.0	<5.0
ETA Combined	**21/09/2011**	**Surface**	<0.3	2650.0	33.0	<3000.0	11.0	1.6	<0.3	394.0	80.30	1110.0	<5.0	121.00		489000		13.00	0.162	745.00	82500.00	<3.0	55.00	1070.0		74.400	1850.0	<1.0	<2.0	13500	<0.5	3330.0	<30.0	1.000	5.00	<10.0	455000.0	<5.0
ETA Combined	**19/10/2011**	**Surface**	<0.3	4880.0	30.0	<3000.0	11.0	1.8	<0.3	383.0	71.70	1170.0	<5.0	125.00		586000		14.00	0.158	758.00	86100.00	<3.0	61.00	1140.0		179.000	1910.0	<1.0	<2.0	13200	<0.5	3330.0	<30.0	0.600	5.80	<10.0	485000.0	<5.0
ETA Combined	**17/11/2011**	**Surface**	<0.3	1920.0	32.0	<3000.0	11.0	0.8	<0.3	426.0	12.10	971.0	<5.0	16.00		1270000		13.00	0.124	614.00	78400.00	<3.0	75.00	849.0		19.200	2090.0	<1.0	<2.0	15100	<0.5	3340.0	<30.0	0.300	5.20	<10.0	445000.0	<5.0
ETA Combined	**07/12/2011**	**Surface**	0.300	2460.0	37.5	<1000.0	12.0	1.3	<0.1	430.0	15.30	1040.0	<2.0	27.00		1280000	<0.2	14.00	0.138	653.00	84900.00	<1.0	74.00	876.0		24.900	2080.0	<0.4	<0.8	13600	<0.2	3900.0	<10.0	0.310	6.01	<4.0	460000.0	<2.0
ETA Combined Average			1.948	4963.3	55.1	1195.8	113.9	1.2	0.7	385.2	52.81	964.5	6.4	182.83		747000	0.10	11.81	0.127	665.92	78891.67	1.75	58.17	887.2		1490.258	1917.5	3.20	0.98	14295	43.87	3306.2	37.4	1.303	5.37	8.6	422416.7	2.42
ETA Combined Max			15.100	23100.0	303.0	<5,000.0	1220.0	2.0	<10.0	492.0	136.00	1260.0	31.0	1050.00		1280000	<0.2	14.00	0.162	856.00	97200.00	<10.0	75.00	1270.0		14900.000	2440.0	28.00	<4.0	17700	486.00	4150.0	279.0	7.680	8.40	<50.0	575000.0	<10.0
ETA Combined Min			<0.2	866.0	18.0	<200.0	11.0	0.7	<0.1	174.0	6.90	261.0	<2.0	3.00		214000	<0.2	<5.0	0.058	145.00	17500.00	<1.0	14.00	228.0		15.000	<1,000.0	<0.4	<0.4	8540	<0.2	924.0	<10.0	0.300	3.30	<4.0	138000.0	<2.0
FAROCR	**22/06/2011**	**Surface**	0.007	139.0	0.3	<50.0	15.8	0.0	<0.005	3.9	0.07	0.2	0.2	2.36		129		0.21	0.002	0.83	4.94	0.21	1.36	1.3		7.780	<10.0	0.05	0.11	5950	0.03	22.9	1.5	0.018	0.34	0.3	19.2	0.20
FAROCR	**21/07/2011**	**Surface**	<0.005	108.0	0.3	<50.0	18.1	0.0	<0.005	5.4	0.04	0.1	0.2	1.59		85		0.18	0.002	1.15	2.45	0.14	1.50	0.9		4.180	<10.0	0.04	0.19	7550	<0.01	29.5	2.1	0.007	0.39	<0.2	8.0	0.20
FAROCR	**23/08/2011**	**Surface**	<0.005	81.4	0.3	<50.0	19.0	0.0	<0.005	5.6	0.03	0.1	0.2	1.23		73		0.20	0.002	1.25	1.49	0.16	1.67	0.8		2.510	<10.0	0.04	0.12	7020	<0.01	31.3	1.1	0.005	0.34	0.3	5.1	<0.1
FAROCR	**22/09/2011**	**Surface**	<0.005	97.0	0.3	<50.0	22.4	0.0	<0.005	6.4	0.03	0.1	0.2	1.10		120		0.27	0.002	1.50	1.87	0.25	1.80	0.9		2.170	<10.0	0.05	0.18	7160	<0.01	34.0	2.8	0.005	0.34	0.6	5.3	<0.1
FAROCR	**19/10/2011**	**Surface**	<0.005	32.7	0.3	<50.0	24.9	<0.01	<0.005	8.9	0.03	0.0	<0.1	0.91		25		0.29	0.003	1.90	0.64	0.50	2.03	0.9		0.795	<10.0	0.06	0.38	6900	<0.01	44.9	<0.5	0.006	0.57	<0.2	5.4	<0.1
FAROCR	**15/11/2011**	**Surface**	<0.005	26.9	0.4	<50.0	29.7	<0.01	<0.005	8.7	0.03	0.0	0.2	1.22		29		0.37	0.003	2.13	1.06	0.60	1.96	1.0		1.130	<10.0	0.08	0.43	6090	0.04	49.8	0.7	0.007	0.48	<0.2	5.9	<0.1
FAROCR	**06/12/2011**	**Surface**	<0.005	24.7	0.4	<50.0	24.5	<0.01	<0.005	10.1	0.03	0.0	<0.1	0.71		27		0.35	0.003	2.35	0.45	0.72	2.10	1.0		0.634	<10.0	0.06	0.52	6890	<0.01	49.7	<0.5	0.006	0.73	0.3	4.1	<0.1
FAROCR Average			0.003	72.8	0.3	25.0	22.1	0.0	0.0	7.0	0.04	0.1	0.2	1.30		70		0.27	0.002	1.59	1.84	0.37	1.77	1.0		2.743	5.0	0.05	0.28	6794	0.01	37.4	1.2	0.008	0.46	0.3	7.6	0.09
FAROCR Max			0.007	139.0	0.4	<50.0	29.7	0.0	<0.005	10.1	0.07	0.2	0.2	2.36		129		0.37	0.003	2.35	4.94	0.72	2.10	1.3		7.780	<10.0	0.08	0.52	7550	0.04	49.8	2.8	0.018	0.73	0.6	19.2	0.20
FAROCR Min			<0.005	24.7	0.3	<50.0	15.8	<0.01	<0.005	3.9	0.03	0.0	<0.1	0.71		25		0.18	0.002	0.83	0.45	0.14	1.36	0.8		0.634	<10.0	0.04	0.11	5950	<0.01	22.9	<0.5	0.005	0.34	<0.2	4.1	<0.1
FCO	**26/05/2011**	**Surface**	0.048	1010.0	0.8	<50.0	37.8	0.2	<0.005	10.3	2.37	7.9	0.7	119.00		1450		0.85	0.004	4.34	212.00	0.09	1.44	9.9		19.400	17.0	0.10	0.06	4720	<0.01	51.0	2.4	0.026	0.56	<0.2	1250.0	0.30
FCO	**27/10/2011**	**Surface**	0.006	865.0	0.2	<50.0	34.4	0.2	<0.005	11.6	3.26	5.1	0.4	101.00		466		0.42	0.003	4.02	90.80	<0.05	2.69	11.7		2.350	1740.0	0.04	0.06	6930	<0.01	66.5	<0.5	0.009	0.48	<0.2	2090.0	<0.1
FCO Average			0.027	937.5	0.5	25.0	36.1	0.2	0.0	11.0	2.82	6.5	0.6	110.00		958		0.64	0.003	4.18	151.40	0.06	2.07	10.8		10.875	878.5	0.07	0.06	5825	0.01	58.8	1.3	0.018	0.52	0.1	1670.0	0.18
FCO Max			0.048	1010.0	0.8	<50.0	37.8	0.2	<0.005	11.6	3.26	7.9	0.7	119.00		1450		0.85	0.004	4.34	212.00	0.09	2.69	11.7		19.400	1740.0	0.10	0.06	6930	<0.01	66.5	2.4	0.026	0.56	<0.2	2090.0	0.30
FCO Min			0.006	865.0	0.2	<50.0	34.4	0.2	<0.005	10.3	2.37	5.1	0.4	101.00		466		0.42	0.003	4.02	90.80	<0.05	1.44	9.9		2.350	17.0	0.04	0.06	4720	<0.01	51.0	<0.5	0.009	0.48	<0.2	1250.0	<0.1
FCS-4	**06/01/2011**	**Surface**	1.700	2310.0	96.0	<500.0	637.0	<1.0	<10.0	439.0	13.00	735.0	<10.0	92.00		865000		11.20	0.117	643.00	77100.00	<10.0	60.50	653.0		1810.000	1900.0	7.00	<1.0	15700	<50.0	3620.0	60.0	1.100	9.00	<50.0	333000.0	<5.0
FCS-4	**03/02/2011**	**Surface**	0.220	619.0	18.6	<200.0	16.0	0.5	<4.0	442.0	8.73	798.0	<4.0	3.50		783000		12.60	0.135	747.00	86400.00	<4.0	66.80	706.0		38.500	2140.0	<2.0	<0.4	13800	<20.0	3810.0	<20.0	0.400	7.10	<20.0	337000.0	<2.0
FCS-4	**16/03/2011**	**Surface**	1.000	593.0	18.0	<5000.0	17.0	<1.0	<0.5	456.0	10.30	853.0	<10.0	6.00		738000		13.00	0.126	818.00	89900.00	<5.0	71.00	775.0		37.000	2270.0	<2.0	<4.0	14100	499.00	4070.0	<50.0	0.400	8.00	<20.0	378000.0	<10.0
FCS-4	**14/04/2011**	**Surface**	0.200	1400.0	16.1	<1000.0	14.5	0.4	<0.1	441.0	17.60	764.0	<2.0	46.00		613000		13.00	0.107	732.00	79300.00	<1.0	64.00	675.0		75.100	2030.0	<0.4	<0.8	12300	<0.2	3850.0	<10.0	0.350	6.77	<4.0	290000.0	<2.0
FCS-4	**05/05/2011**	**Surface**	16.700	31000.0	325.0	<1000.0	1280.0	2.8	0.5	236.0	116.00	238.0	38.0	1080.00		390000		6.00	0.063	151.00	17100.00	<1.0	15.00	227.0		15600.000	<1000.0	28.00	1.60	24100	<4.0	1180.0	301.0	7.270	16.60	26.0	129000.0	3.00
FCS-4	**16/06/2011**	**Surface**	<0.1	2740.0	28.7	<1000.0	12.4	0.3	<0.1	480.0	15.60	460.0	<2.0	156.00		297000		12.00	0.118	749.00	70200.00	<1.0	59.00	484.0		162.000	1500.0	0.50	<0.8	12200	<0.2	3580.0	<10.0	0.900	11.70	<4.0	174000.0	<2.0
FCS-4	**14/07/2011**	**Surface**	<0.1	1990.0	16.2	<1000.0	12.2	0.4	<0.1	461.0	28.20	488.0	<2.0	92.00		249000		12.00	0.124	712.00	67200.00	<1.0	58.00	519.0		164.000	1640.0	0.70	<0.8	12600	<0.2	3410.0	<10.0	0.930	9.68	<4.0	193000.0	<2.0
FCS-4	**23/08/2011**	**Surface**	0.120	1320.0	13.3	<500.0	11.5	<0.1	<0.05	466.0	12.70	396.0	<1.0	49.20		266000		11.70	0.109	700.00	64400.00	<0.5	57.70	432.0		95.100	1550.0	0.30	<0.4	11400	<0.1	3390.0	<5.0	0.630	10.40	<2.0	149000.0	<1.0
FCS-4	**21/09/2011**	**Surface**	<0.3	2400.0	26.0	<3000.0	11.0	1.2	<0.3	406.0	66.40	1020.0	<5.0	107.00		475000		13.00	0.146	757.00	80800.00	<3.0	56.00	999.0		74.800	1820.0	<1.0	<2.0	12800	<0.5	3280.0	<30.0	0.900	5.60	<10.0	423000.0	<5.0
FCS-4	**19/10/2011**	**Surface**	<0.3	4040.0	28.0	<3000.0	11.0	1.2	<0.3	394.0	64.60	1030.0	<5.0	117.00		531000		13.00	0.153	741.00	79100.00	<3.0	60.00	1060.0		179.000	1840.0	<1.0	<2.0	13200	<0.5	3360.0	<30.0	0.600	6.20	<10.0	423000.0	<5.0
FCS-4	**17/11/2011**	**Surface**	<0.3	2060.0	20.0	<3000.0	10.0	1.0	<0.3	426.0	45.90	937.0	<5.0	72.00		705000		13.00	0.143	748.00	79700.00	<3.0	67.00	922.0		85.500	1930.0	<1.0	<2.0	13900	<0.5	3370.0	<30.0	0.500	6.10	<10.0	412000.0	<5.0
FCS-4	**07/12/2011**	**Surface**	0.300	1780.0	22.4	<1000.0	10.3	0.7	<0.1	409.0	42.20	978.0	<2.0	67.00		743000	<0.2	14.00	0.077	754.00	86500.00	<1.0	67.00	942.0		75.200	1940.0	<0.4	<0.8	11700	<0.2	3880.0	<10.0	0.500	6.77	<4.0	421000.0	<2.0
FCS-4 Average			1.733	4354.3	52.4	841.7	170.2	0.8	0.7	421.3	36.77	724.8	5.2	157.31		554583	0.10	12.04	0.118	687.67	73141.67	1.40	58.50	699.5		1533.017	1755.0	3.37	0.76	13983	44.77	3400.0	38.6	1.207	8.66	7.9	305166.7	1.96
FCS-4 Max			16.700	31000.0	325.0	<5,000.0	1280.0	2.8	<10.0	480.0	116.00	1030.0	38.0	1080.00		865000	<0.2	14.00	0.153	818.00	89900.00	<10.0	71.00	1060.0		15600.000	2270.0	28.00	<4.0	24100	499.00	4070.0	301.0	7.270	16.60	<50.0	423000.0	<10.0
FCS-4 Min			<0.1	593.0	13.3	<200.0	10.0	<0.1	<0.05	236.0	8.73	238.0	<1.0	3.50		249000	<0.2	6.00	0.063	151.00	17100.00	<0.5	15.00	227.0		37.000	<1,000.0	0.30	<0.4	11400	<0.1	1180.0	<5.0	0.350	5.60	<2.0	129000.0	<1.0
FL-1	**13/04/2011**	**Surface**	0.013	14.3	0.1	<50.0	15.8	0.2	<0.005	104.0	18.30	30.9	<0.1	18.20		16		5.11	0.045	50.50	1830.00	0.49	11.10	94.4	<0.005	0.986	167.0	0.13	0.21	6440	<0.01	440.0	<0.5	0.280	1.25	<0.2	16900.0	<0.1
FL-1	**15/06/2011**	**Surface**	<0.03	44.0	0.2	<300.0	15.5	0.1	<0.03	132.0	18.50	55.9	<0.5	28.40		256		7.10	0.052	71.60	2980.00	0.40	17.70	134.0	<0.005	2.770	235.0	0.20	<0.2	4280	<0.05	544.0	<3.0	0.380	1.07	<1.0	21500.0	<0.5
FL-1	**13/07/2011**	**Surface**	<0.03	22.0	0.4	<300.0	17.8	0.1	<0.03	134.0	20.80	55.2	<0.5	10.00		149		6.90	0.056	70.40	3050.00	<0.3	16.60	133.0	<0.005	2.910	207.0	0.20	<0.2	4010	<0.05	626.0	<3.0	0.460	0.91	<1.0	21300.0	<0.5
FL-1	**10/08/2011**	**Surface**	<0.03	17.0	0.2	<300.0	16.0	0.1	<0.03	135.0	20.10	54.7	<0.5	7.30		178		6.90	0.053	72.00	3130.00	<0.3	16.00	131.0	0.00	1.530	220.0	0.20	<0.2	3970	<0.05	583.0	<3.0	0.450	0.57	<1.0	22100.0	<0.5
FL-1	**07/09/2011**	**Surface**	<0.03	18.0	<0.1	<300.0	16.1	0.1	<0.03	146.0	19.80	58.1	<0.5	7.70		95		7.30	0.057	77.40	3270.00	<0.3	16.90	140.0	<0.005	1.320	226.0	<0.1	0.30	4320	<0.05	597.0	<3.0	0.440	0.42	<1.0	22900.0	<0.5
FL-1 Average			0.015	23.1	0.2	125.0	16.2	0.1	0.0	130.2	19.50	51.0	0.2	14.32		139		6.66	0.053	68.38	2852.00	0.27	15.66	126.5	0.00	1.903	211.0	0.16	0.16	4604	0.02	558.0	1.3	0.402	0.84	0.4	20940.0	0.21
FL-1 Max			<0.03	44.0	0.4	<300.0	17.8	0.2	<0.03	146.0	20.80	58.1	<0.5	28.40		256		7.30	0.057	77.40	3270.00	0.49	17.70	140.0	<0.005	2.910	235.0	0.20	0.30	6440	<0.05	626.0	<3.0	0.460	1.25	<1.0	22900.0	<0.5
FL-1 Min			0.013	14.3	0.1	<50.0	15.5	0.1	<0.005	104.0	18.30	30.9	<0.1	7.30		16		5.11	0.045	50.50	1830.00	<0.3	11.10	94.4	0.00	0.986	167.0	<0.1	<0.2	3970	<0.01	440.0	<0.5	0.280	0.42	<0.2	16900.0	<0.1
FL-15	**13/04/2011**	**Surface**	0.015	11.6	0.1	<50.0	15.4	0.1	<0.005	156.0	14.90	51.6	<0.1	4.57		49		7.88	0.061	72.00	3350.00	0.48	17.80	138.0	<0.005	0.201	250.0	0.22	0.11	3710	<0.01	680.0	<0.5	0.429	1.22	<0.2	18800.0	<0.1
FL-15	**15/06/2011**	**Surface**	<0.03	29.0	0.2	<300.0	15.7	0.1	<0.03	156.0	17.30	60.5	<0.5	16.80		341		8.90	0.062	84.90	3820.00	0.40	21.90	158.0	<0.005	0.960	271.0	0.20	<0.2	4240	<0.05	614.0	<3.0	0.430	1.10	<1.0	22800.0	<0.5
FL-15	**13/07/2011**	**Surface**	<0.03	18.0	0.2	<300.0	15.8	0.1	<0.03	153.0	16.90	60.8	<0.5	13.80		149		8.80	0.060	80.90	3760.00	<0.3	20.40	158.0	<0.005	0.870	268.0	0.20	<0.2	3910	<0.05	656.0	<3.0	0.430	1.15	<1.0	22800.0	<0.5
FL-15	**10/08/2011**	**Surface**	<0.03	16.0	0.2	<300.0	15.8	0.1	<0.03	159.0	16.50	58.0	<0.5	11.10		110		8.90	0.060	82.50	3840.00	<0.3	20.50	152.0	0.00	0.910	242.0	0.20	<0.2	3730	<0.05	637.0	<3.0	0.470	1.11	<1.0	23400.0	<0.5
FL-15	**07/09/2011**	**Surface**	<0.03	14.0	<0.1	<300.0	16.2	0.1	<0.03	167.0	17.50	60.3	<0.5	9.10		74		9.40	0.066	85.40	3900.00	<0.3	20.90	158.0	<0.005	0.800	255.0	0.20	<0.2	4010	<0.05	674.0	<3.0	0.460	0.74	<1.0	23500.0	<0.5
FL-15 Average			0.015	17.7	0.2	125.0	15.8	0.1	0.0	158.2	16.62	58.2	0.2	11.07		145		8.78	0.062	81.14	3734.00	0.27	20.30	152.8	0.00	0.748	257.2	0.20	0.10	3920	0.02	652.2	1.3	0.444	1.06	0.4	22260.0	0.21
FL-15 Max			<0.03	29.0	0.2	<300.0	16.2	0.1	<0.03	167.0	17.50	60.8	<0.5	16.80		341		9.40	0.066	85.40	3900.00	0.48	21.90	158.0	<0.005	0.960	271.0	0.22	<0.2	4240	<0.05	680.0	<3.0	0.470	1.22	<1.0	23500.0	<0.5
FL-15 Min			0.015	11.6	<0.1	<50.0	15.4	0.1	<0.005	153.0	14.90	51.6	<0.1	4.57		49		7.88	0.060	72.00	3350.00	<0.3	17.80	138.0	0.00	0.201	242.0	0.20	0.11	3710	<0.01	614.0	<0.5	0.429	0.74	<0.2	18800.0	<0.1

Note: Statistics calculated with DLs at half value.
Note: Metals reported in mg/L shaded in gray.

Denison Environmental Services

Table B-3: 2011 Rose Creek Drainage Water Quality
Total Metals

Faro Mine Closure

Station	Date	Sample Type	Ag µg/L	Al µg/L	As µg/L	B µg/L	Ba µg/L	Be µg/L	Bi µg/L	Ca mg/L	Cd µg/L	Co µg/L	Cr µg/L	Cu µg/L	F mg/L	Fe µg/L	Hg µg/L	K mg/L	Li µg/L	Mg mg/L	Mn µg/L	Mo µg/L	Na mg/L	Ni µg/L	P mg/L	Pb µg/L	S mg/L	Sb µg/L	Se µg/L	Si µg/L	Sn µg/L	Sr µg/L	Ti µg/L	Tl µg/L	U µg/L	V µg/L	Zn µg/L	Zr µg/L
FL-3	13/04/2011	Surface	0.013	14.7	0.1	<50.0	15.6	0.1	<0.005	158.0	16.20	51.0	<0.1	4.57		24		7.61	0.061	69.80	3030.00	0.51	17.10	131.0	<0.005	0.213	240.0	0.24	0.16	4240	<0.01	670.0	<0.5	0.459	1.30	<0.2	18400.0	<0.1
FL-3	15/06/2011	Surface	<0.03	38.0	<0.1	<300.0	14.9	0.1	<0.03	131.0	18.90	55.2	<0.5	28.10		231		7.00	0.051	70.90	2940.00	<0.3	17.40	133.0	<0.005	1.800	240.0	0.20	<0.2	4260	<0.05	528.0	<3.0	0.400	1.05	<1.0	21300.0	<0.5
FL-3	13/07/2011	Surface	<0.03	38.0	0.2	<300.0	16.3	0.1	<0.03	134.0	20.00	57.1	<0.5	13.10		193		7.10	0.054	73.70	3150.00	<0.3	17.10	137.0	<0.005	1.870	231.0	<0.1	<0.2	4140	<0.05	602.0	<3.0	0.420	0.84	<1.0	22000.0	<0.5
FL-3	10/08/2011	Surface	<0.03	17.0	0.2	<300.0	15.6	0.1	<0.03	136.0	19.90	55.1	<0.5	7.10		178		7.00	0.054	73.40	3140.00	<0.3	16.40	133.0	0.00	1.340	223.0	<0.1	<0.2	4010	<0.05	571.0	<3.0	0.410	0.53	<1.0	22200.0	<0.5
FL-3	07/09/2011	Surface	<0.03	15.0	<0.1	<300.0	16.8	0.1	<0.03	151.0	20.40	58.2	<0.5	7.80		87		7.50	0.056	78.60	3390.00	<0.3	17.30	142.0	<0.005	1.220	223.0	<0.1	<0.2	4420	<0.05	610.0	<3.0	0.440	0.39	<1.0	23200.0	<0.5
FL-3 Average			0.015	24.5	0.1	125.0	15.8	0.1	0.0	142.0	19.08	55.3	0.2	12.13		143		7.24	0.055	73.28	3130.00	0.22	17.06	135.2	0.00	1.289	231.4	0.12	0.11	4214	0.02	596.2	1.3	0.426	0.82	0.4	21420.0	0.21
FL-3 Max			<0.03	38.0	0.2	<300.0	16.8	0.1	<0.03	158.0	20.40	58.2	<0.5	28.10		231		7.61	0.061	78.60	3390.00	0.51	17.40	142.0	<0.005	1.870	240.0	0.24	<0.2	4420	<0.05	670.0	<3.0	0.459	1.30	<1.0	23200.0	<0.5
FL-3 Min			0.013	14.7	<0.1	<50.0	14.9	0.1	<0.005	131.0	16.20	51.0	<0.1	4.57		24		7.00	0.051	69.80	2940.00	<0.3	16.40	131.0	0.00	0.213	223.0	<0.1	0.16	4010	<0.01	528.0	<0.5	0.400	0.39	<0.2	18400.0	<0.1
FL-30	13/04/2011	Surface	<0.005	3.0	0.2	<50.0	12.8	0.1	<0.005	192.0	0.12	37.8	<0.1	0.31		24200		12.10	0.071	62.10	3710.00	1.21	25.60	81.6	<0.005	0.163	264.0	0.04	0.17	3070	<0.01	695.0	<0.5	0.209	3.13	<0.2	5030.0	<0.1
FL-30	15/06/2011	Surface	<0.005	35.6	0.3	<50.0	13.0	0.1	<0.005	198.0	0.70	42.2	<0.1	3.83		23600		13.40	0.075	72.60	3920.00	1.09	31.10	91.4	<0.005	3.580	312.0	0.06	0.11	3510	<0.01	662.0	<0.5	0.212	2.66	<0.2	5790.0	<0.1
FL-30	13/07/2011	Surface	<0.005	18.1	0.3	<50.0	13.2	0.1	<0.005	194.0	0.64	43.5	<0.1	2.55		24700		13.00	0.075	71.10	3900.00	1.13	29.80	93.4	<0.005	0.465	306.0	0.05	0.13	3410	<0.01	713.0	<0.5	0.210	2.88	<0.2	5410.0	<0.1
FL-30	10/08/2011	Surface	<0.005	15.0	0.2	<50.0	12.8	0.1	<0.005	198.0	0.42	41.4	<0.1	1.66		25100		13.50	0.073	70.80	3870.00	1.09	29.20	89.8	0.00	0.552	283.0	0.04	0.16	3150	<0.01	683.0	<0.5	0.197	2.82	<0.2	5620.0	<0.1
FL-30	07/09/2011	Surface	<0.005	14.5	0.2	<50.0	14.5	0.1	<0.005	204.0	0.52	44.3	<0.1	1.78		25800		13.80	0.073	77.00	4190.00	1.29	30.90	96.4	<0.005	0.646	295.0	0.04	0.17	3330	<0.01	706.0	<0.5	0.212	2.74	<0.2	6290.0	<0.1
FL-30 Average			0.003	17.2	0.2	25.0	13.3	0.1	0.0	197.2	0.48	41.8	0.1	2.03		24680		13.16	0.073	70.72	3918.00	1.16	29.32	90.5	0.00	1.081	292.0	0.05	0.15	3294	0.01	691.8	0.3	0.208	2.85	0.1	5628.0	0.05
FL-30 Max			<0.005	35.6	0.3	<50.0	14.5	0.1	<0.005	204.0	0.70	44.3	<0.1	3.83		25800		13.80	0.075	77.00	4190.00	1.29	31.10	96.4	<0.005	3.580	312.0	0.06	0.17	3510	<0.01	713.0	<0.5	0.212	3.13	<0.2	6290.0	<0.1
FL-30 Min			<0.005	3.0	0.2	<50.0	12.8	0.1	<0.005	192.0	0.12	37.8	<0.1	0.31		23600		12.10	0.071	62.10	3710.00	1.09	25.60	81.6	0.00	0.163	264.0	0.04	0.11	3070	<0.01	662.0	<0.5	0.197	2.66	<0.2	5030.0	<0.1
FL-5	13/04/2011	Surface	0.013	12.3	0.1	<50.0	15.5	0.1	<0.005	157.0	15.50	51.9	<0.1	5.28		27		7.68	0.062	69.90	3090.00	0.51	17.50	133.0	<0.005	0.147	243.0	0.23	0.14	4030	<0.01	668.0	<0.5	0.449	1.21	<0.2	18700.0	<0.1
FL-5	15/06/2011	Surface	<0.03	36.0	<0.1	<300.0	15.6	0.1	<0.03	145.0	18.20	55.9	<0.5	25.80		292		7.60	0.058	74.40	3110.00	0.40	18.90	140.0	<0.005	1.420	239.0	0.20	<0.2	4380	<0.05	577.0	<3.0	0.440	1.09	<1.0	21300.0	<0.5
FL-5	13/07/2011	Surface	<0.03	26.0	0.3	<300.0	15.7	0.1	<0.03	125.0	19.00	57.0	<0.5	12.40		169		7.10	0.052	73.40	3210.00	<0.3	17.40	139.0	<0.005	1.680	239.0	0.20	<0.2	3790	<0.05	586.0	<3.0	0.410	0.82	<1.0	22400.0	<0.5
FL-5	10/08/2011	Surface	<0.03	17.0	<0.1	<300.0	15.8	0.1	<0.03	138.0	19.60	55.0	<0.5	7.00		176		7.00	0.055	73.80	3180.00	<0.3	16.50	134.0	0.00	1.340	207.0	<0.1	<0.2	3990	<0.05	580.0	<3.0	0.430	0.54	<1.0	22300.0	<0.5
FL-5	07/09/2011	Surface	<0.03	20.0	<0.1	<300.0	16.6	0.1	<0.03	149.0	20.10	57.1	<0.5	8.00		87		7.50	0.056	77.20	3350.00	<0.3	17.00	143.0	<0.005	1.310	219.0	0.20	<0.2	4240	<0.05	603.0	<3.0	0.440	0.37	<1.0	23000.0	<0.5
FL-5 Average			0.015	22.3	0.1	125.0	15.8	0.1	0.0	142.8	18.48	55.4	0.2	11.70		150		7.38	0.057	73.74	3188.00	0.27	17.46	137.8	0.00	1.179	229.4	0.18	0.11	4086	0.02	602.8	1.3	0.434	0.81	0.4	21540.0	0.21
FL-5 Max			<0.03	36.0	0.3	<300.0	16.6	0.1	<0.03	157.0	20.10	57.1	<0.5	25.80		292		7.68	0.062	77.20	3350.00	0.51	18.90	143.0	<0.005	1.680	243.0	0.23	<0.2	4380	<0.05	668.0	<3.0	0.449	1.21	<1.0	23000.0	<0.5
FL-5 Min			0.013	12.3	<0.1	<50.0	15.5	0.1	<0.005	125.0	15.50	51.9	<0.1	5.28		27		7.00	0.052	69.90	3090.00	<0.3	16.50	133.0	0.00	0.147	207.0	<0.1	0.14	3790	<0.01	577.0	<0.5	0.410	0.37	<0.2	18700.0	<0.1
FL-60	13/04/2011	Surface	<0.005	9.6	0.7	<50.0	12.2	0.1	<0.005	201.0	0.14	36.6	<0.1	0.14		26300		12.40	0.071	63.50	3650.00	1.31	26.80	78.7	<0.005	0.142	274.0	0.03	0.16	3420	<0.01	697.0	<0.5	0.198	3.63	<0.2	4420.0	<0.1
FL-60	15/06/2011	Surface	<0.005	18.8	0.9	<50.0	12.5	0.1	<0.005	198.0	0.14	42.5	<0.1	0.94		26800		14.30	0.076	75.10	4030.00	1.36	33.20	90.6	0.01	1.460	316.0	0.04	0.08	3400	<0.01	686.0	<0.5	0.218	3.55	<0.2	4840.0	<0.1
FL-60	13/07/2011	Surface	<0.005	16.7	1.1	<50.0	12.7	0.1	<0.005	204.0	0.19	42.5	<0.1	1.07		28500		13.40	0.078	72.10	3850.00	1.27	30.70	89.8	<0.005	0.427	306.0	0.04	0.12	3430	<0.01	720.0	<0.5	0.216	3.70	<0.2	4470.0	<0.1
FL-60	10/08/2011	Surface	<0.005	15.8	1.0	<50.0	12.4	0.1	<0.005	202.0	0.23	39.6	<0.1	0.89		27900		13.20	0.074	70.60	3730.00	1.22	29.50	85.3	0.00	0.455	286.0	0.04	0.14	3180	<0.01	706.0	<0.5	0.207	3.83	<0.2	4630.0	<0.1
FL-60	07/09/2011	Surface	<0.005	14.7	0.9	<50.0	13.7	0.1	<0.005	201.0	0.41	41.2	<0.1	0.85		27900		13.70	0.086	74.10	3950.00	1.40	30.40	89.3	<0.005	0.468	288.0	0.04	0.10	3180	<0.01	793.0	<0.5	0.236	4.00	<0.2	5140.0	<0.1
FL-60 Average			0.003	15.1	0.9	25.0	12.7	0.1	0.0	201.2	0.22	40.5	0.1	0.78		27480		13.40	0.077	71.08	3842.00	1.31	30.12	86.7	0.00	0.590	294.0	0.04	0.12	3322	0.01	720.4	0.3	0.215	3.74	0.1	4700.0	0.05
FL-60 Max			<0.005	18.8	1.1	<50.0	13.7	0.1	<0.005	204.0	0.41	42.5	<0.1	1.07		28500		14.30	0.086	75.10	4030.00	1.40	33.20	90.6	0.01	1.460	316.0	0.04	0.16	3430	<0.01	793.0	<0.5	0.236	4.00	<0.2	5140.0	<0.1
FL-60 Min			<0.005	9.6	0.7	<50.0	12.2	0.1	<0.005	198.0	0.14	36.6	<0.1	0.14		26300		12.40	0.071	63.50	3650.00	1.22	26.80	78.7	0.00	0.142	274.0	0.03	0.08	3180	<0.01	686.0	<0.5	0.198	3.55	<0.2	4420.0	<0.1
FL-80	13/04/2011	Surface	<0.005	2.5	1.8	<50.0	12.9	0.1	<0.005	204.0	0.05	37.3	<0.1	0.15		31000		14.20	0.075	73.60	4040.00	1.18	31.90	86.8	<0.005	0.251	319.0	0.03	0.10	3230	<0.01	729.0	<0.5	0.224	5.03	<0.2	3910.0	<0.1
FL-80	15/06/2011	Surface	<0.005	13.6	1.8	<50.0	13.1	0.1	<0.005	207.0	0.10	36.4	<0.1	0.63		31600		14.00	0.081	73.80	3840.00	1.13	33.40	84.5	<0.005	0.529	323.0	0.04	<0.04	3570	<0.01	754.0	<0.5	0.238	5.26	<0.2	3760.0	<0.1
FL-80	13/07/2011	Surface	<0.005	19.1	1.6	<50.0	13.6	0.1	<0.005	209.0	0.17	38.0	<0.1	0.69		32300		13.80	0.081	72.70	3880.00	1.13	31.90	87.1	<0.005	0.503	324.0	0.04	0.06	3570	<0.01	784.0	<0.5	0.234	5.30	<0.2	3570.0	<0.1
FL-80	10/08/2011	Surface	<0.005	13.9	1.5	<50.0	13.4	0.1	<0.005	215.0	0.18	34.9	<0.1	0.58		32600		13.90	0.078	71.60	3750.00	1.13	30.90	82.6	0.00	0.446	296.0	0.03	0.09	3320	<0.01	775.0	<0.5	0.232	5.45	<0.2	3800.0	<0.1
FL-80	07/09/2011	Surface	<0.005	14.0	1.4	<50.0	13.2	0.1	<0.005	217.0	0.30	36.3	<0.1	0.70		32500		14.70	0.081	78.20	4090.00	1.21	33.10	84.2	<0.005	0.510	327.0	0.04	0.09	3470	<0.01	831.0	<0.5	0.224	5.28	<0.2	4340.0	<0.1
FL-80 Average			0.003	12.6	1.6	25.0	13.2	0.1	0.0	210.4	0.16	36.6	0.1	0.55		32000		14.12	0.079	73.98	3920.00	1.16	32.24	85.0	0.00	0.448	317.8	0.04	0.07	3432	0.01	774.6	0.3	0.230	5.26	0.1	3876.0	0.05
FL-80 Max			<0.005	19.1	1.8	<50.0	13.6	0.1	<0.005	217.0	0.30	38.0	<0.1	0.70		32600		14.70	0.081	78.20	4090.00	1.21	33.40	87.1	<0.005	0.529	327.0	0.04	0.10	3570	<0.01	831.0	<0.5	0.238	5.45	<0.2	4340.0	<0.1
FL-80 Min			<0.005	2.5	1.4	<50.0	12.9	0.1	<0.005	204.0	0.05	34.9	<0.1	0.15		31000		13.80	0.075	71.60	3750.00	1.13	30.90	82.6	0.00	0.251	296.0	0.03	<0.04	3230	<0.01	729.0	<0.5	0.224	5.03	<0.2	3570.0	<0.1
GDHSECK	14/03/2011	Surface	<0.005	1.9	0.3	<50.0	66.4	<0.01	<0.005	243.0	3.06	0.4	<0.1	2.30		7		6.16	0.009	60.80	42.40	0.27	11.00	5.5		7.920	232.0	0.37	0.09	7460	<0.01	907.0	<0.5	0.049	3.48	<0.2	1990.0	<0.1
GDHSECK	26/05/2011	Surface	<0.03	19.0	0.4	<300.0	37.9	<0.05	<0.03	269.0	8.91	3.6	<0.5	4.10		185		5.40	0.019	132.00	449.00	2.60	15.40	40.5		9.940	419.0	0.30	0.90	5200	<0.05	1130.0	<3.0	0.120	1.64	<1.0	16200.0	<0.5
GDHSECK	27/10/2011	Surface	<0.005	5.3	0.2	<50.0	29.9	<0.01	<0.005	178.0	2.05	0.1	<0.1	1.18		11		4.06	0.006	59.30	23.00	0.25	8.77	7.6		0.955	199.0	0.36	0.17	5660	<0.01	732.0	<0.5	0.025	1.68	<0.2	2840.0	<0.1
GDHSECK Average			0.007	8.7	0.3	66.7	44.7	0.0	0.0	230.0	4.67	1.3	0.1	2.53		68		5.21	0.011	84.03	171.47	1.04	11.72	17.8		6.272	283.3	0.34	0.39	6107	0.01	923.0	0.7	0.065	2.27	0.2	7010.0	0.12
GDHSECK Max			<0.03	19.0	0.4	<300.0	66.4	<0.05	<0.03	269.0	8.91	3.6	<0.5	4.10		185		6.16	0.019	132.00	449.00	2.60	15.40	40.5		9.940	419.0	0.37	0.90	7460	<0.05	1130.0	<3.0	0.120	3.48	<1.0	16200.0	<0.5
GDHSECK Min			<0.005	1.9	0.2	<50.0	29.9	<0.01	<0.005	178.0	2.05	0.1	<0.1	1.18		7		4.06	0.006	59.30	23.00	0.25	8.77	5.5		0.955	199.0	0.30	0.09	5200	<0.01	732.0	<0.5	0.025	1.64	<0.2	1990.0	<0.1
LRSINK	17/03/2011	Surface	<0.02	8.0	0.2	<50.0	2.0	<0.1	<1.0	76.0	<0.01	<0.5	<1.0	27.00	1.08	65		0.46	0.013	23.70	24.00	<1.0	19.00	<1.0		2.000	9.0	<0.5	<0.1	9260	<5.0	947.0	<5.0	<0.05	<0.1	<5.0	33.0	0.90
LRSINK	26/04/2011	Surface	<0.02	6.0	<0.1	<50.0	2.0	<0.1	<1.0	63.4	<0.01	<0.5	<1.0	30.80	1.10	22	<0.05	0.40		21.60	22.00	<1.0	17.10	<1.0		1.100	11.0	<0.5	<0.1	8440	<5.0	870.0	<5.0	<0.05	<0.1	<5.0	25.0	1.40
LRSINK Average			0.010	7.0	0.1	25.0	2.0	0.1	0.5	69.7	0.01	0.3	0.5	28.90	1.09	44	0.03	0.43	0.013	22.65	23.00	0.50	18.05	0.5		1.550	10.0	0.25	0.05	8850	2.50	908.5	2.5	0.025	0.05	2.5	29.0	1.15
LRSINK Max			<0.02	8.0	0.2	<50.0	2.0	<0.1	<1.0	76.0	<0.01	<0.5	<1.0	30.80	1.10	65	<0.05	0.46	0.013	23.70	24.00	<1.0	19.00	<1.0		2.000	11.0	<0.5	<0.1	9260	<5.0	947.0	<5.0	<0.05	<0.1	<5.0	33.0	1.40
LRSINK Min			<0.02	6.0	<0.1	<50.0	2.0	<0.1	<1.0	63.4	<0.01	<0.5	<1.0	27.00	1.08	22	<0.05	0.40	0.013	21.60	22.00	<1.0	17.10	<1.0		1.100	9.0	<0.5	<0.1	8440	<5.0	870.0	<5.0	<0.05	<0.1	<5.0	25.0	0.90
NF2	19/01/2011	Surface	<0.005	4.4	0.4	<50.0	73.9	<0.01	0.0	40.6	0.02	0.1	<0.1	0.30		97		1.02	0.008	8.88	26.90	0.76	2.93	0.4		0.206	<10.0	0.06	0.39	5790	<0.01	194.0	<0.5	<0.002	2.65	<0.2	10.6	<0.1
NF2	02/02/2011	Surface	<0.005	6.2	0.4	<50.0	72.2	<0.01	0.1	42.0	0.01	0.3	<0.1	0.47		255		1.09	0.008	9.42	44.20	0.86	3.25	0.7		0.470	<10.0	0.06	0.41	5470	0.02	183.0	<0.5	<0.002	2.63	<0.2	78.8	<0.1
NF2	16/03/2011	Surface	<0.005	8.5	0.6	<50.0	71.3	<0.01	<0.005	54.6	0.08	0.2	<0.1	1.16		113		1.55	0.010	12.70	18.50	0.96	5.59	1.5		1.290	13.0	0.08	0.64	7090	<0.01	239.0	0.7	0.012	3.67	<0.2	21.8	<0.1
NF2	13/04/2011	Surface	<0.005	6.6	0.4	<50.0	77.9	<0.01	<0.005	44.0	0.03	0.1	<0.1	1.27		109		1.23	0.009	9.91	42.90	0.83	3.72	0.8		0.653	<10.0	0.06	0.36	6080	0.02	206.0	<0.5	0.003	2.95	<0.2	33.2	<0.1
NF2	12/05/2011	Surface	<0.005	76.5	1.0	<50.0	44.2	0.0	0.0	26.8	0.13	0.1	0.2	3.34		355		1.61	0.005	5.75	11.80	0.59	2.44	1.4		2.130	<10.0	0.06	0.39	4570	<0.01	121.0	<0.5	0.007	1.36	<0.2	69.0	<0.1
NF2	20/06/2011	Surface	<0.005	57.2	0.6	<50.0	27.6	<0.01	<0.005	13.8	0.03	0.1	<0.1	0.98		160		0.42	0.002	3.36	21.80	0.32	1.36	0.6		2.100	<10.0	0.08	0.22	4030	<0.01	57.3	1.8	0.004	0.52	<0.2	7.3	<0.1
NF2	21/07/2011	Surface	<0.005	50.3	0.6	<50.0	36.3	<0.01	<0.005	18.8	0.03	0.1	<0.1	1.02		159		0.40	0.002	3.94	14.60	0.30	1.54	0.6		1.410	<10.0	0.08	0.20	5640	<0.01	72.3	1.3	0.003	0.56	<0.2	9.0	<0.1
NF2	25/08/2011	Surface	<0.005	21.8	0.5	<50.0	40.7	<0.01	<0.005	21.0	0.02	0.1	<0.1	0.72		114		0.47	0.002	4.45	10.90	0.35	1.77	0.5		1.130	<10.0	0.08	0.17	4640	<0.01	89.1	0.7	0.003	0.71	<0.2	7.7	<0.1
NF2	21/09/2011	Surface	<0.005	17.3	0.5	<50.0	49.2	<0.01	<0.005	26.1	0.02	0.1	<0.1	0.45		153		0.61	0.003	5.13	20.00	0.47	1.89	0.5		0.342	<10.0	0.06	0.27	5340	<0.01	109.0	<0.5	<0.002	1.07	<0.2	7.0	<0.1
NF2	20/10/2011	Surface	0.029	162.0	1.4	<50.0	75.3	<0.01	0.0	34.2	0.07	0.5	0.4	2.26		844		0.86	0.005	6.81	158.00	0.80	2.52	1.4		21.600	<10.0	0.13	0.35	5480	0.02	142.0	7.0	0.012	1.80	0.5	35.6	<0.1
NF2	14/11/2011	Surface	0.006	21.2	0.5	<50.0	64.4	<0.01	0.0	30.1	0.05	0.2	<0.1	0.82		181		0.88	0.006	7.04	54.50	0.63	2.47	0.8		2.570	<10.0	0.08	0.35	4860	0.04	148.0	0.8	0.004	1.69	<0.2	24.8	<0.1
NF2	05/12/2011	Surface	<0.005	15.8	0.5	<50.0	62.5	<0.01	<0.005	36.0	0.04	0.1	<0.1	1.29		167		1.02	0.006	7.51	30.70	0.64	2.84	0.6		1.130	<10.0	0.07	0.44	5600	0.02	147.0	0.7	0.003	1.95	<0.2	15.1	<0.1
NF2 Average			0.005	37.3	0.6	25.0	58.0	0.0	0.0	32.3	0.04	0.2	0.1	1.17		226		0.93	0.005	7.08	37.90	0.63	2.69	0.8		2.919	5.7	0.08	0.35	5383	0.01	142.3	1.2	0.005	1.80	0.1	26.7	0.05
NF2 Max			0.029	162.0	1.4	<50.0	77.9	0.0	0.1	54.6	0.13	0.5	0.4	3.34		844		1.61	0.010	12.70	158.00	0.96	5.59	1.5		21.600	13.0	0.13	0.64	7090	0.04	239.0	7.0	0.012	3.67	0.5	78.8	<0.1
NF2 Min			<0.005	4.4	0.4	<50.0	27.6	<0.01	<0.005	13.8	0.01	0.1	<0.1	0.30		97		0.40	0.002	3.36	10.90	0.30	1.36	0.4		0.206	<10.0	0.06	0.17	4030	<0.01	57.3	<0.5	<0.002	0.52	<0.2	7.0	<0.1
NFRC SC-1	14/11/2011	Surface	<0.005	16.3	0.5	<50.0	64.6	<0.01	<0.005	31.2	0.03	0.1	<0.1	0.42		183		0.86	0.005	6.94	50.20	0.64	2.39	0.6		2.130	<10.0	0.07	0.36	5100	<0.01	149.0	0.9	0.004	1.72	<0.2	15.1	<0.1
NFRC SC-1	05/12/2011	Surface	<0.005	13.3	0.5	<50.0	61.6	<0.01	<0.005	35.2	0.02	0.1	<0.1	0.39		167		0.86	0.005	7.38	29.30	0.71	2.66	0.4		0.483	<10.0	0.06	0.39	5590	<0.01	148.0	<0.5	0.003	1.89	<0.2	9.5	<0.1
NFRC SC-1 Average			0.003	14.8	0.5	25.0	63.1	0.0	0.0	33.2	0.02	0.1	0.1	0.41		175		0.86	0.005	7.16	39.75	0.68	2.53	0.5		1.307	5.0	0.07	0.38	5345	0.01	148.5	0.6	0.004	1.81	0.1	12.3	0.05
NFRC SC-1 Max			<0.005	16.3	0.5	<50.0	64.6	<0.01	<0.005	35.2	0.03	0.1	<0.1	0.42		183		0.86	0.005	7.38	50.20	0.71	2.66	0.6		2.130	<10.0	0.07	0.39	5590	<0.01	149.0	0.9	0.004	1.89	<0.2	15.1	<0.1
NFRC SC-1 Min			<0.005	13.3	0.5	<50.0	61.6	<0.01	<0.005	31.2	0.02	0.1	<0.1	0.39		167		0.86	0.005	6.94	29.30	0.64	2.39	0.4

Denison Environmental Services

Table B-3: 2011 Rose Creek Drainage Water Quality
Total Metals

Faro Mine Closure

Station	Date	Sample Type	Ag µg/L	Al µg/L	As µg/L	B µg/L	Ba µg/L	Be µg/L	Bi µg/L	Ca mg/L	Cd µg/L	Co µg/L	Cr µg/L	Cu µg/L	F mg/L	Fe µg/L	Hg µg/L	K mg/L	Li µg/L	Mg mg/L	Mn µg/L	Mo µg/L	Na mg/L	Ni µg/L	P mg/L	Pb µg/L	S mg/L	Sb µg/L	Se µg/L	Si µg/L	Sn µg/L	Sr µg/L	Ti µg/L	Tl µg/L	U µg/L	V µg/L	Zn µg/L	Zr µg/L
NFRC SC-2	**14/11/2011**	**Surface**	<0.005	16.8	0.5	<50.0	65.1	<0.01	0.0	32.5	0.03	0.2	<0.1	0.61		210		0.87	0.005	7.09	54.70	0.65	2.45	0.7		1.640	<10.0	0.07	0.38	5330	0.03	150.0	0.6	0.004	1.77	<0.2	17.7	<0.1
NFRC SC-2	**05/12/2011**	**Surface**	<0.005	14.1	0.5	<50.0	62.9	<0.01	<0.005	36.0	0.02	0.1	<0.1	0.43		202		0.88	0.005	7.49	34.50	0.67	2.66	0.5		0.616	<10.0	0.07	0.44	5690	<0.01	148.0	0.8	<0.002	1.92	<0.2	11.3	<0.1
NFRC SC-2 Average			0.003	15.5	0.5	25.0	64.0	0.0	0.0	34.3	0.03	0.1	0.1	0.52		206		0.88	0.005	7.29	44.60	0.66	2.56	0.6		1.128	5.0	0.07	0.41	5510	0.02	149.0	0.7	0.003	1.85	0.1	14.5	0.05
NFRC SC-2 Max			<0.005	16.8	0.5	<50.0	65.1	<0.01	0.0	36.0	0.03	0.2	<0.1	0.61		210		0.88	0.005	7.49	54.70	0.67	2.66	0.7		1.640	<10.0	0.07	0.44	5690	0.03	150.0	0.8	0.004	1.92	<0.2	17.7	<0.1
NFRC SC-2 Min			<0.005	14.1	0.5	<50.0	62.9	<0.01	<0.005	32.5	0.02	0.1	<0.1	0.43		202		0.87	0.005	7.09	34.50	0.65	2.45	0.5		0.616	<10.0	0.07	0.38	5330	<0.01	148.0	0.6	<0.002	1.77	<0.2	11.3	<0.1
NFRC SC-3	**14/11/2011**	**Surface**	<0.005	11.2	0.5	<50.0	65.9	<0.01	0.0	31.8	0.03	0.1	<0.1	0.54		154		0.87	0.006	7.14	52.00	0.64	2.48	0.6		1.340	<10.0	0.08	0.35	5170	0.02	151.0	<0.5	<0.002	1.72	<0.2	18.7	<0.1
NFRC SC-3	**05/12/2011**	**Surface**	<0.005	14.5	0.5	<50.0	63.5	<0.01	<0.005	36.2	0.02	0.1	<0.1	0.42		201		0.88	0.005	7.59	34.10	0.69	2.67	0.5		0.602	<10.0	0.07	0.43	5650	<0.01	149.0	0.8	<0.002	1.90	<0.2	11.6	<0.1
NFRC SC-3 Average			0.003	12.9	0.5	25.0	64.7	0.0	0.0	34.0	0.03	0.1	0.1	0.48		178		0.88	0.006	7.37	43.05	0.67	2.58	0.5		0.971	5.0	0.08	0.39	5410	0.01	150.0	0.5	0.001	1.81	0.1	15.2	0.05
NFRC SC-3 Max			<0.005	14.5	0.5	<50.0	65.9	<0.01	0.0	36.2	0.03	0.1	<0.1	0.54		201		0.88	0.006	7.59	52.00	0.69	2.67	0.6		1.340	<10.0	0.08	0.43	5650	0.02	151.0	0.8	<0.002	1.90	<0.2	18.7	<0.1
NFRC SC-3 Min			<0.005	11.2	0.5	<50.0	63.5	<0.01	<0.005	31.8	0.02	0.1	<0.1	0.42		154		0.87	0.005	7.14	34.10	0.64	2.48	0.5		0.602	<10.0	0.07	0.35	5170	<0.01	149.0	<0.5	<0.002	1.72	<0.2	11.6	<0.1
NFRC SC-4	**14/11/2011**	**Surface**	<0.005	11.2	0.4	<50.0	65.3	<0.01	0.0	31.8	0.03	0.2	<0.1	0.54		127		0.88	0.006	7.08	55.80	0.63	2.41	0.7		0.957	<10.0	0.08	0.34	5140	0.02	154.0	<0.5	0.003	1.73	<0.2	24.1	<0.1
NFRC SC-4	**05/12/2011**	**Surface**	0.006	42.7	0.7	<50.0	64.1	<0.01	0.0	35.5	0.04	0.2	1.0	0.94		364		0.93	0.006	7.85	54.00	0.71	2.81	0.7		3.940	<10.0	0.08	0.41	5540	<0.01	148.0	1.9	0.004	1.89	0.3	18.4	<0.1
NFRC SC-4 Average			0.004	27.0	0.5	25.0	64.7	0.0	0.0	33.7	0.03	0.2	0.5	0.74		246		0.91	0.006	7.47	54.90	0.67	2.61	0.7		2.449	5.0	0.08	0.38	5340	0.01	151.0	1.1	0.004	1.81	0.2	21.3	0.05
NFRC SC-4 Max			0.006	42.7	0.7	<50.0	65.3	<0.01	0.0	35.5	0.04	0.2	1.0	0.94		364		0.93	0.006	7.85	55.80	0.71	2.81	0.7		3.940	<10.0	0.08	0.41	5540	0.02	154.0	1.9	0.004	1.89	0.3	24.1	<0.1
NFRC SC-4 Min			<0.005	11.2	0.4	<50.0	64.1	<0.01	0.0	31.8	0.03	0.2	<0.1	0.54		127		0.88	0.006	7.08	54.00	0.63	2.41	0.7		0.957	<10.0	0.08	0.34	5140	<0.01	148.0	<0.5	0.003	1.73	<0.2	18.4	<0.1
R10	**20/01/2011**	**Surface**	<0.005	6.3	0.4	<50.0	75.1	<0.01	0.1	40.1	0.01	0.0	<0.1	0.26		94		0.97	0.008	8.22	15.10	0.78	2.70	0.3		0.092	<10.0	0.05	0.39	5910	0.09	189.0	<0.5	<0.002	2.63	<0.2	4.9	<0.1
R10	**15/02/2011**	**Surface**	<0.005	3.5	0.4	<50.0	72.6	<0.01	0.1	37.4	0.01	0.0	<0.1	0.30		80		1.05	0.008	8.95	12.50	0.85	3.17	0.3		0.147	<10.0	0.06	0.44	4860	<0.01	184.0	<0.5	<0.002	2.66	<0.2	7.1	<0.1
R10	**16/03/2011**	**Surface**	<0.005	4.8	0.4	<50.0	82.5	<0.01	<0.005	42.8	0.01	0.0	<0.1	0.51		67		1.20	0.009	10.40	15.00	0.92	3.71	0.3		0.207	<10.0	0.06	0.44	5590	<0.01	204.0	<0.5	<0.002	3.03	<0.2	9.9	<0.1
R10	**12/04/2011**	**Surface**	<0.005	3.8	0.5	<50.0	78.1	<0.01	<0.005	41.1	0.02	0.1	<0.1	0.32		72		1.08	0.009	9.17	15.70	0.59	3.31	0.4		0.207	<10.0	0.05	0.41	6040	<0.01	183.0	<0.5	<0.002	2.58	<0.2	9.7	<0.1
R10	**09/05/2011**	**Surface**	0.007	96.2	1.2	<50.0	61.0	0.0	0.0	28.8	0.12	0.3	0.2	2.85		494		1.82	0.005	5.90	40.30	0.55	2.12	1.0		2.430	<10.0	0.07	0.27	4740	<0.01	127.0	2.1	0.003	1.35	<0.2	79.8	<0.1
R10	**22/06/2011**	**Surface**	<0.005	79.5	0.5	<50.0	30.9	<0.01	<0.005	13.8	0.03	0.1	0.3	1.42		179		0.40	0.002	2.97	14.40	0.27	1.24	0.8		1.310	<10.0	0.09	0.19	4410	<0.01	60.9	1.8	0.004	0.47	0.3	3.9	0.20
R10	**21/07/2011**	**Surface**	<0.005	52.1	0.6	<50.0	36.2	<0.01	<0.005	18.2	0.03	0.1	<0.1	0.98		154		0.37	0.002	3.83	15.80	0.29	1.49	0.5		2.040	<10.0	0.07	0.20	5450	<0.01	73.5	1.6	0.003	0.59	<0.2	6.4	<0.1
R10	**23/08/2011**	**Surface**	<0.005	25.5	0.6	<50.0	39.9	<0.01	<0.005	20.5	0.01	0.1	<0.1	0.77		133		0.44	0.002	4.28	17.20	0.33	1.72	0.5		0.392	<10.0	0.07	0.19	4960	<0.01	86.0	0.6	0.003	0.72	<0.2	6.0	<0.1
R10	**22/09/2011**	**Surface**	<0.005	23.8	0.5	<50.0	47.6	<0.01	<0.005	24.0	0.01	0.1	<0.1	0.52		151		0.63	0.003	5.17	21.20	0.43	1.89	0.4		0.233	<10.0	0.06	0.24	5140	<0.01	100.0	0.7	<0.002	0.99	<0.2	4.7	<0.1
R10	**19/10/2011**	**Surface**	<0.005	10.0	0.6	<50.0	54.3	<0.01	<0.005	29.8	0.01	0.0	<0.1	0.37		148		0.69	0.004	6.15	24.50	0.57	2.29	0.4		0.077	<10.0	0.06	0.36	4980	<0.01	128.0	<0.5	<0.002	1.56	<0.2	6.9	<0.1
R10	**16/11/2011**	**Surface**	<0.005	10.6	0.5	<50.0	59.4	<0.01	<0.005	33.4	0.02	0.1	<0.1	0.46		116		0.80	0.005	7.29	18.50	0.61	2.56	0.9		0.378	<10.0	0.07	0.41	5580	<0.01	142.0	<0.5	<0.002	1.78	<0.2	8.2	<0.1
R10	**06/12/2011**	**Surface**	<0.005	12.2	0.6	<50.0	64.2	<0.01	<0.005	35.1	0.01	0.0	<0.1	0.31		162		0.84	0.006	7.21	22.30	0.68	2.51	0.3		0.100	<10.0	0.06	0.44	5560	<0.01	146.0	<0.5	<0.002	1.85	<0.2	5.7	<0.1
R10 Average			0.003	27.4	0.6	25.0	58.5	0.0	0.0	30.4	0.02	0.1	0.1	0.76		154		0.86	0.005	6.63	19.38	0.57	2.39	0.5		0.634	5.0	0.06	0.33	5268	0.01	135.3	0.7	0.002	1.68	0.1	12.8	0.06
R10 Max			0.007	96.2	1.2	<50.0	82.5	0.0	0.1	42.8	0.12	0.3	0.3	2.85		494		1.82	0.009	10.40	40.30	0.92	3.71	1.0		2.430	<10.0	0.09	0.44	6040	0.09	204.0	2.1	0.004	3.03	0.3	79.8	0.20
R10 Min			<0.005	3.5	0.4	<50.0	30.9	<0.01	<0.005	13.8	0.01	0.0	<0.1	0.26		67		0.37	0.002	2.97	12.50	0.27	1.24	0.3		0.077	<10.0	0.05	0.19	4410	<0.01	60.9	<0.5	<0.002	0.47	<0.2	3.9	<0.1
R7	**20/01/2011**	**Surface**	<0.005	5.2	0.5	<50.0	80.2	<0.01	0.1	39.6	0.01	0.0	<0.1	0.41		97		0.97	0.008	7.68	11.20	0.80	2.83	0.5		0.545	<10.0	0.05	0.40	5860	0.04	188.0	<0.5	<0.002	2.51	<0.2	4.9	<0.1
R7	**15/02/2011**	**Surface**	<0.005	3.3	0.5	<50.0	74.8	<0.01	0.1	35.8	0.01	0.0	<0.1	0.56		92		1.03	0.009	8.15	10.10	0.87	3.15	0.2		0.272	<10.0	0.05	0.41	4890	<0.01	176.0	<0.5	<0.002	2.49	<0.2	1.9	<0.1
R7	**16/03/2011**	**Surface**	<0.005	5.5	0.4	<50.0	83.7	<0.01	<0.005	41.0	0.01	0.0	<0.1	0.79		74		1.12	0.009	8.87	9.38	0.87	3.55	0.3		0.645	<10.0	0.06	0.44	5640	0.02	194.0	<0.5	<0.002	2.85	<0.2	6.8	<0.1
R7	**12/04/2011**	**Surface**	<0.005	5.0	0.7	<50.0	78.0	<0.01	<0.005	40.4	0.02	0.0	<0.1	0.77		208		1.03	0.008	8.03	6.96	0.77	3.14	0.3		1.140	<10.0	0.12	0.40	6140	0.02	177.0	<0.5	<0.002	2.71	<0.2	2.3	<0.1
R7	**09/05/2011**	**Surface**	<0.005	46.0	1.2	<50.0	61.3	<0.01	0.0	25.2	0.03	0.0	<0.1	1.01		453		1.54	0.005	5.43	23.10	0.63	2.04	0.6		0.264	<10.0	0.06	0.29	4440	<0.01	117.0	1.2	<0.002	1.27	<0.2	2.5	<0.1
R7	**22/06/2011**	**Surface**	<0.005	76.3	0.6	<50.0	31.6	<0.01	<0.005	13.9	0.01	0.1	0.4	1.11		186		0.36	0.001	2.85	16.60	0.29	1.18	0.7		0.242	<10.0	0.09	0.20	4180	<0.01	57.4	1.8	<0.002	0.45	<0.2	1.1	<0.1
R7	**21/07/2011**	**Surface**	<0.005	37.3	0.6	<50.0	37.7	<0.01	<0.005	19.3	0.01	0.0	<0.1	0.74		149		0.33	0.002	3.78	17.10	0.30	1.43	0.4		0.152	<10.0	0.08	0.18	5430	<0.01	69.6	1.1	<0.002	0.53	<0.2	1.6	<0.1
R7	**24/08/2011**	**Surface**	<0.005	24.8	0.6	<50.0	39.7	<0.01	<0.005	20.5	0.01	0.0	<0.1	0.59		145		0.40	0.002	4.09	17.90	0.35	1.53	0.4		0.165	<10.0	0.08	0.20	4370	<0.01	82.5	<0.5	<0.002	0.68	<0.2	1.8	<0.1
R7	**22/09/2011**	**Surface**	<0.005	17.8	0.6	<50.0	49.1	<0.01	<0.005	24.8	0.01	0.0	<0.1	0.55		160		0.58	0.003	4.94	20.60	0.45	1.82	0.3		0.102	<10.0	0.06	0.27	5100	<0.01	97.0	<0.5	<0.002	0.98	<0.2	2.8	<0.1
R7	**19/10/2011**	**Surface**	0.036	14.5	0.7	<50.0	54.4	<0.01	<0.005	28.1	0.02	0.1	<0.1	0.85		177		0.61	0.004	5.83	25.20	0.54	2.29	0.3		0.834	<10.0	0.06	0.35	4690	0.03	118.0	<0.5	<0.002	1.51	<0.2	10.3	<0.1
R7	**15/11/2011**	**Surface**	<0.005	8.5	0.5	<50.0	65.1	<0.01	0.0	30.1	0.02	0.0	<0.1	0.57		113		0.78	0.005	6.24	16.70	0.66	2.33	0.3		0.373	<10.0	0.06	0.35	5010	0.02	141.0	<0.5	<0.002	1.70	<0.2	3.4	<0.1
R7	**06/12/2011**	**Surface**	<0.005	11.2	0.6	<50.0	63.8	<0.01	<0.005	33.3	<0.005	0.0	<0.1	0.24		176		0.77	0.005	6.45	18.10	0.69	2.46	0.2		0.040	<10.0	0.06	0.37	5430	<0.01	137.0	<0.5	<0.002	1.81	<0.2	0.4	<0.1
R7 Average			0.005	21.3	0.6	25.0	60.0	0.0	0.0	29.3	0.01	0.0	0.1	0.68		169		0.79	0.005	6.03	16.08	0.60	2.31	0.4		0.398	5.0	0.07	0.32	5098	0.01	129.5	0.5	0.001	1.62	0.1	3.3	0.05
R7 Max			0.036	76.3	1.2	<50.0	83.7	<0.01	0.1	41.0	0.03	0.1	0.4	1.11		453		1.54	0.009	8.87	25.20	0.87	3.55	0.7		1.140	<10.0	0.12	0.44	6140	0.04	194.0	1.8	<0.002	2.85	<0.2	10.3	<0.1
R7 Min			<0.005	3.3	0.4	<50.0	31.6	<0.01	<0.005	13.9	<0.005	0.0	<0.1	0.24		74		0.33	0.001	2.85	6.96	0.29	1.18	0.2		0.040	<10.0	0.05	0.18	4180	<0.01	57.4	<0.5	<0.002	0.45	<0.2	0.4	<0.1
R8	**20/01/2011**	**Surface**	<0.005	3.6	0.4	<50.0	75.2	<0.01	0.1	36.0	0.01	0.0	<0.1	0.37		88		0.92	0.008	7.23	10.40	0.80	2.67	0.2		0.175	<10.0	0.06	0.38	5490	0.02	177.0	<0.5	<0.002	2.43	<0.2	2.5	<0.1
R8	**15/02/2011**	**Surface**	<0.005	2.9	0.4	<50.0	71.6	<0.01	<0.005	36.2	0.02	0.0	<0.1	0.63		86		0.96	0.008	7.72	7.92	0.84	2.99	0.3		0.247	<10.0	0.05	0.42	4920	<0.01	174.0	<0.5	<0.002	2.46	<0.2	2.1	<0.1
R8	**16/03/2011**	**Surface**	<0.005	5.9	0.4	<50.0	82.8	<0.01	<0.005	42.8	<0.005	0.0	<0.1	0.64		80		1.10	0.009	8.95	9.60	0.88	3.54	0.2		0.293	<10.0	0.06	0.47	5940	0.02	190.0	<0.5	<0.002	2.84	<0.2	3.7	<0.1
R8	**12/04/2011**	**Surface**	<0.005	4.8	0.4	<50.0	75.7	<0.01	<0.005	40.2	<0.005	0.0	<0.1	0.50		76		1.00	0.008	8.08	6.70	0.82	3.12	0.2		0.130	<10.0	0.06	0.41	6060	<0.01	171.0	<0.5	<0.002	2.64	<0.2	0.6	<0.1
R8	**09/05/2011**	**Surface**	0.006	43.1	1.2	<50.0	58.9	<0.01	<0.005	25.4	0.01	0.0	<0.1	0.99		434		1.53	0.005	5.23	20.00	0.66	1.99	0.6		0.207	<10.0	0.05	0.32	4430	<0.01	116.0	<0.5	<0.002	1.25	<0.2	2.4	<0.1
R8	**22/06/2011**	**Surface**	0.006	96.8	0.6	<50.0	30.0	0.0	<0.005	12.5	0.03	0.1	1.4	1.61		208		0.36	0.001	2.56	15.60	0.28	1.22	1.7		3.220	<10.0	0.09	0.16	4440	<0.01	52.2	2.5	0.009	0.42	0.3	3.9	0.20
R8	**21/07/2011**	**Surface**	<0.005	41.4	0.6	<50.0	35.3	<0.01	<0.005	17.3	0.01	0.1	<0.1	0.92		135		0.32	0.002	3.51	14.30	0.28	1.46	0.5		0.487	<10.0	0.07	0.20	5660	<0.01	64.8	0.7	<0.002	0.54	<0.2	2.0	<0.1
R8	**24/08/2011**	**Surface**	<0.005	32.4	0.6	<50.0	37.4	<0.01	<0.005	18.6	0.01	0.0	<0.1	0.81		137		0.39	0.002	3.68	16.30	0.33	1.56	0.5		1.140	<10.0	0.08	0.19	4750	<0.01	75.7	<0.5	0.004	0.63	<0.2	1.5	<0.1
R8	**22/09/2011**	**Surface**	<0.005	26.8	0.6	<50.0	47.3	<0.01	<0.005	22.5	0.01	0.0	<0.1	0.56		155		0.56	0.003	4.57	20.00	0.44	1.81	0.4		0.239	<10.0	0.06	0.25	5290	<0.01	89.6	0.7	<0.002	0.90	<0.2	1.6	<0.1
R8	**19/10/2011**	**Surface**	<0.005	11.2	0.6	<50.0	52.0	<0.01	<0.005	27.8	0.01	0.0	<0.1	0.41		157		0.61	0.004	5.45	24.70	0.55	2.23	0.3		0.079	<10.0	0.06	0.36	5170	<0.01	112.0	<0.5	<0.002	1.41	<0.2	2.6	<0.1
R8	**15/11/2011**	**Surface**	<0.005	7.5	0.5	<50.0	62.7	<0.01	<0.005	29.9	0.01	0.0	<0.1	0.32		115		0.78	0.005	6.15	18.80	0.60	2.34	0.2		0.113	<10.0	0.06	0.37	5280	<0.01	136.0	<0.5	<0.002	1.56	<0.2	1.1	<0.1
R8	**06/12/2011**	**Surface**	<0.005	9.9	0.6	<50.0	64.0	<0.01	<0.005	32.8	0.01	0.0	<0.1	0.30		172		0.80	0.005	6.43	21.60	0.68	2.49	0.3		0.054	<10.0	0.06	0.38	5620	<0.01	137.0	<0.5	<0.002	1.73	<0.2	1.0	<0.1
R8 Average			0.003	23.9	0.6	25.0	57.7	0.0	0.0	28.5	0.01	0.0	0.2	0.67		154		0.78	0.005	5.80	15.49	0.60	2.29	0.4		0.532	5.0	0.06	0.33	5254	0.01	124.6	0.5	0.002	1.57	0.1	2.1	0.06
R8 Max			0.006	96.8	1.2	<50.0	82.8	0.0	0.1	42.8	0.03	0.1	1.4	1.61		434		1.53	0.009	8.95	24.70	0.88	3.54	1.7		3.220	<10.0	0.09	0.47	6060	0.02	190.0	2.5	0.009	2.84	0.3	3.9	0.20
R8 Min			<0.005	2.9	0.4	<50.0	30.0	<0.01	<0.005	12.5	<0.005	0.0	<0.1	0.30		76		0.32	0.001	2.56	6.70	0.28	1.22	0.2		0.054	<10.0	0.05	0.16	4430	<0.01	52.2	<0.5	<0.002	0.42	<0.2	0.6	<0.1

Note: Statistics calculated with DLs at half value.
Note: Metals reported in mg/L shaded in gray.

Denison Environmental Services

Table B-3: 2011 Rose Creek Drainage Water Quality
Total Metals

Faro Mine Closure

Station	Date	Sample Type	Ag µg/L	Al µg/L	As µg/L	B µg/L	Ba µg/L	Be µg/L	Bi µg/L	Ca mg/L	Cd µg/L	Co µg/L	Cr µg/L	Cu µg/L	F mg/L	Fe µg/L	Hg µg/L	K mg/L	Li µg/L	Mg mg/L	Mn µg/L	Mo µg/L	Na mg/L	Ni µg/L	P mg/L	Pb µg/L	S mg/L	Sb µg/L	Se µg/L	Si µg/L	Sn µg/L	Sr µg/L	Ti µg/L	Tl µg/L	U µg/L	V µg/L	Zn µg/L	Zr µg/L
R9	**20/01/2011**	**Surface**	<0.005	5.6	0.4	<50.0	74.5	<0.01	0.0	40.0	0.01	0.0	<0.1	0.24		89		0.98	0.008	8.40	12.60	0.82	2.75	0.2		0.055	<10.0	0.06	0.40	5840	<0.01	186.0	0.6	<0.002	2.64	<0.2	0.8	<0.1
R9	**15/02/2011**	**Surface**	<0.005	3.3	0.4	<50.0	73.4	<0.01	0.0	42.2	0.01	0.0	<0.1	0.27		80		1.03	0.008	8.89	9.56	0.86	3.13	0.2		0.081	<10.0	0.05	0.41	5670	<0.01	184.0	<0.5	<0.002	2.68	<0.2	0.8	<0.1
R9	**16/03/2011**	**Surface**	<0.005	5.4	0.4	<50.0	82.3	<0.01	<0.005	44.4	0.01	0.0	<0.1	0.30		66		1.15	0.009	9.56	10.80	0.87	3.51	0.2		0.612	<10.0	0.06	0.46	5990	<0.01	197.0	<0.5	<0.002	3.06	<0.2	1.9	<0.1
R9	**12/04/2011**	**Surface**	<0.005	4.4	0.5	<50.0	74.7	<0.01	<0.005	40.7	<0.005	0.0	<0.1	0.32		65		1.04	0.008	8.68	7.79	0.83	3.18	0.2		0.103	<10.0	0.06	0.41	5930	<0.01	177.0	<0.5	<0.002	2.82	<0.2	0.6	<0.1
R9	**09/05/2011**	**Surface**	<0.005	44.1	1.0	<50.0	57.2	<0.01	0.0	27.3	0.02	0.1	0.2	1.09		418		1.60	0.005	5.57	22.90	0.61	2.00	0.7		0.609	<10.0	0.06	0.30	4810	<0.01	121.0	0.8	0.003	1.27	<0.2	4.9	<0.1
R9	**22/06/2011**	**Surface**	<0.005	81.9	0.6	<50.0	30.1	0.0	<0.005	13.5	0.02	0.1	0.4	1.28		191		0.39	0.002	2.87	18.10	0.26	1.23	1.0		1.180	<10.0	0.09	0.16	4380	<0.01	59.3	1.7	0.005	0.46	0.3	3.4	0.20
R9	**21/07/2011**	**Surface**	<0.005	45.0	0.6	<50.0	36.6	<0.01	<0.005	18.2	0.02	0.1	<0.1	0.94		136		0.36	0.002	3.74	12.70	0.30	1.43	0.5		0.932	<10.0	0.07	0.20	5450	<0.01	71.1	0.8	<0.002	0.58	<0.2	1.8	<0.1
R9	**23/08/2011**	**Surface**	<0.005	30.8	0.6	<50.0	38.9	<0.01	<0.005	20.9	<0.005	0.1	<0.1	0.85		148		0.45	0.002	4.32	17.60	0.34	1.73	0.6		0.499	<10.0	0.07	0.22	4900	0.02	84.8	0.6	0.004	0.71	<0.2	3.4	<0.1
R9	**22/09/2011**	**Surface**	<0.005	22.3	0.6	<50.0	47.1	<0.01	<0.005	24.6	0.02	0.0	<0.1	0.51		147		0.61	0.003	5.00	20.60	0.44	1.85	0.5		0.232	<10.0	0.06	0.27	5320	<0.01	101.0	<0.5	<0.002	0.98	<0.2	5.0	<0.1
R9	**19/10/2011**	**Surface**	<0.005	13.7	0.6	<50.0	54.2	<0.01	<0.005	30.1	0.01	0.0	<0.1	0.48		147		0.71	0.004	6.26	25.20	0.57	2.31	0.5		0.284	<10.0	0.06	0.33	5000	0.02	128.0	<0.5	<0.002	1.57	<0.2	6.5	<0.1
R9	**16/11/2011**	**Surface**	<0.005	15.6	0.5	<50.0	61.2	<0.01	<0.005	34.5	0.02	0.0	<0.1	0.65		122		0.80	0.005	6.98	17.90	0.64	2.43	0.5		0.984	<10.0	0.07	0.42	5840	0.03	146.0	0.7	<0.002	1.88	<0.2	3.8	<0.1
R9	**06/12/2011**	**Surface**	<0.005	11.8	0.6	<50.0	64.0	<0.01	<0.005	35.4	0.01	0.0	<0.1	0.42		167		0.84	0.005	7.17	21.60	0.68	2.49	0.3		0.092	<10.0	0.06	0.45	5620	0.76	145.0	<0.5	<0.002	1.82	<0.2	0.9	<0.1
R9 Average			0.003	23.7	0.6	25.0	57.9	0.0	0.0	31.0	0.01	0.0	0.1	0.61		148		0.83	0.005	6.45	16.45	0.60	2.34	0.4		0.472	5.0	0.06	0.34	5396	0.07	133.4	0.6	0.002	1.71	0.1	2.8	0.06
R9 Max			<0.005	81.9	1.0	<50.0	82.3	0.0	0.0	44.4	0.02	0.1	0.4	1.28		418		1.60	0.009	9.56	25.20	0.87	3.51	1.0		1.180	<10.0	0.09	0.46	5990	0.76	197.0	1.7	0.005	3.06	0.3	6.5	0.20
R9 Min			<0.005	3.3	0.4	<50.0	30.1	<0.01	<0.005	13.5	<0.005	0.0	<0.1	0.24		65		0.36	0.002	2.87	7.79	0.26	1.23	0.2		0.055	<10.0	0.05	0.16	4380	<0.01	59.3	<0.5	<0.002	0.46	<0.2	0.6	<0.1
SECURSINK	**17/03/2011**	**Surface**	<0.02	<3.0	0.2	<50.0	2.0	<0.1	<1.0	74.3	<0.01	<0.5	<1.0	31.60	1.05	71		0.50	0.011	23.20	25.00	<1.0	18.60	<1.0		1.200	9.0	<0.5	<0.1	8810	<5.0	894.0	<5.0	<0.05	<0.1	<5.0	20.0	<0.5
SECURSINK	**26/04/2011**	**Surface**	<0.02	<3.0	<0.1	<50.0	2.0	<0.1	<1.0	66.6	<0.01	<0.5	<1.0	27.60	1.05	14	<0.05	0.42		21.70	19.00	<1.0	17.10	<1.0		0.500	10.0	<0.5	<0.1	8510	<5.0	897.0	<5.0	<0.05	<0.1	<5.0	14.0	<0.5
SECURSINK Average			0.010	1.5	0.1	25.0	2.0	0.1	0.5	70.5	0.01	0.3	0.5	29.60	1.05	43	0.03	0.46	0.011	22.45	22.00	0.50	17.85	0.5		0.850	9.5	0.25	0.05	8660	2.50	895.5	2.5	0.025	0.05	2.5	17.0	0.25
SECURSINK Max			<0.02	<3.0	0.2	<50.0	2.0	<0.1	<1.0	74.3	<0.01	<0.5	<1.0	31.60	1.05	71	<0.05	0.50	0.011	23.20	25.00	<1.0	18.60	<1.0		1.200	10.0	<0.5	<0.1	8810	<5.0	897.0	<5.0	<0.05	<0.1	<5.0	20.0	<0.5
SECURSINK Min			<0.02	<3.0	<0.1	<50.0	2.0	<0.1	<1.0	66.6	<0.01	<0.5	<1.0	27.60	1.05	14	<0.05	0.42	0.011	21.70	19.00	<1.0	17.10	<1.0		0.500	9.0	<0.5	<0.1	8510	<5.0	894.0	<5.0	<0.05	<0.1	<5.0	14.0	<0.5
X10	**18/01/2011**	**Surface**	0.010	3.9	0.2	<50.0	69.9	<0.01	0.0	44.2	0.02	0.0	<0.1	0.35		113		1.09	0.007	10.20	17.30	0.60	3.00	0.6		0.123	<10.0	0.06	0.41	5260	<0.01	199.0	<0.5	0.003	2.69	<0.2	33.4	0.20
X10	**01/02/2011**	**Surface**	<0.005	2.1	0.2	<50.0	68.5	<0.01	<0.005	48.4	0.01	0.0	<0.1	0.33		117		1.15	0.007	10.40	13.40	0.62	3.14	0.6		0.151	11.0	0.05	0.36	5870	<0.01	203.0	<0.5	<0.002	2.61	<0.2	29.8	<0.1
X10	**14/03/2011**	**Surface**	<0.005	3.6	0.2	<50.0	82.0	<0.01	<0.005	46.0	0.02	0.0	<0.1	0.67		70		1.35	0.008	12.80	7.70	0.80	3.71	0.8		0.116	13.0	0.06	0.41	5290	<0.01	225.0	<0.5	<0.002	3.08	<0.2	35.1	<0.1
X10	**13/04/2011**	**Surface**	<0.005	2.5	0.2	<50.0	75.1	<0.01	<0.005	47.1	0.02	0.0	<0.1	0.79		79		1.44	0.007	12.20	7.29	0.73	3.74	0.7		0.319	11.0	0.06	0.38	5830	<0.01	225.0	<0.5	<0.002	3.03	<0.2	25.1	<0.1
X10	**05/05/2011**	**Surface**	<0.005	16.7	0.4	<50.0	63.6	<0.01	<0.005	40.7	0.03	0.0	<0.1	1.12		235		1.32	0.007	9.02	15.10	0.61	2.96	0.8		0.233	<10.0	0.07	0.34	5360	<0.01	181.0	<0.5	0.003	2.50	<0.2	33.0	<0.1
X10	**20/06/2011**	**Surface**	<0.005	43.5	0.4	<50.0	28.2	<0.01	<0.005	14.9	0.02	0.1	<0.1	0.86		187		0.47	0.001	3.77	21.10	0.29	1.30	0.6		0.739	<10.0	0.07	0.19	3620	<0.01	67.6	0.6	0.003	0.64	<0.2	7.6	<0.1
X10	**14/07/2011**	**Surface**	<0.005	19.8	0.5	<50.0	44.1	<0.01	<0.005	26.2	0.02	0.1	<0.1	0.80		218		0.58	0.002	6.18	25.50	0.36	1.65	0.5		0.285	<10.0	0.07	0.27	4720	<0.01	113.0	<0.5	0.003	1.07	<0.2	11.7	<0.1
X10	**24/08/2011**	**Surface**	<0.005	33.0	0.5	<50.0	45.9	<0.01	<0.005	25.9	0.01	0.1	<0.1	0.78		237		0.61	0.002	6.00	32.70	0.35	1.66	0.6		0.896	<10.0	0.08	0.18	4350	<0.01	113.0	1.1	<0.002	0.99	<0.2	13.1	<0.1
X10	**21/09/2011**	**Surface**	<0.005	14.8	0.4	<50.0	52.9	<0.01	<0.005	31.7	0.02	0.1	<0.1	0.58		286		0.77	0.003	7.22	31.00	0.44	1.92	0.6		0.696	<10.0	0.06	0.25	4750	<0.01	136.0	<0.5	<0.002	1.42	<0.2	21.7	<0.1
X10	**20/10/2011**	**Surface**	<0.005	24.9	0.5	<50.0	65.4	<0.01	<0.005	37.3	0.02	0.2	<0.1	0.58		482		0.88	0.004	8.74	60.20	0.52	2.39	0.7		2.010	<10.0	0.07	0.38	4810	<0.01	162.0	1.1	0.003	2.00	<0.2	29.9	<0.1
X10	**15/11/2011**	**Surface**	<0.005	27.2	0.2	<50.0	65.6	<0.01	<0.005	34.2	0.02	0.1	<0.1	0.49		147		1.01	0.004	8.20	48.50	0.52	2.38	0.6		0.281	<10.0	0.07	0.32	4670	<0.01	172.0	<0.5	0.003	1.88	<0.2	37.4	<0.1
X10	**06/12/2011**	**Surface**	<0.005	6.1	0.3	<50.0	62.2	<0.01	<0.005	40.5	0.02	0.1	0.2	0.46		207		1.00	0.005	8.90	37.80	0.58	2.65	0.5		0.253	<10.0	0.08	0.40	5360	<0.01	170.0	<0.5	<0.002	2.19	<0.2	28.0	<0.1
X10 Average			0.003	16.5	0.3	25.0	60.3	0.0	0.0	36.4	0.02	0.1	0.1	0.65		198		0.97	0.005	8.64	26.47	0.54	2.54	0.6		0.509	6.7	0.07	0.32	4991	0.01	163.9	0.4	0.002	2.01	0.1	25.5	0.06
X10 Max			0.010	43.5	0.5	<50.0	82.0	<0.01	0.0	48.4	0.03	0.2	0.2	1.12		482		1.44	0.008	12.80	60.20	0.80	3.74	0.8		2.010	13.0	0.08	0.41	5870	<0.01	225.0	1.1	0.003	3.08	<0.2	37.4	0.20
X10 Min			<0.005	2.1	0.2	<50.0	28.2	<0.01	<0.005	14.9	0.01	0.0	<0.1	0.33		70		0.47	0.001	3.77	7.29	0.29	1.30	0.5		0.116	<10.0	0.05	0.18	3620	<0.01	67.6	<0.5	<0.002	0.64	<0.2	7.6	<0.1

Note: Statistics calculated with DLs at half value.
Note: Metals reported in mg/L shaded in gray.

Denison Environmental Services

Table B-3: 2011 Rose Creek Drainage Water Quality
Total Metals

Faro Mine Closure

Station	Date	Sample Type	Ag µg/L	Al µg/L	As µg/L	B µg/L	Ba µg/L	Be µg/L	Bi µg/L	Ca mg/L	Cd µg/L	Co µg/L	Cr µg/L	Cu µg/L	F mg/L	Fe µg/L	Hg µg/L	K mg/L	Li µg/L	Mg mg/L	Mn µg/L	Mo µg/L	Na mg/L	Ni µg/L	P mg/L	Pb µg/L	S mg/L	Sb µg/L	Se µg/L	Si µg/L	Sn µg/L	Sr µg/L	Ti µg/L	Tl µg/L	U µg/L	V µg/L	Zn µg/L	Zr µg/L
X14	18/01/2011	Surface	0.037	6.1	0.4	<50.0	66.3	<0.01	0.0	98.7	0.07	2.1	<0.1	0.35		386		1.96	0.008	23.10	2990.00	0.66	7.63	5.4		0.197	79.0	0.06	0.39	5120	<0.01	340.0	<0.5	0.007	3.52	<0.2	29.6	0.30
X14	01/02/2011	Surface	<0.005	5.7	0.3	<50.0	67.0	<0.01	0.0	118.0	0.06	2.2	<0.1	0.31		412		2.12	0.009	24.40	3100.00	0.70	8.16	5.2		0.229	82.0	0.06	0.35	6220	<0.01	360.0	<0.5	0.007	3.49	<0.2	25.6	<0.1
X14	14/03/2011	Surface	<0.005	3.7	0.5	<50.0	74.0	<0.01	<0.005	168.0	0.11	4.6	<0.1	0.33		612		3.08	0.011	39.10	6050.00	0.95	13.40	10.7		0.107	157.0	0.06	0.37	6470	<0.01	497.0	<0.5	0.008	4.47	<0.2	25.9	<0.1
X14	24/03/2011	Surface	<0.03	37.0	0.3	<300.0	58.0	<0.05	<0.03	242.0	0.13	22.5	<0.5	0.80		809		3.70	0.014	55.30	14400.00	0.60	17.90	30.0		0.780	248.0	<0.1	0.30	6390	<0.05	708.0	<3.0	0.060	4.85	<1.0	125.0	<0.5
X14	29/03/2011	Surface	<0.03	7.0	0.4	<300.0	64.6	<0.05	<0.03	228.0	0.13	12.7	<0.5	1.60		514		4.20	0.015	52.10	9890.00	0.90	17.10	20.9		0.350	230.0	<0.1	0.30	6670	<0.05	669.0	<3.0	0.070	5.24	<1.0	109.0	<0.5
X14	05/04/2011	Surface	<0.03	6.0	0.3	<300.0	61.9	<0.05	<0.03	220.0	0.13	15.9	<0.5	0.60		415		3.90	0.014	48.50	10300.00	0.70	16.00	23.0		0.330	206.0	<0.1	0.30	6500	<0.05	640.0	<3.0	0.070	4.91	<1.0	109.0	<0.5
X14	12/04/2011	Surface	<0.03	4.0	0.2	<300.0	54.0	<0.05	<0.03	217.0	0.12	18.3	<0.5	0.40		410		3.60	0.013	47.80	11100.00	0.70	15.50	25.1		0.210	205.0	<0.1	0.40	6250	0.12	611.0	<3.0	0.070	4.59	<1.0	113.0	<0.5
X14	19/04/2011	Surface	<0.03	4.0	0.3	<300.0	63.0	<0.05	<0.03	246.0	0.08	20.6	0.6	<0.3		460		3.90	0.012	52.50	12200.00	0.80	17.30	26.8		0.120	209.0	<0.1	0.30	6770	0.12	666.0	<3.0	0.050	4.61	<1.0	107.0	<0.5
X14	26/04/2011	Surface	<0.03	10.0	0.4	<300.0	60.3	<0.05	<0.03	213.0	0.12	17.9	<0.5	0.70		474		3.70	0.012	46.90	11300.00	0.70	14.80	23.7		0.160	199.0	<0.1	0.50	6270	<0.05	587.0	<3.0	0.050	4.15	<1.0	97.5	<0.5
X14	03/05/2011	Surface	<0.03	122.0	0.6	<300.0	49.4	<0.05	<0.03	322.0	0.15	50.4	<0.5	0.70		983		4.80	0.016	70.60	25500.00	1.00	21.60	56.2		1.030	323.0	<0.1	<0.2	7350	<0.05	867.0	<3.0	0.060	4.54	<1.0	189.0	<0.5
X14	04/05/2011	Surface	<0.005	27.9	0.5	<50.0	53.0	<0.01	0.0	162.0	0.11	9.5	<0.1	0.90		454		3.38	0.016	34.70	6120.00	0.62	11.50	12.9		1.260	155.0	0.10	0.27	5400	<0.01	509.0	0.7	0.079	3.10	<0.2	62.8	<0.1
X14	10/05/2011	Surface	<0.005	38.9	0.5	<50.0	41.4	<0.01	<0.005	155.0	0.12	6.9	<0.1	1.77		496		4.16	0.017	34.30	4410.00	0.49	10.90	9.9		0.770	165.0	0.11	0.23	4730	<0.01	496.0	<0.5	0.108	2.31	<0.2	99.7	<0.1
X14	17/05/2011	Surface	0.006	121.0	1.0	<50.0	41.4	<0.01	0.0	57.4	0.09	2.8	0.2	2.97		960		2.28	0.006	13.40	1580.00	0.36	4.16	4.7		3.040	48.0	0.12	0.20	3590	<0.01	191.0	2.2	0.050	1.10	0.3	62.5	0.20
X14	24/05/2011	Surface	0.011	209.0	1.0	<50.0	26.9	0.1	0.0	11.7	0.09	0.7	0.3	2.33		605		1.10	0.001	2.72	315.00	0.16	0.95	1.8		6.190	<10.0	0.06	0.08	2280	<0.01	46.8	6.9	0.014	0.48	0.5	22.6	0.30
X14	31/05/2011	Surface	0.007	112.0	0.5	<50.0	22.5	0.0	0.0	16.6	0.04	0.5	0.2	1.45		261		0.72	0.002	3.99	289.00	0.23	1.34	1.4		3.070	13.0	0.07	0.15	3050	<0.01	64.0	3.6	0.018	0.49	<0.2	13.8	<0.1
X14	07/06/2011	Surface	<0.005	35.9	0.4	<50.0	29.7	<0.01	<0.005	33.4	0.12	1.4	<0.1	1.49		174		1.72	0.003	7.72	842.00	0.34	2.32	2.2		6.850	28.0	0.08	0.21	4020	0.04	121.0	0.6	0.032	0.82	<0.2	74.0	<0.1
X14	14/06/2011	Surface	<0.005	27.7	0.4	<50.0	31.1	<0.01	<0.005	36.7	0.02	1.2	<0.1	0.83		173		0.86	0.003	9.06	754.00	0.37	2.50	2.0		0.437	27.0	0.08	0.26	4150	<0.01	130.0	<0.5	0.030	0.94	<0.2	18.6	<0.1
X14	21/06/2011	Surface	<0.005	56.3	0.5	<50.0	28.5	0.0	<0.005	25.7	0.04	1.1	<0.1	1.20		222		0.61	0.002	6.65	620.00	0.45	2.00	1.8		1.230	19.0	0.08	0.20	3970	<0.01	96.2	1.5	0.018	0.71	<0.2	13.7	<0.1
X14	28/06/2011	Surface	<0.005	52.5	0.5	<50.0	33.4	0.0	<0.005	32.4	0.02	0.9	0.2	1.21		208		0.84	0.003	9.42	601.00	0.28	2.72	1.7		0.996	24.0	0.07	0.20	4730	<0.01	121.0	1.2	0.028	0.85	<0.2	19.4	<0.1
X14	05/07/2011	Surface	<0.005	39.4	0.5	<50.0	38.6	<0.01	<0.005	38.7	0.03	1.1	<0.1	1.00		226		0.81	0.003	9.90	701.00	0.37	2.65	1.9		1.440	27.0	0.08	0.27	4480	<0.01	142.0	0.9	0.032	1.03	<0.2	20.6	<0.1
X14	12/07/2011	Surface	<0.005	19.7	0.4	<50.0	38.1	<0.01	<0.005	44.7	0.03	1.0	<0.1	0.83		230		0.90	0.004	10.40	687.00	0.39	2.82	1.7		0.394	31.0	0.08	0.23	4700	0.24	158.0	<0.5	0.044	0.98	<0.2	19.0	<0.1
X14	19/07/2011	Surface	<0.005	23.6	0.4	<50.0	41.6	<0.01	<0.005	44.3	0.02	1.1	<0.1	0.87		253		1.01	0.005	11.40	779.00	0.35	3.13	1.9		0.736	34.0	0.07	0.22	4590	<0.01	173.0	0.7	0.059	1.01	<0.2	22.3	<0.1
X14	26/07/2011	Surface	<0.005	16.0	0.5	<50.0	41.3	<0.01	<0.005	49.7	0.04	1.4	<0.1	0.70		291		1.19	0.006	14.30	864.00	0.69	3.70	2.2		0.541	41.0	0.08	0.24	4440	<0.01	191.0	<0.5	0.071	1.12	<0.2	35.6	<0.1
X14	02/08/2011	Surface	<0.005	19.5	0.4	<50.0	42.7	<0.01	<0.005	55.2	0.04	1.4	<0.1	0.75		305		1.18	0.006	13.50	954.00	0.28	3.55	2.2		1.100	40.0	0.08	0.24	5000	<0.01	200.0	<0.5	0.068	1.20	<0.2	35.1	<0.1
X14	09/08/2011	Surface	0.006	12.3	0.5	<50.0	52.6	<0.01	<0.005	56.1	0.04	1.6	<0.1	0.66		315		1.36	0.006	14.80	1060.00	0.35	3.95	2.3		0.488	47.0	0.08	0.27	4360	<0.01	238.0	<0.5	0.084	1.40	<0.2	27.6	<0.1
X14	16/08/2011	Surface	<0.005	17.7	0.5	<50.0	41.8	<0.01	<0.005	50.8	0.02	0.9	0.2	0.76		260		1.13	0.005	12.60	667.00	0.41	3.56	1.7		0.289	37.0	0.09	0.21	4570	<0.01	186.0	<0.5	0.062	1.06	<0.2	16.1	<0.1
X14	23/08/2011	Surface	<0.005	20.8	0.4	<50.0	42.2	<0.01	<0.005	46.3	0.02	1.4	<0.1	0.68		233		1.01	0.005	11.50	846.00	0.37	3.07	2.0		0.374	34.0	0.08	0.26	4310	<0.01	180.0	<0.5	0.054	1.10	<0.2	16.6	<0.1
X14	25/08/2011	Surface	<0.005	19.3	0.4	<50.0	41.1	<0.01	<0.005	49.3	0.01	1.5	<0.1	0.73		242		1.07	0.005	12.20	926.00	0.33	3.28	2.2		0.732	35.0	0.08	0.19	4270	<0.01	187.0	<0.5	0.050	1.09	<0.2	16.6	<0.1
X14	30/08/2011	Surface	<0.005	29.0	0.5	<50.0	43.7	<0.01	<0.005	54.6	0.02	1.4	<0.1	0.62		290		1.17	0.006	13.40	968.00	0.43	3.61	2.1		0.493	42.0	0.08	0.26	4510	<0.01	206.0	1.3	0.067	1.24	<0.2	18.2	<0.1
X14	06/09/2011	Surface	<0.005	13.7	0.5	<50.0	46.7	<0.01	<0.005	66.0	0.03	2.1	<0.1	0.55		323		1.41	0.006	15.70	1380.00	0.39	4.30	2.9		0.466	53.0	0.09	0.27	4710	<0.01	243.0	<0.5	0.066	1.45	0.3	23.6	<0.1
X14	13/09/2011	Surface	<0.005	14.1	0.4	<50.0	45.2	<0.01	<0.005	61.2	0.03	1.9	<0.1	0.87		293		1.37	0.006	15.50	1180.00	0.51	3.98	2.6		0.892	47.0	0.08	0.25	4560	<0.01	224.0	<0.5	0.064	1.44	<0.2	21.1	<0.1
X14	20/09/2011	Surface	<0.005	19.9	0.4	<50.0	46.9	<0.01	<0.005	65.6	0.02	2.6	<0.1	0.56		349		1.51	0.007	16.70	1510.00	0.40	4.34	3.2		0.731	55.0	0.08	0.25	4240	<0.01	243.0	0.6	0.068	1.61	<0.2	24.7	<0.1
X14	27/09/2011	Surface	0.013	8.2	0.4	<50.0	42.1	<0.01	<0.005	69.6	0.03	4.7	<0.1	0.42		319		1.37	0.006	16.20	2630.00	0.39	4.45	5.2		0.216	64.0	0.06	0.27	4630	0.03	239.0	<0.5	0.048	1.63	<0.2	29.6	<0.1
X14	25/10/2011	Surface	<0.005	8.2	0.5	<50.0	60.1	<0.01	<0.005	56.9	0.03	0.7	<0.1	0.43		451		1.17	0.004	12.80	861.00	0.54	3.95	1.8		0.687	26.0	0.07	0.37	5630	0.02	204.0	<0.5	0.004	2.09	<0.2	26.3	<0.1
X14	23/11/2011	Surface	<0.005	50.8	0.5	<50.0	56.3	<0.01	<0.005	184.0	0.11	14.8	0.2	0.68		706		2.99	0.011	38.80	7940.00	0.60	11.80	15.8		0.864	164.0	0.09	0.31	7410	<0.01	486.0	2.1	0.077	3.22	<0.2	86.1	<0.1
X14	29/11/2011	Surface	<0.03	11.0	0.3	<300.0	57.4	<0.05	<0.03	168.0	0.10	19.7	<0.5	0.60		501		3.10	0.011	39.60	10600.00	0.50	11.70	20.3		0.380	154.0	<0.1	0.30	5200	<0.05	524.0	<3.0	0.090	3.33	<1.0	102.0	<0.5
X14	08/12/2011	Surface	<0.005	11.3	0.3	<50.0	52.3	<0.01	<0.005	181.0	0.08	22.7	<0.1	0.37		709	<0.01	3.11	0.012	42.10	12000.00	0.49	12.70	21.5		0.276	176.0	0.08	0.28	5390	<0.01	579.0	0.6	0.069	3.51	<0.2	146.0	<0.1
X14 Average			0.007	33.5	0.4	52.0	47.5	0.0	0.0	106.6	0.07	7.4	0.1	0.87		414	0.01	2.09	0.008	24.42	4565.24	0.51	7.52	9.7		1.039	95.4	0.07	0.26	5052	0.02	333.1	1.1	0.052	2.29	0.2	54.2	0.11
X14 Max			0.037	209.0	1.0	<300.0	74.0	<0.05	0.0	322.0	0.15	50.4	0.6	2.97		983	<0.01	4.80	0.017	70.60	25500.00	1.00	21.60	56.2		6.850	323.0	0.12	0.50	7410	0.24	867.0	6.9	0.108	5.24	<1.0	189.0	<0.5
X14 Min			<0.005	3.7	0.2	<50.0	22.5	<0.01	<0.005	11.7	0.01	0.5	<0.1	<0.3		173	<0.01	0.61	0.001	2.72	289.00	0.16	0.95	1.4		0.107	<10.0	0.06	0.08	2280	<0.01	46.8	<0.5	0.004	0.48	<0.2	13.7	<0.1
X2	19/01/2011	Surface	<0.005	3.3	0.3	<50.0	73.3	<0.01	0.0	43.2	0.03	0.2	<0.1	0.28		115		1.04	0.009	9.48	65.50	0.70	2.95	0.7		0.191	11.0	0.06	0.39	6070	0.07	200.0	<0.5	<0.002	2.71	<0.2	17.9	<0.1
X2	01/02/2011	Surface	<0.005	5.6	0.4	<50.0	72.1	<0.01	<0.005	51.7	0.03	0.2	<0.1	0.33		173		1.15	0.009	10.40	74.30	0.72	3.40	0.6		0.528	<10.0	0.05	0.39	7290	<0.01	198.0	<0.5	<0.002	2.62	<0.2	19.7	<0.1
X2	16/03/2011	Surface	<0.005	4.4	0.4	<50.0	80.5	<0.01	<0.005	48.7	0.04	0.3	<0.1	0.54		268		1.27	0.010	12.20	131.00	0.85	4.02	0.9		0.369	12.0	0.06	0.49	6210	<0.01	224.0	<0.5	0.003	3.21	<0.2	40.7	<0.1
X2	13/04/2011	Surface	<0.005	3.7	0.3	<50.0	77.0	<0.01	<0.005	45.0	0.03	0.2	<0.1	0.40		169		1.27	0.009	11.00	87.00	0.80	3.77	0.7		0.223	<10.0	0.06	0.35	6010	<0.01	214.0	<0.5	0.005	2.98	<0.2	18.0	<0.1
X2	11/05/2011	Surface	<0.005	80.0	1.1	<50.0	53.7	<0.01	<0.005	30.1	0.14	0.3	0.2	3.53		578		1.66	0.005	6.77	64.50	0.63	2.58	1.3		2.050	<10.0	0.08	0.34	5020	<0.01	134.0	0.8	0.003	1.58	<0.2	83.0	<0.1
X2	20/06/2011	Surface	<0.005	66.0	0.6	<50.0	28.6	<0.01	<0.005	14.9	0.06	0.2	0.2	2.66		215		0.44	0.002	3.51	35.50	0.31	1.36	0.8		3.400	<10.0	0.08	0.26	4130	0.02	59.5	2.7	0.005	0.54	<0.2	45.1	<0.1
X2	13/07/2011	Surface	<0.005	32.0	0.5	<50.0	41.4	<0.01	<0.005	21.8	0.01	0.1	<0.1	0.81		125		0.46	0.002	4.71	17.10	0.35	1.59	0.5		0.841	<10.0	0.08	0.27	5030	<0.01	89.1	<0.5	0.008	0.72	<0.2	6.9	<0.1
X2	25/08/2011	Surface	<0.005	20.5	0.5	<50.0	39.4	<0.01	<0.005	21.3	0.02	0.1	<0.1	0.63		117		0.45	0.003	4.39	16.50	0.33	1.65	0.4		0.346	<10.0	0.07	0.19	4700	<0.01	90.5	<0.5	<0.002	0.72	<0.2	6.3	<0.1
X2	21/09/2011	Surface	<0.005	18.5	0.6	<50.0	48.5	<0.01	<0.005	26.4	0.02	0.1	<0.1	0.55		163		0.65	0.004	5.44	31.20	0.55	1.96	0.5		0.461	<10.0	0.06	0.26	5290	<0.01	110.0	<0.5	<0.002	1.09	<0.2	8.1	<0.1
X2	20/10/2011	Surface	0.006	58.4	0.9	<50.0	64.1	<0.01	<0.005	35.1	0.03	0.4	<0.1	0.60		455		0.84	0.005	7.34	160.00	0.63	2.59	1.0		3.950	<10.0	0.09	0.35	5580	<0.01	141.0	2.1	0.004	1.80	0.3	16.0	<0.1
X2	14/11/2011	Surface	<0.005	7.9	0.3	<50.0	64.3	<0.01	0.0	33.5	0.03	0.2	<0.1	0.49		108		0.92	0.006	7.58	66.40	0.61	2.52	0.8		1.610	<10.0	0.07	0.37	5330	<0.01	155.0	<0.5	0.004	1.73	<0.2	23.2	<0.1
X2	06/12/2011	Surface	<0.005	13.9	0.5	<50.0	62.7	<0.01	<0.005	35.9	0.03	0.1	<0.1	0.41		201		0.86	0.006	7.94	53.10	0.67	2.71	0.5		0.602	<10.0	0.07	0.41	5590	<0.01	150.0	0.6	0.003	1.98	<0.2	12.8	<0.1
X2 Average			0.003	26.2	0.5	25.0	58.8	0.0	0.0	34.0	0.04	0.2	0.1	0.94		224		0.92	0.006	7.56	66.84	0.60	2.59	0.7		1.214	6.1	0.07	0.34	5521	0.01	147.1	0.7	0.003	1.81	0.1	24.8	0.05
X2 Max			0.006	80.0	1.1	<50.0	80.5	<0.01	0.0	51.7	0.14	0.4	0.2	3.53		578		1.66	0.010	12.20	160.00	0.85	4.02	1.3		3.950	12.0	0.09	0.49	7290	0.07	224.0	2.7	0.008	3.21	0.3	83.0	<0.1
X2 Min			<0.005	3.3	0.3	<50.0	28.6	<0.01	<0.005	14.9	0.01	0.1	<0.1	0.28		108		0.44	0.002	3.51	16.50	0.31	1.36	0.4		0.191	<10.0	0.05	0.19	4130	<0.01	59.5	<0.5	<0.002	0.54	<0.2	6.3	<0.1
X22b	19/01/2011	Surface	<0.03	12.0	<0.1	<300.0	16.4	0.1	<0.03	140.0	16.00	46.1	<0.5	8.20		137		8.00	0.062	70.00	2890.00	0.50	16.80	122.0		1.250	236.0	0.30	<0.2	4060	0.06	641.0	<3.0	0.500	1.30	<1.0	19100.0	<0.5
X22b	15/02/2011	Surface	<0.03	9.0	<0.1	<300.0	17.3	<0.05	<0.03	156.0	17.20	55.0	<0.5	8.50		97		9.00	0.065	80.40	3450.00	0.50	19.70	145.0		0.840	230.0	0.20	<0.2	3930	<0.05	674.0	<3.0	0.500	1.28	<1.0	22300.0	<0.5
X22b	16/03/2011	Surface	<0.03	16.0	0.2	<300.0	17.0	0.1	<0.03	140.0	18.20	47.9	<0.5	14.60		21		7.30	0.057	76.70	2870.00	0.50	18.50	132.0		0.440	239.0	0.20	<0.2	4770	<0.05	619.0	<3.0	0.500	1.37	<1.0	21700.0	<0.5
X22b	14/04/2011	Surface	0.006	15.5	0.2	<50.0	15.5	0.0	0.0	110.0	4.83	11.1	<0.1	1.89		236		4.51	0.035	41.40	682.00	0.17	10.30	36.6		7.160	142.0	0.16	0.19	5950	0.03	490.0	<0.5	0.584	0.67	<0.2	5560.0	<0.1
X22b	04/05/2011	Surface	0.040	95.0	0.5	<300.0	32.0	<0.05	0.1	99.9	11.10	21.0	<0.5	5.70		265		4.00	0.029	36.20	1230.00	<0.3	9.20	53.1		27.800	120.0	0.30	0.50	3600	0.11	480.0	<3.0	0.400	0.61	<1.0	10300.0	<0.5
X22b	15/06/2011	Surface	<0.03	38.0	0.2	<300.0	16.4	0.1	<0.03	130.0	18.80	57.1	<0.5	28.90		249		7.20	0.052	73.10	3000.00	0.40	17.10	137.0		1.650	216.0	0.20	<0.2	3880	<0.05	564.0	<3.0	0.420	1.20	<1.0	21900.0	<0.5
X22b	20/07/2011	Surface	0.010	29.0	0.1	<50.0	15.4	0.1	<0.005	134.0	19.20	53.5	<0.1	9.21		176		6.99	0.057	71.20	2930.00	0.34	16.10	126.0		2.730	240.0	0.17	0.14	4150	<0.01	599.0	<0.5	0.426	0.85	<0.2	18500.0	<0.1
X22b	23/08/2011	Surface	<0.03	53.0	0.3	<300.0	17.6	0.1	<0.03	139.0	19.90	54.4	<0.5	10.00		227		7.00	0.052	74.10	3060.00	<0.3	16.70	132.0		6.580	207.0	0.20	<0.2	4130	<0.05	602.0	<3.0	0.410	0.45	<1.0	21300.0	<0.5
X22b	25/09/2011	Surface	0.050	15.0	0.4	<300.0	15.1	0.1	<0.03	139.0	20.80	55.3	<0.5	8.10		112		7.30	0.059	75.20	3630.00	0.40	19.70	138.0		1.680	226.0	0.20	<0.2	3920	<0.05	664.0	<3.0	0.430	0.37	<1.0	25100.0	<0.5
X22b	19/10/2011	Surface	0.013	16.5	0.1	<50.0	16.3	0.1	<0.005	148.0	19.80	59.2	<0.1	8.84		157		7.67	0.047	77.30	3290.00	0.38	19.00	148.0		1.020	240.0	0.18	0.13	3810	<0.01	654.0	<0.5	0.434	0.52	<0.2	20000.0	<0.1
X22b	17/11/2011	Surface	<0.03	43.0	0.3	<300.0	16.0	0.1	<0.03	144.0	20.60	56.9	<0.5	13.50		82		7.90	0.059	81.50	3310.00	0.40	19.10	148.0		5.110	232.0	0.20	<0.2	4090	<0.05	605.0	<3.0	0.420	0.61	<1.0	23400.0	<0.5
X22b	07/12/2011	Surface	0.015	15.2	0.1	<50.0	16.6	0.1	<0.005	150.0	20.30	58.7	<0.1	8.90		69	<0.01	8.30	0.065	83.20	3520.00	0.29	19.80	148.0		0.537	261.0	0.19	0.15	3940	<0.01	683.0	<0.5	0.452	0.62	<0.2	21300.0	<0.1
X22b Average			0.019	29.8	0.2	108.3	17.6	0.1	0.0	135.8	17.23	48.0	0.2	10.53		152	0.01	7.10	0.053	70.03	2821.83	0.35	16.83	122.1		4.733	215.8	0.21	0.15	4186	0.03	606.3	1.1	0.456	0.82	0.4	19205.0	0.18
X22b Max			0.050	95.0	0.5	<300.0	32.0	0.1	0.1	156.0	20.80	59.2	<0.5	28.90		265	<0.01	9.00	0.065	83.20	3630.00	0.50	19.80	148.0		27.800	261.0	0.30	0.50	5950	0.11	683.0	<3.0	0.584	1.37	<1.0	25100.0	<0.5
X22b Min			0.006	9.0	<0.1	<50.0	15.1	0.0	<0.005	99.9	4.83	11.1	<0.1	1.89		21	<0.01	4.00	0.029	36.20	682.00	0.17	9.20	36.6		0.440	120.0	0.16	0.13	3600	<0.01	480.0	<0.5	0.400	0.37	<0.2	5560.0	<0.1

Note: Statistics calculated with DLs at half value.
Note: Metals reported in mg/L shaded in gray.

Denison Environmental Services

Table B-3: 2011 Rose Creek Drainage Water Quality
Total Metals

Faro Mine Closure

Station	Date	Sample Type	Ag µg/L	Al µg/L	As µg/L	B µg/L	Ba µg/L	Be µg/L	Bi µg/L	Ca mg/L	Cd µg/L	Co µg/L	Cr µg/L	Cu µg/L	F mg/L	Fe µg/L	Hg µg/L	K mg/L	Li mg/L	Mg mg/L	Mn µg/L	Mo µg/L	Na mg/L	Ni µg/L	P mg/L	Pb µg/L	S mg/L	Sb µg/L	Se µg/L	Si µg/L	Sn µg/L	Sr µg/L	Ti µg/L	Tl µg/L	U µg/L	V µg/L	Zn µg/L	Zr µg/L
X3	**18/01/2011**	**Surface**	0.007	6.9	0.3	<50.0	68.1	<0.01	0.0	40.5	0.01	0.1	<0.1	0.35		124		1.12	0.007	9.70	50.80	0.66	3.19	0.6		0.207	<10.0	0.06	0.36	4800	<0.01	195.0	<0.5	<0.002	2.65	<0.2	13.3	0.20
X3	**02/02/2011**	**Surface**	<0.005	3.7	0.3	<50.0	68.9	<0.01	<0.005	42.8	0.02	0.1	<0.1	0.26		116		1.14	0.007	9.40	47.00	0.57	3.06	0.5		0.123	<10.0	0.04	0.35	5590	<0.01	192.0	<0.5	0.003	2.48	<0.2	12.4	<0.1
X3	**14/03/2011**	**Surface**	<0.005	2.4	0.3	<50.0	78.7	<0.01	<0.005	47.4	0.01	0.1	<0.1	0.83		110		1.30	0.008	11.60	70.90	0.80	3.74	0.8		0.210	11.0	0.05	0.39	6110	0.02	216.0	<0.5	0.003	3.05	<0.2	20.6	<0.1
X3	**13/04/2011**	**Surface**	<0.005	3.0	0.3	<50.0	72.4	<0.01	<0.005	45.2	0.02	0.1	<0.1	0.29		150		1.40	0.008	10.70	61.20	0.72	3.83	0.6		0.176	<10.0	0.04	0.35	5950	<0.01	216.0	<0.5	0.003	2.93	<0.2	15.9	<0.1
X3	**05/05/2011**	**Surface**	<0.005	28.1	0.4	<50.0	68.2	<0.01	<0.005	42.0	0.20	0.2	<0.1	1.82		302		1.38	0.007	8.54	67.70	0.69	3.07	1.0		0.370	<10.0	0.06	0.33	5940	<0.01	188.0	<0.5	0.003	2.61	<0.2	77.4	<0.1
X3	**20/06/2011**	**Surface**	<0.005	113.0	0.6	<50.0	27.7	0.0	<0.005	14.0	0.03	0.2	0.2	1.01		324		0.50	0.001	2.98	28.20	0.23	1.36	0.6		2.060	<10.0	0.07	0.15	3700	<0.01	66.9	4.0	0.003	0.68	0.3	6.5	<0.1
X3	**13/07/2011**	**Surface**	<0.005	24.6	0.5	<50.0	41.0	<0.01	<0.005	23.4	0.02	0.1	<0.1	0.67		143		0.59	0.002	4.68	20.30	0.25	1.64	0.5		0.400	<10.0	0.06	0.20	4560	<0.01	111.0	<0.5	0.004	1.01	<0.2	3.6	<0.1
X3	**25/08/2011**	**Surface**	<0.005	40.3	0.5	<50.0	39.1	<0.01	<0.005	22.4	0.01	0.1	<0.1	0.67		200		0.57	0.002	4.57	25.20	0.27	1.70	0.4		0.654	<10.0	0.06	0.15	4250	<0.01	108.0	1.1	0.003	0.93	<0.2	4.5	<0.1
X3	**21/09/2011**	**Surface**	<0.005	14.6	0.4	<50.0	47.3	<0.01	<0.005	28.8	0.02	0.1	<0.1	0.48		177		0.75	0.003	5.83	25.00	0.39	1.98	0.5		0.245	<10.0	0.05	0.23	4860	<0.01	129.0	<0.5	<0.002	1.34	<0.2	4.6	<0.1
X3	**27/10/2011**	**Surface**	<0.005	14.3	0.5	<50.0	54.2	<0.01	<0.005	34.3	0.02	0.1	<0.1	0.58		216		0.91	0.004	7.20	52.80	0.38	2.48	0.6		1.620	<10.0	0.06	0.32	5440	<0.01	155.0	<0.5	0.003	1.80	<0.2	10.1	<0.1
X3	**15/11/2011**	**Surface**	<0.005	12.4	0.3	<50.0	62.2	<0.01	<0.005	34.6	0.02	0.1	<0.1	0.44		123		0.99	0.004	7.37	48.30	0.47	2.46	0.5		0.429	<10.0	0.06	0.34	5110	<0.01	165.0	1.0	0.003	1.86	<0.2	13.8	<0.1
X3	**07/12/2011**	**Surface**	<0.005	12.0	0.4	<50.0	62.6	<0.01	<0.005	38.2	0.01	0.1	<0.1	0.37		207	<0.01	1.00	0.005	8.20	50.50	0.49	2.77	0.5		0.280	<10.0	0.05	0.36	5130	<0.01	177.0	<0.5	<0.002	2.18	<0.2	9.6	<0.1
X3 Average			0.003	22.9	0.4	25.0	57.5	0.0	0.0	34.5	0.03	0.1	0.1	0.65		183	0.01	0.97	0.005	7.56	45.66	0.49	2.61	0.6		0.565	5.5	0.06	0.29	5120	0.01	159.9	0.7	0.003	1.96	0.1	16.0	0.06
X3 Max			0.007	113.0	0.6	<50.0	78.7	0.0	0.0	47.4	0.20	0.2	0.2	1.82		324	<0.01	1.40	0.008	11.60	70.90	0.80	3.83	1.0		2.060	11.0	0.07	0.39	6110	0.02	216.0	4.0	0.004	3.05	0.3	77.4	0.20
X3 Min			<0.005	2.4	0.3	<50.0	27.7	<0.01	<0.005	14.0	0.01	0.1	<0.1	0.26		110	<0.01	0.50	0.001	2.98	20.30	0.23	1.36	0.4		0.123	<10.0	0.04	0.15	3700	<0.01	66.9	<0.5	<0.002	0.68	<0.2	3.6	<0.1
X3A	**18/01/2011**	**Surface**	<0.005	6.5	0.3	<50.0	71.2	<0.01	0.0	43.1	0.02	0.1	<0.1	0.37		224		1.13	0.007	9.60	70.00	0.62	3.10	0.6		1.430	<10.0	0.06	0.34	5440	<0.01	198.0	<0.5	0.004	2.69	<0.2	23.1	<0.1
X3A	**01/02/2011**	**Surface**	<0.005	3.7	0.3	<50.0	69.9	<0.01	0.0	48.9	0.01	0.1	<0.1	0.60		128		1.16	0.007	9.57	54.00	0.62	3.15	0.9		0.163	<10.0	0.05	0.34	6160	<0.01	201.0	<0.5	<0.002	2.58	<0.2	13.0	<0.1
X3A	**16/03/2011**	**Surface**	<0.005	4.6	0.3	<50.0	79.7	<0.01	<0.005	47.9	0.05	0.1	<0.1	1.53		110		1.33	0.008	11.90	84.30	0.71	3.65	1.0		0.537	11.0	0.07	0.43	5630	0.14	224.0	<0.5	0.003	3.09	<0.2	35.3	<0.1
X3A	**13/04/2011**	**Surface**	<0.005	4.5	0.3	<50.0	74.3	<0.01	<0.005	45.5	0.02	0.1	<0.1	0.66		251		1.33	0.008	10.50	85.40	0.71	3.52	0.7		0.354	<10.0	0.05	0.35	5750	<0.01	222.0	<0.5	<0.002	2.93	<0.2	23.6	<0.1
X3A	**05/05/2011**	**Surface**	<0.005	27.9	0.5	<50.0	68.3	<0.01	<0.005	41.9	0.27	0.2	<0.1	1.74		312		1.43	0.007	9.00	83.20	0.67	3.13	1.1		0.547	<10.0	0.06	0.34	5790	<0.01	190.0	<0.5	0.003	2.54	<0.2	72.3	<0.1
X3A	**20/06/2011**	**Surface**	<0.005	67.4	0.5	<50.0	26.9	<0.01	<0.005	13.9	0.03	0.1	0.2	0.88		313		0.46	0.001	3.07	27.60	0.25	1.28	0.5		1.440	<10.0	0.07	0.17	3820	<0.01	63.6	2.5	0.003	0.60	<0.2	13.7	<0.1
X3A	**13/07/2011**	**Surface**	<0.005	24.3	0.5	<50.0	42.4	<0.01	<0.005	24.1	0.02	0.3	<0.1	0.77		574		0.59	0.002	5.10	43.80	0.30	1.68	0.6		0.551	<10.0	0.07	0.22	4740	<0.01	108.0	<0.5	0.004	0.96	<0.2	52.9	<0.1
X3A	**25/08/2011**	**Surface**	<0.005	22.9	0.5	<50.0	39.7	<0.01	<0.005	23.4	0.04	0.2	<0.1	1.22		555		0.60	0.002	4.85	48.90	0.31	1.73	0.8		1.620	<10.0	0.06	0.12	4290	0.02	107.0	0.6	0.003	0.94	<0.2	56.7	<0.1
X3A	**21/09/2011**	**Surface**	<0.005	16.4	0.5	<50.0	49.7	<0.01	<0.005	30.0	0.02	0.1	<0.1	0.75		689		0.79	0.003	6.43	41.70	0.40	1.99	0.8		0.433	<10.0	0.05	0.24	4850	<0.01	132.0	<0.5	<0.002	1.37	<0.2	55.7	<0.1
X3A	**20/10/2011**	**Surface**	<0.005	21.8	0.6	<50.0	60.9	<0.01	<0.005	37.4	0.07	0.5	<0.1	0.55		1840		1.01	0.004	7.62	165.00	0.46	2.42	1.0		1.420	11.0	0.06	0.33	5110	<0.01	171.0	1.0	0.004	1.62	<0.2	142.0	<0.1
X3A	**15/11/2011**	**Surface**	<0.005	10.9	0.4	<50.0	64.5	<0.01	<0.005	35.9	0.10	0.6	<0.1	0.47		3860		1.05	0.004	8.01	203.00	0.52	2.43	1.1		0.574	12.0	0.06	0.31	4840	<0.01	176.0	<0.5	0.003	1.87	<0.2	301.0	<0.1
X3A	**06/12/2011**	**Surface**	<0.005	13.2	0.4	<50.0	63.4	<0.01	<0.005	38.8	0.02	0.1	<0.1	0.62		235		1.00	0.005	8.32	61.00	0.58	2.65	0.5		0.406	<10.0	0.07	0.37	5360	0.02	170.0	<0.5	0.003	2.25	<0.2	12.5	<0.1
X3A Average			0.003	18.7	0.4	25.0	59.2	0.0	0.0	35.9	0.05	0.2	0.1	0.85		758		0.99	0.005	7.83	80.66	0.51	2.56	0.8		0.790	6.6	0.06	0.30	5148	0.02	163.6	0.5	0.003	1.95	0.1	66.8	0.05
X3A Max			<0.005	67.4	0.6	<50.0	79.7	<0.01	0.0	48.9	0.27	0.6	0.2	1.74		3860		1.43	0.008	11.90	203.00	0.71	3.65	1.1		1.620	12.0	0.07	0.43	6160	0.14	224.0	2.5	0.004	3.09	<0.2	301.0	<0.1
X3A Min			<0.005	3.7	0.3	<50.0	26.9	<0.01	<0.005	13.9	0.01	0.1	<0.1	0.37		110		0.46	0.001	3.07	27.60	0.25	1.28	0.5		0.163	<10.0	0.05	0.12	3820	<0.01	63.6	<0.5	<0.002	0.60	<0.2	12.5	<0.1
X4	**18/01/2011**	**Surface**	<0.03	7.0	<0.1	<300.0	13.2	<0.05	<0.03	165.0	0.85	49.2	<0.5	1.10		73600		3.30	0.013	27.50	13100.00	<0.3	8.40	42.4		3.900	200.0	0.20	<0.2	4970	<0.05	517.0	<3.0	0.180	0.87	<1.0	7730.0	<0.5
X4	**03/02/2011**	**Surface**	<0.02	26.0	<0.1	<50.0	15.0	<0.1	<1.0	220.0	3.07	74.1	<1.0	6.50		74000		4.24	0.018	40.30	18700.00	<1.0	11.20	63.0		14.200	290.0	<0.5	0.20	6620	<5.0	699.0	<5.0	0.470	0.60	<5.0	11800.0	<0.5
X4	**14/03/2011**	**Surface**	<0.03	20.0	0.3	<300.0	15.6	<0.05	<0.03	163.0	1.12	51.9	<0.5	0.60		68200		3.50	0.012	30.50	13300.00	0.80	9.30	45.1		2.270	232.0	<0.1	<0.2	5470	<0.05	530.0	<3.0	0.160	0.56	<1.0	8520.0	<0.5
X4	**21/04/2011**	**Surface**	<0.03	49.0	0.4	<300.0	17.2	<0.05	<0.03	166.0	1.34	43.3	<0.5	7.30		60600		3.00	0.011	25.60	11500.00	<0.3	7.60	37.1		14.500	186.0	<0.1	<0.2	5590	<0.05	549.0	<3.0	0.260	0.80	<1.0	7690.0	<0.5
X4	**04/05/2011**	**Surface**	<0.03	29.0	0.2	<300.0	15.1	<0.05	<0.03	150.0	1.12	41.0	<0.5	2.10		53200		3.10	0.011	24.40	10600.00	<0.3	7.10	35.7		3.380	187.0	0.20	<0.2	5350	<0.05	460.0	<3.0	0.210	0.46	<1.0	7140.0	<0.5
X4	**20/06/2011**	**Surface**	<0.03	423.0	4.0	<300.0	19.1	0.1	<0.03	158.0	17.30	81.1	<0.5	91.10		18600		2.90	0.014	48.60	13300.00	<0.3	7.90	78.5		1130.000	271.0	0.40	<0.2	4560	<0.05	558.0	<3.0	2.080	1.45	<1.0	25700.0	<0.5
X4	**21/07/2011**	**Surface**	<0.03	427.0	4.5	<300.0	15.3	0.1	<0.03	183.0	15.40	81.1	<0.5	87.30		15700		3.10	0.016	50.20	15200.00	<0.3	8.70	76.0		1530.000	273.0	0.80	<0.2	5310	<0.05	645.0	<3.0	2.800	1.53	<1.0	22600.0	<0.5
X4	**23/08/2011**	**Surface**	0.130	398.0	9.5	<300.0	48.8	0.1	<0.03	202.0	11.70	86.4	0.7	77.50		24000		3.40	0.015	51.00	17900.00	<0.3	9.90	77.3		1340.000	267.0	1.10	<0.2	5210	0.07	686.0	<3.0	2.320	1.36	<1.0	19700.0	<0.5
X4	**21/09/2011**	**Surface**	0.050	567.0	5.1	<300.0	37.5	0.2	<0.03	222.0	15.10	110.0	<0.5	104.00		24600		3.80	0.019	59.60	20700.00	<0.3	10.70	96.2		1590.000	312.0	0.90	<0.2	5510	<0.05	746.0	<3.0	2.530	1.71	<1.0	24800.0	<0.5
X4	**19/10/2011**	**Surface**	<0.03	426.0	1.3	<300.0	10.7	0.2	<0.03	224.0	13.60	127.0	<0.5	82.60		31500		4.10	0.021	68.00	21700.00	<0.3	11.90	113.0		1080.000	327.0	0.20	<0.2	5160	<0.05	790.0	<3.0	1.890	1.44	<1.0	28900.0	<0.5
X4	**15/11/2011**	**Surface**	0.040	343.0	0.8	<300.0	7.2	0.1	<0.03	225.0	14.30	126.0	1.3	80.00		39300		4.50	0.024	72.90	23700.00	0.50	12.60	110.0		1030.000	386.0	0.20	<0.2	5520	<0.05	863.0	<3.0	2.130	1.47	<1.0	28400.0	<0.5
X4	**05/12/2011**	**Surface**	<0.03	10.0	0.6	<300.0	9.7	<0.05	<0.03	207.0	2.29	89.5	<0.5	0.50		94100		3.70	0.015	35.60	21400.00	<0.3	10.60	71.5		1.720	275.0	0.30	<0.2	6020	<0.05	630.0	<3.0	0.400	1.20	<1.0	8570.0	<0.5
X4 Average			0.029	227.1	2.2	139.6	18.7	0.1	0.1	190.4	8.10	80.1	0.4	45.05		48117		3.55	0.016	44.52	16758.33	0.26	9.66	70.5		644.998	267.2	0.39	0.11	5441	0.24	639.4	1.6	1.286	1.12	0.7	16795.8	0.25
X4 Max			0.130	567.0	9.5	<300.0	48.8	0.2	<1.0	225.0	17.30	127.0	1.3	104.00		94100		4.50	0.024	72.90	23700.00	<1.0	12.60	113.0		1590.000	386.0	1.10	<0.2	6620	<5.0	863.0	<5.0	2.800	1.71	<5.0	28900.0	<0.5
X4 Min			<0.02	7.0	<0.1	<50.0	7.2	<0.05	<0.03	150.0	0.85	41.0	<0.5	0.50		15700		2.90	0.011	24.40	10600.00	<0.3	7.10	35.7		1.720	186.0	<0.1	<0.2	4560	<0.05	460.0	<3.0	0.160	0.46	<1.0	7140.0	<0.5

Note: Statistics calculated with DLs at half value.
Note: Metals reported in mg/L shaded in gray.

Denison Environmental Services

Table B-3: 2011 Rose Creek Drainage Water Quality
Total Metals

Faro Mine Closure

Station	Date	Sample Type	Ag µg/L	Al µg/L	As µg/L	B µg/L	Ba µg/L	Be µg/L	Bi µg/L	Ca mg/L	Cd µg/L	Co µg/L	Cr µg/L	Cu µg/L	F mg/L	Fe µg/L	Hg µg/L	K mg/L	Li µg/L	Mg mg/L	Mn µg/L	Mo µg/L	Na mg/L	Ni µg/L	P mg/L	Pb µg/L	S mg/L	Sb µg/L	Se µg/L	Si µg/L	Sn µg/L	Sr µg/L	Ti µg/L	Tl µg/L	U µg/L	V µg/L	Zn µg/L	Zr µg/L
X5	24/03/2011	Surface	<0.03	11.0	<0.1	<300.0	27.1	<0.05	<0.03	439.0	0.18	60.5	<0.5	0.50		230	<0.05	6.30	0.022	94.90	32100.00	0.60	29.80	71.0		0.210	484.0	<0.1	<0.2	8140	<0.05	1180.0	<3.0	0.190	5.52	<1.0	318.0	<0.5
X5	29/03/2011	Surface	<0.03	2.0	0.2	<300.0	41.6	<0.05	<0.03	375.0	0.13	31.4	<0.5	4.70		240	<0.05	6.90	0.025	84.70	18500.00	0.90	27.40	44.3		0.390	392.0	0.20	<0.2	7200	<0.05	1080.0	<3.0	0.250	6.73	<1.0	294.0	<0.5
X5	05/04/2011	Surface	<0.03	4.0	0.4	<300.0	34.9	<0.05	<0.03	406.0	0.22	39.1	<0.5	0.80		308	<0.05	7.00	0.021	84.20	22100.00	0.90	28.60	50.6		0.150	412.0	<0.1	<0.2	8000	<0.05	1060.0	<3.0	0.210	6.87	<1.0	258.0	<0.5
X5	12/04/2011	Surface	<0.03	2.0	0.3	<300.0	27.7	<0.05	<0.03	417.0	0.16	46.6	<0.5	0.60		236	<0.05	6.10	0.021	82.70	24400.00	0.70	26.40	57.4		0.270	427.0	<0.1	<0.2	7530	0.15	1060.0	<3.0	0.200	6.19	<1.0	264.0	<0.5
X5	19/04/2011	Surface	<0.03	6.0	<0.1	<300.0	32.7	<0.05	<0.03	470.0	0.10	52.4	<0.5	0.40		586	<0.05	6.60	0.020	93.20	27300.00	1.40	30.80	63.2		0.140	405.0	0.20	<0.2	7920	0.16	1210.0	<3.0	0.170	6.68	<1.0	253.0	<0.5
X5	26/04/2011	Surface	<0.03	5.0	0.3	<300.0	28.0	<0.05	<0.03	387.0	0.21	51.5	<0.5	0.80		565	<0.05	6.50	0.018	84.10	27600.00	0.60	26.10	58.7		0.820	442.0	<0.1	0.40	6860	<0.05	1030.0	<3.0	0.150	5.42	<1.0	249.0	<0.5
X5	03/05/2011	Surface	<0.05	4.0	<0.2	<500.0	22.8	<0.1	<0.05	498.0	0.12	95.4	<1.0	<0.5		853	<0.1	7.00	0.019	111.00	46300.00	1.60	33.50	102.0		0.260	532.0	<0.2	<0.4	8900	<0.1	1320.0	<5.0	0.090	5.57	<2.0	319.0	<1.0
X5	10/05/2011	Surface	<0.005	5.5	0.2	<50.0	14.3	<0.01	<0.005	259.0	0.13	17.2	<0.1	0.30		372	<0.01	6.40	0.033	59.30	8490.00	0.51	18.70	20.5		0.179	313.0	0.15	0.16	3380	<0.01	854.0	<0.5	0.274	2.22	0.3	165.0	<0.1
X5	17/05/2011	Surface	<0.03	17.0	0.4	<300.0	15.3	<0.05	<0.03	279.0	0.11	19.7	<0.5	0.60		350	<0.05	5.30	0.026	62.60	10100.00	0.40	17.40	24.0		0.470	300.0	0.50	<0.2	3390	<0.05	781.0	<3.0	0.410	1.94	<1.0	190.0	<0.5
X5	24/05/2011	Surface	<0.03	9.0	<0.1	<300.0	16.2	<0.05	<0.03	237.0	0.14	23.8	<0.5	0.60		280	<0.05	4.20	0.020	55.00	12200.00	0.40	15.40	27.6		0.310	299.0	0.20	<0.2	3690	<0.05	684.0	<3.0	0.280	1.78	<1.0	176.0	<0.5
X5	31/05/2011	Surface	<0.005	6.6	0.2	<50.0	14.5	<0.01	<0.005	229.0	0.17	15.6	<0.1	0.59		287	<0.01	4.78	0.026	61.50	8230.00	0.35	15.30	18.0		0.752	323.0	0.19	0.14	2840	<0.01	706.0	<0.5	0.422	2.05	<0.2	190.0	<0.1
X5	07/06/2011	Surface	<0.03	5.0	0.2	<300.0	16.9	<0.05	<0.03	248.0	0.22	19.0	<0.5	0.50		398	<0.05	5.20	0.028	66.30	10100.00	0.40	16.00	21.3		0.880	321.0	0.20	<0.2	3260	<0.05	752.0	<3.0	0.490	2.09	<1.0	213.0	<0.5
X5	14/06/2011	Surface	<0.03	5.0	0.4	<300.0	17.3	<0.05	<0.03	316.0	0.19	33.1	<0.5	0.80		431	<0.05	5.70	0.027	82.70	16900.00	0.50	20.90	35.2		1.100	374.0	0.20	<0.2	4040	<0.05	922.0	<3.0	0.520	2.69	<1.0	292.0	<0.5
X5	21/06/2011	Surface	<0.005	3.6	0.3	<50.0	15.9	<0.01	<0.005	308.0	0.16	27.2	<0.1	0.51		395	<0.01	5.95	0.033	82.70	13400.00	0.92	20.60	28.4		1.000	420.0	0.13	0.14	3640	<0.01	951.0	<0.5	0.577	2.19	<0.2	209.0	<0.1
X5	28/06/2011	Surface	<0.03	16.0	0.5	<300.0	16.4	<0.05	<0.03	277.0	0.17	20.7	<0.5	0.50		686	<0.05	6.20	0.034	86.60	10600.00	<0.3	20.80	21.5		1.120	392.0	<0.1	0.30	3270	<0.05	863.0	<3.0	0.650	1.93	<1.0	223.0	<0.5
X5	05/07/2011	Surface	<0.03	6.0	0.4	<300.0	18.7	<0.05	<0.03	287.0	0.18	20.6	<0.5	0.50		702	<0.05	6.10	0.035	80.90	10400.00	0.40	19.60	21.8		1.370	370.0	0.20	<0.2	3110	<0.05	932.0	<3.0	0.710	1.98	<1.0	209.0	<0.5
X5	12/07/2011	Surface	<0.005	7.4	0.3	<50.0	15.1	<0.01	<0.005	282.0	0.16	14.3	<0.1	0.73		557	<0.01	6.08	0.038	78.40	7310.00	0.38	18.00	14.7		1.350	345.0	0.20	0.14	2520	0.42	939.0	<0.5	0.846	1.44	<0.2	154.0	<0.1
X5	19/07/2011	Surface	<0.03	6.0	0.3	<300.0	15.3	<0.05	<0.03	273.0	0.15	13.0	<0.5	0.50		622	<0.05	5.80	0.035	75.60	6920.00	0.40	17.40	13.9		1.320	305.0	0.20	<0.2	2540	<0.05	880.0	<3.0	0.890	1.31	<1.0	172.0	<0.5
X5	26/07/2011	Surface	<0.005	5.9	0.3	<50.0	15.1	<0.01	<0.005	256.0	0.19	13.3	<0.1	0.55		606	<0.01	6.15	0.040	78.90	6430.00	1.36	17.80	13.4		1.960	364.0	0.21	0.15	2450	<0.01	869.0	<0.5	0.799	1.35	<0.2	228.0	<0.1
X5	02/08/2011	Surface	<0.03	6.0	0.3	<300.0	15.5	<0.05	<0.03	269.0	0.18	14.8	<0.5	0.60		754	<0.05	6.50	0.039	82.60	7770.00	<0.3	19.00	14.9		1.960	348.0	0.20	<0.2	2700	<0.05	879.0	<3.0	0.800	1.59	<1.0	268.0	<0.5
X5	09/08/2011	Surface	<0.005	3.5	0.3	<50.0	17.0	<0.01	<0.005	295.0	0.16	14.1	<0.1	0.48		525	<0.02	6.36	0.040	80.20	6800.00	0.32	19.20	14.0		0.901	362.0	0.22	0.19	2380	<0.01	964.0	<0.5	0.871	1.53	<0.2	132.0	<0.1
X5	16/08/2011	Surface	<0.005	3.5	0.2	<50.0	13.0	<0.01	<0.005	281.0	0.05	9.1	<0.1	0.36		159	<0.01	6.22	0.042	75.30	4590.00	0.39	18.30	9.2		0.301	346.0	0.23	0.17	2150	<0.01	932.0	<0.5	0.817	1.14	<0.2	40.2	<0.1
X5	23/08/2011	Surface	<0.03	8.0	0.4	<300.0	13.5	<0.05	<0.03	262.0	0.07	16.1	<0.5	<0.3		214	<0.05	5.70	0.035	73.90	8310.00	0.40	17.40	16.6		0.190	333.0	0.20	0.30	2520	<0.05	910.0	<3.0	0.700	1.60	2.0	81.5	<0.5
X5	30/08/2011	Surface	<0.005	2.4	0.2	<50.0	12.8	<0.01	<0.005	280.0	0.05	13.8	<0.1	0.32		181	<0.01	6.16	0.038	78.60	7030.00	0.41	19.30	13.7		0.146	394.0	0.19	0.15	2530	<0.01	951.0	<0.5	0.680	1.37	<0.2	51.3	<0.1
X5	06/09/2011	Surface	<0.03	6.0	0.4	<300.0	15.5	<0.05	<0.03	330.0	0.09	19.3	<0.5	0.70		326	<0.05	6.80	0.039	85.00	10300.00	<0.3	21.10	20.0		0.670	352.0	0.20	<0.2	3090	0.10	1070.0	<3.0	0.690	1.75	2.0	92.0	<0.5
X5	13/09/2011	Surface	<0.03	7.0	<0.1	<300.0	14.2	<0.05	<0.03	284.0	0.06	16.4	<0.5	0.40		240	<0.05	5.90	0.040	78.70	8260.00	1.70	18.30	16.5		0.410	343.0	<0.1	<0.2	2600	<0.05	935.0	<3.0	0.640	1.47	<1.0	79.1	<0.5
X5	20/09/2011	Surface	<0.03	6.0	0.5	<300.0	15.3	<0.05	<0.03	317.0	0.07	20.9	<0.5	0.40		172	<0.05	6.60	0.038	83.30	10600.00	0.40	20.10	21.4		1.250	353.0	<0.1	<0.2	3070	<0.05	963.0	<3.0	0.620	1.87	<1.0	86.4	<0.5
X5	27/09/2011	Surface	<0.03	3.0	0.8	<300.0	16.8	<0.05	<0.03	361.0	0.13	46.0	<0.5	0.70		576	<0.05	6.40	0.031	91.50	22900.00	0.40	23.70	44.0		0.270	451.0	<0.1	<0.2	4810	<0.05	1040.0	<3.0	0.430	3.06	<1.0	173.0	<0.5
X5	23/11/2011	Surface	<0.03	<20.0	0.5	<300.0	25.1	<0.05	<0.1	361.0	0.16	48.6	<3.0	<1.0		295	<0.05	6.00	0.025	92.00	24000.00	0.50	26.00	45.6		1.000	433.0	<0.3	<0.2	5660	<1.0	1050.0	<30.0	0.260	4.56	<3.0	214.0	<0.5
X5	29/11/2011	Surface	<0.03	9.0	0.2	<300.0	23.8	<0.05	<0.03	476.0	0.15	71.5	<0.5	1.40		882	<0.05	7.00	0.027	105.00	34600.00	1.10	29.50	64.5		0.460	564.0	<0.1	<0.2	7660	<0.05	1270.0	<3.0	0.250	5.72	<1.0	257.0	<0.5
X5	08/12/2011	Surface	<0.03	17.0	0.3	<300.0	23.6	<0.05	<0.03	439.0	0.17	77.3	<0.5	7.40		1250	<0.05	7.10	0.026	106.00	38600.00	<0.3	31.20	67.6		0.380	469.0	<0.1	<0.2	6340	<0.05	1320.0	<3.0	0.220	5.36	<1.0	269.0	<0.5
X5 Average			0.012	6.7	0.3	121.0	19.7	0.0	0.0	329.0	0.14	31.7	0.2	0.91		461	0.02	6.16	0.030	81.85	16230.32	0.61	22.05	34.0		0.709	386.1	0.15	0.14	4458	0.06	979.3	1.6	0.487	3.13	0.5	197.4	0.21
X5 Max			<0.05	<20.0	0.8	<500.0	41.6	<0.1	<0.1	498.0	0.22	95.4	<3.0	7.40		1250	<0.1	7.10	0.042	111.00	46300.00	1.70	33.50	102.0		1.960	564.0	0.50	0.40	8900	<1.0	1320.0	<30.0	0.890	6.87	<3.0	319.0	<1.0
X5 Min			<0.005	2.0	<0.1	<50.0	12.8	<0.01	<0.005	229.0	0.05	9.1	<0.1	<0.3		159	<0.01	4.20	0.018	55.00	4590.00	<0.3	15.30	9.2		0.140	299.0	<0.1	0.14	2150	<0.01	684.0	<0.5	0.090	1.14	<0.2	40.2	<0.1
X5P	18/01/2011	Surface	<0.03	2.0	0.3	<300.0	46.9	<0.05	<0.03	352.0	0.10	30.0	<0.5	0.50		213		6.70	0.025	84.70	18600.00	1.30	29.00	44.9		0.390	360.0	0.20	0.50	6690	<0.05	1050.0	<3.0	0.230	7.64	<1.0	251.0	<0.5
X5P	03/02/2011	Surface	<0.03	3.0	0.3	<300.0	42.6	<0.05	<0.03	361.0	0.17	31.6	<0.5	0.80		265		6.60	0.024	83.60	18400.00	0.80	27.80	44.6		0.740	386.0	0.20	<0.2	6780	<0.05	1020.0	<3.0	0.240	7.06	<1.0	262.0	<0.5
X5P	15/03/2011	Surface	<0.03	5.0	0.4	<300.0	78.4	<0.05	<0.03	327.0	0.11	25.0	<0.5	1.00		68		7.00	0.024	83.30	14800.00	1.70	25.00	35.7		0.540	342.0	0.40	1.10	8650	<0.05	1000.0	<3.0	0.220	7.02	<1.0	219.0	<0.5
X5P	14/04/2011	Surface	<0.03	6.0	0.4	<300.0	40.6	<0.05	<0.03	375.0	0.14	27.3	<0.5	1.80		215		7.10	0.020	85.00	16900.00	1.10	29.50	40.2		1.940	375.0	0.20	0.30	7830	0.06	1020.0	<3.0	0.190	7.40	<1.0	212.0	<0.5
X5P	05/05/2011	Surface	0.009	39.8	0.6	<50.0	23.6	<0.01	0.0	340.0	0.06	5.6	0.3	0.78		127		2.16	0.009	23.90	2370.00	0.32	8.29	14.9		24.100	334.0	0.26	0.12	9650	<0.01	989.0	1.4	0.170	2.50	<0.2	29.0	<0.1
X5P	20/06/2011	Surface	<0.005	30.8	0.5	<50.0	18.0	<0.01	<0.005	275.0	0.19	17.6	<0.1	1.20		542		5.63	0.033	76.80	9120.00	0.48	18.70	19.4		4.290	369.0	0.21	0.16	2940	<0.01	883.0	1.1	0.614	1.81	<0.2	215.0	<0.1
X5P	14/07/2011	Surface	<0.03	7.0	0.6	<300.0	15.3	<0.05	<0.03	274.0	0.10	11.7	<0.5	0.50		524		6.00	0.037	76.40	6380.00	0.40	17.50	12.4		1.310	322.0	0.20	<0.2	2460	<0.05	891.0	<3.0	0.880	1.36	<1.0	158.0	<0.5
X5P	23/08/2011	Surface	<0.005	14.0	0.2	<50.0	13.7	<0.01	<0.005	279.0	0.05	12.7	<0.1	0.51		171		5.93	0.042	78.40	6480.00	0.36	18.40	13.1		1.280	340.0	0.20	0.12	2260	<0.01	974.0	0.6	0.762	1.28	<0.2	51.1	<0.1
X5P	21/09/2011	Surface	<0.03	73.0	1.0	<300.0	22.3	<0.05	<0.03	332.0	0.14	27.7	<0.5	1.20		1020		6.70	0.038	87.40	13300.00	<0.3	20.90	27.6		8.480	363.0	0.20	<0.2	3490	<0.05	1030.0	<3.0	0.620	2.11	2.0	157.0	<0.5
X5P	19/10/2011	Surface	<0.03	10.0	0.4	<300.0	22.4	<0.05	<0.03	397.0	0.16	50.3	<0.5	0.50		417		6.80	0.031	94.50	24100.00	0.50	26.80	48.8		2.480	417.0	0.20	<0.2	5250	<0.05	1140.0	<3.0	0.390	4.29	<1.0	267.0	<0.5
X5P	15/11/2011	Surface	<0.03	4.0	0.4	<300.0	34.0	<0.05	<0.03	381.0	0.19	43.0	1.2	0.60		118		7.20	0.033	95.00	23700.00	1.00	26.00	44.4		2.130	457.0	0.20	<0.2	6130	<0.05	1180.0	<3.0	0.360	4.84	<1.0	238.0	<0.5
X5P	05/12/2011	Surface	<0.03	10.0	0.5	<300.0	28.7	<0.05	<0.03	397.0	0.17	40.8	<0.5	1.80		226		6.90	0.026	92.70	22100.00	0.80	28.00	43.1		1.110	407.0	0.30	<0.2	6620	0.08	1030.0	<3.0	0.290	6.06	<1.0	212.0	<0.5
X5P Average			0.012	17.1	0.5	118.8	32.2	0.0	0.0	340.8	0.13	26.9	0.3	0.93		326		6.23	0.028	80.14	14687.50	0.74	22.99	32.4		4.066	372.7	0.23	0.24	5729	0.03	1017.3	1.4	0.414	4.45	0.5	189.3	0.20
X5P Max			<0.03	73.0	1.0	<300.0	78.4	<0.05	<0.03	397.0	0.19	50.3	1.2	1.80		1020		7.20	0.042	95.00	24100.00	1.70	29.50	48.8		24.100	457.0	0.40	1.10	9650	0.08	1180.0	<3.0	0.880	7.64	2.0	267.0	<0.5
X5P Min			<0.005	2.0	0.2	<50.0	13.7	<0.01	<0.005	274.0	0.05	5.6	<0.1	0.50		68		2.16	0.009	23.90	2370.00	<0.3	8.29	12.4		0.390	322.0	0.20	0.12	2260	<0.01	883.0	0.6	0.170	1.28	<0.2	29.0	<0.1
X7	28/06/2011	Surface	<0.1	1250.0	21.6	<1000.0	10.2	1.1	<0.1	378.0	25.40	1260.0	<2.0	3.00		927000		12.00	0.131	977.00	101000.00	<1.0	61.00	1070.0		20.600	2840.0	<0.4	<0.8	16200	<0.2	3950.0	<10.0	0.310	4.57	<4.0	491000.0	<2.0
X7	18/10/2011	Surface	<0.3	1670.0	28.0	<3000.0	8.0	1.5	<0.3	375.0	25.50	1220.0	<5.0	<3.0		1550000		12.00	0.145	705.00	90500.00	<3.0	54.00	1050.0		17.300	2560.0	<1.0	<2.0	15800	<0.5	3540.0	<30.0	0.400	1.80	<10.0	506000.0	<5.0
X7 Average			0.100	1460.0	24.8	1000.0	9.1	1.3	0.1	376.5	25.45	1240.0	1.8	2.25		1238500		12.00	0.138	841.00	95750.00	1.00	57.50	1060.0		18.950	2700.0	0.35	0.70	16000	0.18	3745.0	10.0	0.355	3.19	3.5	498500.0	1.75
X7 Max			<0.3	1670.0	28.0	<3,000.0	10.2	1.5	<0.3	378.0	25.50	1260.0	<5.0	<3.0		1550000		12.00	0.145	977.00	101000.00	<3.0	61.00	1070.0		20.600	2840.0	<1.0	<2.0	16200	<0.5	3950.0	<30.0	0.400	4.57	<10.0	506000.0	<5.0
X7 Min			<0.1	1250.0	21.6	<1,000.0	8.0	1.1	<0.1	375.0	25.40	1220.0	<2.0	3.00		927000		12.00	0.131	705.00	90500.00	<1.0	54.00	1050.0		17.300	2560.0	<0.4	<0.8	15800	<0.2	3540.0	<10.0	0.310	1.80	<4.0	491000.0	<2.0

Note: Statistics calculated with DLs at half value.
Note: Metals reported in mg/L shaded in gray.

Table B-4: 2011 Rose Creek Drainage Water Quality Bioassay Results

Station	Date	Percent Mortality				Temp. (°C)		pH		D.O. (mg/L)		Conductivity	LC_{50} Final Result
		24 hr	48 hr	72 hr	96 hr	Initial	Final	Inital	Final	Initial	Final	(µS/cm)	(%v/v)
X13	**15/03/2011**	0	0	0	0	14.1	15.1	6.8	7.9	8.3	9.8	2537	Pass: 100%
X13	**28/06/2011**	0	0	0	0	15.4	15.0	6.9	8.1	8.1	10.0	2344	Pass: 100%
X13	**20/09/2011**	0	0	0	0	15.2	14.9	7.1	8.2	8.8	9.9	2210	Pass: 100%
X13	**01/12/2011**	0	0	0	0	14.7	14.8	6.9	8.0	9.7	10.0	2236	Pass: 100%
X5P	**15/03/2011**	0	0	0	0	14.1	15.0	7.1	7.9	9.2	9.8	2062	Pass: 100%
X5	**28/06/2011**	0	0	0	0	15.5	15.1	7.5	7.9	10.0	9.9	1795	Pass: 100%
X5	**20/09/2011**	0	0	0	0	15.2	14.9	7.4	8.1	9.8	9.8	1869	Pass: 100%
X5	**08/12/2011**	0	0	0	0	14.9	14.9	6.6	8.1	8.0	10.1	2446	Pass: 100%

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Table B-5: 2011 Rose Creek Drainage Water Quality
Groundwater Well Parameters

Faro Mine Closure

Site	Date	WL Time	Water Level from TOC (WL-m)	Depth to Bottom from TOC (DTB-m)	Well Volume (L)	Target Purge Volume (L)	Total Purge Volume (L)	Purge Rate (L/s)	Stick-up (m)	Purge Method	Comments
BH10A	29/Sep/11	15:02	7.518	34.11	13.480	40.4400	42	0.009	0.873	PumpFV/Waterra	
BH10B	29/Sep/11	15:04	7.506	52.911	23.020	69.0600	70	0.038	0.872	PumpFV/Waterra	Not capped; covered by 45 gallon drum.
BH13B	9/Jun/11	0:00								PumpFV/Waterra	WL taken on June 09/11 - frozen at 4.486m; WL taken on June 23/11 - frozen at 4.095m; WL taken on July 14/11 - frozen; WL taken on July 20/11 - frozen at 3.864m.
BH13B	28/Sep/11	16:11	3.359	4.481	2.270	6.8100	1.1	0.006		PumpFV/Waterra	Well capped; good condition.;Well purged dry; dirty purge.
BH14A	8/Jun/11	16:50	2.835	6.362	7.149	21.447	21	0.035	0.113	PumpFV/Waterra	WL taken on June 08/11; 1st purge on June 08/11 - dry at 12L; 2nd purge - dry at 5L; 3rd purge on June 09/11; Well is capped and in good condition just very low to ground.
BH14A	13/Oct/11	10:55	3.538	6.352	5.700	17.1	17.11	0.029	0.106	Pump/Assist	Well has no outer casing, just a stand alone pvc pipe and it's in good condition, capped. 1st purge oct 13 - 7.5 litres - 2nd purge oct 13 - 10 liters. sample collected oct 17. Clear purge. First purge used pump and assist. Second purge waterra.
BH14B	9/Jun/11	8:47	5.077	10.189	10.362	31.086	31.5	0.025	0.742	PumpFV/Waterra	WL taken o June 9/11; 1st purge on June 9/11 - dry at 15L; 2nd purge on June 9/11 - dry at 2L left to recharge; 3rd purge on June 9/11 - dry at 8.5L; 4th pruge on June 10/11 - 6L; Pipe in good condition; Mesh around outside exposed; New Waterra tubing installed June 10/11; Clear purge water.
BH14B	13/Oct/11	10:52	4.201	10.029	11.810	35.430	35.44	0.039	0.727	Pump/Assist	No outer casing, well is a pvc pipe and in good condition. Capped. 1st purge oct 13- 14 litres; 2nd purge oct 13 12 litres; 3rd purge oct 17 - 9.5 litres. clear purge.
BH5	28/Sep/11	14:26	2.225	7.488	10.660	31.98	41	0.097	0.661	PumpFV/Waterra	Dirty purge.;Good condition; PVC pipe no casing; no cap.
BH6	28/Sep/11	13:50	3.429	6.625	6.478	19.4340	30	0.125	0.721	PumpFV/Waterra	Clean purge.;Well capped; good condition; PVC pipe with no casing.
BH8	28/Sep/11	15:43	16.356	20.754	8.900	26.700	25.5	0.075	0.791	PumpFV/Waterra	WL taken on Sept 28/11; 1st purge Sept. 28/11 - dry at 9L; 2nd purge Sept. 29/11 - dry at 8.5L; 3rd purge Sept. 30/11 - dry at 8L; Well capped; good condition; Foot valve and tubing replaced.
P01-01A	2/Jun/11	13:52	3.465	20.315	34.150	102.45	105	0.070	0.695	WaterraFV	
P01-01A	23/Sep/11	11:40	3.624	20.3	33.800	101.4	105	0.159	0.629	PumpFV/Waterra	Good clean yield;Well in good condition; cap inside outer casing; outer casing good condition; picture taken.
P01-01B	27/Jan/11	15:32	4.074	35.704	64.101	192.3030	213	0.054		PumpFV/Waterra	Centrifrugal pump needed manual assistance for entire purge periodCentrifrugal pump needed manual assistance for entire purge period
P01-01B	21/Jul/11	8:38	3.616	35.208	64.000	192	195	0.110	0.833	PumpFV/Waterra	Hot water was added to well to sit for 48 hours. Good yield.;Visited June 2 & 9 & 23 and July 12- tubing stuck in frozen well. Could not sample until hot water was added to thaw ice.
P01-01B	23/Sep/11	11:45	3.735	35.22	63.820	191.46	195	0.813	0.576	PumpFV/Waterra	Good clean yield of water.;Well in good condition; capped; outer casing good condition; picture taken.Clear purge.;Outer well in good condition - capped; INner well in good condition - capped.;Clear sample.
P01-02A	1/Feb/11	15:22	2.579	14.232	23.619	70.8570	91	0.089		PumpFV/Waterra	
P01-02A	1/Jun/11	14:18	2.549	14.352	23.925	71.7750	90	0.090	0.637	Pump/Assist	
P01-02A	23/Sep/11	15:40	2.160	14.359	24.720	74.1600	75	0.208	0.614	PumpFV/Waterra	Good yield; clear water.;PVC pipe fairly good condition; capped; no out casing; labeled; picture taken.
P01-02B	1/Feb/11	15:21	0.604							PumpFV/Waterra	Well frozen at 0.604m
P01-02B	1/Jun/11	14:37	0.841	29.930	58.961	176.8830	195	0.0900	1.616	Pump/Assist	
P01-02B	23/Sep/11	15:29	0.397	29.618	59.230	177.6900	179	0.1570	1.611	PumpFV/Waterra	Good yield; clear water.;PVC pipe in good condition; no cap; labeled; picture taken.
P01-03	12/Jul/11	9:43	3.785	9.631	11.850	35.5500	30	0.0630	0.464	PumpFV/Waterra	Dirty sample with sediment in sample water.;WL taken on June 02/11 - frozen at 2.495m; WL taken on June 09/11 - frozen 2.500m; WL taken on June 23/11 - frozen at 3.933m; WL taken July 12/11; Dirty purge at beginning but cleared up with sediment remaining; Well is in good condition - capped and labelled.
P01-03	28/Sep/11	11:22	4.506	9.497	10.100	30.3000	42	0.0770	0.330	PumpFV/Waterra	
P01-04A	1/Feb/11	10:58	1.867							PumpFV/Waterra	Well frozen at 1.867m
P01-04A	12/Jul/11	9:51	2.275	53.879	104.601	313.8039	315	0.0800	0.219	PumpFV/Waterra	Clear sample with sulphur smell.;WL taken on June 02/11 - frozen at 1.85m; WL taken on June 09/11 - frozen at 1.845m; WL taken on July 12/11; Well is in good condition - capped and labelled; Purge water clear with sulphur smell.
P01-04A	26/Sep/11	15:27	2.818	53.145	102.000	306.0000	306	0.0750	0.200	PumpFV/Waterra	Well capped; new Watera tubing put in well.
P01-04B	1/Feb/11	11:00	2.318	34.628	65.487	196.4610	225	0.1500		PumpFV/Waterra	
P01-04B	12/Jul/11	9:54	2.845	34.032	63.216	189.6480	190	0.0740	0.204	PumpFV/Waterra	Sediment in sample but clear water.;WL taken on June 02/11- frozen at 2.10m; WL taken on June 09/11 - frozen at 2.101; WL taken on June 23/11 - frozen at 2.161m; WL taken July 12/11; Sediment in 1st part of purge; Well is in good condition - capped and labelled.
P01-04B	26/Sep/11	15:26	3.435	21.310	36.200	108.6000	108.6	0.091	0.105	PumpFV/Waterra	Clear purge;Well capped; barrel excess watera tubing sticking out.
P01-11	1/Jun/11	15:41	1.207	11.077	20.000	60.0000	75	0.100	0.760	Pump/Assist	Stickup different from historic. Photo taken.
P01-11	24/Sep/11	10:05	1.202	11.015	19.890	59.6700	60	0.166	1.015	PumpFV/Waterra	Cement foundation lifted; capped.;Good yield.
P03-01-2	4/Oct/11	14:57	5.862	30.300	3.100	9.3000	9.31	0.009	0.857	PumpFV/Waterra	Good clean purge. ;well in good condition. Outer metal casing in good condition and capped. Centre stalk measured for field stick up. Good purge volume. Clear water. Well in good condition. Out casing is capped.
P03-01-4	4/Oct/11	14:01	5.948	25.158	2.430	7.2900	7.31	0.0119	0.857	Peristaltic PumpFV	Well in good condition. Outer casing is capped. Good purge volume, water is clear.
P03-01-6	5/Oct/11	8:49	6.003	13.97	1.010	3.0300	3.03	0.009	0.857	Peristaltic PumpFV	Good clean purge. ;well in good condition.Outer metal casing in good condition and capped. Centre stalk measured for stick up.
P03-01-8	5/Oct/11	8:51	4.74	10.073	0.677	2.0310	2.03	0.004	0.857	PeristalticFV/Assist	Dirty purge water. Sample dirty.;Well in good condition. Outer metal casing in good condition and capped. Centre stalk measured for field stick up.
P03-01-9	5/Oct/11	8:54	5.844	8.533	1.024	3.0720	0.341	0.002	0.857	PeristalticFV/Assist	Purge water dirty. unable to purge a litre on the first purge. 1st purge 0.4 litres. Not enough water for sample.;well in good condition. Outer metal casing in good condition and capped. Centre stalk measured for field stick up. no sample collected.
P03-03-2	5/Oct/11	10:17	7.159	34.227	3.430	10.2900	10.31	0.008	0.805	PeristalticFV/Assist	Good purge. ;well in good condition. Outer metal casing in good condition and capped. Centre stalk measured for field stick up.
P03-03-4	5/Oct/11	10:21	7.191	25.390	2.310	6.9300	6.93	0.007	0.805	PeristalticFV/Assist	Good purge.;well in good condition. Outer metal casing in good condition and capped.
P03-03-6	5/Oct/11	10:25	7.3	18.195	1.380	4.1400	4.2	0.000	0.805	PeristalticFV/Assist	No sample collected.;well in good condition. Outer metal casing in good condition and capped. Field stick measured from centre stalk.
P03-03-8	5/Oct/11	10:28	6.85	13.349	0.888	15:56	15:50	0.001	0.805	PeristalticFV/Assist	No sample collected due to very slow recharge.;well in good condition. Outer metal casing in good condition and capped. Very little water in well. One purge collected 1.55 liters. Stopped pump four times to collect total purge. Not enough water for sample. Field stick-up measured from centre stalk.
P03-03-9	5/Oct/11	10:30	0.000	10.044	0.000	0.0000	0	0.0000	0.805	PumpFV/Waterra	No sample. not enough water in well to collected sample.;well in good condition. Outer metal casing in good condition and capped. Field stick up measured from centre stalk.
P03-04-2	5/Oct/11	10:22	12.172	48.735	4.640	13.9200	13.9	0.0014	0.740	PeristalticFV/Assist	No sample. Pump assist.;well in good condition. Outer metal in good condition. Field stick up measured from centre stalk. first purge 0.82 litres; 2nd purge 0.64 litres. No sample collected due to very little water in well and slow recharge. Pump assist
P03-04-4	11/Oct/11	10:32	12.449	36.272	3.020	9.0600	9.07	0.0005	0.740	PeristalticFV/Assist	No sample.;well in condition. Outer metal casing in good condition and capped. Field stick measured from centre stalk. 1st purge 0.41 litres; 2nd purge 0.22 litres. No sample collected, not enough water for a sample.
P03-04-6	11/Oct/11	11:15	12.485	18.514	0.766	2.2968	2.29	0.0006	0.740	PeristalticFV/Assist	No sample.;well in condition. Outer metal casing in good condition and capped. field stick up measured from centre stalk. No sample collected. 1st purge 0.1 litres; 2nd purge 0.2 litres. Not enough water in well for sample.
P03-04-8	11/Oct/11	11:18	12.474	14.922	0.311	0.9324	0.93	0.0005	0.740	PeristalticFV/Assist	Not enough water in well to collect sample. ;well in good condition. Outer metal casing in good condition and capped. Field stick up measured from centre stalk. No sample collected due to very little water in well.
P03-05-2	5/Oct/11	14:37	8.475	37.818	3.726	11.1780	11.179	0.0031	0.890	PeristalticFV/Assist	Sample collected.;well in good condition. Outer metal casing in good condition and capped. Field stick up measured from centre stalk. Assisted pump, difficult well to purge.
P03-05-4	5/Oct/11	14:42	8.688	24.556	2.010	6.0300	6.04	0.0020	0.890	PeristalticFV/Assist	Good purge, pump assist.;well in good condition. Outer metal casing in good condition and capped. Field stick up measured from centre stalk. 1st purge 6 litres.
P03-05-6	5/Oct/11	14:49	8.599	19.665	1.400	4.2000	4.21	0.0019	0.890	PeristalticFV/Assist	Well in good condition. Outer metal casing in good condition and capped. Field stick up measured from centre stalk. first purge 3 litres; 2nd purge 1.2 litres. Left well to recharge for 15 mins. Water turbid
P03-05-8	6/Oct/11	14:53	8.529	12.064	0.448	1.3440	1.346	0.0033	0.890	PeristalticFV/Assist	Sample water dirty. ;well in good condition. Outer metal casing good condition and capped. Field stick up measured from centre stalk. Pump assist. One purge 1.4 litres.
P03-06-1	29/May/11	9:20	12.322	26.618	1.810	5.4294	5.5	0.003	0.917	PeristalticFV/Assist	WL taken on May 29/11; Attempted to Hydrolift and Waterra but to no avail; Outer casing good with cap; Inner pipe good with no cap; Labelled, GPS'd and photo taken.Centre stalk measurement.
P03-06-1	6/Oct/11	11:21	12.149	26.627	1.838	5.5140	6	0.003	0.912	PeristalticFV/Assist	Sample water clear.;well in codition.Outer metal casing in good condition and capped. Field stick up measured from center stalk. Purge water clear.

Denison Environmental Services

Table B-5: 2011 Rose Creek Drainage Water Quality
Groundwater Well Parameters

Faro Mine Closure

Site	Date	WL Time	Water Level from TOC (WL-m)	Depth to Bottom from TOC (DTB-m)	Well Volume (L)	Target Purge Volume (L)	Total Purge Volume (L)	Purge Rate (L/s)	Stick-up (m)	Purge Method	Comments
P03-06-2	29/May/11	9:18	12.398	23.7	1.430	4.2900	4.3	0.010	0.917	WaterraFV	Dirty sample - sediment in sample.;Inner pipe good - no cap. Outer casing good - no cap. Labelled. GPS'd and photo taken.Centre stalk.
P03-06-2	6/Oct/11	11:24	12.180	23.723	1.460	4.3800	4.39	0.003	0.912	PeristalticFV/Assist	Sample abit turbid.;well in codition.Outer metal casing in good condition and capped. Field stick up measured from center stalk. Purge water clear.
P03-06-3	29/May/11	9:16	12.419	21.090	1.100	3.3000	3.3	0.006	0.917	WaterraFV	Dirty sample - sediment in sample.;Outer casing good - cap. Inner pipe good - no cap. Labelled. GPS'd and photo taken.Centre stalk.
P03-06-3	6/Oct/11	14:12	12.22	20.921	1.100	3.3000	3	0.004	0.912	PeristalticFV/Assist	Sample water clear. ;well in codition.Outer metal casing in good condition and capped. Field stick up measured from center stalk
P03-06-4	29/May/11	9:14	12.499	17.572	0.640	1.9200	2	0.008	0.917	WaterraFV	Murky sample - sediment in sample.;Outer casing good - cap. Inner pipe good - no cap. Labelled. GPS'd and photo taken.Centre stalk.
P03-06-4	6/Oct/11	14:16	5.362	17.595	1.550	4.65	4.66	0.004	0.912	PeristalticFV/Assist	Sample water clear.;well in codition.Outer metal casing in good condition and capped. Field stick up measured from center stalk. Purge water clear.
P03-06-5	28/May/11	11:46	12.357	15.159	0.350	1.05	1.1	0.002	0.917	PeristalticFV/Assist	Black sample - sediment in sample.;Outer casing good - cap. Inner casing good - no cap. Labelled. GPS's and photo taken.Centre stalk.
P03-06-5	6/Oct/11	15:18	12.255	15.131	0.365	1.0950	1	0.000	0.912	PeristalticFV/Assist	Insufficient water to collect a sample. No recharge.;well in codition.Outer metal casing in good condition and capped. Field stick up measured from center stalk. Purge water clear. first purge 3 litres, no recharge.
P03-06-6	28/May/11	11:52	11.528	13.629	0.270	0.81	0.8	0.001	0.917	PeristalticFV/Assist	Outer casing good - cap. Inner casing good - no cap. Labelled. GPS'd and photo taken.;Slow purge. Dirty sample - black sediment in sample.EC measured on Hanna meter b/c EC not working on meter.
P03-06-6	6/Oct/11	15:20	12.25	13.61	0.172	0.516	0.2	0.000	0.912	PeristalticFV/Assist	Insufficient water to collect sample.
P03-06-7	29/Jun/11	13:28	0	11.805	0.000	0	0	0.000	0.917	PumpFV/Waterra	WL taken on May 28/11 - frozen at 2.079m; WL taken on June 29/11 - dry; Outer casing is in good condition with cap; Inner casing is in good condition with no cap; Labelled, GPS'd, and photo taken.Centre stalk measurement.
P03-06-7	6/Oct/11	15:50		11.833					0.912	PumpFV/Waterra	Well dry. No sample collected.;well in condition.Outer metal casing in good condition and capped. Field stick up measured from center stalk.
P03-08-2	2/Feb/11	11:43	8.662	13.03	0.771	2.3127	3	0.005		PeristalticFV/Assist	Peristaltic pump need manual assistance for entire purge period; Purged water has strong sulphur smellPeristaltic pump needed manual assistance for entire purge period; Purge water has strong sulphur smell
P03-08-2	11/Oct/11	13:21	8.148	13.222	0.644	1.9320	1.9	0.006		PumpFV/Waterra	
P03-08-4	11/Oct/11	13:24	8.018	24.125	2.040	6.1200	6.2	0.001		PumpFV/Waterra	
P03-08-6	11/Oct/11	13:40	7.43	21.119	1.730	5.1900	5.3	0.002	0.834	PumpFV/Waterra	Well in good condition; metal outer casing capped and good condition.
P03-08-7	11/Oct/11	13:43	9.281	18.064	1.110	3.3300	3.34	0.001	0.834	PeristalticFV/Assist	No sample collected.;well in good condition. Outer metal casing in good condition and capped. field stick up measured from centre stalk. Pump assist. 1st purge 1.22 litres. well has very little water and very difficult to purge. No sample collected. Water black/grey in color.
P03-08-8	11/Oct/11	13:45	5.644	15.039	1.190	3.570	3.58	0.001	0.834	PumpFV/Waterra	Well in good condition. Outer metal casing in good condition and capped. Field stick measured from centre stalk. One purge 1 litres. Well dry, no sample collected.
P03-09-2	25/Sep/11	14:26	2.924	31.38	3.610	10.8300	10.9	0.008	0.800	PumpFV/Waterra	Good clean yield.;Good condition.
P03-09-4	25/Sep/11	14:28	3.200	24.437	2.697	8.091	8.1	0.007	0.83	PumpFV/Waterra	Good condition;Good yield; clear water.
P03-09-6	25/Sep/11	14:30	3.28	19.59	2.070	6.21	6.3	0.004		PumpFV/Waterra	
P03-09-8	25/Sep/11	14:32	3.536	10.26	0.853	2.5590	2.6	0.004		PumpFV/Waterra	Pump assist; recharge for 10min; purge water was dirty; sample water was clean.
P03-09-9	25/Sep/11	14:34	3.83	8.488	0.590	1.7700	1.8	0.006		PumpFV/Waterra	Purge & sample water very dirty.
P05-01-1	23/Jun/11	10:38	1.501	26.264	3.140	9.42	9.5	0.007	0.533	Peristaltic PumpFV	WL taken on May 28/11 - frozen at 1.618m; WL taken on June 23/11 - 1.501m; Outer casing on a slight lean with cap; Inner pipe is in good condition with no cap; Labelled, GPS'd, and photo taken.
P05-01-1	12/Oct/11	12:04	1.621	26.35	3.140	9.4200	9.5	0.008	0.665	PumpFV/Waterra	Good clean yield; no assist needed.;Well in good condition.
P05-01-2	23/Jun/11	10:41	1.687	20.774	2.420	7.26	7.3	0.012	0.570	Peristaltic PumpFV	WL taken on May 28/11 - frozen at 1.727; WL taken on June 23/11 - 1.687m; Outer casing on a slight lean with cap; Inner pipe in good condition with no cap; Labelled, GPS'd, and photo taken.
P05-01-2	12/Oct/11	12:07	1.805	20.745	2.400	7.2000	7.25	0.008		PumpFV/Waterra	
P05-01-3	23/Jun/11	10:45	1.674	17.793	2.100	6.3000	6.5	0.004	0.600	PeristalticFV/Assist	WL taken on May 28/11 - frozen at 1.779m; WL taken on June 23/11 - 1.674m; Outer casing on a slight lean with cap; Inside pipe in good condition with no cap; Labelled, GPS'd, and photo taken; Purged 1.5 L - possible blockage in foot valve; Changed tubing and 2nd purge was fine; Purge water grey.
P05-01-3	12/Oct/11	12:10	1.860	17.770	2.020	6.0600	6.1	0.008		PumpFV/Waterra	Good yield; clear water.
P05-01-4	23/Jun/11	10:46	1.948	12.33	1.320	3.96	4	0.004	0.628	PeristalticFV/Assist	WL taken on May 28/11 - frozen at 1.874m; WL taken on June 23/11 - 1.948m; Outer casing on a slight lean and capped; Good inside pipe with no cap; Well labelled, GPS'd, and photo taken; Purge clear and purge very slow with assistance needed.
P05-01-4	12/Oct/11	12:13	1.959	12.332	1.310	3.930	3.95	0.003	0.665	PeristalticFV/Assist	Water brownish in color. Fairly good yield.;Well in good condition.Centre stalk measured for stick up. Outer metal casing in good condition and capped.
P05-01-5	23/Jun/11	10:48	2.107	6.552	0.565	1.6935	1.8	0.008	0.667	Peristaltic PumpFV	WL taken on May 28/11 - frozen at 2.137m; WL taken on June 23/11 - 2.107m; Outer casing on slight lean with cap; Inside pipe is in good condition and not capped; Labelled, GPS'd, and photo taken.Centre stalk is 1.158m
P05-01-5	12/Oct/11	12:16	2.224	6.550	0.549	1.647	1.65	0.014	0.665	Peristaltic PumpFV	Good clear yield. no pump assist needed.;Well in good condition.Centre stalk measured for stick up. Outer metal casing in good condition and capped.
P05-01-6	28/May/11	0:00								PumpFV/Waterra	WL taken on May 28/11 - frozen at 4.458m; WL taken on June 23/11 - frozen at 2.192m; WL taken on July 14/11 - frozen; WL taken on July 20/11 - frozen; Water and ice on bottom in outer casing on slight lean with cap and labelled; Well is GPS'd and photo taken.
P05-01-6	12/Oct/11	12:18	2.322	4.399	0.263	0.7890	0.79	0.013	0.665	Peristaltic PumpFV	Good yield of water. Water brown in color. No pump assist needed.;Well in good condition.Centre stalk measured for stick up. Outer metal casing in good condition and capped. blockage at 4.399 m.
P05-02	27/Jan/11	14:54	2.294	5.884	7.275	21.8250	42	0.233		PumpFV/Waterra	Sediment noted in sampleSediment noted in sample
P05-02	9/Jun/11	11:10	2.212	5.814	7.300	21.9000	22	0.092	1.412	PumpFV/Waterra	Good yield.;WL taken on June 09/11; Outer casing is in good condition and capped; Inner casing is in good condition but not capped as outer casing cap doesn't latch properly.
P05-02	23/Sep/11	15:04	2.284	5.835	7.190	21.5700	22	0.367	1.410	PumpFV/Waterra	PVC pipe good condition; outcasting in good condition; inner casing capped; picture taken.;Very good yield; clear water.
P05-03	27/Jan/11	13:37	4.635	7.964	6.747	20.2410	45	0.250		PumpFV/Waterra	Sediment noted in sampleSediment noted in sample
P05-03	9/Jun/11	11:59	4.392	7.981	7.275	21.8250	22	0.092	0.816	PumpFV/Waterra	Good yield.;WL taken on June 09/11; Outer casing is in good condition and is capped but cap doesn't latch properly; Inner casing is in good condition and not capped;
P05-03	24/Sep/11	11:09	4.531	7.892	6.810	20.4300	20	0.111	0.812	PumpFV/Waterra	Well in good condition; picture taken.
P05-04	28/Sep/11	13:44	3.159	7.025	7.830	23.4900	30	0.083	0.669	PumpFV/Waterra	Started out dirty then cleared up.;Well capped; good condition.
P09-C1	26/Jan/11	15:43	0.467							PumpFV/Waterra	Well frozen at 0.467m; No sample takenWell frozen at 0.467m; No sample taken
P09-C1	1/Jun/11	16:12	1.390	38.6	75.400	226.2	240	0.090	0.815	Pump/Assist	Severe well jacking; casing broken; could not get depth to bottom reading (used last year's). Angle of well = 72.0 degrees. Photo taken.
P09-C1	23/Sep/11	14:56	0.389		77.450	232.35	232	0.214	0.823	PumpFV/Waterra	Static line will not go further than 9.30m; cement mould lifted; picture taken; PVC pipe sitting 3cm out of outer casing; outer casing has a lid.
P09-C2	26/Jan/11	15:38	0.21							PumpFV/Waterra	Well frozen 0.210m; No sample takenWell frozen at 0.210m; No sample taken
P09-C2	1/Jun/11	16:28	0.53	65.53	131.800	395.4	405	0.060	0.764	Hydrolift	Slight well jacking. Angle of well = 68.7 degrees. Well recharge too slow for pump. Used hyrdolift for second purge.
P09-C2	25/Sep/11	9:45	0.559	65.515	131.660	394.98	395	0.050	1.602	PumpFV/Waterra	Well on 60 degree angle; extra PVC casing added on top to stop overflow; removed for purge.
P09-C3	26/Jan/11	15:29	1.501							PumpFV/Waterra	Well frozen at 1.501m; No sample takenWell frozen at 1.501m; No sample taken
P09-C3	23/Jun/11	11:18	1.285	52.179	103.000	309.0000	310	0.110	0.815	Hydrolift	WL taken June 02/11 - frozen at 2.26m with WL at 0.580m; WL taken on June 09/11 - frozen at 2.761m; WL taken June 23/11 and well thawed; Angled well - approx. 45 degree angle; Top-ground = 0.742m; Casing = 0.815m.Angled well - approx. 45 degree angle; Top -ground = 0.742m; Casing = 0.815m.
P09-C3	24/Sep/11	11:12	1.527	52.2	102.710	308.13	309	0.114	0.427	PumpFV/Waterra	Good yield.;Well in good condition; picture taken.
P09-ETA1	18/Sep/11	10:43	11.37	33.315	44.500	133.5000	135	0.030	0.976	PumpFV/Waterra	Well on approx 60 degree angleFirst purge performed on Sept 18- 93 L purged; second purge performed on Sept 18- 42 L purged.
P09-ETA2	8/Jun/11	15:10	10.807	18.467	15.527	46.5810	47	0.110	0.712	Pump/Assist	Dirty purge - sediment in purge. Dirty sample - sediment in sample.;Outer casing in good condition. Inner pipe in good condition. Centrifugal pump w/ assist.
P09-ETA2	18/Sep/11	10:47	12.776	18.424	11.400	34.2000	37	0.036	0.68	PumpFV/Waterra	

Denison Environmental Services

Table B-5: 2011 Rose Creek Drainage Water Quality
Groundwater Well Parameters

Faro Mine Closure

Site	Date	WL Time	Water Level from TOC (WL-m)	Depth to Bottom from TOC (DTB-m)	Well Volume (L)	Target Purge Volume (L)	Total Purge Volume (L)	Purge Rate (L/s)	Stick-up (m)	Purge Method	Comments
P09-SIS1	8/Jun/11	10:30	5.128	6.687	3.160	9.4800	9.5	0.023	1.106	PumpFV/Waterra	WL taken on June 08/11; 1st purge on June 08/11 - dry at 3L; 2nd purge on June 08/11 - dry at 3L; Outer casing is capped but wobbly with base lifting; Inner casing is in good condition but not capped.
P09-SIS1	16/Jul/11	15:47	5.282	6.661	2.795	8.3850	8.75	0.010	1.103	Pump/Assist	Well good condition. Labelled & capped. Outer casing wobbly but secure in ground.
P09-SIS1	16/Sep/11	13:55	5.189	6.755	3.274	9.822	9.6	0.016	0.973	PumpFV/Waterra	
P09-SIS1	30/Nov/11	9:00	5.306	6.565	2.550	7.65	5	0.017	0.963	WaterraFV	
P09-SIS2	7/Jun/11	16:43	4.331	6.319	4.030	12.09	12.1	0.040	1.028	WaterraFV	Dirty purge. Dirty sample - sediment in sample.;Outer Casing in good condition. Inner tube in good condition.
P09-SIS2	16/Jul/11	16:06	4.298	6.318	4.095	12.2850	13	0.108	1.018	PumpFV/Waterra	Dirty sample with lots of sediment.;WL taken on July 16/11; Well is in good condition being capped and labelled; Levelogger present in well; Purge dirty with lots of sediment.
P09-SIS2	7/Sep/11	16:24	4.421	6.318	3.725	11.1741	11.3	0.038	1.012	PumpFV/Waterra	Dirty sample; sediment in sample; good recharge.;Outer casing in good condition-capped; inner casing in good condition-capped; labelled; data logger in well; stick up to top of PVC pipe; photo taken; dirty purge.
P09-SIS2	29/Nov/11	9:48	4.419	6.263	3.750	11.25	12.5	0.035	0.987	WaterraFV	
P09-SIS3	8/Jun/11	10:49	4.159	4.598	0.890	2.6700	2.7	0.020	1.024	WaterraFV	Dirty purge. Dirty sample.;Outer casing in good condition - metal cap doesn't fit correctly. Inner pipe in good condition.
P09-SIS3	17/Jul/11	10:05	4.056	4.611	1.125	3.3750	3.5	0.012	1.021	WaterraFV	Dirty sample.;WL taken on July 17/11; Well is in good condition with outer casing being capped and labelled; Levelogger present in well; Wobbly outer case; Dirty purge.
P09-SIS3	7/Sep/11	15:44	4.201	4.622	1.964	5.8905	5.9	0.020	0.999	PumpFV/Waterra	Dirty sample; good recharge.;outer casing in good condition-capped; inner casing in good condition-cap sitting on top; labelled; stick up to top of PVC pipe; photo taken; data logger in well; dirty purge.
P09-SIS3	29/Nov/11	11:13	4.171	4.555	0.780	2.34	2.5	0.021	0.97	WaterraFV	
P09-SIS4	6/Jun/11	14:20	4.13	4.41	0.560	1.6800	2	0.002	0.906	WaterraFV	Well in good condition.
P09-SIS4	17/Jul/11	10:22	3.858	4.414	1.127	3.381	3.55	0.008	0.921	WaterraFV	Minimal but fast recharge.;WL taken on July 17/11; Well is in good condition with outer casing being capped but not labelled; Levelogger present in well; Outer casing is wobbly.
P09-SIS4	7/Sep/11	15:20	4.209	4.438	0.450	1.3488	1.625	0.013	0.919	PumpFV/Waterra	Outer well in good condition-capped; inner well in good condition-cap sitting on pipe; not labelled; replace tubing; data logger in well; stick up to top of PVC pipe; photo taken; dirty purge.;Well purged dry
P09-SIS4	29/Nov/11	11:40	4.272	4.400	0.260	0.78			0.887	PumpFV/Waterra	No sample collected. Not enough water for sample.;not enough water for or sample.no sample collected. Not enough water for sample or purge.
P09-SIS5	6/Jun/11	14:07	3.78	4.53	1.560	4.68	4.52	0.003	0.955	WaterraFV	Well in good condition. Insufficient recaharge for sample.
P09-SIS5	7/Sep/11	15:03	3.073	4.613	1.742	5.2248	6.1	0.034	0.997	PumpFV/Waterra	Outer well in good condition-capped; labelled; inner well in good condition-not capped; photo taken; replace tubing; dirty purge; stick up to top of PVC pipe.
P09-SIS6	18/Sep/11	14:50	3.538	6.207	5.400	16.2	16.2	0.038	0.929	PumpFV/Waterra	Not part of the appendix to sample but sampled additionallly.
P96-6	9/Jun/11	9:55	9.025	18.375	18.952	56.8560	58	0.065	0.707	Pump/Assist	Good yield;WL taken on June 09/11; Outer casing is in good condition and capped; Inner casing is broken off at ground level and not capped; Deep well that when pumping needs assistance.
P96-6	28/Sep/11	14:57	12.375	18.321	16.940	50.8200	53	0.058	0.69	PumpFV/Waterra	Metal casing capped; PVC pipe broken.;Purge clear.
P96-7	8/Jun/11	11:26	8.652	9.853	2.434	7.302	7.5	0.010	0.655	Pump/Assist	WL taken on June 8/11; 1st purge on June 8/11 - dry at 5.5L; 2nd purge on June 8/11 - dry at 1L left to recharge; 3rd purge on June 9/11 - dry at 1L; Outer casing is in good condition - metal cap doesn't fit correctly; Inner pipe is in good conditon; Base of outere casing is heaved and slightly angled - photo taken; Dirty purge - sediment in purge.
P96-7	10/Sep/11	11:06	4.586	9.938	10.509	31.5258	32	0.089	0.68	PumpFV/Waterra	Outer casing in good condition-cap; inner casing in good condition-cap; labelled; cement pad heaved; stick up to top of PVC pipe.;Sediment in sample.
P96-8A	8/Jun/11	14:18	2.433	9.406	14.134	42.402	43	0.180	0.802	Pump/Assist	Clear purge - sediment in purge.;Outer casing in good condition - cement base heaved. Inner pipe in good condition. Centrifugal pump.;Top of pipe.
P96-8A	10/Sep/11	9:24	2.549	9.357	13.368	40.1025	41	0.017	0.610	PumpFV/Waterra	Outer casing in good condition-cap; inner casing in good condition-cap; labelled; tubing needs replacing; cement pad heaved; stick up to top of PVC pipe; dirty purge.
P96-8B	8/Jun/11	14:20	2.524	4.865	4.747	14.241	15	0.130	0.802	Pump/Assist	Clear purge - sediment in purge.;Outer casing in good condition - cement base heaved. Inner pipe in good condition. Centrifugal pump.
P96-8B	10/Sep/11	9:26	2.648	4.814	4.253	12.7587	13	0.072	0.688	PumpFV/Waterra	Outer casing in good condition-cap; inner casing in good condition-cap; labelled; cement pad heaved; stick up to top of PVC pipe.
P96-9A	10/Jun/11	16:25	5.619	9.39	7.640	22.92	23	0.063	0.975	PumpFV/Waterra	WL taken on June 10/11; Well inner and outer casing is in good condition; Well capped.
P96-9A	4/Oct/11	14:58	5.811	9.328	7.129	21.3869	22	0.061	0.841	PumpFV/Waterra	Clear sample.;Dirty purge.;Outer well in good condition; Inner well in good condition; Inner well protrudes above outer well; Base heaved; Labelled.
S1A	7/Jun/11	14:13	4.754	12.302	15.300	45.9	46	0.130	0.763	Pump/Assist	Clear purge and dirty sample.;Well broken.
S1A	15/Sep/11	14:50	4.822	12.454	15.470	46.4100	50	0.083	0.693	PumpFV/Waterra	Well casing is broken; Field stick up measured to top of broken casing.
S1B	7/Jun/11	14:44		5.188					1.195	NA	No Sample - Well Dry;Well in Good Condition. Well Dry @ 5.188 m.
S1B	15/Sep/11	14:53		5.526					1.199	PumpFV/Waterra	Well is dry;Well is dry.
S2A	7/Jun/11	14:56	5.916	12.515	13.270	39.81	40	0.030	1.314	Pump/Assist	Clear purge and sample.;Well in good condition - slighlty angled - wobbly.
S2A	10/Sep/11	15:52	5.948	12.547	12.957	38.8713	39	0.019	1.299	PumpFV/Waterra	Outer well in good condition-cap; labelled; stick up to top of PVC pipe; dirty purge.First purge performed on Sept 10- 16L purged; second purge performed on Sept 10- 17L purged; third purge performed on Sept 10- 6L purged.
S2B	7/Jun/11	15:24	5.14	7.009	3.788	11.364	12	0.040	0.580	Pump/Assist	Dirty sample - sediment in sample.;Well in good condition - slighlty angled.
S2B	10/Sep/11	15:53	5.163	7.706	4.993	14.9793	14.9793	0.031	0.578	PumpFV/Waterra	Outer well in good condition-cap; labelled; stick up to top of PVC pipe; dirty purge.
SRK04-3A	17/Sep/11	17:03	6.13	12.304	12.500	37.5	39	0.065		PumpFV/Waterra	Good yield.;Inner and outer casing of well is in good condition and capped; Field stick-up not measured.Field stick-up not measured.
SRK05-ETA-BR1	17/Sep/11	16:40	6.995	13.233	3.160	9.48	10	0.033	0.809	WaterraFV	Good yield.;Well has not outer casing and inner casing is in good condition and capped.
SRK05-ETA-BR2	17/Sep/11	16:30	5.301	19.305	7.100	21.3000	25	0.104	0.568	Pump/Assist	Good yield.;Well has no outer casing but is in good condition and capped.
SRK05-SP1A	10/Sep/11	14:19	6.872	19.901	25.582	76.7472	77	0.061	0.453	PumpFV/Waterra	Outer well in good condition-cap; inner well in good condition- cap; labelled; stick up to top of PVC pipe.;Sediment in sample.
SRK05-SP1B	10/Sep/11	13:53	7.069	13.15	11.940	35.82	36	0.086	0.715	PumpFV/Waterra	Dirty sample; sediment in sample.;Outer well in good condition-cap; inner well in good condition-cap; labelled; stick up to top of PVC pipe; dirty purge.
SRK05-SP2	10/Sep/11	12:29	1.841	11.574	19.111	57.3321	60	0.250	0.444	PumpFV/Waterra	Dirty sample; sediment in sample.;Outer casing in good condition-cap; inner casing in good condition-cap; labelled; stick up to PVC pipe; dirty purge.
SRK05-SP3A	10/Sep/11	14:51	4.801	23.810	31.324	93.9723	112	0.060	0.871	PumpFV/Waterra	Outer casing in good condition-cap; inner casing in good condition-cap; labelled; stick up to top of PVC pipe.
SRK05-SP3B	10/Sep/11	14:56	3.851	13.113	18.186	54.5577	55	0.076	0.662	PumpFV/Waterra	Outer casing in good condition-cap; inner casing in good condition-cap; labelled; stick up to top of PVC pipe.
SRK05-SP4A	6/Jun/11	14:29	4.660	22.500	36.160	108.4800	110	0.100	0.735	Pump/Assist	Pipe broken inside casing at ground level.;Water clear.
SRK05-SP4A	15/Sep/11	15:45	4.646	22.247	35.600	106.8000	113	0.111	0.574	PumpFV/Waterra	Inner PVC casing is broken at ground level; WL, DTB, and Field Stick-up measured at the lowest point of opening on outer metal casing.
SRK05-SP4B	6/Jun/11	0:00								PumpFV/Waterra	WL taken on June 6/11 - frozen at 2.04m; WL taken on June 9/11 - frozen at 2.216m; WL taken on June 28/11 - frozen at 2.05m; WL taken on July 12/11 - frozen at 2.514m; WL taken on July 17/11 - frozen at 2.633m; WL taken on July 20/11 - frozen at 2.723m.
SRK05-SP4B	15/Sep/11	15:48	4.117	4.713	1.200	3.6000	4.5	0.003	0.86	WaterraFV	WL taken on Sept. 15/11 and 1st purge performed - dry at 3.5L; 2nd ourge performed on Sept. 16/11; Well is capped and is in good condition.
SRK05-SP5	7/Jun/11	15:55	7.949	14.869	14.027	42.081	43	0.080	1.081	Pump/Assist	Clear purge. Dirty sample - sediment in sample.;Well in godd condition but wobbles.
SRK05-SP5	7/Sep/11	16:35	8.045	14.811	13.710	41.1300	41	0.057	1.076	PumpFV/Waterra	Good yield; water clear.;Good; capped; picture taken; well wobbly.
SRK05-SP6	10/Sep/11	11:40		11.82					0.957	PumpFV/Waterra	Outer casing in good condition-cap; inner casing in good condition-cap; labelled; stick up to top of PVC pipe; dry.
SRK08-P10A	9/Jun/11	14:00	11.472	13.72	4.557	13.671	14	0.019	0.694	PumpFV/Waterra	Dirty purge and sample.;WL taken on June 09/11; 1st purge on June 09/11 - dry at 8L; 2nd purge on June 09/11 - 6L; Outer casing is capped and is in good condition; Inner well is in good condition as capped.
SRK08-P10A	17/Sep/11	14:30	9.931	13.75	7.740	23.22	24	0.040	0.699	PumpFV/Waterra	Fairly good water volume; Purge and sample water brownish/grey in colour. Well is capped and is in good condition.well in good condition. good water volume, water grey in color.
SRK08-P11A	8/Jun/11	16:14	0.736	12.511	23.868	71.604	72	0.200	0.690	Pump/Assist	Clear purge. Dirty sample. Oil/grease sheen in guardhouse creek beside wells.;Outer casing in good condition - bentonite @ base showing. Inner pipe in good ocndition - bentonite around pipe. Centrifugal pump.
SRK08-P11A	17/Sep/11	14:12	0.739	12.516	23.870	71.61	74	0.206	0.680	PumpFV/Waterra	Good yield.;Well is capped and is in good condition.well in good condition. Good yield.
SRK08-P11B	8/Jun/11	16:15	0.882	6.699	11.791	35.3730	36	0.300	0.790	Pump/Assist	Clear purge. Dirty sample - sediment in sample TSS bottle but absent in duplicate TSS bottle.;Outer casing in good condition - bentonite @ base showing. Inner pipe in good condition - bentonite around pipe. Centrifugal pump.

Table B-5: 2011 Rose Creek Drainage Water Quality Groundwater Well Parameters

Site	Date	WL Time	Water Level from TOC (WL-m)	Depth to Bottom from TOC (DTB-m)	Well Volume (L)	Target Purge Volume (L)	Total Purge Volume (L)	Purge Rate (L/s)	Stick-up (m)	Purge Method	Comments
SRK08-P11B	17/Sep/11	14:10	0.911	6.695	35.170	105.5100	36	0.300	0.770	PumpFV/Waterra	Good yield.;Well is in good condition and capped.well in good condition. Good yield.
SRK08-P12A	29/Sep/11	14:07	2.148	8.386	12.600	37.8	45	0.053	0.694	PumpFV/Waterra	Dirty purge; good yield.;Good condition
SRK08-P12B	29/Sep/11	14:08	2.139	12.693	21.390	64.1700	75	0.138	0.707	PumpFV/Waterra	Dirty purge; good yield.;Good condition; metal casing.
SRK08-P9	8/Jun/11	13:44	5.681	6.857	2.384	7.152	7.25	0.009	0.780	WaterraFV	WL taken June 08/11; 1st purge 5.55 L - dry; 2nd purge - June 09/11 - 0.840 - dry; 3rd purge June 15/11 - dry at 0.860; Insufficient amount for sample; Casing broken and needs repair. Photo taken. Pebbly bottom - kept clogging the foot valve.
SRK08-P9	10/Sep/11	10:41	4.161	6.192	3.988	11.9634	12.04	0.029	0.780	WaterraFV	Outer casing is broken at 0.099; Well is capped and labelled; Field stick-up taken to top of PVC casing; WL taken on Sept. 10/11 and 1st purge performed - dry at 11.7L; 2nd purge performed Sept. 17/11.
SRK08-SBR1	7/Sep/11	17:00							0.800	PumpFV/Waterra	Outer casing in good condition-capped; inner casing in good condition; no cap; well slightly angled; labelled; photo taken; stick up to top of PVC pipe; bentonite blockage at 1.222m.
SRK08-SBR2	13/Oct/11	13:25	7.054	18.865	23.940	71.8200	71.82	0.052	0.620	Pump/Assist	Well at a 45 degree angle. Well capped, outer metal casing dented, makes it difficult to attached the cap. Oct 13 - First purge at 8 litres, water very dirty, rust in color. 2nd purge Oct 17 - 64 litres, water clear.
SRK08-SBR3	10/Sep/11	11:48	11.674	13.243	3.081	9.2421	9.4	0.031	0.965	PumpFV/Waterra	Outer casing in good condition-cap; inner casing in good condition-cap; labelled; stick up to top of PVC pipe.;Sediment in sample.
SRK08-SBR4	14/Sep/11	16:38	8.568	21.356	25.920	77.7600	80	0.044	0.775	PumpFV/Waterra	Well is capped and is in good condition.
SRK08-SP7A	6/Jun/11	16:05	2.98	17.73	29.900	89.7000	90	0.090	0.858	Pump/Assist	Water Clear.;Well is in good condition; outer casing covers the inner casing.
SRK08-SP7A	16/Jul/11	14:32	2.965	17.727	29.923	89.769	91	0.169	0.881	PumpFV/Waterra	Good yield.;WL taken on July 16/11; Well is in good condition with outer casing being capped and labelled; Bentonite base is very water-logged and mushy and a hole is developing in ground beside well; Very soft bottom makes accurate DTB measurement difficult.
SRK08-SP7A	7/Sep/11	14:36	3.12	17.72	30.000	90.0000	92	0.170		PumpFV/Waterra	Good yield.;Well in good condition; picture taken.
SRK08-SP7A	29/Nov/11	14:25	3.081	17.626	30.000	90	95	0.053	0.852	WaterraFV	
SRK08-SP7B	6/Jun/11	16:07	2.97	8.51	11.220	33.66	35	0.290	0.891	Pump/Assist	Well is in good condition; outer casing covers well.
SRK08-SP7B	16/Jul/11	14:36	2.943	8.545	11.355	34.065	36	0.300	0.918	PumpFV/Waterra	Good yield.;WL taken on JUly 16/11; Well is in good condition with outer casing being capped and labelled; Bentonite base is water-logged and mushy.
SRK08-SP7B	7/Sep/11	14:41	3.098	8.571	11.090	33.27	34	0.189		PumpFV/Waterra	Good yield; clear water.;Well in good condition; picture taken.
SRK08-SP7B	29/Nov/11	14:00	3.093	8.524	10.900	32.7	33	0.138	0.882	WaterraFV	
SRK08-SP8A	6/Jun/11	15:15	1.580	11.570	20.200	60.6000	61	0.250	0.880	Pump/Assist	Clear water.;Well is in good condition. Capped.
SRK08-SP8A	7/Sep/11	15:46	2.697	11.565	17.980	53.9400	55	0.229	0.890	PumpFV/Waterra	Good yield; clear water.;Well in good condition; picture taken.
SRK08-SP8B	6/Jun/11	15:14	1.66	7.01	10.800	32.4	40	0.170	0.919	Pump/Assist	Dirty water; milky looking.;Well is in good condition. Outcasing lid.
SRK08-SP8B	7/Sep/11	15:50	1.912	7.040	10.390	31.1700	34	0.283	0.996	PumpFV/Waterra	Good yield; some sediment.;Well in good condition; picture taken; capped; casing shorter than PVC pipe well.
TH86-17	17/Sep/11	11:48	8.191	14.99	23.300	69.9	70	0.078	1.035	WaterraFV	Good yeild; Clear water during purge and then water turned red while collecting sample.;Well is labelled, capped and is in good condition.
TH86-2	17/Sep/11	11:19	1.696	11.532	19.930	59.7900	60	0.250	0.465	PumpFV/Waterra	Good yield; Water rusty coloured.;Well is just a steel pipe that is rusty but is in good condition; Pipe is not capped and a latex glove is being used to cover top of pipe; Waterra tubing needs to be changed with the next sampling event.
TH86-5	17/Sep/11	11:38	8.654	27.403	38.000	114.0000	120	0.091	1.222	PumpFV/Waterra	Good yield; Purge and sample water is black.;Well is capped and is in good condition.
X16A	1/Feb/11	13:51	3.886	5.209	2.682	8.0460	29	0.242		PumpFV/Waterra	
X16A	2/Jun/11	14:49	3.224	5.375	2.450	7.35	15	0.130	0.827	Pump/Assist	
X16A	25/Sep/11	10:14	3.617	5.319	1.940	5.8200	6	0.050	0.829	PumpFV/Waterra	Good purge volume; clear water.;Well in good condition; no outer casing; both wells covered with 45 gallon drum; 1.5 inch diameter well.
X16B	1/Feb/11	13:47	4.002	28.86	50.383	151.149	172	0.074		PumpFV/Waterra	
X16B	2/Jun/11	14:56	3.318	29.08	39.160	117.48	122	0.140	0.998	Pump/Assist	
X16B	25/Sep/11	10:16	3.73	29.128	115.810	347.43	348	0.089	0.999	PumpFV/Waterra	Clear water; Assist the pump while purging.;Well in good condition; capped; both A & B covered with 45 gallon drum; 3 inch diameter well.First purge performed on Sept 25- 210L purged; Second purge performed on Sept 25- 138L purged.
X17A	2/Feb/11	15:05	2.454	6.042	7.271	21.813	42	0.050		PumpFV/Waterra	
X17A	31/May/11	13:37	2.171	6.01	7.780	23.34	24	0.130	0.710	PumpFV/Waterra	Clear sample and purge, slightly dirty.;Outer pipe good. Soft bottom. No cap - 45 G drum over top. Labelled.
X17A	26/Sep/11	9:29	2.904	6.040	3.600	10.8000	15	0.063	0.722	PumpFV/Waterra	Clean purge;Well not capped
X17B	2/Feb/11	15:08	2.940	22.910	161.901	485.7030	506	0.116		PumpFV/Waterra	
X17B	31/May/11	15:17	2.635	24.906	180.560	541.68	542	0.210	1.249	Pump/Assist	Good, clear purge.;Soft Bottom. Outer Pipe good. Capped. Labelled. Tubing lost down well. Next time bring new tubing.
X17B	26/Sep/11	9:36	2.725	23.638	95.400	286.2000	286	0.103	1.244	PumpFV/Waterra	Clean purge;Needs watera tubing
X18A	2/Feb/11	16:54	4.598	9.461	12.273	36.8190	9	0.050		PumpFV/Waterra	1st purge performed February 2/11 - dry at 9L; No recharge - no sample taken.1st purge performed February 2/11 - dry at 9L; No recharge - no sample taken
X18A	2/Jun/11	11:45	4.006	9.334	10.800	32.4000	33	0.020	0.619	PumpFV/Waterra	
X18A	23/Sep/11	13:45	4.265	9.334	10.270	30.81	31	0.057	0.619	PumpFV/Waterra	PVC pipe condition; top of pipe chipped; capped; picture taken.;Slow purge; clear water; 10 min breaks for recharge of well.
X18B	2/Feb/11	16:56	5.336	10.654	8.360	25.0800	46	0.153		PumpFV/Waterra	
X18B	2/Jun/11	11:46	3.781	10.644	13.900	41.7	45	0.130	0.624	Pump/Assist	
X18B	23/Sep/11	13:48	4.011	10.648	13.450	40.35	41	0.136	0.610	PumpFV/Waterra	Good yield; water clear.;PVC pipe in good condition; no outer casing; capped; picture taken.
X21-96A	9/Jun/11	14:02	4.75	15.755	5.580	16.74	18	0.027	0.641	PumpFV/Waterra	Dirty purge and clear sample.;WL taken on June 09/11; Outer casing is in good condition and capped; Inner casing is in good condition and is capped; Well is 1" diameter and has brass foot valve.
X21-96A	13/Oct/11	11:36	4.81	15.670	5.500	16.5	16.51	0.017	0.631	PumpFV/Waterra	Outer metal casing in good condition and capped. Well capped and in good condition. Purge water was dirty, grey in color.;sample dirty, grey in color.
X21-96B	9/Jun/11	14:08	4.769	9.015	8.607	25.821	27	0.056	0.690	PumpFV/Waterra	Good yield.;WL taken on June 09/11; Outer casing is capped and is in good conditon.
X21-96B	13/Oct/11	11:32	4.810	8.950	8.390	25.1700	25.17	0.017	0.690	PumpFV/Waterra	Outer metal casing in good condition and capped. Well in good condition and capped. Purge water clear.;Sample water clear.
X24-96D	2/Jun/11	16:03	4.850	28.630	48.200	144.6000	155	0.080	0.835	PumpFV/Waterra	
X24-96D	28/Sep/11	11:48	5.42	28.49	46.760	140.28	145	0.101	0.858	PumpFV/Waterra	Well capped; PVC pipe; sticks out of metal casing.
X25-96A	1/Feb/11	11:40	3.222	9.488	12.619	37.8570	58	0.138		PumpFV/Waterra	
X25-96A	2/Jun/11	15:43	4.205	9.48	10.690	32.0700	45	0.150	0.416	PumpFV/Waterra	
X25-96A	28/Sep/11	10:14	4.815	9.47	9.435	28.3050	30	0.016	0.43	PumpFV/Waterra	Clean purge.;Well capped; good condition.
X25-96B	1/Feb/11	11:38	3.126	19.768	33.731	101.193	135	0.141		PumpFV/Waterra	
X25-96B	2/Jun/11	15:44	4.08	19.89	32.050	96.1500	105	0.150	0.416	PumpFV/Waterra	
X25-96B	28/Sep/11	10:16	4.656	19.697	30.488	91.464	105	0.175	0.416	PumpFV/Waterra	Clean purge.;Well capped; good condition.

Figure B-1: Sulphate at FCO, FAROCR, and R7

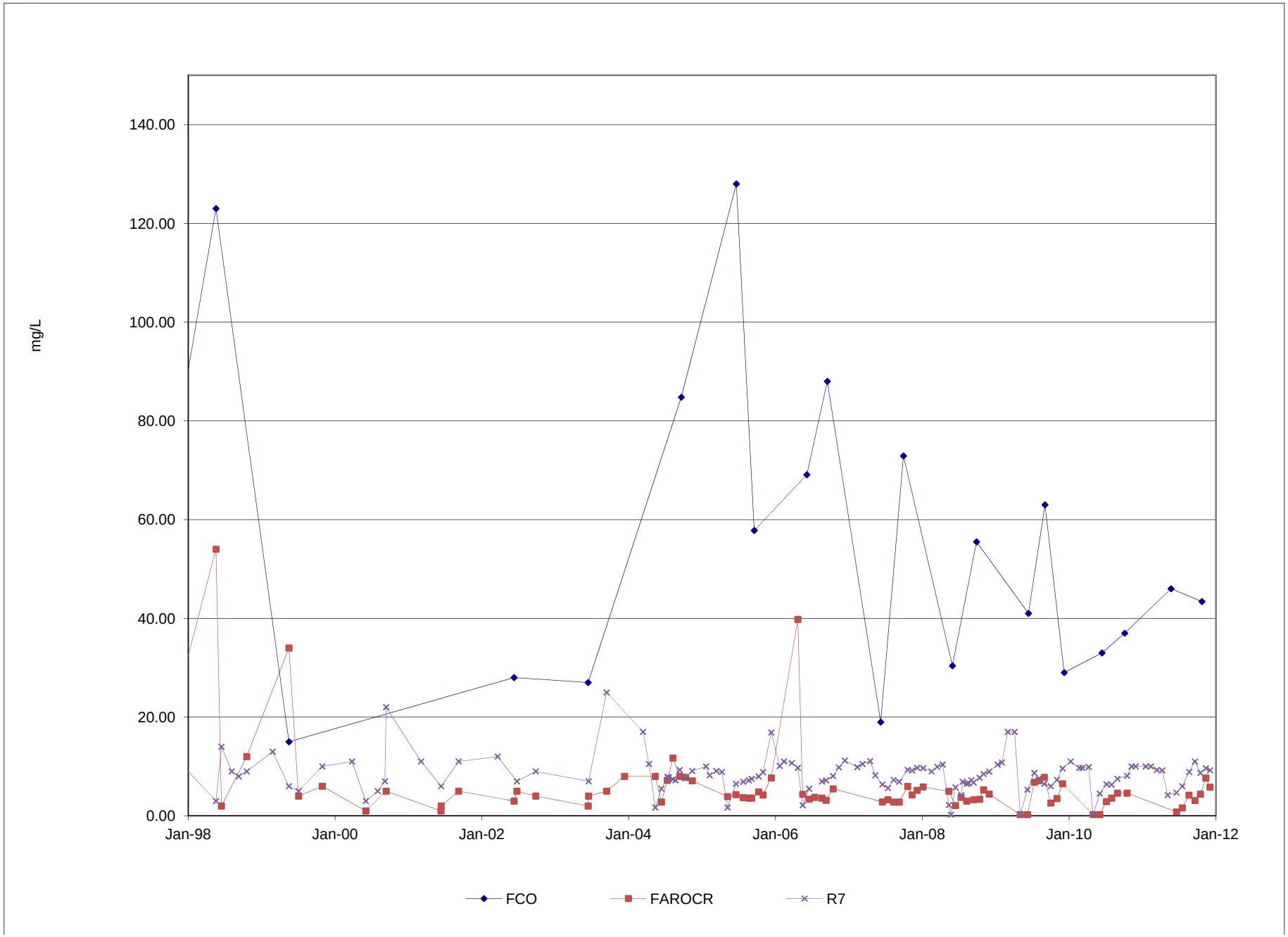


Figure B-2: Zinc (Total) at FCO, FAROCR, and R7

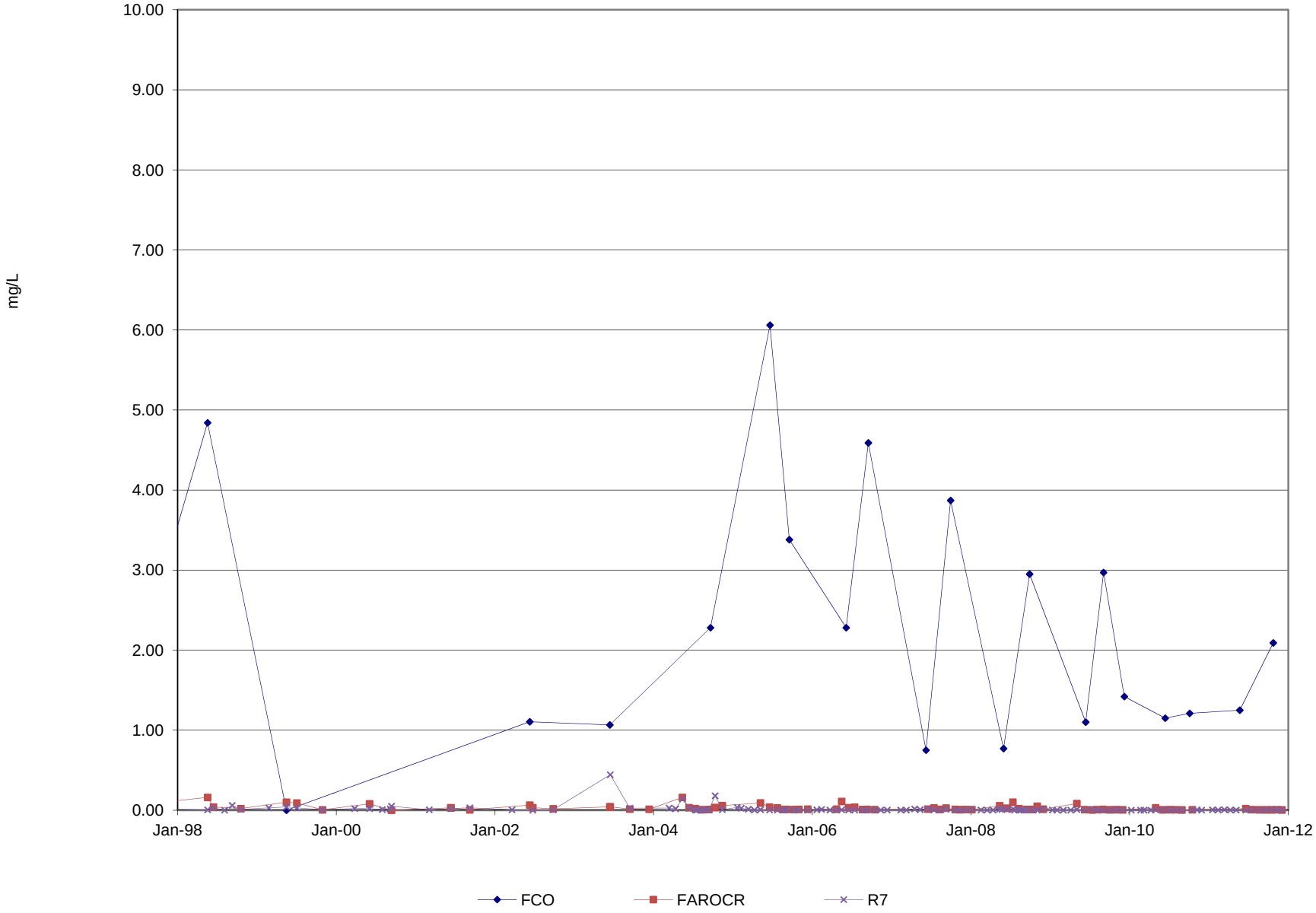


Figure B-3: Copper (Total) at FCO, FAROCR, and R7

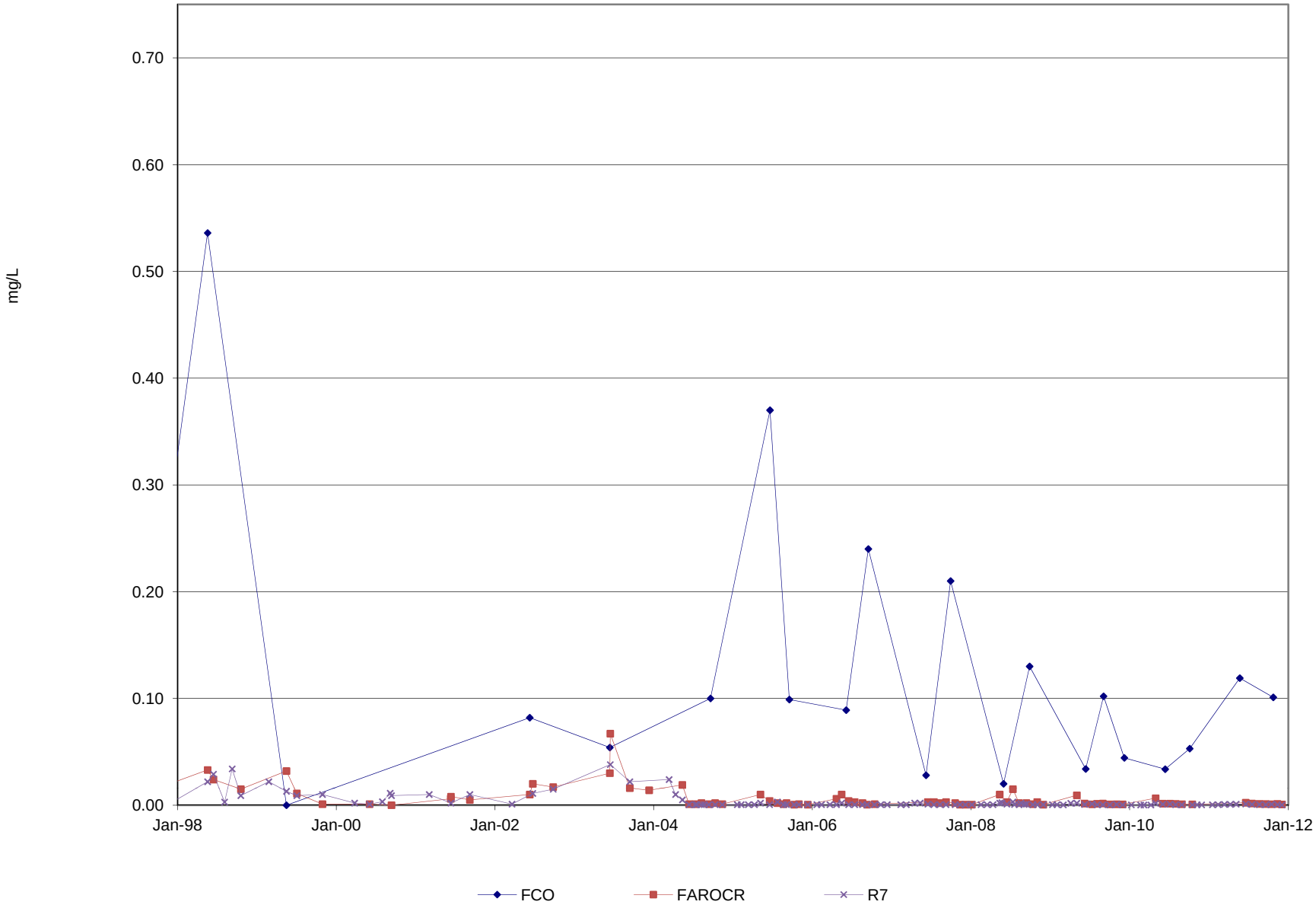


Figure B-4: Cadmium (Total) at FCO, FAROCR, and R7

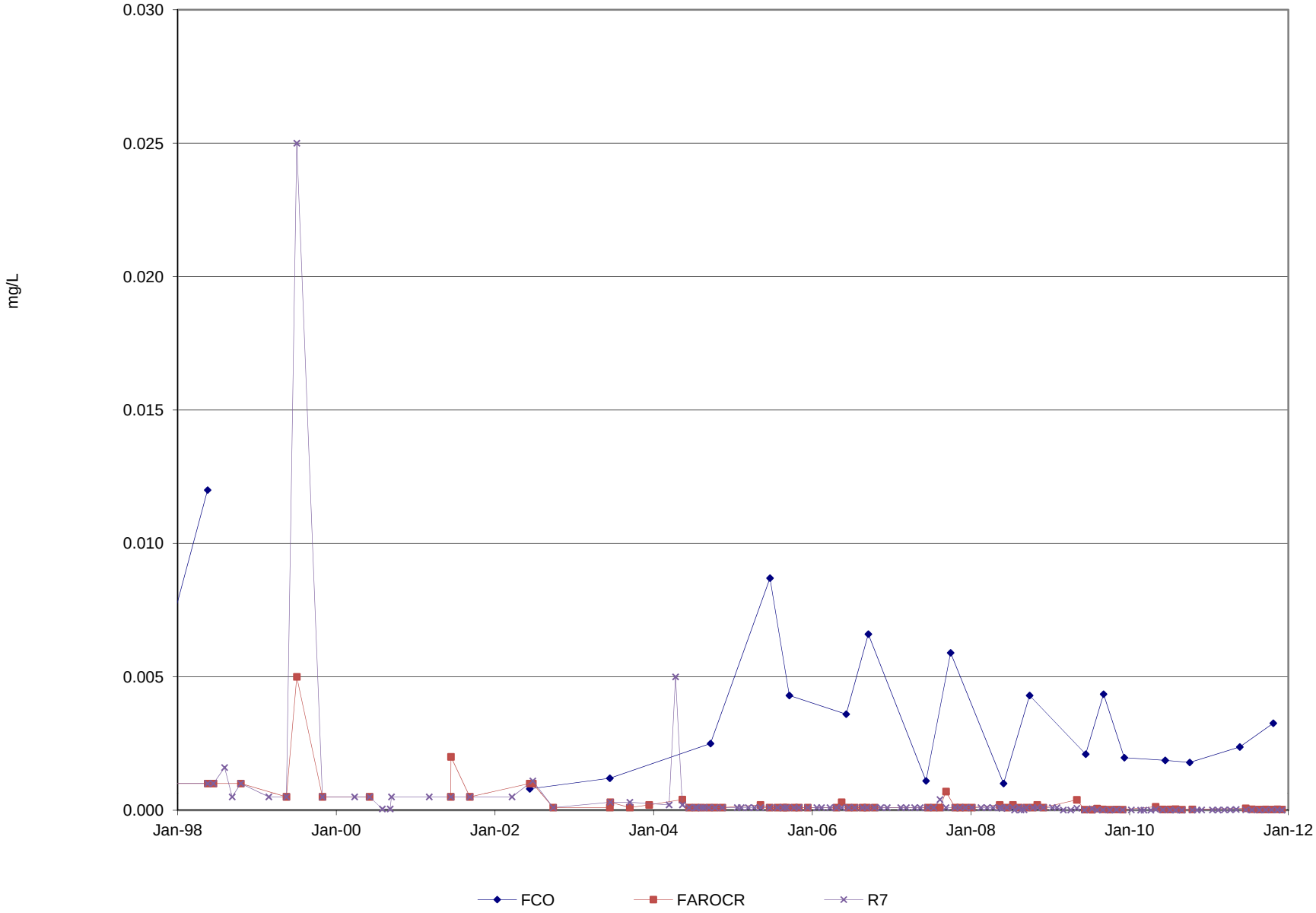


Figure B-5: Sulphate in the Faro Pit, Faro Pit Seeps, Zone II Pit and S-Wells Trench Interception

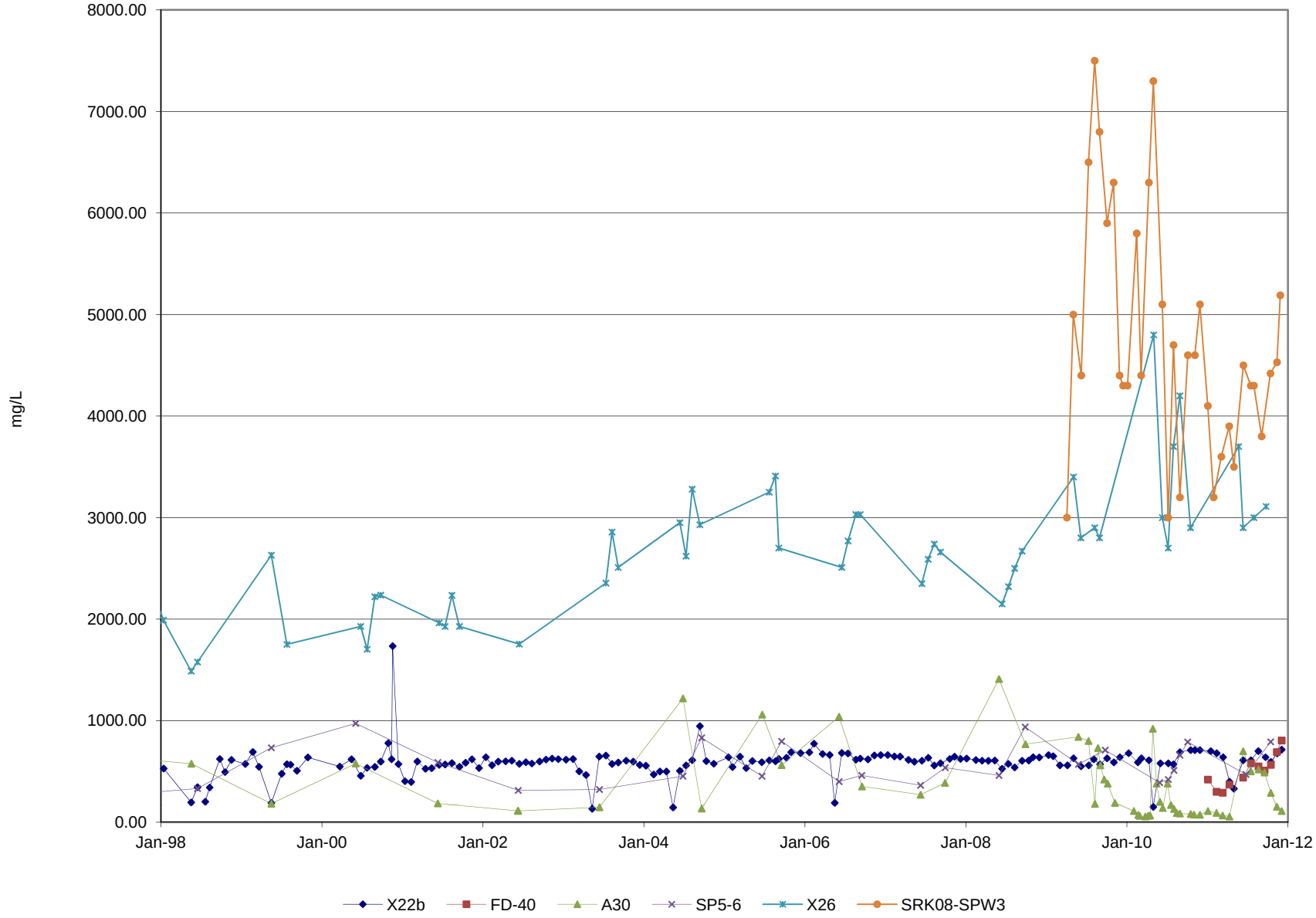


Figure B-6: Zinc (Total and Dissolved) in the Faro Pit (X22b)

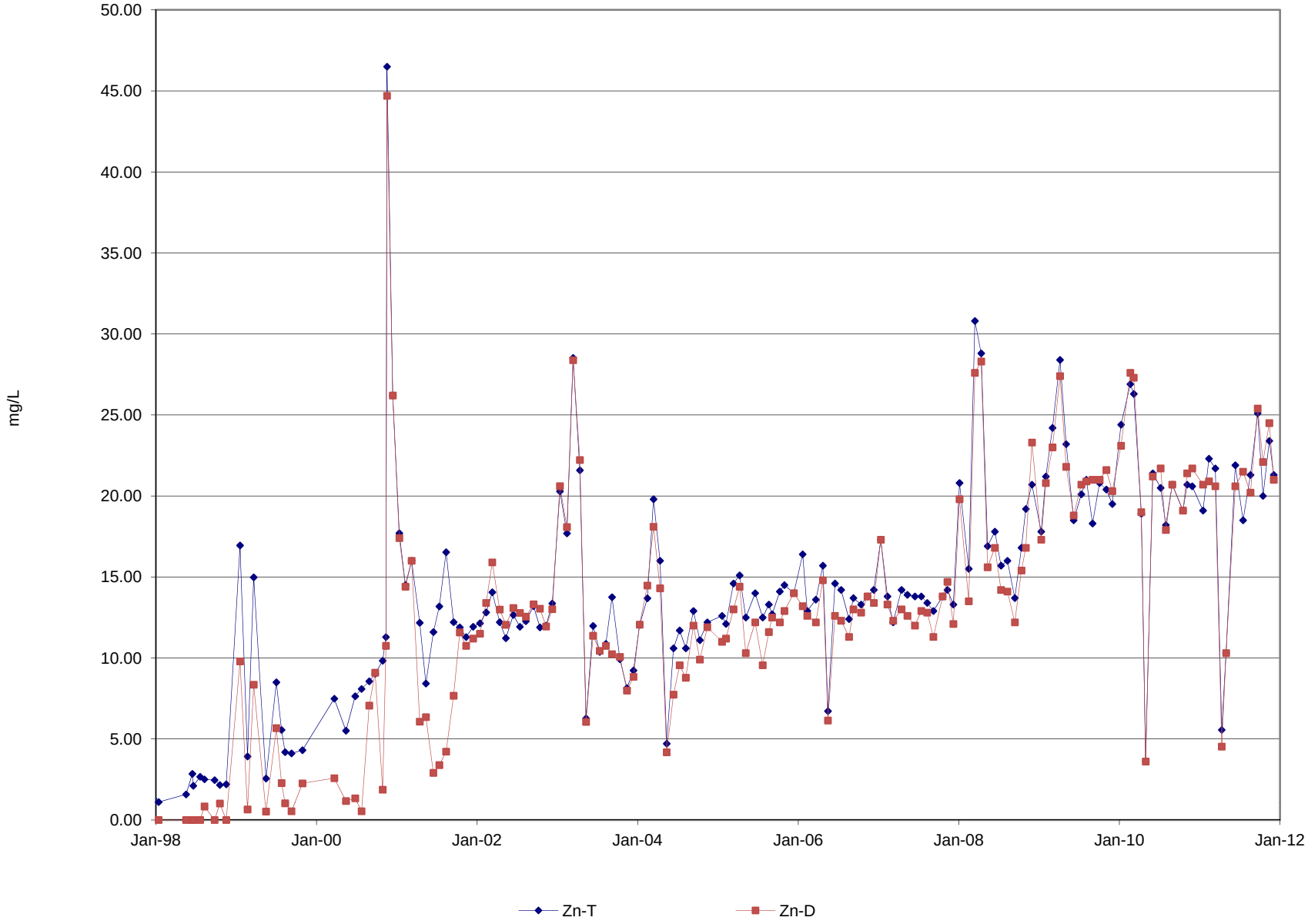


Figure B-7: Zinc (Dissolved) in the Faro Pit, Faro Pit Seeps, Zone II Pit and S-Wells Trench Interception

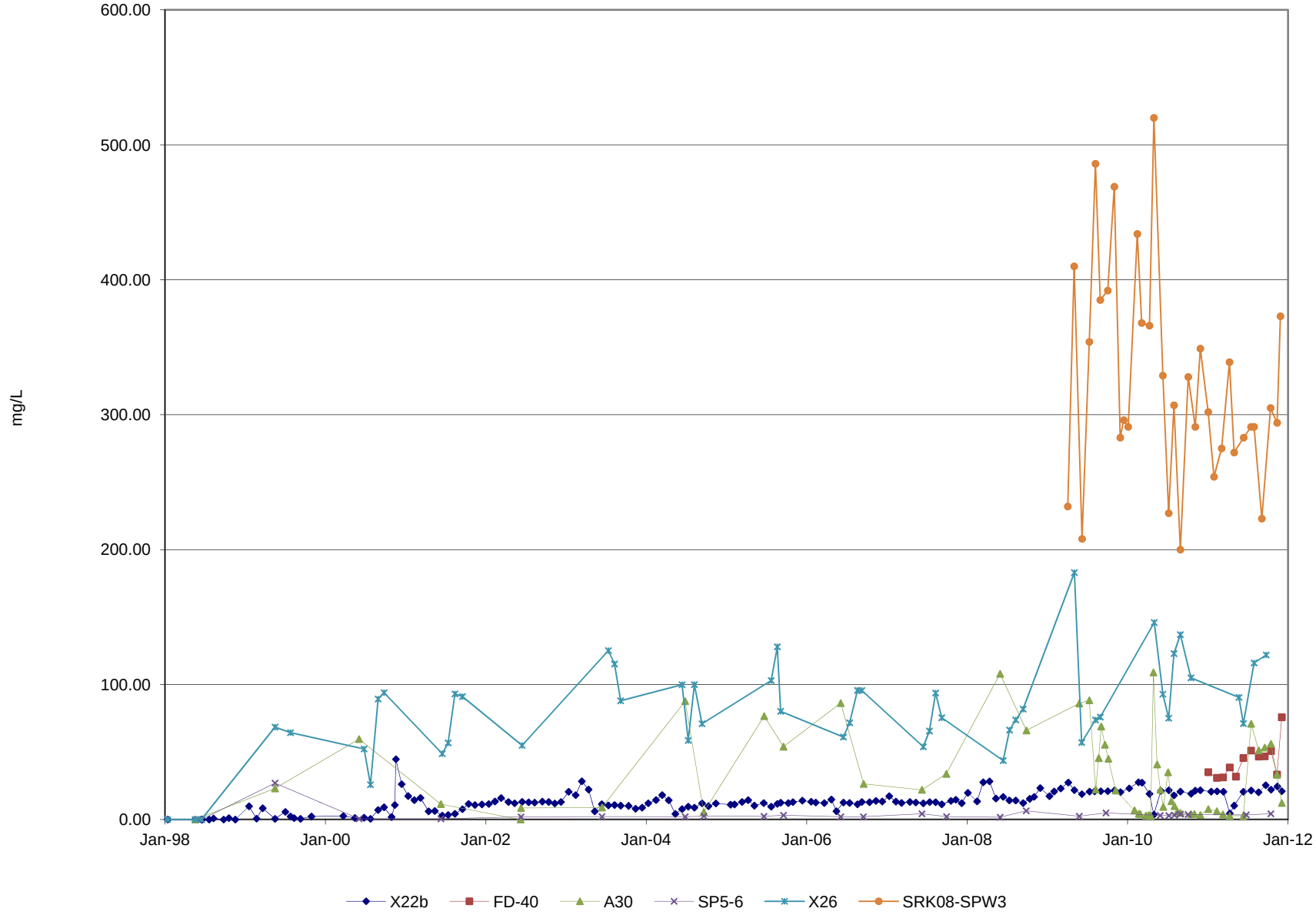


Figure B-8: Lead (Total and Dissolved) in the Faro Pit (X22b)

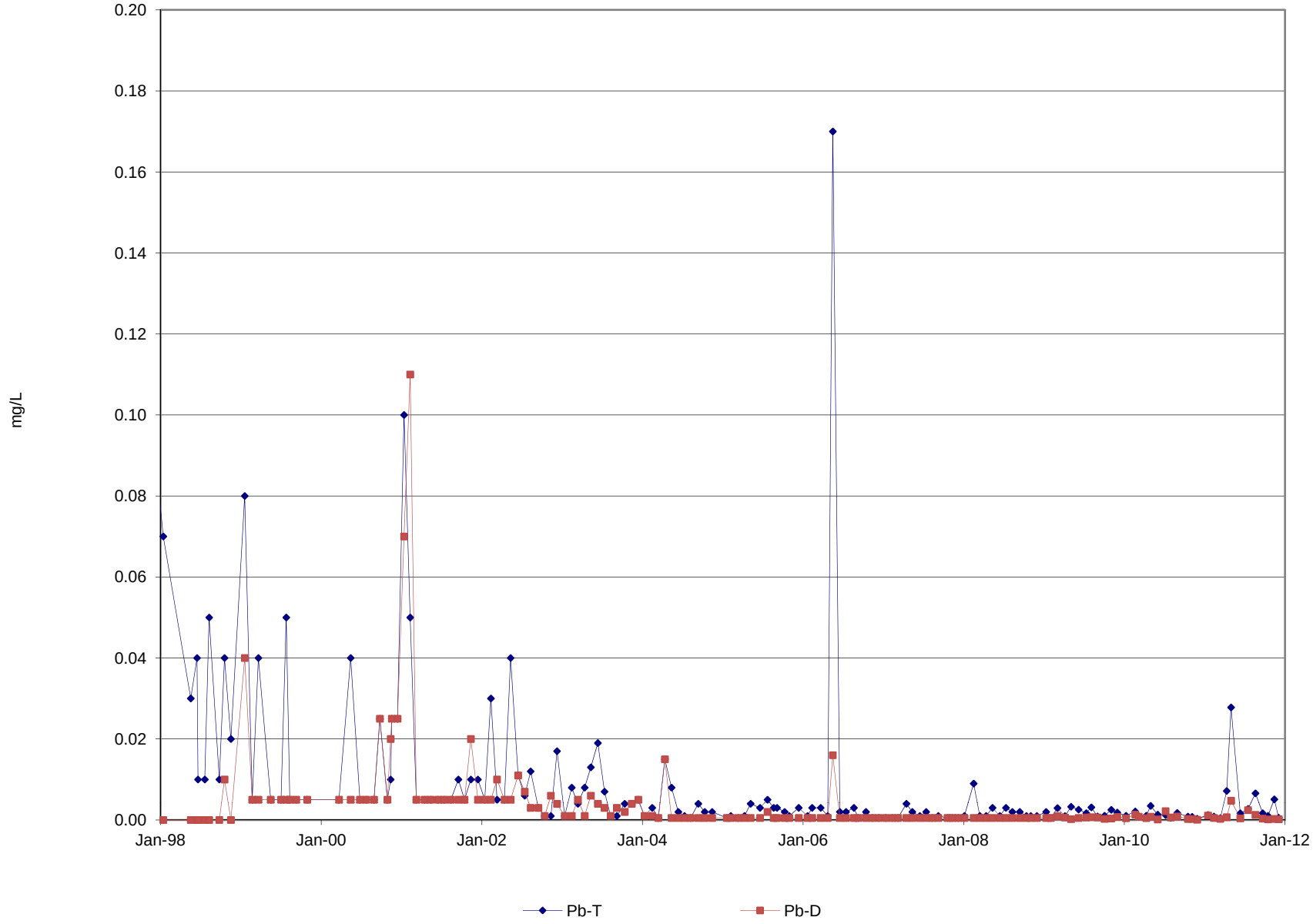


Figure B-9: Lead (Dissolved) in the Faro Pit, Faro Pit Seeps, Zone II Pit and S-Wells Trench Interception

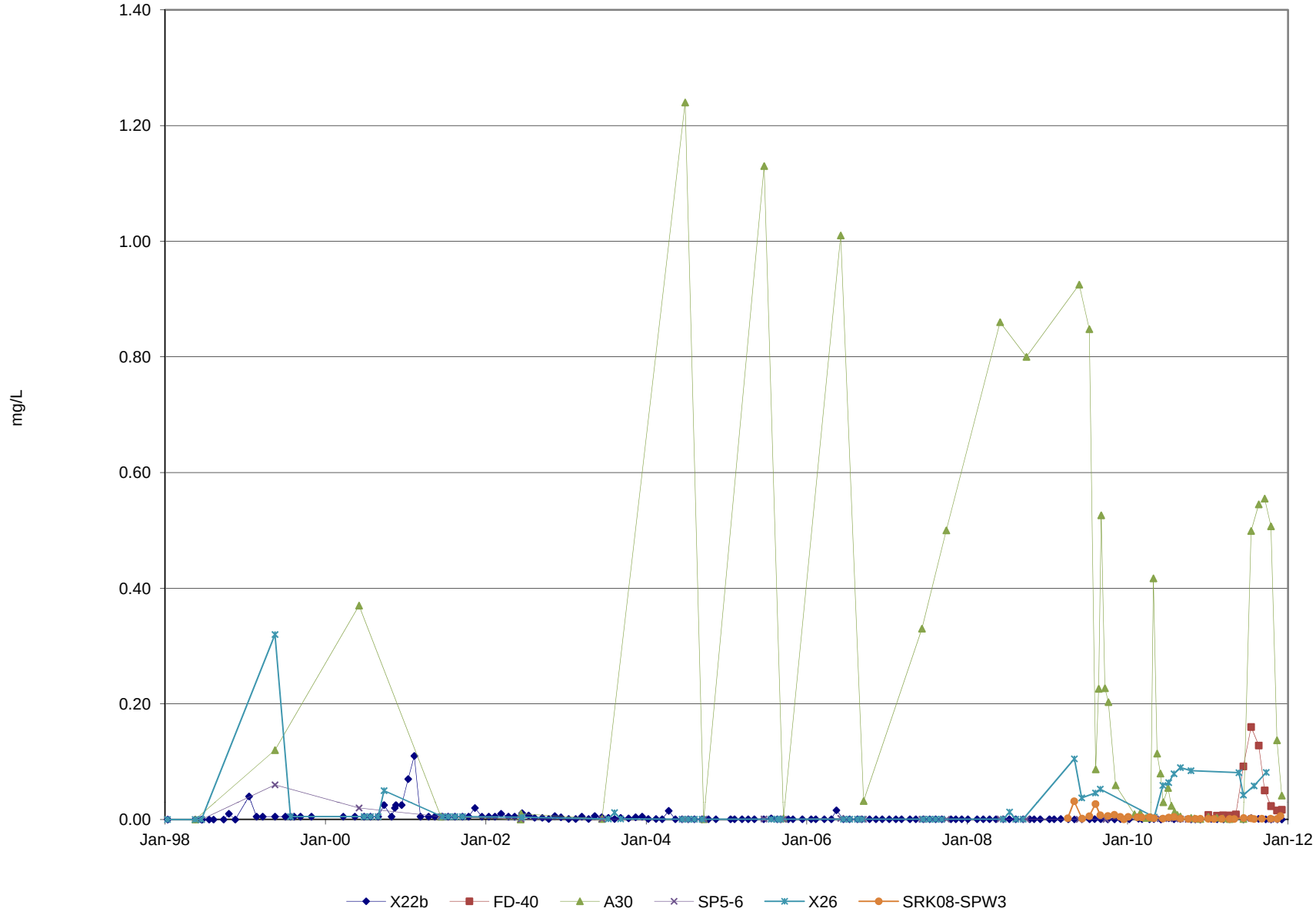


Figure B-10: Cadmium (Total and Dissolved) in the Faro Pit (X22b)

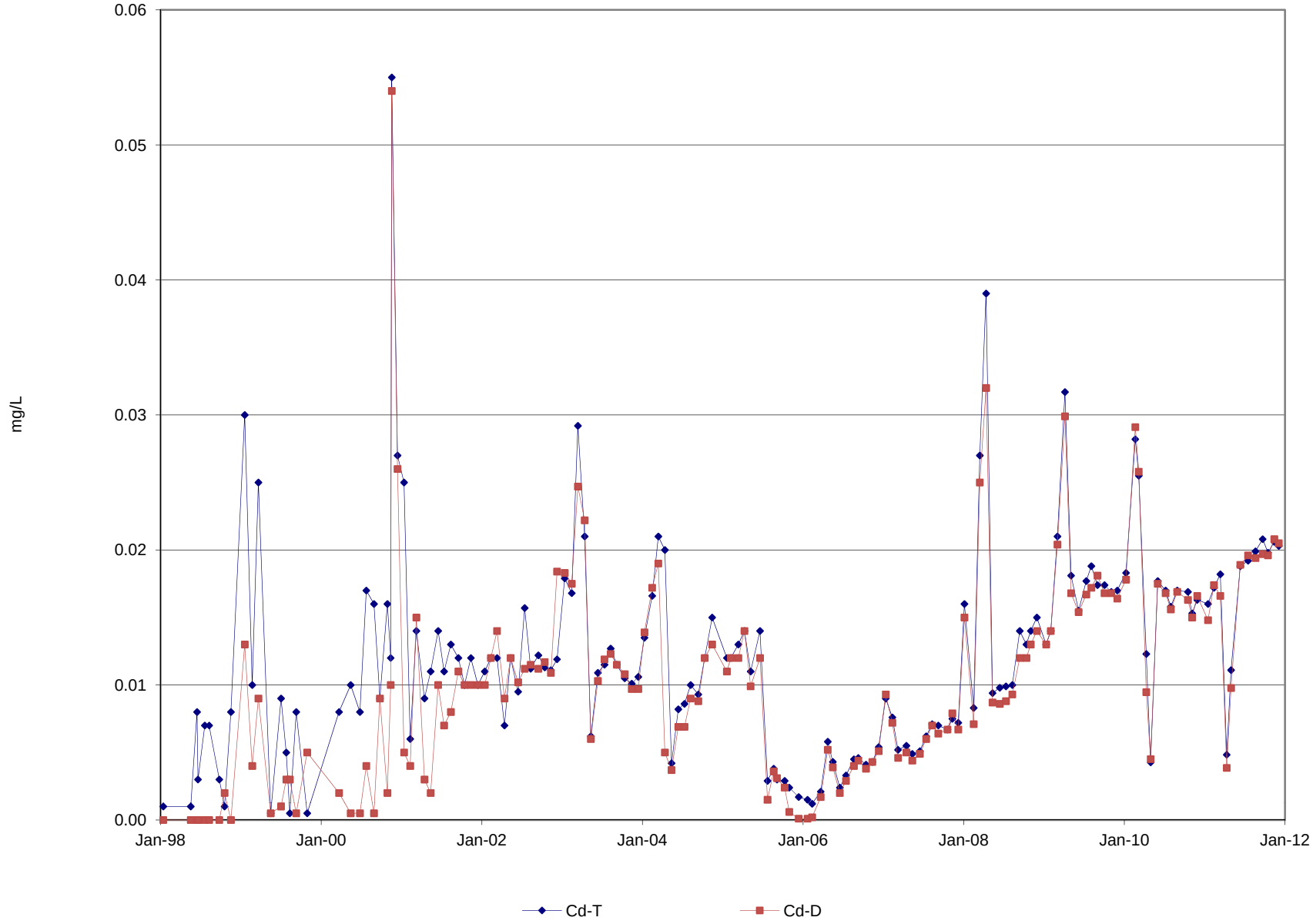


Figure B-11: Cadmium (Dissolved) in the Faro Pit, Faro Pit Seeps, Zone II Pit and S-Wells Trench Interception

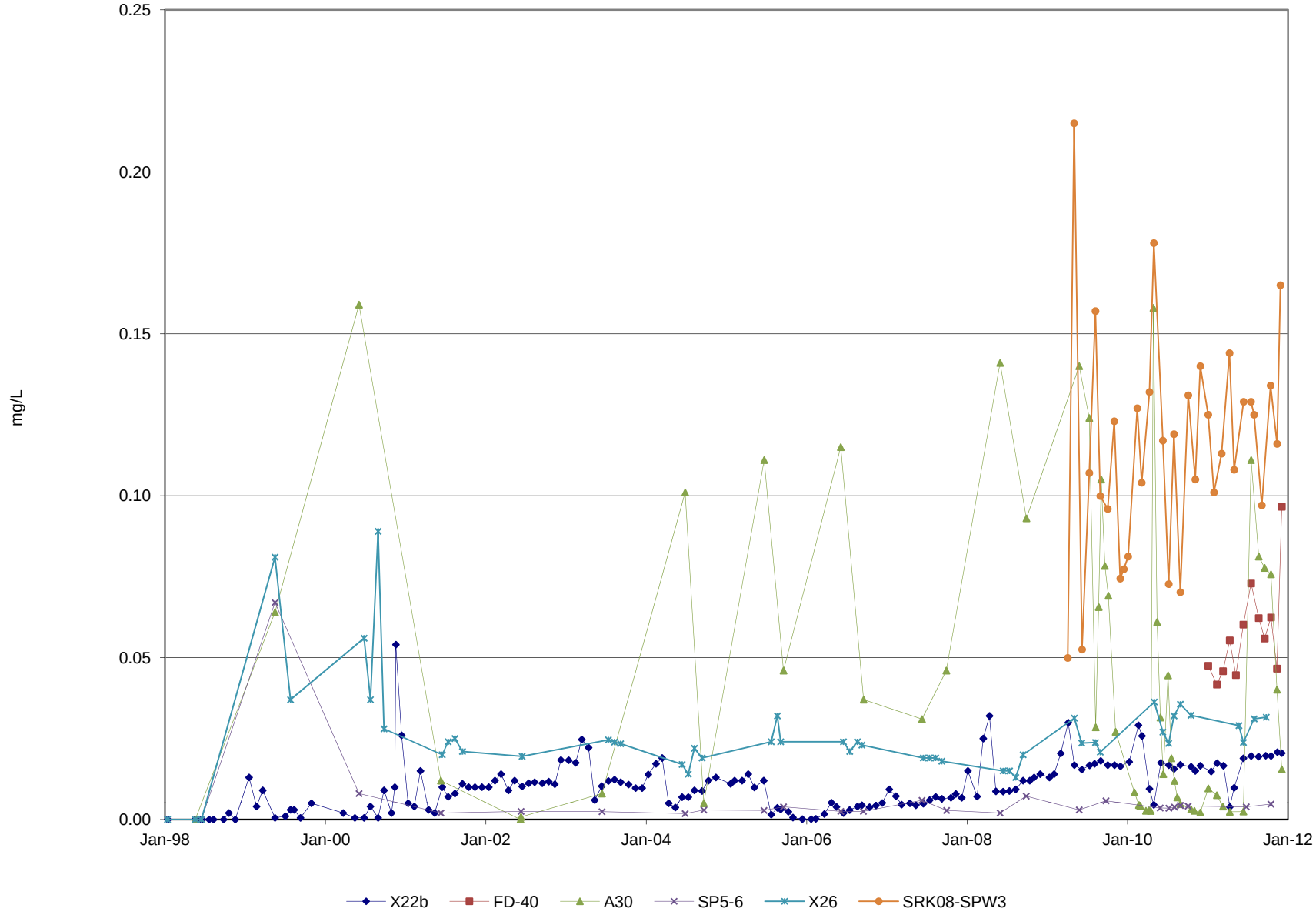


Figure B-12: Sulphate at the Main Dump Toe and ETA

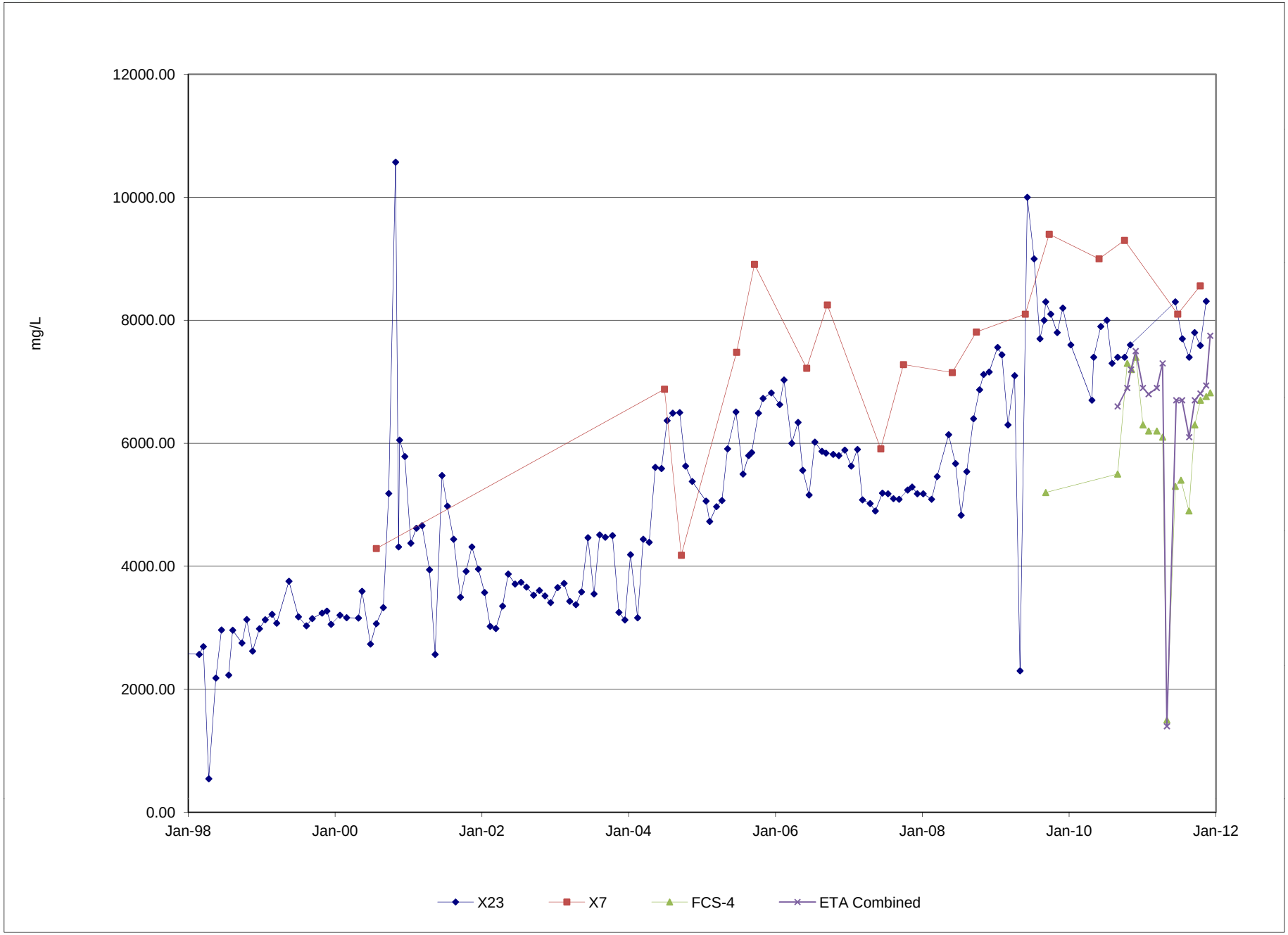


Figure B-13: Zinc at the Main Dump Toe and ETA

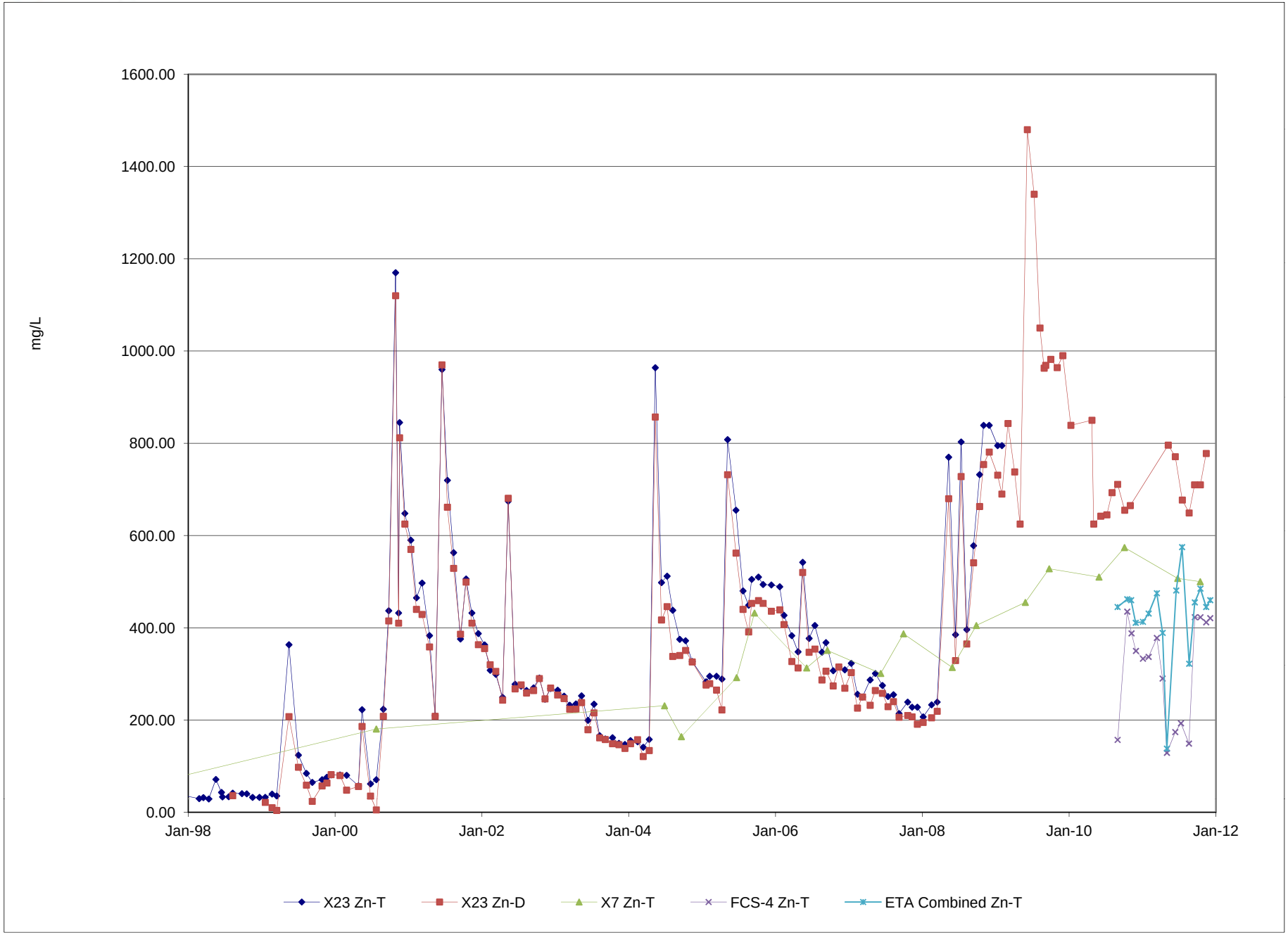


Figure B-14: pH in the Intermediate Pond (X4)

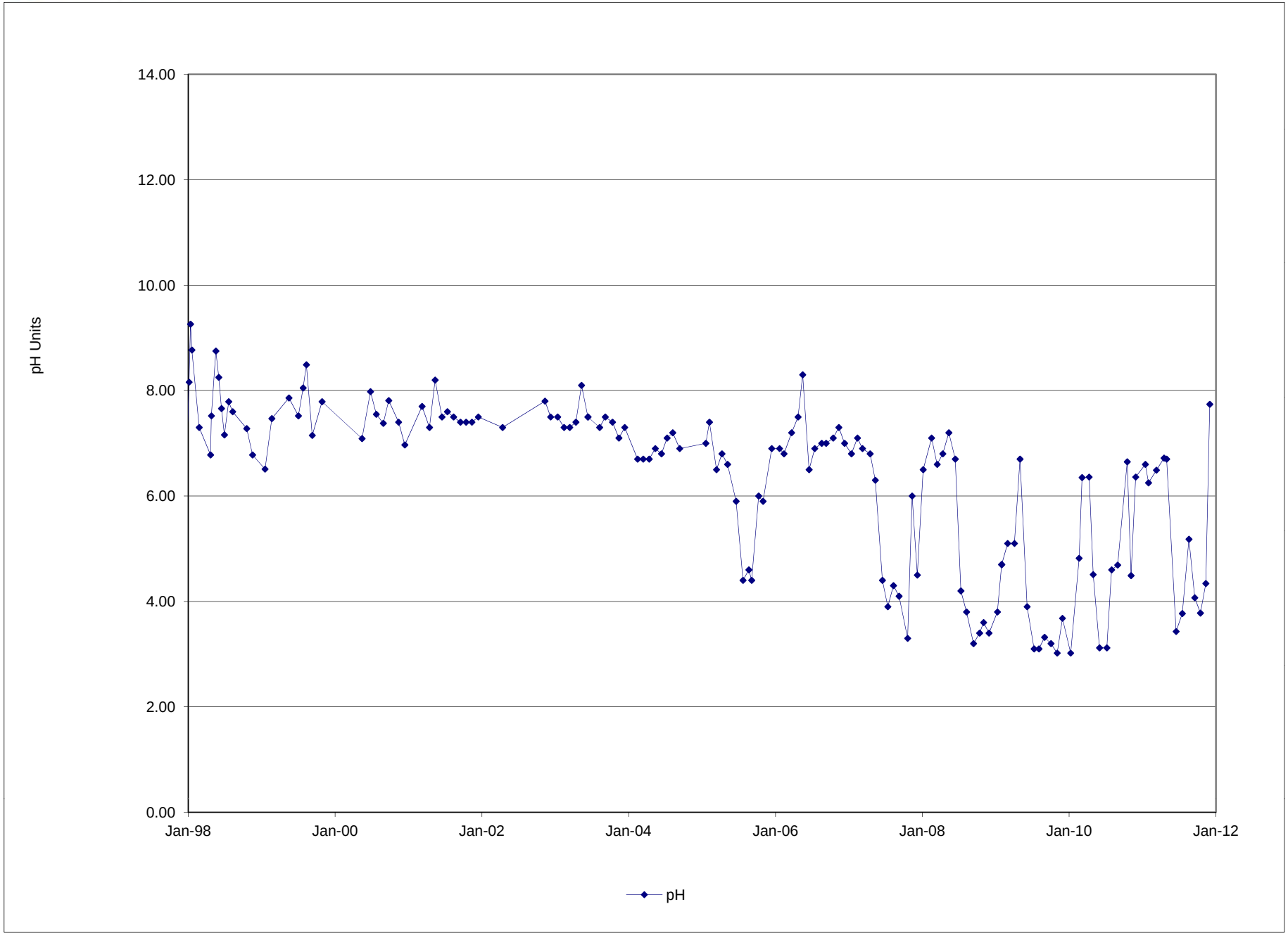


Figure B-15: Zinc (Total and Dissolved) in the Intermediate Pond (X4)

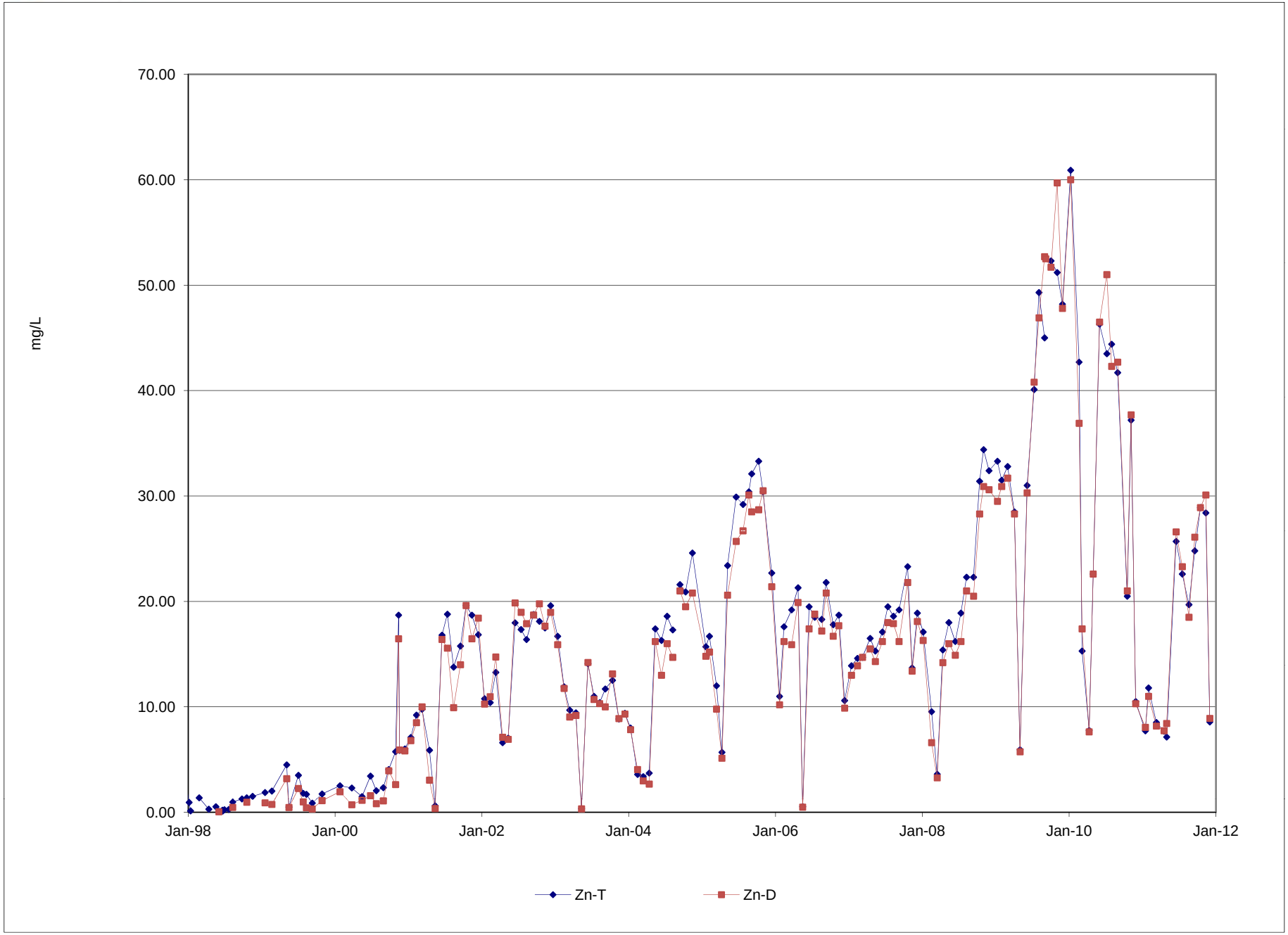


Figure B-16: Sulphate in the Intermediate Pond (X4)

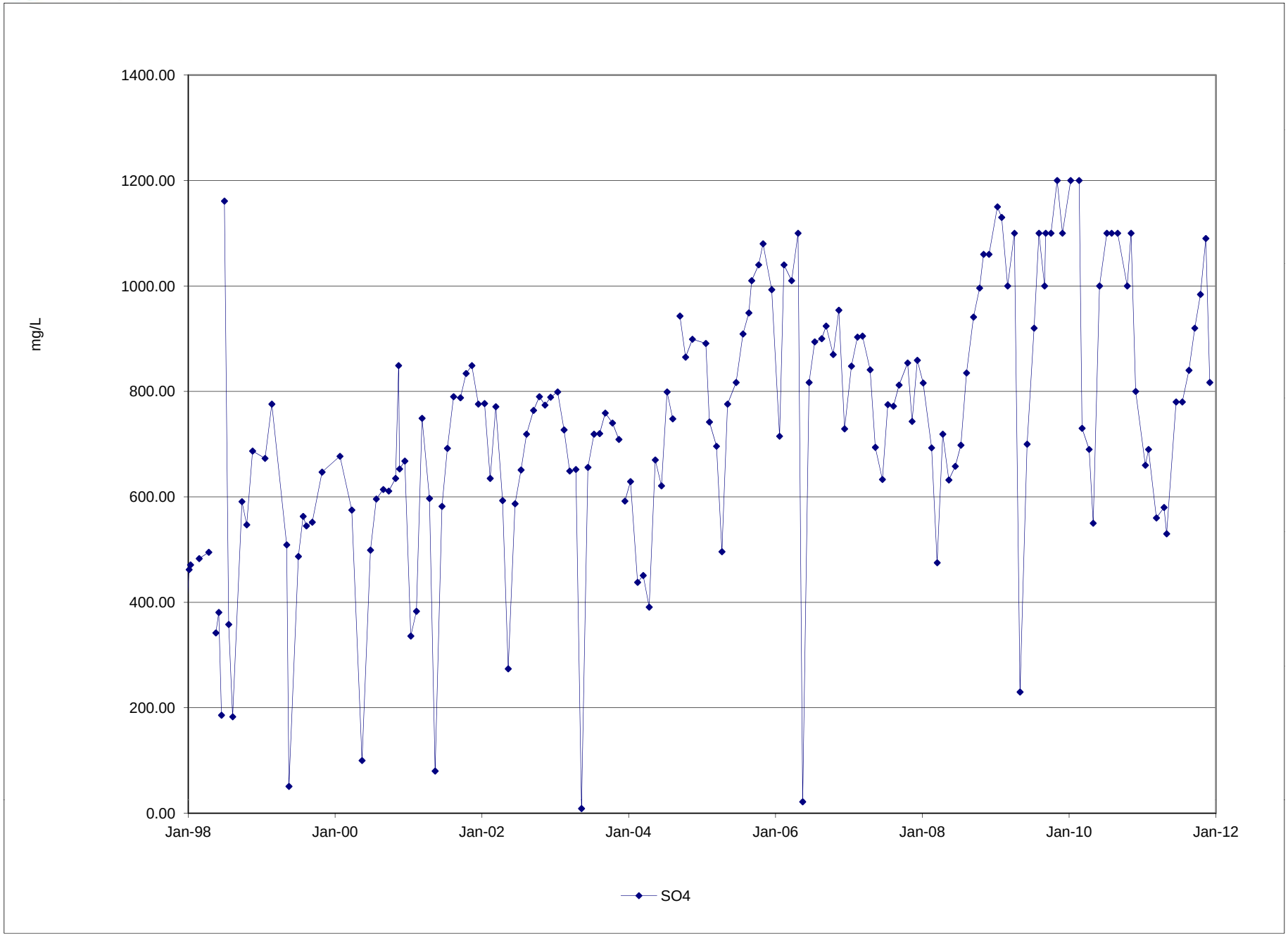


Figure B-17: Iron (Total and Dissolved) in the Intermediate Pond (X4)

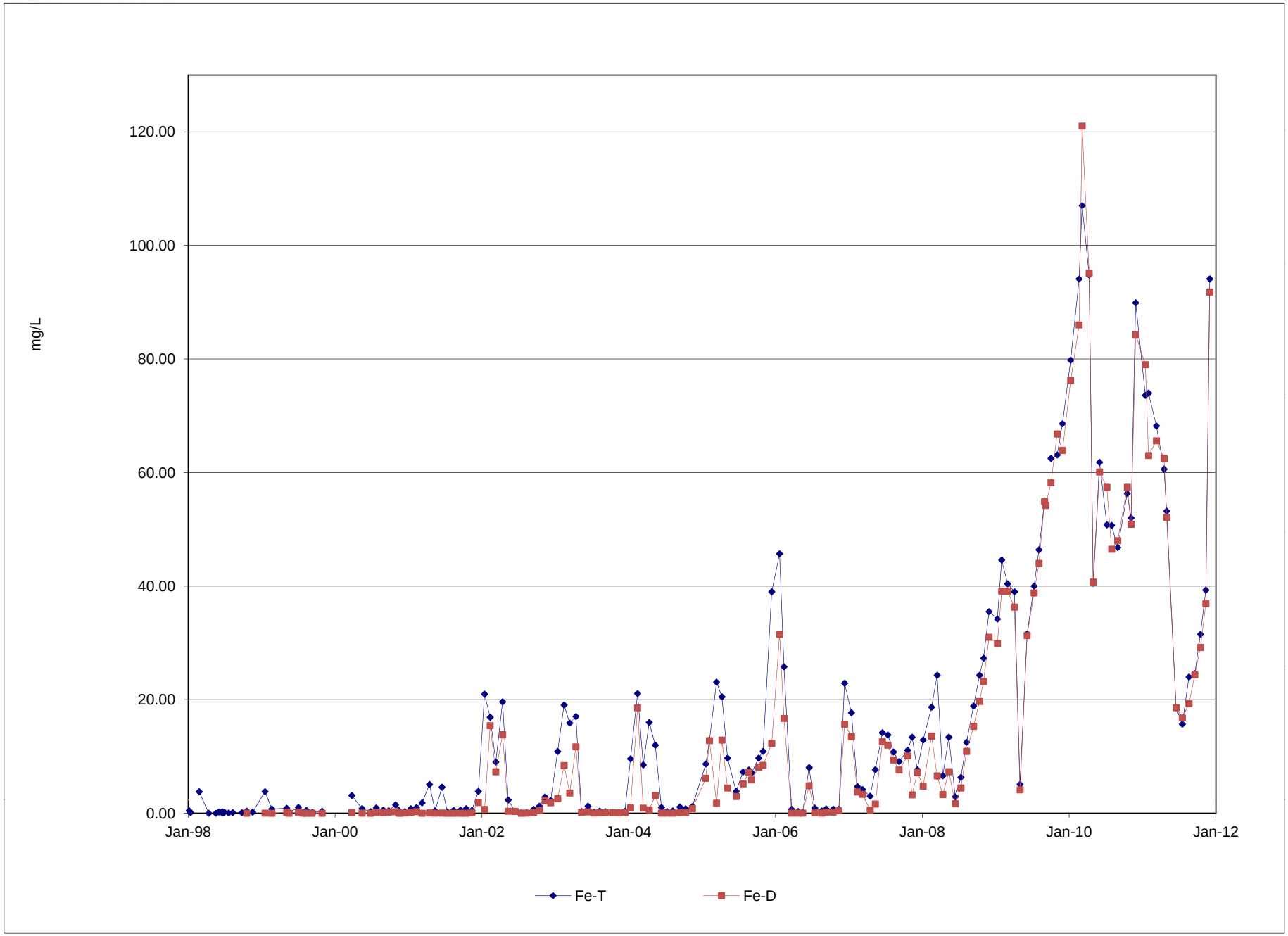


Figure B-18: Elevations and Zinc (Total and Dissolved) at the Intermediate Pond (X4)

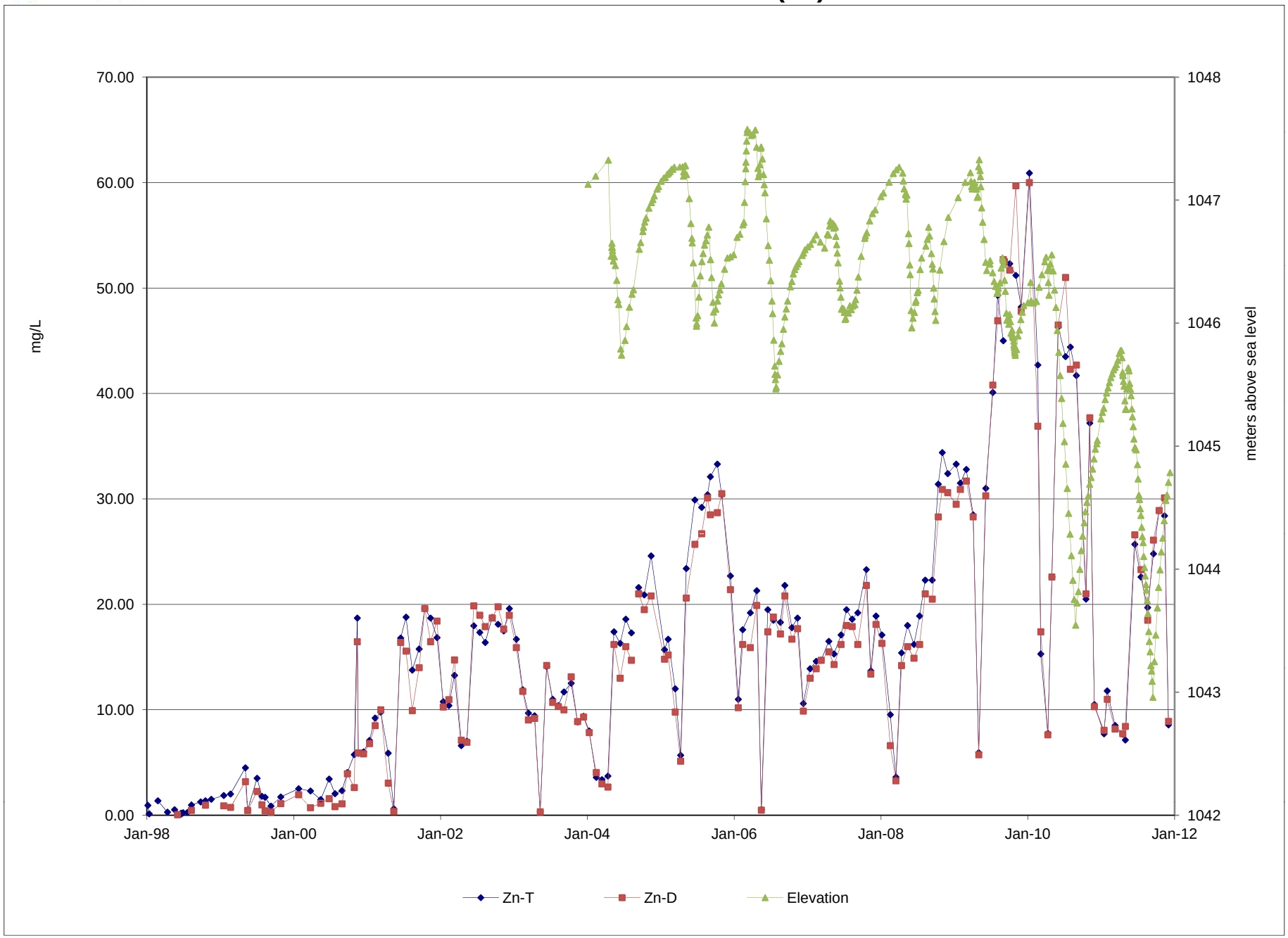


Figure B-19: Sulphate in the North Fork of Rose Creek, Upstream of the Rock Drain

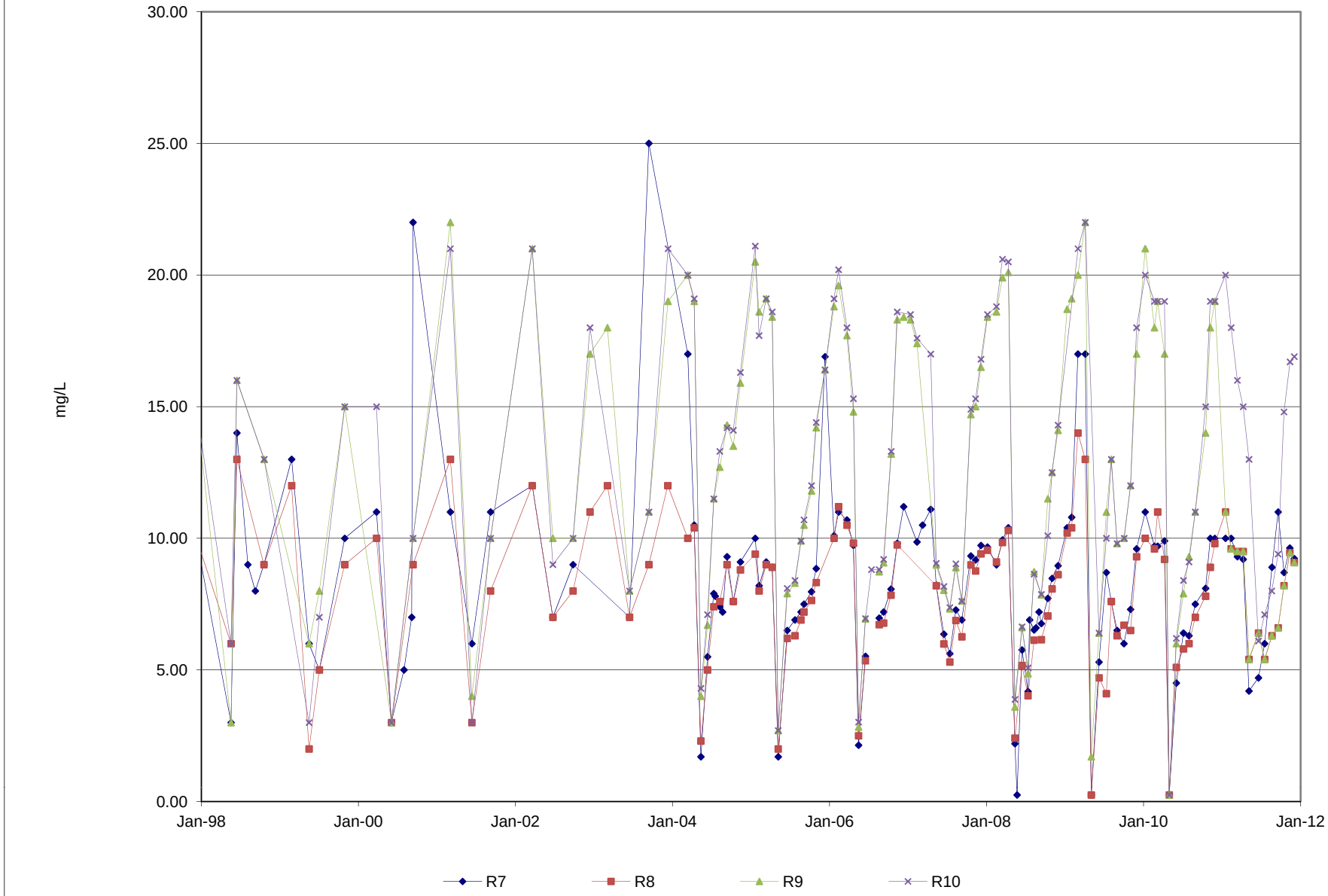


Figure B-20: Zinc (Total) in the North Fork of Rose Creek, Upstream of the Rock Drain

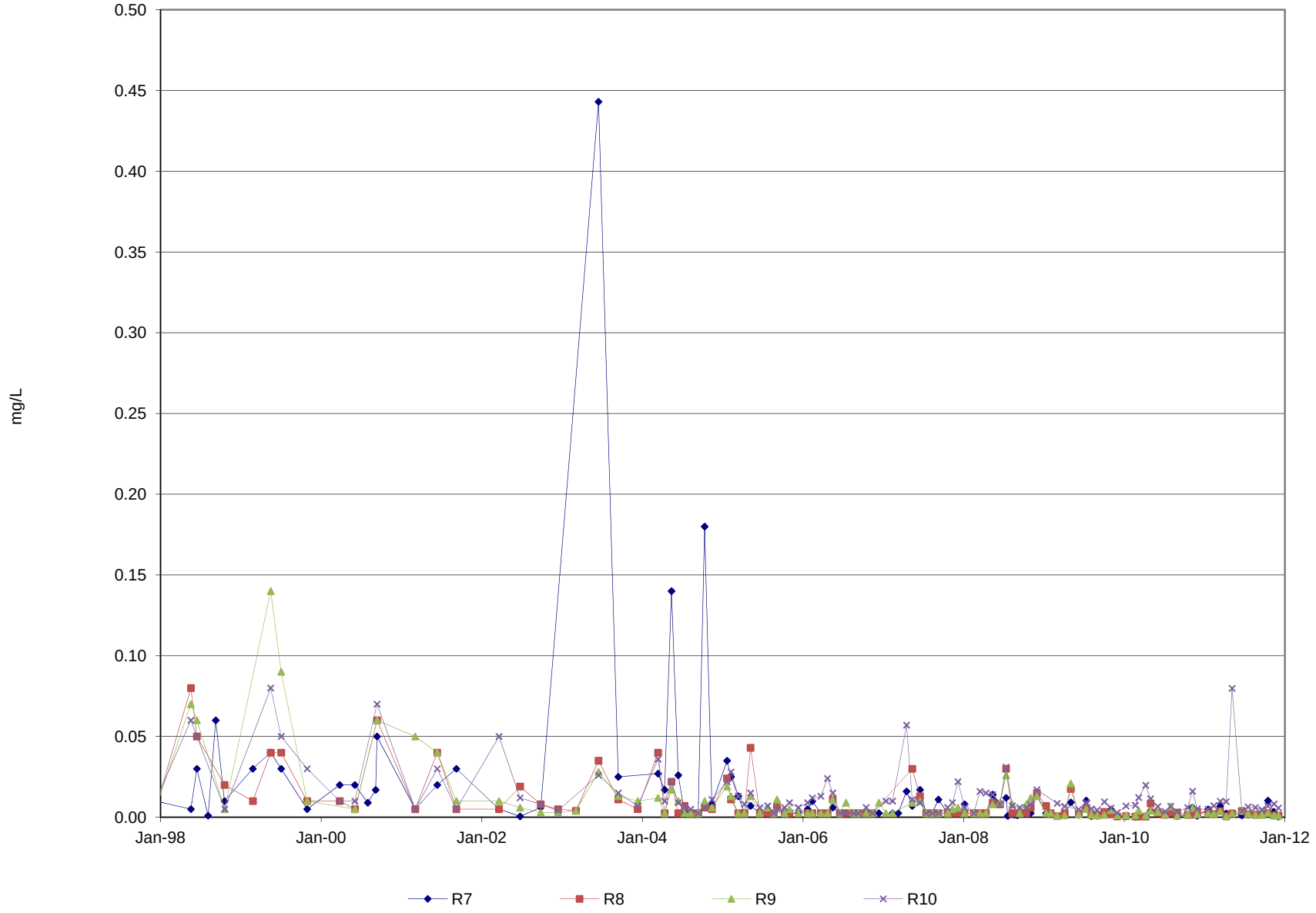


Figure B-21: Iron (Total) in the North Fork of Rose Creek, Upstream of the Rock Drain

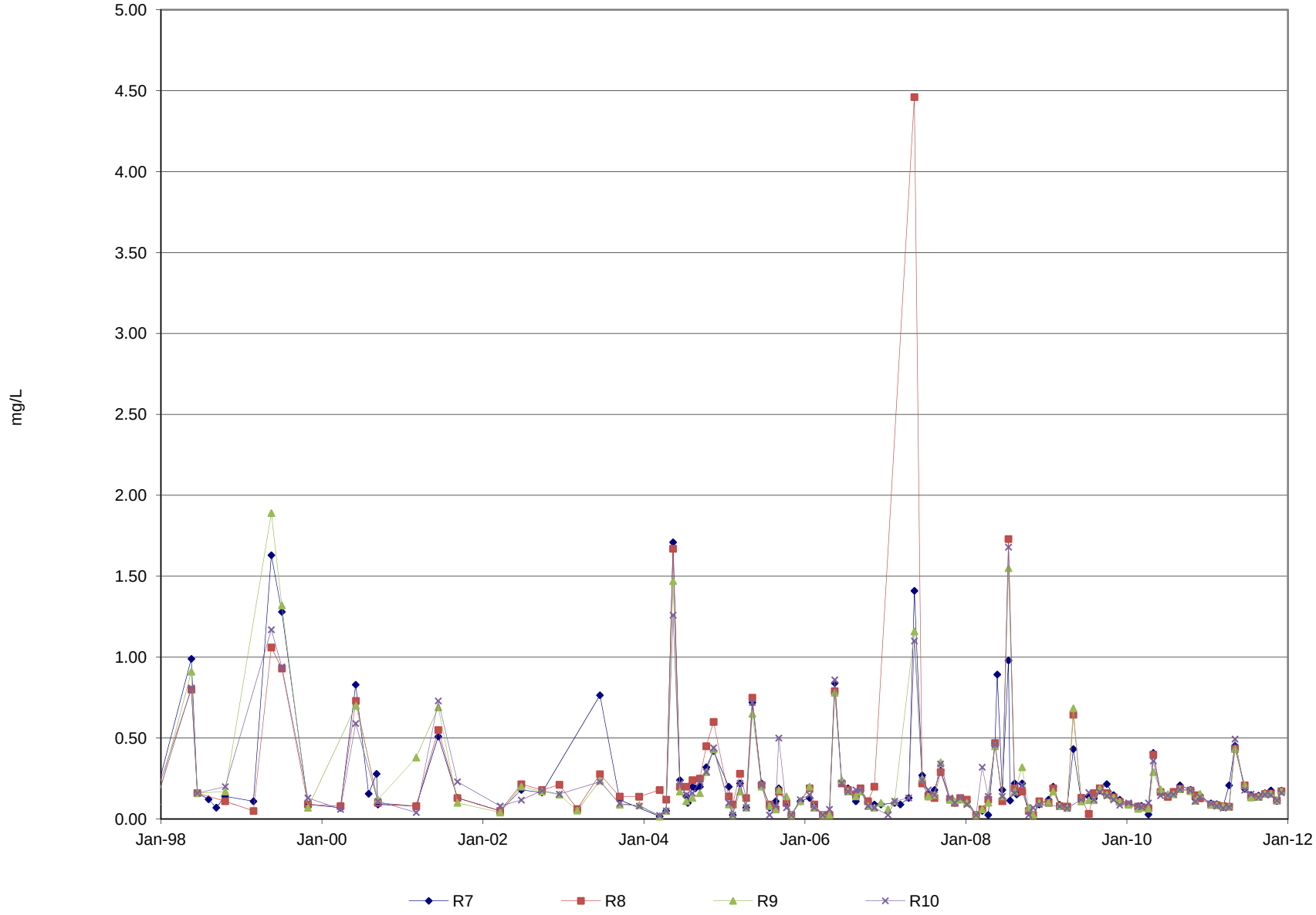


Figure B-22: Lead (Total) in the North Fork of Rose Creek, Upstream of the Rock Drain

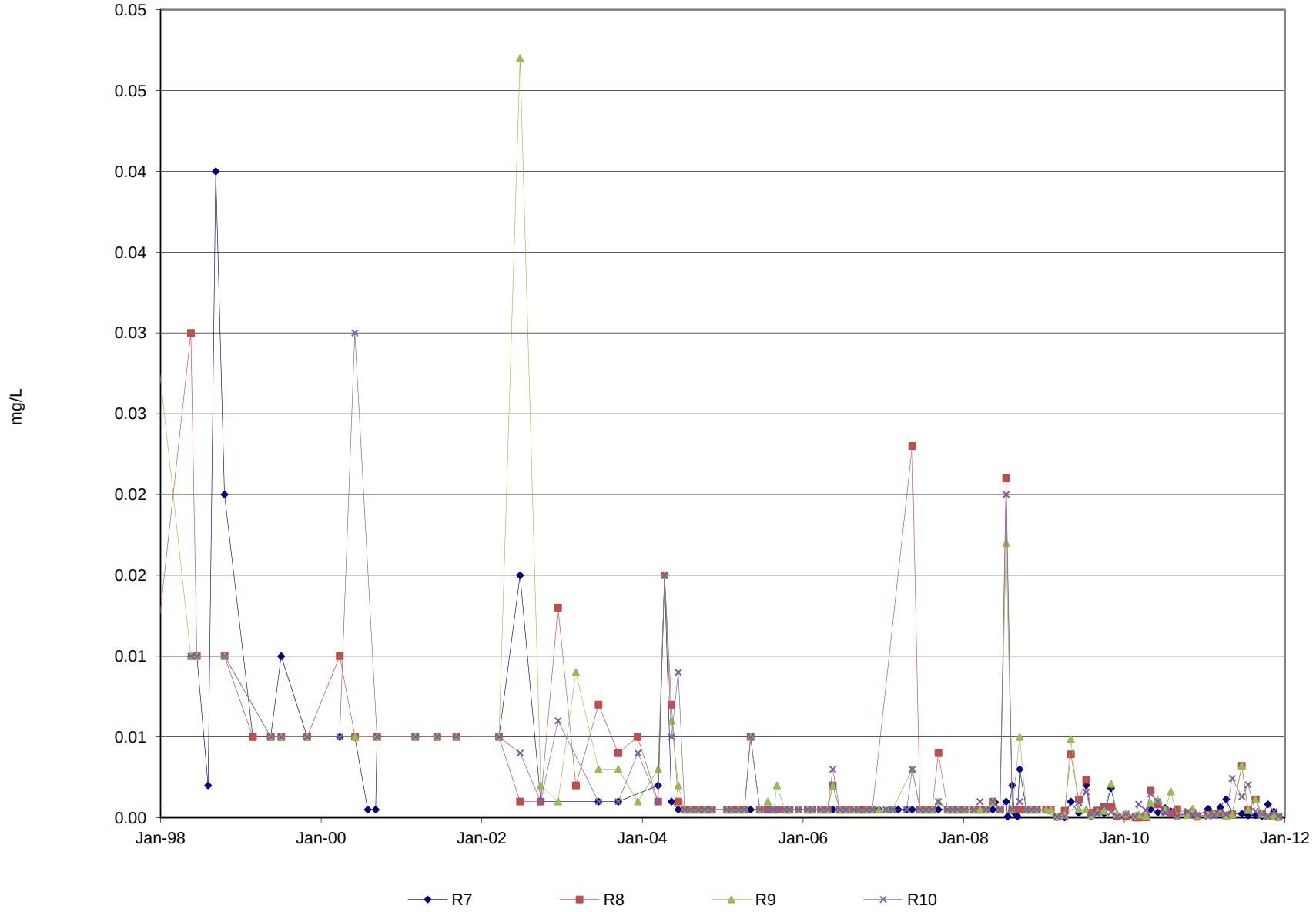


Figure B-23: Sulphate in the North Fork of Rose Creek, Upstream and Downstream of the Rock Drain

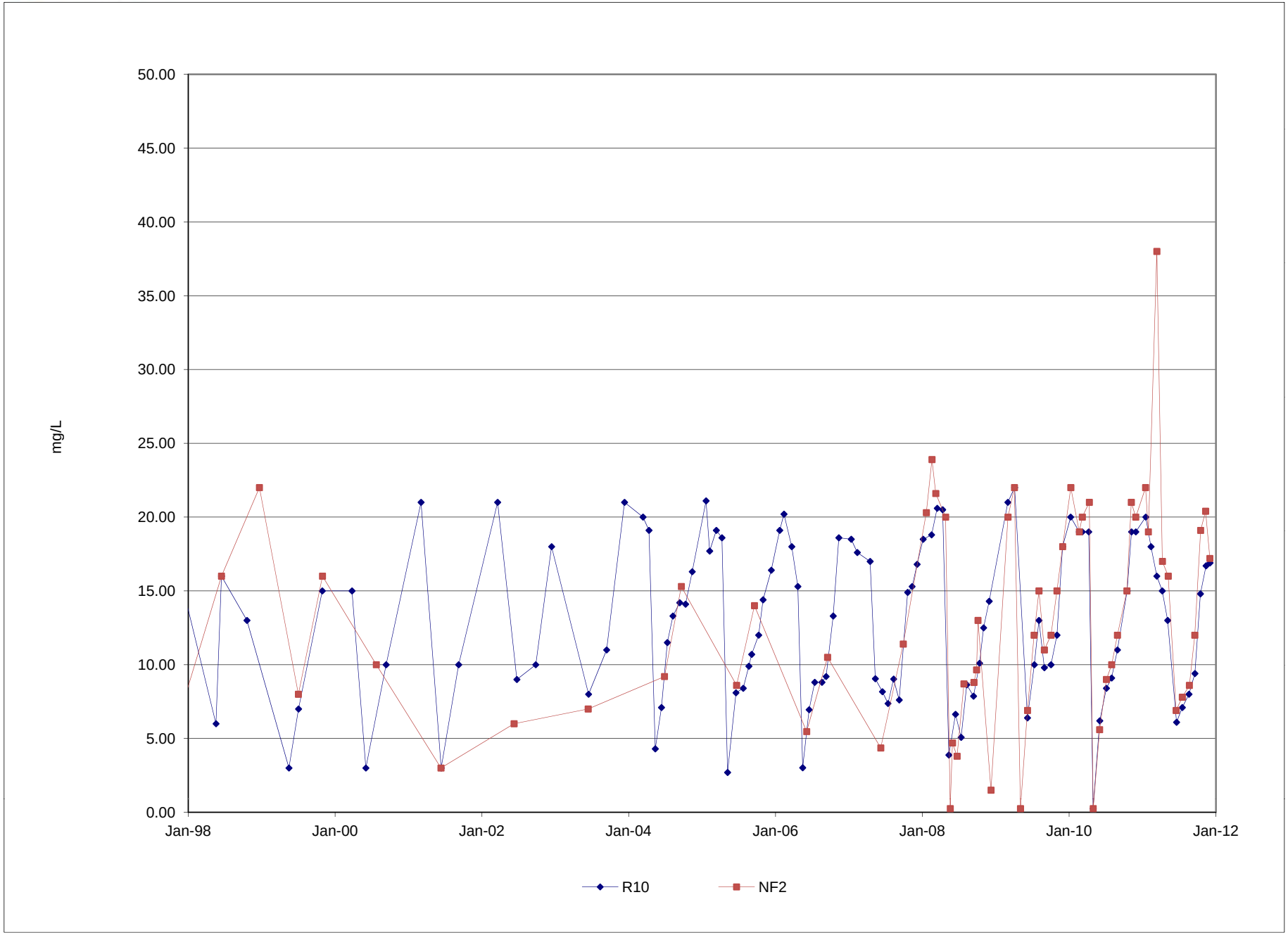


Figure B-24: Zinc (Total) in the North Fork of Rose Creek, Upstream and Downstream of the Rock Drain

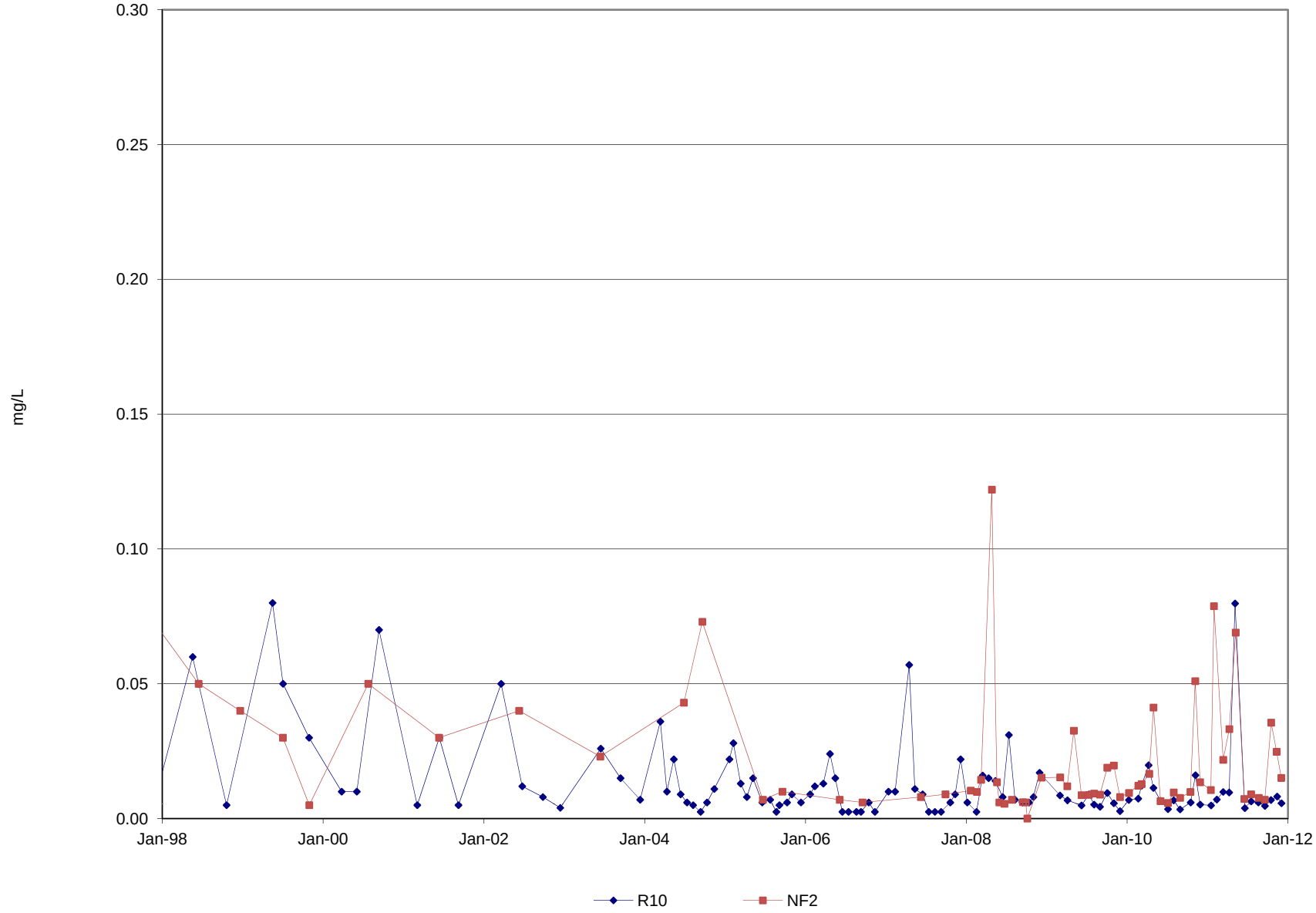


Figure B-25: Sulphate in the North Fork of Rose Creek, Downstream of the Rock Drain Along the S-Wells Reach

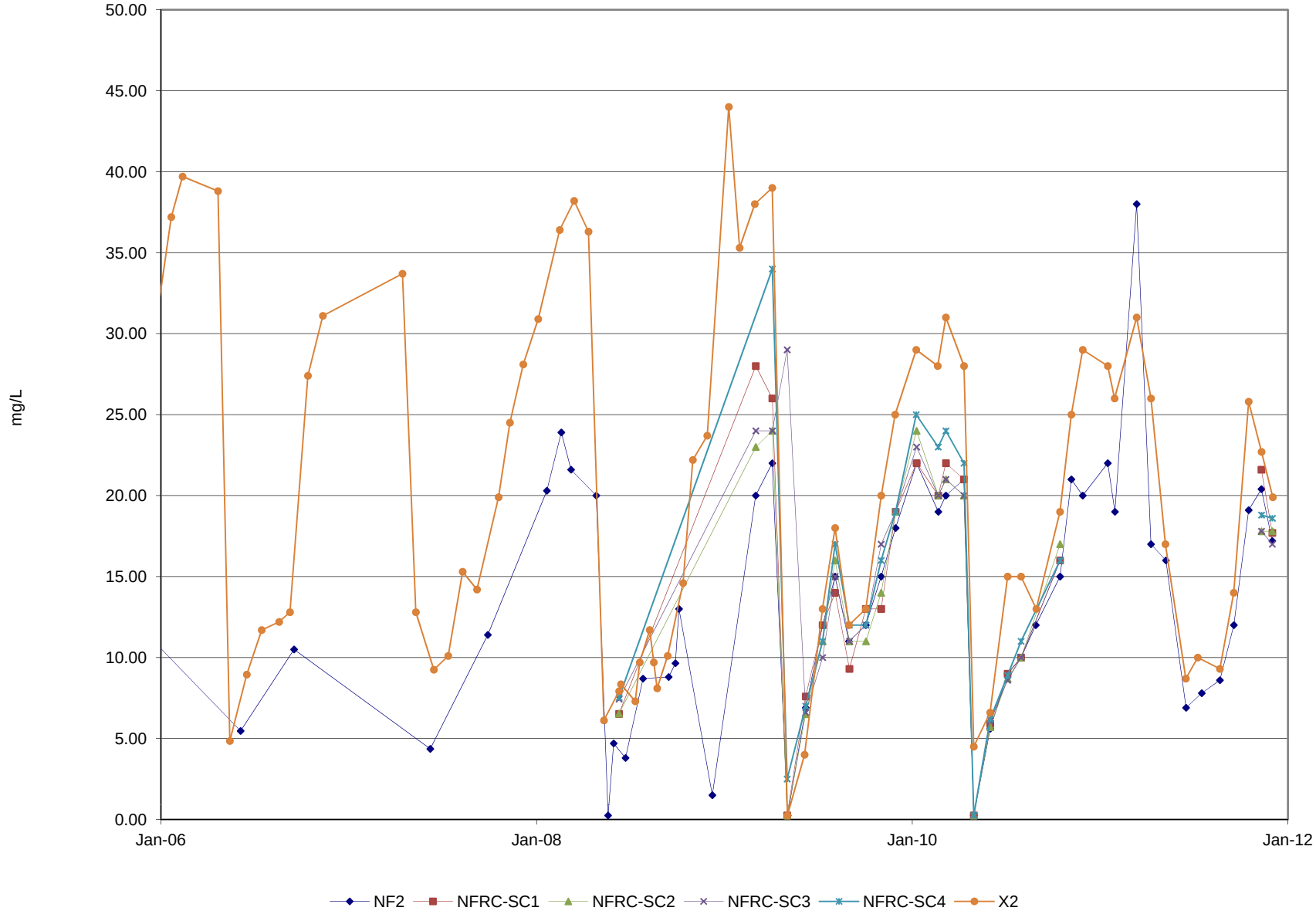


Figure B-26: Zinc (Total) in the North Fork of Rose Creek, Downstream of the Rock Drain Along the S-Wells Reach

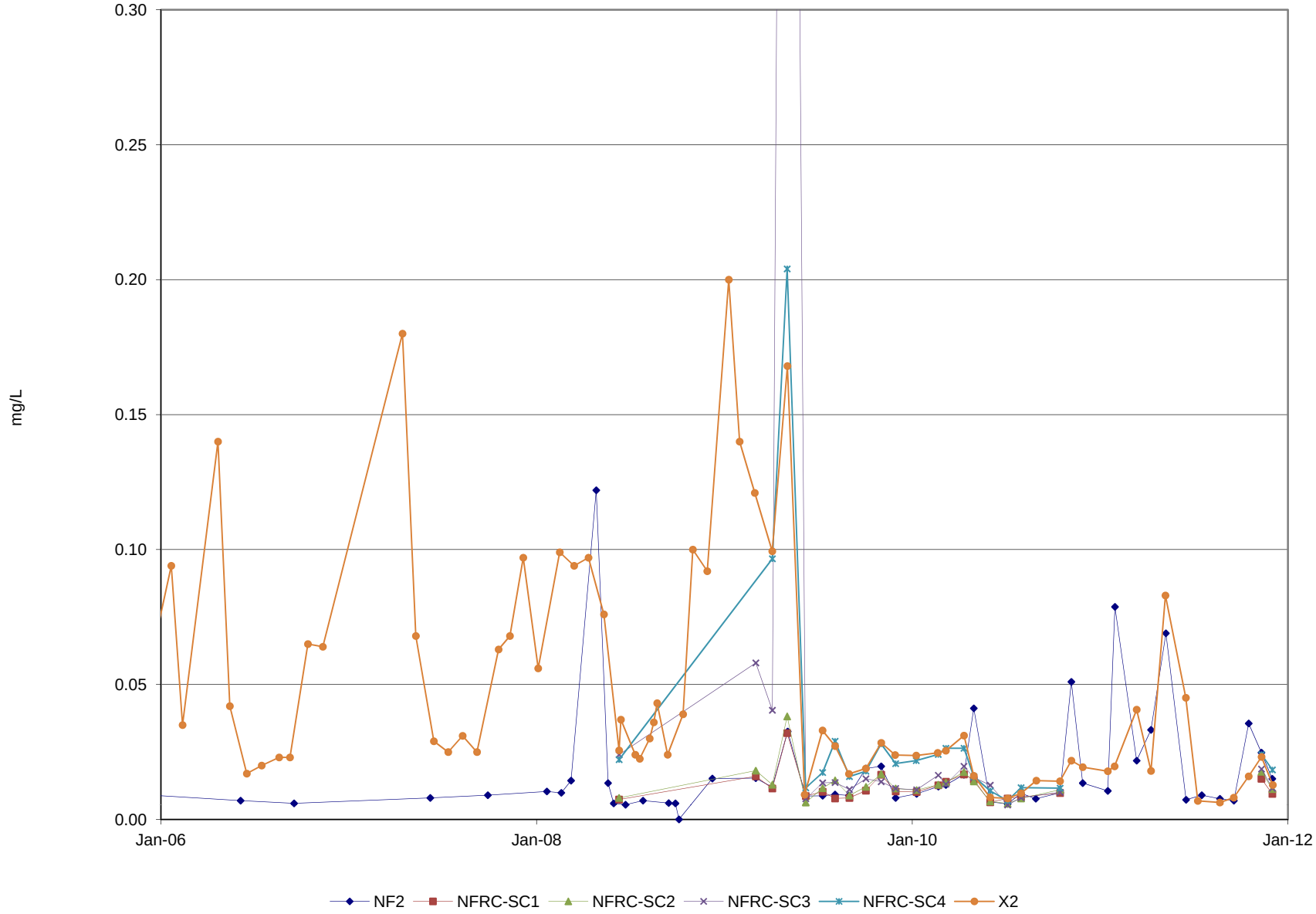


Figure B-27: Lead (Total) in the North Fork of Rose Creek, Downstream of the Rock Drain Along the S-Wells Reach

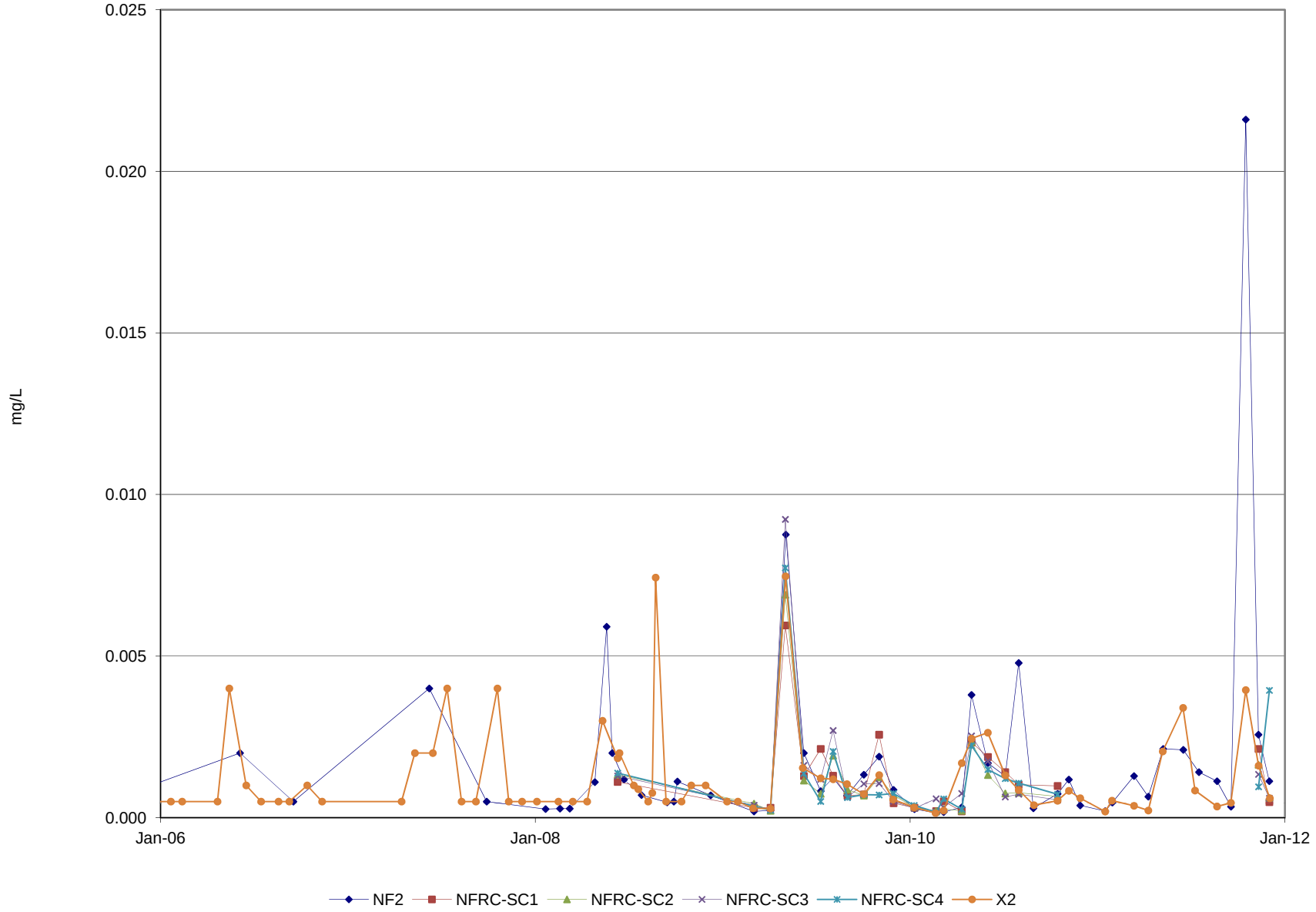


Figure B-28: Sulphate at X2, X3, X3A and X10

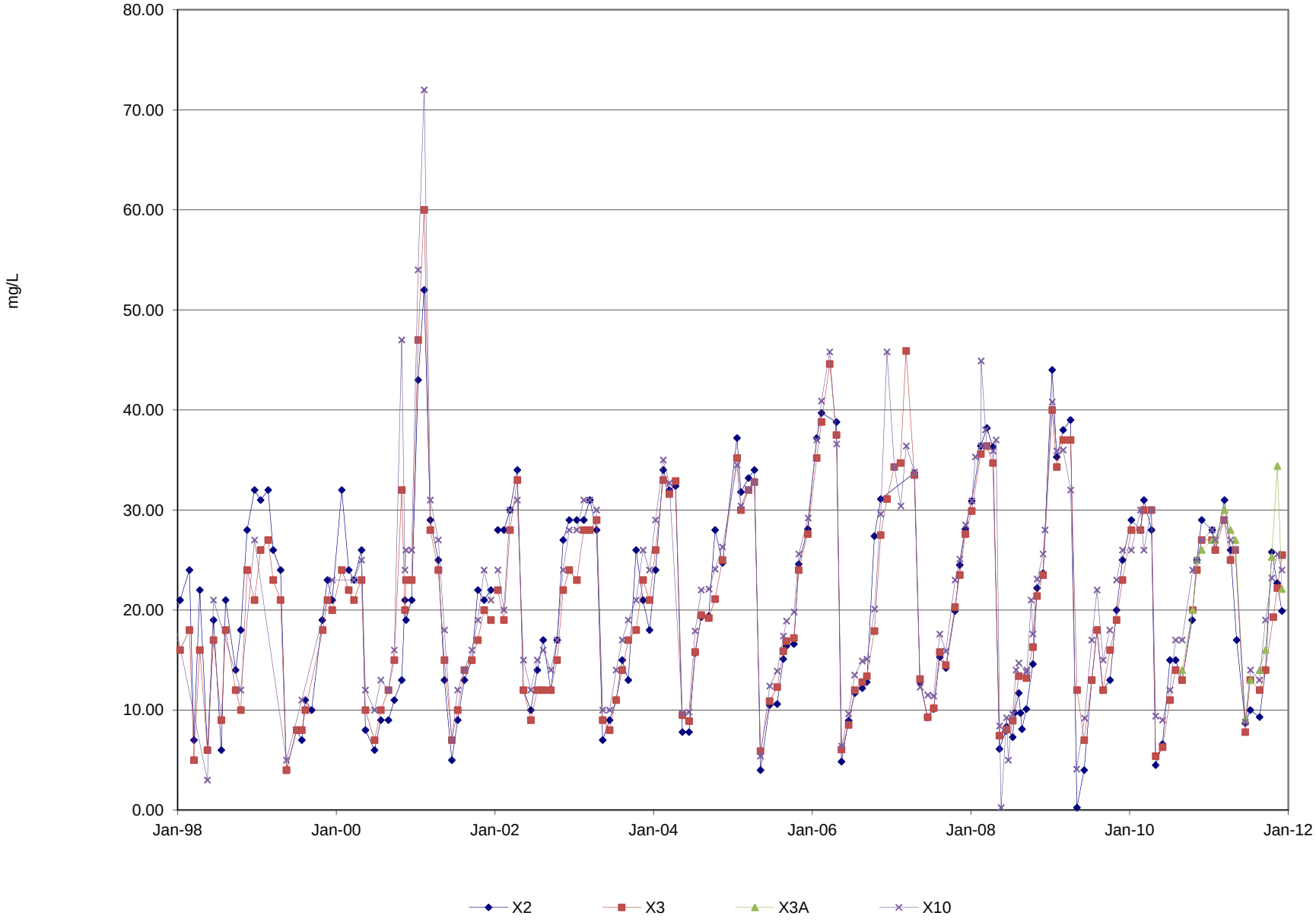


Figure B-29: Zinc (Total) at X2, X3, X3A and X10

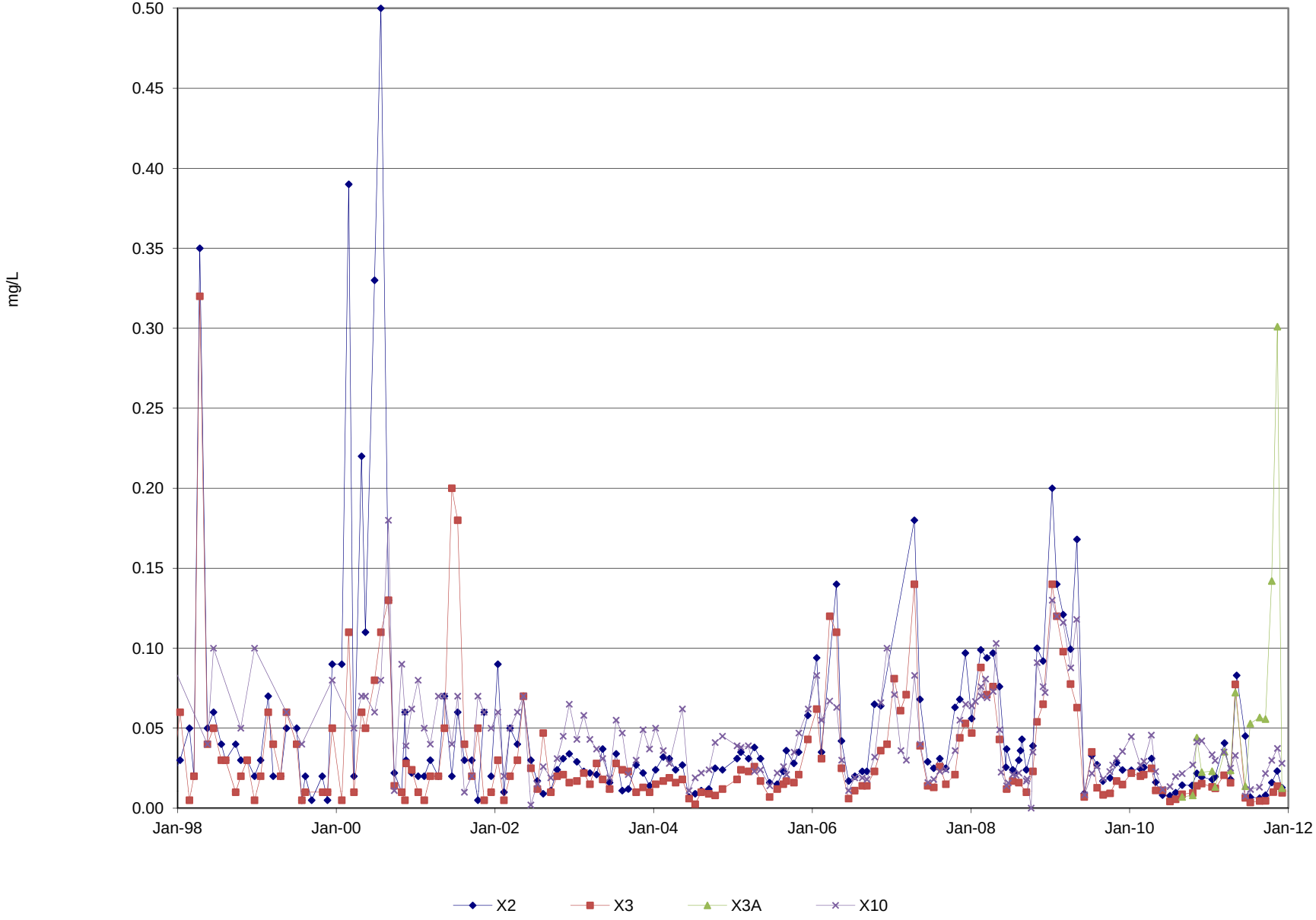


Figure B-30: Cadmium (Total) at X2, X3, X3A and X10

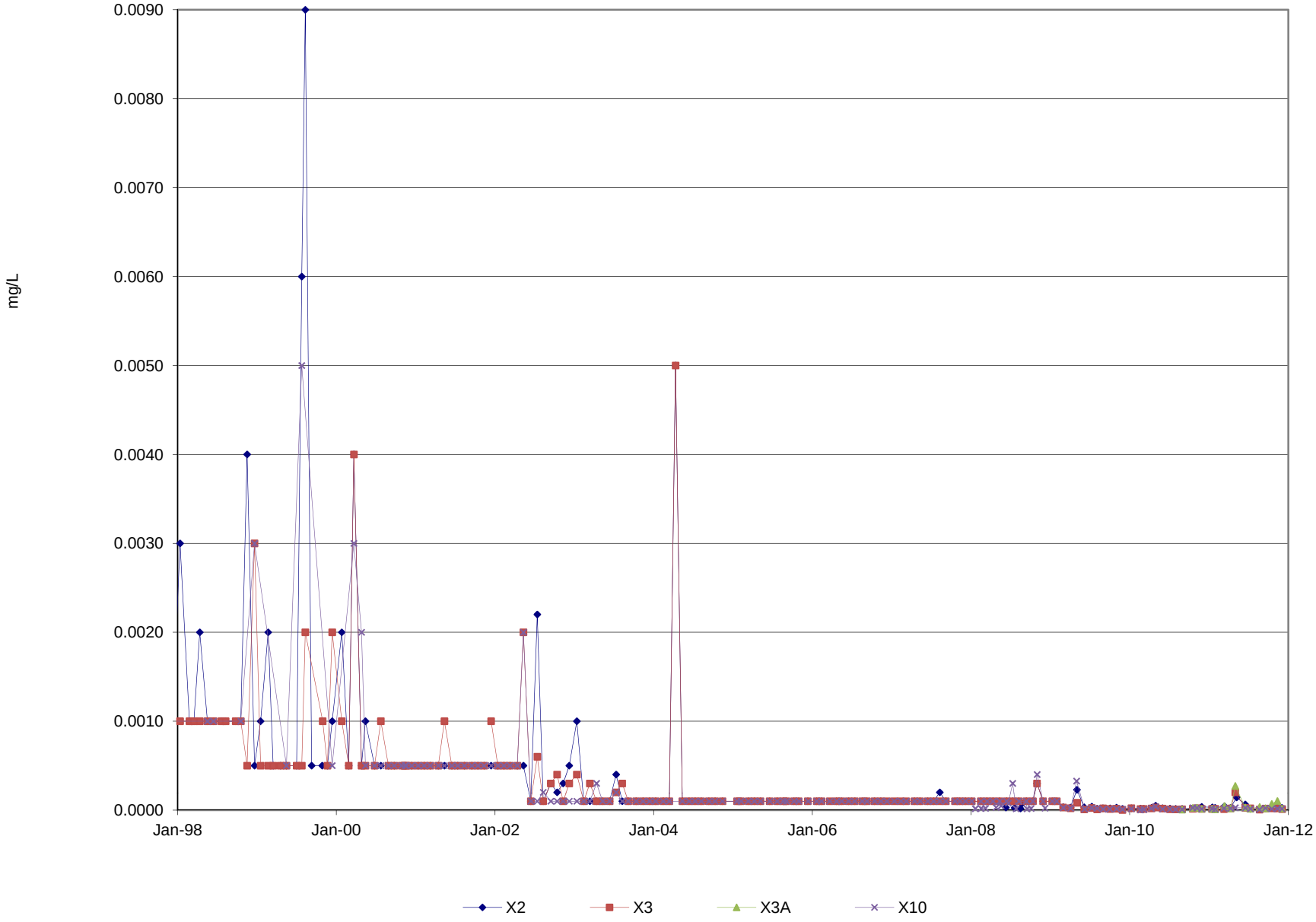


Figure B-31: Lead (Total) at X2, X3, X3A and X10

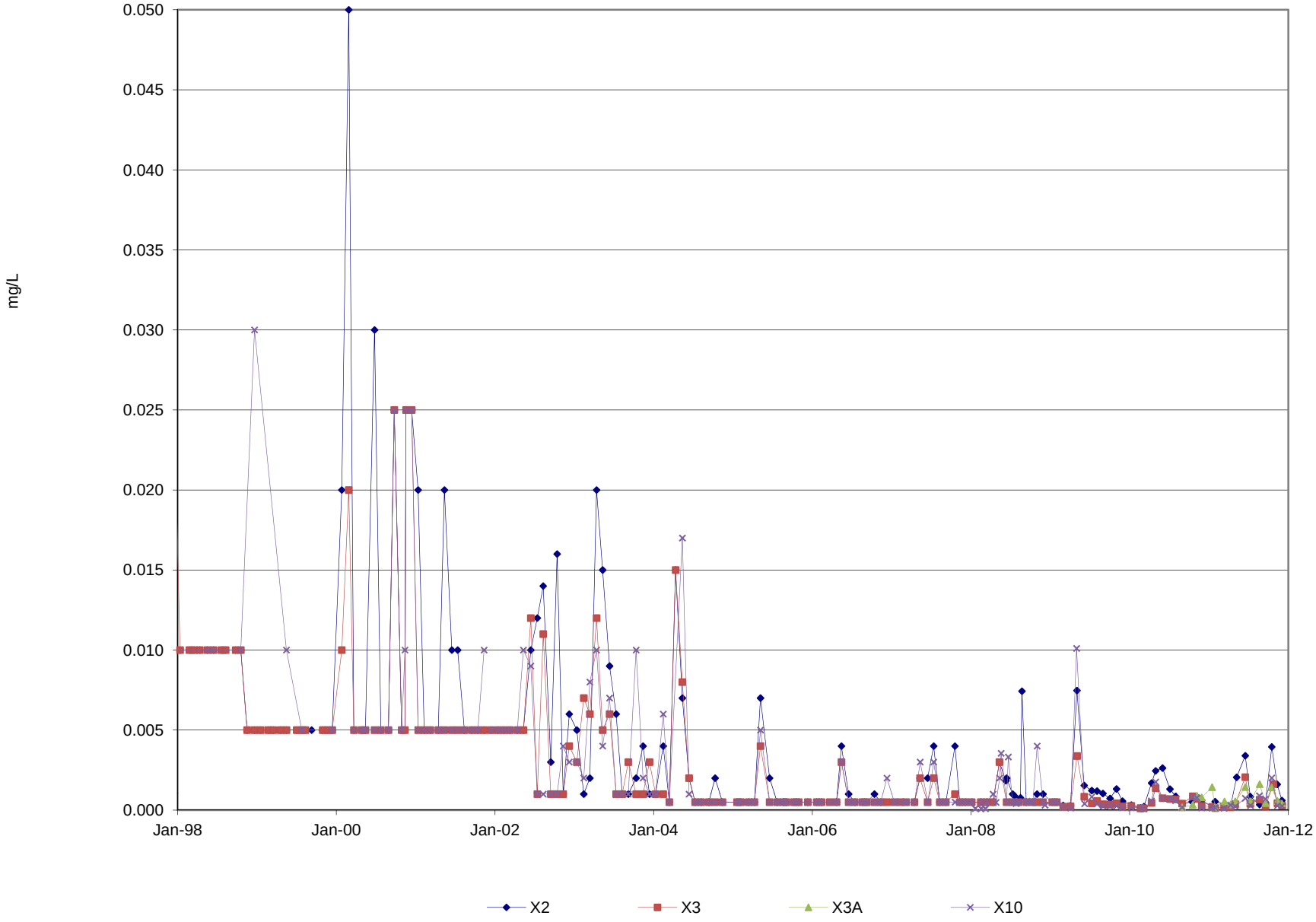
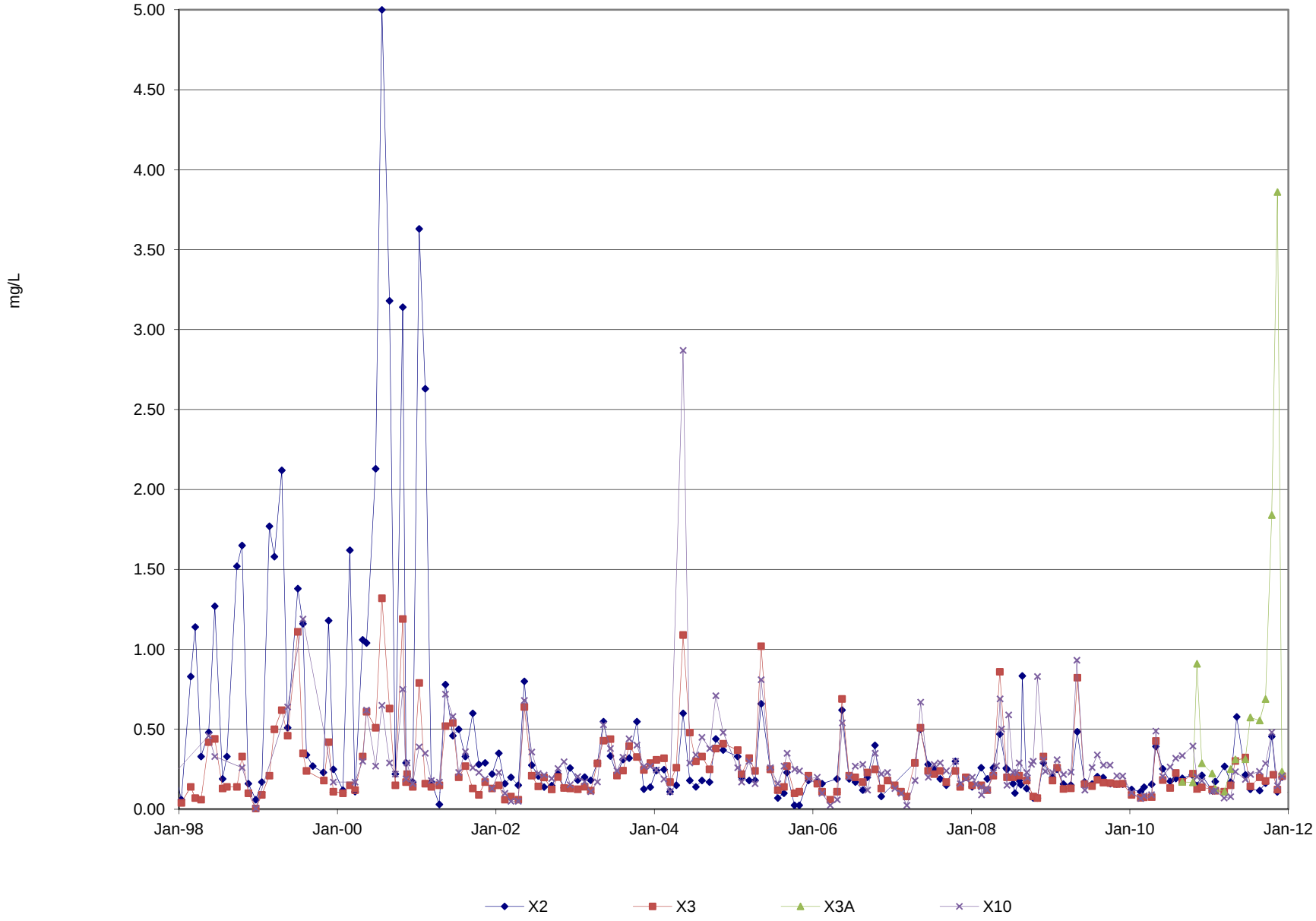


Figure B-32: Iron (Total) at X2, X3, X3A and X10



TABLES AND FIGURES

Rose Creek Drainage Water Quality:

Cross Valley Pond Depth Profiles

Table B-6 and Figure B-33
Cross Valley Pond Water Quality Profile - January 4, 2011

Table B-6

a) Site: NC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	9:55 AM	<0.0	7.49	2147	0.214
-1.5	9:57 AM	1.3	8.51	2172	0.301
-2.0	10:03 AM	2.5	7.06	2417	0.302
-2.5	9:59 AM	3.3	7.21	2471	0.346
-3.0	10:01 AM	1.1	7.45	2211	
-4.0	10:05 AM	3.9	6.87	2610	0.323
-5.0	10:06 AM	4.2	6.76	2710	
-6.0	10:08 AM	4.1	6.74	2615	0.375
-7.0	10:10 AM	4.1	6.66	2857	
-8.0	10:11 AM	4.4	6.62	2878	0.433
-9.0					
-10.0					

Bottom @ 8.2 m

b) Site: Middle

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	10:32 AM	<0.0	7.43	2024	0.279
-1.5					
-2.0	10:34 AM	1.9	7.24	2160	0.329
-2.5	10:36 AM	2.8	6.84	2455	0.458
-3.0	10:37 AM	2.5	6.97	2436	
-4.0	10:38 AM	4.0	6.63	2635	0.438
-5.0	10:40 AM	4.4	6.71	2592	
-6.0	10:41 AM	4.2	6.59	2644	0.360
-7.0	10:43 AM	3.9	6.51	2698	
-8.0	10:45 AM	4.2	6.44	2805	0.440
-9.0					
-10.0					

Bottom @ 8.3 m

c) Site: SC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	11:12 AM	<0.0	7.58	1655	0.196
-1.5					
-2.0	11:14 AM	1.9	7.03	2135	0.310
-2.5	11:16 AM	1.8	6.97	2345	0.278
-3.0	11:17 AM	3.3	6.64	2448	
-4.0	11:18 AM	3.4	6.59	2660	0.273
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

Bottom @ 4.3 m

d) Site: WC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	10:54 AM	0.3	7.26	1868	0.206
-1.5	10:55 AM	1.8	7.22	2097	0.316
-2.0	10:56 AM	3.0	6.93	2311	0.322
-2.5	10:57 AM	3.5	6.72	2452	0.325
-3.0	10:58 AM	4.3	6.59	2565	
-4.0	10:59 AM	4.7	6.50	2609	0.323
-5.0	11:00 AM	4.7	6.45	2678	
-6.0	11:01 AM	4.1	6.48	2615	0.318
-7.0	11:02 AM	3.9	6.48	2617	
-8.0	11:04 AM	4.3	6.44	2706	0.320
-9.0	11:05 AM	0.9	7.25	2078	
-10.0					

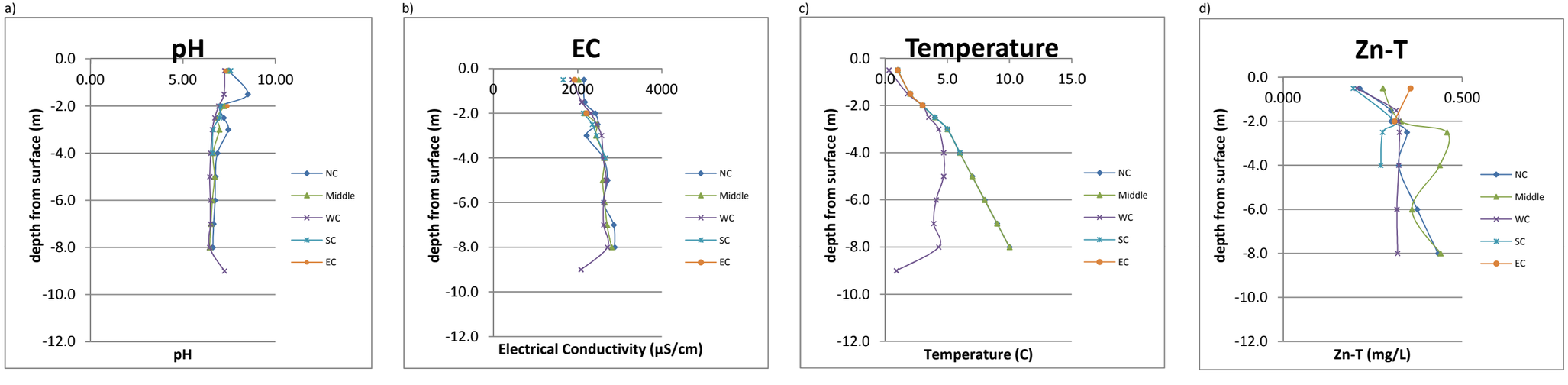
Bottom @ 9.1 m

e) Site: EC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	10:21 AM	<0.0	7.29	1924	0.356
-1.5					
-2.0	10:23 AM	1.2	7.40	2205	0.311
-2.5					
-3.0					
-4.0					
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

Bottom @ 2.5 m

Figure B-33



Method of Analysis: ICP-OES.

Table B-7 and Figure B-34
Cross Valley Pond Water Quality Profile - February 9, 2011

Table B-7

a) Site: NC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	3:37 PM	0.9	7.27	2047	0.228
-2.0	3:38 PM	1.7	7.16	2168	0.285
-2.5	3:40 PM	2.5	6.90	2352	0.339
-3.0	3:42 PM	3.3	6.63	2491	0.360
-4.0	3:43 PM	4.6	6.46	2589	0.341
-5.0	3:45 PM	4.5	6.41	2693	
-6.0	3:47 PM	4.5	6.37	2746	0.352
-7.0	3:48 PM	4.5	6.33	2775	
-8.0					
-9.0					
-10.0					

Bottom @ 7.5 m

b) Site: Middle

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	2:19 PM	1.1	7.41	2064	0.155
-2.0	2:21 PM	3.3	7.47	2316	0.296
-2.5	2:24 PM	2.9	6.84	2423	0.314
-3.0	2:26 PM	3.0	6.88	2572	0.359
-4.0	2:31 PM	3.5	6.69	2631	0.366
-5.0	2:32 PM	3.8	6.62	2652	
-6.0	2:33 PM	4.0	6.54	2757	0.301
-7.0	2:36 PM	3.8	6.48	2726	
-8.0	2:39 PM	3.8	6.38	2866	0.340
-9.0					
-10.0					

Bottom @ 8.2 m

c) Site: SC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	3:18 PM	0.4	7.20	1607	0.145
-2.0	3:20 PM	1.4	7.08	2136	0.287
-2.5	3:22 PM	2.4	6.77	2324	0.256
-3.0	3:23 PM	3.6	6.53	2549	0.233
-4.0	3:27 PM	3.8	6.48	2644	0.262
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

Bottom @ 4.9 m

d) Site: WC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	2:51 PM	0.8	7.23	1425	0.127
-2.0	2:53 PM	1.8	7.09	2092	0.291
-2.5	2:56 PM	2.9	6.80	2418	0.233
-3.0	2:58 PM	3.4	6.61	2521	0.278
-4.0	2:59 PM	3.7	6.53	2577	0.313
-5.0	3:01 PM	3.9	6.49	2663	
-6.0	3:02 PM	4.4	6.43	2671	0.288
-7.0	3:04 PM	4.5	6.40	2708	
-8.0	3:06 PM	4.0	6.41	2739	0.275
-9.0					
-10.0					

Bottom @ 8.5 m

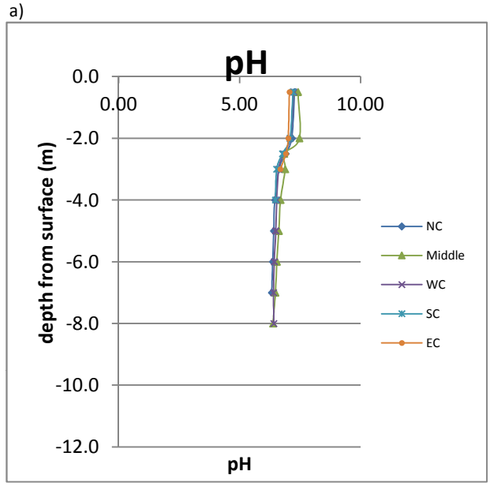
e) Site: EC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	3:57 PM	0.9	7.06	2071	0.326
-2.0	3:51 PM	1.5	7.01	2203	0.322
-2.5	4:00 PM	1.8	6.91	2304	0.241
-3.0	4:02 PM	2.5	6.68	2554	0.303
-4.0					
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

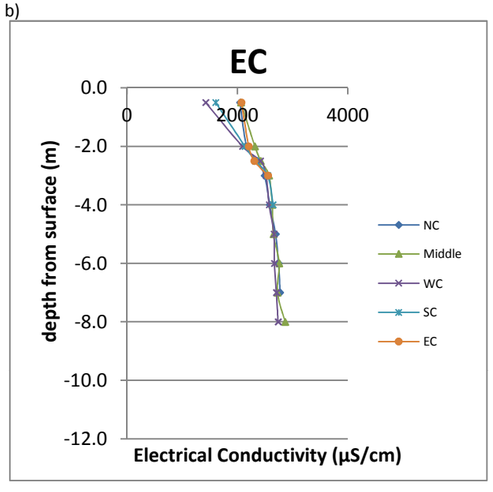
Bottom @ 3.8 m

Figure B-34

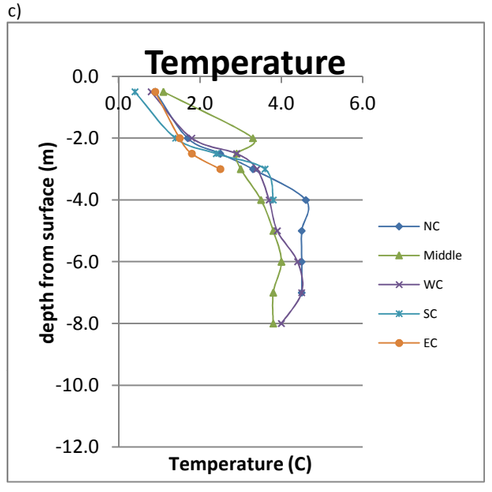
a)



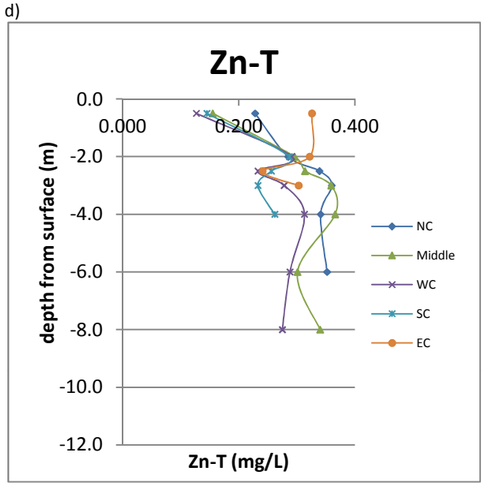
b)



c)



d)



Method of Analysis: ICP-OES.

Table B-8 and Figure B-35
Cross Valley Pond Water Quality Profile - March 3, 2011

Table B-8

a) Site: NC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	11:40 AM	0.8	7.22	1770	0.199
-2.0	11:46 AM	1.0	7.08	2226	0.293
-2.5	11:57 AM	1.4	6.82	2094	0.283
-3.0	11:59 AM	1.6	7.09	1708	0.199
-4.0	12:02 PM	3.1	6.39	2575	0.337
-5.0	12:04 PM	4.3	6.38	2581	
-6.0	12:05 PM	4.0	6.33	2691	0.412
-7.0	12:06 PM	4.5	6.44	2406	
-8.0					
-9.0					
-10.0					

Bottom @ 7.1 m

b) Site: Middle

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	1:06 PM	0.6	7.07	1777	0.103
-2.0	1:07 PM	1.4	7.27	2117	0.292
-2.5	1:08 PM	2.2	6.64	2446	0.325
-3.0	1:09 PM	3.1	6.63	2423	0.329
-4.0	1:11 PM	3.9	6.54	2643	0.379
-5.0	1:12 PM	4.2	6.52	2688	
-6.0	1:13 PM	4.4	6.55	2713	0.335
-7.0	1:14 PM	4.0	6.48	2750	
-8.0	1:15 PM	3.9	6.48	2859	0.320
-9.0	1:17 PM	4.3	6.60	2757	
-10.0					

Bottom @ 9.2 m

c) Site: SC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	1:20 PM	0.8	7.12	1307	0.107
-2.0	1:22 PM	1.8	7.09	2048	0.276
-2.5					
-3.0	1:23 PM	2.8	6.51	2447	0.233
-4.0	1:23 PM	3.6	6.41	2607	0.230
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

Bottom @ 4.9 m

d) Site: WC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	12:12 PM	0.6	7.27	1315	0.098
-2.0	12:15 PM	1.4	7.13	2042	0.285
-2.5	12:17 PM	2.0	6.62	2225	0.253
-3.0	12:18 PM	3.1	6.49	2331	0.281
-4.0	12:20 PM	4.3	6.31	2660	0.274
-5.0	12:23 PM	4.9	6.29	2734	
-6.0	12:24 PM	4.7	6.35	2730	0.309
-7.0	12:26 PM	4.9	6.35	2753	
-8.0	12:27 PM	4.7	6.32	2714	0.293
-9.0	12:29 PM	4.4	6.29	2844	
-10.0					

Bottom @ 9.9 m

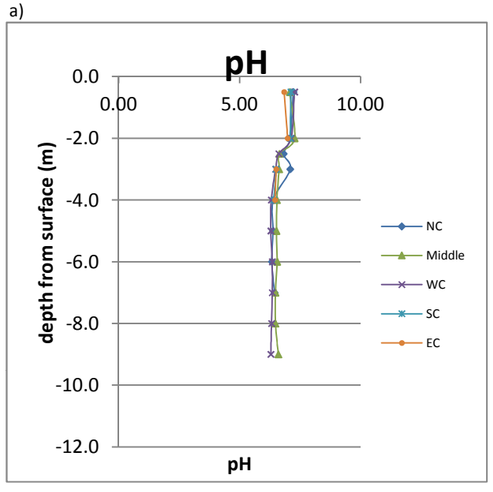
e) Site: EC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	1:27 PM	0.8	6.84	1629	0.201
-2.0	1:29 PM	0.6	6.98	2100	0.330
-2.5					
-3.0	1:30 PM	2.5	6.51	2452	0.301
-4.0	1:31 PM	2.7	6.46	2596	0.352
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

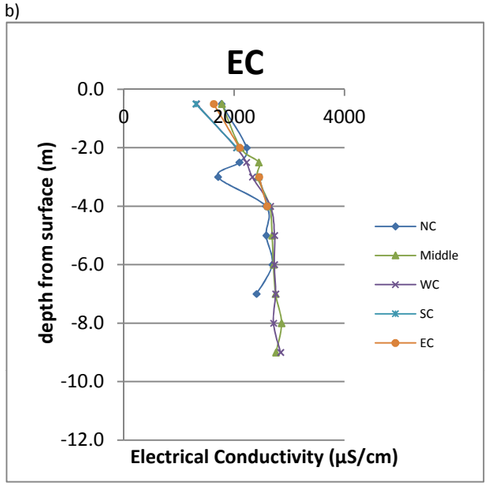
Bottom @ 4.6 m

Figure B-35

a)



b)



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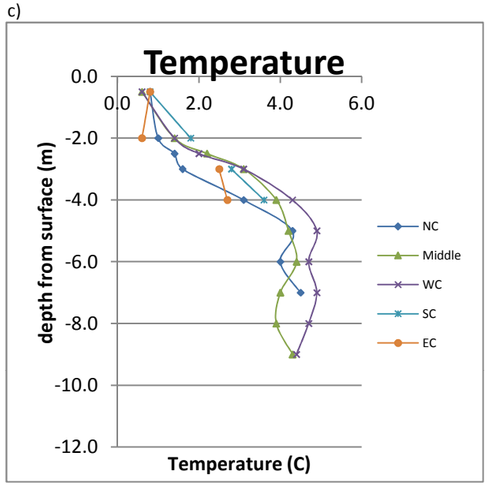
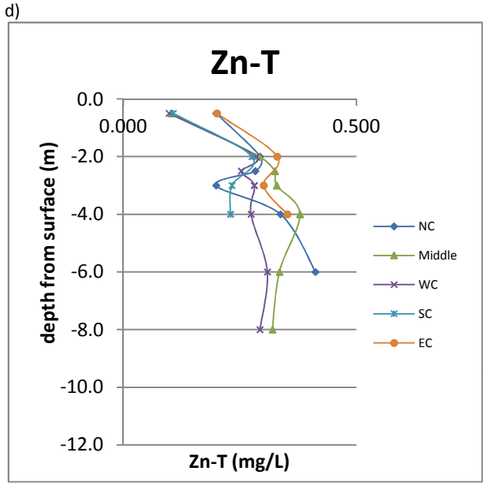


d)



Method of Analysis: ICP-OES

Table B-9 and Figure B-36
Cross Valley Pond Water Quality Profile - March 21, 2011

Table B-9

a) Site: NC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	9:17 AM		7.23	1857	0.199
-2.0	9:19 AM		7.19	2116	0.301
-3.0	9:22 AM		6.71	2403	0.391
-4.0	9:23 AM		6.61	2575	0.305
-5.0	9:27 AM		6.61	2464	0.316
-6.0	9:28 AM		6.51	2617	0.360
-7.0					
-8.0					
-9.0					
-10.0					

Bottom @ 8.1 m

b) Site: Middle

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5					
-2.0					
-3.0					
-4.0					
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

c) Site: SC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5					
-2.0					
-3.0					
-4.0					
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

d) Site: WC

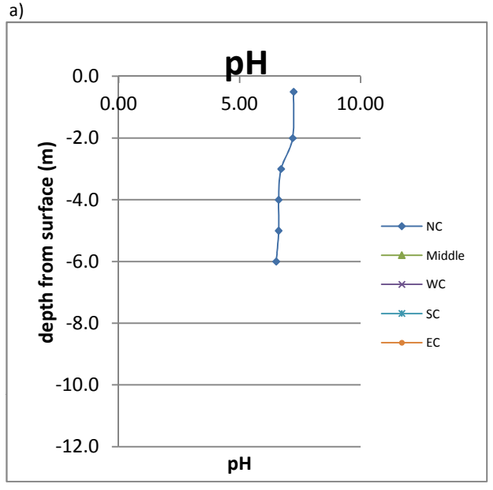
Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5					
-2.0					
-2.5					
-3.0					
-4.0					
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

e) Site: EC

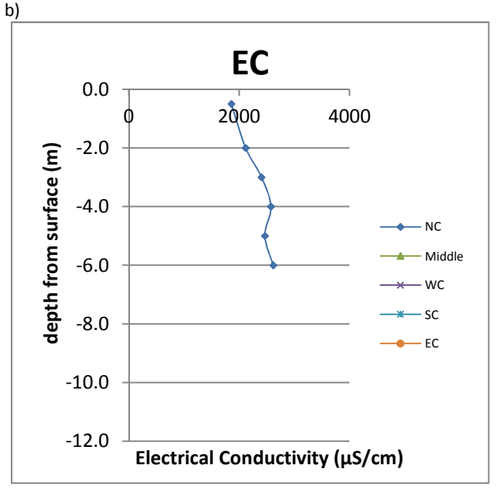
Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5					
-2.0					
-2.5					
-3.0					
-4.0					
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

Figure B-36

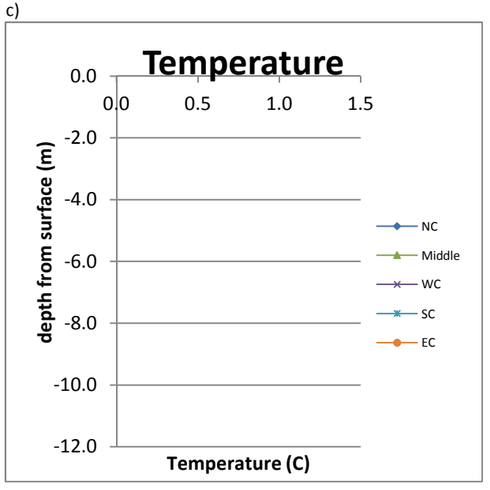
a)



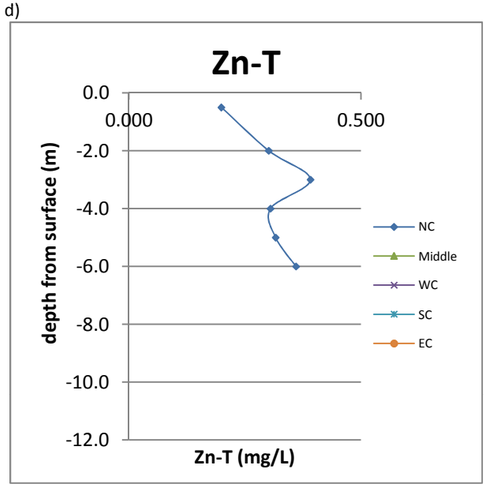
b)



c)



d)



Method of Analysis: ICP-OES

Table B-10 and Figure B-37
Cross Valley Pond Water Quality Profile - April 6, 2011

Table B-10

a) Site: NC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	2:16 PM	0.3	7.54	1501	0.135
-2.0	2:18 PM	0.5	7.34	1846	0.165
-2.5	2:20 PM	1.0	7.33	1848	0.184
-3.0	2:21 PM	1.1	7.23	2025	0.198
-4.0	2:22 PM	1.8	7.01	2133	0.216
-5.0	2:23 PM	3.2	6.70	2471	
-6.0	2:24 PM	3.2	6.74	2412	0.281
-7.0	2:26 PM	3.6	6.62	2549	
-8.0	2:27 PM	4.0	6.60	2658	0.299
-9.0	2:28 PM	4.2	6.56	2735	
-10.0					

Bottom @ 9.3 m

b) Site: Middle

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	2:36 PM	0.5	7.24	1846	0.097
-2.0	2:39 PM	0.7	7.19	1958	0.103
-2.5	2:40 PM	0.7	7.21	1944	0.114
-3.0	2:41 PM	0.6	7.20	1906	0.258
-4.0	2:42 PM	1.1	7.23	1960	0.319
-5.0	2:43 PM	2.3	6.84	2265	
-6.0	2:45 PM	1.8	6.97	2195	0.308
-7.0	2:46 PM	3.8	6.59	2589	
-8.0	2:47 PM	3.5	6.56	2693	0.299
-9.0	2:49 PM	4.0	6.55	2734	
-10.0	2:50 PM	4.0	6.54	2762	0.301

Bottom @ 10.9 m

c) Site: SC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	3:19 PM	2.3	7.28	1874	0.200
-2.0	3:21 PM	1.8	7.20	1992	0.204
-2.5	3:22 PM	1.6	7.27	1978	
-3.0	3:23 PM	1.9	7.26	1878	
-4.0	3:25 PM	2.4	7.01	2093	0.227
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

Bottom @ 4.7 m

d) Site: WC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	2:59 PM	0.7	7.38	1737	0.176
-2.0	3:00 PM	1.0	7.29	1869	0.183
-2.5	3:01 PM	2.3	7.04	2110	0.215
-3.0	3:02 PM	2.3	6.90	2210	0.211
-4.0	3:03 PM	1.8	7.21	1985	0.293
-5.0	3:04 PM	3.0	6.73	2398	
-6.0	3:06 PM	3.3	6.71	2415	0.303
-7.0	3:07 PM	4.3	6.55	2670	
-8.0	3:09 PM	4.0	6.61	2592	0.296
-9.0	3:10 PM	4.5	6.54	2767	
-10.0	3:11 PM	4.3	6.54	2763	0.289

Bottom @ 10.7 m

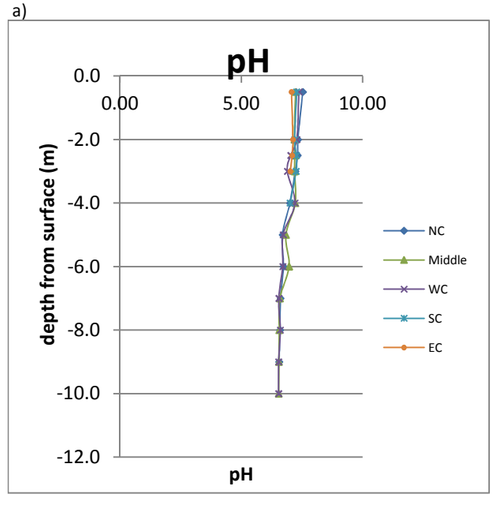
e) Site: EC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	3:33 PM	0.8	7.07	1758	0.517
-2.0	3:34 PM	0.7	7.13	1852	0.293
-2.5	3:35 PM	1.1	7.10	1829	
-3.0	3:36 PM	1.8	7.02	2080	0.445
-4.0					
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

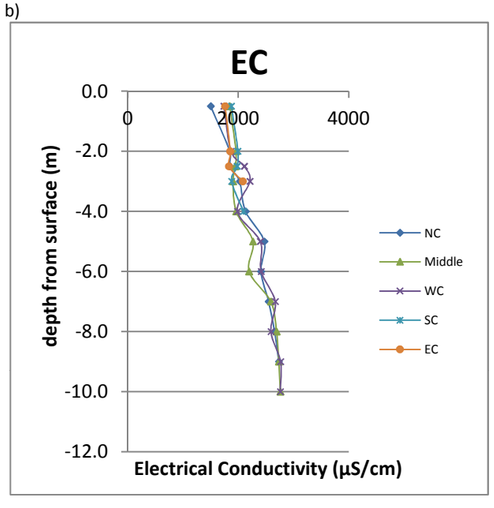
Bottom @ 3.9 m

Figure B-37

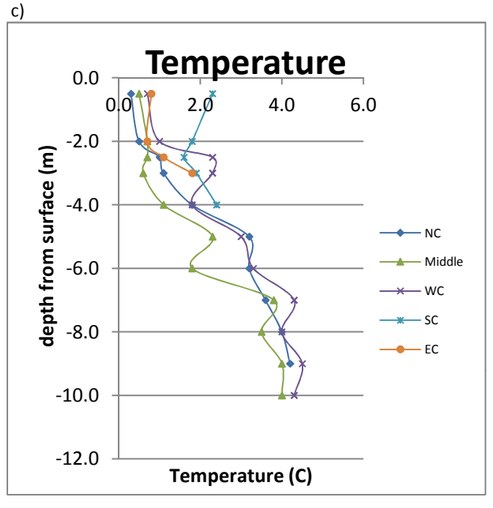
a)



b)



c)



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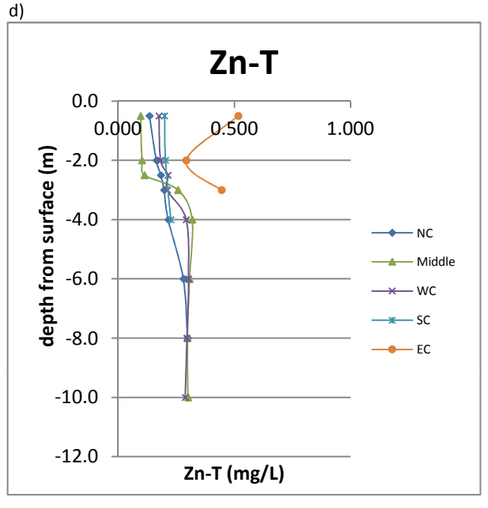


Method of Analysis: ICP-OES

Table B-11 and Figure B-38
Cross Valley Pond Water Quality Profile - May 31, 2011

Table B-11

a) Site: NC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	5:34 PM	14.1	7.77	1289	0.175
-2.0	5:35 PM	9.6	6.89	2450	0.366
-3.0	5:36 PM	8.1	6.64	2572	0.287
-4.0	5:37 PM	6.7	6.49	2630	0.290
-5.0	5:38 PM	7.1	6.45	2620	
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

Bottom @ 5.5 m

b) Site: Middle

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	5:55 PM	12.8	7.35	1251	0.184
-2.0	5:56 PM	10.8	6.53	2449	0.278
-3.0	5:57 PM	8.8	6.44	2368	0.300
-4.0	5:58 PM	7.9	6.45	2643	0.262
-5.0	5:59 PM	8.6	6.41	2476	
-6.0	6:00 PM	6.6	6.39	2760	0.235
-7.0	6:01 PM	6.1	6.43	2698	
-8.0	6:02 PM	6.1	6.38	2661	0.253
-9.0					
-10.0					

Bottom @ 8.9 m

c) Site: SC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	6:28 PM	12.2	7.20	1230	0.160
-2.0	6:29 PM	10.0	6.73	2345	0.235
-3.0	6:30 PM	7.6	6.52	2571	0.228
-4.0	6:31 PM	6.2	6.51	2609	0.244
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

Bottom @ 4.3 m

d) Site: WC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	6:12 PM	10.6	7.19	1356	0.193
-2.0	6:13 PM	11.0	6.65	2111	0.360
-3.0	6:14 PM	9.6	6.56	2446	0.296
-4.0	6:15 PM	7.7	6.44	2604	0.262
-5.0	6:16 PM	6.8	6.45	2535	
-6.0	6:17 PM	5.9	6.42	2595	0.243
-7.0	6:18 PM	5.7	6.43	2681	
-8.0	6:19 PM	5.7	6.40	2698	0.253
-9.0	6:20 PM	5.7	6.40	2707	
-10.0					

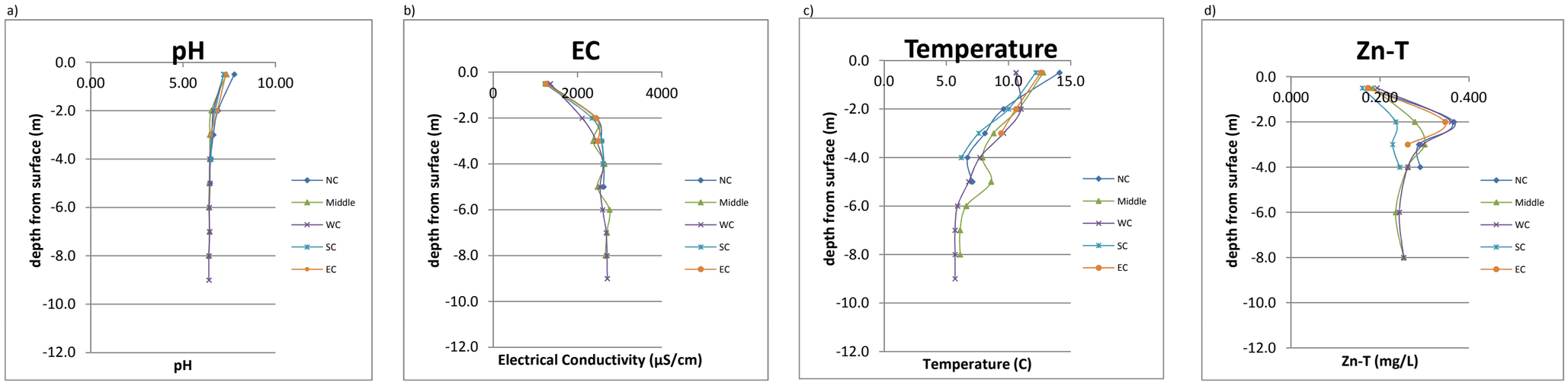
Bottom @ 9.5 m

e) Site: EC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	6:36 PM	12.6	7.31	1241	0.172
-2.0	6:37 PM	10.6	6.85	2436	0.346
-3.0	6:38 PM	9.4	6.48	2485	0.262
-4.0					
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

Bottom @ 3.3 m

Figure B-38



Method of Analysis: ICP-OES

Table B-12 and Figure B-39
Cross Valley Pond Water Quality Profile - June 27, 2011

Table B-12

a) Site: NC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	1:02 PM	15.8	7.72	1580	0.198
-2.0	1:04 PM	15.6	6.46	2283	0.301
-2.5	1:06 PM	13.2	6.32	2510	0.326
-3.0	1:07 PM	11.2	6.34	2627	0.296
-4.0	1:09 PM	10.6	6.44	2467	0.272
-5.0	1:11 PM	8.4	6.37	2704	
-6.0	1:12 PM	9.5	6.32	2568	0.260
-7.0	1:15 PM	6.8	6.31	2726	
-8.0					
-9.0					
-10.0					

Bottom @ 7.5 m

b) Site: Middle

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	1:23 PM	15.3	7.52	1609	0.194
-2.0	1:24 PM	13.8	6.47	2535	0.302
-2.5	1:26 PM	11.1	6.41	2617	0.281
-3.0	1:27 PM	10.4	6.36	2657	
-4.0	1:29 PM	9.7	6.40	2607	0.266
-5.0	1:30 PM	7.2	6.39	2682	
-6.0	1:32 PM	8.1	6.40	2674	0.262
-7.0	1:33 PM	6.4	6.37	2834	
-8.0	1:35 PM	7.1	6.42	2788	0.244
-9.0					
-10.0					

Bottom @ 8.75 m

c) Site: SC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	2:04 PM	15.9	7.42	1596	0.436
-2.0	2:06 PM	14.1	6.43	2503	0.288
-2.5	2:09 PM	12.7	6.34	2542	0.272
-3.0	2:07 PM	11.3	6.36	2622	
-4.0					
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

Bottom @ 3.75 m

d) Site: WC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	1:41 PM	15.6	7.45	1590	0.188
-2.0	1:42 PM	14.1	6.41	2468	0.319
-2.5	1:46 PM	12.8	6.36	2560	0.289
-3.0	1:44 PM	11.5	6.34	2601	
-4.0	1:47 PM	9.2	6.35	2663	0.263
-5.0	1:48 PM	7.0	6.33	2694	
-6.0	1:50 PM	7.1	6.34	2736	0.245
-7.0	1:51 PM	6.7	6.34	2786	
-8.0					
-9.0					
-10.0					

Bottom @ 7.9 m

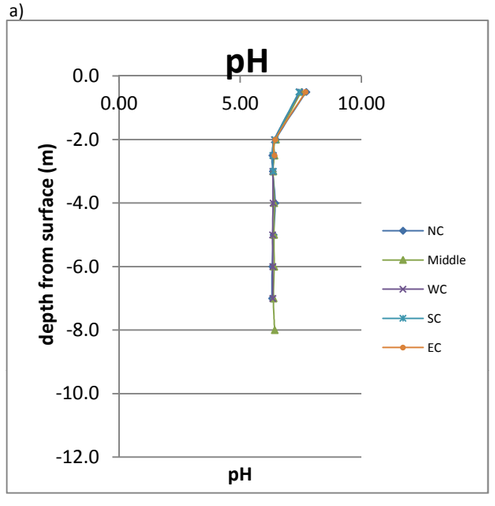
e) Site: EC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	2:16 PM	15.4	7.69	1584	0.243
-2.0	2:17 PM	13.1	6.44	2565	0.348
-2.5	2:18 PM	11.9	6.41	2612	0.360
-3.0					
-4.0					
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

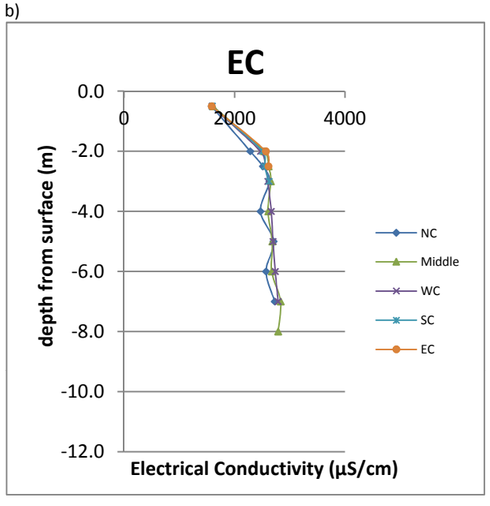
Bottom @ 3.0 m

Figure B-39

a)



b)



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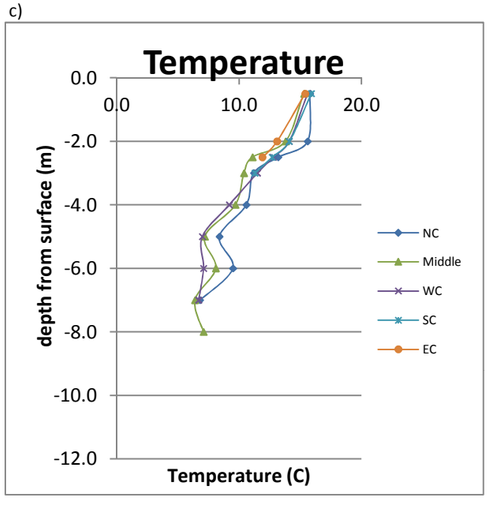
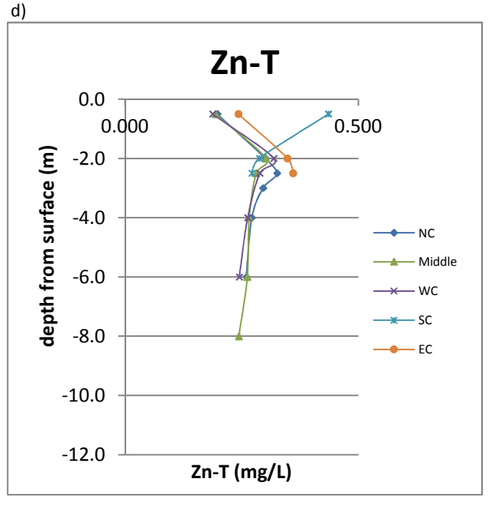


d)



Method of Analysis: ICP-OES

Table B-13 and Figure B-40
Cross Valley Pond Water Quality Profile - July 25, 2011

Table B-13

a) Site: NC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	3:26 PM	17.3	8.08	1415	0.216
-2.0	3:30 PM	16.5	8.05	1400	0.215
-2.5	3:32 PM	15.7	6.60	1869	0.213
-3.0	3:34 PM	12.8	6.35	2484	0.214
-4.0	3:36 PM	12.6	7.29	2355	0.227
-5.0	3:38 PM	12.6	6.36	2335	
-6.0	3:40 PM	14.3	7.25	2341	0.264
-7.0	3:42 PM	9.4	6.39	2401	
-8.0					
-9.0					
-10.0					

Bottom @ 7.5 m

b) Site: Middle

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	4:18 PM	15.6	7.58	1399	0.216
-2.0	4:22 PM	15.3	7.01	2008	0.325
-2.5	4:24 PM	14.1	6.26	2053	0.269
-3.0	4:26 PM	14.5	6.27	2275	
-4.0	4:28 PM	10.3	6.16	2421	0.264
-5.0	4:30 PM	9.0	6.14	2420	
-6.0	4:37 PM	8.8	6.21	2452	0.266
-7.0	4:39 PM	8.6	6.11	2541	
-8.0	4:41 PM	8.8	6.14	2513	0.244
-9.0	4:43 PM	8.1	6.12	2586	
-10.0	4:45 PM	9.2	6.22	2491	0.260

Bottom @ 8.75 m

c) Site: SC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	4:05 PM	14.9	7.60	1379	0.205
-2.0	4:09 PM	14.8	6.58	1705	0.319
-2.5	4:11 PM	13.0	6.18	2292	0.273
-3.0	4:13 PM	11.5	6.13	2303	
-4.0	4:15 PM	9.9	6.17	2389	0.247
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

Bottom @ 3.75 m

d) Site: WC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	3:45 PM	15.9	8.79	1462	0.210
-2.0	3:48 PM	14.5	8.21	2165	0.275
-2.5	3:50 PM	14.5	8.22	2023	0.281
-3.0	3:51 PM	12.9	8.23	2388	
-4.0	3:52 PM	10.4	8.46	2406	0.228
-5.0	3:54 PM	9.0	6.57	2417	
-6.0	3:56 PM	8.7	6.49	2450	0.235
-7.0	3:58 PM	8.4	6.24	2404	
-8.0	4:00 PM	8.2	6.33	2520	0.233
-9.0	4:02 PM	7.5	6.19	2514	
-10.0					

Bottom @ 7.9 m

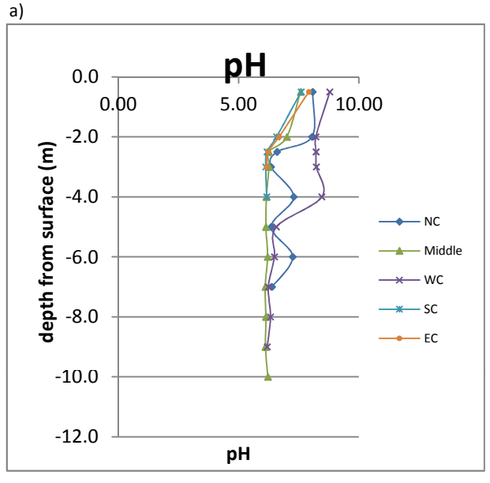
e) Site: EC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	4:48 PM	15.2	7.92	1373	0.205
-2.0	4:52 PM	14.2	6.68	1659	0.228
-2.5	4:54 PM	13.2	6.22	2295	0.367
-3.0	4:56 PM	12.1	6.16	2271	
-4.0					
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

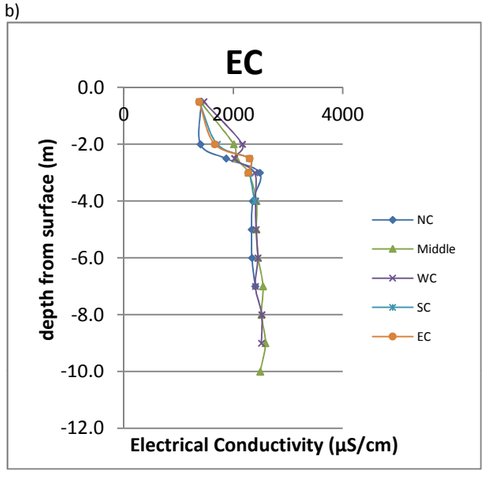
Bottom @ 4.0 m

Figure B-40

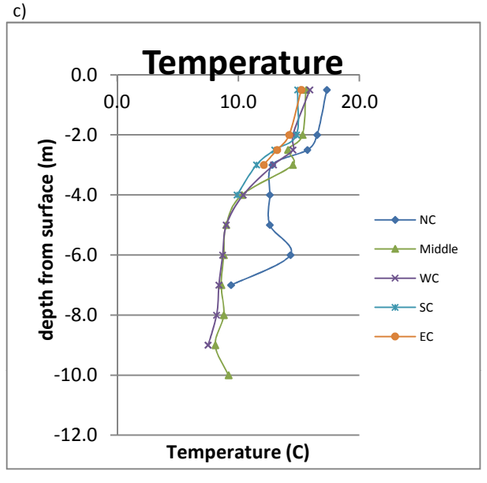
a)



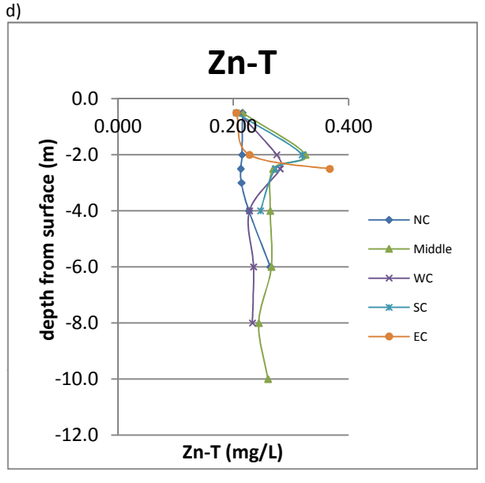
b)



c)



d)



Method of Analysis: ICP-OES

Table B-14 and Figure B-41
Cross Valley Pond Water Quality Profile - August 17, 2011

Table B-14

a) Site: NC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	10:20 AM	12.0	8.25	1357	0.036
-1.0	10:27 AM	12.2	7.72	1710	0.030
-2.0	10:23 AM	12.3	7.16	1770	0.083
-3.0	10:25 AM	12.4	6.28	2325	0.382
-4.0	10:32 AM	9.6	6.23	3040	0.284
-5.0	10:35 AM	8.6	6.16	3020	0.272
-6.0	10:40 AM	8.1	6.27	2424	0.259
-7.0	10:45 AM	7.9	6.26	2445	0.286
-8.0					
-9.0					
-10.0					

Bottom @ 8.0 m

b) Site: Middle

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	11:23 AM	11.9	8.67	1346	0.027
-1.0	11:25 AM	12.0	8.00	1690	0.033
-2.0	11:28 AM	12.9	6.52	2630	0.402
-3.0	11:30 AM	11.2	6.21	2980	0.311
-4.0	11:33 AM	9.1	6.19	3010	0.284
-5.0	11:36 AM	9.4	6.20	2930	0.298
-6.0	11:38 AM	7.9	6.17	3060	0.266
-7.0	11:41 AM	7.9	6.14	3130	0.279
-8.0					
-9.0					
-10.0					

Bottom @ 7.5 m

c) Site: SC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	12:44 PM	11.5	7.91	1340	0.043
-1.0	12:46 PM	11.6	7.35	1700	0.045
-2.0	12:48 PM	12.6	6.52	2090	0.388
-3.0	12:50 PM	11.0	6.35	2203	0.271
-4.0	12:55 PM	8.1	6.42	2970	0.248
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

Bottom @ 4.3 m

d) Site: NEW

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	10:50 AM	11.8	8.63	1670	0.044
-1.0	10:53 AM	11.8	8.48	1336	0.033
-2.0	10:55 AM	12.4	6.64	1841	0.463
-3.0	10:57 AM	11.3	6.41	2980	0.358
-4.0	11:00 AM	9.3	6.17	3020	0.285
-5.0	11:05 AM	8.3	6.17	3000	0.286
-6.0	11:10 AM	7.8	6.13	3050	0.270
-7.0	11:13 AM	7.7	6.11	3130	0.268
-8.0	11:15 AM	7.8	6.33	2475	0.319
-9.0					
-10.0					

Bottom @ 8.5 m

e) Site: WC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	12:19 PM	11.9	7.38	1720	0.041
-1.0	12:22 PM	11.9	7.67	1710	0.038
-2.0	12:24 PM	12.9	6.54	2640	0.376
-3.0	12:25 PM	11.6	6.22	2960	0.307
-4.0	12:27 PM	9.3	6.23	3020	0.268
-5.0	12:30 PM	8.6	6.18	3020	0.283
-6.0	12:36 PM	9.8	6.17	2870	0.227
-7.0	12:38 PM	7.5	6.12	3110	0.248
-8.0	12:40 PM	7.0	6.30	3160	0.253
-9.0	12:42 PM	7.0	6.35	2451	0.254
-10.0					

Bottom @ 9.4 m

f) Site: EC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	1:17 PM	11.7	9.01	1315	0.026
-1.0	1:22 PM	11.6	8.64	1670	0.029
-2.0	1:23 PM	10.9	6.90	1588	0.099
-3.0	1:25 PM	11.3	6.77	2710	0.393
-4.0					
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

Bottom @ 4.0 m

g) Site: Middle SE

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	1:00 PM	11.6	8.49	1342	0.025
-1.0	1:03 PM	11.4	8.44	1343	0.031
-2.0	1:05 PM	12.3	6.54	1997	0.326
-3.0	1:07 PM	11.4	6.34	2329	0.291
-4.0	1:10 PM	9.2	6.27	2980	0.258
-5.0	1:12 PM	9.7	6.38	2143	0.249
-6.0	1:15 PM	8.0	6.33	2396	0.264
-7.0					
-8.0					
-9.0					
-10.0					

Bottom at 7.0 m

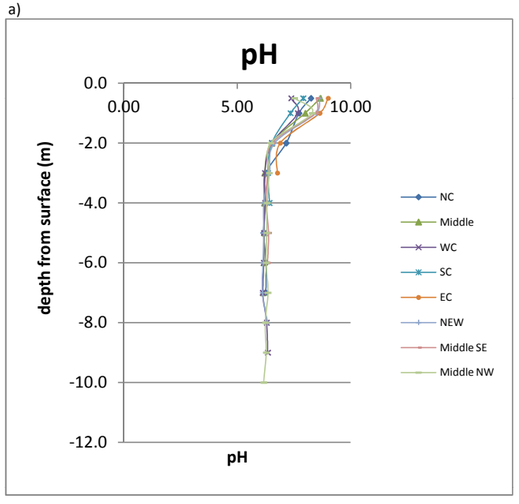
h) Site: Middle NW

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	11:44 AM	11.7	7.53	1690	0.028
-1.0	11:47 AM	12.0	8.30	1351	0.033
-2.0	11:49 AM	13.2	6.48	2106	0.388
-3.0	11:51 AM	11.9	6.41	2166	0.309
-4.0	11:54 AM	9.8	6.32	2366	0.290
-5.0	11:55 AM	8.2	6.31	2383	0.274
-6.0	11:58 AM	8.0	6.28	2410	0.264
-7.0	12:00 PM	7.8	6.36	3220	0.251
-8.0	12:04 PM	9.4	6.24	2990	0.243
-9.0	12:07 PM	9.0	6.28	3060	0.232
-10.0	12:12 PM	6.9	6.17	3280	0.264

Bottom @ 11.0 m

Figure B-41

a)



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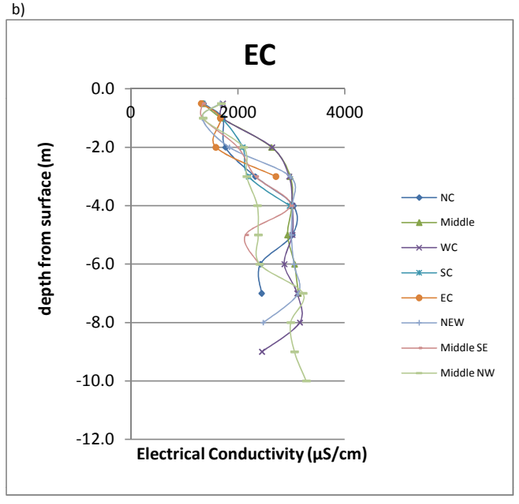

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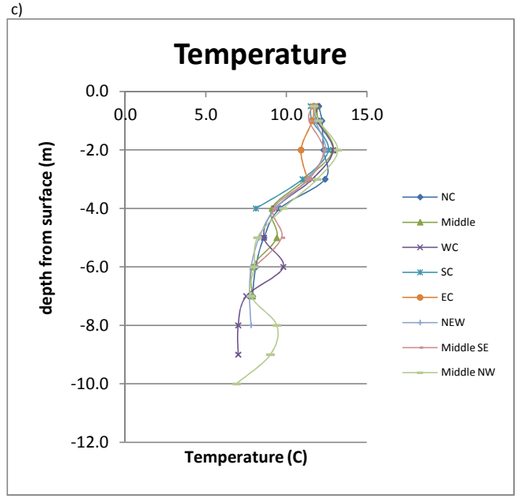

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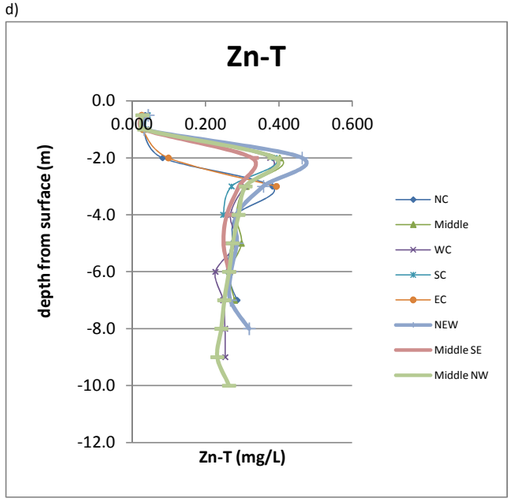


Method of Analysis: ICP-OES

Table B-15 and Figure B-42
Cross Valley Pond Water Quality Profile - August 19, 2011

Table B-15

a) Site: NC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	3:14 PM	11.7	8.22	1487	
-1.0	3:15 PM	11.7	8.26	1489	
-1.5	3:16 PM	11.6	8.31	1490	
-2.0	3:17 PM	11.5	8.35	1486	
-2.5	3:18 PM	11.7	7.09	1686	
-3.0	3:19 PM	12.1	6.51	2464	
-3.5	3:21 PM	11.6	6.51	2392	
-4.0	3:22 PM	11.7	6.61	2115	
-5.0	3:24 PM	10.5	6.53	2434	
-6.0	3:26 PM	10.1	6.64	2300	
-7.0	3:27 PM	10.4	6.55	2203	
-8.0	3:29 PM	8.9	6.45	2610	
-9.0					
-10.0					

Bottom @ 8.7 m

b) Site: Middle

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5					
-1.0					
-1.5					
-2.0					
-2.5					
-3.0					
-3.5					
-4.0					
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

c) Site: SC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5					
-1.0					
-1.5					
-2.0					
-2.5					
-3.0					
-3.5					
-4.0					
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

d) Site: NEW *Site moved 25m closer to shore.

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	2:47 PM	12.0	8.66	1493	
-1.0	2:49 PM	11.9	8.76	1467	
-1.5	2:53 PM	12.0	8.78	1474	
-2.0	2:55 PM	12.0	7.83	1532	
-2.5	2:58 PM	12.6	6.50	2387	
-3.0	3:02 PM	12.1	6.34	2570	
-3.5	3:06 PM	12.3	6.38	2489	
-4.0					
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

Bottom @ 3.85 m

e) Site: WC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5					
-1.0					
-1.5					
-2.0					
-2.5					
-3.0					
-3.5					
-4.0					
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

f) Site: EC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	2:34 PM	12.8	8.00	1830	
-1.0	2:35 PM	12.4	8.07	1514	
-1.5	2:36 PM	11.9	7.94	1770	
-2.0	2:37 PM	12.3	6.71	2142	
-2.5	2:38 PM	12.6	6.51	2346	
-3.0	2:39 PM	12.1	6.41	2521	
-3.5	2:40 PM	12.1	6.43	2335	
-4.0					
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

Bottom @ 3.6 m

g) Site: Middle SE

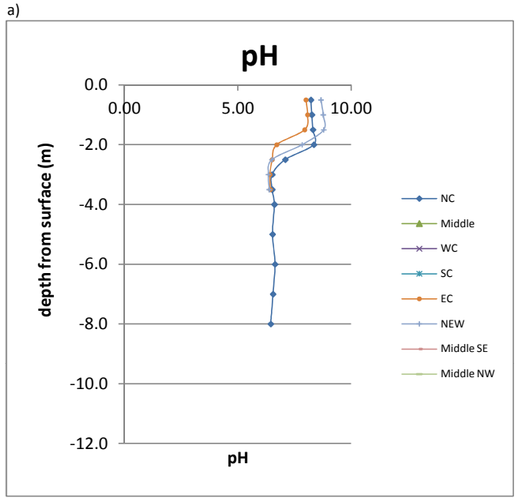
Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5					
-1.0					
-1.5					
-2.0					
-2.5					
-3.0					
-3.5					
-4.0					
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

h) Site: Middle NW

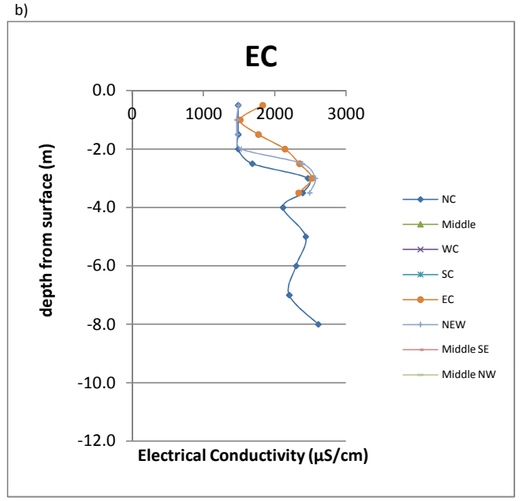
Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5					
-1.0					
-1.5					
-2.0					
-2.5					
-3.0					
-3.5					
-4.0					
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

Figure B-42

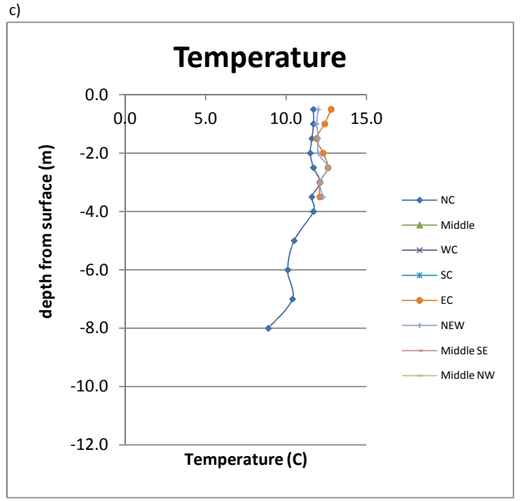
a)



b)



c)



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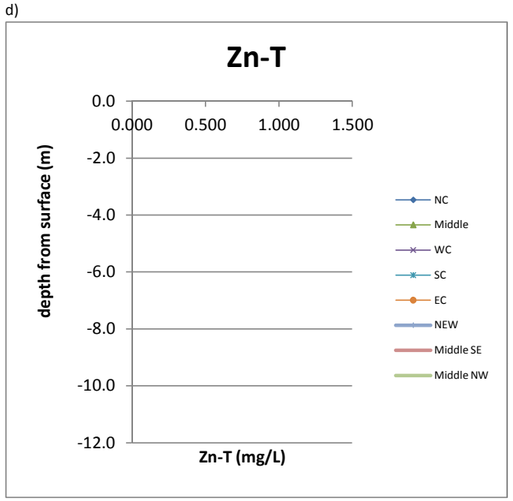


Method of Analysis: Field Hanna Pen

Table B-16 and Figure B-43
Cross Valley Pond Water Quality Profile - August 23, 2011

Table B-16

a) Site: NC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	11:19 AM	11.7	7.41	1900	
-1.0	11:20 AM	11.5	7.43	1900	
-1.5	11:21 AM	11.5	7.35	1890	
-2.0	11:22 AM	12.1	6.42	2860	
-2.5	11:24 AM	12.0	6.45	2750	
-3.0	11:25 AM	11.5	6.41	2810	
-3.5	11:26 AM	10.6	6.24	3010	
-4.0	11:28 AM	10.4	6.26	2860	
-5.0	11:29 AM	8.9	6.25	3070	
-6.0	11:30 AM	9.4	6.27	2920	
-7.0	11:32 AM	9.3	6.26	3010	
-8.0	11:33 AM	7.9	6.21	3170	
-9.0					
-10.0					

Bottom @ 8.2 m

b) Site: Middle

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5					
-1.0					
-1.5					
-2.0					
-2.5					
-3.0					
-3.5					
-4.0					
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

c) Site: SC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5					
-1.0					
-1.5					
-2.0					
-2.5					
-3.0					
-3.5					
-4.0					
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

d) Site: NEW

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	11:40 AM	11.3	8.36	1810	
-1.0	11:43 AM	11.2	7.88	1850	
-1.5	11:45 AM	11.3	7.53	1870	
-2.0	11:47 AM	11.5	6.63	2260	
-2.5	11:52 AM	11.7	6.33	2840	
-3.0	11:54 AM	11.3	6.26	2940	
-3.5					
-4.0					
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

Bottom @ 3.9 m

e) Site: WC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5					
-1.0					
-1.5					
-2.0					
-2.5					
-3.0					
-3.5					
-4.0					
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

f) Site: EC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	11:59 AM	11.4	7.94	1840	
-1.0	12:02 PM	11.3	7.84	1850	
-1.5	12:03 PM	11.4	6.63	2290	
-2.0	12:07 PM	11.6	6.40	2670	
-2.5	12:08 PM	11.6	6.36	2710	
-3.0	12:09 PM	11.5	6.23	2970	
-3.5					
-4.0					
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

Bottom @ 3.6 m

g) Site: Middle SE

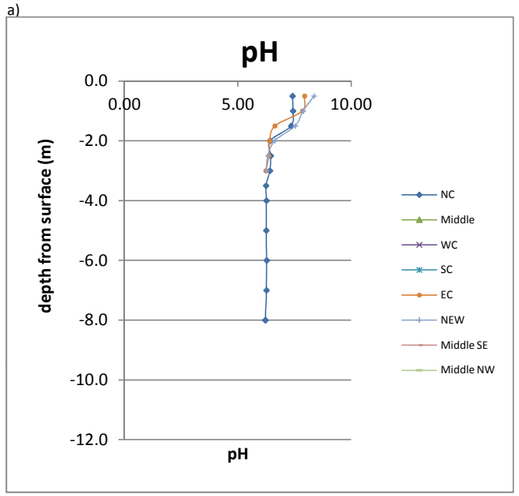
Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5					
-1.0					
-1.5					
-2.0					
-2.5					
-3.0					
-3.5					
-4.0					
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

h) Site: Middle NW

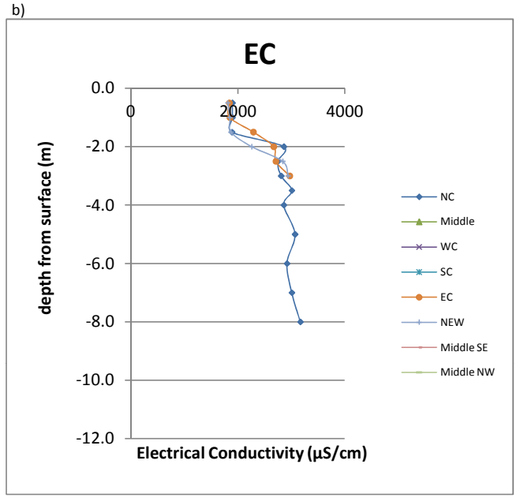
Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5					
-1.0					
-1.5					
-2.0					
-2.5					
-3.0					
-3.5					
-4.0					
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

Figure B-43

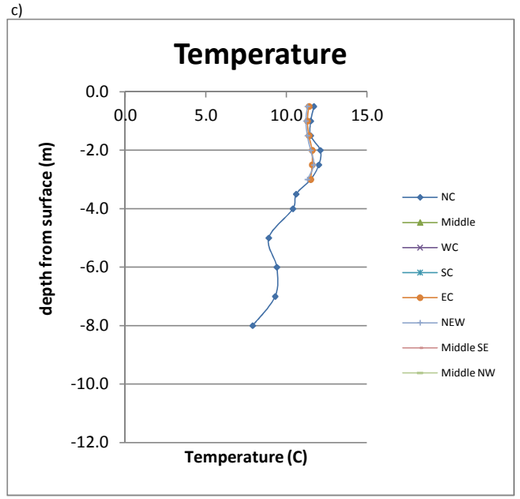
a)



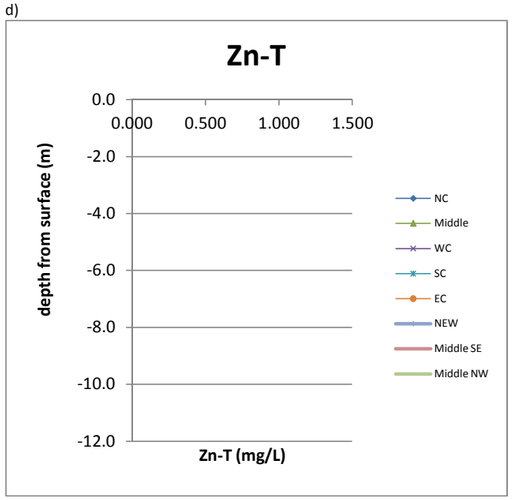
b)



c)



d)



Method of Analysis: Field Hanna Pen

Table B-17 and Figure B-44
Cross Valley Pond Water Quality Profile - August 26, 2011

Table B-17

a) Site: NC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	1:11 PM	12.3	7.33	1616	0.062
-1.0	1:13 PM	11.4	7.30	1567	0.062
-1.5	1:15 PM	11.1	7.69	1598	0.062
-2.0	1:17 PM	11.1	7.53	1552	0.063
-2.5	1:19 PM	11.6	6.60	2329	0.340
-3.0	1:21 PM	11.4	6.45	2512	0.340
-3.5	1:23 PM	11.0	6.49	2504	0.292
-4.0	1:25 PM	11.0	6.49	2505	0.355
-5.0	1:27 PM	9.8	6.50	2547	0.322
-6.0	1:29 PM	9.4	6.62	2709	0.304
-7.0	1:31 PM	8.2	6.53	2594	0.260
-8.0	1:33 PM	8.5	6.43	2613	0.329
-9.0					
-10.0					

Bottom @ 8.5 m

b) Site: Middle

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	2:14 PM	10.9	7.45	1575	0.102
-1.0	2:16 PM	11.0	7.70	1583	0.077
-1.5	2:18 PM	11.0	7.53	1560	0.076
-2.0	2:20 PM	10.9	7.65	1586	0.080
-2.5	2:22 PM	11.8	6.65	2266	0.321
-3.0	2:24 PM	11.4	6.58	2419	0.296
-3.5	2:26 PM	10.6	6.53	2476	0.288
-4.0	2:28 PM	9.6	6.54	2587	0.272
-5.0	2:30 PM	8.6	6.54	2550	0.282
-6.0	2:32 PM	8.3	6.58	2599	0.241
-7.0	2:34 PM	8.2	6.51	2651	0.262
-8.0	2:36 PM	7.5	6.54	2654	0.259
-9.0					
-10.0					

Bottom @8.3 m

c) Site: SC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	3:02 PM	11.1	7.63	1576	0.076
-1.0	3:04 PM	11.1	7.24	1569	0.079
-1.5	3:05 PM	11.2	7.55	1584	0.081
-2.0	3:07 PM	11.5	6.84	1919	0.213
-2.5	3:09 PM	12.2	6.79	2407	0.305
-3.0	3:11 PM	11.4	6.46	2383	0.268
-3.5	3:13 PM	10.0	6.47	2368	0.244
-4.0	3:15 PM	9.3	7.06	2545	0.251
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

Bottom @4.3 m

d) Site: NEW

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	1:43 PM	11.3	7.31	1585	0.067
-1.0	1:45 PM	11.5	7.99	1576	0.064
-1.5	1:47 PM	11.2	7.73	1559	0.065
-2.0	1:49 PM	11.2	8.06	1575	0.067
-2.5	1:51 PM	11.6	6.66	2289	0.309
-3.0	1:53 PM	11.8	6.64	2421	0.351
-3.5	1:55 PM	10.7	6.53	2520	0.376
-4.0					
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

Bottom @ 4.3 m

e) Site: WC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	2:40 PM	11.0	7.64	1567	0.071
-1.0	2:42 PM	11.1	7.75	1572	0.071
-1.5	2:44 PM	11.0	7.74	1573	0.072
-2.0	2:46 PM	11.2	7.69	1571	0.075
-2.5	2:48 PM	12.4	6.64	2362	0.320
-3.0	2:50 PM	11.4	6.63	2454	0.291
-3.5	2:52 PM	10.7	6.71	2537	0.286
-4.0	2:53 PM	9.8	6.53	2497	0.276
-5.0	2:54 PM	8.9	6.77	2565	0.278
-6.0	2:55 PM	7.9	6.88	2599	0.270
-7.0	2:56 PM	8.2	6.79	2597	0.278
-8.0	2:57 PM	8.0	6.51	2610	0.246
-9.0					
-10.0					

Bottom @9.3 m

f) Site: EC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	2:00 PM	11.0	7.46	1559	0.084
-1.0	2:02 PM	11.0	7.90	1572	0.072
-1.5	2:04 PM	11.1	7.65	1555	0.076
-2.0	2:06 PM	11.0	7.61	1605	0.089
-2.5	2:08 PM	11.3	6.74	2148	0.254
-3.0	2:10 PM	11.0	6.55	2539	0.395
-3.5					
-4.0					
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

Bottom @ 4.0 m

g) Site: Middle SE

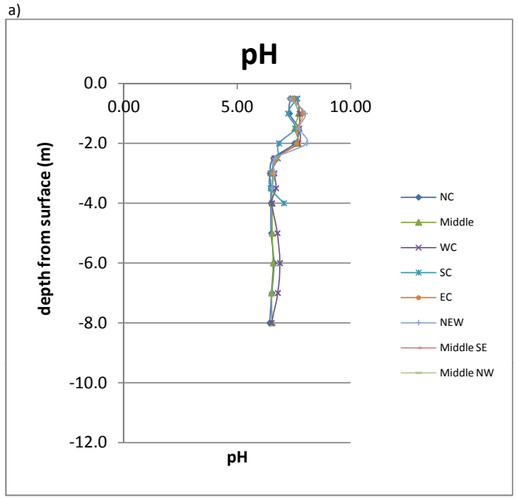
Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5					
-1.0					
-1.5					
-2.0					
-2.5					
-3.0					
-3.5					
-4.0					
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

h) Site: Middle NW

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5					
-1.0					
-1.5					
-2.0					
-2.5					
-3.0					
-3.5					
-4.0					
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

Figure B-44

a)



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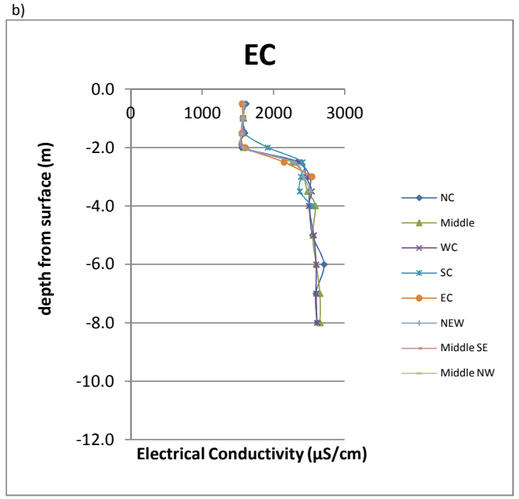
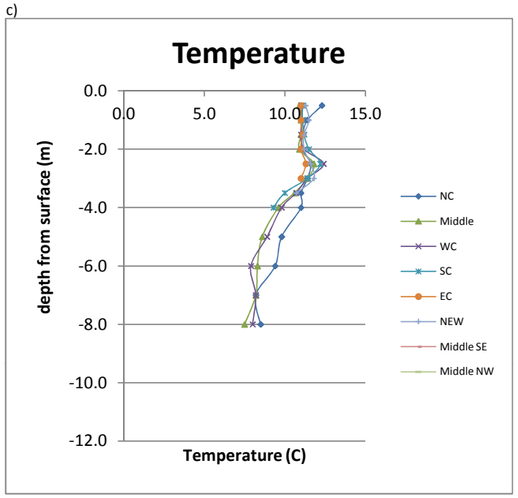
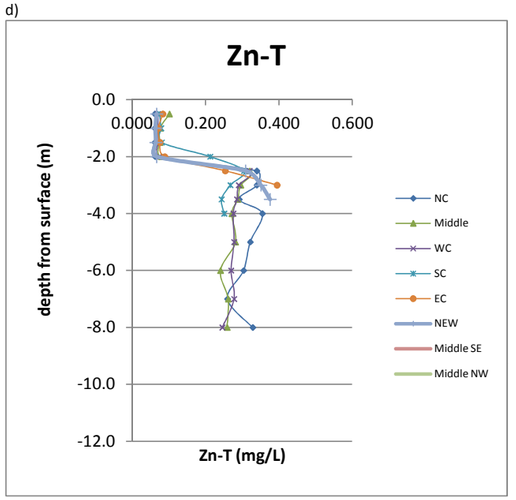


c)



d)



Method of Analysis: Field Hanna Pen August 26, 2011

Table B-18 and Figure B-45
Cross Valley Pond Water Quality Profile - August 30, 2011

Table B-18

a) Site: NC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	3:23 PM	10.7	8.23	1551	
-1.0	3:24 PM	10.7	8.25	1552	
-1.5	3:25 PM	10.6	8.21	1554	
-2.0	3:26 PM	10.7	8.19	1556	
-2.5	3:27 PM	10.8	8.17	1553	
-3.0	3:28 PM	11.4	6.65	2236	
-3.5	3:29 PM	11.1	6.44	2465	
-4.0	3:30 PM	10.2	6.39	2463	
-5.0	3:31 PM	9.9	6.35	2573	
-6.0	3:32 PM	8.3	6.36	2593	
-7.0	3:33 PM	8.9	6.40	2452	
-8.0					
-9.0					
-10.0					

Bottom @ 7.5 m

b) Site: Middle

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5					
-1.0					
-1.5					
-2.0					
-2.5					
-3.0					
-3.5					
-4.0					
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

c) Site: SC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5					
-1.0					
-1.5					
-2.0					
-2.5					
-3.0					
-3.5					
-4.0					
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

d) Site: NEW

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	3:15 PM	10.6	8.21	1550	
-1.0	3:16 PM	10.6	8.28	1549	
-1.5	3:17 PM	10.6	8.30	1547	
-2.0	3:18 PM	10.5	8.30	1549	
-2.5	3:19 PM	10.5	8.29	1551	
-3.0	3:20 PM	11.3	6.74	2257	
-3.5					
-4.0					
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

Bottom @ 4.3 m

e) Site: WC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5					
-1.0					
-1.5					
-2.0					
-2.5					
-3.0					
-3.5					
-4.0					
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

f) Site: EC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	3:07 PM	11.4	8.51	1415	
-1.0	3:08 PM	11.2	8.64	1526	
-1.5	3:09 PM	10.9	8.68	1524	
-2.0	3:10 PM	10.9	8.59	1527	
-2.5	3:11 PM	10.0	7.15	1700	
-3.0	3:12 PM	11.3	6.49	2380	
-3.5					
-4.0					
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

Bottom @ 3.5 m

g) Site: Middle SE

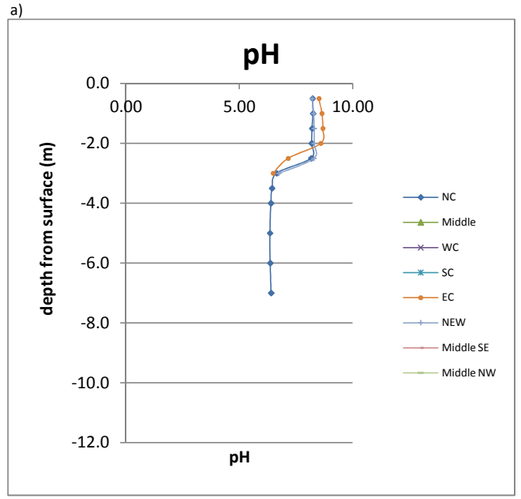
Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5					
-1.0					
-1.5					
-2.0					
-2.5					
-3.0					
-3.5					
-4.0					
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

h) Site: Middle NW

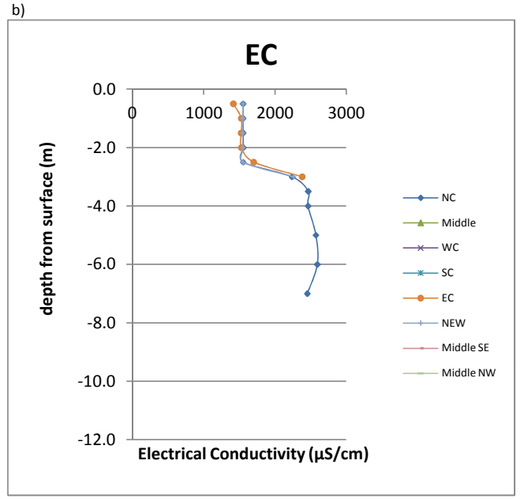
Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5					
-1.0					
-1.5					
-2.0					
-2.5					
-3.0					
-3.5					
-4.0					
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

Figure B-45

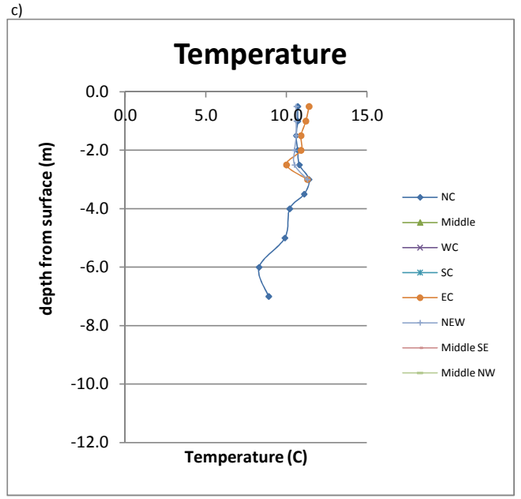
a)



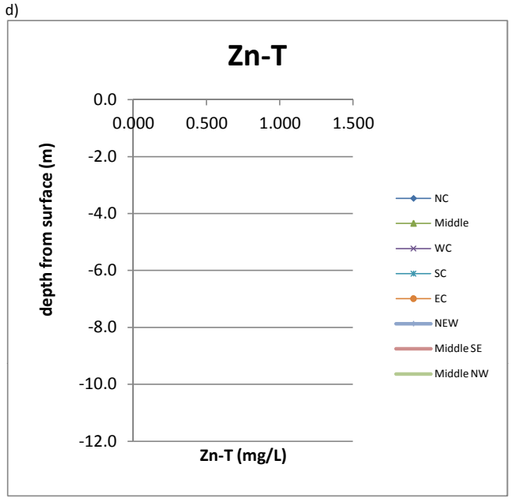
b)



c)



d)



Method of Analysis: Field Hanna Pen

Table B-19 and Figure B-46
Cross Valley Pond Water Quality Profile - September 2, 2011

Table B-19

a) Site: NC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	11:30 AM		7.99		
-1.0	11:31 AM		7.97		
-1.5	11:32 AM		7.96		
-2.0	11:34 AM		7.42		
-2.5	11:38 AM		6.32		
-3.0	11:42 AM		6.19		
-3.5	11:44 AM		6.12		
-4.0	11:46 AM		6.10		
-5.0	11:48 AM		6.13		
-6.0	11:50 AM		6.10		
-7.0	11:52 AM		6.08		
-8.0	11:54 AM		6.05		
-9.0					
-10.0					

Bottom @ 8.8 m

b) Site: Middle

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5					
-1.0					
-1.5					
-2.0					
-2.5					
-3.0					
-3.5					
-4.0					
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

c) Site: SC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5					
-1.0					
-1.5					
-2.0					
-2.5					
-3.0					
-3.5					
-4.0					
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

d) Site: NEW

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	11:28 AM		8.24		
-1.0	11:26 AM		8.19		
-1.5	11:25 AM		7.78		
-2.0	11:20 AM		6.36		
-2.5	11:19 AM		6.14		
-3.0	11:18 AM		6.10		
-3.5	11:16 AM		6.13		
-4.0					
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

Bottom @ 4.0 m

e) Site: WC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5					
-1.0					
-1.5					
-2.0					
-2.5					
-3.0					
-3.5					
-4.0					
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

f) Site: EC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	10:59 AM		8.03		
-1.0	11:03 AM		8.16		
-1.5	11:05 AM		8.16		
-2.0	11:10 AM		6.48		
-2.5	11:12 AM		6.23		
-3.0	11:13 AM		6.14		
-3.5					
-4.0					
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

Bottom @ 3.5 m

g) Site: Middle SE

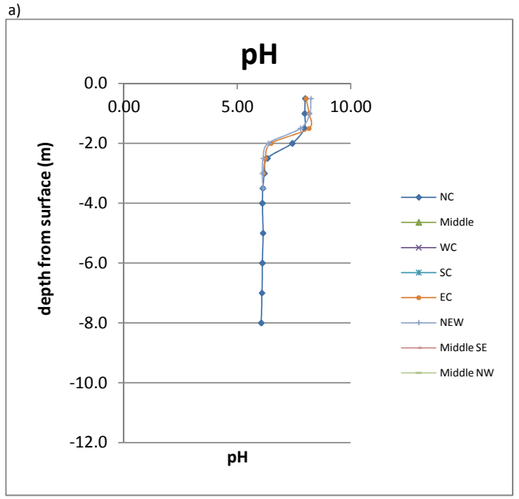
Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5					
-1.0					
-1.5					
-2.0					
-2.5					
-3.0					
-3.5					
-4.0					
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

h) Site: Middle NW

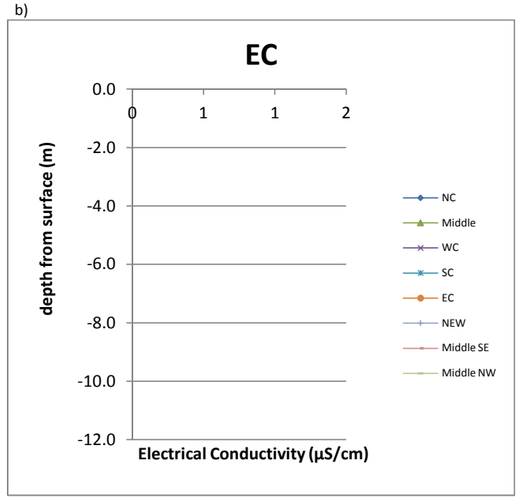
Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5					
-1.0					
-1.5					
-2.0					
-2.5					
-3.0					
-3.5					
-4.0					
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

Figure B-46

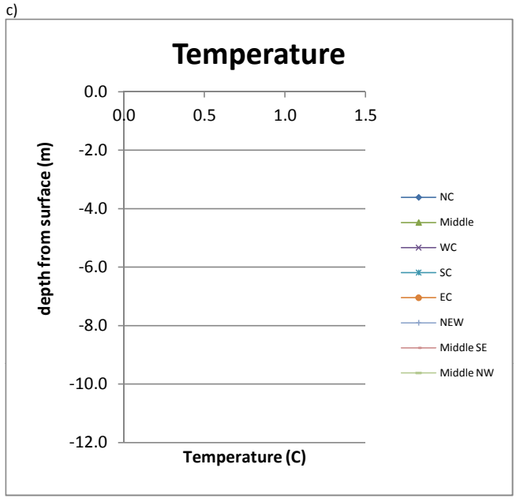
a)



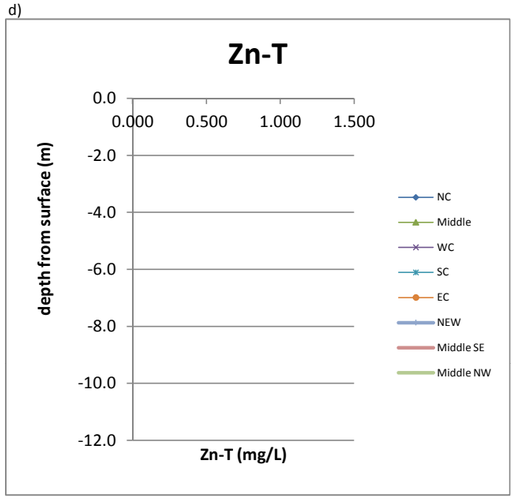
b)



c)



d)



Method of Analysis: Field Hanna Pen

Table B-20 and Figure B-47
Cross Valley Pond Water Quality Profile - September 6, 2011

Table B-20

a) Site: NC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	2:14 PM	9.5	7.38	1563	
-1.0	2:16 PM	9.6	7.34	1557	
-1.5	2:18 PM	9.6	7.32	1559	
-2.0	2:20 PM	9.7	7.25	1569	
-2.5	2:22 PM	9.9	7.15	1587	
-3.0	2:24 PM	11.2	6.35	2369	
-3.5	2:26 PM	11.0	6.31	2444	
-4.0	2:28 PM	10.1	6.30	2473	
-5.0	2:30 PM	10.0	6.28	2476	
-6.0	2:32 PM	9.0	6.30	2510	
-7.0	2:34 PM	9.2	6.27	2499	
-8.0	2:36 PM	9.2	6.33	2342	
-9.0					
-10.0					

Bottom @ 7.8 m

b) Site: Middle

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5					
-1.0					
-1.5					
-2.0					
-2.5					
-3.0					
-3.5					
-4.0					
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

c) Site: SC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5					
-1.0					
-1.5					
-2.0					
-2.5					
-3.0					
-3.5					
-4.0					
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

d) Site: NEW

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	2:00 PM	9.6	7.30	1561	
-1.0	2:02 PM	9.6	7.27	1559	
-1.5	2:04 PM	9.5	7.26	1561	
-2.0	2:06 PM	9.5	7.23	1563	
-2.5	2:08 PM	9.6	7.22	1563	
-3.0	2:10 PM	10.8	6.39	2385	
-3.5					
-4.0					
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

Bottom @ 3.5 m

e) Site: WC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5					
-1.0					
-1.5					
-2.0					
-2.5					
-3.0					
-3.5					
-4.0					
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

f) Site: EC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	1:38 PM	10.1	7.26	1596	
-1.0	1:43 PM	10.1	7.31	1564	
-1.5	1:47 PM	10.0	7.33	1560	
-2.0	1:50 PM	9.9	7.27	1564	
-2.5	1:53 PM	10.1	6.56	2065	
-3.0	1:56 PM	10.5	6.34	2451	
-3.5					
-4.0					
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

Bottom @ 3.5 m

g) Site: Middle SE

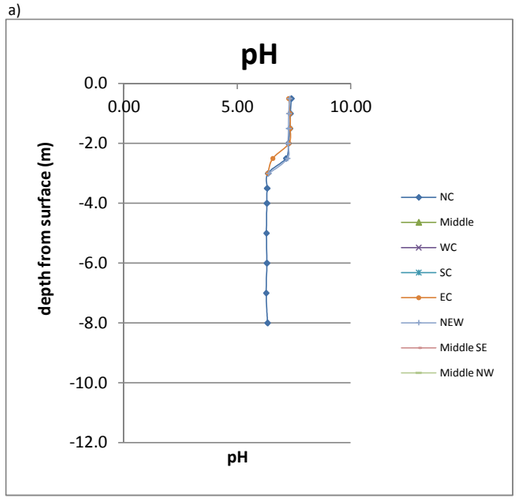
Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5					
-1.0					
-1.5					
-2.0					
-2.5					
-3.0					
-3.5					
-4.0					
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

h) Site: Middle NW

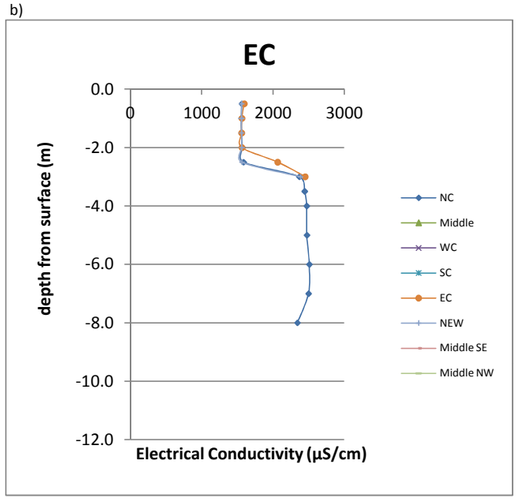
Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5					
-1.0					
-1.5					
-2.0					
-2.5					
-3.0					
-3.5					
-4.0					
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

Figure B-47

a)



b)



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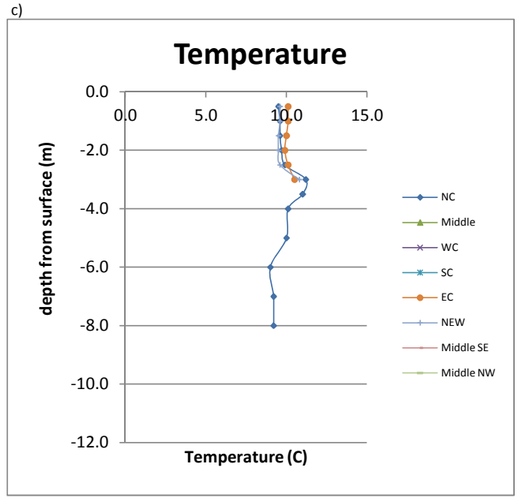

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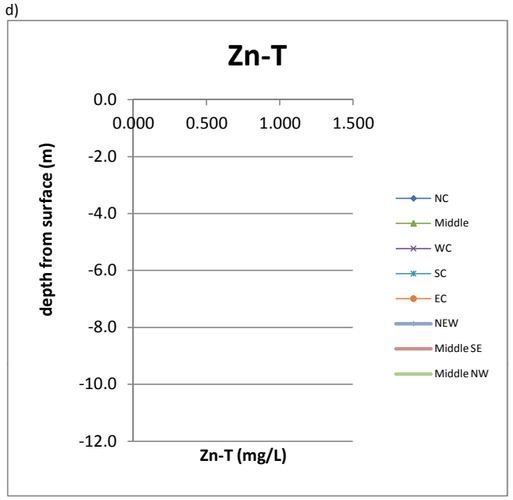


Method of Analysis: Field Hanna Pen

Table B-21 and Figure B-48
Cross Valley Pond Water Quality Profile - September 9, 2011

Table B-21

a) Site: NC

Δh	t	T	pH	Lab pH	EC (µS/cm)	Zn-T
-0.5	12:41 PM	8.2	7.32	7.48	1696	0.084
-1.5	12:42 PM	8.1	7.35	7.45	1689	0.078
-2.0	12:46 PM	8.2	7.36	7.46	1698	0.080
-2.5	12:48 PM	8.8	6.65	6.66	2030	0.200
-3.0	12:49 PM	10.1	6.35	6.40	2543	0.331
-4.0	12:51 PM	9.1	6.30	6.37	2553	0.308
-5.0	12:53 PM	8.5	6.24	6.34	2665	0.275
-6.0	12:55 PM	7.8	6.21	6.34	2683	0.231
-7.0	12:57 PM	7.5	6.24	6.32	2567	
-8.0						
-9.0						
-10.0						

Bottom @ 7.9m

b) Site: Middle

Δh	t	T	pH	Lab pH	EC (µS/cm)	Zn-T
-0.5	12:17 PM	8.1	7.42	7.47	1682	0.078
-1.5	12:18 PM	8.3	7.41	7.54	1689	0.078
-2.0	12:23 PM	8.4	7.39	7.51	1686	0.075
-2.5	12:25 PM	9.0	6.61	6.64	2138	0.197
-3.0	12:27 PM	10.2	6.37	6.40	2493	0.291
-4.0	12:23 PM	9.5	6.34	6.35	2503	0.271
-5.0	12:32 PM	9.0	6.34	6.35	2558	0.265
-6.0	12:33 PM	8.2	6.29	6.37	2644	0.269
-7.0	12:34 PM	7.6	6.29	6.33	2689	0.219
-8.0	12:36 PM	6.9	6.25	6.32	2848	0.241
-9.0	12:37 PM	6.6	6.26	6.35	2838	0.241
-10.0						

Bottom @ 9.1m

c) Site: SC

Δh	t	T	pH	Lab pH	EC (µS/cm)	Zn-T
-0.5	11:28 AM	8.9	7.38	7.63	1653	0.073
-1.5	11:29 AM	8.6	7.53	7.61	1686	0.071
-2.0	11:32 AM	8.2	7.58	7.57	1672	0.072
-2.5	11:38 AM	9.3	6.79	6.46	2309	0.269
-3.0	11:41 AM	10.0	6.50	6.38	2403	0.287
-4.0						
-5.0						
-6.0						
-7.0						
-8.0						
-9.0						
-10.0						

Bottom @ 3.4m

d) Site: NEW

Δh	t	T	pH	Lab pH	EC (µS/cm)	Zn-T
-0.5	1:02 PM	8.0	7.52	8.07	1655	0.062
-1.5	1:03 PM	8.2	7.43	7.53	1698	0.079
-2.0	1:05 PM	8.3	7.36	7.49	1696	0.077
-2.5	1:07 PM	9.4	6.45		2294	
-3.0	1:09 PM	10.0	6.33	6.52	2499	0.347
-4.0						
-5.0						
-6.0						
-7.0						
-8.0						
-9.0						
-10.0						

Bottom @ 3.9m

e) Site: WC

Δh	t	T	pH	Lab pH	EC (µS/cm)	Zn-T
-0.5	11:51 AM	8.4	7.36	7.69	1677	0.070
-1.5	11:53 AM	8.5	7.44	7.63	1670	0.075
-2.0	11:55 AM	8.5	7.46	7.63	1665	0.070
-2.5	11:57 AM	9.1	6.74	6.54	2172	0.070
-3.0	11:59 AM	10.1	6.55	6.37	2433	0.305
-4.0	12:00 PM	9.5	6.39	6.37	2565	0.265
-5.0	12:03 PM	8.2	6.40	6.38	2597	0.247
-6.0	12:04 PM	7.4	6.36	6.33	2652	0.240
-7.0	12:05 PM	7.5	6.34	6.33	2654	0.236
-8.0	12:07 PM	7.7	6.34	6.31	2633	0.242
-9.0	12:09 PM	6.8	6.33	6.34	2694	0.242
-10.0						

Bottom @ 9.4m

f) Site: EC

Δh	t	T	pH	Lab pH	EC (µS/cm)	Zn-T
-0.5	1:11 PM	8.4	7.57	8.36	1653	0.066
-1.5	1:12 PM	8.4	7.53	7.59	1702	0.089
-2.0	1:13 PM	8.3	7.38	7.48	1700	0.082
-2.5	1:15 PM	8.9	6.62	6.63	2052	0.245
-3.0	1:17 PM	9.7	6.42	6.43	2377	0.346
-4.0						
-5.0						
-6.0						
-7.0						
-8.0						
-9.0						
-10.0						

Bottom @ 3.9m

g) Site: Middle SE

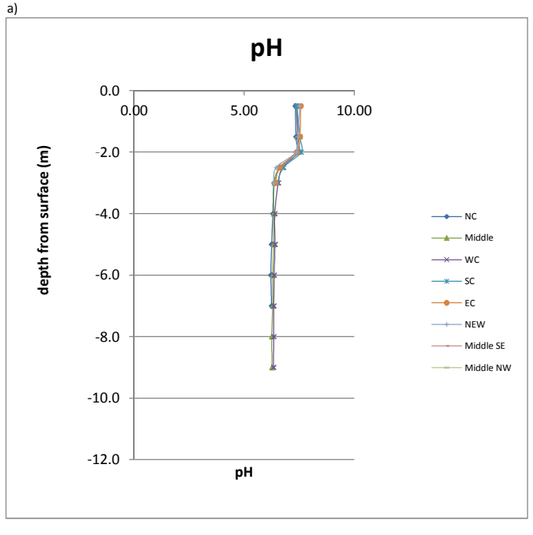
Δh	t	T	pH	Lab pH	EC (µS/cm)	Zn-T
-0.5						
-1.5						
-2.0						
-2.5						
-3.0						
-4.0						
-5.0						
-6.0						
-7.0						
-8.0						
-9.0						
-10.0						

h) Site: Middle NW

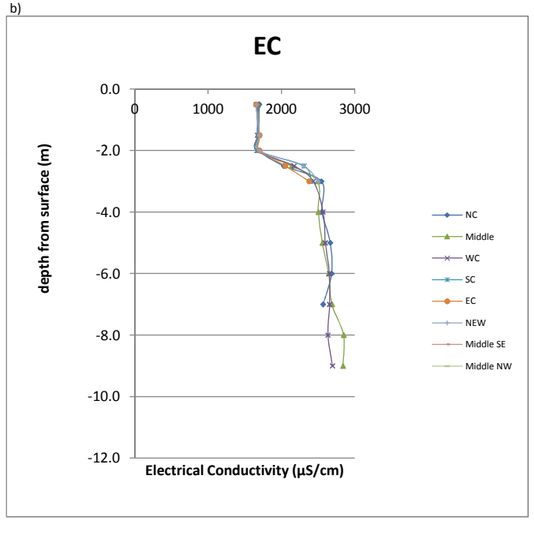
Δh	t	T	pH	Lab pH	EC (µS/cm)	Zn-T
-0.5						
-1.5						
-2.0						
-2.5						
-3.0						
-4.0						
-5.0						
-6.0						
-7.0						
-8.0						
-9.0						
-10.0						

Figure B-48

a)



b)



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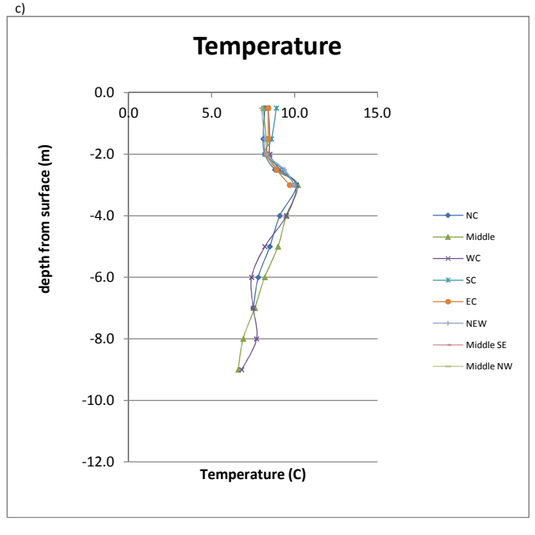

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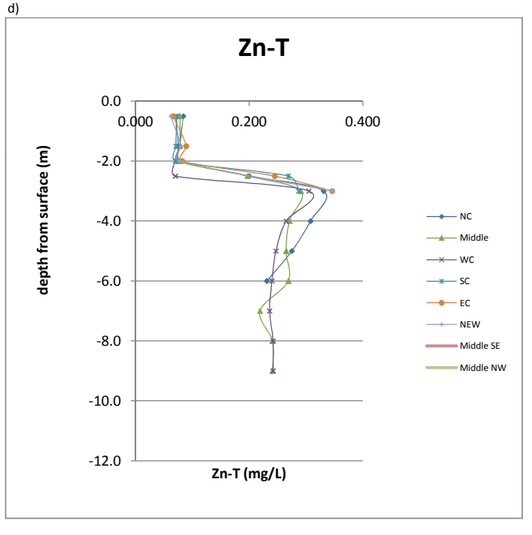


Method of Analysis: Field Hanna Pen for field analysis; Denver Instruments Model 250 pH meter for lab analysis

Table B-22 and Figure B-49
Cross Valley Pond Water Quality Profile - September 13, 2011

Table B-22

a) Site: NC

Δh	t	T	pH	Lab pH	EC (µS/cm)	Zn-T
-0.5	2:45 PM	9.8	8.02	8.19	1931	
-1.0	2:47 PM	9.0	8.00	8.12	1850	
-1.5	2:49 PM	9.0	7.99	8.12	1850	
-2.0	2:51 PM	8.9	7.94	8.05	1852	
-2.5	2:53 PM	9.9	6.92	6.41	2695	
-3.0	2:55 PM	10.3	6.57	6.37	2829	
-3.5	2:57 PM	10.2	6.46	6.36	2889	
-4.0	2:59 PM	9.9	6.31	6.41	2714	
-5.0	3:02 PM	8.7	6.31	6.35	2929	
-6.0	3:04 PM	8.0	6.27	6.41	2798	
-7.0	3:06 PM	7.4	6.23	6.27	3050	
-8.0	3:08 PM	6.9	6.19	6.29	2994	
-9.0						
-10.0						

Bottom @ 8.4m

b) Site: Middle

Δh	t	T	pH	Lab pH	EC (µS/cm)	Zn-T
-0.5						
-1.0						
-1.5						
-2.0						
-2.5						
-3.0						
-3.5						
-4.0						
-5.0						
-6.0						
-7.0						
-8.0						
-9.0						
-10.0						

c) Site: SC

Δh	t	T	pH	Lab pH	EC (µS/cm)	Zn-T
-0.5						
-1.0						
-1.5						
-2.0						
-2.5						
-3.0						
-3.5						
-4.0						
-5.0						
-6.0						
-7.0						
-8.0						
-9.0						
-10.0						

d) Site: NEW

Δh	t	T	pH	Lab pH	EC (µS/cm)	Zn-T
-0.5	3:11 PM	8.9	7.71	8.07	1870	
-1.0	3:13 PM	9.0	7.88	8.11	1860	
-1.5	3:15 PM	8.9	7.87	8.05	1859	
-2.0	3:17 PM	8.7	7.81	7.74	1863	
-2.5	3:19 PM	9.5	6.62	6.45	2586	
-3.0	3:21 PM	10.2	6.40	6.37	2789	
-3.5	3:23 PM	10.3	6.28	6.36	2870	
-4.0						
-5.0						
-6.0						
-7.0						
-8.0						
-9.0						
-10.0						

Bottom @ 4.2m

e) Site: WC

Δh	t	T	pH	Lab pH	EC (µS/cm)	Zn-T
-0.5						
-1.0						
-1.5						
-2.0						
-2.5						
-3.0						
-3.5						
-4.0						
-5.0						
-6.0						
-7.0						
-8.0						
-9.0						
-10.0						

f) Site: EC

Δh	t	T	pH	Lab pH	EC (µS/cm)	Zn-T
-0.5	3:30 PM	9.0	7.99	8.08	1908	
-1.0	3:32 PM	8.9	7.94	7.84	1877	
-1.5	3:33 PM			7.82	1871	
-2.0	3:34 PM	8.6	7.99	7.66	1876	
-2.5	3:36 PM	9.3	7.03	6.47	2511	
-3.0	3:38 PM	10.1	6.83	6.42	2720	
-3.5						
-4.0						
-5.0						
-6.0						
-7.0						
-8.0						
-9.0						
-10.0						

Bottom @ 3.8m

g) Site: Middle SE

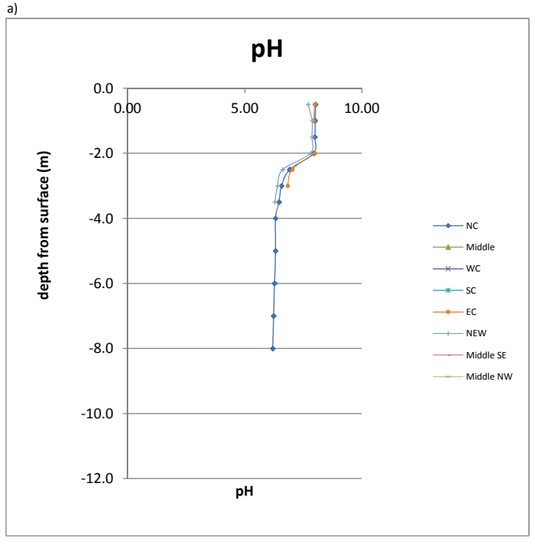
Δh	t	T	pH	Lab pH	EC (µS/cm)	Zn-T
-0.5						
-1.0						
-1.5						
-2.0						
-2.5						
-3.0						
-3.5						
-4.0						
-5.0						
-6.0						
-7.0						
-8.0						
-9.0						
-10.0						

h) Site: Middle NW

Δh	t	T	pH	Lab pH	EC (µS/cm)	Zn-T
-0.5						
-1.0						
-1.5						
-2.0						
-2.5						
-3.0						
-3.5						
-4.0						
-5.0						
-6.0						
-7.0						
-8.0						
-9.0						
-10.0						

Figure B-49

a)



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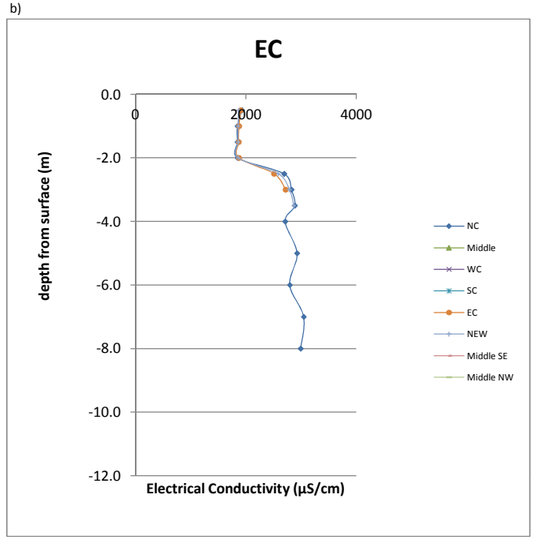
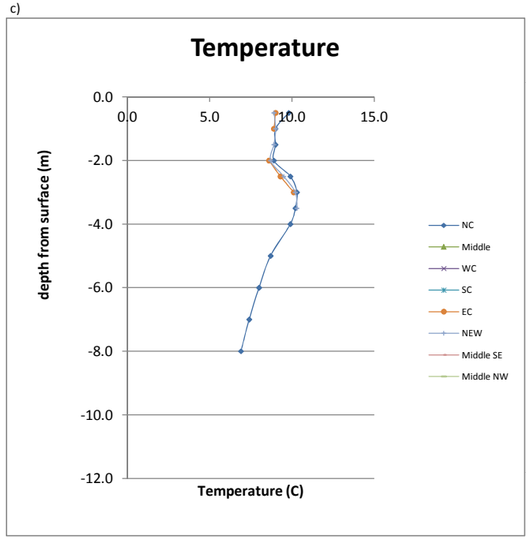


c)



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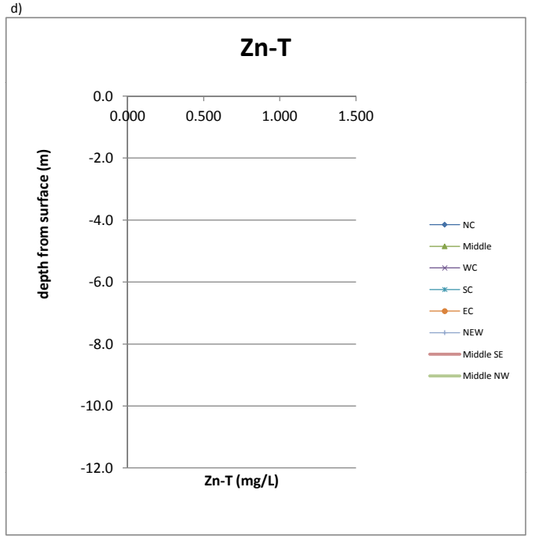


Method of Analysis: Field Hanna Pen for field analysis; Denver Instruments Model 250 pH meter for lab analysis.

Table B-23 and Figure B-50
Cross Valley Pond Water Quality Profile - September 16, 2011

Table B-23

a) Site: NC

Δh	t	T	pH	Lab pH	EC (µS/cm)	Zn-T
-0.5	4:20 PM	9.3	8.50	8.55	1522	
-1.0	4:23 PM	9.1	8.49	8.54	1517	
-1.5	4:25 PM	8.6	8.52	8.55	1517	
-2.0	4:27 PM	8.3	8.52	8.53	1524	
-2.5	4:29 PM	8.7	7.00	6.66	1968	
-3.0	4:32 PM	10.1	6.63	6.42	2431	
-3.5	4:34 PM	10.0	6.51	6.42	2466	
-4.0	4:36 PM	9.7	6.46	6.42	2488	
-5.0	4:38 PM	8.7	6.39	6.38	2516	
-6.0	4:40 PM	8.0	6.36	6.45	2545	
-7.0	4:42 PM	7.2	6.32	6.40	2667	
-8.0	4:44 PM	6.6	6.35	6.45	2706	
-9.0						
-10.0						

Bottom @ 8.5m

b) Site: Middle

Δh	t	T	pH	Lab pH	EC (µS/cm)	Zn-T
-0.5						
-1.0						
-1.5						
-2.0						
-2.5						
-3.0						
-3.5						
-4.0						
-5.0						
-6.0						
-7.0						
-8.0						
-9.0						
-10.0						

c) Site: SC

Δh	t	T	pH	Lab pH	EC (µS/cm)	Zn-T
-0.5						
-1.0						
-1.5						
-2.0						
-2.5						
-3.0						
-3.5						
-4.0						
-5.0						
-6.0						
-7.0						
-8.0						
-9.0						
-10.0						

d) Site: NEW

Δh	t	T	pH	Lab pH	EC (µS/cm)	Zn-T
-0.5	4:48 PM	8.3	8.73	8.65	1518	
-1.0	4:50 PM	8.1	8.66	8.60	1521	
-1.5	4:52 PM	8.0	8.52	8.47	1533	
-2.0	4:54 PM	7.9	8.44	8.44	1539	
-2.5	4:56 PM	9.0	6.86	6.50	2306	
-3.0	4:58 PM	9.7	6.55	6.39	2437	
-3.5	5:00 PM	9.8	6.44	6.45	2502	
-4.0						
-5.0						
-6.0						
-7.0						
-8.0						
-9.0						
-10.0						

Bottom @ 4.2m

e) Site: WC

Δh	t	T	pH	Lab pH	EC (µS/cm)	Zn-T
-0.5						
-1.0						
-1.5						
-2.0						
-2.5						
-3.0						
-3.5						
-4.0						
-5.0						
-6.0						
-7.0						
-8.0						
-9.0						
-10.0						

f) Site: EC

Δh	t	T	pH	Lab pH	EC (µS/cm)	Zn-T
-0.5	5:10 PM	8.2	8.57	8.50	1533	
-1.0	5:12 PM	7.9	8.35	8.28	1543	
-1.5	5:14 PM	7.8	8.24	8.22	1550	
-2.0	5:16 PM	7.8	7.39	7.08	1653	
-2.5	5:18 PM	9.1	6.74	6.50	2333	
-3.0	5:20 PM	9.4	6.50	6.48	2444	
-3.5						
-4.0						
-5.0						
-6.0						
-7.0						
-8.0						
-9.0						
-10.0						

Bottom @ 3.8m

g) Site: Middle SE

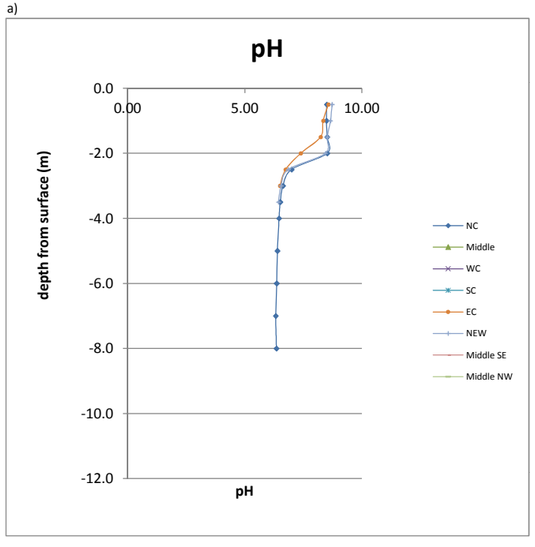
Δh	t	T	pH	Lab pH	EC (µS/cm)	Zn-T
-0.5						
-1.0						
-1.5						
-2.0						
-2.5						
-3.0						
-3.5						
-4.0						
-5.0						
-6.0						
-7.0						
-8.0						
-9.0						
-10.0						

h) Site: Middle NW

Δh	t	T	pH	Lab pH	EC (µS/cm)	Zn-T
-0.5						
-1.0						
-1.5						
-2.0						
-2.5						
-3.0						
-3.5						
-4.0						
-5.0						
-6.0						
-7.0						
-8.0						
-9.0						
-10.0						

Figure B-50

a)



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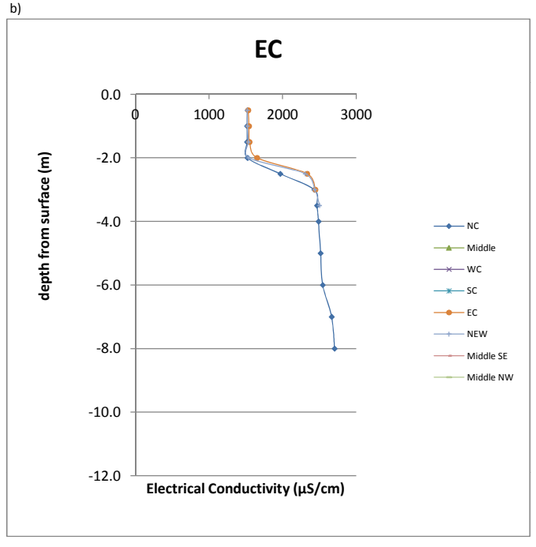

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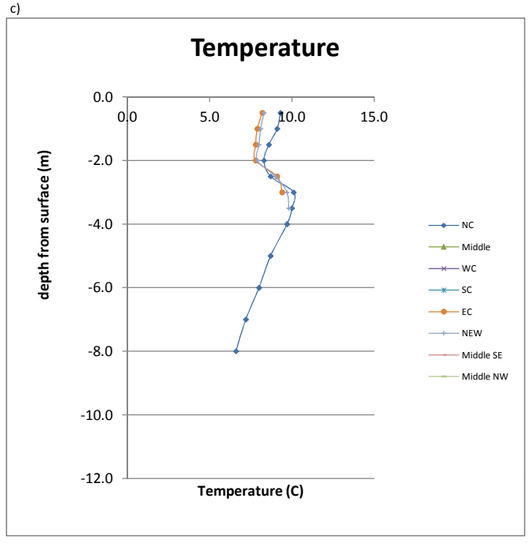

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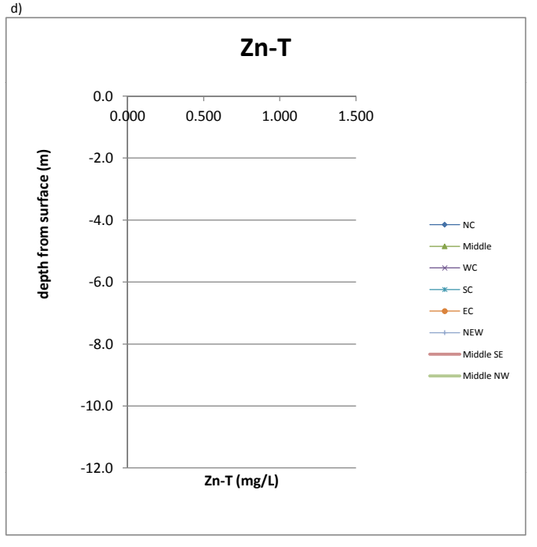


Method of Analysis: Field Hanna Pen for field analysis; Denver Instruments Model 250 pH meter for lab analysis.

Table B-24 and Figure B-51
Cross Valley Pond Water Quality Profile - September 19, 2011

Table B-24

a) Site: NC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	4:51 PM	7.4	7.65	1671	0.042
-1.5	4:53 PM	7.4	7.67	1671	0.042
-2.0	4:55 PM	7.4	7.70	1673	0.043
-2.5	4:57 PM	8.5	6.57	2298	0.287
-3.0	4:59 PM	9.4	6.38	2578	0.225
-4.0	5:02 PM	9.5	6.30	2626	0.269
-5.0	5:04 PM	8.4	6.28	2689	0.280
-6.0	5:07 PM	7.8	6.24	2729	0.256
-7.0	5:08 PM	7.2	6.22	2832	0.264
-8.0	5:10 PM	6.8	6.28	2859	0.269
-9.0					
-10.0					

Bottom @ 8.4m

b) Site: Middle

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	4:29 PM	7.4	7.38	1700	0.046
-1.5	4:31 PM	7.2	7.20	1702	0.046
-2.0	4:32 PM	7.2	7.24	1693	0.048
-2.5	4:34 PM	8.8	6.50	2344	0.271
-3.0	4:38 PM	9.8	6.31	2568	0.263
-4.0	4:40 PM	9.4	6.25	2626	0.279
-5.0	4:41 PM	8.5	6.22	2692	0.263
-6.0	4:44 PM	7.8	6.22	2708	0.227
-7.0	4:46 PM	7.2	6.21	2798	0.224
-8.0					
-9.0					
-10.0					

Bottom @ 7.4m

c) Site: SC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	3:40 PM	8.3	7.85	1698	0.042
-1.5	3:44 PM	8.2	7.81	2090	0.065
-2.0	3:46 PM	7.7	7.29	1946	0.162
-2.5	3:48 PM	9.1	6.74	2358	0.278
-3.0	3:50 PM	10.0	6.54	2558	0.268
-4.0	3:52 PM	9.0	6.55	2605	0.248
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

Bottom @ 4.3m

d) Site: NEW

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	5:17 PM	7.2	7.66	1681	0.036
-1.5	5:19 PM	7.3	7.54	1683	0.038
-2.0	5:20 PM	7.3	7.53	1683	0.042
-2.5	5:22 PM	9.0	6.60	2462	0.305
-3.0	5:24 PM	9.4	6.38	2566	0.355
-4.0					
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

Bottom @ 4.2m

e) Site: WC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	3:59 PM	8.0	7.78	1675	0.045
-1.5	4:01 PM	7.8	7.67	1692	0.047
-2.0	4:05 PM	7.3	7.82	1684	0.052
-2.5	4:07 PM	9.0	6.63	2268	0.276
-3.0	4:09 PM	9.5	6.42	2555	0.265
-4.0	4:11 PM	9.2	6.39	2635	0.264
-5.0	4:13 PM	8.2	6.31	2665	0.237
-6.0	4:15 PM	7.5	6.28	2699	0.196
-7.0	4:18 PM	7.5	6.25	2728	0.225
-8.0	4:20 PM	7.2	6.29	2765	0.234
-9.0	4:22 PM	7.0	6.21	2770	0.208
-10.0					

Bottom @ 9.3m

f) Site: EC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	5:30 PM	7.2	7.65	1686	0.038
-1.5	5:31 PM	7.2	7.63	1683	0.036
-2.0	5:33 PM	7.5	7.27	1823	0.115
-2.5	5:35 PM	9.0	6.55	2448	0.252
-3.0	5:37 PM	9.4	6.40	2586	0.373
-4.0					
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

Bottom @ 3.9m

g) Site: Middle SE

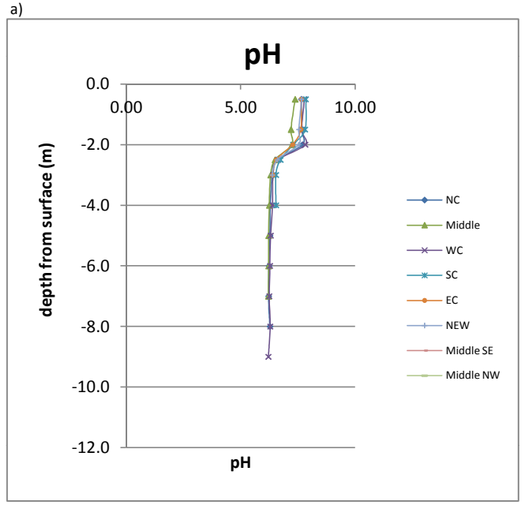
Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5					
-1.5					
-2.0					
-2.5					
-3.0					
-4.0					
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

h) Site: Middle NW

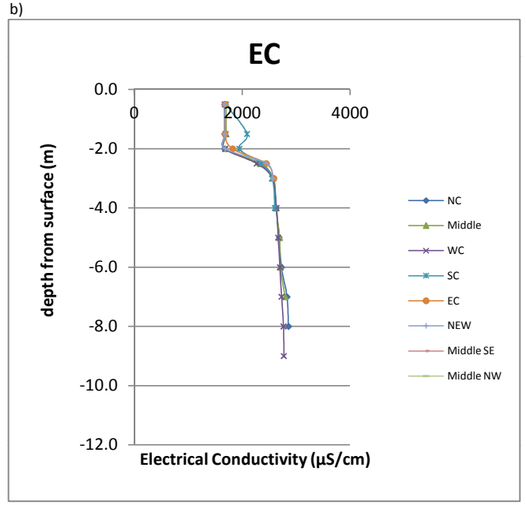
Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5					
-1.5					
-2.0					
-2.5					
-3.0					
-4.0					
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

Figure B-51

a)



b)



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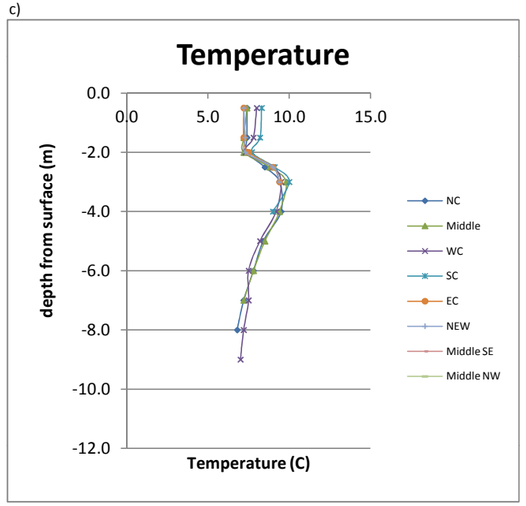

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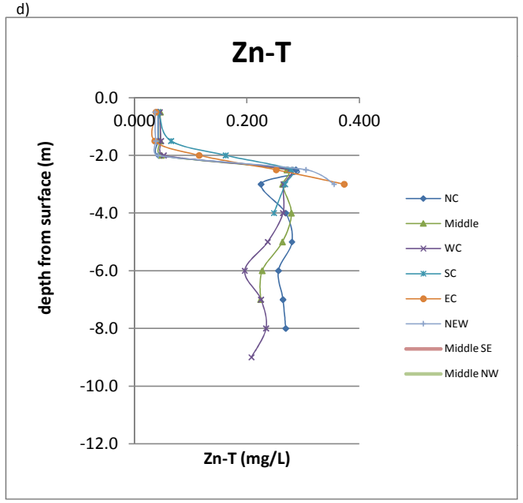


Method of Analysis: ICP-OES; Field Hanna Pen.

Table B-25 and Figure B-52
Cross Valley Pond Water Quality Profile - October 12, 2011

Table B-25

a) Site: NC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	12:00 PM	1.4	7.22	2077	0.227
-2.0	12:03 PM	3.8	6.67	2476	0.325
-3.0	12:06 PM	5.1	6.32	2651	
-4.0	12:08 PM	6.1	6.20	2701	0.305
-5.0	12:12 PM	6.5	6.18	2755	
-6.0	12:15 PM	6.4	6.10	2845	0.302
-7.0	12:18 PM	6.4	6.10	2905	
-8.0					
-9.0					
-10.0					

Bottom @ 7.2m

b) Site: Middle

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	12:25 PM	1.5	7.14	2088	0.324
-2.0	12:28 PM	4.3	6.60	2496	0.287
-3.0	12:32 PM	5.6	6.39	2679	
-4.0	12:34 PM	6.7	6.18	2722	0.228
-5.0	12:36 PM	6.5	6.11	2753	
-6.0	12:38 PM	5.7	6.10	2815	0.268
-7.0	12:40 PM	5.7	6.09	2910	
-8.0	12:43 PM	5.9	6.06	2940	0.227
-9.0	12:46 PM	5.7	6.10	2939	
-10.0					

Bottom @ 9.7m

c) Site: SC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	1:30 PM	1.5	7.17	2090	0.248
-2.0	1:33 PM	4.3	6.55	2520	0.324
-3.0	1:35 PM	6.3	6.24	2691	
-4.0					
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

Bottom @ 4.3m

d) Site: WC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	12:57 PM	1.4	7.15	2096	0.237
-2.0	12:59 PM	3.6	6.65	2450	0.283
-3.0	1:03 PM	5.1	6.43	2679	
-4.0	1:05 PM	6.5	6.16	2727	0.276
-5.0	1:08 PM	6.4	6.10	2753	
-6.0	1:11 PM	6.4	6.09	2782	0.270
-7.0	1:13 PM	6.3	6.06	2839	
-8.0	1:15 PM	6.2	6.04	2856	0.229
-9.0					
-10.0					

Bottom @ 8.1m

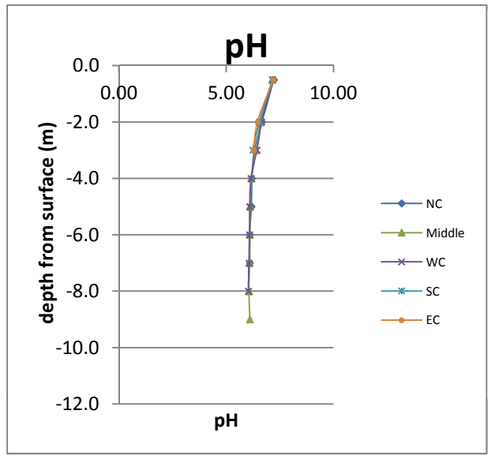
e) Site: EC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	11:30 AM	1.7	7.20	2197	0.228
-2.0	11:35 AM	4.6	6.46	2580	0.309
-3.0	11:40 AM	5.5	6.30	2670	
-4.0					
-5.0					
-6.0					
-7.0					
-8.0					
-9.0					
-10.0					

Bottom @ 3.5m

Figure B-52

a)



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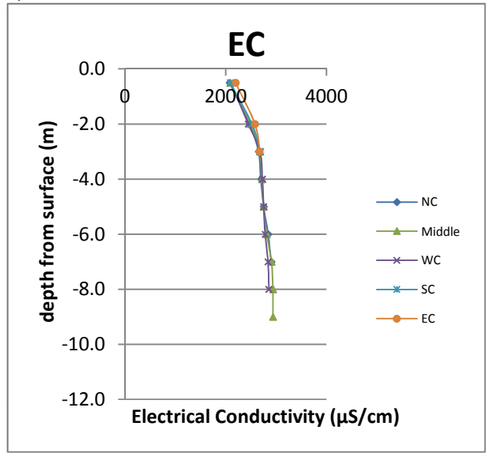

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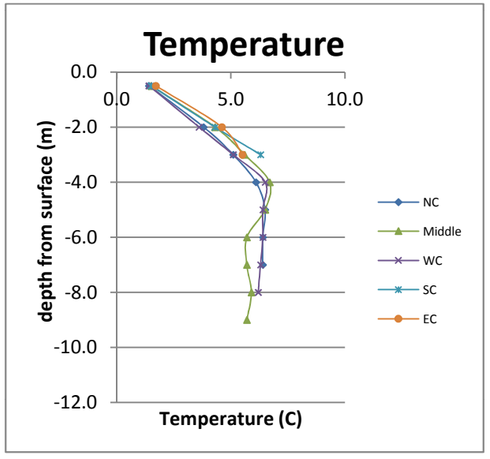

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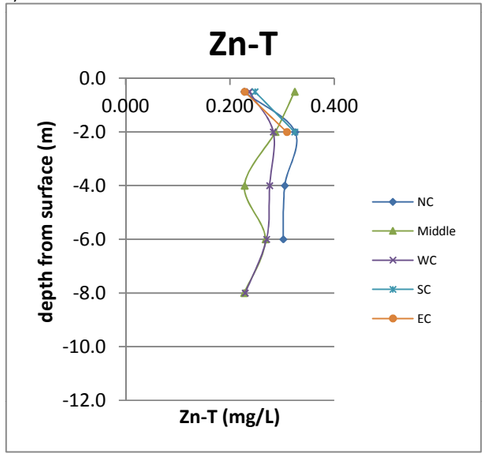


Method of Analysis: ICP-OES.

Table B-26 and Figure B-53
Cross Valley Pond Water Quality Profile - November 9, 2011

Table B-26

a) Site: NC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	9:30 AM	0.0	7.68	2340	0.215
-1.0	9:32 AM	0.5	7.57	2320	
-1.5	9:34 AM	1.5	7.50	2340	0.233
-2.0	9:36 AM	3.3	6.85	2590	0.278
-2.5	9:38 AM	3.9	6.57	2910	0.325
-3.0	9:40 AM	3.3	6.53	2930	
-3.5	9:42 AM	3.7	6.44	3070	
-4.0	9:42 AM	4.3	6.43	3090	0.282
-5.0	9:44 AM	5.0	6.41	3060	
-6.0					

Bottom @ 6.0m

b) Site: Middle

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5					
-1.0					
-1.5					
-2.0					
-2.5					
-3.0					
-3.5					
-4.0					
-5.0					
-6.0					

Not sampled - ice too thin.

c) Site: SC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	10:20 AM	0.2	7.5	2150	0.219
-1.0	10:22 AM	2.4	7.4	2260	
-1.5	10:24 AM	2.7	7.3	2310	0.223
-2.0	10:28 AM	4.0	6.7	2720	0.224
-2.5	10:30 AM	4.9	6.5	2850	0.202
-3.0	10:32 AM	5.1	6.5	2940	
-3.5					
-4.0					
-5.0					
-6.0					

Bottom @ 3.6m

e) Site: WC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	11:00 AM	0.2	7.60	2310	0.233
-1.0	11:02 AM	1.5	7.55	2310	
-1.5	11:04 AM	3.1	7.35	2360	0.235
-2.0	11:06 AM	4.1	6.68	2770	0.305
-2.5	11:08 AM	4.6	6.55	2930	0.308
-3.0	11:10 AM	4.9	6.50	2980	
-3.5	11:12 AM	5.4	6.48	3000	
-4.0	11:14 AM	5.5	6.47	3020	0.235
-5.0	11:16 AM	5.7	6.46	3060	
-6.0	11:18 AM	5.4	6.45	3130	0.244

Bottom @ 7.0m

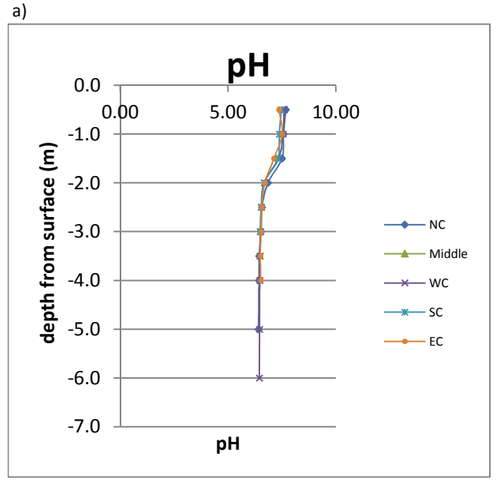
f) Site: EC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	10:40 AM	0.5	7.36	2320	0.198
-1.0	10:42 AM	1.0	7.51	2330	
-1.5	10:44 AM	1.8	7.13	2390	0.204
-2.0	10:46 AM	2.9	6.71	2760	0.195
-2.5	10:48 AM	3.7	6.57	2910	0.275
-3.0	10:50 AM	4.2	6.53	2970	
-3.5	10:52 AM	4.3	6.50	3060	
-4.0	10:54 AM	4.6	6.52	3000	0.297
-5.0					
-6.0					

Bottom @ 4.8m

Figure B-53

a)



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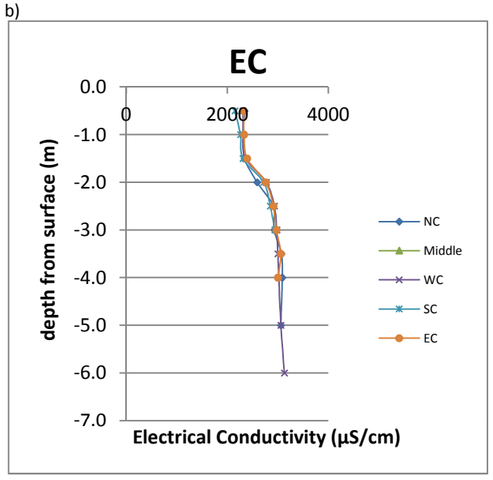
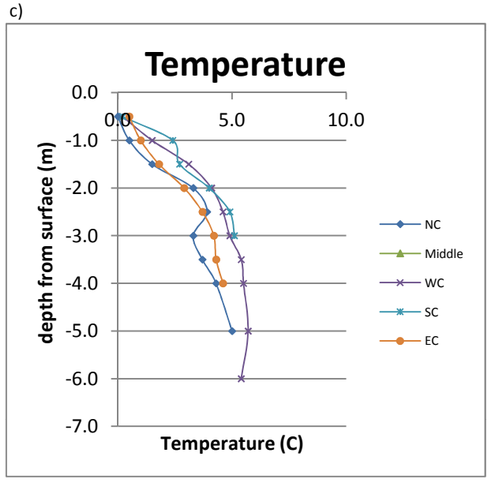
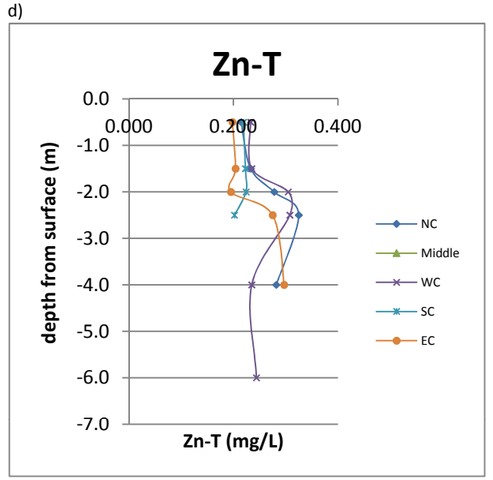


c)



d)



Method of Analysis: ICP-OES

Table B-27 and Figure B-54
Cross Valley Pond Water Quality Profile - December 14, 2011

Table B-27

a) Site: NC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	12:15 PM	0.3	7.28	1690	0.224
-1.0	12:17 PM	3.4	6.89	1630	0.230
-1.5	12:19 PM	1.7	6.53	2100	0.205
-2.0	12:21 PM	4.4	6.48	2110	0.225
-2.5	12:23 PM	4.5	6.44	2330	0.229
-3.0	12:25 PM	5.0	6.53	2350	0.259
-3.5					
-4.0	12:27 PM	5.5	6.49	2420	0.251
-5.0	12:29 PM	5.5	6.49	2420	0.367
-6.0					
-7.0					
-8.0					

Bottom @ 5.5m

b) Site: Middle

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5					
-1.0					
-1.5					
-2.0					
-2.5					
-3.0					
-3.5					
-4.0					
-5.0					
-6.0					
-7.0					
-8.0					

Not sampled - ice too thin.

c) Site: SC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	12:35 PM	0.3	7.0	1760	0.188
-1.0					
-1.5					
-2.0	12:37 PM	2.5	6.5	2310	0.300
-2.5	12:39 PM	4.0	6.4	2450	0.190
-3.0	12:41 PM	4.6	6.4	2520	0.188
-3.5					
-4.0					
-5.0					
-6.0					
-7.0					
-8.0					

Bottom @ 3.7m

e) Site: WC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	12:43 PM	0.2	7.20	1760	0.187
-1.0					
-1.5					
-2.0	12:45 PM	3.8	6.51	2370	0.205
-2.5	12:47 PM	5.0	6.34	2450	0.192
-3.0	12:49 PM	4.9	6.35	2480	0.240
-3.5					
-4.0	12:51 PM	5.2	6.38	2510	0.216
-5.0	12:53 PM	5.0	6.34	2580	0.218
-6.0	12:55 PM	5.0	6.41	2600	0.216
-7.0	12:57 PM	4.8	6.48	2660	0.217
-8.0	12:59 PM	4.1	6.30	2750	0.206

Bottom @ 8.3m

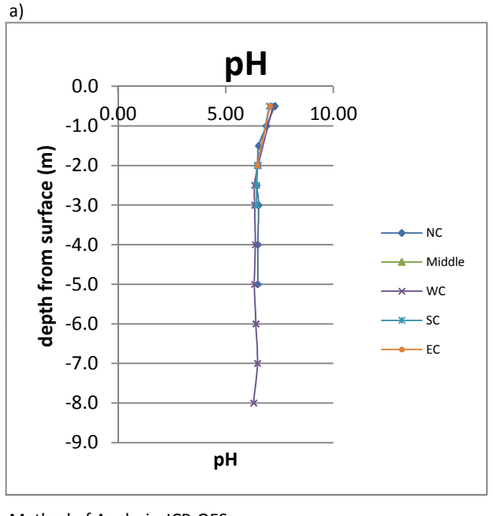
f) Site: EC

Δh	t	T	pH	EC (µS/cm)	Zn-T
-0.5	12:31 PM	0.4	7.06	1810	0.261
-1.0					
-1.5					
-2.0	12:33 PM	3.2	6.47	2390	0.185
-2.5					
-3.0					
-3.5					
-4.0					
-5.0					
-6.0					
-7.0					
-8.0					

Bottom @ 5.5m

Figure B-54

a)



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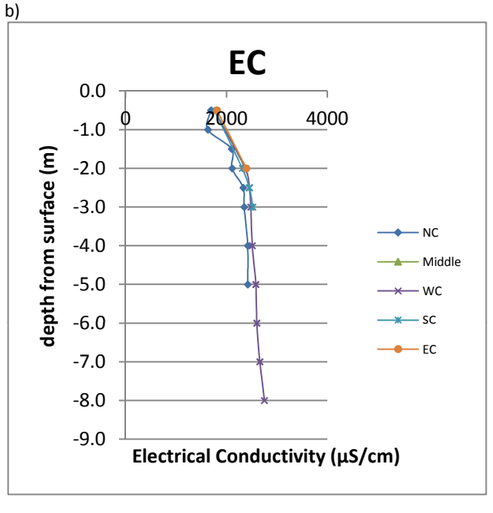

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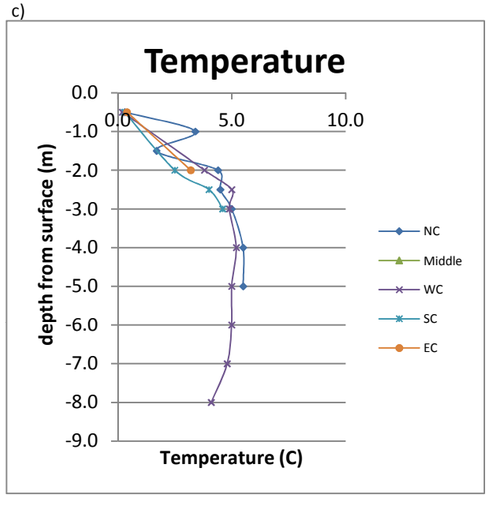

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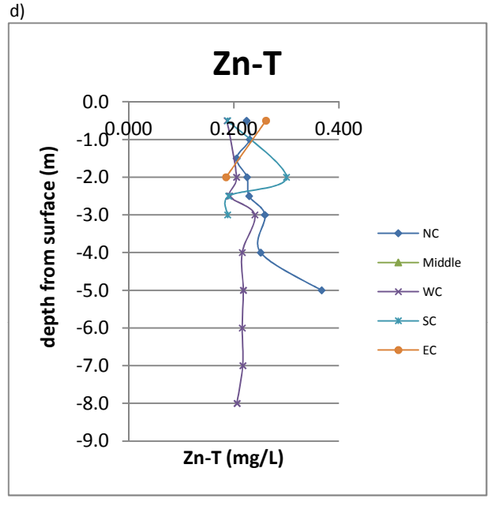

Method of Analysis: ICP-OES

TABLES

Rose Creek Drainage Water Quality:

Quality Assurance and Quality Control

Table B-28: Quality Assurance / Quality Control
2011 Field Blanks - General Parameters

Station	Date	Sample Type	Acid(pH4.5)	Acid(pH8.3)	ALK	ALKPP	CaCO3	CaCO3-d	Cl-d	CO3	Colour	COND	DOC	HCO3	NH3	OH	pH	SO4-d	TDS	TOC	TSS	TURB
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	TCU	µmho/cm	mg/L	mg/L	mg/L	mg/L	(blank)	mg/L	mg/L	mg/L	mg/L	NTU
FCS-4	06/01/2011	FIELD BLANK			0.70	<0.5	<0.5	2	<0.5	<0.5		6.0		0.90	<0.05	<0.5	5.36	<0.5	<10		<1	
Deionized Water			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.005	<0.5	5.95	<0.5	<10.0	<0.5	<4.0	<0.1
Times greater than DI water			0	0	1.4	1	1	3.2	1	1	0	6	0	1.8	10	1	0.59	1	1	0	0.25	0
Comments												Blank concentration > PQL and correctly entered into emLine.			Blank concentration not > PQL (detection limit for field blank higher than that used for DI water, lab noted "RDL raised due to sample matrix interference). Therefore, comparison not valid in this case.							
Action												Let Value Stand			Let Value Stand							
Result												High blank value remains.										
A30	14/03/2011	FIELD BLANK	<0.5	<0.5	1.40	<0.5		<0.5	<0.5	<0.5		2.0		1.70		<0.5	5.51	<0.5			<1	
Deionized Water			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.005	<0.5	5.95	<0.5	<10.0	<0.5	<4.0	<0.1
Times greater than DI water			1	1	2.8	1	0	1	1	1	0	2	0	3.4	0	1	0.44	1	0	0	0.25	0
Comments																						
Action																						
Result																						
X5	26/04/2011	FIELD BLANK			<0.5	<0.5	<0.5	1	<0.5	<0.5	<5	<1		<0.5	<0.005	<0.5	5.79	<0.5	<10		<1	<0.25
Deionized Water			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.005	<0.5	5.95	<0.5	<10.0	<0.5	<4.0	<0.1
Times greater than DI water			0	0	1	1	1	1.4	1	1	10	1	0	1	1	1	0.16	1	1	0	0.25	2.5
Comments											Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.											
Action											Let Value Stand											
Result																						
SRK08-SPW2	04/05/2011	FIELD BLANK	<0.5	<0.5	1.40	<0.5		<0.5	<0.5	<0.5		4.0		1.80		<0.5	6.15	<0.5			<1	
Deionized Water			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.005	<0.5	5.95	<0.5	<10.0	<0.5	<4.0	<0.1
Times greater than DI water			1	1	2.8	1	0	1	1	1	0	4	0	3.6	0	1	0.20	1	0	0	0.25	0
Comments																						
Action																						
Result																						
SRK08-P11A	08/06/2011	FIELD BLANK	<0.5	<0.5	1.90	<0.5		<0.5	1	<0.5		2.0		2.30		<0.5	6.92	<0.5			<1	
Deionized Water			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.005	<0.5	5.95	<0.5	<10.0	<0.5	<4.0	<0.1
Times greater than DI water			1	1	3.8	1	0	1	2.4	1	0	2	0	4.6	0	1	0.97	1	0	0	0.25	0
Comments																						
Action																						
Result																						
X5	19/07/2011	FIELD BLANK			0.90	<0.5	<0.5	<0.5	1	<0.5	<5	<1		1.10	<0.005	<0.5	6.13	<0.5	<10		<1	<0.25
Deionized Water			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.005	<0.5	5.95	<0.5	<10.0	<0.5	<4.0	<0.1
Times greater than DI water			0	0	1.8	1	1	1	1.2	1	10	1	0	2.2	1	1	0.18	1	1	0	0.25	2.5
Comments											Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.											
Action											Let Value Stand											
Result																						

Blank value is a detection limit higher than that of DI water.
Blank value > PQL and < retest limit (30X detection limit).
Blank value > retest limit (30X detection limit).
Retest result to replace original result in emLine.

Denison Environmental Services

Table B-28: Quality Assurance / Quality Control
2011 Field Blanks - General Parameters

Faro Mine Closure

Station	Date	Sample Type	Acid(pH4.5)	Acid(pH8.3)	ALK	ALKPP	CaCO3	CaCO3-d	Cl-d	CO3	Colour	COND	DOC	HCO3	NH3	OH	pH	SO4-d	TDS	TOC	TSS	TURB
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	TCU	µmho/cm	mg/L	mg/L	mg/L	mg/L	(blank)	mg/L	mg/L	mg/L	mg/L	NTU
X14	09/08/2011	FIELD BLANK			0.90	<0.5	<0.5	1	1	<0.5		<1	1.3	1.00	<0.005	<0.5	6.01	1.0	<10	<0.5	<1	<0.25
Deionized Water			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.005	<0.5	5.95	<0.5	<10.0	<0.5	<4.0	<0.1
Times greater than DI water			0	0	1.8	1	1	1.4	2	1	0	1	2.6	2	1	1	0.06	2	1	1	0.25	2.5
Comments																						
Action																						
Result																						
P09-ETA2	18/09/2011	FIELD BLANK	<0.5	<0.5	1.20	<0.5		<0.5	<0.5	<0.5		5.0		1.50		<0.5	5.90	<0.5			<1	
Deionized Water			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.005	<0.5	5.95	<0.5	<10.0	<0.5	<4.0	<0.1
Times greater than DI water			1	1	2.4	1	0	1	1	1	0	5	0	3	0	1	0.05	1	0	0	0.25	0
Comments												Blank concentration > PQL and correctly entered into emLine.										
Action												**Let Value Stand**										
Result												High blank value remains.										
R7	22/09/2011	FIELD BLANK			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<1	<0.5	<0.5	0.01	<0.5	5.38	<0.5	<10	<0.5	<1	<0.1
Deionized Water			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.005	<0.5	5.95	<0.5	<10.0	<0.5	<4.0	<0.1
Times greater than DI water			0	0	1	1	1	1	1	1	0	1	1	1	1.2	1	0.57	1	1	1	0.25	1
Comments																						
Action																						
Result																						
SRK08-SPW3	17/10/2011	FIELD BLANK	<0.5	<0.5	<0.5	<0.5		1	<0.5	<0.5		<1		<0.5		<0.5	7.00	<0.5			<1	
Deionized Water			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.005	<0.5	5.95	<0.5	<10.0	<0.5	<4.0	<0.1
Times greater than DI water			1	1	1	1	0	2	1	1	0	1	0	1	0	1	1.05	1	0	0	0.25	0
Comments																	pH correctly entered into emLine.					
Action																	**Let Value Stand**					
Result																	Retest request would be filed past hold time. Discrepancy between values remains.					

- Blank value is a detection limit higher than that of DI water.
- Blank value > PQL and < retest limit (30X detection limit).
- Blank value > retest limit (30X detection limit).
- Retest result to replace original result in emLine.

Denison Environmental Services

Table B-29: Quality Assurance / Quality Control
2011 Field Blanks - Dissolved Metals

Station	Date	Sample Type	Ag-d µg/L	Al-d µg/L	As-d µg/L	Ba-d µg/L	B-d µg/L	Be-d µg/L	Bi-d µg/L	Ca-d mg/L	Cd-d µg/L	Co-d µg/L	Cr-d µg/L	Cu-d µg/L	Fe-d µg/L	K-d mg/L	Li-d mg/L	Mg-d mg/L	Mn-d µg/L	Mo-d µg/L	Na-d mg/L	Ni-d µg/L	Pb-d µg/L	Sb-d µg/L	Se-d µg/L	Si-d µg/L	Sn-d µg/L	Sr-d µg/L	Ti-d µg/L	Tl-d µg/L	U-d µg/L	V-d µg/L	Zn-d µg/L	Zr-d µg/L
FCS-4	06/01/2011	FIELD BLANK	<0.02	4.00	<0.1	<1	<50	<0.1	<1	0.33	0.02	<0.5	<1	0.5000	224.00	0.13	<0.005	0.20	37.000	<1	0.08	<1	0.5000	<0.5	<0.1	<100	<5	2.00	<5	<0.05	<0.1	<5	116.000	<0.5
Deionized Water			<0.005	<0.2	<0.02	<0.02	<50	<0.01	<0.005	<0.05	<0.005	<0.005	<0.1	<0.05	<1	<0.05	<0.5	<0.05	<0.05	<0.05	<0.05	<0.02	<0.005	<0.02	<0.04	<100	<0.01	<0.05	<0.5	<0.002	<0.002	<0.2	<0.1	<0.1
Times greater than DI water			4	20	5	50	1	10	200	6.6	4	100	10	10	224	2.6	0.01	4	740	20	1.6	50	100	25	2.5	1	500	40	10	25	50	25	1160	5
Comments				Blank value correctly entered into emLine. However concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.		Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration > PQL and correctly entered into emLine. Lab noted that "Dissolved greater than total. Reanalysis yields similar results."		Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank value correctly entered into emLine. However, blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration > PQL and correctly entered into emLine. Lab noted that "Dissolved greater than total. Reanalysis yields similar results."	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.		Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank value correctly entered into emLine. However, blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.			Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank value correctly entered into emLine. However, blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration > PQL and correctly entered into emLine. Lab noted that "Dissolved greater than total. Reanalysis yields similar results."	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.
Action				Let Value Stand	Let Value Stand	Let Value Stand		Let Value Stand	Let Value Stand	Let Value Stand		Let Value Stand	Let Value Stand	Let Value Stand	Let Value Stand				Let Value Stand	Let Value Stand		Let Value Stand	Let Value Stand	Let Value Stand			Let Value Stand	Let Value Stand	Let Value Stand	Let Value Stand	Let Value Stand	Let Value Stand	Let Value Stand	Let Value Stand
Result				High blank value remains.						High blank value remains.				High blank value remains.	High blank value remains. Retest not requested because lab already reanalyzed.				High blank value remains. Retest not requested because lab already reanalyzed.			High blank value remains.					High blank value remains.					High blank value remains. Retest not requested because lab already reanalyzed.	
A30	14/03/2011	FIELD BLANK	<0.02	<3	<0.1	<1	<50	<0.1	<1	<0.05	<0.01	<0.5	<1	1.0000	<5	<0.05		<0.05	<1	<1	<0.05	<1	0.3000	<0.5	<0.1	<100	<5	<1	<5	<0.05	<0.1	<5	<5	<0.5
Deionized Water			<0.005	<0.2	<0.02	<0.02	<50	<0.01	<0.005	<0.05	<0.005	<0.005	<0.1	<0.05	<1	<0.05	<0.5	<0.05	<0.05	<0.05	<0.05	<0.02	<0.005	<0.02	<0.04	<100	<0.01	<0.05	<0.5	<0.002	<0.002	<0.2	<0.1	<0.1
Times greater than DI water			4	15	5	50	1	10	200	1	2	100	10	20	5	1	0	1	20	20	1	50	60	25	2.5	1	500	20	10	25	50	25	50	5
Comments				Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.		Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.			Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration equal to PQL (detection limit for field blank higher than that used for DI water) and correctly entered into emLine.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.				Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank value correctly entered into emLine. However, blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.			Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.
Action				Let Value Stand	Let Value Stand	Let Value Stand		Let Value Stand	Let Value Stand			Let Value Stand	Let Value Stand	Let Value Stand	Let Value Stand				Let Value Stand	Let Value Stand		Let Value Stand	Let Value Stand	Let Value Stand			Let Value Stand	Let Value Stand	Let Value Stand	Let Value Stand	Let Value Stand	Let Value Stand	Let Value Stand	Let Value Stand
Result														High blank value remains.									High blank value remains.											
X5	26/04/2011	FIELD BLANK	<0.005	4.10	<0.02	0.310	<50	<0.01	<0.005	0.27	<0.005	0.0220	<0.1	0.3700	2.00	0.28	<0.0005	<0.05	6.230	0.53	0.16	0.090	0.3810	<0.02	<0.04	<100	0.03	0.99	<0.5	<0.002	<0.002	<0.2	1.700	<0.1
Deionized Water			<0.005	<0.2	<0.02	<0.02	<50	<0.01	<0.005	<0.05	<0.005	<0.005	<0.1	<0.05	<1	<0.05	<0.5	<0.05	<0.05	<0.05	<0.05	<0.02	<0.005	<0.02	<0.04	<100	<0.01	<0.05	<0.5	<0.002	<0.002	<0.2	<0.1	<0.1
Times greater than DI water			1	20.5	1	15.5	1	1	1	5.4	1	4.4	1	7.4	2	5.6	0.001	1	124.8	10.6	3.2	4.5	76.2	1	1	1	3	19.8	1	1	1	1	17	1
Comments				Blank concentration > PQL and correctly entered into emLine. Lab noted that "Dissolved greater than total. Reanalysis yields similar results."		Blank concentration > PQL and correctly entered into emLine. Lab noted that "Dissolved greater than total. Reanalysis yields similar results."				Blank concentration > PQL and correctly entered into emLine. Lab noted that "Dissolved greater than total. Reanalysis yields similar results."				Blank concentration > PQL and correctly entered into emLine. Lab noted that "Dissolved greater than total. Reanalysis yields similar results."		Blank concentration > PQL and correctly entered into emLine. Lab noted that "Dissolved greater than total. Reanalysis yields similar results."			Blank concentration > PQL and correctly entered into emLine.	Blank concentration > PQL and correctly entered into emLine.												Blank concentration > PQL and correctly entered into emLine. Lab noted that "Dissolved greater than total. Reanalysis yields similar results."	
Action				Let Value Stand		Let Value Stand				Let Value Stand				Let Value Stand	Let Value Stand				Let Value Stand	Let Value Stand			Let Value Stand					Let Value Stand					Let Value Stand	
Result				High blank value remains.		High blank value remains.				High blank value remains.				High blank value remains.	High blank value remains.				High blank value remains. Retest not requested because lab already reanalyzed full suite because dissolved > total for some metals.	High blank value remains.			High blank value remains. Retest not requested because lab already reanalyzed full suite because dissolved > total for some metals.					High blank value remains.					High blank value remains.	
SRK08-SPW2	04/05/2011	FIELD BLANK	<0.02	<3	<0.1	<1	<50	<0.1	<1	<0.05	<0.01	<0.5	<1	<0.2	<5	<0.05	<0.005	<0.05	<1	<1	<0.05	<1	<0.2	<0.5	<0.1	<100	<5	<1	<5	<0.05	<0.1	<5	<5	<0.5
Deionized Water			<0.005	<0.2	<0.02	<0.02	<50	<0.01	<0.005	<0.05	<0.005	<0.005	<0.1	<0.05	<1	<0.05	<0.5	<0.05	<0.05	<0.05	<0.05	<0.02	<0.005	<0.02	<0.04	<100	<0.01	<0.05	<0.5	<0.002	<0.002	<0.2	<0.1	<0.1
Times greater than DI water			4	15	5	50	1	10	200	1	2	100	10	4	5	1	0.01	1	20	20	1	50	40	25	2.5	1	500	20	10	25	50	25	50	5
Comments				Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.		Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.			Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.		Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.			Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.

- Blank value is a detection limit higher than that of DI water.
- Blank value > PQL and < retest limit (30X detection limit).
- Blank value > retest limit (30X detection limit).
- Retest result to replace original result in emLine.

Denison Environmental Services

Table B-29: Quality Assurance / Quality Control
2011 Field Blanks - Dissolved Metals

Station	Date	Sample Type		Ag-d µg/L	Al-d µg/L	As-d µg/L	Ba-d µg/L	B-d µg/L	Be-d µg/L	Bi-d µg/L	Ca-d mg/L	Cd-d µg/L	Co-d µg/L	Cr-d µg/L	Cu-d µg/L	Fe-d µg/L	K-d mg/L	Li-d mg/L	Mg-d mg/L	Mn-d µg/L	Mo-d µg/L	Na-d mg/L	Ni-d µg/L	Pb-d µg/L	Sb-d µg/L	Se-d µg/L	Si-d µg/L	Sn-d µg/L	Sr-d µg/L	Ti-d µg/L	Tl-d µg/L	U-d µg/L	V-d µg/L	Zn-d µg/L	Zr-d µg/L
		Action			Let Value Stand	Let Value Stand	Let Value Stand		Let Value Stand	Let Value Stand			Let Value Stand	Let Value Stand		Let Value Stand				Let Value Stand	Let Value Stand		Let Value Stand	Let Value Stand					Let Value Stand	Let Value Stand	Let Value Stand	Let Value Stand	Let Value Stand	Let Value Stand	Let Value Stand	Let Value Stand
		Result																																	
SRK08-P11A	08/06/2011	FIELD BLANK		<0.005	0.90	<0.02	0.180	<50	<0.01	<0.005	<0.05	<0.005	<0.005	<0.1	<0.05	2.00	<0.05	<0.0005	<0.05	0.630	<0.05	<0.05	0.040	0.3150	<0.02	<0.04	<100	<0.01	0.15	<0.5	<0.002	<0.002	<0.2	1.500	<0.1
Deionized Water				<0.005	<0.2	<0.02	<0.02	<50	<0.01	<0.005	<0.05	<0.005	<0.005	<0.1	<0.05	<1	<0.05	<0.5	<0.05	<0.05	<0.05	<0.05	<0.02	<0.005	<0.02	<0.04	<100	<0.01	<0.05	<0.5	<0.002	<0.002	<0.2	<0.1	<0.1
Times greater than DI water				1	4.5	1	9	1	1	1	1	1	1	1	1	2	1	0.001	1	12.6	1	1	2	63	1	1	1	1	3	1	1	1	1	15	1
		Comments					Blank concentration > PQL and correctly entered into emLine.													Blank concentration > PQL and correctly entered into emLine.				Blank concentration > PQL and correctly entered into emLine. Laboratory contact indicated that lab had already retested, with similar results.											Blank concentration > PQL and correctly entered into emLine.	
		Action					Let Value Stand													Let Value Stand				Let Value Stand										Let Value Stand	
		Result					High blank value remains.													High blank value remains.				High value remains. Comment added in emLine: "Lab retested with similar results."										High blank value remains.	
X5	19/07/2011	FIELD BLANK		<0.005	1.20	<0.02	0.340	<50	<0.01	<0.005	<0.05	<0.005	<0.005	<0.1	<0.05	2.00	<0.05	<0.0005	<0.05	0.190	<0.05	<0.05	<0.02	0.2000	<0.02	<0.04	<100	<0.01	<0.05	<0.5	<0.002	<0.002	<0.2	0.400	<0.1
Deionized Water				<0.005	<0.2	<0.02	<0.02	<50	<0.01	<0.005	<0.05	<0.005	<0.005	<0.1	<0.05	<1	<0.05	<0.5	<0.05	<0.05	<0.05	<0.05	<0.02	<0.005	<0.02	<0.04	<100	<0.01	<0.05	<0.5	<0.002	<0.002	<0.2	<0.1	<0.1
Times greater than DI water				1	6	1	17	1	1	1	1	1	1	1	1	2	1	0.001	1	3.8	1	1	1	40	1	1	1	1	1	1	1	1	1	4	1
		Comments			Blank concentration > PQL and correctly entered into emLine. Lab noted that "Dissolved greater than total. Reanalysis yields similar results."		Blank concentration > PQL and correctly entered into emLine. Lab noted that "Dissolved greater than total. Reanalysis yields similar results."																	Blank concentration > PQL and correctly entered into emLine. Lab noted that "Dissolved greater than total. Reanalysis yields similar results."											
		Action			Let Value Stand		Let Value Stand																	Let Value Stand											
		Result			High blank value remains.		High blank value remains.																	High blank value remains. Retest not requested because lab already reanalyzed.											
X14	09/08/2011	FIELD BLANK		0.0080	0.90	<0.02	0.070	<50	<0.01	<0.005	0.18	<0.005	<0.005	<0.1	0.0800	<1	0.43	<0.0005	<0.05	1.500	<0.05	0.06	<0.02	0.0980	<0.02	<0.04	<100	<0.01	0.65	<0.5	0.00	<0.002	<0.2	0.900	<0.1
Deionized Water				<0.005	<0.2	<0.02	<0.02	<50	<0.01	<0.005	<0.05	<0.005	<0.005	<0.1	<0.05	<1	<0.05	<0.5	<0.05	<0.05	<0.05	<0.05	<0.02	<0.005	<0.02	<0.04	<100	<0.01	<0.05	<0.5	<0.002	<0.002	<0.2	<0.1	<0.1
Times greater than DI water				1.6	4.5	1	3.5	1	1	1	3.6	1	1	1	1.6	1	8.6	0.001	1	30	1	1.2	1	19.6	1	1	1	1	13	1	1.5	1	1	9	1
		Comments															Blank concentration > PQL and correctly entered into emLine. Lab noted that "Dissolved greater than total. Reanalysis yields similar results."			Blank concentration > PQL and correctly entered into emLine. Lab noted that "Dissolved greater than total. Reanalysis yields similar results."				Blank concentration > PQL and correctly entered into emLine. Lab noted that "Dissolved greater than total. Reanalysis yields similar results."					Blank concentration > PQL and correctly entered into emLine. Lab noted that "Dissolved greater than total. Reanalysis yields similar results."					Blank concentration > PQL and correctly entered into emLine. Lab noted that "Dissolved greater than total. Reanalysis yields similar results."	
		Action															Let Value Stand			Let Value Stand				Let Value Stand					Let Value Stand					Let Value Stand	
		Result															High blank value remains.			High blank value remains. Retest not requested because lab already reanalyzed.				High blank value remains.					High blank value remains.					High blank value remains.	

Blank value is a detection limit higher than that of DI water.
Blank value > PQL and < retest limit (30X detection limit).
Blank value > retest limit (30X detection limit).
Retest result to replace original result in emLine.

Denison Environmental Services

Table B-29: Quality Assurance / Quality Control
2011 Field Blanks - Dissolved Metals

Station	Date	Sample Type	Ag-d µg/L	Al-d µg/L	As-d µg/L	Ba-d µg/L	B-d µg/L	Be-d µg/L	Bi-d µg/L	Ca-d mg/L	Cd-d µg/L	Co-d µg/L	Cr-d µg/L	Cu-d µg/L	Fe-d µg/L	K-d mg/L	Li-d mg/L	Mg-d mg/L	Mn-d µg/L	Mo-d µg/L	Na-d mg/L	Ni-d µg/L	Pb-d µg/L	Sb-d µg/L	Se-d µg/L	Si-d µg/L	Sn-d µg/L	Sr-d µg/L	Ti-d µg/L	Tl-d µg/L	U-d µg/L	V-d µg/L	Zn-d µg/L	Zr-d µg/L
P09-ETA2	18/09/2011	FIELD BLANK	<0.02	<3	<0.1	<1	<50	<0.1	<1	<0.05	<0.01	<0.5	<1	<0.2	<5	<0.05	<0.005	<0.05	<1	<1	<0.05	<1	<0.2	<0.5	<0.1	<100	<5	<1	<5	<0.05	<0.1	<5	<5	<0.5
Deionized Water			<0.005	<0.2	<0.02	<0.02	<50	<0.01	<0.005	<0.05	<0.005	<0.005	<0.1	<0.05	<1	<0.05	<0.5	<0.05	<0.05	<0.05	<0.05	<0.02	<0.005	<0.02	<0.04	<100	<0.01	<0.05	<0.5	<0.002	<0.002	<0.2	<0.1	<0.1
Times greater than DI water			4	15	5	50	1	10	200	1	2	100	10	4	5	1	0.01	1	20	20	1	50	40	25	2.5	1	500	20	10	25	50	25	50	5
Comments				Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.		Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.			Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.				Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.		Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.			Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.
Action				Let Value Stand	Let Value Stand	Let Value Stand		Let Value Stand	Let Value Stand			Let Value Stand	Let Value Stand		Let Value Stand				Let Value Stand	Let Value Stand		Let Value Stand	Let Value Stand	Let Value Stand			Let Value Stand	Let Value Stand	Let Value Stand	Let Value Stand	Let Value Stand	Let Value Stand	Let Value Stand	Let Value Stand
Result																																		
R7	22/09/2011	FIELD BLANK	<0.005	0.70	<0.02	0.090	<50	<0.01	<0.005	0.08	<0.005	<0.005	<0.1	<0.05	<1	<0.05	<0.0005	<0.05	0.080	<0.05	<0.05	<0.02	0.0360	<0.02	<0.04	<100	<0.01	0.16	<0.5	<0.002	<0.002	<0.2	0.200	<0.1
Deionized Water			<0.005	<0.2	<0.02	<0.02	<50	<0.01	<0.005	<0.05	<0.005	<0.005	<0.1	<0.05	<1	<0.05	<0.5	<0.05	<0.05	<0.05	<0.05	<0.02	<0.005	<0.02	<0.04	<100	<0.01	<0.05	<0.5	<0.002	<0.002	<0.2	<0.1	<0.1
Times greater than DI water			1	3.5	1	4.5	1	1	1	1.6	1	1	1	1	1	1	0.001	1	1.6	1	1	1	7.2	1	1	1	1	3.2	1	1	1	1	2	1
Comments																						Blank concentration > PQL and correctly entered into emLine. Lab noted that "Dissolved greater than total. Reanalysis yields similar results."												
Action																						Let Value Stand												
Result																						High blank value remains.												
SRK08-SPW3	17/10/2011	FIELD BLANK	<0.02	<3	<0.1	<1	<50	<0.1	<1	0.23	0.04	<0.5	<1	<0.2	<5	<0.05	<0.005	0.08	16.000	<1	<0.05	<1	<0.2	<0.5	<0.1	<100	<5	<1	<5	<0.05	<0.1	<5	46.000	<0.5
Deionized Water			<0.005	<0.2	<0.02	<0.02	<50	<0.01	<0.005	<0.05	<0.005	<0.005	<0.1	<0.05	<1	<0.05	<0.5	<0.05	<0.05	<0.05	<0.05	<0.02	<0.005	<0.02	<0.04	<100	<0.01	<0.05	<0.5	<0.002	<0.002	<0.2	<0.1	<0.1
Times greater than DI water			4	15	5	50	1	10	200	4.6	8	100	10	4	5	1	0.01	1.6	320	20	1	50	40	25	2.5	1	500	20	10	25	50	25	460	5
Comments				Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.		Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.		Blank value correctly entered into emLine. However, blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.				Blank concentration > PQL and correctly entered into emLine.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.		Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.			Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.
Action				Let Value Stand	Let Value Stand	Let Value Stand		Let Value Stand	Let Value Stand		Let Value Stand	Let Value Stand	Let Value Stand		Let Value Stand				Request Retest	Let Value Stand		Let Value Stand	Let Value Stand	Let Value Stand			Let Value Stand	Let Value Stand	Let Value Stand	Let Value Stand	Let Value Stand	Let Value Stand	Request Retest	Let Value Stand
Result											High blank value remains.								Retest requested, but lab had already reanalyzed multiple times with similar results. Therefore, high blank value remains.														Retest requested, but lab had already reanalyzed multiple times with similar results. Therefore, high blank value remains.	
R10	16/11/2011	FIELD BLANK	<0.005	0.60	<0.02	<0.02	<50	<0.01	<0.005	<0.05	<0.005	<0.005	<0.1	<0.05	<1	<0.05	<0.0005	<0.05	0.060	<0.05	<0.05	<0.02	0.0200	<0.02	<0.04	<100	<0.01	0.11	<0.5	<0.002	<0.002	<0.2	0.300	<0.1
Deionized Water			<0.005	<0.2	<0.02	<0.02	<50	<0.01	<0.005	<0.05	<0.005	<0.005	<0.1	<0.05	<1	<0.05	<0.5	<0.05	<0.05	<0.05	<0.05	<0.02	<0.005	<0.02	<0.04	<100	<0.01	<0.05	<0.5	<0.002	<0.002	<0.2	<0.1	<0.1
Times greater than DI water			1	3	1	1	1	1	1	1	1	1	1	1	1	1	0.001	1	1.2	1	1	1	4	1	1	1	1	2.2	1	1	1	1	3	1
Comments																																		
Action																																		
Result																																		
NFRC SC-3	05/12/2011	FIELD BLANK	<0.005	0.50	<0.02	<0.02	<50	<0.01	<0.005	<0.05	<0.005	<0.005	<0.1	<0.05	<1	<0.05	<0.0005	<0.05	0.120	<0.05	<0.05	<0.02	0.0820	<0.02	<0.04	<100	<0.01	<0.05	<0.5	<0.002	<0.002	<0.2	0.700	<0.1
Deionized Water			<0.005	<0.2	<0.02	<0.02	<50	<0.01	<0.005	<0.05	<0.005	<0.005	<0.1	<0.05	<1	<0.05	<0.5	<0.05	<0.05	<0.05	<0.05	<0.02	<0.005	<0.02	<0.04	<100	<0.01	<0.05	<0.5	<0.002	<0.002	<0.2	<0.1	<0.1
Times greater than DI water			1	2.5	1	1	1	1	1	1	1	1	1	1	1	1	0.001	1	2.4	1	1	1	16.4	1	1	1	1	1	1	1	1	1	7	1
Comments																						Blank concentration > PQL and correctly entered into emLine. Lab noted that "Dissolved greater than total. Reanalysis yields similar results."										Blank concentration > PQL and correctly entered into emLine. Lab noted that "Dissolved greater than total. Reanalysis yields similar results."	
Action																						Let Value Stand										Let Value Stand	
Result																						High blank value remains.										High blank value remains.	

Blank value is a detection limit higher than that of DI water.
Blank value > PQL and < retest limit (30X detection limit).
Blank value > retest limit (30X detection limit).
Retest result to replace original result in emLine.

Denison Environmental Services

Table B-30: Quality Assurance / Quality Control
2011 Field Blanks - Total Metals

Station	Date	Sample Type	Ag µg/L	Al µg/L	As µg/L	B µg/L	Ba µg/L	Be µg/L	Bi µg/L	Ca mg/L	Cd µg/L	Co µg/L	Cr µg/L	Cu µg/L	Fe µg/L	K mg/L	Li mg/L	Mg mg/L	Mn µg/L	Mo µg/L	Na mg/L	Ni µg/L	Pb µg/L	Sb µg/L	Se µg/L	Si µg/L	Sn µg/L	Sr µg/L	Ti µg/L	Tl µg/L	U µg/L	V µg/L	Zn µg/L	Zr µg/L
FCS-4	06/01/2011	FIELD BLANK	<0.02	<3	<0.1	<50	<1	<0.1	<1	<0.05	<0.01	<0.5	<1	<0.2	<5	<0.05	<0.005	<0.05	<1	<1	<0.05	<1	<0.2	<0.5	<0.1	<100	<5	<1	<5	<0.05	<0.1	<5	6.000	<0.5
Deionized Water			<0.005	<0.2	<0.02	<50	<0.02	<0.01	<0.005	<0.05	<0.005	<0.005	<0.1	<0.05	<1	<0.05	<0.5	<0.05	<0.05	<0.05	<0.05	<0.02	<0.005	<0.02	<0.04	<100	<0.01	<0.05	<0.5	<0.002	<0.002	<0.2	<0.1	<0.1
Times greater than DI water			4	15	5	1	50	10	200	1	2	100	10	4	5	1	0.01	1	20	20	1	50	40	25	2.5	1	500	20	10	25	50	25	60	5
Comments				Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.		Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.			Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.		Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.				Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank value correctly entered into emLine. However concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.
Action				Let Value Stand	Let Value Stand		Let Value Stand	Let Value Stand	Let Value Stand			Let Value Stand	Let Value Stand		Let Value Stand				Let Value Stand	Let Value Stand		Let Value Stand	Let Value Stand	Let Value Stand			Let Value Stand	Let Value Stand	Let Value Stand	Let Value Stand	Let Value Stand	Let Value Stand	Let Value Stand	Let Value Stand
Result																																High blank value remains.	
X5	26/04/2011	FIELD BLANK	<0.005	0.90	<0.02	<50	<0.02	<0.01	<0.005	<0.05	<0.005	<0.005	<0.1	<0.05	<1	<0.05	<0.0005	<0.05	<0.05	<0.05	<0.05	<0.02	0.0150	<0.02	0.0700	<100	<0.01	<0.05	<0.5	<0.002	<0.002	<0.2	<0.1	<0.1
Deionized Water			<0.005	<0.2	<0.02	<50	<0.02	<0.01	<0.005	<0.05	<0.005	<0.005	<0.1	<0.05	<1	<0.05	<0.5	<0.05	<0.05	<0.05	<0.05	<0.02	<0.005	<0.02	<0.04	<100	<0.01	<0.05	<0.5	<0.002	<0.002	<0.2	<0.1	<0.1
Times greater than DI water			1	4.5	1	1	1	1	1	1	1	1	1	1	1	1	0.001	1	1	1	1	1	3	1	1.75	1	1	1	1	1	1	1	1	1
Comments																																	
Action																																	
Result																																	
X5	19/07/2011	FIELD BLANK	<0.005	0.60	<0.02	<50	<0.02	<0.01	<0.005	<0.05	<0.005	<0.005	<0.1	<0.05	<1	<0.05	<0.0005	<0.05	0.060	<0.05	<0.05	<0.02	0.0290	<0.02	<0.04	<100	<0.01	<0.05	<0.5	<0.002	<0.002	<0.2	0.200	<0.1
Deionized Water			<0.005	<0.2	<0.02	<50	<0.02	<0.01	<0.005	<0.05	<0.005	<0.005	<0.1	<0.05	<1	<0.05	<0.5	<0.05	<0.05	<0.05	<0.05	<0.02	<0.005	<0.02	<0.04	<100	<0.01	<0.05	<0.5	<0.002	<0.002	<0.2	<0.1	<0.1
Times greater than DI water			1	3	1	1	1	1	1	1	1	1	1	1	1	1	0.001	1	1.2	1	1	1	5.8	1	1	1	1	1	1	1	1	1	2	1
Comments																							Blank concentration > PQL and correctly entered into emLine.											
Action																							Let Value Stand											
Result																							High blank value remains.											
X14	09/08/2011	FIELD BLANK	<0.005	0.50	<0.02	<50	<0.02	<0.01	<0.005	<0.05	<0.005	<0.005	<0.1	<0.05	<1	<0.05	<0.0005	<0.05	<0.05	<0.05	<0.05	<0.02	0.0120	<0.02	<0.04	<100	<0.01	<0.05	<0.5	<0.002	<0.002	<0.2	0.200	<0.1
Deionized Water			<0.005	<0.2	<0.02	<50	<0.02	<0.01	<0.005	<0.05	<0.005	<0.005	<0.1	<0.05	<1	<0.05	<0.5	<0.05	<0.05	<0.05	<0.05	<0.02	<0.005	<0.02	<0.04	<100	<0.01	<0.05	<0.5	<0.002	<0.002	<0.2	<0.1	<0.1
Times greater than DI water			1	2.5	1	1	1	1	1	1	1	1	1	1	1	1	0.001	1	1	1	1	1	2.4	1	1	1	1	1	1	1	1	1	2	1
Comments																																	
Action																																	
Result																																	
R7	22/09/2011	FIELD BLANK	<0.005	0.50	<0.02	<50	<0.02	<0.01	<0.005	<0.05	<0.005	<0.005	<0.1	<0.05	<1	<0.05	<0.0005	<0.05	<0.05	<0.05	<0.05	<0.02	0.0110	<0.02	<0.04	<100	<0.01	<0.05	<0.5	<0.002	<0.002	<0.2	<0.1	<0.1
Deionized Water			<0.005	<0.2	<0.02	<50	<0.02	<0.01	<0.005	<0.05	<0.005	<0.005	<0.1	<0.05	<1	<0.05	<0.5	<0.05	<0.05	<0.05	<0.05	<0.02	<0.005	<0.02	<0.04	<100	<0.01	<0.05	<0.5	<0.002	<0.002	<0.2	<0.1	<0.1
Times greater than DI water			1	2.5	1	1	1	1	1	1	1	1	1	1	1	1	0.001	1	1	1	1	1	2.2	1	1	1	1	1	1	1	1	1	1	1
Comments																																	
Action																																	
Result																																	
R10	16/11/2011	FIELD BLANK	<0.005	0.90	<0.02	<50	0.080	<0.01	<0.005	<0.05	<0.005	<0.005	<0.1	0.0700	<1	<0.05	<0.0005	<0.05	<0.05	<0.05	<0.05	0.040	0.1080	<0.02	<0.04	<100	0.02	0.08	<0.5	<0.002	<0.002	<0.2	0.200	<0.1
Deionized Water			<0.005	<0.2	<0.02	<50	<0.02	<0.01	<0.005	<0.05	<0.005	<0.005	<0.1	<0.05	<1	<0.05	<0.5	<0.05	<0.05	<0.05	<0.05	<0.02	<0.005	<0.02	<0.04	<100	<0.01	<0.05	<0.5	<0.002	<0.002	<0.2	<0.1	<0.1
Times greater than DI water			1	4.5	1	1	4	1	1	1	1	1	1	1.4	1	1	0.001	1	1	1	1	2	21.6	1	1	1	2	1.6	1	1	1	1	2	1
Comments																							Blank concentration > PQL and correctly entered into emLine.											
Action																							Let Value Stand											
Result																							High blank value remains.											
NFRC SC-3	05/12/2011	FIELD BLANK	<0.005	0.50	<0.02	<50	<0.02	<0.01	<0.005	<0.05	<0.005	<0.005	<0.1	0.1100	<1	<0.05	<0.0005	<0.05	<0.05	<0.05	<0.05	<0.02	0.0380	<0.02	<0.04	<100	<0.01	<0.05	<0.5	<0.002	<0.002	<0.2	0.500	<0.1
Deionized Water			<0.005	<0.2	<0.02	<50	<0.02	<0.01	<0.005	<0.05	<0.005	<0.005	<0.1	<0.05	<1	<0.05	<0.5	<0.05	<0.05	<0.05	<0.05	<0.02	<0.005	<0.02	<0.04	<100	<0.01	<0.05	<0.5	<0.002	<0.002	<0.2	<0.1	<0.1
Times greater than DI water			1	2.5	1	1	1	1	1	1	1	1	1	2.2	1	1	0.001	1	1	1	1	1	7.6	1	1	1	1	1	1	1	1	1	5	1
Comments																							Blank concentration > PQL and correctly entered into emLine. Lab noted that "Dissolved greater than total. Reanalysis yields similar results."										Blank concentration > PQL and correctly entered into emLine. Lab noted that "Dissolved greater than total. Reanalysis yields similar results."	
Action																							Let Value Stand										Let Value Stand	
Result																							High blank value remains.										High blank value remains.	

Blank value is a detection limit higher than that of DI water.
Blank value > PQL and < retest limit (30X detection limit).
Blank value > retest limit (30X detection limit).
Retest result to replace original result in emLine.

Denison Environmental Services

Table B-31: Quality Assurance / Quality Control
2011 Duplicates - General Parameters

Station	Date	Sample Type	Acid(pH4.5)	Acid(pH8.3)	ALK	ALKPP	CaCO3	CaCO3-d	Chloride	CN 4500	CN(wad)	CNTHIO	CO3	Colour	COND	DO	DOC	HCO3	NH3	NO2	NO2/3	NO3	OH	oPO4	ORP	pH	SO4-d	TDS	TOC	TSS	TURB
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	TCU	µmho/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mV	(blank)	mg/L	mg/L	mg/L	mg/L	NTU
SRK08-SPW3	06/01/2011	M	<0.5	586.00	210.00	<0.5		3880.00	4.10				<0.5		5280.0000			260.00					<0.5			6.80	4100.000			21.000	
SRK08-SPW3	06/01/2011	DUPLICATE	<0.5	569.00	210.00	<0.5		3780.00	4.20				<0.5		5230.0000			260.00					<0.5			6.79	4000.000			20.000	
RPD (%)			N/A	2.94	0.00	N/A	N/A	2.61	2.41	N/A	N/A	N/A	N/A	N/A	0.95	N/A	N/A	0.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.01	2.47	N/A	N/A	4.88	N/A
Comments																															
Action																															
Result																															
P05-02	27/01/2011	M	<0.5	55.90	370.00	<0.5		1780.00	3.00				<0.5		2770.00			450.00					<0.5			7.14	1400.00			750.00	
P05-02	27/01/2011	DUPLICATE	<0.5	36.10	360.00	<0.5		1650.00	2.80				<0.5		2760.00			440.00					<0.5			7.16	1400.00			270.00	
RPD (%)			N/A	43.04	2.74	N/A	N/A	7.58	6.90	N/A	N/A	N/A	N/A	N/A	0.36	N/A	N/A	2.25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.02	0.00	N/A	N/A	94.12	N/A
Comments																														Both values > PQL and correctly entered into emLine.	
Action																														**Let Value Stand**	
Result																														Retest request would be filed past hold time. Discrepancy between values remains.	
P05-03	27/01/2011	M	<0.5	26.50	300.00	<0.5		846.00	1.70				<0.5		1540.00			370.00					<0.5			7.35	610.00			62.00	
P05-03	27/01/2011	DUPLICATE	<0.5	20.80	300.00	<0.5		840.00	1.70				<0.5		1580.00			360.00					<0.5			7.41	650.00			360.00	
RPD (%)			N/A	24.10	0.00	N/A	N/A	0.71	0.00	N/A	N/A	N/A	N/A	N/A	2.56	N/A	N/A	2.74	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.06	6.35	N/A	N/A	141.23	N/A
Comments																														Both values > PQL and correctly entered into emLine.	
Action																														**Let Value Stand**	
Result																														Retest request would be filed past hold time. Discrepancy between values remains.	
SRK08-SPW2	01/02/2011	M	<0.5	302.00	220.00	<0.5		2630.00	2.90				<0.5		3890.00			270.00					<0.5			6.47	2800.00			5.00	
SRK08-SPW2	01/02/2011	DUPLICATE	<0.5	277.00	220.00	<0.5		2590.00	3.00				<0.5		3860.00			270.00					<0.5			6.46	2800.00			4.00	
RPD (%)			N/A	8.64	0.00	N/A	N/A	1.53	3.39	N/A	N/A	N/A	N/A	N/A	0.77	N/A	N/A	0.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.01	0.00	N/A	N/A	22.22	N/A
Comments																															
Action																															
Result																															
X14	01/02/2011	M			170.00	<0.5	394.00	358.00	0.60				<0.5		744.0000		1.50	210.00	0.05				<0.5			7.72	190.000	460.00	1.30	<1	2.8100
X14	01/02/2011	DUPLICATE			170.00	<0.5	389.00	384.00	0.60				<0.5		719.0000		1.70	210.00	0.05				<0.5			7.86	200.000	470.00	0.80	2.000	2.9000
RPD (%)			N/A	N/A	0.00	N/A	1.28	7.01	0.00	N/A	N/A	N/A	N/A	N/A	3.42	N/A	12.50	0.00	4.26	N/A	N/A	N/A	N/A	N/A	N/A	0.14	5.13	2.15	47.62	N/A	3.15
Comments																															
Action																															
Result																															
X11	03/02/2011	M	<0.5	43.00	360.00	<0.5		1800.00	2.40				<0.5		2970.00			440.00					<0.5			7.45	1600.00			13.00	
X11	03/02/2011	DUPLICATE	<0.5	41.00	360.00	<0.5		1920.00	5.90				<0.5		2970.00			440.00					<0.5			7.52	1600.00			12.00	
RPD (%)			N/A	4.76	0.00	N/A	N/A	6.45	84.34	N/A	N/A	N/A	N/A	N/A	0.00	N/A	N/A	0.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.07	0.00	N/A	N/A	8.00	N/A
Comments									Both values correctly entered into emLine; however, main sample value not > PQL. Therefore, RPD analysis not valid in this case.																							
Action									**Let Value Stand**																						
Result									Discrepancy between values remains.																						
X5	05/04/2011	M			270.00	<0.5	1360.00	1380.00	2.00	<0.005			<0.5	<5	2130.00			330.00	0.73				<0.5			7.63	1100.00	1900.00		2.00	2.10
X5	05/04/2011	DUPLICATE			270.00	<0.5	1370.00	1370.00	2.40	<0.005			<0.5	<5	2190.00			330.00	0.71				<0.5			7.46	1100.00	1900.00		2.00	2.20
RPD (%)			N/A	N/A	0.00	N/A	0.73	0.73	18.18	N/A	N/A	N/A	N/A	N/A	2.78	N/A	N/A	0.00	2.78	N/A	N/A	N/A	N/A	N/A	N/A	0.17	0.00	0.00	N/A	0.00	4.65
Comments																															
Action																															
Result																															
R7	12/04/2011	M			130.00	<0.5	134.00	144.00	<0.5				<0.5		273.00		2.50	160.00	0.01				<0.5			7.94	9.20	150.00	2.80	<1	0.53
R7	12/04/2011	DUPLICATE			140.00	<0.5	128.00	143.00	<0.5				<0.5		273.00		0.80	170.00	0.01				<0.5			7.97	9.10	150.00	0.70	<1	0.63
RPD (%)			N/A	N/A	7.41	N/A	4.58	0.70	N/A	N/A	N/A	N/A	N/A	N/A	0.00	N/A	103.03	6.06	40.00	N/A	N/A	N/A	N/A	N/A	N/A	0.03	1.09	0.00	120.00	N/A	17.24
Comments																	Both values correctly entered into emLine; however, duplicate value not > PQL. Therefore, RPD analysis not valid in this case.												Both values correctly entered into emLine; however, duplicate value not > PQL. Therefore, RPD analysis not valid in this case.		
Action																	**Let Value Stand**												**Let Value Stand**		
Result																	Discrepancy between values remains.												Discrepancy between values remains.		
FL-3	13/04/2011	M	<0.5	26.20	82.00	<0.5	681.00	693.00	2.30				<0.5		1360.00	13.7000		100.0000	0.98	0.0100	0.53	0.52	<0.5	<0.005	155.000	7.470	640.00	1100.00		<1	
FL-3	13/04/2011	DUPLICATE	<0.5	25.00	81.00	<0.5	656.00	690.00	2.50				<0.5		1350.00	13.7000		99.0000	1.10	0.0100	0.51	0.50	<0.5	<0.005	150.000	7.420	640.00	1100.00		<1	
RPD (%)			N/A	4.69	1.23	N/A	3.74	0.43	8.33	N/A	N/A	N/A	N/A	N/A	0.74	0.00		1.01	11.54	0.00	3.85	3.92	N/A	N/A	3.28	0.05	0.00	0.00	N/A	N/A	N/A
Comments																															
Action																															
Result																															
R8	09/05/2011	M			94.00	<0.5	84.90	92.30	3.10				<0.5		194.00		10.40	110.00	0.04	<0.005	0.09	0.09	<0.5			7.60	5.40	120.00	9.40	2.00	1.85
R8	09/05/2011	DUPLICATE			92.00	<0.5	89.30	96.70	0.70				<0.5		196.00		10.60	110.00	0.04	<0.005	0.06	0.06	<0.5			7.66	5.30	120.00	10.50	2.00	1.79
RPD (%)			N/A	N/A	2.15	N/A	5.05	4.66	126.32	N/A	N/A	N/A	N/A	N/A	1.03	N/A	1.90	0.00	8.22	N/A	40.00	40.00	N/A	N/A	N/A	0.06	1.87	0.00	11.06	0.00	3.30
Comments									Both values correctly entered into emLine; however, duplicate value not > PQL. Therefore, RPD analysis not valid in this case.																						
Action									**Let Value Stand**																						
Result									Discrepancy between values remains.																						
X26	26/05/2011	M	<0.5	382.00	290.00	<0.5		3480.00	4.60				<0.5		4650.00			350.00					<0.5			6.84	3700.00			150.00	
X26	26/05/2011	DUPLICATE	<0.5	393.00	300.00	<0.5		3250.00	5.90				<0.5		4740.00			370.00					<0.5			6.85	3700.00			140.00	
RPD (%)			N/A	2.84	3.39	N/A	N/A	6.84	24.76	N/A	N/A	N/A	N/A	N/A	1.92	N/A	N/A	5.56	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.01	0.00	N/A	N/A	6.90	N/A
Comments																															
Action																															
Result																															

RPD > 50%.
Retest result to replace original result in emLine.

Denison Environmental Services

Table B-31: Quality Assurance / Quality Control
2011 Duplicates - General Parameters

Station	Date	Sample Type	Acid(pH4.5)	Acid(pH8.3)	ALK	ALKPP	CaCO3	CaCO3-d	Chloride	CN 4500	CN(wad)	CNTHIO	CO3	Colour	COND	DO	DOC	HCO3	NH3	NO2	NO2/3	NO3	OH	oPO4	ORP	pH	SO4-d	TDS	TOC	TSS	TURB
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	TCU	µmho/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mV	(blank)	mg/L	mg/L	mg/L	mg/L	NTU
P01-11	01/06/2011	M	<0.5	66.60	370.00	<0.5		1800.00	3.20				<0.5		2960.00			450.00					<0.5			7.21	1700.00			1500.00	
P01-11	01/06/2011	DUPLICATE	<0.5	56.50	400.00	<0.5		1940.00	2.90				<0.5		2990.00			480.00					<0.5			7.08	1500.00			5200.00	
RPD (%)			N/A	16.41	7.79	N/A	N/A	7.49	9.84	N/A	N/A	N/A	N/A	N/A	1.01	N/A	N/A	6.45	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.13	12.50	N/A	N/A	110.45	N/A
Comments																														Both values > PQL and correctly entered into emLine. Lab noted on duplicate sample that "The RDL was raised due to high solids in sample."	
Action																														**Let Value Stand**	
Result																														Retest request would be filed past hold time. Discrepancy between values remains.	
SRK08-P11B	08/06/2011	M	<0.5	21.80	160.00	<0.5		570.00	1.70				<0.5		1030.00			200.00					<0.5			7.58	400.00			16000.00	
SRK08-P11B	08/06/2011	DUPLICATE	<0.5	27.40	160.00	<0.5		591.00	0.80				<0.5		1060.00			200.00					<0.5			7.41	410.00			880.00	
RPD (%)			N/A	22.76	0.00	N/A	N/A	3.62	72.00	N/A	N/A	N/A	N/A	N/A	2.87	N/A	N/A	0.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.17	2.47	N/A	N/A	179.15	N/A
Comments									Both values correctly entered into emLine; however, neither value > PQL. Therefore, RPD analysis not valid in this case.																						Both values > PQL and correctly entered into emLine. Lab noted on both samples that "The RDL was raised due to high solids in sample."	
Action									**Let Value Stand**																					**Let Value Stand**	
Result									Discrepancy between values remains.																					Retest request would be filed past hold time. Discrepancy between values remains.	
SRK08-P10A	09/06/2011	M	<0.5	115.00	590.00	<0.5		2310.00	120.00				<0.5		3650.00			720.00					<0.5			7.04	1500.00			4700.00	
SRK08-P10A	09/06/2011	DUPLICATE	<0.5	107.00	570.00	<0.5		2330.00	130.00				<0.5		3670.00			700.00					<0.5			7.09	1500.00			3900.00	
RPD (%)			N/A	7.21	3.45	N/A	N/A	0.86	8.00	N/A	N/A	N/A	N/A	N/A	0.55	N/A	N/A	2.82	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.05	0.00	N/A	N/A	18.60	N/A
Comments																															
Action																															
Result																															
X5	14/06/2011	M			140.00	<0.5	1130.00	1130.00	1.70	<0.005	<0.5	<5	1860.00				170.00	0.55	<0.005	0.25	0.25	<0.5				7.45	1000.00	1600.00		<1	2.30
X5	14/06/2011	DUPLICATE			140.00	<0.5	1070.00	1060.00	1.50	<0.005	<0.5	<5	1860.00				170.00	0.53	<0.005	0.22	0.22	<0.5				7.47	1000.00	1700.00		<1	2.20
RPD (%)			N/A	N/A	0.00	N/A	5.45	6.39	12.50	N/A	N/A	N/A	0.00	N/A	N/A	N/A	0.00	3.70	N/A	12.77	12.77	N/A	N/A	N/A	N/A	0.02	0.00	6.06	N/A	N/A	4.44
Comments																															
Action																															
Result																															
NF2	20/06/2011	M			48.00	<0.5	48.20	49.80	<0.5				<0.5		112.00		3.20	58.00	0.02	<0.005	<0.02	<0.02	<0.5			7.63	6.90	72.00	3.20	6.00	0.90
NF2	20/06/2011	DUPLICATE			47.00	<0.5	47.80	48.70	<0.5				<0.5		113.00		3.00	58.00	0.01	<0.005	<0.02	<0.02	<0.5			7.74	7.10	70.00	3.20	10.00	1.03
RPD (%)			N/A	N/A	2.11	N/A	0.83	2.23	N/A	N/A	N/A	N/A	N/A	N/A	0.89	N/A	6.45	0.00	14.29	N/A	N/A	N/A	N/A	N/A	N/A	0.11	2.86	2.82	0.00	50.00	13.47
Comments																														Both values > PQL and correctly entered into emLine.	
Action																														**Let Value Stand**	
Result																														Retest request would be filed past hold time. Discrepancy between values remains.	
FL-1	13/07/2011	M	<0.5	24.20	66.00	<0.5	624.00	641.00	1.70				<0.5		1230.00			80.00	1.10	<0.005	0.48	0.48	<0.5	<0.005		7.25	610.00	960.00		<1	
FL-1	13/07/2011	DUPLICATE	<0.5	25.70	64.00	<0.5	664.00	625.00	1.80				<0.5		1240.00			78.00	0.59	0.01	0.49	0.48	<0.5	<0.005		7.18	600.00	980.00		<1	
RPD (%)			N/A	6.01	3.08	N/A	6.21	2.53	5.71	N/A	N/A	N/A	N/A	N/A	0.81	N/A	N/A	2.53	60.36	N/A	2.06	0.00	N/A	N/A	N/A	0.07	1.65	2.06	N/A	N/A	N/A
Comments																			Both values > PQL and correctly entered into emLine.												
Action																			**Request Retest**												
Result																			Retest performed, see results below.												
FL-1 Retest	13/07/2011	M																	0.83												
FL-1 Retest	13/07/2011	DUPLICATE																	0.84												
RPD (%) Retest Results			N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RPD (%) Original/Retest Main			N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	27.98	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RPD (%) Original/Retest Dup			N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	34.97	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Comments																			Retest for April 13 FL-3 main and duplicate samples. Both retest values > PQL.												
Action																			**Replace Main & Duplicate Sample Values.**												
Result																			New main and duplicate sample values entered into emLine. Discrepancy between values resolved.												
SRK08-SP7A	16/07/2011	M	<0.5	121.00	120.00	<0.5		668.00	2.40				<0.5		1380.0000			150.00					<0.5			6.81	700.000			14.000	
SRK08-SP7A	16/07/2011	DUPLICATE	<0.5	131.00	110.00	<0.5		678.00	2.20				<0.5		1340.0000			140.00					<0.5			6.40	700.000			12.000	
RPD (%)			N/A	7.94	8.70	N/A	N/A	1.49	8.70	N/A	N/A	N/A	N/A	N/A	2.94	N/A	N/A	6.90	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.41	0.00	N/A	N/A	15.38	N/A
Comments																															
Action																															
Result																															
SRK08-SPW2	20/07/2011	M	<0.5	313.00	210.00	<0.5		2250.00	3.20				<0.5		3430.0000			250.00					<0.5			6.58	2000.000			3.000	
SRK08-SPW2	20/07/2011	DUPLICATE	<0.5	305.00	210.00	<0.5		2220.00	3.00				<0.5		3440.0000			250.00					<0.5			6.64	1900.000			3.000	
RPD (%)			N/A	2.59	0.00	N/A	N/A	1.34	6.45	N/A	N/A	N/A	N/A	N/A	0.29	N/A	N/A	0.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.06	5.13	N/A	N/A	0.00	N/A
Comments																															
Action																															
Result																															

RPD > 50%.
Retest result to replace original result in emLine.

Denison Environmental Services

Table B-31: Quality Assurance / Quality Control
2011 Duplicates - General Parameters

Station	Date	Sample Type	Acid(pH4.5)	Acid(pH8.3)	ALK	ALKPP	CaCO3	CaCO3-d	Chloride	CN 4500	CN(wad)	CNTHIO	CO3	Colour	COND	DO	DOC	HCO3	NH3	NO2	NO2/3	NO3	OH	oPO4	ORP	pH	SO4-d	TDS	TOC	TSS	TURB
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	TCU	µmho/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mV	(blank)	mg/L	mg/L	mg/L	mg/L	NTU
SRK08-SPW1	07/09/2011	M	<0.5	183.00	300.00	<0.5		570.00	1.70				<0.5		1140.0000			360.00					<0.5			6.48	290.000			32.000	
SRK08-SPW1	07/09/2011	DUPLICATE	<0.5	223.00	300.00	<0.5		558.00	1.90				<0.5		1150.0000			370.00					<0.5			6.44	290.000			35.000	
RPD (%)			N/A	19.70	0.00	N/A	N/A	2.13	11.11	N/A	N/A	N/A	N/A	N/A	0.87	N/A	N/A	2.74	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.04	0.00	N/A	N/A	8.96	N/A
Comments																															
Action																															
Result																															
P09-C2	26/09/2011	M	<0.5	389.00	1700.00	<0.5		1080.00	26.00				<0.5		2750.0000			2000.00					<0.5			6.79	6.500			52.000	
P09-C2	26/09/2011	DUPLICATE	<0.5	401.00	1700.00	<0.5		1050.00	26.00				<0.5		2730.0000			2000.00					<0.5			6.80	6.600			83.000	
RPD (%)			N/A	3.04	0.00	N/A	N/A	2.82	0.00	N/A	N/A	N/A	N/A	N/A	0.73	N/A	N/A	0.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.01	1.53	N/A	N/A	45.93	N/A
Comments																															
Action																															
Result																															
SRK08-P12A	29/09/2011	M	<0.5	348.00	590.00	<0.5		646.00	1.80				<0.5		1290.0000			730.00					<0.5			6.21	131.000			1100.000	
SRK08-P12A	29/09/2011	DUPLICATE	<0.5	256.00	550.00	<0.5		629.00	1.90				<0.5		1180.0000			670.00					<0.5			6.13	112.000			670.000	
RPD (%)			N/A	30.46	7.02	N/A	N/A	2.67	5.41	N/A	N/A	N/A	N/A	N/A	8.91	N/A	N/A	8.57	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.08	15.64	N/A	N/A	48.59	N/A
Comments																															
Action																															
Result																															
P05-01-2	12/10/2011	M	<0.5	136.00	380.00	<0.5		2110.00	3.10				<0.5		3030.00			460.00					<0.5			7.34	1730.00			59.00	
P05-01-2	12/10/2011	DUPLICATE	<0.5	80.40	380.00	<0.5		2050.00	3.00				<0.5		2950.00			470.00					<0.5			7.36	1640.00			54.00	
RPD (%)			N/A	51.39	0.00	N/A	N/A	2.88	3.28	N/A	N/A	N/A	N/A	N/A	2.68	N/A	N/A	2.15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.02	5.34	N/A	N/A	8.85	N/A
Comments				Both values > PQL and correctly entered into emLine.																											
Action				**Let Value Stand**																											
Result				Retest request would be filed past hold time. Discrepancy between values remains.																											
X21-96B	13/10/2011	M	<0.5	679.00	130.00	<0.5		1270.00	4.10				<0.5		3310.00			160.00					<0.5			6.22	1920.00			130.00	
X21-96B	13/10/2011	DUPLICATE	<0.5	666.00	72.00	<0.5		1280.00	3.50				<0.5		3000.00			87.00					<0.5			6.20	1890.00			300.00	
RPD (%)			N/A	1.93	57.43	N/A	N/A	0.78	15.79				N/A	N/A	9.83		N/A	59.11	N/A				N/A			0.02	1.57	N/A	N/A	79.07	N/A
Comments					Both values > PQL and correctly entered into emLine.													Both values > PQL and correctly entered into emLine.												Both values > PQL and correctly entered into emLine.	
Action					**Let Value Stand**													**Let Value Stand**												**Let Value Stand**	
Result					Retest request would be filed past hold time. Discrepancy between values remains.													Retest request would be filed past hold time. Discrepancy between values remains.												Retest request would be filed past hold time. Discrepancy between values remains.	
X14	25/10/2011	M			120.00	<0.5	195.00	195.00	0.70				<0.5		376.00		2.00	150.00	0.03	<0.005	0.10	0.10	<0.5			7.91	70.80	230.00	1.80	<1	1.90
X14	25/10/2011	DUPLICATE			120.00	<0.5	195.00	195.00	0.70				<0.5		374.00		2.00	140.00	0.03	<0.005	0.10	0.10	<0.5			7.91	68.40	230.00	1.90	<1	1.90
RPD (%)			N/A	N/A	0.00	N/A	0.00	0.00	0.00	N/A	N/A	N/A	N/A	N/A	0.53	N/A	0.00	6.90	6.06	N/A	0.00	0.00	N/A	N/A	N/A	0.00	3.45	0.00	5.41	N/A	0.00
Comments																															
Action																															
Result																															
A30	15/11/2011	M	<0.5	24.90	2.91	<0.5		123.00	<0.5				<0.5		335.00			3.55					<0.5			5.81	152.00			3.00	
A30	15/11/2011	DUPLICATE	<0.5	24.70	2.68	<0.5		124.00	<0.5				<0.5		337.00			3.27					<0.5			6.31	153.00			2.10	
RPD (%)			N/A	0.81	8.23	N/A	N/A	0.81	N/A	N/A	N/A	N/A	N/A	N/A	0.60	N/A	N/A	8.21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.50	0.66	N/A	N/A	35.29	N/A
Comments																															
Action																															
Result																															
FAROCR	06/12/2011	M			33.00	<0.5	34.80	31.00	<0.5				<0.5		80.60		1.55	40.30	0.03	<0.005	0.04	0.04	<0.5			7.59	5.82	46.00	1.18	<1	0.29
FAROCR	06/12/2011	DUPLICATE			36.20	<0.5	35.10	32.20	<0.5				<0.5		80.40		1.56	44.20	0.03	<0.005	0.04	0.04	<0.5			7.62	5.69	42.00	1.11	<1	0.34
RPD (%)			N/A	N/A	9.25	N/A	0.86	3.80	N/A	N/A	N/A	N/A	N/A	N/A	0.25	N/A	0.64	9.23	6.25	N/A	2.35	2.35	N/A	N/A	N/A	0.03	2.26	9.09	6.11	N/A	15.87
Comments																															
Action																															
Result																															

RPD > 50%.
Retest result to replace original result in emLine.

Denison Environmental Services

Table B-32: Quality Assurance / Quality Control
2011 Duplicates - Dissolved Metals

Station	Date	Sample Type	Ag-d	Al-d	As-d	Ba-d	B-d	Be-d	Bi-d	Ca-d	Cd-d	Co-d	Cr-d	Cu-d	Fe-d	Hg-d	K-d	Li-d	Mg-d	Mn-d	Mo-d	Na-d	Ni-d	Pb-d	Sb-d	S-d	Se-d	Si-d	Sn-d	Sr-d	Ti-d	Tl-d	U-d	V-d	Zn-d	Zr-d
			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	mg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
SRK08-SPW3	06/01/2011	M	0.1800	22.00	<0.4	16.000	<200	<0.4	<4	299.00	125.00	425.0000	<4	6.7000	4870.00		10.70	0.135	761.00	71900.000	<4	25.10	1890.000	1.3000	<2	1540	<0.4	12900.00	<20	1300.00	<20	<0.2	4.7000	<20	302000.000	<2
SRK08-SPW3	06/01/2011	DUPLICATE	0.2000	20.00	<0.4	16.000	<200	<0.4	<4	302.00	123.00	416.0000	<4	10.6000	4970.00		10.50	0.132	734.00	70200.000	<4	25.20	1870.000	1.1000	<2	1500	<0.4	13200.00	<20	1290.00	<20	<0.2	4.8000	<20	297000.000	<2
RPD (%)			10.53	9.52	N/A	0.00	N/A	N/A	N/A	1.00	1.61	2.14	N/A	45.09	2.03	N/A	1.89	2.25	3.61	2.39	N/A	0.40	1.06	16.67	N/A	2.63	N/A	2.30	N/A	0.77	N/A	N/A	2.11	N/A	1.67	N/A
Comments																																			
Action																																			
Result																																			
P05-02	27/01/2011	M	<0.03	7.00	2.90	31.30	<300	<0.05	<0.03	538.00	0.17	12.50	<0.5	<0.3	9260.00		7.40	0.02	106.00	23500.00	0.70	41.30	12.60	0.22	0.20	576.00	<0.2	8460.00	<0.05	1250.0	<3	0.040	7.54	<1	49.40	<0.5
P05-02	27/01/2011	DUPLICATE	<0.03	12.00	3.10	31.10	<300	<0.05	0.05	486.00	0.20	12.20	<0.5	5.20	9130.00		7.30	0.02	106.00	23300.00	0.70	41.10	12.70	0.38	0.20	590.00	<0.2	7850.00	<0.05	1240.0	<3	0.030	7.63	<1	49.10	<0.5
RPD (%)			N/A	52.63	6.67	0.64	N/A	N/A	N/A	10.16	16.22	2.43	N/A	N/A	1.41	N/A	1.36	0.00	0.00	0.85	0.00	0.49	0.79	53.33	0.00	2.40	N/A	7.48	N/A	0.80	N/A	28.57	1.19	N/A	0.61	N/A
Comments				Both values correctly entered into emLine; however, duplicate value not > PQL. Therefore, RPD analysis not valid in this case.																				Both values > PQL and correctly entered into emLine.													
Action				**Let Value Stand**																				Let Value Stand												
Result				Discrepancy between values remains.																				Discrepancy between values remains.												
P05-03	27/01/2011	M	<0.03	3.00	3.60	215.00	<300	<0.05	<0.03	249.00	0.10	2.33	<0.5	<0.3	5250.00		4.10	0.01	54.40	9710.00	2.50	26.10	3.60	0.19	<0.1	249.00	<0.2	6610.00	<0.05	660.0	<3	<0.01	8.88	<1	5.80	<0.5
P05-03	27/01/2011	DUPLICATE	<0.03	3.00	3.40	203.00	<300	<0.05	<0.03	243.00	0.10	2.50	<0.5	<0.3	4770.00		4.30	0.01	56.70	9960.00	3.00	26.70	3.90	0.31	0.20	255.00	<0.2	6260.00	<0.05	669.0	<3	<0.01	9.27	<1	5.60	<0.5
RPD (%)			N/A	0.00	5.71	5.74	N/A	N/A	N/A	2.44	0.00	7.04	N/A	N/A	9.58	N/A	4.76	15.38	4.14	2.54	18.18	2.27	8.00	48.00	N/A	2.38	N/A	5.44	N/A	1.35	N/A	N/A	4.30	N/A	3.51	N/A
Comments																																			
Action																																			
Result																																			
SRK08-SPW2	01/02/2011	M	0.13	12.00	0.50	16.00	<200	<0.4	<4	248.00	32.00	242.00	<4	2.20	2880.00		8.00	0.10	489.00	40100.00	<4	21.20	892.00	<0.8	<2	953.00	<0.4	11700.00	<20	1070.0	<20	<0.2	3.60	<20	152000.00	<2
SRK08-SPW2	01/02/2011	DUPLICATE	0.16	12.00	<0.4	16.00	<200	<0.4	<4	251.00	31.10	242.00	<4	11.30	2890.00		7.90	0.10	476.00	39600.00	<4	21.10	878.00	<0.8	<2	972.00	<0.4	11800.00	<20	1020.0	<20	<0.2	3.50	<20	149000.00	<2
RPD (%)			20.69	0.00	N/A	0.00	N/A	N/A	N/A	1.20	2.85	0.00	N/A	134.81	0.35	N/A	1.26	1.03	2.69	1.25	N/A	0.47	1.58	N/A	N/A	1.97	N/A	0.85	N/A	4.78	N/A	N/A	2.82	N/A	1.99	N/A
Comments														Both values correctly entered into emLine; however, main sample value not > PQL. Therefore, RPD analysis not valid in this case.																							
Action														**Let Value Stand**																						
Result														Discrepancy between values remains.																						
X14	01/02/2011	M	<0.005	2.00	0.25	66.000	<50	<0.01	0.01	105.00	0.07	2.0900	<0.1	0.2900	257.00		2.04	0.009	23.40	3010.000	0.66	8.02	5.050	0.1230	0.06	81	0.3500	5290.00	<0.01	352.00	<0.5	0.01	3.3100	<0.2	26.600	<0.1
X14	01/02/2011	DUPLICATE	<0.005	1.70	0.23	68.100	<50	<0.01	<0.005	114.00	0.07	2.1000	<0.1	0.3100	263.00		2.41	0.009	23.90	3010.000	0.56	8.05	5.110	0.0620	0.06	81	0.3600	5760.00	<0.01	362.00	<0.5	0.01	3.2700	<0.2	28.900	<0.1
RPD (%)			N/A	16.22	8.33	3.13	N/A	N/A	N/A	8.22	4.44	0.48	N/A	6.67	2.31	N/A	16.63	0.00	2.11	0.00	16.39	0.37	1.18	65.95	0.00	0.00	2.82	8.51	N/A	2.80	N/A	0.00	1.22	N/A	8.29	N/A
Comments																								Both values > PQL and correctly entered into emLine.												
Action																								**Let Value Stand**												
Result																								Discrepancy between values remains.												
X11	03/02/2011	M	<0.03	3.00	2.40	42.40	<300	<0.05	<0.03	518.00	0.13	41.70	<0.5	0.50	5750.00		8.30	0.02	124.00	33900.00	0.40	37.60	47.40	0.22	<0.1	612.00	<0.2	6590.00	<0.05	1460.0	<3	0.040	5.54	<1	18.00	<0.5
X11	03/02/2011	DUPLICATE	<0.03	3.00	2.30	42.10	<300	<0.05	<0.03	560.00	0.12	42.20	<0.5	0.40	5940.00		8.50	0.02	126.00	34500.00	0.40	38.20	47.60	0.20	<0.1	600.00	<0.2	6870.00	<0.05	1450.0	<3	0.040	5.33	<1	18.40	<0.5
RPD (%)			N/A	0.00	4.26	0.71	N/A	N/A	N/A	7.79	8.00	1.19	N/A	22.22	3.25	N/A	2.38	4.26	1.60	1.75	0.00	1.58	0.42	9.52	N/A	1.98	N/A	4.16	N/A	0.69	N/A	0.00	3.86	N/A	2.20	N/A
Comments																																			
Action																																			
Result																																			
FL-3	13/04/2011	M	0.0160	7.50	0.10	16.400	<50	0.05	<0.005	147.00	15.90	54.8000	<0.1	0.2700	3.00		8.54	0.06	79.200	3160.00	0.530	20.00	142.00	0.073	#####	265.00	0	########	<0.01	658.00	<0.5	0.44	1.21	<0.2	19300.00	<0.1
FL-3	13/04/2011	DUPLICATE	0.0110	7.90	0.08	16.800	<50	0.04	<0.005	148.00	15.60	54.4000	<0.1	0.3100	3.00		8.34	0.06	77.600	3100.00	0.470	19.50	142.00	0.430	#####	250.00	0	########	<0.01	663.00	<0.5	0.44	1.21	<0.2	19300.00	<0.1
RPD (%)			37.04	5.19	22.22	2.41	N/A	22.22	N/A	0.68	1.90	0.73	N/A	13.79	0.00	N/A	2.37	0.00	2.04	1.92	12.00	2.53	0.00	141.95	0.00	5.83	8.00	0.00	N/A	0.76	N/A	0.45	0.00	N/A	0.00	N/A
Comments																								Both values > PQL and correctly entered into emLine. Lab noted on duplicate sample that "Dissolved greater than total. Reanalysis yields similar results."												
Action																								**Request Retest**												
Result																								Retest performed, see results below.												
FL-3 Retest	13/04/2011	M																						0.09											
FL-3 Retest	13/04/2011	DUPLICATE																						0.15											
RPD (%) Retest Results			N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	52.46	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RPD (%) Original/Retest Main			N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	20.86	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RPD (%) Original/Retest Dup			N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	94.52	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Comments																								Retest for April 13 FL-3 main and duplicate samples. Duplicate retest value > PQL, however main sample retest value not > PQL.												
Action																								**Replace Main & Duplicate Sample Values.**												
Result																								New main and duplicate sample values entered into emLine.												
X5	05/04/2011	M	<0.03	2.00	0.20	34.10	<300	<0.05	<0.03	409.00	0.18	40.40	<0.5	1.10	131.00	<0.05	6.90	0.02	86.30	22400.00	2.20	28.90	53.20	0.24	<0.1	405.00	<0.2	7680.00	0.10	1080.0	<3	0.210	6.95	<1	272.00	<0.5
X5	05/04/2011	DUPLICATE	<0.03	5.00	0.30	36.10	<300	<0.05	0.19	410.00	0.21	39.20	<0.5	1.80	134.00	<0.05	6.80	0.02	84.40	21800.00	1.10	28.20	52.10	0.41	0.20	379.00	<0.2	7720.00	0.26	1100.0	<3	0.230	7.20	<1	268.00	<0.5
RPD (%)			N/A	85.71	40.00	5.70	N/A	N/A	N/A	0.24	15.38	3.02	N/A	48.28	2.26	N/A	1.46	0.00	2.23	2.71	66.67	2.45	2.09	52.31	N/A	6.63	N/A	0.52	88.89	1.83	N/A	9.09	3.53	N/A	1.48	N/A
Comments				Both values correctly entered into emLine; however, main sample value not > PQL, and duplicate value equal to PQL. Therefore, RPD analysis not valid in this case.																	Both values > PQL and correctly entered into emLine. Lab noted on main sample that "Dissolved greater than total. Reanalysis yields similar results."					Both values > PQL and correctly entered into emLine. Lab noted on main sample that "Dissolved greater than total. Reanalysis yields similar results."					Both values correctly entered into emLine; however, main sample value not > PQL. Therefore, RPD analysis not valid in this case.											
Action				**Let Value Stand**																	**Let Value Stand**			**Let Value Stand**				**Let Value Stand**							
Result				Discrepancy between values remains.																	Discrepancy between values remains.			Discrepancy between values remains.				Discrepancy between values remains.							

RPD > 50%.
RPD > 100%.
Retest result to replace original result in emLine.

Denison Environmental Services

Table B-32: Quality Assurance / Quality Control
2011 Duplicates - Dissolved Metals

Station	Date	Sample Type	Ag-d µg/L	Al-d µg/L	As-d µg/L	Ba-d µg/L	B-d µg/L	Be-d µg/L	Bi-d µg/L	Ca-d mg/L	Cd-d µg/L	Co-d µg/L	Cr-d µg/L	Cu-d µg/L	Fe-d µg/L	Hg-d µg/L	K-d mg/L	Li-d µg/L	Mg-d mg/L	Mn-d µg/L	Mo-d µg/L	Na-d mg/L	Ni-d µg/L	Pb-d µg/L	Sb-d µg/L	S-d mg/L	Se-d µg/L	Si-d µg/L	Sn-d µg/L	Sr-d µg/L	Ti-d µg/L	Tl-d µg/L	U-d µg/L	V-d µg/L	Zn-d µg/L	Zr-d µg/L
R7	12/04/2011	M	0.01	3.70	0.35	77.50	<50	<0.01	<0.005	43.60	0.01	0.03	<0.1	1.01	30.00		1.70	0.01	8.63	8.50	0.85	3.57	0.33	2.05	0.05	<10	0.40	6470.00	0.02	185.0	<0.5	<0.002	2.63	<0.2	3.00	<0.1
R7	12/04/2011	DUPLICATE	<0.005	2.70	0.37	74.90	<50	<0.01	<0.005	42.40	0.01	0.02	<0.1	0.46	30.00		1.23	0.01	9.00	7.00	0.82	3.68	0.23	0.97	0.04	<10	0.40	6100.00	<0.01	183.0	<0.5	<0.002	2.61	<0.2	1.60	<0.1
RPD (%)			N/A	31.25	5.56	3.41	N/A	N/A	N/A	2.79	36.36	43.90	N/A	74.83	0.00	N/A	32.08	3.59	4.20	19.35	3.59	3.03	35.71	71.16	22.22	N/A	0.00	5.89	N/A	1.09	N/A	N/A	0.76	N/A	60.87	N/A
Comments														Both values > PQL and correctly entered into emLine. Lab noted on main sample that "Dissolved greater than total. Reanalysis yields similar results."											Both values > PQL and correctly entered into emLine. Lab noted on both samples that "Dissolved greater than total. Reanalysis yields similar results."											Both values > PQL and correctly entered into emLine. Lab noted on duplicate sample that "Dissolved greater than total. Reanalysis yields similar results."	
Action														**Let Value Stand**										**Let Value Stand**											**Let Value Stand**	
Result														Discrepancy between values remains.										Discrepancy between values remains.											Discrepancy between values remains.	
R8	09/05/2011	M	0.01	34.10	0.86	58.60	<50	<0.01	<0.005	28.00	0.02	0.04	<0.1	1.08	271.00		1.63	0.01	5.47	12.90	0.62	2.05	0.60	0.58	0.06	<10	0.30	4820.00	<0.01	119.0	<0.5	<0.002	1.31	<0.2	6.10	<0.1
R8	09/05/2011	DUPLICATE	<0.005	33.80	0.86	59.70	<50	<0.01	<0.005	29.20	0.02	0.05	<0.1	1.24	277.00		1.74	0.01	5.77	14.20	0.71	2.16	0.64	0.51	0.06	<10	0.30	4970.00	<0.01	121.0	<0.5	0.003	1.32	<0.2	8.10	<0.1
RPD (%)			N/A	0.88	0.00	1.86	N/A	N/A	N/A	4.20	5.71	17.02	N/A	13.79	2.19	N/A	6.53	1.94	5.34	9.59	13.53	5.23	6.45	12.57	0.00	N/A	0.00	3.06	N/A	1.67	N/A	N/A	0.76	N/A	28.17	N/A
Comments																																				
Action																																				
Result																																				
X26	26/05/2011	M	0.07	11.00	4.10	7.00	122.00	0.30	<1	551.00	29.00	665.00	<1	2.10	116000.00		17.50	0.29	511.00	19500.00	<1	89.00	1670.00	81.00	0.80	1300.00	<0.1	8020.00	<5	3950.0	<5	1.890	17.60	<5	90500.00	<0.5
X26	26/05/2011	DUPLICATE	0.06	9.00	4.00	7.00	70.00	0.20	<1	515.00	27.70	644.00	<1	1.70	108000.00		16.30	0.28	477.00	18700.00	<1	81.80	1600.00	91.20	0.80	1190.00	<0.1	6920.00	<5	3750.0	<5	1.770	16.30	<5	87400.00	<0.5
RPD (%)			15.38	20.00	2.47	0.00	54.17	40.00	N/A	6.75	4.59	3.21	N/A	21.05	7.14	N/A	7.10	3.88	6.88	4.19	N/A	8.43	4.28	11.85	0.00	8.84	N/A	14.73	N/A	5.19	N/A	6.56	7.67	N/A	3.49	N/A
Comments							Both values correctly entered into emLine; however, neither value > PQL. Therefore, RPD analysis not valid in this case.																																	
Action							**Let Value Stand**																															
Result							Discrepancy between values remains.																															
P01-11	01/06/2011	M	<0.03	5.00	33.30	30.80	<300	<0.05	<0.03	553.00	<0.03	5.74	<0.5	<0.3	47000.00		7.90	0.02	101.00	24800.00	4.50	32.80	10.40	0.20	<0.1	576.00	<0.2	10100.00	<0.05	1310.0	<3	<0.01	10.80	<1	5.30	<0.5
P01-11	01/06/2011	DUPLICATE	<0.03	6.00	37.00	32.30	<300	<0.05	<0.03	588.00	0.10	6.97	<0.5	<0.3	50800.00		8.00	0.02	115.00	27900.00	0.80	40.00	12.50	0.23	<0.1	603.00	<0.2	11300.00	<0.05	1390.0	<3	<0.01	11.20	<1	5.00	<0.5
RPD (%)			N/A	18.18	10.53	4.75	N/A	N/A	N/A	6.13	N/A	19.35	N/A	N/A	7.77	N/A	1.26	10.53	12.96	11.76	139.62	19.78	18.34	13.95	N/A	4.58	N/A	11.21	N/A	5.93	N/A	N/A	3.64	N/A	5.83	N/A
Comments																					Both values correctly entered into emLine; however, duplicate value not > PQL. Therefore, RPD analysis not valid in this case.																	
Action																					**Let Value Stand**															
Result																					Discrepancy between values remains.															
SRK08-P11B	08/06/2011	M	<0.005	306.00	1.14	49.90	<50	0.02	<0.005	161.00	0.91	2.77	1.10	2.33	1930.00		3.23	0.01	40.70	904.00	0.26	8.44	18.00	1.10	0.08	153.00	0.11	7650.00	0.02	582.0	10.50	0.029	1.71	1.40	145.00	<0.1
SRK08-P11B	08/06/2011	DUPLICATE	0.01	360.00	0.84	50.10	<50	0.02	<0.005	169.00	0.89	2.55	1.00	2.15	1550.00		3.34	0.01	41.00	903.00	0.27	8.40	17.90	0.97	0.07	156.00	0.09	7960.00	0.05	601.0	10.50	0.029	1.71	1.30	142.00	<0.1
RPD (%)			N/A	16.22	30.30	0.40	N/A	0.00	N/A	4.85	2.11	8.27	9.52	8.04	21.84	N/A	3.35	1.79	0.73	0.11	3.77	0.48	0.56	12.87	13.33	1.94	20.00	3.97	85.71	3.21	0.00	0.00	0.00	7.41	2.09	N/A
Comments																												Both values correctly entered into emLine; however, main sample value not > PQL, and duplicate value equal to PQL. Therefore, RPD analysis not valid in this case.											
Action																												**Let Value Stand**								
Result																												Discrepancy between values remains.								
X5	14/06/2011	M	<0.03	5.00	1.00	17.40	<300	<0.05	<0.03	311.00	0.21	30.80	<0.5	0.50	64.00	<0.05	6.00	0.03	86.40	15600.00	0.80	21.50	33.70	0.35	0.20	368.00	<0.2	3920.00	<0.05	923.0	<3	0.520	2.53	<1	284.00	<0.5
X5	14/06/2011	DUPLICATE	<0.03	4.00	<0.1	17.60	<300	<0.05	<0.03	292.00	0.21	24.40	<0.5	0.50	37.00	<0.05	5.70	0.03	80.20	12700.00	0.40	20.10	27.20	0.16	0.20	330.00	<0.2	3430.00	<0.05	880.0	<3	0.580	2.24	<1	270.00	<0.5
RPD (%)			N/A	22.22	N/A	1.14	N/A	N/A	N/A	6.30	0.00	23.19	N/A	0.00	53.47	N/A	5.13	0.00	7.44	20.49	66.67	6.73	21.35	74.51	0.00	10.89	N/A	13.33	N/A	4.77	N/A	10.91	12.16	N/A	5.05	N/A
Comments															Both values > PQL and correctly entered into emLine.						Both values correctly entered into emLine; however, neither value > PQL. Therefore, RPD analysis not valid in this case.			Both values > PQL and correctly entered into emLine.														
Action															**Let Value Stand**						**Let Value Stand**			**Let Value Stand**												
Result															Discrepancy between values remains.						Discrepancy between values remains.			Discrepancy between values remains.												
NF2	20/06/2011	M	<0.005	19.40	0.42	28.00	<50	<0.01	<0.005	14.90	0.02	0.02	<0.1	0.76	62.00		0.40	0.00	3.07	2.67	0.28	1.16	0.45	0.46	0.07	<10	0.20	4050.00	<0.01	59.6	<0.5	0.003	0.51	<0.2	4.80	<0.1
NF2	20/06/2011	DUPLICATE	<0.005	19.90	0.44	28.40	<50	<0.01	<0.005	14.30	0.02	0.03	<0.1	0.81	60.00		0.42	0.00	3.17	2.95	0.32	1.23	0.43	0.52	0.07	<10	0.18	3900.00	0.15	59.7	<0.5	0.003	0.51	<0.2	5.20	<0.1
RPD (%)			N/A	2.54	4.65	1.42	N/A	N/A	N/A	4.11	6.06	29.79	N/A	6.37	3.28	N/A	4.88	0.00	3.21	9.96	13.33	5.86	4.55	13.47	0.00	N/A	10.53	3.77	N/A	0.17	N/A	0.00	1.38	N/A	8.00	N/A
Comments																																				
Action																																				
Result																																				
SRK08-P10A	09/06/2011	M	<0.03	141.00	0.80	21.60	<300	<0.05	<0.03	796.00	0.27	1.61	<0.5	1.70	168.00		13.80	0.01	78.80	13.50	<0.3	120.00	6.70	1.16	<0.1	560.00	<0.2	9730.00	<0.05	1540.0	5.00	0.020	42.00	<1	37.30	1.80
SRK08-P10A	09/06/2011	DUPLICATE	<0.02	75.00	0.20	21.00	<50	<0.1	<1	800.00	0.27	2.20	<1	1.60	112.00		13.90	0.01	80.50	12.00	<1	121.00	6.00	0.70	<0.5	640.00	<0.1	9560.00	<5	1510.0	<5	<0.05	37.50	<5	28.00	1.70
RPD (%)			N/A	61.11	120.00	2.82	N/A	N/A	N/A	0.50	0.00	30.97	N/A	6.06	40.00	N/A	0.72	15.38	2.13	11.76	N/A	0.83	11.02	49.46	N/A	13.33	N/A	1.76	N/A	1.97	N/A	N/A	11.32	N/A	28.48	5.71
Comments				Both values > PQL and correctly entered into emLine.	Both values correctly entered into emLine; however, duplicate value not > PQL. Therefore, RPD analysis not valid in this case.																																	
Action				**Let Value Stand**	**Let Value Stand**																																	
Result				Discrepancy between values remains.	Discrepancy between values remains.																																	

RPD > 50%.
RPD > 100%.
Retest result to replace original result in emLine.

Denison Environmental Services

Table B-32: Quality Assurance / Quality Control
2011 Duplicates - Dissolved Metals

Station	Date	Sample Type	Ag-d	Al-d	As-d	Ba-d	B-d	Be-d	Bi-d	Ca-d	Cd-d	Co-d	Cr-d	Cu-d	Fe-d	Hg-d	K-d	Li-d	Mg-d	Mn-d	Mo-d	Na-d	Ni-d	Pb-d	Sb-d	S-d	Se-d	Si-d	Sn-d	Sr-d	Ti-d	Tl-d	U-d	V-d	Zn-d	Zr-d
			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
FL-1	13/07/2011	M	<0.03	3.00	0.40	16.20	<300	<0.05	<0.03	136.00	19.60	56.60	<0.5	7.10	20.00		7.10	0.06	73.30	3110.00	<0.3	17.10	135.00	0.60	0.20	214.00	<0.2	4010.00	<0.05	584.00	<3	0.44	0.760	<1	22100.00	<0.5
FL-1	13/07/2011	DUPLICATE	<0.03	2.00	0.20	16.40	<300	0.07	<0.03	131.00	19.70	55.50	<0.5	6.90	22.00		7.00	0.05	72.30	3050.00	<0.3	17.00	132.00	0.32	0.20	208.00	<0.2	3960.00	<0.05	587.00	<3	0.44	0.810	<1	21600.00	<0.5
RPD (%)			N/A	40.00	66.67	1.23	N/A	N/A	N/A	3.75	0.51	1.96	N/A	2.86	9.52	N/A	1.42	1.83	1.37	1.95	N/A	0.59	2.25	60.87	0.00	2.84	N/A	1.25	N/A	0.51	N/A	0.00	6.37	N/A	2.29	N/A
Comments					Both values correctly entered into emLine; however, neither value > PQL. Therefore, RPD analysis not valid in this case.																			Both values > PQL and correctly entered into emLine.													
Action					**Let Value Stand**																			**Let Value Stand**												
Result					Discrepancy between values remains.																			Discrepancy between values remains.												
SRK08-SP7A	16/07/2011	M	<0.02	11.00	4.80	10.00	<50	0.30	<1	166.00	0.06	8.20	<1	<0.2	22000.00		5.14	0.05	61.50	1720.00	<1	9.81	21.00	<0.2	<0.5	250.00	<0.1	12900.00	<5	631.0	<5	<0.05	0.30	<5	682.00	<0.5
SRK08-SP7A	16/07/2011	DUPLICATE	<0.02	7.00	4.90	10.00	<50	0.30	<1	170.00	0.06	8.30	<1	0.50	22500.00		5.14	0.05	61.80	1740.00	<1	9.76	21.00	<0.2	<0.5	259.00	<0.1	13300.00	<5	646.0	<5	<0.05	0.30	<5	689.00	<0.5
RPD (%)			N/A	44.44	2.06	0.00	N/A	0.00	N/A	2.38	0.00	1.21	N/A	N/A	2.25	N/A	0.00	2.02	0.49	1.16	N/A	0.51	0.00	N/A	N/A	3.54	N/A	3.05	N/A	2.35	N/A	N/A	0.00	N/A	1.02	N/A
Comments																																			
Action																																			
Result																																			
SRK08-SPW2	20/07/2011	M	0.06	15.00	2.40	18.00	<50	<0.1	<1	215.00	28.60	216.00	<1	2.80	3340.00		7.30	0.09	416.00	35500.00	<1	18.50	803.00	1.10	<0.5	836.00	<0.1	11200.00	<5	928.0	<5	<0.05	3.50	<5	123000.00	<0.5
SRK08-SPW2	20/07/2011	DUPLICATE	0.06	19.00	7.20	18.00	<50	<0.1	<1	215.00	28.60	210.00	<1	3.20	3330.00		7.26	0.09	409.00	35000.00	<1	18.30	785.00	1.90	<0.5	824.00	<0.1	11100.00	<5	934.0	<5	<0.05	3.50	<5	120000.00	<0.5
RPD (%)			0.00	23.53	100.00	0.00	N/A	N/A	N/A	0.00	0.00	2.82	N/A	13.33	0.30	N/A	0.55	0.00	1.70	1.42	N/A	1.09	2.27	53.33	N/A	1.45	N/A	0.90	N/A	0.64	N/A	N/A	0.00	N/A	2.47	N/A
Comments					Both values > PQL and correctly entered into emLine.																			Both values > PQL and correctly entered into emLine.												
Action					**Request Retest**																			**Let Value Stand**												
Result					Retest performed, see results below.																			Discrepancy between values remains.												
SRK08-SPW2	20/07/2011	M			<0.4																														
SRK08-SPW2	20/07/2011	DUPLICATE			<0.4																														
RPD (%) Retest Results			N/A	N/A	0.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RPD (%) Original/Retest Main			N/A	N/A	142.86	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RPD (%) Original/Retest Dup			N/A	N/A	178.95	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Comments					Retest for April 13 FL-3 main and duplicate samples. Both retest values not > PQL (RPD results calculated based on detection limit value for retest results).																																		
Action					**Replace Main & Duplicate Sample Values.**																																		
Result					New main and duplicate sample values entered into emLine. Discrepancy between values resolved.																																		
SRK08-SPW1	07/09/2011	M	<0.02	35.00	3.90	15.00	<50	0.90	<1	140.00	0.14	8.90	<1	1.30	24400.00		4.71	0.06	53.80	1340.00	<1	9.89	23.00	1.60	<0.5	127.00	<0.1	16400.00	<5	646.0	<5	<0.05	0.70	<5	1330.00	<0.5
SRK08-SPW1	07/09/2011	DUPLICATE	<0.02	45.00	3.80	15.00	<50	0.90	<1	136.00	0.15	8.80	<1	1.80	23500.00		4.63	0.06	53.00	1320.00	<1	9.89	24.00	2.60	<0.5	133.00	<0.1	16200.00	<5	638.0	<5	<0.05	0.70	<5	1360.00	<0.5
RPD (%)			N/A	25.00	2.60	0.00	N/A	0.00	N/A	2.90	6.90	1.13	N/A	32.26	3.76	N/A	1.71	1.71	1.50	1.50	N/A	0.00	4.26	47.62	N/A	4.62	N/A	1.23	N/A	1.25	N/A	N/A	0.00	N/A	2.23	N/A
Comments																																			
Action																																			
Result																																			
P09-C2	26/09/2011	M	0.18	21.00	<0.1	725.00	100.00	2.60	<1	230.00	1.08	<0.5	<1	<0.2	3610.00		10.60	0.90	124.00	119.00	<1	348.00	<1	<0.2	<0.5	<3	<0.1	10800.00	<5	4800.0	<5	<0.05	0.40	<5	<5	158.00
P09-C2	26/09/2011	DUPLICATE	0.15	23.00	<0.1	714.00	99.00	2.50	<1	220.00	1.10	<0.5	<1	<0.2	3460.00		10.40	0.86	121.00	118.00	<1	341.00	<1	<0.2	<0.5	<3	<0.1	10900.00	<5	4700.0	<5	<0.05	0.40	<5	<5	158.00
RPD (%)			18.18	9.09	N/A	1.53	1.01	3.92	N/A	4.44	1.83	N/A	N/A	N/A	4.24	N/A	1.90	4.31	2.45	0.84	N/A	2.03	N/A	N/A	N/A	N/A	N/A	0.92	N/A	2.11	N/A	N/A	0.00	N/A	N/A	0.00
Comments																																			
Action																																			
Result																																			
SRK08-P12A	29/09/2011	M	0.01	35.40	0.66	31.60	<50	0.88	<0.005	177.00	0.03	7.85	0.20	0.17	14600.00		3.27	0.10	49.60	836.00	<0.05	23.30	11.80	0.28	<0.02	51.00	<0.04	11400.00	0.05	1110.0	<0.5	0.062	0.51	<0.2	890.00	0.40
SRK08-P12A	29/09/2011	DUPLICATE	<0.005	32.50	0.53	33.40	<50	0.79	<0.005	172.00	0.03	7.98	0.20	0.16	14300.00		3.20	0.10	48.40	832.00	<0.05	22.50	12.10	0.09	0.03	51.00	<0.04	11300.00	0.03	1090.0	<0.5	0.067	0.50	<0.2	870.00	0.40
RPD (%)			N/A	8.54	21.85	5.54	N/A	10.78	N/A	2.87	10.53	1.64	0.00	6.06	2.08	N/A	2.16	2.96	2.45	0.48	N/A	3.49	2.51	100.27	N/A	0.00	N/A	0.88	50.00	1.82	N/A	7.75	1.79	N/A	2.27	0.00
Comments																								Both values > PQL and correctly entered into emLine.					Both values correctly entered into emLine; however, main sample value equal to PQL, and duplicate value not > PQL. Therefore, RPD analysis not valid in this case.												
Action																								**Request Retest**					**Let Value Stand**							
Result																								Discrepancy between values remains.												
SRK08-P12A	29/09/2011	M																						0.07											
SRK08-P12A	29/09/2011	DUPLICATE																						0.07											
RPD (%) Retest Results			N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RPD (%) Original/Retest Main			N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	124.64	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RPD (%) Original/Retest Dup			N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	35.44	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Comments																								Retest for April 13 FL-3 main and duplicate samples. Both retest values not > PQL.												
Action																								**Replace Main & Duplicate Sample Values.**												
Result																								New main and duplicate sample values entered into emLine. Discrepancy between values resolved.												

- RPD > 50%.
- RPD > 100%.
- Retest result to replace original result in emLine.

Denison Environmental Services

Table B-32: Quality Assurance / Quality Control
2011 Duplicates - Dissolved Metals

Station	Date	Sample Type	Ag-d	Al-d	As-d	Ba-d	B-d	Be-d	Bi-d	Ca-d	Cd-d	Co-d	Cr-d	Cu-d	Fe-d	Hg-d	K-d	Li-d	Mg-d	Mn-d	Mo-d	Na-d	Ni-d	Pb-d	Sb-d	S-d	Se-d	Si-d	Sn-d	Sr-d	Ti-d	Tl-d	U-d	V-d	Zn-d	Zr-d
			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
P05-01-2	12/10/2011	M	<0.03	<1	1.10	29.20	<300	0.07	<0.03	628.00	<0.03	<0.03	<0.5	<0.3	32200.00		7.60	0.03	131.00	29300.00	<0.3	40.50	0.30	0.09	<0.1	650.00	<0.2	10800.00	1.02	1460.0	<3	<0.01	2.00	<1	1.10	0.60
P05-01-2	12/10/2011	DUPLICATE	<0.03	2.00	1.00	28.50	<300	0.08	<0.03	606.00	<0.03	0.12	<0.5	<0.3	31300.00		7.80	0.03	131.00	29400.00	<0.3	41.10	0.40	0.05	<0.1	686.00	<0.2	10500.00	<0.05	1460.0	<3	<0.01	1.96	<1	1.20	0.70
	RPD (%)		N/A	N/A	9.52	2.43	N/A	13.33	N/A	3.57	N/A	N/A	N/A	N/A	2.83	N/A	2.60	2.99	0.00	0.34	N/A	1.47	28.57	57.14	N/A	5.39	N/A	2.82	N/A	0.00	N/A	N/A	2.02	N/A	8.70	15.38
	Comments																							Both values correctly entered into emLine; however, neither value > PQL. Therefore, RPD analysis not valid in this case.												
	Action																							Let Value Stand												
	Result																							Discrepancy between values remains.												
X21-96B	13/10/2011	M	<0.02	8.00	7.20	16.00	<50	<0.1	<1	361.00	0.27	78.00	<1	0.50	408000.00		4.90	0.02	88.90	50800.00	<1	55.30	48.00	0.60	<0.5	721.00	0.20	10900.00	<5	1070.0	<5	<0.05	3.70	<5	18300.00	<0.5
X21-96B	13/10/2011	DUPLICATE	<0.02	39.00	7.70	16.00	<50	<0.1	<1	364.00	0.25	79.10	<1	0.50	432000.00		5.25	0.02	90.30	52700.00	<1	55.80	53.00	0.40	<0.5	761.00	<0.1	11000.00	<5	1110.0	<5	<0.05	3.70	<5	19300.00	<0.5
	RPD (%)		N/A	131.91	6.71	0.00	N/A	N/A	N/A	0.83	7.69	1.40	N/A	0.00	5.71	N/A	6.90	4.65	1.56	3.67	N/A	0.90	9.90	40.00	N/A	5.40	N/A	0.91	N/A	3.67	N/A	N/A	0.00	N/A	5.32	N/A
	Comments			Both values correctly entered into emLine; however, main sample value not > PQL. Therefore, RPD analysis not valid in this case.																																
	Action			Let Value Stand																																
	Result			Discrepancy between values remains.																																
X14	25/10/2011	M	<0.005	3.90	0.34	54.70	<50	<0.01	<0.005	57.30	0.03	0.66	<0.1	0.40	239.00		1.19	0.00	12.60	859.00	0.55	3.87	1.78	0.31	0.07	27.00	0.37	5620.00	<0.01	205.0	<0.5	0.004	2.15	<0.2	24.60	<0.1
X14	25/10/2011	DUPLICATE	<0.005	3.60	0.35	55.00	<50	<0.01	<0.005	57.20	0.03	0.69	<0.1	0.46	237.00		1.54	0.00	12.80	851.00	0.57	3.95	1.95	0.31	0.07	27.00	0.37	5540.00	0.02	206.0	<0.5	0.004	2.14	<0.2	27.60	<0.1
	RPD (%)		N/A	8.00	2.90	0.55	N/A	N/A	N/A	0.17	3.08	3.87	N/A	13.95	0.84	N/A	25.64	0.00	1.57	0.94	3.57	2.05	9.12	1.30	0.00	0.00	0.00	1.43	N/A	0.49	N/A	0.00	0.47	N/A	11.49	N/A
	Comments																																		
	Action																																		
	Result																																		
A30	15/11/2011	M	0.12	665.00	0.12	23.20	<50	0.59	<1	20.20	15.50	10.70	<1	143.00	8.20		1.02	0.02	17.70	373.00	<1	2.41	40.60	41.30	<0.5	48.20	0.12	5410.00	<5	104.0	<5	<0.05	1.00	<5	12300.00	<0.5
A30	15/11/2011	DUPLICATE	0.11	725.00	0.13	24.50	<50	0.61	<1	20.40	16.60	10.90	<1	144.00	6.80		1.04	0.02	17.80	384.00	<1	2.45	41.10	44.40	<0.5	46.50	0.13	5460.00	<5	112.0	<5	<0.05	1.03	<5	12600.00	<0.5
	RPD (%)		2.60	8.63	8.00	5.45	N/A	3.33	N/A	0.99	6.85	1.85	N/A	0.70	18.67	N/A	1.94	3.90	0.56	2.91	N/A	1.65	1.22	7.23	N/A	3.59	8.00	0.92	N/A	7.41	N/A	N/A	2.96	N/A	2.41	N/A
	Comments																																		
	Action																																		
	Result																																		
FAROCR	06/12/2011	M	<0.005	9.80	0.41	25.20	<50	<0.01	<0.005	8.74	0.04	0.02	<0.1	0.65	8.00		0.33	0.00	2.23	1.27	0.74	1.98	0.82	0.28	0.07	<10	0.53	5700.00	<0.01	52.3	<0.5	0.004	0.75	<0.2	4.30	<0.1
FAROCR	06/12/2011	DUPLICATE	<0.005	10.20	0.39	25.60	<50	<0.01	<0.005	9.20	0.03	0.03	<0.1	0.71	8.00		0.33	0.00	2.24	0.38	0.77	1.94	0.97	0.40	0.07	<10	0.52	5970.00	<0.01	52.0	<0.5	0.005	0.75	<0.2	4.90	<0.1
	RPD (%)		N/A	4.00	5.00	1.57	N/A	N/A	N/A	5.13	25.81	25.00	N/A	8.82	0.00	N/A	0.00	0.00	0.45	107.88	3.97	2.04	16.76	33.92	0.00	N/A	1.90	4.63	N/A	0.58	N/A	22.22	0.93	N/A	13.04	N/A
	Comments																			Both values > PQL and correctly entered into emLine. Lab noted on main sample that "Dissolved greater than total. Reanalysis yields similar results."												
	Action																			Let Value Stand															
	Result																			Discrepancy between values remains. Retest not requested because lab already reanalyzed suspect sample.												

RPD > 50%.
RPD > 100%.
Retest result to replace original result in emLine.

Denison Environmental Services

Table B-33: Quality Assurance / Quality Control
2011 Duplicates - Total Metals

Station	Date	Sample Type	Ag	Al	As	B	Ba	Be	Bi	Ca	Cd	Co	Cr	Cu	Fe	Hg	K	Li	Mg	Mn	Mo	Na	Ni	P	Pb	S	Sb	Se	Si	Sn	Sr	Ti	Tl	U	V	Zn	Zr
			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	ug/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	mg/L	µg/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
X14	01/02/2011	M	<0.005	5.70	0.29	<50	67.00	<0.01	0.01	118.00	0.06	2.1700	<0.1	0.3100	412.00		2.12	0.009	24.40	3100.000	0.70	8.16	5.170		0.2290	82.00	0	0.3500	6220.00	<0.01	360.00	<0.5	0.01	3.4900	<0.2	25.600	<0.1
X14	01/02/2011	DUPLICATE	<0.005	5.90	0.29	<50	68.10	<0.01	0.01	115.00	0.06	2.2200	<0.1	0.3100	409.00		2.13	0.009	24.60	3170.000	0.70	8.41	5.300		0.1440	82.00	0	0.3600	6040.00	<0.01	360.00	<0.5	0.01	3.4800	<0.2	26.100	<0.1
RPD (%)			N/A	3.45	0.00	N/A	1.63	N/A	40.00	2.58	5.04	2.28	N/A	0.00	0.73	N/A	0.47	3.43	0.82	2.23	0.00	3.02	2.48	N/A	45.58	0.00	0.00	2.82	2.94	N/A	0.00	N/A	15.38	0.29	N/A	1.93	N/A
Comments																																				
Action																																				
Result																																				
FL-3	13/04/2011	M	0.0130	14.70	0.14	<50	15.60	0.06	<0.005	158.00	16.20	51.0000	<0.1	4.5700	24.00		7.61	0.06	69.800	3030.00	0.510	17.10	131.00	<0.005	0.213	240.0000	0.24	0	4240.0000	<0.01	670.00	<0.5	0.46	1.30	<0.2	18400.00	<0.1
FL-3	13/04/2011	DUPLICATE	0.0180	15.00	0.07	<50	15.80	0.05	<0.005	149.00	15.70	50.1000	<0.1	4.5300	27.00		7.27	0.06	69.300	2900.00	0.470	17.60	129.00	<0.005	0.204	230.0000	0.21	0	4110.0000	<0.01	631.00	<0.5	0.42	1.23	<0.2	17100.00	<0.1
RPD (%)			32.26	2.02	66.67	N/A	1.27	18.18	N/A	5.86	3.13	1.78	N/A	0.88	11.76		4.57	8.18	0.72	4.38	8.16	2.88	1.54	N/A	4.32	4.26	13.33	13.33	3.11	N/A	6.00	N/A	9.35	5.53	N/A	7.32	N/A
Comments					Both values correctly entered into emLine; however, duplicate value not > PQL. Therefore, RPD analysis not valid in this case.																																	
Action					Let Value Stand																															
Result					Discrepancy between values remains.																															
X5	05/04/2011	M	<0.03	4.00	0.40	<300	34.90	<0.05	<0.03	406.00	0.22	39.10	<0.5	0.80	308.00	<0.05	7.00	0.02	84.20	22100.00	0.90	28.60	50.60		0.15	412.00	<0.1	<0.2	8000.00	<0.05	1060.0	<3	0.210	6.87	<1	258.00	<0.5
X5	05/04/2011	DUPLICATE	<0.03	214.00	<0.1	<300	35.20	<0.05	0.04	409.00	0.22	40.00	<0.5	0.90	314.00	<0.05	6.80	0.02	84.90	21700.00	0.70	28.50	52.30		0.34	400.00	<0.1	<0.2	7940.00	0.37	1080.0	<3	0.200	6.85	<1	263.00	<0.5
RPD (%)			N/A	192.66	N/A	N/A	0.86	N/A	N/A	0.74	0.00	2.28	N/A	11.76	1.93	N/A	2.90	4.65	0.83	1.83	25.00	0.35	3.30	N/A	77.55	2.96	N/A	N/A	0.75	N/A	1.87	N/A	4.88	0.29	N/A	1.92	N/A
Comments				Both values correctly entered into emLine; however, main sample value not > PQL. Therefore, RPD analysis not valid in this case.																					Both values correctly entered into emLine; however, main sample value equal to PQL. Lab noted on main sample that "Dissolved greater than total. Reanalysis yields similar results."														
Action				Let Value Stand																					Let Value Stand											
Result				Discrepancy between values remains.																					Discrepancy between values remains.											
R7	12/04/2011	M	<0.005	5.00	0.71	<50	78.00	<0.01	<0.005	40.40	0.02	0.02	<0.1	0.77	208.00		1.03	0.01	8.03	6.96	0.77	3.14	0.34		1.14	<10	0.12	0.40	6140.00	0.02	177.0	<0.5	<0.002	2.71	<0.2	4.00	<0.1
R7	12/04/2011	DUPLICATE	<0.005	5.50	0.45	<50	76.30	<0.01	<0.005	38.30	<0.005	0.01	<0.1	0.38	97.00		0.98	0.01	7.92	6.24	0.90	3.04	0.18		0.17	<10	0.05	0.42	5620.00	<0.01	176.0	<0.5	<0.002	2.72	<0.2	0.60	<0.1
RPD (%)			N/A	9.52	44.83	N/A	2.20	N/A	N/A	5.34	N/A	47.06	N/A	67.83	72.79	N/A	4.98	1.26	1.38	10.91	15.57	3.24	61.54	N/A	147.03	N/A	82.35	4.88	8.84	N/A	0.57	N/A	N/A	0.37	N/A	147.83	N/A
Comments														Both values > PQL and correctly entered into emLine. Lab noted on main sample that "Dissolved greater than total. Reanalysis yields similar results."	Both values > PQL and correctly entered into emLine.										Both values > PQL and correctly entered into emLine. Lab noted on duplicate sample that "Dissolved greater than total. Reanalysis yields similar results."		Both values > PQL and correctly entered into emLine. Lab noted on both samples that "Dissolved greater than total. Reanalysis yields similar results."		Both values correctly entered into emLine; however, duplicate value not > PQL. Therefore, RPD analysis not valid in this case.										Both values > PQL and correctly entered into emLine. Lab noted on duplicate sample that "Dissolved greater than total. Reanalysis yields similar results."	
Action														Let Value Stand	Let Value Stand								Let Value Stand		Let Value Stand		Let Value Stand								Request Retest	
Result														Discrepancy between values remains.	Discrepancy between values remains.								Discrepancy between values remains.		Discrepancy between values remains. retest not requested because lab already reanalyzed.		Discrepancy between values remains.								Retest performed, see results below.	
R7 Retest	12/04/2011	M																																	2.30	
R7 Retest	12/04/2011	DUPLICATE																																	0.60	
RPD (%) Retest Results			N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	117.24	N/A
RPD (%) Original/Retest Main			N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	53.97	N/A
RPD (%) Original/Retest Dup			N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	N/A
Comments																																			Retest for April 12 R7 main and duplicate samples. Both retest values > PQL.	
Action																																			Replace Main Sample Value	
Result																																			New main sample value entered into emLine. Entered duplicate retest result into emLine as comment: "Retest result: 0.60 µg/L. Original value stands: RPD (original, retest)<20%. Retested as identified through QA/QC."	
R8	09/05/2011	M	0.01	43.10	1.16	<50	58.90	<0.01	<0.005	25.40	0.01	0.04	<0.1	0.99	434.00		1.53	0.00	5.23	20.00	0.66	1.99	0.57		0.21	<10	0.05	0.32	4430.00	<0.01	116.0	<0.5	<0.002	1.25	<0.2	2.40	<0.1
R8	09/05/2011	DUPLICATE	0.01	44.60	1.19	<50	59.30	0.02	<0.005	26.60	0.04	0.05	<0.1	1.06	444.00		1.59	0.00	5.56	20.60	0.63	2.03	0.53		0.23	<10	0.07	0.30	4780.00	<0.01	117.0	0.60	<0.002	1.26	<0.2	2.80	<0.1
RPD (%)			0.00	3.42	2.55	N/A	0.68	N/A	N/A	4.62	100.00	19.05	N/A	6.83	2.28	N/A	3.85	2.11	6.12	2.96	4.65	1.99	7.27	N/A	8.78	N/A	33.33	6.45	7.60	N/A	0.86	N/A	N/A	0.80	N/A	15.38	N/A
Comments											Both values correctly entered into emLine; however, main sample value not > PQL. Therefore, RPD analysis not valid in this case.																																
Action											Let Value Stand																																
Result											Discrepancy between values remains.																																
X5	14/06/2011	M	<0.03	5.00	0.40	<300	17.30	<0.05	<0.03	316.00	0.19	33.10	<0.5	0.80	431.00	<0.05	5.70	0.03	82.70	16900.00	0.50	20.90	35.20		1.10	374.00	0.20	<0.2	4040.00	<0.05	922.0	<3	0.520	2.69	<1	292.00	<0.5
X5	14/06/2011	DUPLICATE	<0.03	4.00	0.50	<300	16.80	<0.05	<0.03	296.00	0.18	30.10	<0.5	0.60	434.00	<0.05	5.50	0.03	81.10	15400.00	0.40	20.30	32.90		1.16	349.00	<0.1	<0.2	3810.00	<0.05	885.0	<3	0.510	2.46	<1	277.00	<0.5
RPD (%)			N/A	22.22	22.22	N/A	2.93	N/A	N/A	6.54	5.41	9.49	N/A	28.57	0.69	N/A	3.57	3.64	1.95	9.29	22.22	2.91	6.75	N/A	5.31	6.92	N/A	N/A	5.86	N/A	4.10	N/A	1.94	8.93	N/A	5.27	N/A
Comments																																				
Action																																				
Result																																				
NF2	20/06/2011	M	<0.005	57.20	0.57	<50	27.60	<0.01	<0.005	13.80	0.03	0.12	<0.1	0.98	160.00		0.42	0.00	3.36	21.80	0.32	1.36	0.58		2.10	<10	0.08	0.22	4030.00	<0.01	57.3	1.80	0.004	0.52	<0.2	7.30	<0.1
NF2	20/06/2011	DUPLICATE	<0.005	64.10	0.53	<50	28.80	<0.01	<0.005	13.70	0.03	0.10	0.20	0.98	152.00		0.42	0.00	3.27	18.20	0.33	1.35	0.58		1.65	<10	0.08	0.18	3980.00	<0.01	58.8	2.10	0.004	0.53	<0.2	8.20	<0.1
RPD (%)			N/A	11.38	7.27	N/A	4.26	N/A	N/A	0.73	0.00	14.41	N/A	0.00	5.13	N/A	0.00	6.45	2.71	18.00	3.08	0.74	0.00	N/A	24.00	N/A	0.00	20.00	1.25	N/A	2.58	15.38	0.00	0.38	N/A	11.61	N/A
Comments																																				
Action																																				
Result																																				

RPD > 50%.
RPD > 100%.
Retest result to replace original result in emLine.

Denison Environmental Services

Table B-33: Quality Assurance / Quality Control
2011 Duplicates - Total Metals

Station	Date	Sample Type	Ag	Al	As	B	Ba	Be	Bi	Ca	Cd	Co	Cr	Cu	Fe	Hg	K	Li	Mg	Mn	Mo	Na	Ni	P	Pb	S	Sb	Se	Si	Sn	Sr	Ti	Tl	U	V	Zn	Zr
			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	ug/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L	mg/L	µg/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
FL-1	13/07/2011	M	<0.03	22.00	0.40	<300	17.80	0.07	<0.03	134.00	20.80	55.20	<0.5	10.00	149.00		6.90	0.06	70.40	3050.00	<0.3	16.60	133.00	<0.005	2.91	207.00	0.20	<0.2	4010.00	<0.05	626.00	<3	0.46	0.910	<1	21300.00	<0.5
FL-1	13/07/2011	DUPLICATE	<0.03	18.00	0.30	<300	16.70	0.07	<0.03	145.00	20.00	57.60	<0.5	10.50	140.00		7.20	0.05	73.50	3160.00	<0.3	17.20	138.00	<0.005	1.37	210.00	0.20	<0.2	4330.00	<0.05	605.00	<3	0.44	0.850	<1	22100.00	<0.5
RPD (%)			N/A	20.00	28.57	N/A	6.38	0.00	N/A	7.89	3.92	4.26	N/A	4.88	6.23		4.26	3.64	4.31	3.54	N/A	3.55	3.69	N/A	71.96	1.44	0.00	N/A	7.67	N/A	3.41	N/A	4.44	6.82	N/A	3.69	N/A
Comments																									Both values > PQL and correctly entered into emLine.												
Action																									**Let Value Stand**												
Result																									Discrepancy between values remains.												
X14	25/10/2011	M	<0.005	8.20	0.47	<50	60.10	<0.01	<0.005	56.90	0.03	0.66	<0.1	0.43	451.00		1.17	0.00	12.80	861.00	0.54	3.95	1.84		0.69	26.00	0.07	0.37	5630.00	0.02	204.0	<0.5	0.004	2.09	<0.2	26.30	<0.1
X14	25/10/2011	DUPLICATE	<0.005	7.70	0.45	<50	58.90	<0.01	<0.005	57.10	0.03	0.68	<0.1	0.43	454.00		1.18	0.00	12.70	856.00	0.54	3.92	1.95		0.68	27.00	0.07	0.37	5680.00	0.02	203.0	<0.5	0.004	2.09	<0.2	27.60	<0.1
RPD (%)			N/A	6.29	4.35	N/A	2.02	N/A	N/A	0.35	3.28	2.09	N/A	0.00	0.66	N/A	0.85	0.00	0.78	0.58	0.00	0.76	5.80	N/A	1.32	3.77	0.00	0.00	0.88	0.00	0.49	N/A	0.00	0.00	N/A	4.82	N/A
Comments																																				
Action																																				
Result																																				
FAROCR	06/12/2011	M	<0.005	24.70	0.38	<50	24.50	<0.01	<0.005	10.10	0.03	0.02	<0.1	0.71	27.00		0.35	0.00	2.35	0.45	0.72	2.10	1.02		0.63	<10	0.06	0.52	6890.00	<0.01	49.7	<0.5	0.006	0.73	0.30	4.10	<0.1
FAROCR	06/12/2011	DUPLICATE	<0.005	25.90	0.42	<50	24.90	<0.01	<0.005	10.10	0.03	0.03	<0.1	0.63	27.00		0.36	0.00	2.37	0.58	0.71	2.10	0.95		0.61	<10	0.06	0.51	6870.00	<0.01	49.9	<0.5	0.005	0.71	<0.2	5.40	<0.1
RPD (%)			N/A	4.74	10.00	N/A	1.62	N/A	N/A	0.00	13.33	8.33	N/A	11.94	0.00	N/A	2.82	0.00	0.85	25.24	1.40	0.00	7.11	N/A	3.86	N/A	0.00	1.94	0.29	N/A	0.40	N/A	18.18	2.09	N/A	27.37	N/A
Comments																																				
Action																																				
Result																																				

RPD > 50%.
RPD > 100%.
Retest result to replace original result in emLine.

Denison Environmental Services

Table B-34: Quality Assurance / Quality Control
2011 Splits - General Parameters

Faro Mine Closure

Station	Date	Sample Type	Acid(pH4.5)	Acid(pH8.3)	ALK	ALKPP	CaCO3	CaCO3-d	Chloride	CN 4500	CO3	Colour	COND	DOC	HCO3	NH3	NO2	NO2/3	NO3	OH	ORP	pH	SO4-d	TDS	TOC	TSS	TURB
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	TCU	µmho/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mV	(blank)	mg/L	mg/L	mg/L	mg/L	NTU
X4	18/01/2011	M			35.00	<0.5	525.00	551.00	1.60		<0.5		1160.0000		43.00	0.24				<0.5		6.12	660.000	970.00		28.000	
X4	18/01/2011	SPLIT			36.00	<0.5	511.00	550.00	1.10		<0.5		1160.0000		43.00	0.25				<0.5		6.22	650.000	980.00		29.000	
RPD (%)			N/A	N/A	2.82	N/A	2.70	0.18	37.04	N/A	N/A	N/A	0.00	N/A	0.00	4.08	N/A	N/A	N/A	N/A	N/A	0.10	1.53	1.03	N/A	3.51	N/A
Comments																											
Action																											
Result																											
NF2	16/03/2011	M			160.00	<0.5	188.00	175.00	1.40		<0.5		375.00	1.50	190.00	0.02				<0.5		7.69	38.00	220.00	1.30	<1	0.82
NF2	16/03/2011	SPLIT			160.00	<0.5	176.00	170.00	1.10		<0.5		370.00	1.50	190.00	0.02				<0.5		7.88	29.00	220.00	1.50	<1	0.86
RPD (%)			N/A	N/A	0.00	N/A	6.59	2.90	24.00	N/A	N/A	N/A	1.34	0.00	0.00	11.76	N/A	N/A	N/A	N/A	N/A	0.19	26.87	0.00	14.29	N/A	4.76
Comments																											
Action																											
Result																											
X2	13/04/2011	M			140.00	<0.5	158.00	167.00	<0.5		<0.5		321.00	1.50	170.00	0.02				<0.5		7.91	26.00	180.00	1.00	<1	0.76
X2	13/04/2011	SPLIT			140.00	<0.5	157.00	166.00	<0.5		<0.5		320.00	1.20	170.00	0.01				<0.5		7.93	25.00	180.00	0.90	<1	0.77
RPD (%)			N/A	N/A	0.00	N/A	0.63	0.60	N/A	N/A	N/A	N/A	0.31	22.22	0.00	25.00	N/A	N/A	N/A	N/A	N/A	0.02	3.92	0.00	10.53	N/A	1.31
Comments																											
Action																											
Result																											
A30	12/05/2011	M	<0.5	12.30	32.00	<0.5		89.20	1.10		<0.5		210.00		39.00					<0.5	208.00	6.98				4.00	
A30	12/05/2011	SPLIT	<0.5	8.30	33.00	<0.5		83.90	0.70		<0.5		209.00		40.00					<0.5	208.00	6.99				4.00	
RPD (%)			N/A	38.83	3.08	N/A	N/A	6.12	44.44	N/A	N/A	N/A	0.48	N/A	2.53	N/A	N/A	N/A	N/A	N/A	0.00	0.01	N/A	N/A	N/A	0.00	N/A
Comments																											
Action																											
Result																											
X14	24/05/2011	M			25.00	<0.5	40.30	43.50	0.90		<0.5		95.00	12.50	30.00	0.04	<0.005	<0.02	<0.02	<0.5		7.32	19.00	62.00	13.10	22.00	5.95
X14	24/05/2011	SPLIT			24.00	<0.5	40.10	44.00	0.80		<0.5		92.00	12.70	29.00	0.04	<0.005	<0.02	<0.02	<0.5		7.24	19.00	64.00	13.90	20.00	5.73
RPD (%)			N/A	N/A	4.08	N/A	0.50	1.14	11.76	N/A	N/A	N/A	3.21	1.59	3.39	10.26	N/A	N/A	N/A	N/A	N/A	0.08	0.00	3.17	5.93	9.52	3.77
Comments																											
Action																											
Result																											
X18A	02/06/2011	M	<0.5	21.60	290.00	<0.5		1160.00	1.60		<0.5		1870.0000		360.00					<0.5		7.58	860.000			27.000	
X18A	02/06/2011	SPLIT	<0.5	21.20	290.00	<0.5		1180.00	1.50		<0.5		1860.0000		360.00					<0.5		7.48	870.000			27.000	
RPD (%)			N/A	1.87	0.00	N/A	N/A	1.71	6.45		N/A	N/A	0.54	N/A	0.00	N/A				N/A		0.10	1.16	N/A	N/A	0.00	N/A
Comments																											
Action																											
Result																											
SRK08-SP8B	02/06/2011	M		107.00	230.00	<0.5		601.00	1.40		<0.5		1300.00		280.00					<0.5		7.00	510.00			3800.00	
SRK08-SP8B	02/06/2011	SPLIT		89.20	240.00	<0.5		730.00	1.70		<0.5		1320.00		290.00					<0.5		7.00	540.00			4000.00	
RPD (%)			N/A	18.14	4.26	N/A	N/A	19.38	19.35		N/A	N/A	1.53	N/A	3.51	N/A				N/A		0.00	5.71	N/A	N/A	5.13	N/A
Comments																											
Action																											
Result																											
FAROCR	22/06/2011	M			12.00	<0.5	13.10	12.50	<0.5		<0.5		35.00	6.60	15.00	0.04	<0.005	<0.02	<0.02	<0.5		7.38	0.80	30.00	5.90	2.00	1.78
FAROCR	22/06/2011	SPLIT			12.00	<0.5	13.10	12.80	<0.5		<0.5		32.00	5.70	15.00	0.04	<0.005	<0.02	<0.02	<0.5		7.33	<0.5	32.00	5.70	4.00	1.65
RPD (%)			N/A	N/A	0.00	N/A	0.00	2.37	N/A	N/A	N/A	N/A	8.96	14.63	0.00	2.60	N/A	N/A	N/A	N/A	N/A	0.05	N/A	6.45	3.45	66.67	7.58
Comments																										Both values correctly entered into emLine; however, neither value > PQL. Therefore, RPD analysis not valid in this case.	
Action																										**Let Value Stand**	
Result																										Discrepancy between values remains.	
X5	28/06/2011	M			110.00	<0.5	1050.00	1080.00	2.60	<0.005	<0.5	<5	1720.00		140.00	0.68	0.01	0.27	0.26	<0.5		7.82	970.00	1500.00		2.00	6.19
X5	28/06/2011	SPLIT			110.00	<0.5	1070.00	1030.00	2.20	<0.005	<0.5	10.00	1750.00		140.00	0.76	0.01	0.27	0.26	<0.5		7.68	990.00	1500.00		2.00	6.13
RPD (%)			N/A	N/A	0.00	N/A	1.89	4.74	16.67	N/A	N/A	N/A	1.73	N/A	0.00	11.11	0.00	0.00	0.00	N/A	N/A	0.14	2.04	0.00	N/A	0.00	0.97
Comments																											
Action																											
Result																											
X13	14/07/2011	M	<0.5	33.60	340.00	<0.5		1430.00	2.80	<0.005	<0.5	20.00	2310.00		420.00	0.74				<0.5		7.61	1200.00			8.00	5.69
X13	14/07/2011	SPLIT	<0.5	32.40	330.00	<0.5		1500.00	2.10	<0.005	<0.5	15.00	2240.00		410.00	0.73				<0.5		7.66	1100.00			9.00	4.30
RPD (%)			N/A	3.64	2.99	N/A	N/A	4.78	28.57	N/A	N/A	28.57	3.08	N/A	2.41	1.36	N/A	N/A	N/A	N/A	N/A	0.05	8.70	N/A	N/A	11.76	27.83
Comments																											
Action																											
Result																											

■ RPD > 50%.
■ Retest result to replace original result in emLine.

Denison Environmental Services

Table B-34: Quality Assurance / Quality Control
2011 Splits - General Parameters

Faro Mine Closure

Station	Date	Sample Type	Acid(pH4.5)	Acid(pH8.3)	ALK	ALKPP	CaCO3	CaCO3-d	Chloride	CN 4500	CO3	Colour	COND	DOC	HCO3	NH3	NO2	NO2/3	NO3	OH	ORP	pH	SO4-d	TDS	TOC	TSS	TURB
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	TCU	µmho/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mV	(blank)	mg/L	mg/L	mg/L	mg/L	NTU
R10	23/08/2011	M			64.00	<0.5	68.90	68.90	<0.5		<0.5		144.00	3.70	78.00	0.02	0.01	<0.02	<0.02	<0.5		7.79	8.00	80.00	3.60	<1	0.51
R10	23/08/2011	SPLIT			63.00	<0.5	68.60	71.40	0.90		<0.5		149.00	4.70	77.00	0.02	<0.005	<0.02	<0.02	<0.5		7.68	7.90	86.00	5.30	<1	0.51
RPD (%)			N/A	N/A	1.57	N/A	0.44	3.56	N/A	N/A	N/A	N/A	3.41	23.81	1.29	18.18	N/A	N/A	N/A	N/A	N/A	0.11	1.26	7.23	38.20	N/A	0.00
Comments																											
Action																											
Result																											
S2A	11/09/2011	M	<0.5	300.00	340.00	<0.5		671.00	2.40		<0.5		1300.00		410.00					<0.5		6.37	480.00			580.00	
S2A	11/09/2011	SPLIT	<0.5	287.00	340.00	<0.5		677.00	2.00		<0.5		1300.00		410.00					<0.5		6.37	450.00			500.00	
RPD (%)			N/A	4.43	0.00	N/A	N/A	0.89	18.18		N/A	N/A	0.00	N/A	0.00	N/A				N/A		0.00	6.45	N/A	N/A	14.81	N/A
Comments																											
Action																											
Result																											
P09-C1	24/09/2011	M	<0.5	61.70	440.00	<0.5		1660.00	3.80		<0.5		2800.00		530.00					<0.5		7.62	1300.00			150.00	
P09-C1	24/09/2011	SPLIT	<0.5	89.40	440.00	<0.5		1720.00	3.50		<0.5		2800.00		530.00					<0.5		7.46	1300.00			140.00	
RPD (%)			N/A	36.66	0.00	N/A	N/A	3.55	8.22		N/A	N/A	0.00	N/A	0.00	N/A				N/A		0.16	0.00	N/A	N/A	6.90	N/A
Comments																											
Action																											
Result																											
P03-08-2	12/10/2011	M	<0.5	15.40	260.00	<0.5		357.00	<0.5		<0.5		653.00		310.00					<0.5		7.94	114.00			5.00	
P03-08-2	12/10/2011	SPLIT	<0.5	16.50	260.00	<0.5		363.00	0.70		<0.5		658.00		310.00					<0.5		7.95	125.00			4.00	
RPD (%)			N/A	6.90	0.00	N/A	N/A	1.67	N/A		N/A	N/A	0.76	N/A	0.00	N/A				N/A		0.01	9.21	N/A	N/A	22.22	N/A
Comments																											
Action																											
Result																											
BH14A	17/10/2011	M	<0.5	72.80	420.00	<0.5		3010.00	11.00		<0.5		4080.00		510.00					<0.5		7.38	2460.00			730.00	
BH14A	17/10/2011	SPLIT	<0.5	77.70	410.00	<0.5		3070.00	10.00		<0.5		4010.00		500.00					<0.5		7.55	2540.00			200.00	
RPD (%)			N/A	6.51	2.41	N/A	N/A	1.97	9.52		N/A	N/A	1.73	N/A	1.98	N/A				N/A		0.17	3.20	N/A	N/A	113.98	N/A
Comments																										Both values > PQL and correctly entered into emLine.	
Action																										**Let Value Stand**	
Result																										Retest request would be filed past hold time. Discrepancy between values remains.	
SRK08-SPW2	17/10/2011	M	<0.5	238.00	190.00	<0.5		2290.00	3.00		<0.5		3420.00		230.00					<0.5		6.97	2670.00			13.00	
SRK08-SPW2	17/10/2011	SPLIT	<0.5	269.00	190.00	<0.5		2280.00	2.80		<0.5		3420.00		230.00					<0.5		6.85	2520.00			12.00	
RPD (%)			N/A	12.23	0.00	N/A	N/A	0.44	6.90		N/A	N/A	0.00	N/A	0.00	N/A				N/A		0.12	5.78	N/A	N/A	8.00	N/A
Comments																											
Action																											
Result																											
X22b	19/10/2011	M			76.00	<0.5	689.00	688.00	1.80		<0.5		1310.00		93.00	0.94	0.01	0.52	0.51	<0.5		7.32	594.00	1100.00		<1	
X22b	19/10/2011	SPLIT			75.00	<0.5	704.00	662.00	1.80		<0.5		1320.00		91.00	0.83	0.01	0.53	0.52	<0.5		7.16	648.00	1000.00		<1	
RPD (%)			N/A	N/A	1.32	N/A	2.15	3.85	0.00	N/A	N/A	N/A	0.76	N/A	2.17	12.43	13.33	1.90	1.94	N/A	N/A	0.16	8.70	9.52	N/A	N/A	N/A
Comments																											
Action																											
Result																											
SRK08-SP7A	29/11/2011	M	<0.5	56.90	112.00	<0.5		588.00	2.80		<0.5		1160.00		137.00					<0.5		6.55	536.00			51.10	
SRK08-SP7A	29/11/2011	SPLIT	<0.5	68.00	119.00	<0.5		575.00	2.60		<0.5		1170.00		145.00					<0.5		6.62	572.00			21.60	
RPD (%)			N/A	17.77	6.06	N/A	N/A	2.24	7.41		N/A	N/A	0.86	N/A	5.67	N/A				N/A		0.07	6.50	N/A	N/A	81.16	N/A
Comments																										Both values > PQL and correctly entered into emLine.	
Action																										**Let Value Stand**	
Result																										Retest request would be filed past hold time. Discrepancy between values remains.	
R9	16/11/2011	M			103.00	<0.5	115.00	117.00	0.70		<0.5		233.00	1.85	125.00	0.03	<0.005	0.18	0.18	<0.5		7.87	14.50	144.00	1.66	<1	0.66
R9	16/11/2011	SPLIT			103.00	<0.5	113.00	110.00	<0.5		<0.5		232.00	2.22	126.00	0.07	<0.005	0.19	0.19	<0.5		7.91	15.00	148.00	1.89	<1	0.60
RPD (%)			N/A	N/A	0.00	N/A	1.75	6.17	N/A	N/A	N/A	N/A	0.43	18.18	0.80	86.32	N/A	1.62	4.37	N/A	N/A	0.04	3.39	2.74	12.96	N/A	9.52
Comments																Both values > PQL and correctly entered into emLine.											
Action																**Request Retest**											
Result																Retest performed, see results below.											

■ RPD > 50%.
■ Retest result to replace original result in emLine.

Denison Environmental Services

Table B-34: Quality Assurance / Quality Control
2011 Splits - General Parameters

Faro Mine Closure

Station	Date	Sample Type	Acid(pH4.5)	Acid(pH8.3)	ALK	ALKPP	CaCO3	CaCO3-d	Chloride	CN 4500	CO3	Colour	COND	DOC	HCO3	NH3	NO2	NO2/3	NO3	OH	ORP	pH	SO4-d	TDS	TOC	TSS	TURB
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	TCU	µmho/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mV	(blank)	mg/L	mg/L	mg/L	mg/L	NTU
R9	16/11/2011	M														0.11											
R9	16/11/2011	SPLIT														0.07											
RPD (%) Retest Results			N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	47.19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RPD (%) Original/Retest Main			N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	121.17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RPD (%) Original/Retest Split			N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Comments																Retest for November 16 R9 main and split samples. Both retest values > PQL.											
Action																**Replace Main Sample Value**											
Result																Discrepancy between values resolved. New main sample value entered into emLine. Entered duplicate retest result into emLine as comment: "Retest result: 0.068 mg/L. Original value stands: RPD (original, retest)<20%. Retested as identified through										
X3A	06/12/2011	M			115.00	<0.5	131.00	124.00	<0.5		<0.5		268.00	1.61	140.00	0.03	0.01	0.15	0.15	<0.5		7.80	22.10	140.00	1.99	<1	1.08
X3A	06/12/2011	SPLIT			113.00	<0.5	131.00	128.00	<0.5		<0.5		268.00	1.90	138.00	0.05	<0.005	0.32	0.32	<0.5		7.65	22.70	140.00	2.56	<1	1.13
RPD (%)			N/A	N/A	1.75	N/A	0.00	3.17	N/A	N/A	N/A	N/A	0.00	16.52	1.44	45.78	N/A	70.86	73.87	N/A	N/A	0.15	2.68	0.00	25.05	N/A	4.52
Comments																		Both values > PQL and correctly entered into emLine.	Both values > PQL and correctly entered into emLine.								
Action																		**Let Value Stand**	**Let Value Stand**								
Result																		Retest request would be filed past hold time. Discrepancy between values remains.	Retest request would be filed past hold time. Discrepancy between values remains.								
A30	07/12/2011	M	<0.5	9.80	7.87	<0.5		93.20	<0.5		<0.5		223.00		9.60					<0.5	193.00	6.62	110.00			<4	
A30	07/12/2011	SPLIT	<0.5	9.60	7.83	<0.5		90.70	<0.5		<0.5		236.00		9.55					<0.5	193.00	6.39	98.50			8.00	
RPD (%)			N/A	2.06	0.51	N/A	N/A	2.72	N/A	N/A	N/A	N/A	5.66	N/A	0.52	N/A	N/A	N/A	N/A	N/A	0.00	0.23	11.03	N/A	N/A	N/A	N/A
Comments																											
Action																											
Result																											

■ RPD > 50%.
■ Retest result to replace original result in emLine.

Denison Environmental Services

Table B-35: Quality Assurance / Quality Control
2011 Splits - Dissolved Metals

Station	Date	Sample Type	Ag-d µg/L	Al-d µg/L	As-d µg/L	Ba-d µg/L	B-d µg/L	Be-d µg/L	Bi-d µg/L	Ca-d mg/L	Cd-d µg/L	Co-d µg/L	Cr-d µg/L	Cu-d µg/L	Fe-d µg/L	Hg-d µg/L	K-d mg/L	Li-d mg/L	Mg-d mg/L	Mn-d µg/L	Mo-d µg/L	Na-d mg/L	Ni-d µg/L	Pb-d µg/L	Sb-d µg/L	S-d mg/L	Se-d µg/L	Si-d µg/L	Sn-d µg/L	Sr-d µg/L	Ti-d µg/L	Tl-d µg/L	U-d µg/L	V-d µg/L	Zn-d µg/L	Zr-d µg/L
X4	18/01/2011	M	<0.03	2.00	<0.1	12.800	<300	<0.05	<0.03	176.00	0.95	50.3000	<0.5	<0.3	79000.00		3.40	0.013	27.30	13500.000	<0.3	8.30	42.200	0.1300	<0.1	219	<0.2	5140.00	<0.05	521.00	<3	0.16	0.7400	<1	8060.000	<0.5
X4	18/01/2011	SPLIT	<0.03	2.00	<0.1	12.700	<300	<0.05	<0.03	174.00	0.86	51.6000	<0.5	<0.3	78500.00		3.50	0.013	28.20	13700.000	<0.3	8.60	44.000	0.3500	<0.1	215	<0.2	5050.00	<0.05	528.00	<3	0.16	0.7600	<1	8160.000	<0.5
	RPD (%)		N/A	0.00	N/A	0.78	N/A	N/A	N/A	1.14	9.94	2.55	N/A	N/A	0.63	N/A	2.90	0.00	3.24	1.47	N/A	3.55	4.18	91.67	N/A	1.84	N/A	1.77	N/A	1.33	N/A	0.00	2.67	N/A	1.23	N/A
	Comments																							Both values correctly entered into emLine; however, main sample value not > PQL. Therefore, RPD analysis not valid in this case.												
	Action																							**Let Value Stand**												
	Result																							Discrepancy between values remains.												
NF2	16/03/2011	M	<0.005	5.70	0.48	67.40	<50	<0.01	<0.005	51.50	0.14	0.21	0.20	2.12	48.00		1.44	0.01	11.30	19.00	0.91	5.03	1.60	1.13	0.10	11.00	0.53	6630.00	0.05	230.0	<0.5	0.013	3.50	<0.2	45.30	<0.1
NF2	16/03/2011	SPLIT	<0.005	4.10	0.51	68.40	<50	<0.01	<0.005	49.60	0.11	0.20	0.20	1.14	70.00		1.46	0.01	11.20	21.00	0.89	5.04	1.46	0.85	0.10	11.00	0.54	6190.00	0.04	232.0	<0.5	0.013	3.51	<0.2	45.50	<0.1
	RPD (%)		N/A	32.65	6.06	1.47	N/A	N/A	N/A	3.76	20.80	3.92	0.00	60.12	37.29	N/A	1.38	1.04	0.89	10.00	2.22	0.20	9.15	28.40	0.00	0.00	1.87	6.86	22.22	0.87	N/A	0.00	0.29	N/A	0.44	N/A
	Comments													Both values > PQL and correctly entered into emLine. Lab noted on both samples that "Dissolved greater than total. Reanalysis yields similar results."																						
	Action													**Let Value Stand**																						
	Result													Discrepancy between values remains.																						
X2	13/04/2011	M	<0.005	2.30	0.21	76.60	<50	<0.01	<0.005	49.60	0.02	0.16	<0.1	0.47	65.00		1.38	0.01	10.50	86.20	0.72	3.61	0.68	0.18	0.06	<10	0.44	6890.00	<0.01	215.0	<0.5	<0.002	2.80	<0.2	38.40	<0.1
X2	13/04/2011	SPLIT	<0.005	2.20	0.19	73.60	<50	<0.01	<0.005	49.30	0.03	0.15	<0.1	0.48	65.00		1.60	0.01	10.40	87.30	0.78	3.56	0.71	0.24	0.05	<10	0.41	6760.00	<0.01	214.0	<0.5	<0.002	2.84	<0.2	40.60	<0.1
	RPD (%)		N/A	4.44	10.00	3.99	N/A	N/A	N/A	0.61	35.29	9.15	N/A	2.11	0.00	N/A	14.77	1.09	0.96	1.27	8.00	1.39	4.32	29.13	18.18	N/A	7.06	1.90	N/A	0.47	N/A	N/A	1.42	N/A	5.57	N/A
	Comments																																			
	Action																																			
	Result																																			
A30	12/05/2011	M	<0.02	12.00	<0.1	24.00	<50	<0.1	<1	20.20	2.43	<0.5	<1	4.60	<5		0.72	0.01	9.43	6.00	<1	2.10	10.00	1.00	<0.5	24.00	0.20	6230.00	<5	87.0	<5	<0.05	0.30	<5	2780.00	<0.5
A30	12/05/2011	SPLIT	<0.02	12.00	<0.1	23.00	<50	<0.1	<1	19.00	2.33	<0.5	<1	4.50	<5		0.67	0.01	8.87	6.00	<1	1.99	10.00	1.10	<0.5	25.00	0.20	6340.00	<5	80.0	<5	<0.05	0.30	<5	2590.00	<0.5
	RPD (%)		N/A	0.00	N/A	4.26	N/A	N/A	N/A	6.12	4.20	N/A	N/A	2.20	N/A	N/A	7.19	0.00	6.12	0.00	N/A	5.38	0.00	9.52	N/A	4.08	0.00	1.75	N/A	8.38	N/A	N/A	0.00	N/A	7.08	N/A
	Comments																																			
	Action																																			
	Result																																			
X14	24/05/2011	M	0.01	63.90	0.46	19.90	<50	0.02	<0.005	12.60	0.04	0.50	<0.1	1.85	185.00		1.18	0.00	2.93	279.00	0.17	1.09	1.48	1.44	0.06	<10	0.08	2180.00	<0.01	47.1	0.90	0.009	0.30	<0.2	15.50	<0.1
X14	24/05/2011	SPLIT	0.01	67.40	0.48	19.90	<50	<0.01	<0.005	12.50	0.05	0.51	0.20	1.83	187.00		1.22	0.00	3.13	286.00	0.20	1.17	1.59	1.31	0.06	<10	0.09	2180.00	<0.01	46.6	0.60	0.010	0.30	<0.2	15.50	0.20
	RPD (%)		10.53	5.33	4.26	0.00	N/A	N/A	N/A	0.80	29.79	1.58	N/A	1.09	1.08	N/A	3.33	0.00	6.60	2.48	16.22	7.08	7.17	9.45	0.00	N/A	11.76	0.00	N/A	1.07	40.00	10.53	0.99	N/A	0.00	N/A
	Comments																																			
	Action																																			
	Result																																			
X18A	02/06/2011	M	<0.005	1.50	9.28	141.000	<50	<0.01	<0.005	343.00	0.03	1.6800	<0.1	0.1000	4070.00		6.38	0.015	74.60	4880.000	0.75	22.40	4.730	0.0490	0.04	331	<0.04	7510.00	<0.01	1350.00	<0.5	<0.002	9.2700	<0.2	1.000	0.20
X18A	02/06/2011	SPLIT	0.0090	1.50	9.58	140.000	<50	<0.01	<0.005	346.00	0.02	1.7100	<0.1	0.0700	4040.00		6.62	0.015	76.60	5070.000	0.72	22.80	4.870	0.0490	0.03	348	<0.04	7580.00	<0.01	1360.00	<0.5	<0.002	9.0500	<0.2	1.000	0.20
	RPD (%)		N/A	0.00	3.18	0.71	N/A	N/A	N/A	0.87	21.28	1.77	N/A	35.29	0.74	N/A	3.69	0.00	2.65	3.82	4.08	1.77	2.92	0.00	28.57	5.01	N/A	0.93	N/A	0.74	N/A	N/A	2.40	N/A	0.00	0.00
	Comments																																			
	Action																																			
	Result																																			
SRK08-SP8E	02/06/2011	M	<0.02	13.00	2.00	17.00	<50	<0.1	<1	144.00	0.06	4.40	<1	<0.2	14900.00		3.50	0.05	58.80	1210.00	<1	9.48	9.00	<0.2	<0.5	159.00	<0.1	10500.00	<5	670.0	<5	<0.05	1.20	<5	276.00	<0.5
SRK08-SP8E	02/06/2011	SPLIT	<0.02	14.00	2.00	16.00	<50	<0.1	<1	163.00	0.06	4.80	<1	<0.2	16600.00		3.93	0.05	78.70	1440.00	<1	13.20	11.00	<0.2	<0.5	195.00	<0.1	11700.00	<5	711.0	<5	<0.05	1.10	<5	321.00	<0.5
	RPD (%)		N/A	7.41	0.00	6.06	N/A	N/A	N/A	12.38	0.00	8.70	N/A	N/A	10.79	N/A	11.57	5.83	28.95	17.36	N/A	32.80	20.00	N/A	N/A	20.34	N/A	10.81	N/A	5.94	N/A	N/A	8.70	N/A	15.08	N/A
	Comments																																			
	Action																																			
	Result																																			
FAROCR	22/06/2011	M	0.01	90.70	0.28	14.50	<50	0.04	<0.005	3.70	0.07	0.10	0.80	2.05	61.00		0.19	0.00	0.80	2.50	0.69	1.35	1.28	5.12	0.05	<10	0.12	5480.00	0.02	23.0	0.70	0.015	0.31	<0.2	14.60	0.20
FAROCR	22/06/2011	SPLIT	<0.005	87.40	0.30	14.20	<50	0.03	<0.005	3.82	0.06	0.09	0.20	2.01	56.00		0.19	0.00	0.80	2.42	0.26	1.37	0.96	4.52	0.05	<10	0.11	5660.00	<0.01	22.7	<0.5	0.013	0.32	<0.2	14.30	0.20
	RPD (%)		N/A	3.71	6.90	2.09	N/A	28.57	N/A	3.19	10.85	10.10	120.00	1.97	8.55	N/A	0.00	0.00	0.00	3.25	90.53	1.47	28.57	12.45	0.00	N/A	8.70	3.23	N/A	1.31	N/A	14.29	3.80	N/A	2.08	0.00
	Comments												Both values correctly entered into emLine; however, split value not > PQL. Therefore, RPD analysis not valid in this case. Lab noted on main sample that "Dissolved greater than total. Reanalysis yields similar results."								Both values > PQL and correctly entered into emLine. Lab noted on both samples that "Dissolved greater than total. Reanalysis yields similar results."																
	Action												**Let Value Stand**								**Let Value Stand**															
	Result												Discrepancy between values remains.								Discrepancy between values remains.															
X5	28/06/2011	M	<0.03	13.00	0.30	17.10	<300	<0.05	<0.03	287.00	0.16	20.90	<0.5	<0.3	144.00	<0.05	6.30	0.04	87.60	10700.00	0.80	21.00	21.50	0.74	0.20	388.00	<0.2	3250.00	<0.05	884.0	<3	0.670	1.85	<1	207.00	<0.5
X5	28/06/2011	SPLIT	<0.03	14.00	0.20	16.80	<300	<0.05	<0.03	272.00	0.15	19.90	<0.5	<0.3	126.00	<0.05	6.10	0.03	84.70	10300.00	0.60	20.40	21.10	0.18	<0.1	374.00	<0.2	3090.00	<0.05	885.0	<3	0.630	1.84	<1	198.00	<0.5
	RPD (%)		N/A	7.41	40.00	1.77	N/A	N/A	N/A	5.37	6.45	4.90	N/A	N/A	13.33	N/A	3.23	2.90	3.37	3.81	28.57	2.90	1.88	121.74	N/A	3.67	N/A	5.05	N/A	0.11	N/A	6.15	0.54	N/A	4.44	N/A
	Comments																							Both values > PQL and correctly entered into emLine.												
	Action																							**Request Retest**												
	Result																							Retest performed, see results below.												

RPD > 50%.
RPD > 100%.
Retest result to replace original result in emLine.

Denison Environmental Services

Table B-35: Quality Assurance / Quality Control
2011 Splits - Dissolved Metals

Station	Date	Sample Type	Ag-d µg/L	Al-d µg/L	As-d µg/L	Ba-d µg/L	B-d µg/L	Be-d µg/L	Bi-d µg/L	Ca-d mg/L	Cd-d µg/L	Co-d µg/L	Cr-d µg/L	Cu-d µg/L	Fe-d µg/L	Hg-d µg/L	K-d mg/L	Li-d mg/L	Mg-d mg/L	Mn-d µg/L	Mo-d µg/L	Na-d mg/L	Ni-d µg/L	Pb-d µg/L	Sb-d µg/L	S-d mg/L	Se-d µg/L	Si-d µg/L	Sn-d µg/L	Sr-d µg/L	Ti-d µg/L	Tl-d µg/L	U-d µg/L	V-d µg/L	Zn-d µg/L	Zr-d µg/L
X5	28/06/2011	M																					0.16												
X5	28/06/2011	SPLIT																					0.13												
RPD (%) Retest Results			N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	20.69	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RPD (%) Original/Retest Main			N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	128.89	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RPD (%) Original/Retest Split			N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	32.26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Comments																								Retest for June 28 main and split samples. Main sample retest value > PQL, however split sample retest value not > PQL.												
Action																								**Replace Main & Split Sample Values.**												
Result																								New main and split sample values entered into emLine.												
X13	14/07/2011	M	<0.03	3.00	1.70	49.80	<300	<0.05	<0.03	432.00	0.22	17.50	<0.5	<0.3	4290.00	<0.05	6.10	0.02	86.50	22700.00	0.70	31.60	32.40	0.12	<0.1	425.00	<0.2	8850.00	<0.05	1060.0	<3	0.020	8.43	<1	70.60	<0.5
X13	14/07/2011	SPLIT	<0.03	4.00	1.70	47.20	<300	<0.05	<0.03	449.00	0.21	22.60	<0.5	0.40	4130.00	<0.05	6.30	0.02	92.10	24300.00	0.60	32.40	34.90	0.21	<0.1	446.00	<0.2	8830.00	<0.05	1120.0	<3	0.030	7.99	<1	108.00	<0.5
RPD (%)			N/A	28.57	0.00	5.36	N/A	N/A	N/A	3.86	4.65	25.44	N/A	N/A	3.80	N/A	3.23	6.06	6.27	6.81	15.38	2.50	7.43	54.55	N/A	4.82	N/A	0.23	N/A	5.50	N/A	40.00	5.36	N/A	41.88	N/A
Comments																								Both values correctly entered into emLine; however, main sample value not > PQL. Therefore, RPD analysis not valid in this case.												
Action																								**Let Value Stand**												
Result																								Discrepancy between values remains.												
R10	23/08/2011	M	0.01	14.70	0.50	39.50	<50	<0.01	<0.005	20.70	0.05	0.19	<0.1	0.69	86.00		0.88	0.00	4.15	39.30	0.34	1.64	0.56	0.29	0.08	<10	0.20	4920.00	<0.01	86.2	<0.5	<0.002	0.73	<0.2	27.50	<0.1
R10	23/08/2011	SPLIT	0.07	16.00	0.51	38.80	<50	<0.01	<0.005	21.20	0.14	0.63	<0.1	0.79	89.00		2.08	0.00	4.49	106.00	0.34	1.74	1.14	0.51	0.08	<10	0.22	4870.00	<0.01	87.9	<0.5	0.003	0.72	<0.2	91.40	<0.1
RPD (%)			146.34	8.47	1.98	1.79	N/A	N/A	N/A	2.39	104.76	107.13	N/A	13.51	3.43	N/A	81.08	4.26	7.87	91.81	0.00	5.92	68.24	56.28	0.00	N/A	9.52	1.02	N/A	1.95	N/A	N/A	1.10	N/A	107.49	N/A
Comments			Both values correctly entered into emLine; however, split value not > PQL. Therefore, RPD analysis not valid in this case. Lab noted on split sample that "Dissolved greater than total. Reanalysis yields similar results."								Both values > PQL and correctly entered into emLine. Lab noted on both samples that "Dissolved greater than total. Reanalysis yields similar results."	Both values > PQL and correctly entered into emLine. Lab noted on both samples that "Dissolved greater than total. Reanalysis yields similar results."					Both values > PQL and correctly entered into emLine. Lab noted on both samples that "Dissolved greater than total. Reanalysis yields similar results."			Both values > PQL and correctly entered into emLine. Lab noted on both samples that "Dissolved greater than total. Reanalysis yields similar results."												Both values > PQL and correctly entered into emLine. Lab noted on split sample that "Dissolved greater than total. Reanalysis yields similar results."	Both values > PQL and correctly entered into emLine. Lab noted on both samples that "Dissolved greater than total. Reanalysis yields similar results."		
Action			**Let Value Stand**								**Let Value Stand**	**Let Value Stand**					**Let Value Stand**			**Let Value Stand**			**Let Value Stand**	**Let Value Stand**											**Let Value Stand**	
Result			Discrepancy between values remains.								Discrepancy between values remains. Retest not requested because lab already reanalyzed.	Discrepancy between values remains. Retest not requested because lab already reanalyzed.					Discrepancy between values remains.			Discrepancy between values remains.			Discrepancy between values remains.	Discrepancy between values remains.											Discrepancy between values remains. Retest not requested because lab already reanalyzed.	
S2A	11/09/2011	M	<0.005	18.30	0.15	19.10	<50	0.15	<0.005	162.00	0.71	13.90	<0.1	0.32	19600.00		5.13	0.06	64.60	2410.00	0.07	9.11	31.00	0.17	<0.02	157.00	<0.04	14200.00	<0.01	649.0	<0.5	0.006	2.29	<0.2	2180.00	<0.1
S2A	11/09/2011	SPLIT	<0.005	18.40	0.17	19.10	<50	0.12	<0.005	162.00	0.68	13.60	<0.1	0.34	19600.00		5.34	0.05	66.30	2490.00	<0.05	9.29	30.40	0.17	<0.02	165.00	<0.04	14300.00	<0.01	654.0	<0.5	0.003	2.31	<0.2	2150.00	<0.1
RPD (%)			N/A	0.54	12.50	0.00	N/A	22.22	N/A	0.00	4.74	2.18	N/A	6.06	0.00	N/A	4.01	21.58	2.60	3.27	N/A	1.96	1.95	0.00	N/A	4.97	N/A	0.70	N/A	0.77	N/A	66.67	0.87	N/A	1.39	N/A
Comments																																Both values correctly entered into emLine; however, neither value > PQL. Therefore, RPD analysis not valid in this case.				
Action																																**Let Value Stand**				
Result																																Discrepancy between values remains.				
P09-C1	24/09/2011	M	<0.03	3.00	0.60	38.80	<300	0.25	<0.03	477.00	0.18	0.26	<0.5	<0.3	12300.00		7.90	0.18	113.00	21900.00	<0.3	91.80	0.40	0.04	<0.1	498.00	<0.2	10300.00	<0.05	2390.0	<3	<0.01	0.58	<1	<0.5	4.30
P09-C1	24/09/2011	SPLIT	<0.03	3.00	0.40	39.70	<300	0.29	<0.03	504.00	0.16	0.20	<0.5	<0.3	12900.00		8.00	0.18	113.00	21900.00	<0.3	91.30	0.20	<0.03	<0.1	500.00	<0.2	10900.00	<0.05	2390.0	<3	<0.01	0.59	<1	<0.5	4.40
RPD (%)			N/A	0.00	40.00	2.29	N/A	14.81	N/A	5.50	11.76	26.09	N/A	N/A	4.76	N/A	1.26	0.56	0.00	0.00	N/A	0.55	66.67	N/A	N/A	0.40	N/A	5.66	N/A	0.00	N/A	N/A	1.71	N/A	N/A	2.30
Comments																							Both values correctly entered into emLine; however, neither value > PQL. Therefore, RPD analysis not valid in this case.													
Action																							**Let Value Stand**												
Result																							Discrepancy between values remains.												
P03-08-2	12/10/2011	M	<0.005	4.90	0.31	182.00	<50	<0.01	<0.005	97.80	0.24	1.10	<0.1	2.39	11.00		1.42	0.00	27.50	2890.00	0.95	5.25	15.80	0.18	0.09	45.00	<0.04	4170.00	<0.01	344.0	<0.5	0.025	3.46	<0.2	3.40	<0.1
P03-08-2	12/10/2011	SPLIT	<0.005	5.40	0.35	180.00	<50	<0.01	<0.005	99.90	0.24	1.09	<0.1	2.35	10.00		1.44	0.00	27.60	2990.00	0.85	5.32	15.90	0.44	0.09	46.00	<0.04	4250.00	<0.01	328.0	<0.5	0.025	3.39	<0.2	3.40	<0.1
RPD (%)			N/A	9.71	12.12	1.10	N/A	N/A	N/A	2.12	0.00	0.91	N/A	1.69	9.52	N/A	1.40	4.88	0.36	3.40	11.11	1.32	0.63	83.41	0.00	2.20	N/A	1.90	N/A	4.76	N/A	0.00	2.04	N/A	0.00	N/A
Comments																								Both values > PQL and correctly entered into emLine.												
Action																								**Let Value Stand**												
Result																								Discrepancy between values remains.												

RPD > 50%.
RPD > 100%.
Retest result to replace original result in emLine.

Denison Environmental Services

Table B-35: Quality Assurance / Quality Control
2011 Splits - Dissolved Metals

Station	Date	Sample Type	Ag-d µg/L	Al-d µg/L	As-d µg/L	Ba-d µg/L	B-d µg/L	Be-d µg/L	Bi-d µg/L	Ca-d mg/L	Cd-d µg/L	Co-d µg/L	Cr-d µg/L	Cu-d µg/L	Fe-d µg/L	Hg-d µg/L	K-d mg/L	Li-d mg/L	Mg-d mg/L	Mn-d µg/L	Mo-d µg/L	Na-d mg/L	Ni-d µg/L	Pb-d µg/L	Sb-d µg/L	S-d mg/L	Se-d µg/L	Si-d µg/L	Sn-d µg/L	Sr-d µg/L	Ti-d µg/L	Tl-d µg/L	U-d µg/L	V-d µg/L	Zn-d µg/L	Zr-d µg/L
BH14A	17/10/2011	M	0.05	25.00	0.40	20.90	<300	<0.05	<0.03	637.00	1.87	0.09	<0.5	3.10	76.00	<0.05	4.20	0.08	345.00	4.60	0.50	16.90	106.00	50.50	0.20	870.00	0.80	9980.00	0.13	3140.0	<3	<0.01	141.00	<1	11100.00	<0.5
BH14A	17/10/2011	SPLIT	0.04	20.00	0.40	20.40	<300	<0.05	<0.03	642.00	1.83	0.09	<0.5	2.00	59.00	<0.05	4.40	0.08	356.00	3.90	0.40	17.10	110.00	48.20	<0.1	874.00	0.80	10000.00	0.12	3240.0	<3	<0.01	145.00	<1	11400.00	<0.5
	RPD (%)		22.22	22.22	0.00	2.42	N/A	N/A	N/A	0.78	2.16	0.00	N/A	43.14	25.19	N/A	4.65	1.21	3.14	16.47	22.22	1.18	3.70	4.66	N/A	0.46	0.00	0.20	8.00	3.13	N/A	N/A	2.80	N/A	2.67	N/A
	Comments																																			
	Action																																			
	Result																																			
SRK08-SPW2	17/10/2011	M	0.20	<20	<0.5	19.00	<300	<0.5	<5	226.00	32.20	200.00	<5	5.00	4380.00		8.70	0.09	419.00	33400.00	<5	20.80	756.00	<1	<3	830.00	<0.5	11800.00	<30	1020.0	<30	<0.3	3.40	<30	132000.00	<3
SRK08-SPW2	17/10/2011	SPLIT	<0.1	<20	<0.5	19.00	<300	<0.5	<5	223.00	31.00	197.00	<5	5.00	4170.00		7.30	0.09	417.00	32400.00	<5	20.00	743.00	<1	<3	830.00	<0.5	11800.00	<30	962.0	<30	<0.3	3.40	<30	128000.00	<3
	RPD (%)		N/A	N/A	N/A	0.00	N/A	N/A	N/A	1.34	3.80	1.51	N/A	0.00	4.91	N/A	17.50	1.17	0.48	3.04	N/A	3.92	1.73	N/A	N/A	0.00	N/A	0.00	N/A	5.85	N/A	N/A	0.00	N/A	3.08	N/A
	Comments																																			
	Action																																			
	Result																																			
X22b	19/10/2011	M	<0.03	7.00	0.20	16.00	<300	0.08	<0.03	146.00	19.60	56.00	<0.5	6.90	14.00		8.10	0.06	78.70	3340.00	<0.3	18.80	145.00	0.16	0.20	238.00	<0.2	3930.00	<0.05	599.0	<3	0.430	0.47	<1	22100.00	<0.5
X22b	19/10/2011	SPLIT	<0.03	5.00	0.20	15.70	<300	0.07	<0.03	139.00	19.70	54.40	<0.5	6.70	9.00		8.00	0.06	76.40	3230.00	0.40	18.20	141.00	0.15	0.20	232.00	<0.2	3770.00	<0.05	608.0	<3	0.400	0.49	<1	21700.00	<0.5
	RPD (%)		N/A	33.33	0.00	1.89	N/A	13.33	N/A	4.91	0.51	2.90	N/A	2.94	43.48	N/A	1.24	3.45	2.97	3.35	N/A	3.24	2.80	6.45	0.00	2.55	N/A	4.16	N/A	1.49	N/A	7.23	4.17	N/A	1.83	N/A
	Comments																																			
	Action																																			
	Result																																			
SRK08-SP7A	29/11/2011	M	<0.02	10.50	4.61	13.90	<50	0.34	<1	152.00	0.09	7.21	<1	0.74	19100.00		5.52	0.05	50.60	1460.00	<1	8.60	19.80	<0.2	<0.5	189.00	<0.1	12500.00	<5	546.0	<5	<0.05	0.33	<5	692.00	<0.5
SRK08-SP7A	29/11/2011	SPLIT	<0.02	10.20	4.43	13.30	<50	0.33	<1	149.00	0.08	7.12	<1	0.41	18400.00		5.36	0.05	49.50	1430.00	<1	8.57	18.00	0.88	<0.5	182.00	<0.1	12000.00	<5	540.0	<5	<0.05	0.32	<5	666.00	<0.5
	RPD (%)		N/A	2.90	3.98	4.41	N/A	2.99	N/A	1.99	16.67	1.26	N/A	57.39	3.73	N/A	2.94	5.08	2.20	2.08	N/A	0.35	9.52	N/A	N/A	3.77	N/A	4.08	N/A	1.10	N/A	N/A	3.08	N/A	3.83	N/A
	Comments													Both values correctly entered into emLine; however, neither value > PQL. Therefore, RPD analysis not valid in this case.																							
	Action													**Let Value Stand**																							
	Result													Discrepancy between values remains.																							
R9	16/11/2011	M	<0.005	4.20	0.44	59.80	<50	<0.01	<0.005	35.40	0.01	0.04	<0.1	0.52	67.00		0.81	0.01	6.93	16.40	0.60	2.43	0.33	0.34	0.07	<10	0.41	5900.00	0.02	143.0	<0.5	<0.002	1.81	<0.2	5.70	<0.1
R9	16/11/2011	SPLIT	<0.005	4.20	0.40	59.00	<50	<0.01	<0.005	32.90	0.02	0.06	<0.1	0.37	65.00		0.79	0.01	6.83	18.70	0.60	2.38	0.37	0.13	0.07	<10	0.39	5370.00	<0.01	143.0	<0.5	<0.002	1.73	<0.2	14.70	<0.1
	RPD (%)		N/A	0.00	9.52	1.35	N/A	N/A	N/A	7.32	32.26	42.55	N/A	33.71	3.03	N/A	2.50	0.00	1.45	13.11	0.00	2.08	11.43	89.66	0.00	N/A	5.00	9.41	N/A	0.00	N/A	N/A	4.52	N/A	88.24	N/A
	Comments																							Both values > PQL and correctly entered into emLine.												Both values > PQL and correctly entered into emLine. Lab noted on split sample that "Dissolved greater than total. Reanalysis yields similar results."	
	Action																							**Let Value Stand**												**Let Value Stand**	
	Result																							Discrepancy between values remains.												Discrepancy between values remains.	
X3A	06/12/2011	M	0.02	2.90	0.35	65.20	<50	<0.01	<0.005	35.90	0.02	0.09	<0.1	0.68	128.00		1.23	0.00	8.35	60.20	0.56	2.81	0.54	0.28	0.06	<10	0.35	4750.00	0.03	174.0	<0.5	<0.002	2.16	<0.2	14.80	<0.1
X3A	06/12/2011	SPLIT	0.01	2.60	0.35	63.90	<50	<0.01	<0.005	37.80	0.02	0.09	<0.1	0.52	128.00		1.29	0.00	8.08	59.60	0.57	2.76	0.47	0.19	0.06	<10	0.41	5110.00	0.02	173.0	<0.5	<0.002	2.22	<0.2	15.80	<0.1
	RPD (%)		40.00	10.91	0.00	2.01	N/A	N/A	N/A	5.16	27.03	3.24	N/A	26.67	0.00	N/A	4.76	2.11	3.29	1.00	1.77	1.80	13.86	42.22	0.00	N/A	15.79	7.30	40.00	0.58	N/A	N/A	2.74	N/A	6.54	N/A
	Comments																																			
	Action																																			
	Result																																			
A30	07/12/2011	M	0.0640	161.00	<0.1	20.000	<50	0.18	<1	18.10	5.90	2.3600	<1	45.2000	<5		0.72	0.011	11.60	83.600	<1	2.21	21.400	13.4000	<0.5	34	<0.1	5940.00	<5	76.60	<5	<0.05	0.3500	<5	6970.000	<0.5
A30	07/12/2011	SPLIT	0.0420	156.00	<0.1	19.800	<50	0.17	<1	17.40	5.89	2.3300	<1	44.9000	<5		0.72	0.011	11.50	83.900	<1	2.20	22.000	13.0000	<0.5	34	0.1200	5810.00	<5	75.90	<5	<0.05	0.3400	<5	6990.000	<0.5
	RPD (%)		41.51	3.15	N/A	1.01	N/A	5.71	N/A	3.94	0.17	1.28	N/A	0.67	N/A	N/A	0.70	0.90	0.87	0.36	N/A	0.45	2.76	3.03	N/A	2.07	N/A	2.21	N/A	0.92	N/A	N/A	2.90	N/A	0.29	N/A
	Comments																																			
	Action																																			
	Result																																			

RPD > 50%.
RPD > 100%.
Retest result to replace original result in emLine.

Denison Environmental Services

Table B-36: Quality Assurance / Quality Control
2011 Splits - Total Metals

Faro Mine Closure

Station	Date	Sample Type	Ag	Al	As	B	Ba	Be	Bi	Ca	Cd	Co	Cr	Cu	Fe	Hg	K	Li	Mg	Mn	Mo	Na	Ni	Pb	S	Sb	Se	Si	Sn	Sr	Ti	Tl	U	V	Zn	Zr
			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	ug/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	µg/L	µg/L	mg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
X4	18/01/2011	M	<0.03	7.00	<0.1	<300	13.20	<0.05	<0.03	165.00	0.85	49.2000	<0.5	1.1000	73600.00		3.30	0.013	27.50	13100.000	<0.3	8.40	42.400	3.9000	200.00	0	<0.2	4970.00	<0.05	517.00	<3	0.18	0.8700	<1	7730.000	<0.5
X4	18/01/2011	SPLIT	<0.03	7.00	<0.1	<300	13.00	<0.05	<0.03	158.00	0.88	50.7000	<0.5	1.1000	74000.00		3.40	0.013	28.10	13400.000	<0.3	8.60	43.600	3.9300	205.00	<0.1	<0.2	4520.00	<0.05	519.00	<3	0.18	0.8500	<1	8010.000	<0.5
RPD (%)			N/A	0.00	N/A	N/A	1.53	N/A	N/A	4.33	3.47	3.00	N/A	0.00	0.54	N/A	2.99	0.00	2.16	2.26	N/A	2.35	2.79	0.77	2.47	N/A	N/A	9.48	N/A	0.39	N/A	0.00	2.33	N/A	3.56	N/A
Comments																																				
Action																																				
Result																																				
NF2	16/03/2011	M	<0.005	8.50	0.64	<50	71.30	<0.01	<0.005	54.60	0.08	0.21	<0.1	1.16	113.00		1.55	0.01	12.70	18.50	0.96	5.59	1.48	1.29	13.00	0.08	0.64	7090.00	<0.01	239.0	0.70	0.012	3.67	<0.2	21.80	<0.1
NF2	16/03/2011	SPLIT	<0.005	7.90	0.57	<50	70.90	<0.01	<0.005	50.90	0.09	0.18	<0.1	0.67	110.00		1.47	0.01	11.80	17.50	1.00	5.25	1.22	1.19	12.00	0.07	0.59	6390.00	<0.01	234.0	<0.5	0.012	3.64	<0.2	20.60	<0.1
RPD (%)			N/A	7.32	11.57	N/A	0.56	N/A	N/A	7.01	15.38	11.28	N/A	53.55	2.69	N/A	5.30	1.00	7.35	5.56	4.08	6.27	19.26	8.06	8.00	13.33	8.13	10.39	N/A	2.11	N/A	0.00	0.82	N/A	5.66	N/A
Comments														Both values > PQL and correctly entered into emLine.																							
Action														**Let Value Stand**																							
Result														Discrepancy between values remains.																							
X2	13/04/2011	M	<0.005	3.70	0.34	<50	77.00	<0.01	<0.005	45.00	0.03	0.17	<0.1	0.40	169.00		1.27	0.01	11.00	87.00	0.80	3.77	0.70	0.22	<10	0.06	0.35	6010.00	<0.01	214.0	<0.5	0.005	2.98	<0.2	18.00	<0.1
X2	13/04/2011	SPLIT	<0.005	3.50	0.35	<50	73.90	<0.01	<0.005	45.10	0.02	0.15	<0.1	0.24	173.00		1.28	0.01	10.80	88.80	0.76	3.77	0.62	0.19	<10	0.05	0.35	6100.00	<0.01	217.0	<0.5	<0.002	2.88	<0.2	17.40	<0.1
RPD (%)			N/A	5.56	2.90	N/A	4.11	N/A	N/A	0.22	22.22	10.79	N/A	50.00	2.34	N/A	0.78	3.31	1.83	2.05	5.13	0.00	12.12	14.42	N/A	18.18	0.00	1.49	N/A	1.39	N/A	N/A	3.41	N/A	3.39	N/A
Comments														Both values > PQL and correctly entered into emLine.																							
Action														**Let Value Stand**																							
Result														Discrepancy between values remains.																							
X14	24/05/2011	M	0.01	209.00	0.96	<50	26.90	0.05	0.01	11.70	0.09	0.71	0.30	2.33	605.00		1.10	0.00	2.72	315.00	0.16	0.95	1.81	6.19	<10	0.06	0.08	2280.00	<0.01	46.8	6.90	0.014	0.48	0.50	22.60	0.30
X14	24/05/2011	SPLIT	0.01	202.00	0.99	<50	26.90	0.03	0.01	11.70	0.08	0.66	0.30	2.17	604.00		1.12	0.00	2.68	311.00	0.17	0.90	1.88	5.96	<10	0.07	0.09	2280.00	<0.01	46.4	5.90	0.014	0.47	0.50	21.90	0.30
RPD (%)			8.70	3.41	3.08	N/A	0.00	50.00	0.00	0.00	8.59	6.44	0.00	7.11	0.17	N/A	1.80	0.00	1.48	1.28	6.06	5.41	3.79	3.79	N/A	15.38	11.76	0.00	N/A	0.86	15.63	0.00	1.89	0.00	3.15	0.00
Comments								Both values correctly entered into emLine. However, split value not > PQL, and main sample value equal to PQL. Therefore, RPD analysis not valid in this case.																																	
Action								**Let Value Stand**																														
Result								Discrepancy between values remains.																														
FAROCR	22/06/2011	M	0.01	139.00	0.33	<50	15.80	0.04	<0.005	3.88	0.07	0.15	0.20	2.36	129.00		0.21	0.00	0.83	4.94	0.21	1.36	1.34	7.78	<10	0.05	0.11	5950.00	0.03	22.9	1.50	0.018	0.34	0.30	19.20	0.20
FAROCR	22/06/2011	SPLIT	<0.005	138.00	0.31	<50	16.10	0.05	<0.005	3.89	0.06	0.15	0.20	2.39	117.00		0.20	0.00	0.83	4.01	0.15	1.33	1.14	6.37	<10	0.05	0.11	5920.00	<0.01	23.3	2.20	0.017	0.37	0.40	13.70	0.20
RPD (%)			N/A	0.72	6.25	N/A	1.88	22.22	N/A	0.26	21.21	4.71	0.00	1.26	9.76	N/A	4.88	0.00	0.00	20.78	33.33	2.23	16.13	19.93	N/A	0.00	0.00	0.51	N/A	1.73	37.84	5.71	7.09	28.57	33.43	0.00
Comments																																				
Action																																				
Result																																				
X5	28/06/2011	M	<0.03	16.00	0.50	<300	16.40	<0.05	<0.03	277.00	0.17	20.70	<0.5	0.50	686.00	<0.05	6.20	0.03	86.60	10600.00	<0.3	20.80	21.50	1.12	392.00	<0.1	0.30	3270.00	<0.05	863.0	<3	0.650	1.93	<1	223.00	<0.5
X5	28/06/2011	SPLIT	<0.03	18.00	0.40	<300	17.00	<0.05	<0.03	277.00	0.15	21.30	<0.5	0.50	721.00	<0.05	6.50	0.04	90.60	10900.00	<0.3	21.70	22.10	1.20	393.00	<0.1	<0.2	3130.00	<0.05	904.0	<3	0.670	2.03	<1	230.00	<0.5
RPD (%)			N/A	11.76	22.22	N/A	3.59	N/A	N/A	0.00	12.50	2.86	N/A	0.00	4.98	N/A	4.72	5.71	4.51	2.79	N/A	4.24	2.75	6.90	0.25	N/A	N/A	4.38	N/A	4.64	N/A	3.03	5.05	N/A	3.09	N/A
Comments																																				
Action																																				
Result																																				
R10	23/08/2011	M	<0.005	25.50	0.56	<50	39.90	<0.01	<0.005	20.50	0.01	0.05	<0.1	0.77	133.00		0.44	0.00	4.28	17.20	0.33	1.72	0.48	0.39	<10	0.07	0.19	4960.00	<0.01	86.0	0.60	0.003	0.72	<0.2	6.00	<0.1
R10	23/08/2011	SPLIT	<0.005	26.80	0.54	<50	39.90	<0.01	<0.005	20.60	<0.005	0.05	<0.1	0.67	131.00		0.43	0.00	4.18	16.90	0.33	1.67	0.40	0.33	<10	0.07	0.18	4800.00	<0.01	86.2	<0.5	<0.002	0.71	<0.2	4.70	<0.1
RPD (%)			N/A	4.97	3.64	N/A	0.00	N/A	N/A	0.49	N/A	0.00	N/A	13.89	1.52	N/A	2.30	4.65	2.36	1.76	0.00	2.95	18.18	17.78	N/A	0.00	5.41	3.28	N/A	0.23	N/A	N/A	1.40	N/A	24.30	N/A
Comments																																				
Action																																				
Result																																				
X22b	19/10/2011	M	0.01	16.50	0.14	<50	16.30	0.08	<0.005	148.00	19.80	59.20	<0.1	8.84	157.00		7.67	0.05	77.30	3290.00	0.38	19.00	148.00	1.02	240.00	0.18	0.13	3810.00	<0.01	654.0	<0.5	0.434	0.52	<0.2	20000.00	<0.1
X22b	19/10/2011	SPLIT	<0.03	17.00	0.20	<300	17.10	0.09	<0.03	153.00	20.10	59.50	<0.5	8.90	166.00		8.30	0.06	78.30	3400.00	0.40	19.00	151.00	1.03	225.00	0.20	<0.2	3870.00	<0.05	636.0	<3	0.460	0.49	<1	23000.00	<0.5
RPD (%)			N/A	2.99	35.29	N/A	4.79	11.76	N/A	3.32	1.50	0.51	N/A	0.68	5.57	N/A	7.89	28.15	1.29	3.29	5.13	0.00	2.01	0.98	6.45	10.53	N/A	1.56	N/A	2.79	N/A	5.82	5.36	N/A	13.95	N/A
Comments																																				
Action																																				
Result																																				
R9	16/11/2011	M	<0.005	15.60	0.54	<50	61.20	<0.01	<0.005	34.50	0.02	0.04	<0.1	0.65	122.00		0.80	0.01	6.98	17.90	0.64	2.43	0.54	0.98	<10	0.07	0.42	5840.00	0.03	146.0	0.70	<0.002	1.88	<0.2	3.80	<0.1
R9	16/11/2011	SPLIT	<0.005	9.10	0.50	<50	57.90	<0.01	<0.005	33.40	0.03	0.07	<0.1	0.72	114.00		0.82	0.01	7.09	20.90	0.61	2.56	0.52	0.75	<10	0.07	0.40	5530.00	<0.01	137.0	<0.5	<0.002	1.76	<0.2	16.10	<0.1
RPD (%)			N/A	52.63	7.69	N/A	5.54	N/A	N/A	3.24	57.14	42.99	N/A	10.22	6.78	N/A	2.47	1.87	1.56	15.46	4.80	5.21	3.77	26.86	N/A	0.00	4.88	5.45	N/A	6.36	N/A	N/A	6.59	N/A	123.62	N/A
Comments				Both values > PQL and correctly entered into emLine.							Both values correctly entered into emLine; however, main sample value not > PQL. Therefore, RPD analysis not valid in this case.																												Both values > PQL and correctly entered into emLine.	
Action				**Let Value Stand**							**Let Value Stand**																										**Request Retest**	
Result				Discrepancy between values remains.							Discrepancy between values remains.																										Retest performed, see results below.	
X3A	06/12/2011	M	<0.005	13.20	0.40	<50	63.40	<0.01	<0.005	38.80	0.02	0.09	<0.1	0.62	235.00		1.00	0.00	8.32	61.00	0.58	2.65	0.52	0.41	<10	0.07	0.37	5360.00	0.02	170.0	<0.5	0.003	2.25	<0.2	12.50	<0.1
X3A	06/12/2011	SPLIT	<0.005	12.50	0.47	<50	62.60	<0.01	<0.005	38.90	0.02	0.10	<0.1	0.43	232.00		1.03	0.00	8.28	60.90	0.53	2.71	0.49	0.40	<10	0.06	0.37	5400.00	<0.01	166.0	<0.5	<0.002	2.16	<0.2	12.90	<0.1
RPD (%)			N/A	5.45	16.09	N/A	1.27	N/A	N/A	0.26	5.71	16.67	N/A	36.19	1.28	N/A	2.96	0.00	0.48	0.16	9.01	2.24	5.94	1.24	N/A	15.38	0.00	0.74	N/A	2.38	N/A	N/A	4.08	N/A	3.15	N/A
Comments																																				
Action																																				
Result																																				

RPD > 50%.
RPD > 100%.
Retest result to replace original result in emLine.

Denison Environmental Services

Table B-37: Quality Assurance / Quality Control
2011 Lab vs. Field Comparison

Station	Date	COND	CONDF	RPD	Comments	Action	Result	pH	pHF	Difference	Comments	Action	Result
		µmho/cm	µmho/cm	%									
A30	06/01/2011	287	297	3.42				6.70	6.83	0.13			
A30	14/02/2011	270	354	26.92	Field and lab values correctly entered into emLine.	Let Value Stand	Discrepancy between lab and field values remains.	7.12	6.95	0.17			
A30	14/03/2011	205	182	11.89				6.87	6.96	0.09			
A30	14/04/2011	190	180	5.41				7.23	7.43	0.2			
A30	12/05/2011	210	241	13.75				6.98	7.63	0.65			
A30	15/06/2011	1300	1353	4.00				3.38	2.95	0.43			
A30	20/07/2011	1050	1065	1.42				3.42	3.10	0.32			
A30	24/08/2011	1040	1035	0.48				3.64	3.21	0.43			
A30	20/09/2011	959	970	1.14				4.41	4.61	0.2			
A30	19/10/2011	672	610	9.67				4.93	4.29	0.64			
A30	15/11/2011	335	360	7.19				5.81	5.84	0.03			
A30	07/12/2011	223	232	3.96				6.62	6.05	0.57			
BH10A	29/09/2011	781	834	6.56				6.08	5.73	0.35			
BH10B	29/09/2011	1100	1125	2.25				6.04	5.45	0.59			
BH14A	09/06/2011	3740	3893	4.01				7.38	6.8	0.58			
BH14A	17/10/2011	4080	4243	3.92				7.38	6.61	0.77			
BH14B	10/06/2011	3790	4077	7.30				7.44	6.87	0.57			
BH14B	17/10/2011	3830	4073	6.15				7.61	6.81	0.8			
BH5	28/09/2011	569	605	6.13				6.15	5.73	0.42			
BH6	28/09/2011	573	594	3.60				7.02	6.29	0.73			
BH8	12/10/2011	3910	4215	7.51				4.18	5.4	1.22	Field and lab values correctly entered into emLine.	Let Value Stand	Discrepancy between lab and field values remains.
ETA Combined	06/01/2011	7340	>3999	#VALUE!	Field and lab values not comparable because conductivity greater than maximum measurable level for field meter used.			5.67	6.38	0.71			
ETA Combined	03/02/2011	7270	>3999	#VALUE!	Field and lab values not comparable because conductivity greater than maximum measurable level for field meter used.			5.57	5.93	0.36			
ETA Combined	16/03/2011	7370	7500	1.75				5.73	5.97	0.24			
ETA Combined	14/04/2011	7170	7590	5.69				5.08	6.26	1.18	Field and lab values correctly entered into emLine.	Let Value Stand	Discrepancy between lab and field values remains.
ETA Combined	05/05/2011	2460	2470	0.41				3.52	3.68	0.16			
ETA Combined	21/06/2011	7060	>3999	#VALUE!	Field and lab values not comparable because conductivity greater than maximum measurable level for field meter used.			4.33	5.87	1.54	Field and lab values correctly entered into emLine.	Let Value Stand	Retest request would be filed past hold time. Discrepancy between values remains.
ETA Combined	20/07/2011	6920	>3999	#VALUE!	Field and lab values not comparable because conductivity greater than maximum measurable level for field meter used.			4.60	5.57	0.97			
ETA Combined	24/08/2011	6720	>3999	#VALUE!	Field and lab values not comparable because conductivity greater than maximum measurable level for field meter used.			4.75	5.88	1.13	Field and lab values correctly entered into emLine.	Let Value Stand	Discrepancy between lab and field values remains.
ETA Combined	21/09/2011	7400	7280	1.63				4.49	5.98	1.49	Field and lab values correctly entered into emLine.	Let Value Stand	Discrepancy between lab and field values remains.
ETA Combined	19/10/2011	7400	6990	5.70				5.02	5.88	0.86			
ETA Combined	17/11/2011	7490	5100	37.97	Field and lab values correctly entered into emLine.	Let Value Stand	Discrepancy between lab and field values remains. Multiple flagged conductivity values on November 17, 2011 suggests calibration on field meter may have been off.	5.75	6.20	0.45			
ETA Combined	07/12/2011	7550	8690	14.04				5.72	6.11	0.39			
FAROCR	22/06/2011	35	25	33.33	Field and lab values correctly entered into emLine.	Let Value Stand	Discrepancy between lab and field values remains.	7.38	7.23	0.15			
FAROCR	21/07/2011	43	31	32.43	Field and lab values correctly entered into emLine.	Let Value Stand	Discrepancy between lab and field values remains.	7.03	7.48	0.45			
FAROCR	23/08/2011	45	64	34.86	Field and lab values correctly entered into emLine.	Let Value Stand	Discrepancy between lab and field values remains.	7.43	7.85	0.42			
FAROCR	22/09/2011	60	87	36.73	Field and lab values correctly entered into emLine.	Let Value Stand	Discrepancy between lab and field values remains.	7.41	7.48	0.07			
FAROCR	19/10/2011	69		200.00	Lab value correctly entered into emLine, but field value not entered due to meter malfunction.	Let Value Stand		7.23	7.41	0.18			

Blank value > PQL and < retest limit (30X detection limit).
Blank value > retest limit (30X detection limit).

Denison Environmental Services

Table B-37: Quality Assurance / Quality Control
2011 Lab vs. Field Comparison

Station	Date	COND	CONDF	RPD	Comments	Action	Result	pH	pHF	Difference	Comments	Action	Result
		µmho/cm	µmho/cm	%									
FAROCR	15/11/2011	74.1	220	99.22	Field and lab values correctly entered into emLine.	**Let Value Stand**	Retest request would be filed past hold time. Discrepancy between values remains. Multiple flagged conductivity values on November 17, 2011 suggests calibration on field meter may have been off.	7.55	7.85	0.3			
FAROCR	06/12/2011	80.6	70	14.08				7.59	7.67	0.08			
FCO	26/05/2011	118	110	7.02				6.82	7.82	1	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains.
FCO	27/10/2011	133	130	2.28				7.09	7.54	0.45			
FCS-4	06/01/2011	6880	>3999	#VALUE!	Field and lab values not comparable because conductivity greater than maximum measurable level for field meter used.			5.68	6.96	1.28	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains.
FCS-4	03/02/2011	6700	>3999	#VALUE!	Field and lab values not comparable because conductivity greater than maximum measurable level for field meter used.			5.52	6.73	1.21	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains.
FCS-4	16/03/2011	6720	3580	60.97	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains. Retest request would be filed past hold time. Multiple flagged conductivity values on March 16, 2011 suggests calibration on field meter may have been off.	4.41	7.13	2.72	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains. Retest request would be filed past hold time.
FCS-4	14/04/2011	6580	7100	7.60				4.54	6.56	2.02	Field and lab values correctly entered into emLine.	**Let Value Stand**	Retest request would be filed past hold time. Discrepancy between values remains.
FCS-4	05/05/2011	2550	2600	1.94				3.61	4.10	0.49			
FCS-4	16/06/2011	5860	>3999	#VALUE!	Field and lab values not comparable because conductivity greater than maximum measurable level for field meter used.			5.70	6.58	0.88			
FCS-4	14/07/2011	6070	>3999	#VALUE!	Field and lab values not comparable because conductivity greater than maximum measurable level for field meter used.			5.36	6.37	1.01	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains.
FCS-4	23/08/2011	6030	>3999	#VALUE!	Field and lab values not comparable because conductivity greater than maximum measurable level for field meter used.			6.15	6.79	0.64			
FCS-4	21/09/2011	7220	7550	4.47				4.61	6.26	1.65	Field and lab values correctly entered into emLine.	**Let Value Stand**	Retest request would be filed past hold time. Discrepancy between values remains.
FCS-4	19/10/2011	6710	6830	1.77				5.16	5.80	0.64			
FCS-4	17/11/2011	7280	3400	72.66	Field and lab values correctly entered into emLine.	**Let Value Stand**	Retest request would be filed past hold time. Discrepancy between values remains. Multiple flagged conductivity values on November 17, 2011 suggests calibration on field meter may have been off.	5.40	6.83	1.43	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains.
FCS-4	07/12/2011	7150	8380	15.84				5.44	6.67	1.23	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains.
FD-40	06/01/2011	849	858	1.05				6.65	6.61	0.04			
FD-40	14/02/2011	714	740	3.58				6.73	6.78	0.05			
FD-40	14/03/2011	670	649	3.18				6.49	6.18	0.31			
FD-40	14/04/2011	832	910	8.96				6.51	6.96	0.45			
FD-40	12/05/2011	815	880	7.67				6.32	7.20	0.88			
FD-40	15/06/2011	866	837	3.41				5.29	5.12	0.17			
FD-40	20/07/2011	1130	1108	1.97				3.41	3.04	0.37			
FD-40	24/08/2011	1030	1025	0.49				4.26	3.69	0.57			
FD-40	20/09/2011	982	970	1.23				5.96	5.60	0.36			
FD-40	19/10/2011	1090	1120	2.71				6.19	5.05	1.14	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains.
FD-40	15/11/2011	1280	1070	17.87				5.77	6.27	0.5			
FD-40	07/12/2011	1370	1390	1.45				5.40	5.43	0.03			

Blank value > PQL and < retest limit (30X detection limit).
Blank value > retest limit (30X detection limit).

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Table B-37: Quality Assurance / Quality Control
2011 Lab vs. Field Comparison

Station	Date	COND	CONDF	RPD	Comments	Action	Result	pH	pHF	Difference	Comments	Action	Result
		µmho/cm	µmho/cm	%									
GDHSECK	14/03/2011	1350	830	47.71	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains. Multiple flagged conductivity values on March 14, 2011 suggests calibration on field meter may have been off.	8.17	7.91	0.26			
GDHSECK	26/05/2011	1960	1846	5.99				7.80	7.77	0.03			
GDHSECK	27/10/2011	1200	1350	11.76				8.12	8.00	0.12			
NF2	19/01/2011	298	220	30.12	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains.	7.59	7.91	0.32			
NF2	02/02/2011	300	302	0.66				7.71	7.78	0.07			
NF2	16/03/2011	375	300	22.22	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains. Multiple flagged conductivity values on March 16, 2011 suggests calibration on field meter may have been off.	7.69	7.68	0.01			
NF2	13/04/2011	302	316	4.53				7.90	7.73	0.17			
NF2	12/05/2011	208	227	8.74				7.65	8.10	0.45			
NF2	20/06/2011	112	103	8.37				7.63	6.19	1.44	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains.
NF2	21/07/2011	125	118	5.76				7.63	9.47	1.84	Field and lab values correctly entered into emLine.	**Let Value Stand**	Retest request would be filed past hold time. Discrepancy between values remains.
NF2	25/08/2011	152	136	11.11				7.73	7.48	0.25			
NF2	21/09/2011	171	184	7.32				7.94	7.28	0.66			
NF2	20/10/2011	220	2100	162.07	Lab value correctly entered into emLine, but field value incorrectly entered.	**Change Value**	Field value changed; now correctly entered into emLine (see below).	7.82	7.14	0.68			
NF2	20/10/2011	220	210	4.65	Lab value correctly entered into emLine, and incorrect field value amended (see above).	**Let Value Stand**	Discrepancy between lab and field values resolved.	7.82	7.14	0.68			
NF2	14/11/2011	240	203	16.70				8.06	7.54	0.52			
NF2	05/12/2011	246	250	1.61				7.77	7.55	0.22			
NFRC SC-1	14/11/2011	240	203	16.70				8.10	7.54	0.56			
NFRC SC-1	05/12/2011	245	243	0.82				7.73	7.62	0.11			
NFRC SC-2	14/11/2011	236	204	14.55				7.59	7.63	0.04			
NFRC SC-2	05/12/2011	248	248	0.00				7.60	7.56	0.04			
NFRC SC-3	14/11/2011	239	187	24.41	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains. Multiple flagged conductivity values on November 14, 2011 suggests calibration on field meter may have been off.	7.64	8.05	0.41			
NFRC SC-3	05/12/2011	246	247	0.41				7.73	7.55	0.18			
NFRC SC-4	14/11/2011	240	190	23.26	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains. Multiple flagged conductivity values on November 14, 2011 suggests calibration on field meter may have been off.	7.61	7.47	0.14			
NFRC SC-4	05/12/2011	251	236	6.16				7.81	7.55	0.26			
P01-01A	02/06/2011	1790	1910	6.49				7.42	7.16	0.26			
P01-01A	23/09/2011	2000	2067	3.29				7.79	7.26	0.53			
P01-01B	21/07/2011	1350	1405	3.99				7.75	7.50	0.25			
P01-01B	23/09/2011	1360	1505	10.12				7.95	7.33	0.62			
P01-02A	01/02/2011	758	340	76.14	Field and lab values correctly entered into emLine.	**Let Value Stand**	Retest request would be filed past hold time. Discrepancy between lab and field values remains. Multiple flagged conductivity values on February 1, 2011 suggests calibration on field meter may have been off.	7.90	7.88	0.02			
P01-02A	01/06/2011	741	808	8.65				7.87	7.48	0.39			
P01-02A	23/09/2011	772	783	1.41				8.11	7.6	0.51			
P01-02B	01/06/2011	556	587	5.42				7.86	7.51	0.35			
P01-02B	23/09/2011	560	573	2.29				8.13	7.58	0.55			
P01-03	12/07/2011	3900	5635	36.39	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains.	6.45	6.33	0.12			
P01-03	28/09/2011	3720	3816	2.55				6.77	6.55	0.22			

Blank value > PQL and < retest limit (30X detection limit).
Blank value > retest limit (30X detection limit).

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Table B-37: Quality Assurance / Quality Control
2011 Lab vs. Field Comparison

Station	Date	COND	CONDF	RPD	Comments	Action	Result	pH	pHF	Difference	Comments	Action	Result
		µmho/cm	µmho/cm	%									
P01-04A	12/07/2011	1080	1489	31.84	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains.	7.16	6.60	0.56			
P01-04A	26/09/2011	1090	1096	0.55				7.52	6.89	0.63			
P01-04B	01/02/2011	2090	1280	48.07	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains. Multiple flagged conductivity values on February 1, 2011 suggests calibration on field meter may have been off.	7.36	7.3	0.06			
P01-04B	12/07/2011	2150	3100	36.19	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains.	7.28	6.90	0.38			
P01-04B	26/09/2011	2170	2254	3.80				7.53	7.1	0.43			
P01-11	01/06/2011	2960	3305	11.01				7.21	6.84	0.37			
P01-11	24/09/2011	3160	3294	4.15				7.46	6.92	0.54			
P03-01-2	04/10/2011	425	428	0.70				7.92	7.79	0.13			
P03-01-4	04/10/2011	222	222	0.00				6.45	6.58	0.13			
P03-01-6	05/10/2011	929	1074	14.48				5.67	6.33	0.66			
P03-01-8	05/10/2011	7700	8317	7.70				3.88	6.24	2.36	Field and lab values correctly entered into emLine.	**Let Value Stand**	Retest request would be filed past hold time. Discrepancy between values remains.
P03-03-2	05/10/2011	2130	2137	0.33				4.44	5.05	0.61			
P03-03-4	05/10/2011	1370	1472	7.18				5.32	5.52	0.2			
P03-05-2	05/10/2011	1800	1870	3.81				6.70	6.16	0.54			
P03-05-4	05/10/2011	1390	1421	2.21				7.35	6.27	1.08	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains.
P03-05-6	06/10/2011	7600	7795	2.53				3.79	5.86	2.07	Field and lab values correctly entered into emLine.	**Let Value Stand**	Retest request would be filed past hold time. Discrepancy between values remains.
P03-05-8	06/10/2011	11400	11539	1.21				3.59	5.66	2.07	Field and lab values correctly entered into emLine.	**Let Value Stand**	Retest request would be filed past hold time. Discrepancy between values remains.
P03-06-1	29/06/2011	4090	4289	4.75				5.77	5.72	0.05			
P03-06-1	06/10/2011	4130	4390	6.10				5.80	5.2	0.6			
P03-06-2	29/05/2011	4800	8224	52.58	Field and lab values correctly entered into emLine.	**Let Value Stand**	Multiple flagged conductivity values on June 28/29 suggests calibration on field meter may have been off.	4.71	5.29	0.58			
P03-06-2	06/10/2011	4300	4518	4.94				5.58	5.13	0.45			
P03-06-3	29/05/2011	4630	7112	42.28	Field and lab values correctly entered into emLine.	**Let Value Stand**	Multiple flagged conductivity values on June 28/29 suggests calibration on field meter may have been off.	4.77	5.6	0.83			
P03-06-3	06/10/2011	4830	5017	3.80				5.33	5.51	0.18			
P03-06-4	29/05/2011	2720	5232	63.18	Field and lab values correctly entered into emLine.	**Let Value Stand**	Multiple flagged conductivity values on June 28/29 suggests calibration on field meter may have been off.	5.16	6.3	1.14	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains.
P03-06-4	06/10/2011	2700	3009	10.83				6.18	6.17	0.01			
P03-06-5	28/05/2011	2760	7302	90.28	Field and lab values correctly entered into emLine.	**Let Value Stand**	Multiple flagged conductivity values on June 28/29 suggests calibration on field meter may have been off.	4.72	6.16	1.44	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains.
P03-06-6	28/05/2011	6000	7509	22.34	Field and lab values correctly entered into emLine.	**Let Value Stand**	Multiple flagged conductivity values on June 28/29 suggests calibration on field meter may have been off.	4.15	5.68	1.53	Field and lab values correctly entered into emLine.	**Let Value Stand**	Retest request would be filed past hold time. Discrepancy between values remains.
P03-08-2	02/02/2011	696	370	61.16	Field and lab values correctly entered into emLine.	**Let Value Stand**	Retest request would be filed past hold time. Discrepancy between values remains.	7.59	7.32	0.27			
P03-08-2	12/10/2011	653	703	7.37				7.94	6.97	0.97			
P03-08-4	12/10/2011	1130	1292	13.38				7.53	6.66	0.87			
P03-08-6	12/10/2011	805	899	11.03				7.60	7.49	0.11			
P03-09-2	25/09/2011	1890	1891	0.05				7.77	6.98	0.79			
P03-09-4	25/09/2011	1340	1383	3.16				7.77	7.13	0.64			
P03-09-6	25/09/2011	1830	1620	12.17				7.77	7.03	0.74			
P03-09-8	25/09/2011	1960	1998	1.92				7.73	6.9	0.83			
P03-09-9	25/09/2011	1880	1255	39.87	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains.	7.76	7.06	0.7			
P05-01-1	29/06/2011	2820	3047	7.74				7.12	6.6	0.52			
P05-01-1	12/10/2011	3100	3353	7.84				7.42	6.59	0.83			
P05-01-2	12/10/2011	3030	3293	8.32				7.34	6.6	0.74			
P05-01-3	29/06/2011	2890	3263	12.12				7.05	7.37	0.32			
P05-01-3	12/10/2011	2930	3299	11.85				7.38	6.73	0.65			

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Table B-37: Quality Assurance / Quality Control
2011 Lab vs. Field Comparison

Station	Date	COND	CONDF	RPD	Comments	Action	Result	pH	pHF	Difference	Comments	Action	Result
		µmho/cm	µmho/cm	%									
P05-01-4	29/06/2011	2930	3251	10.39				7.10	6.8	0.3			
P05-01-4	12/10/2011	2970	3344	11.85				7.65	6.74	0.91			
P05-01-5	29/06/2011	2840	3119	9.36				7.15	6.61	0.54			
P05-01-5	12/10/2011	2860	3162	10.03				7.50	6.73	0.77			
P05-01-6	12/10/2011	2890	3162	8.99				7.62	6.72	0.9			
P05-02	09/06/2011	2750	2898	5.24				7.70	6.68	1.02	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains.
P05-02	23/09/2011	2890	2474	15.51				7.26	6.87	0.39			
P05-03	09/06/2011	1790	1755	1.97				7.81	6.93	0.88			
P05-03	24/09/2011	1390	1447	4.02				7.59	7.12	0.47			
P05-04	28/09/2011	484	517	6.59				6.94	6.5	0.44			
P09-C1	01/06/2011	2740	2958	7.65				7.11	6.88	0.23			
P09-C1	24/09/2011	2800	2872	2.54				7.62	6.71	0.91			
P09-C2	02/06/2011	2740	2892	5.40				6.86	6.4	0.46			
P09-C2	26/09/2011	2750	2790	1.44				6.79	6.35	0.44			
P09-C3	28/06/2011	1180	1227	3.91				7.28	7.25	0.03			
P09-C3	24/09/2011	1160	1173	1.11				7.49	6.74	0.75			
P09-ETA1	18/09/2011	422	475	11.82				7.96	7.35	0.61			
P09-ETA2	08/06/2011	5170	9781	61.68	Field and lab values correctly entered into emLine.	**Let Value Stand**	Retest request would be filed past hold time. Discrepancy between values remains.	6.18	6.29	0.11			
P09-ETA2	18/09/2011	5330	5550	4.04				6.60	6.48	0.12			
P09-SIS1	09/06/2011	9640	8728	9.93				6.79	6.34	0.45			
P09-SIS1	20/07/2011	6830	5347	24.36	Lab value correctly entered into emLine, but field value incorrectly entered.	**Change Value**	Field value changed; now correctly entered into emLine (see below).	6.64	6.55	0.09			
P09-SIS1	20/07/2011	6830	7434	8.47	Lab value correctly entered into emLine, and incorrect field value amended (see above).	**Let Value Stand**	Discrepancy between lab and field values resolved.	6.64	6.55	0.09			
P09-SIS1	18/09/2011	8180	8249	0.84				6.67	6.4	0.27			
P09-SIS1	30/11/2011	7040	6457	8.64				6.93	6.14	0.79			
P09-SIS2	07/06/2011	9510	9850	3.51				6.53	6.04	0.49			
P09-SIS2	16/07/2011	8850	9357	5.57				6.31	5.97	0.34			
P09-SIS2	07/09/2011	8750	12250	33.33	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains. Multiple flagged conductivity values on September 7 suggests calibration on field meter may have been off.	6.54	6.01	0.53			
P09-SIS2	29/11/2011	8900	8177	8.47				6.53	5.71	0.82			
P09-SIS3	08/06/2011	9340	9882	5.64				6.91	6.12	0.79			
P09-SIS3	17/07/2011	8150	8583	5.18				6.32	6.31	0.01			
P09-SIS3	07/09/2011	8790	11909	30.14	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains. Multiple flagged conductivity values on September 7 suggests calibration on field meter may have been off.	6.60	6.15	0.45			
P09-SIS3	29/11/2011	8590	7253	16.88				6.54	5.9	0.64			
P09-SIS4	08/06/2011		5739	200.00	Field value correctly entered into emLine. No lab parameters measured because insufficient water for sample. Field parameters measured on purge water.	**Let Value Stand**			6.4	6.4	Field value correctly entered into emLine. No lab parameters measured because insufficient water for sample. Field parameters measured on purge water.	**Let Value Stand**	
P09-SIS4	17/07/2011	6170	6514	5.42				6.64	6.64	0			
P09-SIS5	08/06/2011		5549	200.00	Field value correctly entered into emLine. No lab parameters measured because insufficient water for sample. Field parameters measured on purge water.	**Let Value Stand**			6.93	6.93	Field value correctly entered into emLine. No lab parameters measured because insufficient water for sample. Field parameters measured on purge water.	**Let Value Stand**	
P09-SIS6	18/09/2011	5070	5410	6.49				7.01	6.44	0.57			
P96-6	09/06/2011	1540	1580	2.56				6.66	6.1	0.56			
P96-6	28/09/2011	2050	2106	2.69				7.12	6.28	0.84			
P96-7	15/06/2011	2760	2936	6.18				7.74	7.45	0.29			
P96-7	10/09/2011	3430	4255	21.47	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains. Multiple flagged conductivity values on September 10 suggests calibration on field meter may have been off.	7.95	6.74	1.21	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains.

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Blank value > retest limit (30X detection limit).

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Table B-37: Quality Assurance / Quality Control
2011 Lab vs. Field Comparison

Station	Date	COND	CONDF	RPD	Comments	Action	Result	pH	pHF	Difference	Comments	Action	Result
		µmho/cm	µmho/cm	%									
P96-8A	08/06/2011	7530	8226	8.83				5.73	5.38	0.35			
P96-8A	11/09/2011	8040	11800	37.90	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains. Multiple flagged conductivity values on September 11 suggests calibration on field meter may have been off.	5.80	5.42	0.38			
P96-8B	08/06/2011	6450	6875	6.38				5.18	5.27	0.09			
P96-8B	11/09/2011	7330	11150	41.34	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains. Multiple flagged conductivity values on September 11 suggests calibration on field meter may have been off.	4.71	4.42	0.29			
R10	20/01/2011	292	280	4.20				7.68	7.78	0.1			
R10	15/02/2011	290	306	5.37				7.95	7.92	0.03			
R10	16/03/2011	309	300	2.96				7.64	8.05	0.41			
R10	12/04/2011	293	292	0.34				7.75	7.69	0.06			
R10	09/05/2011	205	206	0.49				7.54	7.67	0.13			
R10	22/06/2011	96	92	4.26				7.70	7.73	0.03			
R10	21/07/2011	126	132	4.65				7.71	7.11	0.6			
R10	23/08/2011	144	188	26.51	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains.	7.79	8.15	0.36			
R10	22/09/2011	167	208	21.87	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains.	8.01	8.04	0.03			
R10	19/10/2011	205	180	12.99				7.88	7.50	0.38			
R10	16/11/2011	232	186	22.01	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains.	7.76	7.82	0.06			
R10	06/12/2011	239	239	0.00				7.84	7.48	0.36			
R7	20/01/2011	267	292	8.94				7.80	7.64	0.16			
R7	15/02/2011	269	285	5.78				8.04	8.01	0.03			
R7	16/03/2011	291	281	3.50				8.28	7.73	0.55			
R7	12/04/2011	273	284	3.95				7.94	8.03	0.09			
R7	09/05/2011	199	217	8.65				7.63	7.80	0.17			
R7	22/06/2011	94	94	0.00				7.70	7.98	0.28			
R7	21/07/2011	124	123	0.81				7.69	8.83	1.14	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains.
R7	24/08/2011	144	140	2.82				7.99	7.60	0.39			
R7	22/09/2011	162	192	16.95				8.03	7.52	0.51			
R7	19/10/2011	192	170	12.15				7.88	7.89	0.01			
R7	15/11/2011	220	220	0.00				7.98	7.36	0.62			
R7	06/12/2011	227	223	1.78				7.83	7.73	0.1			
R8	20/01/2011	267	270	1.12				7.83	7.74	0.09			
R8	15/02/2011	273	295	7.75				8.04	8.00	0.04			
R8	16/03/2011	288	280	2.82				7.83	8.02	0.19			
R8	12/04/2011	272	279	2.54				7.96	8.04	0.08			
R8	09/05/2011	194	218	11.65				7.60	7.87	0.27			
R8	22/06/2011	83	85	2.38				7.67	7.69	0.02			
R8	21/07/2011	115	113	1.75				7.64	7.90	0.26			
R8	24/08/2011	132	123	7.06				8.02	7.56	0.46			
R8	22/09/2011	152	180	16.87				7.98	7.64	0.34			
R8	19/10/2011	181	160	12.32				7.88	7.76	0.12			
R8	15/11/2011	205	200	2.47				7.82	7.63	0.19			
R8	06/12/2011	219	212	3.25				7.89	7.66	0.23			
R9	20/01/2011	289	290	0.35				7.84	7.81	0.03			
R9	15/02/2011	289	293	1.37				8.03	7.99	0.04			
R9	16/03/2011	311	290	6.99				8.33	8.02	0.31			
R9	12/04/2011	283	282	0.35				7.96	8.08	0.12			
R9	09/05/2011	203	209	2.91				7.72	7.78	0.06			
R9	22/06/2011	99	93	6.25				8.02	7.67	0.35			
R9	21/07/2011	125	131	4.69				7.79	7.80	0.01			
R9	23/08/2011	143	157	9.33				7.90	7.93	0.03			
R9	22/09/2011	175	230	27.16	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains.	7.90	7.51	0.39			
R9	19/10/2011	205	180	12.99				7.79	7.66	0.13			
R9	16/11/2011	233	187	21.90	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains.	7.87	7.89	0.02			
R9	06/12/2011	239	236	1.26				7.90	7.61	0.29			

Blank value > PQL and < retest limit (30X detection limit).
Blank value > retest limit (30X detection limit).

Denison Environmental Services

Table B-37: Quality Assurance / Quality Control
2011 Lab vs. Field Comparison

Station	Date	COND	CONDF	RPD	Comments	Action	Result	pH	pHF	Difference	Comments	Action	Result
		µmho/cm	µmho/cm	%									
S1A	07/06/2011	1090	585	60.30	Field and lab values correctly entered into emLine.	**Let Value Stand**	Retest request would be filed past hold time. Discrepancy between values remains.	7.15	6.82	0.33			
S1A	15/09/2011	274	285	3.94				7.30	6.64	0.66			
S2A	11/09/2011	1300	1660	24.32	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains. Multiple flagged conductivity values on September 11 suggests calibration on field meter may have been off.	6.37	5.81	0.56			
S2B	07/06/2011	7140	7630	6.64				6.85	6.37	0.48			
S2B	11/09/2011	7110	9649	30.30	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains. Multiple flagged conductivity values on September 11 suggests calibration on field meter may have been off.	6.61	5.83	0.78			
SP5-6	28/06/2011	1090	976	11.04				7.52	6.80	0.72			
SP5-6	18/10/2011	1730	1860	7.24				7.96	6.82	1.14	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains.
SRK04-3A	17/09/2011	7920	8470	6.71				5.87	5.34	0.53			
SRK05-ETA-BR1	17/09/2011	7940	8350	5.03				5.54	5.45	0.09			
SRK05-ETA-BR2	17/09/2011	2310	2566	10.50				7.06	6.89	0.17			
SRK05-SP1A	10/09/2011	1810	2264	22.29	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains. Multiple flagged conductivity values on September 10 suggests calibration on field meter may have been off.	6.11	5.58	0.53			
SRK05-SP1B	10/09/2011	1020	1264	21.37	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains. Multiple flagged conductivity values on September 10 suggests calibration on field meter may have been off.	6.80	5.68	1.12	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains.
SRK05-SP2	10/09/2011	472	575	19.68				6.85	6.45	0.4			
SRK05-SP3A	10/09/2011	1480	1770	17.85				6.26	5.73	0.53			
SRK05-SP3B	10/09/2011	1250	1544	21.05	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains. Multiple flagged conductivity values on September 10 suggests calibration on field meter may have been off.	6.12	5.66	0.46			
SRK05-SP4A	06/06/2011	1060	1156	8.66				6.63	5.85	0.78			
SRK05-SP4A	15/09/2011	1090	1157	5.96				6.26	5.84	0.42			
SRK05-SP4B	16/09/2011	6040	>3999	#VALUE!	Field and lab values not comparable because conductivity greater than maximum measurable level for field meter used.			6.41	5.89	0.52			
SRK05-SP5	07/06/2011	7090	5619	23.15	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains.	6.98	5.85	1.13	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains.
SRK05-SP5	07/09/2011	5570	7004	22.81	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains. Multiple flagged conductivity values on September 7 suggests calibration on field meter may have been off.	6.41	5.83	0.58			
SRK08-P10A	09/06/2011	3650	3744	2.54				7.04	6.44	0.6			
SRK08-P10A	17/09/2011	3680	3790	2.95				6.70	6.41	0.29			
SRK08-P11A	08/06/2011	861	1606	60.40	Field and lab values correctly entered into emLine.	**Let Value Stand**	Retest request would be filed past hold time. Discrepancy between values remains.	7.88	7.06	0.82			
SRK08-P11A	17/09/2011	642	665	3.52				7.58	7.1	0.48			
SRK08-P11B	08/06/2011	1030	1920	60.34	Field and lab values correctly entered into emLine.	**Let Value Stand**	Retest request would be filed past hold time. Discrepancy between values remains.	7.58	6.97	0.61			
SRK08-P11B	17/09/2011	897	900	0.33				7.20	6.91	0.29			
SRK08-P12A	29/09/2011	1290	1315	1.92				6.21	5.8	0.41			
SRK08-P12B	29/09/2011	702	1080	42.42	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains.	6.25	5.71	0.54			
SRK08-P9	17/09/2011 10:15	2030	2287	11.91				7.53	7.18	0.35			
SRK08-SBR2	17/10/2011	1430	1496	4.51				6.43	6.29	0.14			

Blank value > PQL and < retest limit (30X detection limit).
Blank value > retest limit (30X detection limit).

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Table B-37: Quality Assurance / Quality Control
2011 Lab vs. Field Comparison

Station	Date	COND	CONDF	RPD	Comments	Action	Result	pH	pHF	Difference	Comments	Action	Result
		µmho/cm	µmho/cm	%									
SRK08-SBR3	10/09/2011	3300	4063	20.73	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains. Multiple flagged conductivity values on September 10 suggests calibration on field meter may have been off.	7.49	6.62	0.87			
SRK08-SBR4	14/09/2011	1740	1728	0.69				7.37	6.15	1.22	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains.
SRK08-SP7A	06/06/2011	1630	1801	9.97				6.50	6.04	0.46			
SRK08-SP7A	16/07/2011	1380	1627	16.43				6.81	6.15	0.66			
SRK08-SP7A	07/09/2011	1360	2.071	199.39	Lab value correctly entered into emLine, but field value incorrectly entered.	**Change Value**	Field value changed; now correctly entered into emLine (see below).	6.46	6.53	0.07			
SRK08-SP7A	07/09/2011	1360	2071	41.45	Lab value correctly entered into emLine, and incorrect field value amended (see above).	**Let Value Stand**	Discrepancy between lab and field values remains.	6.46	6.53	0.07			
SRK08-SP7A	29/11/2011	1160	1113	4.14				6.55	6.1	0.45			
SRK08-SP7B	06/06/2011	237	239	0.84				6.91	6.6	0.31			
SRK08-SP7B	16/07/2011	215	220	2.30				6.85	6.47	0.38			
SRK08-SP7B	07/09/2011	175	274.8	44.38	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains. Multiple flagged conductivity values on September 7 suggests calibration on field meter may have been off.	6.93	8.42	1.49	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains.
SRK08-SP7B	29/11/2011	187	224	18.00				6.94	7.2	0.26			
SRK08-SP8A	06/06/2011	1840	1809	1.70				7.00	4.09	2.91	Field and lab values correctly entered into emLine.	**Let Value Stand**	Retest request would be filed past hold time. Discrepancy between values remains.
SRK08-SP8A	07/09/2011	2100	2888	31.60	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains. Multiple flagged conductivity values on September 7 suggests calibration on field meter may have been off.	6.62	6.02	0.6			
SRK08-SP8B	06/06/2011	1300	1582	19.57				7.00	6.08	0.92			
SRK08-SP8B	07/09/2011	2320	3392	37.54	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains. Multiple flagged conductivity values on September 7 suggests calibration on field meter may have been off.	6.47	6.3	0.17			
SRK08-SPW1	06/01/2011	1060	1103	3.98				6.83	6.57	0.26			
SRK08-SPW1	01/02/2011	1090	1093	0.27				6.82	6.48	0.34			
SRK08-SPW1	08/03/2011	1070	1200	11.45				6.31	6.29	0.02			
SRK08-SPW1	13/04/2011	1070	1210	12.28				7.08	6.18	0.9			
SRK08-SPW1	04/05/2011	1070	1160	8.07				6.87	6.29	0.58			
SRK08-SPW1	12/05/2011	1100	1120	1.80				6.52	6.11	0.41			
SRK08-SPW1	16/06/2011	1100	900	20.00	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains.	6.46	6.27	0.19			
SRK08-SPW1	20/07/2011	1110	1102	0.72				6.33	6.17	0.16			
SRK08-SPW1	03/08/2011	1100	1062	3.52				6.39	6.27	0.12			
SRK08-SPW1	07/09/2011	1140	1491	26.68	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains. Multiple flagged conductivity values on September 7 suggests calibration on field meter may have been off.	6.48	6.05	0.43			
SRK08-SPW1	18/10/2011	1120	1260	11.76				6.57	5.94	0.63			
SRK08-SPW1	16/11/2011	1120	1230	9.36				6.43	6.13	0.3			
SRK08-SPW1	01/12/2011	1120	1300	14.88				6.41	6.04	0.37			
SRK08-SPW2	06/01/2011	3810	>3999	#VALUE!	Field and lab values not comparable because conductivity greater than maximum measurable level for field meter used.			6.85	6.38	0.47			
SRK08-SPW2	01/02/2011	3890	4300	10.01				6.47	6.17	0.3			
SRK08-SPW2	08/03/2011	3650	4020	9.65				6.34	6.26	0.08			
SRK08-SPW2	13/04/2011	3530	3790	7.10				7.06	6.10	0.96			
SRK08-SPW2	04/05/2011	3600	3790	5.14				6.91	6.25	0.66			
SRK08-SPW2	16/06/2011	3440	2568	29.03	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains.	6.64	6.28	0.36			
SRK08-SPW2	20/07/2011	3430	3121	9.43				6.58	6.11	0.47			

Blank value > PQL and < retest limit (30X detection limit).
Blank value > retest limit (30X detection limit).

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Table B-37: Quality Assurance / Quality Control
2011 Lab vs. Field Comparison

Station	Date	COND	CONDF	RPD	Comments	Action	Result	pH	pHF	Difference	Comments	Action	Result
		µmho/cm	µmho/cm	%									
SRK08-SPW2	03/08/2011	3340	3250	2.73				6.70	6.23	0.47			
SRK08-SPW2	07/09/2011	3480	5010	36.04	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains. Multiple flagged conductivity values on September 7 suggests calibration on field meter may have been off.	6.64	6.14	0.5			
SRK08-SPW2	17/10/2011	3420	3630	5.96				6.97	6.89	0.08			
SRK08-SPW2	16/11/2011	3610	3920	8.23				6.62	6.07	0.55			
SRK08-SPW2	01/12/2011	4350	4960	13.10				6.66	6.81	0.15			
SRK08-SPW3	06/01/2011	5280	>3999	#VALUE!	Field and lab values not comparable because conductivity greater than maximum measurable level for field meter used.			6.80	6.31	0.49			
SRK08-SPW3	01/02/2011	4670	5100	8.80				6.37	6.18	0.19			
SRK08-SPW3	08/03/2011	4630	4960	6.88				6.34	6.09	0.25			
SRK08-SPW3	13/04/2011	5360	5870	9.08				6.96	5.93	1.03	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains.
SRK08-SPW3	04/05/2011	4500	>3999	#VALUE!	Field and lab values not comparable because conductivity greater than maximum measurable level for field meter used.			6.98	6.4	0.58			
SRK08-SPW3	16/06/2011	5150	3890	27.88	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains.	6.58	5.98	0.6			
SRK08-SPW3	20/07/2011	5300	>3999	#VALUE!	Field and lab values not comparable because conductivity greater than maximum measurable level for field meter used.			6.55	6.04	0.51			
SRK08-SPW3	03/08/2011	5390	>3999	#VALUE!	Field and lab values not comparable because conductivity greater than maximum measurable level for field meter used.			6.67	5.96	0.71			
SRK08-SPW3	07/09/2011	4810	6489	29.72	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains. Multiple flagged conductivity values on September 7 suggests calibration on field meter may have been off.	6.48	5.94	0.54			
SRK08-SPW3	17/10/2011	5400	5540	2.56				6.88	6.2	0.68			
SRK08-SPW3	16/11/2011	5460	5890	7.58				6.51	6.27	0.24			
SRK08-SPW3	01/12/2011	6150	7050	13.64				6.51	5.86	0.65			
TH86-17	17/09/2011	173	175	1.15				7.33	7.1	0.23			
TH86-2	17/09/2011	310	319	2.86				7.52	7.36	0.16			
TH86-5	17/09/2011	862	867	0.58				6.97	6.51	0.46			
Weir 3	03/02/2011	2000	2030	1.49				7.47	7.33	0.14			
Weir 3	04/08/2011	1900	1853	2.50				7.70	7.01	0.69			
X10	18/01/2011	311	311	0.00				7.54	7.77	0.23			
X10	01/02/2011	317	150	71.52	Field and lab values correctly entered into emLine.	**Let Value Stand**	Retest request would be filed past hold time. Discrepancy between lab and field values remains. Multiple flagged conductivity values on February 1, 2011 suggests calibration on field meter may have been off.	7.78	7.95	0.17			
X10	14/03/2011	332	170	64.54	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains. Retest request would be filed past hold time. Multiple flagged conductivity values on March 14, 2011 suggests calibration on field meter may have been off.	7.91	7.45	0.46			
X10	13/04/2011	326	315	3.43				8.09	8.05	0.04			
X10	05/05/2011	298	250	17.52				7.88	7.96	0.08			
X10	20/06/2011	123	115	6.72				7.77		7.77	Field pH = 5.92. Calibration suspect & value believed to be incorrect, so entered into emLine as comment.	**Let Value Stand**	
X10	14/07/2011	183	180	1.65				8.01	7.67	0.34			
X10	24/08/2011	180	182	1.10				8.06	7.71	0.35			
X10	21/09/2011	219	226	3.15				8.22	7.29	0.93			

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Blank value > retest limit (30X detection limit).

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Table B-37: Quality Assurance / Quality Control
2011 Lab vs. Field Comparison

Station	Date	COND	CONDF	RPD	Comments	Action	Result	pH	pHF	Difference	Comments	Action	Result
		µmho/cm	µmho/cm	%									
X10	20/10/2011	263	2300	158.95	Lab value correctly entered into emLine, but field value incorrectly entered.	**Change Value**	Field value changed; now correctly entered into emLine (see below).	7.67	7.50	0.17			
X10	20/10/2011	263	230	13.39	Lab value correctly entered into emLine, and incorrect field value amended (see above).	**Let Value Stand**	Discrepancy between lab and field values resolved.	7.67	7.50	0.17			
X10	15/11/2011	270	216	22.22	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains.	8.20	7.83	0.37			
X10	06/12/2011	274	270	1.47				7.89	7.73	0.16			
X11	03/02/2011	2970	2910	2.04				7.45	7.17	0.28			
X11	04/08/2011	2930	2775	5.43				7.52	6.97	0.55			
X12	03/02/2011	1670	1660	0.60				7.60	7.50	0.1			
X12	04/08/2011	1280	1252	2.21				7.92	9.40	1.48	Field and lab values correctly entered into emLine.	**Remove Value**	Field value removed because of likely instrument and/or operator error.
X13	06/01/2011	2390	2387	0.13				7.63	7.28	0.35			
X13	03/02/2011	2180	2370	8.35				7.46	7.20	0.26			
X13	15/03/2011	2520	2427	3.76				7.69	7.20	0.49			
X13	13/04/2011	2360	2357	0.13				7.89	7.14	0.75			
X13	04/05/2011	2490	2553	2.50				7.76	7.04	0.72			
X13	16/06/2011	2320	2317	0.13				7.49	6.85	0.64			
X13	14/07/2011	2310	2612	12.27				7.61	7.06	0.55			
X13	25/08/2011	1920	1936	0.83				7.78	6.86	0.92			
X13	20/09/2011	2290	2530	9.96				7.52	7.06	0.46			
X13	19/10/2011	2270	2310	1.75				7.39	6.72	0.67			
X13	17/11/2011	2420	2640	8.70				7.41	7.24	0.17			
X13	01/12/2011	2220	2530	13.05				7.53	6.66	0.87			
X14	18/01/2011	707	719	1.68				7.51	7.35	0.16			
X14	01/02/2011	744	150	132.89	Field and lab values correctly entered into emLine.	**Let Value Stand**	Retest request would be filed past hold time. Discrepancy between lab and field values remains. Multiple flagged conductivity values on February 1, 2011 suggests calibration on field meter may have been off.	7.72	7.97	0.25			
X14	14/03/2011	1010	590	52.50	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains. Retest request would be filed past hold time. Multiple flagged conductivity values on March 14, 2011 suggests calibration on field meter may have been off.	7.74	7.16	0.58			
X14	24/03/2011	1500	1435	4.43				7.69	7.69	0			
X14	29/03/2011	1410	1410	0.00				7.85	7.69	0.16			
X14	05/04/2011	1380	1471	6.38				7.76	7.58	0.18			
X14	12/04/2011	1370	1430	4.29				7.76	7.36	0.4			
X14	19/04/2011	1390	1323	4.94				7.58	7.49	0.09			
X14	26/04/2011	1290	1303	1.00				7.70	7.40	0.3			
X14	03/05/2011	1830	1935	5.58				7.78	6.99	0.79			
X14	04/05/2011	1060	1134	6.75				7.91	7.49	0.42			
X14	10/05/2011	969	1043	7.36				7.65	7.95	0.3			
X14	17/05/2011	435	456	4.71				7.84	7.73	0.11			
X14	24/05/2011	95	117	20.75	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains.	7.32	8.07	0.75			
X14	31/05/2011	136	133	2.23				7.66	8.80	1.14	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains.
X14	07/06/2011	268	280	4.38				7.70	7.63	0.07			
X14	14/06/2011	288	256	11.76				7.85	7.91	0.06			
X14	21/06/2011	222	220	0.90				7.86	7.50	0.36			
X14	28/06/2011	246	260	5.53				7.97	8.18	0.21			
X14	05/07/2011	293	273	7.07				7.90	7.97	0.07			
X14	12/07/2011	338	292	14.60				7.71	7.87	0.16			
X14	19/07/2011	356	335	6.08				7.86	7.85	0.01			
X14	26/07/2011	395	375	5.19				7.88	8.06	0.18			
X14	02/08/2011	375	435	14.81				7.73	9.00	1.27	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains.

Blank value > PQL and < retest limit (30X detection limit).
Blank value > retest limit (30X detection limit).

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Table B-37: Quality Assurance / Quality Control
2011 Lab vs. Field Comparison

Station	Date	COND	CONDF	RPD	Comments	Action	Result	pH	pHF	Difference	Comments	Action	Result
		µmho/cm	µmho/cm	%									
X14	09/08/2011	440	351	22.50	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains.	7.95	7.82	0.13			
X14	16/08/2011	370	341	8.16				7.77	8.27	0.5			
X14	23/08/2011	355	346	2.57				7.86	7.97	0.11			
X14	25/08/2011	374	372	0.54				8.02	7.71	0.31			
X14	30/08/2011	414	390	5.97				8.03	8.03	0			
X14	06/09/2011	474	422	11.61				8.01	7.85	0.16			
X14	13/09/2011	453	438	3.37				8.00	7.91	0.09			
X14	20/09/2011	506	570	11.90				8.06	7.96	0.1			
X14	27/09/2011	541	525	3.00				7.78	7.58	0.2			
X14	25/10/2011	376	445	16.81				7.91	7.55	0.36			
X14	23/11/2011	1020	998	2.18				7.85	7.64	0.21			
X14	29/11/2011	1150	1088	5.54				7.70	7.37	0.33			
X14	08/12/2011	1160	1118	3.69				7.56	7.39	0.17			
X16A	01/02/2011	364	220	49.32	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains. Multiple flagged conductivity values on February 1, 2011 suggests calibration on field meter may have been off.	7.89	7.95	0.06			
X16A	02/06/2011	328	389	17.02				7.80	7.71	0.09			
X16A	25/09/2011	335	343	2.36				8.09	7.76	0.33			
X16B	01/02/2011	409	220	60.10	Field and lab values correctly entered into emLine.	**Let Value Stand**	Retest request would be filed past hold time. Discrepancy between lab and field values remains. Multiple flagged conductivity values on February 1, 2011 suggests calibration on field meter may have been off.	7.88	7.87	0.01			
X16B	02/06/2011	409	428	4.54				7.90	7.64	0.26			
X16B	25/09/2011	393	401	2.02				8.19	7.88	0.31			
X17A	02/02/2011	568	586	3.12				7.84	7.55	0.29			
X17A	31/05/2011	649	1198	59.45	Field and lab values correctly entered into emLine.	**Let Value Stand**	Multiple flagged conductivity values on June 28/29 suggests calibration on field meter may have been off.	8.08	7.81	0.27			
X17A	26/09/2011	522	534	2.27				8.03	7.85	0.18			
X17B	02/02/2011	1260	1220	3.23				7.55	6.86	0.69			
X17B	31/05/2011	1190	1254	5.24				7.96	7.09	0.87			
X17B	26/09/2011	810	774	4.55				7.70	7.2	0.5			
X18A	02/06/2011	1870	1993	6.37	Lab value correctly entered into emLine, and incorrect field value amended (see above).	**Let Value Stand**	Discrepancy between lab and field values resolved.	7.58	6.88	0.7			
X18A	02/06/2011	1870	1205	43.25	Lab value correctly entered into emLine, but field value incorrectly entered.	**Change Value**	Field value changed; now correctly entered into emLine (see below).	7.58	6.88	0.7			
X18A	23/09/2011	1690	1729	2.28				7.82	7.21	0.61			
X18B	02/02/2011	1710	1744	1.97				7.48	6.9	0.58			
X18B	02/06/2011	1900	2130	11.41				7.29	6.95	0.34			
X18B	23/09/2011	791	914	14.43				7.87	7.31	0.56			
X2	19/01/2011	311	160	64.12	Field and lab values correctly entered into emLine.	**Let Value Stand**	Retest request would be filed past hold time. Discrepancy between values remains.	7.61	8.20	0.59			
X2	01/02/2011	312	140	76.11	Field and lab values correctly entered into emLine.	**Let Value Stand**	Retest request would be filed past hold time. Discrepancy between lab and field values remains. Multiple flagged conductivity values on February 1, 2011 suggests calibration on field meter may have been off.	7.51	8.01	0.5			
X2	16/03/2011	352	330	6.45				7.50	7.52	0.02			
X2	13/04/2011	321	305	5.11				7.91	7.63	0.28			
X2	11/05/2011	228	224	1.77				7.63	7.82	0.19			
X2	20/06/2011	117	118	0.85				7.72	8.29	0.57			
X2	13/07/2011	159	143	10.60				7.69	6.80	0.89			
X2	25/08/2011	152	139	8.93				8.00	7.54	0.46			
X2	21/09/2011	180	183	1.65				7.99	7.31	0.68			

Blank value > PQL and < retest limit (30X detection limit).
Blank value > retest limit (30X detection limit).

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Table B-37: Quality Assurance / Quality Control
2011 Lab vs. Field Comparison

Station	Date	COND	CONDF	RPD	Comments	Action	Result	pH	pHF	Difference	Comments	Action	Result
		µmho/cm	µmho/cm	%									
X2	20/10/2011	229	2100	160.67	Lab value correctly entered into emLine, but field value incorrectly entered.	**Change Value**	Field value changed; now correctly entered into emLine (see below).	7.74	7.43	0.31			
X2	20/10/2011	229	210	8.66	Lab value correctly entered into emLine, and incorrect field value amended (see above).	**Let Value Stand**	Discrepancy between lab and field values resolved.	7.74	7.43	0.31			
X2	14/11/2011	249	198	22.82	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains. Multiple flagged conductivity values on November 14, 2011 suggests calibration on field meter may have been off.	8.08	7.51	0.57			
X2	06/12/2011	252	258	2.35				7.70	7.48	0.22			
X21-96A	09/06/2011	4720	2570	58.98	Field and lab values correctly entered into emLine.	**Let Value Stand**	Retest request would be filed past hold time. Discrepancy between values remains.	5.35	7.46	2.11	Field and lab values correctly entered into emLine.	**Let Value Stand**	Retest request would be filed past hold time. Discrepancy between values remains.
X21-96A	13/10/2011	16500	17431	5.49				3.75	5.52	1.77	Field and lab values correctly entered into emLine.	**Let Value Stand**	Retest request would be filed past hold time. Discrepancy between values remains.
X21-96B	09/06/2011	2350	11400	131.64	Field and lab values correctly entered into emLine.	**Let Value Stand**	Retest request would be filed past hold time. Discrepancy between values remains.	6.23	6.2	0.03			
X21-96B	13/10/2011	3310	3328	0.54				6.22	6.15	0.07			
X22b	19/01/2011	1310	850	42.59	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains.	7.33	3.50	3.83	Lab value correctly entered into emLine, but field value incorrectly entered.	**Change Value**	Field value changed; now correctly entered into emLine (see below).
X22b	19/01/2011	1310	850	42.59	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains.	7.33	7.04	0.29	Lab value correctly entered into emLine, and incorrect field value amended (see above).	**Let Value Stand**	Discrepancy between lab and field values resolved.
X22b	15/02/2011	1360	1371	0.81				7.48	7.66	0.18			
X22b	16/03/2011	1320	1400	5.88				7.48	7.18	0.3			
X22b	14/04/2011	915	800	13.41				7.54	7.52	0.02			
X22b	04/05/2011	818	922	11.95				7.19	7.18	0.01			
X22b	15/06/2011	1210	1127	7.10				7.15	6.34	0.81			
X22b	20/07/2011	1250	1197	4.33				7.51	5.95	1.56	Field and lab values correctly entered into emLine.	**Let Value Stand**	Retest request would be filed past hold time. Discrepancy between values remains.
X22b	23/08/2011	1250	1147	8.59				7.52	7.61	0.09			
X22b	25/09/2011	1300	1206	7.50				7.56	7.39	0.17			
X22b	19/10/2011	1310	1370	4.48				7.32	6.20	1.12	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains.
X22b	17/11/2011	1350	1510	11.19				7.39	7.48	0.09			
X22b	07/12/2011	1340	1424	6.08				7.33	7.18	0.15			
X23	12/05/2011	7930	8410	5.88				2.93	3.33	0.4			
X23	16/06/2011	8270	>3999	#VALUE!	Field and lab values not comparable because conductivity greater than maximum measurable level for field meter used.			5.42	6.31	0.89			
X23	21/07/2011	8130	>3999	#VALUE!	Field and lab values not comparable because conductivity greater than maximum measurable level for field meter used.			5.32	6.36	1.04	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains.
X23	24/08/2011	8040	>3999	#VALUE!	Field and lab values not comparable because conductivity greater than maximum measurable level for field meter used.			5.94	6.14	0.2			
X23	20/09/2011	8430	8880	5.20				6.17	6.24	0.07			
X23	19/10/2011	8410	785	165.85	Lab value correctly entered into emLine, but field value incorrectly entered.	**Change Value**	Field value changed; now correctly entered into emLine (see below).	5.93	6.63	0.7			
X23	19/10/2011	8410	7850	6.89	Lab value correctly entered into emLine, and incorrect field value amended (see above).	**Let Value Stand**	Discrepancy between lab and field values resolved.	5.93	6.63	0.7			

Blank value > PQL and < retest limit (30X detection limit).
Blank value > retest limit (30X detection limit).

Table B-37: Quality Assurance / Quality Control
2011 Lab vs. Field Comparison

Station	Date	COND	CONDF	RPD	Comments	Action	Result	pH	pHF	Difference	Comments	Action	Result
		µmho/cm	µmho/cm	%									
X23	17/11/2011	8320	2340	112.20	Field and lab values correctly entered into emLine.	Let Value Stand	Retest request would be filed past hold time. Discrepancy between values remains. Multiple flagged conductivity values on November 17, 2011 suggests calibration on field meter may have been off.	6.12	6.79	0.67			
X24-96D	02/06/2011	3670	4133	11.87				6.74	6.2	0.54			
X24-96D	28/09/2011	3870	4034	4.15				6.94	6.26	0.68			
X25-96A	01/02/2011	1480	870	51.91	Field and lab values correctly entered into emLine.	Let Value Stand	Retest request would be filed past hold time. Discrepancy between lab and field values remains. Multiple flagged conductivity values on February 1, 2011 suggests calibration on field meter may have been off.	7.53	7.5	0.03			
X25-96A	02/06/2011	1490	1613	7.93				7.52	7.07	0.45			
X25-96A	28/09/2011	1590	1644	3.34				7.79	7.38	0.41			
X25-96B	01/02/2011	1340	720	60.19	Field and lab values correctly entered into emLine.	Let Value Stand	Retest request would be filed past hold time. Discrepancy between lab and field values remains. Multiple flagged conductivity values on February 1, 2011 suggests calibration on field meter may have been off.	7.79	7.76	0.03			
X25-96B	02/06/2011	1390	1477	6.07				7.71	7.25	0.46			
X25-96B	28/09/2011	1420	7457	136.01	Field and lab values correctly entered into emLine. Based on historical results, field reading anomalously high.	Let Value Stand	Retest on field result not possible. Discrepancy between values remains.	8.02	7.41	0.61			
X26	26/05/2011	4650	>3999	#VALUE!	Field and lab values not comparable because conductivity greater than maximum measurable level for field meter used.			6.84	6.59	0.25			
X26	15/06/2011	4020	3988	0.80				6.86	6.29	0.57			
X26	03/08/2011	4670	>3999	#VALUE!	Field and lab values not comparable because conductivity greater than maximum measurable level for field meter used.			6.55	6.38	0.17			
X26	27/09/2011	4950	5190	4.73				6.45	6.07	0.38			
X3	18/01/2011	302	301	0.33				7.55	7.52	0.03			
X3	02/02/2011	301	311	3.27				7.86	7.99	0.13			
X3	14/03/2011	325	160	68.04	Field and lab values correctly entered into emLine.	Let Value Stand	Discrepancy between lab and field values remains. Retest request would be filed past hold time. Multiple flagged conductivity values on March 14, 2011 suggests calibration on field meter may have been off.	7.75	7.51	0.24			
X3	13/04/2011	310	306	1.30				8.05	7.69	0.36			
X3	05/05/2011	297	250	17.18				7.92	7.58	0.34			
X3	20/06/2011	110	104	5.61				7.73	7.55	0.18			
X3	13/07/2011	163	157	3.75				7.81	6.86	0.95			
X3	25/08/2011	160	147	8.47				8.05	7.76	0.29			
X3	21/09/2011	199	207	3.94				8.13	7.42	0.71			
X3	27/10/2011	232	230	0.87				7.94	7.60	0.34			
X3	15/11/2011	246	200	20.63	Field and lab values correctly entered into emLine.	Let Value Stand	Discrepancy between lab and field values remains.	7.64	7.65	0.01			
X3	07/12/2011	263	270	2.63				7.69	7.56	0.13			
X3A	18/01/2011	298	304	1.99				7.43	7.57	0.14			
X3A	01/02/2011	296	120	84.62	Field and lab values correctly entered into emLine.	Let Value Stand	Retest request would be filed past hold time. Discrepancy between lab and field values remains. Multiple flagged conductivity values on February 1, 2011 suggests calibration on field meter may have been off.	7.76	8.04	0.28			

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Table B-37: Quality Assurance / Quality Control
2011 Lab vs. Field Comparison

Station	Date	COND	CONDF	RPD	Comments	Action	Result	pH	pHF	Difference	Comments	Action	Result
		µmho/cm	µmho/cm	%									
X3A	16/03/2011	347	190	58.47	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains. Retest request would be filed past hold time. Multiple flagged conductivity values on March 16, 2011 suggests calibration on field meter may have been off.	7.61	7.82	0.21			
X3A	13/04/2011	319	304	4.82				7.59	7.85	0.26			
X3A	05/05/2011	302	300	0.66				7.90	7.58	0.32			
X3A	20/06/2011	114	107	6.33				7.72	7.73	0.01			
X3A	13/07/2011	170	162	4.82				7.73	6.86	0.87			
X3A	25/08/2011	166	158	4.94				7.97	7.57	0.4			
X3A	21/09/2011	207	225	8.33				7.91	7.37	0.54			
X3A	20/10/2011	245	2800	167.82	Lab value correctly entered into emLine, but field value incorrectly entered.	**Change Value**	Field value changed; now correctly entered into emLine (see below).	7.90	7.07	0.83			
X3A	20/10/2011	245	280	13.33	Lab value correctly entered into emLine, and incorrect field value amended (see above).	**Let Value Stand**	Discrepancy between lab and field values resolved.	7.90	7.07	0.83			
X3A	15/11/2011	272	225	18.91				7.42	7.62	0.2			
X3A	06/12/2011	268	262	2.26				7.80	7.62	0.18			
X4	18/01/2011	1160	1240	6.67				6.12	6.60	0.48			
X4	03/02/2011	1320	1400	5.88				6.31	6.25	0.06			
X4	14/03/2011	1150	670	52.75	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains. Retest request would be filed past hold time. Multiple flagged conductivity values on March 14, 2011 suggests calibration on field meter may have been off.	6.35	6.49	0.14			
X4	21/04/2011	1090	1033	5.37				6.27	6.72	0.45			
X4	04/05/2011	1060	1174	10.21				6.12	6.70	0.58			
X4	20/06/2011	1380	1269	8.38				3.68	3.43	0.25			
X4	21/07/2011	1340	1326	1.05				4.08	3.77	0.31			
X4	23/08/2011	1430	1306	9.06				5.09	5.18	0.09			
X4	21/09/2011	1600	1571	1.83				4.17	4.07	0.1			
X4	19/10/2011	1670	1760	5.25				4.77	3.78	0.99			
X4	15/11/2011	1710	1518	11.90				4.64	4.34	0.3			
X4	05/12/2011	1460	1545	5.66				6.43	7.74	1.31	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains.
X5	24/03/2011	2370	2225	6.31				7.35	6.88	0.47			
X5	29/03/2011	2080	2201	5.65				7.67	7.24	0.43			
X5	05/04/2011	2130	2140	0.47				7.63	7.08	0.55			
X5	12/04/2011	2240	2400	6.90				7.27	6.92	0.35			
X5	19/04/2011	2330	2233	4.25				7.11	6.83	0.28			
X5	26/04/2011	2170	2138	1.49				7.26	6.80	0.46			
X5	03/05/2011	2740	3030	10.05				7.41	6.62	0.79			
X5	10/05/2011	1600	1606	0.37				7.78	7.83	0.05			
X5	17/05/2011	1640	1693	3.18				7.50	7.08	0.42			
X5	24/05/2011	1530	1480	3.32				7.55	7.14	0.41			
X5	31/05/2011	1490	1358	9.27				7.78	7.19	0.59			
X5	07/06/2011	1620	1800	10.53				7.57	7.21	0.36			
X5	14/06/2011	1860	1505	21.10	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains.	7.45	6.89	0.56			
X5	21/06/2011	1910	1697	11.81				7.81	6.84	0.97			
X5	28/06/2011	1720	1910	10.47				7.82	7.53	0.29			
X5	05/07/2011	294	1423	131.51	Field and lab values correctly entered into emLine. However, lab value suspicious given historical results.	**Let Value Stand**	Retest request would be filed past hold time. Discrepancy between values remains.	7.89	7.62	0.27			
X5	12/07/2011	1680	1382	19.46				7.81	7.72	0.09			
X5	19/07/2011	1710	1580	7.90				7.86	7.38	0.48			
X5	26/07/2011	1700	1491	13.10				7.75	7.81	0.06			
X5	02/08/2011	1630	1556	4.65				7.64	7.90	0.26			
X5	09/08/2011	1710	1372	21.93	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains.	7.80	7.74	0.06			
X5	16/08/2011	1630	1450	11.69				7.79	8.02	0.23			

Blank value > PQL and < retest limit (30X detection limit).
Blank value > retest limit (30X detection limit).

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Table B-37: Quality Assurance / Quality Control
2011 Lab vs. Field Comparison

Station	Date	COND	CONDF	RPD	Comments	Action	Result	pH	pHF	Difference	Comments	Action	Result
		µmho/cm	µmho/cm	%									
X5	23/08/2011	1760	1637	7.24				7.78	7.67	0.11			
X5	30/08/2011	1750	1760	0.57				7.90	8.10	0.2			
X5	06/09/2011	1810	1576	13.82				7.81	7.72	0.09			
X5	13/09/2011	1790	1631	9.30				7.94	7.74	0.2			
X5	20/09/2011	1870	1970	5.21				7.69	7.80	0.11			
X5	27/09/2011	2180	1817	18.16				7.22	6.95	0.27			
X5	23/11/2011	2330	2220	4.84				7.69	7.46	0.23			
X5	29/11/2011	2480	2260	9.28				7.36	7.14	0.22			
X5	08/12/2011	2530	2279	10.44				7.14	6.90	0.24			
X5P	18/01/2011	2040	2002	1.88				7.60	7.00	0.6			
X5P	03/02/2011	2050	2040	0.49				7.76	7.22	0.54			
X5P	15/03/2011	1910	1930	1.04				7.66	7.53	0.13			
X5P	14/04/2011	2000	1782	11.53				7.74	7.16	0.58			
X5P	05/05/2011	1610	1688	4.73				7.81	8.38	0.57			
X5P	20/06/2011	1730	1544	11.36				7.75	7.39	0.36			
X5P	14/07/2011	1690	1768	4.51				7.78	7.59	0.19			
X5P	23/08/2011	1720	1539	11.11				7.79	8.17	0.38			
X5P	21/09/2011	1910	1823	4.66				7.86	6.85	1.01	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains.
X5P	19/10/2011	2130	2280	6.80				7.76	7.21	0.55			
X5P	15/11/2011	2240		200.00	Lab value correctly entered into emLine. Field value not measured because meter was too cold.	Let Value Stand	Discrepancy between lab and field values remains.	8.07	7.45	0.62			
X5P	05/12/2011	2210	2319	4.81				7.53	7.21	0.32			
X7	28/06/2011	8140	>3999	#VALUE!	Field and lab values not comparable because conductivity greater than maximum measurable level for field meter used.			5.83	5.44	0.39			
X7	18/10/2011	8620	7970	7.84				5.34	5.28	0.06			

Blank value > PQL and < retest limit (30X detection limit).
Blank value > retest limit (30X detection limit).

Table B-38: Quality Assurance / Quality Control High/Low Action Record 2009-2011

Date of Action	Parameter Information					Action
	Station	Analyte	Date	Result	Units	
28/05/2011	Weir 3	Ca-d	12-Mar-09	354	mg/L	Added "Value is high" result flag in emLine.
28/05/2011	Weir 3	Fe-d	12-Mar-09	2.36	mg/L	Added "Value is high" result flag in emLine.
28/05/2011	X11	Fe-d	12-Mar-09	3.2	mg/L	Added "Value is high" result flag in emLine.
28/05/2011	X12	Ca-d	12-Mar-09	239	mg/L	Added "Value is high" result flag in emLine.
28/05/2011	X13	Fe-d	3-Mar-09	3.62	mg/L	Added "Value is high" result flag in emLine.
07/07/2011	S1A	Co-d	30-May-09	0.0935	mg/L	Added "Value is high" result flag in emLine.
07/07/2011	S2A	Alk	30-May-09	410	mg/L	Added "Value is high" result flag in emLine.
07/07/2011	S2B	Co-d	30-May-09	0.105	mg/L	Added "Value is high" result flag in emLine.
07/07/2011	BH14A	Ni-d	30-May-09	0.139	mg/L	Added "Value is high" result flag in emLine.
07/07/2011	BH14B	U-d	30-May-09	0.221	mg/L	Added "Value is high" result flag in emLine.
07/07/2011	FAROCR	TSS	5-May-09	260	mg/L	Added "Value is high" result flag in emLine.
07/07/2011	NF2	NH3	6-May-09	0.07	mg/L	Added "Value is high" result flag in emLine.
07/07/2011	P96-8A	Co-d	29-May-09	1.73	mg/L	Added "Value is high" result flag in emLine.
07/07/2011	P96-8A	Fe-d	29-May-09	37	mg/L	Added "Value is high" result flag in emLine.
07/07/2011	R9	TSS	5-May-09	440	mg/L	Added "Value is high" result flag in emLine.
09/07/2011						May 2009 data posted in emLine (March, April data posted earlier).
13/07/2011	Weir 3	Ca-d	12-Mar-09	354	mg/L	Removed "Value is high" result flag in emLine; flagged value corroborated.
13/07/2011	X11	Fe-d	12-Mar-09	3.2	mg/L	Removed "Value is high" result flag in emLine; flagged value corroborated.
13/07/2011	X12	Ca-d	12-Mar-09	239	mg/L	Removed "Value is high" result flag in emLine; flagged value corroborated.
14/07/2011	Weir 3	Fe-d	12-Mar-09	2.36	mg/L	Removed "Value is high" result flag in emLine; flagged value corroborated.
14/07/2011	BH14A	Ni-d	30-May-09	0.139	mg/L	Removed "Value is high" result flag in emLine; flagged value corroborated.
14/07/2011	BH14B	U-d	30-May-09	0.221	mg/L	Removed "Value is high" result flag in emLine; flagged value corroborated.
14/07/2011	P96-8A	Co-d	29-May-09	1.73	mg/L	Removed "Value is high" result flag in emLine; flagged value corroborated.
14/07/2011	P96-8A	Fe-d	29-May-09	37	mg/L	Removed "Value is high" result flag in emLine; flagged value corroborated.
14/07/2011	S2A	ALK	30-May-09	410	mg/L	Removed "Value is high" result flag in emLine; flagged value corroborated.
14/07/2011	S2B	Co-d	30-May-09	0.105	mg/L	Removed "Value is high" result flag in emLine; flagged value corroborated.
14/07/2011	NF1	TSS	10-Jun-09	26	mg/L	Added "Value is high" result flag in emLine.
14/07/2011	P03-06-2	Fe-d	1-Jun-09	440	mg/L	Added "Value is high" result flag in emLine.
14/07/2011	P03-06-2	SO4-d	1-Jun-09	3800	mg/L	Added "Value is high" result flag in emLine.
14/07/2011	X23	Co-d	9-Jun-09	2.37	mg/L	Added "Value is high" result flag in emLine.
14/07/2011	X23	Fe-d	9-Jun-09	417	mg/L	Added "Value is high" result flag in emLine.
14/07/2011						June 2009 data posted in emLine.
16/07/2011	W10	TSS	14-Jul-09	7	mg/L	Added "Value is high" result flag in emLine.
16/07/2011						July 2009 data posted in emLine.
18/07/2011	A30	TSS	28-Aug-09	460	mg/L	Added "Value is high" result flag in emLine.
18/07/2011	NF1	Ca	6-Aug-09	52.2	mg/L	Added "Value is high" result flag in emLine.
18/07/2011	NF1	Ca-d	6-Aug-09	51.7	mg/L	Added "Value is high" result flag in emLine.
18/07/2011	NF1	COND	6-Aug-09	325	µS/cm	Added "Value is high" result flag in emLine.
18/07/2011	NF1	Fe	6-Aug-09	6.25	mg/L	Added "Value is high" result flag in emLine.
18/07/2011	NF1	Fe-d	6-Aug-09	4.38	mg/L	Added "Value is high" result flag in emLine.
18/07/2011	NF1	Li	6-Aug-09	9.3	mg/L	Added "Value is high" result flag in emLine.
18/07/2011	NF1	Li-d	6-Aug-09	8.8	mg/L	Added "Value is high" result flag in emLine.
18/07/2011	NF1	Mg	6-Aug-09	11	mg/L	Added "Value is high" result flag in emLine.
18/07/2011	NF1	Mg-d	6-Aug-09	11.1	mg/L	Added "Value is high" result flag in emLine.
18/07/2011	NF1	Mn	6-Aug-09	2.03	mg/L	Added "Value is high" result flag in emLine.
18/07/2011	NF1	Mn-d	6-Aug-09	1.96	mg/L	Added "Value is high" result flag in emLine.
18/07/2011	NF1	SO4-d	6-Aug-09	34	mg/L	Added "Value is high" result flag in emLine.
18/07/2011	NF1	Sr-d	6-Aug-09	0.227	mg/L	Added "Value is high" result flag in emLine.

Table B-38: Quality Assurance / Quality Control High/Low Action Record 2009-2011

Date of Action	Parameter Information					Action
	Station	Analyte	Date	Result	Units	
18/07/2011	NF1	U	6-Aug-09	1.86	µg/L	Added "Value is high" result flag in emLine.
18/07/2011	NF1	U-d	6-Aug-09	1.79	µg/L	Added "Value is high" result flag in emLine.
19/07/2011						August 2009 data posted in emLine.
31/07/2011	A25	COND	29-Sep-09	530	µS/cm	Added "Value is high" result flag in emLine.
31/07/2011	A25	TSS	29-Sep-09	51	mg/L	Added "Value is high" result flag in emLine.
31/07/2011	BH4	ALK	10-Sep-09	660	mg/L	Added "Value is high" result flag in emLine.
31/07/2011	BH4	COND	10-Sep-09	1410	µS/cm	Added "Value is high" result flag in emLine.
31/07/2011	P03-01-2	ALK	11-Sep-09	49	mg/L	Added "Value is low" result flag in emLine.
31/07/2011	P03-01-2	COND	11-Sep-09	92	µS/cm	Added "Value is low" result flag in emLine.
31/07/2011	P03-06-2	Al-d	9-Sep-09	0.458	mg/L	Added "Value is high" result flag in emLine.
31/07/2011	P96-8A	Fe-d	11-Sep-09	152	mg/L	Added "Value is high" result flag in emLine.
31/07/2011	P96-8B	Cd-d	11-Sep-09	0.43	mg/L	Added "Value is high" result flag in emLine.
31/07/2011	P96-8B	Co-d	11-Sep-09	2.73	mg/L	Added "Value is high" result flag in emLine.
31/07/2011	P96-8B	Fe-d	11-Sep-09	52.1	mg/L	Added "Value is high" result flag in emLine.
31/07/2011	P96-8B	Ni-d	11-Sep-09	2.71	mg/L	Added "Value is high" result flag in emLine.
31/07/2011	P96-8B	pH	11-Sep-09	3.6		Added "Value is low" result flag in emLine.
31/07/2011	P96-8B	Zn-d	11-Sep-09	1060	mg/L	Added "Value is high" result flag in emLine.
31/07/2011	S1A	Fe-d	11-Sep-09	12.6	mg/L	Added "Value is high" result flag in emLine.
01/08/2011						September 2009 data posted in emLine.
02/08/2011	X14	S	7-Oct-09	1700	mg/L	Added "Value is high" result flag in emLine.
02/08/2011	X22b	Cu-d	5-Oct-09	0.265	mg/L	Added "Value is high" result flag in emLine.
02/08/2011	X5	pHF	5-Oct-09	6.00		Added "Value is low" result flag in emLine.
02/08/2011						October 2009 data posted in emLine.
04/08/2011						November 2009 data posted in emLine. (no result flags for November)
05/08/2011	W8	Fe	10-Dec-09	1.79	mg/L	Added "Value is high" result flag in emLine.
05/08/2011	W8	Mn	10-Dec-09	0.155	mg/L	Added "Value is high" result flag in emLine.
05/08/2011						December 2009 data posted in emLine.
07/08/2011	X22b	Chloride	11-Jan-10	4.3	mg/L	Added "Value is high" result flag in emLine.
07/08/2011						January 2010 data posted in emLine.
08/08/2011	X5P	Chloride	22-Feb-10	3.1	mg/L	Added "Value is high" result flag in emLine.
08/08/2011						Februay 2010 data posted in emLine.
11/08/2011	X4	Fe-d	9-Mar-10	121	mg/L	Added "Value is high" result flag in emLine.
11/08/2011						March 2010 data posted in emLine.
12/08/2011	X14	S	13-Apr-10	1740	mg/L	Added "Value is high" result flag in emLine.
12/08/2011	X14	CONDF	20-Apr-10	1914	µS/cm	Added "Value is high" result flag in emLine.
12/08/2011	X22b	ALK	13-Apr-10	110	mg/L	Added "Value is high" result flag in emLine.
12/08/2011	X22b	HCO3	13-Apr-10	130	mg/L	Added "Value is high" result flag in emLine.
12/08/2011	X23	U-d	27-Apr-10	0.0466	mg/L	Added "Value is high" result flag in emLine.
12/08/2011	X4	Chloride	13-Apr-10	3.9	mg/L	Added "Value is high" result flag in emLine.
12/08/2011						April 2010 data posted in emLine.
08/09/2011	A25	Pb-d	31-May-10	0.0017	mg/L	Added "Value is high" result flag in emLine.
08/09/2011	R10	DOC	3-May-10	14.7	mg/L	Added "Value is high" result flag in emLine.
08/09/2011	R10	TOC	3-May-10	14.5	mg/L	Added "Value is high" result flag in emLine.
08/09/2011	X14	FLOW	25-May-10	4666	L/s	Could not add "Value is high" result flag in emLine because can not add result flags to calculated parameters. Result deemed reasonable so value posted in emLine with rest of May 2010 results.
08/09/2011	X22b	ALK	3-May-10	20	mg/L	Added "Value is low" result flag in emLine.
08/09/2011	X22b	CaCO3	3-May-10	158	mg/L	Added "Value is low" result flag in emLine.
08/09/2011	X22b	CaCO3-d	3-May-10	161	mg/L	Added "Value is low" result flag in emLine.
08/09/2011	X22b	HCO3	3-May-10	25	mg/L	Added "Value is low" result flag in emLine.
08/09/2011	X22b	TDS	3-May-10	230	mg/L	Added "Value is low" result flag in emLine.
08/09/2011	X23	ALK	6-May-10	75	mg/L	Added "Value is high" result flag in emLine.
08/09/2011	X23	HCO3	6-May-10	92	mg/L	Added "Value is high" result flag in emLine.
08/09/2011	X26	SO4-d	5-May-10	4800	mg/L	Added "Value is high" result flag in emLine.
08/09/2011						May 2010 data posted in emLine.
12/09/2011	FCO	NH3	16-Jun-10	0.15	mg/L	Added "Value is high" result flag in emLine.
12/09/2011	NE1	Fe-d	1-Jun-10	0.31	mg/L	Added "Value is high" result flag in emLine.

Table B-38: Quality Assurance / Quality Control High/Low Action Record 2009-2011

Date of Action	Parameter Information					Action
	Station	Analyte	Date	Result	Units	
12/09/2011	NE1	Zn-d	1-Jun-10	0.549	mg/L	Added "Value is high" result flag in emLine.
12/09/2011	NE1	Temp-F	1-Jun-10	12.5	°c	Added "Value is high" result flag in emLine.
13/09/2011	P03-06-1	Cu-d	14-Jun-10	0.346	mg/L	Added "Value is high" result flag in emLine.
13/09/2011	P96-7	Temp-F	11-Jun-10	15.7	°c	Added "Value is high" result flag in emLine.
13/09/2011	P96-7	Zn-d	11-Jun-10	0.155	mg/L	Added "Value is high" result flag in emLine.
13/09/2011	P96-8B	Fe-d	9-Jun-10	41	mg/L	Added "Value is high" result flag in emLine.
13/09/2011	SRK08-SPW3	pH-F	13-Jun-10	7.77		Added "Value is high" result flag in emLine.
13/09/2011	X13	pH-F	13-Jun-10	8.49		Added "Value is high" result flag in emLine.
13/09/2011	X18A	Mn-d	7-Jun-10	5.97	mg/L	Added "Value is high" result flag in emLine.
13/09/2011	X26	pH-F	13-Jun-10	7.61		Added "Value is high" result flag in emLine.
14/09/2011						June 2010 data posted in emLine.
15/09/2011	X12	FLOW	22-Jul-10	1.304	L/s	Changed value - replaced staff gauge reading with weir measurement in emLine. New result: 0.07 L/s.
15/09/2011	W10	Mn-d	10-Jul-10	0.0236	mg/L	Added "Value is high" result flag in emLine.
15/09/2011	W10	Zn-d	10-Jul-10	0.146	mg/L	Added "Value is high" result flag in emLine.
15/09/2011						July 2010 data posted in emLine.
16/09/2011	NF1	Fe	3-Aug-10	3.29	mg/L	Added "Value is high" result flag in emLine.
16/09/2011	NF1	Fe-d	3-Aug-10	2.56	mg/L	Added "Value is high" result flag in emLine.
16/09/2011	NF1	Mn	3-Aug-10	1.04	mg/L	Added "Value is high" result flag in emLine.
16/09/2011	NF1	Mn-d	3-Aug-10	0.984	mg/L	Added "Value is high" result flag in emLine.
16/09/2011	NF1	S-d	3-Aug-10	25	mg/L	Added "Value is high" result flag in emLine.
16/09/2011	NF1	SO4-d	3-Aug-10	48	mg/L	Added "Value is high" result flag in emLine.
16/09/2011	NF1	Zn	3-Aug-10	0.262	mg/L	Added "Value is high" result flag in emLine.
16/09/2011	NF1	Zn-d	3-Aug-10	0.249	mg/L	Added "Value is high" result flag in emLine.
16/09/2011	NF2	TSS	3-Aug-11	18	mg/L	Added "Value is high" result flag in emLine.
16/09/2011	SRK08-SPW3	Mo-d	3-Aug-11	0.018	mg/L	Added "Value is high" result flag in emLine.
16/09/2011						August 2010 data posted in emLine.
18/09/2011	BH14A	Pb-d	21-Sep-10	0.12	mg/L	Added "Value is high" result flag in emLine.
18/09/2011	P01-11	Temp-F	8-Sep-10	8.3	°c	Added "Value is high" result flag in emLine.
18/09/2011	P03-01-4	WL-m	21-Sep-10	3.37	m	Added "Value is low" result flag in emLine.
18/09/2011	P03-01-9	WL-m	21-Sep-10	3.17	m	Added "Value is low" result flag in emLine.
18/09/2011	P03-03-4	Co-d	21-Sep-10	0.226	mg/L	Added "Value is high" result flag in emLine.
18/09/2011	P03-03-4	Fe-d	21-Sep-10	157	mg/L	Added "Value is high" result flag in emLine.
18/09/2011	P03-03-4	Ni-d	21-Sep-10	0.222	mg/L	Added "Value is high" result flag in emLine.
18/09/2011	P03-03-4	SO4-d	21-Sep-10	930	mg/L	Added "Value is high" result flag in emLine.
18/09/2011	P03-03-4	COND	21-Sep-10	1650	µS/cm	Added "Value is high" result flag in emLine.
18/09/2011	P03-04-4	K-d	20-Sep-10	5.1	mg/L	Added "Value is high" result flag in emLine.
18/09/2011	P03-04-8	Pb-d	20-Sep-10	0.528	mg/L	Added "Value is high" result flag in emLine.
18/09/2011	P03-04-8	WL-m	20-Sep-10	10.415	m	Added "Value is low" result flag in emLine.
18/09/2011	P03-05-2	Ca-d	22-Sep-10	233	mg/L	Added "Value is high" result flag in emLine.
18/09/2011	P03-05-2	Co-d	22-Sep-10	0.211	mg/L	Added "Value is high" result flag in emLine.
18/09/2011	P03-05-2	COND	22-Sep-10	1480	µS/cm	Added "Value is high" result flag in emLine.
18/09/2011	P03-05-2	Fe-d	22-Sep-10	27.5	mg/L	Added "Value is high" result flag in emLine.
18/09/2011	P03-05-2	Mn-d	22-Sep-10	38.2	mg/L	Added "Value is high" result flag in emLine.
18/09/2011	P03-05-2	Ni-d	22-Sep-10	0.226	mg/L	Added "Value is high" result flag in emLine.
18/09/2011	P03-05-2	SO4-d	22-Sep-10	860	mg/L	Added "Value is high" result flag in emLine.
18/09/2011	P03-05-2	Zn-d	22-Sep-10	1.51	mg/L	Added "Value is high" result flag in emLine.
18/09/2011	P03-05-6	WL-m	22-Sep-10	6.459	m	Added "Value is low" result flag in emLine.
18/09/2011	P03-05-8	WL-m	22-Sep-10	3.98	m	Added "Value is low" result flag in emLine.
18/09/2011	P03-06-4	U-d	22-Sep-10	0.0038	mg/L	Added "Value is low" result flag in emLine.
18/09/2011	P03-06-5	K-d	22-Sep-10	9.06	mg/L	Added "Value is high" result flag in emLine.
18/09/2011	P03-09-2	Mn-d	13-Sep-10	0.51	mg/L	Added "Value is high" result flag in emLine.
18/09/2011	P03-09-6	Mn-d	13-Sep-10	12	mg/L	Added "Value is high" result flag in emLine.
18/09/2011	P05-02	Cd-d	8-Sep-10	0.0005	mg/L	Added "Value is high" result flag in emLine.
18/09/2011	P05-02	Temp-F	8-Sep-10	9.8	°c	Added "Value is high" result flag in emLine.
18/09/2011	P96-6	Temp-F	21-Sep-10	7.65	°c	Added "Value is high" result flag in emLine.
18/09/2011						September 2010 data posted in emLine.

Table B-38: Quality Assurance / Quality Control High/Low Action Record 2009-2011

Date of Action	Parameter Information					Action
	Station	Analyte	Date	Result	Units	
27/09/2011	X13	Head (m)	7-Oct-10	0.44	m	Head value changed from 0.44 m (incorrect) to 0.044 m (correct). This resulted in FLOW being correct to 15.51 L/s from 490.39 L/s.
27/09/2011	FAROCR	CONDF	19-Oct-10	244	µS/cm	Added "Value is high" result flag in emLine.
27/09/2011	X7	NH3	6-Oct-10	4.2	mg/L	Added "Value is high" result flag in emLine.
27/09/2011	X7	U-d	6-Oct-10	0.0087	mg/L	Added "Value is high" result flag in emLine.
27/09/2011						October 2010 data posted in emLine.
28/09/2011	X13	CNTHIO	4-Nov-10	0.0033	mg/L	Added "Value is high" result flag in emLine.
28/09/2011	X5P	Chloride	8-Nov-10	5	mg/L	Added "Value is high" result flag in emLine.
28/09/2011						November 2010 data posted ini emLine.
29/09/2011	A30	TSS	1-Dec-10	380	mg/L	Added "Value is high" result flag in emLine.
29/09/2011						December 2010 data posted in emLine.
04/10/2011						January 2011 data posted in emLine.
05/10/2011	P01-02A	Al-d	1-Feb-11	0.301	mg/L	Added "Value is high" result flag in emLine.
05/10/2011	P01-02A	Cu-d	1-Feb-11	0.00502	mg/L	Added "Value is high" result flag in emLine.
05/10/2011	P01-02A	Pb-d	1-Feb-11	0.00351	mg/L	Added "Value is high" result flag in emLine.
05/10/2011	X13	Chloride	3-Feb-11	5.4	mg/L	Added "Value is high" result flag in emLine.
05/10/2011	X18B	WL-m	2-Feb-11	5.336	m	Added "Value is high" result flag in emLine.
05/10/2011						February 2011 data posted in emLine.
05/10/2011	P05-02	Cd-d	8-Sep-10	0.0005	mg/L	Removed "Value is high" result flag in emLine; flagged value corroborated.
06/10/2011	NF2	Na	16-Mar-11	5.59	mg/L	Added "Value is high" result flag in emLine.
06/10/2011	X4	Chloride	14-Mar-11	4.9	mg/L	Added "Value is high" result flag in emLine.
06/10/2011	X5P	Ba-d	15-Mar-11	0.0757	mg/L	Added "Value is high" result flag in emLine.
06/10/2011						March 2011 data posted in emLine.
12/10/2011	NF2	K-d	13-Apr-11	2.49	mg/L	Added "Value is high" result flag in emLine.
12/10/2011	X13	Acid(8.3)	13-Apr-11	<0.5	mg/L	Added "Value is low" result flag in emLine.
12/10/2011						April 2011 data posted in emLine.
28/11/2011	P03-06-2	Al-d	9-Sep-09	0.458	mg/L	Removed "Value is high" result flag in emLine; flagged value corroborated.
28/11/2011	P03-03-4	Co-d	21-Sep-10	0.226	mg/L	Removed "Value is high" result flag in emLine; flagged value corroborated.
28/11/2011	P03-03-4	COND	21-Sep-10	1650	µS/cm	Removed "Value is high" result flag in emLine; flagged value corroborated.
28/11/2011	P03-03-4	Fe-d	21-Sep-10	157	mg/L	Removed "Value is high" result flag in emLine; flagged value corroborated.
28/11/2011	P03-03-4	Ni-d	21-Sep-10	0.222	mg/L	Removed "Value is high" result flag in emLine; flagged value corroborated.
28/11/2011	P03-03-4	SO4-d	21-Sep-10	930	mg/L	Removed "Value is high" result flag in emLine; flagged value corroborated.
28/11/2011	P03-05-2	Ca-d	22-Sep-10	233	mg/L	Removed "Value is high" result flag in emLine; flagged value corroborated.
28/11/2011	P03-05-2	Co-d	22-Sep-10	0.211	mg/L	Removed "Value is high" result flag in emLine; flagged value corroborated.
28/11/2011	P03-05-2	COND	22-Sep-10	1480	µS/cm	Removed "Value is high" result flag in emLine; flagged value corroborated.
28/11/2011	P03-05-2	Fe-d	22-Sep-10	27.5	mg/L	Removed "Value is high" result flag in emLine; flagged value corroborated.
28/11/2011	P03-05-2	Mn-d	22-Sep-10	38.2	mg/L	Removed "Value is high" result flag in emLine; flagged value corroborated.
28/11/2011	P03-05-2	Ni-d	22-Sep-10	0.226	mg/L	Removed "Value is high" result flag in emLine; flagged value corroborated.
28/11/2011	P03-05-2	SO4-d	22-Sep-10	860	mg/L	Removed "Value is high" result flag in emLine; flagged value corroborated.
28/11/2011	P03-05-2	Zn-d	22-Sep-10	1.51	mg/L	Removed "Value is high" result flag in emLine; flagged value corroborated.
28/11/2011	P03-09-6	Mn-d	13-Sep-10	12	mg/L	Removed "Value is high" result flag in emLine; flagged value corroborated.

Table B-38: Quality Assurance / Quality Control High/Low Action Record 2009-2011

Date of Action	Parameter Information					Action
	Station	Analyte	Date	Result	Units	
28/11/2011	P03-09-2	Mn-d	13-Sep-10	0.51	mg/L	Removed "Value is high" result flag in emLine; flagged value corroborated.
28/11/2011	FCO	K-d	26-May-11	0.89	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	FCO	TSS	26-May-11	29	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	P03-06-2	Al-d	29-May-11	1.13	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	P03-06-2	CONDF	29-May-11	8224	µS/cm	Added "Value is high" result flag in emLine.
28/11/2011	P03-06-4	Al-d	29-May-11	1.02	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	P03-06-4	CONDF	29-May-11	5232	µS/cm	Added "Value is high" result flag in emLine.
28/11/2011	P03-06-4	Pb-d	29-May-11	0.216	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	P03-06-5	CONDF	28-May-11	7302	µS/cm	Added "Value is high" result flag in emLine.
28/11/2011	P03-06-5	Pb-d	28-May-11	0.274	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	R10	DOC	9-May-11	10.6	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	R10	TOC	9-May-11	10.4	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	R10	Zn	9-May-11	0.0798	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	R7	TURB	9-May-11	2.17	NTU	Added "Value is high" result flag in emLine.
28/11/2011	X12	FLOW	5-May-11	2.03	L/s	Added "Value is high" result flag to weir measurement (head(m)) in emLine.
28/11/2011	X14	Co	3-May-11	0.0504	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	X14	Co-d	3-May-11	0.0494	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	X14	FLOW	24-May-11	31110.85	L/s	Added "Value is high" result flag to staff gauge reading in emLine.
28/11/2011	X14	FLOW	31-May-11	14703.52	L/s	Added "Value is high" result flag to staff gauge reading in emLine.
28/11/2011	X14	Ni	3-May-11	0.0562	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	X14	Ni-d	3-May-11	0.0555	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	X17a	CONDF	31-May-11	1198	µS/cm	Added "Value is high" result flag in emLine.
28/11/2011						May 2011 data posted in emLine.
30/11/2011	BH14B	Pb-d	10-Jun-11	0.123	mg/L	Added "Value is high" result flag in emLine.
30/11/2011	P05-02	Al-d	9-Jun-11	0.065	mg/L	Added "Value is high" result flag in emLine.
30/11/2011	P05-02	Cd-d	9-Jun-11	0.0008	mg/L	Added "Value is high" result flag in emLine.
30/11/2011	P05-03	Al-d	9-Jun-11	0.047	mg/L	Added "Value is high" result flag in emLine.
30/11/2011	X2	FLOW	20-Jun-11	3471.9	L/s	Added "Value is high" result flag in emLine.
30/11/2011	X21-96B	CONDF	9-Jun-11	11400	µS/cm	Added "Value is high" result flag in emLine.
30/11/2011	X21-96B	Cr-d	9-Jun-11	0.013	mg/L	Added "Value is high" result flag in emLine.
30/11/2011						June 2011 data posted in emLine.
01/12/2011	NF2	pH-F	21-Jul-11	9.47		Added "Result Questionable" result flag in emLine.
01/12/2011	SRK08-SPW3	As-d	20-Jul-11	0.0054	mg/L	Added "Value is high" result flag in emLine.
01/12/2011						July 2011 data posted in emLine.
05/12/2011	A30	Mo-d	24-Aug-11	0.048	mg/L	Added "Value is high" result flag in emLine.
05/12/2011						August 2011 data posted in emLine.
09/01/2012	P03-09-2	Fe-d	25-Sep-11	0.027	mg/L	Added "Value is low" result flag in emLine.
09/01/2012	P03-09-2	K-d	25-Sep-11	5	mg/L	Added "Value is high" result flag in emLine.
09/01/2012	P03-09-2	Mg-d	25-Sep-11	65	mg/L	Added "Value is high" result flag in emLine.
09/01/2012	P03-09-2	Mn-d	25-Sep-11	13.7	mg/L	Added "Value is high" result flag in emLine.
09/01/2012	P03-09-2	U-d	25-Sep-11	0.00913	mg/L	Added "Value is high" result flag in emLine.
09/01/2012	P03-09-4	Fe-d	25-Sep-11	7.36	mg/L	Added "Value is high" result flag in emLine.
09/01/2012	P03-09-4	Mn-d	25-Sep-11	0.994	mg/L	Added "Value is low" result flag in emLine.
09/01/2012	P03-09-4	U-d	25-Sep-11	0.00211	mg/L	Added "Value is low" result flag in emLine.
09/01/2012	SRK08-SP7B	pH-F	7-Sep-11	8.42		Added "Value is high" result flag in emLine.
09/01/2012	TH86-17	Mn-d	17-Sep-11	0.09	mg/L	Added "Value is high" result flag in emLine.
09/01/2012	X24-96D	Fe-d	28-Sep-11	0.229	mg/L	Added "Value is high" result flag in emLine.
09/01/2012	X25-96B	CONDF	28-Sep-11	7457	mg/L	Added "Value is high" result flag in emLine.
09/01/2012						September 2011 data posted in emLine.
16/01/2012	FCO	Fe-d	27-Oct-11	0.473	mg/L	Added "Value is high" result flag in emLine.
16/01/2012	NF2	Fe	20-Oct-11	0.844	mg/L	Added "Value is high" result flag in emLine.
16/01/2012	NF2	Mn	20-Oct-11	0.158	mg/L	Added "Value is high" result flag in emLine.
16/01/2012	NF2	Mn-d	20-Oct-11	0.121	mg/L	Added "Value is high" result flag in emLine.
16/01/2012	NF2	Pb	20-Oct-11	0.0216	mg/L	Added "Value is high" result flag in emLine.
16/01/2012	P03-01-8	WL-M	5-Oct-11	4.74	m	Added "Value is low" result flag in emLine.
16/01/2012	P03-03-4	pH	5-Oct-11	5.32		Added "Value is low" result flag in emLine.

Table B-38: Quality Assurance / Quality Control High/Low Action Record 2009-2011

Date of Action	Parameter Information					Action
	Station	Analyte	Date	Result	Units	
16/01/2012	P03-05-2	Zn-d	5-Oct-11	13.7	mg/L	Added "Value is high" result flag in emLine.
16/01/2012	P03-05-4	Mn-d	5-Oct-11	19.9	mg/L	Added "Value is high" result flag in emLine.
16/01/2012	P03-05-8	COND	6-Oct-11	11400	µS/cm	Added "Value is high" result flag in emLine.
16/01/2012	P03-05-8	Fe-d	6-Oct-11	4630	mg/L	Added "Value is high" result flag in emLine.
16/01/2012	P03-06-1	Al-d	6-Oct-11	0.39	mg/L	Added "Value is high" result flag in emLine.
16/01/2012	P03-06-4	WL-M	6-Oct-11	5.36	m	Added "Value is low" result flag in emLine.
16/01/2012	P05-01-6	ALK	12-Oct-11	390	mg/L	Added "Value is high" result flag in emLine.
16/01/2012	SP5-6	Fe-d	18-Oct-11	0.637	mg/L	Added "Value is high" result flag in emLine.
16/01/2012	X21-96A	Zn-d	13-Oct-11	659	mg/L	Added "Value is high" result flag in emLine.
16/01/2012						Posted October 2011 results in emLine.
17/01/2012	NFRC SC-3	Bi-d	14-Nov-11	0.000029	mg/L	Added "Value is high" result flag in emLine.
17/01/2012						Posted November 2011 results in emLine.
30/01/2012	X5	Fe-d	8-Dec-11	0.941	mg/L	Added "Value is high" result flag in emLine.
30/01/2012						Posted December 2011 results in emLine.

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Vangorda Creek Drainage Water Quality:

Pit Lakes and Surface, Seepage, and Ground Water

Table C-1: 2011 Vangorda Creek Drainage Water Quality
General Parameters

Station	Date	Sample Type	Acid(pH4.5) mg/L	Acid(pH8.3) mg/L	ALK mg/L	ALKPP mg/L	CaCO3 mg/L	CaCO3-d mg/L	Chloride mg/L	Chlorophyll a µg/L	CN 4500 mg/L	CNTHIO mg/L	CO3 mg/L	Colour TCU	COND µmho/cm	CONDF µS/cm	DO mg/L	DO-% %	DOC mg/L	HCO3 mg/L as CaCO3	Ion Balance (blank)	NH3 mg/L	NO2 mg/L	NO2/3 mg/L	NO3 mg/L	OH mg/L	oPO4 mg/L	ORP mV	pH (blank)	pHF (blank)	SO4-d mg/L	TDS mg/L	TEMP-F °C	TOC mg/L	TSS mg/L	TURB NTU
BH05-9B-R	**10/06/2011**	**Ground**	<0.5	<0.5	140	<0.5		213	1.6				<0.5		632	689				170.0	1.00					<0.5			8.08	7.56	160.0		4.9		97.0	
BH05-9B-R	**04/10/2011**	**Ground**	<0.5	1.2	140	<0.5		210	1.5				<0.5		627	400				180.0	0.98					<0.5			7.95	7.86	166.0		3.9		180.0	
BH05-9B-R Average			0.3	0.7	140	0.3		212	1.6				0.250		630	545				175.0	0.99					0.3			8.02	7.71	163.0		4.4		138.5	
BH05-9B-R Max			<0.5	1.2	140	<0.5		213	1.6				<0.5		632	689				180.0	1.00					<0.5			8.08	7.86	166.0		4.9		180.0	
BH05-9B-R Min			<0.5	<0.5	140	<0.5		210	1.5				<0.5		627	400				170.0	0.98					<0.5			7.95	7.56	160.0		3.9		97.0	
GC Weir	**26/04/2011**	**Surface**			270	<0.5	1020	1010	1.2				<0.5		1580	1580			5.60	330.0	1.00	0.021	0.02	1.78	1.76	<0.5			8.12	8.10	710.0	1300	1.0	5.10	<1.0	0.25
GC Weir	**10/05/2011**	**Surface**			150	<0.5	764	756	1.6				<0.5		1300	1420			4.00	190.0		0.030	0.02	3.30	3.30	<0.5			8.00	8.11	620.0	990	0.9	3.70	38.0	25.00
GC Weir	**18/05/2011**	**Surface**			80	<0.5	624	327	<0.5				<0.5		658	620			2.80	98.0	1.10	0.053	0.04	1.53	1.49	<0.5			7.92	8.15	210.0	450	5.9	10.50	4400.0	3110.00
GC Weir	**25/05/2011**	**Surface**			250	<0.5	1090	1090	0.9				<0.5		1640	1650			5.20	310.0	0.91	0.026	0.02	5.10	5.10	<0.5			8.16	7.99	920.0	1500	1.8	5.50	7.0	1.72
GC Weir	**06/06/2011**	**Surface**			310	<0.5	1280	1330	2.2				<0.5		2060	1947			3.80	380.0	1.00	0.014	<0.005	2.70	2.70	<0.5			8.14	8.14	980.0	2000	4.7	3.90	4.0	1.44
GC Weir	**22/06/2011**	**Surface**			290	<0.5	1490	1390	1.4				<0.5		2070	2250			4.40	360.0	1.00	0.068	0.01	8.40	8.40	<0.5			8.29	8.15	990.0	1800	4.5	4.40	160.0	44.00
GC Weir	**05/07/2011**	**Surface**			370	6.8	1510	1480	0.9				8.100		2260	2040			3.70	430.0	1.00	0.024	<0.005	5.60	5.60	<0.5			8.37	8.50	1000.0	2000	6.5	4.40	6.0	2.16
GC Weir	**21/07/2011**	**Surface**			370	<0.5	1580	1540	1.4				<0.5		2270	2340			3.50	450.0	0.97	0.042	0.04	6.80	6.80	<0.5			8.22	8.40	1200.0	2200	7.2	4.80	8.0	2.83
GC Weir	**03/08/2011**	**Surface**			390	<0.5	1380	1490	2.2				<0.5		2250	2013			4.80	470.0	0.94	0.017	<0.005	4.40	4.40	<0.5			8.30	8.20	1200.0	2200	9.7	4.00	9.0	1.70
GC Weir	**18/08/2011**	**Surface**			400	<0.5	1510	1530	1.6				<0.5		2250	1862			4.10	490.0	1.00	0.036	<0.005	4.40	4.40	<0.5			8.30	8.32	1000.0	2300	5.0	3.90	8.0	1.91
GC Weir	**07/09/2011**	**Surface**			410	<0.5	1570	1630	1.9				<0.5		2370	1559			3.90	500.0	1.00	0.039	<0.005	4.60	4.60	<0.5			8.28	8.06	1200.0	2300	3.4	4.60	3.0	0.60
GC Weir	**20/09/2011**	**Surface**			410	4.6	1610	1630	2.2				5.500		2350	2630			3.50	490.0	1.00	0.024	<0.005	4.60	4.60	<0.5			8.32	8.27	1100.0	2200	3.6	3.30	<1.0	0.56
GC Weir	**11/10/2011**	**Surface**			420	<0.5	1580	1620	1.4				<0.5		2370	1940			3.10	520.0	0.97	0.017	<0.005	4.40	4.40	<0.5			8.26	8.37	1210.0	2100	0.5	3.00	<1.0	0.47
GC Weir	**27/10/2011**	**Surface**			420	7.2	1620	1680	1.6				8.600		2340	2680			2.90	500.0	1.10	0.044	<0.005	4.70	4.70	<0.5			8.37	8.26	1140.0	2000	0.5	3.10	2.0	0.30
GC Weir	**08/11/2011**	**Surface**			420	<0.5	1620	1490	1.8				<0.5		2370	2450			3.80	510.0	0.86	0.043	<0.005	3.80	3.80	<0.5			8.16	8.44	1280.0	2100	0.0	3.80	7.0	1.66
GC Weir Average					331	1.4	1350	1333	1.5				1.680		2009	1932			3.94	401.9	0.99	0.033	0.01	4.41	4.40	0.3			8.21	8.23	984.0	1829	3.7	4.53	310.2	212.97
GC Weir Max					420	7.2	1620	1680	2.2				8.600		2370	2680			5.60	520.0	1.10	0.068	0.04	8.40	8.40	<0.5			8.37	8.50	1280.0	2300	9.7	10.50	4400.0	3110.00
GC Weir Min					80	<0.5	624	327	<0.5				<0.5		658	620			2.80	98.0	0.86	0.014	<0.005	1.53	1.49	<0.5			7.92	7.99	210.0	450	0.0	3.00	<1.0	0.25
GCA	**25/05/2011**	**Surface**			260	<0.5	1100	1140	1.3				<0.5		1740	1842			5.20	320.0	0.92	0.026	0.01	4.70	4.70	<0.5			8.06	7.76	950.0	1600	3.9	5.20	19.0	2.59
GD05 d/s	**22/05/2011**	**Seepage**	<0.5	11.4	370	<0.5		1780	1.4				<0.5		2510	2168				450.0	1.00					<0.5		118	8.17	7.90	1300.0		1.3		<1.0	
GD05 d/s	**22/09/2011**	**Seepage**	<0.5	21.6	470	<0.5		2250	2.2				<0.5		3180	3500				570.0	1.00					<0.5		149	8.14	7.60	1700.0		4.7		<1.0	
GD05 d/s Average			0.3	16.5	420	0.3		2015	1.8				0.250		2845	2834				510.0	1.00					0.3		134	8.16	7.75	1500.0		3.0		0.5	
GD05 d/s Max			<0.5	21.6	470	<0.5		2250	2.2				<0.5		3180	3500				570.0	1.00					<0.5		149	8.17	7.90	1700.0		4.7		<1.0	
GD05 d/s Min			<0.5	11.4	370	<0.5		1780	1.4				<0.5		2510	2168				450.0	1.00					<0.5		118	8.14	7.60	1300.0		1.3		<1.0	
GL-1	**12/04/2011**	**Surface**	<0.5	<0.5	290	6.1	545	554	1.4	<5.0			7.400		899	1100	14.80			340.0	0.99	0.220	<0.005	0.73	0.73	<0.5	<0.005	100	8.44	8.31	280.0	710	5.0		<1.0	
GL-1	**14/06/2011**	**Surface**	<0.5	7.2	140	<0.5	506	490	0.9	<5.0			<0.5		926	870	5.42			170.0	1.10	0.047	0.01	0.85	0.85	<0.5	<0.005	90	7.98	8.72	310.0	660	11.6		5.0	
GL-1	**12/07/2011**	**Surface**	<0.5	<0.5	110	<0.5	476	482	0.8	15.0			<0.5		883	800				130.0	1.10	0.026	<0.005	0.11	0.11	<0.5	<0.005	95	8.26	8.66	340.0	640	22.3		4.0	
GL-1	**09/08/2011**	**Surface**	<0.5	<0.5	120	3.3	478	495	1.6	<5.0			3.900		910	891	8.05	94.70		140.0	1.00	0.068	<0.005	0.41	0.41	<0.5	<0.005	65	8.43	8.86	360.0	750	14.2		5.0	
GL-1	**06/09/2011**	**Surface**	<0.5	<0.5	140	<0.5	539	494	1.0	<5.0			<0.5		936	937	8.55	89.40		170.0	0.98	0.070	<0.005	0.57	0.57	<0.5	<0.005	120	8.19	8.26	370.0	750	9.6		4.0	
GL-1 Average			0.3	1.6	160	2.0	509	503	1.1	5.0			2.410		911	920	9.21	92.05		190.0	1.03	0.086	0.00	0.53	0.53	0.3	0.003	94	8.26	8.56	332.0	702	12.5		3.7	
GL-1 Max			<0.5	7.2	290	6.1	545	554	1.6	15.0			7.400		936	1100	14.80	94.70		340.0	1.10	0.220	0.01	0.85	0.85	<0.5	<0.005	120	8.44	8.86	370.0	750	22.3		5.0	
GL-1 Min			<0.5	<0.5	110	<0.5	476	482	0.8	<5.0			<0.5		883	800	5.42	89.40		130.0	0.98	0.026	<0.005	0.11	0.11	<0.5	<0.005	65	7.98	8.26	280.0	640	5.0		<1.0	
GL-15	**12/04/2011**	**Surface**	<0.5	7.3	170	<0.5	605	613	1.2				<0.5		1070	1105	8.90			210.0	1.10	0.021	<0.005	0.99	0.99	<0.5	<0.005	110	7.99	8.01	410.0	790	4.6		<1.0	
GL-15	**14/06/2011**	**Surface**	<0.5	14.7	160	<0.5	598	575	1.0				<0.5		1030	1110	3.52			200.0	1.10	0.028	<0.005	1.04	1.04	<0.5	<0.005	120	7.97	8.70	370.0	780	6.5		<4.0	
GL-15	**12/07/2011**	**Surface**	<0.5	4.3	170	<0.5	595	601	0.8				<0.5		1050	1110				200.0	1.10	0.028	<0.005	1.07	1.07	<0.5	<0.005	140	7.79	8.03	400.0	800	9.3		<1.0	
GL-15	**09/08/2011**	**Surface**	<0.5	1.9	170	<0.5	580	595	1.5				<0.5		1060	1057	5.58	47.80		210.0	1.00	0.036	<0.005	0.92	0.92	<0.5	<0.005	180	7.97	8.51	420.0	810	5.2		<1.0	
GL-15	**06/09/2011**	**Surface**	<0.5	8.3	160	<0.5	628	544	1.1	<5.0			<0.5		1060	1060	5.24	50.00		200.0	0.98	0.071	<0.005	1.02	1.02	<0.5	<0.005	145	7.84	7.02	400.0	860	5.0		<1.0	
GL-15 Average			0.3	7.3	166	0.3	601	586	1.1	2.5			0.250		1054	1088	5.81	48.90		204.0	1.06	0.037	0.00	1.01	1.01	0.3	0.003	139	7.91	8.05	400.0	808	6.1		0.8	
GL-15 Max			<0.5	14.7	170	<0.5	628	613	1.5	<5.0			<0.5		1070	1110	8.90	50.00		210.0	1.10	0.071	<0.005	1.07	1.07	<0.5	<0.005	180	7.99	8.70	420.0	860	9.3		<4.0	
GL-15 Min			<0.5	1.9	160	<0.5	580	544	0.8	<5.0			<0.5		1030	1057	3.52	47.80		200.0	0.98	0.021	<0.005	0.92	0.92	<0.5	<0.005	110	7.79	7.02	370.0	780	4.6		<1.0	
GL-3	**12/04/2011**	**Surface**	<0.5	<0.5	170	<0.5	579	602	1.7	<5.0			<0.5		1050	1090	13.10			210.0	1.10	0.076	0.01	0.97	0.96	<0.5	<0.005	115	8.04	8.49	390.0	760	5.5		<1.0	
GL-3	**14/06/2011**	**Surface**	<0.5	8.3	140	<0.5	526	506	0.6	<5.0			<0.5		951	950	5.32			170.0	1.10	0.061	<0.005	0.86	0.86	<0.5	<0.005	110	7.95	8.51	310.0	680	10.9		<4.0	
GL-3	**12/07/2011**	**Surface**	<0.5	<0.5	140	3.1	532	518	1.2	20.0			3.800		931	930				160.0	1.10	0.023	<0.005	0.48	0.48	<0.5	<0.005	95	8.43	9.11	340.0	680	14.8		5.0	
GL-3	**09/08/2011**	**Surface**	<0.5	<0.5	120	4.9	469	498	1.6	<5.0			5.900		906	894	9.48	106.00		140.0	1.00	0.057	<0.005	0.38	0.38	<0.5	<0.005	70	8.50	9.12	370.0	630	13.8		6.0	
GL-3	**06/09/2011**	**Surface**	<0.5	1.9	130	<0.5	544	502	1.0	7.0			<0.5		944	942	8.00	82.30		160.0	1.00	0.160	<0.005	0.47	0.47	<0.5	<0.005	115	8.00	7.60	350.0	820	9.6		4.0	
GL-3 Average			0.3	2.2	140	1.8	530	525	1.2	6.9			2.090		956	961	8.98	94.15		168.0	1.06	0.075	0.00	0.63	0.63	0.3	0.003	101	8.18	8.57	352.0	714	10.9		3.5	
GL-3 Max			<0.5	8.3	170	4.9	579	602	1.7	20.0			5.900		1050	1090	13.10	106.00		210.0	1.10	0.160	0.01	0.97	0.96	<0.5	<0.005	115	8.50	9.12	390.0	820	14.8		6.0	
GL-3 Min			<0.5	<0.5	120	<0.5	469	498	0.6	<5.0			<0.5		906	894	5.32	82.30		140.0	1.00	0.023	<0.005	0.38	0.38	<0.5	<0.005	70	7.95	7.60	310.0	630	5.5		<1.0	
GL-30	**12/04/2011**	**Surface**	<0.5	5.3	170	<0.5	609	588	1.1				<0.5		1070	1120	8.30			210.0	1.00	0.013	<0.005	0.97	0.97	<0.5	<0.005	120	7.85	7.91	410.0	780	4.5		<1.0	
GL-30	**14/06/2011**	**Surface**	<0.5	15.5	170	<0.5	588	570	1.0				<0.5		1070	1100	3.76			210.0	1.10	0.033	<0.005	1.04	1.04	<0.5	<0.005	105	7.97	8.45	360.0	780	6.6		<4.0	
GL-30	**12/07/2011**	**Surface**	<0.5	5.4	170	<0.5	586	607	0.9				<0.5		1060	1080				210.0	1.10	0.037	<0.005	1.08	1.08	<0.5	<0.005	155	7.84	7.97	390.0	800	6.0		<1.0	
GL-30	**09/08/2011**	**Surface**	<0.5	2.3	170	<0.5	559	596	1.5				<0.5		1090	1067	5.58	53.20		210.0	1.00	0.046	<0.005	1.01	1.01	<0.5	<0.005	160	8.05	8.36	420.0	810	5.3		<1.0	
GL-30	**06/09/2011**	**Surface**	<0.5	4.1	170	<0.5	620	548	1.0				<0.5		1070	1066	4.81	45.50		200.0	0.95	0.082	<0.005	1.04	1.04	<0.5	0.008	150	8.00	6.91	420.0	840	4.5		<1.0	
GL-30 Average			0.3	6.5	170	0.3	592	582	1.1				0.250		1072	1087	5.61	49.35		208.0	1.03	0.042	0.00	1.03	1.03	0.3	0.004	138	7.94	7.92	400.0	802	5.4		0.8	
GL-30 Max			<0.5	15.5	170	<0.5	620	607	1.5				<0.5		1090	1120	8.30	53.20		210.0	1.10	0.082	<0.005	1.08	1.08	<0.5	0.008	160	8.05	8.45	420.0	840	6.6		<4.0	
GL-30 Min			<0.5	2.3	170	<0.5	559	548	0.9				<0.5		1060	1066	3.76	45.50		200.0	0.95	0.013	<0.005	0.97	0.97	<0.5	<0.005	105	7.84	6.91	360.0	780	4.5		<1.0	
GL-5	**12/04/2011**	**Surface**	<0.5	<0.5	170	<0.5	572	559	1.2	<5.0			<0.5		1070	1080	10.00			210.0	1.00	0.090	0.01	1.03	1.02	<0.5	<0.005	105	8.01	8.17	380.0	770	5.5		<1.0	
GL-5	**14/06/2011**	**Surface**	<0.5	12.0	160	<0.5	573	563	1.5	8.0			<0.5		1060	1009	4.21			200.0	1.10	0.037	<0.005	1.00	1.00	<0.5	<0.005	115	7.90	8.35	370.0	760	7.6		<4.0	
GL-5	**12/07/2011**	**Surface**	<0.5	4.5	160	<0.5	588	600	0.7	<5.0			<0.5		1040	1070				200.0	1.10	0.039	<0.005	0.95	0.95	<0.5	<0.005	140	7.90	8.16	380.0	790	9.3		120.0	
GL-5	**09/08/2011**	**Surface**	<0.5	0.9	170	<0.5	552	578	1.5	6.0			<0.5		1040	1047	8.56	84.20		200.0	1.00	0.022	<0.005	0.75	0.75	<0.5	<0.005	165	7.82	8.31	420.0	820	8.5		2.0	
GL-5	**06/09/2011**	**Surface**	<0.5	3.1	140	<0.5	557	501	1.0	<5.0			<0.5		967	957	7.26	82.10		170.0	0.97	0.058	<0.005	0.60	0.60	<0.5	<0.005	120	7.97	7.32	380.0	790	9.6		4.0	
GL-5 Average			0.3	4.2	160	0.3	568	560	1.2	4.3			0.250		1035	1033	7.51	83.15		196.0	1.03	0.049	0.00	0.87	0.86	0.3	0.003	129	7.92	8.06	386.0	786	8.1		25.7	
GL-5 Max			<0.5	12.0	170	<0.5	588	600	1.5	8.0			<0.5		1070	1080	10.00	84.20		210.0	1.10	0.090	0.01	1.03	1.02	<0.5	<0.005	165	8.01	8.35	420.0	820	9.6		120.0	
GL-5 Min			<0.5	<0.5	140	<0.5	552	501	0.7	<5.0			<0.5		967	957	4.21	82.10		170.0	0.97	0.022	<0.005	0.60	0.60	<0.5	<0.005	105	7.82	7.32	370.0	760	5.5		<1.0	
GL-60	**12/04/2011**	**Surface**	<0.5	5.3	170	<0.5	614	601	1.1				<0.5		1090	1115	6.60			210.0	0.95	0.015	<0.005	1.01	1.01	<0.5	<0.005	120	7.88	7.94	470.0	780	4.9		<1.0	
GL-60	**14/06/2011**	**Surface**	<0.5	13.5	170	<0.5	573	574	0.8				<0.5		1060	1110	3.76			200.0	1.10	0.021	<0.005	1.04	1.04	<0.5	<0.005	135	7.87	8.45	370.0	770	7.2		<4.0	
GL-60	**12/07/2011**	**Surface**	<0.5	4.8	170	<0.5	566	585	1.0				<0.5		1070	1100				210.0	1.10	0.023	<0.005	1.01	1.01	<0.5	<0.005	145	7.79		400.0	800			<1.0	
GL-60	**09/08/2011**	**Surface**	<0.5	2.8	170	<0.5	563	590	1.4				<0.5		1070	1059	4.84	43.80		210.0	1.00	0.055	<0.005	0.90	0.90	<0.5	<0.005	155	7.96	8.25	410.0	810	4.9		<1.0	
GL-60	**06/09/2011**	**Surface**	<0.5	4.2	170	<0.5	617	544	1.0				<0.5		1070	1070	4.80	45.40		210.0	0.93	0.095	<0.005	1.03	1.03	<0.5	<0.005	140	7.96		430.0	900	4.5		<1.0	
GL-60 Average			0.3	6.1	170	0.3	587	579	1.1				0.250		1072	1091	5.00	44.60		208.0	1.02	0.042	0.00	1.00	1.00	0.3	0.003	139	7.89	8.21	416.0	812	5.4		0.8	
GL-60 Max			<0.5	13.5	170	<0.5	617	601	1.4				<0.5		1090	1115	6.60	45.40		210.0	1.10	0.095	<0.005	1.04	1.04	<0.5	<0.005	155	7.96	8.45	470.0	900	7.2		<4.0	
GL-60 Min			<0.5	2.8	170	<0.5	563	544	0.8				<0.5		1060	1059	3.76	43.80		200.0	0.93	0.015	<0.005	0.90	0.90	<0.5	<0.005	120	7.79	7.94	370.0	770	4.5		<1.0	

Note: Statistics calculated with DLs at half value.

Table C-1: 2011 Vangorda Creek Drainage Water Quality
General Parameters

Station	Date	Sample Type	Acid(pH4.5) mg/L	Acid(pH8.3) mg/L	ALK mg/L	ALKPP mg/L	CaCO3 mg/L	CaCO3-d mg/L	Chloride mg/L	Chlorophyll a µg/L	CN 4500 mg/L	CNTHIO mg/L	CO3 mg/L	Colour TCU	COND µmho/cm	CONDF µS/cm	DO mg/L	DO-% %	DOC mg/L	HCO3 mg/L as CaCO3	Ion Balance (blank)	NH3 mg/L	NO2 mg/L	NO2/3 mg/L	NO3 mg/L	OH mg/L	oPO4 mg/L	ORP mV	pH (blank)	pHF (blank)	SO4-d mg/L	TDS mg/L	TEMP-F °C	TOC mg/L	TSS mg/L	TURB NTU
LCD	**15/06/2011**	**Surface**			<0.5	<0.5	1100	985	<0.5				<0.5		2440	2201				<0.5	0.94	0.150	<0.005	0.32	0.32	<0.5			3.66	3.43	1500.0	2400	14.2		<1.0	
LCD	**13/07/2011**	**Surface**			<0.5	<0.5	1410	1410	<0.5				<0.5		2890	2280				<0.5	1.00	0.032	<0.005	0.21	0.21	<0.5			3.66	3.48	1900.0	2900	17.0		3.0	
LCD	**10/08/2011**	**Surface**			<0.5	<0.5	1510	1590	<0.5				<0.5		3800	2790				<0.5	0.93	0.093	<0.005	0.11	0.11	<0.5			3.41	3.11	2600.0	4300	14.3		2.0	
LCD	**13/09/2011**	**Surface**			<0.5	<0.5	1810	1750	0.9				<0.5		4390	3974				<0.5	0.94	0.071	<0.005	<0.02	<0.02	<0.5			3.30	2.85	3400.0	4800	10.7		27.0	
LCD Average					0	0.3	1458	1434	0.4				0.250		3380	2811				0.3	0.95	0.087	0.00	0.16	0.16	0.3			3.51	3.22	2350.0	3600	14.1		8.1	
LCD Max					<0.5	<0.5	1810	1750	0.9				<0.5		4390	3974				<0.5	1.00	0.150	<0.005	0.32	0.32	<0.5			3.66	3.48	3400.0	4800	17.0		27.0	
LCD Min					<0.5	<0.5	1100	985	<0.5				<0.5		2440	2201				<0.5	0.93	0.032	<0.005	<0.02	<0.02	<0.5			3.30	2.85	1500.0	2400	10.7		<1.0	
Moose Pond	**25/05/2011**	**Surface**			250	<0.5	1050	1050	1.0				<0.5		1620	1549			5.20	310.0	0.86	0.093	0.01	4.40	4.40	<0.5			8.24	7.56	940.0	1400	6.3	5.20	36.0	6.03
MOOSE SEEP	**04/01/2011**	**Seepage**	<0.5	15.3	340	<0.5		1540	1.1				<0.5		2320	2307				410.0	1.00					<0.5	186	7.79	7.91	1200.0		1.2		3.0	
MOOSE SEEP	**03/02/2011**	**Seepage**	<0.5	12.8	340	<0.5		1510	0.8				<0.5		2290	2195				420.0	1.00					<0.5	154	7.89	7.93	1100.0		0.5		6.0	
MOOSE SEEP	**03/03/2011**	**Seepage**	<0.5	15.9	340	<0.5		1590	1.2				<0.5		2260	2246				420.0	1.10					<0.5	75	7.88	7.55	1100.0		0.7		22.0	
MOOSE SEEP	**11/04/2011**	**Seepage**	<0.5	13.2	330	<0.5		1430	1.0				<0.5		2140	2170				400.0	1.00					<0.5	29	7.89	7.52	1000.0		0.8		11.0	
MOOSE SEEP	**10/05/2011**	**Seepage**	<0.5	17.4	330	<0.5		1350	1.2				<0.5		2130	2280				400.0	0.94					<0.5	2	8.07	7.46	1100.0		1.1		5.0	
MOOSE SEEP	**18/05/2011**	**Seepage**	<0.5	8.8	270	<0.5		1220	1.3				<0.5		1950	1918				330.0	0.98					<0.5	7	8.19	7.78	950.0		3.2		<1.0	
MOOSE SEEP	**06/06/2011**	**Seepage**	<0.5	3.5	240	<0.5		823	0.8				<0.5		1580	1479				300.0						<0.5		7.98	7.88	690.0		5.3		<1.0	
MOOSE SEEP	**22/06/2011**	**Seepage**	<0.5	4.0	230	<0.5		984	1.0				<0.5		1590	1800				280.0	1.00					<0.5	100	8.18	7.70	710.0		4.9		<1.0	
MOOSE SEEP	**05/07/2011**	**Seepage**	<0.5	<0.5	260	<0.5		1150	1.6				<0.5		1800	1685				320.0	1.10					<0.5	165	8.21	8.13	800.0		5.4		<1.0	
MOOSE SEEP	**21/07/2011**	**Seepage**	<0.5	13.8	290	<0.5		1230	1.4				<0.5		1950	2040				350.0	0.99					<0.5	124	8.09	7.72	940.0		7.6		<1.0	
MOOSE SEEP	**03/08/2011**	**Seepage**	<0.5	<0.5	300	<0.5		1290	1.9				<0.5		2040	1876				370.0	0.92					<0.5	60	8.05	7.65	1100.0		6.9		6.0	
MOOSE SEEP	**18/08/2011**	**Seepage**	<0.5	18.7	320	<0.5		1380	1.7				<0.5		2120	1755				390.0	1.10					<0.5	120	8.06	7.66	980.0		5.8		<1.0	
MOOSE SEEP	**07/09/2011**	**Seepage**	<0.5	8.3	330	<0.5		1590	1.8				<0.5		2250	1509				400.0	1.10					<0.5	109	7.94	7.46	1100.0		4.2		2.0	
MOOSE SEEP	**20/09/2011**	**Seepage**	<0.5	18.3	330	<0.5		1510	1.7				<0.5		2270	2420				400.0	1.00					<0.5	182	7.95	7.41	1200.0		5.4		<1.0	
MOOSE SEEP	**11/10/2011**	**Seepage**	<0.5	9.9	340	<0.5		1550	1.1				<0.5		2320	1879				420.0						<0.5	129	7.95	7.68	1180.0		3.4		<4.0	
MOOSE SEEP	**27/10/2011**	**Seepage**	<0.5	0.6	350	<0.5		1600	1.0				<0.5		2280	2550				420.0	1.10					<0.5	110	8.07	8.05	1140.0		1.9		8.0	
MOOSE SEEP	**08/11/2011**	**Seepage**	<0.5	24.0	350	<0.5		1460	1.8				<0.5		2300	1190				430.0	0.90					<0.5	153	7.92	8.17	1260.0		0.2		2.0	
MOOSE SEEP	**01/12/2011**	**Seepage**	<0.5	3.9	350	<0.5		1490	1.0				<0.5		2240	2309				427.0	0.99					<0.5		8.05	7.73	1130.0		1.5		1.8	
MOOSE SEEP Average			0.3	10.5	313	0.3		1372	1.3				0.250		2102	1978				382.6	1.01					0.3	107	8.01	7.74	1037.8		3.3		4.0	
MOOSE SEEP Max			<0.5	24.0	350	<0.5		1600	1.9				<0.5		2320	2550				430.0	1.10					<0.5	186	8.21	8.17	1260.0		7.6		22.0	
MOOSE SEEP Min			<0.5	<0.5	230	<0.5		823	0.8				<0.5		1580	1190				280.0	0.90					<0.5	2	7.79	7.41	690.0		0.2		<1.0	
P09-GS1A	**05/07/2011**	**Ground**	<0.5	2.1	240	<0.5		876	1.3				<0.5		1480	1553				290.0						<0.5		7.80	7.01	640.0		4.6		48.0	
P09-GS1A	**13/10/2011**	**Ground**	<0.5	33.1	230	<0.5		883	1.2				<0.5		1430	2109				280.0	1.00					<0.5		7.76	7.54	645.0		3.7		760.0	
P09-GS1A Average			0.3	17.6	235	0.3		880	1.3				0.250		1455	1831				285.0	1.00					0.3		7.78	7.28	642.5		4.2		404.0	
P09-GS1A Max			<0.5	33.1	240	<0.5		883	1.3				<0.5		1480	2109				290.0	1.00					<0.5		7.80	7.54	645.0		4.6		760.0	
P09-GS1A Min			<0.5	2.1	230	<0.5		876	1.2				<0.5		1430	1553				280.0	1.00					<0.5		7.76	7.01	640.0		3.7		48.0	
P09-GS1B	**29/06/2011**	**Ground**	<0.5	45.8	130	<0.5		711	1.0				<0.5		1190	1452				160.0	1.10					<0.5		7.04	6.91	540.0		3.2		54.0	
P09-GS1B	**06/10/2011**	**Ground**	<0.5	35.6	270	<0.5		917	0.6				<0.5		1530	2232				340.0						<0.5		7.69	6.83	687.0		5.6		350.0	
P09-GS1B Average			0.3	40.7	200	0.3		814	0.8				0.250		1360	1842				250.0	1.10					0.3		7.37	6.87	613.5		4.4		202.0	
P09-GS1B Max			<0.5	45.8	270	<0.5		917	1.0				<0.5		1530	2232				340.0	1.10					<0.5		7.69	6.91	687.0		5.6		350.0	
P09-GS1B Min			<0.5	35.6	130	<0.5		711	0.6				<0.5		1190	1452				160.0	1.10					<0.5		7.04	6.83	540.0		3.2		54.0	
P09-GW3	**13/06/2011**	**Ground**	<0.5	13.4	440	<0.5		1650	1.6				<0.5		2440	1904				530.0	1.00					<0.5		7.87	7.40	1100.0		4.6		550.0	
P09-LCD1	**13/06/2011**	**Ground**	<0.5	4.0	260	<0.5		420	0.6				<0.5		813	870				320.0	1.00					<0.5		7.72	7.22	190.0		3.4		250.0	
P09-LCD1	**12/10/2011**	**Ground**	<0.5	10.8	270	<0.5		443	0.8				<0.5		814	1349				320.0	1.10					<0.5		7.95	7.42	185.0		3.3		200.0	
P09-LCD1 Average			0.3	7.4	265	0.3		432	0.7				0.250		814	1110				320.0	1.05					0.3		7.84	7.32	187.5		3.3		225.0	
P09-LCD1 Max			<0.5	10.8	270	<0.5		443	0.8				<0.5		814	1349				320.0	1.10					<0.5		7.95	7.42	190.0		3.4		250.0	
P09-LCD1 Min			<0.5	4.0	260	<0.5		420	0.6				<0.5		813	870				320.0	1.00					<0.5		7.72	7.22	185.0		3.3		200.0	
P09-LCD6	**13/06/2011**	**Ground**	<0.5	7.4	250	<0.5		507	2.0				<0.5		906	981				310.0	1.10					<0.5		7.66	7.29	230.0		3.9		8900.0	
P09-LCD6	**12/10/2011**	**Ground**	<0.5	20.1	270	<0.5		539	0.6				<0.5		969	1467				330.0	1.00					<0.5		7.89	7.37	277.0		2.8		960.0	
P09-LCD6 Average			0.3	13.8	260	0.3		523	1.3				0.250		938	1224				320.0	1.05					0.3		7.78	7.33	253.5		3.3		4930.0	
P09-LCD6 Max			<0.5	20.1	270	<0.5		539	2.0				<0.5		969	1467				330.0	1.10					<0.5		7.89	7.37	277.0		3.9		8900.0	
P09-LCD6 Min			<0.5	7.4	250	<0.5		507	0.6				<0.5		906	981				310.0	1.00					<0.5		7.66	7.29	230.0		2.8		960.0	
P09-VC1	**11/06/2011**	**Ground**	<0.5	<0.5	140	<0.5		168	<0.5				<0.5		387	405				170.0	0.99					<0.5		7.98	7.55	59.0		4.1		41.0	
P09-VC1	**20/10/2011**	**Ground**	<0.5	1.4	110	<0.5		158	<0.5				<0.5		402	391				140.0	1.10					<0.5		7.98	8.02	82.7		1.6		9.0	
P09-VC1 Average			0.3	0.8	125	0.3		163	0.3				0.250		395	398				155.0	1.05					0.3		7.98	7.79	70.9		2.9		25.0	
P09-VC1 Max			<0.5	1.4	140	<0.5		168	<0.5				<0.5		402	405				170.0	1.10					<0.5		7.98	8.02	82.7		4.1		41.0	
P09-VC1 Min			<0.5	<0.5	110	<0.5		158	<0.5				<0.5		387	391				140.0	0.99					<0.5		7.98	7.55	59.0		1.6		9.0	
P09-VC2	**11/06/2011**	**Ground**	<0.5	1.6	170	<0.5		200	<0.5				<0.5		417	435				210.0	1.10					<0.5		7.87	7.11	23.0		3.9		160.0	
P09-VC2	**05/10/2011**	**Ground**	<0.5	<0.5	170	<0.5		203	0.6				<0.5		395	581				210.0						<0.5		8.08	7.42	43.6		3.6		11.0	
P09-VC2 Average			0.3	0.9	170	0.3		202	0.4				0.250		406	508				210.0	1.10					0.3		7.98	7.27	33.3		3.7		85.5	
P09-VC2 Max			<0.5	1.6	170	<0.5		203	0.6				<0.5		417	581				210.0	1.10					<0.5		8.08	7.42	43.6		3.9		160.0	
P09-VC2 Min			<0.5	<0.5	170	<0.5		200	<0.5				<0.5		395	435				210.0	1.10					<0.5		7.87	7.11	23.0		3.6		11.0	
P2001-2A	**11/06/2011**	**Ground**	<0.5	28.2	500	<0.5		1310	3.5				<0.5		1910	2000				610.0	1.10					<0.5		7.65	6.95	710.0		4.3		5600.0	
P2001-2A	**12/10/2011**	**Ground**	<0.5	28.7	480	<0.5		1320	1.7				<0.5		1850	2880				590.0	1.10					<0.5		7.73	7.14	758.0		2.8		2900.0	
P2001-2A Average			0.3	28.5	490	0.3		1315	2.6				0.250		1880	2440				600.0	1.10					0.3		7.69	7.05	734.0		3.6		4250.0	
P2001-2A Max			<0.5	28.7	500	<0.5		1320	3.5				<0.5		1910	2880				610.0	1.10					<0.5		7.73	7.14	758.0		4.3		5600.0	
P2001-2A Min			<0.5	28.2	480	<0.5		1310	1.7				<0.5		1850	2000				590.0	1.10					<0.5		7.65	6.95	710.0		2.8		2900.0	
P2001-2B	**13/06/2011**	**Ground**	<0.5	29.0	500	<0.5		1260	1.9				<0.5		1900	2030				620.0	1.00					<0.5		7.62	6.95	730.0		3.8		260.0	
P2001-2B	**06/10/2011**	**Ground**	<0.5	35.7	470	<0.5		1220	1.9				<0.5		1760	2788				570.0						<0.5		7.61	7.11	671.0		3.5		2800.0	
P2001-2B Average			0.3	32.4	485	0.3		1240	1.9				0.250		1830	2409				595.0	1.00					0.3		7.62	7.03	700.5		3.7		1530.0	
P2001-2B Max			<0.5	35.7	500	<0.5		1260	1.9				<0.5		1900	2788				620.0	1.00					<0.5		7.62	7.11	730.0		3.8		2800.0	
P2001-2B Min			<0.5	29.0	470	<0.5		1220	1.9				<0.5		1760	2030				570.0	1.00					<0.5		7.61	6.95	671.0		3.5		260.0	
P2001-3	**08/06/2011**	**Ground**	<0.5	10.8	410	<0.5		486	0.7				<0.5		923	1178				500.0	1.00					<0.5		7.92	7.98	130.0		3.9		37.0	
P2001-3	**17/10/2011**	**Ground**	<0.5	24.8	440	<0.5		484	1.2				<0.5		953	1450				540.0	0.98					<0.5		7.90	8.03	122.0		2.5		1100.0	
P2001-3 Average			0.3	17.8	425	0.3		485	1.0				0.250		938	1314				520.0	0.99					0.3		7.91	8.01	126.0		3.2		568.5	
P2001-3 Max			<0.5	24.8	440	<0.5		486	1.2				<0.5		953	1450				540.0	1.00					<0.5		7.92	8.03	130.0		3.9		1100.0	
P2001-3 Min			<0.5	10.8	410	<0.5		484	0.7				<0.5		923	1178				500.0	0.98					<0.5		7.90	7.98	122.0		2.5		37.0	
P96-9A	**10/06/2011**	**Ground**	<0.5	21.4	330	<0.5		2260	1.4				<0.5		2990	3070				400.0	1.10					<0.5		7.65	6.89	1700.0		2.0		12.0	
P96-9A	**04/10/2011**	**Ground**	<0.5	63.6	500	<0.5		2490	1.9				<0.5		3590	3597				610.0	1.00					<0.5		7.47	6.88	1930.0		7.6		3.0	
P96-9A Average			0.3	42.5	415	0.3		2375	1.7				0.250		3290	3334				505.0	1.05					0.3		7.56	6.89	1815.0		4.8		7.5	
P96-9A Max			<0.5	63.6	500	<0.5		2490	1.9				<0.5		3590	3597				610.0	1.10					<0.5		7.65	6.89	1930.0		7.6		12.0	
P96-9A Min			<0.5	21.4	330	<0.5		2260	1.4				<0.5		2990	3070				400.0	1.00					<0.5		7.47	6.88	1700.0		2.0		3.0	

Note: Statistics calculated with DLs at half value.

Table C-1: 2011 Vangorda Creek Drainage Water Quality
General Parameters

Station	Date	Sample Type	Acid(pH4.5) mg/L	Acid(pH8.3) mg/L	ALK mg/L	ALKPP mg/L	CaCO3 mg/L	CaCO3-d mg/L	Chloride mg/L	Chlorophyll a µg/L	CN 4500 mg/L	CNTHIO mg/L	CO3 mg/L	Colour TCU	COND µmho/cm	CONDF µS/cm	DO mg/L	DO-% %	DOC mg/L	HCO3 mg/L as CaCO3	Ion Balance (blank)	NH3 mg/L	NO2 mg/L	NO2/3 mg/L	NO3 mg/L	OH mg/L	oPO4 mg/L	ORP mV	pH (blank)	pHF (blank)	SO4-d mg/L	TDS mg/L	TEMP-F °C	TOC mg/L	TSS mg/L	TURB NTU
PW-10-01 (DH1)	**14/02/2011**	**Ground**	<0.5	692.0	2000	<0.5		50800	15.0				<0.5		33800	>20000.0				2400.0	1.10					<0.5			6.96	6.42	44000.0		13.5		370.0	
PW-10-01 (DH1)	**23/06/2011**	**Ground**	<0.5	651.0	<0.5	<0.5		51700	7.0				<0.5		32300	36325				<0.5	0.94					<0.5			7.46	6.58	53000.0		16.5		720.0	
PW-10-01 (DH1)	**20/10/2011**	**Ground**	<0.5	734.0	2100	<0.5		71600	9.0				<0.5		43600	20345				2500.0	0.90					<0.5			6.86	6.65	75300.0		2.5		2500.0	
PW-10-01 (DH1) Average			0.3	692.3	1367	0.3		58033	10.3				0.250		36567	25557				1633.4	0.98					0.3			7.09	6.55	57433.3		10.8		1196.7	
PW-10-01 (DH1) Max			<0.5	734.0	2100	<0.5		71600	15.0				<0.5		43600	36325				2500.0	1.10					<0.5			7.46	6.65	75300.0		16.5		2500.0	
PW-10-01 (DH1) Min			<0.5	651.0	<0.5	<0.5		50800	7.0				<0.5		32300	20000				<0.5	0.90					<0.5			6.86	6.42	44000.0		2.5		370.0	
PW-10-02 (DH2)	**14/02/2011**	**Ground**	<0.5	79.5	470	<0.5		1270	6.9				<0.5		2040	1650				570.0	1.00					<0.5			7.14	6.86	790.0		0.1		360.0	
PW-10-02 (DH2)	**27/06/2011**	**Ground**	<0.5	301.0	470	<0.5		2570	2.4				<0.5		3990	4385				580.0	1.00					<0.5			6.66	6.56	2300.0		5.9		3000.0	
PW-10-02 (DH2)	**24/10/2011**	**Ground**	<0.5	216.0	600	<0.5		2530	2.2				<0.5		3920	3432				730.0	0.88					<0.5			6.77	6.62	2450.0		1.2		3100.0	
PW-10-02 (DH2) Average			0.3	198.8	513	0.3		2123	3.8				0.250		3317	3156				626.7	0.96					0.3			6.86	6.68	1846.7		2.4		2153.3	
PW-10-02 (DH2) Max			<0.5	301.0	600	<0.5		2570	6.9				<0.5		3990	4385				730.0	1.00					<0.5			7.14	6.86	2450.0		5.9		3100.0	
PW-10-02 (DH2) Min			<0.5	79.5	470	<0.5		1270	2.2				<0.5		2040	1650				570.0	0.88					<0.5			6.66	6.56	790.0		0.1		360.0	
PW-10-03 (DH3)	**14/02/2011**	**Ground**	<0.5	243.0	720	<0.5		1190	5.7				<0.5		1990	2190				880.0	1.00					<0.5			6.98	6.78	610.0		0.3		310.0	
PW-10-03 (DH3)	**27/06/2011**	**Ground**	<0.5	232.0	600	<0.5		1330	4.7				<0.5		2160	2363				730.0	1.00					<0.5			7.02	6.81	810.0		4.5		90.0	
PW-10-03 (DH3)	**24/10/2011**	**Ground**	<0.5	169.0	570	<0.5		1600	4.7				<0.5		2370	2166				690.0	1.20					<0.5			6.61	6.67	1000.0		2.8		330.0	
PW-10-03 (DH3) Average			0.3	214.7	630	0.3		1373	5.0				0.250		2173	2240				766.7	1.07					0.3			6.87	6.75	806.7		2.5		243.3	
PW-10-03 (DH3) Max			<0.5	243.0	720	<0.5		1600	5.7				<0.5		2370	2363				880.0	1.20					<0.5			7.02	6.81	1000.0		4.5		330.0	
PW-10-03 (DH3) Min			<0.5	169.0	570	<0.5		1190	4.7				<0.5		1990	2166				690.0	1.00					<0.5			6.61	6.67	610.0		0.3		90.0	
Sheep Creek	**22/05/2011**	**Seepage**	<0.5	<0.5	220	<0.5		287	<0.5				<0.5		567	493				270.0	0.88					<0.5	147		8.25	8.16	110.0		0.4		100.0	
Sheep Creek	**22/09/2011**	**Seepage**	<0.5	<0.5	230	2.4		347	0.9				2.900		644	760				280.0	0.97					<0.5	128		8.33	7.97	120.0		4.9		<1.0	
Sheep Creek Average			0.3	0.3	225	1.3		317	0.6				1.575		606	627				275.0	0.93					0.3	138		8.29	8.07	115.0		2.7		50.3	
Sheep Creek Max			<0.5	<0.5	230	2.4		347	0.9				2.900		644	760				280.0	0.97					<0.5	147		8.33	8.16	120.0		4.9		100.0	
Sheep Creek Min			<0.5	<0.5	220	<0.5		287	<0.5				<0.5		567	493				270.0	0.88					<0.5	128		8.25	7.97	110.0		0.4		<1.0	
SRK GD01	**24/01/2011**	**Seepage**	<0.5	18.7	530	<0.5		2800	2.1				<0.5		3510	3275				640.0	1.20					<0.5	130		7.72	7.70	1800.0		1.3		2.0	
SRK GD01	**17/02/2011**	**Seepage**	<0.5	27.1	530	<0.5		2540	2.2				<0.5		3530	3566				640.0	1.10					<0.5	55		7.85	7.73	1800.0		0.0		<1.0	
SRK GD01	**28/03/2011**	**Seepage**	<0.5	28.6	520	<0.5		2500	<0.5				<0.5		3530	3511				630.0	1.10	0.026				<0.5	86		8.03	7.56	1700.0		1.7		44.0	
SRK GD01	**20/04/2011**	**Seepage**	<0.5	24.3	550	<0.5		2880	1.6				<0.5		3700	3112				670.0	1.10	<0.005				<0.5			7.97	7.71	2000.0		1.8		2.0	
SRK GD01	**17/05/2011**	**Seepage**	<0.5	16.1	140	<0.5		699	1.3				<0.5		1180	1263				180.0	1.10	0.011				<0.5			7.58	6.98	490.0		3.0		33.0	
SRK GD01	**16/06/2011**	**Seepage**	<0.5	67.8	470	<0.5		2360	2.8				<0.5		3030	2565				570.0	1.10					<0.5	177		7.64	7.01	1600.0		2.8		7.0	
SRK GD01	**11/07/2011**	**Seepage**	<0.5	62.6	490	<0.5		2160	1.6				<0.5		3120	2850				600.0	1.00					<0.5	110		7.61	6.40	1600.0		3.0		<1.0	
SRK GD01	**10/08/2011**	**Seepage**	<0.5	34.2	440	<0.5		2180	2.1				<0.5		2950	2753				530.0						<0.5	200		8.14	6.98	1600.0		4.0		4.0	
SRK GD01	**13/09/2011**	**Seepage**	<0.5	63.4	540	<0.5		2130	2.2				<0.5		3010	2760				660.0	1.00					<0.5			7.48	7.62	1500.0		3.3		3.0	
SRK GD01	**18/10/2011**	**Seepage**		44.8	600	<0.5	1990	2260	2.1				<0.5		3060	2725			3.10	730.0						<0.5	101		7.74	6.99	1610.0		1.9		1.0	
SRK GD01	**23/11/2011**	**Seepage**	<0.5	<0.5	537	<0.5		2120	1.9				<0.5		3080	2818				655.0	0.96					<0.5	196		7.93	7.53	1640.0		0.7		1.2	
SRK GD01	**13/12/2011**	**Seepage**	<0.5	13.9	541	<0.5		2300	1.7				<0.5		3140	3051				661.0	1.10					<0.5	135		8.04	7.73	1560.0		2.3		1.5	
SRK GD01 Average			0.3	33.5	491	0.3	1990	2244	1.8				0.250		3070	2854			3.10	597.2	1.08	0.013				0.3	132		7.81	7.33	1575.0		2.2		8.3	
SRK GD01 Max			<0.5	67.8	600	<0.5	1990	2880	2.8				<0.5		3700	3566			3.10	730.0	1.20	0.026				<0.5	200		8.14	7.73	2000.0		4.0		44.0	
SRK GD01 Min			<0.5	<0.5	140	<0.5	1990	699	<0.5				<0.5		1180	1263			3.10	180.0	0.96	<0.005				<0.5	55		7.48	6.40	490.0		0.0		<1.0	
SRK05-5C	**10/06/2011**	**Ground**	<0.5	1.8	200	<0.5		585	0.8				<0.5		994	984				240.0	1.10					<0.5			8.00	7.72	350.0		5.0		6700.0	
SRK05-5C	**04/10/2011**	**Ground**	<0.5	2.7	140	<0.5		196	<0.5				<0.5		454	463				170.0	0.99					<0.5			7.93	7.78	95.0		4.4		15000.0	
SRK05-5C Average			0.3	2.3	170	0.3		391	0.5				0.250		724	724				205.0	1.05					0.3			7.97	7.75	222.5		4.7		10850.0	
SRK05-5C Max			<0.5	2.7	200	<0.5		585	0.8				<0.5		994	984				240.0	1.10					<0.5			8.00	7.78	350.0		5.0		15000.0	
SRK05-5C Min			<0.5	1.8	140	<0.5		196	<0.5				<0.5		454	463				170.0	0.99					<0.5			7.93	7.72	95.0		4.4		6700.0	
SRK05-7	**14/06/2011**	**Ground**	<0.5	24.4	480	<0.5		2090	2.1				<0.5		2870	1659				590.0	1.10					<0.5			7.62	7.35	1500.0		3.7		6100.0	
SRK05-7	**05/10/2011**	**Ground**	<0.5	47.5	540	<0.5		2490	2.6				<0.5		3090	4623				660.0						<0.5			7.38	6.90	1770.0		4.9		3200.0	
SRK05-7 Average			0.3	36.0	510	0.3		2290	2.4				0.250		2980	3141				625.0	1.10					0.3			7.50	7.13	1635.0		4.3		4650.0	
SRK05-7 Max			<0.5	47.5	540	<0.5		2490	2.6				<0.5		3090	4623				660.0	1.10					<0.5			7.62	7.35	1770.0		4.9		6100.0	
SRK05-7 Min			<0.5	24.4	480	<0.5		2090	2.1				<0.5		2870	1659				590.0	1.10					<0.5			7.38	6.90	1500.0		3.7		3200.0	
SRK05-8	**11/06/2011**	**Ground**	<0.5	31.0	530	<0.5		1620	1.9				<0.5		2320	2455				650.0	1.00					<0.5			7.70	7.31	1000.0		3.7		610.0	
SRK05-8	**04/10/2011**	**Ground**	<0.5	49.3	550	<0.5		1560	1.4				<0.5		2440	2444				670.0	0.96					<0.5			7.64	7.02	1050.0		5.0		260.0	
SRK05-8 Average			0.3	40.2	540	0.3		1590	1.7				0.250		2380	2450				660.0	0.98					0.3			7.67	7.17	1025.0		4.4		435.0	
SRK05-8 Max			<0.5	49.3	550	<0.5		1620	1.9				<0.5		2440	2455				670.0	1.00					<0.5			7.70	7.31	1050.0		5.0		610.0	
SRK05-8 Min			<0.5	31.0	530	<0.5		1560	1.4				<0.5		2320	2444				650.0	0.96					<0.5			7.64	7.02	1000.0		3.7		260.0	
SRK05-9	**04/01/2011**	**Ground**	<0.5	19.9	320	<0.5		1310	1.5				<0.5		2010	1950				390.0	0.99					<0.5			7.83	7.62	990.0		1.9		170.0	
SRK05-9	**18/01/2011**	**Ground**	<0.5	18.3	300	<0.5		1290	0.8				<0.5		1820	1460				360.0						<0.5			7.85	7.36	900.0		0.2		420.0	
SRK05-9	**03/02/2011**	**Ground**	<0.5	11.9	300	<0.5		1100	1.7				<0.5		1780	1710				370.0	1.00					<0.5			7.91	7.76	750.0		0.9		210.0	
SRK05-9	**16/02/2011**	**Ground**	<0.5	15.3	290	<0.5		1080	1.1				<0.5		1750	1772				350.0	1.00					<0.5			7.63	7.86	770.0		0.3		180.0	
SRK05-9	**03/03/2011**	**Ground**	<0.5	12.9	280	<0.5		1080	1.4				<0.5		1630	1632				340.0	1.10					<0.5			7.79	7.43	710.0		0.2		220.0	
SRK05-9	**23/03/2011**	**Ground**	<0.5	12.6	260	<0.5		900	2.5				<0.5		1440	1540				320.0	1.00					<0.5			7.81	7.79	620.0		2.6		650.0	
SRK05-9	**11/04/2011**	**Ground**	<0.5	5.8	240	<0.5		838	3.4				<0.5		1360	1530				300.0	1.10					<0.5			7.90	6.96	540.0		2.4		260.0	
SRK05-9	**26/04/2011**	**Ground**	<0.5	10.9	210	<0.5		814	3.0				<0.5		1380	1392				260.0	1.10					<0.5			8.16	7.55	550.0		3.5		190.0	
SRK05-9	**10/05/2011**	**Ground**	<0.5	27.1	330	<0.5		1600	2.2				<0.5		2390	2550				410.0	0.98					<0.5			7.70	7.32	1300.0		2.5		510.0	
SRK05-9	**18/05/2011**	**Ground**	<0.5	9.3	200	<0.5		909	1.1				<0.5		1480	1427				240.0	1.10					<0.5			8.03	7.55	630.0		2.8		650.0	
SRK05-9	**06/06/2011**	**Ground**	<0.5	4.2	220	<0.5		863	1.1				<0.5		1510	1415				270.0						<0.5			7.85	7.63	640.0		4.2		290.0	
SRK05-9	**22/06/2011**	**Ground**	<0.5	12.1	270	<0.5		1180	1.4				<0.5		1910	2090				330.0	1.00					<0.5			7.90	7.56	890.0		5.5		820.0	
SRK05-9	**05/07/2011**	**Ground**	<0.5	13.7	290	<0.5		1240	1.8				<0.5		1950	1889				360.0	1.00					<0.5			8.00	8.04	930.0		7.3		350.0	
SRK05-9	**21/07/2011**	**Ground**	<0.5	27.5	330	<0.5		1540	1.7				<0.5		2260	2500				410.0	1.00					<0.5			7.87	7.31	1100.0		8.8		220.0	
SRK05-9	**03/08/2011**	**Ground**	<0.5	7.6	370	<0.5		1480	2.3				<0.5		2410	2205				450.0	0.89					<0.5			7.86	7.50	1300.0		8.5		56.0	
SRK05-9	**18/08/2011**	**Ground**	<0.5	38.6	380	<0.5		1710	1.7				<0.5		2480	2030				470.0	1.10					<0.5			7.77	7.20	1200.0		7.0		100.0	
SRK05-9	**07/09/2011**	**Ground**	<0.5	20.2	360	<0.5		1620	1.8				<0.5		2310	1531				440.0	1.00					<0.5			7.56	7.13	1200.0		6.6		290.0	
SRK05-9	**20/09/2011**	**Ground**	<0.5	32.3	380	<0.5		1650	2.3				<0.5		2480	2540				460.0	0.96					<0.5			7.71	7.22	1300.0		7.1		230.0	
SRK05-9	**11/10/2011**	**Ground**	<0.5	22.7	380	<0.5		1650	1.5				<0.5		2420	2026				460.0						<0.5			7.63	7.35	1270.0		5.5		130.0	
SRK05-9	**27/10/2011**	**Ground**	<0.5	10.3	380	<0.5		1590	1.3				<0.5		2360	2690				460.0	1.00					<0.5			7.99	7.36	1190.0		4.9		140.0	
SRK05-9	**08/11/2011**	**Ground**	<0.5	37.6	370	<0.5		1540	1.4				<0.5		2350	2400				450.0	0.93					<0.5			7.64	7.71	1270.0		1.6		550.0	
SRK05-9	**22/11/2011**	**Ground**	<0.5	15.5	363	<0.5		1470	1.1				<0.5		2310	2193				443.0	0.94					<0.5			7.88	7.50	1170.0		3.8		150.0	
SRK05-9	**01/12/2011**	**Ground**	<0.5	10.5	356	<0.5		1530	1.0				<0.5		2280	2323				434.0	0.98					<0.5			7.77	7.38	1190.0		3.6		77.4	
SRK05-9	**14/12/2011**	**Ground**	<0.5	16.2	359	<0.5		1530	1.1				<0.5		2300	2477				438.0	1.00					<0.5			8.06	7.44	1130.0		1.7		19.0	
SRK05-9 Average			0.3	17.2	314	0.3		1313	1.7				0.250		2015	1970				384.0	1.01					0.3			7.84	7.48	980.8		3.9		286.8	
SRK05-9 Max			<0.5	38.6	380	<0.5		1710	3.4				<0.5		2480	2690				470.0	1.10					<0.5			8.16	8.04	1300.0		8.8		820.0	
SRK05-9 Min			<0.5	4.2	200	<0.5		814	0.8				<0.5		1360	1392				240.0	0.89					<0.5			7.56	6.96	540.0		0.2		19.0	
SRK05-ETA-BR1	**17/09/2011**	**Ground**			85	<0.5		4130					<0.5		7940	8350				100.0						<0.5			5.54	5.45	7800.0		4.7			
SRK05-ETA-BR2	**17/09/2011**	**Ground**			120	<0.5		1340					<0.5		2310	2566				140.0						<0.5			7.06	6.89	1300.0		4.1			
SRK08-P14	**04/10/2011**	**Ground**	<0.5	25.6	250	<0.5		1040	1.0				<0.5		1730	1753				310.0	0.99					<0.5			7.65	7.33	776.0		2.1		310.0	

Note: Statistics calculated with DLs at half value.

Denison Environmental Services

Table C-1: 2011 Vangorda Creek Drainage Water Quality
General Parameters

Station	Date	Sample Type	Acid(pH4.5) mg/L	Acid(pH8.3) mg/L	ALK mg/L	ALKPP mg/L	CaCO3 mg/L	CaCO3-d mg/L	Chloride mg/L	Chlorophyll a µg/L	CN 4500 mg/L	CNTHIO mg/L	CO3 mg/L	Colour TCU	COND µmho/cm	CONDF µS/cm	DO mg/L	DO-% %	DOC mg/L	HCO3 mg/L as CaCO3	Ion Balance (blank)	NH3 mg/L	NO2 mg/L	NO2/3 mg/L	NO3 mg/L	OH mg/L	oPO4 mg/L	ORP mV	pH (blank)	pHF (blank)	SO4-d mg/L	TDS mg/L	TEMP-F °C	TOC mg/L	TSS mg/L	TURB NTU
SRK08-P15	**04/10/2011**	**Ground**	<0.5	14.4	330	<0.5		1250	1.3				<0.5		2040	2126				410.0	0.98					<0.5			7.85	7.45	913.0		2.6		93.0	
SRK08-P16	**23/05/2011**	**Ground**	<0.5	13.7	270	<0.5		618	1.1				<0.5		1010	977				330.0	1.00					<0.5			7.63	7.58	320.0		3.9		4800.0	
SRK-GD11	**27/09/2011**	**Seepage**	<0.5	41.1	420	<0.5		1570	2.4				<0.5		2280	2550				520.0	1.10					<0.5		179	7.65	7.26	1050.0		3.6		32.0	
SRK-GD13	**27/09/2011**	**Seepage**	<0.5	29.0	480	<0.5		1530	1.6				<0.5		2290	2470				580.0	1.00					<0.5		174	7.85	7.41	963.0		2.3		<1.0	
SRK-GD21b	**22/05/2011**	**Seepage**	<0.5	13.2	410	<0.5		2220	1.0				<0.5		3150	2670				510.0	1.10					<0.5		73	8.13	7.92	1600.0		2.3		470.0	
SRK-GD4	**22/05/2011**	**Seepage**	<0.5	2.9	120	<0.5		537	<0.5				<0.5		977	838				140.0	1.00					<0.5		68	7.94	7.83	400.0		4.2		6.0	
SRK-GD5	**21/05/2011**	**Seepage**	<0.5	17.5	430	<0.5		2080	1.3				<0.5		2930	2740				520.0	1.10					<0.5		77	8.18	7.92	1500.0		3.5		12.0	
SRK-GD5	**27/09/2011**	**Seepage**	<0.5	8.9	660	<0.5		2490	2.9				<0.5		3510	3690				810.0	1.00					<0.5		118	8.17	8.07	1760.0		3.8		<1.0	
SRK-GD5 Average			0.3	13.2	545	0.3		2285	2.1				0.250		3220	3215				665.0	1.05					0.3		98	8.18	8.00	1630.0		3.7		6.3	
SRK-GD5 Max			<0.5	17.5	660	<0.5		2490	2.9				<0.5		3510	3690				810.0	1.10					<0.5		118	8.18	8.07	1760.0		3.8		12.0	
SRK-GD5 Min			<0.5	8.9	430	<0.5		2080	1.3				<0.5		2930	2740				520.0	1.00					<0.5		77	8.17	7.92	1500.0		3.5		<1.0	
SRK-GD6	**21/05/2011**	**Seepage**	<0.5	26.2	610	<0.5		2490	2.1				<0.5		3330	3111				750.0	1.10					<0.5		77	8.11	7.64	1700.0		3.1		<1.0	
SRK-GD6	**27/09/2011**	**Seepage**	<0.5	28.6	660	<0.5		2430	2.9				<0.5		3340	3560				800.0	1.00					<0.5		122	7.95	7.34	1670.0		3.2		2.0	
SRK-GD6 Average			0.3	27.4	635	0.3		2460	2.5				0.250		3335	3336				775.0	1.05					0.3		100	8.03	7.49	1685.0		3.2		1.3	
SRK-GD6 Max			<0.5	28.6	660	<0.5		2490	2.9				<0.5		3340	3560				800.0	1.10					<0.5		122	8.11	7.64	1700.0		3.2		2.0	
SRK-GD6 Min			<0.5	26.2	610	<0.5		2430	2.1				<0.5		3330	3111				750.0	1.00					<0.5		77	7.95	7.34	1670.0		3.1		<1.0	
Sweet Creek	**22/05/2011**	**Seepage**	<0.5	14.6	450	<0.5		2080	1.8				<0.5		2890	2571				550.0	1.10					<0.5		54	7.99	8.07	1500.0		4.9		<1.0	
Sweet Creek	**22/09/2011**	**Seepage**	<0.5	17.1	470	<0.5		2160	2.2				<0.5		3070	3410				570.0	1.00					<0.5		106	8.09	7.75	1600.0		4.2		<1.0	
Sweet Creek Average			0.3	15.9	460	0.3		2120	2.0				0.250		2980	2991				560.0	1.05					0.3		80	8.04	7.91	1550.0		4.6		0.5	
Sweet Creek Max			<0.5	17.1	470	<0.5		2160	2.2				<0.5		3070	3410				570.0	1.10					<0.5		106	8.09	8.07	1600.0		4.9		<1.0	
Sweet Creek Min			<0.5	14.6	450	<0.5		2080	1.8				<0.5		2890	2571				550.0	1.00					<0.5		54	7.99	7.75	1500.0		4.2		<1.0	
Trib A	**25/05/2011**	**Surface**			360	<0.5	2210	2340	1.4				<0.5		3010	2853		6.30		440.0	1.10	0.220	0.02	5.40	5.40	<0.5			7.95	6.83	1800.0	3300	7.4	7.80	610.0	307.00
V1	**24/01/2011**	**Surface**			47	<0.5	56	60	0.6				<0.5		117	192		27.10		58.0	1.00	0.036	<0.005	0.12	0.12	<0.5			7.66	7.93	11.0	62	0.1	0.70	<1.0	0.25
V1	**17/02/2011**	**Surface**			45	<0.5	49	46	<0.5				<0.5		117	134		0.90		55.0		<0.005	<0.005	0.13	0.13	<0.5			7.48	7.84	11.0	62	0.5	1.10	<4.0	0.25
V1	**22/03/2011**	**Surface**			45	<0.5	48	51	<0.5				<0.5		116	137		0.70		55.0		0.013	<0.005	0.15	0.15	<0.5			7.59	8.03	12.0	66	1.6	0.60	<1.0	0.10
V1	**21/04/2011**	**Surface**			46	<0.5	57	57	<0.5				<0.5		119	90		0.80		56.0	1.00	0.019	<0.005	0.15	0.15	<0.5			7.63	8.52	15.0	64	1.2	0.70	<1.0	0.25
V1	**17/05/2011**	**Surface**			36	<0.5	40	41	<0.5				<0.5		85	88		12.10		43.0	1.00	0.016	0.01	<0.02	<0.02	<0.5			7.66	8.08	7.5	42	0.2	11.70	<1.0	0.50
V1	**15/06/2011**	**Surface**			14	<0.5	18	19	<0.5				<0.5		45	38		3.00		17.0	1.00	0.024	<0.005	<0.02	<0.02	<0.5			7.29	7.62	6.9	28	6.4	2.30	<1.0	0.25
V1	**13/07/2011**	**Surface**			24	<0.5	30	29	<0.5				<0.5		70	67		1.90		30.0	1.00	0.020	<0.005	<0.02	<0.02	<0.5			7.35	7.65	9.2	48	7.5	2.30	<1.0	0.25
V1	**10/08/2011**	**Surface**			26	<0.5	31	31	<0.5				<0.5		75	73		2.50		31.0	1.00	<0.005	<0.005	<0.02	<0.02	<0.5			7.29	7.68	7.9	64	5.9	2.30	<1.0	0.34
V1	**13/09/2011**	**Surface**			26	<0.5	31	30	0.8				<0.5		74	61		2.20		31.0	1.00	0.047	<0.005	<0.02	<0.02	<0.5			7.64	7.75	9.8	44	4.5	1.80	<1.0	0.17
V1	**18/10/2011**	**Surface**			36	<0.5	42	41	<0.5				<0.5		92	110		1.60		44.0	1.00	0.032	<0.005	<0.02	<0.02	<0.5			7.57	7.78	10.8	54	0.0	1.50	<1.0	0.10
V1	**23/11/2011**	**Surface**			40	<0.5	54	48	<0.5				<0.5		109	127		2.34		48.9	1.00	0.028	0.01	6.52	6.51	<0.5			7.72	8.41	17.9	58	0.0	1.28	<1.0	0.10
V1	**08/12/2011**	**Surface**			43	<0.5	48	44	<0.5				<0.5		108	104		1.04		52.3	1.00	0.071	<0.005	0.07	0.07	<0.5			7.56	7.89	13.4	64	0.2	1.23	<4.0	0.10
V1 Average					36	0.3	42	41	0.3				0.250		94	102		4.68		43.4	1.00	0.026	0.00	0.60	0.60	0.3			7.54	7.93	11.0	55	2.3	2.29	0.8	0.15
V1 Max					47	<0.5	57	60	0.8				<0.5		119	192		27.10		58.0	1.00	0.071	0.01	6.52	6.51	<0.5			7.72	8.52	17.9	66	7.5	11.70	<4.0	0.50
V1 Min					14	<0.5	18	19	<0.5				<0.5		45	38		0.70		17.0	1.00	<0.005	<0.005	<0.02	<0.02	<0.5			7.29	7.62	6.9	28	0.0	0.60	<1.0	0.10
V14	**22/05/2011**	**Seepage**	<0.5	7.0	230	<0.5		1620	<0.5				<0.5		2340	2068				290.0	1.10					<0.5		34	8.06	7.64	1300.0		10.6		12.0	
V15	**04/01/2011**	**Seepage**	<0.5	57.3	490	<0.5		3100	2.0				<0.5		3910	>3999.0				600.0	1.10					<0.5		191	7.42	7.10	2400.0		1.8		2.0	
V15	**18/01/2011**	**Seepage**	<0.5	43.1	510	<0.5		3270	1.4				<0.5		3940	3730				620.0						<0.5		126	7.70	6.43	2600.0		0.3		8.0	
V15	**03/02/2011**	**Seepage**	<0.5	41.8	530	<0.5		3200	1.5				<0.5		3930	3681				650.0	1.00					<0.5		153	7.49	7.28	2600.0		1.4		<1.0	
V15	**16/02/2011**	**Seepage**	<0.5	49.7	540	<0.5		2970	1.7				<0.5		4000	>3999.0				650.0						<0.5		102	7.54	7.45	2300.0		0.0		2.0	
V15	**03/03/2011**	**Seepage**	<0.5	51.6	520	<0.5		2980	1.7				<0.5		3910	3842				640.0	1.00					<0.5		61	7.55	7.19	2300.0		0.4		2.0	
V15	**23/03/2011**	**Seepage**	<0.5	45.4	540	<0.5		3180	6.1				<0.5		3930	4190				660.0	1.00					<0.5		51	7.48	7.37	2500.0		1.2		<1.0	
V15	**11/04/2011**	**Seepage**	<0.5	37.6	520	<0.5		2860	1.7				<0.5		3850	4130				630.0	1.10					<0.5		33	7.63	6.89	2000.0		2.0		2.0	
V15	**26/04/2011**	**Seepage**	<0.5	54.6	520	<0.5		2810	2.4				<0.5		3790	3606				630.0	1.10					<0.5		77	7.68	7.02	2000.0		1.0		<1.0	
V15	**10/05/2011**	**Seepage**	<0.5	29.7	330	<0.5		1780	1.4				<0.5		2640	2800				410.0	0.98					<0.5		21	7.85	7.48	1400.0		1.3		16.0	
V15	**18/05/2011**	**Seepage**	<0.5	24.1	380	<0.5		2060	1.3				<0.5		2870	2720				470.0	1.00					<0.5		69	7.99	7.20	1600.0		5.2		7.0	
V15	**25/05/2011**	**Seepage**			410	<0.5		2290	1.9				<0.5	<5.0	2950	2942				500.0						<0.5			7.87	7.06	1800.0	3200	3.6		<1.0	
V15	**06/06/2011**	**Seepage**	<0.5	25.7	460	<0.5		2290	1.6				<0.5		3460	3012				560.0						<0.5			7.60	7.05	1800.0		6.1		<1.0	
V15	**22/06/2011**	**Seepage**	<0.5	23.5	350	<0.5		1960	0.9				<0.5		2890	2990				430.0	1.00					<0.5		70	7.93	7.15	1500.0		7.5		53.0	
V15	**05/07/2011**	**Seepage**	<0.5	42.2	510	<0.5		2760	2.0				<0.5		3660	3101				620.0	1.10					<0.5		84	7.82	7.69	1900.0		7.3		2.0	
V15	**21/07/2011**	**Seepage**	<0.5	60.1	520	<0.5		2970	7.0				<0.5		3770	3870				630.0	1.10					<0.5		172	7.64	7.18	2200.0		7.7		<1.0	
V15	**03/08/2011**	**Seepage**	<0.5	52.7	550	<0.5		2770	2.6				<0.5		3770	3261				670.0	1.00					<0.5		165	7.72	6.95	2100.0		8.0		<1.0	
V15	**18/08/2011**	**Seepage**	<0.5	72.6	560	<0.5		2800	2.3				<0.5		3760	3065				690.0	1.00					<0.5		174	7.66	6.90	2100.0		5.1		2.0	
V15	**07/09/2011**	**Seepage**	<0.5	47.2	570	<0.5		2920	2.6				<0.5		3740	2323				700.0	1.00					<0.5		178	7.57	6.60	2200.0		3.3		<1.0	
V15	**20/09/2011**	**Seepage**	<0.5	70.6	600	<0.5		2790	2.6				<0.5		3850	4040				740.0	1.00					<0.5		130	7.32	6.87	2100.0		3.6		<1.0	
V15	**11/10/2011**	**Seepage**	<0.5	47.4	510	<0.5		2640	1.7				<0.5		3470	2835				620.0						<0.5		181	7.35	6.88	1820.0		2.3		5.0	
V15	**27/10/2011**	**Seepage**	<0.5	10.6	390	<0.5		2710	1.3				<0.5		2870	4090				480.0	1.30					<0.5		196	8.07	6.93	1590.0		2.2		<1.0	
V15	**08/11/2011**	**Seepage**	<0.5	77.6	540	<0.5		2720	2.6				<0.5		3620	3700				650.0	1.10					<0.5		147	7.31	7.07	1980.0		1.5		2.0	
V15	**22/11/2011**	**Seepage**	<0.5	8.9	543	<0.5		2620	2.1				<0.5		3630	3399				663.0	1.00					<0.5		153	7.52	6.96	1970.0		1.3		<1.0	
V15	**01/12/2011**	**Seepage**	<0.5	33.6	524	<0.5		2570	1.6				<0.5		3540	3492				640.0	1.00					<0.5			7.54	7.20	1920.0		1.1		2.4	
V15	**14/12/2011**	**Seepage**	<0.5	25.0	532	<0.5		2660	1.7				<0.5		3600	3981				649.0	1.10					<0.5		208	7.87	6.97	1890.0		2.7		2.0	
V15 Average			0.3	43.0	498	0.3		2707	2.2				0.250	2.5	3574	3472				608.1	1.05					0.3		125	7.64	7.07	2022.8	3200	3.1		4.5	
V15 Max			<0.5	77.6	600	<0.5		3270	7.0				<0.5	<5.0	4000	4190				740.0	1.30					<0.5		208	8.07	7.69	2600.0	3200	8.0		53.0	
V15 Min			<0.5	8.9	330	<0.5		1780	0.9				<0.5	<5.0	2640	2323				410.0	0.98					<0.5		21	7.31	6.43	1400.0	3200	0.0		<1.0	
V16	**22/05/2011**	**Seepage**	<0.5	3.1	210	<0.5		962	0.9				<0.5		1520	1328				260.0	1.10					<0.5		102	8.14	7.86	670.0		5.5		23.0	

Note: Statistics calculated with DLs at half value.

Table C-1: 2011 Vangorda Creek Drainage Water Quality
General Parameters

Station	Date	Sample Type	Acid(pH4.5) mg/L	Acid(pH8.3) mg/L	ALK mg/L	ALKPP mg/L	CaCO3 mg/L	CaCO3-d mg/L	Chloride mg/L	Chlorophyll a µg/L	CN 4500 mg/L	CNTHIO mg/L	CO3 mg/L	Colour TCU	COND µmho/cm	CONDF µS/cm	DO mg/L	DO-% %	DOC mg/L	HCO3 mg/L as CaCO3	Ion Balance (blank)	NH3 mg/L	NO2 mg/L	NO2/3 mg/L	NO3 mg/L	OH mg/L	oPO4 mg/L	ORP mV	pH (blank)	pHF (blank)	SO4-d mg/L	TDS mg/L	TEMP-F °C	TOC mg/L	TSS mg/L	TURB NTU
V2	**04/01/2011**	**Surface**	<0.5	12.3			1760	1710	1.3			0.001		<5.0	2530	2412			2.50			<0.05	<0.005	8.00	8.00				8.07	8.01	1300.0	2300	0.0	2.60	4.0	1.21
V2	**03/02/2011**	**Surface**			390	<0.5	1700	1880	<0.5		<0.002		<0.5	<5.0	2610	2511			2.30	470.0	1.10	<0.05	<0.005	8.20	8.20	<0.5			8.17	7.84	1300.0	2300	0.8	2.30	2.0	0.58
V2	**03/03/2011**	**Surface**			380	<0.5	1900	1950	1.3			<0.001	<0.5	<5.0	2560	2589			3.40	460.0		0.027	<0.005	7.70	7.70	<0.5			8.03	7.97	1400.0	2400	0.0	3.30	3.0	1.48
V2	**11/04/2011**	**Surface**			360	<0.5	1670	1720	1.2				<0.5	<5.0	2490	2396			2.60	450.0	1.00	0.009	<0.005	5.90	5.90	<0.5			8.08	7.97	1200.0	2300	1.0	2.50	2.0	0.25
V2	**10/05/2011**	**Surface**			310	<0.5	1330	1410	<0.5				<0.5	10.0	2100	2230			4.70	370.0		<0.005	<0.005	5.00	5.00	<0.5			8.22	7.76	1000.0	1800	0.5	4.80	5.0	0.70
V2	**18/05/2011**	**Surface**			100	<0.5	595	419	0.7				<0.5	100.0	796	780			3.60	120.0	1.10	0.039	0.04	1.75	1.71	<0.5			8.02	8.09	280.0	560	5.3	5.10	2600.0	1052.00
V2	**25/05/2011**	**Surface**			280	<0.5	1220	1220	1.0				<0.5		1820	1846			4.30	350.0	0.90	0.021	<0.005	4.40	4.40	<0.5			8.15	7.85	1000.0	1800	2.5	4.40	2.0	0.31
V2	**06/06/2011**	**Surface**			270	<0.5	1090	1110	1.2				<0.5	10.0	1750	1694			3.70	330.0	1.00	0.015	<0.005	3.40	3.40	<0.5			8.10	8.02	800.0	1600	4.6	3.30	<1.0	0.29
V2	**23/06/2011**	**Surface**			250	<0.5	1000	1000	1.2				<0.5	10.0	1620	1400			3.90	300.0	1.00	0.027	<0.005	2.34	2.34	<0.5			8.10	7.92	700.0	1600	5.2	5.60	4.0	0.70
V2	**05/07/2011**	**Surface**			280	<0.5	1120	1140	0.8				<0.5	<5.0	1760	1671			3.10	340.0	1.00	0.022	<0.005	2.90	2.90	<0.5			8.24	8.18	810.0	1200	4.3	4.00	2.0	0.25
V2	**21/07/2011**	**Surface**			280	<0.5	1190	1170	1.1				<0.5	<5.0	1850	1900			3.40	340.0	1.00	0.052	<0.005	3.30	3.30	<0.5			7.99	7.95	880.0	1600	5.5	7.20	<1.0	0.25
V2	**03/08/2011**	**Surface**			290	<0.5	1160	1220	1.9				<0.5	<5.0	1890	1763			4.10	360.0	1.00	0.017	<0.005	3.30	3.30	<0.5			8.15	7.85	880.0	1700	6.0	4.00	<1.0	0.25
V2	**18/08/2011**	**Surface**			300	<0.5	1200	1260	1.3				<0.5	<5.0	1900	1590			4.10	360.0	0.99	0.030	<0.005	3.30	3.30	<0.5			8.16	7.91	940.0	1900	4.1	4.00	<1.0	0.25
V2	**07/09/2011**	**Surface**			300	<0.5	1240	1350	1.4				<0.5	<5.0	1990	1354			4.00	370.0	1.10	0.029	<0.005	3.45	3.45	<0.5			7.98	7.74	940.0	1900	3.5	5.20	<1.0	0.10
V2	**20/09/2011**	**Surface**			310	<0.5	1300	1290	1.5				<0.5	<5.0	1970	2130			3.50	380.0	0.99	0.044	<0.005	3.50	3.50	<0.5			8.19	7.56	960.0	1700	4.6	3.30	<1.0	0.35
V2	**11/10/2011**	**Surface**			310	<0.5	1220	1270	1.6				<0.5	<5.0	1970	1634			3.90	380.0	1.00	0.024	<0.005	3.50	3.50	<0.5			8.13	7.99	928.0	1700	1.6	3.90	<1.0	0.12
V2	**27/10/2011**	**Surface**			310	<0.5	1240	1270	0.8				<0.5	<5.0	1930	2250			2.80	380.0	1.00	0.054	<0.005	3.80	3.80	<0.5			8.11	8.13	886.0	1600	1.2	2.80	<1.0	0.10
V2	**08/11/2011**	**Surface**			310	<0.5	1410	1220	1.5				<0.5	<5.0	1990	2080			3.30	380.0	0.88	0.055	<0.005	3.60	3.60	<0.5			8.10	8.27	1050.0	1700	0.3	3.10	3.0	0.76
V2	**01/12/2011**	**Surface**			317	<0.5	1310	1290	0.7				<0.5	20.0	2000	2081			2.94	387.0	0.98	<0.005	<0.005	4.64	4.64	<0.5			8.11	7.90	967.0	1670	0.3	2.67	2.1	0.32
V2 Average			0.3	12.3	297	0.3	1298	1310	1.1		0.001	0.001	0.250	10.1	1975	1911			3.48	362.6	1.00	0.027	0.00	4.31	4.31	0.3			8.11	7.94	959.0	1754	2.7	3.90	138.6	55.77
V2 Max			<0.5	12.3	390	<0.5	1900	1950	1.9		<0.002	<0.001	<0.5	100.0	2610	2589			4.70	470.0	1.10	0.055	0.04	8.20	8.20	<0.5			8.24	8.27	1400.0	2400	6.0	7.20	2600.0	1052.00
V2 Min			<0.5	12.3	100	<0.5	595	419	<0.5		<0.002	0.001	<0.5	<5.0	796	780			2.30	120.0	0.88	<0.005	<0.005	1.75	1.71	<0.5			7.98	7.56	280.0	560	0.0	2.30	<1.0	0.10
V20	**19/05/2011**	**Surface**			29	<0.5	53	29	1.3				<0.5		64	70				36.0	1.00	0.030	<0.005	<0.02	<0.02	<0.5			7.47	8.15	<0.5	50	3.6		400.0	125.00
V22	**23/03/2011**	**Surface**			58	<0.5	872	985	1.8				<0.5		1800	1900				71.0	1.10	0.270				<0.5			7.33	6.71	1000.0	1700	0.6		10.0	
V22	**28/06/2011**	**Surface**			<0.5	<0.5	742	769	1.4				<0.5		2090	2026				<0.5	1.00	0.210				<0.5			3.07	2.76	1100.0	1700	16.4		9.0	
V22	**11/09/2011**	**Surface**			<0.5	<0.5	1120	913	1.5				<0.5		2540	2520				<0.5	0.96	0.370				<0.5			3.41	3.32	1700.0	2500	7.6		11.0	
V22	**22/12/2011**	**Surface**			<0.5	<0.5	1140	1080	<0.5				<0.5		2520	2487				<0.5	1.10	0.560				<0.5			3.47	3.36	1520.0	2340	0.2		11.6	
V22 Average					15	0.3	969	937	1.2				0.250		2238	2233				17.9	1.04	0.353				0.3			4.32	4.04	1330.0	2060	6.2		10.4	
V22 Max					58	<0.5	1140	1080	1.8				<0.5		2540	2520				71.0	1.10	0.560				<0.5			7.33	6.71	1700.0	2500	16.4		11.6	
V22 Min					<0.5	<0.5	742	769	<0.5				<0.5		1800	1900				<0.5	0.96	0.210				<0.5			3.07	2.76	1000.0	1700	0.2		9.0	
V23	**23/03/2011**	**Surface**			190	<0.5	639	587	1.8				<0.5		1070	1160				230.0	1.00	0.044				<0.5			7.75	7.97	410.0	800	0.8		<1.0	
V23	**28/06/2011**	**Surface**			150	<0.5	583	567	0.9				<0.5		946	897				180.0	1.10	0.034				<0.5			8.12	7.67	360.0	730	16.3		5.0	
V23	**11/09/2011**	**Surface**			140	<0.5	541	510	1.0				<0.5		967	918				170.0	0.90	0.024				<0.5			8.25	8.15	430.0	730	7.9		6.0	
V23	**22/12/2011**	**Surface**			161	<0.5	527	566	0.7				<0.5		1060	1134				196.0	1.10	0.067				<0.5			8.00	8.19	383.0	766	0.3		<1.0	
V23 Average					160	0.3	573	558	1.1				0.250		1011	1027				194.0	1.03	0.042				0.3			8.03	8.00	395.8	757	6.3		3.0	
V23 Max					190	<0.5	639	587	1.8				<0.5		1070	1160				230.0	1.10	0.067				<0.5			8.25	8.19	430.0	800	16.3		6.0	
V23 Min					140	<0.5	527	510	0.7				<0.5		946	897				170.0	0.90	0.024				<0.5			7.75	7.67	360.0	730	0.3		<1.0	
V24	**07/07/2011**	**Surface**			<0.5	<0.5	1010	867	<0.5				<0.5		2280	2630				<0.5	1.00	0.230	<0.005	0.07	0.07	<0.5			3.09	2.39	1200.0	2100	16.9		3.0	
V24	**12/07/2011**	**Surface**			<0.5	<0.5	894	871	<0.5				<0.5		2350	2131				<0.5	0.96	0.170	0.01	0.08	0.07	<0.5			3.10	2.67	1400.0	2300	17.0		7.0	
V24	**19/07/2011**	**Surface**			<0.5	<0.5	952	919	1.1				<0.5		2420	2252				<0.5	0.99	0.230	<0.005	0.06	0.06	<0.5			3.11	2.81	1400.0	2000	15.7		21.0	
V24	**26/07/2011**	**Surface**			<0.5	<0.5	914	892	<0.5				<0.5		2480	2127				<0.5	0.88	0.330	0.01	0.06	0.05	<0.5			3.18	3.40	1500.0	2400	14.5		3.0	
V24	**11/09/2011**	**Surface**			<0.5	<0.5	1090	1040	0.9				<0.5		2570	2520				<0.5	0.89	0.290	<0.005	<0.02	<0.02	<0.5			3.35	3.32	1700.0	2600	7.6		10.0	
V24 Average					0	0.3	972	918	0.6				0.250		2420	2332				0.3	0.94	0.250	0.00	0.06	0.05	0.3			3.17	2.92	1440.0	2280	14.3		8.8	
V24 Max					<0.5	<0.5	1090	1040	1.1				<0.5		2570	2630				<0.5	1.00	0.330	0.01	0.08	0.07	<0.5			3.35	3.40	1700.0	2600	17.0		21.0	
V24 Min					<0.5	<0.5	894	867	<0.5				<0.5		2280	2127				<0.5	0.88	0.170	<0.005	<0.02	<0.02	<0.5			3.09	2.39	1200.0	2000	7.6		3.0	
V25	**07/07/2011**	**Surface**			23	<0.5	1280	1390	<0.5				<0.5		2010	2270				28.0	1.10	0.160	<0.005	0.08	0.08	<0.5			7.51	7.43	1200.0	1900	14.1		5.0	
V25	**12/07/2011**	**Surface**			22	<0.5	1490	1510	<0.5				<0.5		2200	1900				27.0	1.00	0.210	<0.005	0.06	0.06	<0.5			7.64	9.04	1400.0	2100	13.8		4.0	
V25	**19/07/2011**	**Surface**			34	<0.5	1630	1590	1.0				<0.5		2400	2337				41.0	1.00	0.270	<0.005	0.03	0.03	<0.5			7.97	8.78	1500.0	2400	12.9		4.0	
V25	**26/07/2011**	**Surface**			39	<0.5	1560	1490	<0.5				<0.5		2410	2143				47.0	0.93	1.400	<0.005	0.06	0.06	<0.5			7.60	8.34	1500.0	2400	11.5		2.0	
V25	**11/08/2011**	**Surface**			39	<0.5	1630	1670	0.6				<0.5		2380	2156				47.0		0.210	<0.005	0.05	0.05	<0.5			7.55	7.57	1400.0	2400	12.4		<1.0	
V25	**18/08/2011**	**Surface**			39	<0.5	1620	1650	0.6				<0.5		2370	2410				47.0	1.10	0.260	<0.005	0.05	0.05	<0.5			7.67	7.85	1400.0	2000	11.7		2.0	
V25	**11/09/2011**	**Surface**			11	<0.5	1620	1500	<0.5				<0.5		2370	2385				14.0	0.89	0.230	<0.005	<0.02	<0.02	<0.5			6.79	8.34	1600.0	2300	8.2		3.0	
V25	**20/09/2011**	**Surface**			29	<0.5	1680	1690	0.8				<0.5		2410	2690				35.0	1.00	0.250	<0.005	0.04	0.04	<0.5			7.57	8.19	1600.0	2400	5.9		7.0	
V25 Average					30	0.3	1564	1561	0.5				0.250		2319	2286				35.8	1.00	0.374	0.00	0.05	0.05	0.3			7.54	8.19	1450.0	2238	11.3		3.4	
V25 Max					39	<0.5	1680	1690	1.0				<0.5		2410	2690				47.0	1.10	1.400	<0.005	0.08	0.08	<0.5			7.97	9.04	1600.0	2400	14.1		7.0	
V25 Min					11	<0.5	1280	1390	<0.5				<0.5		2010	1900				14.0	0.89	0.160	<0.005	<0.02	<0.02	<0.5			6.79	7.43	1200.0	1900	5.9		<1.0	
V25BSP	**02/04/2011**	**Surface**			110	<0.5	999	1110	<0.5				<0.5	<5.0	1690	1702				140.0	1.00	0.023	<0.005	0.07	0.07	<0.5			7.98	8.01	940.0	1500	1.9		7.0	2.55
V25BSP	**12/05/2011**	**Surface**			31	<0.5			0.8				<0.5		769	806				37.0	1.10	0.013	<0.005	0.11	0.11	<0.5			7.14	8.08	310.0	570	2.5		<1.0	0.25
V25BSP	**15/06/2011**	**Surface**			48	<0.5	114	113	<0.5				<0.5	<5.0	253	238				58.0	1.00	0.058	<0.005	<0.02	<0.02	<0.5			7.65	7.57	79.0	160	14.7		<1.0	0.83
V25BSP	**23/06/2011**	**Surface**			52	<0.5	117	109	<0.5				<0.5		250	236				63.0	1.00	0.022	<0.005	<0.02	<0.02	<0.5			7.81	7.94	72.0	180	15.5		4.0	2.89
V25BSP	**07/07/2011**	**Surface**			53	<0.5	139	147	<0.5				<0.5	20.0	307	330				65.0	1.00	0.029	<0.005	<0.02	<0.02	<0.5			7.80	7.61	93.0	230	12.9		<1.0	1.63
V25BSP	**12/07/2011**	**Surface**			28	<0.5	1160	1080	<0.5				<0.5	<5.0	1720	1312				34.0	0.97	0.096	<0.005	0.06	0.06	<0.5			7.25	7.80	1100.0	1600	14.9		<1.0	0.50
V25BSP	**19/07/2011**	**Surface**			35	<0.5	1410	1350	0.8				<0.5	<5.0	2090	1953				43.0	1.00	0.085	<0.005	0.08	0.08	<0.5			7.67	7.73	1300.0	2000	14.7		<1.0	0.29
V25BSP	**26/07/2011**	**Surface**			38	<0.5	1440	1340	<0.5				<0.5	<5.0	2230	1963				46.0	0.92	0.100	<0.005	0.09	0.09	<0.5			7.51	8.01	1400.0	2100	13.0		<1.0	0.50
V25BSP	**10/08/2011**	**Surface**			47	<0.5	1160	1070	0.7				<0.5	<5.0	1770	1404				57.0	0.97	0.021	<0.005	0.07	0.07	<0.5			7.61	7.06	1000.0	1600	10.6		<1.0	0.25
V25BSP	**11/08/2011**	**Surface**			47	<0.5	1110	1130	0.7				<0.5	<5.0	1800	1645				57.0		0.021	<0.005	0.09	0.09	<0.5			7.56	7.53	1000.0	1700	11.6		<1.0	1.50
V25BSP	**18/08/2011**	**Surface**			54	<0.5	1150	1160	0.6				<0.5	<5.0	1740	1760				66.0	1.00	0.037	<0.005	0.05	0.05	<0.5			7.88	7.90	1000.0	1700	12.2		<1.0	0.40
V25BSP	**11/09/2011**	**Surface**			56	<0.5	904	899	<0.5				<0.5	<5.0	1560	1586				68.0	0.91	0.083	<0.005	<0.02	<0.02	<0.5			7.67	7.71	910.0	1400	7.7		2.0	0.70
V25BSP	**20/09/2011**	**Surface**			40	<0.5	1350	1320	<0.5				<0.5	<5.0	2010	2260				49.0	1.00	1.400	<0.005	0.09	0.09	<0.5			7.70	7.80	1200.0	1900	6.7		<1.0	0.10
V25BSP	**18/10/2011**	**Surface**			100	<0.5	642	641	<0.5				<0.5	<5.0	1110	1186				120.0	1.10	<0.005	<0.005	0.11	0.11	<0.5			7.87	7.64	497.0	840	0.1		<1.0	0.10
V25BSP	**23/11/2011**	**Surface**			120	<0.5	828	705	0.6				<0.5	<5.0	1240	1240				146.0	1.00	0.031	<0.005	0.13	0.13	<0.5			7.82	7.92	580.0	988	0.0		<1.0	0.10
V25BSP	**08/12/2011**	**Surface**			114	<0.5	634	582	<0.5				<0.5	<5.0	1140	1162				139.0	0.91	0.056	<0.005	0.10	0.10	<0.5			7.71	7.58	531.0	914	0.2		<4.0	0.10
V25BSP Average					61	0.3	877	850	0.4				0.250	3.8	1355	1299				74.3	0.99	0.130	0.00	0.07	0.07	0.3			7.66	7.74	750.8	1211	8.7		1.3	0.79
V25BSP Max					120	<0.5	1440	1350	0.8				<0.5	20.0	2230	2260				146.0	1.10	1.400	<0.005	0.13	0.13	<0.5			7.98	8.08	1400.0	2100	15.5		7.0	2.89
V25BSP Min					28	<0.5	114	109	<0.5				<0.5	<5.0	250	236				34.0	0.91	<0.005	<0.005	<0.02	<0.02	<0.5			7.14	7.06	72.0	160	0.0		<1.0	0.10
V25SPP	**22/03/2011**	**Surface**			180	<0.5	874	869	0.6				<0.5		1480	1445				220.0		0.028	<0.005	0.14	0.14	<0.5			7.31	7.29	700.0	1200	0.3		<1.0	0.60

Note: Statistics calculated with DLs at half value.

Denison Environmental Services

Table C-1: 2011 Vangorda Creek Drainage Water Quality
General Parameters

Station	Date	Sample Type	Acid(pH4.5) mg/L	Acid(pH8.3) mg/L	ALK mg/L	ALKPP mg/L	CaCO3 mg/L	CaCO3-d mg/L	Chloride mg/L	Chlorophyll a µg/L	CN 4500 mg/L	CNTHIO mg/L	CO3 mg/L	Colour TCU	COND µmho/cm	CONDF µS/cm	DO mg/L	DO-% %	DOC mg/L	HCO3 mg/L as CaCO3	Ion Balance (blank)	NH3 mg/L	NO2 mg/L	NO2/3 mg/L	NO3 mg/L	OH mg/L	oPO4 mg/L	ORP mV	pH (blank)	pHF (blank)	SO4-d mg/L	TDS mg/L	TEMP-F °C	TOC mg/L	TSS mg/L	TURB NTU
V27	25/01/2011	Surface			110	<0.5	333	331	1.0				<0.5		608	604			0.80	140.0	1.10	<0.005	<0.005	1.01	1.01	<0.5			7.87	7.21	180.0	400	2.0	1.20	<1.0	0.25
V27	17/02/2011	Surface			120	<0.5	326	321	<0.5				<0.5		633	713			1.30	140.0		0.011	<0.005	1.03	1.03	<0.5			7.91	8.24	190.0	420	0.5	0.90	<4.0	0.25
V27	28/03/2011	Surface			120	<0.5	355	308	<0.5				<0.5		658	713			1.00	140.0	1.00	0.009	0.01	1.06	1.05	<0.5			8.12	8.39	190.0	430	0.7	1.70	<1.0	0.25
V27	21/04/2011	Surface			120	<0.5	359	384	0.8				<0.5		695	780			1.20	150.0	1.10	0.027	<0.005	0.98	0.98	<0.5			8.01	8.21	220.0	450	0.5	1.00	<1.0	0.25
V27	12/05/2011	Surface			130	<0.5	445	482	1.0				<0.5		918	973			4.00	160.0	1.00	0.039	<0.005	1.23	1.23	<0.5			8.04	8.30	330.0	660	0.7	4.00	<1.0	0.32
V27	16/06/2011	Surface			33	<0.5	66	68	0.7				<0.5		157	139			2.20	40.0	1.00	0.023	<0.005	0.08	0.08	<0.5			7.59	8.27	39.0	86	7.5	2.60	<1.0	0.25
V27	11/07/2011	Surface			42	<0.5	321	316	<0.5				<0.5		609	558			3.50	51.0	1.10	0.044	<0.005	0.12	0.12	<0.5			7.59		240.0	420	11.7	3.30	<1.0	0.25
V27	10/08/2011	Surface			49	<0.5	120	118	<0.5				<0.5		257	234			2.70	60.0	1.00	0.026	<0.005	0.19	0.19	<0.5			7.77	7.59	70.0	170	6.4	2.20	<1.0	0.29
V27	12/09/2011	Surface			45	<0.5	407	422	1.0				<0.5		797	750			2.60	55.0	1.10	0.031	<0.005	0.13	0.13	<0.5			7.76	7.86	320.0	590	3.9	2.20	<1.0	0.36
V27	18/10/2011	Surface			78	<0.5	204	197	<0.5				<0.5		402	477			1.30	96.0	1.00	0.010	<0.005	0.38	0.38	<0.5			7.83	8.27	119.0	240	0.3	1.40	<1.0	0.17
V27	24/11/2011	Surface			96	<0.5	279	245	<0.5				<0.5		488	530			1.95	117.0	1.00	0.027	<0.005	0.57	0.57	<0.5			8.02		151.0	294	<0.0	1.45	<1.0	0.12
V27	12/12/2011	Surface			100	<0.5	270	269	<0.5				<0.5		516	515			1.93	122.0	1.00	0.015	<0.005	0.59	0.59	<0.5			7.96	7.67	158.0	334	0.0	1.24	<1.0	0.10
V27 Average					87	0.3	290	288	0.5				0.250		562	582			2.04	105.9	1.04	0.022	0.00	0.61	0.61	0.3			7.87	8.00	183.9	375	2.9	1.93	0.6	0.18
V27 Max					130	<0.5	445	482	1.0				<0.5		918	973			4.00	160.0	1.10	0.044	0.01	1.23	1.23	<0.5			8.12	8.39	330.0	660	11.7	4.00	<4.0	0.36
V27 Min					33	<0.5	66	68	<0.5				<0.5		157	139			0.80	40.0	1.00	<0.005	<0.005	0.08	0.08	<0.5			7.59	7.21	39.0	86	0.0	0.90	<1.0	0.10
V2A	03/02/2011	Surface			340	1.4	1040	1150	1.7				1.600	10.0	1690	1684			11.70	410.0	1.10	<0.05	<0.005	1.83	1.83	<0.5			8.30	8.35	710.0	1400	0.4	11.70	5.0	0.53
V2A	11/04/2011	Surface			280	<0.5	918	1000	1.0				<0.5		1530	1710			5.70	340.0	1.10	0.015	0.01	1.16	1.15	<0.5			8.15	7.84	640.0	1300	0.6	5.90	120.0	36.50
V2A	10/05/2011	Surface			170	<0.5	882	854	1.5				<0.5		1410	1530			4.80	210.0		0.014	0.02	3.00	3.00	<0.5			7.95	7.98	680.0	1100	2.6	4.60	59.0	32.50
V2A	19/05/2011	Surface			120	<0.5	567	501	<0.5				<0.5		944	836			3.50	150.0	0.99	0.033	0.03	2.43	2.40	<0.5			8.05	7.63	380.0	660	3.6	3.80	940.0	523.00
V2A	25/05/2011	Surface			250	<0.5	1030	1050	1.5				<0.5	20.0	1650	1603			5.40	310.0	0.91	0.027	0.01	4.50	4.50	<0.5			8.23	8.00	880.0	1600	4.9	5.40	47.0	16.40
V2A	06/06/2011	Surface			320	<0.5	1360	1410	1.6				<0.5		2120	1913			3.90	390.0	1.00	0.017	<0.005	3.20	3.20	<0.5			8.21	8.17	1000.0	2100	10.1	3.90	11.0	2.62
V2A	22/06/2011	Surface			260	<0.5	1230	1140	<0.5				<0.5		1810	1960			5.40	310.0	1.00	0.074	0.01	6.00	6.00	<0.5			8.21	8.17	820.0	1600	6.0	4.90	260.0	46.40
V2A	05/07/2011	Surface			380	4.7	1560	1570	<0.5				5.600		2350	2051			3.70	450.0	1.00	0.029	<0.005	6.40	6.40	<0.5			8.33	8.34	1100.0	2200	9.4	5.60	11.0	5.13
V2A	21/07/2011	Surface			390	<0.5	1790	1710	1.6				<0.5		2550	2580			3.70	480.0	0.97	0.049	<0.005	7.30	7.30	<0.5			8.14	8.26	1300.0	2400	12.2	4.90	6.0	1.51
V2A	03/08/2011	Surface			420	<0.5	1690	1800	2.1				<0.5		2630	2316			3.70	510.0	0.96	0.025	<0.005	7.70	7.70	<0.5			8.17	8.08	1400.0	2600	12.6	3.70	8.0	0.76
V2A	18/08/2011	Surface			420	<0.5	1730	1740	2.0				<0.5		2530	2080			4.40	520.0	1.10	0.036	<0.005	6.90	6.90	<0.5			8.22	8.17	1100.0	2500	6.0	4.20	72.0	9.68
V2A	07/09/2011	Surface			440	<0.5	1800	1960	2.2				<0.5		2710	1707			3.70	540.0	1.00	0.028	<0.005	8.60	8.60	<0.5			8.20	7.94	1400.0	2700	6.7	4.60	2.0	0.62
V2A	20/09/2011	Surface			430	<0.5	1770	1830	1.9				<0.5		2560	2710			3.30	530.0	1.00	0.033	<0.005	7.50	7.50	<0.5			8.25	7.42	1300.0	2500	6.8	3.70	<1.0	0.51
V2A	11/10/2011	Surface			420	<0.5	1590	1650	1.3				<0.5		2430	1980			<5.0	510.0	0.97	0.025	<0.005	7.00	7.00	<0.5			8.18	8.20	1230.0	2100	0.7	4.00	<1.0	0.30
V2A	27/10/2011	Surface			410	5.2	1650	1670	1.5				6.300		2360	2710			3.60	490.0	1.00	0.040	<0.005	7.00	7.00	<0.5			8.34	8.25	1170.0	2000	0.8	3.40	4.0	0.40
V2A	08/11/2011	Surface			410	<0.5	1650	1510	1.8				<0.5		2390	2460			4.00	500.0	0.89	0.054	<0.005	5.60	5.60	<0.5			8.02	8.24	1250.0	2100	0.0	4.00	6.0	0.98
V2A	01/12/2011	Surface			382	<0.5	1510	1590	1.0				<0.5		2240	2341			3.57	466.0	1.00	0.045	<0.005	6.45	6.45	<0.5			8.16	7.90	1120.0	1970	0.1	4.34	59.5	5.98
V2A Average					344	0.9	1398	1420	1.4				1.000	15.0	2112	2010			4.50	418.6	1.00	0.033	0.01	5.45	5.44	0.3			8.18	8.06	1028.2	1931	4.9	4.86	94.8	40.22
V2A Max					440	5.2	1800	1960	2.2				6.300	20.0	2710	2710			11.70	540.0	1.10	0.074	0.03	8.60	8.60	<0.5			8.34	8.35	1400.0	2700	12.6	11.70	940.0	523.00
V2A Min					120	<0.5	567	501	<0.5				<0.5	10.0	944	836			3.30	150.0	0.89	0.014	<0.005	1.16	1.15	<0.5			7.95	7.42	380.0	660	0.0	3.40	<1.0	0.30
V30	28/06/2011	Seepage	<0.5	1160.0	140	<0.5		4440	1.7				<0.5		7170	>3999.0				180.0	1.00					<0.5		17	6.37	5.74	5500.0		13.2		87.0	
V30	17/10/2011	Seepage	<0.5	1600.0	110	<0.5		5240	4.0				<0.5		8090	5820				140.0	0.88					<0.5		15	6.18	7.68	7940.0		4.6		87.0	
V30 Average			0.3	1380.0	125	0.3		4840	2.9				0.250		7630	4910				160.0	0.94					0.3		16	6.28	6.71	6720.0		8.9		87.0	
V30 Max			<0.5	1600.0	140	<0.5		5240	4.0				<0.5		8090	5820				180.0	1.00					<0.5		17	6.37	7.68	7940.0		13.2		87.0	
V30 Min			<0.5	1160.0	110	<0.5		4440	1.7				<0.5		7170	3999				140.0	0.88					<0.5		15	6.18	5.74	5500.0		4.6		87.0	
V31	28/06/2011	Seepage	252.0	3080.0	<0.5	<0.5		5360	<0.5				<0.5		10100	>3999.0				<0.5	0.82					<0.5		375	3.03	2.60	11000.0		19.4		26.0	
V32	28/06/2011	Seepage	1190.0	33900.0	<0.5	<0.5		19500	66.0				<0.5		37400	>3999.0				<0.5	0.87					<0.5		336	2.90	2.49	62000.0		17.8		86.0	
V32	17/10/2011	Seepage	2210.0	49000.0	<0.5	<0.5		33300	<5.0				<0.5		40100	>20000.0				<0.5	1.00					<0.5		318	3.03	2.78	88600.0		0.0		430.0	
V32 Average			1700.0	41450.0	0	0.3		26400	34.3				0.250		38750	12000				0.3	0.94					0.3		327	2.97	2.64	75300.0		8.9		258.0	
V32 Max			2210.0	49000.0	<0.5	<0.5		33300	66.0				<0.5		40100	20000				<0.5	1.00					<0.5		336	3.03	2.78	88600.0		17.8		430.0	
V32 Min			1190.0	33900.0	<0.5	<0.5		19500	<5.0				<0.5		37400	3999				<0.5	0.87					<0.5		318	2.90	2.49	62000.0		0.0		86.0	
V33	28/06/2011	Seepage	32.4	29200.0	<0.5	<0.5		30700	55.0				<0.5		39800	>3999.0				<0.5	0.95					<0.5		111	4.39	4.67	63000.0		10.3		410.0	
V33	17/10/2011	Seepage	301.0	42500.0	<0.5	<0.5		44000	<5.0				<0.5		45700	>20000.0				<0.5	0.92					<0.5		166	4.20	4.49	101000.0		2.8		31.0	
V33 Average			166.7	35850.0	0	0.3		37350	28.8				0.250		42750	12000				0.3	0.94					0.3		139	4.30	4.58	82000.0		6.6		220.5	
V33 Max			301.0	42500.0	<0.5	<0.5		44000	55.0				<0.5		45700	20000				<0.5	0.95					<0.5		166	4.39	4.67	101000.0		10.3		410.0	
V33 Min			32.4	29200.0	<0.5	<0.5		30700	<5.0				<0.5		39800	3999				<0.5	0.92					<0.5		111	4.20	4.49	63000.0		2.8		31.0	
V34	10/06/2011	Ground	<0.5	32.9	770	<0.5		1190	3.5				<0.5		1780	1932				940.0	1.10					<0.5			7.82	7.36	350.0		3.2		150.0	
V34	06/10/2011	Ground	<0.5	43.1	770	<0.5		1230	3.3				<0.5		1750	2687				950.0						<0.5			7.63	7.07	357.0		2.5		210.0	
V34 Average			0.3	38.0	770	0.3		1210	3.4				0.250		1765	2310				945.0	1.10					0.3			7.73	7.22	353.5		2.9		180.0	
V34 Max			<0.5	43.1	770	<0.5		1230	3.5				<0.5		1780	2687				950.0	1.10					<0.5			7.82	7.36	357.0		3.2		210.0	
V34 Min			<0.5	32.9	770	<0.5		1190	3.3				<0.5		1750	1932				940.0	1.10					<0.5			7.63	7.07	350.0		2.5		150.0	
V35	10/06/2011	Ground	<0.5	39.8	630	<0.5		2790	2.7				<0.5		3550	3806				770.0	1.10					<0.5			7.78	7.82	1800.0		4.3		35.0	
V35	12/10/2011	Ground	<0.5	31.4	470	<0.5		1480	1.3				<0.5		2100	3137				580.0	1.00					<0.5			7.92	6.78	976.0		4.2		23.0	
V35 Average			0.3	35.6	550	0.3		2135	2.0				0.250		2825	3472				675.0	1.05					0.3			7.85	7.30	1388.0		4.3		29.0	
V35 Max			<0.5	39.8	630	<0.5		2790	2.7				<0.5		3550	3806				770.0	1.10					<0.5			7.92	7.82	1800.0		4.3		35.0	
V35 Min			<0.5	31.4	470	<0.5		1480	1.3				<0.5		2100	3137				580.0	1.00					<0.5			7.78	6.78	976.0		4.2		23.0	
V36	08/06/2011	Ground	<0.5	39.3	470	<0.5		1820	1.2				<0.5		2540	2933				580.0	1.00					<0.5			7.91	7.09	1200.0		7.1		4.0	
V36	05/10/2011	Ground	<0.5	41.4	470	<0.5		1750	1.3				<0.5		2390	3658				580.0						<0.5			7.81	7.34	1250.0		3.9		110.0	
V36 Average			0.3	40.4	470	0.3		1785	1.3				0.250		2465	3296				580.0	1.00					0.3			7.86	7.22	1225.0		5.5		57.0	
V36 Max			<0.5	41.4	470	<0.5		1820	1.3				<0.5		2540	3658				580.0	1.00					<0.5			7.91	7.34	1250.0		7.1		110.0	
V36 Min			<0.5	39.3	470	<0.5		1750	1.2				<0.5		2390	2933				580.0	1.00					<0.5			7.81	7.09	1200.0		3.9		4.0	
V37	11/06/2011	Ground	<0.5	<0.5	420	<0.5		531	3.5				<0.5		1020	1084				510.0	0.98					<0.5			8.18	7.35	170.0		4.7		170.0	
V37	12/10/2011	Ground	<0.5	3.9	450	3.5		616	1.0				4.200		1050	1598				540.0	1.00					<0.5			8.31	7.81	193.0		2.8		180.0	
V37 Average			0.3	2.1	435	1.9		574	2.3				2.225		1035	1341				525.0	0.99					0.3			8.25	7.58	181.5		3.7		175.0	
V37 Max			<0.5	3.9	450	3.5		616	3.5				4.200		1050	1598				540.0	1.00					<0.5			8.31	7.81	193.0		4.7		180.0	
V37 Min			<0.5	<0.5	420	<0.5		531	1.0				<0.5		1020	1084				510.0	0.98					<0.5			8.18	7.35	170.0		2.8		170.0	
V4	25/01/2011	Surface			330	<0.5	407	437	1.1				<0.5		726	793	3.10			400.0	1.10	0.009	<0.005	0.13	0.13	<0.5			8.10	7.41	79.0	410	0.5	4.40	3.0	1.59
V4	17/02/2011	Surface			330	<0.5	397	407	1.7				<0.5		720	761	3.50			410.0		0.072	<0.005	0.15	0.15	<0.5			8.05	8.10	82.0	440	0.0	3.80	<4.0	1.41
V4	16/06/2011	Surface			230	<0.5	266	273	<0.5				<0.5		506	405	6.40			270.0	1.00	0.034	<0.005	0.03	0.03	<0.5			8.24	7.96	51.0	290	6.9	7.30	28.0	1.04
V4	11/07/2011	Surface			230	<0.5	278	276	0.6				<0.5		493	452	6.80			290.0	1.00	0.120	<0.005	<0.02	<0.02	<0.5			8.26	7.63	44.0	320	10.5	6.60	2.0	1.11
V4	10/08/2011	Surface			260	<0.5	334	320	1.2				<0.5		585	529	4.70			320.0	1.00	0.036	<0.005	<0.02	<0.02	<0.5			8.20	8.08	56.0	340	6.2	4.90	<1.0	1.89
V4	12/09/2011	Surface			260	<0.5	302	296	1.0				<0.5		556	529	5.00			310.0	0.95	0.033	<0.005	<0.02	<0.02	<0.5			8.24	8.07	60.0	340	3.1	5.10	<1.0	1.07
V4	18/10/2011	Surface			270	3.6	350	338	0.9				4.300		593	669	3.50			330.0	1.00	0.030	<0.005	0.05	0.05	<0.5			8.34	7.77	57.6	340	0.0	4.30	2.0	1.83
V4	24/11/2011	Surface			308	<0.5	429	357	0.6				<0.5		664	720	4.07			376.0	0.95	0.047	<0.005	0.11	0.11	<0.5			8.20	8.01	72.5	374	<0.0	4.58	2.8	2.11
V4	12/12/2011	Surface			305	<0.5	390	384	<0.5				<0.5		654	640	4.12			372.0	1.10	0.064	<0.005	0.09	0.09	<0.5			8.27	7.69	62.1	400	0.0	4.30	3.6	1.91
V4 Average					280	0.6	350	343	0.8				0.700		611	611	4.58			342.0	1.01	0.049	0.00	0.07	0.07	0.3			8.21	7.86	62.7	362	3.0	5.03	4.9	1.55
V4 Max					330	3.6	429	437	1.7				4.300		726	793	6.80			410.0	1.10	0.120	<0.005	0.15	0.15	<0.5			8.34	8.10	82.0	440	10.5	7.30	28.0	2.11
V4 Min					230	<0.5	266	273	<0.5				<0.5		493	405	3.10			270.0	0.95	0.009	<0.005	<0.02	<0.02	<0.5			8.05	7.41	44.0	290	0.0	3.80	<1.0	1.04

Note: Statistics calculated with DLs at half value.

Table C-1: 2011 Vangorda Creek Drainage Water Quality
General Parameters

Station	Date	Sample Type	Acid(pH4.5) mg/L	Acid(pH8.3) mg/L	ALK mg/L	ALKPP mg/L	CaCO3 mg/L	CaCO3-d mg/L	Chloride mg/L	Chlorophyll a µg/L	CN 4500 mg/L	CNTHIO mg/L	CO3 mg/L	Colour TCU	COND µmho/cm	CONDF µS/cm	DO mg/L	DO-% %	DOC mg/L	HCO3 mg/L as CaCO3	Ion Balance (blank)	NH3 mg/L	NO2 mg/L	NO2/3 mg/L	NO3 mg/L	OH mg/L	oPO4 mg/L	ORP mV	pH (blank)	pHF (blank)	SO4-d mg/L	TDS mg/L	TEMP-F °C	TOC mg/L	TSS mg/L	TURB NTU
V5	25/01/2011	Surface			280	<0.5	452	468	2.6				<0.5		778	772			2.80	340.0	1.10	0.012	<0.005	0.17	0.17	<0.5			8.01	7.81	140.0	480	0.0	2.40	14.0	1.58
V5	17/02/2011	Surface			310	<0.5	489	486	2.5				<0.5		870	830			2.40	370.0		<0.005	<0.005	0.18	0.18	<0.5			8.08	8.03	170.0	550	0.6	2.30	<4.0	2.09
V5	22/03/2011	Surface			340	<0.5	581	602	2.5				<0.5		984	954			2.40	420.0		0.025	<0.005	0.20	0.20	<0.5			7.93	8.09	200.0	650	0.0	2.30	2.0	0.60
V5	21/04/2011	Surface			300	<0.5	489	491	3.5				<0.5		839	783			2.60	360.0	1.10	0.033	<0.005	0.13	0.13	<0.5			8.13	8.01	170.0	510	3.0	2.40	4.0	1.73
V5	11/05/2011	Surface			120	<0.5	199	159	3.1				<0.5		321	334			20.70	140.0	0.97	0.053	<0.005	<0.02	<0.02	<0.5			8.03	8.27	50.0	230	1.3	19.10	290.0	128.00
V5	18/05/2011	Surface			74	<0.5	213	96	1.5				<0.5		190	193			25.90	90.0	1.00	0.036	0.01	<0.02	<0.02	<0.5			7.89	8.24	24.0	180	4.3	27.90	1600.0	730.00
V5	15/06/2011	Surface			110	<0.5	143	145	1.8				<0.5		294	300			7.10	130.0	0.99	0.036	0.02	0.05	0.03	<0.5			7.88	7.64	41.0	170	7.3	9.90	110.0	40.50
V5	13/07/2011	Surface			160	<0.5	207	218	2.1				<0.5		417	382			4.80	200.0	0.97	0.039	0.02	0.05	0.03	<0.5			8.19	6.68	65.0	270	8.6	4.30	92.0	37.40
V5	10/08/2011	Surface			170	<0.5	246	230	1.6				<0.5		431	409			4.50	200.0	0.98	0.029	<0.005	0.04	0.04	<0.5			8.13	8.32	71.0	280	7.4	4.40	27.0	9.24
V5	12/09/2011	Surface			160	<0.5	218	219	2.1				<0.5		419	400			7.10	200.0	1.00	0.057	<0.005	0.03	0.03	<0.5			8.27	7.97	56.0	260	6.6	6.40	33.0	6.76
V5	18/10/2011	Surface			200	<0.5	290	288	1.9				<0.5		513	590			3.80	250.0	1.00	0.047	<0.005	0.09	0.09	<0.5			8.27	7.90	77.4	340	0.5	3.30	9.0	1.21
V5	23/11/2011	Surface			233	<0.5	374	328	1.9				<0.5		606	624			3.33	284.0	0.98	0.026	<0.005	0.16	0.16	<0.5			8.21	8.01	107.0	368	<0.0	2.95	9.8	1.42
V5	13/12/2011	Surface			234	<0.5	354	362	1.7				<0.5		632	616			3.51	286.0	1.10	0.026	<0.005	0.13	0.13	<0.5			8.19	8.17	111.0	386	0.2	3.72	8.9	1.62
V5 Average					207	0.3	327	315	2.2				0.250		561	553			7.00	251.5	1.02	0.032	0.01	0.10	0.09	0.3			8.09	7.93	98.6	360	3.1	7.03	169.4	74.01
V5 Max					340	<0.5	581	602	3.5				<0.5		984	954			25.90	420.0	1.10	0.057	0.02	0.20	0.20	<0.5			8.27	8.32	200.0	650	8.6	27.90	1600.0	730.00
V5 Min					74	<0.5	143	96	1.5				<0.5		190	193			2.40	90.0	0.97	<0.005	<0.005	<0.02	<0.02	<0.5			7.88	6.68	24.0	170	0.0	2.30	2.0	0.60
V8	25/01/2011	Surface			220	<0.5	409	423	1.9				<0.5		728	722			1.50	270.0	1.10	<0.005	<0.005	0.50	0.50	<0.5			8.05	7.97	160.0	470	0.2	1.80	2.0	0.27
V8	17/02/2011	Surface			230	<0.5	428	407	1.8				<0.5		758	732			1.90	280.0		<0.005	<0.005	0.52	0.52	<0.5			8.09	8.17	180.0	580	0.4	1.80	<4.0	0.54
V8	22/03/2011	Surface			240	<0.5	428	447	1.8				<0.5		812	833			1.70	290.0		0.023	<0.005	0.60	0.60	<0.5			8.05	8.24	200.0	520	0.3	1.70	2.0	0.30
V8	21/04/2011	Surface			240	<0.5	445	466	2.3				<0.5		817	752			2.00	290.0	1.10	0.010	<0.005	0.45	0.45	<0.5			8.19	8.21	190.0	530	2.1	2.00	<1.0	0.25
V8	11/05/2011	Surface			120	<0.5	231	217	2.1				<0.5		444	454			16.20	150.0	0.91	0.029	<0.005	0.22	0.22	<0.5			8.04	8.29	120.0	300	2.0	15.60	49.0	18.50
V8	18/05/2011	Surface			76	<0.5	237	138	1.1				<0.5		273	285			20.50	93.0	0.96	0.040	0.01	0.24	0.23	<0.5			7.79	8.20	76.0	230	4.3	21.90	1500.0	683.00
V8	15/06/2011	Surface			80	<0.5	121	121	1.2				<0.5		257	239			4.30	98.0	1.00	0.030	0.01	0.06	0.05	<0.5			7.99	7.94	53.0	150	8.3	4.90	160.0	14.40
V8	13/07/2011	Surface			110	<0.5	289	302	0.8				<0.5		602	542			2.60	130.0	0.99	0.029	<0.005	0.08	0.08	<0.5			8.08	5.98	200.0	420	10.0	3.80	22.0	3.86
V8	10/08/2011	Surface			120	<0.5	200	197	1.0				<0.5		386	357			3.10	140.0	1.00	0.023	<0.005	0.09	0.09	<0.5			8.00	8.26	76.0	250	9.1	3.00	64.0	3.06
V8	12/09/2011	Surface			110	<0.5	320	322	1.2				<0.5		633	594			4.10	140.0	1.00	0.065	<0.005	0.07	0.07	<0.5			8.04	7.97	200.0	460	5.8	4.20	9.0	2.66
V8	25/10/2011	Surface			180	<0.5	287	326	1.6				<0.5		566	640			2.60	220.0	1.10	0.023	<0.005	0.20	0.20	<0.5			8.14	7.81	121.0	360	0.0	2.60	<1.0	0.85
V8	23/11/2011	Surface			188	<0.5	372	325	1.1				<0.5		592	613			3.08	230.0	1.10	0.024	<0.005	0.32	0.32	<0.5			8.16	8.06	122.0	368	<0.0	2.44	4.1	0.74
V8	08/12/2011	Surface			193	<0.5	337	329	1.5				<0.5		602	608			6.80	236.0	0.99	0.051	<0.005	0.34	0.34	<0.5			8.03	8.40	144.0	400	0.1	3.18	<4.0	0.89
V8 Average					162	0.3	316	309	1.5				0.250		575	567			5.41	197.5	1.02	0.027	0.00	0.28	0.28	0.3			8.05	7.96	141.7	388	3.3	5.30	139.8	56.09
V8 Max					240	<0.5	445	466	2.3				<0.5		817	833			20.50	290.0	1.10	0.065	0.01	0.60	0.60	<0.5			8.19	8.40	200.0	580	10.0	21.90	1500.0	683.00
V8 Min					76	<0.5	121	121	0.8				<0.5		257	239			1.50	93.0	0.91	<0.005	<0.005	0.06	0.05	<0.5			7.79	5.98	53.0	150	0.0	1.70	<1.0	0.25
Vang Cr C	18/05/2011	Surface			26	<0.5	48	50	1.4				<0.5		109	120			17.80	32.0	1.00	0.023	<0.005	0.03	0.03	<0.5			7.45	8.12	23.0	100	3.9	18.80	40.0	11.70
Vang Cr D	18/05/2011	Surface			37	<0.5	97	88	1.4				<0.5		195	202			17.20	46.0	1.00	0.017	0.02	0.19	0.17	<0.5			7.51	8.37	54.0	140	4.2	18.50	190.0	88.00
Vang Cr E	18/05/2011	Surface			56	<0.5	221	175	1.7				<0.5		375	365			15.00	69.0	0.92	0.019	0.01	0.61	0.60	<0.5			7.74	7.82	130.0	260	4.3	13.90	800.0	450.00
Vang Cr E	25/05/2011	Surface			9	<0.5	23	23	<0.5				<0.5		56	56			6.50	11.0	1.00	0.024	<0.005	0.04	0.04	<0.5			6.96	8.46	16.0	48	2.3	6.70	6.0	1.90
Vang Cr E Average					33	0.3	122	99	1.0				0.250		216	211			10.75	40.0	0.96	0.022	0.01	0.33	0.32	0.3			7.35	8.14	73.0	154	3.3	10.30	403.0	225.95
Vang Cr E Max					56	<0.5	221	175	1.7				<0.5		375	365			15.00	69.0	1.00	0.024	0.01	0.61	0.60	<0.5			7.74	8.46	130.0	260	4.3	13.90	800.0	450.00
Vang Cr E Min					9	<0.5	23	23	<0.5				<0.5		56	56			6.50	11.0	0.92	0.019	<0.005	0.04	0.04	<0.5			6.96	7.82	16.0	48	2.3	6.70	6.0	1.90
VGMAIN	18/05/2011	Surface			76	<0.5	170	162	1.6				<0.5		331	356			17.40	93.0	0.88	0.009	0.03	0.45	0.42	<0.5			7.87	8.23	110.0	220	4.4	20.40	190.0	80.00
VGMAIN	25/05/2011	Surface			39	<0.5	54	54	<0.5				<0.5		118	121			7.70	48.0	1.00	0.045	<0.005	0.06	0.06	<0.5			7.83	7.40	24.0	70	5.1	8.60	27.0	4.57
VGMAIN Average					58	0.3	112	108	0.9				0.250		225	239			12.55	70.5	0.94	0.027	0.01	0.26	0.24	0.3			7.85	7.82	67.0	145	4.8	14.50	108.5	42.29
VGMAIN Max					76	<0.5	170	162	1.6				<0.5		331	356			17.40	93.0	1.00	0.045	0.03	0.45	0.42	<0.5			7.87	8.23	110.0	220	5.1	20.40	190.0	80.00
VGMAIN Min					39	<0.5	54	54	<0.5				<0.5		118	121			7.70	48.0	0.88	0.009	<0.005	0.06	0.06	<0.5			7.83	7.40	24.0	70	4.4	8.60	27.0	4.57
VL-1	13/04/2011	Surface	<0.5	264.0	<0.5	<0.5	895	864	1.1				<0.5		1920	2400	7.60			<0.5	1.00	0.270	<0.005	<0.02	<0.02	<0.5	<0.005	200	5.19	5.96	1200.0	1900	0.5		33.0	
VL-1	14/06/2011	Surface	50.4	410.0	<0.5	<0.5	713	723	0.8				<0.5		2000	2001	5.65			<0.5	1.00	0.280	0.01	0.04	0.03	<0.5	<0.005	440	3.25	3.14	1100.0	1700	14.9		8.0	
VL-1	13/07/2011	Surface	121.0	445.0	<0.5	<0.5	851	875	1.0				<0.5		2370	2410				<0.5	1.00	0.160	<0.005	0.07	0.07	<0.5	<0.005	470	3.10	3.40	1300.0	2100	16.9		12.0	
VL-1	10/08/2011	Surface	53.4	409.0	<0.5	<0.5	1030	1040	0.7				<0.5		2500	2540	7.31	91.80		<0.5	1.00	0.330	<0.005	<0.02	<0.02	<0.5	<0.005	410	3.27	3.98	1500.0	2500	12.5		5.0	
VL-1	07/09/2011	Surface	38.8	422.0	<0.5	<0.5	1060	1010	1.0				<0.5		2530	2580	8.17	81.20		<0.5	0.90	0.320	<0.005	<0.02	<0.02	<0.5	<0.005	395	3.62	3.41	1600.0	2500	9.1		8.0	
VL-1 Average			52.8	390.0	0	0.3	910	902	0.9				0.250		2264	2386	7.18	86.50		0.3	0.98	0.272	0.00	0.03	0.03	0.3	0.003	383	3.69	3.98	1340.0	2140	10.8		13.2	
VL-1 Max			121.0	445.0	<0.5	<0.5	1060	1040	1.1				<0.5		2530	2580	8.17	91.80		<0.5	1.00	0.330	0.01	0.07	0.07	<0.5	<0.005	470	5.19	5.96	1600.0	2500	16.9		33.0	
VL-1 Min			<0.5	264.0	<0.5	<0.5	713	723	0.7				<0.5		1920	2001	5.65	81.20		<0.5	0.90	0.160	<0.005	<0.02	<0.02	<0.5	<0.005	200	3.10	3.14	1100.0	1700	0.5		5.0	
VL-15	13/04/2011	Surface	7.5	380.0	<0.5	<0.5	1240	1210	<0.5				<0.5		2610	2650	3.40			<0.5	1.00	0.400	<0.005	<0.02	<0.02	<0.5	<0.005	270	4.25	4.64	1600.0	2500	5.0		8.0	
VL-15	14/06/2011	Surface	67.8	457.0	<0.5	<0.5	1170	1190	0.9				<0.5		2670	2630	1.07			<0.5	1.10	0.430	0.01	<0.02	<0.02	<0.5	<0.005	465	3.24	4.31	1500.0	2500	6.4		11.0	
VL-15	13/07/2011	Surface	71.3	404.0	<0.5	<0.5	1130	1180	2.1				<0.5		2580	2640				<0.5	1.10	0.460	<0.005	<0.02	<0.02	<0.5	<0.005	435	3.46	4.78	1500.0	2600	5.5		8.0	
VL-15	10/08/2011	Surface	63.7	372.0	<0.5	<0.5	1160	1160	2.0				<0.5		2600	2590	1.46	13.40		<0.5	1.10	0.440	<0.005	<0.02	<0.02	<0.5	<0.005	440	3.38	4.62	1500.0	2700	5.6		3.0	
VL-15	07/09/2011	Surface	69.2	410.0	<0.5	<0.5	1210	1090	<0.5				<0.5		2670	2610	1.13	15.00		<0.5	0.91	0.500	<0.005	<0.02	<0.02	<0.5	0.008	450	3.28	3.75	1700.0	2600	4.5		17.0	
VL-15 Average			55.9	404.6	0	0.3	1182	1166	1.1				0.250		2626	2624	1.77	14.20		0.3	1.04	0.446	0.00	0.01	0.01	0.3	0.004	412	3.52	4.42	1560.0	2580	5.4		9.4	
VL-15 Max			71.3	457.0	<0.5	<0.5	1240	1210	2.1				<0.5		2670	2650	3.40	15.00		<0.5	1.10	0.500	0.01	<0.02	<0.02	<0.5	0.008	465	4.25	4.78	1700.0	2700	6.4		17.0	
VL-15 Min			7.5	372.0	<0.5	<0.5	1130	1090	<0.5				<0.5		2580	2590	1.07	13.40		<0.5	0.91	0.400	<0.005	<0.02	<0.02	<0.5	<0.005	270	3.24	3.75	1500.0	2500	4.5		3.0	
VL-3	13/04/2011	Surface	99.7	378.0	<0.5	<0.5	1080	1040	0.9				<0.5		2570	2560	7.20			<0.5	1.00	0.280	0.01	<0.02	<0.02	<0.5	<0.005	505	3.16	4.21	1500.0	2300	3.0		27.0	
VL-3	14/06/2011	Surface	124.0	489.0	<0.5	<0.5	1020	1030	0.9				<0.5		2570	2550	1.06			<0.5	1.10	0.300	0.01	0.04	0.03	<0.5	0.006	520	3.05	3.89	1400.0	2200	9.2		9.0	
VL-3	13/07/2011	Surface	76.7	393.0	<0.5	<0.5	1200	1140	2.0				<0.5		2550	2640				<0.5	1.00	0.470	0.01	<0.02	<0.02	<0.5	<0.005	390	3.39	4.35	1500.0	2400	7.5		16.0	
VL-3	10/08/2011	Surface	61.2	388.0	<0.5	<0.5	1080	1090	1.7				<0.5		2580	2600	2.01	20.10		<0.5	1.00	0.340	<0.005	<0.02	<0.02	<0.5	<0.005	415	3.34	3.97	1500.0	2400	9.0		2.0	
VL-3	07/09/2011	Surface	54.3	487.0	<0.5	<0.5	1080	996	0.9				<0.5		2620	2680	4.75	47.50		<0.5	0.86	0.370	<0.005	<0.02	<0.02	<0.5	<0.005	400	3.41	3.32	1700.0	2600	9.0		12.0	
VL-3 Average			83.2	427.0	0	0.3	1092	1059	1.3				0.250		2578	2606	3.76	33.80		0.3	0.99	0.352	0.01	0.02	0.01	0.3	0.003	446	3.27	3.95	1520.0	2380	7.5		13.2	
VL-3 Max			124.0	489.0	<0.5	<0.5	1200	1140	2.0				<0.5		2620	2680	7.20	47.50		<0.5	1.10	0.470	0.01	0.04	0.03	<0.5	0.006	520	3.41	4.35	1700.0	2600	9.2		27.0	
VL-3 Min			54.3	378.0	<0.5	<0.5	1020	996	0.9				<0.5		2550	2550	1.06	20.10		<0.5	0.86	0.280	<0.005	<0.02	<0.02	<0.5	<0.005	390	3.05	3.32	1400.0	2200	3.0		2.0	
VL-30	13/04/2011	Surface	3.9	379.0	<0.5	<0.5	1210	1210	<0.5				<0.5		2580	2680	3.00			<0.5	1.00	0.440	<0.005	<0.02	<0.02	<0.5	<0.005	250	4.74	4.64	1600.0	2500	5.5		12.0	
VL-30	14/06/2011	Surface	68.4	467.0	<0.5	<0.5	1150	1090	0.7				<0.5		2660	2640	1.26			<0.5	1.00	0.447	0.01	<0.02	<0.02	<0.5	<0.005	500	3.26	4.22	1500.0	2500	6.6		20.0	
VL-30	13/07/2011	Surface	66.9	399.0	<0.5	<0.5	1170	1260	2.0				<0.5		2570	2700				<0.5	1.10	0.470	<0.005	<0.02	<0.02	<0.5	<0.005	415	3.50	4.39	1500.0	2600	5.5		10.0	
VL-30	10/08/2011	Surface	62.1	372.0	<0.5	<0.5	1170	1190	2.2				<0.5		2600	2600	1.50	15.10		<0.5	1.10	0.460	<0.005	<0.02	<0.02	<0.5	<0.005	430	3.39	4.60	1500.0	2800	5.6		4.0	
VL-30	07/09/2011	Surface	58.4	411.0	<0.5	<0.5	1180	1070	<0.5				<0.5		2670	2600	1.35	12.50		<0.5	0.89	0.450	<0.005	<0.02	<0.02	<0.5	<0.005	435	3.37	4.11	1700.0	2500	4.5		13.0	
VL-30 Average			51.9	405.6	0	0.3	1176	1164	1.1				0.250		2616	2644	1.78	13.80		0.3	1.02	0.453	0.00	0.01	0.01	0.3	0.003	406	3.65	4.39	1560.0	2580	5.5		11.8	
VL-30 Max			68.4	467.0	<0.5	<0.5	1210	1260	2.2				<0.5		2670	2700	3.00	15.10		<0.5	1.10	0.470	0.01	<0.02	<0.02	<0.5	<0.005	500	4.74	4.64	1700.0	2800	6.6		20.0	
VL-30 Min			3.9	372.0	<0.5	<0.5	1150	1070	<0.5				<0.5		2570	2600	1.26	12.50		<0.5	0.89	0.440	<0.005	<0.02	<0.02	<0.5	<0.005	250	3.26	4.11	1500.0	2500	4.5		4.0	

Note: Statistics calculated with DLs at half value.

Table C-1: 2011 Vangorda Creek Drainage Water Quality
General Parameters

Station	Date	Sample Type	Acid(pH4.5) mg/L	Acid(pH8.3) mg/L	ALK mg/L	ALKPP mg/L	CaCO3 mg/L	CaCO3-d mg/L	Chloride mg/L	Chlorophyll a µg/L	CN 4500 mg/L	CNTHIO mg/L	CO3 mg/L	Colour TCU	COND µmho/cm	CONDF µS/cm	DO mg/L	DO-% %	DOC mg/L	HCO3 mg/L as CaCO3	Ion Balance (blank)	NH3 mg/L	NO2 mg/L	NO2/3 mg/L	NO3 mg/L	OH mg/L	oPO4 mg/L	ORP mV	pH (blank)	pHF (blank)	SO4-d mg/L	TDS mg/L	TEMP-F °C	TOC mg/L	TSS mg/L	TURB NTU
VL-40	**13/04/2011**	**Surface**	1.1	375.0	<0.5	<0.5	1240	1250	0.8				<0.5		2620	2700	2.90			<0.5	1.10	0.580	<0.005	<0.02	<0.02	<0.5	<0.005	240	4.57	5.49	1600.0	2500	5.6		18.0	
VL-40	**14/06/2011**	**Surface**	76.5	464.0	<0.5	<0.5	1150	1130	0.7				<0.5		2670	2600	0.78			<0.5	1.00	0.406	<0.005	<0.02	<0.02	<0.5	<0.005	400	3.27	4.90	1500.0	2400	6.9		350.0	
VL-40	**13/07/2011**	**Surface**	67.0	413.0	<0.5	<0.5	1220	1220	1.8				<0.5		2580	2720				<0.5	1.10	0.410	0.01	<0.02	<0.02	<0.5	<0.005	420	3.50	4.50	1500.0	2600	5.5		<1.0	
VL-40	**10/08/2011**	**Surface**	56.4	383.0	<0.5	<0.5	1170	1150	2.7				<0.5		2580	2590	1.16	10.70		<0.5	1.00	0.400	<0.005	<0.02	<0.02	<0.5	<0.005	440	3.44	4.48	1500.0	2600	6.0		3.0	
VL-40	**07/09/2011**	**Surface**	57.3	397.0	<0.5	<0.5	1170	1140	1.0				<0.5		2660	2590	1.45	12.50		<0.5	0.95	0.410	<0.005	<0.02	<0.02	<0.5	<0.005	415	3.36	4.30	1700.0	2600	4.5		16.0	
VL-40 Average			51.7	406.4	0	0.3	1190	1178	1.4				0.250		2622	2640	1.57	11.60		0.3	1.03	0.441	0.00	0.01	0.01	0.3	0.003	383	3.63	4.73	1560.0	2540	5.7		77.5	
VL-40 Max			76.5	464.0	<0.5	<0.5	1240	1250	2.7				<0.5		2670	2720	2.90	12.50		<0.5	1.10	0.580	0.01	<0.02	<0.02	<0.5	<0.005	440	4.57	5.49	1700.0	2600	6.9		350.0	
VL-40 Min			1.1	375.0	<0.5	<0.5	1150	1130	0.7				<0.5		2580	2590	0.78	10.70		<0.5	0.95	0.400	<0.005	<0.02	<0.02	<0.5	<0.005	240	3.27	4.30	1500.0	2400	4.5		<1.0	
VL-5	**13/04/2011**	**Surface**	93.3	396.0	<0.5	<0.5	1070	1030	<0.5				<0.5		2560	2600	4.50			<0.5	1.00	0.330	0.01	<0.02	<0.02	<0.5	<0.005	440	3.29	3.72	1500.0	2300	3.0		17.0	
VL-5	**14/06/2011**	**Surface**	83.2	463.0	<0.5	<0.5	1140	1160	<0.5				<0.5		2670	2550	1.15			<0.5	1.10	0.402	0.01	<0.02	<0.02	<0.5	<0.005	460	3.18	4.10	1500.0	2400	7.7		13.0	
VL-5	**13/07/2011**	**Surface**	64.8	395.0	<0.5	<0.5	1130	1150	1.4				<0.5		2540	2630				<0.5	1.10	0.430	0.01	<0.02	<0.02	<0.5	<0.005	400	3.50	4.28	1500.0	2600	7.0		9.0	
VL-5	**10/08/2011**	**Surface**	64.9	373.0	<0.5	<0.5	1150	1170	1.4				<0.5		2590	2600	1.47	14.10		<0.5	1.10	0.450	<0.005	<0.02	<0.02	<0.5	<0.005	445	3.34	4.75	1500.0	2600	6.2		<1.0	
VL-5	**07/09/2011**	**Surface**	66.6	394.0	<0.5	<0.5	1090	1110	0.7				<0.5		2640	2660	1.09	13.80		<0.5	0.99	0.440	0.02	0.52	0.50	<0.5	0.010	445	3.26	3.41	1600.0	2600			17.0	
VL-5 Average			74.6	404.2	0	0.3	1116	1124	0.8				0.250		2600	2608	2.05	13.95		0.3	1.06	0.410	0.01	0.11	0.11	0.3	0.004	438	3.31	4.05	1520.0	2500	6.0		11.3	
VL-5 Max			93.3	463.0	<0.5	<0.5	1150	1170	1.4				<0.5		2670	2660	4.50	14.10		<0.5	1.10	0.450	0.02	0.52	0.50	<0.5	0.010	460	3.50	4.75	1600.0	2600	7.7		17.0	
VL-5 Min			64.8	373.0	<0.5	<0.5	1070	1030	<0.5				<0.5		2540	2550	1.09	13.80		<0.5	0.99	0.330	<0.005	<0.02	<0.02	<0.5	<0.005	400	3.18	3.41	1500.0	2300	3.0		<1.0	
WGD01	**21/05/2011**	**Seepage**	<0.5	7.9	240	<0.5		634	0.6				<0.5		1110	1079				290.0	1.00					<0.5		28	8.12	7.70	360.0		5.7		<1.0	
WGD01	**27/09/2011**	**Seepage**	<0.5	2.0	280	<0.5		969	2.0				<0.5		1560	1670				340.0	1.10					<0.5		115	8.14	7.72	622.0		0.9		<1.0	
WGD01 Average			0.3	5.0	260	0.3		802	1.3				0.250		1335	1375				315.0	1.05					0.3		72	8.13	7.71	491.0		3.3		0.5	
WGD01 Max			<0.5	7.9	280	<0.5		969	2.0				<0.5		1560	1670				340.0	1.10					<0.5		115	8.14	7.72	622.0		5.7		<1.0	
WGD01 Min			<0.5	2.0	240	<0.5		634	0.6				<0.5		1110	1079				290.0	1.00					<0.5		28	8.12	7.70	360.0		0.9		<1.0	
WTA02	**27/09/2011**	**Seepage**	<0.5	<0.5	220	<0.5		245	1.2				<0.5		459	490				270.0	0.98					<0.5		84	8.25	7.81	28.5		1.3		15.0	

Note: Statistics calculated with DLs at half value.
\\192.168.30.11\global\ADMIN\Submittals\Reports\Annual\2011\AnnEnvRpt\4-Appendices\App C WQ Van Creek Drainage\1 - WQ TC-1 to TC-5 Rev 0.xlsx\TC-1 General

Table C-2: 2011 Vangorda Creek Drainage Water Quality
Dissolved Metals

Station	Date	Sample Type	Ag-d µg/L	Al-d µg/L	As-d µg/L	Ba-d µg/L	B-d µg/L	Be-d µg/L	Bi-d µg/L	Ca-d mg/L	Cd-d µg/L	Co-d µg/L	Cr-d µg/L	Cu-d µg/L	Fe-d µg/L	Hg-d µg/L	K-d mg/L	Li-d mg/L	Mg-d mg/L	Mn-d µg/L	Mo-d µg/L	Na-d mg/L	Ni-d µg/L	Pb-d µg/L	Sb-d µg/L	S-d mg/L	Se-d µg/L	Si-d µg/L	Sn-d µg/L	Sr-d µg/L	Ti-d µg/L	Tl-d µg/L	U-d µg/L	V-d µg/L	Zn-d µg/L	Zr-d µg/L
BH05-9B-R	**10/06/2011**	**Ground**	<0.005	15.3	16.50	16.4	<50.0	<0.01	<0.005	48	<0.005	0.103	<0.1	0.09	858		1.93	0.0221	22.6	106.00	11.40	48.20	0.39	0.913	<0.02	65	<0.04	6710	0.02	1110.0	<0.5	<0.002	0.70	<0.2	1.2	<0.1
BH05-9B-R	**04/10/2011**	**Ground**	<0.005	2.7	18.30	16.5	<50.0	<0.01	<0.005	48	0.028	0.058	<0.1	0.15	753		1.84	0.0231	22.0	103.00	11.60	45.40	0.27	0.115	<0.02	62	<0.04	6210	<0.01	1150.0	<0.5	<0.002	0.90	<0.2	1.7	<0.1
BH05-9B-R Average			0.003	9.0	17.40	16.5	25.0	0.01	0.003	48	0.015	0.081	0.1	0.12	806		1.89	0.0226	22.3	104.50	11.50	46.80	0.33	0.514	0.01	64	0.02	6460	0.01	1130.0	0.3	0.001	0.80	0.1	1.5	0.1
BH05-9B-R Max			<0.005	15.3	18.30	16.5	<50.0	<0.01	<0.005	48	0.028	0.103	<0.1	0.15	858		1.93	0.0231	22.6	106.00	11.60	48.20	0.39	0.913	<0.02	65	<0.04	6710	0.02	1150.0	<0.5	<0.002	0.90	<0.2	1.7	<0.1
BH05-9B-R Min			<0.005	2.7	16.50	16.4	<50.0	<0.01	<0.005	48	<0.005	0.058	<0.1	0.09	753		1.84	0.0221	22.0	103.00	11.40	45.40	0.27	0.115	<0.02	62	<0.04	6210	<0.01	1110.0	<0.5	<0.002	0.70	<0.2	1.2	<0.1
GC Weir	**26/04/2011**	**Surface**	<0.005	6.6	1.38	86.2	<50.0	<0.01	0.008	216	0.076	0.102	0.4	1.18	24		3.10	0.0074	115.0	12.30	3.48	7.43	6.20	3.340	0.44	268	0.76	5040	0.02	740.0	<0.5	0.009	20.10	<0.2	63.5	<0.1
GC Weir	**10/05/2011**	**Surface**	<0.005	4.8	1.03	48.6	<50.0	<0.01	0.029	160	0.118	0.451	<0.1	2.51	13		4.24	0.0068	87.0	56.30	2.81	9.80	7.76	1.110	1.02	210	3.74	2600	0.05	531.0	<0.5	0.032	14.40	<0.2	35.7	<0.1
GC Weir	**18/05/2011**	**Surface**	<0.005	28.2	0.84	36.6	<50.0	<0.01	<0.005	69	0.129	0.705	<0.1	1.02	39		3.82	0.0030	37.6	112.00	2.29	5.15	6.23	0.591	0.74	93	2.08	1110	<0.01	250.0	1.3	0.052	5.81	<0.2	20.4	<0.1
GC Weir	**25/05/2011**	**Surface**	<0.03	4.0	1.20	50.4	<300.0	<0.05	<0.03	207	0.110	0.200	<0.5	1.30	10		3.70	0.0080	139.0	4.00	3.30	7.50	27.50	0.520	0.60	262	1.10	4040	<0.05	667.0	<3.0	0.040	21.20	<1.0	263.0	<0.5
GC Weir	**06/06/2011**	**Surface**	<0.03	4.0	1.10	53.2	<300.0	<0.05	<0.03	242	0.170	0.060	<0.5	1.50	7		3.80	0.0090	177.0	1.20	4.20	9.30	28.30	0.380	0.70	333	0.70	4440	0.09	811.0	<3.0	0.050	30.20	<1.0	266.0	<0.5
GC Weir	**22/06/2011**	**Surface**	<0.005	6.8	1.60	49.1	<50.0	<0.01	<0.005	239	0.399	0.425	0.2	1.65	14		5.19	0.0162	192.0	10.30	2.35	8.20	63.10	1.550	0.92	373	1.27	3450	<0.01	854.0	<0.5	0.106	27.50	<0.2	711.0	<0.1
GC Weir	**05/07/2011**	**Surface**	<0.03	7.0	1.50	49.9	<300.0	<0.05	<0.03	268	0.470	0.170	<0.5	1.80	17		4.50	0.0150	198.0	14.30	2.20	8.70	81.60	1.850	0.80	395	0.80	4680	<0.05	886.0	<3.0	0.110	35.30	<1.0	849.0	<0.5
GC Weir	**21/07/2011**	**Surface**	<0.03	7.0	1.70	47.6	<300.0	<0.05	<0.03	283	0.380	0.190	<0.5	1.20	9		4.50	0.0160	203.0	6.10	2.00	8.70	86.40	1.160	0.80	379	0.60	4970	<0.05	866.0	<3.0	0.110	34.90	<1.0	829.0	<0.5
GC Weir	**03/08/2011**	**Surface**	<0.03	3.0	1.80	51.3	<300.0	<0.05	<0.03	271	0.430	0.170	<0.5	1.30	7		4.70	0.0160	198.0	7.30	2.10	8.60	82.70	0.880	0.90	377	0.50	4580	<0.05	917.0	<3.0	0.110	32.60	<1.0	808.0	<0.5
GC Weir	**18/08/2011**	**Surface**	<0.03	11.0	4.40	46.2	<300.0	<0.05	<0.03	276	0.380	0.300	<0.5	1.70	24		4.50	0.0160	204.0	10.10	2.20	8.80	90.80	0.890	0.80	393	0.70	4670	<0.05	873.0	<3.0	0.090	36.60	<1.0	898.0	<0.5
GC Weir	**07/09/2011**	**Surface**	<0.03	6.0	1.70	47.7	<300.0	<0.05	<0.03	290	0.360	0.240	<0.5	1.30	11		5.00	0.0170	220.0	14.30	2.00	9.10	94.30	0.770	0.80	391	0.50	4820	<0.05	958.0	<3.0	0.100	36.60	<1.0	881.0	<0.5
GC Weir	**20/09/2011**	**Surface**	<0.03	6.0	1.90	47.7	<300.0	<0.05	<0.03	287	0.350	0.190	<0.5	1.10	15		5.10	0.0180	221.0	8.40	1.90	9.10	96.80	0.930	0.80	409	0.50	4740	<0.05	937.0	<3.0	0.100	38.10	2.0	865.0	<0.5
GC Weir	**11/10/2011**	**Surface**	<0.03	7.0	1.80	46.2	<300.0	<0.05	<0.03	288	0.380	0.200	<0.5	1.70	16		5.10	0.0170	218.0	5.90	2.10	9.90	95.00	1.300	0.70	401	0.50	4770	<0.05	938.0	<3.0	0.090	39.30	<1.0	771.0	<0.5
GC Weir	**27/10/2011**	**Surface**	<0.03	4.0	1.80	44.0	<300.0	<0.05	<0.03	290	0.280	0.160	<0.5	1.00	6		5.00	0.0180	233.0	8.40	2.10	10.30	89.90	0.480	0.80	423	0.50	4960	<0.05	971.0	<3.0	0.080	39.60	<1.0	696.0	<0.5
GC Weir	**08/11/2011**	**Surface**	<0.03	6.0	1.90	44.3	<300.0	<0.05	<0.03	272	0.220	0.130	<0.5	1.10	25		4.50	0.0160	198.0	2.80	2.30	8.60	74.50	0.880	0.80	402	0.60	4500	<0.05	919.0	<3.0	0.080	34.90	<1.0	608.0	<0.5
GC Weir Average			0.012	7.4	1.71	49.9	116.7	0.02	0.014	244	0.283	0.246	0.2	1.42	16		4.45	0.0133	176.0	18.25	2.49	8.61	62.07	1.109	0.77	341	0.99	4225	0.03	807.9	1.2	0.077	29.81	0.5	571.0	0.2
GC Weir Max			<0.03	28.2	4.40	86.2	<300.0	<0.05	<0.03	290	0.470	0.705	<0.5	2.51	39		5.19	0.0180	233.0	112.00	4.20	10.30	96.80	3.340	1.02	423	3.74	5040	0.09	971.0	<3.0	0.110	39.60	2.0	898.0	<0.5
GC Weir Min			<0.005	3.0	0.84	36.6	<50.0	<0.01	<0.005	69	0.076	0.060	<0.1	1.00	6		3.10	0.0030	37.6	1.20	1.90	5.15	6.20	0.380	0.44	93	0.50	1110	<0.01	250.0	<0.5	0.009	5.81	<0.2	20.4	<0.1
GCA	**25/05/2011**	**Surface**	<0.03	10.0	1.10	43.9	<300.0	<0.05	<0.03	219	<0.03	0.120	<0.5	1.50	20		3.60	0.0070	144.0	14.10	3.00	7.80	3.40	0.540	0.60	282	1.00	3860	<0.05	663.0	<3.0	<0.01	22.70	<1.0	29.8	<0.5
GD05 d/s	**22/05/2011**	**Seepage**	<0.03	7.0	1.50	26.1	<300.0	<0.05	<0.03	334	<0.03	0.210	<0.5	1.40	22		4.00	0.0150	229.0	8.50	0.70	11.40	1.20	0.410	0.30	484	0.70	5830	<0.05	1120.0	<3.0	<0.01	32.10	<1.0	4.2	<0.5
GD05 d/s	**22/09/2011**	**Seepage**	<0.03	5.0	1.40	37.4	<300.0	<0.05	<0.03	404	<0.03	0.040	<0.5	0.70	13		4.50	0.0200	302.0	<0.3	0.60	13.30	1.10	0.660	0.20	575	<0.2	5930	<0.05	1430.0	<3.0	<0.01	48.90	<1.0	2.0	<0.5
GD05 d/s Average			0.015	6.0	1.45	31.8	150.0	0.03	0.015	369	0.015	0.125	0.3	1.05	18		4.25	0.0175	265.5	4.33	0.65	12.35	1.15	0.535	0.25	530	0.40	5880	0.03	1275.0	1.5	0.005	40.50	0.5	3.1	0.3
GD05 d/s Max			<0.03	7.0	1.50	37.4	<300.0	<0.05	<0.03	404	<0.03	0.210	<0.5	1.40	22		4.50	0.0200	302.0	8.50	0.70	13.30	1.20	0.660	0.30	575	0.70	5930	<0.05	1430.0	<3.0	<0.01	48.90	<1.0	4.2	<0.5
GD05 d/s Min			<0.03	5.0	1.40	26.1	<300.0	<0.05	<0.03	334	<0.03	0.040	<0.5	0.70	13		4.00	0.0150	229.0	<0.3	0.60	11.40	1.10	0.410	0.20	484	<0.2	5830	<0.05	1120.0	<3.0	<0.01	32.10	<1.0	2.0	<0.5
GL-1	**12/04/2011**	**Surface**	<0.005	1.8	1.77	103.0	<50.0	<0.01	<0.005	130	0.596	2.540	<0.1	0.84	4		3.39	0.0188	55.7	83.00	2.43	11.90	68.80	0.324	2.19	119	3.55	7770	0.07	792.0	<0.5	0.503	16.80	0.4	2360.0	<0.1
GL-1	**14/06/2011**	**Surface**	0.007	2.9	0.67	39.1	<50.0	<0.01	<0.005	104	1.940	3.760	<0.1	2.58	2		2.53	0.0185	55.9	88.00	2.02	7.91	104.00	0.394	2.76	137	1.07	2950	<0.01	612.0	<0.5	0.824	11.10	<0.2	4010.0	<0.1
GL-1	**12/07/2011**	**Surface**	<0.005	2.5	0.59	29.3	<50.0	<0.01	<0.005	93	0.097	3.830	<0.1	0.36	2		2.70	0.0201	60.6	76.30	2.12	8.40	86.20	0.038	2.69	139	1.10	2410	<0.01	554.0	<0.5	1.300	8.53	0.3	62.7	<0.1
GL-1	**09/08/2011**	**Surface**	<0.005	3.2	1.08	37.0	<50.0	<0.01	<0.005	93	0.681	4.170	<0.1	3.02	9		2.86	0.0197	64.0	62.50	2.36	8.81	71.20	0.463	2.75	151	1.23	2140	0.94	635.0	<0.5	1.770	9.04	0.4	299.0	<0.1
GL-1	**06/09/2011**	**Surface**	0.015	1.4	1.04	38.2	<50.0	<0.01	<0.005	102	1.470	4.400	<0.1	2.87	7		2.65	0.0201	58.5	88.50	2.01	8.00	78.60	0.566	2.90	138	1.24	2270	0.16	646.0	<0.5	1.670	8.46	<0.2	1530.0	<0.1
GL-1 Average			0.006	2.4	1.03	49.3	25.0	0.01	0.003	104	0.957	3.740	0.1	1.93	5		2.83	0.0194	58.9	79.66	2.19	9.00	81.76	0.357	2.66	137	1.64	3508	0.24	647.8	0.3	1.213	10.79	0.3	1652.3	0.1
GL-1 Max			0.015	3.2	1.77	103.0	<50.0	<0.01	<0.005	130	1.940	4.400	<0.1	3.02	9		3.39	0.0201	64.0	88.50	2.43	11.90	104.00	0.566	2.90	151	3.55	7770	0.94	792.0	<0.5	1.770	16.80	0.4	4010.0	<0.1
GL-1 Min			<0.005	1.4	0.59	29.3	<50.0	<0.01	<0.005	93	0.097	2.540	<0.1	0.36	2		2.53	0.0185	55.7	62.50	2.01	7.91	68.80	0.038	2.19	119	1.07	2140	<0.01	554.0	<0.5	0.503	8.46	<0.2	62.7	<0.1
GL-15	**12/04/2011**	**Surface**	<0.005	1.0	0.75	47.3	<50.0	<0.01	<0.005	131	1.710	2.240	<0.1	0.34	3		3.35	0.0232	69.5	31.10	2.19	9.66	132.00	0.080	3.29	166	1.33	3430	<0.01	798.0	<0.5	0.684	13.00	<0.2	4790.0	<0.1
GL-15	**14/06/2011**	**Surface**	<0.005	2.8	0.61	43.8	<50.0	<0.01	<0.005	117	1.810	3.200	<0.1	3.23	2		3.10	0.0222	68.4	75.30	2.41	9.73	131.00	0.359	3.26	168	1.34	3240	<0.01	728.0	<0.5	0.647	13.20	<0.2	4780.0	<0.1
GL-15	**12/07/2011**	**Surface**	<0.005	2.3	0.71	46.1	<50.0	<0.01	<0.005	122	2.000	3.830	<0.1	2.90	3		3.21	0.0242	72.0	85.50	2.35	10.40	142.00	0.460	3.25	164	1.30	3310	<0.01	783.0	<0.5	0.698	13.30	<0.2	5130.0	<0.1
GL-15	**09/08/2011**	**Surface**	0.006	3.9	0.73	49.1	<50.0	<0.01	<0.005	115	2.100	3.900	<0.1	2.61	7		3.39	0.0219	74.7	91.20	2.45	10.40	138.00	0.596	3.21	173	1.27	3030	0.06	796.0	<0.5	0.736	13.80	<0.2	5290.0	<0.1
GL-15	**06/09/2011**	**Surface**	<0.005	1.0	0.56	45.7	<50.0	<0.01	<0.005	114	2.240	3.680	<0.1	2.45	5		2.87	0.0227	62.7	83.80	2.27	8.70	127.00	0.337	3.43	144	1.36	2770	0.04	781.0	<0.5	0.735	13.00	<0.2	5190.0	<0.1
GL-15 Average			0.003	2.2	0.67	46.4	25.0	0.01	0.003	120	1.972	3.370	0.1	2.31	4		3.18	0.0228	69.5	73.38	2.33	9.78	134.00	0.366	3.29	163	1.32	3156	0.02	777.2	0.3	0.700	13.26	0.1	5036.0	0.1
GL-15 Max			0.006	3.9	0.75	49.1	<50.0	<0.01	<0.005	131	2.240	3.900	<0.1	3.23	7		3.39	0.0242	74.7	91.20	2.45	10.40	142.00	0.596	3.43	173	1.36	3430	0.06	798.0	<0.5	0.736	13.80	<0.2	5290.0	<0.1
GL-15 Min			<0.005	1.0	0.56	43.8	<50.0	<0.01	<0.005	114	1.710	2.240	<0.1	0.34	2		2.87	0.0219	62.7	31.10	2.19	8.70	127.00	0.080	3.21	144	1.27	2770	<0.01	728.0	<0.5	0.647	13.00	<0.2	4780.0	<0.1
GL-3	**12/04/2011**	**Surface**	<0.005	1.3	1.27	53.3	<50.0	<0.01	<0.005	134	0.897	3.870	<0.1	0.52	13		3.26	0.0222	64.9	90.90	2.28	9.45	106.00	0.462	3.12	155	1.54	3970	<0.01	807.0	<0.5	0.783	11.90	<0.2	3750.0	<0.1
GL-3	**14/06/2011**	**Surface**	<0.005	2.8	0.85	38.0	<50.0	<0.01	<0.005	106	2.160	4.440	<0.1	3.34	2		2.67	0.0184	58.3	113.00	2.04	8.11	111.00	0.203	2.78	141	1.17	2920	<0.01	625.0	<0.5	1.070	10.90	<0.2	4440.0	<0.1
GL-3	**12/07/2011**	**Surface**	<0.005	2.0	0.53	40.1	<50.0	<0.01	<0.005	104	1.340	4.850	<0.1	0.58	2		2.75	0.0204	62.9	107.00	2.00	8.84	99.80	0.119	2.69	146	1.15	2340	<0.01	655.0	<0.5	1.340	9.52	<0.2	402.0	<0.1
GL-3	**09/08/2011**	**Surface**	<0.005	4.9	1.11	39.3	<50.0	<0.01	<0.005	93	0.691	4.230	<0.1	2.39	10		2.81	0.0189	64.4	64.30	2.20	8.93	70.00	0.407	2.60	145	1.22	2100	0.24	618.0	<0.5	1.820	8.90	0.4	300.0	<0.1
GL-3	**06/09/2011**	**Surface**	0.008	1.0	1.03	40.7	<50.0	<0.01	<0.005	102	1.550	4.510	<0.1	2.68	6		2.62	0.0209	60.1	86.00	2.21	8.26	82.10	0.536	3.05	134	1.29	2260	0.08	660.0	<0.5	1.770	8.85	<0.2	1640.0	<0.1
GL-3 Average			0.004	2.4	0.96	42.3	25.0	0.01	0.003	108	1.328	4.380	0.1	1.90	7		2.82	0.0202	62.1	92.24	2.15	8.72	93.78	0.345	2.85	144	1.27	2718	0.07	673.0	0.3	1.357	10.01	0.2	2106.4	0.1
GL-3 Max			0.008	4.9	1.27	53.3	<50.0	<0.01	<0.005	134	2.160	4.850	<0.1	3.34	13		3.26	0.0222	64.9	113.00	2.28	9.45	111.00	0.536	3.12	155	1.54	3970	0.24	807.0	<0.5	1.820	11.90	0.4	4440.0	<0.1
GL-3 Min			<0.005	1.0	0.53	38.0	<50.0	<0.01	<0.005	93	0.691	3.870	<0.1	0.52	2		2.62	0.0184	58.3	64.30	2.00	8.11	70.00	0.119	2.60	134	1.15	2100	<0.01	618.0	<0.5	0.783	8.85	<0.2	300.0	<0.1
GL-30	**12/04/2011**	**Surface**	<0.005	1.2	0.84	46.3	<50.0	<0.01	<0.005	122	1.860	0.999	<0.1	0.30	3		3.29	0.0225	68.7	8.03	2.27	9.45	127.00	0.079	3.34	165	1.26	3030	<0.01	802.0	<0.5	0.638	13.10	<0.2	4700.0	<0.1
GL-30	**14/06/2011**	**Surface**	<0.005	2.7	0.69	43.4	<50.0	<0.01	<0.005	119	1.890	3.380	<0.1	3.15	2		3.02	0.0225	66.4	76.10	2.40	9.49	131.00	0.299	3.34	167	1.37	3290	<0.01	730.0	<0.5	0.632	12.80	<0.2	4790.0	<0.1
GL-30	**12/07/2011**	**Surface**	<0.005	5.2	0.68	46.4	<50.0	<0.01	<0.005	125	2.000	3.750	<0.1	3.06	3		3.15	0.0242	71.5	84.90	2.50	10.30	141.00	0.468	3.26	160	1.33	3420	<0.01	786.0	<0.5	0.720	13.90	<0.2	4990.0	<0.1
GL-30	**09/08/2011**	**Surface**	<0.005	1.8	0.71	48.7	<50.0	<0.01	<0.005	117	2.140	3.910	<0.1	2.41	4		3.24	0.0238	74.1	94.30	2.60	10.60	133.00	0.477	3.17	167	1.28	3000	0.05	818.0	<0.5	0.751	13.90	<0.2	5190.0	<0.1
GL-30	**06/09/2011**	**Surface**	<0.005	3.9	0.56	46.6	<50.0	<0.01	<0.005	115	2.290	4.050	<0.1	2.34	11		2.91	0.0231	63.6	94.30	2.34	8.87	130.00	0.347	3.55	146	1.26	2770	0.04	784.0	<0.5	0.771	13.40	<0.2	5280.0	<0.1
GL-30 Average			0.003	3.0	0.70	46.3	25.0	0.01	0.003	120	2.036	3.218	0.1	2.25	5		3.12	0.0232	68.9	71.53	2.42	9.74	132.40	0.334	3.33	161	1.30	3102	0.02	784.0	0.3	0.702	13.42	0.1	4990.0	0.1
GL-30 Max			<0.005	5.2	0.84	48.7	<50.0	<0.01	<0.005	125	2.290	4.050	<0.1	3.15	11		3.29	0.0242	74.1	94.30	2.60	10.60	141.00	0.477	3.55	167	1.37	3420	0.05	818.0	<0.5	0.771	13.90	<0.2	5280.0	<0.1
GL-30 Min			<0.005	1.2	0.56	43.4	<50.0	<0.01	<0.005	115	1.860	0.999	<0.1	0.30	2		2.91	0.0225	63.6	8.03	2.27	8.87	127.00	0.079	3.17	146	1.26	2770	<0.01	730.0	<0.5	0.632	12.80	<0.2	4700.0	<0.1
GL-5	**12/04/2011**	**Surface**	<0.005	1.7	1.18	49.0	<50.0	<0.01	<0.005	123	0.855	3.690	<0.1	0.58	9		3.01	0.0225	61.5	86.60	2.19	8.86	103.00	0.437	3.09	146	1.44	3330	<0.01	773.0	<0.5	0.807	11.20	<0.2	3780.0	<0.1
GL-5	**14/06/2011**	**Surface**	<0.005	3.4	0.72	42.5	<50.0	<0.01	<0.005	117	1.790	3.130	<0.1	3.20	4		2.93	0.0215	65.8	73.90	2.22	9.35	125.00	0.293	3.17	166	1.34	3270	<0.01	707.0	<0.5	0.648	12.50	<0.2	4580.0	<0.1
GL-5	**12/07/2011**	**Surface**	<0.005	1.4	0.54	45.5	<50.0	<0.01	<0.005	123	2.290	3.940	<0.1	2.03	3		3.14	0.0230	71.0	90.10	2.40	10.20	136.00	0.363	3.17	158	1.31	3450	<0.01	761.0	<0.5	0.782	10.40	<0.2	5450.0	<0.1
GL-5	**09/08/2011**	**Surface**	<0.005	1.3	0.61	47.4	<50.0	<0.01	<0.005	110	2.600	4.380	<0.1	0.97	4		3.32	0.0225	73.5	109.00	2.45	10.20	136.00	0.321	3.13	173	1.25	3120	0.05	809.0	<0.5	0.918	9.28	<0.2	5850.0	<0.1
GL-5	**06/09/2011**	**Surface**	<0.005	1.2	1.02	39.4	<50.0	<0.01	<0.005	102	1.690	4.500	<0.1	2.87	9		2.62	0.0213	60.2	87.20	2.13	8.23	89.70	0.562	3.06	136	1.30	2330	0.04	672.0	<0.5	1.620	8.62	<0.2	2490.0	<0.1
GL-5 Average			0.003	1.8	0.81	44.8	25.0	0.01	0.003	115	1.845	3.928	0.1	1.93	6		3.00	0.0222	66.4	89.36	2.28	9.37	117.94	0.395	3.12	156	1.33	3100	0.02	744.4	0.3	0.955	10.40	0.1	4430.0	0.1
GL-5 Max			<0.005	3.4	1.18	49.0	<50.0	<0.01	<0.005	123	2.600	4.500	<0.1	3.20	9		3.32	0.0230	73.5	109.00	2.45	10.20	136.00	0.562	3.17	173	1.44	3450	0.05	809.0	<0.5	1.620	12.50	<0.2	5850.0	<0.1
GL-5 Min			<0.005	1.2	0.54	39.4	<50.0	<0.01	<0.005	102	0.855	3.130	<0.1	0.58	3		2.62	0.0213	60.2	73.90	2.13	8.23	89.70	0.293	3.06	136	1.25	2330	<0.01	672.0	<0.5	0.648	8.62	<0.2	2490.0	<0.1
GL-60	**12/04/2011**	**Surface**	<0.005	0.9	0.88	44.8	<50.0	<0.01	<0.005	129	1.880	1.240	<0.1	0.26	3		3.25	0.0236	67.5	21.10	2.14	9.40	122.00	0.036	3.26	164	1.26	3190	<0.01	800.0	<0.5	0.654	13.40	<0.2	4550.0	<0.1
GL-60	**14/06/2011**	**Surface**	0.011	4.1	0.74	43.6	<50.0	<0.01	<0.005	119	1.800	3.370	<0.1	3.03	4		3.10	0.0218	67.3	78.30	2.59	9.61	132.00	0.291	3.26	165	1.35	3270	0.02	728.0	<0.5	0.633	13.20	<0.2	4690.0	<0.1
GL-60	**12/07/2011**	**Surface**	<0.005	1.7	0.74	43.5	<50.0	<0.01	<0.005	119	1.920	3.930	<0.1	3.02	7		3.08	0.0233	70.0	88.30	2.27	10.10	139.00	0.275	3.17	160	1.26	3280	<0.01	743.0	<0.5	0.690	12.90	<0.2	4910.0	<0.1
GL-60	**09/08/2011**	**Surface**	<0.005	1.5	0.77	48.4	<50.0	<0.01	<0.005	114	2.090

Denison Environmental Services

Table C-2: 2011 Vangorda Creek Drainage Water Quality
Dissolved Metals

Station	Date	Sample Type	Ag-d µg/L	Al-d µg/L	As-d µg/L	Ba-d µg/L	B-d µg/L	Be-d µg/L	Bi-d µg/L	Ca-d mg/L	Cd-d µg/L	Co-d µg/L	Cr-d µg/L	Cu-d µg/L	Fe-d µg/L	Hg-d µg/L	K-d mg/L	Li-d mg/L	Mg-d mg/L	Mn-d µg/L	Mo-d µg/L	Na-d mg/L	Ni-d µg/L	Pb-d µg/L	Sb-d µg/L	S-d mg/L	Se-d µg/L	Si-d µg/L	Sn-d µg/L	Sr-d µg/L	Ti-d µg/L	Tl-d µg/L	U-d µg/L	V-d µg/L	Zn-d µg/L	Zr-d µg/L
LCD	15/06/2011	Surface	<0.3	5130.0	<2.0	24.0	<800.0	<2.0	<20.0	120	149.000	464.000	<20.0	85.00	6680	<0.8	2.00	<0.08	166.0	66200.00	<20.0	2.00	409.00	43.000	<8.0	483	<2.0	3240	<80.0	425.0	<80.0	<0.8	12.00	<80.0	195000.0	<8.0
LCD	13/07/2011	Surface	0.180	7030.0	1.50	23.0	<100.0	0.90	<3.0	169	199.000	660.000	<3.0	112.00	12700		2.70	0.0300	239.0	101000.00	<3.0	3.10	588.00	76.100	<1.0	728	1.30	5370	<10.0	604.0	<10.0	0.400	17.20	<10.0	262000.0	<1.0
LCD	10/08/2011	Surface	<0.3	8510.0	<2.0	<20.0	<800.0	<2.0	<20.0	158	248.000	833.000	<20.0	135.00	17700		2.30	<0.08	291.0	126000.00	<20.0	2.70	711.00	110.000	<8.0	841	<2.0	5580	<80.0	601.0	<80.0	<0.8	23.00	<80.0	374000.0	<8.0
LCD	13/09/2011	Surface	<0.2	9130.0	2.00	12.0	<500.0	<1.0	<10.0	166	253.000	928.000	<10.0	138.00	34800		2.30	<0.05	325.0	145000.00	<10.0	3.40	803.00	175.000	<5.0	914	<1.0	6420	<50.0	645.0	<50.0	0.700	25.00	<50.0	383000.0	<5.0
LCD Average			0.145	7450.0	1.38	17.3	275.0	0.85	6.625	153	212.250	721.250	6.6	117.50	17970	0.400	2.33	0.0338	255.3	109550.00	6.63	2.80	627.75	101.025	2.75	742	0.95	5153	27.50	568.8	27.5	0.475	19.30	27.5	303500.0	2.8
LCD Max			<0.3	9130.0	<2.0	24.0	<800.0	<2.0	<20.0	169	253.000	928.000	<20.0	138.00	34800	<0.8	2.70	<0.08	325.0	145000.00	<20.0	3.40	803.00	175.000	<8.0	914	<2.0	6420	<80.0	645.0	<80.0	<0.8	25.00	<80.0	383000.0	<8.0
LCD Min			0.180	5130.0	1.50	12.0	<100.0	0.90	<3.0	120	149.000	464.000	<3.0	85.00	6680	<0.8	2.00	0.0300	166.0	66200.00	<3.0	2.00	409.00	43.000	<1.0	483	<1.0	3240	<10.0	425.0	<10.0	0.400	12.00	<10.0	195000.0	<1.0
Moose Pond	25/05/2011	Surface	<0.03	10.0	2.90	83.5	<300.0	<0.05	<0.03	202	0.130	0.190	<0.5	3.60	6		3.80	0.0060	132.0	6.50	2.50	8.50	11.60	0.760	0.60	261	0.80	4490	<0.05	657.0	<3.0	0.030	21.90	<1.0	45.7	<0.5
MOOSE SEEP	04/01/2011	Seepage	<0.03	2.0	1.40	39.3	<300.0	<0.05	0.210	289	0.230	0.040	<0.5	1.90	<5.0		3.10	0.0070	200.0	1.10	2.50	10.50	1.20	0.350	0.30	406	0.70	4530	<0.05	825.0	<3.0	<0.01	34.50	<1.0	8.1	<0.5
MOOSE SEEP	03/02/2011	Seepage	<0.03	2.0	1.30	38.9	<300.0	<0.05	<0.03	278	0.260	<0.03	<0.5	2.70	<5.0		3.50	0.0070	199.0	3.40	2.40	11.10	1.40	0.400	<0.1	422	0.60	4130	<0.05	820.0	<3.0	<0.01	9.86	<1.0	10.8	<0.5
MOOSE SEEP	03/03/2011	Seepage	<0.03	75.0	1.30	39.3	<300.0	<0.05	<0.03	310	0.240	0.040	<0.5	1.50	16		3.20	0.0060	197.0	<0.3	2.50	10.50	1.50	0.400	0.20	378	0.70	5090	<0.05	891.0	<3.0	<0.01	35.30	<1.0	8.7	<0.5
MOOSE SEEP	11/04/2011	Seepage	<0.03	4.0	1.20	36.9	<300.0	<0.05	<0.03	277	0.260	<0.03	<0.5	1.50	<5.0		2.90	0.0050	180.0	<0.3	2.40	9.50	1.30	0.450	0.20	381	0.70	4870	<0.05	799.0	<3.0	<0.01	33.60	<1.0	8.6	<0.5
MOOSE SEEP	10/05/2011	Seepage	<0.005	5.2	1.36	34.0	<50.0	<0.01	0.056	262	0.238	0.048	0.5	2.07	13		2.86	0.0054	168.0	0.63	2.29	9.22	1.29	1.090	0.18	379	0.68	4950	<0.01	772.0	<0.5	0.006	29.30	<0.2	7.7	<0.1
MOOSE SEEP	18/05/2011	Seepage	<0.005	3.6	1.38	31.3	<50.0	<0.01	0.014	235	0.086	0.069	0.2	1.06	9		3.01	0.0011	154.0	5.90	1.98	8.46	0.71	0.576	0.14	368	0.70	4420	<0.01	750.0	<0.5	0.005	24.60	<0.2	6.8	<0.1
MOOSE SEEP	06/06/2011	Seepage	<0.005	1.4	1.29	28.4	<50.0	<0.01	<0.005	159	0.094	0.033	0.3	0.97	5		2.40	0.0048	103.0	0.71	2.31	6.30	0.67	0.213	0.13	231	1.59	4620	<0.01	588.0	<0.5	0.003	19.60	<0.2	3.2	<0.1
MOOSE SEEP	22/06/2011	Seepage	<0.005	4.7	1.14	28.7	<50.0	<0.01	0.007	188	0.107	0.033	0.3	1.08	13		2.53	0.0046	125.0	0.51	2.33	8.42	0.62	0.568	0.14	271	1.08	4070	<0.01	593.0	<0.5	0.006	18.40	<0.2	3.9	<0.1
MOOSE SEEP	05/07/2011	Seepage	<0.03	5.0	1.30	34.6	<300.0	<0.05	<0.03	215	0.170	0.250	<0.5	1.60	45		3.10	0.0060	148.0	30.50	2.70	9.90	1.50	0.540	0.20	322	1.10	4300	<0.05	650.0	<3.0	<0.01	23.40	<1.0	93.0	<0.5
MOOSE SEEP	21/07/2011	Seepage	0.040	5.0	1.40	36.8	<300.0	<0.05	<0.03	227	0.200	0.070	<0.5	1.40	9		4.00	0.0100	161.0	4.80	2.50	10.30	1.30	0.710	0.20	310	0.90	4540	<0.05	719.0	<3.0	<0.01	27.00	<1.0	19.1	<0.5
MOOSE SEEP	03/08/2011	Seepage	<0.03	3.0	1.60	42.2	<300.0	<0.05	<0.03	249	0.170	0.040	<0.5	1.30	6		3.00	0.0060	161.0	1.00	2.50	9.50	0.80	0.400	0.20	350	0.70	4640	<0.05	793.0	<3.0	<0.01	26.30	<1.0	7.0	<0.5
MOOSE SEEP	18/08/2011	Seepage	<0.03	4.0	2.60	40.1	<300.0	<0.05	<0.03	266	0.170	0.080	<0.5	1.40	12		3.10	0.0060	175.0	1.30	2.40	10.10	1.40	0.340	0.20	359	0.70	4900	<0.05	784.0	<3.0	<0.01	30.90	<1.0	11.3	<0.5
MOOSE SEEP	07/09/2011	Seepage	<0.03	9.0	1.40	43.9	<300.0	<0.05	<0.03	304	0.220	0.050	0.7	1.70	10		3.70	0.0070	203.0	3.70	2.50	10.90	1.80	0.530	0.20	388	0.70	5230	<0.05	889.0	<3.0	<0.01	32.60	<1.0	12.7	<0.5
MOOSE SEEP	20/09/2011	Seepage	<0.03	7.0	1.70	43.6	<300.0	<0.05	<0.03	276	0.220	0.050	0.6	1.30	15		3.70	0.0070	200.0	1.70	2.30	10.80	1.00	1.780	<0.1	410	0.50	4870	<0.05	852.0	<3.0	<0.01	33.30	<1.0	10.5	<0.5
MOOSE SEEP	11/10/2011	Seepage	<0.03	9.0	1.70	44.1	<300.0	<0.05	<0.03	285	0.250	0.050	<0.5	1.90	29		4.10	0.0070	204.0	4.60	2.30	10.80	1.30	1.780	0.20	402	0.50	5040	<0.05	895.0	<3.0	<0.01	34.80	<1.0	15.6	<0.5
MOOSE SEEP	27/10/2011	Seepage	<0.03	5.0	1.10	42.0	<300.0	<0.05	<0.03	299	0.220	0.130	0.7	2.70	28		4.10	0.0080	206.0	10.50	2.40	11.80	1.60	0.840	0.20	416	0.50	1640	<0.05	902.0	<3.0	<0.01	33.90	<1.0	41.4	<0.5
MOOSE SEEP	08/11/2011	Seepage	<0.03	2.0	1.60	41.6	<300.0	<0.05	<0.03	274	0.220	<0.03	<0.5	1.10	<5.0		3.60	0.0070	190.0	0.70	2.40	10.00	0.90	0.400	0.20	419	0.60	4930	<0.05	852.0	<3.0	<0.01	30.20	<1.0	7.1	<0.5
MOOSE SEEP	01/12/2011	Seepage	<0.03	<1.0	1.70	39.3	<300.0	<0.05	<0.03	274	0.210	0.050	<0.5	2.70	<5.0		3.60	0.0070	195.0	3.80	2.50	10.40	1.30	0.540	0.20	395	0.60	4810	<0.05	834.0	<3.0	<0.01	34.10	<1.0	27.0	<0.5
MOOSE SEEP Average			0.014	8.2	1.47	38.1	122.2	0.02	0.027	259	0.198	0.060	0.3	1.66	12		3.31	0.0062	176.1	4.18	2.40	9.92	1.20	0.662	0.18	367	0.75	4532	0.02	789.3	1.2	0.005	28.43	0.4	16.8	0.2
MOOSE SEEP Max			0.040	75.0	2.60	44.1	<300.0	<0.05	0.210	310	0.260	0.250	0.7	2.70	45		4.10	0.0100	206.0	30.50	2.70	11.80	1.80	1.780	0.30	422	1.59	5230	<0.05	902.0	<3.0	<0.01	35.30	<1.0	93.0	<0.5
MOOSE SEEP Min			<0.005	<1.0	1.10	28.4	<50.0	<0.01	<0.005	159	0.086	<0.03	0.2	0.97	<5.0		2.40	0.0011	103.0	<0.3	1.98	6.30	0.62	0.213	<0.1	231	0.50	1640	<0.01	588.0	<0.5	0.003	9.86	<0.2	3.2	<0.1
P09-GS1A	05/07/2011	Ground	<0.03	10.0	1280.00	32.2	<300.0	<0.05	<0.03	218	<0.03	1.210	<0.5	<0.3	3360		2.50	0.0130	80.5	519.00	3.40	21.40	10.40	3.280	0.90	235	<0.2	7590	<0.05	1840.0	<3.0	0.030	2.16	<1.0	68.3	<0.5
P09-GS1A	13/10/2011	Ground	<0.03	3.0	1190.00	33.2	<300.0	<0.05	<0.03	218	<0.03	1.140	<0.5	<0.3	2910		2.50	0.0130	82.1	470.00	3.00	23.70	9.30	<0.03	0.90	233	<0.2	7250	<0.05	1830.0	<3.0	0.040	2.00	<1.0	64.2	<0.5
P09-GS1A Average			0.015	6.5	1235.00	32.7	150.0	0.03	0.015	218	0.015	1.175	0.3	0.15	3135		2.50	0.0130	81.3	494.50	3.20	22.55	9.85	1.648	0.90	234	0.10	7420	0.03	1835.0	1.5	0.035	2.08	0.5	66.3	0.3
P09-GS1A Max			<0.03	10.0	1280.00	33.2	<300.0	<0.05	<0.03	218	<0.03	1.210	<0.5	<0.3	3360		2.50	0.0130	82.1	519.00	3.40	23.70	10.40	3.280	0.90	235	<0.2	7590	<0.05	1840.0	<3.0	0.040	2.16	<1.0	68.3	<0.5
P09-GS1A Min			<0.03	3.0	1190.00	32.2	<300.0	<0.05	<0.03	218	<0.03	1.140	<0.5	<0.3	2910		2.50	0.0130	80.5	470.00	3.00	21.40	9.30	<0.03	0.90	233	<0.2	7250	<0.05	1830.0	<3.0	0.030	2.00	<1.0	64.2	<0.5
P09-GS1B	29/06/2011	Ground	<0.005	1.3	99.60	9.1	<50.0	<0.01	<0.005	176	5.080	42.700	<0.1	0.12	5090		3.75	0.0091	66.1	1430.00	1.52	10.30	160.00	29.400	17.00	219	<0.04	2150	<0.01	651.0	<0.5	3.750	8.24	<0.2	7020.0	<0.1
P09-GS1B	06/10/2011	Ground	<0.005	1.9	263.00	11.4	<50.0	<0.01	<0.005	229	3.270	60.800	<0.1	0.60	3280		4.35	0.0080	84.1	1600.00	2.30	10.10	264.00	34.800	45.00	235	<0.04	2220	0.03	850.0	<0.5	4.490	23.70	<0.2	7710.0	<0.1
P09-GS1B Average			0.003	1.6	181.30	10.2	25.0	0.01	0.003	203	4.175	51.750	0.1	0.36	4185		4.05	0.0086	75.1	1515.00	1.91	10.20	212.00	32.100	31.00	227	0.02	2185	0.02	750.5	0.3	4.120	15.97	0.1	7365.0	0.1
P09-GS1B Max			<0.005	1.9	263.00	11.4	<50.0	<0.01	<0.005	229	5.080	60.800	<0.1	0.60	5090		4.35	0.0091	84.1	1600.00	2.30	10.30	264.00	34.800	45.00	235	<0.04	2220	0.03	850.0	<0.5	4.490	23.70	<0.2	7710.0	<0.1
P09-GS1B Min			<0.005	1.3	99.60	9.1	<50.0	<0.01	<0.005	176	3.270	42.700	<0.1	0.12	3280		3.75	0.0080	66.1	1430.00	1.52	10.10	160.00	29.400	17.00	219	<0.04	2150	<0.01	651.0	<0.5	3.750	8.24	<0.2	7020.0	<0.1
P09-GW3	13/06/2011	Ground	<0.03	86.0	1.50	46.9	<300.0	<0.05	<0.03	311	0.040	0.530	0.6	1.80	362		2.80	0.0140	212.0	29.00	1.00	6.40	58.70	1.370	0.50	378	2.70	6000	<0.05	1300.0	<3.0	0.020	37.40	<1.0	9.1	<0.5
P09-LCD1	13/06/2011	Ground	<0.005	23.1	90.10	34.9	<50.0	<0.01	<0.005	116	0.038	0.417	<0.1	0.44	3510		2.47	0.0088	31.8	533.00	5.01	16.30	0.64	20.700	0.12	71	<0.04	7400	0.04	700.0	0.6	0.013	6.71	<0.2	6.3	<0.1
P09-LCD1	12/10/2011	Ground	<0.005	4.8	54.50	33.8	<50.0	<0.01	<0.005	120	0.034	0.279	<0.1	0.77	2080		2.78	0.0100	34.7	345.00	4.97	16.10	0.92	6.520	0.12	73	<0.04	7150	0.06	729.0	<0.5	0.012	6.98	<0.2	8.9	<0.1
P09-LCD1 Average			0.003	14.0	72.30	34.4	25.0	0.01	0.003	118	0.036	0.348	0.1	0.61	2795		2.63	0.0094	33.3	439.00	4.99	16.20	0.78	13.610	0.12	72	0.02	7275	0.05	714.5	0.4	0.013	6.85	0.1	7.6	0.1
P09-LCD1 Max			<0.005	23.1	90.10	34.9	<50.0	<0.01	<0.005	120	0.038	0.417	<0.1	0.77	3510		2.78	0.0100	34.7	533.00	5.01	16.30	0.92	20.700	0.12	73	<0.04	7400	0.06	729.0	0.6	0.013	6.98	<0.2	8.9	<0.1
P09-LCD1 Min			<0.005	4.8	54.50	33.8	<50.0	<0.01	<0.005	116	0.034	0.279	<0.1	0.44	2080		2.47	0.0088	31.8	345.00	4.97	16.10	0.64	6.520	0.12	71	<0.04	7150	0.04	700.0	<0.5	0.012	6.71	<0.2	6.3	<0.1
P09-LCD6	13/06/2011	Ground	0.022	6.1	92.90	41.4	<50.0	<0.01	<0.005	136	0.066	1.180	<0.1	0.47	5690		2.42	0.0075	40.7	522.00	2.27	6.86	1.42	2.320	0.10	96	<0.04	7920	0.10	725.0	<0.5	0.007	2.77	<0.2	12.6	<0.1
P09-LCD6	12/10/2011	Ground	0.028	228.0	87.80	57.6	<50.0	0.02	0.009	144	0.083	1.570	0.8	3.40	5680		2.52	0.0096	43.4	536.00	2.22	7.05	3.15	29.700	0.14	101	<0.04	8200	0.11	792.0	4.8	0.013	3.11	0.5	19.3	<0.1
P09-LCD6 Average			0.025	117.1	90.35	49.5	25.0	0.01	0.006	140	0.075	1.375	0.4	1.94	5685		2.47	0.0086	42.1	529.00	2.25	6.96	2.29	16.010	0.12	99	0.02	8060	0.11	758.5	2.5	0.010	2.94	0.3	16.0	0.1
P09-LCD6 Max			0.028	228.0	92.90	57.6	<50.0	0.02	0.009	144	0.083	1.570	0.8	3.40	5690		2.52	0.0096	43.4	536.00	2.27	7.05	3.15	29.700	0.14	101	<0.04	8200	0.11	792.0	4.8	0.013	3.11	0.5	19.3	<0.1
P09-LCD6 Min			0.022	6.1	87.80	41.4	<50.0	<0.01	<0.005	136	0.066	1.180	<0.1	0.47	5680		2.42	0.0075	40.7	522.00	2.22	6.86	1.42	2.320	0.10	96	<0.04	7920	0.10	725.0	<0.5	0.007	2.77	<0.2	12.6	<0.1
P09-VC1	11/06/2011	Ground	<0.005	2.7	21.80	21.1	<50.0	<0.01	<0.005	50	<0.005	0.026	<0.1	<0.05	780		1.03	0.0056	10.6	32.90	2.87	13.40	0.11	0.236	0.06	22	<0.04	6000	0.02	674.0	<0.5	<0.002	5.02	<0.2	8.8	<0.1
P09-VC1	20/10/2011	Ground	0.008	24.0	2.30	19.4	<50.0	<0.01	<0.005	47	0.017	0.167	<0.1	0.12	60		1.18	0.0040	9.9	31.50	0.37	22.80	0.55	0.277	0.06	31	<0.04	6220	0.14	603.0	<0.5	<0.002	5.33	<0.2	5.4	<0.1
P09-VC1 Average			0.005	13.4	12.05	20.3	25.0	0.01	0.003	48	0.010	0.097	0.1	0.07	420		1.11	0.0048	10.2	32.20	1.62	18.10	0.33	0.257	0.06	27	0.02	6110	0.08	638.5	0.3	0.001	5.18	0.1	7.1	0.1
P09-VC1 Max			0.008	24.0	21.80	21.1	<50.0	<0.01	<0.005	50	0.017	0.167	<0.1	0.12	780		1.18	0.0056	10.6	32.90	2.87	22.80	0.55	0.277	0.06	31	<0.04	6220	0.14	674.0	<0.5	<0.002	5.33	<0.2	8.8	<0.1
P09-VC1 Min			<0.005	2.7	2.30	19.4	<50.0	<0.01	<0.005	47	<0.005	0.026	<0.1	<0.05	60		1.03	0.0040	9.9	31.50	0.37	13.40	0.11	0.236	0.06	22	<0.04	6000	0.02	603.0	<0.5	<0.002	5.02	<0.2	5.4	<0.1
P09-VC2	11/06/2011	Ground	<0.005	4.0	111.00	41.9	<50.0	<0.01	<0.005	60	0.009	0.278	<0.1	<0.05	1780		1.14	0.0072	11.9	91.10	9.78	5.65	0.31	1.370	0.39	15	<0.04	6990	0.02	842.0	<0.5	0.003	4.60	<0.2	83.3	<0.1
P09-VC2	05/10/2011	Ground	<0.005	33.7	121.00	45.4	<50.0	<0.01	<0.005	62	0.007	0.339	<0.1	0.75	1800		1.17	0.0071	11.5	99.40	9.22	5.50	0.54	5.780	0.47	15	<0.04	7320	0.02	814.0	1.1	0.004	4.29	<0.2	84.0	<0.1
P09-VC2 Average			0.003	18.9	116.00	43.7	25.0	0.01	0.003	61	0.008	0.309	0.1	0.39	1790		1.16	0.0072	11.7	95.25	9.50	5.58	0.43	3.575	0.43	15	0.02	7155	0.02	828.0	0.7	0.004	4.45	0.1	83.7	0.1
P09-VC2 Max			<0.005	33.7	121.00	45.4	<50.0	<0.01	<0.005	62	0.009	0.339	<0.1	0.75	1800		1.17	0.0072	11.9	99.40	9.78	5.65	0.54	5.780	0.47	15	<0.04	7320	0.02	842.0	1.1	0.004	4.60	<0.2	84.0	<0.1
P09-VC2 Min			<0.005	4.0	111.00	41.9	<50.0	<0.01	<0.005	60	0.007	0.278	<0.1	<0.05	1780		1.14	0.0071	11.5	91.10	9.22	5.50	0.31	1.370	0.39	15	<0.04	6990	0.02	814.0	<0.5	0.003	4.29	<0.2	83.3	<0.1
P2001-2A	11/06/2011	Ground	<0.03	421.0	10.80	35.7	<300.0	<0.05	<0.03	289	0.040	1.320	1.2	3.10	1550		4.60	0.0330	142.0	114.00	1.30	7.80	6.30	17.700	0.40	259	<0.2	6610	<0.05	1430.0	13.0	0.020	41.10	<1.0	18.3	<0.5
P2001-2A	12/10/2011	Ground	<0.03	4.0	5.20	22.3	<300.0	<0.05	<0.03	297	0.050	1.140	<0.5	<0.3	169		4.50	0.0350	140.0	165.00	1.40	9.40	4.50	1.250	<0.1	278	<0.2	6500	<0.05	1460.0	<3.0	<0.01	43.40	<1.0	10.8	<0.5
P2001-2A Average			0.015	212.5	8.00	29.0	150.0	0.03	0.015	293	0.045	1.230	0.7	1.63	860		4.55	0.0340	141.0	139.50	1.35	8.60	5.40	9.475	0.23	269	0.10	6555	0.03	1445.0	7.3	0.013	42.25	0.5	14.6	0.3
P2001-2A Max			<0.03	421.0	10.80	35.7	<300.0	<0.05	<0.03	297	0.050	1.320	1.2	3.10	1550		4.60	0.0350	142.0	165.00	1.40	9.40	6.30	17.700	0.40	278	<0.2	6610	<0.05	1460.0	13.0	0.020	43.40	<1.0	18.3	<0.5
P2001-2A Min			<0.03	4.0	5.20	22.3	<300.0	<0.05	<0.03	289	0.040	1.140	<0.5	<0.3	169		4.50	0.0330	140.0	114.00	1.30	7.80	4.50	1.250	<0.1	259	<0.2	6500	<0.05	1430.0	<3.0	<0.01	41.10	<1.0	10.8	<0.5
P2001-2B	13/06/2011	Ground	<0.03	139.0	3.10	21.9	<300.0	<0.05	<0.03	284	0.080	1.270	<0.5	1.30	402		4.30	0.0300	133.0	158.00	1.10	8.20	5.10	5.940	0.30	253	<0.2	6450	<0.05	1360.0	4.0	<0.01	39.60	<1.0	8.0	<0.5
P2001-2B	06/10/2011	Ground	<0.03	87.0	20.20	18.7	<300.0	<0.05	<0.03	269	<0.03	0.780	<0.5	0.90	811		4.90	0.0240	134.0	93.10	2.10	8.30	5.30	3.390	1.60	227	<0.2	6020	0.13	1390.0	<3.0	<0.01	42.80	<1.0	27.7	<0.5
P2001-2B Average			0.015	113.0	11.65	20.3	150.0	0.03	0.015	277	0.048	1.025	0.3	1.10	607		4.60	0.0270	133.5	125.55	1.60	8.25	5.20	4.665	0.95	240	0.10	6235	0.08	1375.0	2.8	0.005	41.20	0.5	17.9	0.3
P2001-2B Max			<0.03	139.0	20.20	21.9	<300.0	<0.05	<0.03	284	0.080	1.270	<0.5	1.30	811		4.90	0.0300	134.0	158.00	2.10	8.30	5.30	5.940	1.60	253	<0.2	6450	0.13	1390.0	4.0	<0.01	42.80	<1.0	27.7	<0.5
P2001-2B Min			<0.03	87.0	3.10	18.7	<300.0	<0.05	<0.03	269	<0.03	0.780	<0.5	0.90	402		4.30	0.0240	133.0	93.10	1.10	8.20	5.10	3.390	0.30	227	<0.2	6020	<0.05	1360.0	<3.0	<0.01	39.60	<1.0	8.0	<0.5
P2001-3	08/06/2011	Ground	<0.005	3.5	2.18	27.3	<50.0	<0.01	<0.005	93	0.781	0.618	<0.1	2.86	15		2.98	0.0105	61.8	491.00	8.75	27.20	1.55	0.059	0.03	49	0.05	7170	<0.01	622.0	<0.5	0.014	12.70	<0.2	5.3	0.4
P2001-3	17/10/2011	Ground	0.013	245.0	2.85	44.4	<50.0	0.02	0.007	86	0.618	1.080	1.1	3.42	494		3.34	0.0116	65.4	639.00	8.62	30.30	3.58	0.968	0.06	48	0.06	6470	0.04	665.0	8.4	0.013	13.60	0.8	21.4	0.5
P2001-3 Average			0.008	124.3	2.52	35.9	25.0	0.01	0.005	89	0.700	0.849	0.6	3.14	255		3.16	0.0111	63.6	565.00	8.69

Table C-2: 2011 Vangorda Creek Drainage Water Quality
Dissolved Metals

Station	Date	Sample Type	Ag-d µg/L	Al-d µg/L	As-d µg/L	Ba-d µg/L	B-d µg/L	Be-d µg/L	Bi-d µg/L	Ca-d mg/L	Cd-d µg/L	Co-d µg/L	Cr-d µg/L	Cu-d µg/L	Fe-d µg/L	Hg-d µg/L	K-d mg/L	Li-d mg/L	Mg-d mg/L	Mn-d µg/L	Mo-d µg/L	Na-d mg/L	Ni-d µg/L	Pb-d µg/L	Sb-d µg/L	S-d mg/L	Se-d µg/L	Si-d µg/L	Sn-d µg/L	Sr-d µg/L	Ti-d µg/L	Tl-d µg/L	U-d µg/L	V-d µg/L	Zn-d µg/L	Zr-d µg/L
P96-9A	**10/06/2011**	**Ground**	<0.03	6.0	1.00	45.9	<300.0	<0.05	<0.03	324	0.410	0.520	<0.5	2.30	65		4.80	0.0100	352.0	104.00	3.10	15.70	6.10	0.190	<0.1	656	0.50	5200	<0.05	1140.0	<3.0	<0.01	33.10	<1.0	14.0	<0.5
P96-9A	**04/10/2011**	**Ground**	<0.03	26.0	0.90	53.3	<300.0	<0.05	<0.03	383	1.390	0.230	<0.5	3.20	54		5.90	0.0130	372.0	46.90	0.40	13.60	7.10	0.650	0.20	727	0.60	5530	<0.05	1310.0	<3.0	0.030	50.70	<1.0	64.3	<0.5
P96-9A Average			0.015	16.0	0.95	49.6	150.0	0.03	0.015	354	0.900	0.375	0.3	2.75	60		5.35	0.0115	362.0	75.45	1.75	14.65	6.60	0.420	0.13	692	0.55	5365	0.03	1225.0	1.5	0.018	41.90	0.5	39.2	0.3
P96-9A Max			<0.03	26.0	1.00	53.3	<300.0	<0.05	<0.03	383	1.390	0.520	<0.5	3.20	65		5.90	0.0130	372.0	104.00	3.10	15.70	7.10	0.650	0.20	727	0.60	5530	<0.05	1310.0	<3.0	0.030	50.70	<1.0	64.3	<0.5
P96-9A Min			<0.03	6.0	0.90	45.9	<300.0	<0.05	<0.03	324	0.410	0.230	<0.5	2.30	54		4.80	0.0100	352.0	46.90	0.40	13.60	6.10	0.190	<0.1	656	0.50	5200	<0.05	1140.0	<3.0	<0.01	33.10	<1.0	14.0	<0.5
PW-10-01 (DH1)	**14/02/2011**	**Ground**	1.900	5110.0	22.00	26.0	<3000.0	<0.5	<0.3	570	<0.3	2140.000	11.0	<3.0	66500		28.00	0.1650	12000.0	69400.00	44.00	414.00	1710.00	1.300	4.00	16800	3.00	12700	<0.5	10000.0	<30.0	<0.1	510.00	<10.0	1420.0	493.0
PW-10-01 (DH1)	**23/06/2011**	**Ground**	<0.5	254.0	21.00	22.0	<5000.0	<1.0	<0.5	514	3.400	1700.000	<10.0	<5.0	13800		19.00	0.1420	12200.0	45400.00	39.00	168.00	1610.00	51.100	6.00	17900	<4.0	11700	<1.0	9600.0	<50.0	0.500	481.00	<20.0	1370.0	218.0
PW-10-01 (DH1)	**20/10/2011**	**Ground**	<0.5	73.0	10.00	19.0	<5000.0	<1.0	<0.5	516	1.800	1240.000	<10.0	<5.0	86300		21.00	<0.05	17100.0	79500.00	15.00	143.00	989.00	27.500	4.00	25600	<4.0	<10000.0	<1.0	11000.0	<50.0	<0.2	834.00	<20.0	456.0	127.0
PW-10-01 (DH1) Average			0.800	1812.3	17.67	22.3	2166.7	0.42	0.217	533	1.783	1693.333	7.0	2.17	55533		22.67	0.1107	13766.7	64766.67	32.67	241.67	1436.33	26.633	4.67	20100	2.33	9800	0.42	10200.0	21.7	0.217	608.33	8.3	1082.0	279.3
PW-10-01 (DH1) Max			1.900	5110.0	22.00	26.0	<5,000.0	<1.0	<0.5	570	3.400	2140.000	11.0	<5.0	86300		28.00	0.1650	17100.0	79500.00	44.00	414.00	1710.00	51.100	6.00	25600	<4.0	12700	<1.0	11000.0	<50.0	0.500	834.00	<20.0	1420.0	493.0
PW-10-01 (DH1) Min			<0.5	73.0	10.00	19.0	<3,000.0	<0.5	<0.3	514	<0.3	1240.000	<10.0	<3.0	13800		19.00	<0.05	12000.0	45400.00	15.00	143.00	989.00	1.300	4.00	16800	3.00	<10,000.0	<0.5	9600.0	<30.0	<0.1	481.00	<10.0	456.0	127.0
PW-10-02 (DH2)	**14/02/2011**	**Ground**	0.110	1350.0	7.60	95.6	<300.0	0.12	0.070	330	0.450	33.600	28.9	33.40	11600		6.70	0.0330	108.0	6880.00	5.20	13.40	117.00	51.800	0.40	283	0.50	8820	0.17	863.0	40.0	0.160	23.30	5.0	130.0	2.8
PW-10-02 (DH2)	**27/06/2011**	**Ground**	<0.3	20.0	21.00	22.0	<3000.0	<0.5	<0.3	503	15.700	1040.000	<5.0	<3.0	18100		8.00	0.0750	318.0	81200.00	4.00	9.00	1190.00	1.600	3.00	881	5.00	10000	0.70	1360.0	<30.0	0.300	16.20	<10.0	121000.0	<5.0
PW-10-02 (DH2)	**24/10/2011**	**Ground**	<0.1	82.0	4.90	20.9	<1000.0	<0.2	<0.1	496	1.100	512.000	<2.0	2.00	25100		7.00	0.0650	314.0	51200.00	9.00	11.00	775.00	2.300	<0.4	825	<0.8	9430	<0.2	989.0	<10.0	0.170	17.50	<4.0	48800.0	<2.0
PW-10-02 (DH2) Average			0.103	484.0	11.17	46.2	716.7	0.16	0.090	443	5.750	528.533	10.8	12.30	18267		7.23	0.0577	246.7	46426.67	6.07	11.13	694.00	18.567	1.20	663	1.97	9417	0.32	1070.7	20.0	0.210	19.00	4.0	56643.3	2.1
PW-10-02 (DH2) Max			<0.3	1350.0	21.00	95.6	<3,000.0	<0.5	<0.3	503	15.700	1040.000	28.9	33.40	25100		8.00	0.0750	318.0	81200.00	9.00	13.40	1190.00	51.800	3.00	881	5.00	10000	0.70	1360.0	40.0	0.300	23.30	<10.0	121000.0	<5.0
PW-10-02 (DH2) Min			<0.1	20.0	4.90	20.9	<300.0	0.12	0.070	330	0.450	33.600	<2.0	2.00	11600		6.70	0.0330	108.0	6880.00	4.00	9.00	117.00	1.600	<0.4	283	0.50	8820	0.17	863.0	<10.0	0.160	16.20	<4.0	130.0	<2.0
PW-10-03 (DH3)	**14/02/2011**	**Ground**	0.070	22.0	20.90	91.3	<300.0	<0.05	<0.03	346	<0.03	38.000	1.8	<0.3	88400		2.30	0.0110	79.1	23800.00	15.10	8.70	55.50	0.140	0.30	196	0.50	9980	<0.05	703.0	<3.0	<0.01	7.83	2.0	8.5	4.7
PW-10-03 (DH3)	**27/06/2011**	**Ground**	<0.03	21.0	8.90	81.7	<300.0	<0.05	<0.03	383	<0.03	28.200	2.1	<0.3	76100		2.30	0.0100	89.9	19600.00	4.60	9.10	36.20	0.310	0.70	282	3.10	10900	0.22	798.0	<3.0	<0.01	8.05	<1.0	53.5	2.9
PW-10-03 (DH3)	**24/10/2011**	**Ground**	<0.03	27.0	6.80	72.3	<300.0	<0.05	<0.03	455	<0.03	13.000	6.5	<0.3	154000		2.30	0.0100	112.0	22100.00	1.10	9.50	23.50	0.290	0.20	356	<0.2	11800	0.10	898.0	<3.0	<0.01	3.28	2.0	395.0	1.5
PW-10-03 (DH3) Average			0.033	23.3	12.20	81.8	150.0	0.03	0.015	395	0.015	26.400	3.5	0.15	106167		2.30	0.0103	93.7	21833.33	6.93	9.10	38.40	0.247	0.40	278	1.23	10893	0.12	799.7	1.5	0.005	6.39	1.5	152.3	3.0
PW-10-03 (DH3) Max			0.070	27.0	20.90	91.3	<300.0	<0.05	<0.03	455	<0.03	38.000	6.5	<0.3	154000		2.30	0.0110	112.0	23800.00	15.10	9.50	55.50	0.310	0.70	356	3.10	11800	0.22	898.0	<3.0	<0.01	8.05	2.0	395.0	4.7
PW-10-03 (DH3) Min			<0.03	21.0	6.80	72.3	<300.0	<0.05	<0.03	346	<0.03	13.000	1.8	<0.3	76100		2.30	0.0100	79.1	19600.00	1.10	8.70	23.50	0.140	0.20	196	<0.2	9980	<0.05	703.0	<3.0	<0.01	3.28	<1.0	8.5	1.5
Sheep Creek	**22/05/2011**	**Seepage**	<0.005	1.8	0.44	68.9	<50.0	<0.01	<0.005	86	<0.005	0.069	<0.1	0.40	4		0.56	0.0022	17.9	0.43	0.79	1.91	0.29	0.056	0.18	37	1.86	4420	<0.01	335.0	<0.5	<0.002	3.98	<0.2	0.6	<0.1
Sheep Creek	**22/09/2011**	**Seepage**	<0.005	5.4	0.36	145.0	<50.0	<0.01	<0.005	103	0.031	0.022	0.3	0.60	9		0.77	0.0026	21.6	0.31	0.89	2.20	0.47	1.050	0.10	43	1.54	4890	<0.01	400.0	<0.5	<0.002	4.93	<0.2	7.8	<0.1
Sheep Creek Average			0.003	3.6	0.40	107.0	25.0	0.01	0.003	94	0.017	0.046	0.2	0.50	7		0.67	0.0024	19.8	0.37	0.84	2.06	0.38	0.553	0.14	40	1.70	4655	0.01	367.5	0.3	0.001	4.46	0.1	4.2	0.1
Sheep Creek Max			<0.005	5.4	0.44	145.0	<50.0	<0.01	<0.005	103	0.031	0.069	0.3	0.60	9		0.77	0.0026	21.6	0.43	0.89	2.20	0.47	1.050	0.18	43	1.86	4890	<0.01	400.0	<0.5	<0.002	4.93	<0.2	7.8	<0.1
Sheep Creek Min			<0.005	1.8	0.36	68.9	<50.0	<0.01	<0.005	86	<0.005	0.022	<0.1	0.40	4		0.56	0.0022	17.9	0.31	0.79	1.91	0.29	0.056	0.10	37	1.54	4420	<0.01	335.0	<0.5	<0.002	3.98	<0.2	0.6	<0.1
SRK GD01	**24/01/2011**	**Seepage**	<0.03	23.0	5.10	33.3	<300.0	<0.05	<0.03	403	0.640	1.090	<0.5	1.90	121		9.10	0.0380	435.0	11.50	41.90	14.00	248.00	1.700	1.20	840	0.70	3480	<0.05	1560.0	<3.0	0.200	72.00	<1.0	1430.0	0.7
SRK GD01	**17/02/2011**	**Seepage**	<0.03	4.0	5.30	30.9	<300.0	<0.05	<0.03	364	0.540	0.880	<0.5	1.60	14		8.30	0.0370	397.0	4.50	1.80	12.70	217.00	1.280	1.10	743	0.70	3010	<0.05	1470.0	<3.0	0.180	68.40	<1.0	1240.0	0.7
SRK GD01	**28/03/2011**	**Seepage**	<0.03	6.0	5.80	30.9	<300.0	<0.05	<0.03	322	0.550	0.960	<0.5	2.30	62		9.00	0.0360	412.0	8.10	3.20	12.80	235.00	1.310	1.20	746	0.70	2640	<0.05	1560.0	<3.0	0.230	73.00	<1.0	1350.0	0.7
SRK GD01	**20/04/2011**	**Seepage**	<0.03	8.0	5.40	33.2	<300.0	<0.05	0.380	425	0.720	1.120	<0.5	2.40	37		9.20	0.0360	442.0	20.60	2.30	14.00	242.00	1.860	1.20	777	0.70	3890	<0.05	1570.0	<3.0	0.220	72.40	<1.0	1430.0	0.8
SRK GD01	**17/05/2011**	**Seepage**	<0.005	2.5	1.54	15.9	<50.0	<0.01	<0.005	101	0.979	1.890	<0.1	2.56	14		5.16	0.0151	109.0	40.30	0.73	3.42	63.00	0.824	0.62	192	0.91	1630	<0.01	407.0	<0.5	0.282	6.49	<0.2	1410.0	<0.1
SRK GD01	**16/06/2011**	**Seepage**	<0.03	7.0	3.70	37.1	<300.0	<0.05	<0.03	367	1.570	2.810	<0.5	2.60	14		7.30	0.0320	350.0	47.50	1.40	11.10	387.00	2.360	1.10	621	0.80	4300	0.08	1350.0	<3.0	0.330	56.60	<1.0	4000.0	0.7
SRK GD01	**11/07/2011**	**Seepage**	<0.03	5.0	2.90	27.7	<300.0	<0.05	<0.03	386	1.750	0.870	<0.5	2.60	19		5.90	0.0260	291.0	41.50	1.10	9.50	235.00	1.540	0.80	565	0.90	4800	<0.05	1120.0	<3.0	0.340	41.20	<1.0	2990.0	<0.5
SRK GD01	**10/08/2011**	**Seepage**	<0.03	6.0	3.30	31.6	<300.0	<0.05	<0.03	363	1.340	1.870	<0.5	2.50	16		8.10	0.0410	310.0	48.60	0.90	10.00	294.00	2.070	1.10	558	0.40	4170	<0.05	1310.0	<3.0	0.300	52.50	<1.0	2870.0	0.7
SRK GD01	**13/09/2011**	**Seepage**	<0.03	7.0	2.90	31.1	<300.0	<0.05	<0.03	346	1.370	2.150	<0.5	3.60	24		7.20	0.0310	307.0	67.60	0.90	9.90	292.00	3.780	1.00	514	0.40	4060	<0.05	1250.0	<3.0	0.300	48.20	<1.0	2880.0	0.6
SRK GD01	**18/10/2011**	**Seepage**	<0.03	6.0	3.10	32.3	<300.0	<0.05	<0.03	373	1.690	3.220	<0.5	2.60	144	<0.05	8.10	0.0360	323.0	216.00	0.70	10.40	349.00	2.210	1.10	565	0.50	4720	<0.05	1290.0	<3.0	0.290	51.90	<1.0	3730.0	0.8
SRK GD01	**23/11/2011**	**Seepage**	<0.03	5.0	4.00	30.5	<300.0	<0.05	<0.03	334	0.670	2.100	<0.5	1.60	16		7.90	0.0320	312.0	48.60	1.50	10.70	245.00	1.960	1.10	547	0.60	3570	0.14	1280.0	<3.0	0.210	54.90	<1.0	1650.0	0.8
SRK GD01	**13/12/2011**	**Seepage**	<0.03	3.0	4.20	29.2	<300.0	<0.05	<0.03	360	0.670	1.370	<0.5	1.30	11		7.30	0.0320	340.0	33.90	1.90	11.60	219.00	1.580	1.10	617	0.60	4030	<0.05	1320.0	<3.0	0.210	59.90	<1.0	1440.0	0.8
SRK GD01 Average			0.014	6.9	3.94	30.3	139.6	0.02	0.044	345	1.041	1.694	0.2	2.30	41	0.025	7.71	0.0327	335.7	49.06	4.86	10.84	252.17	1.873	1.05	607	0.66	3692	0.04	1290.6	1.4	0.258	54.79	0.5	2201.7	0.6
SRK GD01 Max			<0.03	23.0	5.80	37.1	<300.0	<0.05	0.380	425	1.750	3.220	<0.5	3.60	144	<0.05	9.20	0.0410	442.0	216.00	41.90	14.00	387.00	3.780	1.20	840	0.91	4800	0.14	1570.0	<3.0	0.340	73.00	<1.0	4000.0	0.8
SRK GD01 Min			<0.005	2.5	1.54	15.9	<50.0	<0.01	<0.005	101	0.540	0.870	<0.1	1.30	11	<0.05	5.16	0.0151	109.0	4.50	0.70	3.42	63.00	0.824	0.62	192	0.40	1630	<0.01	407.0	<0.5	0.180	6.49	<0.2	1240.0	<0.1
SRK05-5C	**10/06/2011**	**Ground**	0.014	192.0	3.93	122.0	<50.0	0.03	<0.005	134	0.144	0.780	0.6	1.44	410		2.37	0.0083	60.8	739.00	15.20	18.20	3.82	6.020	0.18	153	0.12	6180	0.03	922.0	6.4	0.029	7.18	0.6	6.8	0.2
SRK05-5C	**04/10/2011**	**Ground**	0.006	11.4	3.05	56.5	<50.0	<0.01	<0.005	54	0.037	0.204	<0.1	17.80	85		1.57	0.0071	14.7	302.00	21.00	16.40	3.90	1.570	0.14	36	<0.04	4650	0.03	556.0	<0.5	0.014	2.09	<0.2	2.4	<0.1
SRK05-5C Average			0.010	101.7	3.49	89.3	25.0	0.02	0.003	94	0.091	0.492	0.3	9.62	248		1.97	0.0077	37.8	520.50	18.10	17.30	3.86	3.795	0.16	95	0.07	5415	0.03	739.0	3.3	0.022	4.64	0.4	4.6	0.1
SRK05-5C Max			0.014	192.0	3.93	122.0	<50.0	0.03	<0.005	134	0.144	0.780	0.6	17.80	410		2.37	0.0083	60.8	739.00	21.00	18.20	3.90	6.020	0.18	153	0.12	6180	0.03	922.0	6.4	0.029	7.18	0.6	6.8	0.2
SRK05-5C Min			0.006	11.4	3.05	56.5	<50.0	<0.01	<0.005	54	0.037	0.204	<0.1	1.44	85		1.57	0.0071	14.7	302.00	15.20	16.40	3.82	1.570	0.14	36	<0.04	4650	0.03	556.0	<0.5	0.014	2.09	<0.2	2.4	<0.1
SRK05-7	**14/06/2011**	**Ground**	<0.03	235.0	9.00	31.9	<300.0	<0.05	<0.03	453	0.140	7.130	4.7	3.90	976		2.00	0.0060	233.0	188.00	1.20	12.50	213.00	13.900	3.30	529	0.50	6530	0.06	1190.0	<3.0	0.020	22.40	<1.0	15.6	<0.5
SRK05-7	**05/10/2011**	**Ground**	<0.03	26.0	6.00	35.4	<300.0	<0.05	<0.03	525	0.190	12.500	1.1	2.10	97		2.40	<0.003	285.0	415.00	1.50	14.10	362.00	1.040	3.60	595	0.30	7080	0.09	1490.0	<3.0	0.020	30.10	<1.0	21.4	<0.5
SRK05-7 Average			0.015	130.5	7.50	33.7	150.0	0.03	0.015	489	0.165	9.815	2.9	3.00	537		2.20	0.0038	259.0	301.50	1.35	13.30	287.50	7.470	3.45	562	0.40	6805	0.08	1340.0	1.5	0.020	26.25	0.5	18.5	0.3
SRK05-7 Max			<0.03	235.0	9.00	35.4	<300.0	<0.05	<0.03	525	0.190	12.500	4.7	3.90	976		2.40	0.0060	285.0	415.00	1.50	14.10	362.00	13.900	3.60	595	0.50	7080	0.09	1490.0	<3.0	0.020	30.10	<1.0	21.4	<0.5
SRK05-7 Min			<0.03	26.0	6.00	31.9	<300.0	<0.05	<0.03	453	0.140	7.130	1.1	2.10	97		2.00	<0.003	233.0	188.00	1.20	12.50	213.00	1.040	3.30	529	0.30	6530	0.06	1190.0	<3.0	0.020	22.40	<1.0	15.6	<0.5
SRK05-8	**11/06/2011**	**Ground**	<0.03	63.0	0.70	15.8	<300.0	<0.05	<0.03	343	0.060	1.370	0.7	2.90	156		1.80	0.0170	186.0	5.80	0.70	10.30	1.70	2.020	<0.1	347	0.50	6580	0.07	1260.0	<3.0	<0.01	22.90	<1.0	3.4	<0.5
SRK05-8	**04/10/2011**	**Ground**	<0.03	13.0	0.50	13.6	<300.0	<0.05	<0.03	339	0.060	1.930	<0.5	2.00	8		1.80	0.0170	174.0	0.50	<0.3	9.00	1.50	0.200	<0.1	368	0.50	5960	<0.05	1320.0	<3.0	<0.01	23.60	<1.0	4.9	<0.5
SRK05-8 Average			0.015	38.0	0.60	14.7	150.0	0.03	0.015	341	0.060	1.650	0.5	2.45	82		1.80	0.0170	180.0	3.15	0.43	9.65	1.60	1.110	0.05	358	0.50	6270	0.05	1290.0	1.5	0.005	23.25	0.5	4.2	0.3
SRK05-8 Max			<0.03	63.0	0.70	15.8	<300.0	<0.05	<0.03	343	0.060	1.930	0.7	2.90	156		1.80	0.0170	186.0	5.80	0.70	10.30	1.70	2.020	<0.1	368	0.50	6580	0.07	1320.0	<3.0	<0.01	23.60	<1.0	4.9	<0.5
SRK05-8 Min			<0.03	13.0	0.50	13.6	<300.0	<0.05	<0.03	339	0.060	1.370	<0.5	2.00	8		1.80	0.0170	174.0	0.50	<0.3	9.00	1.50	0.200	<0.1	347	0.50	5960	<0.05	1260.0	<3.0	<0.01	22.90	<1.0	3.4	<0.5

Note: Statistics calculated with DLs at half value.
Note: Metals reported in mg/L shaded in gray.

Table C-2: 2011 Vangorda Creek Drainage Water Quality
Dissolved Metals

Station	Date	Sample Type	Ag-d µg/L	Al-d µg/L	As-d µg/L	Ba-d µg/L	B-d µg/L	Be-d µg/L	Bi-d µg/L	Ca-d mg/L	Cd-d µg/L	Co-d µg/L	Cr-d µg/L	Cu-d µg/L	Fe-d µg/L	Hg-d µg/L	K-d mg/L	Li-d mg/L	Mg-d mg/L	Mn-d µg/L	Mo-d µg/L	Na-d mg/L	Ni-d µg/L	Pb-d µg/L	Sb-d µg/L	S-d mg/L	Se-d µg/L	Si-d µg/L	Sn-d µg/L	Sr-d µg/L	Ti-d µg/L	Tl-d µg/L	U-d µg/L	V-d µg/L	Zn-d µg/L	Zr-d µg/L
SRK05-9	04/01/2011	Ground	<0.03	7.0	0.60	36.1	<300.0	<0.05	<0.03	248	0.230	0.040	<0.5	2.00	<5.0		3.20	0.0080	169.0	3.10	1.10	9.20	1.10	0.440	0.20	350	0.70	4610	0.10	773.0	<3.0	<0.01	28.20	<1.0	8.1	<0.5
SRK05-9	18/01/2011	Ground	<0.03	4.0	0.60	32.7	<300.0	<0.05	0.070	250	0.150	<0.03	<0.5	1.70	6		3.10	0.0070	163.0	2.80	1.00	9.30	1.30	0.300	0.20	335	0.80	4850	0.14	677.0	<3.0	<0.01	25.00	<1.0	6.7	<0.5
SRK05-9	03/02/2011	Ground	<0.03	2.0	0.70	32.8	<300.0	<0.05	<0.03	202	0.170	0.050	<0.5	1.90	8		3.20	0.0070	145.0	4.00	1.10	8.60	1.00	0.350	0.20	295	0.80	3450	0.29	657.0	<3.0	<0.01	12.80	<1.0	6.7	<0.5
SRK05-9	16/02/2011	Ground	<0.03	2.0	0.50	30.6	<300.0	<0.05	<0.03	210	0.110	<0.03	<0.5	1.00	6		2.80	0.0070	135.0	<0.3	0.80	7.80	1.20	0.420	0.20	290	0.80	4230	0.08	660.0	<3.0	<0.01	21.50	<1.0	4.2	<0.5
SRK05-9	03/03/2011	Ground	<0.005	2.1	0.56	26.4	<50.0	<0.01	0.010	215	0.101	0.036	0.4	0.87	12		2.85	0.0067	133.0	0.64	0.99	7.91	0.84	0.193	0.16	292	0.78	4930	0.08	659.0	<0.5	0.004	21.30	<0.2	3.8	<0.1
SRK05-9	23/03/2011	Ground	<0.005	2.7	0.56	25.3	<50.0	<0.01	<0.005	177	0.122	0.059	0.3	1.13	11		3.06	0.0060	111.0	3.91	0.91	7.03	0.91	0.462	0.16	258	0.81	4760	0.38	518.0	<0.5	0.006	18.50	<0.2	13.0	<0.1
SRK05-9	11/04/2011	Ground	<0.005	16.7	0.48	22.2	<50.0	<0.01	<0.005	164	0.092	0.050	0.3	0.81	34		2.50	0.0059	104.0	4.90	0.77	6.51	0.58	1.600	0.12	230	0.75	4550	0.13	524.0	<0.5	0.004	16.30	<0.2	3.7	<0.1
SRK05-9	26/04/2011	Ground	<0.005	4.1	0.48	23.2	<50.0	<0.01	0.007	153	0.116	0.046	0.3	0.98	4		2.38	0.0057	105.0	2.29	0.83	6.50	0.69	0.303	0.15	213	0.80	4120	0.11	504.0	<0.5	0.003	16.30	<0.2	5.7	<0.1
SRK05-9	10/05/2011	Ground	<0.03	6.0	0.90	52.1	<300.0	<0.05	0.040	294	0.250	0.070	<0.5	3.60	32		3.90	0.0080	211.0	17.30	1.00	10.40	1.90	0.700	0.30	424	0.80	5290	0.12	912.0	<3.0	<0.01	23.40	<1.0	14.8	<0.5
SRK05-9	18/05/2011	Ground	<0.005	8.7	0.77	30.1	<50.0	<0.01	<0.005	171	0.159	0.066	0.2	3.42	28		2.94	0.0023	117.0	2.02	1.38	8.17	1.13	1.160	0.31	262	2.50	3590	0.05	592.0	<0.5	0.005	13.90	<0.2	6.7	<0.1
SRK05-9	06/06/2011	Ground	<0.005	2.1	0.66	33.0	<50.0	<0.01	<0.005	161	0.123	0.033	0.2	2.63	5		2.83	0.0059	112.0	0.19	1.42	7.94	1.00	0.246	0.28	228	1.28	3850	0.08	516.0	<0.5	0.005	14.30	<0.2	3.3	<0.1
SRK05-9	22/06/2011	Ground	<0.005	2.4	0.79	43.5	<50.0	<0.01	<0.005	222	0.190	0.050	0.3	2.83	5		3.54	0.0068	151.0	0.27	1.82	9.75	1.28	0.350	0.30	328	0.85	4100	0.08	758.0	<0.5	0.007	22.80	<0.2	4.4	<0.1
SRK05-9	05/07/2011	Ground	<0.03	5.0	1.10	53.8	<300.0	<0.05	<0.03	234	0.240	0.040	<0.5	3.30	11		4.10	0.0080	160.0	2.20	2.00	10.10	1.90	0.700	0.30	334	1.20	4660	0.08	781.0	<3.0	<0.01	26.30	<1.0	18.4	<0.5
SRK05-9	21/07/2011	Ground	<0.03	3.0	1.00	62.0	<300.0	<0.05	<0.03	288	0.270	0.060	<0.5	3.50	<5.0		4.60	0.0100	200.0	0.40	1.80	10.90	1.90	0.540	0.40	391	0.60	5320	<0.05	990.0	<3.0	<0.01	31.60	<1.0	5.4	<0.5
SRK05-9	03/08/2011	Ground	<0.03	4.0	1.20	66.0	<300.0	<0.05	<0.03	272	0.300	<0.03	<0.5	3.30	7		4.50	0.0090	193.0	2.90	1.60	9.50	1.60	0.560	0.30	411	0.60	4980	0.07	1060.0	<3.0	<0.01	32.70	<1.0	6.6	<0.5
SRK05-9	18/08/2011	Ground	<0.03	8.0	2.80	65.4	<300.0	<0.05	<0.03	316	0.310	0.090	<0.5	3.70	17		4.70	0.0100	223.0	2.30	1.60	11.10	2.50	0.540	0.40	428	0.60	5290	0.07	1060.0	<3.0	<0.01	37.60	<1.0	11.9	<0.5
SRK05-9	07/09/2011	Ground	<0.03	5.0	1.10	57.5	<300.0	<0.05	<0.03	302	0.420	0.040	<0.5	3.10	10		4.50	0.0100	210.0	2.70	1.50	10.30	2.30	0.560	0.50	399	0.80	5600	0.12	965.0	<3.0	<0.01	31.80	<1.0	43.9	<0.5
SRK05-9	20/09/2011	Ground	<0.03	16.0	1.20	62.2	<300.0	<0.05	0.050	300	0.370	0.140	0.7	2.90	41		4.60	0.0110	218.0	8.90	1.50	10.30	2.80	2.760	0.30	416	0.60	5430	0.12	993.0	<3.0	0.020	34.60	<1.0	55.5	<0.5
SRK05-9	11/10/2011	Ground	<0.03	23.0	1.10	57.4	<300.0	<0.05	<0.03	297	0.300	0.080	<0.5	2.50	57		4.50	0.0110	220.0	2.30	1.30	10.10	2.20	1.700	0.30	413	0.70	5190	0.20	951.0	<3.0	<0.01	35.20	<1.0	7.1	<0.5
SRK05-9	27/10/2011	Ground	<0.03	8.0	1.00	50.1	<300.0	<0.05	<0.03	278	0.310	0.140	5.0	2.10	35		4.20	0.0110	217.0	1.40	1.40	11.50	3.60	0.260	0.30	409	0.70	5010	0.15	909.0	<3.0	<0.01	33.80	<1.0	15.7	<0.5
SRK05-9	08/11/2011	Ground	<0.03	18.0	1.10	48.9	<300.0	<0.05	<0.03	271	0.260	0.080	<0.5	2.00	37		4.30	0.0100	210.0	1.70	1.40	9.80	1.80	1.420	0.30	435	0.60	4720	0.14	912.0	<3.0	<0.01	31.60	<1.0	6.5	<0.5
SRK05-9	22/11/2011	Ground	<0.03	3.0	0.80	45.4	<300.0	<0.05	<0.03	250	0.230	<0.03	<0.5	1.60	6		4.10	0.0090	205.0	0.50	1.30	10.10	1.70	0.340	0.30	400	0.60	4210	0.25	884.0	<3.0	<0.01	34.00	<1.0	6.3	<0.5
SRK05-9	01/12/2011	Ground	<0.03	<1.0	1.10	42.3	<300.0	<0.05	<0.03	266	0.290	0.040	<0.5	1.80	<5.0		4.10	0.0100	211.0	4.40	1.30	10.60	1.60	0.430	0.30	401	0.60	4620	0.11	876.0	<3.0	<0.01	33.40	<1.0	24.1	<0.5
SRK05-9	14/12/2011	Ground	<0.03	5.0	0.70	37.6	<300.0	<0.05	<0.03	263	0.240	0.050	1.9	2.00	14		3.60	0.0090	212.0	0.80	1.50	10.60	2.90	0.500	0.20	395	0.60	4620	0.11	900.0	<3.0	<0.01	31.60	<1.0	6.2	<0.5
SRK05-9 Average			0.011	6.6	0.91	43.2	113.5	0.02	0.017	242	0.223	0.055	0.5	2.28	16		3.67	0.0081	172.3	3.00	1.31	9.33	1.66	0.701	0.27	347	0.83	4666	0.13	793.0	1.1	0.006	26.19	0.4	12.0	0.2
SRK05-9 Max			<0.03	23.0	2.80	66.0	<300.0	<0.05	0.070	316	0.420	0.140	5.0	3.70	57		4.70	0.0110	223.0	17.30	2.00	11.50	3.60	2.760	0.50	435	2.50	5600	0.38	1060.0	<3.0	0.020	37.60	<1.0	55.5	<0.5
SRK05-9 Min			<0.005	<1.0	0.48	22.2	<50.0	<0.01	<0.005	153	0.092	<0.03	0.2	0.81	4		2.38	0.0023	104.0	0.19	0.77	6.50	0.58	0.193	0.12	213	0.60	3450	0.05	504.0	<0.5	0.003	12.80	<0.2	3.3	<0.1
SRK05-ETA-BR1	17/09/2011	Ground	0.500	1190.0	12.00	<10.0	<500.0	<1.0	<10.0	411	48.900	1350.000	<10.0	6.00	1510000		14.30	0.1480	753.0	101000.00	<10.0	59.70	1220.00	51.000	<5.0	2810	<1.0	17300	<50.0	4250.0	<50.0	<0.5	6.00	<50.0	591000.0	<5.0
SRK05-ETA-BR2	17/09/2011	Ground	<0.02	<3.0	0.30	42.0	<50.0	<0.1	<1.0	415	0.050	21.600	<1.0	<0.2	16700		3.43	0.0120	73.7	2740.00	<1.0	28.90	20.00	0.400	<0.5	550	<0.1	8340	<5.0	6220.0	<5.0	<0.05	0.70	<5.0	7540.0	<0.5
SRK08-P14	04/10/2011	Ground	<0.03	13.0	0.40	73.9	<300.0	<0.05	<0.03	309	0.060	0.070	<0.5	3.40	8		1.10	0.0080	64.6	0.90	0.50	4.50	1.20	0.200	0.20	268	1.60	5470	<0.05	1390.0	<3.0	<0.01	5.83	<1.0	8.3	<0.5
SRK08-P15	04/10/2011	Ground	<0.03	14.0	0.70	45.6	<300.0	<0.05	<0.03	326	0.110	0.380	0.8	1.00	8		1.90	0.0120	106.0	2.60	<0.3	5.10	24.50	0.310	0.30	310	1.40	5560	<0.05	1110.0	<3.0	<0.01	23.50	<1.0	8.3	<0.5
SRK08-P16	23/05/2011	Ground	0.010	268.0	0.92	119.0	<50.0	0.04	<0.005	171	0.193	0.701	0.8	2.81	411		0.87	0.0044	46.7	27.50	0.90	5.36	1.87	2.530	0.12	138	3.07	4920	0.02	674.0	6.7	0.007	10.20	1.1	7.1	0.5
SRK-GD11	27/09/2011	Seepage	<0.03	24.0	1.30	19.3	<300.0	<0.05	<0.03	295	4.070	2.120	<0.5	62.50	101		3.80	0.0160	204.0	123.00	0.60	5.20	249.00	3.080	1.00	381	0.30	4140	<0.05	1020.0	<3.0	0.580	20.60	<1.0	6970.0	<0.5
SRK-GD13	27/09/2011	Seepage	<0.03	6.0	2.80	46.1	<300.0	<0.05	0.080	298	0.050	0.380	<0.5	1.50	25		3.10	0.0130	190.0	2.60	0.70	5.50	105.00	0.380	0.50	345	1.80	5650	<0.05	1230.0	<3.0	0.060	30.00	<1.0	77.3	0.6
SRK-GD21b	22/05/2011	Seepage	<0.03	19.0	3.30	18.9	<300.0	<0.05	<0.03	304	1.630	9.520	<0.5	1.80	16		8.30	0.0360	354.0	59.50	2.80	11.30	405.00	1.590	1.70	673	2.20	3390	<0.05	1190.0	<3.0	0.510	50.00	<1.0	2340.0	<0.5
SRK-GD4	22/05/2011	Seepage	<0.005	3.4	1.23	30.2	<50.0	<0.01	<0.005	87	1.000	5.890	<0.1	1.57	7		3.48	0.0088	77.5	288.00	1.29	2.37	39.20	0.415	0.52	174	0.64	1250	<0.01	331.0	<0.5	0.266	9.09	<0.2	929.0	<0.1
SRK-GD5	21/05/2011	Seepage	<0.03	5.0	3.30	21.0	<300.0	<0.05	<0.03	351	3.610	1.990	<0.5	1.60	13		5.90	0.0350	293.0	70.90	1.50	11.80	251.00	1.880	1.20	601	2.60	3600	<0.05	1210.0	<3.0	0.300	46.20	<1.0	2320.0	<0.5
SRK-GD5	27/09/2011	Seepage	<0.03	4.0	5.10	17.0	<300.0	<0.05	<0.03	415	1.030	0.960	<0.5	2.00	16		8.40	0.0470	354.0	13.70	0.80	14.20	472.00	2.130	1.80	689	0.30	5420	<0.05	1680.0	<3.0	0.430	63.40	<1.0	2940.0	0.7
SRK-GD5 Average			0.015	4.5	4.20	19.0	150.0	0.03	0.015	383	2.320	1.475	0.3	1.80	15		7.15	0.0410	323.5	42.30	1.15	13.00	361.50	2.005	1.50	645	1.45	4510	0.03	1445.0	1.5	0.365	54.80	0.5	2630.0	0.5
SRK-GD5 Max			<0.03	5.0	5.10	21.0	<300.0	<0.05	<0.03	415	3.610	1.990	<0.5	2.00	16		8.40	0.0470	354.0	70.90	1.50	14.20	472.00	2.130	1.80	689	2.60	5420	<0.05	1680.0	<3.0	0.430	63.40	<1.0	2940.0	0.7
SRK-GD5 Min			<0.03	4.0	3.30	17.0	<300.0	<0.05	<0.03	351	1.030	0.960	<0.5	1.60	13		5.90	0.0350	293.0	13.70	0.80	11.80	251.00	1.880	1.20	601	0.30	3600	<0.05	1210.0	<3.0	0.300	46.20	<1.0	2320.0	<0.5
SRK-GD6	21/05/2011	Seepage	<0.03	5.0	4.90	17.3	<300.0	<0.05	<0.03	441	1.400	0.910	<0.5	1.80	16		7.00	0.0330	336.0	6.60	0.80	17.90	418.00	1.850	1.30	676	0.30	5880	<0.05	1620.0	<3.0	0.370	56.00	<1.0	2970.0	0.8
SRK-GD6	27/09/2011	Seepage	<0.03	6.0	3.90	17.9	<300.0	<0.05	<0.03	420	2.020	0.650	<0.5	1.80	16		8.00	0.0410	336.0	13.10	0.40	14.30	502.00	1.600	0.80	636	0.30	5300	<0.05	1620.0	<3.0	0.410	62.20	<1.0	3510.0	0.7
SRK-GD6 Average			0.015	5.5	4.40	17.6	150.0	0.03	0.015	431	1.710	0.780	0.3	1.80	16		7.50	0.0370	336.0	9.85	0.60	16.10	460.00	1.725	1.05	656	0.30	5590	0.03	1620.0	1.5	0.390	59.10	0.5	3240.0	0.8
SRK-GD6 Max			<0.03	6.0	4.90	17.9	<300.0	<0.05	<0.03	441	2.020	0.910	<0.5	1.80	16		8.00	0.0410	336.0	13.10	0.80	17.90	502.00	1.850	1.30	676	0.30	5880	<0.05	1620.0	<3.0	0.410	62.20	<1.0	3510.0	0.8
SRK-GD6 Min			<0.03	5.0	3.90	17.3	<300.0	<0.05	<0.03	420	1.400	0.650	<0.5	1.80	16		7.00	0.0330	336.0	6.60	0.40	14.30	418.00	1.600	0.80	636	0.30	5300	<0.05	1620.0	<3.0	0.370	56.00	<1.0	2970.0	0.7
Sweet Creek	22/05/2011	Seepage	<0.03	3.0	0.60	37.4	<300.0	<0.05	<0.03	415	0.060	0.240	<0.5	1.90	12		3.60	0.0160	253.0	3.00	1.10	12.80	6.30	0.500	0.20	581	0.50	6300	<0.05	1280.0	<3.0	<0.01	40.10	<1.0	11.5	<0.5
Sweet Creek	22/09/2011	Seepage	<0.03	2.0	0.70	40.0	<300.0	<0.05	<0.03	423	<0.03	0.120	<0.5	0.60	9		3.50	0.0160	267.0	0.40	0.90	12.60	6.00	0.070	0.30	550	0.40	5810	<0.05	1390.0	<3.0	<0.01	43.40	<1.0	2.5	<0.5
Sweet Creek Average			0.015	2.5	0.65	38.7	150.0	0.03	0.015	419	0.038	0.180	0.3	1.25	11		3.55	0.0160	260.0	1.70	1.00	12.70	6.15	0.285	0.25	566	0.45	6055	0.03	1335.0	1.5	0.005	41.75	0.5	7.0	0.3
Sweet Creek Max			<0.03	3.0	0.70	40.0	<300.0	<0.05	<0.03	423	0.060	0.240	<0.5	1.90	12		3.60	0.0160	267.0	3.00	1.10	12.80	6.30	0.500	0.30	581	0.50	6300	<0.05	1390.0	<3.0	<0.01	43.40	<1.0	11.5	<0.5
Sweet Creek Min			<0.03	2.0	0.60	37.4	<300.0	<0.05	<0.03	415	<0.03	0.120	<0.5	0.60	9		3.50	0.0160	253.0	0.40	0.90	12.60	6.00	0.070	0.20	550	0.40	5810	<0.05	1280.0	<3.0	<0.01	40.10	<1.0	2.5	<0.5
Trib A	25/05/2011	Surface	<0.03	11.0	2.20	54.1	<300.0	<0.05	<0.03	355	0.390	5.120	<0.5	1.90	703		5.50	0.0120	354.0	914.00	1.40	12.60	9.40	0.760	0.30	632	0.70	4950	<0.05	1190.0	<3.0	0.040	38.40	<1.0	76.7	<0.5
V1	24/01/2011	Surface	2.040	4.1	0.26	37.2	<50.0	<0.01	0.036	19	0.038	0.106	<0.1	1.69	7		17.60	0.0017	3.1	10.60	0.64	3.15	1.05	0.454	0.07	<10.0	0.21	5000	0.33	89.3	<0.5	0.004	1.21	<0.2	10.3	<0.1
V1	17/02/2011	Surface	<0.005	2.6	0.24	37.0	<50.0	<0.01	<0.005	14	0.007	0.009	<0.1	0.19	2		0.53	0.0014	2.6	0.18	0.60	2.06	0.20	0.025	0.04	<10.0	0.21	3650	<0.01	78.4	<0.5	<0.002	1.23	<0.2	0.4	<0.1
V1	22/03/2011	Surface	<0.005	2.7	0.31	38.1	<50.0	<0.01	<0.005	16	<0.005	0.016	<0.1	0.36	3		1.15	0.0015	2.8	1.18	0.78	2.25	0.25	0.091	0.04	<10.0	0.19	4640	0.03	81.5	<0.5	<0.002	1.55	<0.2	2.2	<0.1
V1	21/04/2011	Surface	<0.005	4.1	0.31	42.3	<50.0	<0.01	<0.005	18	0.017	0.015	<0.1	1.60	6		0.63	0.0016	2.9	1.43	0.72	2.24	0.62	0.866	0.05	<10.0	0.23	5120	0.12	85.6	<0.5	<0.002	1.73	<0.2	4.5	<0.1
V1	17/05/2011	Surface	<0.005	35.5	0.41	33.0	<50.0	<0.01	<0.005	13	0.022	0.051	<0.1	1.32	57		1.21	0.0012	2.3	1.83	0.32	1.48	0.84	0.218	0.04	<10.0	0.14	3950	<0.01	63.5	<0.5	<0.002	0.68	<0.2	1.7	<0.1
V1	15/06/2011	Surface	<0.005	25.0	0.21	17.4	<50.0	<0.01	<0.005	6	0.006	0.066	<0.1	0.55	19		0.37	0.0006	0.9	3.20	0.09	1.08	0.42	0.225	0.03	<10.0	0.05	3820	<0.01	32.8	<0.5	<0.002	0.28	<0.2	4.3	<0.1
V1	13/07/2011	Surface	<0.005	13.8	0.21	24.2	<50.0	<0.01	<0.005	9	0.009	0.019	<0.1	0.45	12		0.33	0.0009	1.4	0.23	0.14	1.40	0.25	0.104	0.03	<10.0	0.09	4410	<0.01	48.8	<0.5	<0.002	0.31	<0.2	0.7	<0.1
V1	10/08/2011	Surface	<0.005	12.0	0.24	26.0	<50.0	<0.01	<0.005	10	0.007	0.022	<0.1	0.43	15		0.31	0.0009	1.4	1.38	0.19	1.58	0.61	0.067	0.03	<10.0	0.05	4440	<0.01	53.4	<0.5	<0.002	0.37	<0.2	1.9	<0.1
V1	13/09/2011	Surface	<0.005	11.4	0.18	27.5	<50.0	<0.01	<0.005	10	0.018	0.019	<0.1	0.37	14		0.37	0.0008	1.4	0.92	0.17	1.59	0.24	2.390	0.03	<10.0	0.06	4510	<0.01	52.2	<0.5	0.003	0.35	<0.2	5.6	<0.1
V1	18/10/2011	Surface	<0.005	7.6	0.23	31.6	<50.0	<0.01	<0.005	13	0.008	0.015	<0.1	0.28	9		0.43	0.0012	2.0	0.62	0.30	1.80	0.22	0.160	0.03	<10.0	0.13	4920	<0.01	65.9	<0.5	<0.002	0.61	<0.2	1.8	<0.1
V1	23/11/2011	Surface	<0.005	5.0	0.26	35.7	<50.0	<0.01	<0.005	16	0.014	0.019	<0.1	0.36	4		0.82	0.0012	2.3	1.08	0.46	1.99	0.23	0.093	0.03	<10.0	0.16	4850	<0.01	74.0	<0.5	<0.002	0.77	<0.2	3.0	<0.1
V1	08/12/2011	Surface	<0.005	5.1	0.26	37.8	<50.0	<0.01	<0.005	13	0.006	0.010	<0.1	0.62	4		0.54	0.0013	2.6	0.11	0.45	2.06	0.23	0.073	0.04	<10.0	0.20	3860	<0.01	79.8	<0.5	<0.002	0.92	<0.2	1.1	<0.1
V1 Average			0.172	10.7	0.26	32.3	25.0	0.01	0.005	13	0.013	0.031	0.1	0.69	13		2.02	0.0012	2.1	1.90	0.41	1.89	0.43	0.397	0.04	5	0.14	4431	0.04	67.1	0.3	0.001	0.83	0.1	3.1	0.1
V1 Max			2.040	35.5	0.41	42.3	<50.0	<0.01	0.036	19	0.038	0.106	<0.1	1.69	57		17.60	0.0017	3.1	10.60	0.78	3.15	1.05	2.390	0.07	<10.0	0.23	5120	0.33	89.3	<0.5	0.004	1.73	<0.2	10.3	<0.1
V1 Min			<0.005	2.6	0.18	17.4	<50.0	<0.01	<0.005	6	<0.005	0.009	<0.1	0.19	2		0.31	0.0006	0.9	0.11	0.09	1.08	0.20	0.025	0.03	<10.0	0.05	3650	<0.01	32.8	<0.5	<0.002	0.28	<0.2	0.4	<0.1
V14	22/05/2011	Seepage	<0.03	17.0	2.20	39.7	<300.0	<0.05	<0.03	237	0.070	1.510	<0.5	1.70	179		4.10	0.0060	250.0	345.00	0.90	10.00	3.20	1.180	0.30	513	1.50	4050	<0.05	768.0	<3.0	0.020	26.50	2.0	6.9	<0.5

Note: Statistics calculated with DLs at half value.
Note: Metals reported in mg/L shaded in gray.

Table C-2: 2011 Vangorda Creek Drainage Water Quality
Dissolved Metals

Station	Date	Sample Type	Ag-d µg/L	Al-d µg/L	As-d µg/L	Ba-d µg/L	B-d µg/L	Be-d µg/L	Bi-d µg/L	Ca-d mg/L	Cd-d µg/L	Co-d µg/L	Cr-d µg/L	Cu-d µg/L	Fe-d µg/L	Hg-d µg/L	K-d mg/L	Li-d mg/L	Mg-d mg/L	Mn-d µg/L	Mo-d µg/L	Na-d mg/L	Ni-d µg/L	Pb-d µg/L	Sb-d µg/L	S-d mg/L	Se-d µg/L	Si-d µg/L	Sn-d µg/L	Sr-d µg/L	Ti-d µg/L	Tl-d µg/L	U-d µg/L	V-d µg/L	Zn-d µg/L	Zr-d µg/L
V15	**04/01/2011**	**Seepage**	<0.03	5.0	0.40	45.4	<300.0	<0.05	0.150	454	1.850	0.060	<0.5	3.00	6		6.50	0.0250	478.0	2.00	0.90	15.20	143.00	0.370	0.20	839	0.70	5570	<0.05	1570.0	<3.0	<0.01	69.10	<1.0	3580.0	0.8
V15	**18/01/2011**	**Seepage**	<0.03	6.0	0.40	43.4	<300.0	<0.05	0.090	500	1.720	0.060	<0.5	2.30	10		6.60	0.0230	492.0	0.80	0.90	16.40	133.00	0.190	<0.1	906	0.80	6740	<0.05	1500.0	<3.0	<0.01	67.20	<1.0	3370.0	<0.5
V15	**03/02/2011**	**Seepage**	<0.03	5.0	0.50	41.9	<300.0	<0.05	<0.03	479	1.820	<0.03	<0.5	2.20	8		6.60	0.0230	487.0	0.70	1.00	15.40	125.00	0.260	<0.1	898	0.70	5990	<0.05	1540.0	<3.0	<0.01	65.40	<1.0	3090.0	<0.5
V15	**16/02/2011**	**Seepage**	<0.03	48.0	0.60	41.1	<300.0	<0.05	<0.03	418	1.700	0.090	<0.5	2.40	18		6.30	0.0220	467.0	0.70	1.10	14.70	126.00	0.240	<0.1	863	0.50	5380	<0.05	1480.0	<3.0	<0.01	64.40	<1.0	3250.0	<0.5
V15	**03/03/2011**	**Seepage**	<0.03	4.0	0.50	38.6	<300.0	<0.05	<0.03	450	1.640	0.060	<0.5	2.20	19		6.00	0.0220	451.0	<0.3	1.10	14.50	119.00	0.180	<0.1	862	0.70	6230	<0.05	1470.0	<3.0	<0.01	66.30	<1.0	2980.0	<0.5
V15	**23/03/2011**	**Seepage**	<0.03	5.0	0.50	42.4	<300.0	<0.05	<0.03	480	1.650	0.040	<0.5	2.30	12		6.20	0.0220	482.0	1.30	1.20	15.70	122.00	0.290	<0.1	924	0.60	6380	<0.05	1510.0	<3.0	<0.01	74.10	<1.0	2930.0	<0.5
V15	**11/04/2011**	**Seepage**	<0.03	6.0	0.50	39.8	<300.0	<0.05	<0.03	424	1.580	0.050	<0.5	2.50	8		6.00	0.0210	437.0	0.80	1.50	14.00	105.00	0.290	0.20	828	0.70	5820	<0.05	1510.0	<3.0	<0.01	68.80	<1.0	2640.0	<0.5
V15	**26/04/2011**	**Seepage**	<0.03	6.0	0.40	38.2	<300.0	<0.05	<0.03	437	1.620	0.070	<0.5	2.00	7		6.00	0.0220	418.0	3.00	0.40	13.80	112.00	0.470	<0.1	835	0.70	6510	<0.05	1470.0	<3.0	<0.01	52.90	<1.0	2920.0	<0.5
V15	**10/05/2011**	**Seepage**	<0.005	2.9	0.58	37.2	<50.0	<0.01	0.011	292	0.943	0.435	0.3	1.91	6		4.53	0.0140	254.0	16.80	1.02	10.00	64.50	0.665	0.23	514	1.58	4770	<0.01	1010.0	<0.5	0.035	32.40	<0.2	1450.0	0.2
V15	**18/05/2011**	**Seepage**	<0.03	6.0	0.80	30.6	<300.0	<0.05	<0.03	315	0.790	0.590	<0.5	1.60	9		4.60	0.0090	310.0	21.30	1.20	11.40	71.90	0.510	0.20	582	1.20	5540	<0.05	1040.0	<3.0	<0.01	35.10	<1.0	1880.0	<0.5
V15	**25/05/2011**	**Seepage**	<0.03	9.0	0.50	35.0	<300.0	<0.05	<0.03	351	1.410	0.070	<0.5	1.90	9		5.30	0.0180	345.0	2.00	0.80	12.10	99.10	0.270	<0.1	630	1.00	5570	<0.05	1210.0	<3.0	<0.01	44.70	<1.0	2740.0	<0.5
V15	**06/06/2011**	**Seepage**	<0.03	20.0	0.40	42.3	<300.0	<0.05	<0.03	361	1.570	0.070	<0.5	2.20	8		5.60	0.0200	337.0	1.30	<0.3	10.90	95.50	0.420	<0.1	701	0.70	6350	<0.05	1490.0	<3.0	<0.01	36.60	<1.0	2670.0	<0.5
V15	**22/06/2011**	**Seepage**	<0.03	5.0	0.80	85.0	<300.0	<0.05	<0.03	303	1.210	1.220	<0.5	2.10	6		5.80	0.0180	292.0	36.70	1.30	12.10	61.90	1.400	0.40	589	2.30	4340	<0.05	1120.0	<3.0	0.080	28.80	<1.0	1530.0	<0.5
V15	**05/07/2011**	**Seepage**	<0.03	8.0	0.70	44.4	<300.0	<0.05	<0.03	425	1.390	0.080	<0.5	2.00	16		5.80	0.0210	411.0	0.90	1.30	14.20	103.00	0.850	<0.1	762	1.00	6680	0.12	1430.0	<3.0	<0.01	55.70	<1.0	2690.0	<0.5
V15	**21/07/2011**	**Seepage**	<0.03	6.0	0.50	45.3	<300.0	<0.05	<0.03	421	1.420	0.070	<0.5	2.30	10		6.30	0.0220	465.0	2.00	0.90	15.30	115.00	0.550	<0.1	787	0.70	6470	<0.05	1470.0	<3.0	<0.01	60.20	<1.0	3300.0	<0.5
V15	**03/08/2011**	**Seepage**	<0.03	5.0	0.90	47.6	<300.0	<0.05	<0.03	415	1.450	0.050	0.6	2.10	7		6.30	0.0230	421.0	1.30	0.90	14.00	106.00	0.440	<0.1	715	0.70	6030	<0.05	1580.0	<3.0	<0.01	55.10	<1.0	3310.0	<0.5
V15	**18/08/2011**	**Seepage**	<0.03	7.0	2.20	42.6	<300.0	<0.05	<0.03	417	1.370	0.080	<0.5	2.30	16		5.80	0.0200	428.0	0.80	0.90	14.70	107.00	0.260	<0.1	745	0.80	6340	<0.05	1400.0	<3.0	<0.01	61.70	<1.0	2950.0	<0.5
V15	**07/09/2011**	**Seepage**	<0.03	6.0	0.50	43.1	<300.0	<0.05	<0.03	429	1.460	0.090	<0.5	2.20	10		6.40	0.0220	449.0	8.20	0.90	15.10	110.00	0.460	<0.1	758	0.90	6580	<0.05	1460.0	<3.0	<0.01	59.80	<1.0	3020.0	<0.5
V15	**20/09/2011**	**Seepage**	<0.03	9.0	0.80	45.5	<300.0	<0.05	<0.03	407	1.330	0.140	<0.5	2.30	13		6.60	0.0220	431.0	14.30	0.70	14.90	100.00	0.730	0.20	761	0.80	6230	<0.05	1440.0	<3.0	<0.01	60.50	<1.0	2720.0	<0.5
V15	**11/10/2011**	**Seepage**	<0.03	5.0	0.70	43.1	<300.0	<0.05	<0.03	394	1.350	0.050	<0.5	2.00	7		6.30	0.0220	403.0	0.80	0.70	14.00	103.00	0.340	<0.1	684	1.10	6210	<0.05	1370.0	<3.0	<0.01	56.00	<1.0	2700.0	<0.5
V15	**27/10/2011**	**Seepage**	<0.03	6.0	0.80	41.8	<300.0	<0.05	<0.03	416	1.520	0.060	0.6	2.30	11		6.70	0.0250	405.0	1.30	0.70	14.40	117.00	0.720	<0.1	735	1.30	5790	<0.05	1440.0	<3.0	<0.01	55.90	<1.0	3160.0	<0.5
V15	**08/11/2011**	**Seepage**	<0.03	8.0	0.60	42.5	<300.0	<0.05	<0.03	441	1.560	0.040	<0.5	2.00	<5.0		6.80	0.0220	393.0	1.10	1.10	14.10	155.00	0.320	<0.1	753	1.50	6710	<0.05	1410.0	<3.0	<0.01	51.00	<1.0	2920.0	<0.5
V15	**22/11/2011**	**Seepage**	<0.03	6.0	0.60	43.8	<300.0	<0.05	<0.03	386	1.650	0.070	<0.5	2.10	10		6.90	0.0240	402.0	1.10	0.60	14.60	131.00	0.300	<0.1	723	1.50	5590	0.21	1410.0	<3.0	<0.01	58.00	<1.0	3330.0	<0.5
V15	**01/12/2011**	**Seepage**	<0.03	4.0	0.50	40.8	<300.0	<0.05	<0.03	388	1.570	0.090	<0.5	2.40	11		6.90	0.0230	388.0	10.40	0.70	14.50	125.00	0.230	<0.1	704	1.40	5830	<0.05	1340.0	<3.0	<0.01	56.20	<1.0	3230.0	<0.5
V15	**14/12/2011**	**Seepage**	<0.03	16.0	0.30	39.3	<300.0	<0.05	<0.03	408	1.580	0.070	1.9	2.70	18		6.10	0.0230	399.0	2.10	0.80	14.80	123.00	0.750	<0.1	698	1.30	6000	<0.05	1460.0	<3.0	<0.01	56.80	<1.0	2970.0	<0.5
V15 Average			0.015	8.6	0.64	43.2	145.0	0.02	0.023	408	1.486	0.149	0.3	2.21	10		6.12	0.0211	409.8	5.27	0.91	14.03	110.92	0.460	0.10	752	1.01	5986	0.04	1405.2	1.5	0.009	55.71	0.5	2853.2	0.3
V15 Max			<0.03	48.0	2.20	85.0	<300.0	<0.05	0.150	500	1.850	1.220	1.9	3.00	19		6.90	0.0250	492.0	36.70	1.50	16.40	155.00	1.400	0.40	924	2.30	6740	0.21	1580.0	<3.0	0.080	74.10	<1.0	3580.0	0.8
V15 Min			<0.005	2.9	0.30	30.6	<50.0	<0.01	0.011	292	0.790	<0.03	0.3	1.60	<5.0		4.53	0.0090	254.0	<0.3	<0.3	10.00	61.90	0.180	<0.1	514	0.50	4340	<0.01	1010.0	<0.5	<0.01	28.80	<0.2	1450.0	0.2
V16	**22/05/2011**	**Seepage**	0.010	12.4	1.34	42.0	<50.0	<0.01	0.006	183	0.046	0.127	<0.1	1.52	28		4.60	0.0122	123.0	5.30	3.20	6.73	5.16	1.040	0.81	283	1.82	3280	0.03	591.0	<0.5	0.019	17.90	<0.2	46.2	<0.1
V2	**04/01/2011**	**Surface**	<0.03	3.0	0.90	72.2	<300.0	<0.05	0.120	317	0.280	<0.03	<0.5	1.40	<5.0	<0.05	2.60	0.0050	222.0	0.80	1.70	12.10	2.50	0.310	0.20	464	0.70	4980	<0.05	1020.0	<3.0	<0.01	33.80	<1.0	24.1	<0.5
V2	**03/02/2011**	**Surface**	<0.03	4.0	0.90	67.5	<300.0	<0.05	<0.03	374	0.300	<0.03	<0.5	1.00	9	<0.05	3.00	0.0050	231.0	2.00	1.90	12.00	2.90	0.330	0.20	520	0.60	6500	<0.05	1020.0	<3.0	<0.01	32.00	<1.0	27.7	<0.5
V2	**03/03/2011**	**Surface**	<0.03	3.0	1.00	73.6	<300.0	<0.05	<0.03	386	0.280	0.040	<0.5	1.20	22	<0.05	2.90	0.0050	240.0	1.00	1.80	12.80	3.10	0.240	0.20	464	0.70	6010	<0.05	1070.0	<3.0	<0.01	36.60	<1.0	22.6	<0.5
V2	**11/04/2011**	**Surface**	<0.03	4.0	0.80	68.9	<300.0	<0.05	<0.03	336	0.250	0.060	<0.5	1.20	6	<0.05	2.70	0.0040	213.0	5.30	1.70	11.70	2.60	0.350	0.20	474	0.70	5610	<0.05	972.0	<3.0	<0.01	36.40	<1.0	22.9	<0.5
V2	**10/05/2011**	**Surface**	<0.005	5.9	0.95	57.9	<50.0	<0.01	<0.005	286	0.192	0.140	0.2	1.65	19	<0.01	2.88	0.0038	170.0	5.12	1.52	10.00	2.50	2.320	0.27	385	0.89	5810	<0.01	811.0	<0.5	0.006	25.20	<0.2	29.7	<0.1
V2	**18/05/2011**	**Surface**	<0.005	8.1	1.08	41.8	<50.0	<0.01	<0.005	86	0.141	0.564	<0.1	1.18	3	<0.01	3.64	0.0027	49.5	82.60	2.14	5.43	4.55	0.442	0.68	121	1.85	1690	<0.01	305.0	<0.5	0.051	7.34	<0.2	16.5	<0.1
V2	**25/05/2011**	**Surface**	<0.03	3.0	1.00	56.8	<300.0	<0.05	<0.03	241	0.140	0.060	<0.5	1.20	7	<0.05	2.50	0.0040	151.0	2.00	1.80	9.30	2.30	0.480	0.20	295	0.90	5430	<0.05	698.0	<3.0	<0.01	21.20	<1.0	27.4	<0.5
V2	**06/06/2011**	**Surface**	<0.005	3.2	0.85	57.4	<50.0	<0.01	<0.005	237	0.142	0.041	0.2	1.07	5	0.030	2.47	0.0039	127.0	0.73	1.45	9.11	1.71	0.366	0.18	311	0.69	5670	<0.01	703.0	<0.5	0.006	20.10	<0.2	14.0	<0.1
V2	**23/06/2011**	**Surface**	<0.005	4.9	0.81	63.0	<50.0	<0.01	<0.005	213	0.127	0.038	0.2	1.21	11	<0.01	2.21	0.0036	114.0	0.67	1.82	8.73	1.44	0.518	0.21	268	0.59	4790	<0.01	683.0	<0.5	0.008	17.40	<0.2	11.2	<0.1
V2	**05/07/2011**	**Surface**	<0.03	7.0	1.00	71.2	<300.0	<0.05	<0.03	243	0.180	<0.03	<0.5	1.10	15	<0.05	2.20	0.0040	128.0	0.90	1.80	8.90	2.10	1.110	0.20	308	0.70	5640	<0.05	707.0	<3.0	<0.01	19.70	<1.0	21.9	<0.5
V2	**21/07/2011**	**Surface**	0.161	7.3	0.82	60.9	<50.0	<0.01	<0.005	247	0.189	0.105	0.3	2.18	22	<0.01	4.94	0.0044	135.0	7.35	1.64	9.72	2.50	1.700	0.24	336	0.58	5740	0.12	745.0	<0.5	0.008	20.80	<0.2	34.7	<0.1
V2	**03/08/2011**	**Surface**	<0.03	5.0	1.10	75.6	<300.0	<0.05	<0.03	246	0.170	<0.03	<0.5	1.30	9	<0.05	2.60	0.0040	148.0	0.50	1.70	9.90	1.80	0.360	0.20	324	0.60	5250	<0.05	808.0	<3.0	<0.01	20.60	<1.0	12.2	<0.5
V2	**18/08/2011**	**Surface**	<0.005	4.3	1.34	67.2	<50.0	<0.01	<0.005	268	0.161	0.068	0.2	1.19	14	<0.01	2.48	0.0041	144.0	0.74	1.79	9.76	1.78	0.340	0.18	345	0.53	5820	<0.01	818.0	<0.5	0.007	24.20	<0.2	10.7	<0.1
V2	**07/09/2011**	**Surface**	<0.03	8.0	1.10	69.2	<300.0	<0.05	<0.03	273	0.130	0.060	<0.5	1.60	16	<0.05	2.70	0.0050	162.0	6.70	1.90	10.60	2.20	0.790	0.20	345	0.60	5890	<0.05	813.0	<3.0	<0.01	23.40	<1.0	19.7	<0.5
V2	**20/09/2011**	**Surface**	<0.03	6.0	1.00	72.5	<300.0	<0.05	<0.03	255	0.150	0.060	<0.5	1.10	9	<0.05	2.70	0.0050	158.0	0.60	1.70	10.30	1.70	0.330	0.20	338	0.50	5530	<0.05	783.0	<3.0	<0.01	24.10	<1.0	11.5	<0.5
V2	**11/10/2011**	**Surface**	<0.03	6.0	1.00	74.5	<300.0	<0.05	<0.03	254	0.170	0.040	<0.5	1.30	15	<0.05	2.60	0.0050	156.0	1.90	1.90	10.00	1.60	0.990	0.20	324	0.50	5590	<0.05	775.0	<3.0	<0.01	24.00	<1.0	14.2	<0.5
V2	**27/10/2011**	**Surface**	<0.03	5.0	1.10	70.9	<300.0	<0.05	<0.03	251	0.190	0.080	<0.5	1.00	8	<0.05	2.60	0.0050	157.0	6.20	2.00	11.10	1.80	0.340	0.20	343	0.60	5690	<0.05	772.0	<3.0	<0.01	24.60	<1.0	28.6	<0.5
V2	**08/11/2011**	**Surface**	<0.03	4.0	1.10	72.6	<300.0	<0.05	<0.03	253	0.170	<0.03	<0.5	0.80	<5.0	<0.05	2.40	0.0040	144.0	<0.3	1.80	9.70	1.50	0.310	0.20	342	0.70	5330	<0.05	749.0	<3.0	<0.01	21.50	<1.0	10.4	<0.5
V2	**01/12/2011**	**Surface**	<0.03	2.0	1.00	67.0	<300.0	<0.05	<0.03	256	0.140	0.050	<0.5	1.10	6	<0.05	2.60	0.0040	157.0	2.30	1.70	10.40	1.50	0.190	0.20	340	0.60	5260	<0.05	761.0	<3.0	<0.01	25.90	<1.0	15.4	<0.5
V2 Average			0.019	4.9	0.99	66.4	110.5	0.02	0.017	264	0.184	0.078	0.2	1.25	11	0.020	2.77	0.0043	158.2	6.71	1.78	10.08	2.21	0.622	0.23	350	0.71	5381	0.02	790.2	1.1	0.008	24.15	0.4	19.8	0.2
V2 Max			0.161	8.1	1.34	75.6	<300.0	<0.05	0.120	386	0.300	0.564	<0.5	2.18	22	<0.05	4.94	0.0050	240.0	82.60	2.14	12.80	4.55	2.320	0.68	520	1.85	6500	0.12	1070.0	<3.0	0.051	36.60	<1.0	34.7	<0.5
V2 Min			<0.005	2.0	0.80	41.8	<50.0	<0.01	<0.005	86	0.127	<0.03	<0.1	0.80	3	<0.01	2.20	0.0027	49.5	<0.3	1.45	5.43	1.44	0.190	0.18	121	0.50	1690	<0.01	305.0	<0.5	0.006	7.34	<0.2	10.4	<0.1
V20	**19/05/2011**	**Surface**	0.009	97.3	0.75	19.8	<50.0	<0.01	<0.005	8	0.051	0.938	0.3	4.98	133		1.63	<0.0005	2.2	19.00	0.17	0.63	1.84	1.040	0.06	<10.0	0.07	2370	<0.01	37.4	1.3	0.003	0.10	<0.2	6.5	0.2
V22	**23/03/2011**	**Surface**	0.070	48.0	0.30	25.0	<50.0	<0.1	<1.0	229	81.800	408.000	<1.0	50.90	5160		3.43	0.0380	100.0	30000.00	<1.0	7.88	397.00	<0.2	1.00	431	<0.1	6880	<5.0	1460.0	<5.0	2.210	1.70	<5.0	107000.0	<0.5
V22	**28/06/2011**	**Surface**	0.130	4600.0	2.80	23.0	<100.0	0.70	<2.0	155	170.000	587.000	3.0	2590.00	36500		2.00	0.0330	92.8	39600.00	<2.0	3.10	474.00	371.000	<1.0	395	0.40	4260	<10.0	740.0	<10.0	1.700	9.70	<10.0	156000.0	<1.0
V22	**11/09/2011**	**Surface**	<0.2	2020.0	3.00	16.0	<500.0	<1.0	<10.0	193	133.000	616.000	<10.0	750.00	49600		2.40	<0.05	105.0	47000.00	<10.0	3.30	504.00	233.000	<5.0	483	<1.0	3910	<50.0	975.0	<50.0	1.800	4.00	<50.0	164000.0	<5.0
V22	**22/12/2011**	**Surface**	0.140	1480.0	3.81	20.9	679.0	<0.5	<5.0	219	145.000	802.000	<5.0	574.00	101000		3.17	0.0480	129.0	58200.00	<5.0	5.14	631.00	201.000	<2.5	604	<0.5	5830	<25.0	1090.0	<25.0	1.880	3.63	<25.0	202000.0	<2.5
V22 Average			0.110	2037.0	2.48	21.2	251.0	0.38	2.250	199	132.450	603.250	2.8	991.23	48065		2.75	0.0360	106.7	43700.00	2.25	4.86	501.50	201.275	1.31	478	0.30	5220	11.25	1066.3	11.3	1.898	4.76	11.3	157250.0	1.1
V22 Max			<0.2	4600.0	3.81	25.0	679.0	<1.0	<10.0	229	170.000	802.000	<10.0	2590.00	101000		3.43	<0.05	129.0	58200.00	<10.0	7.88	631.00	371.000	<5.0	604	<1.0	6880	<50.0	1460.0	<50.0	2.210	9.70	<50.0	202000.0	<5.0
V22 Min			0.070	48.0	0.30	16.0	<50.0	<0.1	<1.0	155	81.800	408.000	<1.0	50.90	5160		2.00	0.0330	92.8	30000.00	<1.0	3.10	397.00	<0.2	1.00	395	<0.1	3910	<5.0	740.0	<5.0	1.700	1.70	<5.0	107000.0	<0.5
V23	**23/03/2011**	**Surface**	<0.005	1.1	1.43	54.9	<50.0	<0.01	<0.005	121	0.905	4.250	<0.1	0.88	20		3.14	0.0221	69.4	103.00	2.37	10.60	115.00	0.586	3.31	170	1.61	3640	<0.01	748.0	<0.5	0.784	13.30	<0.2	4100.0	<0.1
V23	**28/06/2011**	**Surface**	0.007	3.6	0.60	37.2	<50.0	<0.01	<0.005	101	1.940	5.080	<0.1	0.85	41		2.92	0.0212	76.4	237.00	2.20	8.05	95.90	0.489	2.62	160	1.13	2240	<0.01	655.0	<0.5	0.993	12.40	<0.2	1670.0	2.8
V23	**11/09/2011**	**Surface**	<0.005	2.8	1.14	38.5	<50.0	<0.01	<0.005	102	1.470	4.410	<0.1	2.24	22		2.88	0.0205	62.2	106.00	2.07	7.94	76.50	0.842	2.68	148	1.16	2270	<0.01	637.0	<0.5	1.640	7.50	<0.2	1810.0	<0.1
V23	**22/12/2011**	**Surface**	0.009	0.9	1.02	45.2	<50.0	<0.01	<0.005	118	2.120	5.300	<0.1	2.65	5		3.14	0.0220	66.0	122.00	2.77	9.90	116.00	0.362	3.26	155	1.53	3020	0.17	756.0	<0.5	1.690	11.50	<0.2	4340.0	<0.1
V23 Average			0.005	2.1	1.05	44.0	25.0	0.01	0.003	111	1.609	4.760	0.1	1.66	22		3.02	0.0215	68.5	142.00	2.35	9.12	100.85	0.570	2.97	158	1.36	2793	0.05	699.0	0.3	1.277	11.18	0.1	2980.0	0.7
V23 Max			0.009	3.6	1.43	54.9	<50.0	<0.01	<0.005	121	2.120	5.300	<0.1	2.65	41		3.14	0.0221	76.4	237.00	2.77	10.60	116.00	0.842	3.31	170	1.61	3640	0.17	756.0	<0.5	1.690	13.30	<0.2	4340.0	2.8
V23 Min			<0.005	0.9	0.60	37.2	<50.0	<0.01	<0.005	101	0.905	4.250	<0.1	0.85	5		2.88	0.0205	62.2	103.00	2.07	7.94	76.50	0.362	2.62	148	1.13	2240	<0.01	637.0	<0.5	0.784	7.50	<0.2	1670.0	<0.1
V24	**07/07/2011**	**Surface**	<0.1	5010.0	3.20	21.0	<300.0	0.70	<5.0	172	207.000	674.000	<5.0	2510.00	49100		2.30	0.0410	106.0	44900.00	<5.0	3.70	519.00	437.000	<3.0	480	<0.5	4460	<30.0	845.0	<30.0	1.600	9.20	<30.0	181000.0	<3.0
V24	**12/07/2011**	**Surface**	<0.1	4750.0	2.50	21.0	<300.0	0.80	<5.0	174	194.000	668.000	<5.0	2290.00	48600		2.00	0.0400	106.0	46900.00	<5.0	3.70	531.00	366.000	<3.0	470	<0.5	5050	<30.0	793.0	<30.0	1.200	9.50	<30.0	182000.0	<3.0
V24	**19/07/2011**	**Surface**	0.110	4640.0	4.30	22.0	<200.0	0.60	<4.0	180	201.000	717.000	<4.0	2260.00	48100		2.50	0.0410	114.0	54000.00	<4.0	3.80	572.00	429.000	<2.0	534	0.90	5100	<20.0	876.0	<20.0	2.100	8.20	<20.0	195000.0	<2.0
V24	**26/07/2011**	**Surface**	0.110	3820.0	2.80	21.0	<200.0	0.70	<4.0	186	181.000	678.000	<4.0	1720.00	49400		2.10	0.0420	104.0	45600.00	<4.0	3.50	541.00	351.000	<2.0	473	<0.4	5350	<20.0	886.0	<20.0	1.800	7.60	<20.0	167000.0	<2.0
V24	**11/09/2011**	**Surface**	0.120	2200.0	2.70	18.0	<100.0	0.40	<2.0	220	152.000	711.000	<2.0	887.00	56800		2.60	0.0450	120.0	54100.00	<2.0	3.90	591.00	260.000	<1.0	516	<0.2	4690	<10.0	1070.0	<10.0	2.000	4.90	<10.0	186000.0	<1.0
V24 Average			0.088	4084.0	3.10	20.6	110.0	0.64	2.000	186	187.000	689.600	2.0	1933.40	50400		2.30	0.0418	110.0	49100.00	2.00	3.72	550.80	368.600

Table C-2: 2011 Vangorda Creek Drainage Water Quality
Dissolved Metals

Station	Date	Sample Type	Ag-d µg/L	Al-d µg/L	As-d µg/L	Ba-d µg/L	B-d µg/L	Be-d µg/L	Bi-d µg/L	Ca-d mg/L	Cd-d µg/L	Co-d µg/L	Cr-d µg/L	Cu-d µg/L	Fe-d µg/L	Hg-d µg/L	K-d mg/L	Li-d mg/L	Mg-d mg/L	Mn-d µg/L	Mo-d µg/L	Na-d mg/L	Ni-d µg/L	Pb-d µg/L	Sb-d µg/L	S-d mg/L	Se-d µg/L	Si-d µg/L	Sn-d µg/L	Sr-d µg/L	Ti-d µg/L	Tl-d µg/L	U-d µg/L	V-d µg/L	Zn-d µg/L	Zr-d µg/L
V25	**07/07/2011**	**Surface**	<0.03	10.0	0.20	25.4	<300.0	<0.05	<0.03	449	0.970	0.570	<0.5	0.40	<5.0		2.40	0.0380	65.3	546.00	<0.3	3.60	0.90	0.270	<0.1	448	0.50	655	<0.05	1370.0	<3.0	1.040	0.28	<1.0	39.0	<0.5
V25	**12/07/2011**	**Surface**	<0.03	14.0	0.20	19.2	<300.0	<0.05	<0.03	479	0.470	0.210	<0.5	<0.3	17		2.60	0.0420	76.0	370.00	1.30	4.20	0.60	0.510	<0.1	542	0.50	<500.0	<0.05	1430.0	<3.0	1.370	0.14	<1.0	14.8	<0.5
V25	**19/07/2011**	**Surface**	<0.03	9.0	0.30	21.1	<300.0	<0.05	<0.03	476	1.140	1.100	<0.5	0.60	17		3.00	0.0480	97.4	2220.00	<0.3	4.60	0.80	0.440	<0.1	629	0.40	<500.0	<0.05	1500.0	<3.0	1.580	0.15	<1.0	78.7	<0.5
V25	**26/07/2011**	**Surface**	<0.03	8.0	<0.1	24.1	<300.0	<0.05	<0.03	438	1.760	0.840	<0.5	<0.3	11		2.80	0.0470	97.3	3510.00	<0.3	4.30	0.80	0.760	<0.1	521	0.30	548	0.48	1610.0	<3.0	1.520	0.28	<1.0	10.4	<0.5
V25	**11/08/2011**	**Surface**	<0.03	6.0	0.30	24.1	<300.0	<0.05	0.090	488	1.590	1.040	<0.5	<0.3	8		3.10	0.0470	109.0	2320.00	0.40	4.80	1.20	0.270	<0.1	538	<0.2	623	<0.05	1550.0	<3.0	0.930	0.41	<1.0	27.6	<0.5
V25	**18/08/2011**	**Surface**	<0.03	10.0	0.90	22.0	<300.0	<0.05	<0.03	485	1.630	1.880	<0.5	1.10	21		3.30	0.0460	108.0	2370.00	0.40	4.80	2.10	0.690	<0.1	545	0.40	581	0.06	1490.0	<3.0	1.150	0.36	<1.0	123.0	<0.5
V25	**11/09/2011**	**Surface**	<0.03	11.0	0.20	22.6	<300.0	<0.05	<0.03	461	0.520	0.380	<0.5	<0.3	15		2.90	0.0490	85.4	940.00	0.50	4.30	0.60	2.060	<0.1	543	<0.2	<500.0	<0.05	1650.0	<3.0	1.440	0.22	<1.0	11.8	<0.5
V25	**20/09/2011**	**Surface**	<0.03	7.0	0.60	22.8	<300.0	<0.05	<0.03	513	1.630	1.580	<0.5	0.50	16		3.10	0.0500	98.7	597.00	<0.3	4.80	1.30	0.160	<0.1	564	<0.2	<500.0	<0.05	1590.0	<3.0	1.210	0.26	<1.0	258.0	<0.5
V25 Average			0.015	9.4	0.34	22.7	150.0	0.03	0.024	474	1.214	0.950	0.3	0.40	13		2.90	0.0459	92.1	1609.13	0.40	4.43	1.04	0.645	0.05	541	0.30	426	0.09	1523.8	1.5	1.280	0.26	0.5	70.4	0.3
V25 Max			<0.03	14.0	0.90	25.4	<300.0	<0.05	0.090	513	1.760	1.880	<0.5	1.10	21		3.30	0.0500	109.0	3510.00	1.30	4.80	2.10	2.060	<0.1	629	0.50	655	0.48	1650.0	<3.0	1.580	0.41	<1.0	258.0	<0.5
V25 Min			<0.03	6.0	<0.1	19.2	<300.0	<0.05	<0.03	438	0.470	0.210	<0.5	<0.3	<5.0		2.40	0.0380	65.3	370.00	<0.3	3.60	0.60	0.160	<0.1	448	<0.2	<500.0	<0.05	1370.0	<3.0	0.930	0.14	<1.0	10.4	<0.5
V25BSP	**02/04/2011**	**Surface**	<0.005	6.3	0.25	41.8	<50.0	<0.01	<0.005	336	0.500	0.735	<0.1	2.77	13	<0.01	2.48	0.0200	65.0	75.30	0.36	8.76	2.81	0.236	0.10	364	0.28	4760	<0.01	1040.0	<0.5	0.323	2.00	<0.2	123.0	<0.1
V25BSP	**12/05/2011**	**Surface**	<0.005	3.1	0.13	19.2	<50.0	<0.01	<0.005	114	0.197	0.433	<0.1	2.47	4	<0.01	1.68	0.0077	21.9	74.50	0.26	3.78	0.93	0.583	0.14	136	0.41	4970	<0.01	366.0	<0.5	0.058	0.38	<0.2	87.1	<0.1
V25BSP	**15/06/2011**	**Surface**	<0.005	29.1	0.38	12.7	<50.0	<0.01	<0.005	35	0.126	0.699	<0.1	7.11	18	<0.01	1.04	0.0029	6.2	10.80	0.47	1.86	1.08	0.746	0.24	25	0.15	4480	<0.01	126.0	<0.5	0.138	0.49	<0.2	38.0	<0.1
V25BSP	**23/06/2011**	**Surface**	<0.005	21.9	0.42	15.1	<50.0	<0.01	<0.005	33	0.106	0.862	<0.1	4.12	14	<0.01	0.82	0.0023	6.3	10.60	0.27	2.04	0.98	0.336	0.19	24	0.15	4120	<0.01	131.0	<0.5	0.119	0.55	<0.2	22.2	<0.1
V25BSP	**07/07/2011**	**Surface**	<0.005	25.4	0.39	20.2	<50.0	<0.01	<0.005	46	0.122	0.926	<0.1	4.27	18	<0.01	0.82	0.0024	8.0	11.10	0.31	2.21	1.03	0.675	0.17	31	0.14	5380	<0.01	161.0	<0.5	0.109	0.57	<0.2	25.4	<0.1
V25BSP	**12/07/2011**	**Surface**	<0.03	13.0	0.30	48.8	<300.0	<0.05	<0.03	340	0.890	0.830	<0.5	2.00	11	<0.05	2.00	0.0280	56.7	175.00	0.80	3.70	1.40	0.300	<0.1	391	0.40	1810	<0.05	1070.0	<3.0	0.570	0.29	<1.0	107.0	<0.5
V25BSP	**19/07/2011**	**Surface**	<0.03	12.0	0.30	38.5	<300.0	<0.05	<0.03	424	0.970	0.810	<0.5	1.50	14	<0.05	2.70	0.0370	71.6	494.00	<0.3	4.00	1.00	0.670	<0.1	496	0.30	1280	<0.05	1270.0	<3.0	0.860	0.25	<1.0	70.6	<0.5
V25BSP	**26/07/2011**	**Surface**	<0.03	13.0	0.20	38.6	<300.0	<0.05	<0.03	397	1.140	1.000	<0.5	1.50	13	<0.05	2.50	0.0380	84.7	1320.00	<0.3	4.10	1.20	1.000	<0.1	476	0.30	1020	0.18	1300.0	<3.0	1.020	0.29	<1.0	59.6	<0.5
V25BSP	**10/08/2011**	**Surface**	<0.03	16.0	0.30	45.9	<300.0	<0.05	<0.03	318	0.220	0.310	<0.5	1.70	9	<0.05	2.20	0.0240	67.8	30.20	0.70	4.70	1.30	0.330	<0.1	369	<0.2	2550	<0.05	1080.0	<3.0	0.240	1.20	<1.0	91.3	<0.5
V25BSP	**11/08/2011**	**Surface**	<0.03	24.0	0.30	46.0	<300.0	<0.05	<0.03	338	0.470	1.240	<0.5	3.10	7	<0.05	2.40	0.0280	68.8	30.90	0.40	4.80	1.60	0.290	<0.1	368	<0.2	2490	<0.05	1110.0	<3.0	0.300	1.04	<1.0	101.0	<0.5
V25BSP	**18/08/2011**	**Surface**	<0.005	15.8	0.31	33.4	<50.0	<0.01	<0.005	350	0.626	1.560	<0.1	3.19	11	<0.01	2.42	0.0287	68.1	426.00	0.30	4.65	1.49	0.719	0.11	380	0.26	2210	0.02	1100.0	<0.5	0.553	0.86	<0.2	52.7	<0.1
V25BSP	**11/09/2011**	**Surface**	<0.005	13.7	0.30	34.4	<50.0	<0.01	<0.005	272	0.576	0.905	<0.1	1.69	14	<0.01	2.15	0.0168	53.7	309.00	0.26	4.04	1.26	0.436	0.09	336	0.21	2180	<0.01	954.0	<0.5	0.400	0.67	<0.2	59.7	<0.1
V25BSP	**20/09/2011**	**Surface**	<0.03	18.0	0.40	39.4	<300.0	<0.05	<0.03	397	0.590	2.680	<0.5	3.30	11	<0.05	2.60	0.0350	78.9	137.00	<0.3	4.90	1.90	0.420	<0.1	451	0.30	1860	<0.05	1270.0	<3.0	0.490	0.52	<1.0	101.0	<0.5
V25BSP	**18/10/2011**	**Surface**	<0.005	37.4	0.21	22.6	<50.0	<0.01	<0.005	191	0.416	4.550	<0.1	6.60	18	<0.01	1.76	0.0117	39.6	40.30	0.69	6.89	2.45	0.866	0.10	196	0.36	5010	<0.01	602.0	<0.5	0.108	3.04	<0.2	109.0	<0.1
V25BSP	**23/11/2011**	**Surface**	0.130	13.1	0.21	26.0	<50.0	<0.01	0.006	211	0.341	1.670	<0.1	3.45	4	<0.01	3.34	0.0093	43.5	31.00	0.80	9.73	1.87	0.259	0.12	225	0.49	5710	0.07	646.0	<0.5	0.061	5.38	<0.2	107.0	<0.1
V25BSP	**08/12/2011**	**Surface**	<0.005	6.9	0.21	24.3	<50.0	<0.01	0.010	167	0.267	0.264	<0.1	1.99	2	<0.01	1.82	0.0049	39.8	7.97	0.81	8.71	1.62	0.061	0.11	184	0.42	4420	<0.01	610.0	<0.5	0.057	4.95	<0.2	83.7	<0.1
V25BSP Average			0.015	16.8	0.29	31.7	71.9	0.01	0.008	248	0.472	1.217	0.1	3.17	11	0.013	2.05	0.0185	48.8	198.98	0.43	4.93	1.50	0.495	0.10	278	0.27	3391	0.03	802.3	0.7	0.338	1.40	0.3	77.4	0.1
V25BSP Max			0.130	37.4	0.42	48.8	<300.0	<0.05	<0.03	424	1.140	4.550	<0.5	7.11	18	<0.05	3.34	0.0380	84.7	1320.00	0.81	9.73	2.81	1.000	0.24	496	0.49	5710	0.18	1300.0	<3.0	1.020	5.38	<1.0	123.0	<0.5
V25BSP Min			<0.005	3.1	0.13	12.7	<50.0	<0.01	<0.005	33	0.106	0.264	<0.1	1.50	2	<0.01	0.82	0.0023	6.2	7.97	0.26	1.86	0.93	0.061	0.09	24	0.14	1020	<0.01	126.0	<0.5	0.057	0.25	<0.2	22.2	<0.1
V25SPP	**22/03/2011**	**Surface**	<0.03	5.0	0.20	53.6	<300.0	<0.05	<0.03	258	0.630	0.390	<0.5	2.70	15	<0.05	2.50	0.0090	54.4	185.00	<0.3	11.80	4.60	0.770	<0.1	269	0.30	8020	<0.05	741.0	<3.0	0.220	2.53	<1.0	209.0	<0.5
V27	**25/01/2011**	**Surface**	<0.005	3.3	0.49	54.1	<50.0	<0.01	<0.005	72	0.057	0.012	<0.1	0.50	5		0.95	0.0029	36.6	0.32	0.68	3.88	0.70	0.261	0.11	81	0.41	4250	<0.01	266.0	<0.5	0.010	6.40	<0.2	27.3	<0.1
V27	**17/02/2011**	**Surface**	<0.005	5.2	0.54	52.9	<50.0	<0.01	0.063	72	0.061	0.021	<0.1	0.94	10		0.91	0.0030	34.7	0.41	0.75	3.69	1.02	0.703	0.11	76	0.48	3900	<0.01	258.0	<0.5	0.011	6.50	<0.2	28.5	<0.1
V27	**28/03/2011**	**Surface**	<0.005	6.1	0.53	53.4	<50.0	<0.01	<0.005	68	0.074	0.021	<0.1	0.75	6		0.93	0.0028	33.6	0.93	0.79	3.45	0.83	0.560	0.10	81	0.50	4010	<0.01	270.0	<0.5	0.009	6.89	<0.2	31.9	<0.1
V27	**21/04/2011**	**Surface**	<0.005	5.0	0.50	53.3	<50.0	<0.01	0.006	88	0.077	0.020	<0.1	0.76	6		1.03	0.0032	39.7	1.90	0.79	4.10	0.89	0.424	0.10	91	0.42	5220	0.02	285.0	<0.5	0.015	7.12	<0.2	29.0	<0.1
V27	**12/05/2011**	**Surface**	<0.005	9.2	0.79	58.8	<50.0	<0.01	0.017	102	0.095	0.068	0.2	1.81	24		1.63	0.0032	55.6	10.90	0.83	4.68	1.59	0.615	0.12	138	0.82	4260	<0.01	340.0	<0.5	0.039	8.40	<0.2	36.7	<0.1
V27	**16/06/2011**	**Surface**	<0.005	18.8	0.30	22.1	<50.0	<0.01	<0.005	17	0.033	0.029	<0.1	0.97	21		0.44	0.0011	5.9	3.23	0.22	1.41	0.55	0.389	0.06	13	0.13	3930	<0.01	69.7	<0.5	0.013	0.90	<0.2	15.7	<0.1
V27	**11/07/2011**	**Surface**	<0.005	18.3	0.26	52.8	<50.0	<0.01	<0.005	94	0.206	0.120	<0.1	1.07	25		0.84	0.0065	19.7	20.10	0.25	2.33	1.12	0.241	0.07	97	0.19	4030	<0.01	331.0	<0.5	0.077	1.39	<0.2	53.2	<0.1
V27	**10/08/2011**	**Surface**	<0.005	14.8	0.38	30.5	<50.0	<0.01	<0.005	30	0.063	0.080	<0.1	1.72	38		0.87	0.0021	10.4	7.99	0.28	2.12	0.77	0.490	0.07	26	0.17	4510	<0.01	119.0	<0.5	0.018	1.59	<0.2	43.9	<0.1
V27	**12/09/2011**	**Surface**	<0.005	12.5	0.23	49.6	<50.0	<0.01	<0.005	124	0.270	0.219	<0.1	1.09	26		1.11	0.0099	27.7	84.60	0.26	2.84	1.14	0.270	0.06	135	0.19	3890	<0.01	420.0	<0.5	0.096	1.59	<0.2	70.5	<0.1
V27	**18/10/2011**	**Surface**	0.041	28.4	0.45	38.1	<50.0	<0.01	0.006	46	0.097	0.109	0.2	1.46	89		0.90	0.0025	19.8	11.90	0.48	3.05	1.01	4.600	0.08	44	0.32	4660	0.13	173.0	0.6	0.016	3.61	<0.2	56.5	<0.1
V27	**24/11/2011**	**Surface**	0.078	4.7	0.39	46.4	<50.0	<0.01	0.006	57	0.071	0.206	<0.1	0.77	119		2.42	0.0028	24.9	21.60	0.61	3.54	1.10	0.238	0.10	58	0.42	4660	0.02	214.0	<0.5	0.012	4.90	<0.2	104.0	<0.1
V27	**12/12/2011**	**Surface**	<0.005	5.2	0.44	44.9	<50.0	<0.01	<0.005	62	0.061	0.051	<0.1	0.73	4		0.88	0.0027	28.1	8.86	0.66	3.53	0.82	0.112	0.09	62	0.42	5110	<0.01	214.0	<0.5	0.011	5.27	<0.2	32.5	<0.1
V27 Average			0.012	11.0	0.44	46.4	25.0	0.01	0.010	69	0.097	0.080	0.1	1.05	31		1.08	0.0036	28.1	14.40	0.55	3.22	0.96	0.742	0.09	75	0.37	4369	0.02	246.6	0.3	0.027	4.55	0.1	44.1	0.1
V27 Max			0.078	28.4	0.79	58.8	<50.0	<0.01	0.063	124	0.270	0.219	0.2	1.81	119		2.42	0.0099	55.6	84.60	0.83	4.68	1.59	4.600	0.12	138	0.82	5220	0.13	420.0	0.6	0.096	8.40	<0.2	104.0	<0.1
V27 Min			<0.005	3.3	0.23	22.1	<50.0	<0.01	<0.005	17	0.033	0.012	<0.1	0.50	4		0.44	0.0011	5.9	0.32	0.22	1.41	0.55	0.112	0.06	13	0.13	3890	<0.01	69.7	<0.5	0.009	0.90	<0.2	15.7	<0.1
V2A	**03/02/2011**	**Surface**	<0.03	3.0	1.00	75.7	<300.0	<0.05	<0.03	258	0.050	0.080	<0.5	1.10	8		3.00	0.0060	124.0	6.50	2.60	11.70	7.50	0.320	0.40	272	0.80	5760	<0.05	751.0	<3.0	<0.01	27.90	<1.0	110.0	<0.5
V2A	**11/04/2011**	**Surface**	<0.005	4.0	1.15	62.4	<50.0	<0.01	0.043	221	0.068	0.390	0.3	1.56	14		2.89	0.0055	110.0	33.90	2.50	8.13	5.87	0.596	0.42	261	0.64	5690	<0.01	689.0	<0.5	0.014	20.80	<0.2	58.8	<0.1
V2A	**10/05/2011**	**Surface**	<0.005	5.6	1.05	51.6	<50.0	<0.01	0.033	174	0.191	0.380	<0.1	2.02	18		4.11	0.0064	102.0	43.20	2.02	9.42	13.30	1.380	0.74	243	2.89	3480	0.02	575.0	<0.5	0.022	14.30	<0.2	218.0	<0.1
V2A	**19/05/2011**	**Surface**	0.007	12.3	1.81	39.4	<50.0	<0.01	<0.005	102	0.221	0.714	<0.1	2.17	24		6.50	0.0055	59.7	75.60	2.42	5.42	9.61	1.500	0.64	141	1.70	2000	0.05	356.0	<0.5	0.046	7.97	<0.2	97.7	<0.1
V2A	**25/05/2011**	**Surface**	<0.03	131.0	1.50	51.0	<300.0	<0.05	<0.03	197	0.240	0.210	<0.5	2.70	20		3.20	0.0070	136.0	16.70	2.30	8.40	26.60	0.890	0.40	268	0.80	4490	<0.05	654.0	<3.0	0.020	20.60	<1.0	457.0	<0.5
V2A	**06/06/2011**	**Surface**	<0.005	3.6	1.18	47.2	<50.0	<0.01	<0.005	256	0.317	0.096	<0.1	2.94	12		3.73	0.0090	187.0	10.20	3.06	9.90	28.60	0.654	0.52	396	0.65	4740	<0.01	885.0	<0.5	0.028	29.90	<0.2	465.0	<0.1
V2A	**22/06/2011**	**Surface**	<0.005	5.2	1.43	51.8	<50.0	<0.01	0.007	212	0.318	0.355	0.3	1.56	11		3.95	0.0121	149.0	11.00	2.10	8.12	40.70	1.200	0.72	303	1.17	3990	<0.01	770.0	<0.5	0.074	22.70	<0.2	487.0	<0.1
V2A	**05/07/2011**	**Surface**	<0.03	6.0	1.40	52.3	<300.0	<0.05	<0.03	280	0.520	0.110	<0.5	1.20	10		4.10	0.0130	212.0	5.30	1.80	9.80	68.70	0.980	0.60	438	0.80	5020	<0.05	920.0	<3.0	0.060	35.60	<1.0	1000.0	<0.5
V2A	**21/07/2011**	**Surface**	0.140	8.0	1.10	51.9	<300.0	<0.05	<0.03	296	0.650	0.180	<0.5	1.80	26		6.30	0.0150	235.0	8.60	1.60	10.20	73.10	2.070	0.50	437	0.60	5520	<0.05	1010.0	<3.0	0.060	40.50	<1.0	1250.0	<0.5
V2A	**03/08/2011**	**Surface**	<0.03	4.0	1.50	50.6	<300.0	<0.05	<0.03	299	0.660	0.130	<0.5	1.50	6		5.00	0.0160	255.0	6.30	1.40	10.60	80.10	0.880	0.50	466	0.60	4960	<0.05	1040.0	<3.0	0.070	35.40	<1.0	1480.0	<0.5
V2A	**18/08/2011**	**Surface**	<0.03	9.0	3.80	49.3	<300.0	<0.05	<0.03	297	0.610	0.200	<0.5	1.90	37		4.40	0.0150	242.0	7.90	1.70	10.70	80.60	0.780	0.50	449	0.60	5230	<0.05	968.0	<3.0	0.070	41.30	<1.0	1360.0	<0.5
V2A	**07/09/2011**	**Surface**	<0.03	6.0	1.40	50.1	<300.0	<0.05	<0.03	329	0.610	0.150	<0.5	1.70	11		5.10	0.0170	277.0	8.60	1.60	11.60	87.50	0.680	0.50	472	0.60	5550	<0.05	1060.0	<3.0	0.060	41.60	<1.0	1420.0	<0.5
V2A	**20/09/2011**	**Surface**	<0.03	8.0	1.60	51.1	<300.0	<0.05	<0.03	301	0.710	0.310	<0.5	2.00	13		5.20	0.0170	261.0	24.10	1.50	11.40	87.70	1.010	0.50	481	0.60	5230	<0.05	1000.0	<3.0	0.060	41.10	2.0	1370.0	<0.5
V2A	**11/10/2011**	**Surface**	<0.03	6.0	1.30	51.9	<300.0	<0.05	<0.03	284	0.580	0.110	<0.5	1.60	10		4.70	0.0150	227.0	7.10	1.40	11.00	77.00	0.740	0.40	420	0.60	5140	<0.05	959.0	<3.0	0.050	38.20	<1.0	1140.0	<0.5
V2A	**27/10/2011**	**Surface**	<0.03	5.0	1.20	52.1	<300.0	<0.05	<0.03	287	0.520	0.200	<0.5	1.50	15		4.70	0.0150	232.0	21.20	1.40	12.10	74.20	0.720	0.40	430	0.70	5420	<0.05	962.0	<3.0	0.040	37.00	<1.0	1110.0	<0.5
V2A	**08/11/2011**	**Surface**	<0.03	10.0	1.30	52.2	<300.0	<0.05	<0.03	282	0.480	0.090	<0.5	1.10	18		4.20	0.0140	196.0	3.80	1.30	10.20	63.00	0.980	0.50	407	0.70	5100	<0.05	911.0	<3.0	0.040	32.30	<1.0	973.0	<0.5
V2A	**01/12/2011**	**Surface**	<0.03	4.0	1.10	64.3	<300.0	<0.05	<0.03	292	0.450	0.130	<0.5	1.60	12		4.10	0.0120	209.0	13.00	2.10	12.50	40.60	0.500	0.50	432	0.80	5160	<0.05	1030.0	<3.0	0.020	40.70	<1.0	782.0	<0.5
V2A Average			0.019	13.6	1.46	53.2	113.2	0.02	0.016	257	0.423	0.226	0.2	1.76	16		4.42	0.0118	189.0	17.82	1.93	10.07	50.86	0.934	0.51	372	0.90	4852	0.02	855.3	1.1	0.043	31.05	0.5	810.5	0.2
V2A Max			0.140	131.0	3.80	75.7	<300.0	<0.05	0.043	329	0.710	0.714	<0.5	2.94	37		6.50	0.0170	277.0	75.60	3.06	12.50	87.70	2.070	0.74	481	2.89	5760	<0.05	1060.0	<3.0	0.074	41.60	2.0	1480.0	<0.5
V2A Min			<0.005	3.0	1.00	39.4	<50.0	<0.01	<0.005	102	0.050	0.080	<0.1	1.10	6		2.89	0.0055	59.7	3.80	1.30	5.42	5.87	0.320	0.40	141	0.60	2000	<0.01	356.0	<0.5	<0.01	7.97	<0.2	58.8	<0.1
V30	**28/06/2011**	**Seepage**	0.400	175.0	20.00	19.0	<500.0	<1.0	<10.0	389	120.000	4070.000	<10.0	4.00	163000		9.40	0.0860	843.0	212000.00	13.00	9.80	6500.00	<2.0	<5.0	1990	<1.0	8690	<50.0	1590.0	<50.0	1.800	9.00	<50.0	614000.0	<5.0
V30	**17/10/2011**	**Seepage**	<0.3	48.0	32.00	12.0	<600.0	<1.0	<10.0	404	103.000	4570.000	<10.0	<3.0	327000		12.10	0.0940	1030.0	244000.00	<10.0	11.60	7530.00	<3.0	<6.0	2400	<1.0	9580	<60.0	1870.0	<60.0	1.900	10.00	<60.0	698000.0	<6.0
V30 Average			0.275	111.5	26.00	15.5	275.0	0.50	5.000	397	111.500	4320.000	5.0	2.75	245000		10.75	0.0900	936.5	228000.00	9.00	10.70	7015.00	1.250	2.75	2195	0.50	9135	27.50	1730.0	27.5	1.850	9.50	27.5	656000.0	2.8
V30 Max			0.400	175.0	32.00	19.0	<600.0	<1.0	<10.0	404	120.000	4570.000	<10.0	4.00	327000		12.10	0.0940	1030.0	244000.00	13.00	11.60	7530.00	<3.0	<6.0	2400	<1.0	9580	<60.0	1870.0	<60.0	1.900	10.00	<60.0	698000.0	<6.0
V30 Min			<0.3	48.0	20.00	12.0	<500.0	<1.0	<10.0	389	103.000	4070.000	<10.0	<3.0	163000		9.40	0.0860	843.0	212000.00	<10.0	9.80	6500.00	<2.0	<5.0	1990	<1.0	8690	<50.0	1590.0	<50.0	1.800	9.00	<50.0	614000.0	<5.0
V31	**28/06/2011**	**Seepage**	0.600	9930.0	4.00	<10.0	<500.0	<1.0	<10.0	380	108.000	3850.000	<10.0	24.00	593000		7.50	0.1340	1070.0	501000.00	<10.0	12.30	3100.00	11.000	<5.0	3110	<1.0	20800	<50.0

Denison Environmental Services

Table C-2: 2011 Vangorda Creek Drainage Water Quality
Dissolved Metals

Station	Date	Sample Type	Ag-d µg/L	Al-d µg/L	As-d µg/L	Ba-d µg/L	B-d µg/L	Be-d µg/L	Bi-d µg/L	Ca-d mg/L	Cd-d µg/L	Co-d µg/L	Cr-d µg/L	Cu-d µg/L	Fe-d µg/L	Hg-d µg/L	K-d mg/L	Li-d mg/L	Mg-d mg/L	Mn-d µg/L	Mo-d µg/L	Na-d mg/L	Ni-d µg/L	Pb-d µg/L	Sb-d µg/L	S-d mg/L	Se-d µg/L	Si-d µg/L	Sn-d µg/L	Sr-d µg/L	Ti-d µg/L	Tl-d µg/L	U-d µg/L	V-d µg/L	Zn-d µg/L	Zr-d µg/L
V33	28/06/2011	Seepage	6.200	70900.0	80.00	<10.0	<500.0	15.00	<10.0	482	5220.000	17900.000	38.0	808.00	5910000		4.90	0.8290	7170.0	3420000.00	<10.0	8.40	15000.00	579.000	<5.0	20200	3.00	6840	<50.0	4280.0	<50.0	12.000	933.00	<50.0	9220000.0	13.0
V33	17/10/2011	Seepage	<10.0	390000.0	103.00	<500.0	<30000.0	<50.0	<500.0	629	8840.000	28600.000	<500.0	2460.00	11200000		<30.0	<3.0	10300.0	5340000.00	<500.0	<30.0	24500.00	1870.000	<300.0	32900	<50.0	<50000.0	<3000.0	4980.0	<3000.0	<30.0	1750.00	<3000.0	13800000.0	<300.0
V33 Average			5.600	230450.0	91.50	127.5	7625.0	20.00	127.500	556	7030.000	23250.000	144.0	1634.00	8555000		9.95	1.1645	8735.0	4380000.00	127.50	11.70	19750.00	1224.500	76.25	26550	14.00	15920	762.50	4630.0	762.5	13.500	1341.50	762.5	11510000.0	81.5
V33 Max			<10.0	390000.0	103.00	<500.0	<30,000.0	<50.0	<500.0	629	8840.000	28600.000	<500.0	2460.00	11200000		<30.0	<3.0	10300.0	5340000.00	<500.0	<30.0	24500.00	1870.000	<300.0	32900	<50.0	<50,000.0	<3,000.0	4980.0	<3,000.0	<30.0	1750.00	<3,000.0	13800000.0	<300.0
V33 Min			6.200	70900.0	80.00	<10.0	<500.0	15.00	<10.0	482	5220.000	17900.000	38.0	808.00	5910000		4.90	0.8290	7170.0	3420000.00	<10.0	8.40	15000.00	579.000	<5.0	20200	3.00	6840	<50.0	4280.0	<50.0	12.000	933.00	<50.0	9220000.0	13.0
V34	10/06/2011	Ground	<0.005	1.8	0.82	71.4	<50.0	<0.01	<0.005	174	0.021	1.590	<0.1	0.27	910		4.55	0.0230	184.0	62.80	2.05	8.13	3.08	0.541	0.06	141	<0.04	6600	0.03	1510.0	<0.5	<0.002	19.20	<0.2	5.1	0.3
V34	06/10/2011	Ground	<0.005	63.5	2.08	71.9	<50.0	<0.01	<0.005	184	0.032	1.390	0.3	1.06	1140		4.25	0.0174	187.0	51.00	1.68	7.59	3.79	0.317	0.74	141	<0.04	6520	0.05	1610.0	1.2	0.006	20.80	<0.2	17.6	0.3
V34 Average			0.003	32.7	1.45	71.7	25.0	0.01	0.003	179	0.027	1.490	0.2	0.67	1025		4.40	0.0202	185.5	56.90	1.87	7.86	3.44	0.429	0.40	141	0.02	6560	0.04	1560.0	0.7	0.004	20.00	0.1	11.4	0.3
V34 Max			<0.005	63.5	2.08	71.9	<50.0	<0.01	<0.005	184	0.032	1.590	0.3	1.06	1140		4.55	0.0230	187.0	62.80	2.05	8.13	3.79	0.541	0.74	141	<0.04	6600	0.05	1610.0	1.2	0.006	20.80	<0.2	17.6	0.3
V34 Min			<0.005	1.8	0.82	71.4	<50.0	<0.01	<0.005	174	0.021	1.390	<0.1	0.27	910		4.25	0.0174	184.0	51.00	1.68	7.59	3.08	0.317	0.06	141	<0.04	6520	0.03	1510.0	<0.5	<0.002	19.20	<0.2	5.1	0.3
V35	10/06/2011	Ground	<0.03	4.0	1.00	10.1	<300.0	<0.05	<0.03	552	0.360	0.220	<0.5	1.40	13		5.70	0.0310	344.0	119.00	1.70	12.00	11.10	1.560	0.30	708	0.90	6840	<0.05	1540.0	<3.0	0.040	130.00	<1.0	10.3	<0.5
V35	12/10/2011	Ground	<0.03	13.0	0.50	11.0	<300.0	<0.05	<0.03	323	0.100	0.070	0.8	1.20	<5.0		3.50	0.0210	164.0	4.10	1.00	7.00	5.80	0.260	0.20	358	1.90	5800	<0.05	806.0	<3.0	0.020	58.80	<1.0	25.0	<0.5
V35 Average			0.015	8.5	0.75	10.6	150.0	0.03	0.015	438	0.230	0.145	0.5	1.30	8		4.60	0.0260	254.0	61.55	1.35	9.50	8.45	0.910	0.25	533	1.40	6320	0.03	1173.0	1.5	0.030	94.40	0.5	17.7	0.3
V35 Max			<0.03	13.0	1.00	11.0	<300.0	<0.05	<0.03	552	0.360	0.220	0.8	1.40	13		5.70	0.0310	344.0	119.00	1.70	12.00	11.10	1.560	0.30	708	1.90	6840	<0.05	1540.0	<3.0	0.040	130.00	<1.0	25.0	<0.5
V35 Min			<0.03	4.0	0.50	10.1	<300.0	<0.05	<0.03	323	0.100	0.070	<0.5	1.20	<5.0		3.50	0.0210	164.0	4.10	1.00	7.00	5.80	0.260	0.20	358	0.90	5800	<0.05	806.0	<3.0	0.020	58.80	<1.0	10.3	<0.5
V36	08/06/2011	Ground	<0.03	2.0	2.40	7.4	<300.0	<0.05	<0.03	378	0.410	1.710	<0.5	2.50	6		4.80	0.0380	212.0	67.40	1.90	8.00	12.30	2.820	0.20	428	2.10	6460	0.10	1610.0	<3.0	0.070	40.90	<1.0	96.1	<0.5
V36	05/10/2011	Ground	<0.03	7.0	5.20	7.2	<300.0	<0.05	<0.03	353	0.340	1.790	<0.5	4.10	54		5.40	0.0300	211.0	86.70	0.70	8.80	13.80	2.680	1.00	434	0.70	6270	0.10	1550.0	<3.0	0.080	40.30	<1.0	74.1	<0.5
V36 Average			0.015	4.5	3.80	7.3	150.0	0.03	0.015	366	0.375	1.750	0.3	3.30	30		5.10	0.0340	211.5	77.05	1.30	8.40	13.05	2.750	0.60	431	1.40	6365	0.10	1580.0	1.5	0.075	40.60	0.5	85.1	0.3
V36 Max			<0.03	7.0	5.20	7.4	<300.0	<0.05	<0.03	378	0.410	1.790	<0.5	4.10	54		5.40	0.0380	212.0	86.70	1.90	8.80	13.80	2.820	1.00	434	2.10	6460	0.10	1610.0	<3.0	0.080	40.90	<1.0	96.1	<0.5
V36 Min			<0.03	2.0	2.40	7.2	<300.0	<0.05	<0.03	353	0.340	1.710	<0.5	2.50	6		4.80	0.0300	211.0	67.40	0.70	8.00	12.30	2.680	0.20	428	0.70	6270	0.10	1550.0	<3.0	0.070	40.30	<1.0	74.1	<0.5
V37	11/06/2011	Ground	<0.005	5.8	1.92	78.9	<50.0	<0.01	<0.005	76	0.008	0.436	<0.1	0.24	58		5.32	0.0252	82.9	112.00	20.60	22.60	1.60	0.147	0.08	61	0.05	3370	0.04	580.0	<0.5	0.004	1.32	<0.2	1.2	<0.1
V37	12/10/2011	Ground	<0.005	7.9	4.74	101.0	<50.0	<0.01	<0.005	84	0.016	0.516	<0.1	0.38	1700		5.56	0.0270	98.7	132.00	22.70	24.40	1.42	0.878	0.06	76	<0.04	3410	0.04	631.0	<0.5	<0.002	2.06	<0.2	92.6	<0.1
V37 Average			0.003	6.9	3.33	90.0	25.0	0.01	0.003	80	0.012	0.476	0.1	0.31	879		5.44	0.0261	90.8	122.00	21.65	23.50	1.51	0.513	0.07	69	0.04	3390	0.04	605.5	0.3	0.003	1.69	0.1	46.9	0.1
V37 Max			<0.005	7.9	4.74	101.0	<50.0	<0.01	<0.005	84	0.016	0.516	<0.1	0.38	1700		5.56	0.0270	98.7	132.00	22.70	24.40	1.60	0.878	0.08	76	0.05	3410	0.04	631.0	<0.5	0.004	2.06	<0.2	92.6	<0.1
V37 Min			<0.005	5.8	1.92	78.9	<50.0	<0.01	<0.005	76	0.008	0.436	<0.1	0.24	58		5.32	0.0252	82.9	112.00	20.60	22.60	1.42	0.147	0.06	61	<0.04	3370	0.04	580.0	<0.5	<0.002	1.32	<0.2	1.2	<0.1
V4	25/01/2011	Surface	<0.005	3.8	0.67	89.7	<50.0	<0.01	<0.005	104	0.024	0.048	<0.1	0.51	41		1.71	0.0061	43.4	59.50	1.08	4.78	0.65	0.346	0.09	36	0.71	5410	0.02	426.0	<0.5	<0.002	17.00	<0.2	2.4	<0.1
V4	17/02/2011	Surface	<0.005	4.0	0.55	85.2	<50.0	<0.01	<0.005	99	0.025	0.045	<0.1	1.16	46		1.54	0.0058	38.7	41.60	1.05	4.28	0.85	0.606	0.12	32	0.66	4980	0.02	398.0	<0.5	<0.002	16.40	<0.2	5.5	<0.1
V4	16/06/2011	Surface	0.006	14.4	0.84	69.4	<50.0	<0.01	<0.005	71	0.014	0.064	<0.1	1.17	128		0.88	0.0038	23.5	17.70	1.25	2.27	1.06	0.592	0.18	19	0.62	4940	0.03	279.0	<0.5	<0.002	7.84	<0.2	4.6	<0.1
V4	11/07/2011	Surface	0.006	12.4	0.88	69.8	<50.0	<0.01	<0.005	71	0.031	0.070	<0.1	1.35	112		0.89	0.0040	24.1	22.60	1.13	2.57	1.15	0.240	0.15	18	0.45	5300	<0.01	284.0	<0.5	<0.002	7.69	<0.2	4.0	<0.1
V4	10/08/2011	Surface	<0.005	4.3	0.86	78.0	<50.0	<0.01	<0.005	82	0.020	0.077	<0.1	0.69	90		1.05	0.0049	28.3	42.90	1.06	2.93	1.25	0.368	0.10	21	0.48	5080	<0.01	341.0	<0.5	<0.002	10.60	<0.2	5.5	<0.1
V4	12/09/2011	Surface	<0.005	3.5	0.72	68.1	<50.0	<0.01	<0.005	74	0.019	0.063	<0.1	0.68	90		0.92	0.0045	27.3	30.80	1.03	2.57	0.85	0.153	0.10	20	0.48	4750	<0.01	291.0	<0.5	<0.002	8.73	<0.2	5.6	<0.1
V4	18/10/2011	Surface	<0.005	4.6	0.63	71.0	<50.0	<0.01	<0.005	83	0.022	0.058	<0.1	0.66	73		0.97	0.0049	31.9	40.10	1.13	3.07	0.72	0.380	0.10	22	0.59	4830	<0.01	329.0	<0.5	<0.002	11.70	<0.2	7.5	<0.1
V4	24/11/2011	Surface	<0.005	2.2	0.61	84.1	<50.0	<0.01	<0.005	87	0.018	0.069	<0.1	0.50	68		1.16	0.0053	33.8	68.30	1.08	3.42	0.79	0.097	0.09	26	0.67	4920	<0.01	370.0	<0.5	<0.002	13.30	<0.2	2.5	<0.1
V4	12/12/2011	Surface	0.014	4.5	0.64	82.6	<50.0	<0.01	<0.005	93	0.020	0.065	<0.1	0.71	60		1.18	0.0052	36.7	63.40	1.14	3.78	0.91	0.165	0.10	25	0.68	5630	0.03	363.0	<0.5	<0.002	12.90	<0.2	4.5	<0.1
V4 Average			0.005	6.0	0.71	77.5	25.0	0.01	0.003	85	0.021	0.062	0.1	0.83	79		1.14	0.0049	32.0	42.99	1.11	3.30	0.91	0.327	0.11	24	0.59	5093	0.01	342.3	0.3	0.001	11.80	0.1	4.7	0.1
V4 Max			0.014	14.4	0.88	89.7	<50.0	<0.01	<0.005	104	0.031	0.077	<0.1	1.35	128		1.71	0.0061	43.4	68.30	1.25	4.78	1.25	0.606	0.18	36	0.71	5630	0.03	426.0	<0.5	<0.002	17.00	<0.2	7.5	<0.1
V4 Min			<0.005	2.2	0.55	68.1	<50.0	<0.01	<0.005	71	0.014	0.045	<0.1	0.50	41		0.88	0.0038	23.5	17.70	1.03	2.27	0.65	0.097	0.09	18	0.45	4750	<0.01	279.0	<0.5	<0.002	7.69	<0.2	2.4	<0.1
V5	25/01/2011	Surface	<0.005	3.0	0.38	83.6	<50.0	<0.01	0.006	110	0.060	0.062	<0.1	0.93	12		3.61	0.0062	47.2	14.30	2.27	6.15	1.85	0.270	0.15	61	2.56	5890	0.05	401.0	<0.5	0.004	6.67	<0.2	5.6	<0.1
V5	17/02/2011	Surface	<0.005	1.7	0.44	83.5	<50.0	<0.01	0.019	110	0.054	0.054	<0.1	0.79	11		1.65	0.0065	51.4	9.25	2.74	5.53	1.68	0.048	0.15	70	3.35	4460	<0.01	412.0	<0.5	0.003	7.26	<0.2	3.2	<0.1
V5	22/03/2011	Surface	<0.005	1.3	0.58	96.0	<50.0	<0.01	<0.005	141	0.074	0.071	<0.1	0.50	14		1.94	0.0071	60.8	19.30	3.67	5.80	2.21	0.046	0.20	88	4.40	6140	<0.01	466.0	<0.5	<0.002	9.33	<0.2	4.2	<0.1
V5	21/04/2011	Surface	0.007	6.3	0.60	82.7	<50.0	<0.01	0.031	119	0.061	0.079	0.2	1.07	22		1.71	0.0063	47.1	20.40	3.02	5.59	3.74	1.800	0.18	63	2.83	5930	0.13	402.0	<0.5	0.006	7.12	0.3	13.8	<0.1
V5	11/05/2011	Surface	<0.005	16.5	0.72	42.6	<50.0	<0.01	0.012	39	0.063	0.223	0.2	2.47	142		1.76	0.0024	14.7	64.70	1.04	2.11	2.61	0.539	0.12	16	0.57	3440	<0.01	148.0	0.6	0.012	1.80	0.3	5.0	<0.1
V5	18/05/2011	Surface	0.008	51.5	0.99	29.1	<50.0	<0.01	0.008	25	0.084	0.254	0.2	3.60	188		1.57	0.0039	8.1	61.80	0.51	1.28	3.10	0.839	0.16	<10.0	0.43	2680	<0.01	92.6	1.8	0.003	0.87	0.4	5.0	0.3
V5	15/06/2011	Surface	<0.005	14.2	0.63	40.9	<50.0	<0.01	<0.005	37	0.023	0.071	<0.1	1.29	37		0.68	0.0022	12.8	7.28	0.72	2.19	1.20	0.174	0.12	14	0.66	4690	<0.01	147.0	<0.5	0.003	1.75	<0.2	3.1	<0.1
V5	13/07/2011	Surface	<0.005	8.9	0.75	53.9	<50.0	<0.01	<0.005	56	0.021	0.199	<0.1	3.25	35		0.81	0.0033	19.3	33.80	1.05	2.82	2.23	0.216	0.13	22	1.23	5200	<0.01	209.0	<0.5	<0.002	2.91	<0.2	3.9	<0.1
V5	10/08/2011	Surface	<0.005	9.6	0.70	62.7	<50.0	<0.01	<0.005	58	0.038	0.134	<0.1	0.86	40		0.99	0.0037	20.9	27.30	1.09	2.94	3.04	0.565	0.11	23	1.14	4820	<0.01	240.0	<0.5	0.004	3.48	0.3	7.5	<0.1
V5	12/09/2011	Surface	<0.005	9.9	0.60	60.6	<50.0	<0.01	<0.005	53	0.031	0.135	<0.1	1.10	50		0.91	0.0036	20.9	29.00	0.95	2.88	1.62	0.218	0.12	22	1.04	4980	<0.01	221.0	<0.5	<0.002	2.90	<0.2	3.7	<0.1
V5	18/10/2011	Surface	<0.005	5.7	0.53	65.0	<50.0	<0.01	<0.005	69	0.027	0.084	<0.1	1.03	40		0.98	0.0043	28.0	20.10	1.23	3.58	1.28	0.255	0.11	31	1.62	4980	<0.01	269.0	<0.5	0.003	4.43	<0.2	3.6	<0.1
V5	23/11/2011	Surface	<0.005	3.1	0.41	73.5	<50.0	<0.01	<0.005	80	0.038	0.043	<0.1	0.56	15		1.33	0.0045	31.2	17.40	1.56	3.97	1.17	0.063	0.12	37	1.87	5030	<0.01	303.0	<0.5	<0.002	4.98	<0.2	4.2	<0.1
V5	13/12/2011	Surface	0.014	3.6	0.48	72.4	<50.0	<0.01	<0.005	86	0.046	0.072	<0.1	1.29	13		1.92	0.0048	35.6	18.30	1.78	4.62	1.51	0.339	0.14	43	2.07	5490	0.04	317.0	<0.5	0.003	5.52	0.3	6.4	<0.1
V5 Average			0.004	10.4	0.60	65.1	25.0	0.01	0.007	76	0.048	0.114	0.1	1.44	48		1.53	0.0045	30.6	26.38	1.66	3.80	2.10	0.413	0.14	38	1.83	4902	0.02	279.0	0.4	0.003	4.54	0.2	5.3	0.1
V5 Max			0.014	51.5	0.99	96.0	<50.0	<0.01	0.031	141	0.084	0.254	0.2	3.60	188		3.61	0.0071	60.8	64.70	3.67	6.15	3.74	1.800	0.20	88	4.40	6140	0.13	466.0	1.8	0.012	9.33	0.4	13.8	0.3
V5 Min			<0.005	1.3	0.38	29.1	<50.0	<0.01	<0.005	25	0.021	0.043	<0.1	0.50	11		0.68	0.0022	8.1	7.28	0.51	1.28	1.17	0.046	0.11	<10.0	0.43	2680	<0.01	92.6	<0.5	<0.002	0.87	<0.2	3.1	<0.1
V8	25/01/2011	Surface	0.008	2.5	0.35	77.6	<50.0	<0.01	0.011	95	0.069	0.050	<0.1	0.60	18		1.43	0.0061	45.2	5.28	1.26	5.23	2.00	0.257	0.14	74	1.45	4540	0.03	377.0	<0.5	0.005	8.57	<0.2	13.5	<0.1
V8	17/02/2011	Surface	<0.005	1.8	0.36	71.8	<50.0	<0.01	0.013	94	0.063	0.049	<0.1	0.51	14		1.34	0.0062	42.2	3.94	1.28	4.82	1.84	0.060	0.14	69	1.50	3980	<0.01	372.0	<0.5	0.004	9.08	<0.2	11.6	<0.1
V8	22/03/2011	Surface	<0.005	2.1	0.35	80.8	<50.0	<0.01	<0.005	106	0.059	0.060	<0.1	0.61	18		1.46	0.0062	44.5	5.41	1.42	5.00	1.97	0.182	0.16	77	1.71	5140	<0.01	394.0	<0.5	0.004	9.95	<0.2	13.8	<0.1
V8	21/04/2011	Surface	<0.005	5.5	0.47	79.1	<50.0	<0.01	0.058	110	0.081	0.068	<0.1	1.01	23		1.57	0.0067	46.3	8.41	1.56	5.49	2.37	0.745	0.16	79	1.46	5330	0.04	410.0	<0.5	0.006	9.68	<0.2	16.8	<0.1
V8	11/05/2011	Surface	0.006	13.0	0.65	48.6	<50.0	<0.01	0.034	50	0.073	0.157	0.2	2.58	96		1.63	0.0028	22.5	31.40	0.79	2.56	2.58	0.578	0.11	37	0.55	3430	<0.01	196.0	<0.5	0.009	3.76	<0.2	9.2	<0.1
V8	18/05/2011	Surface	<0.005	812.0	1.83	64.4	<50.0	0.07	0.011	33	0.182	1.220	1.4	6.11	1060		1.75	0.0071	13.4	96.60	0.42	1.59	5.43	5.270	0.17	22	0.48	3800	<0.01	121.0	15.8	0.020	1.89	1.9	18.9	0.8
V8	15/06/2011	Surface	<0.005	14.5	0.43	33.8	<50.0	<0.01	<0.005	31	0.025	0.044	<0.1	1.31	23		0.61	0.0021	10.6	3.55	0.50	1.83	0.87	0.303	0.11	16	0.34	4290	0.07	124.0	<0.5	0.007	1.88	<0.2	7.2	<0.1
V8	13/07/2011	Surface	<0.005	8.9	0.47	68.9	<50.0	<0.01	<0.005	84	0.069	0.066	<0.1	0.93	17		0.90	0.0057	22.7	9.31	0.61	2.67	1.28	0.083	0.10	78	0.58	4490	<0.01	313.0	<0.5	0.023	2.87	<0.2	16.4	<0.1
V8	10/08/2011	Surface	<0.005	8.3	0.49	48.0	<50.0	<0.01	<0.005	49	0.049	0.059	<0.1	0.95	21		0.77	0.0036	18.3	8.34	0.70	2.73	2.22	0.338	0.10	28	0.58	4590	<0.01	199.0	<0.5	0.013	3.19	<0.2	10.4	<0.1
V8	12/09/2011	Surface	<0.005	10.7	0.39	63.3	<50.0	<0.01	<0.005	86	0.089	0.111	<0.1	1.07	25		1.07	0.0063	25.8	23.80	0.57	2.88	1.27	0.248	0.09	80	0.51	4380	<0.01	327.0	<0.5	0.030	3.03	<0.2	25.5	<0.1
V8	25/10/2011	Surface	<0.005	5.2	0.47	58.6	<50.0	<0.01	<0.005	77	0.044	0.060	<0.1	0.73	26		1.15	0.0053	32.4	8.70	0.97	4.25	1.45	0.315	0.12	46	1.19	5380	<0.01	298.0	<0.5	0.005	5.81	<0.2	10.3	<0.1
V8	23/11/2011	Surface	0.007	2.8	0.41	63.9	<50.0	<0.01	<0.005	78	0.063	0.087	<0.1	1.02	15		1.69	0.0049	31.5	21.80	1.01	4.01	1.40	0.177	0.13	49	1.12	4950	0.02	296.0	<0.5	0.006	6.57	<0.2	23.0	<0.1
V8	08/12/2011	Surface	0.030	4.9	0.39	65.1	<50.0	<0.01	<0.005	80	0.059	0.065	0.2	1.06	14		2.37	0.0053	31.8	9.55	1.04	4.24	1.35	0.040	0.14	51	1.05	3710	0.06	308.0	<0.5	0.005	6.83	<0.2	17.5	<0.1
V8 Average			0.006	68.6	0.54	63.4	25.0	0.01	0.011	75	0.071	0.161	0.2	1.42	105		1.36	0.0053	29.8	18.16	0.93	3.64	2.00	0.661	0.13	54	0.96	4462	0.02	287.3	1.4	0.011	5.62	0.2	14.9	0.1
V8 Max			0.030	812.0	1.83	80.8	<50.0	0.07	0.058	110	0.182	1.220	1.4	6.11	1060		2.37	0.0071	46.3	96.60	1.56	5.49	5.43	5.270	0.17	80	1.71	5380	0.07	410.0	15.8	0.030	9.95	1.9	25.5	0.8
V8 Min			<0.005	1.8	0.35	33.8	<50.0	<0.01	<0.005	31	0.025	0.044	<0.1	0.51	14		0.61	0.0021	10.6	3.55	0.42	1.59	0.87	0.040	0.09	16	0.34	3430	<0.01	121.0	<0.5	0.004	1.88	<0.2	7.2	<0.1
Vang Cr C	18/05/2011	Surface	0.007	125.0	1.34	29.8	<50.0	0.02	0.013	15	0.153	0.331	0.2	4.31	261		1.83	0.0016	3.2	29.00	0.24	1.10	2.44	4.320	0.06	<10.0	0.15	3230	<0.01	61.7	0.8	0.022	0.68	<0.2	81.4	<0.1
Vang Cr D	18/05/2011	Surface	<0.005	92.7	1.19	32.4	<50.0	0.02	0.019	22	0.152	0.470	<0.1	4.46	225		1.84	0.0020	8.0	30.60	0.31	1.48	2.16	4.780	0.08	20	0.28	3220	0.03	81.3	0.7	0.023	1.13	<0.2	67.9	<0.1
Vang Cr E	18/05/2011	Surface	<0.005	35.0	1.06	30.4	<50.0	<0.01	<0.005	39	0.123	0.492	<0.1	4.59	69		2.26	0.0028	18.9	46.10	0.72	2.45	3.11	2.260	0.24	48	0.66	2810	<0.01	138.0	<0.5	0.031	2.71	<0.2	32.0	<0.1
Vang Cr E	25/05/2011	Surface	<0.005	69.1	0.35	11.4	<50.0	0.02	<0.005	6	0.031	0.091	<0.1	1.48	71		0.75	<0.0005	2.0	5.06	0.12	0.72	0.70	0.653	0.03	<10.0	0.06	2150	<0.01	26.6	<0.5	0.008	0.55	<0.2	15.6	<0.1
Vang Cr E Average			0.003	52.1	0.71	20.9	25.0	0.01	0.003	22	0.077	0.292	0.1	3.04	70		1.51	0.0015	10.4	25.58	0.42	1.59	1.91	1.457	0.14

Table C-2: 2011 Vangorda Creek Drainage Water Quality
Dissolved Metals

Station	Date	Sample Type	Ag-d µg/L	Al-d µg/L	As-d µg/L	Ba-d µg/L	B-d µg/L	Be-d µg/L	Bi-d µg/L	Ca-d mg/L	Cd-d µg/L	Co-d µg/L	Cr-d µg/L	Cu-d µg/L	Fe-d µg/L	Hg-d µg/L	K-d mg/L	Li-d mg/L	Mg-d mg/L	Mn-d µg/L	Mo-d µg/L	Na-d mg/L	Ni-d µg/L	Pb-d µg/L	Sb-d µg/L	S-d mg/L	Se-d µg/L	Si-d µg/L	Sn-d µg/L	Sr-d µg/L	Ti-d µg/L	Tl-d µg/L	U-d µg/L	V-d µg/L	Zn-d µg/L	Zr-d µg/L
VGMAIN	**18/05/2011**	**Surface**	<0.005	18.9	0.69	33.0	<50.0	<0.01	<0.005	37	0.077	0.183	0.2	3.45	82		1.62	0.0029	17.0	33.40	0.60	1.91	2.79	0.957	0.15	33	0.49	2960	<0.01	133.0	<0.5	0.019	2.32	<0.2	18.5	<0.1
VGMAIN	**25/05/2011**	**Surface**	<0.005	43.5	0.49	19.2	<50.0	<0.01	<0.005	14	0.050	0.081	<0.1	2.90	74		0.96	0.0009	4.8	6.58	0.29	1.11	1.03	1.040	0.08	<10.0	0.16	2430	0.02	54.4	0.7	0.012	1.00	<0.2	21.3	<0.1
VGMAIN Average			0.003	31.2	0.59	26.1	25.0	0.01	0.003	25	0.064	0.132	0.1	3.18	78		1.29	0.0019	10.9	19.99	0.45	1.51	1.91	0.999	0.12	19	0.33	2695	0.01	93.7	0.5	0.016	1.66	0.1	19.9	0.1
VGMAIN Max			<0.005	43.5	0.69	33.0	<50.0	<0.01	<0.005	37	0.077	0.183	0.2	3.45	82		1.62	0.0029	17.0	33.40	0.60	1.91	2.79	1.040	0.15	33	0.49	2960	0.02	133.0	0.7	0.019	2.32	<0.2	21.3	<0.1
VGMAIN Min			<0.005	18.9	0.49	19.2	<50.0	<0.01	<0.005	14	0.050	0.081	<0.1	2.90	74		0.96	0.0009	4.8	6.58	0.29	1.11	1.03	0.957	0.08	<10.0	0.16	2430	<0.01	54.4	<0.5	0.012	1.00	<0.2	18.5	<0.1
VL-1	**13/04/2011**	**Surface**	<0.1	532.0	<0.4	18.6	<1000.0	<0.2	<0.1	190	87.800	533.000	<2.0	175.00	43400		3.00	0.0340	95.0	35000.00	<1.0	5.00	465.00	22.200	<0.4	427	<0.8	4490	<0.2	1400.0	<10.0	1.780	1.09	<4.0	135000.0	<2.0
VL-1	**14/06/2011**	**Surface**	<0.1	4470.0	2.50	22.6	<1000.0	0.60	<0.1	145	158.000	582.000	<2.0	2950.00	51800		2.00	0.0310	88.0	36500.00	<1.0	3.00	453.00	290.000	<0.4	395	<0.8	4100	<0.2	683.0	<10.0	1.450	9.31	<4.0	141000.0	<2.0
VL-1	**13/07/2011**	**Surface**	<0.1	5280.0	2.60	24.1	<1000.0	0.80	<0.1	172	210.000	707.000	<2.0	2420.00	45900		2.00	0.0410	109.0	47400.00	<1.0	3.00	555.00	383.000	<0.4	460	<0.8	4960	<0.2	867.0	<10.0	1.270	9.81	<4.0	183000.0	<2.0
VL-1	**10/08/2011**	**Surface**	<0.1	2700.0	2.50	19.7	<1000.0	0.50	<0.1	222	164.000	751.000	<2.0	1280.00	56500		3.00	0.0440	118.0	50900.00	<1.0	4.00	600.00	296.000	<0.4	448	<0.8	4980	<0.2	989.0	<10.0	1.700	5.68	<4.0	187000.0	<2.0
VL-1	**07/09/2011**	**Surface**	<0.1	2090.0	2.90	21.2	<1000.0	0.40	<0.1	228	164.000	750.000	<2.0	1010.00	61500		3.00	0.0450	108.0	49700.00	<1.0	4.00	588.00	291.000	<0.4	432	<0.8	4130	<0.2	1110.0	<10.0	1.930	5.05	<4.0	191000.0	<2.0
VL-1 Average			0.050	3014.4	2.14	21.2	500.0	0.48	0.050	191	156.760	664.600	1.0	1567.00	51820		2.60	0.0390	103.6	43900.00	0.50	3.80	532.20	256.440	0.20	432	0.40	4532	0.10	1009.8	5.0	1.626	6.19	2.0	167400.0	1.0
VL-1 Max			<0.1	5280.0	2.90	24.1	<1,000.0	0.80	<0.1	228	210.000	751.000	<2.0	2950.00	61500		3.00	0.0450	118.0	50900.00	<1.0	5.00	600.00	383.000	<0.4	460	<0.8	4980	<0.2	1400.0	<10.0	1.930	9.81	<4.0	191000.0	<2.0
VL-1 Min			<0.1	532.0	<0.4	18.6	<1,000.0	<0.2	<0.1	145	87.800	533.000	<2.0	175.00	43400		2.00	0.0310	88.0	35000.00	<1.0	3.00	453.00	22.200	<0.4	395	<0.8	4100	<0.2	683.0	<10.0	1.270	1.09	<4.0	135000.0	<2.0
VL-15	**13/04/2011**	**Surface**	<0.1	525.0	<0.4	16.8	<1000.0	<0.2	<0.1	255	145.000	874.000	<2.0	223.00	47300		3.00	0.0470	138.0	64200.00	<1.0	5.00	707.00	60.400	<0.4	590	<0.8	4310	<0.2	1370.0	<10.0	1.800	1.47	<4.0	217000.0	<2.0
VL-15	**14/06/2011**	**Surface**	<0.1	1400.0	1.90	20.0	<1000.0	0.30	<0.1	249	139.000	854.000	<2.0	896.00	46400		3.00	0.0480	138.0	59000.00	<1.0	4.00	708.00	145.000	<0.4	544	<0.8	4940	<0.2	1140.0	<10.0	1.780	2.98	<4.0	202000.0	<2.0
VL-15	**13/07/2011**	**Surface**	<0.1	1630.0	1.70	19.7	<1000.0	<0.2	<0.1	252	144.000	833.000	<2.0	913.00	49100		3.00	0.0480	133.0	58000.00	<1.0	4.00	686.00	197.000	<0.4	538	<0.8	4900	<0.2	1190.0	<10.0	1.890	3.60	<4.0	205000.0	<2.0
VL-15	**10/08/2011**	**Surface**	<0.1	1560.0	1.20	18.0	<1000.0	0.40	<0.1	253	138.000	779.000	<2.0	823.00	51600		3.00	0.0480	128.0	55800.00	<1.0	4.00	651.00	220.000	<0.4	512	<0.8	4650	<0.2	1160.0	<10.0	1.760	3.64	<4.0	194000.0	<2.0
VL-15	**07/09/2011**	**Surface**	<0.1	1460.0	0.50	19.6	<1000.0	0.30	<0.1	246	138.000	777.000	<2.0	787.00	52600		3.00	0.0500	116.0	53400.00	<1.0	4.00	641.00	231.000	<0.4	446	<0.8	4070	<0.2	1210.0	<10.0	1.860	3.48	<4.0	186000.0	<2.0
VL-15 Average			0.050	1315.0	1.10	18.8	500.0	0.24	0.050	251	140.800	823.400	1.0	728.40	49400		3.00	0.0482	130.6	58080.00	0.50	4.20	678.60	170.680	0.20	526	0.40	4574	0.10	1214.0	5.0	1.818	3.03	2.0	200800.0	1.0
VL-15 Max			<0.1	1630.0	1.90	20.0	<1,000.0	0.40	<0.1	255	145.000	874.000	<2.0	913.00	52600		3.00	0.0500	138.0	64200.00	<1.0	5.00	708.00	231.000	<0.4	590	<0.8	4940	<0.2	1370.0	<10.0	1.890	3.64	<4.0	217000.0	<2.0
VL-15 Min			<0.1	525.0	<0.4	16.8	<1,000.0	<0.2	<0.1	246	138.000	777.000	<2.0	223.00	46400		3.00	0.0470	116.0	53400.00	<1.0	4.00	641.00	60.400	<0.4	446	<0.8	4070	<0.2	1140.0	<10.0	1.760	1.47	<4.0	186000.0	<2.0
VL-3	**13/04/2011**	**Surface**	<0.1	1430.0	2.90	18.9	<1000.0	<0.2	<0.1	216	135.000	807.000	<2.0	463.00	48500		3.00	0.0410	122.0	53600.00	<1.0	5.00	647.00	248.000	<0.4	541	<0.8	4610	<0.2	1280.0	<10.0	1.950	3.90	<4.0	194000.0	<2.0
VL-3	**14/06/2011**	**Surface**	<0.1	3560.0	9.30	19.1	<1000.0	0.60	<0.1	222	153.000	765.000	<2.0	2150.00	50400		3.00	0.0460	116.0	50500.00	<1.0	5.00	609.00	313.000	<0.4	537	<0.8	5250	<0.2	1070.0	<10.0	1.920	7.33	<4.0	181000.0	<2.0
VL-3	**13/07/2011**	**Surface**	<0.1	1710.0	2.10	20.3	<1000.0	0.30	<0.1	243	142.000	817.000	<2.0	1060.00	44900		3.00	0.0480	129.0	56000.00	<1.0	4.00	666.00	160.000	<0.4	528	<0.8	4840	<0.2	1170.0	<10.0	1.820	3.68	<4.0	199000.0	<2.0
VL-3	**10/08/2011**	**Surface**	<0.1	1670.0	2.10	17.9	<1000.0	0.40	<0.1	233	139.000	762.000	<2.0	886.00	49600		3.00	0.0430	124.0	53200.00	<1.0	4.00	627.00	189.000	<0.4	509	<0.8	4590	<0.2	1070.0	<10.0	1.570	3.68	<4.0	188000.0	<2.0
VL-3	**07/09/2011**	**Surface**	<0.1	2080.0	3.10	20.6	<1000.0	0.40	<0.1	222	173.000	751.000	<2.0	935.00	71000		3.00	0.0470	107.0	49500.00	<1.0	3.00	587.00	287.000	<0.4	460	<0.8	4220	<0.2	1100.0	<10.0	1.920	4.87	<4.0	194000.0	<2.0
VL-3 Average			0.050	2090.0	3.90	19.4	500.0	0.36	0.050	227	148.400	780.400	1.0	1098.80	52880		3.00	0.0450	119.6	52560.00	0.50	4.20	627.20	239.400	0.20	515	0.40	4702	0.10	1138.0	5.0	1.836	4.69	2.0	191200.0	1.0
VL-3 Max			<0.1	3560.0	9.30	20.6	<1,000.0	0.60	<0.1	243	173.000	817.000	<2.0	2150.00	71000		3.00	0.0480	129.0	56000.00	<1.0	5.00	666.00	313.000	<0.4	541	<0.8	5250	<0.2	1280.0	<10.0	1.950	7.33	<4.0	199000.0	<2.0
VL-3 Min			<0.1	1430.0	2.10	17.9	<1,000.0	<0.2	<0.1	216	135.000	751.000	<2.0	463.00	44900		3.00	0.0410	107.0	49500.00	<1.0	3.00	587.00	160.000	<0.4	460	<0.8	4220	<0.2	1070.0	<10.0	1.570	3.68	<4.0	181000.0	<2.0
VL-30	**13/04/2011**	**Surface**	0.200	431.0	<0.4	15.4	<1000.0	<0.2	<0.1	258	132.000	845.000	<2.0	182.00	50900		3.00	0.0490	137.0	62700.00	<1.0	5.00	696.00	65.600	<0.4	558	<0.8	4340	<0.2	1390.0	<10.0	1.740	1.26	<4.0	218000.0	<2.0
VL-30	**14/06/2011**	**Surface**	<0.1	1430.0	1.90	19.8	<1000.0	0.30	<0.1	211	142.000	854.000	<2.0	902.00	41100		3.00	0.0480	138.0	59600.00	<1.0	4.00	707.00	181.000	<0.4	575	<0.8	4210	<0.2	1160.0	<10.0	1.800	3.16	<4.0	203000.0	<2.0
VL-30	**13/07/2011**	**Surface**	<0.1	1580.0	1.30	19.5	<1000.0	0.30	<0.1	287	146.000	835.000	<2.0	878.00	58400		3.00	0.0500	133.0	57600.00	<1.0	4.00	687.00	207.000	<0.4	516	<0.8	5400	<0.2	1240.0	<10.0	1.880	3.58	<4.0	203000.0	<2.0
VL-30	**10/08/2011**	**Surface**	<0.1	1520.0	1.20	17.4	<1000.0	0.30	<0.1	254	138.000	822.000	<2.0	844.00	53800		3.00	0.0500	135.0	57800.00	<1.0	5.00	682.00	225.000	<0.4	512	<0.8	4630	<0.2	1170.0	<10.0	1.700	3.64	<4.0	203000.0	<2.0
VL-30	**07/09/2011**	**Surface**	<0.1	1390.0	0.60	19.0	<1000.0	0.30	<0.1	235	139.000	773.000	<2.0	745.00	51200		3.00	0.0500	116.0	53500.00	<1.0	4.00	628.00	209.000	<0.4	452	<0.8	3900	<0.2	1250.0	<10.0	1.870	3.33	<4.0	186000.0	<2.0
VL-30 Average			0.080	1270.2	1.04	18.2	500.0	0.26	0.050	249	139.400	825.800	1.0	710.20	51080		3.00	0.0494	131.8	58240.00	0.50	4.40	680.00	177.520	0.20	523	0.40	4496	0.10	1242.0	5.0	1.798	2.99	2.0	202600.0	1.0
VL-30 Max			0.200	1580.0	1.90	19.8	<1,000.0	0.30	<0.1	287	146.000	854.000	<2.0	902.00	58400		3.00	0.0500	138.0	62700.00	<1.0	5.00	707.00	225.000	<0.4	575	<0.8	5400	<0.2	1390.0	<10.0	1.880	3.64	<4.0	218000.0	<2.0
VL-30 Min			<0.1	431.0	<0.4	15.4	<1,000.0	<0.2	<0.1	211	132.000	773.000	<2.0	182.00	41100		3.00	0.0480	116.0	53500.00	<1.0	4.00	628.00	65.600	<0.4	452	<0.8	3900	<0.2	1160.0	<10.0	1.700	1.26	<4.0	186000.0	<2.0
VL-40	**13/04/2011**	**Surface**	<0.1	303.0	0.70	14.7	<1000.0	<0.2	<0.1	263	122.000	844.000	<2.0	152.00	53200		3.00	0.0480	144.0	64300.00	<1.0	5.00	714.00	52.100	<0.4	593	<0.8	4200	<0.2	1370.0	<10.0	1.830	1.03	<4.0	212000.0	<2.0
VL-40	**14/06/2011**	**Surface**	<0.1	1370.0	2.40	18.2	<1000.0	0.30	<0.1	239	139.000	818.000	<2.0	845.00	46900		3.00	0.0510	130.0	57000.00	<1.0	4.00	674.00	208.000	<0.4	582	<0.8	4910	<0.2	1120.0	<10.0	1.740	3.44	<4.0	193000.0	<2.0
VL-40	**13/07/2011**	**Surface**	<0.1	1560.0	2.50	20.2	<1000.0	0.30	<0.1	264	148.000	853.000	<2.0	891.00	53900		3.00	0.0520	136.0	59400.00	<1.0	5.00	706.00	208.000	<0.4	512	<0.8	4940	<0.2	1230.0	<10.0	1.840	3.64	<4.0	207000.0	<2.0
VL-40	**10/08/2011**	**Surface**	<0.1	1460.0	1.30	16.6	<1000.0	0.30	<0.1	246	134.000	788.000	<2.0	798.00	52600		3.00	0.0490	131.0	55900.00	<1.0	5.00	652.00	219.000	<0.4	522	<0.8	4620	<0.2	1130.0	<10.0	1.650	3.48	<4.0	196000.0	<2.0
VL-40	**07/09/2011**	**Surface**	<0.1	1170.0	0.50	17.3	<1000.0	<0.2	<0.1	260	135.000	805.000	<2.0	732.00	55600		3.00	0.0470	119.0	55000.00	<1.0	4.00	665.00	163.000	<0.4	449	<0.8	4170	<0.2	1210.0	<10.0	1.750	3.30	<4.0	191000.0	<2.0
VL-40 Average			0.050	1172.6	1.48	17.4	500.0	0.22	0.050	254	135.600	821.600	1.0	683.60	52440		3.00	0.0494	132.0	58320.00	0.50	4.60	682.20	170.020	0.20	532	0.40	4568	0.10	1212.0	5.0	1.762	2.98	2.0	199800.0	1.0
VL-40 Max			<0.1	1560.0	2.50	20.2	<1,000.0	0.30	<0.1	264	148.000	853.000	<2.0	891.00	55600		3.00	0.0520	144.0	64300.00	<1.0	5.00	714.00	219.000	<0.4	593	<0.8	4940	<0.2	1370.0	<10.0	1.840	3.64	<4.0	212000.0	<2.0
VL-40 Min			<0.1	303.0	0.50	14.7	<1,000.0	<0.2	<0.1	239	122.000	788.000	<2.0	152.00	46900		3.00	0.0470	119.0	55000.00	<1.0	4.00	652.00	52.100	<0.4	449	<0.8	4170	<0.2	1120.0	<10.0	1.650	1.03	<4.0	191000.0	<2.0
VL-5	**13/04/2011**	**Surface**	<0.1	1340.0	1.90	19.0	<1000.0	<0.2	<0.1	219	142.000	778.000	<2.0	405.00	53300		3.00	0.0430	117.0	53100.00	<1.0	5.00	633.00	261.000	<0.4	497	<0.8	4540	<0.2	1340.0	<10.0	2.110	3.61	<4.0	193000.0	<2.0
VL-5	**14/06/2011**	**Surface**	<0.1	1700.0	5.70	20.0	<1000.0	0.30	<0.1	243	137.000	841.000	<2.0	1210.00	45100		3.00	0.0490	134.0	57500.00	<1.0	4.00	690.00	147.000	<0.4	537	<0.8	4890	<0.2	1120.0	<10.0	1.780	3.41	<4.0	197000.0	<2.0
VL-5	**13/07/2011**	**Surface**	<0.1	1430.0	1.60	20.7	<1000.0	0.30	<0.1	239	142.000	840.000	<2.0	865.00	43900		3.00	0.0490	134.0	58300.00	<1.0	5.00	690.00	156.000	<0.4	545	<0.8	4590	<0.2	1200.0	<10.0	1.820	3.11	<4.0	206000.0	<2.0
VL-5	**10/08/2011**	**Surface**	<0.1	1520.0	1.20	18.6	<1000.0	0.30	<0.1	254	137.000	802.000	<2.0	897.00	49900		3.00	0.0490	130.0	56500.00	<1.0	5.00	663.00	187.000	<0.4	534	<0.8	4750	0.40	1110.0	<10.0	1.650	3.40	<4.0	199000.0	<2.0
VL-5	**07/09/2011**	**Surface**	<0.1	1670.0	1.20	22.0	<1000.0	0.30	<0.1	248	152.000	802.000	<2.0	884.00	54200		3.00	0.0510	119.0	55700.00	<1.0	4.00	652.00	229.000	<0.4	439	<0.8	4060	<0.2	1260.0	<10.0	1.880	3.89	<4.0	205000.0	<2.0
VL-5 Average			0.050	1532.0	2.32	20.1	500.0	0.26	0.050	241	142.000	812.600	1.0	852.20	49280		3.00	0.0482	126.8	56220.00	0.50	4.60	665.60	196.000	0.20	510	0.40	4566	0.16	1206.0	5.0	1.848	3.48	2.0	200000.0	1.0
VL-5 Max			<0.1	1700.0	5.70	22.0	<1,000.0	0.30	<0.1	254	152.000	841.000	<2.0	1210.00	54200		3.00	0.0510	134.0	58300.00	<1.0	5.00	690.00	261.000	<0.4	545	<0.8	4890	0.40	1340.0	<10.0	2.110	3.89	<4.0	206000.0	<2.0
VL-5 Min			<0.1	1340.0	1.20	18.6	<1,000.0	<0.2	<0.1	219	137.000	778.000	<2.0	405.00	43900		3.00	0.0430	117.0	53100.00	<1.0	4.00	633.00	147.000	<0.4	439	<0.8	4060	<0.2	1110.0	<10.0	1.650	3.11	<4.0	193000.0	<2.0
WGD01	**21/05/2011**	**Seepage**	<0.005	4.3	0.36	57.7	<50.0	<0.01	<0.005	171	0.015	0.149	<0.1	0.71	12		1.25	0.0062	50.1	3.89	0.56	3.46	0.97	0.509	0.19	164	1.98	5270	<0.01	768.0	<0.5	0.003	8.63	<0.2	2.3	<0.1
WGD01	**27/09/2011**	**Seepage**	<0.005	7.1	0.23	75.9	<50.0	<0.01	0.027	252	0.014	0.051	<0.1	0.71	16		1.47	0.0080	82.6	0.68	0.39	4.29	1.18	0.417	0.13	259	1.27	5360	<0.01	1120.0	<0.5	<0.002	12.50	<0.2	3.7	<0.1
WGD01 Average			0.003	5.7	0.30	66.8	25.0	0.01	0.015	212	0.015	0.100	0.1	0.71	14		1.36	0.0071	66.4	2.29	0.48	3.88	1.08	0.463	0.16	212	1.63	5315	0.01	944.0	0.3	0.002	10.57	0.1	3.0	0.1
WGD01 Max			<0.005	7.1	0.36	75.9	<50.0	<0.01	0.027	252	0.015	0.149	<0.1	0.71	16		1.47	0.0080	82.6	3.89	0.56	4.29	1.18	0.509	0.19	259	1.98	5360	<0.01	1120.0	<0.5	0.003	12.50	<0.2	3.7	<0.1
WGD01 Min			<0.005	4.3	0.23	57.7	<50.0	<0.01	<0.005	171	0.014	0.051	<0.1	0.71	12		1.25	0.0062	50.1	0.68	0.39	3.46	0.97	0.417	0.13	164	1.27	5270	<0.01	768.0	<0.5	<0.002	8.63	<0.2	2.3	<0.1
WTA02	**27/09/2011**	**Seepage**	<0.005	3.3	0.14	91.0	<50.0	<0.01	<0.005	82	0.008	0.015	<0.1	0.41	5		0.47	0.0012	9.7	0.30	0.70	1.58	0.31	0.159	0.13	<10.0	0.99	4460	<0.01	296.0	<0.5	<0.002	2.21	<0.2	0.5	<0.1

Note: Statistics calculated with DLs at half value.
Note: Metals reported in mg/L shaded in gray.

Denison Environmental Services

Table C-3: 2011 Vangorda Creek Drainage Water Quality
Total Metals

Station	Date	Sample Type	Ag µg/L	Al µg/L	As µg/L	B µg/L	Ba µg/L	Be µg/L	Bi µg/L	Ca mg/L	Cd µg/L	Co µg/L	Cr µg/L	Cu µg/L	Fe µg/L	Hg µg/L	K mg/L	Li mg/L	Mg mg/L	Mn µg/L	Mo µg/L	Na mg/L	Ni µg/L	P mg/L	Pb µg/L	S mg/L	Sb µg/L	Se µg/L	Si µg/L	Sn µg/L	Sr µg/L	Ti µg/L	Tl µg/L	U µg/L	V µg/L	Zn µg/L	Zr µg/L
GC Weir	26/04/2011	Surface	<0.03	6.0	1.30	<300.0	78.5	<0.05	<0.03	209	0.040	0.100	<0.5	1.10	21		3.20	0.0060	120.0	19.00	2.90	7.90	5.50		0.450	268	0.40	1.10	4840	<0.05	637.0	<3.0	<0.01	17.40	<1.0	63.6	<0.5
GC Weir	10/05/2011	Surface	0.006	268.0	2.08	<50.0	54.6	0.03	0.013	156	0.159	1.050	0.9	3.28	672		4.89	0.0076	91.0	74.40	2.35	10.20	8.98		8.930	230	0.98	3.76	3020	<0.01	537.0	10.4	0.039	14.10	0.9	52.9	0.6
GC Weir	18/05/2011	Surface	1.610	53000.0	113.00	<300.0	656.0	4.12	1.100	132	5.670	118.000	116.0	245.00	112000		11.00	0.0900	71.0	2810.00	3.60	6.00	297.00		1070.000	<300.0	3.80	2.90	55700	<1.0	523.0	971.0	1.240	20.00	116.0	2980.0	7.3
GC Weir	25/05/2011	Surface	0.007	118.0	1.32	<50.0	48.3	<0.01	<0.005	206	0.131	0.297	0.3	1.26	204		4.13	0.0084	140.0	7.78	3.22	7.15	24.60		1.690	317	0.64	1.06	4230	<0.01	691.0	3.4	0.052	18.20	0.4	229.0	0.2
GC Weir	06/06/2011	Surface	<0.03	21.0	1.40	<300.0	54.2	<0.05	<0.03	234	0.170	0.110	<0.5	1.30	47		3.80	0.0090	169.0	2.50	4.40	8.70	27.40		1.010	347	0.70	0.70	4490	<0.05	802.0	<3.0	0.040	31.20	<1.0	259.0	<0.5
GC Weir	22/06/2011	Surface	0.066	1050.0	10.00	<50.0	74.1	0.09	0.032	267	0.665	4.220	3.2	8.25	4130		5.40	0.0190	201.0	111.00	2.36	8.56	80.50		49.500	393	1.17	1.34	5230	0.02	892.0	31.3	0.239	28.90	3.3	981.0	1.3
GC Weir	05/07/2011	Surface	<0.03	35.0	2.00	<300.0	51.2	<0.05	<0.03	267	0.410	0.260	<0.5	1.50	102		4.40	0.0160	204.0	5.60	2.30	8.80	84.00		2.100	406	0.80	0.90	4720	<0.05	885.0	<3.0	0.100	34.70	<1.0	876.0	<0.5
GC Weir	21/07/2011	Surface	<0.03	93.0	2.20	<300.0	56.8	<0.05	<0.03	282	0.420	0.400	<0.5	1.80	208		5.00	0.0150	212.0	9.10	2.30	8.90	91.80		4.040	408	0.80	0.70	5210	<0.05	933.0	<3.0	0.120	31.60	<1.0	873.0	<0.5
GC Weir	03/08/2011	Surface	<0.03	47.0	2.30	<300.0	50.7	<0.05	<0.03	247	0.400	0.360	0.6	1.50	148		4.30	0.0150	186.0	9.10	2.20	8.00	80.80		2.660	376	0.80	0.50	4320	<0.05	880.0	<3.0	0.100	33.40	<1.0	812.0	<0.5
GC Weir	18/08/2011	Surface	<0.03	75.0	2.10	<300.0	50.0	<0.05	<0.03	269	0.360	0.390	<0.5	1.50	191		4.70	0.0160	205.0	12.20	2.10	8.80	90.80		2.580	378	0.80	0.60	4460	<0.05	878.0	<3.0	0.110	31.80	<1.0	913.0	<0.5
GC Weir	07/09/2011	Surface	<0.03	25.0	1.80	<300.0	50.8	<0.05	<0.03	284	0.450	0.240	<0.5	1.20	53		4.80	0.0170	208.0	9.20	2.20	8.60	92.00		1.100	376	0.90	0.50	4510	<0.05	1000.0	<3.0	0.120	39.00	<1.0	908.0	<0.5
GC Weir	20/09/2011	Surface	<0.03	26.0	1.80	<300.0	49.1	<0.05	<0.03	279	0.370	0.230	<0.5	1.20	51		5.30	0.0180	222.0	9.40	2.00	9.20	97.10		1.040	411	0.80	0.50	4560	<0.05	950.0	<3.0	0.110	38.10	<1.0	879.0	<0.5
GC Weir	11/10/2011	Surface	<0.03	16.0	1.80	<300.0	44.0	<0.05	<0.03	279	0.310	0.190	<0.5	1.40	34		4.60	0.0160	215.0	5.50	2.10	8.80	93.50		0.570	399	0.70	<0.2	4810	<0.05	945.0	<3.0	0.090	38.60	<1.0	771.0	<0.5
GC Weir	27/10/2011	Surface	<0.03	18.0	1.80	<300.0	44.4	<0.05	<0.03	282	0.250	0.170	<0.5	1.10	37		4.80	0.0180	223.0	5.50	2.10	9.70	88.30		0.860	424	0.80	0.50	4830	<0.05	962.0	<3.0	0.090	38.70	<1.0	678.0	<0.5
GC Weir	08/11/2011	Surface	0.006	35.3	1.79	<50.0	41.6	<0.01	0.006	284	0.255	0.233	0.2	1.22	97		4.56	0.0182	221.0	5.56	2.42	9.90	82.50		1.700	416	0.75	0.52	4420	<0.01	1090.0	1.4	0.085	40.50	<0.2	585.0	0.2
GC Weir Average			0.123	3655.6	9.78	116.7	93.6	0.30	0.087	245	0.671	8.417	8.2	18.17	7866		4.99	0.0193	179.2	206.39	2.57	8.61	82.99		76.549	353	0.99	1.05	7957	0.05	840.3	68.8	0.169	30.41	8.4	790.7	0.8
GC Weir Max			1.610	53000.0	113.00	<300.0	656.0	4.12	1.100	284	5.670	118.000	116.0	245.00	112000		11.00	0.0900	223.0	2810.00	4.40	10.20	297.00		1070.000	424	3.80	3.76	55700	<1.0	1090.0	971.0	1.240	40.50	116.0	2980.0	7.3
GC Weir Min			0.006	6.0	1.30	<50.0	41.6	<0.01	<0.005	132	0.040	0.100	0.2	1.10	21		3.20	0.0060	71.0	2.50	2.00	6.00	5.50		0.450	230	0.40	<0.2	3020	<0.01	523.0	1.4	<0.01	14.10	<0.2	52.9	0.2
GCA	25/05/2011	Surface	<0.03	121.0	1.70	<300.0	46.1	<0.05	<0.03	209	<0.03	0.450	<0.5	1.80	365		3.60	0.0070	141.0	26.00	2.80	7.60	4.10		4.200	307	0.60	1.10	3940	<0.05	654.0	<3.0	<0.01	21.80	<1.0	31.4	<0.5
GL-1	12/04/2011	Surface	0.007	5.7	1.82	<50.0	103.0	<0.01	0.010	123	0.599	2.720	<0.1	1.20	32		3.39	0.0192	58.2	82.90	2.64	12.60	72.80	<0.005	0.878	116	2.28	3.32	7250	0.03	811.0	<0.5	0.493	17.40	0.7	2440.0	<0.1
GL-1	14/06/2011	Surface	0.008	31.0	1.08	<50.0	39.4	<0.01	<0.005	104	1.900	4.150	<0.1	4.31	98		2.66	0.0188	60.1	96.30	1.98	8.57	111.00	<0.005	1.440	140	2.76	1.07	3020	<0.01	608.0	1.1	0.832	10.80	<0.2	4340.0	<0.1
GL-1	12/07/2011	Surface	<0.005	9.9	0.73	<50.0	30.7	<0.01	<0.005	95	0.687	4.090	0.5	1.73	39		2.62	0.0195	57.8	83.60	2.07	7.98	88.70	0.027	0.314	136	2.57	1.13	2440	<0.01	563.0	<0.5	1.300	8.36	0.3	254.0	<0.1
GL-1	09/08/2011	Surface	0.006	31.8	1.95	<50.0	36.1	<0.01	<0.005	96	1.100	4.390	0.2	3.82	157		2.60	0.0186	58.2	87.90	2.01	7.92	77.40	0.027	1.440	136	2.64	1.20	2320	0.25	639.0	1.6	1.750	8.78	0.5	878.0	<0.1
GL-1	06/09/2011	Surface	<0.005	32.9	2.05	<50.0	37.8	<0.01	<0.005	109	1.660	4.900	<0.1	4.57	186		2.75	0.0202	65.2	101.00	2.08	8.92	86.00	<0.005	2.240	150	2.75	1.30	2750	0.12	625.0	1.6	1.760	8.68	0.3	2120.0	<0.1
GL-1 Average			0.005	22.3	1.53	25.0	49.4	0.01	0.004	105	1.189	4.050	0.2	3.13	102		2.80	0.0193	59.9	90.34	2.16	9.20	87.18	0.012	1.262	136	2.60	1.60	3556	0.08	649.2	1.0	1.227	10.80	0.4	2006.4	0.1
GL-1 Max			0.008	32.9	2.05	<50.0	103.0	<0.01	0.010	123	1.900	4.900	0.5	4.57	186		3.39	0.0202	65.2	101.00	2.64	12.60	111.00	0.027	2.240	150	2.76	3.32	7250	0.25	811.0	1.6	1.760	17.40	0.7	4340.0	<0.1
GL-1 Min			<0.005	5.7	0.73	<50.0	30.7	<0.01	<0.005	95	0.599	2.720	<0.1	1.20	32		2.60	0.0186	57.8	82.90	1.98	7.92	72.80	<0.005	0.314	116	2.28	1.07	2320	<0.01	563.0	<0.5	0.493	8.36	<0.2	254.0	<0.1
GL-15	12/04/2011	Surface	<0.005	7.1	1.42	<50.0	48.3	<0.01	<0.005	123	1.750	2.280	<0.1	0.66	92		3.34	0.0224	72.3	30.80	2.44	10.30	135.00	<0.005	0.966	164	3.49	1.28	3250	<0.01	808.0	<0.5	0.702	14.20	<0.2	4690.0	<0.1
GL-15	14/06/2011	Surface	<0.005	19.2	0.88	<50.0	44.5	<0.01	<0.005	123	1.800	3.380	<0.1	3.70	50		3.09	0.0226	70.7	76.80	2.47	10.10	134.00	<0.005	0.929	163	3.30	1.25	3500	<0.01	719.0	0.8	0.627	12.70	<0.2	4930.0	<0.1
GL-15	12/07/2011	Surface	<0.005	17.0	1.09	<50.0	48.1	<0.01	<0.005	124	2.040	3.780	<0.1	4.08	63		3.11	0.0232	69.3	85.40	2.41	10.00	138.00	<0.005	1.520	158	3.19	1.21	3340	<0.01	810.0	0.6	0.715	13.80	<0.2	5080.0	<0.1
GL-15	09/08/2011	Surface	0.006	10.2	1.20	<50.0	49.8	<0.01	<0.005	117	2.040	3.850	<0.1	3.42	56		3.08	0.0217	69.8	86.20	2.37	9.84	133.00	0.003	1.380	163	3.18	1.29	3120	0.03	815.0	<0.5	0.712	13.30	<0.2	5090.0	<0.1
GL-15	06/09/2011	Surface	<0.005	10.9	1.18	<50.0	45.4	<0.01	<0.005	130	2.220	4.160	<0.1	3.37	81		3.18	0.0243	73.8	96.90	2.45	10.20	142.00	<0.005	1.630	163	3.40	1.35	3360	0.02	792.0	0.9	0.779	13.80	<0.2	5710.0	<0.1
GL-15 Average			0.003	12.9	1.15	25.0	47.2	0.01	0.003	123	1.970	3.490	0.1	3.05	68		3.16	0.0228	71.2	75.22	2.43	10.09	136.40	0.003	1.285	162	3.31	1.28	3314	0.01	788.8	0.6	0.707	13.56	0.1	5100.0	0.1
GL-15 Max			0.006	19.2	1.42	<50.0	49.8	<0.01	<0.005	130	2.220	4.160	<0.1	4.08	92		3.34	0.0243	73.8	96.90	2.47	10.30	142.00	<0.005	1.630	164	3.49	1.35	3500	0.03	815.0	0.9	0.779	14.20	<0.2	5710.0	<0.1
GL-15 Min			<0.005	7.1	0.88	<50.0	44.5	<0.01	<0.005	117	1.750	2.280	<0.1	0.66	50		3.08	0.0217	69.3	30.80	2.37	9.84	133.00	0.003	0.929	158	3.18	1.21	3120	<0.01	719.0	<0.5	0.627	12.70	<0.2	4690.0	<0.1
GL-3	12/04/2011	Surface	<0.005	9.7	1.71	<50.0	53.3	<0.01	<0.005	117	0.944	4.140	<0.1	0.96	74		3.30	0.0225	69.8	94.60	2.31	10.50	114.00	<0.005	1.640	160	3.26	1.49	3330	<0.01	797.0	<0.5	0.802	12.50	<0.2	3960.0	<0.1
GL-3	14/06/2011	Surface	<0.005	33.7	1.98	<50.0	39.1	<0.01	<0.005	103	2.220	4.990	<0.1	7.14	179		2.80	0.0193	65.2	125.00	2.05	9.23	124.00	<0.005	1.670	152	2.86	1.14	3010	<0.01	619.0	1.4	1.050	10.80	<0.2	5030.0	<0.1
GL-3	12/07/2011	Surface	<0.005	7.5	0.77	<50.0	40.6	<0.01	<0.005	116	1.790	4.820	<0.1	1.31	40		2.54	0.0198	58.7	105.00	1.91	8.17	97.20	0.011	0.373	146	2.73	1.27	2690	<0.01	647.0	<0.5	1.310	9.51	0.3	700.0	<0.1
GL-3	09/08/2011	Surface	<0.005	44.3	2.01	<50.0	34.2	<0.01	<0.005	91	1.190	4.640	0.3	3.39	173		2.69	0.0196	58.8	87.00	2.08	8.07	80.00	0.024	1.450	138	2.82	1.25	2210	0.08	630.0	1.6	1.640	8.10	0.5	897.0	<0.1
GL-3	06/09/2011	Surface	<0.005	36.4	2.10	<50.0	38.2	<0.01	<0.005	108	1.720	5.130	<0.1	4.58	192		2.79	0.0211	66.6	101.00	2.20	9.15	89.60	<0.005	2.200	149	2.86	1.30	2690	0.02	643.0	1.5	1.780	8.71	0.3	2220.0	<0.1
GL-3 Average			0.003	26.3	1.71	25.0	41.1	0.01	0.003	107	1.573	4.744	0.1	3.48	132		2.82	0.0205	63.8	102.52	2.11	9.02	100.96	0.009	1.467	149	2.91	1.29	2786	0.02	667.2	1.0	1.316	9.92	0.3	2561.4	0.1
GL-3 Max			<0.005	44.3	2.10	<50.0	53.3	<0.01	<0.005	117	2.220	5.130	0.3	7.14	192		3.30	0.0225	69.8	125.00	2.31	10.50	124.00	0.024	2.200	160	3.26	1.49	3330	0.08	797.0	1.6	1.780	12.50	0.5	5030.0	<0.1
GL-3 Min			<0.005	7.5	0.77	<50.0	34.2	<0.01	<0.005	91	0.944	4.140	<0.1	0.96	40		2.54	0.0193	58.7	87.00	1.91	8.07	80.00	<0.005	0.373	138	2.73	1.14	2210	<0.01	619.0	<0.5	0.802	8.10	<0.2	700.0	<0.1
GL-30	12/04/2011	Surface	<0.005	5.7	1.30	<50.0	46.3	<0.01	<0.005	122	1.860	1.210	<0.1	0.60	52		3.40	0.0228	74.0	9.99	2.33	10.30	135.00	<0.005	0.591	169	3.36	1.12	3030	<0.01	800.0	<0.5	0.652	14.50	<0.2	4780.0	<0.1
GL-30	14/06/2011	Surface	<0.005	20.9	0.90	<50.0	44.4	<0.01	<0.005	122	1.850	3.420	<0.1	3.56	58		2.98	0.0223	68.9	77.20	2.40	9.99	132.00	<0.005	0.976	162	3.36	1.29	3520	<0.01	717.0	1.6	0.637	12.90	<0.2	4870.0	<0.1
GL-30	12/07/2011	Surface	<0.005	19.3	1.30	<50.0	45.8	<0.01	0.006	121	1.930	3.850	<0.1	4.26	72		3.11	0.0232	69.0	86.80	2.63	9.98	143.00	<0.005	1.670	2120	3.16	1.58	3220	0.02	790.0	0.6	0.688	14.30	<0.2	5030.0	<0.1
GL-30	09/08/2011	Surface	0.006	11.4	1.28	<50.0	48.8	<0.01	<0.005	113	2.200	3.920	<0.1	3.52	78		3.01	0.0222	67.3	90.90	2.40	9.37	132.00	0.003	1.490	154	3.54	1.26	3120	0.03	833.0	0.6	0.699	13.70	<0.2	5210.0	<0.1
GL-30	06/09/2011	Surface	<0.005	12.3	1.41	<50.0	43.8	<0.01	<0.005	127	2.200	4.580	<0.1	3.30	112		3.25	0.0240	73.5	110.00	2.34	10.30	147.00	<0.005	1.640	165	3.29	1.27	3320	0.02	769.0	0.7	0.757	13.30	<0.2	5850.0	<0.1
GL-30 Average			0.003	13.9	1.24	25.0	45.8	0.01	0.003	121	2.008	3.396	0.1	3.05	74		3.15	0.0229	70.5	74.98	2.42	9.99	137.80	0.003	1.273	554	3.34	1.30	3242	0.02	781.8	0.8	0.687	13.74	0.1	5148.0	0.1
GL-30 Max			0.006	20.9	1.41	<50.0	48.8	<0.01	0.006	127	2.200	4.580	<0.1	4.26	112		3.40	0.0240	74.0	110.00	2.63	10.30	147.00	<0.005	1.670	2120	3.54	1.58	3520	0.03	833.0	1.6	0.757	14.50	<0.2	5850.0	<0.1
GL-30 Min			<0.005	5.7	0.90	<50.0	43.8	<0.01	<0.005	113	1.850	1.210	<0.1	0.60	52		2.98	0.0222	67.3	9.99	2.33	9.37	132.00	0.003	0.591	154	3.16	1.12	3030	<0.01	717.0	<0.5	0.637	12.90	<0.2	4780.0	<0.1
GL-5	12/04/2011	Surface	<0.005	10.3	1.73	<50.0	53.4	<0.01	<0.005	116	1.050	4.080	<0.1	1.04	83		3.32	0.0220	68.8	94.40	2.44	10.30	117.00	<0.005	1.800	158	3.47	1.43	3160	<0.01	789.0	<0.5	0.790	12.20	<0.2	4020.0	<0.1
GL-5	14/06/2011	Surface	<0.005	22.7	0.97	<50.0	44.5	<0.01	<0.005	121	1.860	3.180	<0.1	4.12	70		2.89	0.0227	66.0	73.30	2.42	9.40	127.00	<0.005	1.350	155	3.34	1.25	3520	<0.01	721.0	1.2	0.672	13.00	<0.2	4680.0	<0.1
GL-5	12/07/2011	Surface	<0.005	12.0	0.96	<50.0	46.0	<0.01	<0.005	127	2.100	3.880	<0.1	3.22	57		3.00	0.0226	66.1	88.90	2.37	9.49	130.00	<0.005	1.180	153	3.09	1.27	3410	<0.01	762.0	<0.5	0.829	11.90	<0.2	4450.0	<0.1
GL-5	09/08/2011	Surface	0.008	16.7	1.09	<50.0	45.1	<0.01	<0.005	112	2.620	4.460	<0.1	2.35	88		2.90	0.0224	66.2	109.00	2.30	9.37	135.00	0.005	1.340	152	3.05	1.19	3330	0.07	794.0	0.8	1.000	9.32	<0.2	5620.0	<0.1
GL-5	06/09/2011	Surface	<0.005	38.0	1.91	<50.0	41.5	<0.01	<0.005	112	1.870	4.950	<0.1	4.43	184		2.81	0.0217	67.2	103.00	2.25	9.30	97.60	<0.005	2.200	151	2.90	1.27	2870	0.03	665.0	1.6	1.700	8.92	0.3	3050.0	<0.1
GL-5 Average			0.004	19.9	1.33	25.0	46.1	0.01	0.003	118	1.900	4.110	0.1	3.03	96		2.98	0.0223	66.9	93.72	2.36	9.57	121.32	0.003	1.574	154	3.17	1.28	3258	0.02	746.2	0.8	0.998	11.07	0.1	4364.0	0.1
GL-5 Max			0.008	38.0	1.91	<50.0	53.4	<0.01	<0.005	127	2.620	4.950	<0.1	4.43	184		3.32	0.0227	68.8	109.00	2.44	10.30	135.00	<0.005	2.200	158	3.47	1.43	3520	0.07	794.0	1.6	1.700	13.00	0.3	5620.0	<0.1
GL-5 Min			<0.005	10.3	0.96	<50.0	41.5	<0.01	<0.005	112	1.050	3.180	<0.1	1.04	57		2.81	0.0217	66.0	73.30	2.25	9.30	97.60	<0.005	1.180	151	2.90	1.19	2870	<0.01	665.0	<0.5	0.672	8.92	<0.2	3050.0	<0.1
GL-60	12/04/2011	Surface	<0.005	17.8	1.74	<50.0	44.0	<0.01	0.016	125	1.870	1.410	<0.1	0.61	87		3.40	0.0234	73.3	25.30	2.40	10.40	131.00	<0.005	0.556	173	3.40	1.20	3200	0.02	799.0	0.7	0.669	13.90	<0.2	4580.0	<0.1
GL-60	14/06/2011	Surface	<0.005	37.1	0.99	<50.0	43.0	<0.01	<0.005	115	1.750	3.380	<0.1	3.75	88		2.98	0.0215	69.3	79.20	2.20	9.97	133.00	<0.005	0.980	159	3.11	1.26	3380	<0.01	681.0	2.3	0.610	12.30	<0.2	4830.0	<0.1
GL-60	12/07/2011	Surface	<0.005	20.3	1.37	<50.0	44.2	<0.01	<0.005	116	1.880	3.770	<0.1	4.12	91		2.97	0.0226	66.9	86.40	2.30	9.72	136.00	<0.005	1.640	166	3.16	1.36	3240	<0.01	758.0	0.8	0.671	13.20	<0.2	4730.0	<0.1
GL-60	09/08/2011	Surface	0.006	14.2	1.67	<50.0	44.8	<0.01	<0.005	116	2.100	3.910	<0.1	3.23	104		3.00	0.0222	66.4	98.30	2.34	9.22	129.00	0.003	1.430	153	3.41	1.24	3130	0.02	785.0	0.8	0.716	12.70	<0.2	5100.0	<0.1
GL-60	06/09/2011	Surface	<0.005	21.6	1.79	<50.0	45.6	<0.01	<0.005	127	2.130	4.530	<0.1	2.90	138		3.11	0.0240	72.6	122.00	2.40	10.10	140.00	<0.005	1.570	160	3.24	1.27	3330	<0.01	768.0	1.2	0.778	13.50	<0.2	5630.0	<0.1
GL-60 Average			0.003	22.2	1.51	25.0	44.3	0.01	0.005	120	1.946	3.400	0.1	2.92	102		3.09	0.0227	69.7	82.24	2.33	9.88	133.80	0.003	1.235	162	3.26	1.27	3256	0.01	758.2	1.2	0.689	13.12	0.1	4974.0	0.1
GL-60 Max			0.006	37.1	1.79	<50.0	45.6	<0.01	0.016	127	2.130	4.530	<0.1	4.12	138		3.40	0.0240	73.3	122.00	2.40	10.40	140.00	<0.005	1.640	173	3.41	1.36	3380	0.02	799.0	2.3	0.778	13.90	<0.2	5630.0	<0.1
GL-60 Min			<0.005	14.2	0.99	<50.0	43.0	<0.01	<0.005	115	1.750	1.410	<0.1	0.61	87		2.97	0.0215	66.4	25.30	2.20	9.22	129.00	0.003	0.556	153	3.11	1.20	3130	<0.01	681.0	0.7	0.610	12.30	<0.2	4580.0	<0.1

Note: Statistics calculated with DLs at half value.
Note: Metals reported in mg/L shaded in gray.

Table C-3: 2011 Vangorda Creek Drainage Water Quality
Total Metals

Station	Date	Sample Type	Ag µg/L	Al µg/L	As µg/L	B µg/L	Ba µg/L	Be µg/L	Bi µg/L	Ca mg/L	Cd µg/L	Co µg/L	Cr µg/L	Cu µg/L	Fe µg/L	Hg µg/L	K mg/L	Li mg/L	Mg mg/L	Mn µg/L	Mo µg/L	Na mg/L	Ni µg/L	P mg/L	Pb µg/L	S mg/L	Sb µg/L	Se µg/L	Si µg/L	Sn µg/L	Sr µg/L	Ti µg/L	Tl µg/L	U µg/L	V µg/L	Zn µg/L	Zr µg/L
LCD	15/06/2011	Surface	<0.1	5710.0	1.20	<300.0	26.0	0.70	<6.0	143	164.000	516.000	<6.0	87.00	7640	<0.3	2.20	<0.03	180.0	73200.00	<6.0	1.90	449.00		46.000	553	<3.0	1.50	3830	<30.0	493.0	<30.0	<0.3	13.40	<30.0	207000.0	<3.0
LCD	13/07/2011	Surface	<0.3	6620.0	2.00	<600.0	24.0	<1.0	<10.0	172	199.000	662.000	<10.0	114.00	13800		2.60	<0.06	237.0	103000.00	<10.0	2.60	579.00		76.000	689	<6.0	<1.0	4620	<60.0	628.0	<60.0	<0.6	18.00	<60.0	261000.0	<6.0
LCD	10/08/2011	Surface	<0.2	8040.0	3.00	<500.0	20.0	<1.0	<10.0	159	246.000	831.000	<10.0	136.00	16600		2.20	<0.05	270.0	117000.00	<10.0	4.10	706.00		113.000	807	<5.0	<1.0	5950	<50.0	639.0	<50.0	<0.5	20.00	<50.0	318000.0	<5.0
LCD	13/09/2011	Surface	<0.2	9610.0	3.00	<500.0	18.0	<1.0	<10.0	187	256.000	1010.000	<10.0	153.00	36700		2.50	<0.05	327.0	155000.00	<10.0	3.70	868.00		147.000	938	<5.0	<1.0	7300	<50.0	666.0	<50.0	0.700	26.00	<50.0	413000.0	<5.0
LCD Average			0.100	7495.0	2.30	237.5	22.0	0.55	4.500	165	216.250	754.750	4.5	122.50	18685	0.150	2.38	0.0238	253.5	112050.00	4.50	3.08	650.50		95.500	747	2.38	0.75	5425	23.75	606.5	23.8	0.350	19.35	23.8	299750.0	2.4
LCD Max			<0.3	9610.0	3.00	<600.0	26.0	<1.0	<10.0	187	256.000	1010.000	<10.0	153.00	36700	<0.3	2.60	<0.06	327.0	155000.00	<10.0	4.10	868.00		147.000	938	<6.0	1.50	7300	<60.0	666.0	<60.0	0.700	26.00	<60.0	413000.0	<6.0
LCD Min			<0.1	5710.0	1.20	<300.0	18.0	0.70	<6.0	143	164.000	516.000	<6.0	87.00	7640	<0.3	2.20	<0.03	180.0	73200.00	<6.0	1.90	449.00		46.000	553	<3.0	<1.0	3830	<30.0	493.0	<30.0	<0.3	13.40	<30.0	207000.0	<3.0
Moose Pond	25/05/2011	Surface	<0.03	158.0	3.30	<300.0	77.5	<0.05	<0.03	208	0.160	0.370	<0.5	3.20	301		3.60	0.0060	128.0	9.60	2.10	7.80	10.80		3.790	301	0.50	0.90	4670	<0.05	645.0	5.0	0.030	18.80	<1.0	47.0	<0.5
SRK GD01	18/10/2011	Seepage	<0.02	14.0	2.90	<50.0	31.0	<0.1	<1.0	329	1.230	2.100	<1.0	2.50	47		6.37	0.0300	283.0	48.00	<1.0	9.48	310.00		2.400	527	0.90	0.40	4780	<5.0	1310.0	<5.0	0.270	46.00	<5.0	2860.0	1.0
SRK GD01 Average			0.010	14.0	2.90	25.0	31.0	0.05	0.500	329	1.230	2.100	0.5	2.50	47		6.37	0.0300	283.0	48.00	0.50	9.48	310.00		2.400	527	0.90	0.40	4780	2.50	1310.0	2.5	0.270	46.00	2.5	2860.0	1.0
SRK GD01 Max			<0.02	14.0	2.90	<50.0	31.0	<0.1	<1.0	329	1.230	2.100	<1.0	2.50	47		6.37	0.0300	283.0	48.00	<1.0	9.48	310.00		2.400	527	0.90	0.40	4780	<5.0	1310.0	<5.0	0.270	46.00	<5.0	2860.0	1.0
SRK GD01 Min			<0.02	14.0	2.90	<50.0	31.0	<0.1	<1.0	329	1.230	2.100	<1.0	2.50	47		6.37	0.0300	283.0	48.00	<1.0	9.48	310.00		2.400	527	0.90	0.40	4780	<5.0	1310.0	<5.0	0.270	46.00	<5.0	2860.0	1.0
Trib A	25/05/2011	Surface	0.360	8660.0	30.00	<300.0	225.0	0.44	<0.1	349	1.080	15.500	22.0	31.00	18100		7.00	0.0250	325.0	1130.00	1.80	11.00	37.80		198.000	718	1.40	2.00	16200	<1.0	1200.0	184.0	0.280	32.30	17.0	519.0	3.4
V1	24/01/2011	Surface	0.014	5.7	0.26	<50.0	39.9	<0.01	0.045	18	0.013	0.018	<0.1	0.49	9		0.64	0.0015	2.9	0.63	0.57	2.21	0.24		0.514	<10.0	0.04	0.19	5560	<0.01	82.9	<0.5	<0.002	1.14	<0.2	2.1	<0.1
V1	17/02/2011	Surface	<0.005	3.7	0.30	<50.0	38.6	<0.01	0.015	15	<0.005	0.010	<0.1	0.22	4		0.56	0.0015	2.8	0.26	0.65	2.18	0.23		0.062	<10.0	0.03	0.21	4490	<0.01	81.8	<0.5	<0.002	1.35	<0.2	0.5	<0.1
V1	22/03/2011	Surface	<0.005	3.8	0.28	<50.0	41.0	<0.01	<0.005	15	0.010	0.011	<0.1	0.34	6		0.58	0.0016	2.9	1.42	0.74	2.22	0.22		0.278	<10.0	0.04	0.21	4120	<0.01	84.2	<0.5	<0.002	1.55	<0.2	2.9	<0.1
V1	21/04/2011	Surface	<0.005	3.7	0.30	<50.0	38.8	<0.01	<0.005	18	<0.005	0.014	<0.1	2.26	7		0.54	0.0013	2.9	0.57	0.64	2.18	1.30		0.605	<10.0	0.04	0.24	5270	<0.01	85.7	<0.5	<0.002	1.72	<0.2	0.5	<0.1
V1	17/05/2011	Surface	<0.005	45.4	0.44	<50.0	32.0	<0.01	<0.005	13	0.018	0.059	<0.1	1.35	81		1.12	0.0011	2.2	3.85	0.32	1.45	0.92		0.215	<10.0	0.03	0.14	3990	<0.01	59.8	0.7	<0.002	0.67	<0.2	1.7	<0.1
V1	15/06/2011	Surface	<0.005	29.6	0.20	<50.0	17.1	<0.01	<0.005	6	<0.005	0.023	<0.1	0.43	30		0.31	<0.0005	0.8	1.00	0.12	1.13	0.25		0.087	<10.0	<0.02	<0.04	3720	<0.01	31.2	<0.5	<0.002	0.33	<0.2	0.4	<0.1
V1	13/07/2011	Surface	<0.005	19.8	0.25	<50.0	26.0	<0.01	<0.005	10	0.008	0.024	<0.1	0.42	27		0.36	0.0009	1.5	1.13	0.13	1.56	0.27		0.109	<10.0	0.03	0.08	4640	<0.01	51.1	<0.5	<0.002	0.32	<0.2	0.5	<0.1
V1	10/08/2011	Surface	<0.005	15.2	0.25	<50.0	26.0	<0.01	<0.005	10	0.011	0.022	<0.1	0.51	27		0.32	0.0009	1.5	0.69	0.17	1.62	0.30		0.299	<10.0	0.03	0.07	4470	<0.01	52.3	<0.5	<0.002	0.33	<0.2	2.8	<0.1
V1	13/09/2011	Surface	<0.005	15.2	0.21	<50.0	28.0	<0.01	<0.005	10	0.008	0.020	<0.1	0.41	25		0.38	0.0010	1.4	1.21	0.17	1.61	0.27		0.591	<10.0	0.03	0.07	4540	<0.01	53.4	<0.5	<0.002	0.38	<0.2	2.0	<0.1
V1	18/10/2011	Surface	<0.005	9.9	0.23	<50.0	32.6	<0.01	<0.005	13	0.007	0.016	<0.1	0.26	14		0.46	0.0011	2.1	0.42	0.33	1.84	0.24		0.084	<10.0	0.03	0.12	4980	<0.01	65.8	<0.5	<0.002	0.62	<0.2	0.8	<0.1
V1	23/11/2011	Surface	<0.005	6.9	0.29	<50.0	35.9	<0.01	<0.005	17	<0.005	0.019	<0.1	0.27	9		0.53	0.0013	2.6	0.59	0.49	2.14	0.22		0.182	<10.0	0.04	0.18	6180	<0.01	74.7	<0.5	<0.002	0.80	<0.2	0.8	<0.1
V1	08/12/2011	Surface	<0.005	6.0	0.29	<50.0	36.7	<0.01	<0.005	15	0.006	0.013	<0.1	0.24	6		0.54	0.0014	2.6	0.34	0.42	2.12	0.20		0.009	<10.0	0.03	0.18	4400	<0.01	78.1	<0.5	<0.002	0.91	<0.2	1.2	<0.1
V1 Average			0.003	13.7	0.28	25.0	32.7	0.01	0.007	13	0.008	0.021	0.1	0.60	20		0.53	0.0012	2.2	1.01	0.40	1.86	0.39		0.253	5	0.03	0.14	4697	0.01	66.8	0.3	0.001	0.84	0.1	1.4	0.1
V1 Max			0.014	45.4	0.44	<50.0	41.0	<0.01	0.045	18	0.018	0.059	<0.1	2.26	81		1.12	0.0016	2.9	3.85	0.74	2.22	1.30		0.605	<10.0	0.04	0.24	6180	<0.01	85.7	0.7	<0.002	1.72	<0.2	2.9	<0.1
V1 Min			<0.005	3.7	0.20	<50.0	17.1	<0.01	<0.005	6	<0.005	0.010	<0.1	0.22	4		0.31	<0.0005	0.8	0.26	0.12	1.13	0.20		0.009	<10.0	<0.02	<0.04	3720	<0.01	31.2	<0.5	<0.002	0.32	<0.2	0.4	<0.1
V2	04/01/2011	Surface	0.060	132.0	1.50	<300.0	71.4	<0.05	<0.03	346	0.280	0.450	<0.5	1.70	309	<0.05	2.80	0.0050	217.0	14.40	1.70	11.80	3.40		6.190	510	0.30	0.60	6210	<0.05	983.0	8.0	0.020	32.20	<1.0	31.8	0.8
V2	03/02/2011	Surface	<0.03	13.0	0.80	<300.0	63.8	<0.05	<0.03	306	0.240	0.050	<0.5	1.50	31	<0.05	2.50	0.0050	226.0	2.10	1.40	11.80	2.40		1.020	542	0.20	0.60	4830	<0.05	958.0	<3.0	<0.01	32.50	<1.0	25.1	<0.5
V2	03/03/2011	Surface	<0.03	48.0	1.30	<300.0	65.2	<0.05	<0.03	355	0.290	0.140	<0.5	1.60	98	<0.05	2.90	0.0050	247.0	4.50	2.60	13.20	4.80		2.280	549	0.30	0.80	5790	<0.05	965.0	<3.0	<0.01	34.60	3.0	26.9	<0.5
V2	11/04/2011	Surface	<0.03	11.0	0.80	<300.0	64.6	<0.05	<0.03	320	0.250	0.060	<0.5	1.10	33	<50.0	2.60	0.0040	211.0	2.30	1.60	11.40	2.40		0.800	470	<0.1	0.60	5570	0.09	928.0	<3.0	<0.01	33.90	<1.0	23.3	<0.5
V2	10/05/2011	Surface	<0.03	27.0	1.10	<300.0	64.9	<0.05	<0.03	253	0.200	0.220	<0.5	1.80	54	<0.05	3.00	0.0040	169.0	15.10	1.50	9.90	3.20		2.830	373	0.30	0.70	5330	0.07	749.0	<3.0	<0.01	23.80	<1.0	35.0	<0.5
V2	18/05/2011	Surface	1.210	34700.0	88.10	<300.0	507.0	2.45	0.700	125	3.890	76.200	76.0	179.00	72300	0.004	8.00	0.0570	68.0	1800.00	2.60	6.00	185.00		819.000	<300.0	3.10	2.40	40500	<1.0	456.0	563.0	0.930	15.00	75.0	1930.0	5.4
V2	25/05/2011	Surface	<0.03	28.0	1.00	<300.0	59.5	<0.05	<0.03	245	0.190	0.130	<0.5	1.10	54	<0.05	2.70	0.0040	147.0	2.20	1.50	8.80	1.90		1.080	339	0.20	0.80	5640	<0.05	699.0	<3.0	<0.01	18.60	<1.0	19.6	<0.5
V2	06/06/2011	Surface	<0.005	5.9	0.84	<50.0	59.7	<0.01	<0.005	223	0.141	0.046	0.2	0.97	11	<0.01	2.21	0.0037	130.0	0.90	1.71	8.73	1.58		0.464	307	0.20	0.67	5430	<0.01	683.0	<0.5	0.007	19.90	<0.2	12.2	<0.1
V2	23/06/2011	Surface	<0.005	21.3	1.26	<50.0	65.8	<0.01	<0.005	216	0.132	0.141	0.2	1.74	63	<0.01	2.19	0.0036	113.0	2.51	1.80	8.47	1.63		2.010	277	0.21	0.62	5170	<0.01	672.0	<0.5	0.012	16.70	<0.2	11.4	<0.1
V2	05/07/2011	Surface	0.040	8.0	1.00	<300.0	70.5	<0.05	<0.03	222	0.180	0.050	<0.5	1.30	19	<0.05	2.30	0.0050	138.0	1.10	1.90	9.70	2.30		0.640	310	0.20	1.30	5350	0.27	683.0	<3.0	<0.01	19.60	<1.0	21.3	<0.5
V2	21/07/2011	Surface	<0.005	8.7	0.91	<50.0	66.5	<0.01	<0.005	254	0.149	0.053	0.2	1.18	18	<0.01	2.46	0.0043	136.0	1.07	1.67	8.97	4.73		0.568	363	0.19	0.62	5990	<0.01	775.0	<0.5	0.007	18.60	<0.2	12.6	<0.1
V2	03/08/2011	Surface	<0.03	6.0	0.80	<300.0	73.3	<0.05	<0.03	242	0.170	0.050	<0.5	1.40	11	<0.05	2.30	<0.003	134.0	0.50	1.70	8.90	1.70		0.410	292	0.20	0.50	5310	<0.05	766.0	<3.0	<0.01	19.90	<1.0	13.1	<0.5
V2	18/08/2011	Surface	<0.03	6.0	1.10	<300.0	72.8	<0.05	<0.03	246	0.160	0.040	<0.5	1.20	12	<0.05	2.40	0.0040	141.0	6.80	1.70	9.80	1.90		0.380	301	0.20	0.60	5260	<0.05	751.0	<3.0	<0.01	19.60	<1.0	12.9	<0.5
V2	07/09/2011	Surface	<0.03	9.0	0.90	<300.0	71.7	<0.05	<0.03	251	0.220	<0.03	<0.5	1.30	16	<0.05	2.50	0.0050	148.0	0.90	2.00	9.70	1.90		0.530	325	0.20	0.60	5200	<0.05	830.0	<3.0	<0.01	24.00	<1.0	14.1	<0.5
V2	20/09/2011	Surface	<0.03	7.0	1.00	<300.0	79.1	<0.05	<0.03	256	0.170	0.050	<0.5	1.10	57	<0.05	2.80	0.0040	160.0	14.50	1.70	10.20	1.80		0.580	329	0.20	0.50	5470	<0.05	787.0	<3.0	<0.01	23.20	<1.0	12.3	<0.5
V2	11/10/2011	Surface	<0.005	4.2	0.86	<50.0	66.9	<0.01	<0.005	241	0.156	0.026	0.2	0.96	8	<0.02	2.48	0.0036	150.0	0.45	1.87	9.52	1.49		0.209	337	0.18	0.44	5810	<0.01	815.0	<0.5	0.007	25.90	<0.2	10.2	<0.1
V2	27/10/2011	Surface	<0.03	6.0	1.00	<300.0	72.1	<0.05	<0.03	244	0.160	<0.03	<0.5	1.00	9	<0.05	2.60	0.0050	153.0	1.80	1.80	10.60	1.50		0.270	334	0.20	0.60	5390	<0.05	778.0	<3.0	<0.01	23.70	<1.0	14.6	<0.5
V2	08/11/2011	Surface	<0.005	7.8	0.97	<50.0	67.8	<0.01	0.008	290	0.172	0.045	0.2	0.94	18	<0.01	2.74	0.0044	168.0	0.80	1.98	11.40	1.67		0.609	383	0.19	0.60	5840	<0.01	914.0	0.6	0.005	28.00	<0.2	13.1	<0.1
V2	01/12/2011	Surface	<0.03	30.0	1.20	<300.0	68.9	<0.05	<0.03	265	0.170	0.140	<0.5	1.40	89	<0.05	2.40	0.0040	157.0	4.00	1.70	10.20	1.70		2.810	328	0.20	0.60	5450	<0.05	783.0	<3.0	<0.01	25.30	<1.0	15.2	<0.5
V2 Average			0.078	1846.3	5.60	117.1	91.1	0.15	0.048	258	0.385	4.101	4.2	10.65	3853	1.333	2.84	0.0070	158.6	98.73	1.81	9.95	11.95		44.352	359	0.36	0.74	7344	0.06	788.2	31.1	0.055	23.95	4.4	118.7	0.5
V2 Max			1.210	34700.0	88.10	<300.0	507.0	2.45	0.700	355	3.890	76.200	76.0	179.00	72300	<50.0	8.00	0.0570	247.0	1800.00	2.60	13.20	185.00		819.000	549	3.10	2.40	40500	<1.0	983.0	563.0	0.930	34.60	75.0	1930.0	5.4
V2 Min			<0.005	4.2	0.80	<50.0	59.5	<0.01	<0.005	125	0.132	0.026	0.2	0.94	8	0.004	2.19	<0.003	68.0	0.45	1.40	6.00	1.49		0.209	277	<0.1	0.44	4830	<0.01	456.0	<0.5	0.005	15.00	<0.2	10.2	<0.1
V20	19/05/2011	Surface	0.196	6380.0	13.30	<50.0	128.0	0.28	0.220	12	0.386	12.400	32.1	33.50	12000		2.10	0.0087	5.6	404.00	0.19	0.70	40.00		69.400	<50.0	0.24	0.12	10800	<0.2	54.4	94.0	0.112	0.53	13.2	59.0	1.4
V22	23/03/2011	Surface	0.060	46.0	0.50	58.0	24.0	<0.1	<1.0	206	67.200	356.000	<1.0	44.80	5110		3.20	0.0350	86.6	26300.00	<1.0	7.08	343.00		1.000	342	1.00	0.20	6090	<5.0	1310.0	<5.0	1.990	1.60	<5.0	80900.0	<0.5
V22	28/06/2011	Surface	0.100	4460.0	2.60	<200.0	21.0	0.60	<3.0	157	159.000	536.000	<3.0	2380.00	36400		2.00	0.0340	85.1	36400.00	<3.0	2.90	421.00		337.000	405	<2.0	<0.3	4430	<20.0	702.0	<20.0	1.300	7.40	<20.0	137000.0	<2.0
V22	11/09/2011	Surface	0.160	2340.0	3.10	<200.0	18.0	<0.4	<4.0	237	160.000	758.000	<4.0	944.00	60600		2.70	0.0470	128.0	58500.00	<4.0	4.10	621.00		278.000	586	<2.0	<0.4	4750	<20.0	1130.0	<20.0	2.000	5.50	<20.0	199000.0	<2.0
V22	22/12/2011	Surface	0.200	1520.0	5.30	<300.0	20.0	<0.5	<5.0	248	145.000	803.000	<5.0	579.00	115000		2.93	0.0490	127.0	56500.00	<5.0	5.24	648.00		218.000	578	<3.0	<0.5	6440	<30.0	1150.0	<30.0	2.100	3.90	<30.0	197000.0	<3.0
V22 Average			0.130	2091.5	2.88	102.0	20.8	0.28	1.625	212	132.800	613.250	1.6	986.95	54278		2.71	0.0413	106.7	44425.00	1.63	4.83	508.25		208.500	478	1.13	0.20	5428	9.38	1073.0	9.4	1.848	4.60	9.4	153475.0	0.9
V22 Max			0.200	4460.0	5.30	<300.0	24.0	0.60	<5.0	248	160.000	803.000	<5.0	2380.00	115000		3.20	0.0490	128.0	58500.00	<5.0	7.08	648.00		337.000	586	<3.0	<0.5	6440	<30.0	1310.0	<30.0	2.100	7.40	<30.0	199000.0	<3.0
V22 Min			0.060	46.0	0.50	58.0	18.0	<0.1	<1.0	157	67.200	356.000	<1.0	44.80	5110		2.00	0.0340	85.1	26300.00	<1.0	2.90	343.00		1.000	342	1.00	0.20	4430	<5.0	702.0	<5.0	1.300	1.60	<5.0	80900.0	<0.5
V23	23/03/2011	Surface	<0.005	7.9	1.93	<50.0	54.0	<0.01	<0.005	143	0.968	4.020	<0.1	1.00	81		3.25	0.0222	68.7	97.80	2.66	10.40	112.00	0.003	1.830	166	3.30	1.78	4600	<0.01	752.0	<0.5	0.748	12.20	<0.2	3990.0	0.2
V23	28/06/2011	Surface	<0.005	26.0	1.25	<50.0	35.6	<0.01	<0.005	103	2.020	4.430	0.2	2.22	99		2.98	0.0207	79.0	108.00	1.89	9.02	98.40	0.025	2.140	169	2.54	1.09	2620	<0.01	640.0	0.9	1.010	11.50	<0.2	2720.0	<0.1
V23	11/09/2011	Surface	<0.005	32.5	2.16	<50.0	39.2	<0.01	<0.005	114	1.640	4.380	<0.1	3.85	227		2.78	0.0209	62.5	93.70	1.95	7.67	78.20	0.006	2.990	152	2.75	1.29	2710	<0.01	632.0	1.7	1.660	7.75	0.3	2080.0	<0.1
V23	22/12/2011	Surface	0.020	11.3	1.78	<50.0	43.4	<0.01	<0.005	107	2.050	5.070	<0.1	3.15	89		3.09	0.0216	63.4	120.00	2.43	9.57	112.00	0.003	1.790	153	3.01	1.33	2820	0.02	718.0	<0.5	1.620	11.00	<0.2	4250.0	<0.1
V23 Average			0.007	19.4	1.78	25.0	43.1	0.01	0.003	117	1.670	4.475	0.1	2.56	124		3.03	0.0214	68.4	104.88	2.23	9.17	100.15	0.009	2.188	160	2.90	1.37	3188	0.01	685.5	0.8	1.260	10.61	0.2	3260.0	0.1
V23 Max			0.020	32.5	2.16	<50.0	54.0	<0.01	<0.005	143	2.050	5.070	0.2	3.85	227		3.25	0.0222	79.0	120.00	2.66	10.40	112.00	0.025	2.990	169	3.30	1.78	4600	0.02	752.0	1.7	1.660	12.20	0.3	4250.0	0.2
V23 Min			<0.005	7.9	1.25	<50.0	35.6	<0.01	<0.005	103	0.968	4.020	<0.1	1.00	81		2.78	0.0207	62.5	93.70	1.89	7.67	78.20	0.003	1.790	152	2.54	1.09	2620	<0.01	632.0	<0.5	0.748	7.75	<0.2	2080.0	<0.1

Note: Statistics calculated with DLs at half value.
Note: Metals reported in mg/L shaded in gray.

Denison Environmental Services

Table C-3: 2011 Vangorda Creek Drainage Water Quality
Total Metals

Station	Date	Sample Type	Ag µg/L	Al µg/L	As µg/L	B µg/L	Ba µg/L	Be µg/L	Bi µg/L	Ca mg/L	Cd µg/L	Co µg/L	Cr µg/L	Cu µg/L	Fe µg/L	Hg µg/L	K mg/L	Li mg/L	Mg mg/L	Mn µg/L	Mo µg/L	Na mg/L	Ni µg/L	P mg/L	Pb µg/L	S mg/L	Sb µg/L	Se µg/L	Si µg/L	Sn µg/L	Sr µg/L	Ti µg/L	Tl µg/L	U µg/L	V µg/L	Zn µg/L	Zr µg/L
V24	**07/07/2011**	**Surface**	0.200	6060.0	5.90	<300.0	35.0	0.80	<5.0	203	216.000	798.000	<5.0	3040.00	61000		2.50	0.0430	122.0	52800.00	<5.0	4.30	620.00		499.000	560	<3.0	0.60	5930	<30.0	952.0	<30.0	1.900	10.80	<30.0	184000.0	<3.0
V24	**12/07/2011**	**Surface**	<0.1	4930.0	2.50	<300.0	22.0	0.70	<5.0	172	202.000	671.000	<5.0	2330.00	47800		2.30	0.0370	113.0	49300.00	<5.0	3.50	526.00		373.000	514	<3.0	<0.5	4670	<30.0	850.0	<30.0	1.700	9.00	<30.0	181000.0	<3.0
V24	**19/07/2011**	**Surface**	0.210	4660.0	9.60	<200.0	38.0	0.60	<4.0	190	203.000	738.000	<4.0	2320.00	51500		2.40	0.0420	116.0	52800.00	<4.0	4.20	585.00		476.000	505	<2.0	<0.4	5480	<20.0	900.0	<20.0	2.200	8.90	<20.0	198000.0	<2.0
V24	**26/07/2011**	**Surface**	0.200	3740.0	3.30	<300.0	20.0	<0.5	<5.0	186	176.000	676.000	<5.0	1690.00	51300		2.20	0.0410	109.0	42500.00	<5.0	3.50	533.00		352.000	479	<3.0	<0.5	4670	<30.0	885.0	<30.0	1.800	7.00	<30.0	175000.0	<3.0
V24	**11/09/2011**	**Surface**	0.160	2270.0	3.20	<200.0	18.0	<0.4	<4.0	233	159.000	732.000	<4.0	915.00	59300		2.70	0.0460	124.0	56300.00	<4.0	3.90	593.00		273.000	577	<2.0	<0.4	4730	<20.0	1100.0	<20.0	2.100	5.40	<20.0	192000.0	<2.0
V24 Average			0.164	4332.0	4.90	130.0	26.6	0.51	2.300	197	191.200	723.000	2.3	2059.00	54180		2.42	0.0418	116.8	50740.00	2.30	3.88	571.40		394.600	527	1.30	0.30	5096	13.00	937.4	13.0	1.940	8.22	13.0	186000.0	1.3
V24 Max			0.210	6060.0	9.60	<300.0	38.0	0.80	<5.0	233	216.000	798.000	<5.0	3040.00	61000		2.70	0.0460	124.0	56300.00	<5.0	4.30	620.00		499.000	577	<3.0	0.60	5930	<30.0	1100.0	<30.0	2.200	10.80	<30.0	198000.0	<3.0
V24 Min			<0.1	2270.0	2.50	<200.0	18.0	<0.4	<4.0	172	159.000	671.000	<4.0	915.00	47800		2.20	0.0370	109.0	42500.00	<4.0	3.50	526.00		273.000	479	<2.0	<0.4	4670	<20.0	850.0	<20.0	1.700	5.40	<20.0	175000.0	<2.0
V25	**07/07/2011**	**Surface**	<0.03	31.0	0.20	<300.0	27.5	<0.05	<0.03	411	2.210	1.190	<0.5	3.10	95		2.20	0.0380	63.0	984.00	<0.3	3.40	1.50		0.400	440	<0.1	0.40	591	<0.05	1380.0	<3.0	0.750	0.31	<1.0	307.0	<0.5
V25	**12/07/2011**	**Surface**	<0.03	16.0	0.20	<300.0	21.9	<0.05	<0.03	477	2.070	0.780	<0.5	2.90	47		2.60	0.0430	72.6	975.00	<0.3	4.20	0.80		0.390	512	<0.1	0.40	<500.0	<0.05	1470.0	<3.0	0.960	0.12	<1.0	241.0	<0.5
V25	**19/07/2011**	**Surface**	<0.03	9.0	0.20	<300.0	22.1	<0.05	<0.03	497	1.630	0.750	<0.5	1.20	21		2.80	0.0460	95.5	2370.00	<0.3	4.50	0.70		0.240	537	<0.1	0.30	<500.0	<0.05	1440.0	<3.0	0.650	0.13	<1.0	97.8	<0.5
V25	**26/07/2011**	**Surface**	<0.03	8.0	<0.1	<300.0	20.9	<0.05	<0.03	448	2.000	1.060	<0.5	0.40	27		2.80	0.0490	107.0	3790.00	0.90	5.00	0.80		0.210	557	<0.1	0.40	586	<0.05	1500.0	<3.0	1.030	0.22	<1.0	71.1	<0.5
V25	**11/08/2011**	**Surface**	<0.03	12.0	0.30	<300.0	24.1	<0.05	<0.03	474	1.540	1.100	<0.5	0.40	24		3.10	0.0460	108.0	2400.00	0.40	4.70	1.20		0.230	557	<0.1	<0.2	614	<0.05	1560.0	<3.0	0.970	0.38	<1.0	40.4	<0.5
V25	**18/08/2011**	**Surface**	<0.03	50.0	0.30	<300.0	22.3	<0.05	<0.03	483	1.620	2.020	<0.5	1.00	113		2.90	0.0460	101.0	2400.00	0.40	4.30	2.30		1.410	526	<0.1	0.30	628	<0.05	1450.0	<3.0	1.070	0.30	<1.0	164.0	<0.5
V25	**11/09/2011**	**Surface**	<0.03	25.0	0.20	<300.0	23.8	<0.05	<0.03	494	1.750	0.700	0.6	1.10	47		3.20	0.0510	93.5	1650.00	0.70	4.70	1.00		0.650	537	<0.1	<0.2	<500.0	0.07	1710.0	<3.0	0.930	0.22	<1.0	151.0	<0.5
V25	**20/09/2011**	**Surface**	<0.03	79.0	0.70	<300.0	24.3	<0.05	<0.03	504	2.320	6.910	<0.5	7.10	518		3.20	0.0490	102.0	1010.00	0.50	5.00	5.70		1.790	556	<0.1	0.50	553	<0.05	1610.0	<3.0	0.900	0.30	<1.0	1490.0	<0.5
V25 Average			0.015	28.8	0.27	150.0	23.4	0.03	0.015	474	1.893	1.814	0.3	2.15	112		2.85	0.0460	92.8	1947.38	0.42	4.48	1.75		0.665	528	0.05	0.31	465	0.03	1515.0	1.5	0.908	0.25	0.5	320.3	0.3
V25 Max			<0.03	79.0	0.70	<300.0	27.5	<0.05	<0.03	504	2.320	6.910	0.6	7.10	518		3.20	0.0510	108.0	3790.00	0.90	5.00	5.70		1.790	557	<0.1	0.50	628	0.07	1710.0	<3.0	1.070	0.38	<1.0	1490.0	<0.5
V25 Min			<0.03	8.0	<0.1	<300.0	20.9	<0.05	<0.03	411	1.540	0.700	<0.5	0.40	21		2.20	0.0380	63.0	975.00	<0.3	3.40	0.70		0.210	440	<0.1	<0.2	<500.0	<0.05	1380.0	<3.0	0.650	0.12	<1.0	40.4	<0.5
V25BSP	**02/04/2011**	**Surface**	<0.03	64.0	0.50	<300.0	41.2	<0.05	<0.03	293	0.580	1.460	<0.5	5.60	129	<0.05	2.40	0.0180	64.8	128.00	<0.3	8.60	3.40	<0.002	3.320	333	<0.1	0.30	4160	<0.05	963.0	<3.0	0.280	1.96	<1.0	152.0	<0.5
V25BSP	**12/05/2011**	**Surface**	<0.005	8.6	0.13	<50.0	19.4	<0.01	<0.005	113	0.212	0.560	0.3	11.20	57	<0.01	1.55	0.0072	21.7	121.00	0.34	3.77	3.38	<0.002	0.191	143	0.15	0.43	5060	<0.01	360.0	<0.5	0.055	0.37	<0.2	75.7	<0.1
V25BSP	**15/06/2011**	**Surface**	0.006	60.5	0.39	<50.0	12.4	<0.01	<0.005	35	0.105	0.758	<0.1	6.97	51	<0.01	0.99	0.0029	6.5	12.50	0.50	1.89	1.01	0.006	0.621	25	0.23	0.15	4460	<0.01	122.0	0.9	0.130	0.52	<0.2	31.5	<0.1
V25BSP	**23/06/2011**	**Surface**	0.006	100.0	0.52	<50.0	16.7	<0.01	<0.005	36	0.123	1.110	0.2	4.80	129	<0.01	0.90	0.0024	6.7	23.90	0.28	2.14	1.40	0.009	1.210	23	0.21	0.16	4600	<0.01	135.0	3.7	0.130	0.57	<0.2	28.9	0.2
V25BSP	**07/07/2011**	**Surface**	<0.005	67.2	0.44	<50.0	19.0	<0.01	<0.005	43	0.118	1.030	<0.1	4.47	71	<0.01	0.78	0.0026	8.0	20.30	0.27	2.18	1.20	0.005	0.908	36	0.17	0.16	5370	<0.01	154.0	1.1	0.098	0.57	<0.2	28.7	<0.1
V25BSP	**12/07/2011**	**Surface**	<0.03	33.0	0.30	<300.0	53.6	<0.05	<0.03	371	0.840	0.990	<0.5	3.40	48	<0.05	2.00	0.0300	56.9	193.00	<0.3	3.60	1.40	0.004	1.070	365	<0.1	0.30	1820	<0.05	1150.0	<3.0	0.670	0.27	<1.0	115.0	<0.5
V25BSP	**19/07/2011**	**Surface**	<0.03	25.0	0.30	<300.0	40.9	<0.05	<0.03	444	0.980	0.930	<0.5	2.00	39	<0.05	2.40	0.0360	74.5	528.00	<0.3	4.10	1.00	<0.002	0.570	445	<0.1	0.50	1340	<0.05	1270.0	<3.0	0.900	0.28	<1.0	74.3	<0.5
V25BSP	**26/07/2011**	**Surface**	<0.03	29.0	0.30	<300.0	38.0	<0.05	<0.03	421	1.280	1.250	<0.5	1.80	45	<0.05	2.70	0.0420	94.8	1430.00	0.60	4.90	1.40	<0.002	0.730	509	<0.1	0.30	1160	<0.05	1330.0	<3.0	0.950	0.30	<1.0	73.2	<0.5
V25BSP	**10/08/2011**	**Surface**	<0.03	17.0	0.20	<300.0	44.5	<0.05	<0.03	346	0.340	0.260	<0.5	2.50	10	<0.05	2.30	0.0240	71.4	36.70	1.90	5.00	1.40	<0.002	0.120	378	<0.1	0.40	2810	<0.05	1070.0	<3.0	0.230	1.14	<1.0	94.8	<0.5
V25BSP	**11/08/2011**	**Surface**	<0.03	46.0	0.30	<300.0	44.6	<0.05	<0.03	331	0.490	1.210	<0.5	3.50	37	<0.05	2.30	0.0260	68.4	30.00	0.50	4.70	1.50	0.003	0.580	371	<0.1	<0.2	2470	<0.05	1070.0	<3.0	0.300	1.02	<1.0	104.0	<0.5
V25BSP	**18/08/2011**	**Surface**	<0.005	30.7	0.30	<50.0	33.9	<0.01	<0.005	346	0.619	1.630	<0.1	3.30	40	<0.01	2.40	0.0280	68.8	455.00	0.31	4.70	1.48	<0.002	0.771	389	0.10	0.27	2270	<0.01	1090.0	<0.5	0.561	0.75	<0.2	53.3	<0.1
V25BSP	**11/09/2011**	**Surface**	<0.005	63.4	0.41	<50.0	36.6	<0.01	<0.005	269	0.593	1.100	<0.1	2.36	123	<0.01	2.21	0.0175	56.5	346.00	0.26	4.19	1.32	0.004	1.290	336	0.11	0.20	2230	<0.01	986.0	3.0	0.426	0.70	<0.2	53.5	<0.1
V25BSP	**20/09/2011**	**Surface**	<0.03	28.0	0.50	<300.0	40.2	<0.05	<0.03	409	0.590	2.580	<0.5	3.50	23	<0.05	2.60	0.0340	79.2	137.00	<0.3	4.90	1.90	<0.002	0.630	447	<0.1	0.30	1910	<0.05	1270.0	<3.0	0.490	0.50	<1.0	100.0	<0.5
V25BSP	**18/10/2011**	**Surface**	<0.005	52.6	0.23	<50.0	22.5	<0.01	<0.005	191	0.372	4.940	<0.1	7.88	7	<0.01	1.81	0.0117	40.4	35.60	0.68	7.21	2.29	0.003	0.710	202	0.09	0.37	5220	<0.01	605.0	<0.5	0.125	3.08	<0.2	92.4	<0.1
V25BSP	**23/11/2011**	**Surface**	<0.005	31.7	0.30	<50.0	27.5	<0.01	<0.005	250	0.457	4.250	<0.1	5.98	4	<0.01	2.13	0.0093	49.6	33.10	0.92	10.90	2.88	0.003	0.392	241	0.12	0.51	7850	0.02	647.0	<0.5	0.092	5.26	<0.2	131.0	<0.1
V25BSP	**08/12/2011**	**Surface**	<0.005	8.3	0.23	<50.0	24.1	<0.01	<0.005	187	0.291	0.357	<0.1	2.21	5	<0.01	1.83	0.0089	40.5	13.10	0.78	8.91	1.58		0.110	194	0.13	0.47	4960	<0.01	630.0	<0.5	0.058	5.17	<0.2	88.2	<0.1
V25BSP Average			0.008	41.6	0.33	79.7	32.2	0.01	0.008	255	0.499	1.526	0.2	4.47	51	0.014	1.96	0.0188	50.5	221.45	0.50	5.11	1.78	0.003	0.826	277	0.10	0.31	3606	0.01	803.3	1.3	0.343	1.40	0.3	81.0	0.1
V25BSP Max			<0.03	100.0	0.52	<300.0	53.6	<0.05	<0.03	444	1.280	4.940	<0.5	11.20	129	<0.05	2.70	0.0420	94.8	1430.00	1.90	10.90	3.40	0.009	3.320	509	0.23	0.51	7850	<0.05	1330.0	3.7	0.950	5.26	<1.0	152.0	<0.5
V25BSP Min			<0.005	8.3	0.13	<50.0	12.4	<0.01	<0.005	35	0.105	0.260	<0.1	1.80	4	<0.01	0.78	0.0024	6.5	12.50	0.26	1.89	1.00	<0.002	0.110	23	0.09	0.15	1160	<0.01	122.0	<0.5	0.055	0.27	<0.2	28.7	<0.1
V25SPP	**22/03/2011**	**Surface**	<0.03	7.0	0.20	<300.0	51.3	<0.05	<0.03	260	0.710	0.500	<0.5	3.00	99	<0.05	2.30	0.0080	54.6	204.00	<0.3	12.10	5.20	<0.005	3.730	261	<0.1	0.30	7560	<0.05	723.0	<3.0	0.230	2.39	<1.0	232.0	<0.5
V27	**25/01/2011**	**Surface**	0.008	4.7	0.49	<50.0	53.2	<0.01	0.008	75	0.072	0.033	<0.1	0.67	14		1.00	0.0029	35.2	2.92	0.63	3.77	0.74		0.847	86	0.11	0.43	5170	<0.01	264.0	<0.5	0.010	6.54	<0.2	31.5	<0.1
V27	**17/02/2011**	**Surface**	<0.005	5.1	0.51	<50.0	53.8	<0.01	0.039	71	0.058	0.019	<0.1	0.96	9		0.95	0.0031	35.9	0.90	0.75	3.85	0.73		0.455	81	0.11	0.44	3850	0.02	260.0	<0.5	0.009	6.83	<0.2	27.9	<0.1
V27	**28/03/2011**	**Surface**	<0.005	5.4	0.53	<50.0	56.1	<0.01	<0.005	80	0.083	0.022	<0.1	0.83	11		1.01	0.0031	37.8	1.35	0.75	3.90	0.87		0.684	92	0.11	0.44	5370	0.02	277.0	<0.5	0.009	6.93	<0.2	31.9	<0.1
V27	**21/04/2011**	**Surface**	<0.005	4.3	0.53	<50.0	53.8	<0.01	0.023	81	0.076	0.025	<0.1	0.89	9		0.96	0.0032	37.9	1.15	0.86	4.10	0.82		3.060	85	0.11	0.46	4670	0.02	301.0	<0.5	0.016	7.32	<0.2	29.6	<0.1
V27	**12/05/2011**	**Surface**	<0.005	11.9	1.19	<50.0	55.7	<0.01	<0.005	95	0.121	0.055	<0.1	1.72	48		1.50	0.0032	50.3	11.40	0.85	4.32	1.48		0.536	138	0.14	0.88	4220	<0.01	322.0	<0.5	0.029	8.20	<0.2	35.7	<0.1
V27	**16/06/2011**	**Surface**	<0.005	24.8	0.35	<50.0	22.0	<0.01	<0.005	16	0.023	0.043	<0.1	1.01	40		0.45	0.0011	6.1	3.10	0.21	1.45	0.58		0.455	14	0.05	0.12	3780	<0.01	67.0	<0.5	0.012	0.99	<0.2	14.2	<0.1
V27	**11/07/2011**	**Surface**	<0.005	22.9	0.33	<50.0	53.4	<0.01	<0.005	96	0.202	0.136	<0.1	1.06	42		0.84	0.0068	19.6	21.90	0.24	2.28	1.08		0.406	99	0.08	0.19	4180	<0.01	325.0	<0.5	0.075	1.32	<0.2	52.4	<0.1
V27	**10/08/2011**	**Surface**	<0.005	19.5	0.35	<50.0	30.7	<0.01	<0.005	30	0.072	0.055	<0.1	0.89	55		0.52	0.0020	11.1	4.38	0.26	2.14	0.69		0.387	29	0.06	0.19	4580	<0.01	118.0	<0.5	0.017	1.49	<0.2	34.8	<0.1
V27	**12/09/2011**	**Surface**	<0.005	20.0	0.25	<50.0	50.0	<0.01	<0.005	117	0.264	0.211	<0.1	0.85	63		1.00	0.0098	27.7	82.30	0.25	2.73	1.02		0.337	138	0.06	0.20	3780	<0.01	423.0	<0.5	0.095	1.54	<0.2	67.3	<0.1
V27	**18/10/2011**	**Surface**	<0.005	11.4	0.35	<50.0	39.6	<0.01	<0.005	49	0.066	0.039	<0.1	0.82	42		0.69	0.0024	19.7	4.60	0.47	2.76	0.73		0.389	44	0.08	0.31	4920	<0.01	173.0	<0.5	0.011	3.50	<0.2	43.9	<0.1
V27	**24/11/2011**	**Surface**	<0.005	6.3	0.43	<50.0	44.7	<0.01	<0.005	68	0.068	0.029	0.2	0.72	16		0.85	0.0026	26.6	3.08	0.57	3.37	0.78		0.613	60	0.09	0.43	6390	<0.01	203.0	<0.5	0.012	4.64	<0.2	36.2	<0.1
V27	**12/12/2011**	**Surface**	<0.005	5.8	0.45	<50.0	45.8	<0.01	<0.005	60	0.058	0.018	<0.1	0.58	10		0.89	0.0026	29.2	1.16	0.67	3.67	0.72		0.114	65	0.09	0.41	5040	<0.01	213.0	<0.5	0.012	5.21	<0.2	29.8	<0.1
V27 Average			0.003	11.8	0.48	25.0	46.6	0.01	0.008	70	0.097	0.057	0.1	0.92	30		0.89	0.0036	28.1	11.52	0.54	3.20	0.85		0.690	78	0.09	0.38	4663	0.01	245.5	0.3	0.026	4.54	0.1	36.3	0.1
V27 Max			0.008	24.8	1.19	<50.0	56.1	<0.01	0.039	117	0.264	0.211	0.2	1.72	63		1.50	0.0098	50.3	82.30	0.86	4.32	1.48		3.060	138	0.14	0.88	6390	0.02	423.0	<0.5	0.095	8.20	<0.2	67.3	<0.1
V27 Min			<0.005	4.3	0.25	<50.0	22.0	<0.01	<0.005	16	0.023	0.018	<0.1	0.58	9		0.45	0.0011	6.1	0.90	0.21	1.45	0.58		0.114	14	0.05	0.12	3780	<0.01	67.0	<0.5	0.009	0.99	<0.2	14.2	<0.1

Note: Statistics calculated with DLs at half value.
Note: Metals reported in mg/L shaded in gray.

Denison Environmental Services

Table C-3: 2011 Vangorda Creek Drainage Water Quality
Total Metals

Faro Mine Closure

Station	Date	Sample Type	Ag µg/L	Al µg/L	As µg/L	B µg/L	Ba µg/L	Be µg/L	Bi µg/L	Ca mg/L	Cd µg/L	Co µg/L	Cr µg/L	Cu µg/L	Fe µg/L	Hg µg/L	K mg/L	Li mg/L	Mg mg/L	Mn µg/L	Mo µg/L	Na mg/L	Ni µg/L	P mg/L	Pb µg/L	S mg/L	Sb µg/L	Se µg/L	Si µg/L	Sn µg/L	Sr µg/L	Ti µg/L	Tl µg/L	U µg/L	V µg/L	Zn µg/L	Zr µg/L
V2A	03/02/2011	Surface	<0.03	11.0	1.20	<300.0	74.9	<0.05	<0.03	219	0.070	0.130	<0.5	1.10	21		2.90	0.0050	120.0	6.20	2.30	11.40	7.30		0.570	273	0.50	0.70	4540	<0.05	738.0	<3.0	<0.01	27.90	<1.0	107.0	<0.5
V2A	11/04/2011	Surface	0.060	598.0	7.40	<300.0	94.6	<0.05	<0.03	199	0.290	2.260	1.4	12.40	1250		2.70	0.0060	102.0	91.00	2.70	8.00	13.50		51.600	234	0.50	0.70	5500	0.18	656.0	17.0	0.030	20.20	2.0	231.0	<0.5
V2A	10/05/2011	Surface	<0.005	337.0	2.51	<50.0	61.9	0.04	0.011	176	0.268	1.230	0.9	4.19	733		4.63	0.0076	108.0	68.20	1.65	9.80	15.00		11.700	265	0.74	2.76	4090	<0.01	601.0	11.6	0.031	14.20	1.1	244.0	0.7
V2A	19/05/2011	Surface	0.618	12800.0	56.00	<50.0	222.0	0.85	0.330	107	1.540	27.600	35.5	60.00	27300		5.70	0.0305	72.6	551.00	3.91	5.70	81.50		388.000	139	2.75	1.68	17000	0.40	410.0	213.0	0.345	11.50	29.5	1020.0	3.6
V2A	25/05/2011	Surface	0.040	595.0	3.20	<300.0	64.2	<0.05	<0.03	204	0.330	1.150	1.7	3.30	1250		3.50	0.0080	126.0	41.10	2.00	7.60	23.50		11.200	289	0.50	1.00	5400	<0.05	646.0	19.0	0.040	18.20	2.0	465.0	<0.5
V2A	06/06/2011	Surface	<0.005	50.0	1.45	<50.0	50.7	<0.01	<0.005	243	0.304	0.239	0.3	1.83	123		3.62	0.0089	182.0	14.50	3.20	9.42	28.00		2.850	400	0.57	0.62	4770	<0.01	851.0	1.4	0.030	31.50	<0.2	462.0	0.2
V2A	22/06/2011	Surface	0.057	987.0	8.37	<50.0	78.2	0.07	0.025	233	0.577	3.540	2.7	7.35	3310		4.33	0.0145	157.0	89.90	2.07	8.47	53.70		41.800	325	0.94	1.22	5480	<0.01	810.0	28.1	0.180	24.00	2.7	666.0	1.2
V2A	05/07/2011	Surface	<0.03	127.0	2.20	<300.0	55.5	<0.05	<0.03	273	0.520	0.560	<0.5	2.30	348		4.00	0.0130	214.0	16.50	1.90	10.10	71.90		7.640	425	0.70	1.00	5080	<0.05	923.0	<3.0	0.070	36.20	<1.0	1070.0	<0.5
V2A	21/07/2011	Surface	<0.03	56.0	1.70	<300.0	57.3	<0.05	<0.03	309	0.690	0.290	<0.5	2.40	263		4.60	0.0150	247.0	9.50	1.80	10.80	78.30		2.560	499	0.60	0.70	6010	<0.05	996.0	<3.0	0.070	35.40	<1.0	1310.0	<0.5
V2A	03/08/2011	Surface	<0.03	42.0	1.70	<300.0	51.1	<0.05	<0.03	281	0.700	0.220	0.6	1.90	125		4.50	0.0160	240.0	7.80	1.50	10.00	77.20		2.210	439	0.50	0.60	4850	<0.05	1020.0	<3.0	0.060	36.80	<1.0	1470.0	<0.5
V2A	18/08/2011	Surface	<0.03	390.0	4.00	<300.0	58.0	<0.05	<0.03	291	0.690	1.400	1.2	3.80	1010		4.70	0.0160	245.0	30.20	1.60	10.80	86.80		13.900	433	0.60	0.60	5340	<0.05	991.0	6.0	0.090	35.40	<1.0	1470.0	<0.5
V2A	07/09/2011	Surface	<0.03	19.0	1.30	<300.0	51.3	<0.05	<0.03	310	0.720	0.160	<0.5	1.50	45		4.80	0.0170	250.0	6.10	1.60	10.50	83.10		0.940	443	0.50	0.60	5050	<0.05	1090.0	<3.0	0.050	42.70	<1.0	1430.0	<0.5
V2A	20/09/2011	Surface	<0.03	22.0	1.40	<300.0	51.6	<0.05	<0.03	301	0.590	0.160	<0.5	1.40	55		5.00	0.0160	248.0	7.10	1.40	10.80	80.60		0.970	455	0.50	0.50	5260	<0.05	988.0	<3.0	0.060	39.70	<1.0	1300.0	<0.5
V2A	11/10/2011	Surface	<0.03	22.0	1.30	<300.0	50.4	<0.05	<0.03	277	0.550	0.100	<0.5	1.40	28		4.20	0.0130	219.0	4.60	1.50	10.30	75.10		0.590	403	0.40	0.40	5290	<0.05	951.0	<3.0	0.050	38.20	<1.0	1130.0	<0.5
V2A	27/10/2011	Surface	<0.03	17.0	1.20	<300.0	51.6	<0.05	<0.03	284	0.490	0.150	<0.5	1.30	41		4.60	0.0150	229.0	5.70	1.40	11.90	74.90		0.740	439	0.40	0.60	5230	<0.05	960.0	<3.0	0.040	36.80	<1.0	1080.0	<0.5
V2A	08/11/2011	Surface	<0.005	28.7	1.28	<50.0	47.7	<0.01	0.009	296	0.473	0.176	0.3	1.26	88		4.30	0.0150	221.0	6.07	1.55	11.80	65.90		1.560	423	0.46	0.72	5120	0.12	1070.0	1.0	0.045	39.30	<0.2	905.0	0.2
V2A	01/12/2011	Surface	<0.03	329.0	3.40	<300.0	66.9	<0.05	<0.03	281	0.520	1.140	1.1	3.50	923		3.80	0.0110	197.0	35.40	1.60	11.50	42.80		12.300	386	0.40	0.70	5440	<0.05	874.0	12.0	0.030	35.60	<1.0	939.0	<0.5
V2A Average			0.055	966.5	5.86	113.2	69.9	0.07	0.033	252	0.548	2.383	2.8	6.53	2171		4.23	0.0134	186.9	58.29	1.98	9.93	56.42		32.419	369	0.68	0.89	5850	0.06	857.4	18.9	0.072	30.80	2.5	899.9	0.5
V2A Max			0.618	12800.0	56.00	<300.0	222.0	0.85	0.330	310	1.540	27.600	35.5	60.00	27300		5.70	0.0305	250.0	551.00	3.91	11.90	86.80		388.000	499	2.75	2.76	17000	0.40	1090.0	213.0	0.345	42.70	29.5	1470.0	3.6
V2A Min			<0.005	11.0	1.20	<50.0	47.7	<0.01	<0.005	107	0.070	0.100	0.3	1.10	21		2.70	0.0050	72.6	4.60	1.40	5.70	7.30		0.570	139	0.40	0.40	4090	<0.01	410.0	1.0	<0.01	11.50	<0.2	107.0	0.2
V4	25/01/2011	Surface	<0.005	5.6	0.68	<50.0	91.2	<0.01	0.010	98	0.023	0.048	0.2	0.60	193		1.63	0.0062	39.8	56.00	1.03	4.33	0.70		0.832	34	0.09	0.71	5550	<0.01	432.0	<0.5	0.004	17.50	<0.2	2.9	<0.1
V4	17/02/2011	Surface	<0.005	4.2	0.65	<50.0	90.2	<0.01	0.011	95	0.015	0.038	<0.1	0.66	157		1.42	0.0062	38.7	42.00	1.08	4.14	0.77		0.321	32	0.09	0.59	5030	<0.01	412.0	<0.5	<0.002	17.60	<0.2	1.9	<0.1
V4	16/06/2011	Surface	<0.005	18.4	0.84	<50.0	69.0	<0.01	<0.005	67	0.013	0.073	<0.1	1.06	188		0.85	0.0037	23.9	21.00	1.19	2.35	1.10		0.165	18	0.18	0.61	4780	<0.01	270.0	<0.5	<0.002	8.75	0.3	2.1	<0.1
V4	11/07/2011	Surface	<0.005	23.4	1.06	<50.0	73.9	<0.01	<0.005	72	0.030	0.092	<0.1	1.11	197		0.78	0.0041	23.8	24.70	1.09	2.43	1.06		0.172	17	0.16	0.46	5270	0.03	291.0	1.4	<0.002	7.23	0.3	2.6	<0.1
V4	10/08/2011	Surface	<0.005	8.8	1.08	<50.0	80.2	<0.01	<0.005	84	0.028	0.075	<0.1	0.77	270		1.00	0.0050	30.3	47.00	1.06	3.10	1.04		0.241	22	0.11	0.53	5460	<0.01	347.0	<0.5	<0.002	9.92	<0.2	6.5	<0.1
V4	12/09/2011	Surface	<0.005	4.8	0.78	<50.0	68.9	<0.01	<0.005	75	0.017	0.061	<0.1	0.74	184		0.95	0.0044	28.0	33.50	1.11	2.66	0.96		0.157	21	0.11	0.49	4840	<0.01	298.0	<0.5	<0.002	9.14	<0.2	2.5	<0.1
V4	18/10/2011	Surface	<0.005	29.5	0.95	<50.0	74.3	<0.01	<0.005	85	0.024	0.114	<0.1	0.65	384		1.05	0.0046	33.4	74.50	1.11	3.15	0.85		0.131	25	0.09	0.59	5050	<0.01	328.0	1.0	<0.002	11.80	<0.2	2.5	<0.1
V4	24/11/2011	Surface	<0.005	15.0	0.92	<50.0	87.5	<0.01	0.054	108	0.024	0.111	<0.1	0.72	350		1.25	0.0051	38.6	85.40	1.11	4.01	0.91		0.564	28	0.10	0.71	6740	<0.01	369.0	0.8	<0.002	12.90	<0.2	4.4	<0.1
V4	12/12/2011	Surface	<0.005	15.6	0.93	<50.0	85.3	<0.01	<0.005	95	0.024	0.088	<0.1	0.79	389		1.22	0.0054	37.1	79.80	1.18	3.79	0.93		0.278	26	0.10	0.67	5810	<0.01	362.0	<0.5	<0.002	12.20	<0.2	4.4	<0.1
V4 Average			0.003	13.9	0.88	25.0	80.1	0.01	0.010	87	0.022	0.078	0.1	0.79	257		1.13	0.0050	32.6	51.54	1.11	3.33	0.92		0.318	25	0.11	0.60	5392	0.01	345.4	0.5	0.001	11.89	0.1	3.3	0.1
V4 Max			<0.005	29.5	1.08	<50.0	91.2	<0.01	0.054	108	0.030	0.114	0.2	1.11	389		1.63	0.0062	39.8	85.40	1.19	4.33	1.10		0.832	34	0.18	0.71	6740	0.03	432.0	1.4	0.004	17.60	0.3	6.5	<0.1
V4 Min			<0.005	4.2	0.65	<50.0	68.9	<0.01	<0.005	67	0.013	0.038	<0.1	0.60	157		0.78	0.0037	23.8	21.00	1.03	2.35	0.70		0.131	17	0.09	0.46	4780	<0.01	270.0	<0.5	<0.002	7.23	<0.2	1.9	<0.1
V5	25/01/2011	Surface	<0.005	109.0	0.53	<50.0	85.6	<0.01	0.010	103	0.066	0.217	0.4	0.79	211		1.57	0.0064	47.5	28.20	2.06	5.32	1.87		0.341	61	0.14	2.67	5420	<0.01	399.0	3.4	0.005	6.75	0.5	5.1	<0.1
V5	17/02/2011	Surface	<0.005	52.2	0.54	<50.0	88.9	<0.01	0.013	109	0.055	0.144	0.2	0.83	112		1.68	0.0071	52.9	19.10	2.76	5.67	2.01		0.311	74	0.16	3.39	4680	<0.01	425.0	1.8	0.003	7.77	<0.2	4.5	<0.1
V5	22/03/2011	Surface	<0.005	12.9	0.50	<50.0	100.0	<0.01	<0.005	130	0.085	0.085	0.2	1.06	37		1.90	0.0077	62.3	21.10	3.72	5.86	2.37		0.304	86	0.20	4.51	5390	0.02	495.0	<0.5	0.004	9.71	0.3	6.3	<0.1
V5	21/04/2011	Surface	<0.005	26.6	0.62	<50.0	83.5	<0.01	0.052	122	0.083	0.122	<0.1	1.79	76		1.55	0.0061	44.4	23.10	3.09	5.44	2.41		1.160	54	0.17	3.11	6130	0.08	412.0	<0.5	<0.002	7.10	0.3	11.5	<0.1
V5	11/05/2011	Surface	0.097	5580.0	6.26	<50.0	150.0	0.22	0.100	47	0.436	5.580	14.2	16.50	9340		2.70	0.0099	19.8	369.00	1.40	2.50	21.10		11.600	<50.0	0.42	0.71	11000	<0.2	181.0	123.0	0.089	2.38	13.6	47.0	1.6
V5	18/05/2011	Surface	0.420	25100.0	24.00	<300.0	599.0	1.29	0.300	50	1.820	25.700	60.0	76.00	42400		5.00	0.0400	22.0	1160.00	1.10	2.00	87.30		63.300	<300.0	1.00	0.90	36300	<1.0	210.0	456.0	0.360	2.63	58.0	210.0	5.2
V5	15/06/2011	Surface	0.012	541.0	1.51	<50.0	70.7	0.07	0.007	36	0.113	1.010	1.0	3.92	819		0.74	0.0030	13.0	56.50	0.43	2.22	4.05		3.780	15	0.12	0.63	5120	<0.01	151.0	10.8	0.011	2.08	1.5	14.2	0.5
V5	13/07/2011	Surface	0.034	2430.0	2.71	<50.0	103.0	0.09	0.040	50	0.134	1.940	5.2	6.20	3640		1.20	0.0065	20.1	104.00	1.52	2.80	8.30		3.570	<50.0	0.27	0.86	7180	<0.2	241.0	61.0	0.042	3.32	5.9	16.0	0.6
V5	10/08/2011	Surface	0.023	593.0	1.60	<50.0	91.4	0.06	0.009	61	0.169	1.700	1.5	3.16	1250		1.00	0.0045	22.8	120.00	0.77	3.13	5.45		4.620	24	0.14	1.12	5650	<0.01	254.0	21.2	0.019	3.40	1.9	14.0	0.3
V5	12/09/2011	Surface	<0.005	147.0	0.97	<50.0	66.8	0.02	<0.005	53	0.073	0.397	0.3	1.90	365		0.91	0.0038	20.7	50.90	0.84	2.86	2.56		1.690	22	0.12	1.09	5340	<0.01	218.0	4.3	0.005	2.95	0.3	9.3	0.2
V5	18/10/2011	Surface	<0.005	81.9	0.69	<50.0	71.7	<0.01	<0.005	71	0.040	0.165	0.2	0.87	202		1.02	0.0043	27.5	29.00	1.22	3.54	1.63		0.509	31	0.10	1.61	5270	<0.01	271.0	3.3	0.004	4.56	0.4	3.6	<0.1
V5	23/11/2011	Surface	<0.005	101.0	0.66	<50.0	78.3	<0.01	0.007	93	0.051	0.190	0.3	0.95	224		1.20	0.0048	34.2	28.10	1.58	4.44	1.75		0.393	40	0.13	1.86	6720	<0.01	313.0	4.0	0.006	5.11	0.5	4.7	<0.1
V5	13/12/2011	Surface	<0.005	61.6	0.52	<50.0	74.7	<0.01	<0.005	84	0.047	0.113	0.2	0.86	114		1.23	0.0049	35.0	21.60	1.65	4.31	1.57		0.328	42	0.13	2.05	5500	<0.01	317.0	1.6	0.003	5.40	0.3	4.5	<0.1
V5 Average			0.047	2679.7	3.16	34.6	128.0	0.14	0.042	78	0.244	2.874	6.4	8.83	4522		1.67	0.0084	32.5	156.20	1.70	3.85	10.95		7.070	50	0.24	1.89	8438	0.06	299.0	53.1	0.042	4.86	6.4	27.0	0.7
V5 Max			0.420	25100.0	24.00	<300.0	599.0	1.29	0.300	130	1.820	25.700	60.0	76.00	42400		5.00	0.0400	62.3	1160.00	3.72	5.86	87.30		63.300	<300.0	1.00	4.51	36300	<1.0	495.0	456.0	0.360	9.71	58.0	210.0	5.2
V5 Min			<0.005	12.9	0.50	<50.0	66.8	<0.01	<0.005	36	0.040	0.085	<0.1	0.79	37		0.74	0.0030	13.0	19.10	0.43	2.00	1.57		0.304	15	0.10	0.63	4680	<0.01	151.0	<0.5	<0.002	2.08	<0.2	3.6	<0.1
V8	25/01/2011	Surface	<0.005	11.5	0.39	<50.0	78.3	<0.01	0.015	95	0.061	0.081	0.2	0.52	45		1.33	0.0062	41.6	7.37	1.24	4.81	1.69		0.163	70	0.15	1.48	4950	<0.01	393.0	<0.5	0.007	8.96	<0.2	12.3	<0.1
V8	17/02/2011	Surface	<0.005	12.0	0.45	<50.0	75.1	<0.01	<0.005	99	0.052	0.065	<0.1	0.53	38		1.37	0.0066	43.8	5.65	1.34	5.05	1.92		0.096	71	0.14	1.48	4560	<0.01	386.0	<0.5	0.005	9.67	<0.2	11.2	<0.1
V8	22/03/2011	Surface	<0.005	6.5	0.39	<50.0	86.5	<0.01	<0.005	94	0.078	0.063	<0.1	0.84	33		1.51	0.0071	47.1	6.89	1.43	5.24	2.12		0.497	80	0.23	1.64	4400	<0.01	429.0	<0.5	0.004	10.20	<0.2	14.5	<0.1
V8	21/04/2011	Surface	<0.005	8.7	0.45	<50.0	77.7	<0.01	<0.005	105	0.063	0.058	<0.1	0.52	31		1.39	0.0064	44.2	6.79	1.66	5.22	1.91		0.127	73	0.16	1.55	4950	<0.01	423.0	<0.5	0.006	9.78	<0.2	10.2	<0.1
V8	11/05/2011	Surface	0.021	968.0	1.52	<50.0	64.2	0.04	<0.02	53	0.134	0.940	2.4	4.70	1610		1.80	0.0044	23.8	77.80	1.06	2.70	5.50		2.230	<50.0	0.18	0.49	4970	<0.2	209.0	23.0	0.023	4.36	2.5	17.0	0.6
V8	18/05/2011	Surface	0.360	18600.0	22.80	<300.0	461.0	1.00	0.200	54	1.810	22.100	46.0	64.00	33000		4.00	0.0320	25.0	1130.00	0.90	2.00	72.90		82.100	<300.0	0.90	0.90	28400	<1.0	217.0	364.0	0.310	3.62	45.0	261.0	4.1
V8	15/06/2011	Surface	<0.005	320.0	1.01	<50.0	52.3	0.03	<0.005	30	0.096	0.729	0.7	2.69	568		0.66	0.0025	11.3	45.50	0.36	1.88	2.84		3.050	16	0.11	0.35	4200	<0.01	125.0	7.6	0.016	2.17	0.9	14.6	0.3
V8	13/07/2011	Surface	0.009	818.0	1.26	<50.0	101.0	0.04	<0.02	78	0.126	0.820	2.0	2.70	1270		1.10	0.0068	23.1	48.20	0.80	2.70	3.90		2.190	69	0.15	0.42	4820	<0.2	344.0	27.0	0.045	3.11	2.1	22.0	0.3
V8	10/08/2011	Surface	<0.005	89.9	0.63	<50.0	52.2	<0.01	<0.005	50	0.050	0.176	0.2	1.13	188		0.81	0.0036	18.6	16.40	0.64	2.74	1.34		0.613	30	0.12	0.58	4830	<0.01	204.0	2.6	0.014	3.15	0.3	11.7	<0.1
V8	12/09/2011	Surface	<0.005	68.6	0.49	<50.0	64.3	<0.01	<0.005	86	0.106	0.155	0.2	1.12	156		1.00	0.0064	25.9	28.20	0.53	2.85	1.52		0.497	81	0.10	0.50	4470	<0.01	323.0	1.8	0.027	2.95	<0.2	24.7	<0.1
V8	25/10/2011	Surface	<0.005	25.5	0.48	<50.0	62.9	<0.01	<0.005	70	0.042	0.071	<0.1	0.66	65		1.11	0.0049	27.1	9.20	0.95	3.48	1.35		0.195	44	0.13	1.05	4740	<0.01	291.0	0.9	0.006	4.81	<0.2	9.8	<0.1
V8	23/11/2011	Surface	<0.005	45.5	0.50	<50.0	64.6	<0.01	<0.005	92	0.051	0.101	0.2	0.88	113		1.20	0.0049	34.7	11.70	1.02	4.50	1.52		0.260	53	0.13	1.11	6700	0.03	292.0	1.8	0.007	6.40	<0.2	11.9	<0.1
V8	08/12/2011	Surface	<0.005	37.4	0.51	<50.0	66.0	<0.01	<0.005	79	0.052	0.086	<0.1	0.70	84	<0.01	1.15	0.0055	34.0	9.35	1.03	4.25	1.50		0.154	50	0.12	1.23	4650	<0.01	321.0	2.0	0.007	6.96	<0.2	14.7	<0.1
V8 Average			0.032	1616.3	2.38	34.6	100.5	0.09	0.020	76	0.209	1.957	4.0	6.23	2862	0.005	1.42	0.0075	30.8	107.93	1.00	3.65	7.69		7.090	62	0.20	0.98	6665	0.06	304.4	33.2	0.037	5.86	4.0	33.5	0.4
V8 Max			0.360	18600.0	22.80	<300.0	461.0	1.00	0.200	105	1.810	22.100	46.0	64.00	33000	<0.01	4.00	0.0320	47.1	1130.00	1.66	5.24	72.90		82.100	<300.0	0.90	1.64	28400	<1.0	429.0	364.0	0.310	10.20	45.0	261.0	4.1
V8 Min			<0.005	6.5	0.39	<50.0	52.2	<0.01	<0.005	30	0.042	0.058	<0.1	0.52	31	<0.01	0.66	0.0025	11.3	5.65	0.36	1.88	1.34		0.096	16	0.10	0.35	4200	<0.01	125.0	<0.5	0.004	2.17	<0.2	9.8	<0.1
Vang Cr C	18/05/2011	Surface	0.045	520.0	5.07	<50.0	42.4	0.06	0.040	14	0.258	1.280	1.3	7.10	1900		1.60	0.0018	3.0	114.00	0.30	1.00	3.90		26.600	<50.0	0.12	0.17	3430	<0.2	61.6	11.0	0.042	1.08	1.2	118.0	0.3
Vang Cr D	18/05/2011	Surface	0.320	2650.0	18.30	<50.0	119.0	0.17	0.090	24	0.658	6.250	5.8	26.10	7910		1.90	0.0049	9.2	275.00	0.67	1.40	12.40		177.000	<50.0	0.65	0.41	6180	<0.2	94.6	50.0	0.160	2.46	7.0	321.0	1.0

Note: Statistics calculated with DLs at half value.
Note: Metals reported in mg/L shaded in gray.

Denison Environmental Services

Table C-3: 2011 Vangorda Creek Drainage Water Quality
Total Metals

Faro Mine Closure

Station	Date	Sample Type	Ag µg/L	Al µg/L	As µg/L	B µg/L	Ba µg/L	Be µg/L	Bi µg/L	Ca mg/L	Cd µg/L	Co µg/L	Cr µg/L	Cu µg/L	Fe µg/L	Hg µg/L	K mg/L	Li mg/L	Mg mg/L	Mn µg/L	Mo µg/L	Na mg/L	Ni µg/L	P mg/L	Pb µg/L	S mg/L	Sb µg/L	Se µg/L	Si µg/L	Sn µg/L	Sr µg/L	Ti µg/L	Tl µg/L	U µg/L	V µg/L	Zn µg/L	Zr µg/L
Vang Cr E	**18/05/2011**	**Surface**	0.637	14600.0	39.60	<50.0	318.0	0.69	0.380	47	1.300	22.100	35.2	71.80	29400		3.90	0.0260	25.3	621.00	1.64	2.50	55.60		292.000	<50.0	1.57	0.90	20700	0.50	178.0	290.0	0.420	5.37	30.9	570.0	4.3
Vang Cr E	**25/05/2011**	**Surface**	0.009	127.0	0.63	<50.0	14.2	0.02	<0.005	6	0.047	0.173	<0.1	2.09	241		0.81	0.0006	2.0	21.00	0.11	0.70	0.87		3.310	<10.0	0.03	0.06	2160	<0.01	27.4	2.5	0.013	0.63	<0.2	17.7	<0.1
Vang Cr E Average			0.323	7363.5	20.12	25.0	166.1	0.36	0.191	26	0.674	11.137	17.6	36.95	14821		2.36	0.0133	13.6	321.00	0.88	1.60	28.24		147.655	15	0.80	0.48	11430	0.25	102.7	146.3	0.217	3.00	15.5	293.9	2.2
Vang Cr E Max			0.637	14600.0	39.60	<50.0	318.0	0.69	0.380	47	1.300	22.100	35.2	71.80	29400		3.90	0.0260	25.3	621.00	1.64	2.50	55.60		292.000	<50.0	1.57	0.90	20700	0.50	178.0	290.0	0.420	5.37	30.9	570.0	4.3
Vang Cr E Min			0.009	127.0	0.63	<50.0	14.2	0.02	<0.005	6	0.047	0.173	<0.1	2.09	241		0.81	0.0006	2.0	21.00	0.11	0.70	0.87		3.310	<10.0	0.03	0.06	2160	<0.01	27.4	2.5	0.013	0.63	<0.2	17.7	<0.1
VGMAIN	**18/05/2011**	**Surface**	0.126	2900.0	8.37	<50.0	118.0	0.15	0.080	39	0.477	4.730	8.2	16.40	6100		1.90	0.0061	18.0	318.00	0.79	1.90	15.80		46.400	<50.0	0.46	0.59	6770	<0.2	145.0	66.0	0.106	3.17	6.8	128.0	1.6
VGMAIN	**25/05/2011**	**Surface**	0.008	171.0	1.08	<50.0	27.5	0.03	<0.005	14	0.095	0.442	0.3	2.70	408		0.85	0.0011	4.8	57.40	0.25	0.90	1.56		6.470	<10.0	0.07	0.15	2600	<0.01	56.3	5.4	0.020	1.10	0.3	24.7	0.2
VGMAIN Average			0.067	1535.5	4.73	25.0	72.8	0.09	0.041	26	0.286	2.586	4.3	9.55	3254		1.38	0.0036	11.4	187.70	0.52	1.40	8.68		26.435	15	0.27	0.37	4685	0.05	100.7	35.7	0.063	2.14	3.6	76.4	0.9
VGMAIN Max			0.126	2900.0	8.37	<50.0	118.0	0.15	0.080	39	0.477	4.730	8.2	16.40	6100		1.90	0.0061	18.0	318.00	0.79	1.90	15.80		46.400	<50.0	0.46	0.59	6770	<0.2	145.0	66.0	0.106	3.17	6.8	128.0	1.6
VGMAIN Min			0.008	171.0	1.08	<50.0	27.5	0.03	<0.005	14	0.095	0.442	0.3	2.70	408		0.85	0.0011	4.8	57.40	0.25	0.90	1.56		6.470	<10.0	0.07	0.15	2600	<0.01	56.3	5.4	0.020	1.10	0.3	24.7	0.2
VL-1	**13/04/2011**	**Surface**	<0.1	629.0	0.70	<1000.0	17.6	<0.2	<0.1	211	83.900	491.000	<2.0	176.00	49200		2.00	0.0420	89.0	33300.00	<1.0	5.00	432.00	<0.005	64.500	351	<0.4	<0.8	5420	0.40	1320.0	<10.0	1.590	3.00	<4.0	126000.0	<2.0
VL-1	**14/06/2011**	**Surface**	<0.1	4100.0	4.80	<1000.0	23.1	0.60	<0.1	141	159.000	581.000	3.0	2990.00	50300		2.00	0.0320	88.0	36100.00	2.00	3.00	454.00	<0.005	286.000	411	<0.4	<0.8	4190	<0.2	639.0	<10.0	1.280	7.59	<4.0	141000.0	<2.0
VL-1	**13/07/2011**	**Surface**	<0.1	5070.0	3.30	<1000.0	22.4	0.70	<0.1	172	198.000	682.000	<2.0	2320.00	48900		2.00	0.0380	102.0	45800.00	<1.0	3.00	538.00	<0.005	365.000	466	<0.4	<0.8	5080	<0.2	830.0	<10.0	1.350	9.83	<4.0	174000.0	<2.0
VL-1	**10/08/2011**	**Surface**	0.300	2670.0	2.30	<1000.0	20.5	0.50	<0.1	215	167.000	777.000	<2.0	1320.00	55800		3.00	0.0480	120.0	53300.00	<1.0	4.00	624.00	0.003	302.000	499	<0.4	<0.8	4710	<0.2	1010.0	<10.0	1.850	6.03	<4.0	196000.0	<2.0
VL-1	**07/09/2011**	**Surface**	<0.1	2240.0	2.40	<1000.0	19.5	0.50	<0.1	226	159.000	758.000	<2.0	993.00	61100		2.00	0.0460	121.0	51900.00	<1.0	4.00	600.00	<0.005	270.000	501	<0.4	<0.8	4400	<0.2	1090.0	<10.0	1.800	5.18	<4.0	187000.0	<2.0
VL-1 Average			0.100	2941.8	2.70	500.0	20.6	0.48	0.050	193	153.380	657.800	1.4	1559.80	53060		2.20	0.0412	104.0	44080.00	0.80	3.80	529.60	0.003	257.500	446	0.20	0.40	4760	0.16	977.8	5.0	1.574	6.33	2.0	164800.0	1.0
VL-1 Max			0.300	5070.0	4.80	<1,000.0	23.1	0.70	<0.1	226	198.000	777.000	3.0	2990.00	61100		3.00	0.0480	121.0	53300.00	2.00	5.00	624.00	<0.005	365.000	501	<0.4	<0.8	5420	0.40	1320.0	<10.0	1.850	9.83	<4.0	196000.0	<2.0
VL-1 Min			<0.1	629.0	0.70	<1,000.0	17.6	<0.2	<0.1	141	83.900	491.000	<2.0	176.00	48900		2.00	0.0320	88.0	33300.00	<1.0	3.00	432.00	0.003	64.500	351	<0.4	<0.8	4190	<0.2	639.0	<10.0	1.280	3.00	<4.0	126000.0	<2.0
VL-15	**13/04/2011**	**Surface**	0.200	552.0	1.90	<1000.0	16.6	<0.2	<0.1	266	142.000	911.000	<2.0	233.00	48600		3.00	0.0480	139.0	66500.00	<1.0	5.00	748.00	<0.005	64.200	584	<0.4	<0.8	4790	0.40	1300.0	<10.0	1.800	2.16	<4.0	217000.0	<2.0
VL-15	**14/06/2011**	**Surface**	<0.1	1380.0	4.30	<1000.0	19.1	0.30	<0.1	244	139.000	834.000	<2.0	864.00	45800		3.00	0.0480	135.0	58100.00	<1.0	4.00	685.00	<0.005	141.000	597	<0.4	<0.8	4990	<0.2	1120.0	<10.0	1.700	3.01	<4.0	196000.0	<2.0
VL-15	**13/07/2011**	**Surface**	<0.1	1620.0	2.50	<1000.0	19.8	0.30	<0.1	236	140.000	848.000	<2.0	922.00	47400		3.00	0.0490	130.0	58600.00	<1.0	4.00	689.00	<0.005	189.000	566	<0.4	<0.8	4460	<0.2	1210.0	<10.0	1.820	3.71	<4.0	202000.0	<2.0
VL-15	**10/08/2011**	**Surface**	<0.1	1520.0	1.80	<1000.0	17.6	0.40	<0.1	250	136.000	802.000	<2.0	853.00	51700		3.00	0.0520	131.0	56400.00	<1.0	5.00	660.00	0.004	220.000	515	<0.4	<0.8	4670	<0.2	1130.0	<10.0	1.700	3.53	<4.0	200000.0	<2.0
VL-15	**07/09/2011**	**Surface**	<0.1	1480.0	1.00	<1000.0	16.5	0.30	<0.1	254	133.000	848.000	<2.0	853.00	53500		3.00	0.0430	140.0	61300.00	<1.0	5.00	691.00	<0.005	210.000	528	<0.4	<0.8	4470	<0.2	1140.0	<10.0	1.660	3.29	<4.0	212000.0	<2.0
VL-15 Average			0.080	1310.4	2.30	500.0	17.9	0.28	0.050	250	138.000	848.600	1.0	745.00	49400		3.00	0.0480	135.0	60180.00	0.50	4.60	694.60	0.003	164.840	558	0.20	0.40	4676	0.16	1180.0	5.0	1.736	3.14	2.0	205400.0	1.0
VL-15 Max			0.200	1620.0	4.30	<1,000.0	19.8	0.40	<0.1	266	142.000	911.000	<2.0	922.00	53500		3.00	0.0520	140.0	66500.00	<1.0	5.00	748.00	<0.005	220.000	597	<0.4	<0.8	4990	0.40	1300.0	<10.0	1.820	3.71	<4.0	217000.0	<2.0
VL-15 Min			<0.1	552.0	1.00	<1,000.0	16.5	<0.2	<0.1	236	133.000	802.000	<2.0	233.00	45800		3.00	0.0430	130.0	56400.00	<1.0	4.00	660.00	0.004	64.200	515	<0.4	<0.8	4460	<0.2	1120.0	<10.0	1.660	2.16	<4.0	196000.0	<2.0
VL-3	**13/04/2011**	**Surface**	<0.1	1560.0	5.90	<1000.0	18.4	0.30	<0.1	237	131.000	755.000	<2.0	437.00	58800		3.00	0.0510	118.0	51600.00	<1.0	5.00	617.00	<0.005	267.000	487	<0.4	<0.8	5050	0.60	1230.0	<10.0	2.020	4.90	<4.0	180000.0	<2.0
VL-3	**14/06/2011**	**Surface**	<0.1	3290.0	11.70	<1000.0	23.8	0.50	<0.1	211	152.000	771.000	3.0	2210.00	49300		2.00	0.0460	120.0	49700.00	<1.0	4.00	618.00	0.008	318.000	535	<0.4	<0.8	5250	<0.2	1010.0	<10.0	1.710	6.19	<4.0	184000.0	<2.0
VL-3	**13/07/2011**	**Surface**	<0.1	1830.0	2.50	<1000.0	21.7	0.40	<0.1	261	151.000	872.000	<2.0	1120.00	50000		3.00	0.0490	134.0	60300.00	<1.0	5.00	715.00	<0.005	168.000	542	<0.4	<0.8	4990	<0.2	1260.0	<10.0	1.990	3.64	<4.0	210000.0	<2.0
VL-3	**10/08/2011**	**Surface**	0.200	1670.0	1.10	<1000.0	19.1	0.30	<0.1	230	142.000	782.000	<2.0	902.00	50100		3.00	0.0510	124.0	55200.00	<1.0	4.00	634.00	0.004	200.000	496	<0.4	<0.8	4460	<0.2	1110.0	<10.0	1.800	3.94	<4.0	195000.0	<2.0
VL-3	**07/09/2011**	**Surface**	<0.1	2230.0	3.20	<1000.0	19.0	0.40	<0.1	233	162.000	768.000	<2.0	940.00	73900		2.00	0.0460	122.0	52900.00	<1.0	4.00	600.00	<0.005	268.000	473	<0.4	<0.8	4530	<0.2	1080.0	<10.0	1.880	4.76	<4.0	189000.0	<2.0
VL-3 Average			0.080	2116.0	4.88	500.0	20.4	0.38	0.050	234	147.600	789.600	1.4	1121.80	56420		2.60	0.0486	123.6	53940.00	0.50	4.40	636.80	0.004	244.200	507	0.20	0.40	4856	0.20	1138.0	5.0	1.880	4.69	2.0	191600.0	1.0
VL-3 Max			0.200	3290.0	11.70	<1,000.0	23.8	0.50	<0.1	261	162.000	872.000	3.0	2210.00	73900		3.00	0.0510	134.0	60300.00	<1.0	5.00	715.00	0.008	318.000	542	<0.4	<0.8	5250	0.60	1260.0	<10.0	2.020	6.19	<4.0	210000.0	<2.0
VL-3 Min			<0.1	1560.0	1.10	<1,000.0	18.4	0.30	<0.1	211	131.000	755.000	<2.0	437.00	49300		2.00	0.0460	118.0	49700.00	<1.0	4.00	600.00	0.004	168.000	473	<0.4	<0.8	4460	<0.2	1010.0	<10.0	1.710	3.64	<4.0	180000.0	<2.0
VL-30	**13/04/2011**	**Surface**	0.400	428.0	1.90	<1000.0	14.9	<0.2	0.300	260	131.000	871.000	<2.0	6350.00	50300		3.00	0.0500	137.0	64700.00	7.00	5.00	744.00	<0.005	300.000	584	1.20	<0.8	4640	10.00	1310.0	<10.0	1.720	1.94	<4.0	213000.0	<2.0
VL-30	**14/06/2011**	**Surface**	<0.1	1430.0	14.20	<1000.0	22.5	<0.2	<0.1	235	139.000	851.000	<2.0	899.00	47500		3.00	0.0470	137.0	59800.00	<1.0	4.00	701.00	0.006	203.000	632	<0.4	<0.8	4810	<0.2	1130.0	<10.0	1.670	3.16	<4.0	201000.0	<2.0
VL-30	**13/07/2011**	**Surface**	<0.1	1570.0	2.60	<1000.0	19.1	<0.2	<0.1	247	145.000	855.000	<2.0	875.00	51800		3.00	0.0490	133.0	59400.00	<1.0	4.00	694.00	<0.005	203.000	552	<0.4	<0.8	4650	<0.2	1230.0	<10.0	1.800	3.31	<4.0	204000.0	<2.0
VL-30	**10/08/2011**	**Surface**	0.200	1560.0	1.60	<1000.0	18.5	0.30	<0.1	248	145.000	822.000	<2.0	843.00	52700		3.00	0.0530	133.0	58200.00	<1.0	5.00	681.00	0.003	237.000	538	<0.4	<0.8	4620	<0.2	1200.0	<10.0	1.790	4.02	<4.0	205000.0	<2.0
VL-30	**07/09/2011**	**Surface**	<0.1	1400.0	0.90	<1000.0	16.8	<0.2	<0.1	253	138.000	795.000	<2.0	767.00	53400		3.00	0.0480	132.0	57700.00	<1.0	4.00	651.00	<0.005	196.000	537	<0.4	<0.8	4540	<0.2	1170.0	<10.0	1.690	3.20	<4.0	200000.0	<2.0
VL-30 Average			0.150	1277.6	4.24	500.0	18.4	0.14	0.100	249	139.600	838.800	1.0	1946.80	51140		3.00	0.0494	134.4	59960.00	1.80	4.40	694.20	0.003	227.800	569	0.40	0.40	4652	2.08	1208.0	5.0	1.734	3.13	2.0	204600.0	1.0
VL-30 Max			0.400	1570.0	14.20	<1,000.0	22.5	0.30	0.300	260	145.000	871.000	<2.0	6350.00	53400		3.00	0.0530	137.0	64700.00	7.00	5.00	744.00	0.006	300.000	632	1.20	<0.8	4810	10.00	1310.0	<10.0	1.800	4.02	<4.0	213000.0	<2.0
VL-30 Min			<0.1	428.0	0.90	<1,000.0	14.9	<0.2	<0.1	235	131.000	795.000	<2.0	767.00	47500		3.00	0.0470	132.0	57700.00	<1.0	4.00	651.00	0.003	196.000	537	<0.4	<0.8	4540	<0.2	1130.0	<10.0	1.670	1.94	<4.0	200000.0	<2.0
VL-40	**13/04/2011**	**Surface**	0.200	307.0	2.00	<1000.0	13.0	<0.2	<0.1	272	117.000	862.000	<2.0	155.00	54300		3.00	0.0500	135.0	64600.00	<1.0	5.00	718.00	<0.005	53.400	564	<0.4	<0.8	4680	0.40	1300.0	<10.0	1.630	1.62	<4.0	205000.0	<2.0
VL-40	**14/06/2011**	**Surface**	0.500	5100.0	130.00	<1000.0	562.0	0.40	<0.4	249	146.000	802.000	11.0	901.00	80300		<5.0	0.0530	128.0	57300.00	<1.0	<5.0	655.00	<0.005	643.000	<1000.0	3.00	<0.8	9330	<4.0	1230.0	<100.0	2.270	4.20	<10.0	191000.0	<2.0
VL-40	**13/07/2011**	**Surface**	<0.1	1480.0	2.70	<1000.0	18.2	<0.2	<0.1	263	137.000	902.000	<2.0	930.00	55000		3.00	0.0440	138.0	62500.00	<1.0	5.00	740.00	<0.005	192.000	582	<0.4	<0.8	5060	<0.2	1160.0	<10.0	1.690	3.51	<4.0	215000.0	<2.0
VL-40	**10/08/2011**	**Surface**	<0.1	1510.0	1.50	<1000.0	18.3	0.40	<0.1	253	137.000	811.000	<2.0	823.00	54300		3.00	0.0530	132.0	57600.00	<1.0	5.00	671.00	0.003	232.000	504	<0.4	<0.8	4500	<0.2	1180.0	<10.0	1.860	3.86	<4.0	201000.0	<2.0
VL-40	**07/09/2011**	**Surface**	<0.1	1260.0	0.80	<1000.0	16.4	0.30	<0.1	248	136.000	810.000	<2.0	738.00	53100		3.00	0.0470	134.0	58000.00	<1.0	4.00	656.00	<0.005	158.000	553	<0.4	<0.8	4520	<0.2	1170.0	<10.0	1.610	3.04	<4.0	200000.0	<2.0
VL-40 Average			0.170	1931.4	27.40	500.0	125.6	0.26	0.080	257	134.600	837.400	3.0	709.40	59400		2.90	0.0494	133.4	60000.00	0.50	4.30	688.00	0.003	255.680	541	0.76	0.40	5618	0.54	1208.0	14.0	1.812	3.25	2.6	202400.0	1.0
VL-40 Max			0.500	5100.0	130.00	<1,000.0	562.0	0.40	<0.4	272	146.000	902.000	11.0	930.00	80300		<5.0	0.0530	138.0	64600.00	<1.0	5.00	740.00	<0.005	643.000	<1,000.0	3.00	<0.8	9330	<4.0	1300.0	<100.0	2.270	4.20	<10.0	215000.0	<2.0
VL-40 Min			<0.1	307.0	0.80	<1,000.0	13.0	<0.2	<0.1	248	117.000	802.000	<2.0	155.00	53100		3.00	0.0440	128.0	57300.00	<1.0	4.00	655.00	0.003	53.400	504	<0.4	<0.8	4500	<0.2	1160.0	<10.0	1.610	1.62	<4.0	191000.0	<2.0
VL-5	**13/04/2011**	**Surface**	0.200	1330.0	3.50	<1000.0	18.0	<0.2	<0.1	237	140.000	753.000	8.0	393.00	61000		3.00	0.0470	115.0	51700.00	<1.0	4.00	627.00	<0.005	260.000	498	<0.4	<0.8	5300	0.30	1230.0	<10.0	1.860	4.10	<4.0	181000.0	<2.0
VL-5	**14/06/2011**	**Surface**	<0.1	1680.0	7.30	<1000.0	20.8	<0.2	<0.1	236	137.000	815.000	<2.0	1190.00	45000		3.00	0.0450	134.0	56900.00	<1.0	4.00	681.00	<0.005	148.000	572	<0.4	<0.8	5000	<0.2	1090.0	<10.0	1.690	3.59	<4.0	195000.0	<2.0
VL-5	**13/07/2011**	**Surface**	<0.1	1480.0	2.20	<1000.0	20.4	0.30	<0.1	235	141.000	848.000	<2.0	869.00	32100		3.00	0.0470	133.0	58700.00	<1.0	4.00	699.00	<0.005	151.000	557	<0.4	<0.8	4500	<0.2	1220.0	<10.0	1.570	3.59	<4.0	205000.0	<2.0
VL-5	**10/08/2011**	**Surface**	0.200	1520.0	1.00	<1000.0	18.7	0.30	<0.1	247	136.000	784.000	<2.0	855.00	49200		3.00	0.0510	129.0	55600.00	<1.0	5.00	646.00	0.004	187.000	500	<0.4	<0.8	4560	<0.2	1140.0	<10.0	1.670	3.62	<4.0	196000.0	<2.0
VL-5	**07/09/2011**	**Surface**	<0.1	1760.0	0.90	<1000.0	19.3	0.40	<0.1	217	151.000	816.000	<2.0	901.00	47500		3.00	0.0480	132.0	57500.00	<1.0	4.00	667.00	<0.005	213.000	511	<0.4	<0.8	3910	<0.2	1230.0	<10.0	1.800	3.72	<4.0	201000.0	<2.0
VL-5 Average			0.110	1554.0	2.98	500.0	19.4	0.24	0.050	234	141.000	803.200	2.4	841.60	46960		3.00	0.0476	128.6	56080.00	0.50	4.20	664.00	0.003	191.800	528	0.20	0.40	4654	0.14	1182.0	5.0	1.718	3.72	2.0	195600.0	1.0
VL-5 Max			0.200	1760.0	7.30	<1,000.0	20.8	0.40	<0.1	247	151.000	848.000	8.0	1190.00	61000		3.00	0.0510	134.0	58700.00	<1.0	5.00	699.00	<0.005	260.000	572	<0.4	<0.8	5300	0.30	1230.0	<10.0	1.860	4.10	<4.0	205000.0	<2.0
VL-5 Min			<0.1	1330.0	0.90	<1,000.0	18.0	<0.2	<0.1	217	136.000	753.000	<2.0	393.00	32100		3.00	0.0450	115.0	51700.00	<1.0	4.00	627.00	0.004	148.000	498	<0.4	<0.8	3910	<0.2	1090.0	<10.0	1.570	3.59	<4.0	181000.0	<2.0

Note: Statistics calculated with DLs at half value.
Note: Metals reported in mg/L shaded in gray.

Table C-4: 2011 Vangorda Creek Drainage Water Quality Bioassay Results

Station	Date	Percent Mortality				Temp. (°C)		pH		D.O. (mg/L)		Conductivity	LC_{50} Final Result
		24 hr	48 hr	72 hr	96 hr	Initial	Final	Inital	Final	Initial	Final	(µS/cm)	(%v/v)
V2	**03/03/2011**	0	0	0	0	14.5	15.1	7.8	8.0	10.6	9.7	2755	Pass: 100%
V2	**23/06/2011**	0	0	0	0	15.7	15.0	7.8	8.2	10.0	9.7	1637	Pass: 100%
V2	**20/09/2011**	0	0	0	0	15.4	14.9	7.9	8.4	10.2	9.8	1973	Pass: 100%
V2	**01/12/2011**	0	0	0	0	15.2	14.8	7.9	8.2	10.4	10.0	1896	Pass: 100%
V25BSP	**23/06/2011**	0	0	0	0	15.8	15.1	7.9	7.8	9.6	9.7	252	Pass: 100%
V25BSP	**11/09/2011**	0	0	0	0	14.7	15.1	7.7	7.7	10.4	10.0	1562	Pass: 100%
V25BSP	**08/12/2011**	0	0	0	0	14.6	14.9	7.5	8.0	10.7	10.0	1118	Pass: 100%
Van. Clar. Pond	**23/06/2011**	0	0	0	0	15.8	15.1	8.6	7.3	9.3	9.9	2035	Pass: 100%

Denison Environmental Services

Table C-5: 2011 Vangorda Creek Drainage Water Quality
Groundwater Well Parameters

Faro Mine Closure

Site	Date	WL Time	Water Level from TOC (WL-m)	Depth to Bottom from TOC (DTB-m)	Well Volume (L)	Target Purge Volume (L)	Total Purge Volume (L)	Purge Rate (L/s)	Stick-up (m)	Purge Method	Comments
BH05-9B-R	10/Jun/11	16:18	0.030	19.845	40.160	120.4800	121	0.063	0.961	Pump/Assist	Good yield and clear water. WL taken June 10/11; Well outer casing in good condition; Tip of inner casing small piece cracked and piece is missing, otherwise PVC pipe is in good condition.
BH05-9B-R	4/Oct/11	14:48	0.900	19.738	38.185	114.5539	116	0.081	0.942	Pump/Assist	Black tinged purge.;Outer well in good condition; inner well top slightly cracked; labelled.;Black tinged sample.
P09-GS1A	29/Jun/11	13:29	2.007	30.407	57.567	172.7004	174	0.033	0.87	Hydrolift	WL taken on June 13/11 - frozen at 3.365m; WL taken on June 29/11; 1st purge on June 29/11 - dry at 104L; 2nd purge on July 5/11; Outer casing is in good condition and has cap but Waterra sticks out the top which prevents the cap from being replaced; Inner casing is in good condition and has cap but cannot be placed back on dut to Waterra stick out of casing; Clear purge; Deep well needed to hydrolift and still takes a long time.
P09-GS1A	13/Oct/11	10:12	2.43	30.399	56.693	170.079489	174	0.034	0.878	Hydrolift	Clear purge.;Outer well in good condition; Inner well in good condition; Caps available for both wells but waterra tubing protrudes wells and cap can not be placed on; Needs label; Needs foot valve.;Cloudy sample - sediment in sample.
P09-GS1B	29/Jun/11	13:54	1.863	7.378	11.179	33.5367	35	0.146	0.909	WaterraFV	Good yield.;WL taken on June 13/11 - frozen at 2.618m; WL taken on June 29/11 - 1.863m; Cement base is heaved and wobbly; Inner pipe is in good condition and well capped; Tubing requires pliers to lift out.
P09-GS1B	6/Oct/11	8:45	2.289	7.398	10.356	31.067829	32	0.059	0.908	WaterraFV	Clear Purge.;Outer well in good condition - capped; Iner well in good condition - capped; Cement base heaved; Not labelled.;Clear sample; Sediment in sample.
P09-GW1	13/Jun/11	14:05	4.018	4.271					0.791	PumpFV/Waterra	Insufficient water to sample.;WL taken on June 13/11; Insufficient amount of water to sample; Outer casing in good condition and capped but not labelled; Inner casing is in good condition and is capped.
P09-GW3	13/Jun/11	13:30	2.687	3.124	0.886	2.658	3	0.013	0.894	WaterraFV	Fast recharge; Dirty purge and sample.;WL taken on June 13/11; 1st purge on June 13/11 - dry at 2L; 2nd purge on June 13/11 - dry at 1L; Outer well is in good condition and capped but not labelled; Inner casing is capped and is in good condition.
P09-LCD1	12/Jun/11	13:05	3.796	7.127	6.752	20.2560	21	0.050	0.940	PumpFV/Waterra	WL taken on June 12/11; 1st purge on June 12/11 - dry at 15L; 2nd purge on June 13/11; Outer casing is in good condition and is capped; Inner casing is in good condition and is capped.
P09-LCD1	12/Oct/11	12:00	3.929	7.345	6.924	20.772696	26	0.144	0.928	PumpFV/Waterra	Cloudy purge.;Outer well in good condition - capped; Inner well in good condition - capped; Needs label.;Cloudy sample - sediment in sample.
P09-LCD4	13/Jun/11	15:19	2.064	12.087	20.300	60.9	23.5	0.030	0.902	Pump/Assist	WL taken on June 13/11; 1st purge on June 13/11 - dry at 20L; 2nd purge on June 14/11 - dry at 3.5L; Cement base and case wobbly; Very dirty purge.
P09-LCD4	12/Oct/11	11:55	6.120	12.207	12.328	36.9850	15.8	0.011	0.866	Pump/Assist	Dirty purge.;Outer well in good condition - capped; Inner well in good condition - capped; Labelled.
P09-LCD6	12/Jun/11	11:15	5.665	7.92	4.571	13.713	15	0.050	0.76	PumpFV/Waterra	WL taken on June 12/11; 1st purge on June 12/11 - dry at 10L; 2nd purge on June 13/11; Outer casing is in good condition and is capped; Inner casing is in god condition and capped.
P09-LCD6	12/Oct/11	11:52	5.715	7.94	4.510	13.5302	15	0.125	0.745	PumpFV/Waterra	Dirty purge.;Outer well in good condition - capped; Inner well in good condition - capped; Labelled.;Dirty sample - sediment in sample.
P09-VC1	11/Jun/11	15:52	4.9	68.780	129.490	388.4700	390	0.096	1.045	PumpFV/Waterra	Good yield and clear sample water.;WL taken June 11/11; Well sitting at an angle; Cement lifted from ground; Outer casing is capped and inner PVC pipe (casing) is not capped; Purge water is clear.
P09-VC1	18/Oct/11	15:09	4.52	68.78	130.255	390.7651	391	0.080	0.912	Hydrolift	
P09-VC2	11/Jun/11	15:41	1.814	22.071	41.060	123.18	135	0.061	0.91	Hydrolift	Good yield and clear sample water.;WL taken on June 11/11; Well sitting in standing water; Cannot see base of well as it is immersed in water.
P09-VC2	5/Oct/11	10:33	1.85	22.092	41.031	123.0916	128	0.125	0.927	PumpFV/Waterra	Clear purge; clear sample.;Outer well in good condition; capped; inner well in good condition; base slightly heaved; labelled.
P2001-2A	10/Jun/11	14:57	3.191	13.958	21.830	65.49	66	0.046	0.442	Pump/Assist	WL taken on June 10/11; Let well recharge 24 hrs; 1st purge June 10/11-dry at 44L; 2nd purge June 11/11-22L; Well jacking (cement); Well inner casing capped; Purge water grey in colour.
P2001-2A	6/Oct/11	10:58	4.557	27.445	46.394	139.181928	140	0.041	0.353	Pump/Assist	First purge on October 6 - dry at 63L; Second purge on October 12 - dry at 66L; Third purge on October 12 - 11L collected. Grey coloured purge.;Outer well in good condition - capped; Inner well in good condition - capped; Inner well surrounded in bentonite; Labelled; Base heaved.
P2001-2B	10/Jun/11	10:21	4.414	27.428	46.649	139.947	142	0.088		Pump/Assist	WL taken on June 10/11; 1st purge on June 10/11 - dry at 60L; 2nd purge on June 12/11 - dry at 50L; 3rd purge on June 13/11 - 32L;
P2001-2B	6/Oct/11	10:59	4.479	14.020	19.340	58.0188	59	0.031	0.433	Pump/Assist	Dirty purge.;Outer well in good condition - capped; Inner well in good condition - capped and surrounded in bentonite; Cement based heaved; Labelled.;Dirty sample; Sediment in sample.
P2001-3	8/Jun/11	12:06	38.061	63.11	50.800	152.4	160	0.030	0.794	Hydrolift	Blockage @ 39.069m. Very muddy. No waterra tubing (possibly fell & now causing blockage). Could not measure past 60m; used last year's DTB data.Could not measure past 60m so used last year's DTB data.
P2001-3	17/Oct/11	14:40	37.841	62.829	50.651	151.9520	154	0.069	0.694	Hydrolift	
P96-9A	10/Jun/11	16:25	5.619	9.39	7.640	22.92	23	0.063	0.975	PumpFV/Waterra	WL taken on June 10/11; Well inner and outer casing is in good condition; Well capped.
P96-9A	4/Oct/11	14:58	5.811	9.328	7.129	21.3869	22	0.061	0.841	PumpFV/Waterra	Clear sample.;Dirty purge.;Outer well in good condition; Inner well in good condition; Inner well protrudes above outer well; Base heaved; Labelled.
PW-10-01 (DH1)	3/Feb/11	13:49	23.823	29.099	23.269	69.8070	130	0.967		Hydrolift	WL taken Feb. 03, 11; 1st purge on Feb. 03, 11 - dry at 100L; 2nd purge on Feb. 07, 11- dry at 30L; Purge black with sediment present and slight sulphur smell.
PW-10-01 (DH1)	15/Jun/11	13:07	21.313	29.251	64.353	193.059	193.1	0.040	0.77	Hydrolift	WL taken June 15/11; 1st purge - 99L - dry; 2nd purge on June 22/11 - 87L -dry; 3rd purge on June 23/11 - 7.1L; Outer casing in good condition. Inner pipe is in good condition.
PW-10-01 (DH1)	18/Oct/11	10:18	23.46	33.6	46.238	138.7152	139	0.070	0.77	Hydrolift	Outer well in good condition - capped; Inner well in good condition - capped; Needs Label; 1st purge with 3/4" x 1" tubing; 2nd purge with regular tubing.
PW-10-02 (DH2)	3/Feb/11	15:46	14.881	16.135	5.540	16.62	14	0.023		Hydrolift	WL taken on Feb. 03, 11; 1st purge on Feb. 07, 11 - dry at 10L; 2nd purge on Feb. 10, 11 - dry at 4L; Purge dirty with sediment present; Sediment obstructed Waterra tubing and foot valve.
PW-10-02 (DH2)	14/Jun/11	14:11	12.498	16.908	35.800	107.4	78	0.030	0.757	Hydrolift	WL taken on June 14/11; 1st purge - 41L -dry; 2nd purge on June 22/11 - 29L - dry; 3rd purge on June 23/11 - 8L - dry; Left well to recharge before taking sample; Cement base heaving and wobbly.
PW-10-02 (DH2)	18/Oct/11	9:14	14.018	16.344	10.607	31.8197	15	0.009	0.668	Hydrolift	Dirty purge.;Outer well in good condition - capped; Inner welll in good condition - capped; Needs label.
PW-10-03 (DH3)	7/Feb/11	15:30	14.451	16.408	8.646	25.9380	23	0.027		Hydrolift	WL taken on Feb. 07, 11; 1st purge on Feb. 07, 11 - dry at 15L; 2nd purge on Feb. 10, 11 - dry at 8L; Purge black with sediment present and strong sulphur smell.
PW-10-03 (DH3)	14/Jun/11	15:53	14.545	16.668	17.400	52.2000	23	0.010	0.777	Hydrolift	WL taken on June 14/11; 1st purge on June 14/11 - dry at 13L; 2nd purge on June 22/11 - dry at 7L; 3rd purge on June 23/11 - 3L; Well left to recharge before sampling.
PW-10-03 (DH3)	18/Oct/11	09:47	14.534	16.295	8.030	24.0905	10	0.009	0.735	Hydrolift	Dirty purge.;Outer well in good condition - capped; Inner well wobbly - capped; Needs label.
PW-10-04 (DH4)	7/Feb/11	11:40		9.269						Hydrolift	Well is dry - consistent bottom with well construction details and previous levels.
PW-10-04 (DH4)	14/Jun/11	13:50		9.156						Hydrolift	Well dry at 9.156m
PW-10-04 (DH4)	5/Oct/11	11:14		9.275						Hydrolift	Outer well in good condition - capped; Inner well in good condition - capped; No label.
PW-10-05 (DH5)	7/Feb/11	15:54	37.445							Hydrolift	Well is frozen.
PW-10-05 (DH5)	16/Jun/11	15:09	42.539	44.805	18.370	55.1100	0	0.000		Hydrolift	Bailer and hydrolift were unsuccessful in lifting water from 42m in well.;Insufficient water for sample.
PW-10-05 (DH5)	18/Oct/11	11:03	42.647	44.141	6.813	20.4379			0.856	Hydrolift	Could not hydrolift or bail water out of well.;Outer well in good condition-capped; inner well in good condition-capped; needs label.
SRK05-5C	10/Jun/11	14:55	1.782	3.899	2.410	7.2300	7.2	0.020	1.062	WaterraFV	Sample water very dirty.;WL taken on June 10/11; PVC pipe casing is in good condition but wobbly; Well capped; Purge water very dirty.PVC pipe casing- pipe wobbly. PVC pipe in good condition. Well capped;Water very dirty
SRK05-5C	4/Oct/11	15:41	1.991	3.895	2.171	6.5117	7	0.023	1.031	WaterraFV	Dirty purge; dirty sample; sediment in sample.;Well in good condition; capped; labelled.Dirty purge.;Well in good condition; labelled.;Dirty sample, sediment in sample.

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Table C-5: 2011 Vangorda Creek Drainage Water Quality
Groundwater Well Parameters

Faro Mine Closure

Site	Date	WL Time	Water Level from TOC (WL-m)	Depth to Bottom from TOC (DTB-m)	Well Volume (L)	Target Purge Volume (L)	Total Purge Volume (L)	Purge Rate (L/s)	Stick-up (m)	Purge Method	Comments
SRK05-7	12/Jun/11	9:56	6.051	6.52	0.951	2.853	3.8	0.008		WaterraFV	WL taken on June 12/11; 1st purge on June 12/11 - dry; 2nd purge June 13/11 - dry at 0.5L; 3rd purge on June 14/11 - 2.5L; Dirty purge with sediment; Slow recharge.
SRK05-7	4/Oct/11	10:08	5.975	6.511	10.864	32.5920	2.5	0.008	0.658	PumpFV/Waterra	Outer well cap broken; inner well in good condition; tubing needs replacing; labelled.
SRK05-8	11/Jun/11	14:56	5.48	8.47	6.061	18.183	20	0.083	0.728	Pump/Assist	Fast recharge; Sample water slightly turbid.;WL taken on June 11/11; 1st purge - dry at 14L; 2nd purge - 6L; PVC casing of well in good condition with cracking at tip; Well capped.
SRK05-8	4/Oct/11	14:05	5.833	8.478	5.361	16.0842	18	0.075	0.740	PumpFV/Waterra	Dirty purge.;Well top slightly cracked; Capped; Labelled.;Dirty sample; Sediment in sample.
SRK05-9	4/Jan/11	14:19	3.074	4.041	1.101	3.303	2.5	0.007		WaterraFV	
SRK05-9	18/Jan/11	11:02	3.091	3.972	0.847	2.5416	1.2969	0.004		WaterraFV	
SRK05-9	3/Feb/11	9:59	3.128	3.966	0.955	2.865	2	0.008		WaterraFV	1st purge - dry at 1L; 2nd purge - dry at 1L; 3rd purge taken as sample
SRK05-9	16/Feb/11	15:10	3.14	4.040	0.870	2.61	3	0.002		WaterraFV	
SRK05-9	3/Mar/11	11:45	3.148	3.942	0.905	2.715	3	0.003		WaterraFV	
SRK05-9	23/Mar/11	13:13	3.239	3.902	0.755	2.2650	2.35	0.007		WaterraFV	
SRK05-9	11/Apr/11	14:41	3.276	3.936	0.643	1.9290	2	0.007		WaterraFV	
SRK05-9	26/Apr/11	14:15	3.246	3.948	0.675	2.0253	2.5	0.004		WaterraFV	
SRK05-9	10/May/11	12:04	2.458	3.945	1.430	4.2900	5	0.028		WaterraFV	
SRK05-9	18/May/11	15:02	1.361	3.947	2.490	7.4700	8.5	0.050		WaterraFV	
SRK05-9	6/Jun/11	14:21	2.527	3.963	1.381	4.1430	4.2	0.010		WaterraFV	
SRK05-9	22/Jun/11	12:07	2.251	3.95	1.633	4.899	5	0.012		WaterraFV	
SRK05-9	5/Jul/11	16:13	2.44	3.975	1.476	4.4280	5	0.012		WaterraFV	
SRK05-9	21/Jul/11	12:47	2.489	3.979	1.433	4.2996	4.5	0.075		WaterraFV	
SRK05-9	3/Aug/11	14:51	2.528	3.94	1.609	4.8267	5	0.021		PumpFV/Waterra	
SRK05-9	18/Aug/11	11:40	2.464	3.942	1.421	4.263	7.5	0.031		WaterraFV	
SRK05-9	7/Sep/11	10:12	2.727	3.975	1.200	3.6012	3.6012	0.012		PumpFV/Waterra	
SRK05-9	20/Sep/11	13:25	2.678	3.942	1.200	3.6	4.3	0.024		WaterraFV	
SRK05-9	11/Oct/11	8:56	2.786	3.941	1.111	3.3327	4	0.017		WaterraFV	
SRK05-9	27/Oct/11	12:26	2.858	3.979	1.078	3.2343	4	0.017		WaterraFV	
SRK05-9	8/Nov/11	13:15	2.88	3.94	1.210	3.63	3.63	0.010		WaterraFV	
SRK05-9	22/Nov/11	15:00	2.891	3.945	1.200	3.6000	3.6	1.140		WaterraFV	
SRK05-9	1/Dec/11	11:45	2.9	3.92	1.200	3.6000	4	2.000		PumpFV/Waterra	
SRK05-9	14/Dec/11	15:20	2.93	3.84	1.200	3.6000	3.5	0.017		WaterraFV	
SRK08-P14	4/Oct/11	11:33	6.921	9.883	6.004	18.0119	20	0.067	0.735	PumpFV/Waterra	Dirty purge.;Outer well in good condition; inner well in good condition; both capped; needs a label.;Partly dirty sample with sediment in sample.
SRK08-P15	4/Oct/11	10:51	3.369	8.256	9.906	29.7178	240	0.125	0.37	PumpFV/Waterra	Cloudy purge.;Outer well in good condition - capped; Inner well in good condition - capped; Needs label.;Cloudy sample; Sediment in sample.
SRK08-P16	22/May/11	14:40	5.159	8.079	5.920	17.76	18	0.075	0.606	PumpFV/Waterra	AMP4 Seep Spring sampling; Picture taken and site GPS'dAfter 18L purge DTB measured 7.762m (up from 8.079m); Tubing would not fit back in well
SRK08-P16	4/Oct/11	12:19		7.495	0.000	0	0	0.000	0.589	NA	No water - no purge.;No water.;Outer well in good condition; inner well top slightly cracked; labelled.;Wet muddy bottom.;No water - no sample.
V34	8/Jun/11	10:47	5.959	12.758	13.782	41.3460	41	0.027	0.547	WaterraFV	WL taken on June 8/11; 1st purge on June 8/11 - dry at 18L; 2nd purge on June 9/11 - dry at 14L; 3rd purge on June 10/11 - 9L and then sample taken. Field stick up recorded as 0.667m and in the oomments noted that 0.120m to inner casing (0.667m - 0.120m = 0.574m).
V34	5/Oct/11	11:25	5.944	12.831	13.960	41.8798	42	0.058	0.536	Pump/Assist	Clear purge.;Outer well in good condition - capped; Inner well in good conditio - capped; Needs new tubing; No label.
V35	8/Jun/11	11:31	8.726	15.882	14.510	43.53	43.5	0.032	0.471	WaterraFV	WL taken on June 8/11; 1st purge on June 8/11 - dry at 23L; 2nd purge on June 9/11 - dry at 14L; 3rd purge on June 10/11 - 6.5L then sampled; Field stick-up recorded at 0.631m and in comments noted that 0.160m to inner casing (0.631m-0.160m = 0.471m).
V35	5/Oct/11	11:38	7.261	15.898	17.507	52.521597	53	0.044	0.442	WaterraFV	Clear purge; First purge on October 5th - dry at 22L; Second purge on October 6 - dry at 25L; Third purge on October 12 - 6L purged.;Outer well in good condition - capped; Inner well in good condition - capped; Labelled; Cement base cracked.
V36	8/Jun/11	12:12	8.750	11.809	6.200	18.6000	25	0.060	0.660	WaterraFV	
V36	5/Oct/11	15:59	9.205	11.867	5.396	16.1876	19	0.053	0.650	Pump/Assist	Clear purge.;Outer well in good condition; Inner well in good condition - no cap; Labelled.;Clear sample; Sediment in sample.
V37	8/Jun/11	12:52	8.964	14.505	11.230	33.69	30.5	0.010	0.479	WaterraFV	WL taken on June 8/11; 1st purge on June 8/11 - dry at 15L; 2nd purge on June 9/11 - dry at 8L; 3rd purge on June 10/11 - dry at 7.5L; Left to recharge 24hrs for sufficient water for sample; Well in good condition and covered with barrel; Slight well jacking. Field stick up recorded at 0.509m; In comments noted that 0.03m to inner well (0.509-0.03m=0.479m).
V37	12/Oct/11	10:13	9.676	14.502	9.782	29.3469	29.346906	0.050	0.462	Pump/Assist	Dirty sample - sediment in sample.;outer well in good condition - cap inner well in good condition - no cap labelled. needs new tubing. First purge oct 12 15 litres. 2nd purge octo 12 5.5 litres; 3rd purge oct 13 9.5 litres.

Figure C-1: Sulphate at V1 and V20

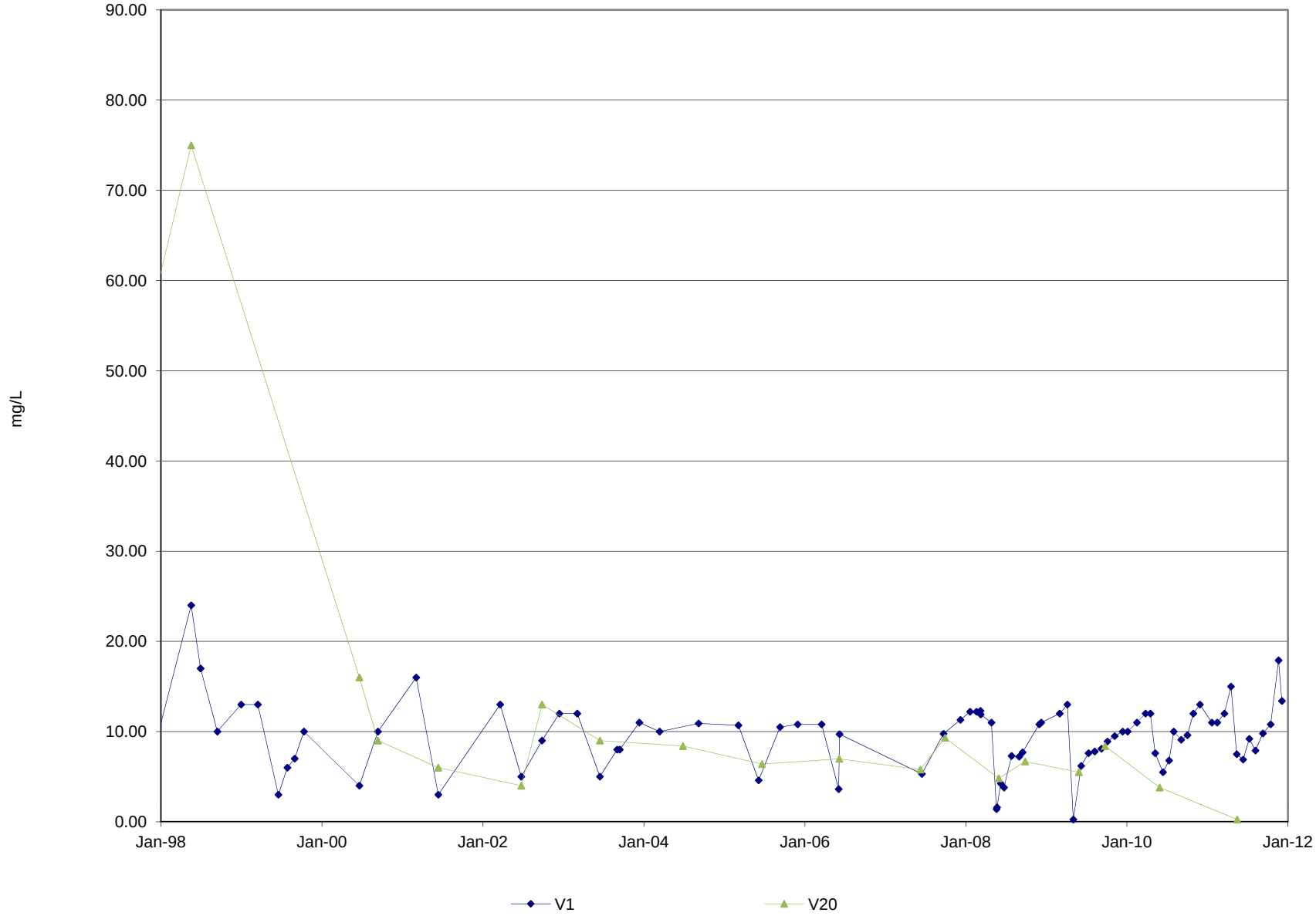


Figure C-2: Zinc (Total) at V1 and V20

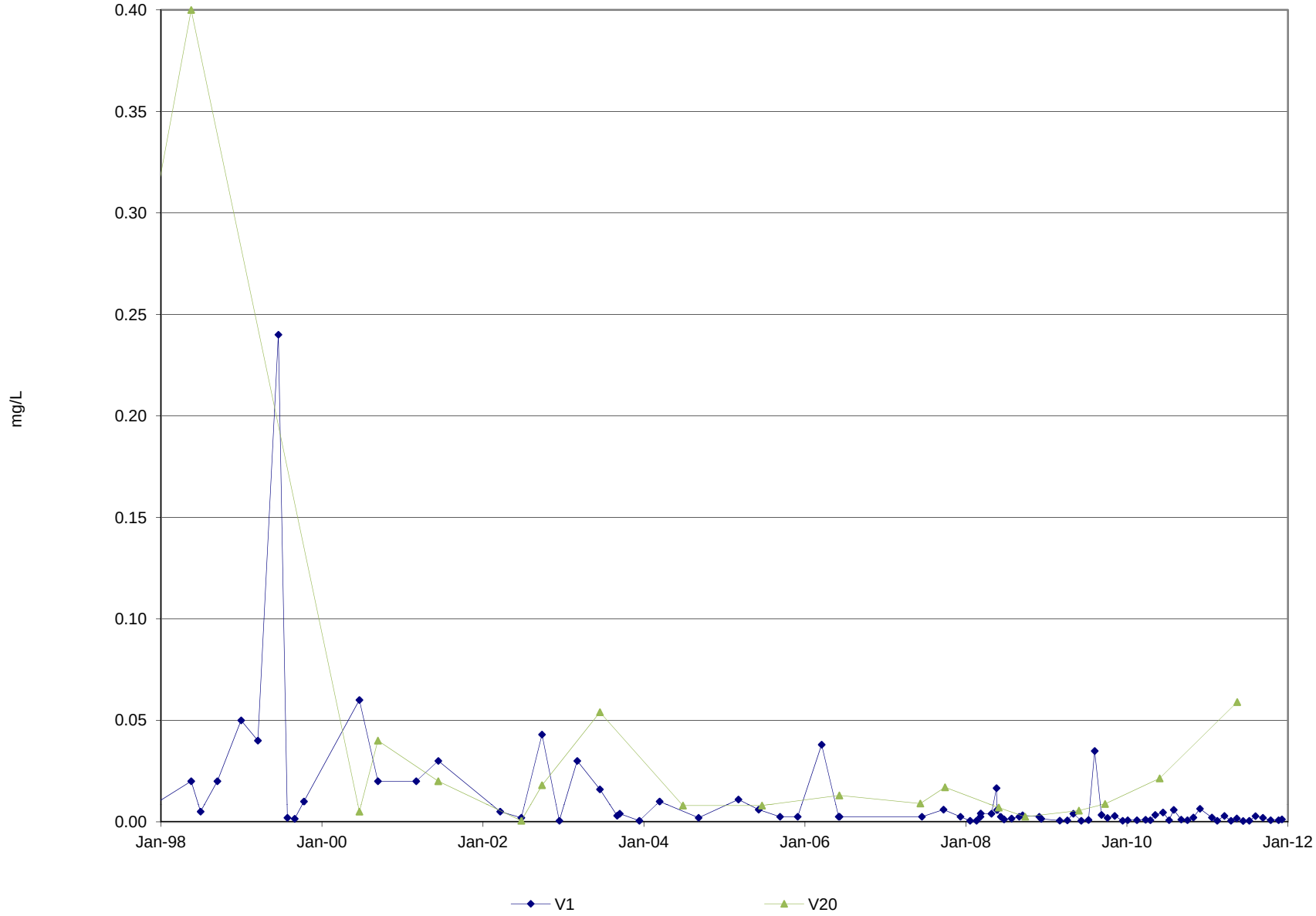


Figure C-3: Cadmium (Total) at V1 and V20

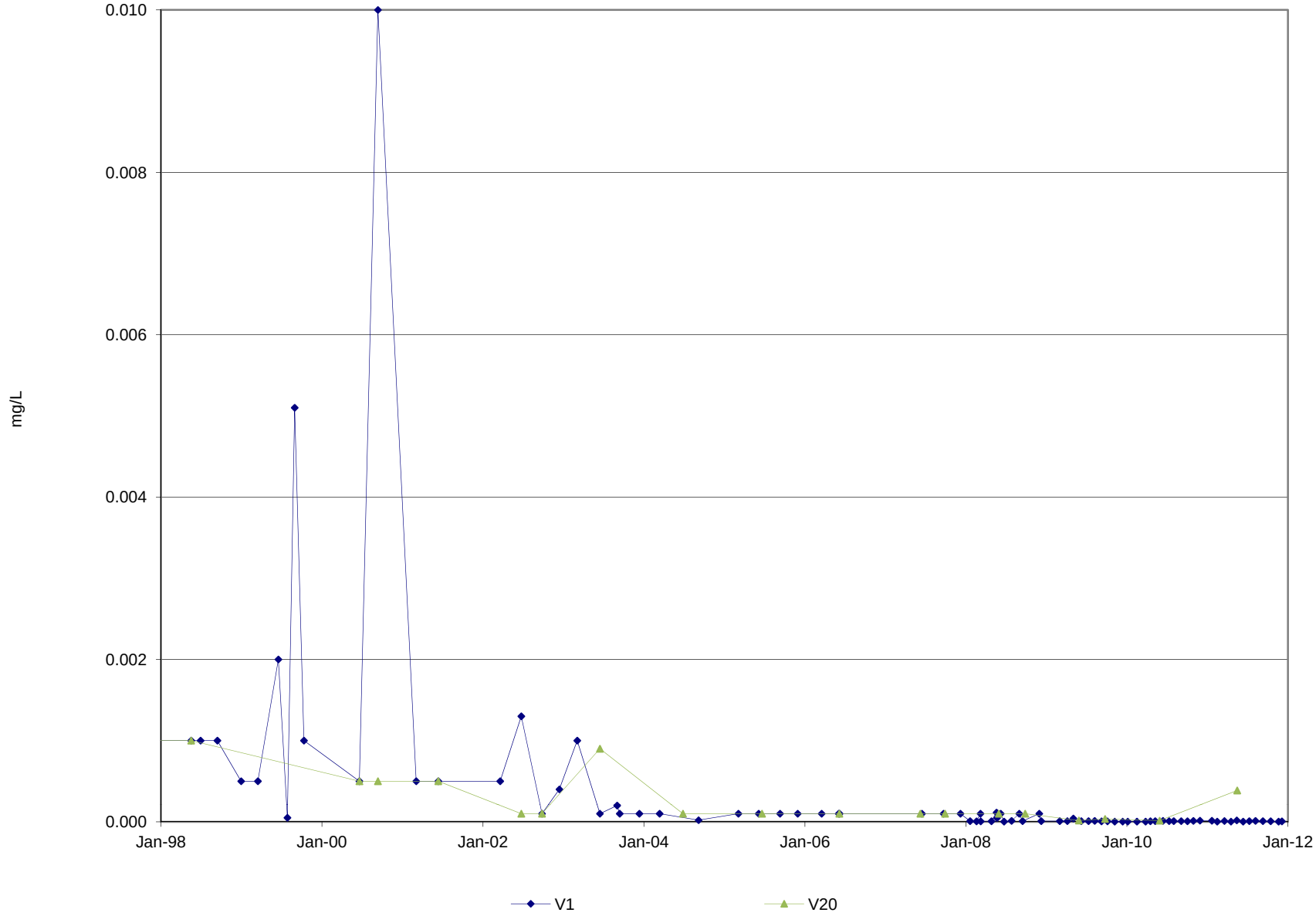


Figure C-4: Zinc (Total and Dissolved) at the Surface of the Grum Pit (V23)

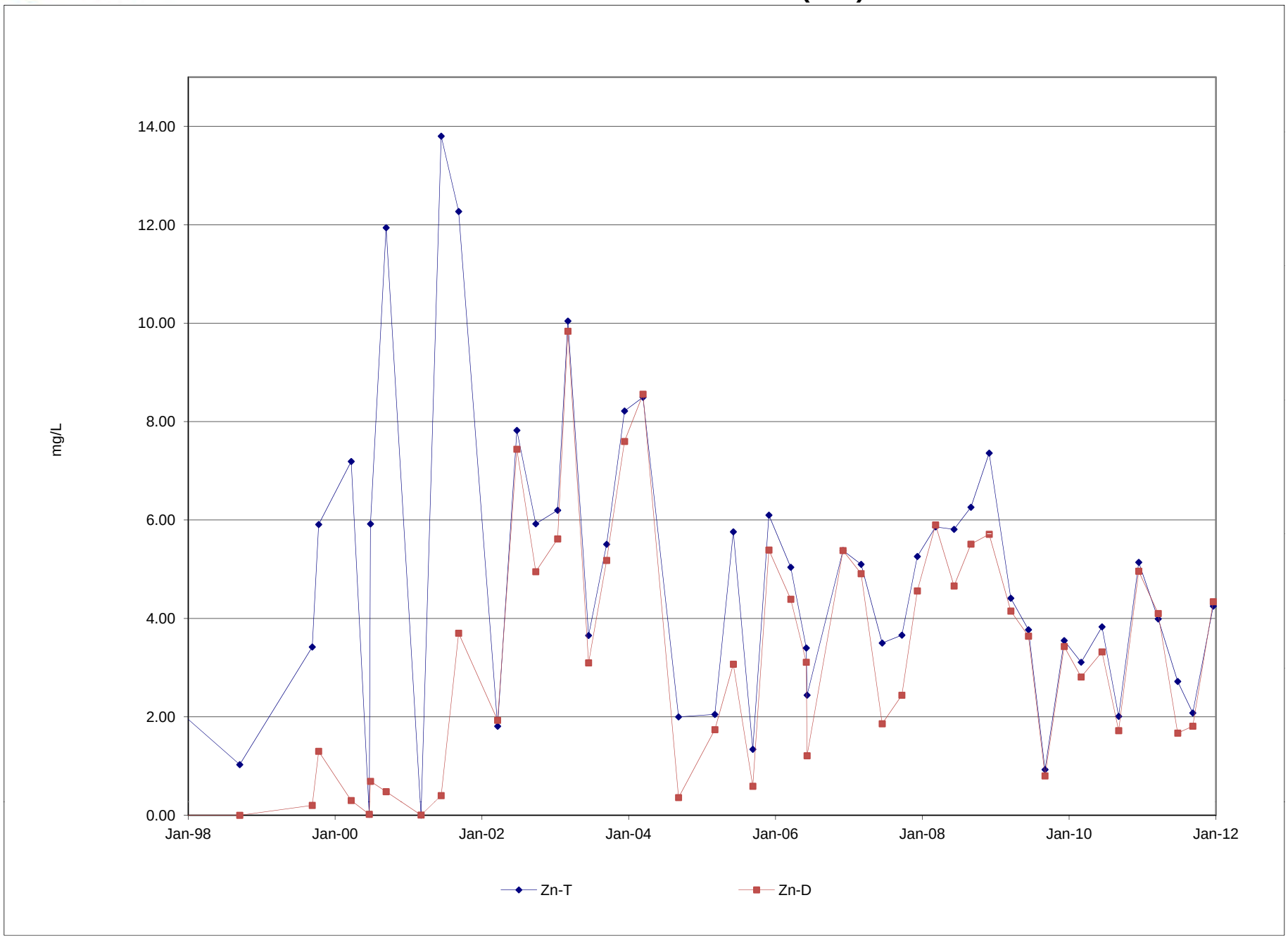


Figure C-5: Sulphate at the Surface of the Vangorda Pit (V22)

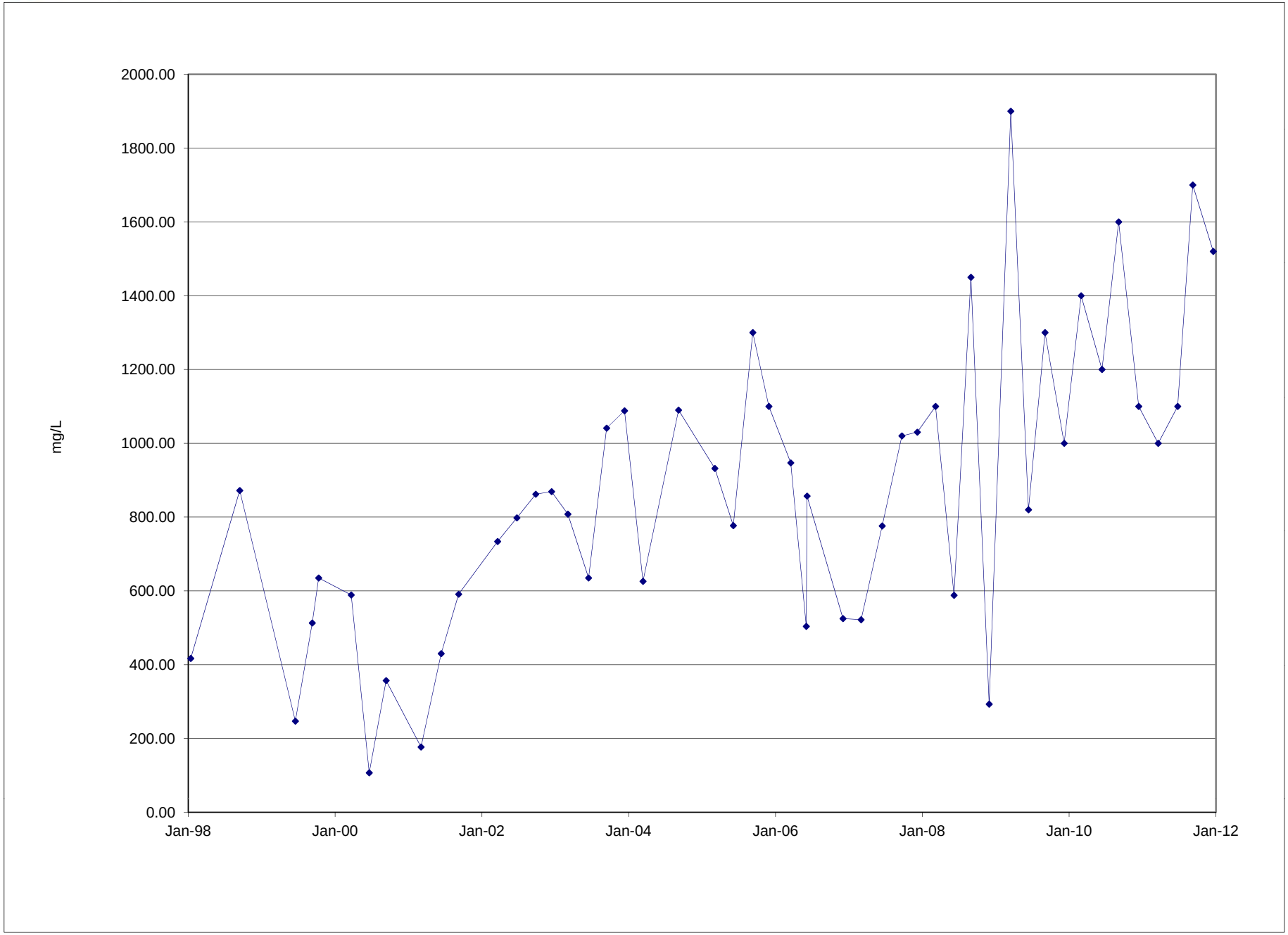


Figure C-6: Zinc (Total and Dissolved) at the Surface of the Vangorda Pit (V22)

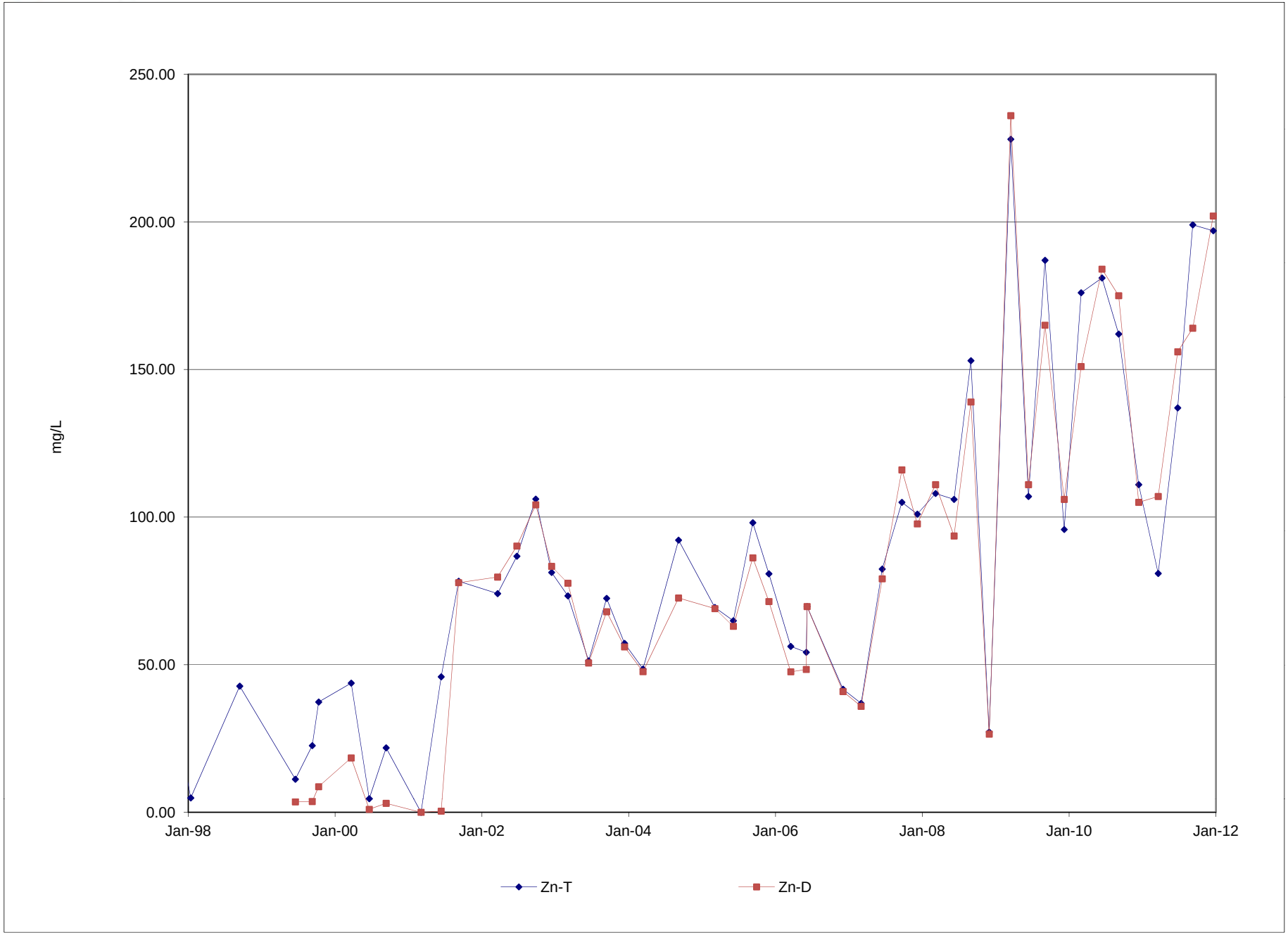


Figure C-7: pH at the Surface of the Vangorda Pit (V22)

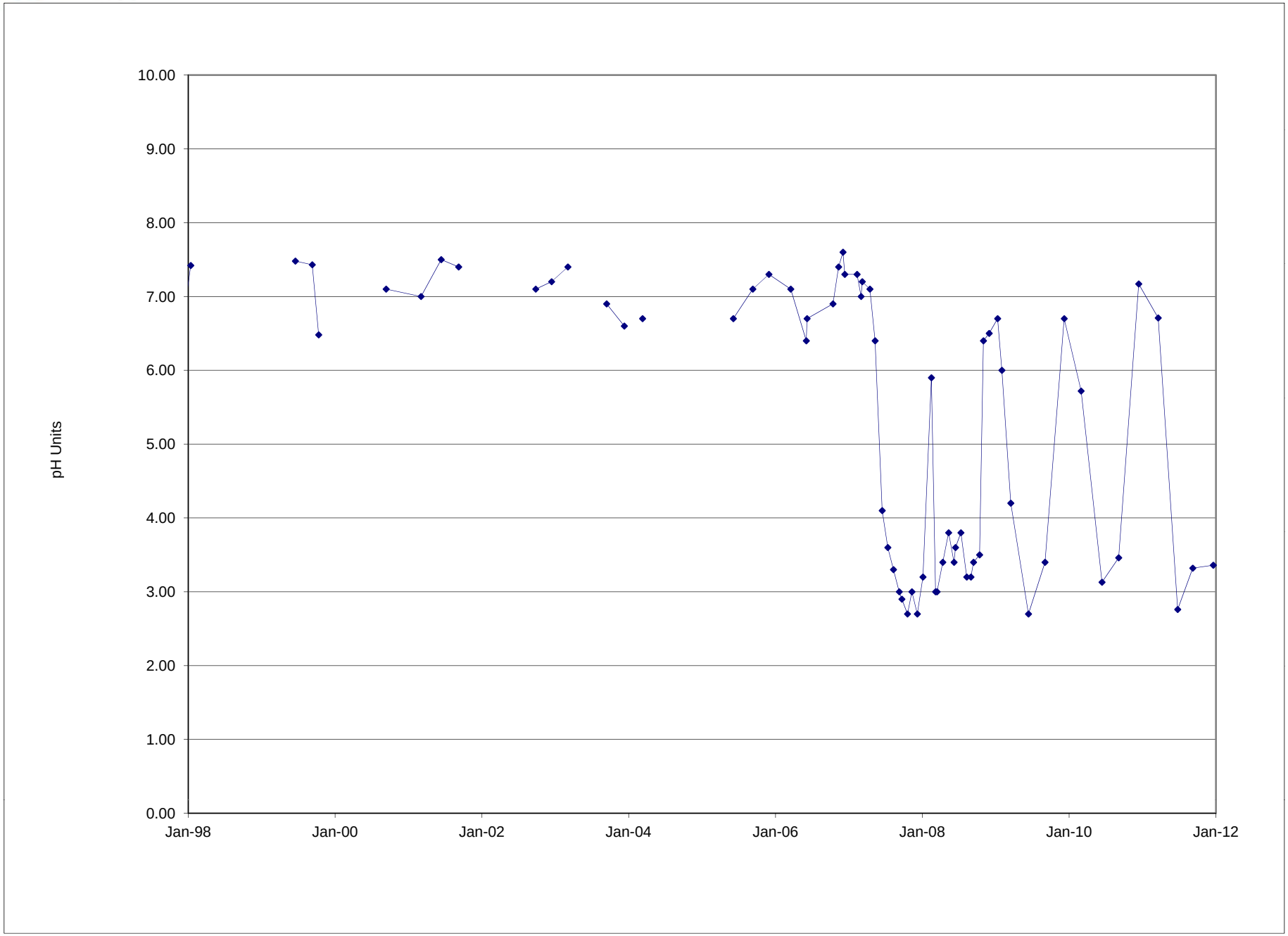


Figure C-8: Sulphate in the Vangorda Waste Rock Dump Toe Drains

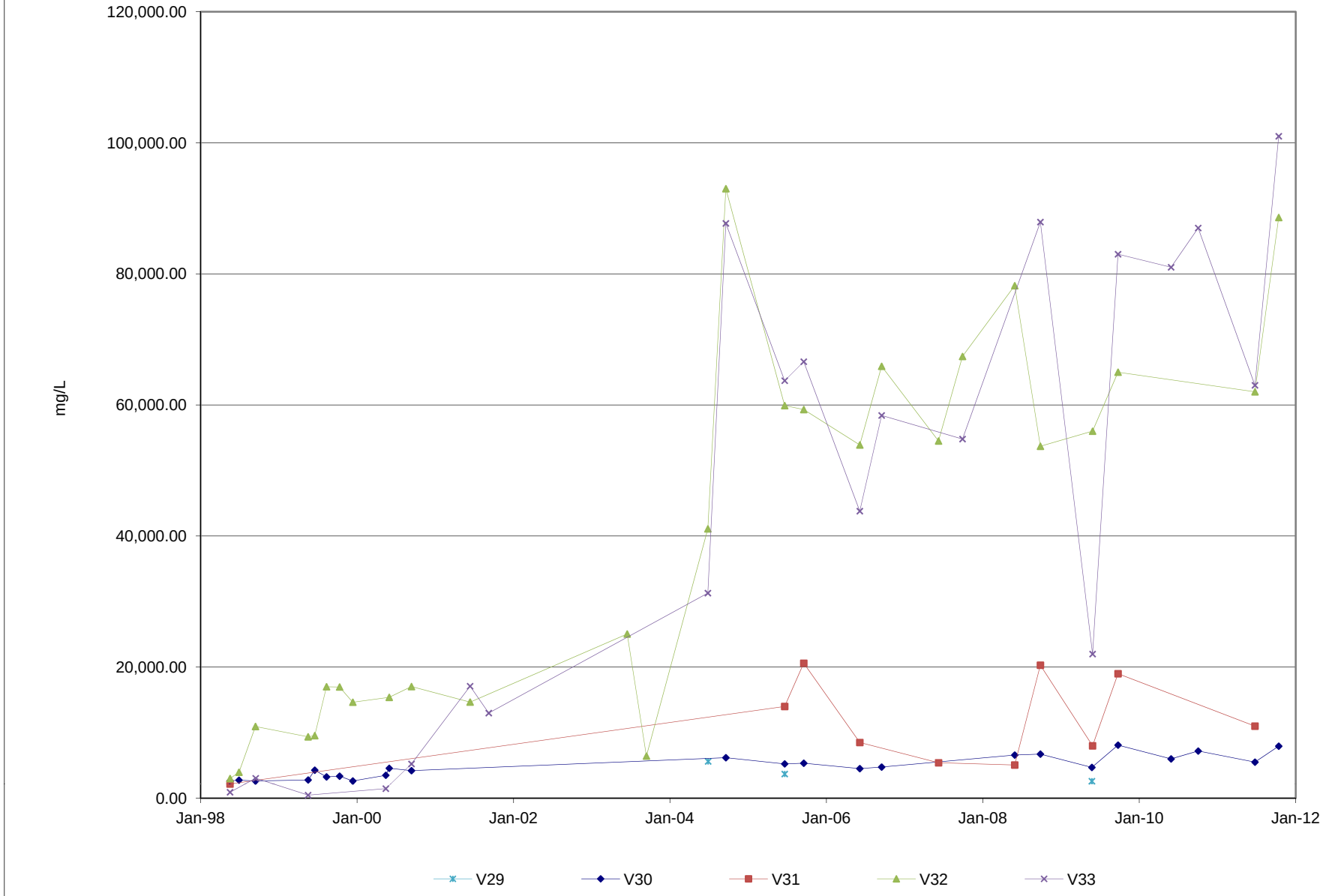


Figure C-9: Zinc (Dissolved) in the Vangorda Waste Rock Dump Toe Drains

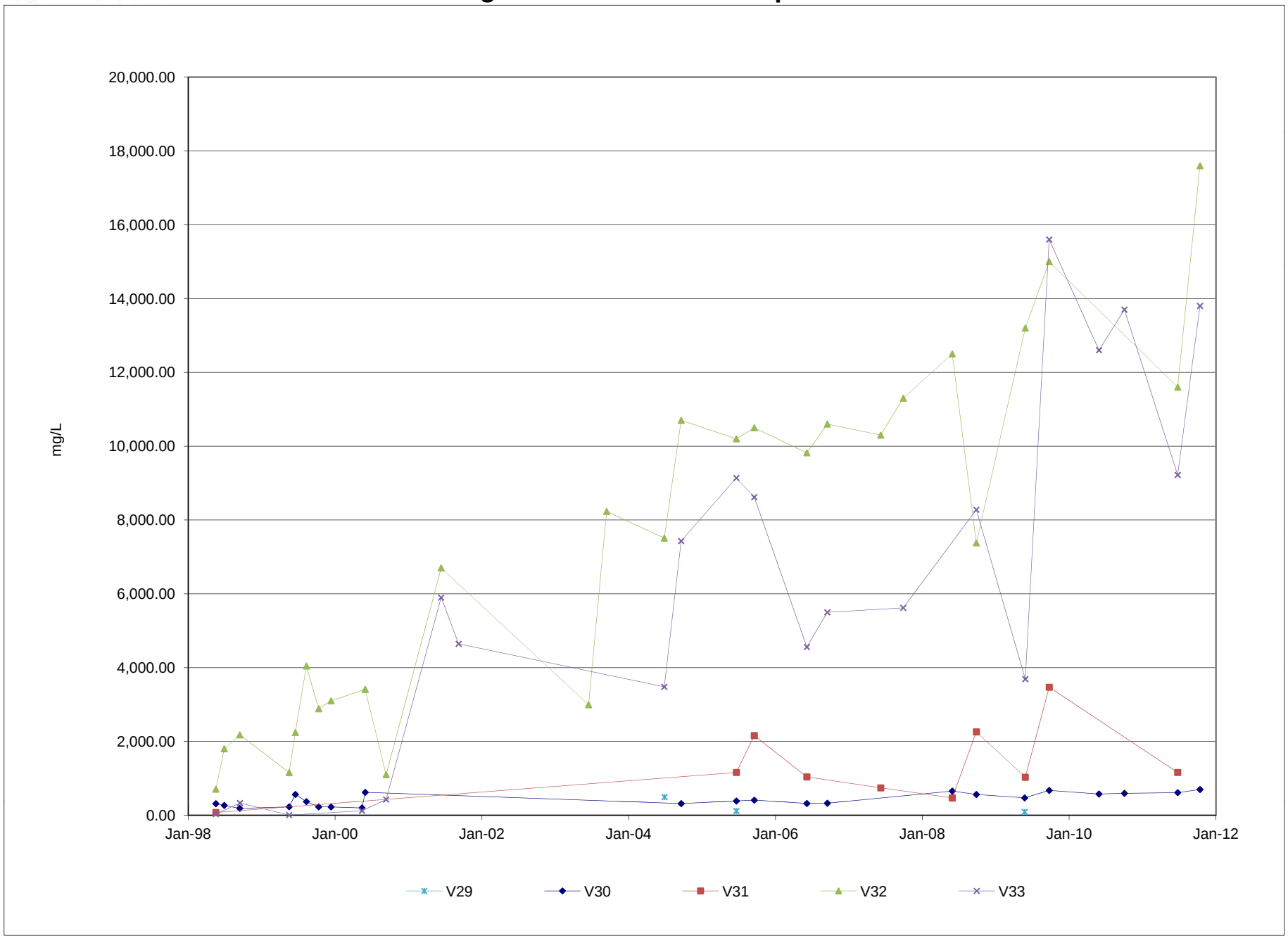


Figure C-10: Sulphate, Zinc (Total and Dissolved), and pH at the Little Creek Dam Pond (LCD)

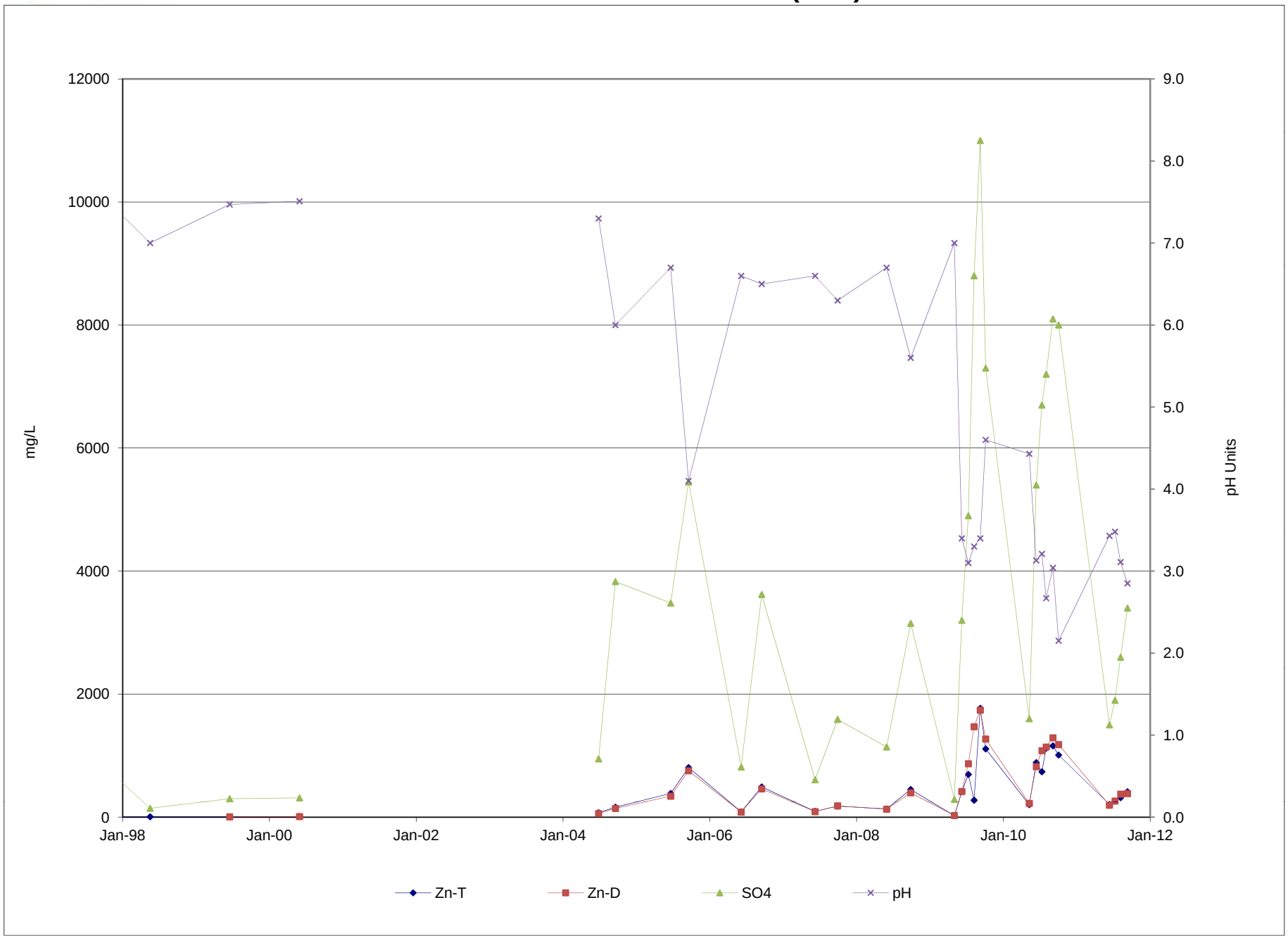


Figure C-11: Sulphate in Groundwater Downgradient of the Vangorda Waste Rock Dump

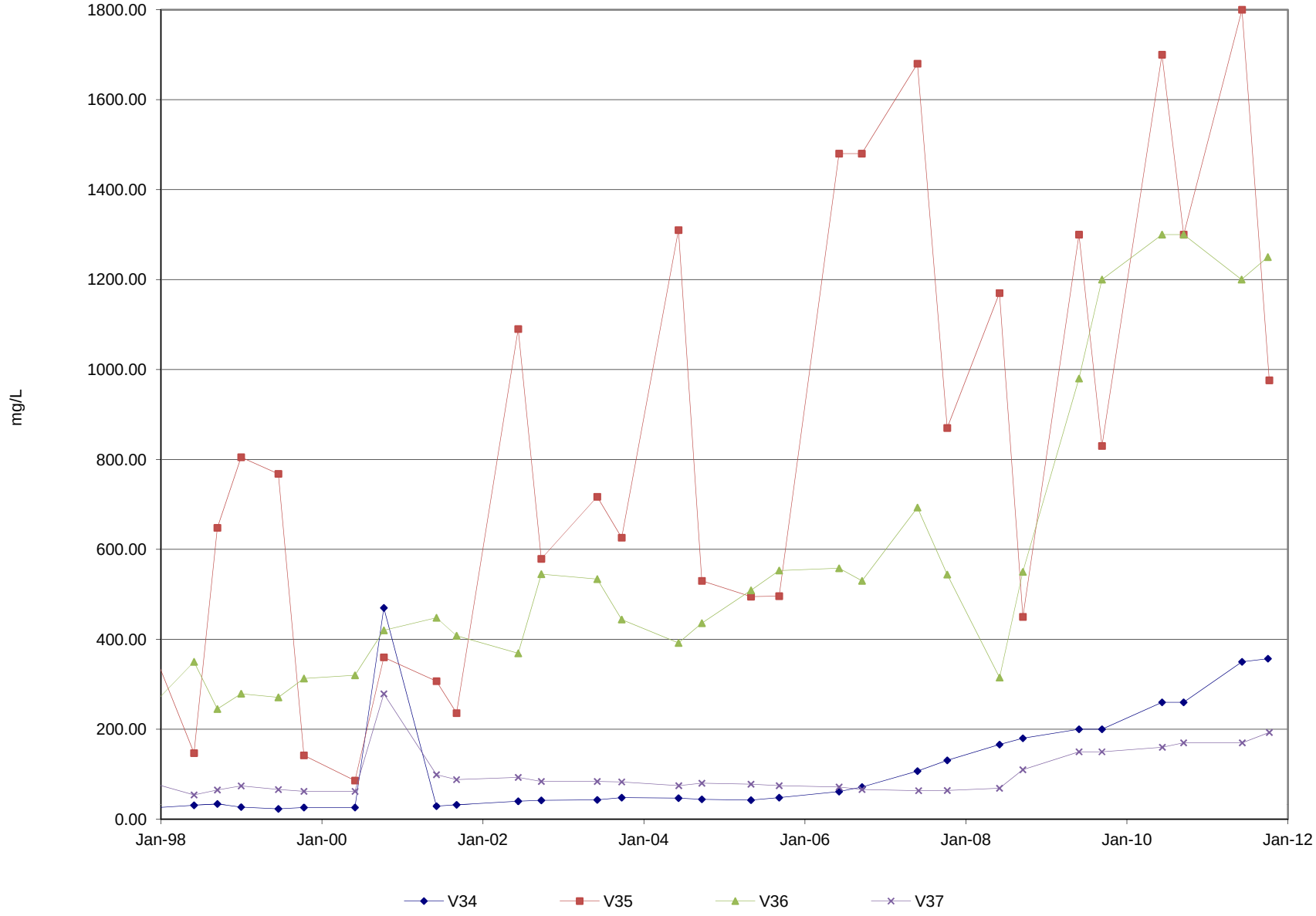


Figure C-12: Zinc (Dissolved) in Groundwater Downgradient of the Vangorda Waste Rock Dump

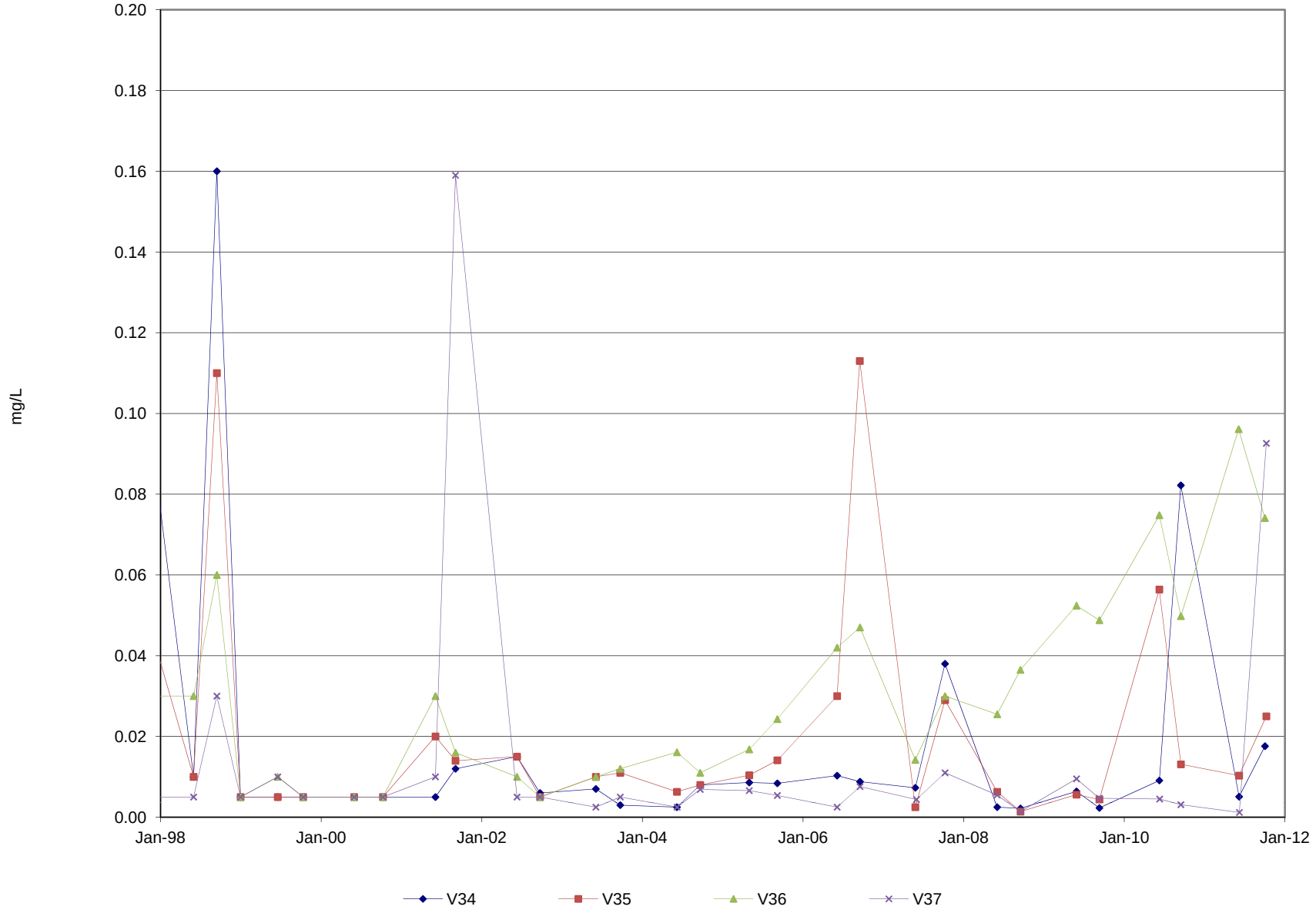


Figure C-13: Sulphate at V25 and V25BSP

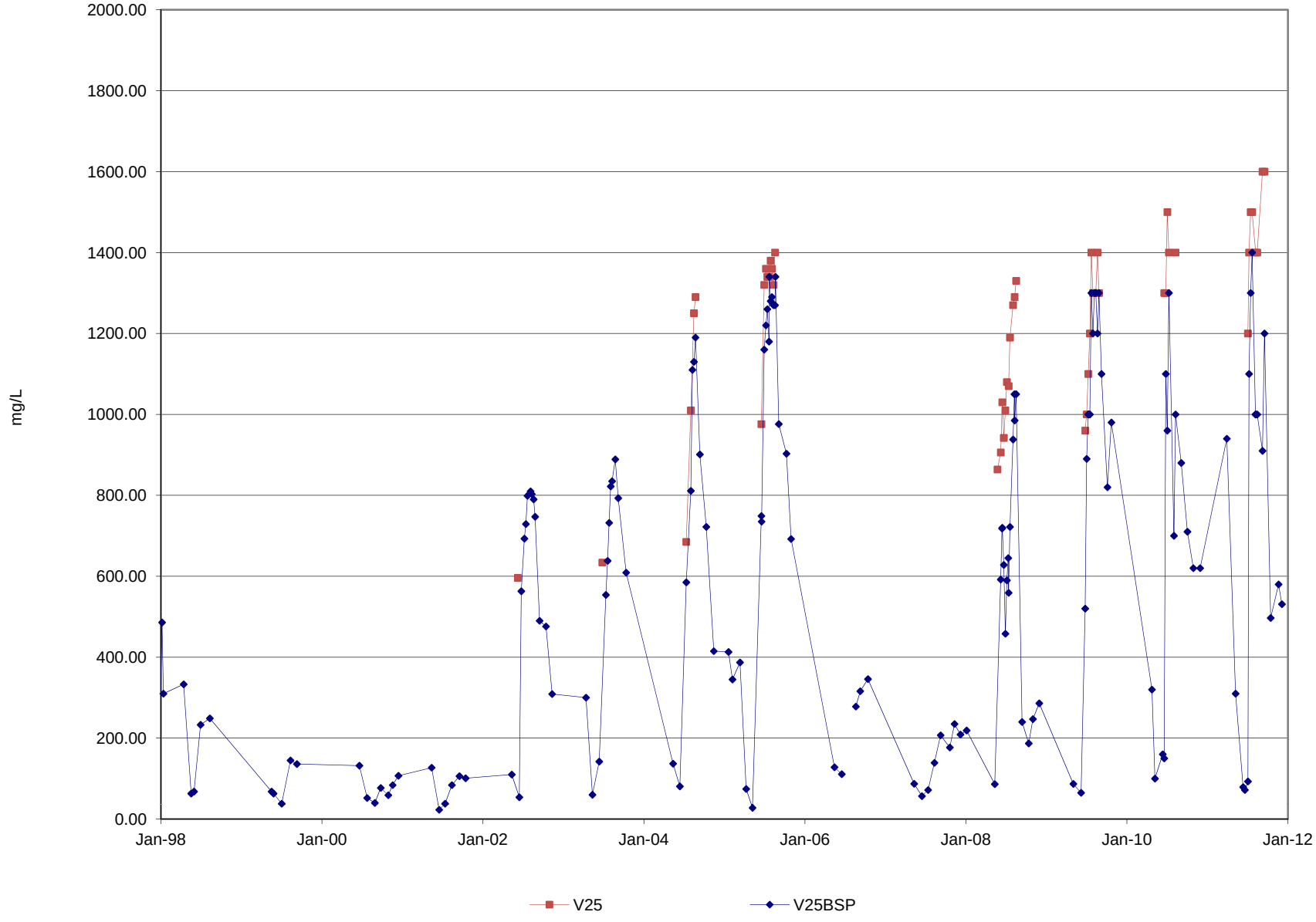


Figure C-14: Zinc (Total) at V25 and V25BSP

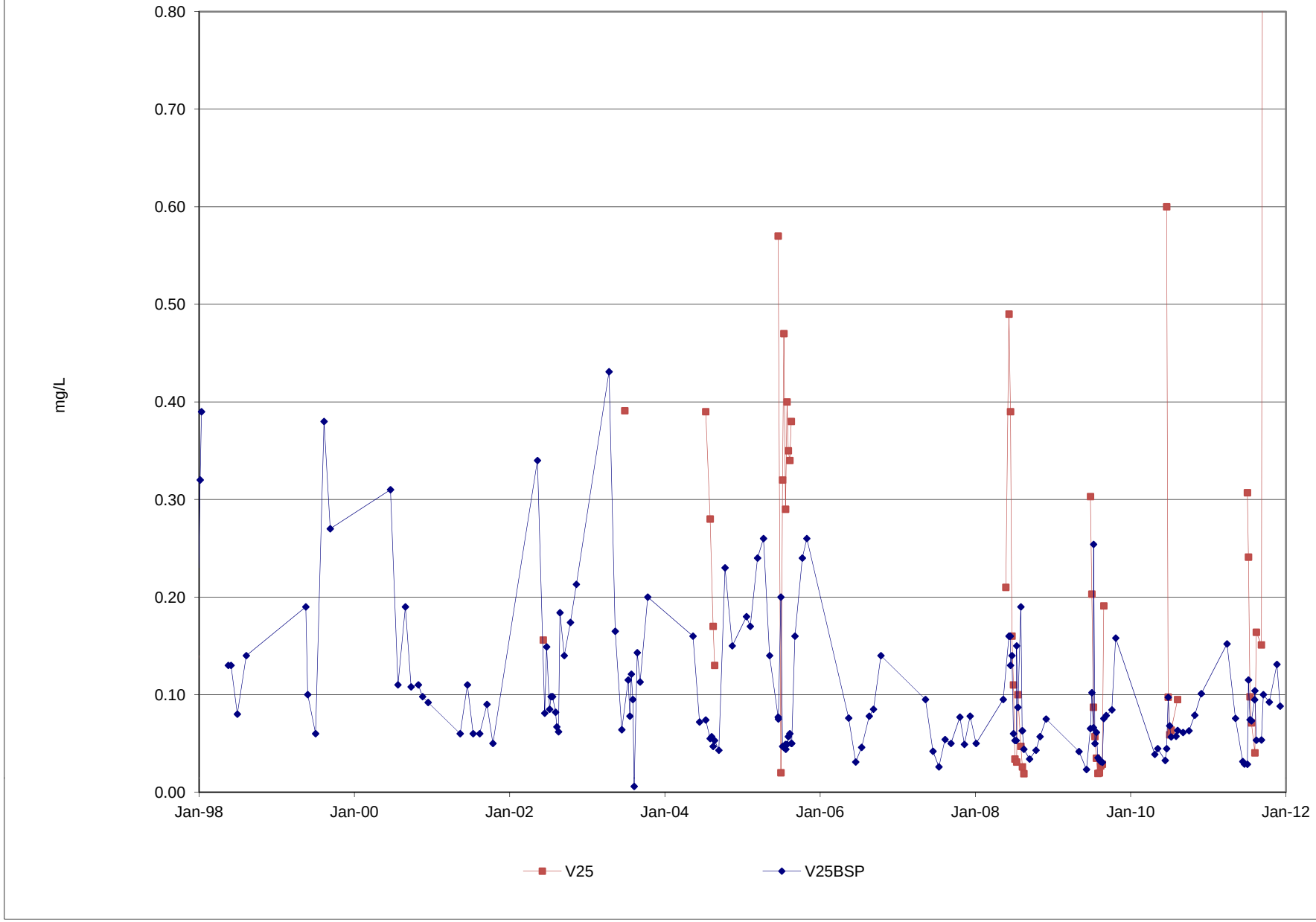


Figure C-15: Sulphate in Shrimp Creek (V4) and Upstream Inflow (V20)

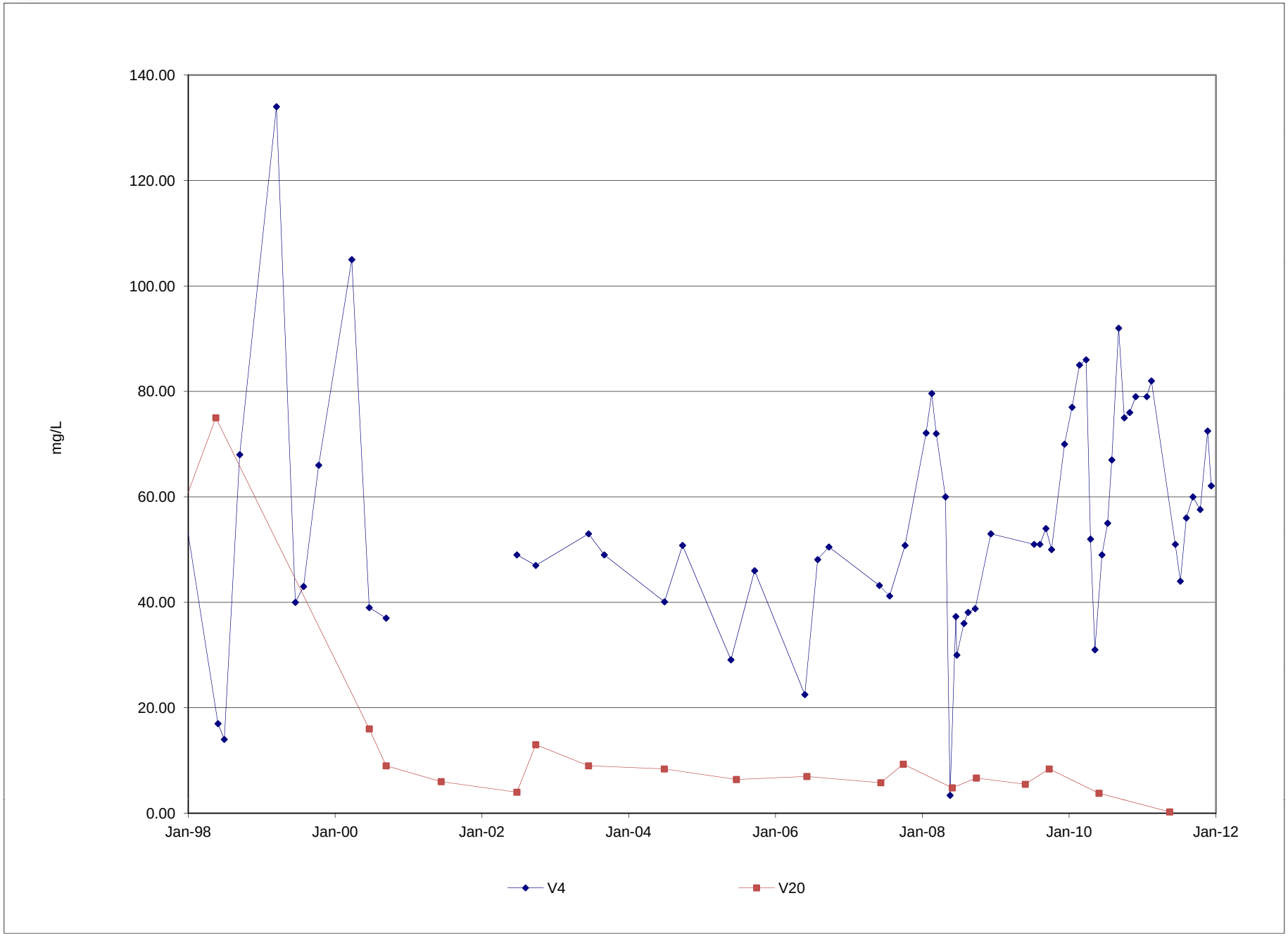


Figure C-16: Zinc (Total) in Shrimp Creek (V4) and Upstream Inflow (V20)

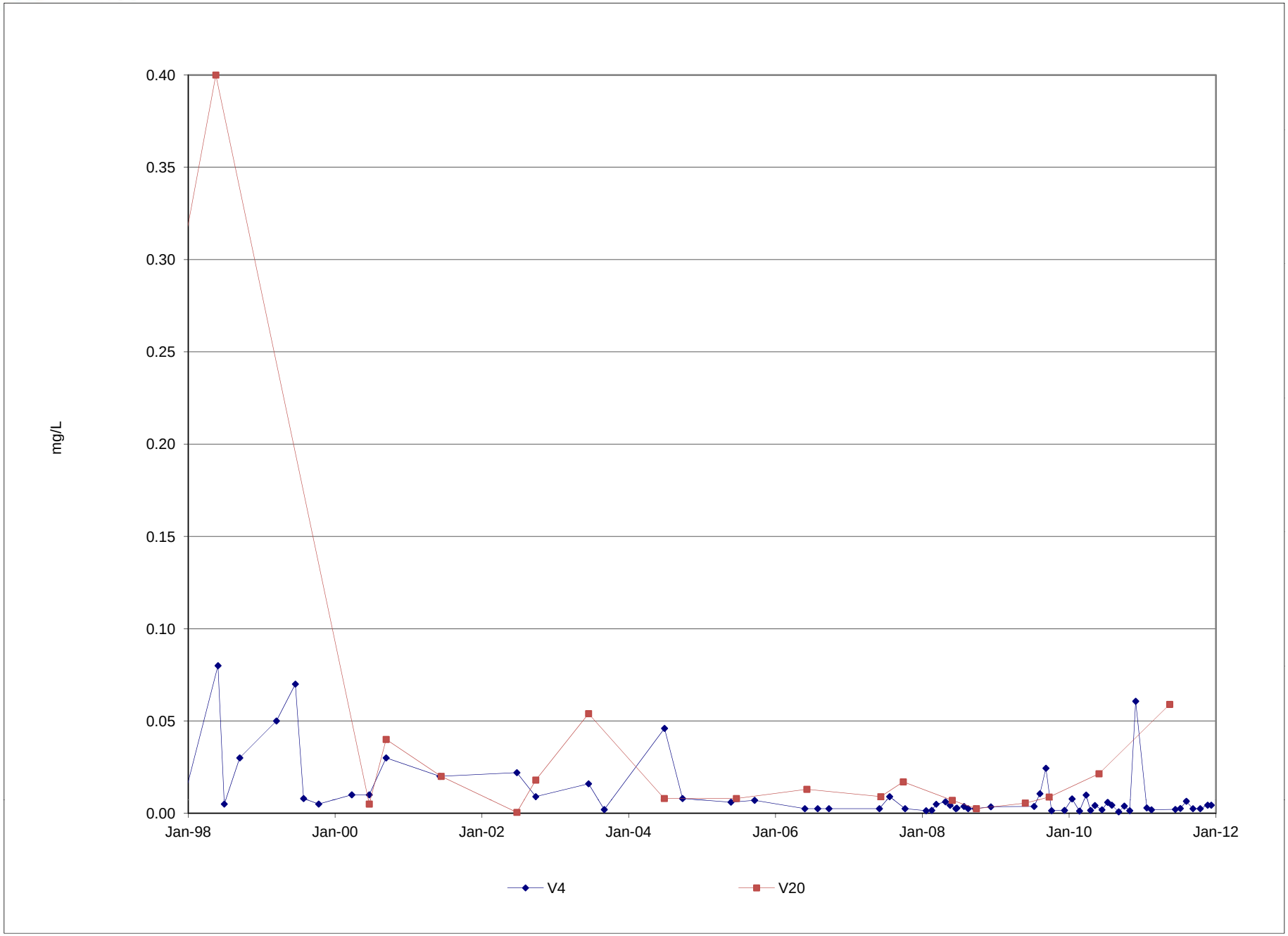


Figure C-17: Sulphate in Vangorda Creek

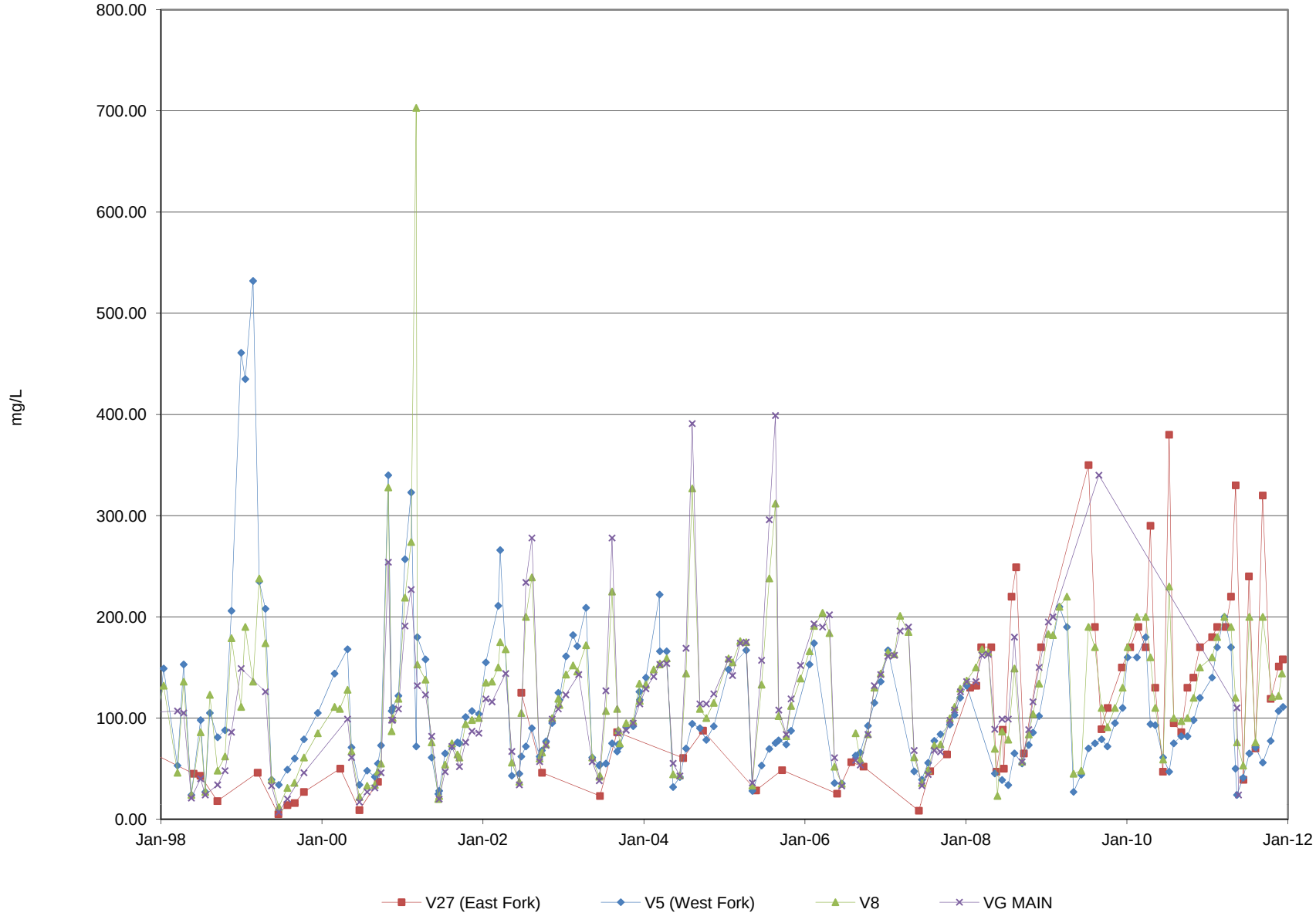
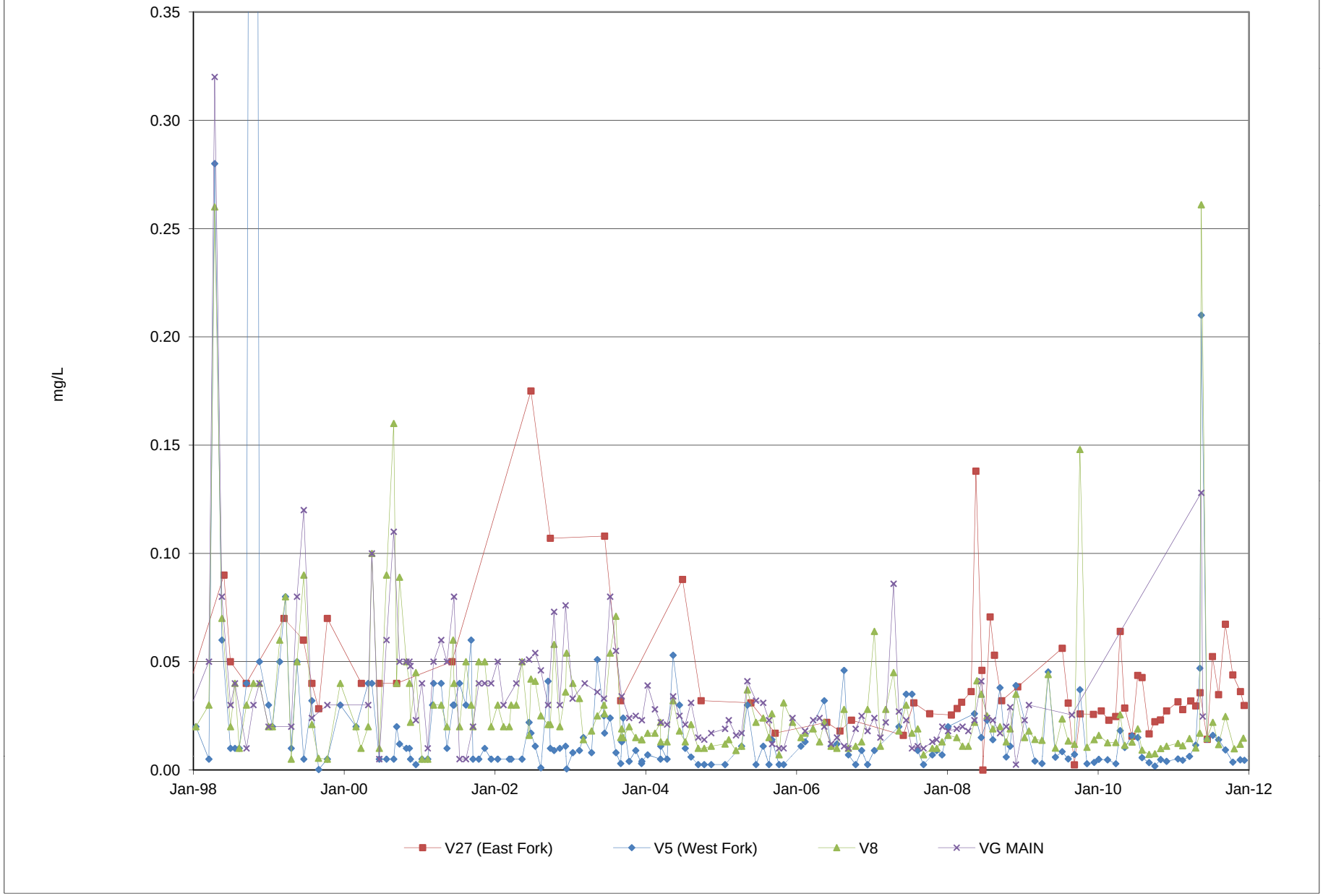


Figure C-18: Zinc (Total) in Vangorda Creek



TABLES

Vangorda Creek Drainage Water Quality:

Quality Assurance and Quality Control

Denison Environmental Services

Table C-6: Quality Assurance / Quality Control
2011 Field Blanks - General Parameters

Faro Mine Closure

Station	Date	Sample Type	Acid(pH4.5)	Acid(pH8.3)	ALK	ALKPP	CaCO3	CaCO3-d	Cl-d	CO3	Colour	COND	DOC	HCO3	NH3	OH	pH	SO4-d	TDS	TOC	TSS	TURB
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	TCU	µmho/cm	mg/L	mg/L	mg/L	mg/L	(blank)	mg/L	mg/L	mg/L	mg/L	NTU
SRK GD01	24/01/2011	FIELD BLANK	<0.5	1	1.50	<0.5		3	<0.5	<0.5		4.0		1.80		<0.5	5.84	<0.5			<1	
Deionized Water			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.005	<0.5	5.95	<0.5	<10.0	<0.5	<4.0	<0.1
Times greater than DI water			1	2.6	3	1	0	5	1	1	0	4	0	3.6	0	1	0.11	1	0	0	0.25	0
Comments								Blank concentration equal to PQL (detection limit for field blank higher than that used for DI water) and correctly entered into emLine.													
Action								Let Value Stand														
Result								High blank value remains.														
V5	17/02/2011	FIELD BLANK			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<1	<0.5	<0.5	0.01	<0.5	5.51	<0.5	<10	<0.5	<4	<0.25
Deionized Water			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.005	<0.5	5.95	<0.5	<10.0	<0.5	<4.0	<0.1
Times greater than DI water			0	0	1	1	1	1	1	1	0	1	1	1	1.8	1	0.44	1	1	1	1	2.5
Comments																						
Action																						
Result																						
MOOSE SEEP	03/03/2011	FIELD BLANK	<0.5	1	0.70	<0.5		<0.5	1	<0.5		<1		0.90		<0.5	5.74	<0.5			<1	
Deionized Water			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.005	<0.5	5.95	<0.5	<10.0	<0.5	<4.0	<0.1
Times greater than DI water			1	2.4	1.4	1	0	1	1.2	1	0	1	0	1.8	0	1	0.21	1	0	0	0.25	0
Comments																						
Action																						
Result																						
V15	18/05/2011	FIELD BLANK	<0.5	<0.5	<0.5	<0.5		2	<0.5	<0.5		<1		<0.5		<0.5	5.42	<0.5			<1	
Deionized Water			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.005	<0.5	5.95	<0.5	<10.0	<0.5	<4.0	<0.1
Times greater than DI water			1	1	1	1	0	3	1	1	0	1	0	1	0	1	0.53	1	0	0	0.25	0
Comments																						
Action																						
Result																						
PW-10-01 (DH1)	23/06/2011	FIELD BLANK	<0.5	<0.5	1.50	<0.5		<0.5	<0.5	<0.5		2.0		1.80		<0.5	6.79	<0.5			<1	
Deionized Water			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.005	<0.5	5.95	<0.5	<10.0	<0.5	<4.0	<0.1
Times greater than DI water			1	1	3	1	0	1	1	1	0	2	0	3.6	0	1	0.84	1	0	0	0.25	0
Comments																						
Action																						
Result																						
V22	28/06/2011	FIELD BLANK			1.10	<0.5	<0.5	<0.5	1	<0.5		4.0		1.30	<0.005	<0.5	6.43	<0.5	<10		<1	
Deionized Water			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.005	<0.5	5.95	<0.5	<10.0	<0.5	<4.0	<0.1
Times greater than DI water			0	0	2.2	1	1	1	1.2	1	0	4	0	2.6	1	1	0.48	1	1	0	0.25	0
Comments																						
Action																						
Result																						
GL-60	06/09/2011	FIELD BLANK	1	1	0.50	1	1	1	1	0.50		1.0		0.50	0.01	1	5.85	1.0	10.00		1	
Deionized Water			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.005	<0.5	5.95	<0.5	<10.0	<0.5	<4.0	<0.1
Times greater than DI water			1	1	1	1	1	1	1	1	0	1	0	1	1.8	1	0.1	2	1	0	0.25	0
Comments																						
Action																						
Result																						

- Blank value is a detection limit higher than that of DI water.
- Blank value > PQL and < retest limit (30X detection limit).
- Blank value > retest limit (30X detection limit).
- Retest result to replace original result in emLine.

Denison Environmental Services

Table C-6: Quality Assurance / Quality Control
2011 Field Blanks - General Parameters

Faro Mine Closure

Station	Date	Sample Type	Acid(pH4.5)	Acid(pH8.3)	ALK	ALKPP	CaCO3	CaCO3-d	Cl-d	CO3	Colour	COND	DOC	HCO3	NH3	OH	pH	SO4-d	TDS	TOC	TSS	TURB
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	TCU	µmho/cm	mg/L	mg/L	mg/L	mg/L	(blank)	mg/L	mg/L	mg/L	mg/L	NTU
V4	12/09/2011	FIELD BLANK			0.80	<0.5	<0.5	<0.5	<0.5	<0.5		<1	<0.5	0.90	0.01	<0.5	5.89	1.2	<10	<0.5	<1	<0.1
Deionized Water			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.005	<0.5	5.95	<0.5	<10.0	<0.5	<4.0	<0.1
Times greater than DI water			0	0	1.6	1	1	1	1	1	0	1	1	1.8	1.6	1	0.06	2.4	1	1	0.25	1
Comments																						
Action																						
Result																						
SRK08-P15	04/10/2011	FIELD BLANK	<0.5	<0.5	2.10	<0.5		<0.5	<0.5	<0.5		3.0		2.50		<0.5	6.34	2.9			<1	
Deionized Water			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.005	<0.5	5.95	<0.5	<10.0	<0.5	<4.0	<0.1
Times greater than DI water			1	1	4.2	1	0	1	1	1	0	3	0	5	0	1	0.39	5.8	0	0	0.25	0
Comments														Blank concentration equal to PQL and correctly entered into emLine.				Blank concentration > PQL and correctly entered into emLine.				
Action														**Let Value Stand**				**Let Value Stand**				
Result														High blank value remains.				High blank value remains.				
SRK05-8	04/10/2011	FIELD BLANK	<0.5	<0.5	1.60	<0.5		<0.5	<0.5	<0.5		3.0		2.00		<0.5	6.10	0.7			<1	
Deionized Water			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.005	<0.5	5.95	<0.5	<10.0	<0.5	<4.0	<0.1
Times greater than DI water			1	1	3.2	1	0	1	1	1	0	3	0	4	0	1	0.15	1.4	0	0	0.25	0
Comments																						
Action																						
Result																						
PW-10-01 (DH1)	20/10/2011	FIELD BLANK	<0.5	<0.5	1.20	<0.5		<0.5	<0.5	<0.5		2.0		1.40		<0.5	5.50	<0.5			<1	
Deionized Water			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.005	<0.5	5.95	<0.5	<10.0	<0.5	<4.0	<0.1
Times greater than DI water			1	1	2.4	1	0	1	1	1	0	2	0	2.8	0	1	0.45	1	0	0	0.25	0
Comments																						
Action																						
Result																						

- Blank value is a detection limit higher than that of DI water.
- Blank value > PQL and < retest limit (30X detection limit).
- Blank value > retest limit (30X detection limit).
- Retest result to replace original result in emLine.

Table C-7: Quality Assurance / Quality Control
2011 Field Blanks - Dissolved Metals

Station	Date	Sample Type	Ag-d	Al-d	As-d	Ba-d	B-d	Be-d	Bi-d	Ca-d	Cd-d	Co-d	Cr-d	Cu-d	Fe-d	K-d	Li-d	Mg-d	Mn-d	Mo-d	Na-d	Ni-d	Pb-d	Sb-d	Se-d	Si-d	Sn-d	Sr-d	Ti-d	Tl-d	U-d	V-d	Zn-d	Zr-d
			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
SRK GD01	**24/01/2011**	**FIELD BLANK**	0.7090	4.50	0.05	0.330	<50	<0.01	0.02	0.37	0.02	0.0330	<0.1	1.0000	5.00	9.06	0.001	0.38	1.980	<0.05	0.76	0.600	0.3390	<0.02	<0.04	<100	0.32	1.32	<0.5	<0.002	0.0470	<0.2	10.400	<0.1
Deionized Water			<0.005	<0.2	<0.02	<0.02	<50	<0.01	<0.005	<0.05	<0.005	<0.005	<0.1	<0.05	<1	<0.05	<0.5	<0.05	<0.05	<0.05	<0.05	<0.02	<0.005	<0.02	<0.04	<100	<0.01	<0.05	<0.5	<0.002	<0.002	<0.2	<0.1	<0.1
Times greater than DI water			141.8	22.5	2.5	16.5	1	1	4.2	7.4	3.6	6.6	1	20	5	181.2	0.002	7.6	39.6	1	15.2	30	67.8	1	1	1	32	26.4	1	1	23.5	1	104	1
Comments			Blank concentration > PQL and correctly entered into eml.ine	Blank concentration > PQL and correctly entered into eml.ine		Blank concentration > PQL and correctly entered into eml.ine				Blank concentration > PQL and correctly entered into eml.ine		Blank concentration > PQL and correctly entered into eml.ine		Blank concentration > PQL and correctly entered into eml.ine	Blank concentration equal to PQL and correctly entered into eml.ine	Blank concentration > PQL and correctly entered into eml.ine		Blank concentration > PQL and correctly entered into eml.ine	Blank concentration > PQL and correctly entered into eml.ine		Blank concentration > PQL and correctly entered into eml.ine	Blank concentration > PQL and correctly entered into eml.ine	Blank concentration > PQL and correctly entered into eml.ine								Blank concentration > PQL and correctly entered into eml.ine			Blank concentration > PQL and correctly entered into eml.ine		
Action			**Request Retest**	**Request Retest**	**Request Retest**	**Request Retest**	**Request Retest**	**Request Retest**	**Request Retest**	**Request Retest**	**Request Retest**	**Request Retest**	**Request Retest**	**Request Retest**	**Request Retest**	**Request Retest**	**Request Retest**	**Request Retest**	**Request Retest**	**Request Retest**	**Request Retest**	**Request Retest**	**Request Retest**	**Request Retest**	**Request Retest**	**Request Retest**	**Request Retest**	**Request Retest**	**Request Retest**	**Request Retest**	**Request Retest**	**Request Retest**	**Request Retest**	**Request Retest**
Result			Retest performed, see results below.	Retest performed, see results below.	Retest performed, see results below.	Retest performed, see results below.	Retest performed, see results below.	Retest performed, see results below.	Retest performed, see results below.	Retest performed, see results below.	Retest performed, see results below.	Retest performed, see results below.	Retest performed, see results below.	Retest performed, see results below.	Retest performed, see results below.	Retest performed, see results below.	Retest performed, see results below.	Retest performed, see results below.	Retest performed, see results below.	Retest performed, see results below.	Retest performed, see results below.	Retest performed, see results below.	Retest performed, see results below.	Retest performed, see results below.	Retest performed, see results below.	Retest performed, see results below.	Retest performed, see results below.	Retest performed, see results below.	Retest performed, see results below.	Retest performed, see results below.	Retest performed, see results below.	Retest performed, see results below.	Retest performed, see results below.	Retest performed, see results below.
SRK GD01 Retest	**24/01/2011**	**FIELD BLANK**	0.8110	2.60	<0.02	0.240	<50	<0.01	0.01	0.37	0.01	0.0190	<0.1	0.9300	4.00	9.06	1.100	0.38	1.790	<0.05	0.76	0.370	0.2680	0.02	<0.04	<100	0.29	0.69	<0.5	0.00	0.0150	<0.2	7.900	<0.1
Deionized Water			<0.005	<0.2	<0.02	<0.02	<50	<0.01	<0.005	<0.05	<0.005	<0.005	<0.1	<0.05	<1	<0.05	<0.5	<0.05	<0.05	<0.05	<0.05	<0.02	<0.005	<0.02	<0.04	<100	<0.01	<0.05	<0.5	<0.002	<0.002	<0.2	<0.1	<0.1
Times greater than DI water			162.2	13	1	12	1	1	2	7.4	2.6	3.8	1	18.6	4	181.2	2.2	7.6	39.6	1	15.2	18.5	53.6	1	1	1	29	13.8	1	1	7.5	1	79	1
RPD Original and Retest Results			13.42	53.52	85.71	31.58	0.00	0.00	70.97	0.00	32.26	53.85	0.00	7.25	22.22	0.00	199.64	0.00	10.08	0.00	0.00	47.42	23.39	0.00	0.00	0.00	9.84	62.69	0.00	0.00	103.23	0.00	27.32	0.00
Comments			Retest for Jan 24 SRK GD01 blank. New blank concentration > PQL.	Retest for Jan 24 SRK GD01 blank. New blank concentration > PQL.	Retest for Jan 24 SRK GD01 blank. Retested as part of dissolved metals suite retest.	Retest for Jan 24 SRK GD01 blank. New blank concentration > PQL. Retested as part of dissolved metals suite retest.	Retest for Jan 24 SRK GD01 blank. Retested as part of dissolved metals suite retest.	Retest for Jan 24 SRK GD01 blank. Retested as part of dissolved metals suite retest.	Retest for Jan 24 SRK GD01 blank. Retested as part of dissolved metals suite retest.	Retest for Jan 24 SRK GD01 blank. New blank concentration > PQL. Retested as part of dissolved metals suite retest.	Retest for Jan 24 SRK GD01 blank. Retested as part of dissolved metals suite retest.	Retest for Jan 24 SRK GD01 blank. Retested as part of dissolved metals suite retest.	Retest for Jan 24 SRK GD01 blank. Retested as part of dissolved metals suite retest.	Retest for Jan 24 SRK GD01 blank. New blank concentration > PQL.	Retest for Jan 24 SRK GD01 blank. Retested as part of dissolved metals suite retest.	Retest for Jan 24 SRK GD01 blank. New blank concentration > PQL.	Retest for Jan 24 SRK GD01 blank. Retested as part of dissolved metals suite retest.	Retest for Jan 24 SRK GD01 blank. New blank concentration > PQL. Retested as part of dissolved metals suite retest.	Retest for Jan 24 SRK GD01 blank. New blank concentration > PQL.	Retest for Jan 24 SRK GD01 blank. Retested as part of dissolved metals suite retest.	Retest for Jan 24 SRK GD01 blank. Retested as part of dissolved metals suite retest.	Retest for Jan 24 SRK GD01 blank. New blank concentration > PQL. Retested as part of dissolved metals suite retest.	Retest for Jan 24 SRK GD01 blank. New blank concentration > PQL.	Retest for Jan 24 SRK GD01 blank. New blank concentration > PQL.	Retest for Jan 24 SRK GD01 blank. Retested as part of dissolved metals suite retest.	Retest for Jan 24 SRK GD01 blank. Retested as part of dissolved metals suite retest.	Retest for Jan 24 SRK GD01 blank. Retested as part of dissolved metals suite retest.	Retest for Jan 24 SRK GD01 blank. New blank concentration > PQL.	Retest for Jan 24 SRK GD01 blank. Retested as part of dissolved metals suite retest.	Retest for Jan 24 SRK GD01 blank. Retested as part of dissolved metals suite retest.	Retest for Jan 24 SRK GD01 blank. New blank concentration > PQL.	Retest for Jan 24 SRK GD01 blank. Retested as part of dissolved metals suite retest.
Action			**Original Value Stands**	**Replace Original Value**	**Replace Original Value**	**Replace Original Value**	**Original Value Stands**	**Original Value Stands**	**Replace Original Value**	**Original Value Stands**	**Replace Original Value**	**Replace Original Value**	**Original Value Stands**	**Original Value Stands**	**Replace Original Value**	**Original Value Stands**	**Replace Original Value**	**Original Value Stands**	**Original Value Stands**	**Original Value Stands**	**Original Value Stands**	**Replace Original Value**	**Replace Original Value**	**Original Value Stands**	**Original Value Stands**	**Original Value Stands**	**Original Value Stands**	**Replace Original Value**	**Original Value Stands**	**Original Value Stands**	**Replace Original Value**	**Original Value Stands**	**Replace Original Value**	**Original Value Stands**
Result			Entered retest result into emLine as comment: "Retest result: 0.811 µg/L. Original value stands: RPD (original, retest)<20%. Retested as identified through QA/QC."	New blank value entered into emLine.	New blank value entered into emLine.	New blank value entered into emLine.	result into emLine as comment: "Retest result: <50 µg/L. Original value stands: RPD (original, retest)<20%. Retested as part of dissolved metals suite retest."	result into emLine as comment: "Retest result: <0.01 µg/L. Original value stands: RPD (original, retest)<20%. Retested as part of dissolved metals suite retest."	New blank value entered into emLine.	result into emLine as comment: "Retest result: 0.37 mg/L. Original value stands: RPD (original, retest)<20%. Retested as part of dissolved metals suite retest."	New blank value entered into emLine.	New blank value entered into emLine.	result into emLine as comment: "Retest result: <0.1 µg/L. Original value stands: RPD (original, retest)<20%. Retested as part of dissolved metals suite retest."	Entered retest result into emLine as comment: "Retest result: 0.93 µg/L. Original value stands: RPD (original, retest)<20%. Retested as identified through QA/QC."	New blank value entered into emLine.	Entered retest result into emLine as comment: "Retest result: 9.06 mg/L. Original value stands: RPD (original, retest)<20%. Retested as identified through QA/QC."	New blank value entered into emLine.	result into emLine as comment: "Retest result: 0.38 mg/L. Original value stands: RPD (original, retest)<20%. Retested as part of dissolved metals suite retest."	Entered retest result into emLine as comment: "Retest result: 1.79 µg/L. Original value stands: RPD (original, retest)<20%. Retested as identified through QA/QC."	result into emLine as comment: "Retest result: <0.05 µg/L. Original value stands: RPD (original, retest)<20%. Retested as part of dissolved metals suite retest."	result into emLine as comment: "Retest result: 0.76 mg/L. Original value stands: RPD (original, retest)<20%. Retested as part of dissolved metals suite retest."	New blank value entered into emLine.	New blank value entered into emLine.	result into emLine as comment: "Retest result: 0.02 µg/L. Original value stands: RPD (original, retest)<20%. Retested as part of dissolved metals suite retest."	result into emLine as comment: "Retest result: <0.04 µg/L. Original value stands: RPD (original, retest)<20%. Retested as part of dissolved metals suite retest."	result into emLine as comment: "Retest result: <100 µg/L. Original value stands: RPD (original, retest)<20%. Retested as part of dissolved metals suite retest."	Entered retest result into emLine as comment: "Retest result: 0.29 µg/L. Original value stands: RPD (original, retest)<20%. Retested as identified through QA/QC."	New blank value entered into emLine.	result into emLine as comment: "Retest result: <0.5 µg/L. Original value stands: RPD (original, retest)<20%. Retested as part of dissolved metals suite retest."	result into emLine as comment: "Retest result: <0.002 µg/L. Original value stands: RPD (original, retest)<20%. Retested as part of dissolved metals suite retest."	New blank value entered into emLine.	result into emLine as comment: "Retest result: <0.2 µg/L. Original value stands: RPD (original, retest)<20%. Retested as part of dissolved metals suite retest."	New blank value entered into emLine.	result into emLine as comment: "Retest result: <0.1 µg/L. Original value stands: RPD (original, retest)<20%. Retested as part of dissolved metals suite retest."
V5	**17/02/2011**	**FIELD BLANK**	<0.005	1.20	<0.02	0.120	<50	<0.01	0.01	<0.05	<0.005	0.0090	<0.1	0.1400	<1	<0.05	<0.0005	<0.05	0.130	<0.05	<0.05	0.080	0.1600	<0.02	<0.04	<100	<0.01	0.18	<0.5	<0.002	0.0200	<0.2	1.200	<0.1
Deionized Water			<0.005	<0.2	<0.02	<0.02	<50	<0.01	<0.005	<0.05	<0.005	<0.005	<0.1	<0.05	<1	<0.05	<0.5	<0.05	<0.05	<0.05	<0.05	<0.02	<0.005	<0.02	<0.04	<100	<0.01	<0.05	<0.5	<0.002	<0.002	<0.2	<0.1	<0.1
Times greater than DI water			1	6	1	6	1	1	2.6	1	1	1.8	1	2.8	1	1	0.001	1	2.6	1	1	4	32	1	1	1	1	3.6	1	1	10	1	12	1
Comments				Blank concentration > PQL and correctly entered into emLine.		Blank concentration > PQL and correctly entered into emLine.																	Blank concentration > PQL and correctly entered into emLine. Lab noted that "Dissolved greater than total. Reanalysis yields similar results."										Blank concentration > PQL and correctly entered into emLine. Lab noted that "Dissolved greater than total. Reanalysis yields similar results."		Blank concentration > PQL and correctly entered into emLine. Lab noted that "Dissolved greater than total. Reanalysis yields similar results."	
Action				**Let Value Stand**		**Let Value Stand**																	**Let Value Stand**								**Let Value Stand**			**Let Value Stand**	
Result				High blank value remains.		High blank value remains.																	High blank value remains. Retest not requested because lab already reanalyzed.								High blank value remains.			High blank value remains.	
MOOSE SEEP	**03/03/2011**	**FIELD BLANK**	<0.005	1.30	<0.02	0.030	<50	<0.01	0.14	<0.05	<0.005	<0.005	<0.1	0.0900	<1	<0.05	<0.0005	<0.05	<0.05	<0.05	<0.05	0.060	0.1040	<0.02	<0.04	<100	<0.01	<0.05	<0.5	<0.002	0.0050	<0.2	0.800	<0.1
Deionized Water			<0.005	<0.2	<0.02	<0.02	<50	<0.01	<0.005	<0.05	<0.005	<0.005	<0.1	<0.05	<1	<0.05	<0.5	<0.05	<0.05	<0.05	<0.05	<0.02	<0.005	<0.02	<0.04	<100	<0.01	<0.05	<0.5	<0.002	<0.002	<0.2	<0.1	<0.1
Times greater than DI water			1	6.5	1	1.5	1	1	28.4	1	1	1	1	1.8	1	1	0.001	1	1	1	1	3	20.8	1	1	1	1	1	1	1	2.5	1	8	1
Comments				Blank concentration > PQL and correctly entered into eml.ine					Blank concentration > PQL and correctly entered into eml.ine														Blank concentration > PQL and correctly entered into eml.ine											Blank concentration > PQL and correctly entered into eml.ine	
Action				**Let Value Stand**					**Let Value Stand**														**Let Value Stand**											**Let Value Stand**	
Result				High blank value remains.					High blank value remains.														High blank value remains.											High blank value remains.	
V15	**18/05/2011**	**FIELD BLANK**	0.0280	2.20	<0.02	0.400	<50	<0.01	<0.005	0.32	0.02	0.0230	<0.1	3.6100	3.00	1.63	0.013	0.16	1.310	<0.05	0.18	0.280	0.6740	0.08	<0.04	<100	0.02	1.44	<0.5	<0.002	0.0080	<0.2	6.700	<0.1
Deionized Water			<0.005	<0.2	<0.02	<0.02	<50	<0.01	<0.005	<0.05	<0.005	<0.005	<0.1	<0.05	<1	<0.05	<0.5	<0.05	<0.05	<0.05	<0.05	<0.02	<0.005	<0.02	<0.04	<100	<0.01	<0.05	<0.5	<0.002	<0.002	<0.2	<0.1	<0.1
Times greater than DI water			5.6	11	1	20	1	1	1	6.4	3.4	4.6	1	72.2	3	32.6	0.0262	3.2	26.2	1	3.6	14	134.8	4	1	1	2	28.8	1	1	4	1	67	1
Comments			Blank concentration > PQL and correctly entered into eml.ine	Blank concentration > PQL and correctly entered into eml.ine		Blank concentration > PQL and correctly entered into eml.ine				Blank concentration > PQL and correctly entered into eml.ine				Blank concentration > PQL and correctly entered into eml.ine		Blank concentration > PQL and correctly entered into eml.ine			Blank concentration > PQL and correctly entered into eml.ine				Blank concentration > PQL and correctly entered into eml.ine											Blank concentration > PQL and correctly entered into eml.ine	
Action			**Let Value Stand**	**Let Value Stand**		**Let Value Stand**				**Let Value Stand**				**Request Retest**		**Request Retest**			**Let Value Stand**			**Let Value Stand**	**Request Retest**					**Let Value Stand**							**Request Retest**	
Result			High blank value remains.	High blank value remains.		High blank value remains.				High blank value remains.				Retest performed, see results below.		Retest performed, see results below.			High blank value remains.			High blank value remains.	Retest performed, see results below.					High blank value remains.							Retest performed, see results below.	

Blank value is a detection limit higher than that of DI water.
Blank value > PQL and < retest limit (30X detection limit).
Blank value > retest limit (30X detection limit).
Retest result to replace original result in emLine.

Denison Environmental Services

Table C-7: Quality Assurance / Quality Control
2011 Field Blanks - Dissolved Metals

Station	Date	Sample Type	Ag-d µg/L	Al-d µg/L	As-d µg/L	Ba-d µg/L	B-d µg/L	Be-d µg/L	Bi-d µg/L	Ca-d mg/L	Cd-d µg/L	Co-d µg/L	Cr-d µg/L	Cu-d µg/L	Fe-d µg/L	K-d mg/L	Li-d mg/L	Mg-d mg/L	Mn-d µg/L	Mo-d µg/L	Na-d mg/L	Ni-d µg/L	Pb-d µg/L	Sb-d µg/L	Se-d µg/L	Si-d µg/L	Sn-d µg/L	Sr-d µg/L	Ti-d µg/L	Tl-d µg/L	U-d µg/L	V-d µg/L	Zn-d µg/L	Zr-d µg/L
V15 Retest	18/05/2011	FIELD BLANK												3.7000		1.63							0.5570									6.000	
Deionized Water			<0.005	<0.2	<0.02	<0.02	<50	<0.01	<0.005	<0.05	<0.005	<0.005	<0.1	<0.05	<1	<0.05	<0.5	<0.05	<0.05	<0.05	<0.05	<0.02	<0.005	<0.02	<0.04	<100	<0.01	<0.05	<0.5	<0.002	<0.002	<0.2	<0.1	<0.1
Times greater than DI water			0	0	0	0	0	0	0	0	0	0	0	74	0	32.6	0	0	0	0	0	0	111.4	0	0	0	0	0	0	0	0	0	60	0
RPD Original and Retest Results			N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.46	0.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	19.01	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	11.02	N/A
Comments														Retest for May 18 V15 blank. Blank concentration > PQL and correctly entered into emLine.		Retest for May 18 V15 blank. Blank concentration > PQL and correctly entered into emLine.								Retest for May 18 V15 blank. Blank concentration > PQL and correctly entered into emLine.											Retest for May 18 V15 blank. Blank concentration > PQL and correctly entered into emLine.	
Action														Original Value Stands		Original Value Stands							Original Value Stands											Original Value Stands	
Result														result into emLine as comment: "Retest result: 3.70 µg/L. Original value stands: RPD (original, retest)<20%. Retested as identified through QA/QC."		result into emLine as comment: "Retest result: 1.63 mg/L. Original value stands: RPD (original, retest)<20%. Retested as identified through QA/QC."										result into emLine as comment: "Retest result: 0.557 µg/L. Original value stands: RPD (original, retest)<20%. Retested as identified through QA/QC."											result into emLine as comment: "Retest result: 6.0 µg/L. Original value stands: RPD (original, retest)<20%. Retested as identified through QA/QC."	
PW-10-01 (DH1)	23/06/2011	FIELD BLANK	<0.005	2.30	0.06	0.560	<50	<0.01	<0.005	0.07	0.01	0.8170	61.30	5.1500	402.00	<0.05	<0.0005	<0.05	10.300	2.83	<0.05	35.400	0.3450	0.03	<0.04	<100	0.11	0.18	<0.5	<0.002	0.0030	<0.2	2.500	<0.1
Deionized Water			<0.005	<0.2	<0.02	<0.02	<50	<0.01	<0.005	<0.05	<0.005	<0.005	<0.1	<0.05	<1	<0.05	<0.0005	<0.05	<0.05	<0.05	<0.05	<0.02	<0.005	<0.02	<0.04	<100	<0.01	<0.05	<0.5	<0.002	<0.002	<0.2	<0.1	<0.1
Times greater than DI water			1	11.5	3	28	1	1	1	1.4	1.6	163.4	613	103	402	1	1	1	206	56.6	1	1770	69	1.5	1	1	11	3.6	1	1	1.5	1	25	1
Comments				Blank concentration > PQL and correctly entered into emLine.		Blank concentration > PQL and correctly entered into emLine.						Blank concentration > PQL and correctly entered into emLine.	Blank concentration > PQL and correctly entered into emLine.	Blank concentration > PQL and correctly entered into emLine.	Blank concentration > PQL and correctly entered into emLine.				Blank concentration > PQL and correctly entered into emLine.	Blank concentration > PQL and correctly entered into emLine.		Blank concentration > PQL and correctly entered into emLine.	Blank concentration > PQL and correctly entered into emLine.						Blank concentration > PQL and correctly entered into emLine.								Blank concentration > PQL and correctly entered into emLine.	
Action			Request Retest	Request Retest	Request Retest	Request Retest	Request Retest	Request Retest	Request Retest	Request Retest	Request Retest	Request Retest	Request Retest	Request Retest	Request Retest	Request Retest	Request Retest	Request Retest	Request Retest	Request Retest	Request Retest	Request Retest	Request Retest	Request Retest	Request Retest	Request Retest	Request Retest	Request Retest	Request Retest	Request Retest	Request Retest	Request Retest	Request Retest	Request Retest
Result			Retest performed, see results below.	Retest performed, see results below.	Retest performed, see results below.	Retest performed, see results below.	Retest performed, see results below.	Retest performed, see results below.	Retest performed, see results below.	Retest performed, see results below.	Retest performed, see results below.	Retest performed, see results below.	Retest performed, see results below.	Retest performed, see results below.	Retest performed, see results below.	Retest performed, see results below.	Retest performed, see results below.	Retest performed, see results below.	Retest performed, see results below.	Retest performed, see results below.	Retest performed, see results below.	Retest performed, see results below.	Retest performed, see results below.	Retest performed, see results below.	Retest performed, see results below.	Retest performed, see results below.	Retest performed, see results below.	Retest performed, see results below.	Retest performed, see results below.	Retest performed, see results below.	Retest performed, see results below.	Retest performed, see results below.	Retest performed, see results below.	Retest performed, see results below.
PW-10-01 (DH1) Retest	23/06/2011	FIELD BLANK	<0.005	2.20	<0.02	0.370	<50	<0.01	<0.005	0.08	0.01	0.0060	<0.1	0.0700	3.00	<0.05	<0.0005	<0.05	0.310	<0.05	<0.05	0.030	0.3010	<0.02	<0.04	<100	<0.01	0.21	<0.5	<0.002	<0.002	<0.2	1.300	<0.1
Deionized Water			<0.005	<0.2	<0.02	<0.02	<50	<0.01	<0.005	<0.05	<0.005	<0.005	<0.1	<0.05	<1	<0.05	<0.0005	<0.05	<0.05	<0.05	<0.05	<0.02	<0.005	<0.02	<0.04	<100	<0.01	<0.05	<0.5	<0.002	<0.002	<0.2	<0.1	<0.1
Times greater than DI water			1	11	1	18.5	1	1	1	1.6	1.4	1.2	1	1.4	3	1	1	1	6.2	1	1	1.5	60.2	1	1	1	1	4.2	1	1	1	1	13	1
RPD Original and Retest Results			0.00	4.44	100.00	40.86	0.00	0.00	0.00	13.33	13.33	197.08	199.35	194.64	197.04	0.00	0.00	0.00	188.31	193.06	0.00	199.66	13.62	40.00	0.00	0.00	166.67	15.38	0.00	0.00	40.00	0.00	63.16	0.00
Comments			Retest for June 23 PW-10-01 (DH1) blank. Retested as part of dissolved metals suite retest.	Retest for June 23 PW-10-01 (DH1) blank. New blank concentration > PQL.	Retest for June 23 PW-10-01 (DH1) blank. Retested as part of dissolved metals suite retest.	Retest for June 23 PW-10-01 (DH1) blank. New blank concentration > PQL. Retested as part of dissolved metals suite retest.	Retest for June 23 PW-10-01 (DH1) blank. Retested as part of dissolved metals suite retest.	Retest for June 23 PW-10-01 (DH1) blank. Retested as part of dissolved metals suite retest.	Retest for June 23 PW-10-01 (DH1) blank. Retested as part of dissolved metals suite retest.	Retest for June 23 PW-10-01 (DH1) blank. Retested as part of dissolved metals suite retest.	Retest for June 23 PW-10-01 (DH1) blank. Retested as part of dissolved metals suite retest.	Retest for June 23 PW-10-01 (DH1) blank. New blank concentration < PQL.	Retest for June 23 PW-10-01 (DH1) blank. New blank concentration < PQL.	Retest for June 23 PW-10-01 (DH1) blank. New blank concentration < PQL.	Retest for June 23 PW-10-01 (DH1) blank. New blank concentration < PQL.	Retest for June 23 PW-10-01 (DH1) blank. Retested as part of dissolved metals suite retest.	Retest for June 23 PW-10-01 (DH1) blank. Retested as part of dissolved metals suite retest.	Retest for June 23 PW-10-01 (DH1) blank. Retested as part of dissolved metals suite retest.	Retest for June 23 PW-10-01 (DH1) blank. New blank concentration > PQL.	Retest for June 23 PW-10-01 (DH1) blank. New blank concentration < PQL.	Retest for June 23 PW-10-01 (DH1) blank. Retested as part of dissolved metals suite retest.	Retest for June 23 PW-10-01 (DH1) blank. Retested as part of dissolved metals suite retest.	Retest for June 23 PW-10-01 (DH1) blank. New blank concentration < PQL.	Retest for June 23 PW-10-01 (DH1) blank. New blank concentration > PQL.	Retest for June 23 PW-10-01 (DH1) blank. Retested as part of dissolved metals suite retest.	Retest for June 23 PW-10-01 (DH1) blank. Retested as part of dissolved metals suite retest.	Retest for June 23 PW-10-01 (DH1) blank. Retested as part of dissolved metals suite retest.	Retest for June 23 PW-10-01 (DH1) blank. Retested as part of dissolved metals suite retest.	Retest for June 23 PW-10-01 (DH1) blank. Retested as part of dissolved metals suite retest.	Retest for June 23 PW-10-01 (DH1) blank. Retested as part of dissolved metals suite retest.	Retest for June 23 PW-10-01 (DH1) blank. Retested as part of dissolved metals suite retest.	Retest for June 23 PW-10-01 (DH1) blank. Retested as part of dissolved metals suite retest.	Retest for June 23 PW-10-01 (DH1) blank. New blank concentration > PQL. Retested as part of dissolved metals suite retest.	Retest for June 23 PW-10-01 (DH1) blank. Retested as part of dissolved metals suite retest.
Action			Original Value Stands	Original Value Stands	Replace Original Value	Replace Original Value	Original Value Stands	Original Value Stands	Original Value Stands	Original Value Stands	Original Value Stands	Replace Original Value	Replace Original Value	Replace Original Value	Replace Original Value	Original Value Stands	Original Value Stands	Original Value Stands	Replace Original Value	Replace Original Value	Original Value Stands	Replace Original Value	Original Value Stands	Replace Original Value	Original Value Stands	Original Value Stands	Replace Original Value	Original Value Stands	Original Value Stands	Original Value Stands	Replace Original Value	Original Value Stands	Replace Original Value	Original Value Stands
Result			Entered retest result into emLine as comment: "Retest result: <0.005 µg/L. Original value stands: RPD (original, retest)<20%. Retested as part of dissolved metals suite retest."	Entered retest result into emLine as comment: "Retest result: 2.2 µg/L. Original value stands: RPD (original, retest)<20%. Retested as part of dissolved metals suite retest."	New blank value entered into emLine.	New blank value entered into emLine.	Entered retest result into emLine as comment: "Retest result: <50 µg/L. Original value stands: RPD (original, retest)<20%. Retested as part of dissolved metals suite retest."	Entered retest result into emLine as comment: "Retest result: <0.01 µg/L. Original value stands: RPD (original, retest)<20%. Retested as part of dissolved metals suite retest."	Entered retest result into emLine as comment: "Retest result: <0.005 µg/L. Original value stands: RPD (original, retest)<20%. Retested as part of dissolved metals suite retest."	Entered retest result into emLine as comment: "Retest result: 0.08 mg/L. Original value stands: RPD (original, retest)<20%. Retested as part of dissolved metals suite retest."	Entered retest result into emLine as comment: "Retest result: 0.01 µg/L. Original value stands: RPD (original, retest)<20%. Retested as part of dissolved metals suite retest."	New blank value entered into emLine.	New blank value entered into emLine.	New blank value entered into emLine.	New blank value entered into emLine.	Entered retest result into emLine as comment: "Retest result: <0.05 mg/L. Original value stands: RPD (original, retest)<20%. Retested as part of dissolved metals suite retest."	Entered retest result into emLine as comment: "Retest result: <0.0005 mg/L. Original value stands: RPD (original, retest)<20%. Retested as part of dissolved metals suite retest."	Entered retest result into emLine as comment: "Retest result: <0.05 mg/L. Original value stands: RPD (original, retest)<20%. Retested as part of dissolved metals suite retest."	New blank value entered into emLine.	New blank value entered into emLine.	Entered retest result into emLine as comment: "Retest result: <0.05 mg/L. Original value stands: RPD (original, retest)<20%. Retested as part of dissolved metals suite retest."	New blank value entered into emLine.	Entered retest result into emLine as comment: "Retest result: 0.301 µg/L. Original value stands: RPD (original, retest)<20%. Retested as identified through QA/QC."	New blank value entered into emLine.	Entered retest result into emLine as comment: "Retest result: <0.04 µg/L. Original value stands: RPD (original, retest)<20%. Retested as part of dissolved metals suite retest."	Entered retest result into emLine as comment: "Retest result: <100 µg/L. Original value stands: RPD (original, retest)<20%. Retested as part of dissolved metals suite retest."	New blank value entered into emLine.	Entered retest result into emLine as comment: "Retest result: 0.21 µg/L. Original value stands: RPD (original, retest)<20%. Retested as part of dissolved metals suite retest."	Entered retest result into emLine as comment: "Retest result: <0.5 µg/L. Original value stands: RPD (original, retest)<20%. Retested as part of dissolved metals suite retest."	Entered retest result into emLine as comment: "Retest result: <0.002 µg/L. Original value stands: RPD (original, retest)<20%. Retested as part of dissolved metals suite retest."	New blank value entered into emLine.	Entered retest result into emLine as comment: "Retest result: <0.2 µg/L. Original value stands: RPD (original, retest)<20%. Retested as part of dissolved metals suite retest."	New blank value entered into emLine.	Entered retest result into emLine as comment: "Retest result: <0.1 µg/L. Original value stands: RPD (original, retest)<20%. Retested as part of dissolved metals suite retest."
V22	28/06/2011	FIELD BLANK	<0.02	<3	<0.1	<1	<50	<0.1	<1	<0.05	<0.01	<0.5	<1	<0.2	<5	<0.05	<0.005	<0.05	2.000	<1	<0.05	<1	<0.2	<0.5	<0.1	<100	<5	<1	<5	<0.05	<0.1	<5	6.000	<0.5
Deionized Water			<0.005	<0.2	<0.02	<0.02	<50	<0.01	<0.005	<0.05	<0.005	<0.005	<0.1	<0.05	<1	<0.05	<0.5	<0.05	<0.05	<0.05	<0.05	<0.02	<0.005	<0.02	<0.04	<100	<0.01	<0.05	<0.5	<0.002	<0.002	<0.2	<0.1	<0.1
Times greater than DI water			4	15	5	50	1	10	200	1	2	100	10	4	5	1	0.01	1	40	20	1	50	40	25	2.5	1	500	20	10	25	50	25	60	5
Comments				Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.		Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.			Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.		Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.				Blank value correctly entered into emLine. However concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case. Also, lab noted that "Dissolved greater than total. Reanalysis yields similar results.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.		Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.			Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank value correctly entered into emLine. However concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.
Action				Let Value Stand	Let Value Stand	Let Value Stand		Let Value Stand	Let Value Stand			Let Value Stand	Let Value Stand		Let Value Stand				Let Value Stand	Let Value Stand		Let Value Stand	Let Value Stand	Let Value Stand			Let Value Stand	Let Value Stand	Let Value Stand	Let Value Stand	Let Value Stand	Let Value Stand	Let Value Stand	Let Value Stand
Result																			High blank value remains.													High blank value remains.	

Blank value is a detection limit higher than that of DI water.
Blank value > PQL and < retest limit (30X detection limit).
Blank value > retest limit (30X detection limit).
Retest result to replace original result in emLine.

Denison Environmental Services

Table C-7: Quality Assurance / Quality Control
2011 Field Blanks - Dissolved Metals

Station	Date	Sample Type	Ag-d µg/L	Al-d µg/L	As-d µg/L	Ba-d µg/L	B-d µg/L	Be-d µg/L	Bi-d µg/L	Ca-d mg/L	Cd-d µg/L	Co-d µg/L	Cr-d µg/L	Cu-d µg/L	Fe-d µg/L	K-d mg/L	Li-d mg/L	Mg-d mg/L	Mn-d µg/L	Mo-d µg/L	Na-d mg/L	Ni-d µg/L	Pb-d µg/L	Sb-d µg/L	Se-d µg/L	Si-d µg/L	Sn-d µg/L	Sr-d µg/L	Ti-d µg/L	Tl-d µg/L	U-d µg/L	V-d µg/L	Zn-d µg/L	Zr-d µg/L
GL-60	06/09/2011	FIELD BLANK	0.0050	0.50	0.02	0.030	50.00	0.01	0.01	0.05	0.01	0.0110	0.10	0.1500	1.00	0.05	0.001	0.05	0.560	0.05	0.05	0.040	0.0480	0.02	0.0400	100.00	0.01	0.05	0.50	0.00	0.0020	0.20	3.100	0.10
Deionized Water			<0.005	<0.2	<0.02	<0.02	<50	<0.01	<0.005	<0.05	<0.005	<0.005	<0.1	<0.05	<1	<0.05	<0.5	<0.05	<0.05	<0.05	<0.05	<0.02	<0.005	<0.02	<0.04	<100	<0.01	<0.05	<0.5	<0.002	<0.002	<0.2	<0.1	<0.1
Times greater than DI water			1	2.5	1	1.5	1	1	1	1	2.2	2.2	1	3	1	1	0.001	1	11.2	1	1	2	9.6	1	1	1	1	1	1	1	1	1	31	1
Comments																			Blank concentration > PQL and correctly entered into emLine. Lab noted that "Dissolved greater than total. Reanalysis yields similar				Blank concentration > PQL and correctly entered into emLine.											Blank concentration > PQL and correctly entered into emLine. Lab noted that "Dissolved greater than total. Reanalysis yields similar	
Action																			**Let Value Stand**				**Let Value Stand**											**Let Value Stand**	
Result																			High blank value remains.				High blank value remains.											High blank value remains. Retest not requested because lab already reanalyzed.	
V4	12/09/2011	FIELD BLANK	<0.005	0.60	<0.02	0.050	<50	<0.01	<0.005	0.08	<0.005	<0.005	<0.1	<0.05	<1	<0.05	<0.0005	<0.05	1.460	<0.05	<0.05	<0.02	0.0520	<0.02	<0.04	<100	<0.01	0.13	<0.5	<0.002	<0.002	<0.2	0.300	<0.1
Deionized Water			<0.005	<0.2	<0.02	<0.02	<50	<0.01	<0.005	<0.05	<0.005	<0.005	<0.1	<0.05	<1	<0.05	<0.5	<0.05	<0.05	<0.05	<0.05	<0.02	<0.005	<0.02	<0.04	<100	<0.01	<0.05	<0.5	<0.002	<0.002	<0.2	<0.1	<0.1
Times greater than DI water			1	3	1	2.5	1	1	1	1.6	1	1	1	1	1	1	0.001	1	29.2	1	1	1	10.4	1	1	1	1	2.6	1	1	1	1	3	1
Comments																			Blank concentration > PQL and correctly entered into emLine. Lab noted that "Dissolved greater than total. Reanalysis yields similar				Blank concentration > PQL and correctly entered into emLine.												
Action																			**Let Value Stand**				**Let Value Stand**												
Result																			High blank value remains.				High blank value remains.												
SRK08-P15	04/10/2011	FIELD BLANK	<0.005	0.40	<0.02	<0.02	<50	<0.01	<0.005	<0.05	<0.005	<0.005	<0.1	<0.05	<1	<0.05	<0.0005	<0.05	<0.05	<0.05	<0.05	<0.02	0.0170	<0.02	<0.04	<100	<0.01	<0.05	<0.5	<0.002	<0.002	<0.2	0.300	<0.1
Deionized Water			<0.005	<0.2	<0.02	<0.02	<50	<0.01	<0.005	<0.05	<0.005	<0.005	<0.1	<0.05	<1	<0.05	<0.0005	<0.05	<0.05	<0.05	<0.05	<0.02	<0.005	<0.02	<0.04	<100	<0.01	<0.05	<0.5	<0.002	<0.002	<0.2	<0.1	<0.1
Times greater than DI water			1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3.4	1	1	1	1	1	1	1	1	1	3	1
Comments																																	
Action																																	
Result																																	
SRK05-8	04/10/2011	FIELD BLANK	<0.005	0.70	0.03	0.030	<50	<0.01	<0.005	<0.05	<0.005	<0.005	<0.1	<0.05	<1	<0.05	<0.0005	<0.05	0.100	0.16	<0.05	<0.02	0.0230	<0.02	<0.04	<100	<0.01	<0.05	<0.5	<0.002	<0.002	<0.2	0.300	<0.1
Deionized Water			<0.005	<0.2	<0.02	<0.02	<50	<0.01	<0.005	<0.05	<0.005	<0.005	<0.1	<0.05	<1	<0.05	<0.0005	<0.05	<0.05	<0.05	<0.05	<0.02	<0.005	<0.02	<0.04	<100	<0.01	<0.05	<0.5	<0.002	<0.002	<0.2	<0.1	<0.1
Times greater than DI water			1	3.5	1.5	1.5	1	1	1	1	1	1	1	1	1	1	1	1	2	3.2	1	1	4.6	1	1	1	1	1	1	1	1	1	3	1
Comments																																	
Action																																	
Result																																	
PW-10-01 (DH1)	20/10/2011	FIELD BLANK	<0.005	0.60	<0.02	0.220	<50	<0.01	<0.005	<0.05	<0.005	<0.005	<0.1	<0.05	<1	<0.05	<0.0005	<0.05	0.140	<0.05	<0.05	<0.02	0.2460	<0.02	<0.04	<100	<0.01	<0.05	<0.5	<0.002	<0.002	<0.2	0.700	<0.1
Deionized Water			<0.005	<0.2	<0.02	<0.02	<50	<0.01	<0.005	<0.05	<0.005	<0.005	<0.1	<0.05	<1	<0.05	<0.0005	<0.05	<0.05	<0.05	<0.05	<0.02	<0.005	<0.02	<0.04	<100	<0.01	<0.05	<0.5	<0.002	<0.002	<0.2	<0.1	<0.1
Times greater than DI water			1	3	1	11	1	1	1	1	1	1	1	1	1	1	1	1	2.8	1	1	1	49.2	1	1	1	1	1	1	1	1	1	7	1
Comments						Blank concentration > PQL and correctly entered into emLine.																Blank concentration > PQL and correctly entered into emLine.											Blank concentration > PQL and correctly entered into emLine.	
Action						**Let Value Stand**																	**Request Retest**										**Let Value Stand**	
Result						High blank value remains.																	Retest requested, but lab had already reanalyzed multiple times with similar results. Therefore, high blank value remains.										High blank value remains.	

Blank value is a detection limit higher than that of DI water.
Blank value > PQL and < retest limit (30X detection limit).
Blank value > retest limit (30X detection limit).
Retest result to replace original result in emLine.

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Table C-8: Quality Assurance / Quality Control
2011 Field Blanks - Total Metals

Station	Date	Sample Type	Ag µg/L	Al µg/L	As µg/L	B µg/L	Ba µg/L	Be µg/L	Bi µg/L	Ca mg/L	Cd µg/L	Co µg/L	Cr µg/L	Cu µg/L	Fe µg/L	K mg/L	Li mg/L	Mg mg/L	Mn µg/L	Mo µg/L	Na mg/L	Ni µg/L	Pb µg/L	Sb µg/L	Se µg/L	Si µg/L	Sn µg/L	Sr µg/L	Ti µg/L	Tl µg/L	U µg/L	V µg/L	Zn µg/L	Zr µg/L
V5	17/02/2011	FIELD BLANK	<0.005	1.20	<0.02	<50	0.040	<0.01	0.01	<0.05	<0.005	<0.005	<0.1	<0.05	<1	<0.05	<0.0005	<0.05	<0.05	<0.05	<0.05	0.040	<0.005	<0.02	<0.04	<100	<0.01	0.12	<0.5	<0.002	0.0140	<0.2	<0.1	<0.1
Deionized Water			<0.005	<0.2	<0.02	<50	<0.02	<0.01	<0.005	<0.05	<0.005	<0.005	<0.1	<0.05	<1	<0.05	<0.5	<0.05	<0.05	<0.05	<0.05	<0.02	<0.005	<0.02	<0.04	<100	<0.01	<0.05	<0.5	<0.002	<0.002	<0.2	<0.1	<0.1
Times greater than DI water			1	6	1	1	2	1	2	1	1	1	1	1	1	1	0.001	1	1	1	1	2	1	1	1	1	1	2.4	1	1	7	1	1	1
Comments				Blank concentration > PQL and correctly entered into emLine.																												Blank concentration > PQL and correctly entered into emLine.			
Action				Let Value Stand																												Let Value Stand			
Result				High blank value remains.																												High blank value remains.			
V22	28/06/2011	FIELD BLANK	<0.02	<3	<0.1	<50	<1	<0.1	<1	<0.05	<0.01	<0.5	<1	<0.2	<5	<0.05	<0.005	<0.05	2.000	<1	<0.05	<1	<0.2	<0.5	<0.1	<100	<5	<1	<5	<0.05	<0.1	<5	<5	<0.5
Deionized Water			<0.005	<0.2	<0.02	<50	<0.02	<0.01	<0.005	<0.05	<0.005	<0.005	<0.1	<0.05	<1	<0.05	<0.5	<0.05	<0.05	<0.05	<0.05	<0.02	<0.005	<0.02	<0.04	<100	<0.01	<0.05	<0.5	<0.002	<0.002	<0.2	<0.1	<0.1
Times greater than DI water			4	15	5	1	50	10	200	1	2	100	10	4	5	1	0.01	1	40	20	1	50	40	25	2.5	1	500	20	10	25	50	25	50	5
Comments				Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.		Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.			Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.		Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.			Blank value correctly entered into emLine. However concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.		Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.			Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.	Blank concentration not > PQL (detection limit for field blank higher than that used for DI water). Therefore, comparison not valid in this case.
Action				Let Value Stand	Let Value Stand		Let Value Stand	Let Value Stand	Let Value Stand			Let Value Stand	Let Value Stand		Let Value Stand				Let Value Stand	Let Value Stand		Let Value Stand	Let Value Stand	Let Value Stand			Let Value Stand	Let Value Stand	Let Value Stand	Let Value Stand	Let Value Stand	Let Value Stand	Let Value Stand	Let Value Stand
Result																			High blank value remains.															
GL-60	06/09/2011	FIELD BLANK	0.0050	0.60	0.020	50.00	0.080	0.01	0.01	0.05	0.01	0.0050	0.10	0.1400	1.00	0.05	0.00	0.05	0.120	0.05	0.05	0.100	0.1450	0.02	0.0400	100.00	0.01	0.05	0.50	0.00	0.0020	0.20	0.800	0.10
Deionized Water			<0.005	<0.2	<0.02	<50	<0.02	<0.01	<0.005	<0.05	<0.005	<0.005	<0.1	<0.05	<1	<0.05	<0.5	<0.05	<0.05	<0.05	<0.05	<0.02	<0.005	<0.02	<0.04	<100	<0.01	<0.05	<0.5	<0.002	<0.002	<0.2	<0.1	<0.1
Times greater than DI water			1	3	1	1	4	1	1	1	1	1	1	2.8	1	1	0.001	1	2.4	1	1	5	29	1	1	1	1	1	1	1	1	1	8	1
Comments																						Blank value equal to PQL and correctly entered into emLine. Lab noted that "Duplicate RPD above control limit - (10% of analytes failure allowed) "	Blank concentration > PQL and correctly entered into emLine.												Blank concentration > PQL and correctly entered into emLine.	
Action																						Let Value Stand	Let Value Stand										Let Value Stand	
Result																						High blank value remains.	High blank value remains.										High blank value remains.	
Action																						Let Value Stand	Let Value Stand										Let Value Stand	
Result																						High blank value remains.	High blank value remains.										High blank value remains.	
V4	12/09/2011	FIELD BLANK	<0.005	0.60	<0.02	<50	<0.02	<0.01	<0.005	<0.05	<0.005	<0.005	<0.1	0.0700	<1	<0.05	<0.0005	<0.05	0.100	<0.05	<0.05	<0.02	0.0330	<0.02	<0.04	<100	<0.01	0.08	<0.5	<0.002	<0.002	<0.2	0.400	<0.1
Deionized Water			<0.005	<0.2	<0.02	<50	<0.02	<0.01	<0.005	<0.05	<0.005	<0.005	<0.1	<0.05	<1	<0.05	<0.5	<0.05	<0.05	<0.05	<0.05	<0.02	<0.005	<0.02	<0.04	<100	<0.01	<0.05	<0.5	<0.002	<0.002	<0.2	<0.1	<0.1
Times greater than DI water			1	3	1	1	1	1	1	1	1	1	1	1.4	1	1	0.001	1	2	1	1	1	6.6	1	1	1	1	1.6	1	1	1	1	4	1
Comments																							Blank value equal to PQL and correctly entered into emLine. Lab noted that "Duplicate RPD above control limit - (10% of analytes failure allowed) "												
Action																							Let Value Stand											
Result																							High blank value remains.											

Blank value is a detection limit higher than that of DI water.
Blank value > PQL and < retest limit (30X detection limit).
Blank value > retest limit (30X detection limit).
Retest result to replace original result in emLine.

Denison Environmental Services

Table C-9: Quality Assurance / Quality Control
2011 Duplicates - General Parameters

Station	Date	Sample Type	Acid(pH4.5)	Acid(pH8.3)	ALK	ALKPP	CaCO3	CaCO3-d	Chloride	CO3	Colour	COND	DOC	DO	HCO3	NH3	NO2	NO2/3	NO3	OH		ORP	pH	SO4-d	TDS	TOC	TSS	TURB
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	TCU	µmho/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L		mV	(blank)	mg/L	mg/L	mg/L	mg/L	NTU
MOOSE SEEP	04/01/2011	M	<0.5	15.30	340.00	<0.5		1540.00	1.10	<0.5		2320.0000			410.00					<0.5			7.79	1200.000			3	
MOOSE SEEP	04/01/2011	DUPLICATE	<0.5	18.10	340.00	<0.5		1610.00	1.20	<0.5		2330.0000			410.00					<0.5			7.84	1200.000			4	
RPD (%)			N/A	16.77	0.00	N/A	N/A	4.44	8.70	N/A	N/A	0.43	N/A	N/A	0.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.05	0.00	N/A	N/A	28.57	N/A
Comments																												
Action																												
Result																												
V8	22/03/2011	M			240.00	<0.5	428.00	447.00	1.80	<0.5		812.00	1.70		290.00	0.02				<0.5			8.05	200.00	520.00	1.70	2.00	0.30
V8	22/03/2011	DUPLICATE			240.00	<0.5	427.00	450.00	1.80	<0.5		804.00	1.70		290.00	0.02				<0.5			8.00	190.00	530.00	1.70	<1	0.30
RPD (%)			N/A	N/A	0.00	N/A	0.23	0.67	0.00	N/A	N/A	0.99	0.00	N/A	0.00	30.00	N/A	N/A	N/A	N/A	N/A	N/A	0.05	5.13	1.90	0.00	N/A	0.00
Comments																												
Action																												
Result																												
V5	22/03/2011	M			340.00	<0.5	581.00	602.00	2.50	<0.5		984.00	2.40		420.00	0.03				<0.5			7.93	200.00	650.00	2.30	2.00	0.60
V5	22/03/2011	DUPLICATE			340.00	<0.5	564.00	557.00	2.60	<0.5		993.00	2.80		420.00	0.03				<0.5			7.91	190.00	650.00	2.30	2.00	0.60
RPD (%)			N/A	N/A	0.00	N/A	2.97	7.77	3.92	N/A	N/A	0.91	15.38	N/A	0.00	18.18	N/A	N/A	N/A	N/A	N/A	N/A	0.02	5.13	0.00	0.00	0.00	0.00
Comments																												
Action																												
Result																												
V14	22/05/2011	M	<0.5	7.00	230.00	<0.5		1620.00	<0.5	<0.5		2340.00			290.00					<0.5		34.00	8.06	1300.00			12.00	
V14	22/05/2011	DUPLICATE	<0.5	5.40	230.00	<0.5		1600.00	<0.5	<0.5		2350.00			280.00					<0.5		34.00	8.08	1300.00			18.00	
RPD (%)			N/A	25.81	0.00	N/A	N/A	1.24	N/A	N/A	N/A	0.43	N/A	N/A	3.51	N/A	N/A	N/A	N/A	N/A	N/A	0.00	0.02	0.00	N/A	N/A	40.00	N/A
Comments																												
Action																												
Result																												
V2A	06/06/2011	M			320.00	<0.5	1360.00	1410.00	1.60	<0.5		2120.00	3.90		390.00	0.02	<0.005	3.20	3.20	<0.5			8.21	1000.00	2100.00	3.90	11.00	2.62
V2A	06/06/2011	DUPLICATE			320.00	<0.5	1320.00	1380.00	2.50	<0.5		2130.00	4.00		390.00	0.02	<0.005	2.10	2.10	<0.5			8.21	1000.00	1900.00	4.70	7.00	2.74
RPD (%)			N/A	N/A	0.00	N/A	2.99	2.15	43.90	N/A	N/A	0.47	2.53	N/A	0.00	25.64	N/A	41.51	41.51	N/A	N/A	N/A	0.00	0.00	10.00	18.60	44.44	4.48
Comments																												
Action																												
Result																												
GL-1	14/06/2011	M	<0.5	7.20	140.00	<0.5	506.00	490.00	0.90	<0.5		926.00		5.42	170.00	0.05	0.01	0.85	0.85	<0.5	<0.005	90.00	7.98	310.00	660.00		5.00	
GL-1	14/06/2011	DUPLICATE	<0.5	4.70	140.00	<0.5	482.00	489.00	0.80	<0.5		923.00		5.40	170.00	0.02	0.01	0.85	0.84	<0.5	<0.005	95.00	7.98	300.00	660.00		<4	
RPD (%)			N/A	42.02	0.00	N/A	4.86	0.20	11.76	N/A	N/A	0.32	N/A	0.37	0.00	80.60	0.00	0.00	1.18	N/A	N/A	5.41	0.00	3.28	0.00	N/A	N/A	N/A
Comments																Both values correctly entered into emLine; however, duplicate value not > PQL. Therefore, RPD analysis not valid in this case.											
Action																**Let Value Stand**											
Result																Discrepancy between values remains.											
V2A	05/07/2011	M			380.00	4.70	1560.00	1570.00	<0.5	5.60		2350.00	3.70		450.00	0.03	<0.005	6.40	6.40	<0.5			8.33	1100.00	2200.00	5.60	11.00	5.13
V2A	05/07/2011	DUPLICATE			370.00	7.90	1550.00	1590.00	1.30	9.50		2340.00	3.60		430.00	0.03	<0.005	6.50	6.50	<0.5			8.38	1200.00	2200.00	4.90	14.00	4.32
RPD (%)			N/A	N/A	2.67	50.79	0.64	1.27	N/A	51.66	N/A	0.43	2.74	N/A	4.55	12.90	N/A	1.55	1.55	N/A	N/A	N/A	0.05	8.70	0.00	13.33	24.00	17.14
Comments						Both values > PQL and correctly entered into emLine.				Both values > PQL and correctly entered into emLine.																		
Action						**Let Value Stand**				**Let Value Stand**																		
Result						Retest request would be filed past hold time. Discrepancy between values remains.				Retest request would be filed past hold time. Discrepancy between values remains.																		
V15	03/08/2011	M	<0.5	52.70	550.00	<0.5			2.60			3770.00										165.00	7.72	2100.00			<1	
V15	03/08/2011	DUPLICATE	<0.5	52.80	550.00	<0.5			2.80			3760.00										165.00	7.71	2000.00			<1	
RPD (%)			N/A	0.19	0.00	N/A	N/A	N/A	7.41	N/A	N/A	0.27	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	0.01	4.88	N/A	N/A	N/A	N/A
Comments																												
Action																												
Result																												
VL-3	10/08/2011	M	61.20	388.00	<0.5	<0.5	1080.00	1090.00	1.70	<0.5		2580.00		2.01	<0.5	0.34	<0.005	<0.02	<0.02	<0.5	<0.005	415.00	3.34	1500.00	2400.00		2.00	
VL-3	10/08/2011	DUPLICATE	64.70	389.00	<0.5	<0.5	1130.00	1120.00	1.10	<0.5		2580.00		2.01	<0.5	0.49	<0.005	<0.02	<0.02	<0.5	<0.005	440.00	3.33	1500.00	2500.00		3.00	
RPD (%)			5.56	0.26	N/A	N/A	4.52	2.71	42.86	N/A	N/A	0.00	N/A	0.00	N/A	36.14	N/A	N/A	N/A	N/A	N/A	5.85	0.01	0.00	4.08	N/A	40.00	N/A
Comments																												
Action																												
Result																												
V2	18/08/2011	M			300.00	<0.5	1200.00	1260.00	1.30	<0.5	<5	1900.00	4.10		360.00	0.03	<0.005	3.30	3.30	<0.5			8.16	940.00	1900.00	4.00	<1	0.25
V2	18/08/2011	DUPLICATE			300.00	<0.5	1260.00	1290.00	2.20	<0.5	<5	1890.00	4.10		360.00	0.04	<0.005	3.11	3.11	<0.5			8.08	860.00	1600.00	3.60	<1	0.25
RPD (%)			N/A	N/A	0.00	N/A	4.88	2.35	51.43	N/A	N/A	0.53	0.00	N/A	0.00	28.57	N/A	5.93	5.93	N/A	N/A	N/A	0.08	8.89	17.14	10.53	N/A	0.00
Comments									Both values correctly entered into emLine; however, neither value > PQL. Therefore, RPD analysis not valid in this case.																			
Action									**Let Value Stand**																			
Result									Discrepancy between values remains.																			
VL-1	07/09/2011	M	38.80	422.00	<0.5	<0.5	1060.00	1010.00	1.00	<0.5		2530.00		8.17	<0.5	0.32	<0.005	<0.02	<0.02	<0.5	<0.005	395.00	3.62	1600.00	2500.00		8.00	
VL-1	07/09/2011	DUPLICATE	44.80	449.00	<0.5	<0.5	1050.00	1090.00	<0.5	<0.5		2560.00		8.17	<0.5	0.36	<0.005	<0.02	<0.02	<0.5	0.01	390.00	3.42	1600.00	2500.00		8.00	
RPD (%)			14.35	6.20	N/A	N/A	0.95	7.62	N/A	N/A	N/A	1.18	N/A	0.00	N/A	11.76	N/A	N/A	N/A	N/A	N/A	1.27	0.20	0.00	0.00	N/A	0.00	N/A
Comments																												
Action																												
Result																												

RPD > 50%.

Retest result to replace original result in emLine.

Denison Environmental Services

Table C-9: Quality Assurance / Quality Control
2011 Duplicates - General Parameters

Station	Date	Sample Type	Acid(pH4.5)	Acid(pH8.3)	ALK	ALKPP	CaCO3	CaCO3-d	Chloride	CO3	Colour	COND	DOC	DO	HCO3	NH3	NO2	NO2/3	NO3	OH		ORP	pH	SO4-d	TDS	TOC	TSS	TURB
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	TCU	µmho/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L		mV	(blank)	mg/L	mg/L	mg/L	mg/L	NTU
V23	11/09/2011	M			140.00	<0.5	541.00	510.00	1.00	<0.5		967.00			170.00	0.02				<0.5			8.25	430.00	730.00		6.00	
V23	11/09/2011	DUPLICATE			150.00	0.60	500.00	496.00	1.10	0.70		979.00			180.00	0.06				<0.5			8.30	430.00	680.00		5.00	
RPD (%)			N/A	N/A	6.90	N/A	7.88	2.78	9.52	N/A	N/A	1.23	N/A	N/A	5.71	82.93	N/A	N/A	N/A	N/A	N/A	N/A	0.05	0.00	7.09	N/A	18.18	N/A
Comments																Both values correctly entered into emLine; however, main sample value not > PQL. Therefore, RPD analysis not valid in this case.												
Action																**Let Value Stand**												
Result																Discrepancy between values remains.												
SRK05-9	11/10/2011	M	<0.5	22.70	380.00	<0.5		1650.00	1.50	<0.5		2420.0000			460.00					<0.5			7.63	1270.000			130.000	
SRK05-9	11/10/2011	DUPLICATE	<0.5	22.20	370.00	<0.5		1690.00	1.60	<0.5		2390.0000			450.00					<0.5			7.65	1240.000			40.000	
RPD (%)			N/A	2.23	2.67	N/A	N/A	2.40	6.45	N/A	N/A	1.25	N/A	N/A	2.20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.02	2.39	N/A	N/A	105.88	N/A
Comments																											Both values > PQL and correctly entered into emLine.	
Action																											**Let Value Stand**	
Result																											Retest request would be filed past hold time. Discrepancy between values remains.	
P09-GS1A	13/10/2011	M	<0.5	33.10	230.00	<0.5		883.00	1.20	<0.5		1430.00			280.00					<0.5			7.76	645.00			760.00	
P09-GS1A	13/10/2011	DUPLICATE	<0.5	25.40	230.00	<0.5		877.00	1.00	<0.5		1400.00			280.00					<0.5			7.92	607.00			790.00	
RPD (%)			N/A	26.32	0.00	N/A	N/A	0.68	18.18	N/A	N/A	2.12	N/A	N/A	0.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.16	6.07	N/A	N/A	3.87	N/A
Comments																												
Action																												
Result																												
SRK05-9	08/11/2011	M	<0.5	37.60	370.00	<0.5		1540.00	1.40	<0.5		2350.00			450.00					<0.5			7.64	1270.00			550.00	
SRK05-9	08/11/2011	DUPLICATE	<0.5	34.70	360.00	<0.5		1560.00	1.60	<0.5		2340.00			440.00					<0.5			7.63	1340.00			950.00	
RPD (%)			N/A	8.02	2.74	N/A	N/A	1.29	13.33	N/A	N/A	0.43	N/A	N/A	2.25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.01	5.36	N/A	N/A	53.33	N/A
Comments																											Both values > PQL and correctly entered into emLine.	
Action																											**Let Value Stand**	
Result																											Retest request would be filed past hold time. Discrepancy between values remains.	
V8	08/12/2011	M			193.00	<0.5	337.00	329.00	1.50	<0.5		602.00	6.80		236.00	0.05	<0.005	0.34	0.34	<0.5			8.03	144.00	400.00	3.18	<4	0.89
V8	08/12/2011	DUPLICATE			188.00	<0.5	332.00	305.00	1.80	<0.5		611.00	3.91		230.00	0.05	<0.005	0.32	0.32	<0.5			7.94	139.00	378.00	2.41	<4	0.95
RPD (%)			N/A	N/A	2.62	N/A	1.49	7.57	18.18	N/A	N/A	1.48	53.97	N/A	2.58	8.16	N/A	4.85	4.85	N/A	N/A	N/A	0.09	3.53	5.66	27.55	N/A	6.52
Comments													Both values > PQL and correctly entered into emLine. Lab noted on both samples that "Dissolved greater than total. Reanalysis yields similar results."																	
Action													**Let Value Stand**															
Result													Discrepancy between values remains. Retest not requested because lab already reanalyzed.															

RPD > 50%.
Retest result to replace original result in emLine.

Denison Environmental Services

Table C-10: Quality Assurance / Quality Control
2011 Duplicates - Dissolved Metals

Station	Date	Sample Type	Ag-d	Al-d	As-d	Ba-d	B-d	Be-d	Bi-d	Ca-d	Cd-d	Co-d	Cr-d	Cu-d	Fe-d	Hg-d	K-d	Li-d	Mg-d	Mn-d	Mo-d	Na-d	Ni-d	Pb-d	Sb-d	S-d	Se-d	Si-d	Sn-d	Sr-d	Ti-d	Tl-d	U-d	V-d	Zn-d	Zr-d
			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
MOOSE SEEP	04/01/2011	M	<0.03	2.00	1.40	39.300	<300	<0.05	0.21	289.00	0.23	0.0400	<0.5	1.9000	<5		3.10	0.007	200.00	1.100	2.50	10.50	1.200	0.3500	0.30	406	0.7000	4530.00	<0.05	825.00	<3	<0.01	34.5000	<1	8.100	<0.5
MOOSE SEEP	04/01/2011	DUPLICATE	<0.03	2.00	1.40	41.800	<300	<0.05	<0.03	295.00	0.28	0.0600	<0.5	1.8000	<5		3.40	0.007	212.00	1.500	2.60	11.10	1.200	0.4000	0.20	419	0.6000	4660.00	<0.05	871.00	<3	<0.01	35.4000	<1	8.000	<0.5
RPD (%)			N/A	0.00	0.00	6.17	N/A	N/A	N/A	2.05	19.61	40.00	N/A	5.41	N/A	N/A	9.23	0.00	5.83	30.77	3.92	5.56	0.00	13.33	40.00	3.15	15.38	2.83	N/A	5.42	N/A	N/A	2.58	N/A	1.24	N/A
Comments																																			
Action																																			
Result																																			
V8	22/03/2011	M	<0.005	2.10	0.35	80.80	<50	<0.01	<0.005	106.00	0.06	0.06	<0.1	0.61	18.00		1.46	0.01	44.50	5.41	1.42	5.00	1.97	0.18	0.16	77.00	1.71	5140.00	<0.01	394.0	<0.5	0.004	9.95	<0.2	13.80	<0.1
V8	22/03/2011	DUPLICATE	<0.005	1.70	0.39	85.80	<50	<0.01	<0.005	104.00	0.07	0.05	<0.1	0.62	17.00		1.49	0.01	46.50	5.59	1.49	5.17	2.00	0.14	0.17	79.00	1.61	5140.00	<0.01	407.0	<0.5	0.005	10.40	<0.2	14.70	<0.1
RPD (%)			N/A	21.05	10.81	6.00	N/A	N/A	N/A	1.90	12.70	20.18	N/A	1.63	5.71	N/A	2.03	6.25	4.40	3.27	4.81	3.34	1.51	27.50	6.06	2.56	6.02	0.00	N/A	3.25	N/A	22.22	4.42	N/A	6.32	N/A
Comments																																			
Action																																			
Result																																			
V5	22/03/2011	M	<0.005	1.30	0.58	96.00	<50	<0.01	<0.005	141.00	0.07	0.07	<0.1	0.50	14.00		1.94	0.01	60.80	19.30	3.67	5.80	2.21	0.05	0.20	88.00	4.40	6140.00	<0.01	466.0	<0.5	<0.002	9.33	<0.2	4.20	<0.1
V5	22/03/2011	DUPLICATE	<0.005	1.40	0.53	93.90	<50	<0.01	<0.005	128.00	0.07	0.06	<0.1	0.50	12.00		1.79	0.01	57.60	18.00	3.51	5.48	2.23	0.06	0.17	84.00	3.96	5580.00	<0.01	451.0	<0.5	0.003	9.00	<0.2	5.10	<0.1
RPD (%)			N/A	7.41	9.01	2.21	N/A	N/A	N/A	9.67	8.45	18.46	N/A	0.00	15.38	N/A	8.04	2.86	5.41	6.97	4.46	5.67	0.90	32.73	16.22	4.65	10.53	9.56	N/A	3.27	N/A	N/A	3.60	N/A	19.35	N/A
Comments																																			
Action																																			
Result																																			
V14	22/05/2011	M	<0.03	17.00	2.20	39.70	<300	<0.05	<0.03	237.00	0.07	1.51	<0.5	1.70	179.00		4.10	0.01	250.00	345.00	0.90	10.00	3.20	1.18	0.30	513.00	1.50	4050.00	<0.05	768.0	<3	0.020	26.50	2.00	6.90	<0.5
V14	22/05/2011	DUPLICATE	<0.03	14.00	1.80	40.60	<300	<0.05	<0.03	236.00	0.10	1.57	<0.5	1.70	126.00		3.90	0.01	245.00	355.00	0.90	10.20	3.50	1.06	0.30	508.00	1.20	4000.00	<0.05	789.0	<3	0.020	27.70	<1	5.60	<0.5
RPD (%)			N/A	19.35	20.00	2.24	N/A	N/A	N/A	0.42	35.29	3.90	N/A	0.00	34.75	N/A	5.00	0.00	2.02	2.86	0.00	1.98	8.96	10.71	0.00	0.98	22.22	1.24	N/A	2.70	N/A	0.00	4.43	N/A	20.80	N/A
Comments																																			
Action																																			
Result																																			
V2A	06/06/2011	M	<0.005	3.60	1.18	47.20	<50	<0.01	<0.005	256.00	0.32	0.10	<0.1	2.94	12.00		3.73	0.01	187.00	10.20	3.06	9.90	28.60	0.65	0.52	396.00	0.65	4740.00	<0.01	885.0	<0.5	0.028	29.90	<0.2	465.00	<0.1
V2A	06/06/2011	DUPLICATE	<0.03	5.00	1.10	51.50	<300	<0.05	<0.03	252.00	0.31	0.08	<0.5	1.60	10.00		3.70	0.01	183.00	10.20	3.00	9.80	27.70	0.55	0.60	353.00	0.70	4830.00	0.07	827.0	<3	0.030	29.80	<1	500.00	<0.5
RPD (%)			N/A	32.56	7.02	8.71	N/A	N/A	N/A	1.57	2.23	18.18	N/A	59.03	18.18	N/A	0.81	0.00	2.16	0.00	1.98	1.02	3.20	17.28	14.29	11.48	7.41	1.88	N/A	6.78	N/A	6.90	0.34	N/A	7.25	N/A
Comments														Both values > PQL and correctly entered into emLine.																							
Action														**Let Value Stand**																						
Result														Discrepancy between values remains.																						
GL-1	14/06/2011	M	0.01	2.90	0.67	39.10	<50	<0.01	<0.005	104.00	1.94	3.76	<0.1	2.58	2.00		2.53	0.02	55.90	88.00	2.02	7.91	104.00	0.39	2.76	137.00	1.07	2950.00	<0.01	612.00	<0.5	0.82	11.100	<0.2	4010.00	<0.1
GL-1	14/06/2011	DUPLICATE	<0.005	2.50	0.65	38.20	<50	<0.01	<0.005	102.00	1.87	3.81	<0.1	2.68	3.00		2.50	0.02	56.80	88.10	1.98	7.93	106.00	0.39	2.68	140.00	1.15	2880.00	<0.01	615.00	<0.5	0.80	11.000	<0.2	4130.00	<0.1
RPD (%)			N/A	14.81	3.03	2.33	N/A	N/A	N/A	1.94	3.67	1.32	N/A	3.80	40.00	N/A	1.19	1.63	1.60	0.11	2.00	0.25	1.90	1.53	2.94	2.17	7.21	2.40	N/A	0.49	N/A	2.96	0.90	N/A	2.95	N/A
Comments																																			
Action																																			
Result																																			
V2A	05/07/2011	M	<0.03	6.00	1.40	52.30	<300	<0.05	<0.03	280.00	0.52	0.11	<0.5	1.20	10.00		4.10	0.01	212.00	5.30	1.80	9.80	68.70	0.98	0.60	438.00	0.80	5020.00	<0.05	920.0	<3	0.060	35.60	<1	1000.00	<0.5
V2A	05/07/2011	DUPLICATE	<0.03	7.00	1.40	52.50	<300	<0.05	<0.03	279.00	0.50	0.12	<0.5	1.50	12.00		4.20	0.01	218.00	5.40	1.90	10.10	70.50	0.88	0.60	436.00	0.80	5050.00	<0.05	918.0	<3	0.070	36.40	<1	1040.00	<0.5
RPD (%)			N/A	15.38	0.00	0.38	N/A	N/A	N/A	0.36	3.92	8.70	N/A	22.22	18.18	N/A	2.41	7.41	2.79	1.87	5.41	3.02	2.59	10.75	0.00	0.46	0.00	0.60	N/A	0.22	N/A	15.38	2.22	N/A	3.92	N/A
Comments																																			
Action																																			
Result																																			
V15	03/08/2011	M	<0.03	5.00	0.90	47.60	<300	<0.05	<0.03	415.00	1.45	0.05	0.60	2.10	7.00		6.30		421.00	1.30	0.90	14.00	106.00	0.44	<0.1		0.70		<0.05	1580.0	<3	<0.01	55.10	<1	3310.00	<0.5
V15	03/08/2011	DUPLICATE	<0.03	5.00	0.80	47.00	<300	<0.05	<0.03	394.00	1.52	0.06	<0.5	2.10	6.00		6.20		420.00	1.10	0.90	14.20	107.00	0.43	<0.1		0.60		<0.05	1540.0	<3	<0.01	53.00	<1	3290.00	<0.5
RPD (%)			N/A	0.00	11.76	1.27	N/A	N/A	N/A	5.19	4.71	18.18	N/A	0.00	15.38	N/A	1.60	N/A	0.24	16.67	0.00	1.42	0.94	2.30	N/A	N/A	15.38	N/A	N/A	2.56	N/A	N/A	3.89	N/A	0.61	N/A
Comments																																			
Action																																			
Result																																			
VL-3	10/08/2011	M	<0.1	1670.00	2.1	17.90	<1000	0.40	<0.1	233.00	139.00	762.00	<2	886.00	49600.00		3.00	0.04	124.00	53200.00	<1	4.00	627.00	189.00	<0.4	509.00	<0.8	4590.00	<0.2	1070.00	<10	1.57	3.680	<4	188000.00	<2
VL-3	10/08/2011	DUPLICATE	<0.1	1740.00	1.40	19.40	<1000	0.30	<0.1	242.00	142.00	786.00	<2	955.00	51800.00		3.00	0.05	125.00	54900.00	<1	4.00	635.00	200.00	<0.4	522.00	<0.8	4530.00	<0.2	1130.00	<10	1.63	3.950	<4	194000.00	<2
RPD (%)			N/A	4.11	40.00	8.04	N/A	28.57	N/A	3.79	2.14	3.10	N/A	7.50	4.34	N/A	0.00	13.04	0.80	3.15	N/A	0.00	1.27	5.66	N/A	2.52	N/A	1.32	N/A	5.45	N/A	3.75	7.08	N/A	3.14	N/A
Comments																																			
Action																																			
Result																																			
V2	18/08/2011	M	<0.005	4.30	1.34	67.20	<50	<0.01	<0.005	268.00	0.16	0.07	0.20	1.19	14.00	<0.01	2.48	0.00	144.00	0.74	1.79	9.76	1.78	0.34	0.18	345.00	0.53	5820.00	<0.01	818.0	<0.5	0.007	24.20	<0.2	10.70	<0.1
V2	18/08/2011	DUPLICATE	<0.005	5.30	1.09	68.00	<50	<0.01	0.01	276.00	0.16	0.06	0.20	1.22	19.00	<0.01	2.48	0.00	147.00	0.83	1.82	10.00	1.76	0.65	0.19	347.00	0.54	5980.00	<0.01	817.0	<0.5	0.007	24.30	<0.2	12.30	<0.1
RPD (%)			N/A	20.83	20.58	1.18	N/A	N/A	N/A	2.94	0.62	14.17	0.00	2.49	30.30	N/A	0.00	2.41	2.06	11.46	1.66	2.43	1.13	62.63	5.41	0.58	1.87	2.71	N/A	0.12	N/A	0.00	0.41	N/A	13.91	N/A
Comments																								Both values > PQL and correctly entered into emLine. Lab noted on duplicate sample that "Dissolved greater than total. Reanalysis yields similar results."												
Action																								**Let Value Stand**											
Result																								Discrepancy between values remains.											
VL-1	07/09/2011	M	<0.1	2090.00	2.90	21.20	<1000	0.40	<0.1	228.00	164.00	750.00	<2	1010.00	61500.00		3.00	0.05	108.00	49700.00	<1	4.00	588.00	291.00	<0.4	432.00	<0.8	4130.00	<0.2	1110.00	<10	1.93	5.050	<4	191000.00	<2
VL-1	07/09/2011	DUPLICATE	<0.1	2150.00	2.90	19.20	<1000	0.40	<0.1	237.00	151.00	749.00	<2	1040.00	61800.00		2.00	0.05	120.00	51800.00	<1	4.00	597.00	272.00	<0.4	503.00	<0.8	4810.00	<0.2	1030.00	<10	1.77	5.490	<4	188000.00	<2
RPD (%)			N/A	2.83	0.00	9.90	N/A	0.00	N/A	3.87	8.25	0.13	N/A	2.93	0.49	N/A	40.00	2.20	10.53	4.14	N/A	0.00	1.52	6.75	N/A	15.19	N/A	15.21	N/A	7.48	N/A	8.65	8.35	N/A	1.58	N/A
Comments																																			
Action																																			
Result																																			

RPD > 50%.
RPD > 100%.
Retest result to replace original result in emLine.

Denison Environmental Services

Table C-10: Quality Assurance / Quality Control
2011 Duplicates - Dissolved Metals

Station	Date	Sample Type	Ag-d µg/L	Al-d µg/L	As-d µg/L	Ba-d µg/L	B-d µg/L	Be-d µg/L	Bi-d µg/L	Ca-d mg/L	Cd-d µg/L	Co-d µg/L	Cr-d µg/L	Cu-d µg/L	Fe-d µg/L	Hg-d µg/L	K-d mg/L	Li-d mg/L	Mg-d mg/L	Mn-d µg/L	Mo-d µg/L	Na-d mg/L	Ni-d µg/L	Pb-d µg/L	Sb-d µg/L	S-d mg/L	Se-d µg/L	Si-d µg/L	Sn-d µg/L	Sr-d µg/L	Ti-d µg/L	Tl-d µg/L	U-d µg/L	V-d µg/L	Zn-d µg/L	Zr-d µg/L
V23	11/09/2011	M	<0.005	2.80	1.14	38.50	<50	<0.01	<0.005	102.00	1.47	4.41	<0.1	2.24	22.00		2.88	0.02	62.20	106.00	2.07	7.94	76.50	0.84	2.68	148.00	1.16	2270.00	<0.01	637.0	<0.5	1.640	7.50	<0.2	1810.00	<0.1
V23	11/09/2011	DUPLICATE	<0.005	4.00	1.25	38.70	<50	<0.01	<0.005	97.30	1.50	4.62	<0.1	2.40	35.00		2.87	0.02	61.50	115.00	2.01	7.84	77.80	1.24	2.64	149.00	1.14	2160.00	0.02	640.0	<0.5	1.660	7.56	<0.2	1830.00	<0.1
RPD (%)			N/A	35.29	9.21	0.52	N/A	N/A	N/A	4.72	2.02	4.65	N/A	6.90	45.61	N/A	0.35	0.49	1.13	8.14	2.94	1.27	1.69	38.23	1.50	0.67	1.74	4.97	N/A	0.47	N/A	1.21	0.80	N/A	1.10	N/A
Comments																																				
Action																																				
Result																																				
SRK05-9	11/10/2011	M	<0.03	23.00	1.10	57.400	<300	<0.05	<0.03	297.00	0.30	0.0800	<0.5	2.5000	57.00		4.50	0.011	220.00	2.300	1.30	10.10	2.200	1.7000	0.30	413	0.7000	5190.00	0.20	951.00	<3	<0.01	35.2000	<1	7.100	<0.5
SRK05-9	11/10/2011	DUPLICATE	<0.03	31.00	1.10	57.300	<300	<0.05	<0.03	298.00	0.30	0.0900	<0.5	3.3000	66.00		4.60	0.011	230.00	2.600	1.40	10.40	2.800	1.8200	0.30	423	0.6000	5160.00	0.09	966.00	<3	<0.01	36.3000	<1	7.800	<0.5
RPD (%)			N/A	29.63	0.00	0.17	N/A	N/A	N/A	0.34	0.00	11.76	N/A	27.59	14.63	N/A	2.20	0.00	4.44	12.24	7.41	2.93	24.00	6.82	0.00	2.39	15.38	0.58	75.86	1.56	N/A	N/A	3.08	N/A	9.40	N/A
Comments																													Both values correctly entered into emLine; however, neither value > PQL. Therefore, RPD analysis not valid in this case.										
Action																													**Let Value Stand**								
Result																													Discrepancy between values remains.								
P09-GS1A	13/10/2011	M	<0.03	3.00	1190.00	33.20	<300	<0.05	<0.03	218.00	<0.03	1.14	<0.5	<0.3	2910.00		2.50	0.01	82.10	470.00	3.00	23.70	9.30	<0.03	0.90	233.00	<0.2	7250.00	<0.05	1830.0	<3	0.040	2.00	<1	64.20	<0.5
P09-GS1A	13/10/2011	DUPLICATE	<0.03	4.00	1160.00	32.70	<300	<0.05	<0.03	217.00	<0.03	1.22	<0.5	<0.3	2820.00		2.50	0.01	81.60	477.00	3.30	23.40	8.80	0.37	0.90	226.00	<0.2	7160.00	<0.05	1820.0	<3	0.030	2.27	<1	66.00	<0.5
RPD (%)			N/A	28.57	2.55	1.52	N/A	N/A	N/A	0.46	N/A	6.78	N/A	N/A	3.14	N/A	0.00	0.00	0.61	1.48	9.52	1.27	5.52	N/A	0.00	3.05	N/A	1.25	N/A	0.55	N/A	28.57	12.65	N/A	2.76	N/A
Comments																																				
Action																																				
Result																																				
SRK05-9	08/11/2011	M	<0.03	18.00	1.10	48.90	<300	<0.05	<0.03	271.00	0.26	0.08	<0.5	2.00	37.00		4.30	0.01	210.00	1.70	1.40	9.80	1.80	1.42	0.30	435.00	0.60	4720.00	0.14	912.0	<3	<0.01	31.60	<1	6.50	<0.5
SRK05-9	08/11/2011	DUPLICATE	<0.03	18.00	1.20	48.30	<300	<0.05	<0.03	289.00	0.29	0.07	<0.5	1.80	38.00		4.10	0.01	203.00	1.80	1.40	9.90	1.60	1.31	0.30	420.00	0.60	5060.00	0.28	890.0	<3	<0.01	30.00	<1	5.70	<0.5
RPD (%)			N/A	0.00	8.70	1.23	N/A	N/A	N/A	6.43	10.91	13.33	N/A	10.53	2.67	N/A	4.76	0.00	3.39	5.71	0.00	1.02	11.76	8.06	0.00	3.51	0.00	6.95	66.67	2.44	N/A	N/A	5.19	N/A	13.11	N/A
Comments																													Both values correctly entered into emLine; however, main sample value not > PQL. Therefore, RPD analysis not valid in this case.										
Action																													**Let Value Stand**								
Result																													Discrepancy between values remains.								
V8	08/12/2011	M	0.03	4.90	0.39	65.10	<50	<0.01	<0.005	79.50	0.06	0.07	0.20	1.06	14.00		2.37	0.01	31.80	9.55	1.04	4.24	1.35	0.04	0.14	51.00	1.05	3710.00	0.06	308.0	<0.5	0.005	6.83	<0.2	17.50	<0.1
V8	08/12/2011	DUPLICATE	0.03	2.90	0.40	64.90	<50	<0.01	<0.005	69.50	0.06	0.06	0.20	1.17	14.00		2.65	0.01	32.00	8.28	1.07	4.22	1.36	0.08	0.14	47.00	1.23	3910.00	0.03	315.0	<0.5	0.006	7.04	<0.2	18.30	<0.1
RPD (%)			3.28	51.28	2.53	0.31	N/A	N/A	N/A	13.42	3.45	6.35	0.00	9.87	0.00	N/A	11.16	1.90	0.63	14.25	2.84	0.47	0.74	66.67	0.00	8.16	15.79	5.25	66.67	2.25	N/A	18.18	3.03	N/A	4.47	N/A
Comments				Both values > PQL and correctly entered into emLine.																				Both values > PQL and correctly entered into emLine.					Both values correctly entered into emLine; however, duplicate value not > PQL. Therefore, RPD analysis not valid in this case.										
Action				**Let Value Stand**																				**Let Value Stand**					**Let Value Stand**								
Result				Discrepancy between values remains.																				Discrepancy between values remains.					Discrepancy between values remains.								

RPD > 50%.
RPD > 100%.
Retest result to replace original result in emLine.

Denison Environmental Services

Table C-11: Quality Assurance / Quality Control
2011 Duplicates - Total Metals

Faro Mine Closure

Station	Date	Sample Type	Ag µg/L	Al µg/L	As µg/L	B µg/L	Ba µg/L	Be µg/L	Bi µg/L	Ca mg/L	Cd µg/L	Co ug/L	Cr µg/L	Cu µg/L	Fe µg/L	Hg µg/L	K mg/L	Li mg/L	Mg mg/L	Mn µg/L	Mo µg/L	Na mg/L	Ni µg/L	P mg/L	Pb µg/L	S mg/L	Sb µg/L	Se µg/L	Si µg/L	Sn µg/L	Sr µg/L	Ti µg/L	Tl µg/L	U µg/L	V µg/L	Zn µg/L	Zr µg/L
V8	22/03/2011	M	<0.005	6.50	0.39	<50	86.50	<0.01	<0.005	93.60	0.08	0.0630	<0.1	0.8400	33.00		1.51	0.007	47.10	6.890	1.43	5.24	2.120		0.50	80	0.2300	1.64	4400.00	<0.01	429.00	<0.5	0.0040	10.20	<0.2	14.50	<0.1
V8	22/03/2011	DUPLICATE	<0.005	6.10	0.42	<50	84.30	<0.01	<0.005	94.90	0.06	0.0670	<0.1	0.6500	33.00		1.47	0.007	46.30	6.510	1.44	5.16	2.050		0.34	75	0.1700	1.74	4230.00	<0.01	417.00	<0.5	0.0060	10.20	<0.2	13.50	<0.1
RPD (%)			N/A	6.35	7.41	N/A	2.58	N/A	N/A	1.38	21.28	6.15	N/A	25.50	0.00	N/A	2.68	1.42	1.71	5.67	0.70	1.54	3.36	N/A	36.67	6.45	30.00	5.92	3.94	N/A	2.84	N/A	40.00	0.00	N/A	7.14	N/A
Comments																																				
Action																																				
Result																																				
V5	22/03/2011	M	<0.005	12.90	0.50	<50	100.00	<0.01	<0.005	130.00	0.09	0.09	0.20	1.06	37.00		1.90	0.01	62.30	21.10	3.72	5.86	2.37		0.30	86.00	0.20	4.51	5390.00	0.0	495.00	<0.5	0.00	9.71	0.30	6.30	<0.1
V5	22/03/2011	DUPLICATE	<0.005	12.60	0.53	<50	97.90	<0.01	<0.005	126.00	0.08	0.09	0.20	0.71	33.00		1.87	0.01	61.00	20.50	3.78	5.81	2.23		0.12	85.00	0.19	4.54	5220.00	<0.01	477.00	<0.5	0.00	9.26	0.30	4.20	<0.1
RPD (%)			N/A	2.35	5.83	N/A	2.12	N/A	N/A	3.13	12.50	0.00	0.00	39.55	11.43	N/A	1.59	1.31	2.11	2.88	1.60	0.86	6.09	N/A	85.45	1.17	5.13	0.66	3.20	N/A	3.70	N/A	0.00	4.74	0.00	40.00	N/A
Comments																									Both values > PQL and correctly entered into emLine.												
Action																									**Let Value Stand**												
Result																									Discrepancy between values remains.												
V2A	06/06/2011	M	<0.005	50.00	1.45	<50	50.70	<0.01	<0.005	243.00	0.30	0.24	0.30	1.83	123.00		3.62	0.01	182.00	14.50	3.20	9.42	28.00		2.85	400.00	0.57	0.62	4770.00	<0.01	851.00	1.400	0.03	31.50	<0.2	462.00	0.20
V2A	06/06/2011	DUPLICATE	<0.03	45.00	1.30	<300	54.10	<0.05	<0.03	245.00	0.29	0.19	<0.5	1.60	105.00		3.50	0.01	171.00	13.30	3.20	9.10	26.40		1.81	354.00	0.50	0.70	4920.00	<0.05	817.00	<3	0.03	30.20	<1	502.00	<0.5
RPD (%)			N/A	10.53	10.91	N/A	6.49	N/A	N/A	0.82	4.71	22.84	N/A	13.41	15.79	N/A	3.37	10.65	6.23	8.63	0.00	3.46	5.88	N/A	44.64	12.20	13.08	12.12	3.10	N/A	4.08	N/A	0.00	4.21	N/A	8.30	N/A
Comments																																				
Action																																				
Result																																				
GL-1	14/06/2011	M	0.01	31.00	1.08	<50	39.40	<0.01	<0.005	104.00	1.90	4.15	<0.1	4.31	98.00		2.66	0.02	60.10	96.30	1.98	8.57	111.00	<0.005	1.44	140.00	2.76	1.07	3020.00	<0.01	608.00	1.1	0.83	10.800	<0.2	4340.00	<0.1
GL-1	14/06/2011	DUPLICATE	<0.005	26.50	1.11	<50	40.20	<0.01	<0.005	98.50	1.92	3.91	<0.1	4.31	91.00		2.45	0.02	57.30	88.70	2.04	7.94	109.00	<0.005	1.45	129.00	2.83	1.08	2860.00	<0.01	600.00	1.2	0.84	11.000	<0.2	4240.00	<0.1
RPD (%)			N/A	15.65	2.74	N/A	2.01	N/A	N/A	5.43	1.05	5.96	N/A	0.00	7.41	N/A	8.22	1.06	4.77	8.22	2.99	7.63	1.82	N/A	0.69	8.18	2.50	0.93	5.44	N/A	1.32	8.70	1.19	1.83	N/A	2.33	N/A
Comments																																				
Action																																				
Result																																				
V2A	05/07/2011	M	<0.03	127.00	2.20	<300	55.50	<0.05	<0.03	273.00	0.52	0.56	<0.5	2.30	348.00		4.00	0.01	214.00	16.50	1.90	10.10	71.90		7.64	425.00	0.70	1.00	5080.00	<0.05	923.00	<3	0.07	36.20	<1	1070.00	<0.5
V2A	05/07/2011	DUPLICATE	<0.03	102.00	2.00	<300	52.70	<0.05	<0.03	278.00	0.57	0.48	<0.5	2.00	334.00		3.90	0.01	209.00	14.70	1.70	9.90	69.70		6.48	438.00	0.60	0.90	5210.00	<0.05	908.00	5.000	0.07	35.30	<1	1020.00	<0.5
RPD (%)			N/A	21.83	9.52	N/A	5.18	N/A	N/A	1.81	9.17	15.38	N/A	13.95	4.11	N/A	2.53	7.41	2.36	11.54	11.11	2.00	3.11	N/A	16.43	3.01	15.38	10.53	2.53	N/A	1.64	N/A	0.00	2.52	N/A	4.78	N/A
Comments																																				
Action																																				
Result																																				
VL-3	10/08/2011	M	0.20	1670.00	1.10	<1000	19.10	0.30	<0.1	230.00	142.00	782.00	<2	902.00	50100.00		3.00	0.05	124.00	55200.00	<1	4.00	634.00	0.00	200.00	496.00	<0.4	<0.8	4460.00	<0.2	1110.00	<10	1.80	3.940	<4	195000.00	<2
VL-3	10/08/2011	DUPLICATE	<0.1	1710.00	1.60	<1000	19.10	0.40	<0.1	244.00	145.00	793.00	<2	924.00	53400.00		3.00	0.05	126.00	55700.00	<1	4.00	649.00	0.00	206.00	517.00	<0.4	<0.8	4610.00	<0.2	1120.00	<10	1.74	4.140	<4	198000.00	<2
RPD (%)			N/A	2.37	37.04	N/A	0.00	28.57	N/A	5.91	2.09	1.40	N/A	2.41	6.38	N/A	0.00	1.94	1.60	0.90	N/A	0.00	2.34	28.57	2.96	4.15	N/A	N/A	3.31	N/A	0.90	N/A	3.39	4.95	N/A	1.53	N/A
Comments																																				
Action																																				
Result																																				
V2	18/08/2011	M	<0.03	6.00	1.10	<300	72.80	<0.05	<0.03	246.00	0.16	0.04	<0.5	1.20	12.00	<0.05	2.40	0.00	141.00	6.80	1.70	9.80	1.90		0.38	301.00	0.20	0.60	5260.00	<0.05	751.00	<3	<0.01	19.60	<1	12.90	<0.5
V2	18/08/2011	DUPLICATE	<0.005	6.00	0.94	<50	69.00	<0.01	<0.005	263.00	0.16	0.04	0.20	1.17	13.00	<0.01	2.52	0.00	146.00	0.84	1.78	10.00	1.70		0.29	345.00	0.19	0.56	5870.00	<0.01	807.00	<0.5	0.01	21.30	<0.2	10.30	<0.1
RPD (%)			N/A	0.00	15.69	N/A	5.36	N/A	N/A	6.68	0.00	13.33	N/A	2.53	8.00	N/A	4.88	4.88	3.48	156.02	4.60	2.02	11.11	N/A	26.19	13.62	5.13	6.90	10.96	N/A	7.19	N/A	N/A	8.31	N/A	22.41	N/A
Comments																				Both values > PQL and correctly entered into emLine.																	
Action																				**Request Retest**																	
Result																				Retest performed, see results below.																	
V2 Retest	18/08/2011	M																		5.90																	
V2 Retest	18/08/2011	DUPLICATE																		0.50																	
RPD (%) Retest Results			N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	168.75	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RPD (%) Original/Retest Main			N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	14.17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RPD (%) Original/Retest Dup			N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	50.75	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Comments																				Retest for August 18 V2 main and duplicate samples. Main sample retest value > PQL, however main sample retest value not > PQL																	
Action																				**Replace Duplicate Sample Value**																	
Result																				New duplicate sample value entered into emLine. Entered main retest result into emLine as comment: "Retest result: 5.9 µg/L. Original value stands: RPD (original, retest)<20%. Retested as identified through QA/QC."																	

RPD > 50%.
RPD > 100%.
Retest result to replace original result in emLine.

Denison Environmental Services

Table C-11: Quality Assurance / Quality Control
2011 Duplicates - Total Metals

Faro Mine Closure

Station	Date	Sample Type	Ag	Al	As	B	Ba	Be	Bi	Ca	Cd	Co	Cr	Cu	Fe	Hg	K	Li	Mg	Mn	Mo	Na	Ni	P	Pb	S	Sb	Se	Si	Sn	Sr	Ti	Tl	U	V	Zn	Zr
			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	ug/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	µg/L	µg/L	mg/L	µg/L	µg/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
VL-1	07/09/2011	M	<0.1	2240.00	2.40	<1000	19.50	0.50	<0.1	226.00	159.00	758.00	<2	993.00	61100.00		2.00	0.05	121.00	51900.00	<1	4.00	600.00	<0.005	270.00	501.00	<0.4	<0.8	4400.00	<0.2	1090.00	<10	1.80	5.180	<4	187000.00	<2
VL-1	07/09/2011	DUPLICATE	<0.1	2170.00	2.50	<1000	18.70	0.50	<0.1	216.00	155.00	766.00	<2	1020.00	58000.00		3.00	0.05	125.00	53300.00	<1	4.00	606.00	<0.005	268.00	516.00	<0.4	<0.8	4230.00	<0.2	1050.00	<10	1.68	4.760	<4	192000.00	<2
RPD (%)			N/A	3.17	4.08	N/A	4.19	0.00	N/A	4.52	2.55	1.05	N/A	2.68	5.21	N/A	40.00	2.20	3.25	2.66	N/A	0.00	1.00	N/A	0.74	2.95	N/A	N/A	3.94	N/A	3.74	N/A	6.90	8.45	N/A	2.64	N/A
Comments																																					
Action																																					
Result																																					
V23	11/09/2011	M	<0.005	32.50	2.16	<50	39.20	<0.01	<0.005	114.00	1.64	4.38	<0.1	3.85	227.00		2.78	0.02	62.50	93.70	1.95	7.67	78.20	0.01	2.99	152.00	2.75	1.29	2710.00	<0.01	632.00	1.700	1.66	7.75	0.30	2080.00	<0.1
V23	11/09/2011	DUPLICATE	<0.005	37.40	2.31	<50	40.30	<0.01	<0.005	98.30	1.68	4.41	<0.1	3.85	217.00		2.76	0.02	61.80	92.00	2.03	7.90	79.00	0.01	3.63	146.00	2.72	1.15	2320.00	<0.01	646.00	2.100	1.70	7.83	<0.2	2090.00	<0.1
RPD (%)			N/A	14.02	6.71	N/A	2.77	N/A	N/A	14.79	2.41	0.68	N/A	0.00	4.50	N/A	0.72	0.48	1.13	1.83	4.02	2.95	1.02	0.00	19.34	4.03	1.10	11.48	15.51	N/A	2.19	21.05	2.38	1.03	N/A	0.48	N/A
Comments																																					
Action																																					
Result																																					
V8	08/12/2011	M	<0.005	37.40	0.51	<50	66.00	<0.01	<0.005	78.80	0.05	0.09	<0.1	0.70	84.00	<0.01	1.15	0.01	34.00	9.35	1.03	4.25	1.50		0.15	50.00	0.12	1.23	4650.00	<0.01	321.00	2.000	0.01	6.96	<0.2	14.70	<0.1
V8	08/12/2011	DUPLICATE	<0.005	44.50	0.52	<50	66.70	<0.01	<0.005	75.90	0.05	0.10	<0.1	0.68	84.00	<0.01	1.20	0.01	34.50	9.67	1.03	4.28	1.46		0.17	51.00	0.13	1.20	4480.00	<0.01	320.00	1.500	0.01	7.27	<0.2	14.80	<0.1
RPD (%)			N/A	17.34	1.94	N/A	1.06	N/A	N/A	3.75	3.92	13.04	N/A	2.90	0.00	N/A	4.26	5.61	1.46	3.36	0.00	0.70	2.70	N/A	9.88	1.98	8.00	2.47	3.72	N/A	0.31	28.57	13.33	4.36	N/A	0.68	N/A
Comments																																					
Action																																					
Result																																					

- RPD > 50%.
- RPD > 100%.
- Retest result to replace original result in emLine.

Denison Environmental Services

Table C-12: Quality Assurance / Quality Control
2011 Splits - General Parameters

Faro Mine Closure

Station	Date	Sample Type	Acid(pH4.5) mg/L	Acid(pH8.3) mg/L	ALK mg/L	ALKPP mg/L	CaCO3 mg/L	CaCO3-d mg/L	Chloride mg/L	CN 4500 mg/L	CO3 mg/L	Colour TCU	COND µmho/cm	DOC mg/L	HCO3 mg/L	NH3 mg/L	NO2 mg/L	NO2/3 mg/L	NO3 mg/L	OH mg/L	ORP mV	pH (blank)	SO4-d mg/L	TDS mg/L	TOC mg/L	TSS mg/L	TURB NTU
V15	18/01/2011	M	<0.5	43.10	510.00	<0.5		3270.00	1.40		<0.5		3940.0000		620.00					<0.5		7.70	2600.000			8	
V15	18/01/2011	SPLIT	<0.5	51.60	530.00	<0.5		3330.00	1.60		<0.5		3970.0000		640.00					<0.5		7.69	2400.000			10	
RPD (%)			N/A	17.95	3.85	N/A	N/A	1.82	13.33	N/A	N/A	N/A	0.76	N/A	3.17	N/A	N/A	N/A	N/A	N/A	N/A	0.01	8.00	N/A	N/A	22.22	N/A
Comments																											
Action																											
Result																											
SRK05-9	03/02/2011	M	<0.5	11.90	300.00	<0.5		1100.00	1.70		<0.5		1780.0000		370.00					<0.5		7.91	750.000			210.000	
SRK05-9	03/02/2011	SPLIT	<0.5	15.00	300.00	<0.5		1130.00	0.70		<0.5		1770.0000		360.00					<0.5		7.90	760.000			230.000	
RPD (%)			N/A	23.05	0.00	N/A	N/A	2.69	83.33	N/A	N/A	N/A	0.56	N/A	2.74	N/A	N/A	N/A	N/A	N/A	N/A	0.01	1.32	N/A	N/A	9.09	N/A
Comments									Both values correctly entered into emLine; however, neither value > PQL. Therefore, RPD analysis not valid in this case.																		
Action									**Let Value Stand**																		
Result									Discrepancy between values remains.																		
V22	23/03/2011	M			58.00	<0.5	872.00	985.00	1.80		<0.5		1800.00		71.00	0.27				<0.5		7.33	1000.00	1700.00		10.00	
V22	23/03/2011	SPLIT			59.00	<0.5	1390.00	997.00	1.40		<0.5		1800.00		71.00	0.28				<0.5		7.33	1100.00	1700.00		9.00	
RPD (%)			N/A	N/A	1.71	N/A	45.80	1.21	25.00	N/A	N/A	N/A	0.00	N/A	0.00	3.64	N/A	N/A	N/A	N/A	N/A	0.00	9.52	0.00	N/A	10.53	N/A
Comments																											
Action																											
Result																											
V15	26/04/2011	M	<0.5	54.60	520.00	<0.5		2810.00	2.40		<0.5		3790.00		630.00					<0.5	77.00	7.68	2000.00			<1	
V15	26/04/2011	SPLIT	<0.5	52.30	520.00	<0.5		2790.00	2.30		<0.5		3820.00		640.00					<0.5	77.00	7.65	2000.00			<1	
RPD (%)			N/A	4.30	0.00	N/A	N/A	0.71	4.26	N/A	N/A	N/A	0.79	N/A	1.57	N/A	N/A	N/A	N/A	0.00	N/A	0.03	0.00	N/A	N/A	N/A	N/A
Comments																											
Action																											
Result																											
SRK05-9	05/07/2011	M	<0.5	13.70	290.00	<0.5		1240.00	1.80		<0.5		1950.00		360.00					<0.5		8.00	930.00			350.00	
SRK05-9	05/07/2011	SPLIT	<0.5	<0.5	290.00	<0.5		1230.00	1.40		<0.5		1980.00		360.00					<0.5		8.04	960.00			130.00	
RPD (%)			N/A	N/A	0.00	N/A	N/A	0.81	25.00	N/A	N/A	N/A	1.53	N/A	0.00	N/A	N/A	N/A	N/A	N/A	N/A	0.04	3.17	N/A	N/A	91.67	N/A
Comments																										Both values > PQL and correctly entered into emLine.	
Action																										**Let Value Stand**	
Result																										Retest request would be filed past hold time. Discrepancy between values remains.	
V2A	18/08/2011	M			420.00	<0.5	1730.00	1740.00	2.00		<0.5		2530.00	4.40	520.00	0.04	<0.005	6.90	6.90	<0.5		8.22	1100.00	2500.00	4.20	72.00	9.68
V2A	18/08/2011	SPLIT			420.00	<0.5	1770.00	1780.00	1.80		<0.5		2530.00	4.20	510.00	0.03	<0.005	7.40	7.40	<0.5		8.23	1200.00	2500.00	4.50	78.00	9.27
RPD (%)			N/A	N/A	0.00	N/A	2.29	2.27	10.53	N/A	N/A	N/A	0.00	4.65	1.94	18.18	N/A	6.99	6.99	N/A	N/A	0.01	8.70	0.00	6.90	8.00	4.33
Comments																											
Action																											
Result																											
V22	11/09/2011	M			<0.5	<0.5	1120.00	913.00	1.50		<0.5		2540.00		<0.5	0.37				<0.5		3.41	1700.00	2500.00		11.00	
V22	11/09/2011	SPLIT			<0.5	<0.5	1100.00	912.00	1.30		<0.5		2540.00		<0.5	0.28				<0.5		3.41	1700.00	2500.00		11.00	
RPD (%)			N/A	N/A	N/A	N/A	1.80	0.11	14.29	N/A	N/A	N/A	0.00	N/A	N/A	27.69	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	N/A	0.00	N/A
Comments																											
Action																											
Result																											
P2001-2A	12/10/2011	M	<0.5	28.70	480.00	<0.5		1320.00	1.70		<0.5		1850.00		590.00					<0.5		7.73	758.00			2900.00	
P2001-2A	12/10/2011	SPLIT	<0.5	28.40	480.00	<0.5		1320.00	1.80		<0.5		1850.00		590.00					<0.5		7.69	746.00			3200.00	
RPD (%)			N/A	1.05	0.00	N/A	N/A	0.00	5.71	N/A	N/A	N/A	0.00	N/A	0.00	N/A	N/A	N/A	N/A	N/A	N/A	0.04	1.60	N/A	N/A	9.84	N/A
Comments																											
Action																											
Result																											

RPD > 50%.

Retest result to replace original result in emLine.

Denison Environmental Services

Table C-13: Quality Assurance / Quality Control
2011 Splits - Dissolved Metals

Station	Date	Sample Type	Ag-d µg/L	Al-d µg/L	As-d µg/L	Ba-d µg/L	B-d µg/L	Be-d µg/L	Bi-d µg/L	Ca-d mg/L	Cd-d µg/L	Co-d µg/L	Cr-d µg/L	Cu-d µg/L	Fe-d µg/L	Hg-d µg/L	K-d mg/L	Li-d mg/L	Mg-d mg/L	Mn-d µg/L	Mo-d µg/L	Na-d mg/L	Ni-d µg/L	Pb-d µg/L	Sb-d µg/L	S-d mg/L	Se-d µg/L	Si-d µg/L	Sn-d µg/L	Sr-d µg/L	Ti-d µg/L	Tl-d µg/L	U-d µg/L	V-d µg/L	Zn-d µg/L	Zr-d µg/L
V15	18/01/2011	M	<0.03	6.00	0.40	43.400	<300	<0.05	0.09	500.00	1.72	0.0600	<0.5	2.3000	10.00		6.60	0.023	492.00	0.800	0.90	16.40	133.000	0.1900	<0.1	906	0.8000	6740.00	<0.05	1500.00	<3	<0.01	67.2000	<1	3370.000	<0.5
V15	18/01/2011	SPLIT	<0.03	6.00	0.60	43.500	<300	<0.05	<0.03	493.00	1.66	0.0500	<0.5	2.6000	10.00		6.80	0.023	510.00	1.000	0.90	16.80	138.000	0.2900	<0.1	943	0.8000	6250.00	<0.05	1490.00	<3	<0.01	67.1000	<1	3450.000	<0.5
RPD (%)			N/A	0.00	40.00	0.23	N/A	N/A	N/A	1.41	3.55	18.18	N/A	12.24	0.00	N/A	2.99	0.00	3.59	22.22	0.00	2.41	3.69	41.67	N/A	4.00	0.00	7.54	N/A	0.67	N/A	N/A	0.15	N/A	2.35	N/A
Comments																																			
Action																																			
Result																																			
SRK05-9	03/02/2011	M	<0.03	2.00	0.70	32.800	<300	<0.05	<0.03	202.00	0.17	0.0500	<0.5	1.9000	8.00		3.20	0.007	145.00	4.000	1.10	8.60	1.000	0.3500	0.20	295	0.8000	3450.00	0.29	657.00	<3	<0.01	12.8000	<1	6.700	<0.5
SRK05-9	03/02/2011	SPLIT	<0.03	3.00	0.60	31.700	<300	<0.05	<0.03	211.00	0.10	<0.03	<0.5	1.9000	8.00		3.20	0.007	147.00	2.800	1.00	8.60	1.000	0.3900	0.20	293	0.8000	3580.00	0.27	652.00	<3	<0.01	12.7000	<1	10.000	<0.5
RPD (%)			N/A	40.00	15.38	3.41	N/A	N/A	N/A	4.36	51.85	N/A	N/A	0.00	0.00	N/A	0.00	0.00	1.37	35.29	9.52	0.00	0.00	10.81	0.00	0.68	0.00	3.70	7.14	0.76	N/A	N/A	0.78	N/A	39.52	N/A
Comments											Both values correctly entered into emLine; however, split value not > PQL. Therefore, RPD analysis not valid in this case.																								
Action											Let Value Stand																								
Result											Discrepancy between values remains.																								
V22	23/03/2011	M	0.07	48.00	0.30	25.00	<50	<0.1	<1	229.00	81.80	408.00	<1	50.90	5160.00		3.43	0.04	100.00	30000.00	<1	7.88	397.00	<0.2	1.00	431.00	<0.1	6880.00	<5	1460.0	<5	2.210	1.70	<5	107000.00	<0.5
V22	23/03/2011	SPLIT	0.07	50.00	0.40	26.00	<50	<0.1	<1	230.00	83.10	416.00	<1	51.80	5640.00		3.64	0.04	103.00	30500.00	<1	7.98	406.00	1.10	1.10	433.00	<0.1	6900.00	<5	1500.0	<5	2.270	1.80	<5	106000.00	<0.5
RPD (%)			0.00	4.08	28.57	3.92	N/A	N/A	N/A	0.44	1.58	1.94	N/A	1.75	8.89	N/A	5.94	0.00	2.96	1.65	N/A	1.26	2.24	N/A	9.52	0.46	N/A	0.29	N/A	2.70	N/A	2.68	5.71	N/A	0.94	N/A
Comments																																			
Action																																			
Result																																			
V15	26/04/2011	M	<0.03	6.00	0.40	38.20	<300	<0.05	<0.03	437.00	1.62	0.07	<0.5	2.00	7.00		6.00	0.02	418.00	3.00	0.40	13.80	112.00	0.47	<0.1	835.00	0.70	6510.00	<0.05	1470.0	<3	<0.01	52.90	<1	2920.00	<0.5
V15	26/04/2011	SPLIT	<0.03	6.00	0.40	37.30	<300	<0.05	<0.03	430.00	1.62	0.07	<0.5	2.30	10.00		5.90	0.02	416.00	2.40	0.40	13.90	113.00	0.36	0.20	813.00	0.70	6450.00	<0.05	1460.0	<3	<0.01	51.50	<1	2930.00	<0.5
RPD (%)			N/A	0.00	0.00	2.38	N/A	N/A	N/A	1.61	0.00	0.00	N/A	13.95	35.29	N/A	1.68	0.00	0.48	22.22	0.00	0.72	0.89	26.51	N/A	2.67	0.00	0.93	N/A	0.68	N/A	N/A	2.68	N/A	0.34	N/A
Comments																																			
Action																																			
Result																																			
SRK05-9	05/07/2011	M	<0.03	5.00	1.10	53.80	<300	<0.05	<0.03	234.00	0.24	0.04	<0.5	3.30	11.00		4.10	0.01	160.00	2.20	2.00	10.10	1.90	0.70	0.30	334.00	1.20	4660.00	0.08	781.0	<3	<0.01	26.30	<1	18.40	<0.5
SRK05-9	05/07/2011	SPLIT	<0.03	4.00	0.90	55.00	<300	<0.05	<0.03	231.00	0.26	0.06	<0.5	5.00	8.00		4.20	0.01	160.00	5.50	1.70	10.10	2.20	0.68	0.40	369.00	1.20	4710.00	0.11	802.0	<3	<0.01	26.40	<1	29.10	<0.5
RPD (%)			N/A	22.22	20.00	2.21	N/A	N/A	N/A	1.29	8.00	40.00	N/A	40.96	31.58	N/A	2.41	0.00	0.00	85.71	16.22	0.00	14.63	2.90	28.57	9.96	0.00	1.07	31.58	2.65	N/A	N/A	0.38	N/A	45.05	N/A
Comments																				Both values > PQL and correctly entered into emLine.																
Action																				Let Value Stand															
Result																				Discrepancy between values remains.															
V2A	18/08/2011	M	<0.03	9.00	3.80	49.30	<300	<0.05	<0.03	297.00	0.61	0.20	<0.5	1.90	37.00		4.40	0.02	242.00	7.90	1.70	10.70	80.60	0.78	0.50	449.00	0.60	5230.00	<0.05	968.0	<3	0.070	41.30	<1	1360.00	<0.5
V2A	18/08/2011	SPLIT	<0.03	6.00	3.90	49.30	<300	<0.05	<0.03	302.00	0.59	0.16	<0.5	1.80	21.00		4.60	0.02	248.00	8.30	1.60	10.90	81.80	0.87	0.50	445.00	0.70	5190.00	<0.05	969.0	<3	0.060	41.10	<1	1370.00	<0.5
RPD (%)			N/A	40.00	2.60	0.00	N/A	N/A	N/A	1.67	3.33	22.22	N/A	5.41	55.17	N/A	4.44	0.00	2.45	4.94	6.06	1.85	1.48	10.91	0.00	0.89	15.38	0.77	N/A	0.10	N/A	15.38	0.49	N/A	0.73	N/A
Comments															Both values correctly entered into emLine; however, split value not > PQL. Therefore, RPD analysis not valid in this case.																					
Action															Let Value Stand																					
Result															Discrepancy between values remains.																					
V22	11/09/2011	M	<0.2	2020.00	3.00	16.00	<500	<1	<10	193.00	133.00	616.00	<10	750.00	49600.00		2.40	<0.05	105.00	47000.00	<10	3.30	504.00	233.00	<5	483.00	<1	3910.00	<50	975.0	<50	1.800	4.00	<50	164000.00	<5
V22	11/09/2011	SPLIT	<0.2	1990.00	2.00	15.00	<500	<1	<10	196.00	123.00	598.00	<10	739.00	50500.00		2.50	<0.05	102.00	46400.00	<10	3.30	492.00	223.00	<5	454.00	<1	4010.00	<50	930.0	<50	1.700	4.00	<50	161000.00	<5
RPD (%)			N/A	1.50	40.00	6.45	N/A	N/A	N/A	1.54	7.81	2.97	N/A	1.48	1.80	N/A	4.08	N/A	2.90	1.28	N/A	0.00	2.41	4.39	N/A	6.19	N/A	2.53	N/A	4.72	N/A	5.71	0.00	N/A	1.85	N/A
Comments																																			
Action																																			
Result																																			
P2001-2A	12/10/2011	M	<0.03	4.00	5.20	22.30	<300	<0.05	<0.03	297.00	0.05	1.14	<0.5	<0.3	169.00		4.50	0.04	140.00	165.00	1.40	9.40	4.50	1.25	<0.1	278.00	<0.2	6500.00	<0.05	1460.0	<3	<0.01	43.40	<1	10.80	<0.5
P2001-2A	12/10/2011	SPLIT	<0.03	2.00	3.80	21.10	<300	<0.05	<0.03	291.00	0.05	1.20	<0.5	<0.3	131.00		4.50	0.04	144.00	156.00	1.30	9.40	4.20	1.05	<0.1	279.00	<0.2	6410.00	<0.05	1410.0	<3	<0.01	42.60	<1	9.40	<0.5
RPD (%)			N/A	66.67	31.11	5.53	N/A	N/A	N/A	2.04	0.00	5.13	N/A	N/A	25.33	N/A	0.00	2.82	2.82	5.61	7.41	0.00	6.90	17.39	N/A	0.36	N/A	1.39	N/A	3.48	N/A	N/A	1.86	N/A	13.86	N/A
Comments				Both values correctly entered into emLine; however, neither value > PQL. Therefore, RPD analysis not valid in this case.																																	
Action				Let Value Stand																																	
Result				Discrepancy between values remains.																																	

RPD > 50%.
RPD > 100%.
Retest result to replace original result in emLine.

Denison Environmental Services

Table C-14: Quality Assurance / Quality Control
2011 Splits - Total Metals

Station	Date	Sample Type	Ag	Al	As	B	Ba	Be	Bi	Ca	Cd	Co	Cr	Cu	Fe	Hg	K	Li	Mg	Mn	Mo	Na	Ni	P	Pb	S	Sb	Se	Si	Sn	Sr	Ti	Tl	U	V	Zn	Zr
			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	ug/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
V22	23/03/2011	M	0.0600	46.00	0.50	58.000	24.00	<0.1	<1	206.00	67.20	356.0000	<1	44.8000	5110.00		3.20	0.035	86.60	26300.000	<1	7.08	343.000		1.000	342.00	1	0.2000	6090.00	<5	1310.00	<5	1.99	1.6000	<5	80900.000	<0.5
V22	23/03/2011	SPLIT	0.0700	43.00	0.40	<50	23.00	<0.1	<1	408.00	67.10	377.0000	<1	46.1000	9060.00		3.39	0.035	89.70	27800.000	<1	7.18	364.000		0.400	352.00	1	0.3000	11600.00	<5	1310.00	<5	2.00	1.5000	<5	84500.000	<0.5
RPD (%)			15.38	6.74	22.22	N/A	4.26	N/A	N/A	65.80	0.15	5.73	N/A	2.86	55.75	N/A	5.77	0.00	3.52	5.55	N/A	1.40	5.94	N/A	85.71	2.88	0.00	40.00	62.30	N/A	0.00	N/A	0.50	6.45	N/A	4.35	N/A
Comments										Both values > PQL and correctly entered into emLine.					Both values > PQL and correctly entered into emLine.										Both values correctly entered into emLine; however, main sample value equal to PQL, and split value not > PQL. Therefore, RPD analysis not valid in this case.					Both values > PQL and correctly entered into emLine.								
Action										**Let Value Stand**					**Let Value Stand**										**Let Value Stand**				**Let Value Stand**							
Result										Discrepancy between values remains.					Discrepancy between values remains.										Discrepancy between values remains.				Discrepancy between values remains.							
V2A	18/08/2011	M	<0.03	390.00	4.00	<300	58.00	<0.05	<0.03	291.00	0.69	1.40	1.20	3.80	1010.00		4.70	0.02	245.00	30.20	1.60	10.80	86.80		13.90	433.00	0.60	0.60	5340.00	<0.05	991.00	6.000	0.09	35.40	<1	1470.00	<0.5
V2A	18/08/2011	SPLIT	<0.03	388.00	4.30	<300	58.60	<0.05	<0.03	298.00	0.68	1.36	1.20	3.80	1040.00		4.80	0.02	250.00	31.20	1.50	11.10	86.90		13.80	433.00	0.60	0.50	5560.00	<0.05	994.00	9.000	0.08	35.80	2.00	1510.00	<0.5
RPD (%)			N/A	0.51	7.23	N/A	1.03	N/A	N/A	2.38	1.46	2.90	0.00	0.00	2.93	N/A	2.11	6.45	2.02	3.26	6.45	2.74	0.12	N/A	0.72	0.00	0.00	18.18	4.04	N/A	0.30	40.00	11.76	1.12	N/A	2.68	N/A
Comments																																					
Action																																					
Result																																					
V22	11/09/2011	M	0.16	2340.00	3.10	<200	18.00	<0.4	<4	237.00	160.00	758.00	<4	944.00	60600.00		2.70	0.05	128.00	58500.00	<4	4.10	621.00		278.00	586.00	<2	<0.4	4750.00	<20	1130.00	<20	2.00	5.50	<20	199000.00	<2
V22	11/09/2011	SPLIT	0.16	2410.00	3.30	<200	19.00	<0.4	<4	230.00	167.00	759.00	<4	952.00	58900.00		2.70	0.05	128.00	58500.00	<4	4.00	617.00		289.00	575.00	<2	<0.4	4570.00	<20	1170.00	<20	2.00	5.40	<20	199000.00	<2
RPD (%)			0.00	2.95	6.25	N/A	5.41	N/A	N/A	3.00	4.28	0.13	N/A	0.84	2.85	N/A	0.00	4.17	0.00	0.00	N/A	2.47	0.65	N/A	3.88	1.89	N/A	N/A	3.86	N/A	3.48	N/A	0.00	1.83	N/A	0.00	N/A
Comments																																					
Action																																					
Result																																					

RPD > 50%.
RPD > 100%.
Retest result to replace original result in emLine.

Denison Environmental Services

Table C-15: Quality Assurance / Quality Control
2011 Lab vs. Field Comparison

Station	Date	COND µmho/cm	CONDF µmho/cm	RPD %	Comments	Action	Result	pH	pHF	Difference	Comments	Action	Result
BH05-9B-R	10/06/2011	632	689	8.63				8.08	7.56	0.52			
BH05-9B-R	04/10/2011	627	400	44.21	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains.	7.95	7.86	0.09			
GC Weir	26/04/2011	1580	1580	0.00				8.12	8.10	0.02			
GC Weir	10/05/2011	1300	1420	8.82				8.00	8.11	0.11			
GC Weir	18/05/2011	658	620	5.95				7.92	8.15	0.23			
GC Weir	25/05/2011	1640	1650	0.61				8.16	7.99	0.17			
GC Weir	06/06/2011	2060	1947	5.64				8.14	8.14	0			
GC Weir	22/06/2011	2070	2250	8.33				8.29	8.15	0.14			
GC Weir	05/07/2011	2260	2040	10.23				8.37	8.50	0.13			
GC Weir	21/07/2011	2270	2340	3.04				8.22	8.40	0.18			
GC Weir	03/08/2011	2250	2013	11.12				8.30	8.20	0.1			
GC Weir	18/08/2011	2250	1862	18.87				8.30	8.32	0.02			
GC Weir	07/09/2011	2370	1559	41.28	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains. Multiple flagged conductivity values on September 7 suggests calibration on field meter may have been off.	8.28	8.06	0.22			
GC Weir	20/09/2011	2350	2630	11.24				8.32	8.27	0.05			
GC Weir	11/10/2011	2370	1940	19.95				8.26	8.37	0.11			
GC Weir	27/10/2011	2340	2680	13.55				8.37	8.26	0.11			
GC Weir	08/11/2011	2370	2450	3.32				8.16	8.44	0.28			
GCA	25/05/2011	1740	1842	5.70				8.06	7.76	0.3			
GD05 d/s	22/05/2011	2510	2168	14.62				8.17	7.90	0.27			
GD05 d/s	22/09/2011	3180	3500	9.58				8.14	7.60	0.54			
LCD	15/06/2011	2440	2201	10.30				3.66	3.43	0.23			
LCD	13/07/2011	2890	2280	23.60	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains.	3.66	3.48	0.18			
LCD	10/08/2011	3800	2790	30.65	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains.	3.41	3.11	0.3			
LCD	13/09/2011	4390	3974	9.95				3.30	7.62	4.32	Lab value correctly entered into emLine, but field value incorrectly entered.	**Change Value**	Field value changed; now correctly entered into emLine (see below).
LCD	13/09/2011	4390	3974	9.95				3.30	2.85	0.45	Lab value correctly entered into emLine, and incorrect field value amended (see above).	**Let Value Stand**	Discrepancy between lab and field values resolved.
Moose Pond	25/05/2011	1620	1549	4.48				8.24	7.56	0.68			
MOOSE SEEP	04/01/2011	2320	2307	0.56				7.79	7.91	0.12			
MOOSE SEEP	03/02/2011	2290	2195	4.24				7.89	7.93	0.04			
MOOSE SEEP	03/03/2011	2260	2246	0.62				7.88	7.55	0.33			
MOOSE SEEP	11/04/2011	2140	2170	1.39				7.89	7.52	0.37			
MOOSE SEEP	10/05/2011	2130	2280	6.80				8.07	7.46	0.61			
MOOSE SEEP	18/05/2011	1950	1918	1.65				8.19	7.78	0.41			
MOOSE SEEP	06/06/2011	1580	1479	6.60				7.98	7.88	0.1			
MOOSE SEEP	22/06/2011	1590	1800	12.39				8.18	7.70	0.48			
MOOSE SEEP	05/07/2011	1800	1685	6.60				8.21	8.13	0.08			
MOOSE SEEP	21/07/2011	1950	2040	4.51				8.09	7.72	0.37			
MOOSE SEEP	03/08/2011	2040	1876	8.38				8.05	7.65	0.4			
MOOSE SEEP	18/08/2011	2120	1755	18.84				8.06	7.66	0.4			
MOOSE SEEP	07/09/2011	2250	1509	39.43	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains. Multiple flagged conductivity values on September 7 suggests calibration on field meter may have been off.	7.94	7.46	0.48			
MOOSE SEEP	20/09/2011	2270	2420	6.40				7.95	7.41	0.54			
MOOSE SEEP	11/10/2011	2320	1879	21.01	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains.	7.95	7.68	0.27			
MOOSE SEEP	27/10/2011	2280	2550	11.18				8.07	8.05	0.02			
MOOSE SEEP	08/11/2011	2300	1190	63.61	Field and lab values correctly entered into emLine.	**Let Value Stand**	Retest request would be filed past hold time. Discrepancy between values remains.	7.92	8.17	0.25			
MOOSE SEEP	01/12/2011	2240	2309	3.03				8.05	7.73	0.32			
P09-GS1A	05/07/2011	1480	1553	4.81				7.8	7.01	0.79			
P09-GS1A	13/10/2011	1430	2109	38.37	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains. Multiple flagged conductivity values Oakton meter suggests calibration meter may have been off.	7.76	7.54	0.22			
P09-GS1B	29/06/2011	1190	1452	19.83				7.04	6.91	0.13			

Blank value > PQL and < retest limit (30X detection limit).
Blank value > retest limit (30X detection limit).

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Table C-15: Quality Assurance / Quality Control
2011 Lab vs. Field Comparison

Station	Date	COND µmho/cm	CONDF µmho/cm	RPD %	Comments	Action	Result	pH	pHF	Difference	Comments	Action	Result
P09-GS1B	06/10/2011	1530	2232	37.32	Field and lab values correctly entered into emLine.	Let Value Stand	Discrepancy between lab and field values remains. Multiple flagged conductivity values Oakton meter suggests calibration meter may have been off.	7.69	6.83	0.86			
P09-GW3	13/06/2011	2440	1904	24.68	Field and lab values correctly entered into emLine.	Let Value Stand	Discrepancy between lab and field values remains.	7.87	7.40	0.47			
P09-LCD1	13/06/2011	813	870	6.77				7.72	7.22	0.5			
P09-LCD1	12/10/2011	814	1349	49.47	Field and lab values correctly entered into emLine.	Let Value Stand	Discrepancy between lab and field values remains. Multiple flagged conductivity values Oakton meter suggests calibration meter may have been off.	7.95	7.42	0.53			
P09-LCD6	13/06/2011	906	981	7.95				7.66	7.29	0.37			
P09-LCD6	12/10/2011	969	1467	40.89	Field and lab values correctly entered into emLine.	Let Value Stand	Discrepancy between lab and field values remains. Multiple flagged conductivity values Oakton meter suggests calibration meter may have been off.	7.89	7.37	0.52			
P09-VC1	11/06/2011	387	405	4.55				7.98	7.55	0.43			
P09-VC1	20/10/2011	402	391	2.77				7.98	8.02	0.04			
P09-VC2	11/06/2011	417	435	4.23				7.87	7.11	0.76			
P09-VC2	05/10/2011	395	581.2	38.15	Field and lab values correctly entered into emLine.	Let Value Stand	Discrepancy between lab and field values remains. Multiple flagged conductivity values Oakton meter suggests calibration meter may have been off.	8.08	7.42	0.66			
P2001-2A	11/06/2011	1910	2000	4.60				7.65	6.95	0.7			
P2001-2A	12/10/2011	1850	2880	43.55	Field and lab values correctly entered into emLine.	Let Value Stand	Discrepancy between lab and field values remains. Multiple flagged conductivity values Oakton meter suggests calibration meter may have been off.	7.73	7.14	0.59			
P2001-2B	13/06/2011	1900	2030	6.62				7.62	6.95	0.67			
P2001-2B	06/10/2011	1760	2788	45.21	Field and lab values correctly entered into emLine.	Let Value Stand	Discrepancy between lab and field values remains. Multiple flagged conductivity values Oakton meter suggests calibration meter may have been off.	7.61	7.11	0.5			
P2001-3	08/06/2011	923	1178	24.27	Field and lab values correctly entered into emLine.	Let Value Stand	Discrepancy between lab and field values remains.	7.92	7.98	0.06			
P2001-3	17/10/2011	953	1450	41.36	Field and lab values correctly entered into emLine.	Let Value Stand	Discrepancy between lab and field values remains. Multiple flagged conductivity values Oakton meter suggests calibration meter may have been off.	7.9	8.03	0.13			
P96-9A	10/06/2011	2990	3070	2.64				7.65	6.89	0.76			
P96-9A	04/10/2011	3590	3597	0.19				7.47	6.88	0.59			
PW-10-01 (DH1)	14/02/2011	33800	>20000	#VALUE!	Field and lab values not comparable because conductivity greater than maximum measurable level for field meter used.			6.96	6.42	0.54			
PW-10-01 (DH1)	23/06/2011	32300	36325	11.73				7.46	6.58	0.88			
PW-10-01 (DH1)	20/10/2011	43600	20345	72.73	Field and lab values correctly entered into emLine.	Let Value Stand	Retest request would be filed past hold time. Discrepancy between values remains.	6.86	6.65	0.21			
PW-10-02 (DH2)	14/02/2011	2040	1650	21.14	Field and lab values correctly entered into emLine.	Let Value Stand	Discrepancy between lab and field values remains.	7.14	6.86	0.28			
PW-10-02 (DH2)	27/06/2011	3990	4385	9.43				6.66	6.56	0.1			
PW-10-02 (DH2)	24/10/2011	3920	3432	13.28				6.77	6.62	0.15			
PW-10-03 (DH3)	14/02/2011	1990	2190	9.57				6.98	6.78	0.2			
PW-10-03 (DH3)	27/06/2011	2160	2363	8.98				7.02	6.81	0.21			
PW-10-03 (DH3)	24/10/2011	2370	2166	8.99				6.61	6.67	0.06			
Sheep Creek	22/05/2011	567	493	13.96				8.25	8.16	0.09			
Sheep Creek	22/09/2011	644	760	16.52				8.33	7.97	0.36			
SRK GD01	24/01/2011	3510	3275	6.93				7.72	7.70	0.02			
SRK GD01	17/02/2011	3530	3566	1.01				7.85	7.73	0.12			
SRK GD01	28/03/2011	3530	3511	0.54				8.03	7.56	0.47			
SRK GD01	20/04/2011	3700	3112	17.26				7.97	7.71	0.26			
SRK GD01	17/05/2011	1180	1263	6.79				7.58	6.98	0.6			
SRK GD01	16/06/2011	3030	2565	16.62				7.64	7.01	0.63			
SRK GD01	11/07/2011	3120	2850	9.05				7.61	6.40	1.21	Field and lab values correctly entered into emLine.	Let Value Stand	Discrepancy between lab and field values remains.

Blank value > PQL and < retest limit (30X detection limit).
Blank value > retest limit (30X detection limit).

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Table C-15: Quality Assurance / Quality Control
2011 Lab vs. Field Comparison

Station	Date	COND µmho/cm	CONDF µmho/cm	RPD %	Comments	Action	Result	pH	pHF	Difference	Comments	Action	Result
SRK GD01	10/08/2011	2950	2753	6.91				8.14	6.98	1.16	Field and lab values correctly entered into emLine.	Let Value Stand	Discrepancy between lab and field values remains.
SRK GD01	13/09/2011	3010	2760	8.67				7.48	7.62	0.14			
SRK GD01	18/10/2011	3060	2725	11.58				7.74	6.99	0.75			
SRK GD01	23/11/2011	3080	2818	8.88				7.93	7.53	0.4			
SRK GD01	13/12/2011	3140	3051	2.88				8.04	7.73	0.31			
SRK05-5C	10/06/2011	994	984	1.01				8	7.72	0.28			
SRK05-5C	04/10/2011	454	463	1.96				7.93	7.78	0.15			
SRK05-7	14/06/2011	2870	1659	53.48	Field and lab values correctly entered into emLine.	Let Value Stand	Retest request would be filed past hold time. Discrepancy between values remains.	7.62	7.35	0.27			
SRK05-7	05/10/2011	3090	4623	39.75	Field and lab values correctly entered into emLine.	Let Value Stand	Discrepancy between lab and field values remains. Multiple flagged conductivity values Oakton meter suggests calibration meter may have been off.	7.38	6.90	0.48			
SRK05-8	11/06/2011	2320	2455	5.65				7.7	7.31	0.39			
SRK05-8	04/10/2011	2440	2444	0.16				7.64	7.02	0.62			
SRK05-9	04/01/2011	2010	1950	3.03				7.83	7.62	0.21			
SRK05-9	18/01/2011	1820	1460	21.95	Field and lab values correctly entered into emLine.	Let Value Stand	Discrepancy between lab and field values remains.	7.85	7.36	0.49			
SRK05-9	03/02/2011	1780	1710	4.01				7.91	7.76	0.15			
SRK05-9	16/02/2011	1750	1772	1.25				7.63	7.86	0.23			
SRK05-9	03/03/2011	1630	1632	0.12				7.79	7.43	0.36			
SRK05-9	23/03/2011	1440	1540	6.71				7.81	7.79	0.02			
SRK05-9	11/04/2011	1360	1530	11.76				7.9	6.96	0.94			
SRK05-9	26/04/2011	1380	1392	0.87				8.16	7.55	0.61			
SRK05-9	10/05/2011	2390	2550	6.48				7.7	7.32	0.38			
SRK05-9	18/05/2011	1480	1427	3.65				8.03	7.55	0.48			
SRK05-9	06/06/2011	1510	1415	6.50				7.85	7.63	0.22			
SRK05-9	22/06/2011	1910	2090	9.00				7.9	7.56	0.34			
SRK05-9	05/07/2011	1950	1889	3.18				8	8.04	0.04			
SRK05-9	21/07/2011	2260	2500	10.08				7.87	7.31	0.56			
SRK05-9	03/08/2011	2410	2205	8.88				7.86	7.50	0.36			
SRK05-9	18/08/2011	2480	2030	19.96				7.77	7.20	0.57			
SRK05-9	07/09/2011	2310	1531	40.56	Field and lab values correctly entered into emLine.	Let Value Stand	Discrepancy between lab and field values remains. Multiple flagged conductivity values on September 7 suggests calibration on field meter may have been off.	7.56	7.13	0.43			
SRK05-9	20/09/2011	2480	2540	2.39				7.71	7.22	0.49			
SRK05-9	11/10/2011	2420	2026	17.72				7.63	7.35	0.28			
SRK05-9	27/10/2011	2360	2690	13.07				7.99	7.36	0.63			
SRK05-9	08/11/2011	2350	2400	2.11				7.64	7.71	0.07			
SRK05-9	22/11/2011	2310	2193	5.20				7.88	7.50	0.38			
SRK05-9	01/12/2011	2280	2323	1.87				7.77	7.38	0.39			
SRK05-9	14/12/2011	2300	2477	7.41				8.06	7.44	0.62			
SRK08-P14	04/10/2011	1730	1753	1.32				7.65	7.33	0.32			
SRK08-P15	04/10/2011	2040	2126	4.13				7.85	7.45	0.4			
SRK08-P16	23/05/2011	1010	977	3.32				7.63	7.58	0.05			
SRK-GD21b	22/05/2011	3150	2670	16.49				8.13	7.92	0.21			
SRK-GD4	22/05/2011	977	838	15.32				7.94	7.83	0.11			
SRK-GD5	21/05/2011	2930	2740	6.70				8.18	7.92	0.26			
SRK-GD5	27/09/2011	3510	3690	5.00				8.17	8.07	0.1			
SRK-GD6	21/05/2011	3330	3111	6.80				8.11	7.64	0.47			
SRK-GD6	27/09/2011	3340	3560	6.38				7.95	7.34	0.61			
Trib A	25/05/2011	3010	2853	5.36				7.95	6.83	1.12	Field and lab values correctly entered into emLine.	Let Value Stand	Discrepancy between lab and field values remains.
V1	24/01/2011	117	192	48.54	Field and lab values correctly entered into emLine.	Let Value Stand	Discrepancy between lab and field values remains.	7.66	7.93	0.27			
V1	17/02/2011	117	134	13.55				7.48	7.84	0.36			
V1	22/03/2011	116	137	16.60				7.59	8.03	0.44			
V1	21/04/2011	119	90	27.75	Field and lab values correctly entered into emLine.	Let Value Stand	Discrepancy between lab and field values remains.	7.63	8.52	0.89			
V1	17/05/2011	85	88	3.47				7.66	8.08	0.42			
V1	15/06/2011	45	38	16.87				7.29	7.62	0.33			
V1	13/07/2011	70	67	4.38				7.35	7.65	0.3			
V1	10/08/2011	75	73	2.70				7.29	7.68	0.39			
V1	13/09/2011	74	61	19.26				7.64	7.75	0.11			

Blank value > PQL and < retest limit (30X detection limit).
Blank value > retest limit (30X detection limit).

Denison Environmental Services

Table C-15: Quality Assurance / Quality Control
2011 Lab vs. Field Comparison

Station	Date	COND µmho/cm	CONDF µmho/cm	RPD %	Comments	Action	Result	pH	pHF	Difference	Comments	Action	Result
V1	18/10/2011	92	110	17.82				7.57	7.78	0.21			
V1	23/11/2011	109	127	15.25				7.72	8.41	0.69			
V1	08/12/2011	108	104	3.77				7.56	7.89	0.33			
V14	22/05/2011	2340	2068	12.34				8.06	7.64	0.42			
V15	04/01/2011	3910	3999	2.25				7.42	7.10	0.32			
V15	18/01/2011	3940	3730	5.48				7.70	6.43	1.27	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains.
V15	03/02/2011	3930	3681	6.54				7.49	7.28	0.21			
V15	16/02/2011	4000	>3999	#VALUE!	Field and lab values not comparable because conductivity greater than maximum measurable level for field meter used.			7.54	7.45	0.09			
V15	03/03/2011	3910	3842	1.75				7.55	7.19	0.36			
V15	23/03/2011	3930	4190	6.40				7.48	7.37	0.11			
V15	11/04/2011	3850	4130	7.02				7.63	6.89	0.74			
V15	26/04/2011	3790	3606	4.98				7.68	7.02	0.66			
V15	10/05/2011	2640	2800	5.88				7.85	7.48	0.37			
V15	18/05/2011	2870	2720	5.37				7.99	7.20	0.79			
V15	25/05/2011	2950	2942	0.27				7.87	7.06	0.81			
V15	06/06/2011	3460	3012	13.84				7.60	7.05	0.55			
V15	22/06/2011	2890	2990	3.40				7.93	7.15	0.78			
V15	05/07/2011	3660	3101	16.54				7.82	7.69	0.13			
V15	21/07/2011	3770	3870	2.62				7.64	7.18	0.46			
V15	03/08/2011	3770	3261	14.48				7.72	6.95	0.77			
V15	18/08/2011	3760	3065	20.37	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains.	7.66	6.90	0.76			
V15	07/09/2011	3740	2323	46.74	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains. Multiple flagged conductivity values on September 7 suggests calibration on field meter may have been off.	7.57	6.60	0.97			
V15	20/09/2011	3850	4040	4.82				7.32	6.87	0.45			
V15	11/10/2011	3470	2835	20.14	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains.	7.35	6.88	0.47			
V15	27/10/2011	2870	4090	35.06	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains.	8.07	6.93	1.14	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains.
V15	08/11/2011	3620	3700	2.19				7.31	7.07	0.24			
V15	22/11/2011	3630	3399	6.57				7.52	6.96	0.56			
V15	01/12/2011	3540	3492	1.37				7.54	7.20	0.34			
V15	14/12/2011	3600	3981	10.05				7.87	6.97	0.9			
V16	22/05/2011	1520	1328	13.48				8.14	7.86	0.28			
V2	04/01/2011	2530	2412	4.78				8.07	8.01	0.06			
V2	03/02/2011	2610	2511	3.87				8.17	7.84	0.33			
V2	03/03/2011	2560	2589	1.13				8.03	7.97	0.06			
V2	11/04/2011	2490	2396	3.85				8.08	7.97	0.11			
V2	10/05/2011	2100	2230	6.00				8.22	7.76	0.46			
V2	18/05/2011	796	780	2.03				8.02	8.09	0.07			
V2	25/05/2011	1820	1846	1.42				8.15	7.85	0.3			
V2	06/06/2011	1750	1694	3.25				8.10	8.02	0.08			
V2	23/06/2011	1620	1400	14.57				8.10	7.92	0.18			
V2	05/07/2011	1760	1671	5.19				8.24	8.18	0.06			
V2	21/07/2011	1850	1900	2.67				7.99	7.95	0.04			
V2	03/08/2011	1890	1763	6.95				8.15	7.85	0.3			
V2	18/08/2011	1900	1590	17.77				8.16	7.91	0.25			
V2	07/09/2011	1990	1354	38.04	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains. Multiple flagged conductivity values on September 7 suggests calibration on field meter may have been off.	7.98	7.74	0.24			
V2	20/09/2011	1970	2130	7.80				8.19	7.56	0.63			
V2	11/10/2011	1970	1634	18.65				8.13	7.99	0.14			
V2	27/10/2011	1930	2250	15.31				8.11	8.13	0.02			
V2	08/11/2011	1990	2080	4.42				8.10	8.27	0.17			
V2	01/12/2011	2000	2081	3.97				8.11	7.90	0.21			
V20	19/05/2011	64	70	8.96				7.47	8.15	0.68			
V22	23/03/2011	1800	1900	5.41				7.33	6.71	0.62			
V22	28/06/2011	2090	2026	3.11				3.07	2.76	0.31			

Blank value > PQL and < retest limit (30X detection limit).
Blank value > retest limit (30X detection limit).

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Table C-15: Quality Assurance / Quality Control
2011 Lab vs. Field Comparison

Station	Date	COND µmho/cm	CONDF µmho/cm	RPD %	Comments	Action	Result	pH	pHF	Difference	Comments	Action	Result
V22	11/09/2011	2540	2520	0.79				3.41	3.32	0.09			
V22	22/12/2011	2520	2487	1.32				3.47	3.36	0.11			
V23	23/03/2011	1070	1160	8.07				7.75	7.97	0.22			
V23	28/06/2011	946	897	5.32				8.12	7.67	0.45			
V23	11/09/2011	967	918	5.20				8.25	8.15	0.1			
V23	22/12/2011	1060	1134	6.75				8.00	8.19	0.19			
V24	07/07/2011	2280	2630	14.26				3.09	2.39	0.7			
V24	12/07/2011	2350	2131	9.77				3.10	2.67	0.43			
V24	19/07/2011	2420	2252	7.19				3.11	2.81	0.3			
V24	26/07/2011	2480	2127	15.32				3.18	3.40	0.22			
V24	11/09/2011	2570	2520	1.96				3.35	3.32	0.03			
V25	07/07/2011	2010	2270	12.15				7.51	7.43	0.08			
V25	12/07/2011	2200	1900	14.63				7.64	9.04	1.4	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains.
V25	19/07/2011	2400	2337	2.66				7.97	8.78	0.81			
V25	26/07/2011	2410	2143	11.73				7.60	8.34	0.74			
V25	11/08/2011	2380	2156	9.88				7.55	7.57	0.02			
V25	18/08/2011	2370	2410	1.67				7.67	7.85	0.18			
V25	11/09/2011	2370	2385	0.63				6.79	8.34	1.55	Field and lab values correctly entered into emLine.	**Let Value Stand**	Retest request would be filed past hold time. Discrepancy between values remains.
V25	20/09/2011	2410	2690	10.98				7.57	8.19	0.62			
V25BSP	02/04/2011	1690	1702	0.71				7.98	8.01	0.03			
V25BSP	12/05/2011	769	806	4.70				7.14	8.08	0.94			
V25BSP	07/07/2011	307	330	7.22				7.80	7.61	0.19			
V25BSP	12/07/2011	1720	1312	26.91	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains.	7.25	7.80	0.55			
V25BSP	19/07/2011	2090	1953	6.78				7.67	7.73	0.06			
V25BSP	26/07/2011	2230	1963	12.74				7.51	8.01	0.5			
V25BSP	10/08/2011	1770	1404	23.06	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains.	7.61	7.06	0.55			
V25BSP	11/08/2011	1800	1645	9.00				7.56	7.53	0.03			
V25BSP	18/08/2011	1740	1760	1.14				7.88	7.90	0.02			
V25BSP	11/09/2011	1560	1586	1.65				7.67	7.71	0.04			
V25BSP	20/09/2011	2010	2260	11.71				7.70	7.80	0.1			
V25BSP	18/10/2011	1110	1186	6.62				7.87	7.64	0.23			
V25BSP	23/11/2011	1240	1240	0.00				7.82	7.92	0.1			
V25BSP	08/12/2011	1140	1162	1.91				7.71	7.58	0.13			
V25SPP	22/03/2011	1480	1445	2.39				7.31	7.29	0.02			
V27	25/01/2011	608	604	0.66				7.87	7.21	0.66			
V27	17/02/2011	633	713	11.89				7.91	8.24	0.33			
V27	28/03/2011	658	713	8.02				8.12	8.39	0.27			
V27	21/04/2011	695	780	11.53				8.01	8.21	0.2			
V27	12/05/2011	918	973	5.82				8.04	8.30	0.26			
V27	11/07/2011	609	558	8.74				7.59		7.59	Lab value correctly entered into emLine, but field value only entered as a comment because value suspect (9.04)	**Let Value Stand**	
V27	10/08/2011	257	234	9.37				7.77	7.59	0.18			
V27	12/09/2011	797	750	6.08				7.76	7.86	0.1			
V27	18/10/2011	402	477	17.06				7.83	8.27	0.44			
V27	24/11/2011	488	530	8.25				8.02		8.02	Lab value correctly entered into emLine. Field value (9.55) questionable, so only entered into emLine as a comment.	**Let Value Stand**	Discrepancy between values remains.
V27	12/12/2011	516	515	0.19				7.96	7.67	0.29			
V2A	03/02/2011	1690	1684	0.36				8.30	8.35	0.05			
V2A	11/04/2011	1530	1710	11.11				8.15	7.84	0.31			
V2A	10/05/2011	1410	1530	8.16				7.95	7.98	0.03			
V2A	19/05/2011	944	836	12.13				8.05	7.63	0.42			
V2A	25/05/2011	1650	1603	2.89				8.23	8.00	0.23			
V2A	05/07/2011	2350	2051	13.59				8.33	8.34	0.01			
V2A	21/07/2011	2550	2580	1.17				8.14	8.26	0.12			
V2A	03/08/2011	2630	2316	12.70				8.17	8.08	0.09			
V2A	18/08/2011	2530	2080	19.52				8.22	8.17	0.05			

Blank value > PQL and < retest limit (30X detection limit).
Blank value > retest limit (30X detection limit).

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Table C-15: Quality Assurance / Quality Control
2011 Lab vs. Field Comparison

Station	Date	COND µmho/cm	CONDF µmho/cm	RPD %	Comments	Action	Result	pH	pHF	Difference	Comments	Action	Result
V2A	07/09/2011	2710	1707	45.42	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains. Multiple flagged conductivity values on September 7 suggests calibration on field meter may have been off.	8.20	7.94	0.26			
V2A	20/09/2011	2560	2710	5.69				8.25	7.42	0.83			
V2A	11/10/2011	2430	1980	20.41	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains.	8.18	8.20	0.02			
V2A	27/10/2011	2360	2710	13.81				8.34	8.25	0.09			
V2A	08/11/2011	2390	2460	2.89				8.02	8.24	0.22			
V2A	01/12/2011	2240	2341	4.41				8.16	7.90	0.26			
V30	17/10/2011	8090	5820	32.64	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains.	6.18	7.68	1.5	Field and lab values correctly entered into emLine.	**Let Value Stand**	Retest request would be filed past hold time. Discrepancy between values remains.
V32	17/10/2011	40100	2000	181.00	Lab value correctly entered into emLine, but field value incorrectly entered.	**Change Value**	Field value changed; now correctly entered into emLine (see below).	3.03	2.78	0.25			
V32	17/10/2011	40100	>20000	#VALUE!	Lab value correctly entered into emLine, and incorrect field value amended (see above). Field and lab values not comparable because conductivity greater than maximum measurable level for field meter used.	**Let Value Stand**	Discrepancy between lab and field values resolved.	3.03	2.78	0.25			
V33	17/10/2011	45700	2000	183.23	Lab value correctly entered into emLine, but field value incorrectly entered.	**Change Value**	Field value changed; now correctly entered into emLine (see below).	4.20	4.49	0.29			
V33	17/10/2011	45700	>20000	#VALUE!	Lab value correctly entered into emLine, and incorrect field value amended (see above). Field and lab values not comparable because conductivity greater than maximum measurable level for field meter used.	**Let Value Stand**	Discrepancy between lab and field values resolved.	4.20	4.49	0.29			
V34	10/06/2011	1780	1932	8.19				7.82	7.36	0.46			
V34	06/10/2011	1750	2687	42.24	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains. Multiple flagged conductivity values Oakton meter suggests calibration meter may have been off.	7.63	7.07	0.56			
V35	10/06/2011	3550	3806	6.96				7.78	7.82	0.04			
V35	12/10/2011	2100	3137	39.60	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains. Multiple flagged conductivity values Oakton meter suggests calibration meter may have been off.	7.92	6.78	1.14	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains.
V36	08/06/2011	2540	2933	14.36				7.91	7.09	0.82			
V36	05/10/2011	2390	3658	41.93	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains. Multiple flagged conductivity values Oakton meter suggests calibration meter may have been off.	7.81	7.34	0.47			
V37	11/06/2011	1020	1084	6.08				8.18	7.35	0.83			
V37	12/10/2011	1050	1598	41.39	Field and lab values correctly entered into emLine.	**Let Value Stand**	Discrepancy between lab and field values remains. Multiple flagged conductivity values Oakton meter suggests calibration meter may have been off.	8.31	7.81	0.5			
V4	25/01/2011	726	793	8.82				8.10	7.41	0.69			
V4	17/02/2011	720	761	5.54				8.05	8.10	0.05			
V4	11/07/2011	493	452	8.68				8.26	7.63	0.63			
V4	10/08/2011	585	529	10.05				8.20	8.08	0.12			
V4	12/09/2011	556	529	4.98				8.24	8.07	0.17			
V4	18/10/2011	593	669	12.04				8.34	7.77	0.57			
V4	24/11/2011	664	720	8.09				8.20	8.01	0.19			
V4	12/12/2011	654	640	2.16				8.27	7.69	0.58			
V5	25/01/2011	778	772	0.77				8.01	7.81	0.2			
V5	17/02/2011	870	830	4.71				8.08	8.03	0.05			
V5	22/03/2011	984	954	3.10				7.93	8.09	0.16			
V5	21/04/2011	839	783	6.91				8.13	8.01	0.12			
V5	11/05/2011	321	334	3.97				8.03	8.27	0.24			
V5	18/05/2011	190	193	1.57				7.89	8.24	0.35			

Blank value > PQL and < retest limit (30X detection limit).
Blank value > retest limit (30X detection limit).

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Table C-15: Quality Assurance / Quality Control
2011 Lab vs. Field Comparison

Station	Date	COND µmho/cm	CONDF µmho/cm	RPD %	Comments	Action	Result	pH	pHF	Difference	Comments	Action	Result
V5	13/07/2011	417	382	8.76				8.19	6.68	1.51	Field and lab values correctly entered into emLine.	**Let Value Stand**	Retest request would be filed past hold time. Discrepancy between values remains.
V5	10/08/2011	431	409	5.24				8.13	8.32	0.19			
V5	12/09/2011	419	400	4.64				8.27	7.97	0.3			
V5	18/10/2011	513	590	13.96				8.27	7.90	0.37			
V5	23/11/2011	606	624	2.93				8.21	8.01	0.2			
V5	13/12/2011	632	616	2.56				8.19	8.17	0.02			
V8	25/01/2011	728	722	0.83				8.05	7.97	0.08			
V8	17/02/2011	758	732	3.49				8.09	8.17	0.08			
V8	22/03/2011	812	833	2.55				8.05	8.24	0.19			
V8	21/04/2011	817	752	8.29				8.19	8.21	0.02			
V8	11/05/2011	444	454	2.23				8.04	8.29	0.25			
V8	18/05/2011	273	285	4.30				7.79	8.20	0.41			
V8	13/07/2011	602	542	10.49				8.08	5.98	2.1	Field and lab values correctly entered into emLine.	**Let Value Stand**	Retest request would be filed past hold time. Discrepancy between values remains.
V8	10/08/2011	386	357	7.81				8.00	8.26	0.26			
V8	12/09/2011	633	594	6.36				8.04	7.97	0.07			
V8	25/10/2011	566	640	12.27				8.14	7.81	0.33			
V8	23/11/2011	592	613	3.49				8.16	8.06	0.1			
V8	08/12/2011	602	608	0.99				8.03	8.40	0.37			
Vang Cr C	18/05/2011	109	120	9.61				7.45	8.12	0.67			
Vang Cr D	18/05/2011	195	202	3.53				7.51	8.37	0.86			
Vang Cr E	18/05/2011	375	365	2.70				7.74	7.82	0.08			
Vang Cr E	25/05/2011	56	56	0.00				6.96	8.46	1.50	Field and lab values correctly entered into emLine.	**Let Value Stand**	Retest request would be filed past hold time. Discrepancy between values remains.
VGMAIN	18/05/2011	331	356	7.28				7.87	8.23	0.36			
VGMAIN	25/05/2011	118	121	2.51				7.83	7.40	0.43			
WGD01	21/05/2011	1110	1079	2.83				8.12	7.70	0.42			
WGD01	27/09/2011	1560	1670	6.81				8.14	7.72	0.42			
WTA02	27/09/2011	459	490	6.53				8.25	7.81	0.44			

Blank value > PQL and < retest limit (30X detection limit).
Blank value > retest limit (30X detection limit).

Table C-16: Quality Assurance / Quality Control High/Low Action Record 2009-2011

Date of Action	Parameter Information					Action
	Station	Analyte	Date	Result	Units	
28/05/2011	V22	Fe	19-Mar-09	52.2	mg/L	Added "Value is high" result flag in emLine.
28/05/2011	V22	Fe-d	19-Mar-09	43.5	mg/L	Added "Value is high" result flag in emLine.
28/05/2011	V22	Mg	19-Mar-09	145	mg/L	Added "Value is high" result flag in emLine.
28/05/2011	V22	Mg-d	19-Mar-09	138	mg/L	Added "Value is high" result flag in emLine.
28/05/2011	V22	Ni-d	19-Mar-09	0.789	mg/L	Added "Value is high" result flag in emLine.
21/06/2011	V22	S	8-Apr-09	364	mg/L	Added "Value is high" result flag in emLine.
07/07/2011	V2	Mn	6-May-09	0.197	mg/L	Added "Value is high" result flag in emLine.
07/07/2011	V2	Mn-d	6-May-09	0.172	mg/L	Added "Value is high" result flag in emLine.
07/07/2011	V2	Zn-d	6-May-09	0.518	mg/L	Added "Value is high" result flag in emLine.
07/07/2011	LCD	Ba-d	4-May-09	0.054	mg/L	Added "Value is high" result flag in emLine.
07/07/2011	V2	S-d	8-Apr-09	364	mg/L	Removed "Value is high" result flag in emLine; flagged value corroborated.
09/07/2011						May 2009 data posted in emLine (March, April data posted earlier).
14/07/2011	V22	TSS	15-Jun-09	62	mg/L	Added "Value is high" result flag in emLine.
14/07/2011	V22	Mg-d	19-Mar-09	138	mg/L	Removed "Value is high" result flag in emLine; flagged value corroborated.
14/07/2011	V22	Pb	15-Jun-09	0.459	mg/L	Added "Value is high" result flag in emLine.
14/07/2011	V22	Pb-d	15-Jun-09	0.703	mg/L	Added "Value is high" result flag in emLine.
14/07/2011	V22	Fe-d	19-Mar-09	43.5	mg/L	Removed "Value is high" result flag in emLine; flagged value corroborated.
14/07/2011						June 2009 data posted in emLine.
16/07/2011	V24	TSS	26-Jul-09	19	mg/L	Added "Value is high" result flag in emLine.
16/07/2011	V25	COND	12-Jul-09	343	uS/cm	Added "Value is low" result flag in emLine.
16/07/2011	V25	Al	19-Jul-09	0.878	mg/L	Added "Value is high" result flag in emLine.
16/07/2011	V25 BSP	K	13-Jul-09	10.4	mg/L	Added "Value is high" result flag in emLine.
16/07/2011	V25 BSP	Li	13-Jul-09	0.155	mg/L	Added "Value is high" result flag in emLine.
16/07/2011	V25 BSP	Mg	13-Jul-09	202	mg/L	Added "Value is high" result flag in emLine.
16/07/2011	V25 BSP	Na	13-Jul-09	17.2	mg/L	Added "Value is high" result flag in emLine.
16/07/2011	V25 BSP	S	13-Jul-09	1920	mg/L	Added "Value is high" result flag in emLine.
16/07/2011	V25 BSP	Sr	13-Jul-09	5.3	mg/L	Added "Value is high" result flag in emLine.
16/07/2011	V25 BSP	Ca	13-Jul-09	1670	mg/L	Added "Value is high" result flag in emLine.
16/07/2011	V27	Ca-d	13-Jul-09	133	mg/L	Added "Value is high" result flag in emLine.
16/07/2011	V2A	S-d	29-Jul-09	545	mg/L	Added "Value is high" result flag in emLine.
16/07/2011						July 2009 data posted in emLine.
18/07/2011	V2	CONDF	25-Aug-09	2230	µS/cm	Added "Value is high" result flag in emLine.
18/07/2011	V24	As-d	2-Aug-09	3.7	µg/L	Added "Value is high" result flag in emLine.
19/07/2011						August 2009 data posted in emLine.
31/07/2011	LCD	Al	10-Sep-09	26.1	mg/L	Added "Value is high" result flag in emLine.
31/07/2011	LCD	Cd	10-Sep-09	1.23	mg/L	Added "Value is high" result flag in emLine.
31/07/2011	LCD	Co	10-Sep-09	5.06	mg/L	Added "Value is high" result flag in emLine.
31/07/2011	LCD	Cu	10-Sep-09	0.38	mg/L	Added "Value is high" result flag in emLine.
31/07/2011	LCD	Fe	10-Sep-09	462	mg/L	Added "Value is high" result flag in emLine.
31/07/2011	LCD	Mg	10-Sep-09	1240	mg/L	Added "Value is high" result flag in emLine.
31/07/2011	LCD	Mn	10-Sep-09	654	mg/L	Added "Value is high" result flag in emLine.
31/07/2011	LCD	Ni	10-Sep-09	3.82	mg/L	Added "Value is high" result flag in emLine.
31/07/2011	LCD	S	10-Sep-09	3720	mg/L	Added "Value is high" result flag in emLine.
31/07/2011	LCD	Sr	10-Sep-09	1.52	mg/L	Added "Value is high" result flag in emLine.
31/07/2011	LCD	TSS	10-Sep-09	62	mg/L	Added "Value is high" result flag in emLine.
31/07/2011	LCD	U	10-Sep-09	0.087	mg/L	Added "Value is high" result flag in emLine.
31/07/2011	LCD	Zn	10-Sep-09	1770	mg/L	Added "Value is high" result flag in emLine.
01/08/2011						September 2009 data posted in emLine.
02/08/2011						October 2009 data posted in emLine.
04/08/2011						November 2009 data posted in emLine. (no result flags for November)
05/08/2011						December 2009 data posted in emLine.
07/08/2011						January 2010 data posted in emLine.
08/08/2011	V2	CONDF	3-Feb-10	825	µS/cm	Added "Value is low" result flag in emLine.
08/08/2011	V5	CONDF	18-Feb-10	1717	µS/cm	Added "Value is high" result flag in emLine.
08/08/2011						Februay 2010 data posted in emLine.

Table C-16: Quality Assurance / Quality Control High/Low Action Record 2009-2011

Date of Action	Parameter Information					Action
	Station	Analyte	Date	Result	Units	
11/08/2011	V22	Fe	4-Mar-10	98.4	mg/L	Added "Value is high" result flag in emLine.
11/08/2011	V22	Fe-d	4-Mar-10	86.3	mg/L	Added "Value is high" result flag in emLine.
11/08/2011						March 2010 data posted in emLine.
12/08/2011	V15	ORP	7-Apr-10	385	mV	Added "Value is high" result flag in emLine.
12/08/2011						April 2010 data posted in emLine.
08/09/2011						May 2010 data posted in emLine.
12/09/2011	Moose Seep	ALKPP	2-Jun-10	11	mg/L	Added "Value is high" result flag in emLine.
12/09/2011	Moose Seep	CO3	2-Jun-10	13	mg/L	Added "Value is high" result flag in emLine.
12/09/2011	Moose Seep	ALKPP	20-Jun-10	2.6	mg/L	Added "Value is high" result flag in emLine.
12/09/2011	Moose Seep	CO3	20-Jun-10	3.2	mg/L	Added "Value is high" result flag in emLine.
13/09/2011	V2	TOC	2-Jun-10	8.6	mg/L	Added "Value is high" result flag in emLine.
13/09/2011	V24	Na-d	29-Jun-10	11.3	mg/L	Added "Value is high" result flag in emLine.
13/09/2011	V2A	TOC	2-Jun-10	9.4	mg/L	Added "Value is high" result flag in emLine.
13/09/2011	V36	Temp-F	12-Jun-10	8.9	°c	Added "Value is high" result flag in emLine.
13/09/2011	V4	Cu	16-Jun-10	0.225	mg/L	Added "Value is high" result flag in emLine.
14/09/2011						June 2010 data posted in emLine.
15/09/2011	V24	As-d	13-Jul-10	0.0042	mg/L	Added "Value is high" result flag in emLine.
15/09/2011						July 2010 data posted in emLine.
16/09/2011						August 2010 data posted in emLine.
18/09/2011	SRK05-9	Ag-d	23-Sep-10	0.00027	mg/L	Added "Value is high" result flag in emLine.
18/09/2011	SRK05-9	Fe-d	23-Sep-10	0.238	mg/L	Added "Value is high" result flag in emLine.
18/09/2011	SRK05-9	K-d	23-Sep-10	11	mg/L	Added "Value is high" result flag in emLine.
18/09/2011	SRK05-9	Mn-d	23-Sep-10	0.087	mg/L	Added "Value is high" result flag in emLine.
18/09/2011						September 2010 data posted in emLine.
27/09/2011	V15	FLOW	7-Oct-10	11	L/s	Flow value changed from 11 L/s (incorrect) to 1.1 L/s (correct).
27/09/2011	LCD	Ba	5-Oct-10	0.144	mg/L	Added "Value is high" result flag in emLine.
27/09/2011	LCD	TSS	5-Oct-10	90	mg/L	Added "Value is high" result flag in emLine.
27/09/2011	V1	NH3	5-Oct-10	0.36	mg/L	Added "Value is high" result flag in emLine.
27/09/2011	V1	pH-F	5-Oct-10	5.23		Added "Value is low" result flag in emLine.
27/09/2011	V2A	CONDF	21-Oct-10	50	µS/cm	Added "Value is low" result flag in emLine.
27/09/2011	V30	Na-d	6-Oct-10	24.8	mg/L	Added "Value is high" result flag in emLine.
27/09/2011						October 2010 data posted in emLine.
28/09/2011	V2	DOC	4-Nov-10	6.3	mg/L	Added "Value is high" result flag in emLine.
28/09/2011						November 2010 data posted ini emLine.
29/09/2011	V22	CONDF	16-Dec-10	20	µS/cm	Added "Result Questionable" result flag in emLine.
29/09/2011						December 2010 data posted in emLine.
04/10/2011	V1	DOC	24-Jan-11	27.1	mg/L	Added "Value is high" result flag in emLine.
04/10/2011	V1	K-d	24-Jan-11	17.6	mg/L	Added "Value is high" result flag in emLine.
04/10/2011						January 2011 data posted in emLine.
05/10/2011	V2A	DOC	3-Feb-11	11.7	mg/L	Added "Value is high" result flag in emLine.
05/10/2011						February 2011 data posted in emLine.
06/10/2011						March 2011 data posted in emLine.
12/10/2011	V5	FLOW	21-Apr-11	16.2	L/s	Added "Value is low" result flag in emLine.
12/10/2011						April 2011 data posted in emLine.
28/11/2011	V14	Mn-d	22-May-11	0.345	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V2	Al	18-May-11	34.7	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V2	As	18-May-11	0.0881	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V2	Ba	18-May-11	0.507	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V2	Co	18-May-11	0.0762	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V2	Colour	18-May-11	100	TCU	Added "Value is high" result flag in emLine.
28/11/2011	V2	Cr	18-May-11	0.076	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V2	Cu	18-May-11	0.179	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V2	Fe	18-May-11	72.3	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V2	K	18-May-11	8	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V2	Li	18-May-11	57	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V2	Mn	18-May-11	1.8	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V2	Ni	18-May-11	0.185	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V2	NO2	18-May-11	0.037	mg/L	Added "Value is high" result flag in emLine.

Table C-16: Quality Assurance / Quality Control
High/Low Action Record 2009-2011

Date of Action	Parameter Information					Action
	Station	Analyte	Date	Result	Units	
28/11/2011	V2	Pb	18-May-11	0.819	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V2	Si	18-May-11	40.5	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V2	Ti	18-May-11	0.563	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V2	TSS	18-May-11	2600	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V2	TURB	18-May-11	1052	NTU	Added "Value is high" result flag in emLine.
28/11/2011	V2	V	18-May-11	0.075	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V2	Zn	18-May-11	1.93	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V20	Al	19-May-11	6.38	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V20	Co	19-May-11	0.0124	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V20	Cr	19-May-11	0.0321	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V20	Fe	19-May-11	12	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V20	K	19-May-11	2.1	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V20	K-d	19-May-11	1.63	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V20	Li	19-May-11	0.0087	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V20	Mn	19-May-11	0.404	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V20	Ni	19-May-11	0.04	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V20	Pb	19-May-11	0.0694	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V20	Ti	19-May-11	0.094	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V20	TSS	19-May-11	400	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V20	V	19-May-11	0.0132	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V2A	Al	19-May-11	12.8	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V2A	Al-d	25-May-11	0.131	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V2A	Cu	19-May-11	0.06	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V2A	Fe	19-May-11	27.3	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V2A	Pb	19-May-11	0.388	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V2A	Ti	19-May-11	0.213	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V2A	TSS	19-May-11	940	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V2A	TURB	19-May-11	523	NTU	Added "Value is high" result flag in emLine.
28/11/2011	V5	Al	18-May-11	25.1	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V5	Ba	18-May-11	0.599	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V5	Co	18-May-11	0.0257	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V5	Cr	18-May-11	0.06	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V5	Cu	18-May-11	0.076	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V5	Fe	18-May-11	42.4	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V5	FLOW	18-May-11	1153.6	L/s	Added "Value is high" result flag in emLine.
28/11/2011	V5	K	18-May-11	5	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V5	Li	18-May-11	0.04	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V5	Mn	18-May-11	1.16	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V5	Ni	18-May-11	0.0873	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V5	Pb	18-May-11	0.0633	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V5	Si	18-May-11	36.3	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V5	Ti	18-May-11	0.456	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V5	TSS	18-May-11	1600	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V5	TURB	18-May-11	730	NTU	Added "Value is high" result flag in emLine.
28/11/2011	V5	V	18-May-11	0.058	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V8	Al	18-May-11	18.6	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V8	Al-d	18-May-11	0.812	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V8	Ba	18-May-11	0.461	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V8	Cr	18-May-11	0.046	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V8	Fe	18-May-11	33	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V8	Fe-d	18-May-11	1.06	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V8	FLOW	18-May-11	2685.5	L/s	Added "Value is high" result flag in emLine.
28/11/2011	V8	Li	18-May-11	0.032	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V8	Mn	18-May-11	1.13	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V8	Ni	18-May-11	0.0729	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V8	Pb	18-May-11	0.0821	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V8	Si	18-May-11	28.4	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V8	Ti	18-May-11	0.364	mg/L	Added "Value is high" result flag in emLine.

Table C-16: Quality Assurance / Quality Control High/Low Action Record 2009-2011

Date of Action	Parameter Information					Action
	Station	Analyte	Date	Result	Units	
28/11/2011	V8	Ti-d	18-May-11	0.0158	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V8	TSS	18-May-11	1500	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V8	TURB	18-May-11	683	NTU	Added "Value is high" result flag in emLine.
28/11/2011	V8	V	18-May-11	0.045	mg/L	Added "Value is high" result flag in emLine.
28/11/2011	V8	Zn	18-May-11	0.261	mg/L	Added "Value is high" result flag in emLine.
28/11/2011						May 2011 data posted in emLine.
30/11/2011	P2001-2A	Al-d	11-Jun-11	0.421	mg/L	Added "Value is high" result flag in emLine.
30/11/2011	P2001-2A	Pb-d	11-Jun-11	0.0177	mg/L	Added "Value is high" result flag in emLine.
30/11/2011	P2001-2A	Zn-d	11-Jun-11	0.0183	mg/L	Added "Value is high" result flag in emLine.
30/11/2011	V22	U-d	28-Jun-11	0.0097	mg/L	Added "Value is high" result flag in emLine.
30/11/2011	V30	Al-d	28-Jun-11	0.175	mg/L	Added "Value is high" result flag in emLine.
30/11/2011	V31	pH-F	28-Jun-11	2.6		Added "Value is low" result flag in emLine.
30/11/2011	V31	Temp-F	28-Jun-11	19.4	°c	Added "Value is high" result flag in emLine.
30/11/2011						June 2011 data posted in emLine.
01/12/2011	MOOSE SEEP	Mn-d	5-Jul-11	0.0305	mg/L	Added "Value is high" result flag in emLine.
01/12/2011	V24	Al	7-Jul-11	6.06	mg/L	Added "Value is high" result flag in emLine.
01/12/2011	V24	As	19-Jul-11	0.0096	mg/L	Added "Value is high" result flag in emLine.
01/12/2011	V25	NH3	26-Jul-11	1.4	mg/L	Added "Value is high" result flag in emLine.
01/12/2011	V8	pH-F	13-Jul-11	5.98		Added "Value is low" result flag in emLine.
01/12/2011						July 2011 data posted in emLine.
05/12/2011						August 2011 data posted in emLine.
09/01/2012	V25	Zn	20-Sep-11	1.49	mg/L	Added "Value is high" result flag in emLine.
09/01/2012	V25	Zn-d	20-Sep-11	0.258	mg/L	Added "Value is high" result flag in emLine.
09/01/2012	V25BSP	NH3	20-Sep-11	1.4	mg/L	Added "Value is high" result flag in emLine.
09/01/2012						September 2011 data posted in emLine.
16/01/2012	P2001-2A	CONDF	12-Oct-11	2880	µS/cm	Added "Value is high" result flag in emLine.
16/01/2012	P2001-2B	CONDF	6-Oct-11	2788	µS/cm	Added "Value is high" result flag in emLine.
16/01/2012	P2001-3	CONDF	17-Oct-11	1450	µS/cm	Added "Value is high" result flag in emLine.
16/01/2012	P2001-3	Al-d	17-Oct-11	0.245	mg/L	Added "Value is high" result flag in emLine.
16/01/2012	SRK05-5C	Cu-d	4-Oct-11	0.0178	mg/L	Added "Value is high" result flag in emLine.
16/01/2012	V30	pH-F	17-Oct-11	7.68		Added "Value is high" result flag in emLine.
16/01/2012	V32	Ca-d	17-Oct-11	602	mg/L	Added "Value is high" result flag in emLine.
16/01/2012	V37	CONDF	12-Oct-11	1598	µS/cm	Added "Value is high" result flag in emLine.
16/01/2012	V37	Zn-d	12-Oct-11	0.0926	mg/L	Added "Value is high" result flag in emLine.
16/01/2012						Posted October 2011 results in emLine.
17/01/2012	V1	NO2	23-Nov-11	0.009	mg/L	Added "Value is high" result flag in emLine.
17/01/2012	V1	NO2/3	23-Nov-11	6.52	mg/L	Added "Value is high" result flag in emLine.
17/01/2012	V1	NO3	23-Nov-11	6.51	mg/L	Added "Value is high" result flag in emLine.
17/01/2012	V27	K-d	24-Nov-11	2.42	mg/L	Added "Value is high" result flag in emLine.
17/01/2012						Posted November 2011 results in emLine.
30/01/2012						Posted December 2011 results in emLine.

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Table D-1: Summary of Historic and 2011 Water Use from the Rose Creek Drainage

Faro Mine Closure

Water Use[3]	Maximum Rate (m³/day)	Total (million m³)
Zone II Pit Pumping		
2008	1,417	0.07
2009	1,831	0.10
2010	1,323	0.07
2011	933	0.06
Faro Pit Pumping		
2008	15,528	2.27
2009	26,784	2.13
2010	19,750	2.01
2011	14,908	1.76
Intermediate Pond		
2008	21,774	2.00
2009	18,870	1.76
2010	10,103	1.16
2011	9,518	1.19
S-Wells Area		
2009	243	0.05
2010	214	0.07
2011	335	0.07
Emergency Tailings Area (to Mill)[1]		
2010	453	0.03
2011	646	0.08
Drinking Water Well		
2011		0.01
Total Estimated Water Use		
2008	38,719	4.3
2009	47,728	4.0
2010	31,390	3.3
2011	**26,340**	**3.2**
Total Allowable	**65,465**	**4.1** [2]

1. Water pumped from Emergency Tailing Area (ETA) to Faro Treatment Plant via new pumping system is shown here. ETA water that was diverted to the Intermediate Pond is accounted for in the Intermediate Pond water use and is therefore not shown as a separate water use.

2. *As suggested in the historic Water Licence Application Report.*

3. *Historic Water Use as reported in previous annual reports.*

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Table D-2: 2011 Water Volumes Moved

Faro Mine Closure

Total Water Discharged (m^3)								
Month	ETA to Mill	X5	Faro Pit Totalizer	I.P. Totalizer	Zone II Discharge	L.C.D. to Van. Pit	Van. Pit to G.T.P.	SRK08-SPW3
January	0	0	0	0	0	0	0	5203
February	0	0	0	0	0	0	0	4740
March	0	38941	0	0	0	0	0	5983
April	0	319211	15709	80903	0	0	0	4898
May	7032	869251	318279	226751	12717	26526	0	10400
June	19323	727214	257792	202586	27990	2999	45839	6750
July	20040	774015	433796	295069	0	16971	239516	6824
August	17943	959738	462145	251024	10674	0	0	6077
September	11403	939081	270843	133910	7037	10578	98265	6136
October	0	0	0	0	0	0	0	4891
November	0	186521	0	0	0	0	0	5049
December	0	109861	0	0	0	0	0	5707
Total	75741	4923834	1758564	1190243	58419	57074	383620	72658

Table D-3: Precipitation at Faro Airport - 1978 to 2011

Year	Jan (mm)	Feb (mm)	Mar (mm)	Apr (mm)	May (mm)	Jun (mm)	Jul (mm)	Aug (mm)	Sep (mm)	Oct (mm)	Nov (mm)	Dec (mm)	Total (mm)
1978	0.4	**miss.**	trace	4.1	11.6	27	38.1	41.6	7.8	32.4	20.2	19	
1979	8.9	18.3	20.2	6.7	10.5	68.2	55.4	13.8	13.4	11.6	12.4	34.4	273.8
1980	19.7	2.4	11.7	12.5	10.5	11.1	95.4	33.2	46.7	**miss.**	21.3	13.3	
1981	6.5	23.1	4	4.5	7.8	42.8	41.3	22.5	41.9	21.5	17	5.4	238.3
1982	10.2	18	9.5	4.1	18.2	14.3	58.3	47.3	47.2	42.3	11.8	13.6	294.8
1983	35.7	6.6	9.8	2.2	20.6	55.6	49.1	65.8	21.2	16.3	11.4	3.9	298.2
1984	27.6	24.1	5.9	2.4	38.8	49	16.6	64.9	5.5	10.8	10.7	22.5	278.8
1985	22.5	24.8	2.2	13.8	17.2	28.1	62.6	80.8	46.3	20	22.2	26.1	366.6
1986	8.4	4.7	34.6	12.9	35.1	12.8	81.8	77.4	44.4	22.7	15.9	5.6	356.3
1987	3.1	14	2.8	10	40.1	50.8	92.4	63.5	30.2	26.6	17.8	6.2	357.5
1988	7	10.4	17.2	8.2	38	37.3	97.2	25.5	43.8	29	17.9	16.5	348
1989	19.8	3.6	19.8	2	17.9	41	51.7	16.9	30.8	46.3	39.8	13.8	303.4
1990	14.4	25.8	5	7	23.4	45.4	30	64.4	66.2	22.7	25.4	24.8	354.5
1991	17.2	22.6	16.6	2.8	22.4	30.2	115.4	33	48.2	49.6	43.4	40	441.4
1992	22.8	24.6	7.6	15.8	14.4	11.4	66.1	34.4	47.8	13.8	18.8	13	290.5
1993	22.2	15	1.6	6	76.7	48.6	50.2	56	50.8	35.7	**miss.**	**miss.**	
1994	20.2	8.4	11.4	5	39.8	24.2	19.6	25.2	45.6	41.6	24.4	8	273.4
1995	8.4	7.8	18.4	5.2	10.9	33.9	73.4	63.4	28.8	12.2	22.3	15.4	300.1
1996	10.2	9.1	27.1	7.2	13.4	20	64.4	70.8	52.7	34.8	3.5	5.9	319.1
1997	6.6	8.7	1.4	14	16.5	39.3	86.4	33.2	trace	25.2	6.4	12.4	250.1
1998	7	2.8	4.8	4.2	14.4	29.6	19.2	24.2	23.4	24	4.6	8.2	166.4
1999	24.4	10	15.4	1.8	44.4	64.8	42	33.8	27	22.4	12.8	21.6	320.4
2000	12.2	2	trace	6	9.6	39.6	48.1	116.2	102.2	8.6	19.4	5.8	369.7
2001	7.4	3	4	14.6	30.8	35	58.4	14.2	44.6	28.6	12.2	15.4	268.2
2002	9.2	5.8	9	7	19.6	19.4	34.9	64.1	38.4	18.2	9.6	9.4	244.6
2003	22.4	8	16	0.4	7.6	45.2	63.2	30.4	30.8	12.8	32.8	19.9	289.5
2004	31.1	11.4	45	4	15.6	34	13.5	38	48.5	33.6	9.8	45	329.5
2005	26.7	12.4	2.6	19.5	58.6	41	83.8	38.6	36.6	13	30	10.8	373.6
2006	11	7	18.5	21.6	16.2	38	33.4	33.3	35.6	21	33.1	8.3	277
2007	16.4	16.4	14.4	3.6	11.4	52	43.5	33.5	50.7	39.6	13.4	28	322.9
2008	**miss.**	**miss.**	**miss.**	**miss.**	**miss.**	68.6	74.8	99	27.2	**miss.**	**miss.**	**miss.**	
2009	**miss.**	15.4	20.3	20.4	19.9	26.1	16.8	62.4	28.2	**miss.**	**miss.**	**miss.**	
2010	20.3	5.6	9	3.4	15	45.6	37.4	29	30.8	16.4	29.2	12.8	254.5
2011	9.5	9.8	0	4.4	6.8	74.2	51.1	55.8	28.8	12.4	15.8	31.4	300
Max	**35.7**	**25.8**	**45**	**21.6**	**76.7**	**74.2**	**115.4**	**116.2**	**102.2**	**49.6**	**43.4**	**45**	**441.4**
Year	1983	1990	2004	2005	1993	2011	1991	2000	2000	1991	1991	2004	1991
Mean	**15.3**	**11.9**	**12.4**	**7.8**	**22.8**	**38.4**	**54.9**	**47.2**	**38.5**	**24.7**	**18.9**	**16.7**	**305.6**
Min	**0.4**	**2**	**0**	**0.4**	**6.8**	**11.1**	**13.5**	**13.8**	**5.5**	**8.6**	**3.5**	**3.9**	**166.4**
Year	1978	2000	2011	2003	2011	1980	2004	1979	1997	2000	1996	1983	1998
St.Dev.	8.7	7.4	10.2	5.8	15.9	16.5	25.8	24.3	17.7	11.4	9.8	10.6	164.1

Data from 1978 to 2008 compiled by BGC Engineering Inc. Subsequent data compiled by Denison Environmental Services.

For some months in 2008/2009, the Faro Airport had technical difficulties with instrumentation, such that in each case the data is incomplete.

Table D-4: Rose Creek Drainage
2011 Open Channel Flows

Site	Water Type	Requested Flow Frequency	Date	Flow (L/s)	Flow Type	Staff Gauge at Site	Comments
A30	Seepage	M	6-Jan-11	1.75	Estimate	N	
			14-Feb-11	1.75	Estimate		
			14-Mar-11	0.75	Estimate		
			14-Apr-11	0.80	Estimate		
			12-May-11	0.75	Estimate		
			15-Jun-11	0.88	Estimate		
			20-Jul-11	1.00	Estimate		
			24-Aug-11	0.30	Estimate		
			20-Sep-11	1.00	Estimate		
			19-Oct-11	0.25	Estimate		
			15-Nov-11	0.16	Estimate		
			7-Dec-11	0.50	Estimate		
ETA Combined	Surface	CONT	6-Jan-11	2.75	Volumetric	N	
			3-Feb-11	2.84	Volumetric		
			16-Mar-11	3.07	Volumetric		
			14-Apr-11	5.31	Volumetric		
			5-May-11	7.61	Volumetric		
			20-Jun-11	7.76	Volumetric		
			20-Jul-11	5.82	Volumetric		
			24-Aug-11	7.10	Volumetric		
			21-Sep-11	6.39	Volumetric		
			19-Oct-11	6.09	Volumetric		
			17-Nov-11	3.72	Volumetric		
			7-Dec-11		Volumetric		
FAROCR	Surface	M	20-Jan-11	-		N	No flow - no sample.
			15-Feb-11	-			Frozen - no flow - no sample.
			16-Mar-11	-			Frozen - no flow - no sample.
			12-Apr-11	-			Frozen - no flow - no sample.
			9-May-11	-			Glaciated with pooling above banks.
			22-Jun-11	542.70	In-stream		Flow measurement was taken at the same location 100 m upstream to capture entire flow.
			21-Jul-11	310.40	In-stream		
			23-Aug-11	247.90	In-stream		
			22-Sep-11	-			Insufficient water for flow.
			19-Oct-11	0.50	Estimate		
			15-Nov-11	15.00	In-stream		
			6-Dec-11	-			Flow not measured.
FCO	Surface	M, concurrent with monitoring at A30	6-Jan-11	-		N	
			14-Feb-11	-			
			14-Mar-11	-			Iced up; Overflow flowing under the snow - no sample.
			14-Apr-11	-			
			26-May-11	2.02	Estimate		Iced and jammed around weir. Flow estimated.
			15-Jun-11	-			
			20-Jul-11	-			
			24-Aug-11	-			
			20-Sep-11	-			
			27-Oct-11	1.96	V-Notch Weir		
			5-Nov-11	-			Flow not measured.
			7-Dec-11	1.15	V-Notch Weir		
FCS-4	Surface	M	6-Jan-11	2.24	V-Notch Weir	N	
			3-Feb-11	2.54	V-Notch Weir		
			16-Mar-11	2.32	V-Notch Weir		
			14-Apr-11	1.96	V-Notch Weir		
			5-May-11	20.89	V-Notch Weir		
			16-Jun-11	0.84	V-Notch Weir		
			14-Jul-11	0.88	V-Notch Weir		
			23-Aug-11	0.88	V-Notch Weir		
			21-Sep-11	4.53	V-Notch Weir		
			19-Oct-11	6.94	V-Notch Weir		
			17-Nov-11	3.99	V-Notch Weir		
			7-Dec-11	5.47	V-Notch Weir		

Denison Environmental Services

Table D-4: Rose Creek Drainage
2011 Open Channel Flows

Site	Water Type	Requested Flow Frequency	Date	Flow (L/s)	Flow Type	Staff Gauge at Site	Comments
FD-40	Seepage	M	6-Jan-11	10.00	Estimate	N	
			14-Feb-11	14.00	Estimate		
			14-Mar-11	5.00	Estimate		
			14-Apr-11	4.00	Estimate		
			12-May-11	5.00	Estimate		
			15-Jun-11	1.15	Estimate		
			20-Jul-11	3.00	Estimate		
			24-Aug-11	2.00	Estimate		
			20-Sep-11	4.20	Estimate		
			19-Oct-11	2.00	Estimate		
			15-Nov-11	1.01	Estimate		
			7-Dec-11	2.50	Estimate		
GDHSECK	Surface	3X	14-Mar-11	0.06	Estimate	N	
			26-May-11	3.77	Estimate		
			27-Oct-11	2.82	Estimate		
NF2	Surface	M	19-Jan-11	-		N	Flow not measured.
			2-Feb-11	-			Flow not measured.
			16-Mar-11	-			Flow not measured.
			13-Apr-11	240.40	In-stream		Flow probe FP111 used.
			12-May-11	-			Flow not measured.
			20-Jun-11	3042.00	In-stream		
			21-Jul-11	2939.40	In-stream		
			25-Aug-11	2244.50	In-stream		
			21-Sep-11	872.60	In-stream		
			20-Oct-11	-	In-stream		Omitted flow due to questionable results.
			14-Nov-11	856.20	In-stream		
			5-Dec-11	-			Flow not measured.
NFRC SC-1	Surface	M	14-Nov-11	-		N	Flow not measured.
			5-Dec-11	-			Flow not measured.
NFRC SC-2	Surface	M	14-Nov-11	-	Estimate	Y	Flow not measured.
			5-Dec-11	-	In-stream		Flow not measured. Staff gauge frozen, no reading taken.
NFRC SC-3	Surface	M	14-Nov-11	793.80	Estimate	N	
			5-Dec-11	-	In-stream		Flow not measured.
NFRC SC-4	Surface	M	14-Nov-11	798.30	In-stream	N	
			5-Dec-11	-	In-stream		Flow not measured.
NWID	Surface	M	25-Oct-11	7.40	In-stream	N	
			5-Nov-11	-	Estimate		Flow not measured.
			5-Dec-11	-	Estimate		Flow not measured.
R10	Surface	M	20-Jan-11	-		N	Flow not measured.
			15-Feb-11	-			Flow not measured.
			16-Mar-11	-			Flow not measured.
			12-Apr-11	-			No flow taken - water backed up and not moving fast enough to measure.
			9-May-11	-			Ice jam downstream, water backed up about 200m past R10. Sample taken in cleared area of ice and slush. Sediment in sample.
			22-Jun-11	-			High water level. Water flowing too fast to perform an in-stream flow.
			21-Jul-11	2748.80	In-stream		
			23-Aug-11	2367.40	In-stream		
			22-Sep-11	1443.00	In-stream		
			19-Oct-11	-	In-stream		Omitted flow due to questionable results.
			16-Nov-11	-	In-stream		Omitted flow due to questionable results.
			6-Dec-11	-			Flow not measured.
R7	Surface	CONT	20-Jan-11	-		Y	Flow not measured.
			15-Feb-11	-			Flow not measured.
			16-Mar-11	-			Flow not measured.
			12-Apr-11	69.60	In-stream		Flow probe FP111 used.
			9-May-11	339.60	In-stream		
			22-Jun-11	-			High water level. Flowing too fast to perform an in-stream flow.
			21-Jul-11	1954.00	In-stream		
			24-Aug-11	3238.40	In-stream		Staff Gauge 0.828m.
			22-Sep-11	772.20	In-stream		
			19-Oct-11	-	In-stream		Omitted flow due to questionable results.
			15-Nov-11	544.40	In-stream		
			6-Dec-11	-			Flow not measured.

Table D-4: Rose Creek Drainage
2011 Open Channel Flows

Site	Water Type	Requested Flow Frequency	Date	Flow (L/s)	Flow Type	Staff Gauge at Site	Comments
R8	Surface	M	20-Jan-11	-		N	Flow not measured.
			15-Feb-11	-			Flow not measured.
			16-Mar-11	-			Flow not measured.
			12-Apr-11	125.60	In-stream		
			9-May-11	356.60	In-stream		
			22-Jun-11	5459.90	In-stream		High water level.
			21-Jul-11	2645.40	In-stream		
			24-Aug-11	3222.40	In-stream		
			22-Sep-11	-			Too shallow and rocks to get a proper flow.
			19-Oct-11	-	In-stream		Omitted flow due to questionable results.
			15-Nov-11	-			Flow not measured.
			6-Dec-11	-			Flow not measured.
R9	Surface	M	20-Jan-11	-		N	Flow not measured.
			15-Feb-11	-			Flow not measured.
			16-Mar-11	-			Flow not measured.
			12-Apr-11	35.23	In-stream		Ice conditions and low water velocity probable cause for underestimation of flow
			9-May-11	423.30	In-stream		
			22-Jun-11	5235.20	In-stream		High water level.
			21-Jul-11	2994.10	In-stream		
			23-Aug-11	2454.30	In-stream		
			22-Sep-11	639.50	In-stream		High water level.
			19-Oct-11	-	In-stream		Omitted flow due to questionable results.
			16-Nov-11	-			Flow not measured.
			6-Dec-11	-			Flow not measured.
SP5-6	Seepage	SF	28-Jun-11	0.17	Estimate	N	Weir needs repair - water flowing underneath.
			18-Oct-11	0.77	Estimate		

Table D-4: Rose Creek Drainage
2011 Open Channel Flows

Site	Water Type	Requested Flow Frequency	Date	Flow (L/s)	Flow Type	Staff Gauge at Site	Comments
Weir 3	Seepage	W	6-Jan-11	1.70	V-Notch Weir	Y	
			12-Jan-11	-	V-Notch Weir		Weather conditions unsuitable for field work.
			20-Jan-11	1.64	V-Notch Weir		
			27-Jan-11	1.77	V-Notch Weir		
			3-Feb-11	2.10	V-Notch Weir		Sample taken early to coincide with Rose Creek Aquifer - Down Valley Isotope Study.
			9-Feb-11	1.83	V-Notch Weir		
			16-Feb-11	1.90	V-Notch Weir		
			24-Feb-11	1.64	V-Notch Weir		
			3-Mar-11	1.83	V-Notch Weir		
			9-Mar-11	2.32	V-Notch Weir		
			17-Mar-11	2.24	V-Notch Weir		
			24-Mar-11	2.24	V-Notch Weir		
			31-Mar-11	2.17	V-Notch Weir		
			7-Apr-11	2.39	V-Notch Weir		
			13-Apr-11	1.96	V-Notch Weir		
			21-Apr-11	2.17	V-Notch Weir		
			28-Apr-11	2.03	V-Notch Weir		
			5-May-11	0.13	V-Notch Weir		
			12-May-11	2.17	V-Notch Weir		
			20-May-11	2.62	V-Notch Weir		
			26-May-11	2.10	V-Notch Weir		
			2-Jun-11	2.03	V-Notch Weir		
			9-Jun-11	2.39	V-Notch Weir		
			16-Jun-11	2.47	V-Notch Weir		Sheen present.
			23-Jun-11	2.70	V-Notch Weir		
			29-Jun-11	3.31	V-Notch Weir		
			7-Jul-11	2.79	V-Notch Weir		
			14-Jul-11	3.69	V-Notch Weir		
			21-Jul-11	3.50	V-Notch Weir		
			28-Jul-11	3.31	V-Notch Weir		
			4-Aug-11	3.31	V-Notch Weir		
			11-Aug-11	1.53	V-Notch Weir		
			18-Aug-11	3.59	V-Notch Weir		
			25-Aug-11	2.87	V-Notch Weir		
			1-Sep-11	2.87	V-Notch Weir		
			8-Sep-11	2.79	V-Notch Weir		
			15-Sep-11	2.70	V-Notch Weir		
			22-Sep-11	2.39	V-Notch Weir		
			29-Sep-11	2.47	V-Notch Weir		
			6-Oct-11	-	V-Notch Weir		Flow not measured.
			13-Oct-11	1.64	V-Notch Weir		
			20-Oct-11	2.17	V-Notch Weir		
			27-Oct-11	1.96	V-Notch Weir		
			3-Nov-11	1.58	V-Notch Weir		
			9-Nov-11	1.77	V-Notch Weir		
			17-Nov-11	1.77	V-Notch Weir		
			24-Nov-11	1.90	V-Notch Weir		
			1-Dec-11	2.24	V-Notch Weir		
			7-Dec-11	2.17	V-Notch Weir		
			15-Dec-11	1.83	V-Notch Weir		
			22-Dec-11	-	V-Notch Weir		Flow not measured - site shutdown.
			29-Dec-11	-	V-Notch Weir		Flow not measured - site shutdown.
X10	Surface	M	18-Jan-11	-		Y	Flow not measured.
			1-Feb-11	-			Flow not measured.
			14-Mar-11	-			Flow not measured.
			13-Apr-11	104.38	In-stream		Ice conditions and low water velocity probable cause of underestimation of flow.
			5-May-11	233.50	In-stream		Measured using SonTek Flow Meter.
			20-Jun-11	6231.10	In-stream		
			14-Jul-11	4700.20	In-stream		
			24-Aug-11	4454.00	In-stream		Staff Gauge 0.480m.
			21-Sep-11	1146.60	In-stream		Staff Gauge 0.366m.
			20-Oct-11	742.00	In-stream		
			15-Nov-11	-			Flow not measured.
			6-Dec-11	-			Flow not measured. Staff gauge frozen - reading not taken.

Table D-4: Rose Creek Drainage
2011 Open Channel Flows

Site	Water Type	Requested Flow Frequency	Date	Flow (L/s)	Flow Type	Staff Gauge at Site	Comments
X11	Seepage	W	6-Jan-11	5.35	V-Notch Weir	Y	
			12-Jan-11	-	V-Notch Weir		Weather conditions unsuitable for field work.
			20-Jan-11	4.99	V-Notch Weir		
			27-Jan-11	5.35	V-Notch Weir		
			3-Feb-11	2.10	V-Notch Weir		Sample taken early to coincide with Rose Creek Aquifer - Down Valley Isotope Study.
			9-Feb-11	6.25	V-Notch Weir		
			16-Feb-11	5.85	V-Notch Weir		
			24-Feb-11	6.11	V-Notch Weir		
			3-Mar-11	5.85	V-Notch Weir		
			9-Mar-11	6.80	V-Notch Weir		
			17-Mar-11	6.94	V-Notch Weir		
			24-Mar-11	7.09	V-Notch Weir		
			31-Mar-11	6.94	V-Notch Weir		
			7-Apr-11	6.80	V-Notch Weir		
			13-Apr-11	5.85	V-Notch Weir		
			21-Apr-11	5.35	V-Notch Weir		
			28-Apr-11	4.87	V-Notch Weir		
			5-May-11	5.47	V-Notch Weir		
			12-May-11	5.98	V-Notch Weir		
			20-May-11	6.38	V-Notch Weir		
			26-May-11	5.98	V-Notch Weir		
			2-Jun-11	6.25	V-Notch Weir		
			9-Jun-11	5.35	V-Notch Weir		
			16-Jun-11	5.22	V-Notch Weir		
			23-Jun-11	5.85	V-Notch Weir		
			29-Jun-11	7.68	V-Notch Weir		
			7-Jul-11	6.38	V-Notch Weir		
			14-Jul-11	7.38	V-Notch Weir		
			21-Jul-11	7.23	V-Notch Weir		
			28-Jul-11	7.53	V-Notch Weir		
			4-Aug-11	8.15	V-Notch Weir		
			11-Aug-11	7.23	V-Notch Weir		
			18-Aug-11	7.99	V-Notch Weir		
			25-Aug-11	8.15	V-Notch Weir		
			1-Sep-11	7.23	V-Notch Weir		
			8-Sep-11	7.83	V-Notch Weir		
			15-Sep-11	7.68	V-Notch Weir		
			22-Sep-11	6.80	V-Notch Weir		
			29-Sep-11	5.72	V-Notch Weir		
			6-Oct-11	-	V-Notch Weir		Flow not measured.
			13-Oct-11	2.56	V-Notch Weir		
			20-Oct-11	4.53	V-Notch Weir		
			27-Oct-11	4.64	V-Notch Weir		
			3-Nov-11	3.89	V-Notch Weir		
			9-Nov-11	4.53	V-Notch Weir		
			17-Nov-11	3.13	V-Notch Weir		
			24-Nov-11	5.47	V-Notch Weir		
			1-Dec-11	5.22	V-Notch Weir		
			7-Dec-11	5.10	V-Notch Weir		
			15-Dec-11	4.31	V-Notch Weir		
			22-Dec-11	-	V-Notch Weir		Flow not measured - site shutdown.
			29-Dec-11	-	V-Notch Weir		Flow not measured - site shutdown.

Table D-4: Rose Creek Drainage
2011 Open Channel Flows

Site	Water Type	Requested Flow Frequency	Date	Flow (L/s)	Flow Type	Staff Gauge at Site	Comments
X12	Seepage	W	6-Jan-11	0.10	V-Notch Weir	Y	
			12-Jan-11	-	V-Notch Weir		Weather conditions unsuitable for field work.
			20-Jan-11	0.06	V-Notch Weir		
			27-Jan-11	0.07	V-Notch Weir		
			3-Feb-11	0.03	V-Notch Weir		Sample taken early to coincide with Rose Creek Aquifer - Down Valley Isotope Study
			9-Feb-11	0.10	V-Notch Weir		
			16-Feb-11	0.07	V-Notch Weir		
			24-Feb-11	0.13	V-Notch Weir		
			3-Mar-11	0.11	V-Notch Weir		
			9-Mar-11	0.09	V-Notch Weir		
			17-Mar-11	0.09	V-Notch Weir		
			24-Mar-11	0.21	V-Notch Weir		
			31-Mar-11	0.11	V-Notch Weir		
			7-Apr-11	0.09	V-Notch Weir		
			13-Apr-11	0.16	V-Notch Weir		
			21-Apr-11	0.09	V-Notch Weir		
			28-Apr-11	0.13	V-Notch Weir		
			5-May-11	2.03	V-Notch Weir		
			12-May-11	0.21	V-Notch Weir		
			20-May-11	0.44	V-Notch Weir		
			26-May-11	0.21	V-Notch Weir		
			2-Jun-11	0.29	V-Notch Weir		
			9-Jun-11	0.10	V-Notch Weir		
			16-Jun-11	0.34	V-Notch Weir		
			23-Jun-11	0.69	V-Notch Weir		
			29-Jun-11	0.69	V-Notch Weir		
			7-Jul-11	0.55	V-Notch Weir		
			14-Jul-11	0.72	V-Notch Weir		
			21-Jul-11	0.62	V-Notch Weir		
			28-Jul-11	0.62	V-Notch Weir		
			4-Aug-11	0.59	V-Notch Weir		
			11-Aug-11	0.49	V-Notch Weir		
			18-Aug-11	0.55	V-Notch Weir		
			25-Aug-11	0.52	V-Notch Weir		
			1-Sep-11	0.46	V-Notch Weir		
			8-Sep-11	0.44	V-Notch Weir		
			15-Sep-11	0.44	V-Notch Weir		
			22-Sep-11	0.36	V-Notch Weir		
			29-Sep-11	0.31	V-Notch Weir		
			6-Oct-11	-	V-Notch Weir		Flow not measured.
			13-Oct-11	0.08	V-Notch Weir		
			20-Oct-11	0.07	V-Notch Weir		
			27-Oct-11	0.15	V-Notch Weir		
			3-Nov-11	0.06	V-Notch Weir		
			9-Nov-11	0.06	V-Notch Weir		
			17-Nov-11	0.09	V-Notch Weir		
			24-Nov-11	0.13	V-Notch Weir		
			1-Dec-11	0.27	V-Notch Weir		
			7-Dec-11	0.18	V-Notch Weir		
			15-Dec-11	0.12	V-Notch Weir		
			22-Dec-11	-	V-Notch Weir		Flow not measured - site shutdown.
			29-Dec-11	-	V-Notch Weir		Flow not measured - site shutdown.

Table D-4: Rose Creek Drainage
2011 Open Channel Flows

Site	Water Type	Requested Flow Frequency	Date	Flow (L/s)	Flow Type	Staff Gauge at Site	Comments
X13	Seepage	W	6-Jan-11	14.46	Broad-Crested Weir	Y	
			12-Jan-11	12.45	Broad-Crested Weir		
			20-Jan-11	16.58	Broad-Crested Weir		
			27-Jan-11	11.96	Broad-Crested Weir		
			3-Feb-11	11.00	Broad-Crested Weir		
			9-Feb-11	11.48	Broad-Crested Weir		
			16-Feb-11	13.09	Broad-Crested Weir		
			24-Feb-11	14.98	Broad-Crested Weir		
			3-Mar-11	13.44	Broad-Crested Weir		
			9-Mar-11	15.51	Broad-Crested Weir		
			17-Mar-11	15.51	Broad-Crested Weir		
			24-Mar-11	17.12	Broad-Crested Weir		
			31-Mar-11	18.22	Broad-Crested Weir		
			7-Apr-11	16.04	Broad-Crested Weir		
			13-Apr-11	13.95	Broad-Crested Weir		
			21-Apr-11	13.95	Broad-Crested Weir		
			28-Apr-11	16.58	Broad-Crested Weir		
			5-May-11	16.58	Broad-Crested Weir		
			12-May-11	19.35	Broad-Crested Weir		
			20-May-11	19.92	Broad-Crested Weir		
			26-May-11	34.51	Broad-Crested Weir		
			2-Jun-11	14.98	Broad-Crested Weir		
			9-Jun-11	18.79	Broad-Crested Weir		
			16-Jun-11	19.92	Broad-Crested Weir		Sheen present.
			23-Jun-11	18.79	Broad-Crested Weir		
			29-Jun-11	13.44	Broad-Crested Weir		
			7-Jul-11	21.67	Broad-Crested Weir		
			14-Jul-11	14.46	Broad-Crested Weir		
			21-Jul-11	23.47	Broad-Crested Weir		Oil/grease present.
			28-Jul-11	20.50	Broad-Crested Weir		
			4-Aug-11	27.52	Broad-Crested Weir		
			11-Aug-11	21.08	Broad-Crested Weir		
			18-Aug-11	27.52	Broad-Crested Weir		
			25-Aug-11	28.49	Broad-Crested Weir		
			1-Sep-11	20.50	Broad-Crested Weir		
			8-Sep-11	22.87	Broad-Crested Weir		
			15-Sep-11	20.50	Broad-Crested Weir		
			22-Sep-11	22.87	Broad-Crested Weir		
			29-Sep-11	22.87	Broad-Crested Weir		
			6-Oct-11	-	Broad-Crested Weir		Flow not measured.
			13-Oct-11	13.69	Broad-Crested Weir		
			19-Oct-11	22.87	Broad-Crested Weir		
			27-Oct-11	19.35	Broad-Crested Weir		
			3-Nov-11	13.95	Broad-Crested Weir		
			9-Nov-11	11.96	Broad-Crested Weir		
			17-Nov-11	11.96	Broad-Crested Weir		
			24-Nov-11	17.39	Broad-Crested Weir		
			1-Dec-11	16.58	Broad-Crested Weir		
			7-Dec-11	17.39	Broad-Crested Weir		
			15-Dec-11	18.79	Broad-Crested Weir		
			22-Dec-11	-	Broad-Crested Weir		Flow not measured - site shutdown.
			29-Dec-11	-	Broad-Crested Weir		Flow not measured - site shutdown.

Table D-4: Rose Creek Drainage
2011 Open Channel Flows

Site	Water Type	Requested Flow Frequency	Date	Flow (L/s)	Flow Type	Staff Gauge at Site	Comments
X14	Surface	CONT	18-Jan-11	-			Flow not measured.
			1-Feb-11	-			Flow not measured.
			14-Mar-11	-			Flow not measured.
			24-Mar-11	-			Staff Gauge Frozen.
			29-Mar-11	-			Staff Gauge Frozen.
			12-Apr-11	333.19	Staff Gauge		
			19-Apr-11	325.78	Staff Gauge		
			26-Apr-11	336.92	Staff Gauge		
			3-May-11	495.02	Staff Gauge		Staff Gauge read.
			4-May-11	352.08	Staff Gauge		Staff Gauge read.
			00:00	606.17	Staff Gauge		Staff Gauge read.
			17-May-11	1917.35	Staff Gauge		
			24-May-11	31635.94	Staff Gauge		
			31-May-11	15082.53	Staff Gauge		Staff Gauge read.
			7-Jun-11	4887.97	Staff Gauge		Staff Gauge read.
			14-Jun-11	4331.27	Staff Gauge		Staff Gauge read.
			21-Jun-11	6260.86	Staff Gauge		
			28-Jun-11	6364.47	Staff Gauge	Y	
			5-Jul-11	4918.24	Staff Gauge		
			12-Jul-11	3984.12	Staff Gauge		
			19-Jul-11	3903.05	Staff Gauge		
			26-Jul-11	3128.04	Staff Gauge		
			2-Aug-11	3055.80	Staff Gauge		
			9-Aug-11	2611.87	Staff Gauge		
			16-Aug-11	3260.70	Staff Gauge		
			23-Aug-11	3836.65	Staff Gauge		
			25-Aug-11	3587.52	Staff Gauge		
			30-Aug-11	2961.78	Staff Gauge		
			6-Sep-11	2408.73	Staff Gauge		Staff Gauge read.
			13-Sep-11	2611.87	Staff Gauge		Staff Gauge read.
			20-Sep-11	2204.14	Staff Gauge		Staff Gauge read.
			27-Sep-11	2009.01	Staff Gauge		Staff Gauge read.
			25-Oct-11	1162.10	In-stream		
			23-Nov-11	-			Staff Gauge reading: 0.68 m. No flow taken.
			29-Nov-11	-			Staff Gauge iced up - no reading taken.
			8-Dec-11	-			Flow not measured.
X2	Surface	CONT	19-Jan-11	-			Flow not measured.
			1-Feb-11	-			Flow not measured.
			16-Mar-11	-			Flow not measured.
			13-Apr-11	138.23	In-stream		Flow not measured.
			11-May-11	513.30	In-stream		Measured using SonTek Flow Meter.
			20-Jun-11	3471.90	In-stream		
			13-Jul-11	2341.00	In-stream	Y	
			25-Aug-11	-			No flow collected, flowing too fast to safely measure flow.
			21-Sep-11	-			No flow taken - flowing too fast too safely measure; SG = 0.534m.
			20-Oct-11	667.20	In-stream		
			14-Nov-11	-			Flow not measured.
			6-Dec-11	-			Flow not measured.

Table D-4: Rose Creek Drainage
2011 Open Channel Flows

Site	Water Type	Requested Flow Frequency	Date	Flow (L/s)	Flow Type	Staff Gauge at Site	Comments
X23	Seepage	W	6-Jan-11	0.00	V-Notch Weir	Y	Frozen at weir.
			12-Jan-11	0.00	V-Notch Weir		Frozen at weir.
			20-Jan-11	0.00	V-Notch Weir		Frozen at weir.
			27-Jan-11	0.00	V-Notch Weir		Frozen at weir.
			3-Feb-11	0.00	V-Notch Weir		Frozen at weir.
			10-Feb-11	0.00	V-Notch Weir		Frozen at weir.
			17-Feb-11	0.00	V-Notch Weir		Frozen at weir.
			24-Feb-11	0.00	V-Notch Weir		Frozen at weir.
			3-Mar-11	0.00	V-Notch Weir		Frozen at weir.
			9-Mar-11	0.00	V-Notch Weir		Frozen at weir.
			16-Mar-11	0.00	V-Notch Weir		Frozen at weir.
			24-Mar-11	0.00	V-Notch Weir		Frozen at weir.
			31-Mar-11	0.00	V-Notch Weir		Frozen at weir.
			7-Apr-11	0.00	V-Notch Weir		Frozen at weir.
			14-Apr-11	0.00	V-Notch Weir		Frozen at weir.
			21-Apr-11	0.00	V-Notch Weir		Frozen at weir.
			28-Apr-11	0.00	V-Notch Weir		Frozen at weir.
			4-May-11	0.00	V-Notch Weir		
			12-May-11	1.25	V-Notch Weir		
			20-May-11	1.58	V-Notch Weir		
			26-May-11	2.10	V-Notch Weir		
			2-Jun-11	2.24	V-Notch Weir		
			9-Jun-11	2.17	V-Notch Weir		
			16-Jun-11	1.64	V-Notch Weir		
			23-Jun-11	1.20	V-Notch Weir		
			29-Jun-11	1.77	V-Notch Weir		
			7-Jul-11	1.47	V-Notch Weir		
			14-Jul-11	1.47	V-Notch Weir		
			21-Jul-11	1.10	V-Notch Weir		
			28-Jul-11	1.10	V-Notch Weir		
			4-Aug-11	1.25	V-Notch Weir		
			11-Aug-11	1.06	V-Notch Weir		
			18-Aug-11	1.41	V-Notch Weir		
			24-Aug-11	1.41	V-Notch Weir		WWF completed same time as Monthly sample.
			1-Sep-11	0.97	V-Notch Weir		
			10-Sep-11	1.20	V-Notch Weir		
			15-Sep-11	1.01	V-Notch Weir		
			22-Sep-11	0.88	V-Notch Weir		
			29-Sep-11	1.10	V-Notch Weir		
			6-Oct-11		V-Notch Weir		Flow not measured.
			13-Oct-11	0.69	V-Notch Weir		
			19-Oct-11	0.92	V-Notch Weir		
			27-Oct-11	0.55	V-Notch Weir		
			3-Nov-11	0.44	V-Notch Weir		
			9-Nov-11	0.38	V-Notch Weir		
			17-Nov-11	0.34	V-Notch Weir		
			24-Nov-11	-			No flow at weir. Flow around weir estimated at 0.75 L/s.
			1-Dec-11	0.00	V-Notch Weir		Frozen at weir.
			7-Dec-11	0.00	V-Notch Weir		Frozen at weir.
			15-Dec-11	0.00	V-Notch Weir		Frozen at weir.
			22-Dec-11	-			Flow not measured - site shutdown.
			29-Dec-11	-			Flow not measured - site shutdown.
X26	Ground	CONT	26-May-11	3.98	Volumetric	N	
			15-Jun-11	5.41	Volumetric		
			3-Aug-11	20.65	Volumetric		
			27-Sep-11	-			Flow not measured - pipe hugger came apart.

Table D-4: Rose Creek Drainage
2011 Open Channel Flows

Site	Water Type	Requested Flow Frequency	Date	Flow (L/s)	Flow Type	Staff Gauge at Site	Comments
X3	Surface	M	18-Jan-11	-		N	Flow not measured.
			2-Feb-11	-			Flow not measured.
			14-Mar-11	-			Flow not measured.
			13-Apr-11	113.63	In-stream		
			5-May-11	217.00	In-stream		Measured using SonTek Flow Meter.
			20-Jun-11	3994.20	In-stream		
			13-Jul-11	2674.10	In-stream		
			25-Aug-11	3045.80	In-stream		
			21-Sep-11	621.40	In-stream		
			27-Oct-11	1113.40	In-stream		
			15-Nov-11	733.90	In-stream		
			7-Dec-11	-			Flow not measured.
X3A	Surface	M	18-Jan-11	-		N	Flow not measured.
			1-Feb-11	-			Flow not measured.
			16-Mar-11	-			Flow not measured.
			13-Apr-11	146.88	In-stream		Flow not measured.
			5-May-11	269.50	In-stream		Measured using SonTek Flow Meter.
			20-Jun-11	5480.60	In-stream		
			13-Jul-11	3571.10	In-stream		
			25-Aug-11	-			Flow not measured - water too deep to safely measure flow.
			21-Sep-11	-			Unsafe for flow due to depth of water. SG = 0.368m
			20-Oct-11	1158.60	In-stream		
			15-Nov-11	826.80	In-stream		
			6-Dec-11	-			Flow not measured.
X7	Surface	SF	28-Jun-11	0.25	Estimate	N	
			18-Oct-11	0.67	Estimate		

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Table D-5: Vangorda Creek Drainage
2011 Open Channel Flows

Site	Water Type	Requested Flow Frequency	Date	Flow (L/s)	Flow Type	Staff Gauge at Site	Comments
MOOSE SEEP	Seepage	2M/M	4-Jan-11	0.25	Estimate	N	
			3-Feb-11	0.25	Estimate		
			3-Mar-11	0.25	Estimate		
			11-Apr-11	0.10	Estimate		Very low flow - difficult to estimate flow accurately.
			10-May-11	3.00	Estimate		
			18-May-11	1.50	Estimate		
			6-Jun-11	0.25	Estimate		
			22-Jun-11	0.50	Estimate		
			5-Jul-11	0.30	Estimate		
			21-Jul-11	0.60	Estimate		
			3-Aug-11	0.30	Estimate		
			18-Aug-11	0.25	Estimate		
			7-Sep-11	0.70	Estimate		
			20-Sep-11	0.50	Estimate		
			11-Oct-11	0.45	Estimate		
			27-Oct-11	0.45	Estimate		
			8-Nov-11	0.50	Estimate		
			1-Dec-11	0.50	Estimate		
SRK GD01	Seepage	M	24-Jan-11	0.75	Estimate	N	
			17-Feb-11	0.10	Estimate		
			28-Mar-11	1.00	Estimate		
			20-Apr-11	0.50	Estimate		
			17-May-11	7.00	Estimate		
			16-Jun-11	0.75	Estimate		
			11-Jul-11	1.13	Estimate		
			10-Aug-11	2.00	Estimate		
			13-Sep-11	1.00	Estimate		
			18-Oct-11	0.57	Estimate		
			23-Nov-11	1.00	Estimate		
			13-Dec-11	1.25	Estimate		
V1	Surface	CONT	24-Jan-11	-		N	Flow not measured.
			17-Feb-11	-			Flow not measured.
			22-Mar-11	-			Flow not measured.
			21-Apr-11	26.90	In-stream		Ice conditions and low water velocity probable cause for underestimation of flow
			17-May-11	130.70	In-stream		Measured using SonTek Flow Meter.
			15-Jun-11	660.00	In-stream		
			13-Jul-11	603.10	In-stream		
			10-Aug-11	449.70	In-stream		
			13-Sep-11	251.20	In-stream		
			18-Oct-11	-	In-stream		Omitted flow due to questionable results.
			23-Nov-11	-			Flow not measured.
			8-Dec-11	-			Flow not measured.
V14	Seepage	SF	22-May-11	0.10	Estimate	N	Sampled May 22/11 with the AMP4 sample set as requested by E.C.
			5-Oct-11	0.00	Estimate		Site dry - no sample.
V15	Seepage	2M	4-Jan-11	1.50	Estimate	N	
			18-Jan-11	0.42	Estimate		
			3-Feb-11	1.50	Estimate		
			16-Feb-11	0.75	Estimate		
			3-Mar-11	1.00	Estimate		
			23-Mar-11	0.25	Estimate		
			11-Apr-11	0.25	Estimate		
			26-Apr-11	0.60	Estimate		
			10-May-11	4.00	Estimate		
			18-May-11	3.00	Estimate		
			6-Jun-11	0.30	Estimate		
			22-Jun-11	1.50	Estimate		
			5-Jul-11	0.60	Estimate		
			21-Jul-11	1.00	Estimate		
			3-Aug-11	0.50	Estimate		
			18-Aug-11	0.50	Estimate		
			7-Sep-11	1.22	Estimate		
			20-Sep-11	1.48	Estimate		
			11-Oct-11	0.51	Estimate		
			27-Oct-11	0.47	Estimate		
			8-Nov-11	0.30	Estimate		
			22-Nov-11	0.50	Estimate		
			1-Dec-11	1.75	Estimate		
			14-Dec-11	1.00	Estimate		

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Table D-5: Vangorda Creek Drainage
2011 Open Channel Flows

Site	Water Type	Requested Flow Frequency	Date	Flow (L/s)	Flow Type	Staff Gauge at Site	Comments
V16	Seepage	SF	26-Apr-11	3.00	Estimate	N	Sampled May 22/11 with the AMP4 sample set as requested by E.C.
			5-Oct-11	0.00	Estimate		Site dry - no sample.
V2	Surface	2M/M	4-Jan-11	3.00	Estimate	N	
			3-Feb-11	3.00	Estimate		
			3-Mar-11	2.50	Estimate		
			3-Mar-11	2.50	Estimate		
			11-Apr-11	-			Unable to estimate flow due to thick ice cover.
			10-May-11	3.00	Estimate		
			18-May-11	-			Flow not measured.
			6-Jun-11	1.25	Estimate		
			23-Jun-11	0.32	Estimate		
			23-Jun-11	0.32	Estimate		
			5-Jul-11	1.25	Estimate		
			21-Jul-11	1.00	Estimate		
			3-Aug-11	1.75	Estimate		
			18-Aug-11	0.65	Estimate		
			7-Sep-11	1.27	Estimate		
			20-Sep-11	1.50	Estimate		
			20-Sep-11	1.50	Estimate		
			11-Oct-11	1.02	Estimate		
			27-Oct-11	0.81	Estimate		
			8-Nov-11	0.50	Estimate		
			1-Dec-11	-			Flow not measured.
V20	Surface	Concurrent with SFN	19-May-11	4.90	Estimate	N	
			25-Oct-11	0.00	Estimate		No flow - no sample.
V25	Surface	WD	7-Jul-11	-		N	Flow not measured.
			13-Jul-11	127.30	In-stream		Flow taken with Sontech.
			19-Jul-11	116.26	In-stream		
			26-Jul-11	41.42	In-stream		Approximately 2 L/s flowing in from outside sources.
			11-Aug-11	40.41	In-stream		Draining Clarification Pond.
			18-Aug-11	48.69	In-stream		Draining Clarification Pond.
			11-Sep-11	115.32	In-stream		
			20-Sep-11	42.70	In-stream		Draining Clarification Pond.
V25BSP	Surface	WD/M	24-Jan-11	0.00	V-Notch Weir	Y	No flow - no sample.
			17-Feb-11	0.00	V-Notch Weir		Frozen at the weir - no sample taken
			22-Mar-11	0.00	V-Notch Weir		Frozen at the weir, no sample taken.
			2-Apr-11	-			Flow not measured.
			12-May-11	0.21	V-Notch Weir		
			15-Jun-11	13.10	V-Notch Weir		
			23-Jun-11	78.33	V-Notch Weir		
			23-Jun-11	78.33	V-Notch Weir		Taken as a weekly sample to coincide with the Quarterly Bioassay
			7-Jul-11	36.10	V-Notch Weir		
			12-Jul-11	109.70	V-Notch Weir		Additional 5.0 l/s should be added to flow for overflow around weir.
			19-Jul-11	89.85	V-Notch Weir		3 L/s flowing around weir, flow is actually 92.854 L/s
			26-Jul-11	89.85	V-Notch Weir		5 L/s flowing around weir, flow is actually 94.854 L/s
			10-Aug-11	3.22	V-Notch Weir		
			11-Aug-11	5.35	V-Notch Weir		Draining Clarification Pond.
			18-Aug-11	38.06	V-Notch Weir		Draining Clarification Pond.
			11-Sep-11	106.72	V-Notch Weir		Add 5.04 L/s for water flowing around the weir.
			20-Sep-11	16.24	V-Notch Weir		Draining Clarification Pond.
			18-Oct-11	2.24	V-Notch Weir		
			23-Nov-11	1.77	V-Notch Weir		
			8-Dec-11	-			Flow not measured.

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Table D-5: Vangorda Creek Drainage
2011 Open Channel Flows

Site	Water Type	Requested Flow Frequency	Date	Flow (L/s)	Flow Type	Staff Gauge at Site	Comments
V27	Surface	CONT	25-Jan-11	-		N	Flow not measured.
			17-Feb-11	-			Flow not measured.
			28-Mar-11	-			Flow not measured.
			21-Apr-11	43.78	In-stream		Ice conditions and low water velocity probable cause of underestimation of flow
			12-May-11	82.50	In-stream		Measured using SonTek Flow Meter.
			16-Jun-11	734.00	In-stream		
			11-Jul-11	857.50	In-stream		
			10-Aug-11	614.00	In-stream		
			12-Sep-11	0.80	In-stream		
			18-Oct-11	-	In-stream		Omitted flow due to questionable results.
			24-Nov-11	-			Flow not measured.
			12-Dec-11	-			Flow not measured.
V29	Seepage	SF	28-Jun-11	0.00	V-Notch Weir	Y	Site dry and photo taken.
			17-Oct-11	0.00	V-Notch Weir		Site dry - no sample.
V2A	Surface	2M/M	4-Jan-11	0.00	Estimate	N	No sample - site frozen.
			3-Feb-11	-			Unable to estimate flow due to substantial overflow and ice thickness of 70cm
			3-Mar-11	0.00	Estimate		No flow - standing water - no sample; Attempted again March 23, 2011 13:58 - no flow - no sample.
			11-Apr-11	0.50	Estimate		
			10-May-11	6.00	Estimate		
			19-May-11	42.70	In-stream		
			6-Jun-11	1.25	Estimate		
			22-Jun-11	1.72	Estimate		
			5-Jul-11	5.00	Estimate		
			21-Jul-11	3.60	Estimate		
			3-Aug-11	4.00	Estimate		
			18-Aug-11	3.00	Estimate		
			7-Sep-11	3.91	Estimate		
			20-Sep-11	3.00	Estimate		
			11-Oct-11	2.24	Estimate		
			27-Oct-11	2.03	Estimate		
			8-Nov-11	0.40	Estimate		
			1-Dec-11	-			Flow not measured.
V30	Seepage	SF	28-Jun-11	0.07	Estimate	Y	
			17-Oct-11	2.47	V-Notch Weir		
			3-Nov-11	0.02	V-Notch Weir		
V31	Seepage	SF	28-Jun-11	0.05	Estimate	N	
			17-Oct-11	0.00	Estimate		No flow - no sample.
			3-Nov-11	0.00	Estimate		No flow.
V32	Seepage	SF	28-Jun-11	0.00	Estimate	Y	Photo taken
			17-Oct-11	0.08	Estimate		
			3-Nov-11	0.00	Estimate		
V33	Seepage	SF	28-Jun-11	0.04	V-Notch Weir	Y	
			17-Oct-11	-			Attempted weir measurement - very little flow.
			3-Nov-11	0.04	V-Notch Weir		
V4	Surface	M	25-Jan-11	-		N	Flow not measured.
			17-Feb-11	-			Flow not measured.
			28-Mar-11	-			Glaciated and frozen. No sample taken.
			21-Apr-11	-			Site frozen in multiple layers. Unable to get sample.
			12-May-11	-			Site iced up - no sample collected.
			16-Jun-11	72.40	In-stream		
			11-Jul-11	60.00	In-stream		
			10-Aug-11	34.90	In-stream		
			12-Sep-11	0.12	In-stream		
			18-Oct-11	0.06	In-stream		
			24-Nov-11	-			Flow not measured.
			12-Dec-11	-			Flow not measured.

Table D-5: Vangorda Creek Drainage
2011 Open Channel Flows

Site	Water Type	Requested Flow Frequency	Date	Flow (L/s)	Flow Type	Staff Gauge at Site	Comments
V5	Surface	M	25-Jan-11	-		N	Flow not measured.
			17-Feb-11	-			Flow not measured.
			22-Mar-11	-			Flow not measured.
			21-Apr-11	16.20	In-stream		Ice conditions and low water velocity probable cause for underestimation of flow.
			11-May-11	168.20	In-stream		Measured using SonTek Flow Meter.
			15-Jun-11	279.00	In-stream		
			13-Jul-11	326.80	In-stream		
			10-Aug-11	244.40	In-stream		
			12-Sep-11	0.32	In-stream		
			18-Oct-11	-	In-stream		Omitted flow due to questionable results.
			23-Nov-11	122.10	In-stream		
			13-Dec-11	-			Flow not measured.
V8	Surface	CONT	25-Jan-11	-		N	Flow not measured.
			17-Feb-11	-			Flow not measured.
			22-Mar-11	-			Flow not measured.
			21-Apr-11	127.95	In-stream		
			11-May-11	451.80	In-stream		Measured using SonTek Flow Meter.
			15-Jun-11	832.00	In-stream		
			13-Jul-11	902.10	In-stream		
			10-Aug-11	674.60	In-stream		
			12-Sep-11	0.92	In-stream		
			25-Oct-11	-	In-stream		Omitted flow due to questionable results; Flow taken at the staff gauge; Iced and rocky bottom.
			23-Nov-11	-	Estimate		Omitted flow due to questionable results.
			8-Dec-11	-			Flow not measured.

FIGURES

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Figure D-1: Measured Water Levels in the Zone II Pit

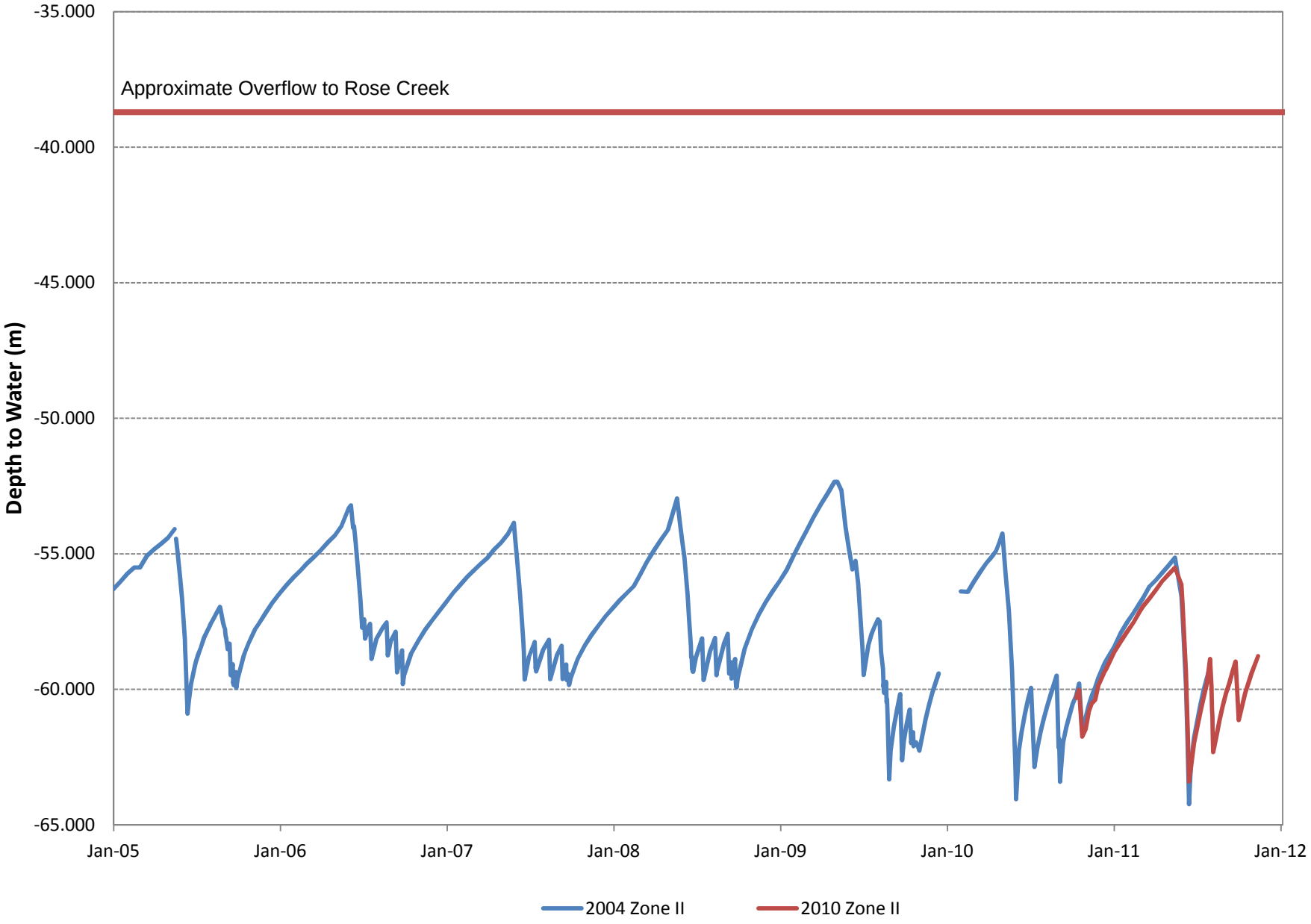

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Figure D-2: Faro Pit Water Elevations

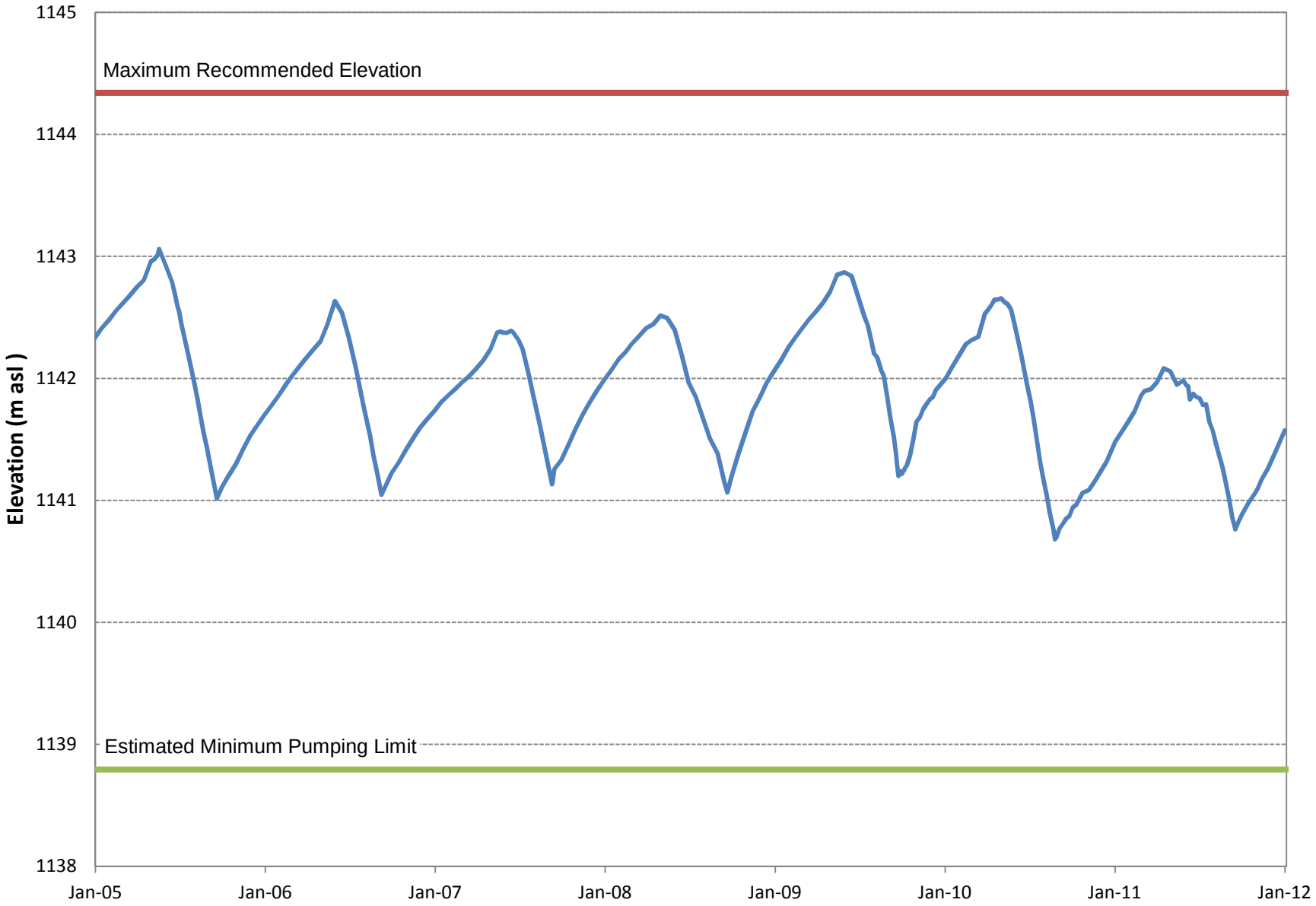

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Figure D-3: Intermediate Pond Water Elevations

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Figure D-4: Cross Valley Pond Water Elevations

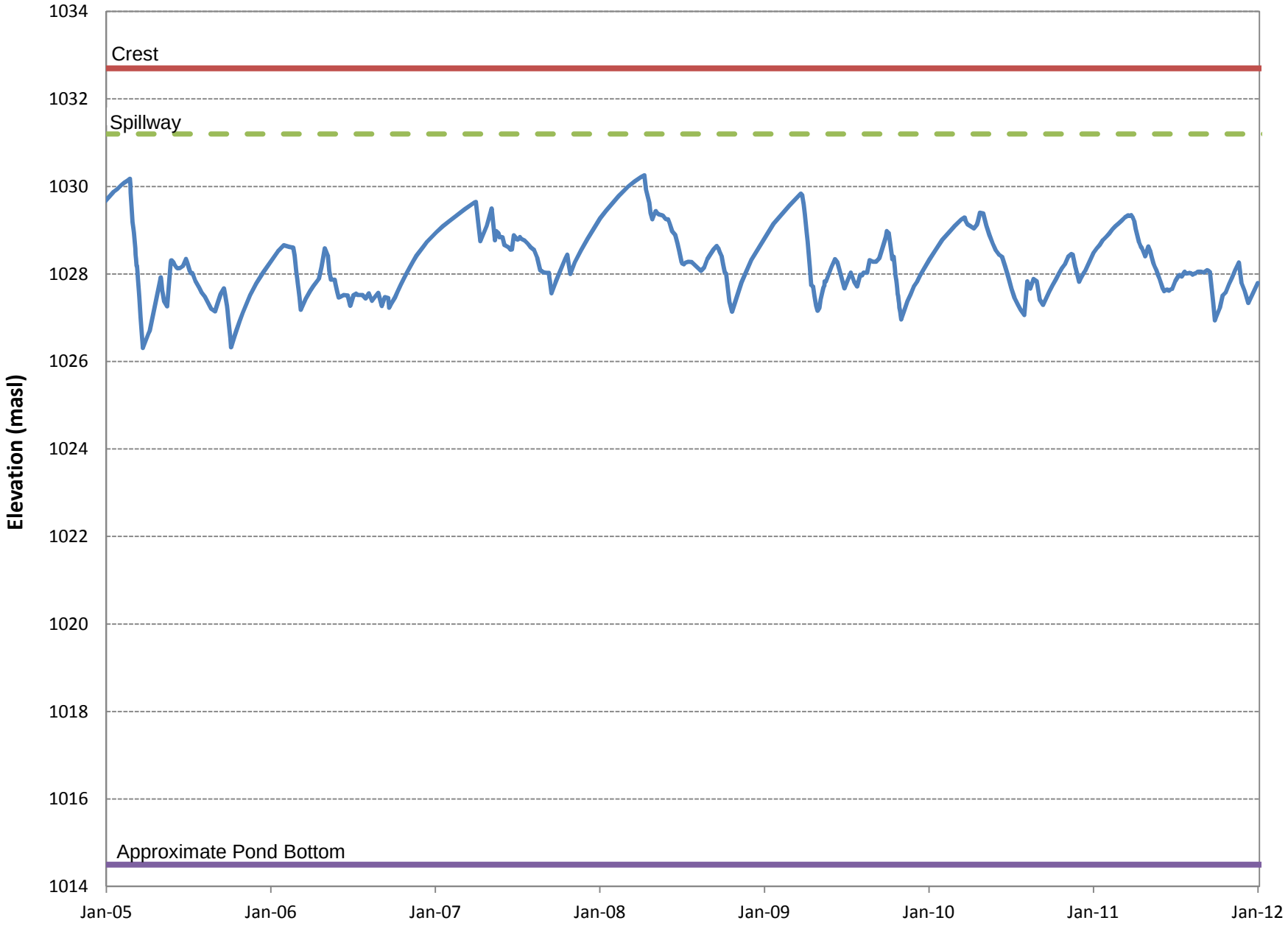

Figure D-5: Little Creek Dam Pond Water Elevations

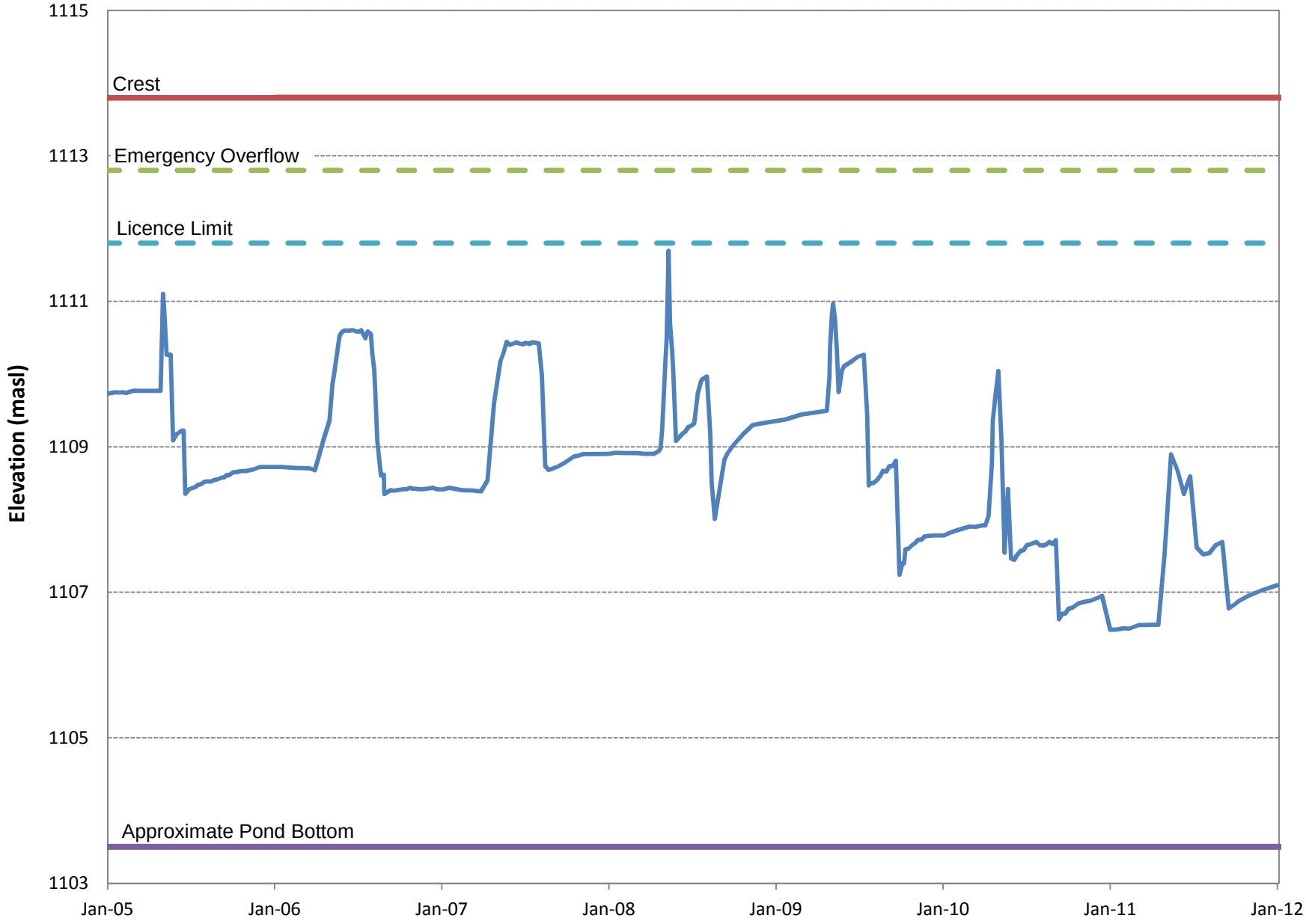

Figure D-6: Vangorda Pit Water Elevations

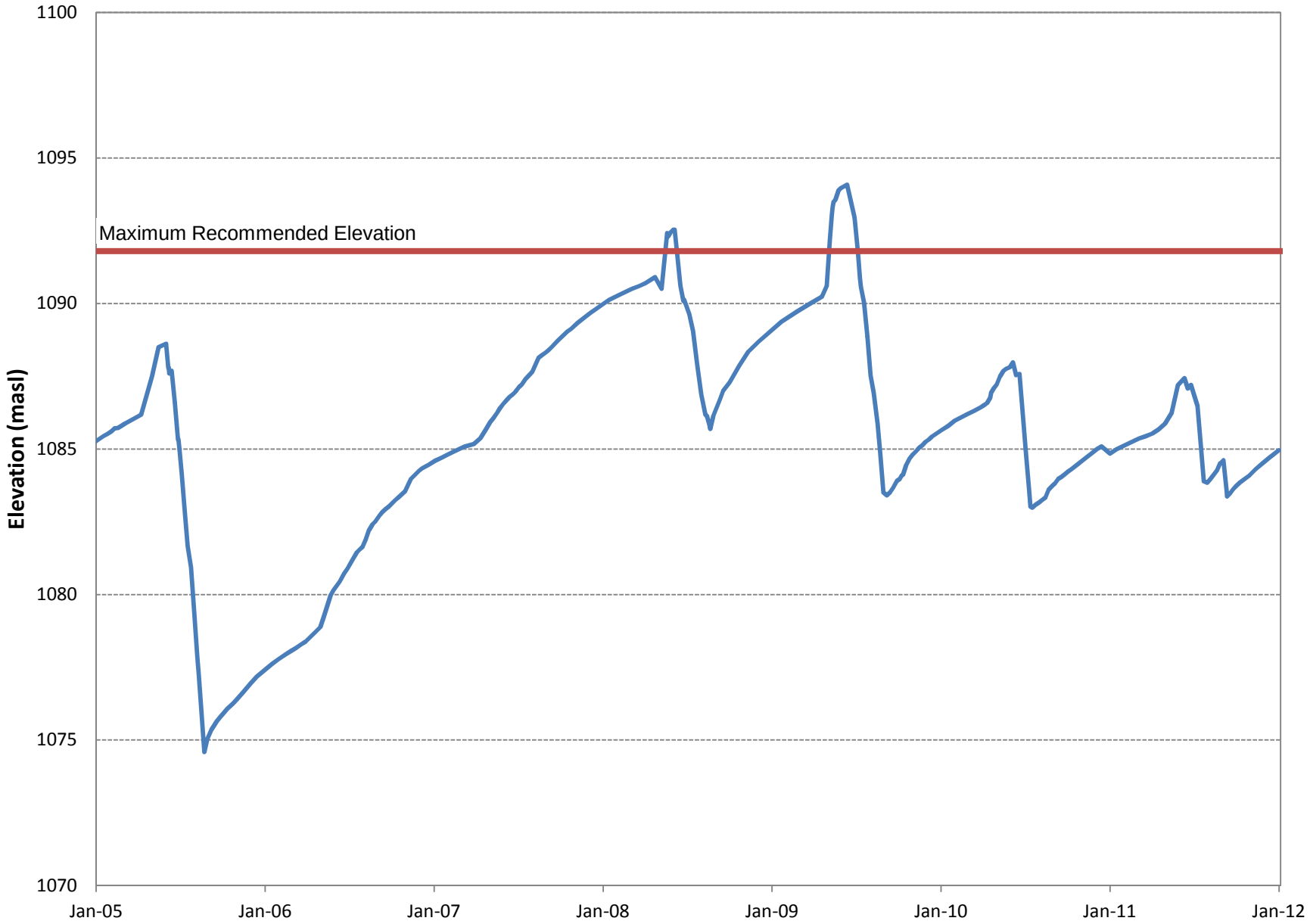

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Figure D-7: Grum Pit Water Elevations

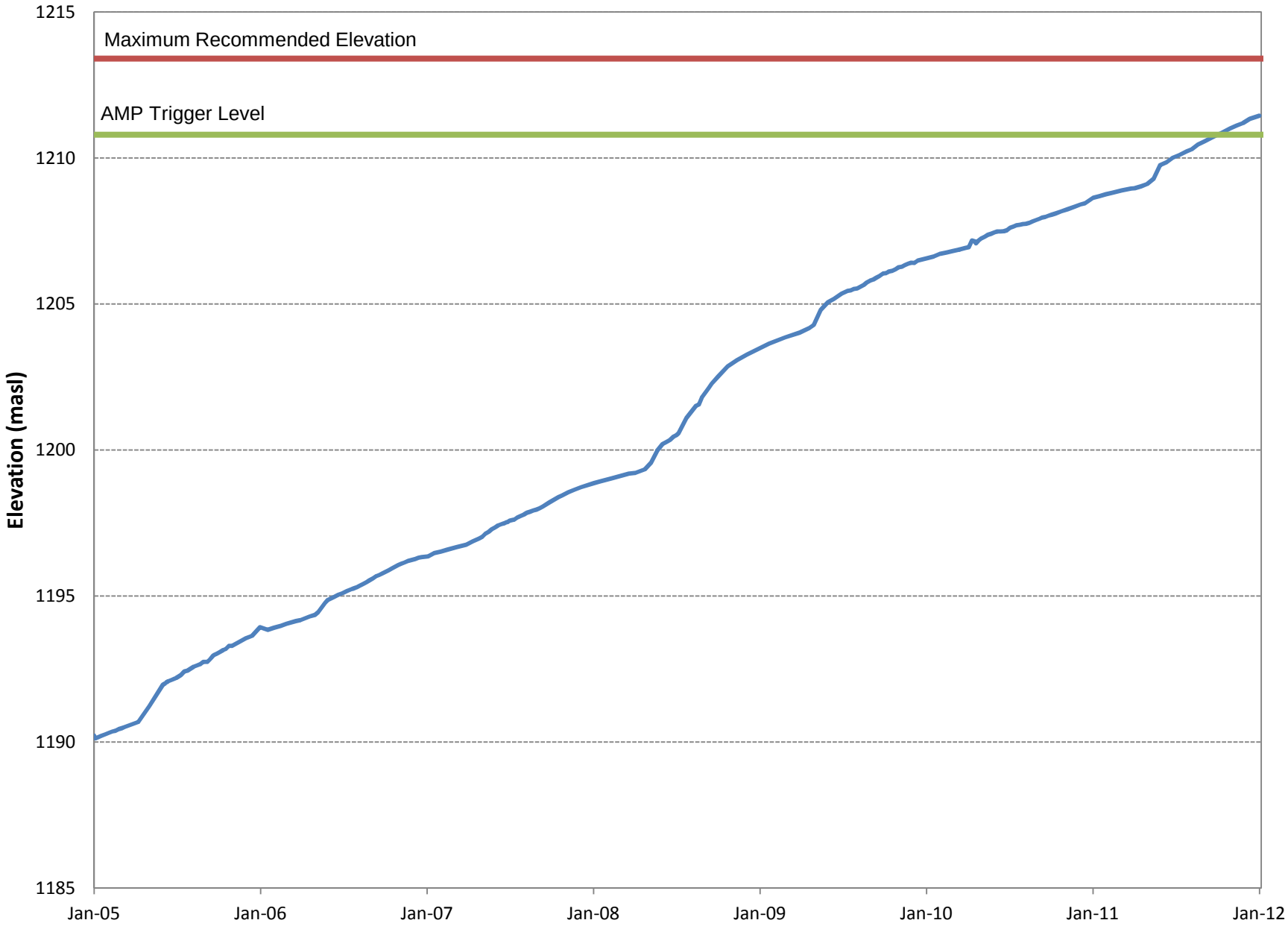

Figure D-8: 2011 Stage and Flow Records for Faro Creek Diversion at FCD-1

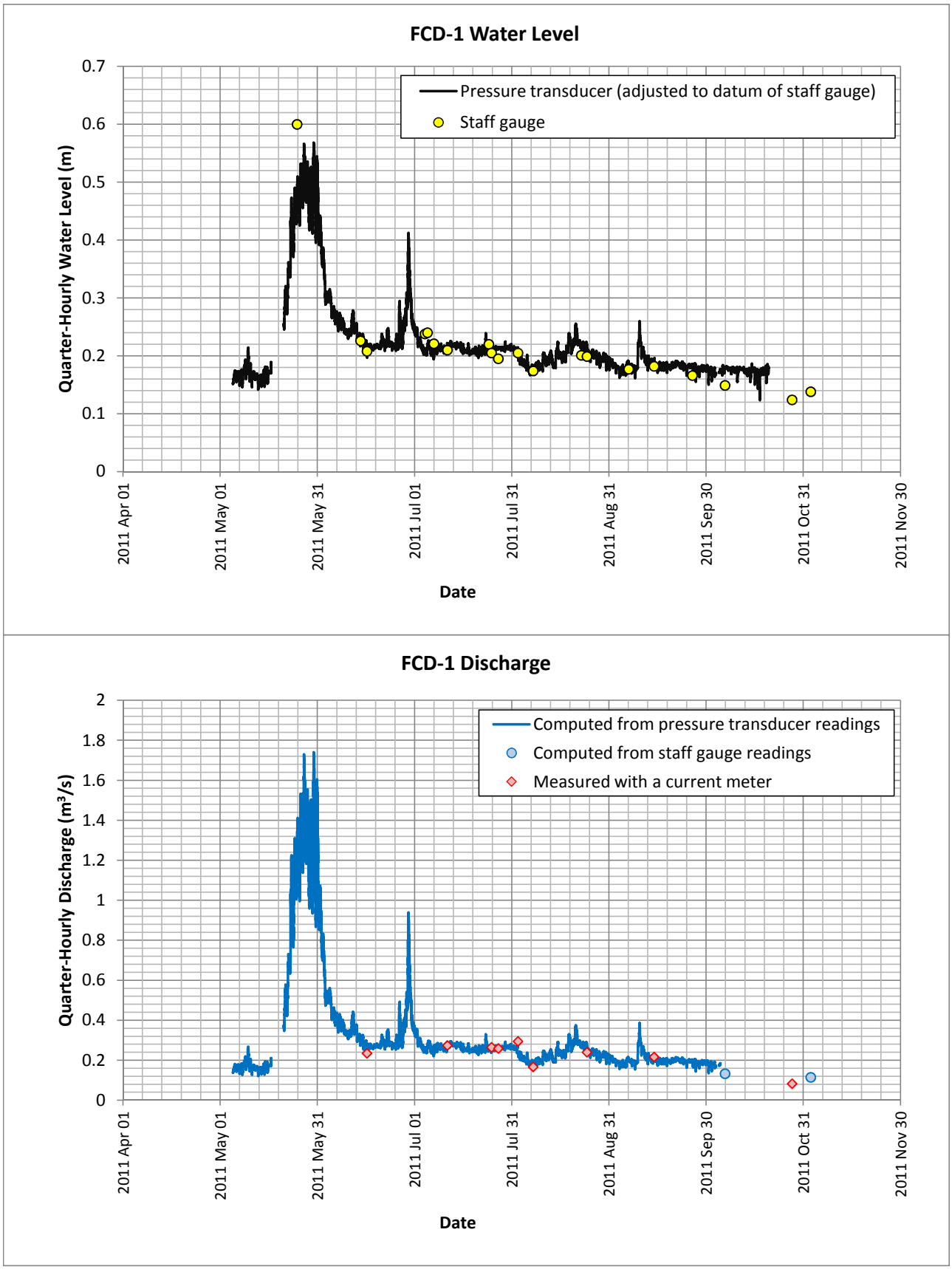

Figure D-9: 2011 Stage and Flow Records for North Fork of Rose Creek at R7

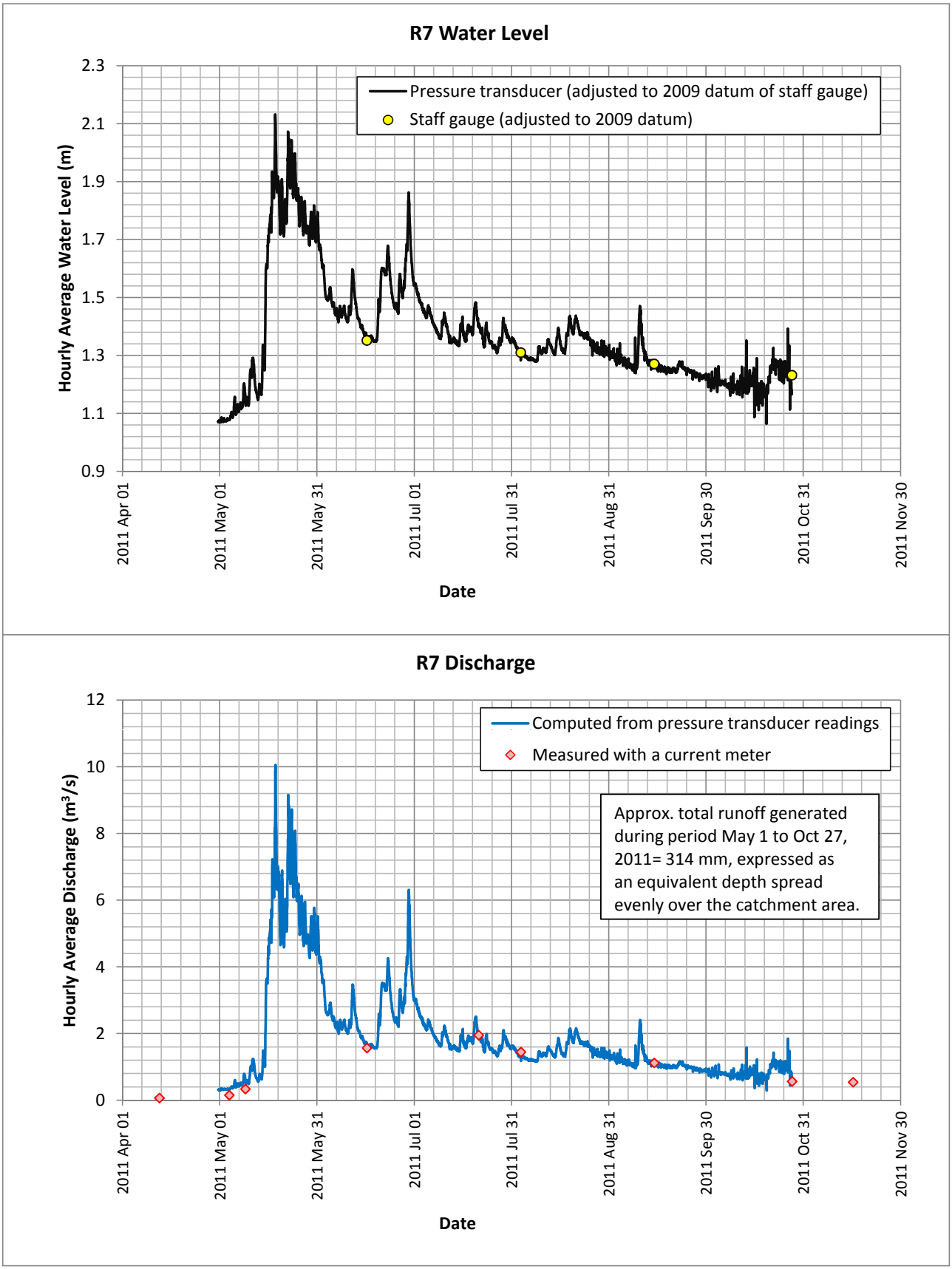

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Figure D-10: 2011 Stage and Flow Records for North Fork of Rose Creek at X2

Faro Mine Closure

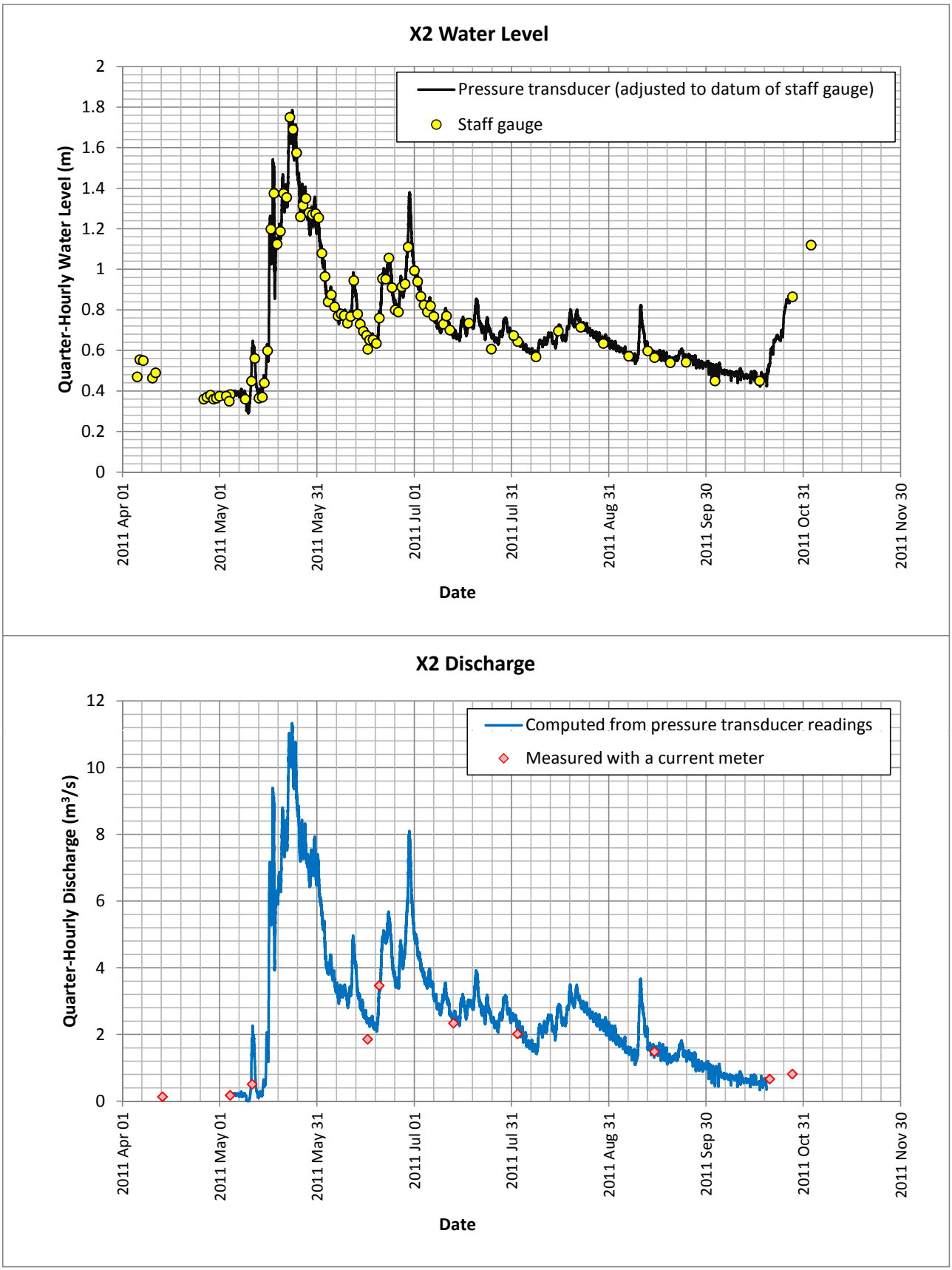

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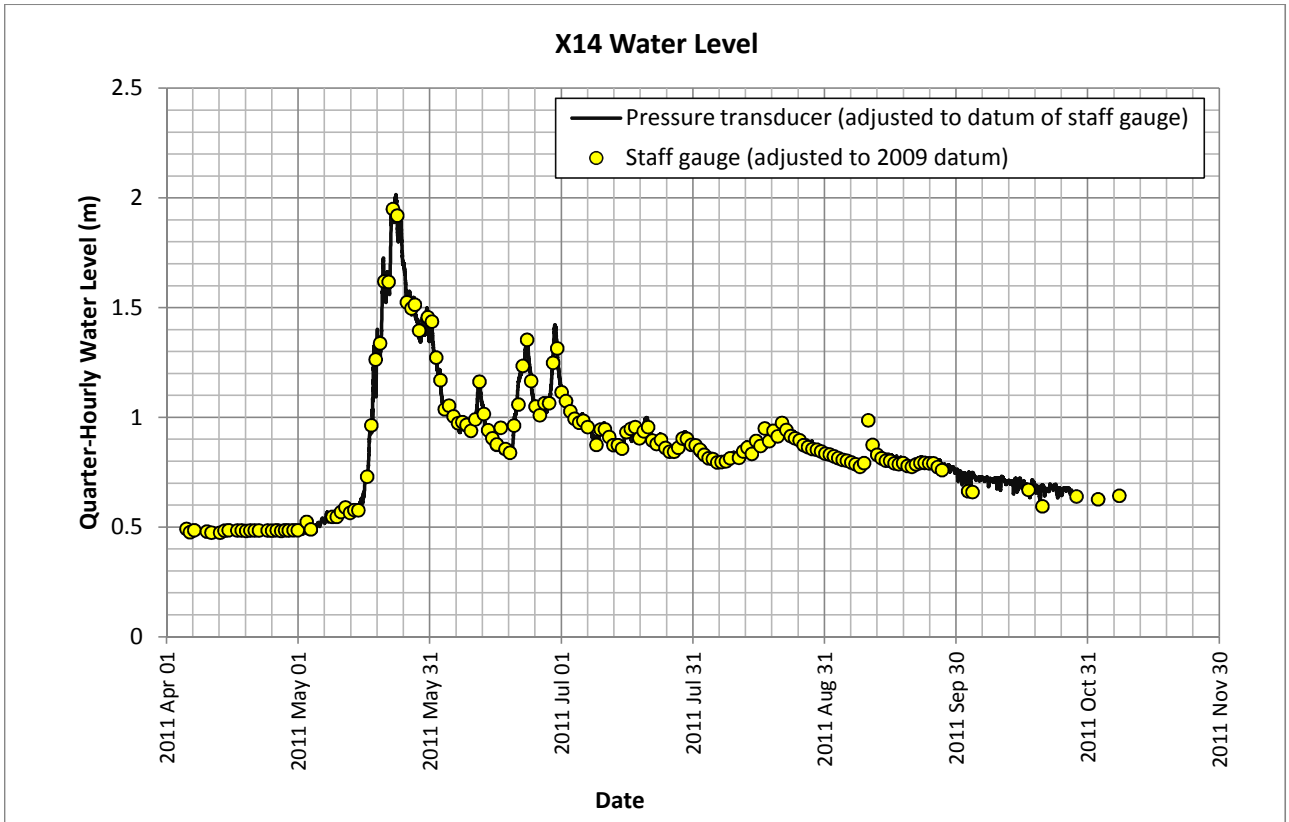
Figure D-11: 2011 Stage and Flow Records for Rose Creek at X14



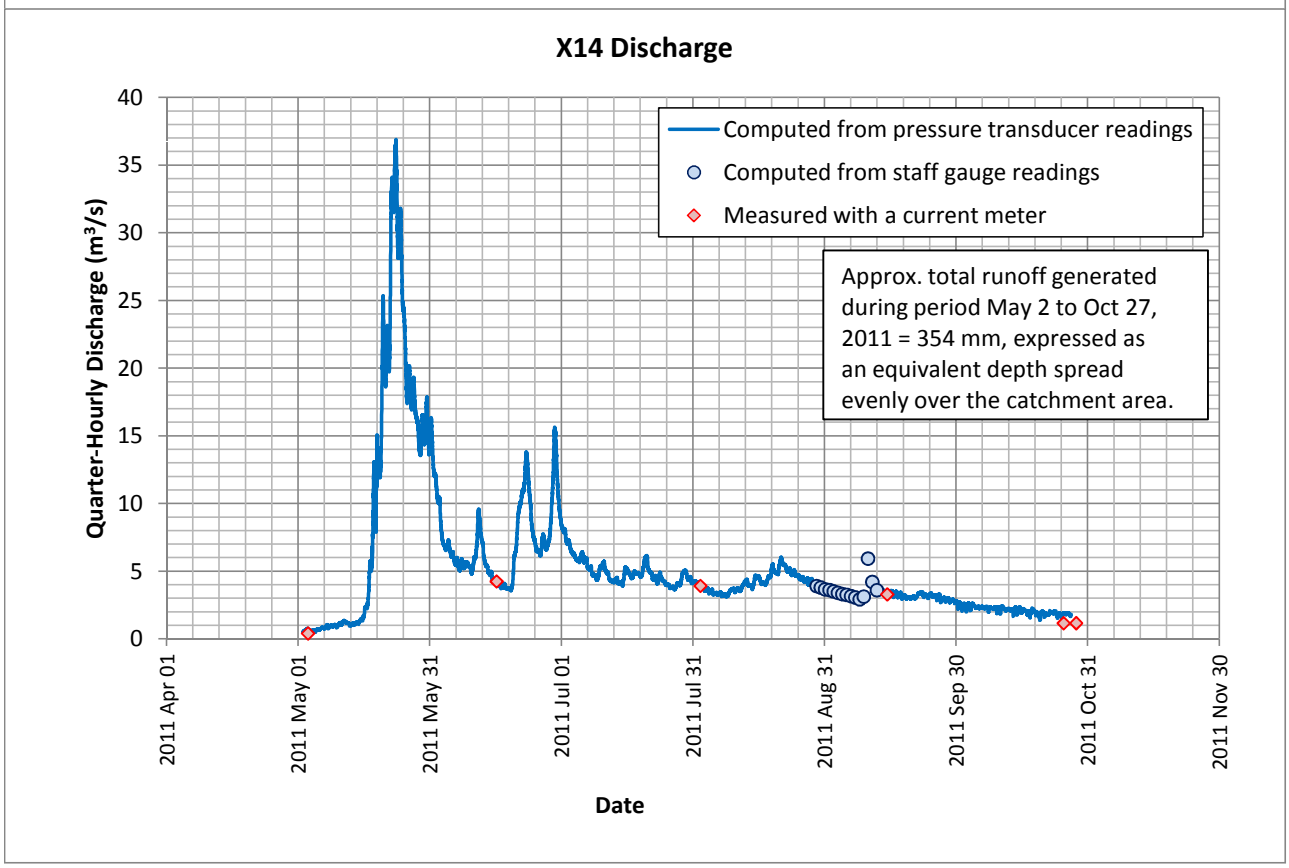
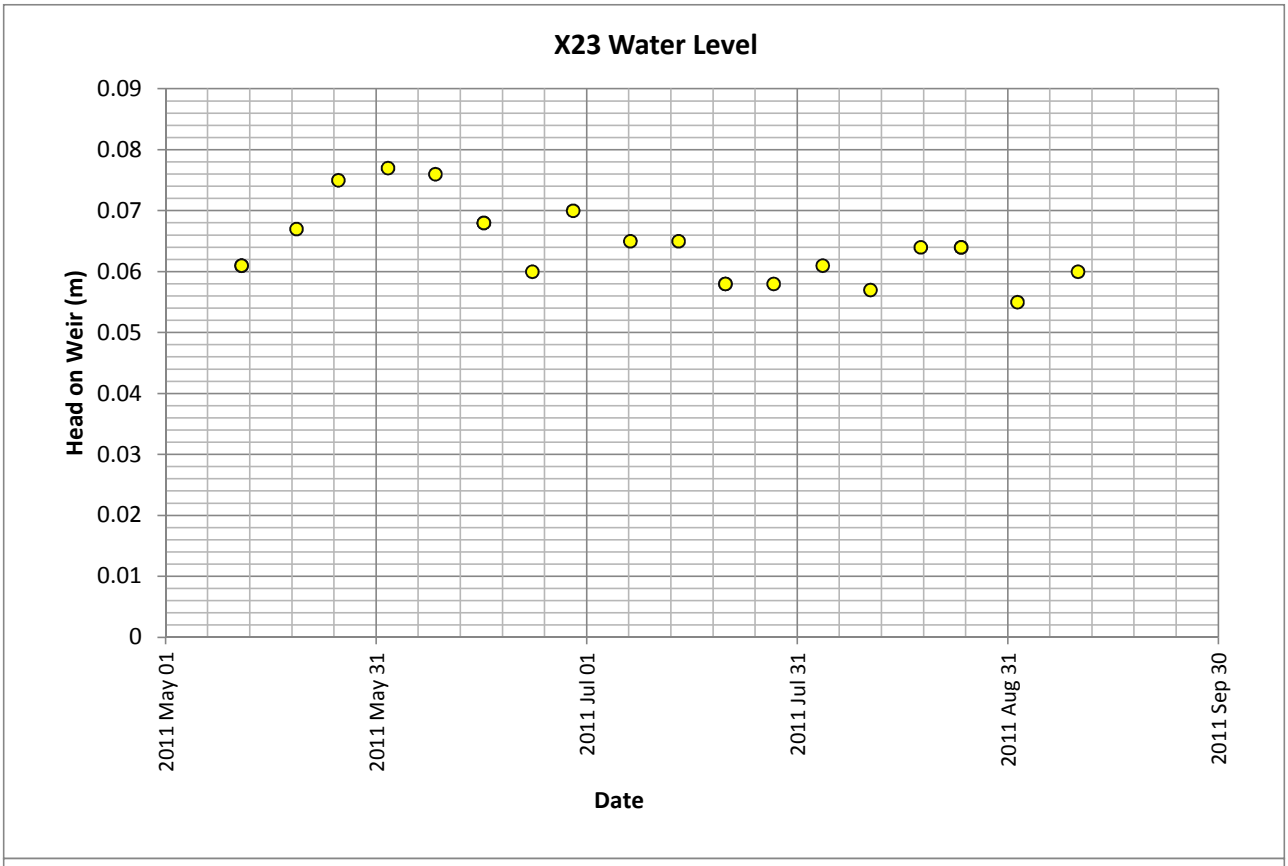


Figure D-12: 2011 Stage and Flow Records for Old Faro Creek Channel at X23



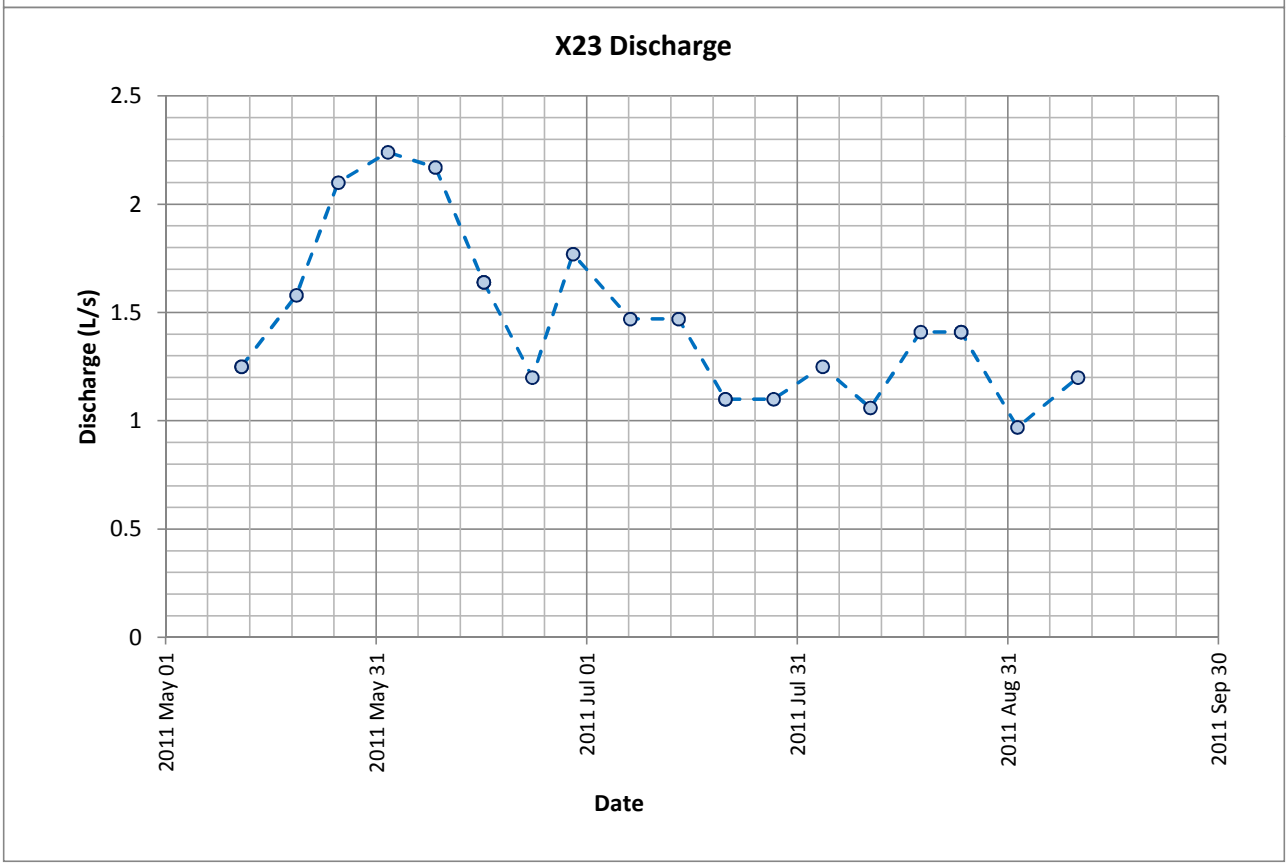


Figure D-13: 2011 Stage and Flow Records for Vangorda Creek at V1

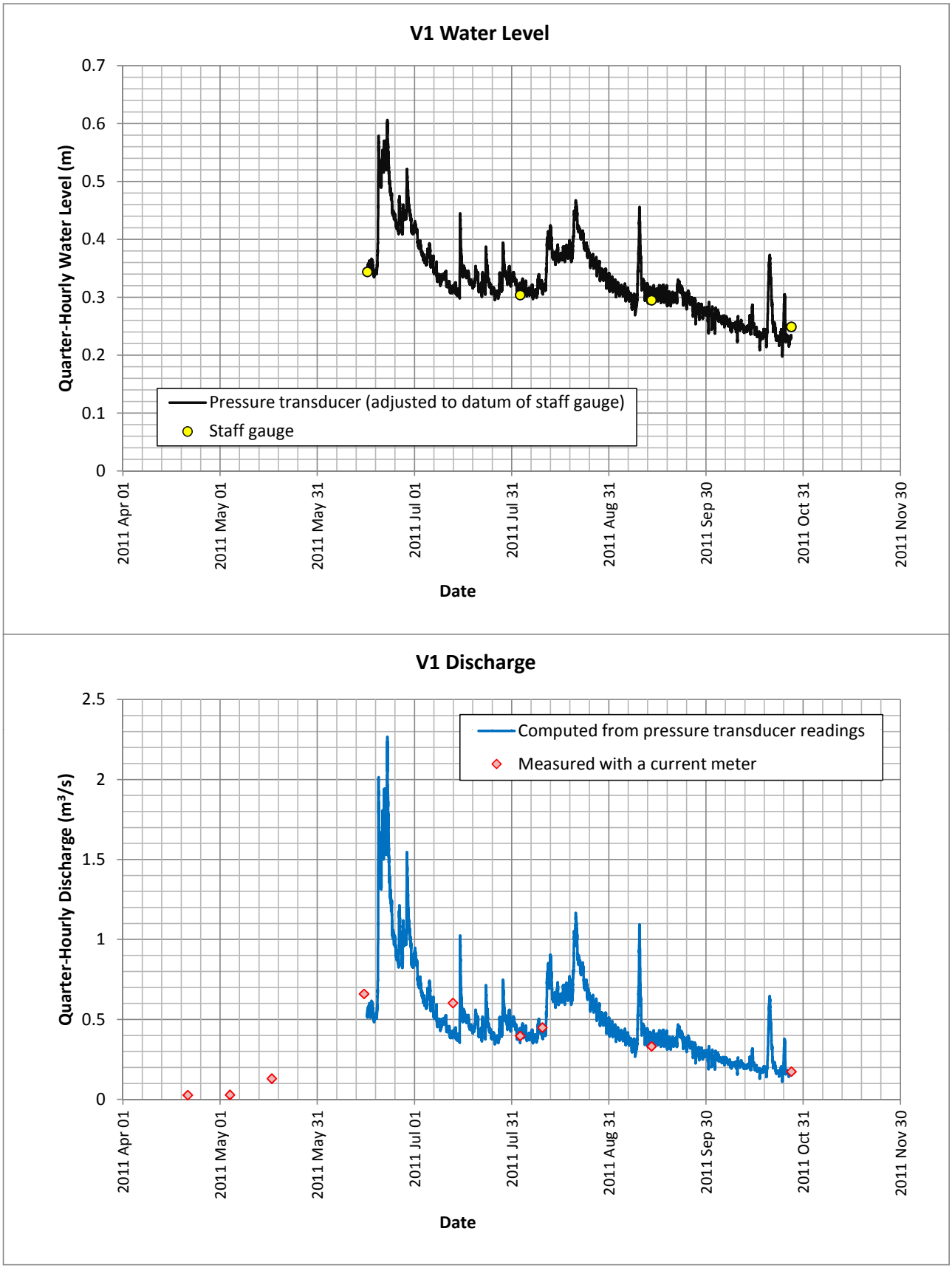


Figure D-14: 2011 Stage and Flow Records for Vangorda Creek at V8

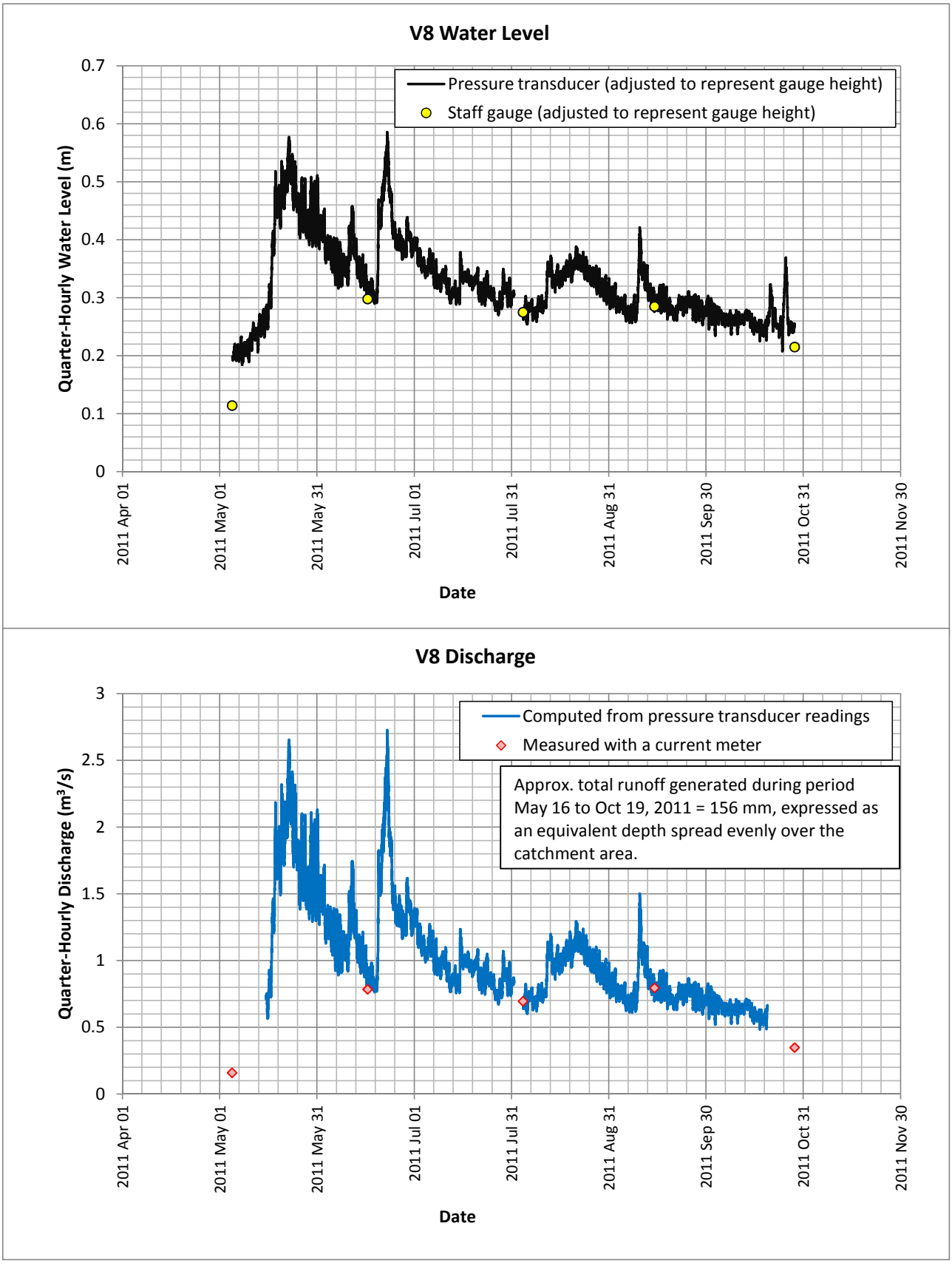


Figure D-15: 2011 Stage and Flow Records for Vangorda Creek at V27

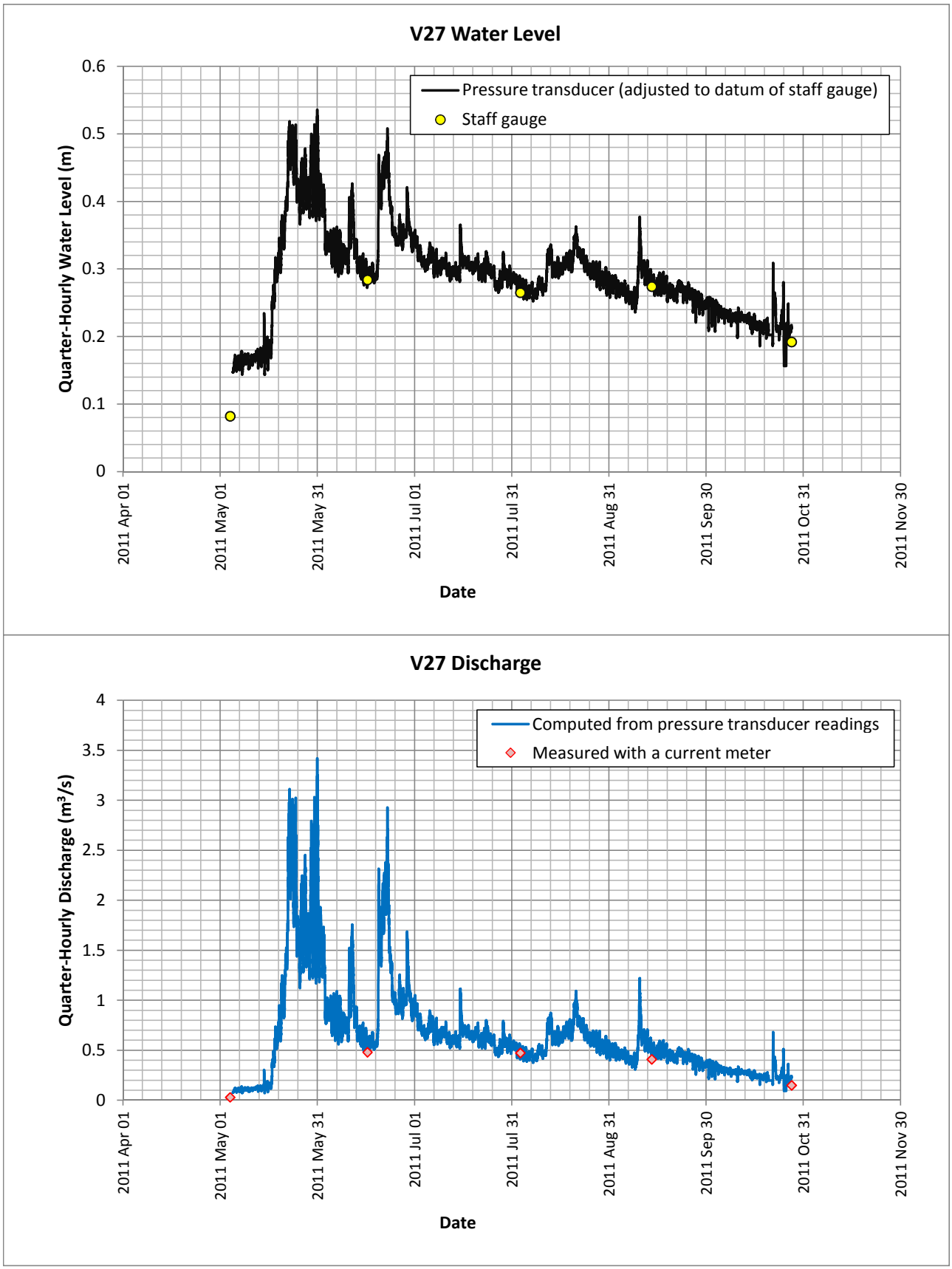


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Table E-1: 2011 Faro Climate Station - Daily and Monthly Average Temperature

Month	Day	Monthly	2011 Faro Daily Air Temperature (°C)																												
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
January	Average	-14.58	-3.109	-4.95	-3.17	-2.69	-5.63	-7.63	-12.36	-19.08	-20.13	-16.75	-16.28	-22.88	-26.24	-28.37	-30.25	-25.40	-21.06	-20.68	-25.91	-21.59	-15.14	-5.26	-6.81	-4.00	-4.26	-5.13	-8.26	-14.49	-18.00	-19.55	-16.94
	Max	-1.819	-2.101	-2.643	-2.602	-1.819	-3.326	-6.637	-8	-11.85	-17.08	-14.37	-12.93	-20.74	-23.57	-26.53	-24.09	-18.48	-19.32	-18.4	-23.68	-18.17	-5.978	-4.457	-5.823	-2.744	-2.284	-3.1	-3.877	-11.39	-15.14	-14.55	-13.23
	Min	-31.98	-4.372	-7.09	-4.289	-3.741	-8.87	-8.64	-18.1	-21.6	-23.25	-18.09	-20.28	-26.43	-27.95	-30.85	-31.98	-31.12	-22.41	-23.29	-27.92	-24.74	-18.69	-6.15	-8.1	-5.377	-6.837	-8.11	-14.78	-18.01	-20.31	-22.13	-20.67
February	Average	-15.45	-1.92	0.04	-1.19	-5.83	-10.96	-15.42	-16.16	-13.56	-4.69	-4.15	-4.37	-15.16	-23.10	-26.85	-30.12	-30.00	-25.31	-22.01	-14.65	-19.19	-16.84	-20.40	-24.56	-14.78	-7.17	-16.74	-23.32	-24.27			
	Max	1.848	1.848	1.44	0.007	-3.873	-7.27	-11.32	-6.742	-9.51	-2.365	-1.874	-2.239	-10.02	-20.02	-21.01	-21.84	-22.05	-17.93	-17.13	-9.74	-13.17	-12.93	-17.02	-19.54	-8.51	-3.548	-11.79	-21.81	-20.22			
	Min	-34.2	-11.08	-1.793	-3.693	-8.72	-14.58	-21.06	-20.91	-17.25	-9.39	-5.595	-7.92	-19.75	-25.02	-30.87	-33.72	-34.2	-29.96	-25.76	-18.6	-23.5	-23.64	-24.53	-28.19	-24.5	-11.52	-23.71	-24.82	-26.74			
March	Average	-12.52	-23.83	-23.88	-21.32	-19.55	-19.24	-16.70	-16.10	-15.16	-18.98	-20.73	-22.72	-22.90	-19.83	-16.15	-12.43	-9.54	-6.62	-12.90	-13.56	-12.11	-10.42	-9.03	-7.08	-5.53	-4.21	-1.63	-0.91	-0.81	-1.62	-1.53	-1.25
	Max	4.695	-14.05	-14.29	-17.24	-11.71	-13.01	-5.586	-7.45	-6.208	-13.97	-16.32	-12.63	-14.97	-10.97	-11.13	-7.32	-5.677	-4.093	-5.521	-2.909	-3.695	-5.736	-3.391	-1.37	-1.382	-0.591	1.529	3.094	4.695	2.795	1.035	0.751
	Min	-28.97	-28.93	-28.97	-25.89	-23.52	-24.19	-23.61	-20.02	-20.76	-22.42	-24.49	-28.86	-28.72	-25.19	-20.18	-15.42	-11.84	-9.27	-18.69	-21.7	-19	-16	-14.06	-13.34	-9.13	-8.08	-5.195	-5.707	-5.304	-5.973	-3.831	-3.266
April	Average	-2.65	-2.86	-4.21	-4.40	-3.00	-3.68	-4.28	-3.47	-1.28	-3.75	-5.06	-5.82	-4.18	-2.31	-1.95	-2.89	-3.56	-5.22	-5.96	-4.94	-5.80	-5.22	-2.72	0.76	2.94	1.17	1.22	-0.11	0.13	0.35	0.67	
	Max	8.02	-0.667	1.48	-1.609	-0.248	2.623	0.971	-0.768	1.987	-1.036	-1.151	-2.061	-0.206	2.176	2.115	1.026	0.663	-2.62	-2.662	-1.092	-3.906	-0.92	0.387	5.04	8.02	4.45	3.599	4.031	3.566	4.097	2.998	
	Min	-11.2	-5.26	-11.2	-8.33	-5.362	-8.74	-9.76	-6.592	-4.539	-5.61	-9	-10.18	-9.03	-5.648	-6.116	-5.558	-7.67	-7.28	-8.85	-9.68	-7.5	-9.58	-6.01	-3.388	-1.309	-3.939	-1.852	-4.021	-4.188	-4.792	-1.931	
May	Average	6.45	0.83	0.33	1.00	1.24	1.30	1.66	1.27	3.12	0.94	1.65	0.99	-0.19	0.93	1.76	4.29	6.37	9.66	11.41	8.03	9.80	9.68	9.86	9.85	10.91	10.19	12.37	13.82	14.57	13.72	13.58	14.89
	Max	19.77	6.644	2.714	3.061	4.279	4.994	7.71	3.789	6.718	2.257	6.934	3.279	0.859	3.609	5.191	8.09	12	14.34	14.93	10.06	14.9	14.6	13.88	14.56	14.51	13.95	17.61	19.36	19.09	18.46	19.77	19.74
	Min	-3.423	-2.414	-1.238	-0.994	-2.552	-1.256	-1.185	-0.744	-3.423	-0.719	-2.346	-1.043	-0.747	-1.635	-1.627	-1.531	-0.61	3.484	8.59	5.288	5.278	5.216	6.742	6.103	6.546	6.192	7.1	6.935	7.6	9.57	7.58	7.88
June	Average	10.18	15.35	9.28	8.06	6.42	8.00	8.57	11.37	10.60	7.24	7.29	5.27	7.31	9.85	9.75	9.86	10.99	12.19	11.25	12.12	10.35	10.57	9.16	12.16	14.53	15.04	12.50	12.83	10.31	7.73	9.42	
	Max	19.31	19.19	11.62	13.82	8.11	11.12	13.62	16.62	14.34	9.06	11.74	7.65	12.5	14.64	13.65	13.63	15.39	15.35	14.86	15.26	12.9	13.8	11.26	16	19.29	19.31	14.89	16.36	13.61	9.28	12.31	
	Min	1.818	12.18	6.366	1.818	4.342	4.396	4.391	5.923	7.18	5.353	4.941	2.967	2.171	4.225	6.613	5.595	4.748	8.43	6.145	9.99	8.85	8.3	7.49	7.58	8.15	10.59	10.81	10.76	8.07	6.363	6.339	
July	Average		7.69	9.02	7.77	7.87	8.82	8.39	9.11	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R
	Max		11.37	12.96	10.36	12.35	13.44	12.71	14.14	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R
	Min		5.477	4.82	5.042	3.432	6.492	4.205	4.681	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R
August	Average		N/R	13.76	12.76	11.41	12.56	6.28	9.08	9.21	7.67	7.60	7.69	7.98	8.70	7.43	7.76	6.70	6.99	6.82	7.20	9.46	9.32	7.93	7.78	7.59	8.23	7.34	7.56	5.89	7.53	8.04	8.55
	Max		N/R	15.64	18.18	15.22	18.07	8.89	12.19	12.07	10.65	10.64	8.85	9.79	13.07	10.27	11.18	8.89	9.18	9.75	10.38	13.04	11.69	10.22	10.81	11.26	11.82	9.76	11.59	9.23	12.01	12.59	12.97
	Min		N/R	10.53	6.573	7.01	6.762	4.829	5.262	7.29	5.807	5.057	6.733	6.796	5.561	5.366	4.574	5.194	5.284	5.462	4.752	6.071	7.47	6.432	5.129	3.74	5.727	5.463	3.781	2.176	4.14	3.023	4.471
September	Average	4.75	6.50	7.35	7.31	5.86	6.20	8.34	7.70	6.86	3.83	5.40	6.51	7.58	9.78	8.32	6.36	5.08	3.62	4.33	5.70	7.07	4.47	3.40	2.51	1.12	-0.19	0.00	-0.61	1.35	1.52	-0.73	
	Max	12.68	10.11	10.91	9.63	8.79	9.79	11.06	10.91	9.57	6.209	8.95	10.19	12.39	12.68	11.86	8.98	10.22	6.529	8.29	8.65	9.46	5.952	5.87	4.718	3.261	2.106	4.042	2.816	3.768	4.44	0.489	
	Min	-3.93	3.066	3.388	5.184	4.107	1.978	6.396	4.812	2.502	2.768	2.84	3.221	1.785	7.15	4.133	2.603	0.382	0.128	-0.516	3.318	5.069	3.487	1.578	0.572	0.292	-1.521	-2.259	-3.93	-0.525	-0.228	-1.831	
October	Average		N/R	N/R	N/R	N/R	1.59	1.09	0.99	0.44	-1.17	-1.87	-2.38	-1.85	-4.50	-3.42	-1.13	-0.56	-1.06	-0.80	-3.71	-4.36	-3.12	-2.75	-2.52	-4.12	-0.99	-1.82	-2.88	-4.19	-3.78	-3.79	-5.63
	Max		N/R	N/R	N/R	N/R	2.888	1.962	2.488	3.454	0.302	1.593	-0.501	0.575	-3.454	-1.597	2.517	1.219	1.823	0.96	-1.541	-2.208	-0.628	-0.544	-0.511	1.905	0.459	-0.529	-0.725	-2.303	-1.572	-2.747	-3.569
	Min		N/R	N/R	N/R	N/R	-0.814	-0.139	-0.243	-1.418	-2.768	-4.863	-4.066	-3.38	-5.981	-5.31	-4.797	-1.7	-3.234	-1.868	-5.629	-7.34	-4.533	-4.486	-6.181	-9.89	-2.425	-2.958	-4.512	-6.72	-5.667	-5.663	-8.78
November	Average		N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R
	Max		N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	
	Min		N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	
December	Average		N/R	N/R	N/R	N/R	N/R	-15.86	-15.76	-10.31	-6.85	-13.56	-11.10	-5.19	-10.14	-13.18	-8.98	-7.32	-7.45	-7.89	-6.43	-10.36	-6.18	-5.40	-4.87	-6.56	-7.45	-11.03	-8.82	-12.05	-11.51	-16.30	-14.80
	Max		N/R	N/R	N/R	N/R	N/R	-14.85	-14.16	-4.292	-3.443	-8.79	-6.522	-3.521	-5.89	-10.17	-7.21	-5.893	-6.178	-5.579	-4.354	-7.34	-3.66	-2.05	-2.285	-5.027	-5.799	-8.16	-7.21	-10.47	-8.93	-12.29	-13.63
	Min		N/R	N/R	N/R	N/R	N/R	-17.87	-18.34	-14.58	-10.16	-15.88	-15.62	-6.319	-15.71	-15.42	-11.45	-10.04	-9.28	-11.42	-10.33	-12.93	-9.49	-8.97	-7.41	-7.68	-10.31	-14	-10.37	-13.17	-12.38	-18.45	-18.05

Table E-2: 2011 Faro Climate Station - Monthly Average and Cumulative Precipitation

Month	Monthly Avg. Precip. (mm)	Monthly Cumulative Precip. (mm)	2011 Faro Daily Precipitation (mm)																													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
January	0.65	20.00	0	0	0.2	0	2.4	0	0	0	0.6	0	0	0	0	0	0.1	-0.1	1.3	0.2	-0.1	1.3	5.2	5.2	1.4	0	0.1	1	0.8	0	0.1	0.1	0.2
February	0.63	17.70	0.4	0.1	0	1.6	0.1	0	0	-0.1	0.2	0.6	4.6	3.4	1	0.3	0.1	0	-0.1	-0.1	2.5	0.5	0.9	0.2	0	0.3	0.6	0.5	0.1	0			
March	0.17	5.30	0	0	0	0	0	0	0.7	0.1	0	0	0	0	0	0.3	0.1	0.7	2.8	0	0	0	0	0	0	0	0.1	0	0	0	0	0.3	0.2
April	0.72	21.50	0.8	-0.1	0	1.2	0	0	0.1	0.4	6.4	0.8	0.2	1.8	0	0.1	0	0	0	0	0	0.1	5	0.9	0.5	0.1	0	0	3	-0.1	0.3	0	
May	0.68	21.20	0.1	1.2	1.8	0.3	1.8	3.4	5.7	0.1	0	0.9	2.8	1.8	-0.2	0.5	0.2	0.2	0.2	0.3	-0.1	0.1	0.5	0.2	-0.1	0.1	0.2	-0.5	-0.1	-0.3	0.4	-0.3	0
June	2.63	79.00	-0.3	0.4	-0.3	5.5	0.8	0.7	0.1	0.6	2.4	3.7	8.2	-0.1	0.1	0.3	-0.2	0.1	-0.5	0.5	4.9	7.1	5	10.4	0.3	0.3	1	2.5	6.2	8.8	10.6	-0.1	
July	1.68	52.09	2	-0.1	-0.7	1.3	8.1	3.8	1.507772	1.507772	1.507772	1.507772	1.507772	1.507772	1.507772	1.507772	1.507772	1.507772	1.507772	1.507772	1.507772	1.507772	1.507772	1.507772	1.507772	1.507772	1.507772	1.507772	1.507772	1.507772	1.507772	1.507772	1.507772
August	1.22	37.81	1.507772	0.097925	-0.1	-0.2	-0.2	0.5	-0.6	1.3	2.1	1.7	2.6	4.4	-0.7	8.1	0.6	1.6	2.3	3.9	1.6	4	1.6	1.7	0.5	0.3	-0.5	-0.1	-0.5	0.4	0.5	-0.3	-0.3
September	1.02	30.58	5.3	0	-0.2	0.4	-0.4	0.4	-0.9	0	18.7	-1	0.4	1	-1.1	0.1	-0.6	0.5	-0.3	0.4	0	0.8	1.3	0.8	0.2	2.5	1.1	0.2	0.244444	0.244444	0.244444	0.244444	
October	0.74	22.92	0.244444	0.244444	0.244444	0.244444	0.244444	1.5	0.1	0.2	1.9	-0.8	1.2	2.7	0.2	0	0.9	-0.5	0.6	0.6	1	0	0.1	1.2	3.9	0.5	0.5	-0.4	0.8	0	0.7	3.1	1.7
November	1.06	31.92	1.063889	1.063889	1.063889	1.063889	1.063889	1.06389	1.063889	1.063889	1.063889	1.063889	1.063889	1.063889	1.063889	1.063889	1.063889	1.063889	1.063889	1.063889	1.063889	1.063889	1.063889	1.063889	1.063889	1.063889	1.063889	1.063889	1.063889	1.063889	1.063889	1.063889	
December	0.99	30.78	1.063889	1.063889	1.063889	1.063889	1.063889	1.06389	1.1	3.6	6.9	0	0.3	0.8	0.3	0.1	0.3	1.3	1.9	0	0.1	0	0.2	1.6	0.2	2	1.3	0.5	0.1	0.1	1.6	0.1	0
Entire Year	1.02	340.02																															

Shaded cells indicate precipitation calculated on a hourly average due to missing data sets.

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Figure E-1: 2011 Faro Air Temperature (Hourly)

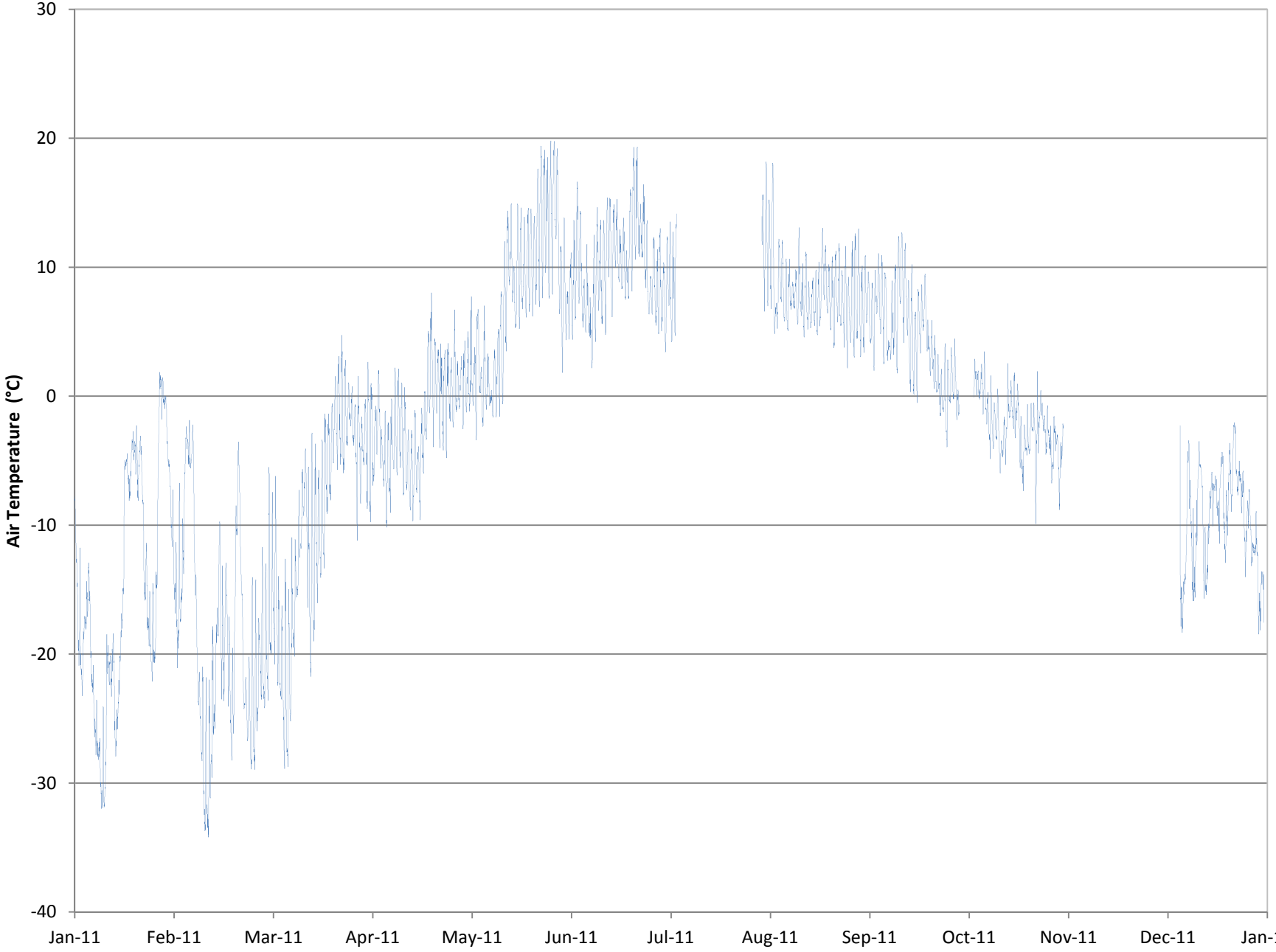

Figure E-2: 2011 Faro Cumulative Precipitation (Hourly)

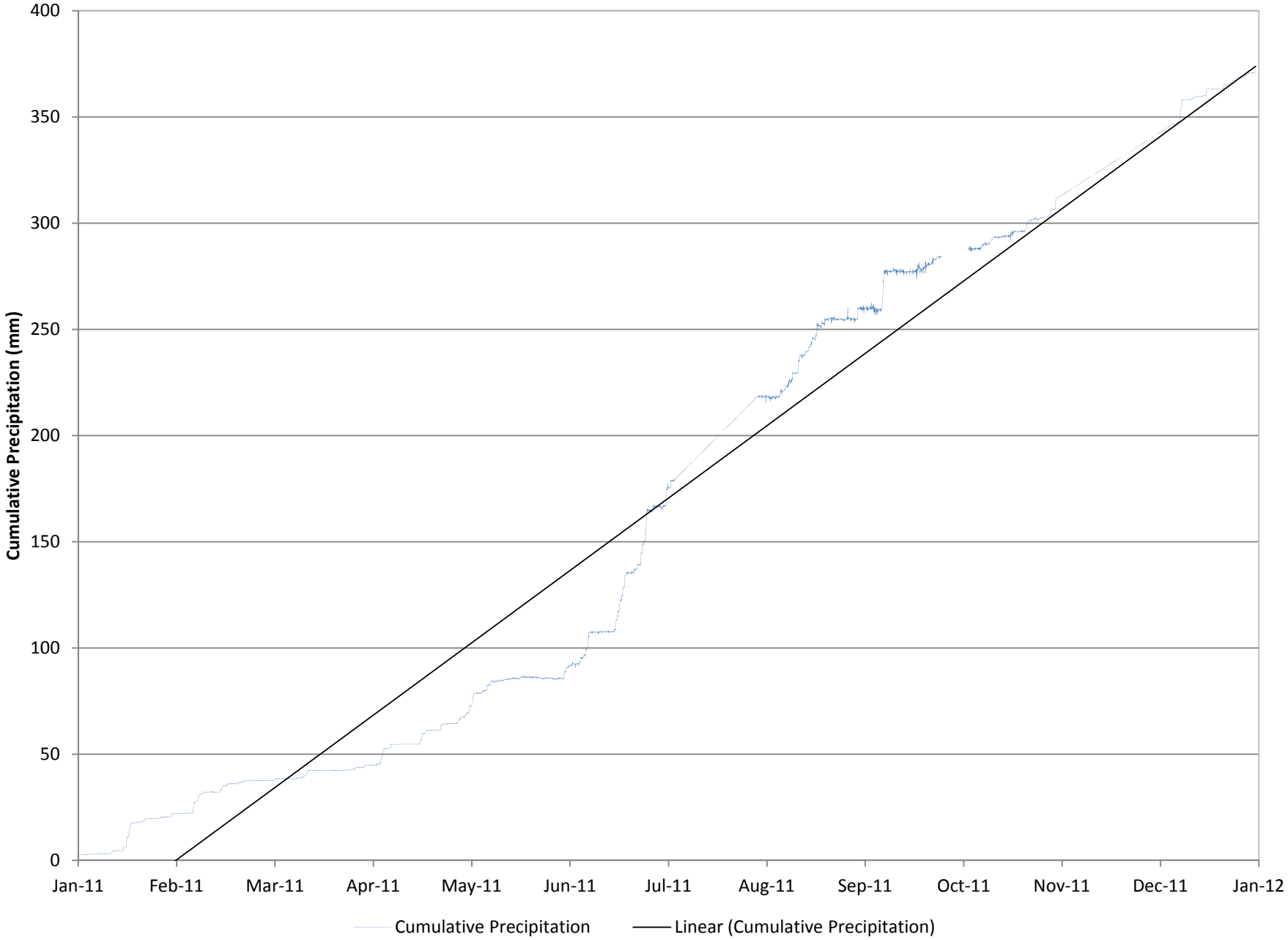

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Figure E-3: 2011 Faro Relative Humidity (Hourly)

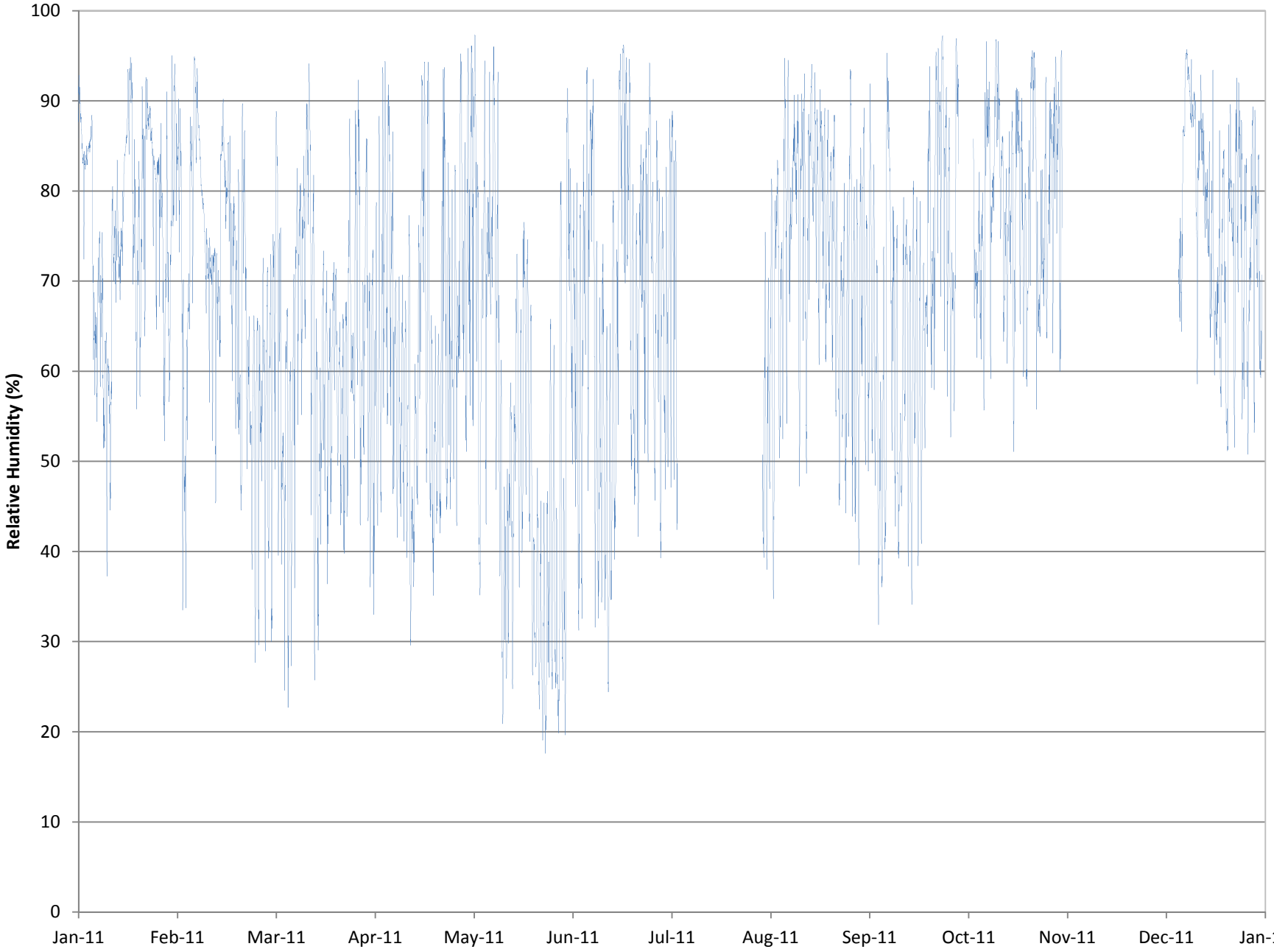

Figure E-4: 2011 Faro Net Radiation (Hourly)

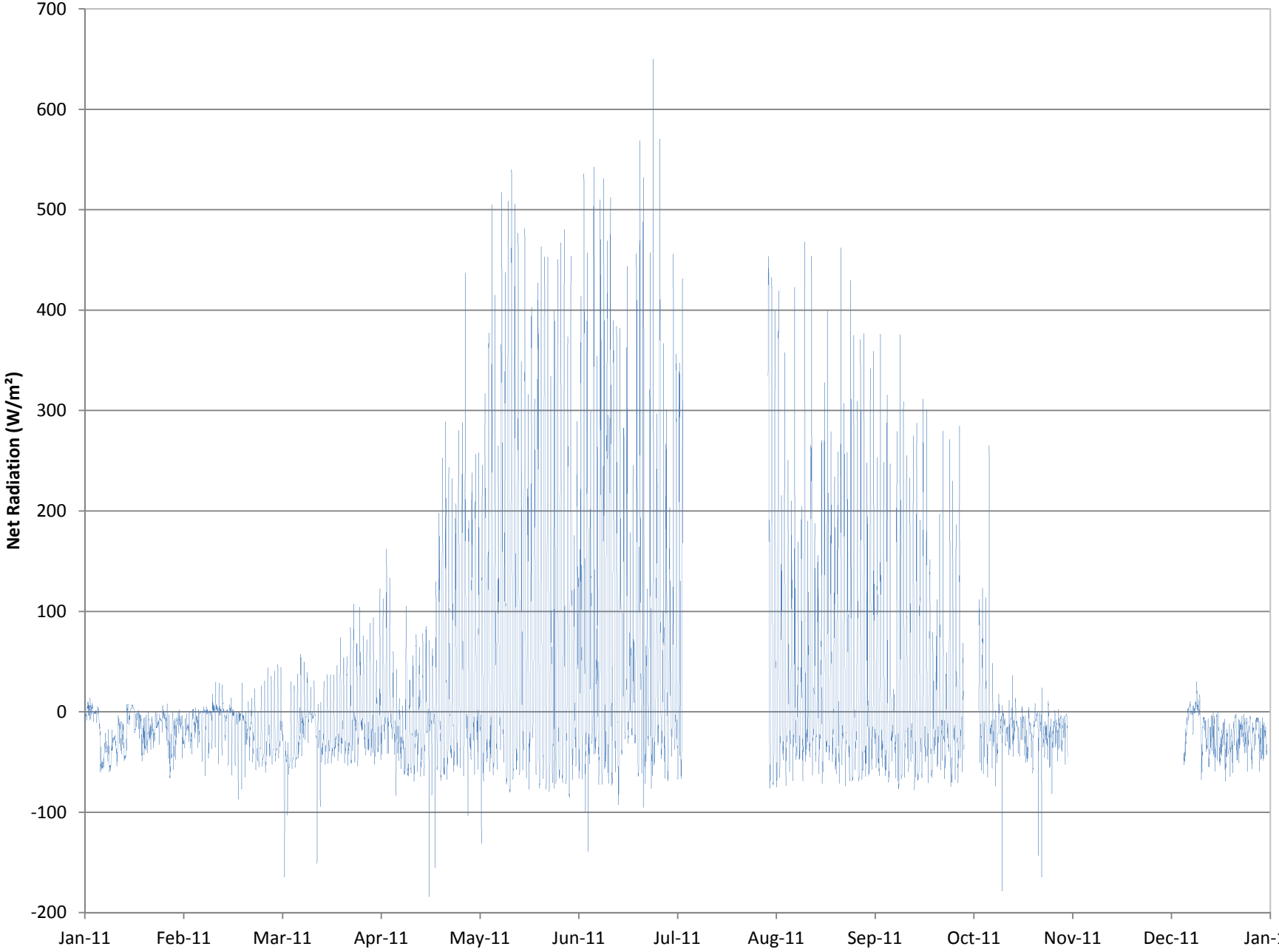

Figure E-5: 2011 Faro Soil Heat Flux (Hourly)

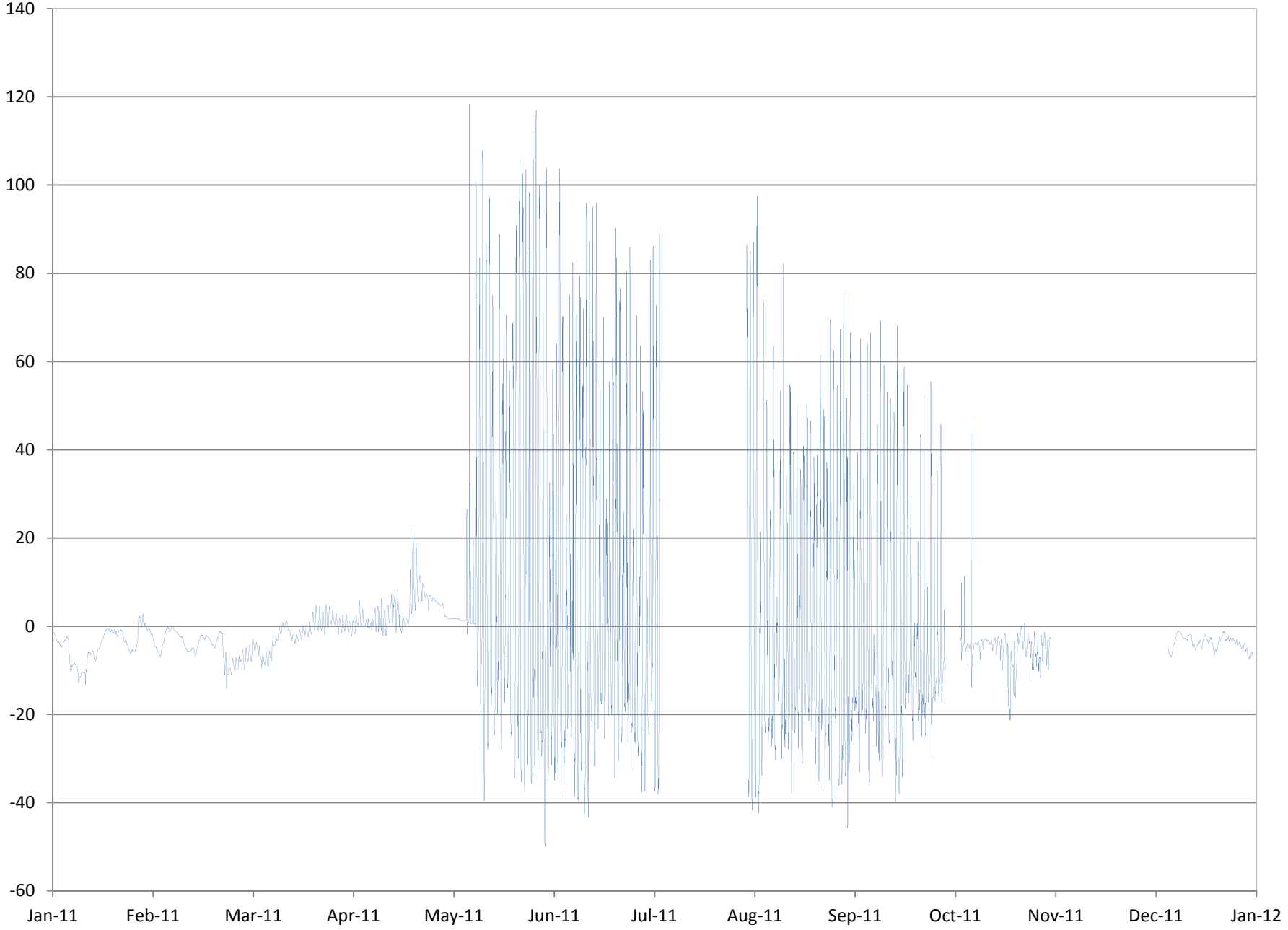

Figure E-6: 2011 Faro Soil Temperature - 10cm Below Ground (Hourly)

Figure E-7: 2011 Faro Soil Temperature - 30cm Below Ground (Hourly)

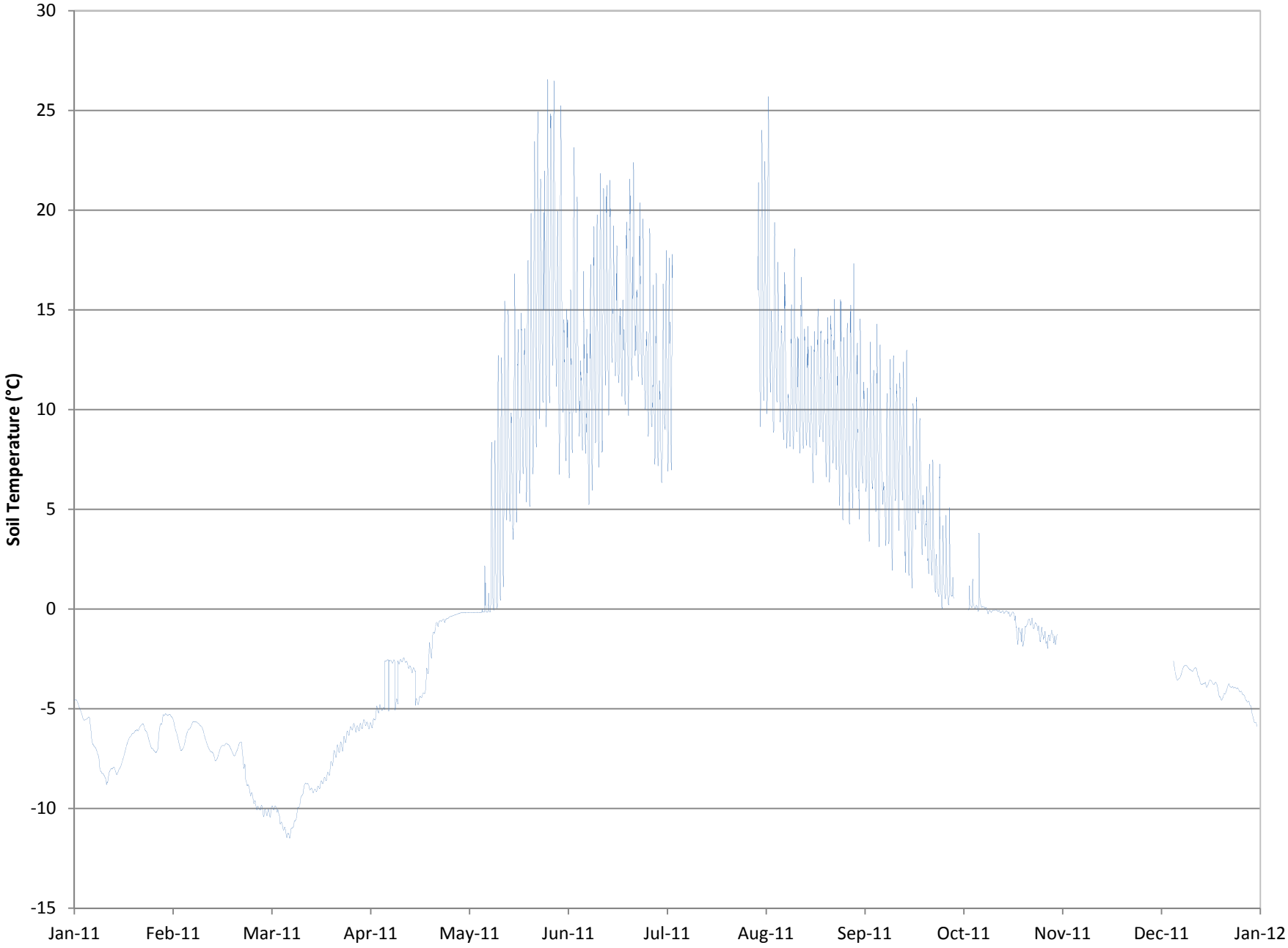

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Figure E-8: 2011 Faro Soil Water Content (Hourly)

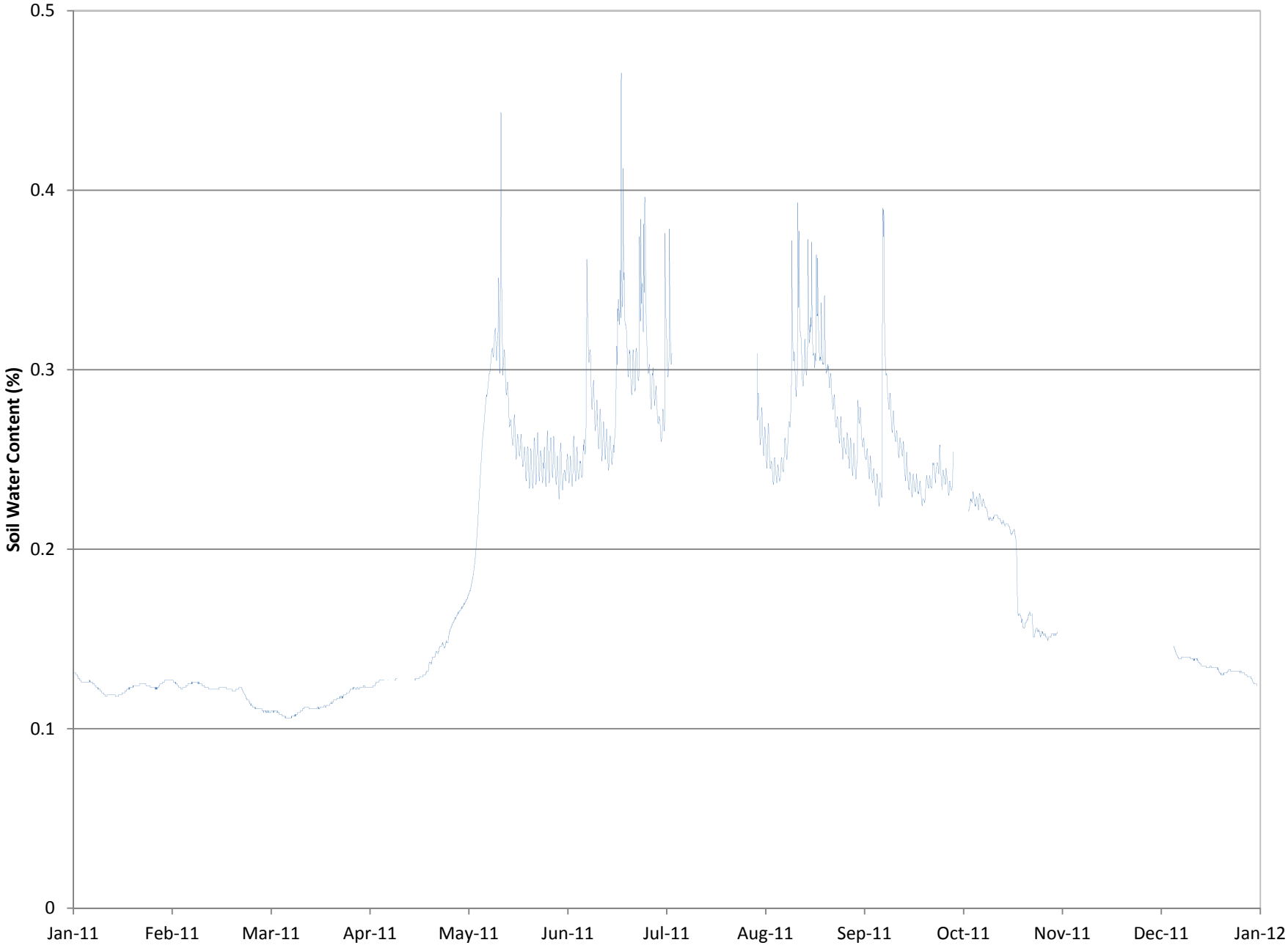

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Figure E-9: 2011 Faro Snow Depth (Hourly)

TABLES AND FIGURES

Grum Meteorological Data

Table E-3: 2011 Grum Climate Station - Daily and Monthly Average Temperature

Month	Day	Monthly	2011 Grum Daily Air Temperature (°C)																												
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
January	Average	-14.92	-4.870	-6.52	-3.33	-3.32	-6.35	-7.82	-11.79	-18.52	-20.80	-15.51	-16.03	-24.93	-28.26	-29.74	-30.05	-25.00	-21.17	-19.97	-24.93	-22.01	-16.29	-5.51	-6.49	-4.38	-4.18	-4.88	-8.10	-13.89	-20.30	-20.99	-16.49
	Max	-1.934	-3	-2.868	-2.114	-2.133	-3.323	-7.02	-7.77	-14.74	-17.13	-13.08	-12.94	-20	-24.55	-25.92	-25.58	-19.21	-19.33	-19	-22.52	-19.37	-6.854	-4.57	-5.933	-3.054	-1.934	-3.234	-4.237	-11.2	-16.68	-15.68	-12.87
	Min	-32.87	-9.33	-10.29	-4.048	-4.343	-9.92	-9.19	-16.28	-22.69	-25.25	-17.87	-20.42	-29.27	-30.34	-32.87	-32.11	-30.52	-22.65	-22.3	-28.23	-24.24	-19.74	-7.61	-7.02	-6.509	-5.986	-6.38	-12.57	-18.92	-23.53	-25.17	-21.17
February	Average	-15.90	-3.44	-0.35	-1.37	-5.79	-10.19	-14.03	-16.41	-15.32	-6.05	-4.06	-4.44	-14.88	-23.07	-28.08	-30.65	-30.76	-25.86	-24.93	-15.32	-19.37	-17.15	-20.69	-25.03	-15.26	-7.11	-16.76	-23.93	-24.98			
	Max	1.232	1.232	0.97	0.078	-3.501	-8.33	-11.35	-8.9	-12.15	-2.711	-3.106	-2.09	-8.99	-20.06	-23.53	-23.85	-23.76	-19.58	-20.32	-9.77	-15.25	-13.99	-17.03	-20.94	-9.99	-3.822	-12.29	-22.09	-18.76			
	Min	-34.95	-10.54	-1.593	-3.414	-8.39	-12.73	-18.48	-22.86	-17.45	-14.41	-4.726	-8.79	-19.74	-25.39	-32.23	-33.52	-34.95	-28.84	-29.62	-21.09	-22.25	-20.45	-23.51	-27.37	-23.97	-11.53	-23.84	-25.15	-29.77			
March	Average	-12.74	-25.64	-24.82	-22.51	-20.91	-18.46	-17.61	-16.91	-15.46	-20.02	-22.93	-23.22	-23.31	-19.69	-16.30	-13.46	-10.38	-6.70	-13.28	-14.44	-11.82	-9.30	-7.68	-6.21	-4.94	-3.64	-1.18	-0.15	0.18	-0.91	-1.54	-1.64
	Max	5.005	-19.14	-19.82	-18.98	-17.77	-15.35	-9.56	-12.66	-10.34	-14.25	-18.34	-17.08	-17.77	-15.9	-13.72	-10.88	-6.939	-4.473	-8.14	-6.482	-6.249	-5.562	-2.423	-1	-1.541	-0.197	2.46	3.998	5.005	2.995	1.96	1.009
	Min	-30.19	-30.19	-28.95	-26.2	-23.38	-20.62	-24.34	-20.84	-20.4	-25.02	-27.48	-28.98	-29.33	-22.77	-19.82	-15.91	-12.41	-9.77	-19.94	-20.44	-19.16	-12.75	-11.18	-11.66	-7.58	-6.237	-3.307	-3.6	-3.428	-4.179	-3.758	-4.07
April	Average	-2.74	-2.59	-4.36	-4.50	-2.77	-3.71	-4.40	-3.55	-1.09	-3.45	-5.28	-6.05	-4.36	-2.33	-2.27	-2.79	-3.57	-5.14	-5.93	-5.04	-5.86	-5.44	-3.05	0.29	2.62	1.03	1.05	-0.35	-0.02	0.29	0.44	
	Max	6.578	0.838	0.123	-0.944	0.684	3.431	1.335	-0.964	3.36	-1.127	-2.614	-2.061	-0.206	2.176	1.609	1.026	0.663	-2.62	-2.662	-1.092	-4.375	-2.321	1.084	5.101	6.578	4.185	4.272	2.996	3.08	3.561	2.867	
	Min	-11.49	-5.269	-11.31	-9.84	-5.441	-7.16	-10.77	-6.986	-4.905	-5.724	-7.39	-11.49	-7.76	-5.648	-6.116	-5.558	-7.67	-7.28	-8.85	-9.68	-7.5	-9.08	-6.559	-3.84	-1.515	-2.618	-2.204	-2.776	-4.005	-3.214	-2.852	
May	Average	6.21	0.06	-0.02	0.75	0.92	1.35	2.03	0.87	2.78	0.71	1.04	1.07	-0.12	0.61	2.10	4.91	6.11	9.16	11.35	8.01	9.38	9.84	9.54	9.27	11.17	9.64	11.80	13.32	14.06	13.69	13.14	14.00
	Max	20.14	3.978	2.514	2.839	3.705	4.173	5.757	2.983	7.52	2.405	3.799	4.054	1.355	3.728	5.871	8.49	12.51	15.09	15.18	10.77	14.97	15.44	13.27	14.09	14.83	14.09	16.81	18.43	18.78	17.86	18.7	20.14
	Min	-4.121	-3.075	-1.457	-1.261	-3.794	-1.387	-0.886	-0.832	-4.121	-0.835	-2.589	-0.68	-1.035	-2.12	-1.582	0.948	-2.209	1.075	8.04	4.813	4.202	4.244	7.18	5.231	7.19	5.124	6.318	4.765	4.853	10.33	6.678	5.046
June	Average	9.76	14.26	9.29	7.79	5.76	7.95	8.31	10.58	10.74	7.03	6.39	4.90	6.86	9.34	9.61	9.41	10.32	11.84	10.58	11.73	9.29	10.25	8.53	11.61	14.10	14.84	12.59	12.28	10.15	7.49	9.07	
	Max	19.18	19.08	12.24	13.2	8.57	11.88	13.43	16.07	13.77	8.84	9.45	7.14	12.17	13.97	12.48	13.73	14.76	14.83	14.73	14.19	10.68	12.97	10.62	15.44	19.18	18.76	14.08	15.89	13.1	9.24	12.12	
	Min	0.875	9.02	6.109	0.875	3.133	3.58	4.722	4.473	6.857	5.334	4.328	3.707	1.822	1.53	6.147	3.452	2.628	8.45	5.565	9.58	8.04	8.25	6.969	6.739	7.24	8.53	11.14	9.53	7.91	5.908	5.496	
July	Average	10.71	7.07	9.42	7.48	7.73	9.07	7.88	10.30	13.00	12.78	10.48	13.41	16.43	13.88	12.97	11.65	11.71	10.70	8.85	9.12	9.22	11.76	13.31	13.09	12.52	11.00	10.36	8.51	8.38	9.23	10.18	10.54
	Max	22	10.72	13.13	10.22	12.6	12.41	11.82	15.8	18.71	16.36	15.47	19.89	22.00	17.41	17.53	15.04	15.82	12.27	10.21	12.18	11.25	16.76	18.64	18.80	16.48	13.70	13.23	10.42	10.87	13.15	14.90	15.58
	Min	2.007	4.88	5.967	4.902	2.839	6.619	2.388	2.007	5.28	9.06	6.45	6.05	7.81	11.19	8.87	9.38	8.39	9.19	7.04	6.57	6.94	5.36	6.19	5.40	8.22	8.77	7.57	6.51	6.58	6.24	5.99	5.23
August	Average	7.86	9.36	10.41	11.88	10.15	11.39	6.09	8.87	9.18	7.33	7.26	7.74	7.14	8.19	7.39	7.23	6.53	6.63	6.37	6.97	8.18	8.82	7.32	6.99	6.87	8.01	7.07	6.81	5.10	7.02	7.08	8.27
	Max	18.52	11.59	15.39	18.52	15.47	18.1	9.64	12.48	13.38	10.2	10.26	8.5	9.45	13.81	10.3	10.73	9.18	10.04	8.72	10.25	12.39	11.43	10.73	11.61	11.11	11.92	9.57	11.52	8.68	11.58	12.78	12.58
	Min	0.79	7.15	5.952	3.825	4.1	4.085	4.216	5.124	6.424	5.035	4.956	6.67	5.55	4.222	5.351	3.791	4.8	5.102	5.014	4.714	4.742	5.975	4.231	2.084	1.882	4.832	4.997	2.725	0.79	3.499	1.818	2.452
September	Average	4.76	6.57	7.29	7.35	5.86	6.08	8.38	7.74	6.79	3.98	5.31	6.58	7.40	9.77	8.35	6.58	5.06	3.61	4.27	5.66	7.04	4.59	3.46	2.55	1.13	-0.11	0.05	-0.69	1.29	1.53	-0.66	
	Max	12.68	10.11	10.91	9.63	8.79	9.79	11.06	10.91	9.57	7.55	8.95	10.19	12.39	12.68	11.86	8.98	10.22	6.529	8.29	8.65	9.46	6.4	5.87	4.718	3.261	2.106	4.042	2.816	3.768	4.44	0.92	
	Min	-3.93	3.066	3.388	5.645	4.107	1.978	6.396	4.812	2.502	2.768	2.84	3.221	1.785	7.15	4.133	3.048	0.382	0.128	-0.516	3.318	5.069	3.487	1.578	0.572	0.292	-1.521	-1.69	-3.93	-0.525	-0.228	-1.831	
October	Average		-0.65	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	-3.06	-3.32	-3.13	-2.75	-3.91	-1.69	-2.39	-3.08	-4.34	-4.43	-3.83	-5.52
	Max		-0.65	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	-1.226	-0.689	-0.694	-1.338	0.175	0.394	-1.27	-0.061	-3.37	-2.513	-2.635	-3.627
	Min		-0.65	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	-4.476	-5.456	-5.446	-4.827	-6.921	-4.262	-4.265	-4.946	-6.887	-6.04	-5.16	-7.84
November	Average	-15.02	-2.66	-11.33	-16.03	-13.67	-12.60	-10.32	-5.74	-10.10	-11.11	-11.98	-12.45	-11.53	-13.20	-18.61	-21.09	-17.59	-20.63	-23.59	-28.37	-29.11	-21.69	-13.33	-14.79	-16.90	-17.74	-15.92	-18.29	-13.65	-8.46	-8.06	
	Max	-1.262	-1.26	-2.34	-12.03	-11.81	-8.93	-5.18	-3.18	-5.61	-8.05	-8.18	-10.95	-9.60	-10.43	-15.55	-18.09	-15.23	-16.40	-21.11	-24.82	-27.27	-16.39	-10.34	-13.97	-14.74	-14.61	-14.26	-15.17	-7.20	-7.09	-4.72	
	Min	-32.98	-4.92	-13.75	-21.55	-15.71	-15.89	-17.67	-7.56	-16.53	-15.26	-15.76	-13.58	-12.92	-17.42	-21.42	-25.40	-22.17	-24.12	-25.54	-31.72	-32.98	-27.20	-15.95	-15.83	-21.39	-21.32	-18.07	-22.01	-21.06	-12.25	-12.19	
December	Average	-9.58	-5.19	-5.18	-10.28	-6.28	-4.64	-15.86	-15.58	-11.67	-6.00	-12.19	-13.99	-5.92	-9.59	-13.77	-9.80	-7.53	-7.68	-9.21	-6.36	-9.76	-6.81	-6.29	-5.33	-6.52	-7.27	-11.99	-9.38	-12.75	-12.54	-16.14	-15.54
	Max	4.149	-2.70	-4.13	-4.20	3.42	4.15	-14.96	-14.7	-6.73	-3.371	-10.02	-8.19	-4.107	-6.306	-10.24	-6.854	-6.454	-6.704	-6.663	-4.769	-7.8	-3.88	-3.713	-3.136	-5.081	-6.059	-10.12	-8.28	-10.9	-10.11	-13.86	-13.66
	Min	-19.66	-7.48	-7.32	-14.20	-12.17	-15.45	-18.09	-16.44	-15.42	-10.27	-15	-19.6	-7.91	-13.57	-17.23	-13.18	-10.98	-9.01	-13.27	-9	-11.99	-10.27	-8.26	-7.27	-7.8	-10.02	-15.36	-11.06	-13.32	-15.74	-19.66	-19.39

Table E-4: 2011 Grum Climate Station - Monthly Average and Cumulative Precipitation

Month	Monthly Avg. Precip. (mm)	Monthly Cumulative Precip. (mm)	2011 Faro Daily Precipitation (mm)																														
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
January	0.62	19.20	0	0	0.2	0	2.4	0	0	0	0.6	0	0.1	0.3	0.1	0	0	-0.1	0.8	0.2	0.1	1.7	4.1	4.4	1.1	-0.1	0	0.8	1.9	0.2	0.2	0.1	0.1
February	0.63	17.50	-0.3	0.3	0.1	1.5	0.1	0.3	0.1	-0.1	0.1	0.6	2.1	3.1	1.1	0.8	0	-0.1	-0.1	-0.1	1.4	0.7	1.4	0.3	0.1	0	2.6	1.3	0.1	0.1			
March	0.12	3.60	0	0	0	-0.1	0	0	0.3	0.2	0.2	0	0.1	-0.2	0	0.6	-0.1	0.1	1.9	0.5	-0.1	-0.2	0	0	-0.1	-0.1	0.1	0	-0.1	0.1	0	0.4	0.1
April	0.77	23.20	0.7	0	0.1	0.7	0.1	-0.1	0	0.5	8.8	0.8	0.6	-0.1	-0.1	0.1	0	0	0.1	0	0	0.5	4.1	0.9	0.2	0.1	0.1	0	3.6	0.3	0.8	0.4	
May	0.98	30.40	0.4	3.1	0.5	0.5	4.8	2.6	5.6	0.3	0.4	0	2.8	5.9	0.6	0.5	0.5	-0.3	0	0.2	-0.4	0.1	1.3	-0.3	0.9	0.7	-0.1	0.3	-0.2	-0.2	-0.2	-0.3	0.4
June	3.05	91.45	0	0	0.4	2	0.3	0.3	0.5	0.1	3.2	5.1	16.1	0.1	0.1	-0.1	0.3	-0.3	0.6	-0.5	11.1	10.5	7.9	19.6	0.3	-0.3	0	2.8	0.5	8.1	1	1.753125	
July	1.75	54.35	1.753125	1.753125	1.753125	1.753125	1.753125	1.75313	1.753125	1.753125	1.753125	1.753125	1.753125	1.753125	1.753125	1.753125	1.753125	1.753125	1.753125	1.753125	1.753125	1.753125	1.753125	1.753125	1.753125	1.753125	1.753125	1.753125	1.753125	1.753125	1.753125	1.753125	1.753125
August	1.72	53.40	0.1	0.3	0.6	-0.7	0.8	-0.9	0.1	3.9	2.1	6.1	7.5	6	0.3	4.6	0.1	0.8	4.3	3.7	0	8.6	1	1.8	1	0.7	0.7	-1	-0.7	1	0.5	0.5	-0.4
September	1.27	38.13	5.3	0	-0.2	0.4	-0.4	0.4	-0.9	0	18.7	-1	0.4	1	-1.1	0.1	-0.6	0.5	-0.3	0.4	0	0.8	1.3	0.8	0.2	2.5	1.1	0.2	2.133333	2.133333	2.133333	2.133333	
October	1.48	45.97	2.133333	2.133333	2.133333	2.133333	2.133333	2.13333	2.133333	2.133333	2.133333	2.133333	2.133333	2.133333	2.133333	2.133333	2.133333	2.133333	2.133333	2.133333	2.133333	2.133333	-0.1	1.2	0.2	-0.6	-0.5	0.7	0	0.7	0.6	0.3	0.8
November	0.84	25.10	2.3	2.3	-0.1	1.2	1.5	0	0.6	1	0	0	0.1	2.3	0.8	0.1	0.5	1.3	4	0.7	0.4	0	0.7	0.2	0.6	0.4	0	1.7	0	0.9	0.3	1.3	
December	1.32	40.90	7	4.9	0	0.4	5.9	0	0.6	3.2	5.5	0	0	0.1	0.3	0.2	0.2	0.7	1	-0.1	0.1	0	0.2	2.4	2.2	1.4	1.8	0.6	0.2	0.8	1.3	0.1	-0.1
Entire Year	1.20	402.30																															

Shaded cells indicate precipitation calculated on a hourly average due to missing data sets.

Figure E-10: 2011 Grum Air Temperature (Hourly)

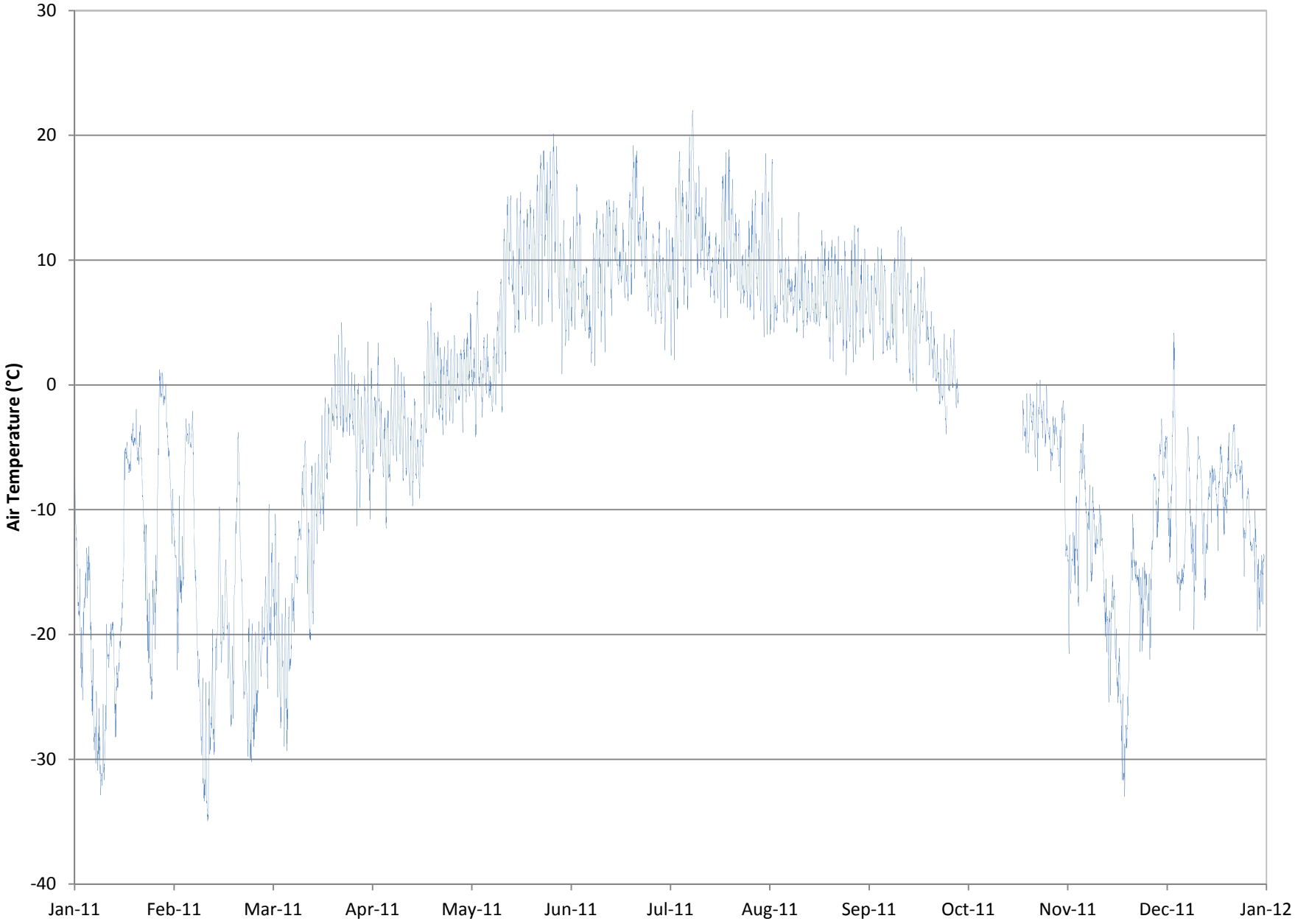


Figure E-11: 2011 Grum Air Temperature (Hourly)

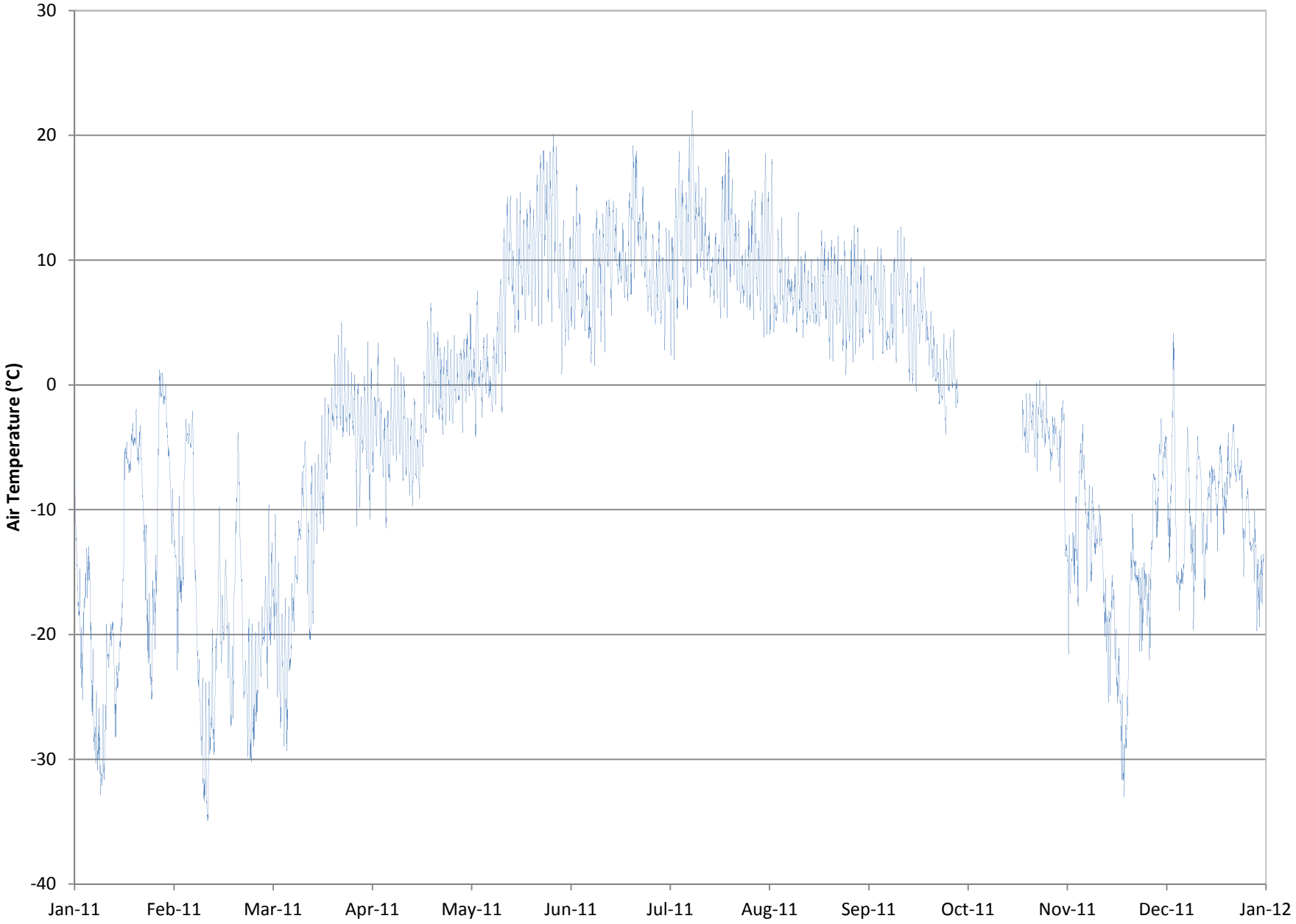


Figure E-12: 2011 Grum Relative Humidity (Hourly)

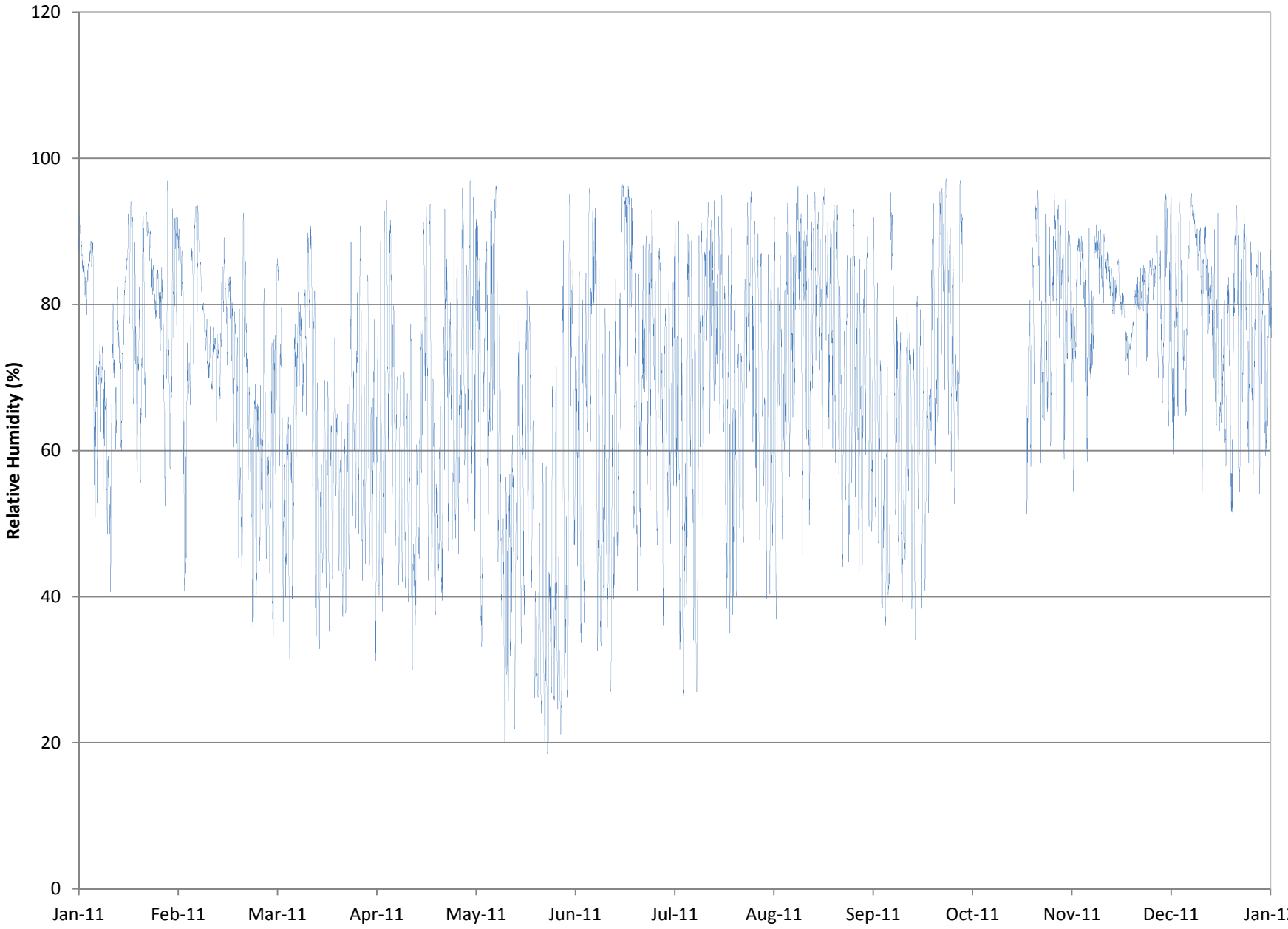
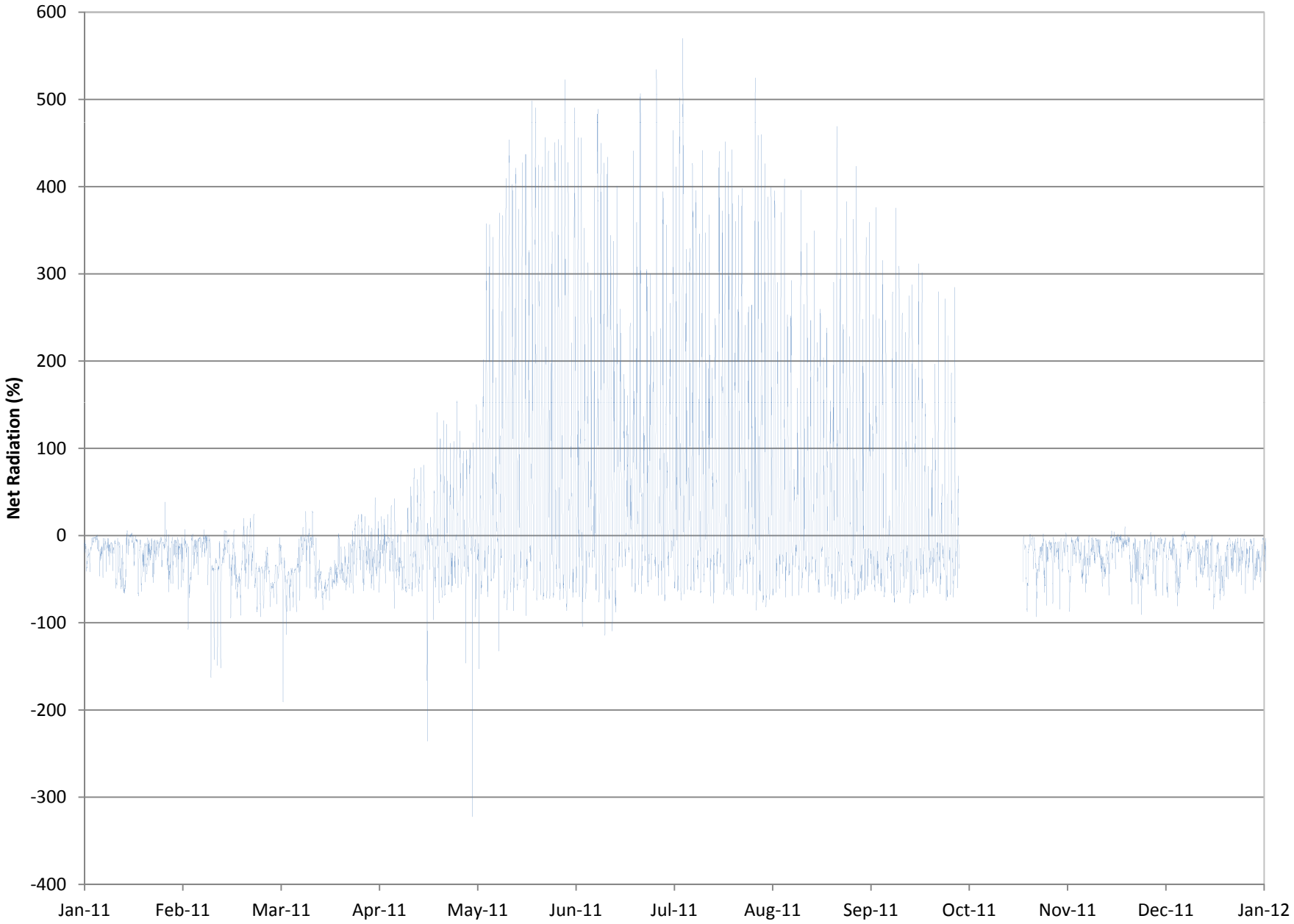
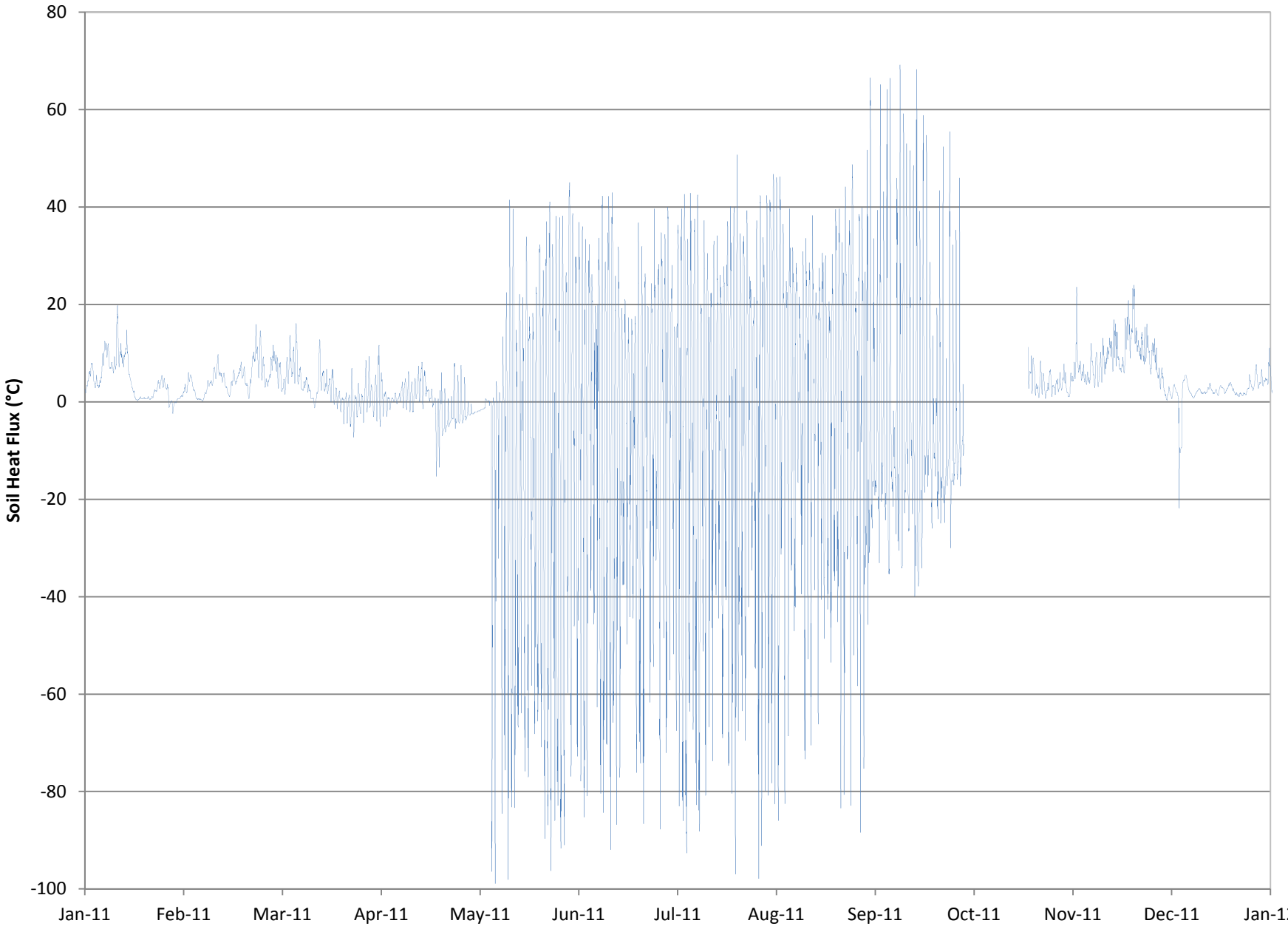


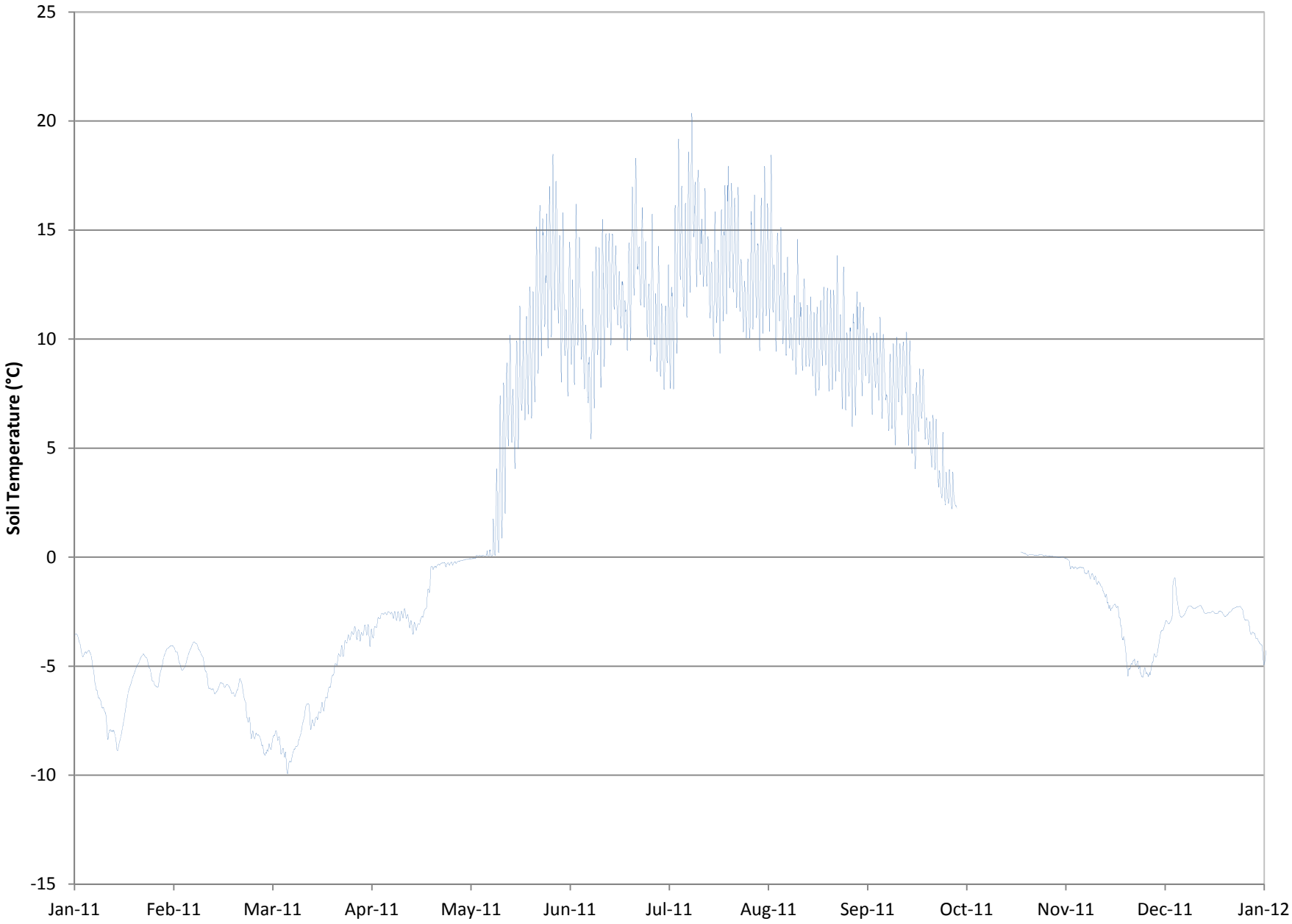
Figure E-13: 2011 Grum Net Radiation (Hourly)



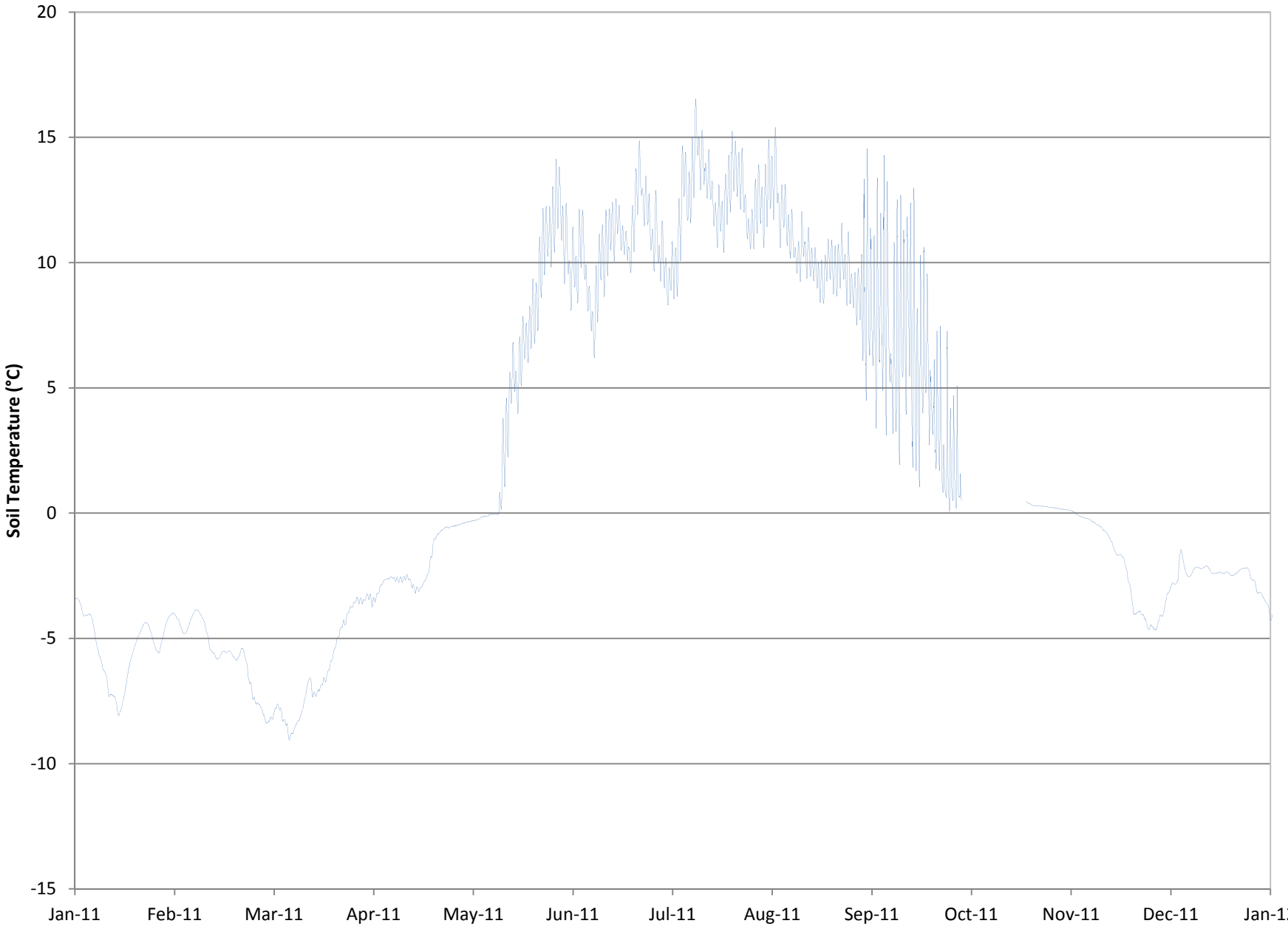
E-14: 2011 Grum Soil Heat Flux (Hourly)



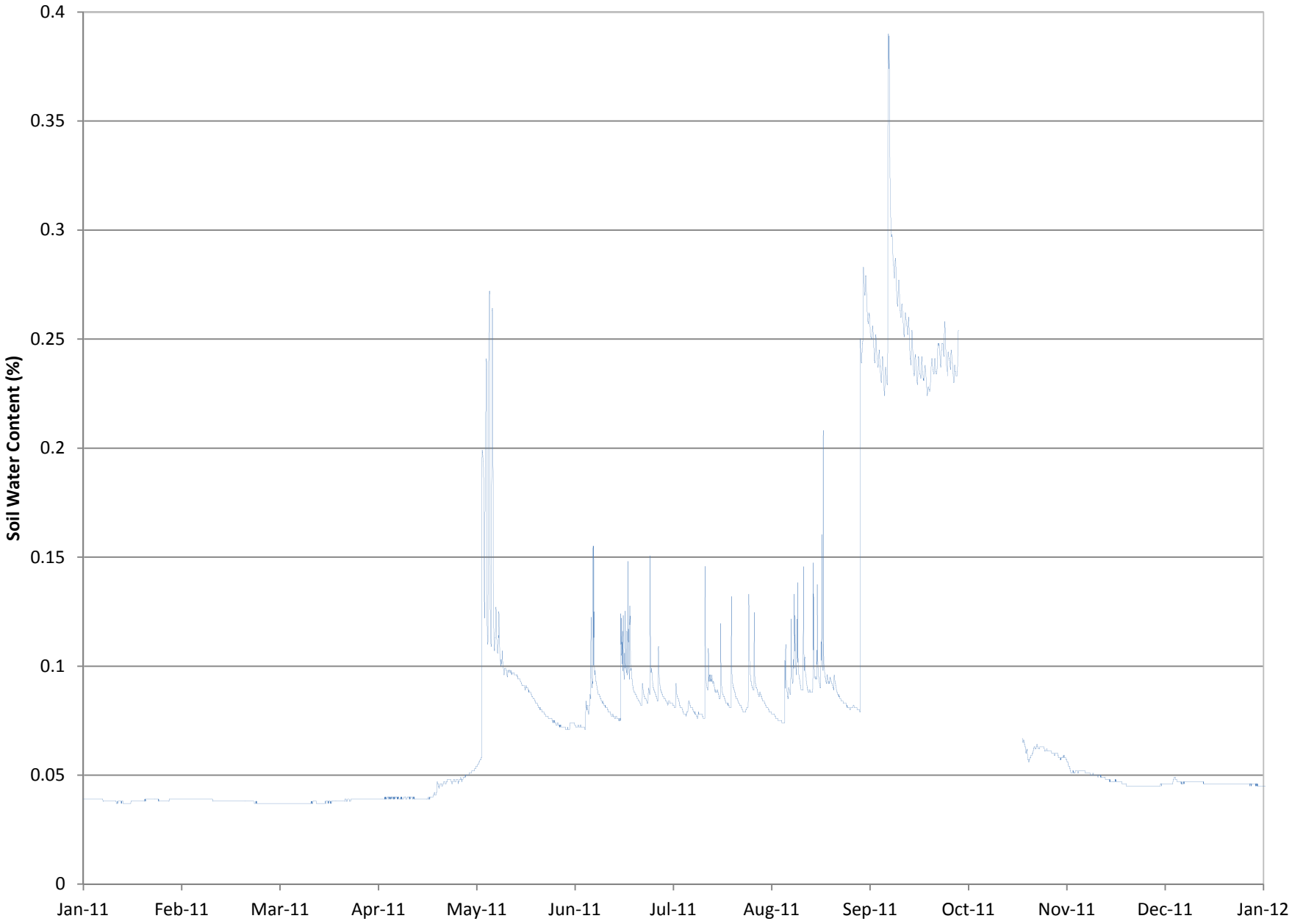
E-15: 2011 Grum Soil Temperature - 10cm Below Ground (Hourly)



E-16: 2011 Grum Soil Temperature - 30cm Below Ground (Hourly)



E-17: 2011 Grum Soil Water Content (Hourly)



E-18: 2011 Grum Snow Depth (Hourly)

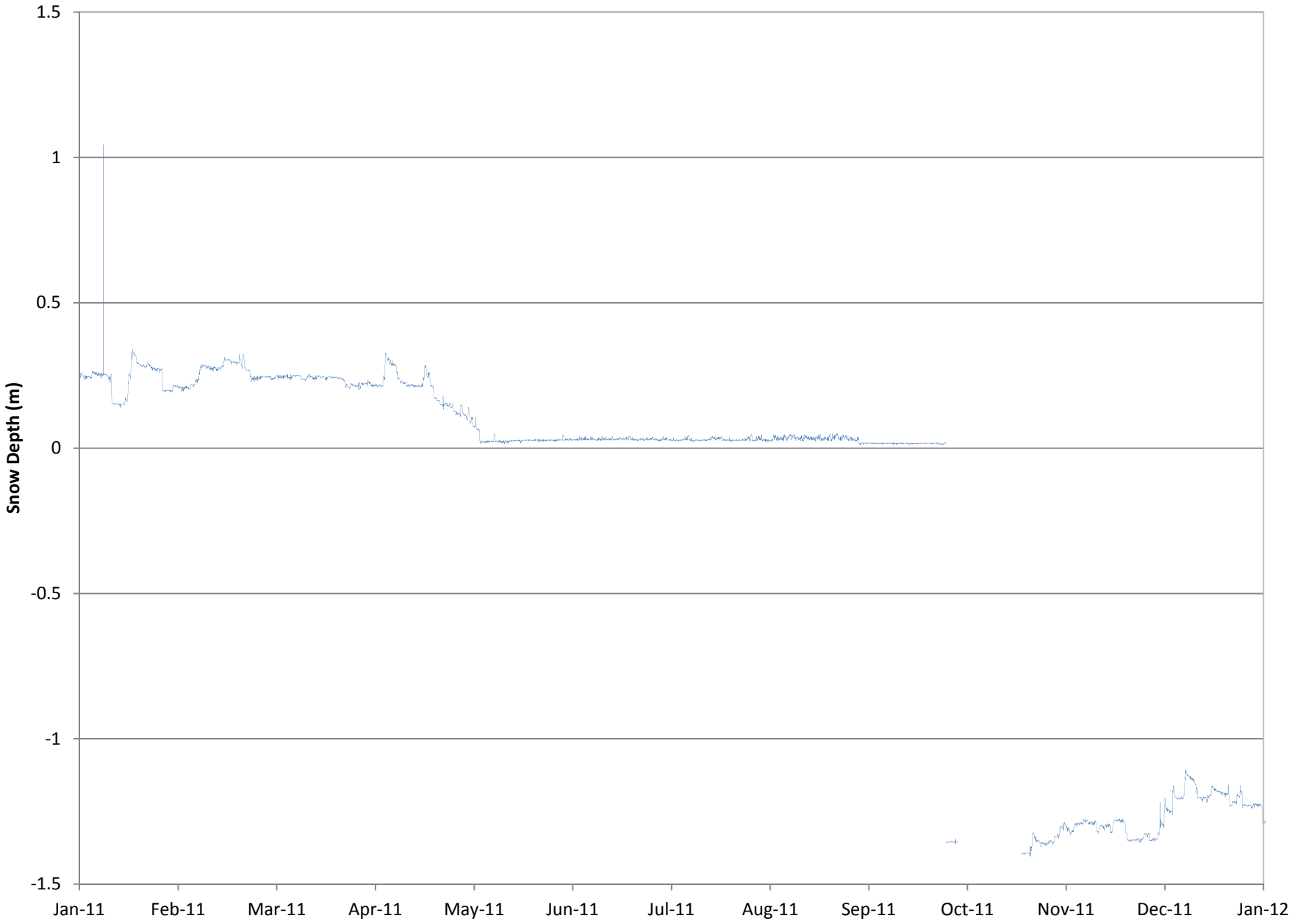
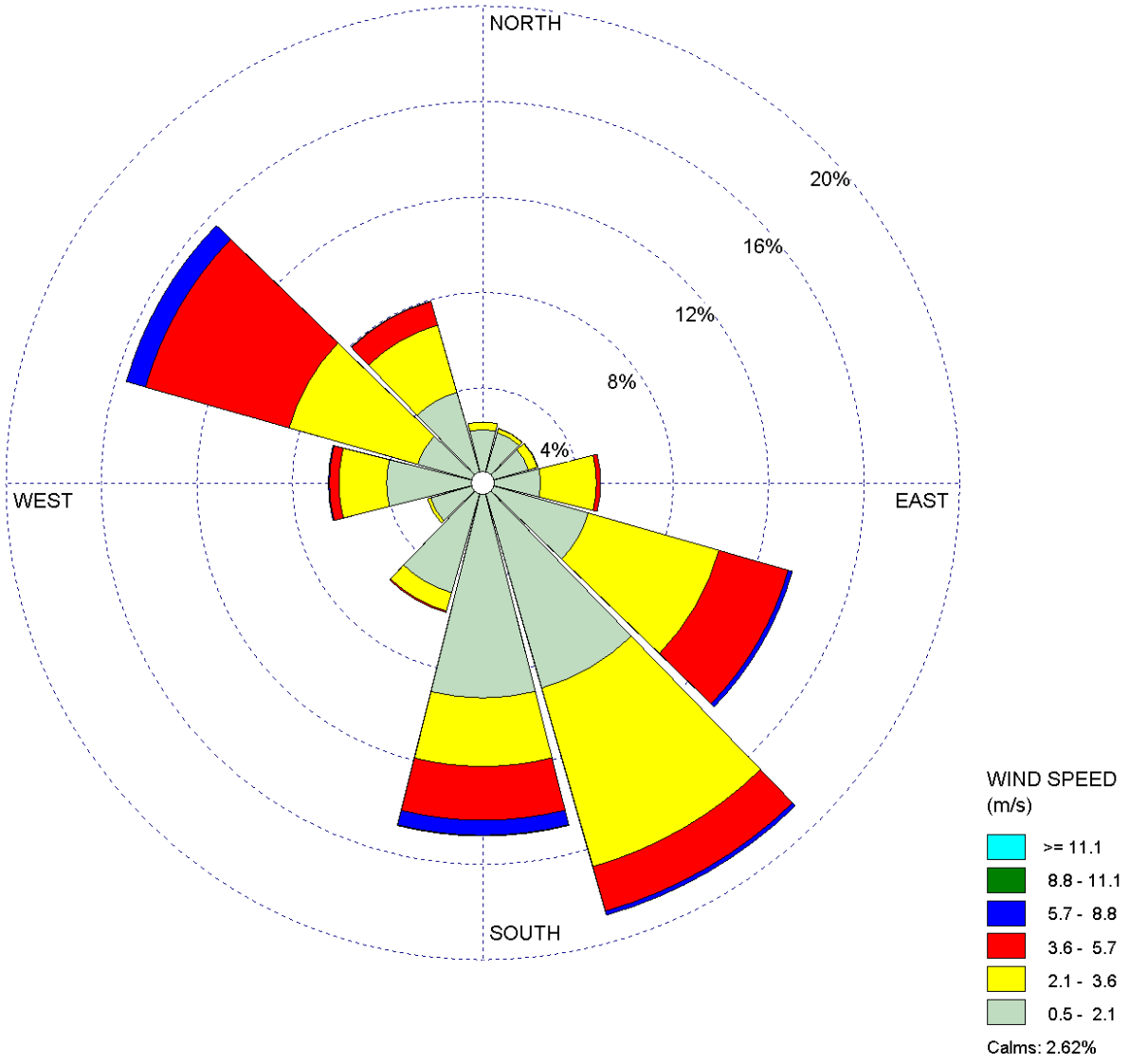


Figure E-19: Grum Climate Station Wind Rose

WIND ROSE PLOT:
Station #2 - Grum Climate Station
Faro, YT

DISPLAY:
Wind Speed
Flow Vector (blowing to)



COMMENTS:	DATA PERIOD: **Start Date: 1/1/2011 - 00:00** **End Date: 1/1/2012 - 00:00**	COMPANY NAME: **Denison Environmental Services**	
		MODELER: **Tracey Parkin**	Denison Environmental Services
	CALM WINDS: **2.62%**	TOTAL COUNT: **8272 hrs.**	
	AVG. WIND SPEED: **2.28 m/s**	DATE: **2/20/2012**	PROJECT NO.:

WRPLOT View - Lakes Environmental Software

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Note: Water elevations at the Cross Valley Pond, Intermediate Pond, Zone II Pit, Faro Pit, Grum Pit, Little Creek Dam Pond and Vangorda Pit were included in Appendix D and are therefore not included in this appendix.

Note: Weir flow rates downgradient of the Cross Valley Dam were also included in Appendix D, and are therefore not included in this appendix.

TABLES AND FIGURES

Rose Creek Diversion Canal

Denison Environmental Services

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Thermistor CD-15

Faro Mine Closure

CD-15		Location:	Canal Dyke St. 1+530			Elevation (m amsl):	1054.73	Coordinates:	1233.7 mN 1028.7 mE	8V581228 6913287
		Thermistor String #26	Date Installed:	1981	Thermistor Type:	Cantec Controls YSI 44007	Ice-Bath Calibration:	Applied	Surface Protector:	Yes
Depth Correction:	0.1									

Depth on String	Actual Depth	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)
(m)	(m)	09-Dec-81	31-May-94	13-Sep-94	20-Sep-95	11-Sep-96	13-Sep-99	07-Jun-00	05-Sep-00	25-May-01	13-Sep-01	13-Jun-02	12-Sep-02	17-Jun-03	12-Sep-03	06-Jul-04	16-Sep-04	31-May-05	12-Oct-05	14-Jun-06	02-Oct-06	06-Jun-07	24-Sep-07	19-Jun-08	24-Sep-08	30-Jun-09	16-May-10	02-Jun-10	10-Sep-10	27-May-11
1.0	-1.1	20.00	13.84	11.56	11.52	11.93	11.36	13.04	12.03	16.84	11.56	12.16	11.57	12.04	11.11	8.87	12.50	13.40	13.87	11.66	13.11	12.99	13.97	13.52	12.89	11.90	16.93	12.66	11.10	16.61
2.0	-2.1	16.29	16.58	10.64	11.36	12.23	11.48	16.96	11.74	17.14	11.30	16.59	12.00	15.88	11.22	11.63	11.67	16.89	12.55	16.95	12.65	17.14	12.72	16.37	12.39	14.90	17.18	16.93	11.30	17.24
3.0	-3.1	15.99	23.62	15.29	16.47	18.13	17.46	24.88	17.37	24.84	17.05	24.82	18.61	24.71	17.12	21.04	16.94	24.35	17.39	24.52	18.43		13.08				24.62	-	-	24.50
4.0	-4.1	15.65		11.34	11.61	13.10	12.17	16.64	12.08	17.01		17.42	13.84	18.02	13.33	17.84	13.31		13.22	18.93	o/l	19.56	14.08	19.44	14.76	19.90	20.14	20.05	14.70	19.92
5.0	-5.1	15.71	16.11	11.81	11.65	13.06	12.38	16.12	11.88	16.21	12.38	16.24	12.68	16.26	12.31	15.91	12.35	16.05	11.70	16.20	12.91	16.50	15.69	16.40	12.61	16.49	16.75	16.61	12.40	16.45
6.0	-6.1	15.75	15.80	12.17	11.72	13.07	12.50	15.77	12.10	15.90	12.57	15.95	12.70	16.00	12.36	15.66	12.82	15.87	12.13	16.42	13.69	17.05	15.90	17.42	13.86	18.92	20.10	19.96	15.50	19.97
7.0	-7.1	15.53	15.49	12.61	12.28	13.67	13.09	15.39	12.60	15.52	13.10	15.53	13.43	15.59	12.94	15.54	13.15	15.30	12.16	15.45	13.34	15.63	15.17	15.73	13.08	15.81	16.05	15.95	12.80	15.49
8.0	-8.1	15.47	15.33	13.42	13.09	14.28	13.78	15.24	13.55	15.40	13.83	15.37	14.26	15.43	13.67	15.44	13.77	15.09	12.76	15.25	13.83	15.43	14.40	15.58	13.77	15.69	15.88	15.82	13.70	15.33
9.0	-9.1	15.41	15.19	14.09	13.78	14.68	14.38	15.23	14.39	15.40	14.52	15.37	14.88	15.45	14.40	15.47	14.46	15.13	13.50	15.27	14.46	15.28	15.03	15.84	14.94	16.75	17.66	17.73	16.30	18.46
10.0	-10.1	15.45	15.96	15.21	14.97	15.78	16.64	17.33	16.94	17.64	17.05	17.55	17.30	17.88	17.09	18.14	17.27	17.76	16.55	5.17	5.14	*28.10*					*45.90*	*46.00*	*36.40*	

Depth on String	Actual Depth	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)
(m)	(m)	09-Dec-81	31-May-94	13-Sep-94	20-Sep-95	11-Sep-96	13-Sep-99	07-Jun-00	05-Sep-00	25-May-01	13-Sep-01	13-Jun-02	12-Sep-02	17-Jun-03	12-Sep-03	06-Jul-04	16-Sep-04	31-May-05	12-Oct-05	14-Jun-06	02-Oct-06	06-Jun-07	24-Sep-07	19-Jun-08	24-Sep-08	30-Jun-09	16-May-10	02-Jun-10	10-Sep-10	27-May-11
1.0	-1.1	-4.10	3.09	6.72	6.79	6.08	7.08	4.28	5.91	-0.78	6.72	5.69	6.70	5.89	7.53	12.20	5.14	3.74	3.05	6.55	4.18	4.36	2.90	3.56	4.52	6.13	-0.91	4.91	7.54	-0.53
2.0	-2.1	-0.20	-0.55	8.35	7.01	5.51	6.79	-0.99	6.34	-1.19	7.12	-0.56	5.89	0.30	7.26	6.53	6.46	-0.91	4.98	-0.98	4.82	-1.19	4.71	-0.30	5.24	1.55	-1.27	-0.98	7.09	-1.34
3.0	-3.1	0.20																					4.15				-8.27			-8.18
4.0	-4.1	0.70		7.15	6.67	4.23	5.72	-0.51	5.87	-0.93		-1.40	3.13	-2.05	3.88	-1.86	3.91		4.05	-3.00		-3.74	2.68	-3.62	1.74	-4.07	-4.29	-4.21	1.95	-4.08
5.0	-5.1	0.60	0.11	6.31	6.58	4.27	5.35	0.09	6.19	-0.01	5.35	-0.05	4.87	-0.07	5.47	0.35	5.40	0.18	6.50	0.00	4.50	-0.36	0.63	-0.24	4.98	-0.35	-0.67	-0.51	5.32	-0.31
6.0	-6.1	0.50	0.44	5.65	6.41	4.21	5.11	0.48	5.76	0.31	4.99	0.25	4.79	0.19	5.33	0.61	4.60	0.35	5.71	-0.32	3.28	-1.05	0.31	-1.47	3.03	-3.06	-4.34	-4.20	0.82	-4.21
7.0	-7.1	0.80	0.85	4.95	5.48	3.33	4.20	0.98	4.96	0.81	4.18	0.80	3.68	0.72	4.43	0.78	4.10	1.09	5.68	0.90	3.82	0.67	1.26	0.55	4.21	0.45	0.14	0.26	4.64	0.84
8.0	-8.1	0.90	1.08	3.73	4.23	2.49	3.20	1.20	3.53	0.99	3.13	1.03	2.52	0.95	3.36	0.94	3.21	1.39	4.74	1.19	3.13	0.95	2.32	0.76	3.21	0.63	0.38	0.46	3.32	1.09
9.0	-9.1	1.00	1.28	2.77	3.22	1.96	2.37	1.23	2.35	1.01	2.18	1.05	1.69	0.95	2.34	0.92	2.26	1.36	3.63	1.18	2.26	1.17	1.49	0.46	1.61	-0.63	-1.71	-1.79	-0.12	-2.58
10.0	-10.1	0.90	0.26	1.21	1.52	0.48	-0.56	-1.35	-0.90	-1.69	-1.03	-1.59	-1.31	-1.95	-1.08	-2.23	-1.28	-1.82	-0.45												

Depth on String	Actual Depth	Resistivity (kOhms)	Resistivity (kOhms)
(m)	(m)	15-Jun-11	04-Oct-11
1.0	-1.1	13.07	13.84
2.0	-2.1	16.87	12.66
3.0	-3.1	o/l	o/l
4.0	-4.1	19.95	14.93
5.0	-5.1	16.45	12.59
6.0	-6.1	20.10	16.05
7.0	-7.1	15.56	12.92
8.0	-8.1	15.64	13.58
9.0	-9.1	18.75	18.66
10.0	-10.1	*21.87*	*20.77*

Depth on String	Actual Depth	Temperature (°C)	Temperature (°C)
(m)	(m)	15-Jun-11	04-Oct-11
1.0	-1.1	4.27	3.13
2.0	-2.1	-0.91	4.82
3.0	-3.1		
4.0	-4.1	-4.11	1.64
5.0	-5.1	-0.31	5.02
6.0	-6.1	-4.34	0.13
7.0	-7.1	0.75	4.46
8.0	-8.1	0.69	3.50
9.0	-9.1	-2.89	-2.80
10.0	-10.1		

Notes:
*The initial reading (Nov 15/81) is excluded from the data set because post-installation equilibrium may not have been complete.

*The 3 metre depth tip is suspect

*Shaded results suspect

Denison Environmental Services

Table F-2: Diversion Canal (Canal Dyke)
Thermistor CD-21

CD-21		Location:	Canal Dyke St.2+100			Elevation (m amsl):	1053.34	Coordinates:	1455.9 mN 509.5 mE	8V580708 6913505
		Thermistor String #12	Date Installed:	1981	Thermistor Type:	Cantec Controls YSI 44007	Ice-Bath Calibration:	Not Applied	Surface Protector:	Yes
Depth Correction:	0.0									

Depth on String	Actual Depth	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)
(m)	(m)	09-Dec-82	29-May-94	14-Sep-94	20-Sep-95	13-Sep-96	17-Oct-97	12-Nov-98	13-Sep-99	07-Jun-00	05-Sep-00	25-May-01	26-Jun-01	13-Sep-01	13-Jun-02	13-Sep-02	17-Jun-03	12-Sep-03	06-Jul-04	18-Sep-04	31-May-05	01-Jun-05	14-Sep-05	14-Jun-06	02-Oct-06	06-Jun-07	24-Sep-07	30-May-08	23-Jun-08	25-Sep-08	30-Jun-09	17-Sep-09	18-May-10	02-Jun-10	10-Sep-10
3.0	-3.0	16.58	16.80	11.91	13.12	14.12	14.18	14.78	13.47	16.92	13.27	16.96	16.84	12.55	17.13	13.29	16.92	12.87	16.69	12.32	16.63	16.75	12.62	17.07	13.82	17.31	13.89	17.11	16.96	13.63	17.01	13.56	16.91	16.89	12.80
5.0	-5.0	16.56	16.45	14.61	15.04	16.56	15.29	14.65	15.78	16.42	15.15	16.34	16.40	14.56	16.42	15.13	16.37	14.93	16.20	14.08	15.81	15.94	14.20	16.31	15.01	16.47	15.74	16.33	16.39	14.89	16.48	15.38	16.09	16.21	14.70
8.0	-8.0	16.89	16.51	16.72	16.68	16.63	16.48	15.79	16.43	16.26	16.23	16.11	16.22	15.99	16.07	15.97	16.13	15.85	15.69	15.39	15.43	15.52	15.26	15.85	15.57	15.90	16.03	15.84	15.99	15.61	16.08	15.92	15.65	15.79	15.60
11.0	-11.0	16.87	16.31	16.27	16.31	16.40	16.48	nr	16.13	15.67	15.79	15.53	15.43	15.54	15.38	14.97	15.49	14.41	14.99	14.12	14.67	14.94	14.09	14.94	14.24	14.50	14.20		15.03	14.57	15.32	15.03	15.17	15.06	14.20
13.0	-13.0	16.84	16.69	16.84	16.84	16.83	16.81	16.77	16.59	16.25	16.37	16.00	16.12	16.17	15.93	15.60	16.18	14.53	16.06	13.93	15.69	15.83	14.39	15.98	14.29	15.89	14.87	15.91	15.99	14.77	16.02	14.85	15.78	15.87	14.90

Depth on String	Actual Depth	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)
(m)	(m)	09-Dec-82	29-May-94	14-Sep-94	20-Sep-95	13-Sep-96	17-Oct-97	12-Nov-98	13-Sep-99	07-Jun-00	05-Sep-00	25-May-01	26-Jun-01	13-Sep-01	13-Jun-02	13-Sep-02	17-Jun-03	12-Sep-03	06-Jul-04	18-Sep-04	31-May-05	01-Jun-05	14-Sep-05	14-Jun-06	02-Oct-06	06-Jun-07	24-Sep-07	30-May-08	23-Jun-08	25-Sep-08	30-Jun-09	17-Sep-09	18-May-10	02-Jun-10	10-Sep-10
3.0	-3.0	-0.30	-0.55	6.29	4.34	2.87	2.79	1.96	3.81	-0.69	4.11	-0.74	-0.60	5.23	-0.93	4.08	-0.69	4.73	-0.42	5.61	-0.35	-0.49	5.12	-0.86	3.30	-1.14	3.20	-0.91	-0.74	3.58	-0.79	3.68	-0.68	-0.66	4.83
5.0	-5.0	-0.30	-0.17	2.16	1.59	-0.30	1.26	2.11	0.64	-0.14	1.45	-0.04	-0.11	2.23	-0.14	1.47	-0.08	1.73	0.13	2.90	0.61	0.45	2.73	0.00	1.63	-0.20	0.69	-0.03	-0.10	1.79	-0.21	1.15	0.26	0.11	2.04
8.0	-8.0	-0.70	-0.25	-0.50	-0.45	-0.39	-0.22	0.62	-0.16	0.05	0.08	0.23	0.09	0.37	0.28	0.40	0.20	0.55	0.75	1.13	1.07	0.96	1.29	0.55	0.90	0.48	0.32	0.56	0.37	0.85	0.26	0.46	0.81	0.63	0.87
11.0	-11.0	-0.60	0.06	0.10	0.06	-0.05	-0.15		0.27	0.84	0.69	1.02	1.14	1.00	1.21	1.74	1.07	2.50	1.72	2.90	2.14	1.78	2.94	1.78	2.73	2.37	2.79		1.66	2.28	1.29	1.66	1.48	1.62	2.78	
13.0	-13.0	-0.60	-0.42	-0.60	-0.60	-0.59	-0.56	-0.52	-0.31	0.10	-0.05	0.40	0.25	0.19	0.49	0.90	0.18	2.30	0.33	3.14	0.79	0.61	2.49	0.43	2.63	0.54	1.84	0.51	0.41	1.98	0.38	1.87	0.67	0.56	1.80

Depth on String	Actual Depth	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)
(m)	(m)	26-May-11	15-Jun-11	03-Oct-11
3.0	-3.0	17.40	17.08	13.28
5.0	-5.0	16.23	16.20	14.44
8.0	-8.0	15.42	15.58	15.29
11.0	-11.0	14.64	14.56	14.21
13.0	-13.0	15.67	15.69	14.67

Depth on String	Actual Depth	Temperature (°C)	Temperature (°C)	Temperature (°C)
(m)	(m)	26-May-11	15-Jun-11	03-Oct-11
3.0	-3.0	-1.25	-0.88	4.10
5.0	-5.0	0.09	0.12	2.39
8.0	-8.0	1.10	0.89	1.26
11.0	-11.0	2.18	2.29	2.77
13.0	-13.0	0.81	0.79	2.11

Notes:

*Tip #4 is suspect

Denison Environmental Services

Table F-3: Diversion Canal (Canal Dyke)
Thermistor CD-26

Faro Mine Closure

CD-26		Location:	Canal Dyke St.2+600			Elevation (m amsl):	1053.10	Coordinates:	1674.7 mN, 71.7 mE	8V580269 6913720
		Thermistor String #17	Date Installed:	1981	Thermistor Type:	Cantec Controls YSI 44007	Ice-Bath Calibration:	Applied	Surface Protector:	Yes
Depth Correction:	-0.4									

Depth on String	Actual Depth	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)
(m)	(m)	09-Dec-81	01-Jun-94	14-Sep-94	21-Sep-95	13-Sep-96	14-Sep-99	13-Jun-02	12-Sep-02	17-Jun-03	12-Sep-03	06-Jul-04	18-Sep-04	01-Jun-05	12-Oct-05	14-Jun-06	02-Oct-06	06-Jun-07	24-Sep-07	30-Jun-09	17-Sep-09	18-May-10	02-Jun-10	10-Sep-10	26-May-11	15-Jun-11	03-Oct-11
1.0	-0.6	22.70	13.14	11.87	11.54	11.98	11.51	14.85	15.64	17.85	17.34	12.28	17.76	16.40	19.82	13.91	18.27	15.43	18.84	15.08	18.32	22.28	16.19	15.20	22.72	16.60	20.19
2.0	-1.6	16.32	16.38	11.07	11.52	11.97	11.63	16.08	11.97	15.52	11.55	10.93	11.99	16.67	13.17	16.68	12.72	16.75	12.44	13.28	12.36	17.30	16.99	11.10	17.53	16.33	13.08
3.0	-2.6	16.20	16.76	11.14	12.01	12.77	12.40	17.06	12.99	16.99	12.38	14.03	12.01	17.00	12.75	17.22	12.92	17.26	12.92	16.68	12.79	17.38	17.34	11.80	17.62	17.62	13.07
4.0	-3.6	16.17		11.94	12.60	13.59	13.26	16.60	13.83	16.54	13.15	16.46	12.45		12.46		13.03	16.67	13.55	16.51	13.11	16.45		12.40	16.61	16.91	13.06
5.0	-4.6	16.24	15.88	12.88	13.36	14.58	14.38	16.99	15.33	17.13	14.74	17.20	13.88	16.96	13.10	17.40	14.53	16.67	15.42	17.96	15.25	17.96	18.15	14.80	18.10	18.47	15.24
6.0	-5.6	16.28	17.71	15.80	18.08	22.69	27.08	35.50	34.25	37.50	35.00	40.20	34.00	44.20	38.00		42.30	48.30	44.06	54.40	50.60	54.90	55.90	48.20	57.60	58.00	55.50
7.0	-6.6	16.43	15.73	14.56	14.73	15.61	15.69	16.51	16.23	16.63	15.92	16.68	15.11	16.30	14.41	16.65	15.37	16.82	16.25	16.95	15.88	16.70	16.88	15.80	16.71	17.08	15.57
8.0	-7.6	16.50	15.19	16.25	14.73	15.35	15.42	15.70	15.73	15.83	15.56	15.86	14.99	15.43	14.24	15.73	15.08	15.87	16.06	15.97	15.46	15.74	15.90	15.50	15.66	16.02	15.14
9.0	-8.6	16.46	15.33	15.60	15.38	15.80	16.10	16.90	17.17	17.38	17.43	17.99	17.62	18.31	18.06	19.84	19.38	19.85	20.78	22.42	22.53	23.49	23.73	26.20	30.63	31.49	31.63
10.0	-9.6	16.24	14.68	15.07	14.91	15.01	15.04	15.11	15.34	15.26	15.34	15.29	15.21	14.85	14.57	15.12	15.13	15.21	15.93	15.37	15.39	15.10		15.60	14.99	15.36	15.15

Depth on String	Actual Depth	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)
(m)	(m)	09-Dec-81	01-Jun-94	14-Sep-94	21-Sep-95	13-Sep-96	14-Sep-99	13-Jun-02	12-Sep-02	17-Jun-03	12-Sep-03	06-Jul-04	18-Sep-04	01-Jun-05	12-Oct-05	14-Jun-06	02-Oct-06	06-Jun-07	24-Sep-07	30-Jun-09	17-Sep-09	18-May-10	02-Jun-10	10-Sep-10	26-May-11	15-Jun-11	03-Oct-11
1.0	-0.6	-6.40	4.23	6.28	6.86	6.10	6.91	1.79	0.77	-1.81	-1.25	5.59	-1.71	-0.16	-3.82	3.09	-2.26	1.03	-2.85	1.49	-2.31	-6.15	0.14	1.39	-6.53	-0.35	-4.21
2.0	-1.6	-0.20	-0.27	7.58	6.76	5.98	6.57	0.09	5.98	0.79	6.71	7.84	5.95	-0.61	4.05	-0.62	4.75	-0.70	5.20	3.89	5.33	-1.38	-1.02	7.48	-1.64	-0.23	4.21
3.0	-2.6	0.00	-0.67	7.50	5.97	4.72	5.32	-1.01	4.38	-0.93	5.35	2.84	5.97	-0.94	4.76	-1.19	4.49	-1.24	4.49	-0.57	4.69	-1.39	-1.34	6.31	-1.66	-1.66	4.28
4.0	-3.6	0.00		6.05	4.96	3.45	3.94	-0.51	3.10	-0.44	4.10	-0.34	5.21		5.19		4.32	-0.56	3.53	-0.37	4.20	-0.27		5.33	-0.47	-0.82	4.31
5.0	-4.6	-0.10	0.34	4.50	3.77	2.02	2.30	-0.98	1.03	-1.14	1.81	-1.22	3.00	-0.95	4.16	-1.45	2.14	-0.56	0.97	-2.01	1.19	-2.06	-2.27	1.75	-2.22	-2.62	1.17
6.0	-5.6	-0.10																									
7.0	-6.6	-0.30	0.56	2.08	1.85	0.71	0.61	-0.39	-0.06	-0.53	0.32	-0.59	1.35	-0.14	2.29	-0.56	1.03	-0.74	-0.06	-0.89	0.39	-0.62	-0.83	0.47	-0.63	-1.06	0.76
8.0	-7.6	-0.40	1.22	-0.10	1.83	1.02	0.93	0.57	0.54	0.41	0.75	0.37	1.49	0.91	2.50	0.54	1.41	0.40	0.17	0.28	0.92	0.54	0.34	0.84	0.64	0.19	1.30
9.0	-8.6	-0.35																									
10.0	-9.6	-0.10	1.89	1.37	1.58	1.45	1.41	1.32	1.02	1.12	1.02	1.08	1.19	1.66	2.04	1.30	1.34	1.24	0.33	1.03	1.01	1.34		0.71	1.48	1.01	1.27

Notes:
*Tips at 5.6 m and 8.6 m depths are suspect.

Table F-4: Diversion Canal (Canal Dyke)
Thermistor BGC05-04

BGC05-04		Location:				Elevation (m amsl):	1054.1	Coordinates:	580864.7E 6913420.2N		
		Thermistor String #	Date Installed:	03-Aug-05	Thermistor Type:	YSI 44007	Ice Bath Calibration:	Applied	Surface Protector:		
Depth Correction:	0.09										

Depth on String	Actual Depth	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)
(m)	(m)	30-May-08	19-Jun-08	30-Jun-09	17-Sep-09	18-May-10	02-Jun-10	10-Sep-10	27-May-11	15-Jun-11	03-Oct-11
0.5	-0.4	11.31	9.92			o/l	o/l	o/l	o/l	o/l	o/l
0.8	-0.7	11.98	10.75			o/l	o/l	o/l	o/l	o/l	o/l
1.0	-0.9	13.48	11.79			o/l	o/l	o/l	o/l	o/l	o/l
1.5	-1.4	16.32	13.79			o/l	o/l	o/l	o/l	o/l	o/l
2.0	-1.9	16.83	15.89			o/l	o/l	o/l	o/l	o/l	o/l
3.0	-2.9	16.77	16.61	16.52	12.12	o/l	o/l	o/l	16.89	16.74	12.64
4.0	-3.9	16.40	16.39	16.41	13.22	o/l	o/l	o/l	16.42	16.44	13.18
6.0	-5.9	16.07	16.12			o/l	o/l	o/l	o/l	o/l	o/l
10.0	-9.9	15.72	15.95			o/l	o/l	o/l	o/l	o/l	o/l
12.0	-11.9	15.51	15.79			o/l	o/l	o/l	o/l	o/l	o/l

Depth on String	Actual Depth	Temperature (^{o}C)	Temperature (^{o}C)	Temperature (^{o}C)	Temperature (^{o}C)	Temperature (^{o}C)	Temperature (^{o}C)	Temperature (^{o}C)	Temperature (^{o}C)	Temperature (^{o}C)	Temperature (^{o}C)
(m)	(m)	30-May-08	19-Jun-08	30-Jun-09	17-Sep-09	18-May-10	02-Jun-10	10-Sep-10	27-May-11	15-Jun-11	03-Oct-11
0.5	-0.4	7.30	10.00								
0.8	-0.7	6.13	8.34								
1.0	-0.9	3.79	6.49								
2.	-1.4	0.00	3.33								
2.0	-1.9	-0.60	0.53								
3.0	-2.9	-0.51	-0.32	-0.21	5.95				-0.64	-0.47	5.12
4.0	-3.9	-0.08	-0.07	-0.09	4.19				-0.11	-0.13	4.25
6.0	-5.9	0.27	0.20								
10.0	-9.9	0.71	0.42								

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Table F-5: Diversion Canal (Spoil Pile)
Thermistor SP-3

Faro Mine Closure

SP-3		Location:	N. of canal dyke St.1 +900			Elevation (m amsl):	1051.2	Coordinates:	1394.4 m N & 704.5 m E	
		Thermistor String #25	Date Installed:	1981	Thermistor Type:	Cantec Controls VSI 44007	Ice-Bath Calibration:	Applied	Surface Protector:	Yes
Depth Correction:	0.1									

Depth on String	Actual Depth	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)
(m)	(m)	09-Dec-81	31-May-94	13-Sep-94	20-Sep-95	15-Oct-96	06-Nov-97	15-Nov-98	15-Sep-99	07-Jun-00	05-Sep-00	26-Jun-01	13-Sep-01	13-Jun-02	13-Sep-02	06-Jul-04	16-Sep-04	12-Oct-05	15-Jun-06	02-Oct-06	06-Jun-07	24-Sep-07	24-Jun-08	24-Sep-08	30-Jun-09	20-May-10	02-Jun-10	10-Sep-10
1.0	-1.1	16.85	14.88	12.72	12.60	17.37	16.59	17.30	12.15		12.38	13.69	12.31	10.81	12.41	8.65	15.69	21.86	13.01	13.05	14.05	13.73	13.21	13.53	12.51	n/r	19.02	11.77
2.0	-2.1	16.20	16.67	11.81	12.29	15.90	14.88	14.95	12.18	16.73	12.06	14.76	11.81		12.21			13.10	16.93	13.22	16.98		16.87	12.73	14.76	n/r	16.78	12.08
3.0	-3.1	16.25	16.66	12.04	12.52	15.59	14.43	14.48	12.38	16.48				17.41	11.78	12.46	13.82	12.87	16.76	62.50	16.90		16.74	12.87	15.50	n/r	0.00	12.45
4.0	-4.1	16.27	18.85	14.32	15.13	16.19	18.09	29.54	nr	nr								53.40	69.30	340.90	92.70		107.30		108.70	n/r	117.50	96.50
5.0	-5.1	16.27	17.10	14.32	14.82	15.10	15.06	15.20	15.11	18.93	16.23	23.65	18.05		13.12	15.35	18.00	144.00	300.40	15.23	1.90		2.30		1.968 Δ	n/r	2.84	n/r
6.0	-6.1	16.39	16.99	15.88	15.31	15.23	14.90	14.80	14.96		14.73	19.10	14.50		13.97	25.52	25.10	14.92	17.21	10.12	17.45		17.51	15.37	17.93	n/r	17.69	15.69
7.0	-7.1	16.49	16.81	16.50	16.33	16.04	15.52	15.01	15.49		15.27		14.87		14.71		17.03	14.49	16.51	15.15	14.20				o/l	n/r	0.00	o/l
8.0	-8.1	16.54	16.69	16.91	16.80	16.73	16.27	15.39	15.78			18.79	18.79						15.80	15.40	15.93		15.99	15.08	16.57	n/r	16.01	15.50
9.0	-9.1	16.54	16.60	16.82	16.71	16.70	16.77	15.90	16.01	15.78	15.38	18.50	15.34		15.04	16.41		14.93	15.66	16.13	15.79		15.87	15.25	16.08	n/r	15.96	15.72
10.0	-10.1	16.48	16.65	17.74	16.77	16.77	16.75	16.68	16.38		15.64					85.10					16.35		17.34	16.95	17.96	n/r	18.15	18.14

Depth on String	Actual Depth	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)
(m)	(m)	09-Dec-81	31-May-94	13-Sep-94	20-Sep-95	15-Oct-96	06-Nov-97	15-Nov-98	15-Sep-99	07-Jun-00	05-Sep-00	26-Jun-01	13-Sep-01	13-Jun-02	13-Sep-02	06-Jul-04	16-Sep-04	12-Oct-05	15-Jun-06	02-Oct-06	06-Jun-07	24-Sep-07	24-Jun-08	24-Sep-08	30-Jun-09	20-May-10	02-Jun-10	10-Sep-10
1.0	-1.1	-0.80	1.64	4.77	4.96	-1.39	-0.50	-1.31	5.70		5.32	3.30	5.44	8.08	5.27	12.72	0.60	-5.80	4.32	4.26	2.78	3.24	4.01	3.53	5.11		-3.23	6.34
2.0	-2.1	0.00	-0.56	6.31	5.50	0.33	1.64	1.55	5.65	-0.66	5.85	1.80	6.28		5.60			4.18	-0.89	4.00	-0.95		-0.82	4.76	1.80		-0.71	5.83
3.0	-3.1	-0.10	-0.59	5.87	5.08	0.72	2.25	2.18	5.32	-0.37				-1.44	6.33	5.19	3.11	4.54	-0.70		-0.86		-0.67	4.54	0.84			5.20
4.0	-4.1	-0.10	-2.95	2.42	1.33	-0.02	-2.18																						
5.0	-5.1	-0.10	-1.07	2.42	1.74	1.35	1.40	1.22	1.34	-3.05	-0.07	-7.28	-2.14		4.15	1.03	-2.08			1.18									
6.0	-6.1	-0.30	-1.00	0.32	1.04	1.18	1.61	1.75	1.54		1.84	-3.23	2.15		2.89			1.59	-1.21		-1.48		-1.55	1.00	-2.01		-1.77	0.58
7.0	-7.1	-0.40	-0.77	-0.41	-0.21	0.16	0.81	1.47	0.85		1.13				1.87		-1.01	2.17	-0.40	1.29	2.57							
8.0	-8.1	-0.40	-0.57	-0.83	-0.70	-0.66	-0.12	0.98	0.48										0.46	0.96	0.30		0.22	1.38	-0.47		0.21	0.84
9.0	-9.1	-0.40	-0.47	-0.73	-0.60	-0.63	-0.71	0.33	0.20	0.48	0.99	-2.61	1.04		1.43	-0.28		1.57	0.63	0.05	0.47		0.37	1.16	0.11		0.28	0.57
10.0	-10.1	-0.40	-0.60	-1.83	-0.74	-0.71	-0.68	-0.60	-0.25		0.66										-0.21		-1.36				-2.28	-2.27

Depth on String	Actual Depth	Resistivity (kOhms)	Resistivity (kOhms)
(m)	(m)	21-Jun-11	03-Oct-11
1.0	-1.1	*24.72*	*14.45*
2.0	-2.1	*28.10*	*13.20*
3.0	-3.1	*28.44*	*13.23*
4.0	-4.1	*128.50*	*97.90*
5.0	-5.1	*n/r*	*n/r*
6.0	-6.1	*28.87*	*15.59*
7.0	-7.1	*o/l*	*o/l*
8.0	-8.1	*o/l*	*o/l*
9.0	-9.1	*27.04*	*15.26*
10.0	-10.1	*29.90*	*18.35*

Depth on String	Actual Depth	Temperature (°C)	Temperature (°C)
(m)	(m)	21-Jun-11	03-Oct-11
1.0	-1.1	-8.45	2.25
2.0	-2.1	-10.97	4.06
3.0	-3.1	-11.21	4.00
4.0	-4.1		
5.0	-5.1		
6.0	-6.1	-11.37	0.71
7.0	-7.1		
8.0	-8.1		
9.0	-9.1	-9.96	1.15
10.0	-10.1	-12.10	-2.50

Notes:
*The initial reading (Nov 15/81) is excluded from the data set because post-installation equilibrium may not have been complete.
*Shaded results suspect

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Table F-6: Diversion Canal (Spoil Pile)
Thermistor SP-5

Faro Mine Closure

SP-5		Location:	N. of canal dyke St.2+950			Elevation (m amsl):	1045.57	Coordinates:	1898.2 mN 183.1 mW	8V580012 6913942
		Thermistor String #24	Date Installed:	1981	Thermistor Type:	Cantec Controls YSI 44007	Ice-Bath Calibration:	Applied	Surface Protector:	Yes
Depth Correction:	0.1									

Depth on String	Actual Depth	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)
(m)	(m)	09-Dec-81	30-May-94	14-Sep-94	21-Sep-95	13-Sep-96	10-Nov-97	12-Nov-98	14-Sep-99	07-Jun-00	05-Sep-00	26-Jun-01	13-Sep-01	13-Jun-02	13-Sep-02	17-Jun-03	28-Oct-03	06-Jul-04	18-Sep-04	06-Jun-07	24-Sep-07	23-Jun-08	24-Sep-08	30-Jun-09	20-May-10	02-Jun-10	10-Sep-10	15-Jun-11	03-Oct-11
1.0	-1.1	18.19	14.47	11.96	12.37	12.66	16.43	16.51	11.82	14.67	12.23	12.84	12.29	12.93	12.20	13.37	15.44	9.59	12.47	13.68	12.58	11.18	12.50	10.98	16.86	13.92	10.70	12.75	13.27
2.0	-2.1	16.21	16.68	11.68	12.28	13.37		15.19	12.49	16.88	12.55	17.03	12.37	16.72	11.76	16.79	14.27	12.06	12.06	17.04	12.51	13.53	12.09	12.80	17.48	16.64	11.10	15.21	12.48
3.0	-3.1	16.38	16.70	12.39	13.08	14.38	15.39	14.85	13.51	16.95	13.52	16.87	13.76	16.86	16.07	16.93	14.01	14.18	12.54	17.01		14.96	12.46	14.29	17.27	16.55	11.80	16.21	12.56
4.0	-4.1	16.32	16.79	13.37	14.02	15.46				17.23	14.72	17.23	14.94	17.21		17.35			13.59	17.61		16.50	13.62	16.09	18.60	17.32	13.30	17.36	13.76
5.0	-5.1	16.38	16.48	14.21	14.48	15.78	15.24	14.64	14.99	16.58	14.97	16.51	15.19	16.40	13.84	16.46	14.04	15.87	13.59	16.24		15.60	13.14	17.70	17.00	15.77	12.90	15.80	13.03
6.0	-6.1	16.33	16.76	15.76	15.81	17.04		15.89	16.65	17.69	16.75	17.76	17.17	17.77	15.87	18.04	15.92		16.10	19.24		21.00	16.90	19.34	21.60	19.79	17.40	20.15	17.62
7.0	-7.1	16.36	16.73	17.00	16.78	17.51				18.12	17.62	18.16	18.22	18.19		18.47	16.75	18.49	16.99	18.32		18.11	16.43	17.89	19.79	17.93	16.40	17.99	16.31
8.0	-8.1	16.40	16.48	16.72	16.48	16.68				16.68	16.38	16.50		16.40		16.40	15.31	16.36	15.59	15.81			14.67	15.38	17.04	15.32	14.50	15.29	14.36
9.0	-9.1	16.54	16.72	17.14	16.74	16.91	17.63		16.81	16.92	16.86	16.85		16.80	16.61	16.80	16.17	16.77	16.44	16.12		15.91	15.45	15.74	17.47	15.64	15.30	15.61	15.12
10.0	-10.1	16.40	16.64	17.06	16.67	16.85		16.73	16.72	16.75	16.77	16.77		16.75	16.82	16.78	16.54	16.72	16.68	15.89		15.68	15.47	15.48	17.29	15.38	15.20	15.33	15.10

Depth on String	Actual Depth	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)
(m)	(m)	09-Dec-81	30-May-94	14-Sep-94	21-Sep-95	13-Sep-96	10-Nov-97	12-Nov-98	14-Sep-99	07-Jun-00	05-Sep-00	26-Jun-01	13-Sep-01	13-Jun-02	13-Sep-02	17-Jun-03	28-Oct-03	06-Jul-04	18-Sep-04	06-Jun-07	24-Sep-07	23-Jun-08	24-Sep-08	30-Jun-09	20-May-10	02-Jun-10	10-Sep-10	15-Jun-11	03-Oct-11
1.0	-1.1	-2.20	2.28	6.11	5.43	4.96	-0.22	-0.31	6.35	2.01	5.66	4.67	5.56	4.53	5.71	3.86	1.00	10.65	5.26	3.40	5.09	7.48	5.22	7.85	-0.77	3.07	8.34	4.83	4.03
2.0	-2.1	0.00	-0.56	6.54	5.52	3.81		1.27	5.18	-0.80	5.08	-0.97	5.38	-0.61	6.40	-0.69	2.51	5.89	5.89	-0.98	5.15	3.57	5.84	4.69	-1.48	-0.51	7.54	1.28	5.21
3.0	-3.1	-0.30	-0.68	5.25	4.16	2.27	0.93	1.63	3.51	-0.97	3.50	-0.87	3.15	-0.86	0.08	-0.94	2.79	2.55	5.01	-1.03		1.49	5.14	2.39	-1.35	-0.51	6.19	-0.10	4.95
4.0	-4.1	-0.20	-0.75	3.75	2.80	0.87				-1.25	1.84	-1.25	1.54	-1.23					3.43	-1.68		-0.41	3.38	0.08	-2.77	-1.36	3.85	-1.41	3.17
5.0	-5.1	-0.30	-0.42	2.51	2.13	0.43	1.12	1.91	1.45	-0.54	1.47	-0.45	1.18	-0.32	3.03	-0.39	2.74	0.32	3.40	-0.13		0.66	4.07	-1.81	-1.04	0.44	4.41	0.40	4.21
6.0	-6.1	-0.20	-0.71	0.50	0.44	-1.03		0.34	-0.58	-1.76	-0.69	-1.83	-1.18	-1.84	0.36	-2.14	0.30		0.08	-3.38		-5.05	-0.87	-3.48	-5.61	-3.92	-1.42	-4.27	-1.66
7.0	-7.1	-0.20	-0.64	-0.95	-0.70	-1.53				-2.19	-1.65	-2.23	-2.30	-2.27			-0.66	-2.58	-0.94	-2.40		-2.18	-0.29	-1.94	-3.90	-1.98	-0.25	-2.05	-0.14
8.0	-8.1	-0.30	-0.40	-0.68	-0.40	-0.63				-0.63	-0.28	-0.42		-0.30			1.05	-0.25	0.69	0.42			1.94	1.01	-1.06	1.06	2.16	1.10	2.36
9.0	-9.1	-0.40	-0.61	-1.09	-0.63	-0.83	-1.64		-0.71	-0.84	-0.77	-0.76		-0.70	-0.48	-0.70	0.04	-0.67	-0.28	0.10		0.36	0.94	0.57	-1.47	0.69	1.12	0.73	1.35
10.0	-10.1	-0.30	-0.59	-1.07	-0.62	-0.83		-0.69	-0.68	-0.71	-0.74	-0.74		-0.71	-0.80	-0.75	-0.47	-0.68	-0.63	0.32		0.58	0.84	0.83	-1.34	0.96	1.19	1.02	1.32

Notes:
* The initial reading (Nov 15/81) is excluded from the data set because post-installation equilibrium may not have been complete.

Table F-7: Diversion Canal (Backslope)
Thermistor BS-5

BS-5		Location:	Diversion Canal - Back Slope St.0+960			Elevation (m advd):	1092.5	Coordinates:		
		Thermistor String #3	Date Installed:	1981	Thermistor Type:	Cantec Controls YSI 44007	Ice-Bath Calibration:	Applied	Surface Protector:	
Depth Correction:	-0.5									

Depth on String	Actual Depth	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)
(m)	(m)	09-Dec-81	02-Jun-94	15-Sep-94	21-Sep-95	29-Sep-02	07-Jul-04	23-Sep-04	20-Jun-08	16-Jul-09	23-Sep-09	11-Jul-11	30-Sep-11
1.0	-0.5		14.56	12.33	13.50		Data too noisy					14.90	15.23
2.0	-1.5	16.28	16.11	12.55	13.80	14.94		14.56			14.30	17.29	15.43
3.0	-2.5	16.25	16.39	13.39	14.85	16.13		15.77			17.17	19.50	17.15
4.0	-3.5	16.18	16.26	14.06	15.34	15.23		14.70		19.08	17.73	20.00	18.81
5.0	-4.5	16.10	16.36	14.81	16.21	15.87		15.30			15.92	17.10	16.44
6.0	-5.5	16.10	16.27	15.27	16.12	16.02		15.48		16.14	15.91	16.20	15.83
7.0	-6.5	16.05	17.05	16.56	17.20	17.49		17.42			14.56	18.35	18.20
8.0	-7.5	16.01	16.44	16.11	16.40	16.66		16.51	17.02	16.82	16.84	16.95	16.85
9.0	-8.5	16.04	16.24	16.04	16.20	16.49		16.43		16.71	16.73	16.81	16.76
10.0	-9.5	16.03	16.37	16.23	16.37	16.75		16.71			16.94	17.01	16.99

Depth on String	Actual Depth	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)
(m)	(m)	09-Dec-81	02-Jun-94	15-Sep-94	21-Sep-95	29-Sep-02	07-Jul-04	23-Sep-04	20-Jun-08	16-Jul-09	23-Sep-09	11-Jul-11	30-Sep-11
1.0	-0.5		2.05	5.38	3.56							1.59	1.15
2.0	-1.5	-0.10	0.11	5.07	3.17	1.59		2.10			2.43	-1.31	0.94
3.0	-2.5	-0.10	-0.27	3.73	1.67	0.04		0.49			-1.17	-3.70	-1.16
4.0	-3.5	0.00	-0.09	2.78	1.05	1.19		1.89		-3.21	-1.79	-4.15	-2.95
5.0	-4.5	0.10	-0.21	1.74	-0.03	0.38		1.10			0.31	-1.08	-0.30
6.0	-5.5	0.10	-0.11	1.14	0.07	0.20		0.87		0.04	0.32	-0.02	0.43
7.0	-6.5	0.20	-0.98	-0.41	-1.15	-1.48		-1.40			2.07	-2.39	-2.23
8.0	-7.5	0.20	-0.32	0.08	-0.27	-0.58		-0.40	-1.00	-0.77	-0.79	-0.92	-0.81
9.0	-8.5	0.20	-0.04	0.20	0.01	-0.34		-0.27		-0.64	-0.66	-0.75	-0.69
10.0	-9.5	0.20	-0.21	-0.04	-0.21	-0.65		-0.61			-0.90	-0.98	-0.95

Notes:
* The 6.5 metre depth tip is suspect - Data is too noisy

Table F-8: Diversion Canal (Backslope)
Thermistor BS-9

BS-9		Location:	Diversion Canal Back Slope St.1+530			Elevation (m advd):	1088.30	Coordinates:	1200.0 m N 1018.4 m E	
		Thermistor String #5	Date Installed:	1981	Thermistor Type:	Cantec Controls YSI 44007	Ice-Bath Calibration:	Applied	Surface Protector:	Yes
Depth Correction:	-0.5									

Depth on String	Actual Depth	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)
(m)	(m)	09-Dec-81	02-Jun-94	15-Sep-94	21-Sep-95	07-Jul-04	23-Sep-04	16-Jul-09	23-Sep-09	11-Jul-11	30-Sep-11
1.0	-0.5	16.14	16.71	12.96	14.86	No readings, nothing registered					16.11
2.0	-1.5	15.74	16.46	13.40	14.66						15.49
3.0	-2.5	15.62	16.65	14.18	14.97						15.99
4.0	-3.5	15.46		17.54	18.51					33.30	31.97
5.0	-4.5	15.76	16.63	14.92	15.72		18.50	16.93	18.74	19.44	16.37
6.0	-5.5	15.56	16.06	14.66	15.54				15.94		15.73
7.0	-6.5	15.57	15.93	14.72	15.62		15.31		15.60		15.61
8.0	-7.5	15.64	15.98	14.92	15.71						16.02
9.0	-8.5	15.61	15.88	14.85	15.49		15.30	16.02	16.69	21.17	16.96
10.0	-9.5	15.67	15.79	14.82	15.29			18.88			

Depth on String	Actual Depth	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)
(m)	(m)	09-Dec-81	02-Jun-94	15-Sep-94	21-Sep-95	07-Jul-04	23-Sep-04	16-Jul-09	23-Sep-09	11-Jul-11	30-Sep-11
1.0	-0.5	0.00	-0.68	4.36	1.63						
2.0	-1.5	0.50	-0.37	3.70	1.91						
3.0	-2.5	0.70	-0.55	2.62	1.54						
4.0	-3.5	0.90		-1.57	-2.61		-2.60			-14.08	-13.28
5.0	-4.5	0.50	-0.55	1.58	0.55			-0.85	-2.86	-3.57	-0.23
6.0	-5.5	0.80	0.18	1.98	0.82		1.03		0.25		
7.0	-6.5	0.70	0.25	1.81	0.63				0.70		
8.0	-7.5	0.70	0.28	1.63	0.61		1.09				
9.0	-8.5	0.70	0.36	1.68	0.85			0.18	-0.56	-5.17	-0.90
10.0	-9.5	0.60	0.45	1.70	1.08			-2.49			

Notes:
* An initial reading (Nov 15, 1981) is excluded from the dataset because post-installation temperature equilibrium may not have been complete.
*The 4 metre depth tip is suspect

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Table F-9: Diversion Canal (Backslope)
Thermistor BS-10

Faro Mine Closure

BS-10		Location:	Diversion Canal Back Slope St.1+900			Elevation (m advd):	1098.20	Coordinates:	1310.5 m N 657.3 m E	
		Thermistor String #5	Date Installed:	1981	Thermistor Type:	Cantec Controls YSI 44007	Ice-Bath Calibration:	Applied	Surface Protector:	Yes
Depth Correction:	-0.5									

Depth on String	Actual Depth	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)
(m)	(m)	09-Dec-81	02-Jun-94	15-Sep-94	21-Sep-95	10-Nov-97	13-Nov-98	03-Dec-99	29-Aug-01	29-Sep-02	07-Jul-04	23-Sep-04	06-Jul-06	20-Sep-06	20-Jun-08	16-Jul-09	23-Sep-09	11-Jul-11	30-Sep-11
1.0	-0.5	16.64	16.54	12.62	14.37	16.45	16.42	16.72	13.36	14.81	16.11	14.69	16.84	14.40	16.75	16.11	13.70	16.65	14.86
2.0	-1.5	16.35	16.65	12.67	14.58	16.17	15.84	16.51	14.20	14.84	16.90	14.62	17.36	14.37	16.69	16.90	14.00	17.07	14.75
3.0	-2.5	16.45	16.44	13.01	14.91	15.71	15.33	16.10	15.15	14.79	17.05	14.47	16.98	23.24	16.48	16.32	15.28	16.60	14.63
4.0	-3.5	16.55	16.45	13.75	15.43	15.63	15.27	16.04	15.41	15.16	16.57	14.82	17.03	14.97	16.25	16.43	14.73	16.68	15.00
5.0	-4.5	16.59	16.45	14.58	16.57	15.75	15.48	16.23	16.18	15.87	16.89	15.57	17.47	15.88	17.06	17.25	16.27	*19.38*	17.64
6.0	-5.5	16.65	16.49	15.41	17.10	15.94	15.69	16.22	16.36	16.09	16.67	15.78	17.09	15.91	16.40	16.61	15.76	16.66	15.76
7.0	-6.5	16.62	16.41	16.10	17.54	16.19	16.01	16.34	16.61	16.48	16.79	16.23	17.28	16.35	16.17	16.85	16.31	16.90	16.25
8.0	-7.5	16.58	17.50	17.50	19.11	18.06	18.01	18.26	18.65	18.93	19.60	19.34	20.56	19.77	17.63	20.39	20.04	20.51	20.01
9.0	-8.5	16.62	16.80	16.77	18.34	17.18	17.27	17.38	17.68	17.90	17.82	17.69	18.37	17.75	17.60	18.12	17.99	18.28	17.98
10.0	-9.5	16.58	16.89	16.95	18.69	17.27	17.31	17.63	17.88	18.19	18.06	18.10	18.78	18.20	18.21	18.44	18.43	18.63	18.50

Depth on String	Actual Depth	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)
(m)	(m)	09-Dec-81	02-Jun-94	15-Sep-94	21-Sep-95	10-Nov-97	13-Nov-98	03-Dec-99	29-Aug-01	29-Sep-02	07-Jul-04	23-Sep-04	06-Jul-06	20-Sep-06	20-Jun-08	16-Jul-09	23-Sep-09	11-Jul-11	30-Sep-11
1.0	-0.5	-0.50	-0.38	4.99	2.39	-0.27	-0.24	-0.59	3.85	1.79	0.14	1.96	-0.73	2.35	-0.62	0.14	3.34	-0.50	1.75
2.0	-1.5	-0.20	-0.56	4.86	2.05	0.01	0.42	-0.39	2.63	1.75	-0.80	2.05	-1.32	2.39	-0.55	-0.80	2.91	-1.02	1.86
3.0	-2.5	-0.30	-0.29	4.35	1.63	0.60	1.08	0.12	1.35	1.82	-0.97	2.25	-0.89		-0.31	-0.12	1.18	-0.47	2.02
4.0	-3.5	-0.50	-0.38	3.16	0.87	0.62	1.08	0.11	1.01	1.33	-0.41	1.78	-0.95	1.58	-0.03	-0.25	1.90	-0.60	1.49
5.0	-4.5	-0.50	-0.33	2.04	-0.47	0.52	0.86	-0.07	0.05	0.43	-0.79	0.81	-1.44	0.42	-0.98	-1.20	-0.06		
6.0	-5.5	-0.60	-0.41	0.92	-1.12	0.26	0.57	-0.09	-0.16	0.16	-0.53	0.54	-1.02	0.38	-0.21	-0.46	0.57	-0.55	0.53
7.0	-6.5	-0.50	-0.25	0.12	-1.55	0.01	0.23	-0.17	-0.46	-0.31	-0.67	-0.01	-1.23	-0.15	0.06	-0.74	-0.10	-0.80	-0.04
8.0	-7.5	-0.50	-1.55	-1.55	-3.25	-2.16	-2.10	-2.37	-2.71	-2.99	-3.66	-3.41	-4.57	-3.83	-1.62	-4.42	-4.09	-4.53	-4.07
9.0	-8.5	-0.50	-0.71	-0.68	-2.41	-1.15	-1.25	-1.37	-1.68	-1.91	-1.83	-1.69	-2.42	-1.75	-1.59	-2.15	-2.01	-2.33	-2.01
10.0	-9.5	-0.50	-0.86	-0.93	-2.82	-1.29	-1.34	-1.69	-1.89	-2.23	-2.09	-2.13	-2.84	-2.24	-2.25	-2.49	-2.48	-2.69	-2.56

Notes:
*The 8 metre depth tip is suspect

Table F-10: Diversion Canal (Backslope)
Thermistor BS-12

BS-12		Location:	Diversion Canal Back Slope St.2+260			Elevation (m advd):	1094.6	Coordinates:	1463.6 m N 343.1 m E	
		Thermistor String #10	Date Installed:	1981	Thermistor Type:	Cantec Controls YSI 44007	Ice-Bath Calibration:	Applied	Surface Protector:	Yes
Depth Correction:	-0.5									

Depth on String	Actual Depth	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)
(m)	(m)	09-Dec-81	02-Jun-94	15-Sep-94	21-Sep-95	07-Jul-04	23-Sep-04	06-Jul-06	20-Sep-06	20-Jun-08	16-Jul-09	23-Sep-09	11-Jul-11	30-Sep-11
1.0	-0.5	16.34	16.00	12.88	14.30	15.91	15.21	17.47	14.55	16.57	15.96	15.89	15.66	15.91
2.0	-1.5	16.28	16.33	12.87	14.57	16.34	15.93	16.99	16.06	17.09	16.42	16.21	17.20	15.79
3.0	-2.5	16.27	16.07	13.13	14.50	15.92	14.80	16.14	14.59	16.13	15.61	15.57	16.00	14.72
4.0	-3.5	16.20			14.62	16.08	14.96	16.12	14.84	16.12	15.82	15.47	16.07	14.97
5.0	-4.5	16.24				16.08	15.24	16.01	15.26	15.96	15.84	15.72	16.32	15.09
6.0	-5.5	16.23	15.73	14.74	15.14	16.75	16.19	16.68	15.99	16.76	16.78	16.91	*19.58*	*1.23*
7.0	-6.5	16.21	15.60	15.03	15.32	16.05	15.79	16.16	15.73	16.21	16.38	16.77	16.59	*1.26*
8.0	-7.5	16.21				15.80	15.77	Noisy	15.39	15.60	15.65	16.24	15.69	15.41
9.0	-8.5	16.19	15.49	15.46	15.74	16.03	16.17	15.87	15.78	15.85	16.94	16.65	15.99	15.91
10.0	-9.5	16.17	15.36	15.45	15.73	15.71	15.95	15.54	15.55	15.55	16.63	16.17	15.66	15.71

Depth on String	Actual Depth	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)
(m)	(m)	09-Dec-81	02-Jun-94	15-Sep-94	21-Sep-95	07-Jul-04	23-Sep-04	06-Jul-06	20-Sep-06	20-Jun-08	16-Jul-09	23-Sep-09	11-Jul-11	30-Sep-11
1.0	-0.5	-0.20	0.21	4.52	2.43	0.32	1.21	-1.50	2.09	-0.47	0.26	0.35	0.65	0.34
2.0	-1.5	-0.10	-0.16	4.57	2.09	-0.17	0.33	-0.93		-1.05	-0.27	-0.01	-1.18	0.51
3.0	-2.5	-0.10	0.15	4.16	2.17	0.33	1.77	0.06	2.05	0.07	0.72	0.77	0.23	1.88
4.0	-3.5	0.00			2.02	0.14	1.57	0.09	1.72	0.09	0.46	0.90	0.15	1.55
5.0	-4.5	-0.10				0.09	1.15	0.18	1.12	0.24	0.39	0.54	-0.19	1.35
6.0	-5.5	-0.10	0.52	1.80	1.27	-0.71	-0.05			-0.73	-0.75	-0.90		
7.0	-6.5	0.00	0.75	1.48	1.11	0.19	0.51	0.06	0.59	0.00	-0.21	-0.67	-0.46	
8.0	-7.5	0.00				0.50	0.54			0.75	0.69	-0.04	0.64	0.99
9.0	-8.5	0.00	0.87	0.91	0.55	0.19	0.02	0.39	0.50	0.42	-0.88	-0.55	0.25	0.34
10.0	-9.5	0.00	1.01	0.90	0.55	0.57	0.27	0.78	0.77	0.77	-0.54	0.00	0.62	0.56

Notes:

* The initial reading (Nov 15/81) is excluded from the data set because post-installation temperature equilibrium may not have been complete.
* Shaded results in mega ohms

Table F-11: Diversion Canal (Canal Dyke)
2011 Inclinometer Data - CD-10

CD-10												
FACES LOGGED : ABCD												
DEPTH OF TUBE : -10.0												
READING INTERVAL : 0.5												
	31/05/2011 16:32				21/06/2011 13:16				03/10/2011 16:11			
DEPTH	FACE A+	FACE A-	FACE B+	FACE B-	FACE A+	FACE A-	FACE B+	FACE B-	FACE A+	FACE A-	FACE B+	FACE B-
meters	meters	meters	meters	meters	meters	meters	meters	meters	meters	meters	meters	meters
-0.5	0.258784	-0.063647	-0.144768	0.149938	0.255979	-0.069476	-0.147643	0.152619	0.252652	-0.07337	-0.150629	0.151158
-1	0.287192	-0.086794	-0.146877	0.152725	0.277029	-0.091573	-0.160076	0.16453	0.274246	-0.094836	-0.160222	0.159449
-1.5	0.251738	-0.05851	-0.011641	-0.014042	0.257473	-0.072951	-0.033697	0.032644	0.25325	-0.074298	-0.032823	0.030403
-2	0.183101	-0.055825	0.39705	-0.529099	0.243175	-0.058092	0.186652	-0.181591	0.23906	-0.059737	0.1816	-0.181047
-2.5	0.195202	-0.020403	0.286823	-0.212284	0	0	0	0	0.251756	-0.07096	0.244851	-0.245253
-3	0.310637	-0.109991	0.32358	-0.314694	0	0	0	0	0.303254	-0.1224	0.319987	-0.319676
-3.5	0.370548	-0.171142	0.402577	-0.394358	0	0	0	0	0.363967	-0.18373	0.399849	-0.399944
-4	0.407749	-0.209115	0.439203	-0.430448	0	0	0	0	0.400733	-0.219209	0.433895	-0.433466
-4.5	0.485649	-0.287855	0.499877	-0.494029	0	0	0	0	0.481149	-0.300883	0.498714	-0.499562
-5	0.621955	-0.424489	0.591138	-0.583346	0	0	0	0	0.621174	-0.440874	0.591251	-0.593132
-5.5	0.685527	-0.489509	0.616455	-0.608204	0	0	0	0	0.681606	-0.501597	0.613958	-0.61391
-6	0.727604	-0.532132	0.596244	-0.586578	0	0	0	0	0.724752	-0.544593	0.592771	-0.592411
-6.5	0.743942	-0.55013	0.528115	-0.518505	0	0	0	0	0.740518	-0.562007	0.52519	-0.524245
-7	0.719341	-0.52424	0.452809	-0.444291	0	0	0	0	0.715986	-0.535413	0.449674	-0.449858
-7.5	0.670453	-0.478398	0.351811	-0.333516	0	0	0	0	0.666144	-0.489735	0.346998	-0.338679
-8	0.552494	-0.358891	0.173486	-0.166709	0	0	0	0	0.549125	-0.369142	0.171071	-0.171273
-8.5	0.504461	-0.311017	0.153409	-0.14651	0	0	0	0	0.502041	-0.32192	0.153066	-0.151517
-9	0.499802	-0.306869	0.138669	-0.1319	0	0	0	0	0.497338	-0.317077	0.138518	-0.137419
-9.5	0.491551	-0.298698	0.136409	-0.129591	0	0	0	0	0.489262	-0.308439	0.135247	-0.134607
-10	0.496969	-0.305207	0.133537	-0.127303	0	0	0	0	0.494447	-0.314563	0.131158	-0.13258

Notes:
*Obstruction below 2.0 m on June 21, 2011 reading

Table F-12: Diversion Canal (Canal Dyke)
2011 Inclinometer Data - CD-15

CD-15												
FACES LOGGED : ABCD												
DEPTH OF TUBE : -10.0												
READING INTERVAL : 0.5												
	31/05/2011 16:10				21/06/2011 13:57				03/10/2011 15:23			
DEPTH	FACE A+	FACE A-	FACE B+	FACE B-	FACE A+	FACE A-	FACE B+	FACE B-	FACE A+	FACE A-	FACE B+	FACE B-
meters	meters	meters	meters	meters	meters	meters	meters	meters	meters	meters	meters	meters
-0.5	1.68267	-1.551758	-0.887635	0.853017	1.722036	-1.55871	-0.881374	0.838777	-1.56514	1.693297	0.844194	-0.88622
-1	0.914876	-0.741616	-0.221344	0.213913	0.904739	-0.743534	-0.222426	0.212251	-0.753325	0.899218	0.212051	-0.22441
-1.5	0.574856	-0.385154	-0.099731	0.106871	0.57622	-0.387345	-0.105457	0.107204	-0.393727	0.570543	0.10463	-0.107097
-2	0.579827	-0.389376	-0.067815	0.075583	0.586222	-0.397613	-0.073177	0.076279	-0.401911	0.579784	0.076765	-0.078091
-2.5	0.585531	-0.395916	-0.121739	0.12736	0.587363	-0.398843	-0.12414	0.125467	-0.409423	0.586342	0.125005	-0.127588
-3	0.518094	-0.32783	-0.11024	0.117075	0.519184	-0.329813	-0.113179	0.115174	-0.336168	0.514258	0.111585	-0.113363
-3.5	0.455353	-0.267948	-0.084205	0.094414	0.457485	-0.270137	-0.087455	0.092617	-0.275029	0.450791	0.090792	-0.089994
-4	0.287566	-0.099966	-0.154744	0.160531	0.289249	-0.101115	-0.157218	0.158681	-0.105573	0.283223	0.156938	-0.157849
-4.5	0.156495	0.030902	-0.131993	0.138789	0.162079	0.031378	-0.135133	0.136993	0.027159	0.15052	0.134124	-0.135907
-5	0.027485	0.160814	-0.099719	0.106106	0.029488	0.160999	-0.103074	0.104783	0.156605	0.022412	0.101658	-0.104039
-5.5	-0.050776	0.236945	-0.121264	0.128092	-0.04896	0.23708	-0.12238	0.126566	0.232263	-0.05629	0.12375	-0.125299
-6	-0.099987	0.287737	-0.138579	0.145188	-0.098781	0.286991	-0.141839	0.144139	0.28128	-0.103128	0.14044	-0.14257
-6.5	-0.177863	0.364406	-0.117072	0.122468	-0.176195	0.364757	-0.120492	0.120752	0.360574	-0.183617	0.11792	-0.121275
-7	-0.415255	0.603004	-0.074742	0.08258	-0.41274	0.602959	-0.077929	0.081632	0.596892	-0.418766	0.079527	-0.079379
-7.5	-0.517823	0.705778	-0.045355	0.050934	-0.516773	0.705978	-0.048633	0.049681	0.702032	-0.52414	0.045781	-0.048737
-8	-0.528757	0.716368	-0.040447	0.04637	-0.528266	0.716692	-0.043366	0.045337	0.711943	-0.534547	0.042821	-0.044695
-8.5	-0.513533	0.701795	-0.044096	0.048183	-0.513438	0.702317	-0.046801	0.047479	0.697678	-0.519946	0.042385	-0.045912
-9	-0.487452	0.675105	-0.098915	0.103865	-0.487039	0.675853	-0.101676	0.103347	0.670229	-0.492631	0.099963	-0.102107
-9.5	-0.478987	0.666373	-0.151602	0.155957	-0.47815	0.666723	-0.154648	0.155286	0.662316	-0.484986	0.151592	-0.154379
-10	0	0	0	0	0	0	0	0	0	0	0	0

Notes:
*No readings at 10 m depth

Table F-13: Diversion Canal (Canal Dyke)
2011 Inclinometer Data - CD-19

CD-19												
FACES LOGGED : ABCD												
DEPTH OF TUBE : -10.0												
READING INTERVAL : 0.5												
	31/05/2011 15:53				21/06/2011 0:00				03/10/2011 16:29			
DEPTH	FACE A+	FACE A-	FACE B+	FACE B-	FACE A+	FACE A-	FACE B+	FACE B-	FACE A+	FACE A-	FACE B+	FACE B-
meters	meters	meters	meters	meters	meters	meters	meters	meters	meters	meters	meters	meters
-0.5	-1.24861	1.450429	-0.382316	0.392165					-1.254949	1.435769	-0.385906	0.38874
-1	-1.212133	1.415618	-0.360288	0.367773					-1.21658	1.398806	-0.365082	0.36564
-1.5	-0.980293	1.185763	-0.261954	0.261221					-1.002856	1.187244	-0.273939	0.26728
-2	-0.796139	0.99918	-0.275412	0.281821					-0.813508	0.99551	-0.285454	0.285493
-2.5	-0.703688	0.90773	-0.305599	0.313615					-0.714266	0.89769	-0.311375	0.312825
-3	-0.673273	0.876699	-0.29681	0.303493					-0.682928	0.865873	-0.300781	0.301385
-3.5	0	0	0	0					-0.702692	0.886374	-0.301099	0.300083
-4	0	0	0	0					0	0	0	0
-4.5	0	0	0	0					0	0	0	0
-5	0	0	0	0					0	0	0	0
-5.5	0	0	0	0					0	0	0	0
-6	0	0	0	0					0	0	0	0
-6.5	0	0	0	0					0	0	0	0
-7	0	0	0	0					0	0	0	0
-7.5	0	0	0	0					0	0	0	0
-8	0	0	0	0					0	0	0	0
-8.5	0	0	0	0					0	0	0	0
-9	0	0	0	0					0	0	0	0
-9.5	0	0	0	0					0	0	0	0
-10	0	0	0	0					0	0	0	0

Notes:
*Obstruction in hole; no readings collected on June 21 for this reason.

Table F-14: Diversion Canal (Canal Dyke)
2011 Inclinometer Data - CD-21

CD-21												
FACES LOGGED : ABCD												
DEPTH OF TUBE : -10.0												
READING INTERVAL : 0.5												
	31/05/2011 14:28				21/06/2011 4:07				27/09/2011 16:39			
DEPTH	FACE A+	FACE A-	FACE B+	FACE B-	FACE A+	FACE A-	FACE B+	FACE B-	FACE A+	FACE A-	FACE B+	FACE B-
meters	meters	meters	meters	meters	meters	meters	meters	meters	meters	meters	meters	meters
-0.5	-1.614019	1.798463	-0.564917	0.572328	-1.626571	1.808156	-0.573725	0.577119	-1.635079	1.822012	-0.574593	0.586868
-1	-1.349674	1.493502	-0.323728	0.365941	-1.363537	1.506149	-0.332349	0.374873	-1.371182	1.516979	-0.332811	0.384148
-1.5	-0.770943	0.944534	0.155538	-0.10319	-0.774247	0.943475	0.148507	-0.090541	-0.771943	0.946476	0.149266	-0.086883
-2	-0.485113	0.672744	0.355979	-0.357318	-0.486696	0.672292	0.352944	-0.353287	-0.485256	0.673928	0.354606	-0.350259
-2.5	-0.433376	0.623386	0.42542	-0.41695	-0.435535	0.623049	0.423791	-0.415869	-0.428551	0.6209	0.420743	-0.403754
-3	-0.385405	0.570356	0.689638	-0.690933	-0.387464	0.569161	0.690027	-0.691921	-0.387436	0.572765	0.692556	-0.687375
-3.5	-0.356483	0.548688	0.78606	-0.780552	-0.358968	0.548092	0.785715	-0.780392	-0.351882	0.545469	0.78866	-0.776922
-4	-0.316924	0.497479	0.96401	-0.962439	-0.319872	0.498637	0.963946	-0.963714	-0.314857	0.498112	0.966917	-0.95902
-4.5	-0.015443	0.19542	1.100552	-1.098282	-0.017107	0.195568	1.10143	-1.098738	-0.010275	0.194726	1.104671	-1.09706
-5	0.332076	-0.134387	1.015935	-1.019541	0.330191	-0.129786	1.017018	-1.019881	0.334021	-0.131408	1.018723	-1.015362
-5.5	-0.162056	0.351606	1.074874	-1.070731	-0.164389	0.354908	1.076825	-1.070982	-0.159602	0.354039	1.079634	-1.067452
-6	0.15971	0.018308	1.342004	-1.342406	0.158577	0.015667	1.343388	-1.345026	0.16402	0.019355	1.347588	-1.340449
-6.5	0.494134	-0.385455	1.434761	-1.394327	0.496342	-0.12217	1.439205	-1.370814	0.466653	-0.380651	1.430299	-1.390806
-7	0.171425	0.038967	0.898833	-0.902385	0.168291	0.040908	0.902005	-0.901905	0.172196	0.040257	0.902959	-0.898898
-7.5	0.334804	-0.1161	1.452951	-1.440615	0.33101	-0.119284	1.448395	-1.436379	0.335766	-0.104693	1.459911	-1.443932
-8	0.188272	-0.003103	1.525113	-1.527836	0.186781	-0.001033	1.531291	-1.525262	0.186805	-0.002239	1.531161	-1.523625
-8.5	0.205558	-0.01308	1.255473	-1.259639	0.20307	-0.013803	1.256927	-1.257805	0.206166	-0.013031	1.261202	-1.255379
-9	0.195916	-0.021477	1.164915	-1.161462	0.194808	-0.023312	1.165194	-1.159184	0.197102	-0.021981	1.169712	-1.156867
-9.5	0.206217	-0.023909	0.898129	-0.901781	0.204557	-0.023528	0.896663	-0.899589	0.207029	-0.022811	0.90291	-0.897956
-10	0.067924	0.131593	0.777716	-0.776963	0.065798	0.131221	0.779052	-0.777194	0.06928	0.131187	0.782958	-0.773615

Table F-15: Diversion Canal (Canal Dyke)
2011 Inclinometer Data - BH94CD-1

BH94CD-1												
FACES LOGGED : ABCD												
DEPTH OF TUBE : -14.0												
READING INTERVAL : 0.5												
	31/05/2011 14:05				21/06/2011 0:00				03/10/2011 0:00			
DEPTH	FACE A+	FACE A-	FACE B+	FACE B-	FACE A+	FACE A-	FACE B+	FACE B-	FACE A+	FACE A-	FACE B+	FACE B-
meters	meters	meters	meters	meters	meters	meters	meters	meters	meters	meters	meters	meters
-0.5	-0.38203	0.564219	-0.593785	0.594132								
-1	-0.228888	0.43494	-0.403393	0.421458								
-1.5	-0.028673	0.206529	0.001617	0.005227								
-2	0	0	0	0								
-2.5	0	0	0	0								
-3	0	0	0	0								
-3.5	0	0	0	0								
-4	0	0	0	0								
-4.5	0	0	0	0								
-5	0	0	0	0								
-5.5	0	0	0	0								
-6	0	0	0	0								
-6.5	0	0	0	0								
-7	0	0	0	0								
-7.5	0	0	0	0								
-8	0	0	0	0								
-8.5	0	0	0	0								
-9	0	0	0	0								
-9.5	0	0	0	0								
-10	0	0	0	0								
-10.5	0	0	0	0								
-11	0	0	0	0								
-11.5	0	0	0	0								
-12	0	0	0	0								
-12.5	0	0	0	0								
-13	0	0	0	0								
-13.5	0	0	0	0								
-14	0	0	0	0								

Note: Obstruction in hole; no June 21 and October 3 readings for this reason.

Table F-16: Diversion Canal (Canal Dyke)
2011 Inclinometer Data - BGC05-08

BGC05-08												
FACES LOGGED : ABCD												
DEPTH OF TUBE : -12.0												
READING INTERVAL : 0.5												
	31/05/2011 14:53				21/06/2011 4:48				27/09/2011 17:06			
DEPTH	FACE A+	FACE A-	FACE B+	FACE B-	FACE A+	FACE A-	FACE B+	FACE B-	FACE A+	FACE A-	FACE B+	FACE B-
meters	meters	meters	meters	meters	meters	meters	meters	meters	meters	meters	meters	meters
-0.5	0.080377	0.109477	0.11118	-0.102195	0.057585	0.057968	-0.133447	-0.138472	0.120946	0.121035	0.091204	0.091484
-1	0.071384	0.117565	0.095181	-0.09076	0.092153	0.092448	-0.101814	-0.101912	0.111038	0.110983	0.088363	0.088532
-1.5	0.054235	0.134514	0.065994	-0.063236	0.126817	0.126992	-0.064661	-0.064084	0.06108	0.061023	0.070887	0.07098
-2	-0.005054	0.192185	0.048227	-0.045102	0.184921	0.18483	-0.04399	-0.043251	-0.012358	-0.012414	0.050814	0.05097
-2.5	-0.059202	0.24799	0.029586	-0.02675	0.230956	0.23092	-0.025708	-0.025064	-0.057666	-0.057749	0.030772	0.030883
-3	-0.066439	0.253201	0.010304	-0.008421	0.236739	0.238736	-0.002868	-0.00292	-0.066959	-0.067007	0.008485	0.008703
-3.5	-0.038733	0.226646	-0.024727	0.027203	0.213673	0.214049	0.0275	0.02809	-0.03609	-0.035998	-0.022523	-0.022533
-4	-0.035003	0.222654	-0.027463	0.029055	0.212841	0.213259	0.027741	0.028463	-0.031758	-0.031771	-0.025482	-0.025334
-4.5	-0.039515	0.227424	-0.036354	0.038942	0.214518	0.214672	0.03991	0.040485	-0.032717	-0.032757	-0.03442	-0.034415
-5	-0.015248	0.20259	-0.073632	0.076211	0.186788	0.187023	0.079119	0.079649	-0.012739	-0.012837	-0.073341	-0.073241
-5.5	0.027342	0.160418	-0.110452	0.113332	0.148839	0.147895	0.113996	0.115659	0.014817	0.014751	-0.106934	-0.106754
-6	0.05255	0.134398	-0.127883	0.130586	0.122231	0.12181	0.131099	0.131871	0.056743	0.014681	-0.126123	-0.106826
-6.5	0.023616	0.16371	-0.12192	0.124512	0.150845	0.153918	0.124481	0.12523	0.033125	0.056735	-0.120566	-0.126053
-7	-0.011648	0.199912	-0.132044	0.133586	0.18739	0.187034	0.133964	0.136425	-0.009527	0.033129	-0.130111	-0.120426
-7.5	-0.009213	0.196586	-0.189541	0.191999	0.184249	0.185988	0.192722	0.193801	-0.006745	-0.009492	-0.18761	-0.130132
-8	-0.08462	0.271949	-0.171509	0.174922	0.25928	0.262489	0.175574	0.175026	-0.082059	-0.08222	-0.1698	-0.169794
-8.5	-0.178169	0.366097	-0.182685	0.184692	0.353813	0.35758	0.185062	0.187527	-0.175619	-0.175623	-0.180525	-0.180558
-9	-0.30753	0.494835	-0.208928	0.21169	0.482813	0.486579	0.212012	0.21295	-0.305389	-0.305404	-0.206686	-0.206712
-9.5	-0.356064	0.543022	-0.212422	0.214832	0.530954	0.532001	0.215194	0.21684	-0.354137	-0.354084	-0.210069	-0.210202
-10	-0.378464	0.56572	-0.238408	0.240141	0.55345	0.554219	0.240881	0.241951	-0.376145	-0.376095	-0.236442	-0.236524
-10.5	-0.400226	0.586792	-0.280169	0.283497	0.549586	0.575452	0.316143	0.285443	-0.397872	-0.397872	-0.278568	-0.278638
-11	-0.376277	0.56183	-0.310771	0.315502	0.500606	0.548307	0.3422	0.315664	-0.374381	-0.374486	-0.308888	-0.308844
-11.5	-0.326178	0.512894	-0.338126	0.341665	0.566314	0.499694	0.307384	0.345755	-0.323876	-0.323873	-0.336458	-0.336218
-12	-0.393038	0.578773	-0.30367	0.306712	0.583472	0.568677	0.284441	0.306123	-0.390249	-0.39021	-0.302193	-0.302157

Table F-17: Diversion Canal (Canal Dyke)
2011 Inclinometer Data - BGC05-05

BGC05-05												
FACES LOGGED : ABCD												
DEPTH OF TUBE : -11.0												
READING INTERVAL : 0.5												
	31/05/2011 15:23				21/06/2011 3:10				03/10/2011 14:35			
DEPTH	FACE A+	FACE A-	FACE B+	FACE B-	FACE A+	FACE A-	FACE B+	FACE B-	FACE A+	FACE A-	FACE B+	FACE B-
meters	meters	meters	meters	meters	meters	meters	meters	meters	meters	meters	meters	meters
-0.5	-0.093286	0.281885	0.06942	-0.066416	-0.094293	0.281897	0.095317	-0.053925	-0.106265	0.275378	0.059182	-0.060321
-1	-0.092177	0.281998	0.087206	-0.08503	-0.097627	0.286826	0.112072	-0.072623	-0.107292	0.277745	0.079147	-0.081676
-1.5	-0.12538	0.315277	0.094208	-0.091883	-0.129004	0.319007	0.120191	-0.08064	-0.140437	0.311272	0.086697	-0.088764
-2	-0.164581	0.353511	0.091434	-0.088505	-0.166048	0.354281	0.11975	-0.080705	-0.178796	0.348198	0.085503	-0.087598
-2.5	-0.201601	0.38966	0.096015	-0.09277	-0.200789	0.388414	0.125302	-0.086778	-0.212277	0.380992	0.091981	-0.094115
-3	-0.200999	0.390411	0.078094	-0.074769	-0.198712	0.388236	0.108224	-0.07017	-0.206907	0.377147	0.076704	-0.078694
-3.5	-0.201489	0.390916	0.061588	-0.058127	-0.199025	0.387981	0.090127	-0.052716	-0.203929	0.374045	0.061969	-0.063803
-4	-0.17659	0.36606	0.049134	-0.047377	-0.17636	0.365426	0.077031	-0.041595	-0.183088	0.353364	0.052516	-0.055137
-4.5	-0.136845	0.325909	0.039331	-0.036822	-0.139578	0.32806	0.066511	-0.031317	-0.148458	0.317836	0.039557	-0.041837
-5	-0.096435	0.286261	0.033469	-0.030896	-0.099805	0.28915	0.058655	-0.024217	-0.110862	0.281418	0.027027	-0.029133
-5.5	-0.071105	0.261471	0.031606	-0.02915	-0.074432	0.264181	0.054111	-0.020666	-0.087507	0.257956	0.019302	-0.02163
-6	-0.013736	0.201871	0.022559	-0.020017	-0.01088	0.19873	0.047106	-0.014834	-0.016209	0.185118	0.016598	-0.018671
-6.5	-0.010516	0.199764	0.03431	-0.03218	-0.006601	0.195456	0.0577	-0.02634	-0.009866	0.179961	0.029522	-0.031652
-7	-0.020172	0.2098	0.040094	-0.038194	-0.018747	0.207348	0.061312	-0.031918	-0.025249	0.195098	0.036272	-0.038858
-7.5	-0.033226	0.221969	0.039981	-0.038183	-0.034792	0.222786	0.059681	-0.03146	-0.047493	0.216605	0.037776	-0.040161
-8	-0.046613	0.236757	0.042528	-0.040701	-0.051987	0.241109	0.060337	-0.033841	-0.07079	0.241404	0.040909	-0.043297
-8.5	-0.076413	0.266973	0.046662	-0.044595	-0.084403	0.272984	0.063072	-0.03651	-0.105127	0.276109	0.04378	-0.04618
-9	-0.081492	0.270635	0.065778	-0.064542	-0.088617	0.276787	0.081345	-0.060006	-0.099681	0.269506	0.064219	-0.06752
-9.5	-0.10952	0.299485	0.076454	-0.07473	-0.111425	0.30056	0.093777	-0.07366	-0.111056	0.281552	0.08239	-0.084846
-10	-0.153665	0.344482	0.070634	-0.069758	-0.144721	0.334745	0.086165	-0.068586	-0.14134	0.31281	0.07888	-0.082011
-10.5	-0.175107	0.364407	0.088405	-0.088726	-0.164933	0.352086	0.097774	-0.05688	-0.169675	0.339513	0.088903	-0.092611
-11	-0.185572	0.376521	0.077443	-0.076485	-0.185973	0.376325	0.084165	-0.045687	-0.19546	0.366837	0.076416	-0.078887

Table F-18: Diversion Canal (Canal Dyke)
2011 Inclinometer Data - BH91-CD1

BH91-CD1												
FACES LOGGED : ABCD												
DEPTH OF TUBE : -11.0												
READING INTERVAL : 0.5												
	31/05/2011 15:41				21/06/2011 2:31				03/10/2011 14:53			
DEPTH	FACE A+	FACE A-	FACE B+	FACE B-	FACE A+	FACE A-	FACE B+	FACE B-	FACE A+	FACE A-	FACE B+	FACE B-
meters	meters	meters	meters	meters	meters	meters	meters	meters	meters	meters	meters	meters
-0.5	0.535491	-0.34793	0.118059	-0.11348	0.532685	-0.348136	0.120053	-0.11142	0.52077	-0.350962	0.112624	-0.112506
-1	0.435044	-0.244905	0.03886	-0.033714	0.429057	-0.247452	0.038401	-0.033038	0.419908	-0.249591	0.035392	-0.034766
-1.5	0.229018	-0.040372	-0.053594	0.056943	0.225415	-0.045064	-0.054867	0.058353	0.219119	-0.050113	-0.057084	0.055789
-2	0.513159	0.091107	0.101552	0.086439	0.097656	0.086067	-0.079842	0.088018	0.092586	0.081182	-0.08182	0.084414
-2.5	0.05855	0.12556	0.130096	-0.132548	0.052051	0.122258	0.134064	-0.135551	0.043645	0.119216	0.133195	-0.138274
-3	0.080582	0.108891	0.239064	-0.234519	0.074852	0.106477	0.23873	-0.234417	0.068582	0.101769	0.23765	-0.238063
-3.5	0.093115	0.095415	0.265573	-0.262375	0.08866	0.091631	0.265674	-0.263004	0.081069	0.088157	0.262824	-0.26481
-4	0.11553	0.072154	0.175021	-0.170625	0.110998	0.068707	0.174936	-0.170583	0.104639	0.063795	0.17506	-0.175768
-4.5	0.149744	0.039908	0.022663	-0.017102	0.145068	0.037081	0.022675	-0.017572	0.136314	0.035262	0.022923	-0.022758
-5	0.155146	0.026646	-0.073407	0.079092	0.150082	0.022737	-0.073186	0.079367	0.142534	0.019689	-0.080913	0.082814
-5.5	0.119534	0.073202	-0.162229	0.165214	0.115232	0.069763	-0.16256	0.164618	0.111606	0.064702	-0.164127	0.159743
-6	0.106125	0.083132	-0.239667	0.244264	0.101649	0.079581	-0.239923	0.24395	0.095547	0.074893	-0.24244	0.241561
-6.5	0.113877	0.075194	-0.281807	0.285312	0.109234	0.071706	-0.282042	0.285177	0.103572	0.066515	-0.284641	0.283027
-7	0.112365	0.077131	-0.272677	0.276737	0.10767	0.07368	-0.273103	0.27683	0.101981	0.068352	-0.275392	0.274083
-7.5	0.101365	0.088251	-0.240777	0.243848	0.09682	0.084692	-0.241195	0.243822	0.091268	0.079302	-0.243607	0.241311
-8	0.111818	0.076833	-0.24509	0.248775	0.107332	0.073289	-0.245444	0.248707	0.102007	0.067778	-0.247725	0.246305
-8.5	0.170112	0.01701	-0.384443	0.387701	0.16535	0.013376	-0.384856	0.38808	0.160189	0.005306	-0.387606	0.387131
-9	0.20257	-0.012923	-0.410397	0.414582	0.197333	-0.016419	-0.411029	0.414585	0.192478	-0.022212	-0.413238	0.411994
-9.5	0.225105	-0.034206	-0.405698	0.409598	0.21985	-0.037594	-0.406113	0.409499	0.214519	-0.043379	-0.408448	0.406698
-10	0.246206	-0.056916	-0.429131	0.433161	0.241105	-0.060392	-0.429482	0.433114	0.235863	-0.065686	-0.431961	0.430446
-10.5	0.260584	-0.070509	-0.462124	0.465691	0.255387	-0.074118	-0.462343	0.46558	0.250367	-0.07957	-0.464563	0.462978
-11	0.263354	-0.074282	-0.473047	0.476955	0.257999	-0.07776	-0.47332	0.477006	0.252604	-0.083134	-0.475613	0.474405

Table F-19: Diversion Canal (Canal Dyke)
2011 Inclinometer Data - SP-2

SP-2								
FACES LOGGED : ABCD								
DEPTH OF TUBE : -7.0								
READING INTERVAL : 0.5								
	22/06/2011 10:10				03/10/2011 15:43			
DEPTH	FACE A+	FACE A-	FACE B+	FACE B-	FACE A+	FACE A-	FACE B+	FACE B-
meters	meters	meters	meters	meters	meters	meters	meters	meters
-0.5	-0.830542	0.997313	0.466133	-0.46393	-0.828515	1.00363	0.467768	-0.467198
-1	-0.76098	0.934431	0.483313	-0.482059	-0.758005	0.937901	0.481987	-0.48254
-1.5	-0.443017	0.610667	0.492684	-0.497306	-0.436448	0.612009	0.4907	-0.497341
-2	0.159112	0.01292	0.358981	-0.35652	0.162878	0.016372	0.357333	-0.357341
-2.5	0.064255	0.107194	0.372411	-0.372635	0.067836	0.110597	0.371398	-0.373888
-3	0.330893	-0.175226	0.11293	-0.08235	0.335529	-0.133896	0.110019	-0.093524
-3.5	0.370911	-0.223832	0.234722	-0.242199	0.373961	-0.220547	0.234613	-0.242641
-4	-0.137087	0.305642	0.59353	-0.593497	-0.134857	0.311294	0.593247	-0.595006
-4.5	0.216423	-0.046307	0.395792	-0.390656	0.222701	-0.044554	0.393802	-0.390899
-5	0.591974	-0.425147	0.304483	-0.294218	0.595927	-0.422281	0.304278	-0.296078
-5.5	0.592311	-0.420212	-0.155126	0.161276	0.5965	-0.417447	-0.155517	0.16051
-6	0.748531	-0.596834	-0.462706	0.436022	0.752792	-0.594966	-0.463367	0.434625
-6.5	0.451239	-0.352471	0.412899	-0.377315	0.454696	-0.349027	0.412622	-0.379871
-7	0.705836	-0.60237	0.937869	-0.910603	0.708699	-0.600334	0.936867	-0.909712

Table F-20: Diversion Canal (Canal Dyke)
2011 Inclinometer Data - SP-5

SP-5	
FACES LOGGED : ABCD	
DEPTH OF TUBE : -8.0	
READING INTERVAL : 0.5	

	22/06/2011 9:50				13/07/2011 13:54				03/10/2011 13:30			
DEPTH	FACE A+	FACE A-	FACE B+	FACE B-	FACE A+	FACE A-	FACE B+	FACE B-	FACE A+	FACE A-	FACE B+	FACE B-
meters	meters	meters	meters	meters	meters	meters	meters	meters	meters	meters	meters	meters
-0.5	0.611518	-0.445811	0.704241	-0.71766	0.7863	-0.436139	-0.551481	-0.68208	0.678286	-0.491312	0.696723	-0.690809
-1	0.579572	-0.428019	0.704176	-0.660091	0.753054	-0.418652	-0.533442	-0.616885	0.596311	-0.442307	0.681966	-0.658201
-1.5	0.337749	-0.168868	0.401157	-0.336095	0.419919	-0.161232	-0.269963	-0.319552	0.357661	-0.169749	0.383234	-0.324794
-2	0.09013	0.081028	0.081977	-0.082545	0.174624	0.085198	-0.006804	-0.084604	0.097761	0.089088	0.081083	-0.083484
-2.5	0.025396	0.145556	0.07623	-0.076306	0.166601	0.150552	0.056524	-0.077632	0.033298	0.153642	0.074854	-0.07738
-3	0.109214	0.062958	0.144935	-0.144882	0.234505	0.068248	-0.023981	-0.144656	0.118068	0.070657	0.142742	-0.143908
-3.5	0.437496	-0.266905	0.188793	-0.185222	0.282403	-0.261987	-0.355561	-0.187019	0.446952	-0.261281	0.187952	-0.18571
-4	0.608585	-0.440207	0.008116	-0.002426	0.105947	-0.434926	-0.522847	-0.003625	0.617964	-0.432907	0.005115	-0.003711
-4.5	0.578045	-0.407223	-0.067376	0.062561	0.034904	-0.402235	-0.493646	0.06123	0.586718	-0.39953	-0.068169	0.061084
-5	0.379732	-0.209435	0.054106	-0.053044	0.190605	-0.204219	-0.264733	-0.054036	0.387453	-0.201219	0.052948	-0.054526
-5.5	0.402825	-0.231878	0.115158	-0.109958	0.213354	-0.226444	-0.31803	-0.111361	0.411175	-0.223962	0.113403	-0.111759
-6	0.693233	-0.520275	-0.121091	0.118678	-0.019203	-0.515099	-0.601747	0.117491	0.702068	-0.512985	-0.122721	0.116574
-6.5	0.991891	-0.819868	-0.252053	0.265889	-0.157337	-0.814428	-0.902484	0.264848	1.002309	-0.812735	-0.254066	0.263577
-7	0.473864	-0.339284	-0.071768	0.153825	-0.02214	-0.333493	-0.371456	0.148633	0.482049	-0.331042	-0.073754	0.151234
-7.5	0.198912	-0.02866	0.195036	-0.189298	0.285187	-0.023561	-0.11456	-0.190575	0.207745	-0.02075	0.191985	-0.191166
-8	0.463141	-0.292223	-0.008761	0.008189	0.202358	-0.287177	-0.200383	0.006924	0.47149	-0.284231	-0.010619	0.005912

Table F-21: Diversion Canal (Canal Dyke)
2011 Inclinometer Data - BS-5

BS-5								
FACES LOGGED : ABCD								
DEPTH OF TUBE : -10.0								
READING INTERVAL : 0.5								
	11/07/2011 10:31				30/09/2011 13:41			
DEPTH	FACE A+	FACE A-	FACE B+	FACE B-	FACE A+	FACE A-	FACE B+	FACE B-
meters	meters	meters	meters	meters	meters	meters	meters	meters
-0.5	0.613907	-0.441898	0.422888	-0.418233	0.617469	-0.428612	0.399734	-0.392711
-1	0.568915	-0.395687	0.333902	-0.330075	0.55692	-0.366762	0.347443	-0.340601
-1.5	0.391573	-0.219565	0.281417	-0.277378	0.403122	-0.216948	0.287154	-0.277805
-2	0.281863	-0.10854	0.239413	-0.2367	0.290996	-0.100939	0.24097	-0.234348
-2.5	0.292648	-0.119238	0.223297	-0.221248	0.301633	-0.111906	0.225488	-0.219177
-3	0.317836	-0.144655	0.231976	-0.230395	0.326609	-0.13727	0.234005	-0.22841
-3.5	0.34177	-0.167744	0.238855	-0.237759	0.350567	-0.160517	0.241166	-0.235737
-4	0.363455	-0.189391	0.245792	-0.243994	0.372119	-0.181946	0.247896	-0.242088
-4.5	0.410731	-0.237863	0.219646	-0.217608	0.419978	-0.231029	0.221682	-0.215517
-5	0.525394	-0.35215	0.194566	-0.192498	0.534523	-0.345303	0.196899	-0.190638
-5.5	0.564229	-0.390934	0.16753	-0.164979	0.573079	-0.38394	0.169652	-0.1633
-6	0.563714	-0.390409	0.111281	-0.108583	0.57259	-0.383391	0.113047	-0.106714
-6.5	0.567914	-0.393995	0.053204	-0.050253	0.576737	-0.386974	0.055183	-0.04872
-7	0.606433	-0.432526	0.00238	-0.001242	0.615371	-0.425747	0.004918	0.000397
-7.5	0.596095	-0.421564	-0.01674	0.020617	0.604477	-0.414951	-0.014679	0.021952
-8	0.476797	-0.302527	-0.099589	0.102628	0.485573	-0.296123	-0.097411	0.104233
-8.5	0.430295	-0.256184	-0.143611	0.145333	0.438704	-0.248044	-0.14162	0.147009
-9	0.386009	-0.213557	-0.185602	0.187364	0.394662	-0.20548	-0.183364	0.188997
-9.5	0.359571	-0.186262	-0.223311	0.224791	0.368339	-0.178315	-0.220843	0.226426
-10	0.336414	-0.162657	-0.2804	0.283264	0.345195	-0.15495	-0.278715	0.284873

Table F-22: Diversion Canal (Canal Dyke)
2011 Inclinometer Data - BS-9

BS-9								
FACES LOGGED : ABCD								
DEPTH OF TUBE : -10.0								
READING INTERVAL : 0.5								
	11/07/2011 11:17				30/09/2011 13:07			
DEPTH	FACE A+	FACE A-	FACE B+	FACE B-	FACE A+	FACE A-	FACE B+	FACE B-
meters	meters	meters	meters	meters	meters	meters	meters	meters
-0.5	-0.103748	-0.220511	0.836305	-0.77993	-0.556899	0.757482	0.54359	-0.526987
-1	-0.209278	-0.128135	0.7352	-0.708946	-0.525214	0.715167	0.507598	-0.500228
-1.5	-0.276856	-0.073937	0.54036	-0.52118	-0.338638	0.526513	0.39143	-0.385706
-2	-0.109769	-0.09183	0.293035	-0.302298	-0.098355	0.288111	0.297103	-0.289945
-2.5	0.021545	-0.234702	0.383471	-0.249022	0.030812	0.158767	0.38612	-0.380119
-3	0.129323	-0.370665	0.500106	-0.212394	0.138716	0.050366	0.502164	-0.496674
-3.5	0.22999	-0.484109	0.591015	-0.180195	0.238541	-0.047988	0.592573	-0.586873
-4	0.349986	-0.577175	0.636395	-0.135509	0.3584	-0.170475	0.638305	-0.632208
-4.5	0.53235	-0.728463	0.691917	-0.069931	0.541399	-0.352394	0.694021	-0.686367
-5	0.796014	-0.975193	0.774249	-0.01002	0.80516	-0.61783	0.775998	-0.769456
-5.5	1.01838	-1.142647	0.780296	0.055112	1.027328	-0.838301	0.781926	-0.776735
-6	1.209309	-1.321784	0.828549	0.11872	1.21846	-1.031268	0.8305	-0.824092
-6.5	1.385924	-1.481981	0.854202	0.19926	1.394853	-1.20717	0.856263	-0.849893
-7	1.529014	-1.597956	0.851235	0.233955	1.536759	-1.351057	0.855115	-0.845036
-7.5	1.70872	-1.71699	0.789534	0.321698	1.717302	-1.534488	0.790219	-0.781427
-8	1.957767	-1.880823	0.687789	0.465042	1.967253	-1.784344	0.690082	-0.676449
-8.5	2.077251	-1.936218	0.596509	0.568459	2.087023	-1.90348	0.59823	-0.586561
-9	2.122692	-1.922564	0.523556	0.691125	2.132526	-1.948422	0.526116	-0.514837
-9.5	2.145448	-1.917744	0.462067	0.728018	2.155223	-1.970355	0.465072	-0.455872
-10	2.134667	-1.909569	0.379773	0.709262	2.15598	-1.971894	0.426472	-0.41685

Table F-23: Diversion Canal (Canal Dyke)
2011 Inclinometer Data - BS-10

BS-10								
FACES LOGGED : ABCD								
DEPTH OF TUBE : -10.0								
READING INTERVAL : 0.5								
	11/07/2011 11:51				30/09/2011 12:39			
DEPTH	FACE A+	FACE A-	FACE B+	FACE B-	FACE A+	FACE A-	FACE B+	FACE B-
meters	meters	meters	meters	meters	meters	meters	meters	meters
-0.5	-0.043558	0.221249	-1.069724	1.075813	-0.029802	0.216853	-1.067162	1.071728
-1	-0.010461	0.184307	-1.028472	1.035491	0.001573	0.179995	-1.025385	1.031707
-1.5	0.253749	-0.07378	-0.718886	0.727679	0.264405	-0.073902	-0.703738	0.715761
-2	0.643295	-0.455367	-0.144123	0.14713	0.64383	-0.447863	-0.1378	0.145804
-2.5	0.841267	-0.663691	0.189081	-0.178656	0.841266	-0.656294	0.19065	-0.179484
-3	0.763878	-0.582274	0.084398	-0.080086	0.762116	-0.573244	0.085671	-0.078974
-3.5	0.740836	-0.559264	0.037139	-0.032038	0.743662	-0.554993	0.043346	-0.036593
-4	0.762592	-0.580521	0.032872	-0.028258	0.768092	-0.578796	0.039882	-0.033929
-4.5	0.794661	-0.611572	0.032893	-0.028239	0.798291	-0.608256	0.039281	-0.033253
-5	0.870046	-0.689442	0.042624	-0.038838	0.872702	-0.685068	0.046449	-0.041878
-5.5	0.822837	-0.640489	0.054712	-0.051525	0.823623	-0.634216	0.05799	-0.053556
-6	0.716698	-0.535162	0.090811	-0.088106	0.71722	-0.528365	0.093725	-0.089075
-6.5	0.668151	-0.484818	0.132823	-0.128776	0.669908	-0.479967	0.134795	-0.130114
-7	0.747092	-0.564892	0.15546	-0.151656	0.74884	-0.559372	0.158093	-0.153525
-7.5	0.787837	-0.603621	0.240259	-0.240212	0.789858	-0.59847	0.2442	-0.241891
-8	0.751705	-0.576293	0.189704	-0.175042	0.753176	-0.56982	0.188251	-0.176638
-8.5	0.836233	-0.658597	-0.106692	0.101724	0.837099	-0.648494	-0.1048	0.103845
-9	0.77652	-0.598398	0.047649	-0.039905	0.780113	-0.591682	0.050678	-0.04237
-9.5	0.782878	-0.601535	0.247343	-0.246004	0.782783	-0.595874	0.251675	-0.247903
-10	0.717445	-0.536732	0.357943	-0.351812	0.717417	-0.529672	0.360465	-0.355426

Table F-24: Diversion Canal (Canal Dyke)
Piezometer BGC05-02

BGC05-02		**Location:**	Canal Dike St.1+900		
		Coordinates:	8V580881 6913412	**Ground Elevation (m amsl):**	1054.10
Surface Protector:	Yes	**Date Installed:**	2005	**Tip Elevation (m amsl):**	1044.65
Date		**Reading (psi) (#030137)**		**Piezometric Elevation (m amsl)**	**Comments**
14-Jun-06		1.9		1045.98	
2-Oct-06		1.7		1045.84	
06-Jun-07		2		1046.05	Good flow
24-Sep-07		0.8		1045.21	
24-Jun-08		2.5		1046.40	
24-Sep-08		3		1046.75	
30-Jun-09		n/r			
17-Sep-09		1.8		1045.91	
20-May-10		1.6		1045.77	
02-Jun-10		2.7		1046.54	
10-Sep-10		0.1		1044.72	
27-May-11		0.6		1045.07	
15-Jun-11		0.9		1045.28	
03-Oct-11		0.8		1045.21	

Table F-25: Diversion Canal (Canal Dyke)
Piezometer BGC05-03

BGC05-03		Location:	Canal Dike St.1+900		
		Coordinates:	8V580868 6913418	Ground Elevation (m amsl):	1054.68
Surface Protector:	Yes	Date Installed:	2005	Tip Elevation (m amsl):	1050.64

Date		Reading (psi) (#030139)		Piezometric Elevation (m amsl)	Comments
14-Jun-06		0.3		1050.85	
2-Oct-06		0.5		1050.99	
6-Jun-07		0.5		1050.99	good flow
24-Sep-07		0		1050.64	
24-Jun-08		0.4		1050.92	
24-Sep-08		0.5		1050.99	
30-Jun-09		0.3		1050.85	
17-Sep-09		0.3		1050.85	
20-May-10		0.4		1050.92	
2-Jun-10		1.4		1051.62	
10-Sep-10		0.4		1050.92	
27-May-11		0.4		1050.92	
15-Jun-11		0.4		1050.92	
11-Oct-11		0.4		1050.92	

Denison Environmental Services

Table F-26: Diversion Canal (Canal Dyke)
Piezometer BGC05-06

BGC05-06		Location:	Canal Dike St. 2+160 (approx)	Ground Elevation (m amsl):	1050.31
		Coordinates:	8V580715 6913517	Shallow Tip Elevation (m amsl):	1046.78
Surface Protector:	Yes	Date Installed:	2005	Deep Tip Elevation (m amsl):	1041.50

Date	Reading (psi)		Piezometric Elevation (m amsl)		Comments
	Shallow PP (#030138)	Deep PP (#030136)	Shallow (#030138)	Deep (#030136)	
14-Sep-05	0.2	0.3	1046.92	1041.71	
14-Jun-06	0.2	0.3	1046.92	1041.71	
2-Oct-06	0.2	0.3	1046.92	1041.71	
06-Jun-07	0.3	0.4	1046.99	1041.78	Good flow
24-Sep-07	0	0	1046.777	1041.50	
24-Jun-08	0.3	0.2	1046.987	1041.64	
24-Sep-08	0.3	0.2	1046.99	1041.64	
30-Jun-09	0.1	0.2	1046.85	1041.64	
17-Sep-09	0.3	0.3	1046.99	1041.71	
19-May-10	0.2	0.3	1046.92	1041.71	
02-Jun-10	1.2	1	1047.62	1042.20	
10-Sep-10	0.1	0.1	1046.85	1041.57	
27-May-11	0.3	0.2	1046.99	1041.64	
15-Jun-11	0.4	0.3	1047.06	1041.71	
4-Oct-11	0.3	0.1	1046.99	1041.57	

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Table F-27: Diversion Canal (Canal Dyke)
Piezometer CD-13

Faro Mine Closure

CD-13		Location:	Canal Dike St.1+350	Ground Elevation (m amsl):	1055.214
		Coordinates:	8V581400 6913185	Shallow Tip Elevation (m amsl):	1048.70
Surface Protector:	Yes	Date Installed:	1981	Deep Tip Elevation (m amsl):	1044.70

Date	Reading (psi)		Piezometric Elevation (m amsl)		Comments
	Shallow PP (#350)	Deep PP (#381)	Shallow (#350)	Deep (#381)	
Nov-81	3.2	7.9	1050.94	1050.23	
Dec-81	2.8	7.5	1050.63	1049.95	
Mar-82	0.9	5.0	1049.33	1048.20	
May-82	0.4	4.1	1048.98	1047.57	
Aug-82	3.4	7.9	1051.08	1050.23	
Apr-83	2.7	7.3	1050.59	1049.81	
Sep-83	3.3	7.9	1051.01	1050.23	
Mar-84	2.4	7.0	1050.38	1049.60	
Jun-84	3.6	8.6	1051.22	1050.72	
Sep-84	2.8	7.7	1050.66	1050.09	
Oct-85	3.7	8.6	1051.29	1050.72	
Oct-86	3.3	8.2	1051.01	1050.44	
Oct-87	3.4	8.2	1051.08	1050.44	
Oct-88	3.2	8.0	1050.94	1050.30	
Sep-89	2.0	7.7	1050.10	1050.09	
Oct-90	3.7	8.5	1051.29	1050.65	
Sep-91	2.8	7.9	1050.66	1050.23	
Sep-92	3.5		1051.12		
May-94	2.8	7.7	1050.66	1050.09	
Sep-94	2.0	7.5	1050.10	1049.95	
Sep-95	0.5	7.5	1049.05	1049.95	
Sep-96	3.4	8.3	1051.08	1050.48	
08-May-97	2.0	7.9	1050.10	1050.23	
07-Nov-97	2.5	7.5	1050.45	1049.95	
26-May-98	3.4	8.3	1051.06	1050.51	
15-Nov-98	2.7	7.7	1050.59	1050.09	
28-May-99	3.3	8.1	1051.01	1050.37	
11-Sep-99	3.1	8.0	1050.87	1050.30	
14-Jun-00	4.2	9.1	1051.64	1051.07	
09-Sep-00	3.8	8.7	1051.36	1050.79	
06-Jun-01	4.2	8.8	1051.64	1050.86	
19-Sep-01	3.0	7.9	1050.80	1050.23	
13-Jun-02	2.1	8.6	1050.17	1050.72	
12-Sep-02	2.2	8.4	1050.24	1050.58	
17-Jun-03	0.1	8.6		1050.72	(#350 very wet)
12-Sep-03	0.1	7.8		1050.16	(#350 very wet)
06-Jul-04	1.3	8.0	1049.61	1050.30	(#350 kept rising); value questionable
16-Sep-04	1.8	7.7	1049.96	1050.09	(#350 kept rising); value questionable
31-May-05	2.5	9.1	1050.45	1051.07	(#350 kept rising); value questionable
14-Sep-05	1.4	8.0	1049.68	1050.30	#350 Bubbles stop then numbers start rising; value questionable
14-Jun-06	2.3	8.7	1050.31	1050.79	#350 Keeps Climbing; value questionable
2-Oct-06	0.9	7.7	1049.33	1050.09	Ice in casing and on cable; value questionable
06-Jun-07	3.9	9.5	1051.43	1051.35	read three times, was very noisy; value questionable
24-Sep-07	1.9	8.3	1050.03	1050.51	#350 stopped then keeps rising; value questionable
24-Jun-08	3.2	8.7	1050.94	1050.79	#350 stopped then keeps rising; value questionable
24-Sep-08	3.6	8.6	1051.22	1050.72	
30-Jun-09	3.4	8.4	1051.08	1050.58	
29-Sep-09	4.0	8.4	1051.50	1050.58	

Table F-27: Diversion Canal (Canal Dyke)
Piezometer CD-13

Date	Reading (psi)		Piezometric Elevation (m amsl)		Comments
	Shallow PP (#350)	Deep PP (#381)	Shallow (#350)	Deep (#381)	
16-May-10	2.1	8.0	1050.17	1050.30	
02-Jun-10	2.7	7.3	1050.59	1049.81	
10-Sep-10	3.1	7.9	1050.87	1050.23	
27-May-11	4.4	8.8	1051.78	1050.86	
15-Jun-11	4.2	9.0	1051.64	1051.00	
04-Oct-11	2.3	8.1	1050.31	1050.37	

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Table F-28: Diversion Canal (Canal Dyke)
Piezometer CD-15

CD-15		Location:	Canal Dike St.1+530	Ground Elevation (m amsl):	1054.882
		Coordinates:	1233.7N, 1028.7E 8V581245 6913275	Shallow Tip Elevation (m amsl):	1048.10
Surface Protector:	Yes	Date Installed:	1981	Deep Tip Elevation (m amsl):	1043.30

Date	Reading (psi)		Piezometric Elevation (m amsl)		Comments
	Shallow PP (#353)	Deep PP (#362)	Shallow (#353)	Deep (#362)	
Nov-81	0.0	0.1	1048.1	1043.37	
Dec-81	0.0	0.0	1048.1	1043.314	
Mar-82	1.0	0.1	1048.8	1043.37	
May-82	0.1		1048.17		
Aug-82	2.7		1049.99		
Apr-83	2.0		1049.5		
Sep-83	2.7		1049.99		
Mar-84	1.4		1049.08		
Jun-84	3.1		1050.27		
Oct-85	4.5		1051.25		
Oct-86	3.6		1050.62		
Oct-87	3.3		1050.41		
Oct-88	3.0		1050.2		
Sep-89	2.8		1050.06		
Jan-90	0.8		1048.66		
Oct-90	4.0		1050.9		
Sep-91	3.0		1050.2		
Sep-92	2.4		1049.78		
May-94	2.3	10.4	1049.71	1050.58	
Sep-94	0.7	8.0	1048.59	1048.9	
Sep-95	1.0	9.0	1048.8	1049.6	
Sep-96	2.4	9.1	1049.745	1049.67	
08-May-97	0.6	7.0	1048.52	1048.2	
06-Nov-97	1.2	3.4	1048.919	1045.645	
26-May-98	1.9	9.2	1049.43	1049.74	
15-Nov-98	1.3		1049.01		No return in deep piezo
04-Dec-98	0.7	7.3	1048.59	1048.41	
16-Dec-98	0.4	6.9	1048.38	1048.13	
28-May-99	0.3	7.4	1048.31	1048.494	
11-Sep-99	0.5	8.5	1048.45	1049.25	
14-Jun-00	0.5	9.9	1048.45	1050.23	
09-Sep-00	0.6		1048.52		No return in deep piezo
19-Sep-00	0.5	11.0	1048.45	1050.965	
06-Jun-01	0.6	5.9	1048.52	1047.43	
19-Sep-01	0.0	8.0	1048.1	1048.9	Shallow tip is "dry"
13-Jun-02	0.7	2.8	1048.59	1045.26	
12-Sep-02	0.6	9.8	1048.52	1050.16	
17-Jun-03	0.0	9.1	1048.1	1049.67	*readings recorded with
12-Sep-03	0.5	8.1	1048.45	1048.97	new piezometer
06-Jul-04	0.0	8.6	1048.128	1049.32	
16-Sep-04	0.5	7.8	1048.45	1048.76	
31-May-05	1.2	10.0	1048.94	1050.3	
14-Sep-05	0.6	8.0	1048.52	1048.9	
14-Jun-06	0.7	9.0	1048.59	1049.6	
2-Oct-06	0.6	7.7	1048.52	1048.69	
06-Jun-07	0.1	7.2	1048.17	1048.34	good flow
24-Sep-07	dry	3.9		1046.03	#353 Dropping - #362 No Bubbles
24-Jun-08	1.0	0.2	1048.8	1043.44	
24-Sep-08	1.2	9.8	1048.94	1050.16	
30-Jun-09	1.7	9.1	1049.29	1049.67	
17-Sep-09	0.8	8.0	1048.66	1048.9	
16-May-10	0.8	0.9	1048.66	1043.93	
02-Jun-10	2.7	9.6	1049.99	1050.02	

Denison Environmental Services

Table F-28: Diversion Canal (Canal Dyke)
Piezometer CD-15

Date	Reading (psi)		Piezometric Elevation (m amsl)		Comments
	Shallow PP (#353)	Deep PP (#362)	Shallow (#353)	Deep (#362)	
10-Sep-10	0.5	7.9	1048.45	1048.83	
27-May-11	0.4	8.4	1048.38	1049.18	
15-Jun-11	1.3	1.9	1049.01	1044.63	
04-Oct-11	0.8	8.6	1048.66	1049.32	

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Table F-29: Diversion Canal (Canal Dyke)
Piezometer CD-21

CD-21		**Location:**	Canal Dike St.2+100	**Ground Elevation (m amsl):**	1053.447
		Coordinates:	1455.9N, 509.5E 8V580724 6913495	**Shallow Tip Elevation (m amsl):**	1047.50
Surface Protector:	Yes	**Date Installed:**	1981	**Deep Tip Elevation (m amsl):**	1042.00

Date	Reading (psi)		Piezometric Elevation (m amsl)		Comments
	Shallow PP (#345)	Deep PP (#366)	Shallow (#345)	Deep (#366)	
Nov-81	1.2	0.4	1048.34	1042.28	
Dec-81	1.1	0.8	1048.27	1042.55	
Mar-82	1.0	0.6	1048.20	1042.42	
May-82	0.7	0.4	1047.99	1042.28	
Aug-82	0.7	0.4	1047.99	1042.28	
Apr-83	0.9	0.4	1048.13	1042.28	
Sep-83	0.8	0.4	1048.06	1042.28	
Mar-84	1.0	0.7	1048.20	1042.49	
Jun-84	1.3	1.3	1048.41	1042.91	
Sep-84	1.5	0.6	1048.55	1042.42	
Oct-85	4.4	4.3	1050.58	1045.01	
Oct-86	6.8	6.3	1052.26	1046.41	
Oct-87	2.0	6.5	1048.90	1046.55	
Oct-88	2.9	5.3	1049.53	1045.71	
Jun-89	3.2	4.9	1049.74	1045.43	
Aug-89	3.5	4.9	1049.95	1045.43	
Sep-89	3.4	4.7	1049.88	1045.29	
Jan-90	1.1	4.8	1048.27	1045.36	
Feb-90	0.9	4.4	1048.13	1045.08	
Mar-90	0.9	4.5	1048.13	1045.15	
Apr-90	1.0	4.6	1048.20	1045.22	
May-90	1.3	4.7	1048.41	1045.29	
Jun-90	2.6	4.4	1049.32	1045.08	
Jul-90	3.6	4.3	1050.02	1045.01	
Oct-90	3.4	4.5	1049.88	1045.15	
Feb-91	0.9	4.1	1048.13	1044.87	
Mar-91	2.8	4.4	1049.46	1045.08	
Apr-91	0.6	4.2	1047.92	1044.94	
May-91	0.9	4.3	1048.13	1045.01	
Jun-91	4.7	4.0	1050.79	1044.80	
Jul-91	4.1	4.1	1050.37	1044.87	
Sep-91	3.8	3.9	1050.16	1044.73	
Apr-92	4.7	5.0	1050.76	1045.47	
Jun-92	6.8	7.9	1052.26	1047.51	
Sep-92	4.2	4.3	1050.44	1045.01	
May-94	4.2	4.1	1050.44	1044.87	
Sep-94	4.0	1.6	1050.30	1043.12	
Sep-95	3.5	0.5	1049.95	1042.35	
Sep-96	4.3	1.3	1050.51	1042.88	
08-May-97	5.8	1.6	1051.56	1043.12	
10-Nov-97	3.7	1.1	1050.09	1042.77	
26-May-98	5.2	0.7	1051.11	1042.49	
15-Nov-98	3.5	n.r.	1049.95		
04-Dec-98	3.8	0.9	1050.16	1042.63	
28-May-99	3.5	1.1	1049.94	1042.77	
11-Sep-99	4.1	1.1	1050.37	1042.77	
14-Jun-00	4.0	1.1	1050.30	1042.77	
09-Sep-00	4.3	1.2	1050.51	1042.84	
06-Jun-01	3.6	1.1	1049.99	1042.77	
19-Sep-01	3.7	1.3	1050.09	1042.91	
13-Jun-02	2.3	1.2	1049.11	1042.84	
12-Sep-02	2.8	1.2	1049.46	1042.84	
17-Jun-03	0.9	0.9	1048.13	1042.63	*readings recorded with new piezometer
12-Sep-03	1.1	0.9	1048.27	1042.63	
06-Jul-04	1.0	0.9	1048.20	1042.63	#366 Bubbles stpped at 1.7Psi

Table F-29: Diversion Canal (Canal Dyke)
Piezometer CD-21

CD-21		**Location:**	Canal Dike St.2+100	**Ground Elevation (m amsl):**	1053.447
		Coordinates:	1455.9N, 509.5E 8V580724 6913495	**Shallow Tip Elevation (m amsl):**	1047.50
Surface Protector:	Yes	**Date Installed:**	1981	**Deep Tip Elevation (m amsl):**	1042.00

Date	**Reading (psi)**		**Piezometric Elevation (m amsl)**		**Comments**
	Shallow PP (#345)	**Deep PP (#366)**	**Shallow (#345)**	**Deep (#366)**	
16-Sep-04	1.0	1.0	1048.20	1042.70	
31-May-05	0.9	1.0	1048.13	1042.70	casing full of water, lots of air over 35 psi
14-Sep-05	1.3	-	1048.41		#366 - gone
14-Jun-06	0.9	-	1048.13		#366 - gone
2-Oct-06	1.1	-	1048.27		#366 - gone
06-Jun-07	1.1	-	1048.27		#366 - gone
24-Sep-07	1.7	-	1048.69		#366 - gone (No Cable)
24-Jun-08	1.2	-	1048.34		#366 - gone
24-Sep-08	2.0	-	1048.90		#366 - gone
30-Jun-09	1.0	-	1048.20		#366 - gone
17-Sep-09	1.7	-	1048.69		#366 - gone
18-May-10	1.0	-	1048.20		#366 - gone
02-Jun-10	1.5	-	1048.55		#366 - gone
10-Sep-10	1.1	-	1048.27		#366 - gone
26-May-11	1.1	-	1048.27		#366 - gone
15-Jun-11	1.1	-	1048.27		#366 - gone
26-Jun-11	1.1	-	1048.27		#366 - gone
03-Oct-11	1.8	-	1048.76		#366 - gone

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Table F-30: Diversion Canal (Canal Dyke)
Piezometer CD-26

CD-26		Location:	Canal Dike St.2+600	Ground Elevation (m amsl):	1053.10
		Coordinates:	1674.7N, 71.7E 8V580284 6913710	Shallow Tip Elevation (m amsl):	1048.20
Surface Protector:	Yes	Date Installed:	1981	Deep Tip Elevation (m amsl):	1042.00

Date	Reading (psi)		Piezometric Elevation (m amsl)		Comments
	Shallow PP (#349)	Deep PP (#356)	Shallow (#349)	Deep (#356)	
Nov-81	0.3	0.5	1048.41	1042.35	
Dec-81	0.5	0.7	1048.55	1042.49	
Mar-82	0.6	0.7	1048.62	1042.49	
May-82	0.4	0.4	1048.48	1042.28	
Aug-82	0.3	0.5	1048.41	1042.35	
Apr-83	0.4	0.6	1048.48	1042.42	
Sep-83	0.4	0.6	1048.48	1042.42	
Mar-84	0.2	0.4	1048.34	1042.28	
Jun-84	0.2	0.5	1048.34	1042.35	
Sep-84	0.4	0.6	1048.48	1042.42	
Oct-85	1.1	1.3	1048.97	1042.91	
Oct-86	1.3	1.2	1049.11	1042.84	
Oct-87	1.0	1.3	1048.90	1042.91	
Jul-88	2.3	2.3	1049.81	1043.61	
Oct-88	0.7	0.8	1048.69	1042.56	
Sep-89	0.5	0.8	1048.55	1042.56	
Oct-90	1.0	1.1	1048.90	1042.77	
Sep-91	0.5	0.7	1048.55	1042.49	
Sep-92	1.3	1.9	1049.11	1043.33	
May-94	0.5	0.8	1048.55	1042.56	
Sep-94	0.6	0.8	1048.62	1042.56	
Sep-95	0.0	0.0	1048.20	1042.00	
Sep-96	0.8	1.2	1048.76	1042.84	
08-May-97	0.6	0.8	1048.62	1042.56	
10-Nov-97	0.6	0.3	1048.59	1042.21	
26-May-98	0.4	0.6	1048.51	1042.42	
12-Nov-98	0.6	0.7	1048.60	1042.49	
28-May-99	1.0	1.2	1048.89	1042.84	
11-Sep-99	0.6	1.0	1048.62	1042.70	
14-Jun-00	0.5	0.8	1048.55	1042.56	
09-Sep-00	0.8	1.2	1048.76	1042.84	
06-Jun-01	0.6	1.0	1048.62	1042.70	
19-Sep-01	0.1	1.0	1048.25	1042.70	
13-Jun-02	0.7	0.9	1048.69	1042.63	
12-Sep-02	0.5	0.9	1048.55	1042.63	
17-Jun-03	0.5	0.8	1048.55	1042.56	*readings recorded with new piezometer
12-Sep-03	0.6	0.9	1048.62	1042.63	
06-Jul-04	0.5	0.9	1048.55	1042.63	
16-Sep-04	0.6	1.0	1048.62	1042.70	
31-May-05	0.5	0.7	1048.55	1042.49	good flow
14-Sep-05	0.5	0.9	1048.55	1042.63	
14-Jun-06	0.5	0.7	1048.55	1042.49	
2-Oct-06	0.5	0.8	1048.55	1042.56	wet in casing
06-Jun-07	0.6	1.0	1048.62	1042.70	good flow
24-Sep-07	0.0	0.3	1048.20	1042.21	
30-Jun-09	0.5	0.6	1048.55	1042.42	
29-Sep-09	0.6	0.8	1048.62	1042.56	
18-May-10	0.5	0.8	1048.55	1042.56	
02-Jun-10	1.0	1.3	1048.90	1042.91	
10-Sep-10	0.6	0.5	1048.62	1042.35	
10-May-11	0.6	0.7	1048.62	1042.49	

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Table F-30: Diversion Canal (Canal Dyke)
Piezometer CD-26

Date	Reading (psi)		Piezometric Elevation (m amsl)		Comments
	Shallow PP (#349)	Deep PP (#356)	Shallow (#349)	Deep (#356)	
17-May-11	0.5	0.6	1048.55	1042.42	
24-May-11	0.6	0.7	1048.62	1042.49	
30-May-11	0.4	0.5	1048.48	1042.35	
15-Jun-11	0.6	0.7	1048.62	1042.49	
03-Oct-11	0.6	0.7	1048.62	1042.49	

Table F-31: Diversion Canal (Backslope)
Piezometer BS-5

BS-5		Location:	Canal Dyke Backslope St.0+960		
		Coordinates:	953.2N, 1534.6E	Ground Elevation (m amsl):	1060.20
Surface Protector:	Yes	Date Installed:	1981	Tip Elevation (m amsl):	1053.00

Date	Reading (psi)	Piezometric Elevation (m amsl)	Comments
Nov-81	1.20	1053.84	
Dec-81	0.80	1053.56	
Mar-82	0.55	1053.385	
May-82	5.40	1056.78	
Aug-82	2.10	1054.47	
Apr-83	0.70	1053.49	
Sep-83	2.50	1054.75	
Mar-84	0.90	1053.63	
Oct-84	0.80	1053.56	
Oct-85	3.30	1055.31	
Oct-86	3.30	1055.31	
Oct-88	1.80	1054.26	
Oct-90		1053.00	
Sep-92	2.50	1054.75	
May-94	6.70	1057.69	
Sep-94	1.70	1054.19	
Sep-95	3.50	1055.45	
Jul-01	3.60	1055.52	
Aug-01	1.30	1053.91	
02-Jun-02	3.10	1055.17	
29-Sep-02	2.80	1054.96	
07-Jul-04	2.10	1054.47	
23-Sep-04	1.60	1054.12	
06-Jun-06	1.30	1053.91	
20-Sep-06	0.40	1053.28	
20-Jun-08	3.40	1055.38	
16-Jul-09	1.90	1054.33	
23-Sep-09	3.20	1055.24	
01-Jul-11	5.00	1056.5	
30-Sep-11	2.40	1054.68	

Table F-32: Diversion Canal (Backslope)
Piezometer BS-9

BS-9		Location:	Canal Dyke Backslope St.1+530		
		Coordinates:	1200N, 1018.4E	Ground Elevation (m amsl):	1056.00
Surface Protector:	Yes	Date Installed:	1981	Tip Elevation (m amsl):	1045.00

Date	Reading (psi)	Piezometric Elevation (m amsl)	Comments
Nov-81	8.80	1051.16	
Dec-81	8.80	1051.16	
Mar-82	5.05	1048.535	
May-82	3.90	1047.73	
Aug-82	8.60	1051.02	
Apr-83	8.00	1050.6	
Sep-83	9.00	1051.3	
Mar-84	7.60	1050.32	
Oct-84	8.50	1050.95	
Oct-85	9.40	1051.58	
Oct-86	9.50	1051.65	
Oct-88	8.90	1051.23	
Oct-90	9.50	1051.65	
Sep-92	7.30	1050.11	
May-94	9.40	1051.58	
Sep-94	6.10	1049.27	
Sep-95	7.00	1049.9	
Jul-04	6.80	1049.76	
Sep-04	6.30	1049.41	
Jun-06	7.30	1050.11	
Sep-06	4.90	1048.43	
Jun-08	8.50	1050.95	
Jul-09	8.60	1051.02	
Sep-09	6.80	1049.76	
Jul-11	9.10	1051.37	
Sep-11	7.70	1050.39	

Table F-33: Rose Creek Staff Gauge-4 (RCSG-4)
Readings 2011

Date	Time	Reading (m)	Comments
5-Apr-11	2:13 PM	0.218	Staff gauges steamed out this morning.
6-Apr-11	9:50 AM	0.200	RCSG#4 is rusted and can't be read accurately
7-Apr-11	11:41 AM	0.215	
10-Apr-11	8:14 AM	2.000	RCSG#4 is rusted and can't be read accurately
11-Apr-11	8:46 AM	0.200	RCSG#4 is rusted and can't be read accurately
13-Apr-11	8:40 AM	0.200	RCSG#4 is rusted and can't be read accurately. NFRC slushy and cannot take a read.
14-Apr-11	9:04 AM	0.230	
15-Apr-11	8:38 AM	0.220	
17-Apr-11	8:36 AM	0.220	
18-Apr-11	10:26 AM	0.190	
19-Apr-11	10:19 AM	0.197	
20-Apr-11	9:12 AM	0.150	
21-Apr-11	8:50 AM	0.175	
22-Apr-11	9:17 AM	0.190	
24-Apr-11	8:57 AM	0.170	
25-Apr-11	9:49 AM	0.170	
26-Apr-11	10:42 AM	0.180	
27-Apr-11	10:36 AM	0.155	
28-Apr-11	12:04 PM	0.162	
29-Apr-11	11:04 AM	0.140	
30-Apr-11	8:28 AM	0.249	
1-May-11	8:25 AM	0.192	
3-May-11	10:47 AM	0.120	
4-May-11	9:00 AM	0.130	
9-May-11	9:05 AM	0.160	
10-May-11	8:52 AM	0.172	
11-May-11	8:38 AM	0.199	
12-May-11	8:55 AM	0.225	
13-May-11	4:15 PM	0.201	
14-May-11	5:42 PM	0.220	
15-May-11	8:37 AM	0.320	
16-May-11	9:10 AM	0.305	
17-May-11	10:03 AM	0.470	
18-May-11	8:42 AM	0.570	
19-May-11	8:40 AM	0.775	
20-May-11	9:28 AM	0.797	
21-May-11	8:35 AM	-	RCSG#4 - water level above top of SG
22-May-11	8:30 AM	1.010	
23-May-11	8:24 AM	1.100	RCSG#4 - estimate b/c water level above top of SG.
24-May-11	8:15 AM	~1.3	RCSG#4 - estimate b/c water level above top of SG.
25-May-11	10:45 AM	-	RCSG#4 - level above top of SG.
26-May-11	4:08 PM	0.910	
27-May-11	11:54 AM	0.928	
28-May-11	9:33 AM	0.938	Water wavy
29-May-11	9:31 AM	0.848	
30-May-11	9:10 AM	0.895	
31-May-11	10:55 AM	0.890	

Table F-33: Rose Creek Staff Gauge-4 (RCSG-4)
Readings 2011

Date	Time	Reading (m)	Comments
1-Jun-11	8:51 AM	0.884	
2-Jun-11	8:43 AM	0.765	
3-Jun-11	8:16 AM	0.697	
4-Jun-11	8:14 AM	0.599	
5-Jun-11	7:47 AM	0.610	
6-Jun-11	8:50 AM	0.574	
7-Jun-11	8:08 AM	0.545	
8-Jun-11	9:39 AM	0.556	
9-Jun-11	8:59 AM	0.549	
10-Jun-11	9:01 AM	0.521	
11-Jun-11	9:17 AM	0.558	
12-Jun-11	8:45 AM	0.683	
13-Jun-11	1:41 PM	0.565	
14-Jun-11	8:57 AM	0.519	
15-Jun-11	8:35 AM	0.491	
16-Jun-11	8:35 AM	0.464	
17-Jun-11	7:02 AM	0.448	
18-Jun-11	9:24 AM	0.448	
19-Jun-11	10:17 AM	0.433	
20-Jun-11	8:40 AM	0.570	
21-Jun-11	8:36 AM	0.692	
22-Jun-11	9:05 AM	0.745	
23-Jun-11	9:07 AM	0.824	
24-Jun-11	7:52 AM	0.685	
25-Jun-11	8:00 AM	0.599	
26-Jun-11	7:51 AM	0.576	
27-Jun-11	9:07 AM	0.630	
28-Jun-11	10:26 AM	0.620	
29-Jun-11	8:57 AM	0.760	
30-Jun-11	8:35 AM	0.792	
1-Jul-11	8:19 AM	0.655	
2-Jul-11	8:28 AM	0.627	
3-Jul-11	8:35 AM	0.589	
4-Jul-11	8:23 AM	0.562	
5-Jul-11	10:15 AM	0.545	
6-Jul-11	9:05 AM	0.553	
7-Jul-11	9:11 AM	0.538	
9-Jul-11	9:58 AM	0.480	
10-Jul-11	9:25 AM	0.510	
11-Jul-11	9:02 AM	0.510	
12-Jul-11	10:04 AM	0.475	
13-Jul-11	8:22 AM	0.452	
14-Jul-11	9:34 AM	0.454	
15-Jul-11	8:13 AM	0.443	

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Table F-33: Rose Creek Staff Gauge-4 (RCSG-4)
Readings 2011

Faro Mine Closure

Date	Time	Reading (m)	Comments
16-Jul-11	8:33 AM	0.506	
17-Jul-11	8:44 AM	0.477	
18-Jul-11	8:46 AM	0.490	
19-Jul-11	8:40 AM	0.490	
20-Jul-11	8:50 AM	0.525	
21-Jul-11	9:29 AM	0.523	
22-Jul-11	8:39 AM	0.479	
23-Jul-11	8:21 AM	0.460	
24-Jul-11	8:48 AM	0.484	
25-Jul-11	9:37 AM	0.449	
26-Jul-11	9:05 AM	0.432	
27-Jul-11	9:20 AM	0.410	
28-Jul-11	8:30 AM	0.448	
29-Jul-11	8:33 AM	0.499	
30-Jul-11	8:33 AM	0.480	
31-Jul-11	10:27 AM	0.460	
1-Aug-11	9:04 AM	0.455	
2-Aug-11	8:57 AM	0.445	
3-Aug-11	8:30 AM	0.415	
4-Aug-11	8:54 AM	0.408	
5-Aug-11	8:36 AM	0.400	
6-Aug-11	8:57 AM	0.390	
7-Aug-11	8:52 AM	0.379	
8-Aug-11	9:20 AM	0.381	
9-Aug-11	9:13 AM	0.411	
11-Aug-11	9:48 AM	0.400	
12-Aug-11	8:58 AM	0.441	
13-Aug-11	8:39 AM	0.450	
14-Aug-11	8:51 AM	0.425	
15-Aug-11	9:25 AM	0.481	
16-Aug-11	9:18 AM	0.450	
17-Aug-11	8:49 AM	0.448	
18-Aug-11	9:06 AM	0.471	
19-Aug-11	9:07 AM	0.518	
20-Aug-11	8:29 AM	0.489	
21-Aug-11	8:26 AM	0.541	
22-Aug-11	8:36 AM	0.508	
23-Aug-11	8:56 AM	0.491	
24-Aug-11	8:49 AM	0.487	
25-Aug-11	10:20 AM	0.476	
26-Aug-11	8:30 AM	0.457	
27-Aug-11	8:48 AM	0.450	
28-Aug-11	9:25 AM	0.447	
29-Aug-11	10:41 AM	0.448	

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Table F-33: Rose Creek Staff Gauge-4 (RCSG-4)
Readings 2011

Faro Mine Closure

Date	Time	Reading (m)	Comments
30-Aug-11	9:19 AM	0.435	
31-Aug-11	9:04 AM	0.429	
1-Sep-11	9:11 AM	0.425	
2-Sep-11	9:57 AM	0.410	
3-Sep-11	9:11 AM	0.399	
4-Sep-11	9:01 AM	0.394	
5-Sep-11	8:45 AM	0.390	
6-Sep-11	9:26 AM	0.430	
7-Sep-11	8:41 AM	0.381	
8-Sep-11	9:04 AM	0.371	
9-Sep-11	7:45 AM	0.385	
10-Sep-11	7:14 AM	0.560	
11-Sep-11	7:11 AM	0.458	
12-Sep-11	8:42 AM	0.420	
13-Sep-11	9:06 AM	0.405	
14-Sep-11	9:10 AM	0.390	
15-Sep-11	8:41 AM	0.390	
16-Sep-11	8:36	0.332	
17-Sep-11	8:56 AM	0.378	
18-Sep-11	8:34 AM	0.377	
19-Sep-11	9:43 AM	0.375	
20-Sep-11	10:00 AM	0.369	
21-Sep-11	8:33 AM	0.369	
22-Sep-11	8:37 AM	0.390	
23-Sep-11	8:20 AM	0.390	
24-Sep-11	8:41 AM	0.377	
25-Sep-11	8:38 AM	0.388	
26-Sep-11	8:38 AM	0.470	
27-Sep-11	8:54 AM	0.351	
3-Oct-11	9:30 AM	0.398	
4-Oct-11	10:00 AM	0.280	
17-Oct-11	8:31 AM	0.293	
20-Oct-11	1:52 PM	0.260	
2-Nov-11	11:09 AM	0.250	
7-Nov-11	9:10 AM	0.270	

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Figure F-1: Diversion Canal (Canal Dyke)
Thermistor CD-15

Faro Mine Closure

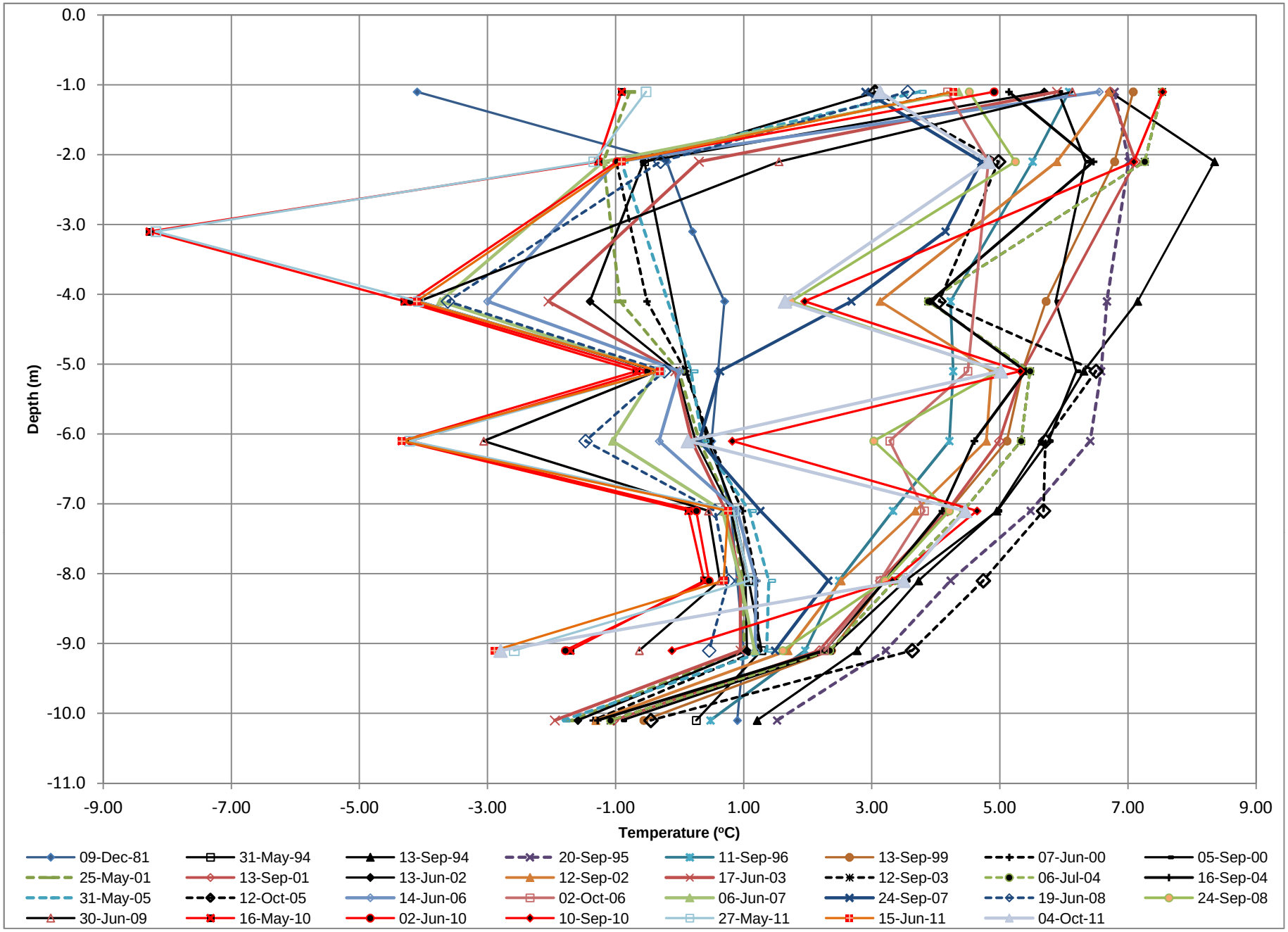

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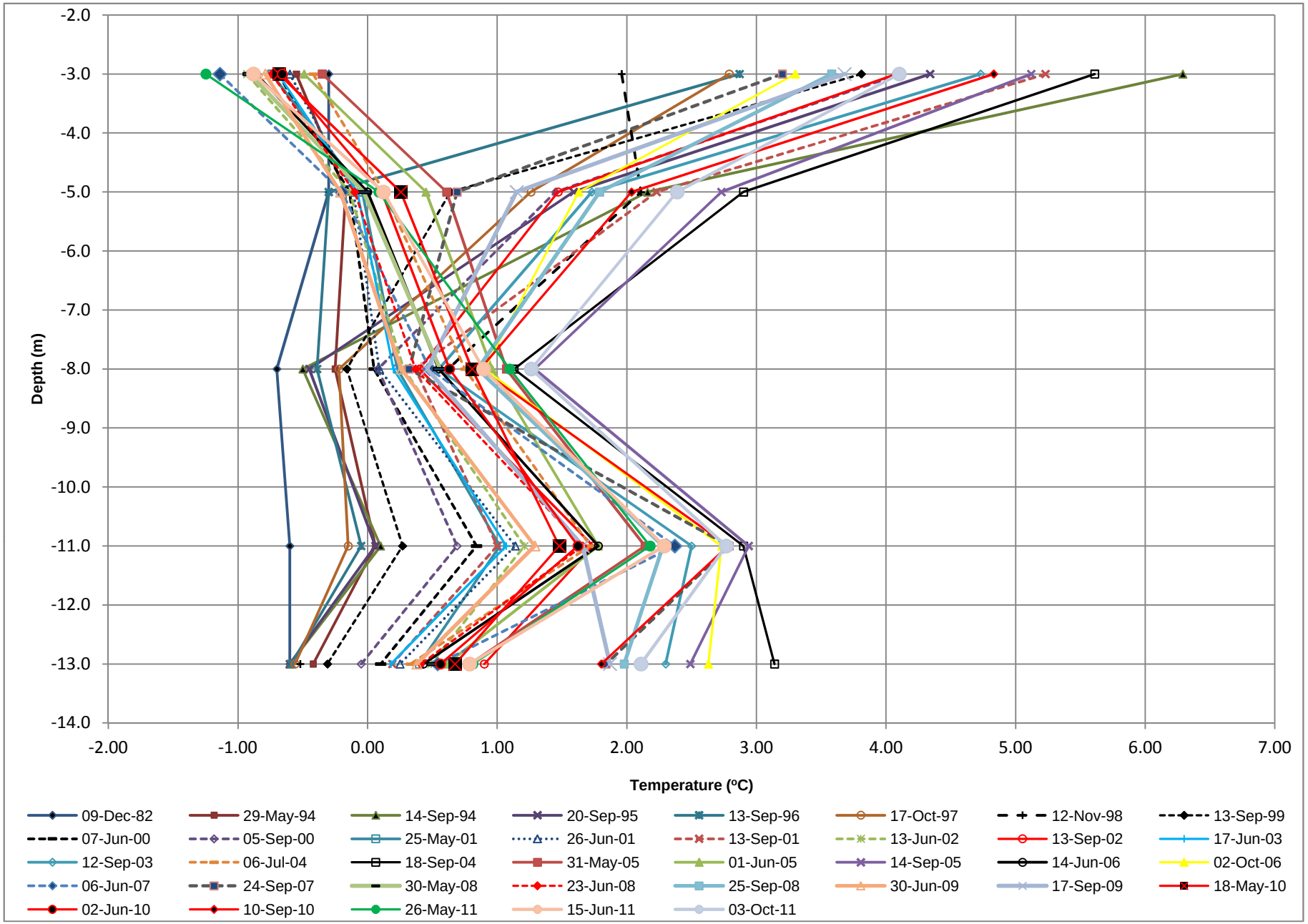
Figure F-2: Diversion Canal (Canal Dyke) Thermistor CD-21

Faro Mine Closure



\\192.168.30.11\global\ADMIN\Submittals\Reports\Annual\2011\AnnEnvRpt\4-Appendices\App F Geotechnical\1 - DC Thermistors TF-1 to TF-10, FF-1 to FF-10.xlsx\FF-2 CD-21

Figure F-3: Diversion Canal (Canal Dyke)
Thermistor CD-26

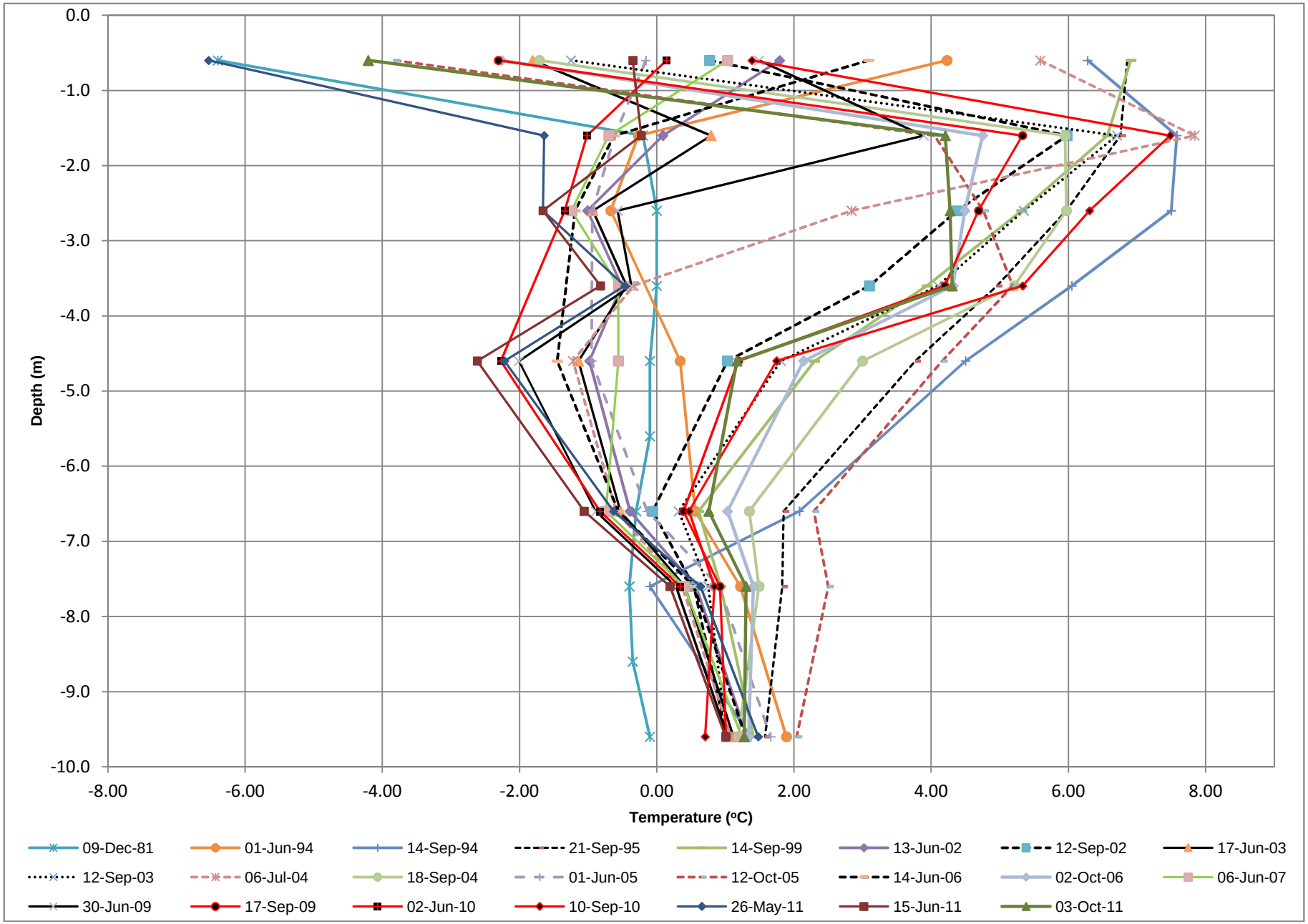


Figure F-4: Diversion Canal (Canal Dyke)
Thermistor BGC05-04

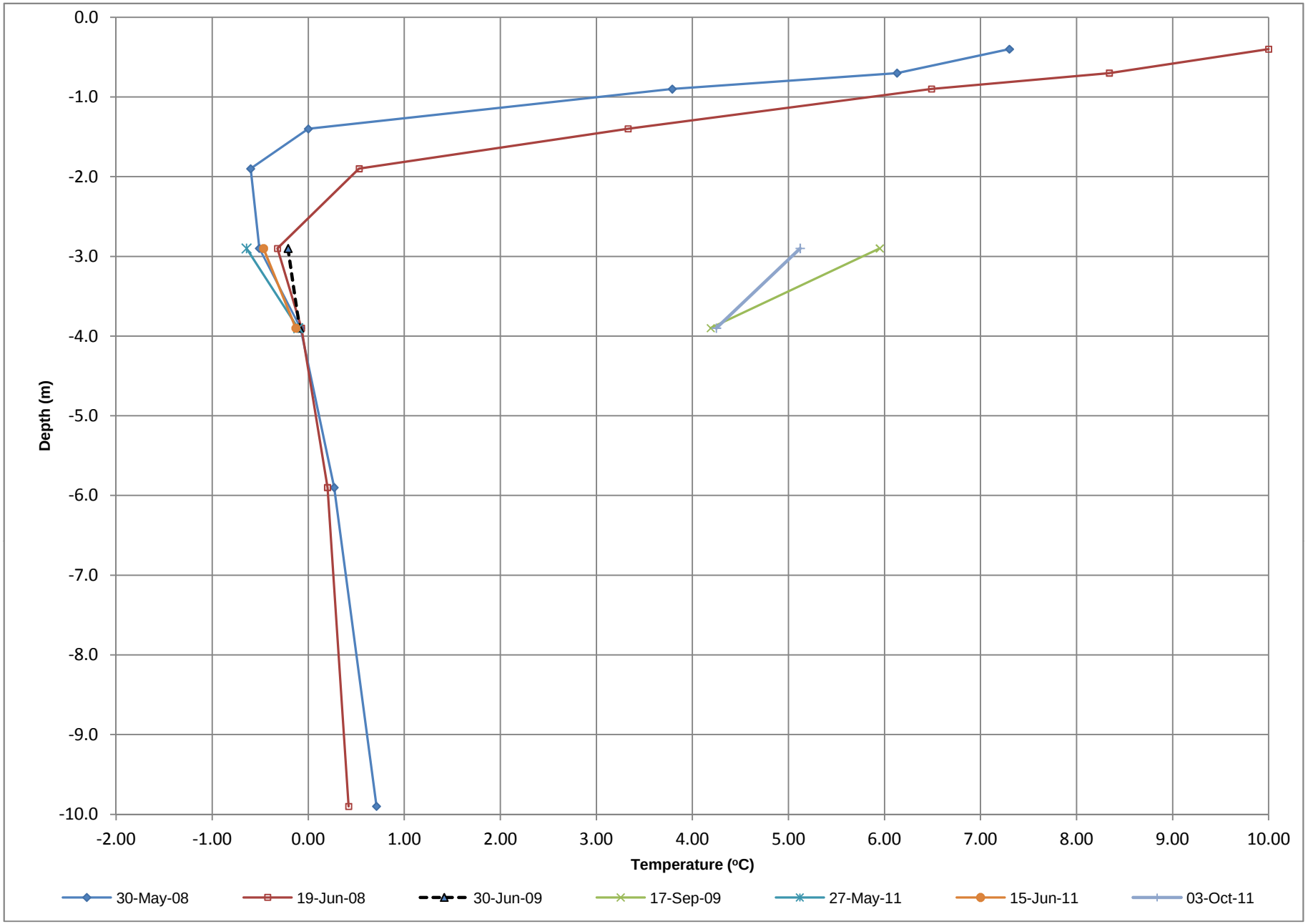


Figure F-5: Diversion Canal (Spoil Pile)
Thermistor SP-3

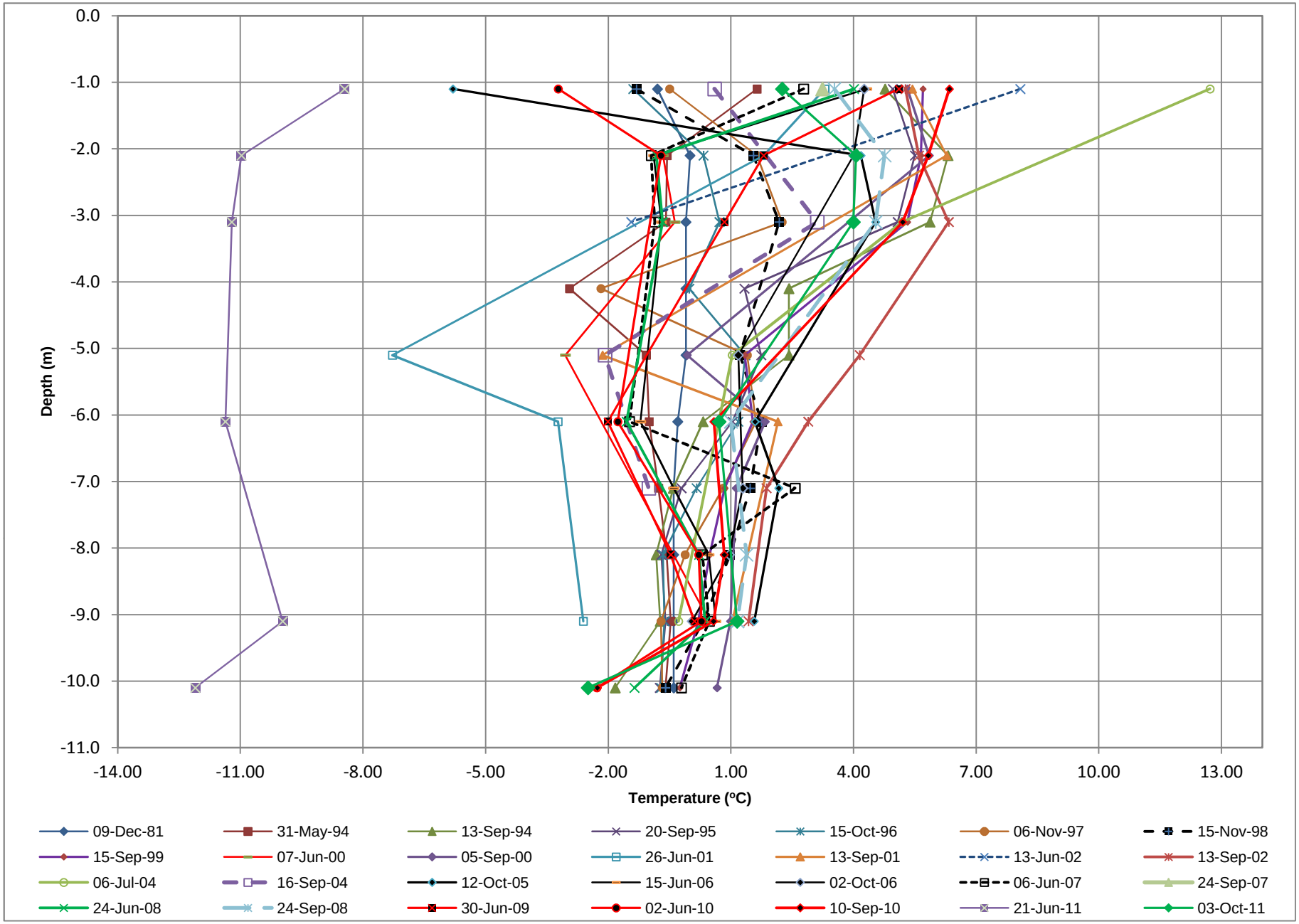


Figure F-6: Diversion Canal (Spoil Pile)
Thermistor SP-5

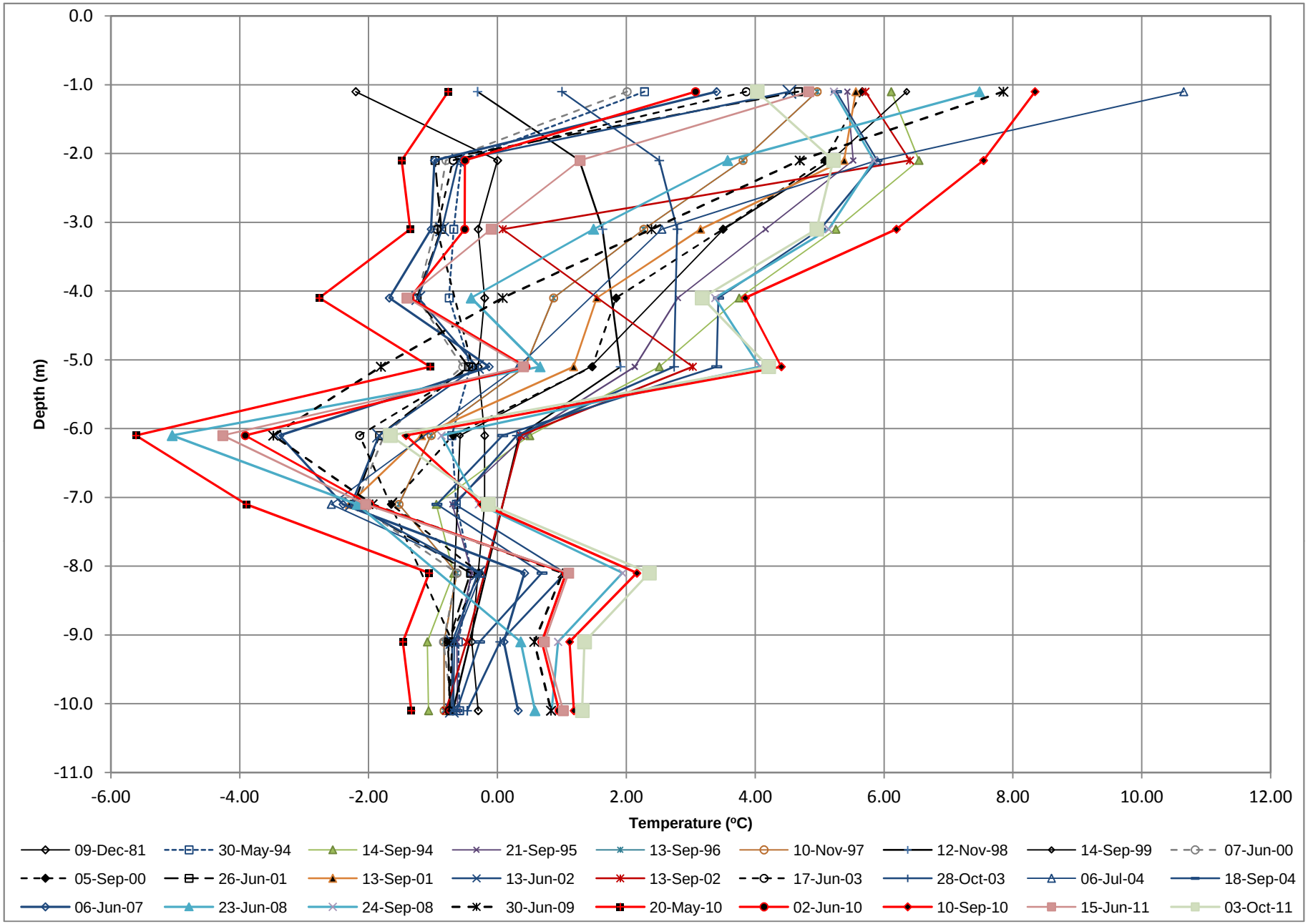


Figure F-7: Diversion Canal (Backslope)
Thermistor BS-5

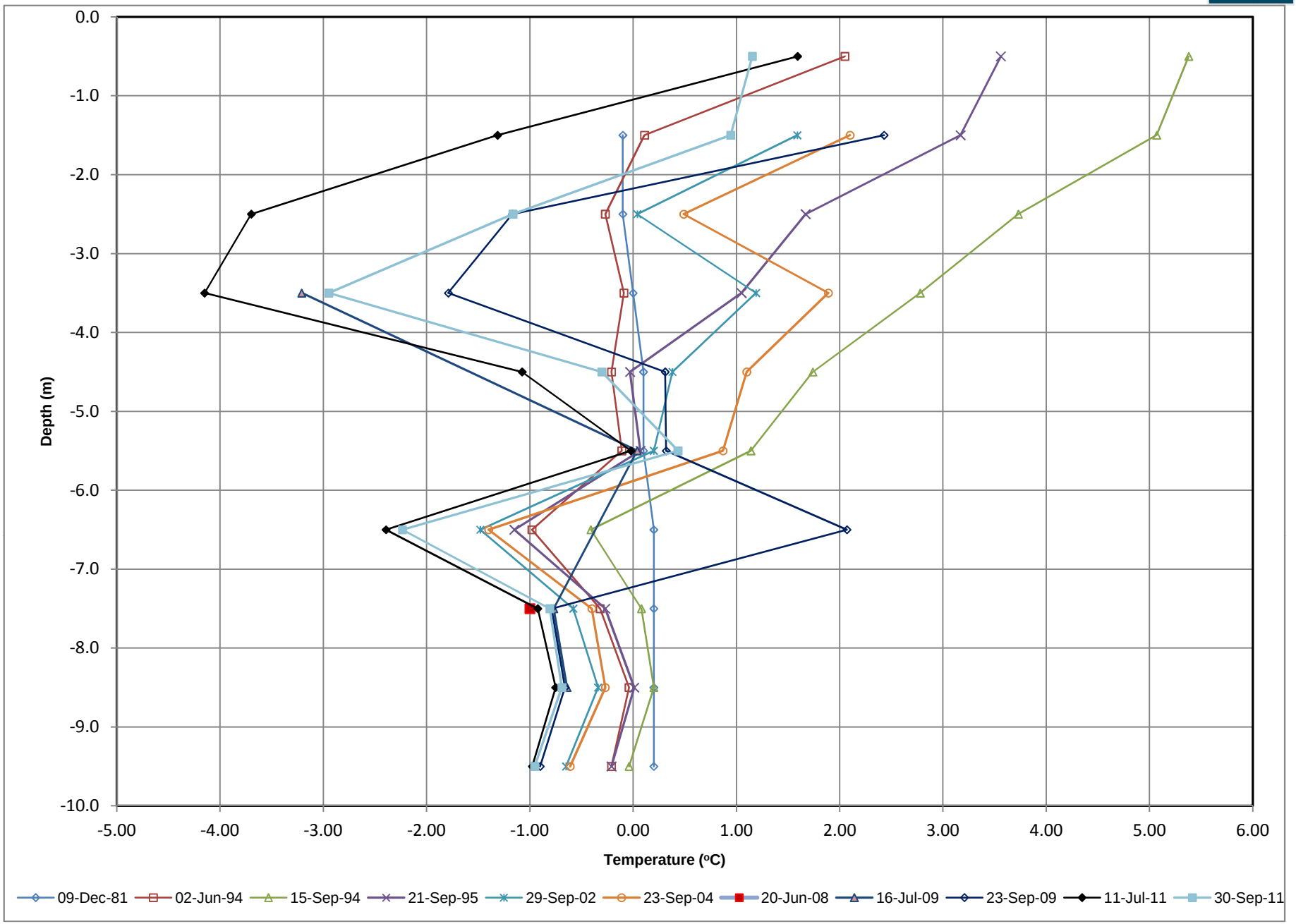


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Figure F-8: Diversion Canal (Backslope)
Thermistor BS-9

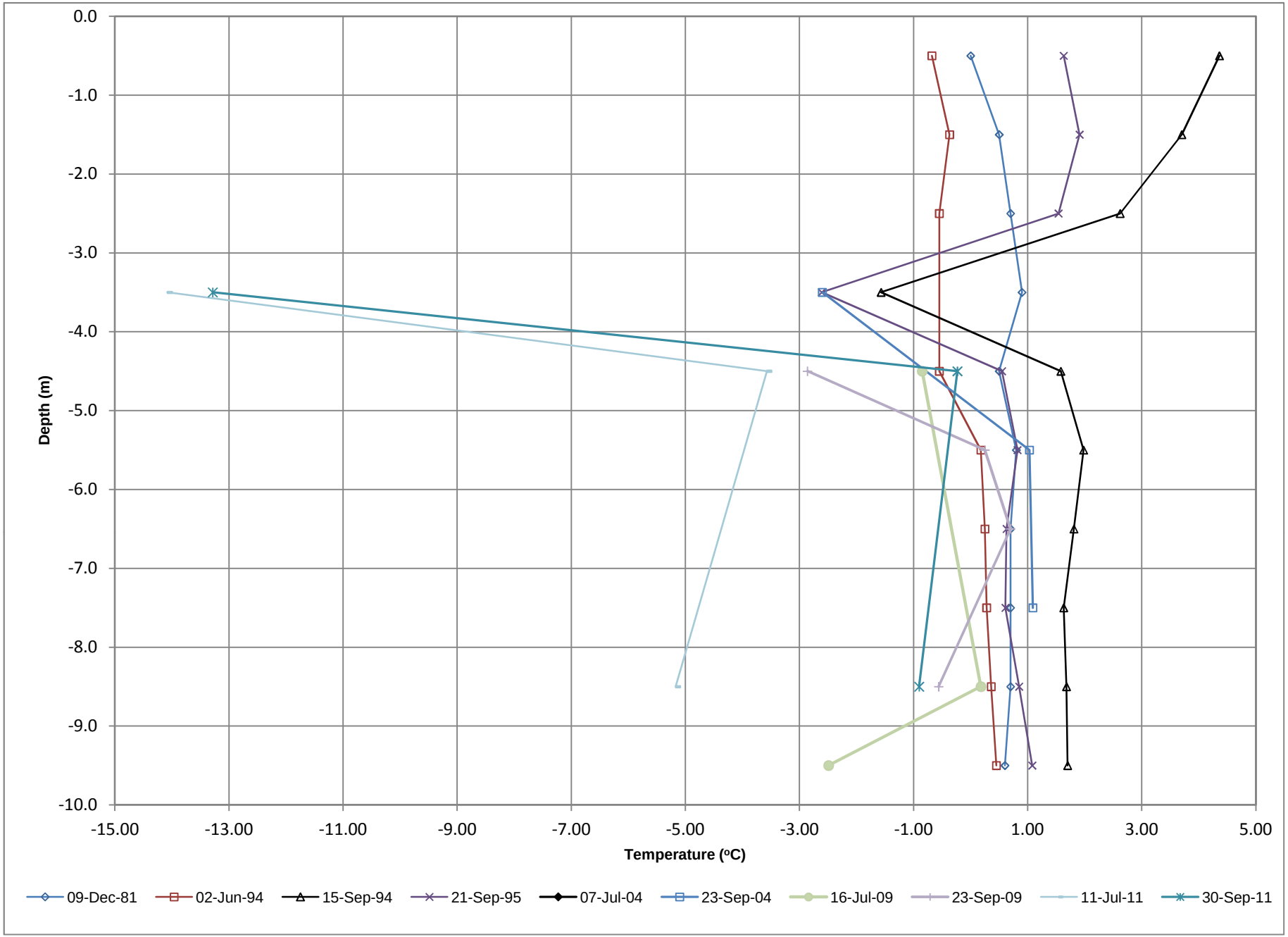

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Figure F-9: Diversion Canal (Backslope)
Thermistor BS-10

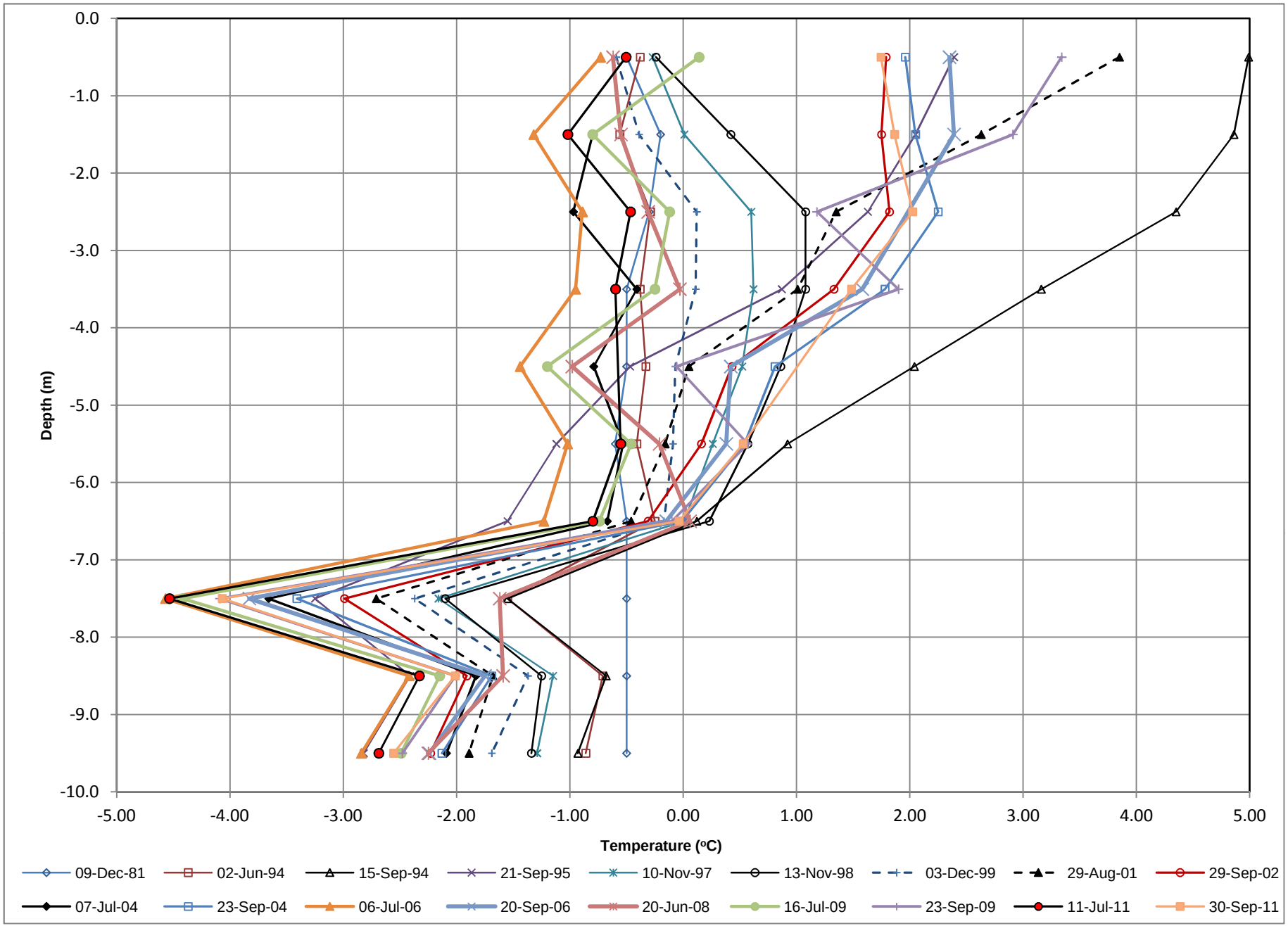

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Figure F-10: Diversion Canal (Backslope)
Thermistor BS-12

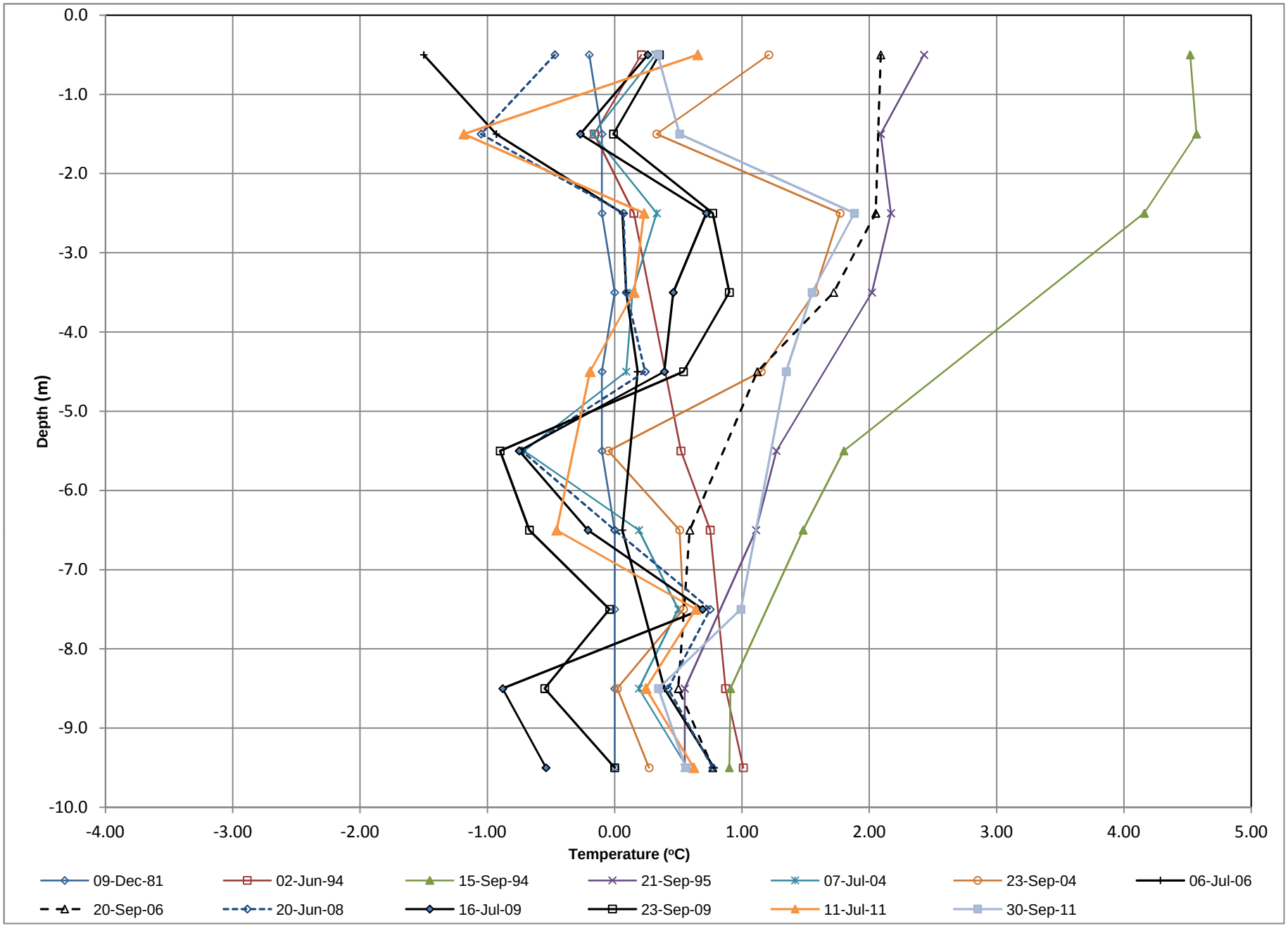

Figure F-11: Diversion Canal (Canal Dyke) - Piezometers
BGC05-02/-03

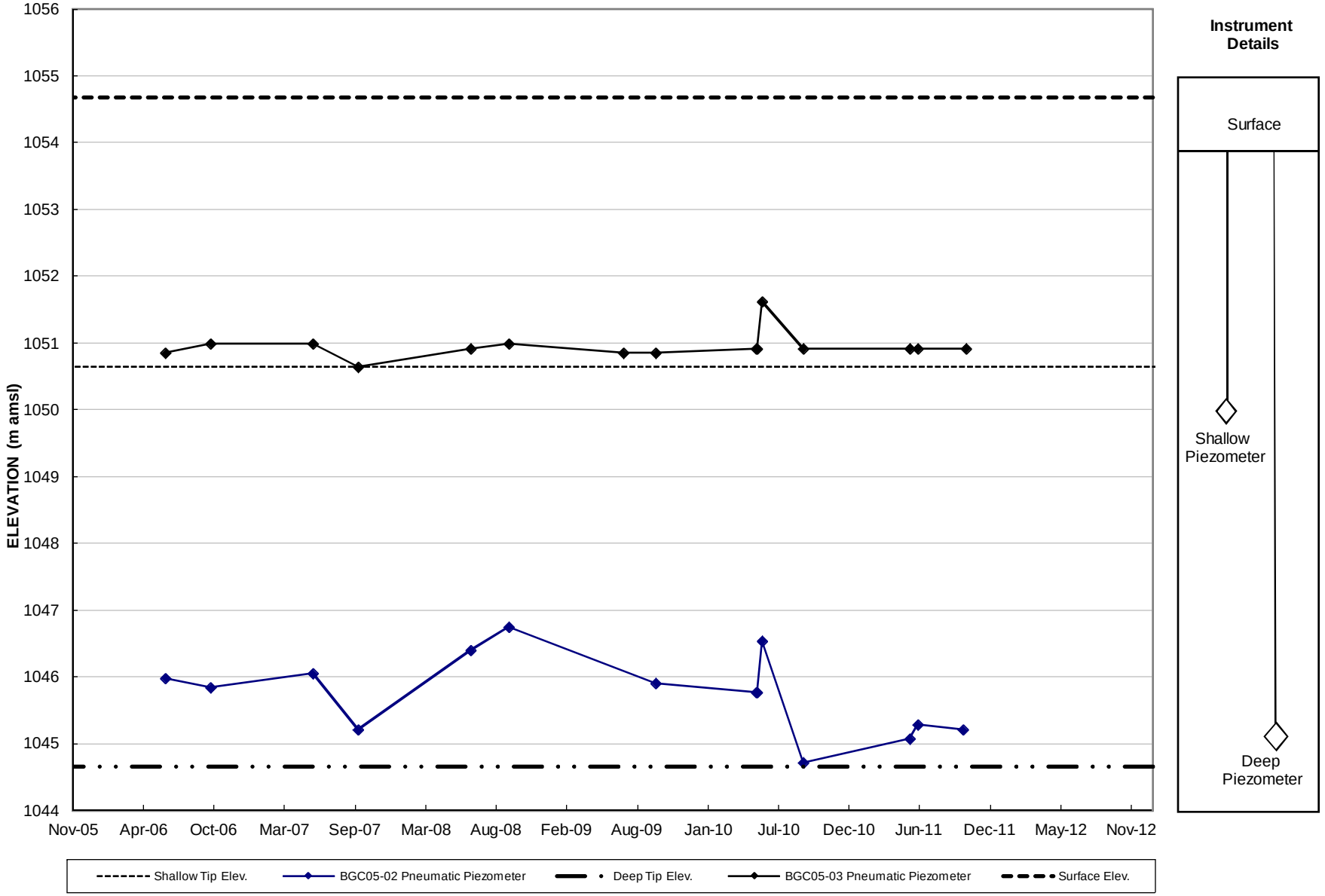

Figure F-12: Diversion Canal (Canal Dyke)
Piezometer BGC05-06 (Both Tips)

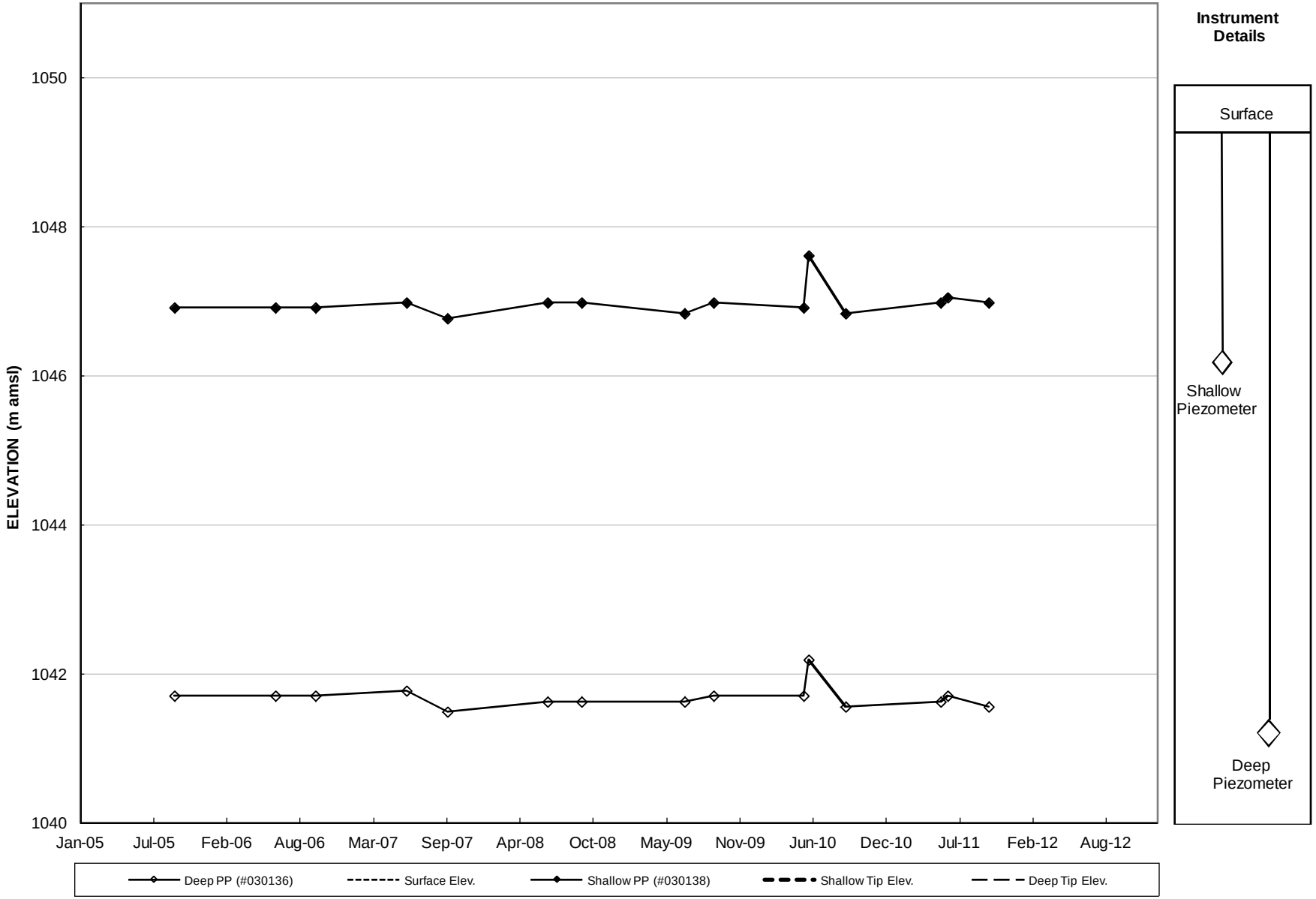

Figure F-13: Diversion Canal (Canal Dyke)
Piezometer CD-13 (Both Tips)

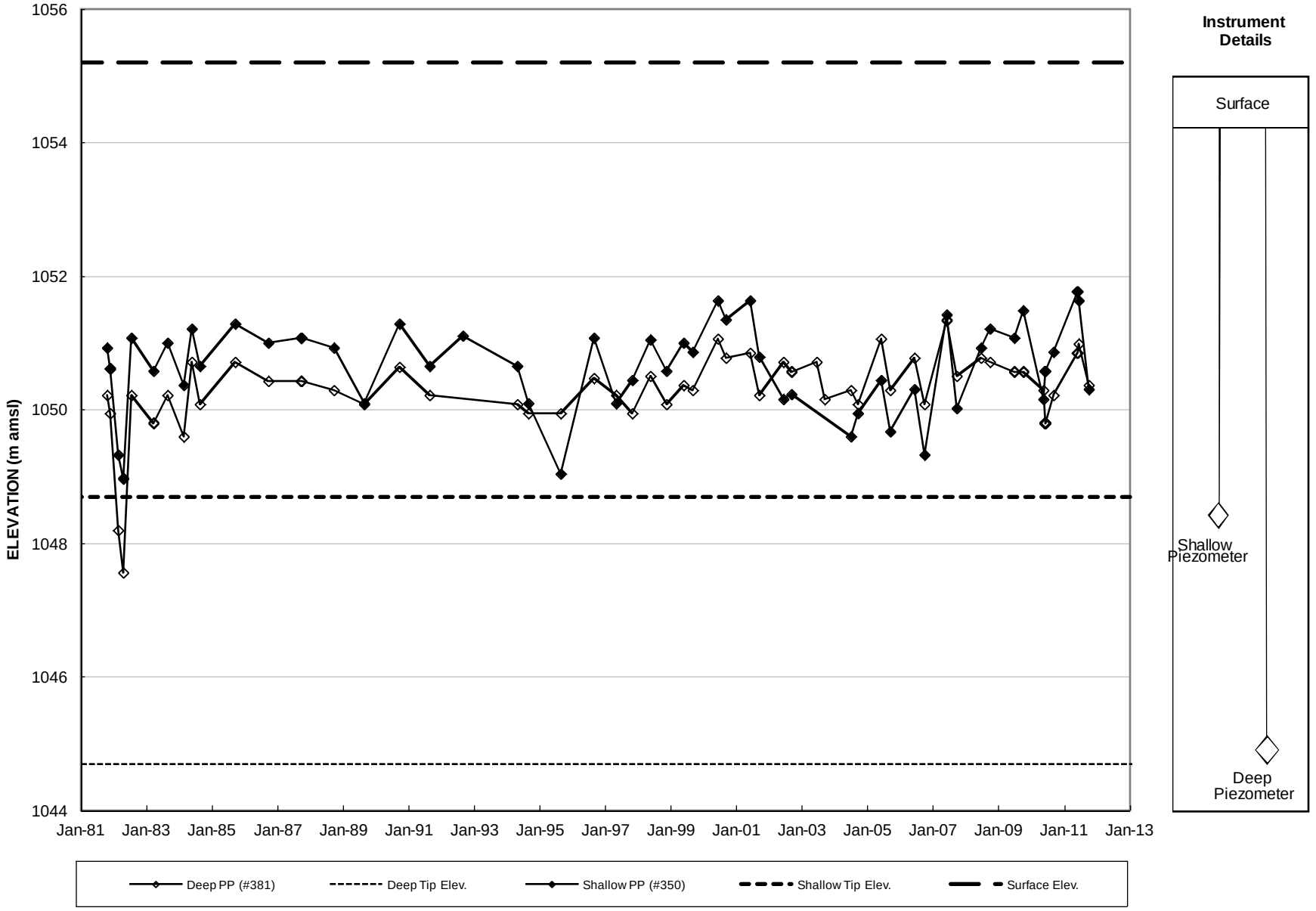

Figure F-14: Diversion Canal (Canal Dyke)
Piezometer CD-15 (Both Tips)

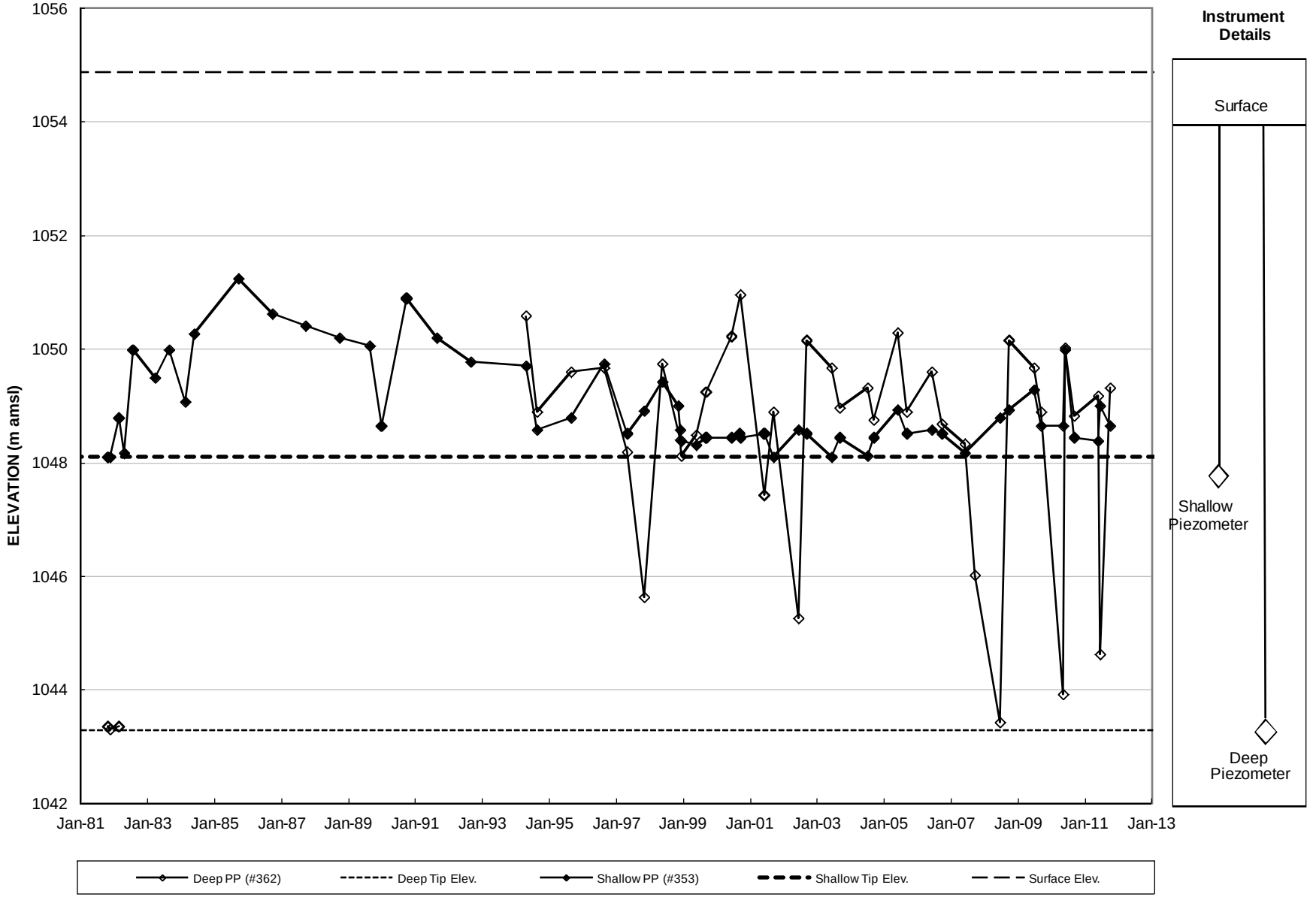

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Figure F-15: Diversion Canal (Canal Dyke)
Piezometer CD-21 (Both Tips)

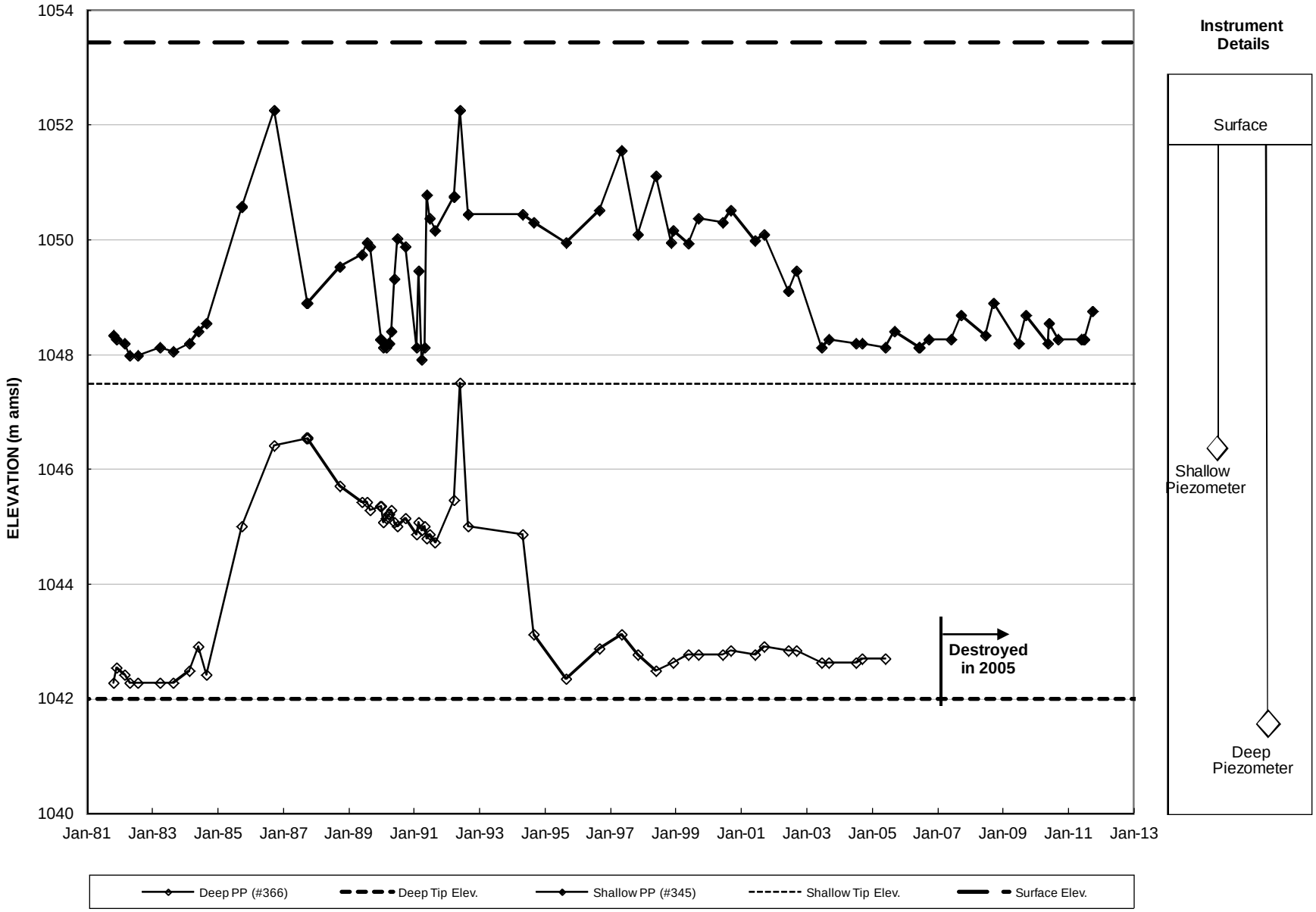


Figure F-16: Diversion Canal (Canal Dyke)
Piezometer CD-26 (Both Tips)

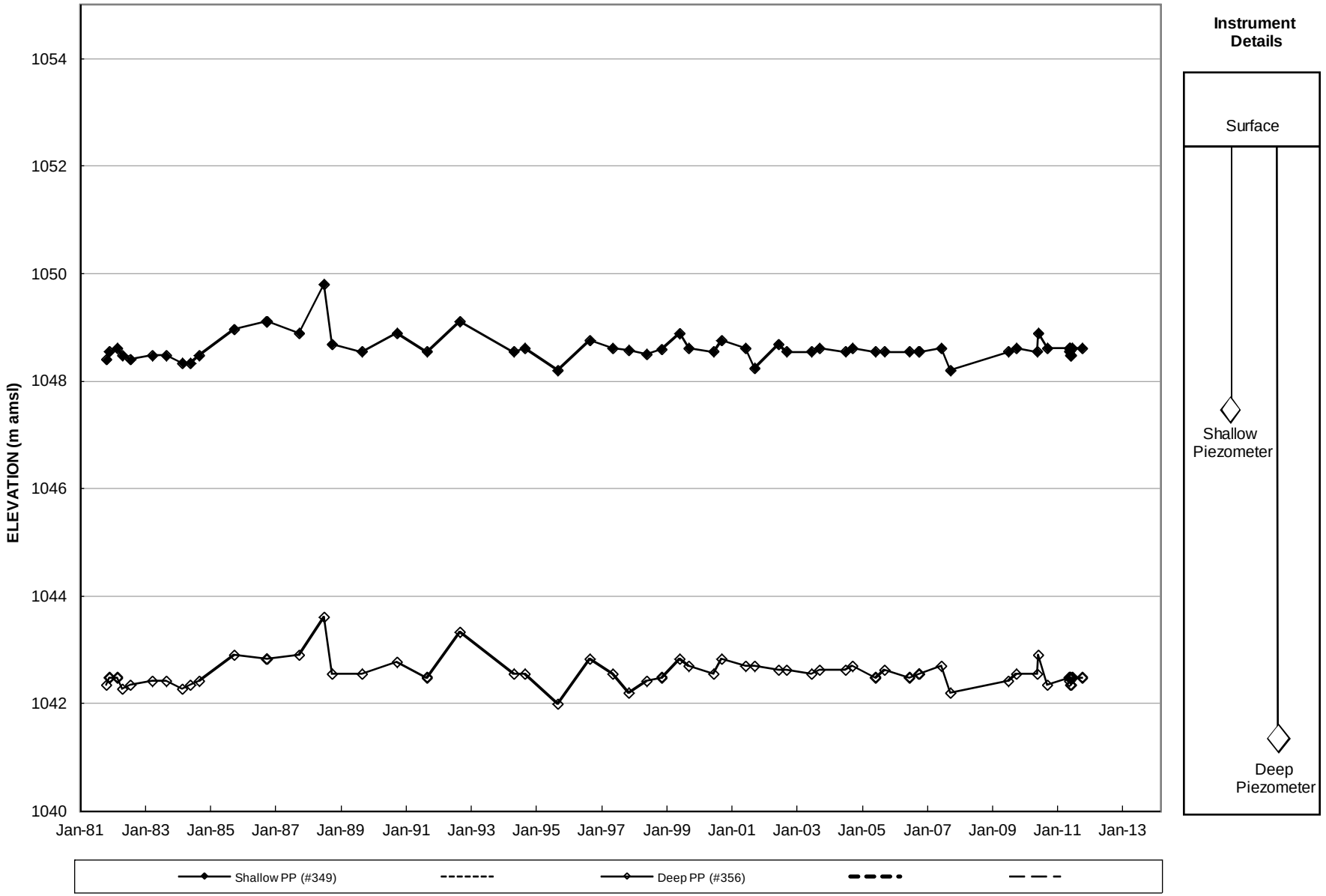


Figure F-17: Diversion Canal (Backslope)
Piezometer BS-5

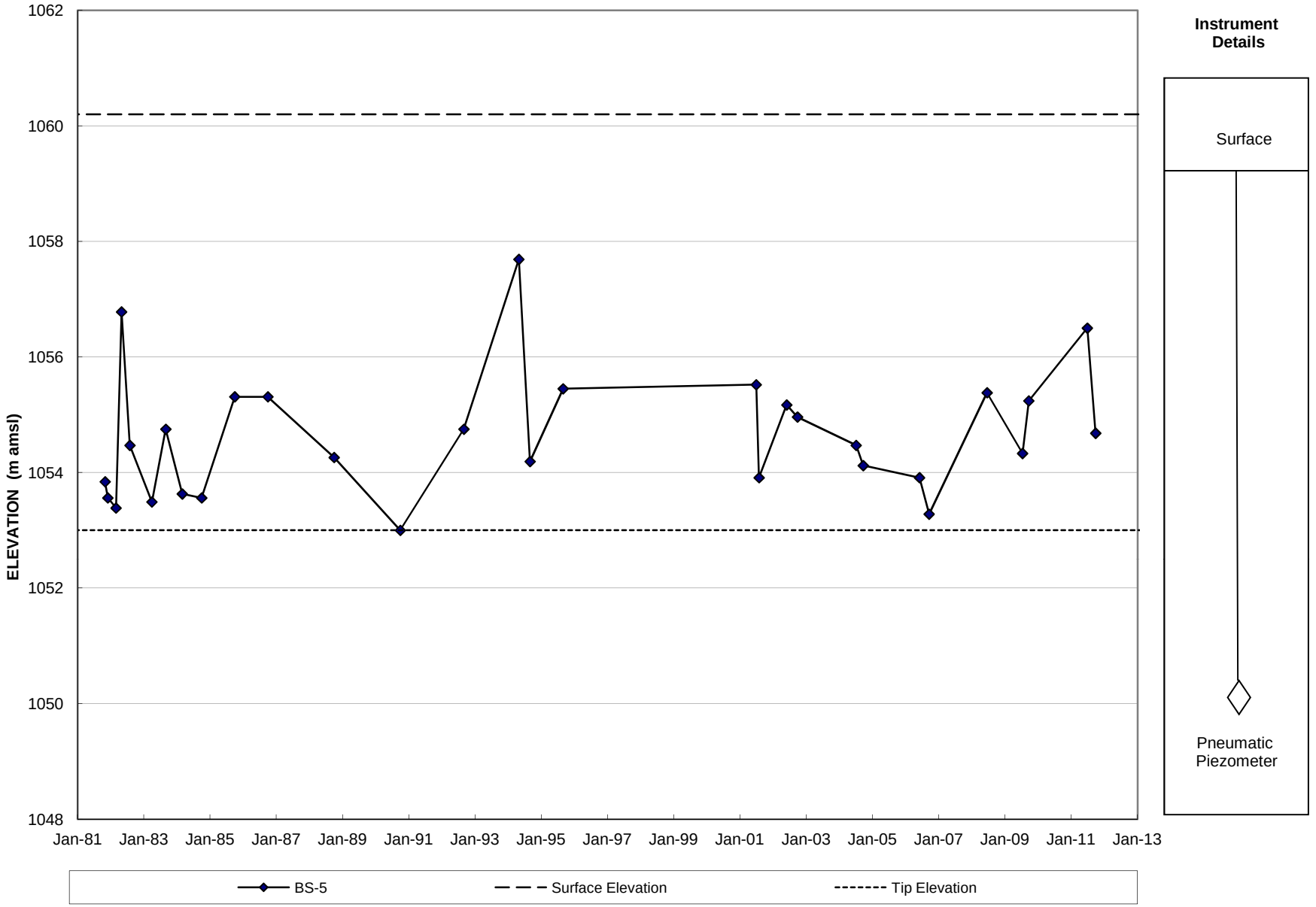
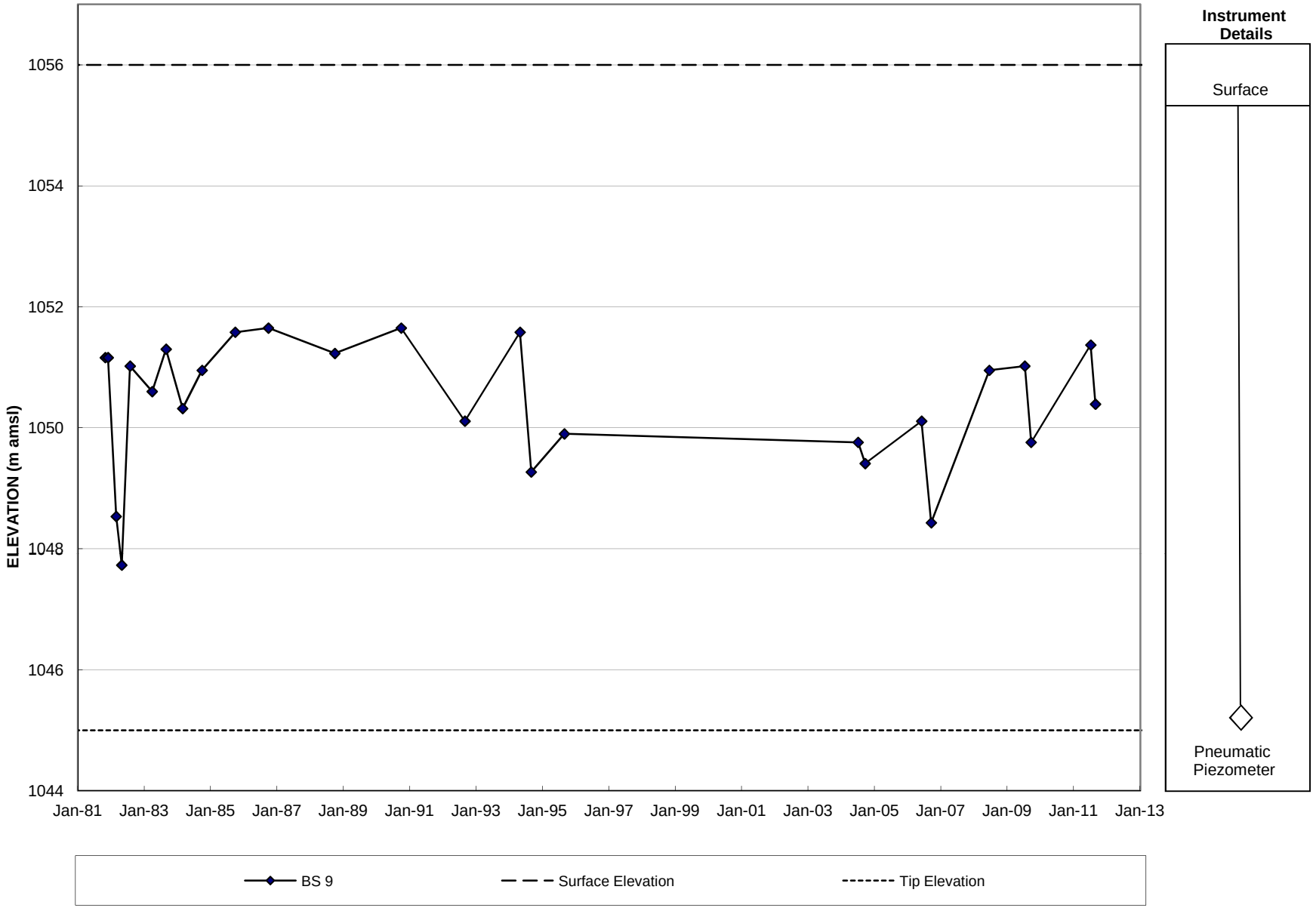


Figure F-18: Diversion Canal (Backslope)
Piezometer BS-9



TABLES AND FIGURES

Cross Valley Dam

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Table F-34: Cross Valley Dam
Thermistor CVDC-6

CVDC-6		Location:	Stn 0+340, Cross Valley Dam Crest			Elevation (m amsl):	1033.30	Coordinates:	2182.1 mN 4.7 mE	8V580210 6914218
		Thermistor String #32	Date Installed:	1981	Thermistor Type:	Cantec Controls YSI 44007	Ice-Bath Calibration:	Applied	Surface Protector:	Yes
Depth Correction:	0									

Depth on String	Actual Depth	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)
(m)	(m)	09-Dec-81	30-May-94	15-Sep-94	22-Sep-95	13-Sep-96	20-Sep-99	07-Jun-00	05-Sep-00	26-Jun-01	14-Sep-01	16-Oct-01	18-Oct-01	01-May-02	12-Jun-02	17-Jul-02	09-Sep-02	23-Apr-03	07-May-03	11-Jun-03	15-Jul-03	10-Sep-03	29-Apr-04	19-Jul-04	26-Aug-04	09-Sep-04	26-May-05	12-Oct-05	14-Jun-06	04-Oct-06
15.0	-15.0	11.05	13.87	14.23	15.64		14.22	14.27	14.55	14.61	14.63	16.26	14.11	14.26	14.35	14.37	14.30	14.03	13.98	14.19	14.08	14.21	13.99	14.15	14.41	14.30	14.02	14.08	14.03	14.42
17.0	-17.0	11.70	13.95	15.22	15.74			14.54	14.79	14.82	14.91	16.48	14.94	14.54	14.59	14.57	14.47	14.31	14.24	14.41	14.28	14.38	14.30	14.40	14.64	14.43	14.27	14.35	14.32	14.69
19.0	-19.0	12.59	13.81	14.63	15.59		14.01	14.29	14.50	14.49	14.60	16.12	14.57	14.18	14.20	14.14	14.06	13.96	13.89	14.05	13.91	13.99	14.02	14.08	14.31	14.09	14.03	14.03	14.14	14.71
21.0	-21.0	13.48	18.73	19.53	20.59	All readings fluctuating	21.25	22.11	22.55	22.63	22.75	24.31	22.82	22.39	22.43	22.43	22.44	22.74	22.70	22.29	22.98	23.29	24.02	24.55	24.98	24.81	26.06	26.70	28.20	30.07
23.0	-23.0	14.16	13.80	14.26	14.97		14.00	14.31	14.54	14.16	14.18	15.02	14.17	13.69	13.75	13.72	13.66	13.55	13.49	13.68	13.57	13.69	13.70	13.77	14.03	13.78	13.74	13.69	13.83	13.97
25.0	-25.0	15.37	13.96	14.42	14.97		14.21	14.45	14.62	14.19	14.27	15.09	14.28	13.70	13.84	13.85	13.79	13.60	13.56	13.79	13.71	13.84	13.74	13.84	14.13	13.86	13.77	13.73	13.85	14.07
27.0	-27.0	15.42	14.26	14.91	15.29		14.55	14.80	14.96	14.96	14.97	15.81	15.00	14.69	14.74	14.67	14.57	14.56	14.49	14.65	14.51	14.55	14.61	14.65	14.91	14.62	14.69	14.56	14.79	14.91
29.0	-29.0	15.35	14.46	14.14	15.44		14.86	15.12	15.22	16.01	16.15	17.05	16.25	16.33	16.37	16.28	16.16	17.97	18.01	18.44	18.53	19.06	20.24	20.55	20.93	20.69	21.77	21.15	23.59	24.08

Depth on String	Actual Depth	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)
(m)	(m)	09-Dec-81	30-May-94	15-Sep-94	22-Sep-95	13-Sep-96	20-Sep-99	07-Jun-00	05-Sep-00	26-Jun-01	14-Sep-01	16-Oct-01	18-Oct-01	01-May-02	12-Jun-02	17-Jul-02	09-Sep-02	23-Apr-03	07-May-03	11-Jun-03	15-Jul-03	10-Sep-03	29-Apr-04	19-Jul-04	26-Aug-04	09-Sep-04	26-May-05	12-Oct-05	14-Jun-06	04-Oct-06
15.0	-15.0	7.60	3.01	2.50	0.63		2.51	2.44	2.06	1.97	1.95	-0.13	2.67	2.46	2.33	2.30	2.40	2.78	2.85	2.55	2.71	2.53	2.84	2.61	2.25	2.40	2.79	2.71	2.78	2.23
17.0	-17.0	6.40	2.85	1.12	0.46			2.03	1.69	1.65	1.53	-0.44	1.49	2.03	1.96	1.99	2.12	2.35	2.44	2.21	2.39	2.25	2.36	2.22	1.89	2.18	2.40	2.29	2.33	1.83
19.0	-19.0	4.90	3.04	1.90	0.64		2.76	2.36	2.07	2.09	1.94	-0.02	1.98	2.52	2.49	2.57	2.69	2.83	2.93	2.70	2.90	2.79	2.74	2.66	2.34	2.64	2.73	2.73	2.57	1.79
21.0	-21.0																													
23.0	-23.0	2.60	3.11	2.46	1.49		2.82	2.39	2.07	2.60	2.57	1.43	2.58	3.27	3.18	3.22	3.31	3.47	3.56	3.28	3.44	3.27	3.25	3.15	2.78	3.14	3.20	3.27	3.07	2.86
25.0	-25.0	1.00	2.91	2.26	1.52		2.56	2.22	1.99	2.58	2.47	1.36	2.46	3.28	3.08	3.07	3.15	3.43	3.49	3.15	3.27	3.08	3.23	3.08	2.67	3.05	3.18	3.24	3.07	2.75
27.0	-27.0	0.90	2.45	1.56	1.06		2.05	1.71	1.50	1.50	1.48	0.41	1.44	1.86	1.79	1.88	2.02	2.03	2.13	1.91	2.10	2.05	1.96	1.91	1.56	1.95	1.86	2.03	1.72	1.56
29.0	-29.0																													

Depth on String	Actual Depth	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)
(m)	(m)	09-May-07	24-Sep-07	24-Jun-08	24-Sep-08	21-Mar-09	13-Apr-09	20-Apr-09	27-Apr-09	05-May-09	19-May-09	29-Jun-09	15-Sep-09	19-May-10	03-Jun-10	10-Sep-10	26-May-11	13-Jun-11	11-Oct-11
15.0	-15.0	14.04	14.03	14.11	14.29	13.97	13.96	13.93	13.92	2.19	13.93	14.08	14.36	13.92	14.44	14.00	13.90	13.80	*21.75*
17.0	-17.0	14.31	14.47	14.35	14.88	14.61	14.24	14.23	14.21	2.20	14.20	14.30	14.53	14.17	14.16	14.20	14.14	14.07	14.21
19.0	-19.0	14.02	14.10	14.05	14.22	14.09	14.01	13.99	13.97	2.19	13.95	14.02	14.18	13.93	13.91	13.90	13.86	13.80	13.92
21.0	-21.0	33.33	36.10	41.10	42.50	52.70	43.60	43.50	43.50		43.60	43.90	44.80	45.80	45.80	46.00	46.55	*47.00*	*47.90*
23.0	-23.0	13.55	13.60	13.54	13.60	22.63	13.45	13.44	13.42	2.18	13.40	13.46	13.53	13.36	13.33	13.30	13.21	*21.87*	*13.32*
25.0	-25.0	13.52	13.60	13.52	13.58	22.97	13.41	13.40	13.38	2.18	13.36	13.42	13.49	o/l	13.30	13.30	13.18	*21.78*	*13.32*
27.0	-27.0	14.53	14.48	14.49	14.50	37.09	14.46	14.45	14.43	2.21	14.41	14.48	14.51	14.38	o/l	14.30	14.32	*22.97*	*14.35*
29.0	-29.0	25.11	25.75	27.17	27.57		28.52	28.54	28.55	2.39	28.55	28.79	29.42	31.64	o/l	32.90	35.20	*35.24*	*36.26*

Depth on String	Actual Depth	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)
(m)	(m)	09-May-07	24-Sep-07	24-Jun-08	24-Sep-08	21-Mar-09	13-Apr-09	20-Apr-09	27-Apr-09	05-May-09	19-May-09	29-Jun-09	15-Sep-09	20-May-10	02-Jun-10	10-Sep-10	26-May-11	13-Jun-11	11-Oct-11
15.0	-15.0	2.76	2.78	2.67	2.41	2.86	2.88	2.92	2.94	43.96	2.92	2.71	2.32	2.98	2.17	2.85	3.01	3.17	
17.0	-17.0	2.35	2.12	2.29	1.57	1.93	2.44	2.46	2.49	43.83	2.50	2.36	2.04	2.59	2.61	2.55	2.64	2.75	2.53
19.0	-19.0	2.74	2.63	2.70	2.46	2.64	2.76	2.79	2.81	43.90	2.84	2.74	2.52	2.92	2.95	2.96	3.03	3.12	2.93
21.0	-21.0																		
23.0	-23.0	3.47	3.40	3.49	3.40	-6.48	3.62	3.64	3.67	44.14	3.70	3.61	3.50	3.87	3.92	3.97	4.12		3.94
25.0	-25.0	3.55	3.43	3.55	3.46	-6.73	3.71	3.73	3.76	44.17	3.79	3.70	3.59		4.01	4.01	4.21		3.98
27.0	-27.0	2.07	2.14	2.13	2.11	-15.50	2.17	2.18	2.21	43.79	2.24	2.14	2.10	2.40		2.52	2.49		2.45
29.0	-29.0																		

Notes:

* The initial reading (Nov 15/81) is excluded from data set because post-installation equilibrium may not have been complete.

*The -21 and -29 metre depth tips are suspect

*Shaded results suspect

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Table F-35: Cross Valley Dam
Thermistor BH88-4

BH88-4		Location:	0+450, Cross Valley Dam Crest			Elevation (m amsl):	1033.40	Coordinates:	2018.3 m N, 76.6 m W	8V580127 6914054
			Date Installed:	1988	Thermistor Type:	Cantec Controls YSI 44007	Ice-Bath Calibration:	Not Applied	Surface Protector:	Yes
Depth Correction:	0									

Depth on String	Actual Depth	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)
(m)	(m)	10-Dec-91	24-Jan-92	30-May-94	15-Sep-94	22-Sep-95	13-Sep-96	05-May-97	20-Nov-97	26-May-98	12-Nov-98	28-May-99	20-Sep-99	07-Jun-00	05-Sep-00	26-Jun-01	14-Sep-01	18-Oct-01	01-May-02	12-Jun-02	17-Jul-02	09-Sep-02	23-Apr-03	07-May-03	11-Jun-03	15-Jul-03	10-Sep-03	29-Apr-04	19-Jul-04	26-Aug-04
0.6	-0.6	19.03	20.60	13.87	11.01	11.17	11.28	16.59	16.64	14.19	18.18	14.78	11.07	12.95	11.74	11.86	11.27	14.42	17.61	12.21	9.99	10.82	17.63	16.47	12.73	9.80	10.73	16.91	8.96	9.06
1.4	-1.4	16.72	18.54	15.54	10.52	11.32	11.43	17.14	15.88	16.51	15.71	16.52	11.25	15.73	11.74	13.71	11.26	13.61	18.17	14.42	11.52	11.18	17.86	16.91	14.83	11.60	10.90	17.18	10.03	9.33
2.0	-2.0	16.81	17.93	18.04	11.27	12.45	13.01	19.84	17.50	19.19	17.30	19.78	13.61	19.90	14.13	19.22	13.49	15.59	21.52	19.89	15.78	13.85	21.06	20.35	19.94	16.22	13.38	20.44	13.37	11.88
2.5	-2.5	15.25	16.14	16.60	10.37	11.54	11.91	17.47	14.86	16.70	14.19	16.76	11.64	16.73	12.05	16.67	11.50	12.85	17.89	17.08	15.04	12.16	17.73	17.47	17.29	15.75	11.87	17.56	12.57	10.92
3.3	-3.3	14.45	15.36	16.31	10.79	11.91	12.48	17.17	14.25	16.40	13.47	16.53	12.09	16.51	12.59	16.33	11.87	12.50	16.54	16.55	16.51	12.42	16.34	16.38	16.40	16.35	11.97	16.23	13.22	11.27
4.2	-4.2	13.82	14.69	15.87	11.52	12.41	13.19	16.52	13.82	15.98	13.03	16.11	12.72	16.14	13.30	16.03	12.60	12.59	16.04	16.19	16.17	13.12	15.90	15.98	16.08	16.05	12.74	15.82	14.34	12.27

Depth on String	Actual Depth	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)
(m)	(m)	10-Dec-91	24-Jan-92	30-May-94	15-Sep-94	22-Sep-95	13-Sep-96	05-May-97	20-Nov-97	26-May-98	12-Nov-98	28-May-99	20-Sep-99	07-Jun-00	05-Sep-00	26-Jun-01	14-Sep-01	18-Oct-01	01-May-02	12-Jun-02	17-Jul-02	09-Sep-02	23-Apr-03	07-May-03	11-Jun-03	15-Jul-03	10-Sep-03	29-Apr-04	19-Jul-04	26-Aug-04
0.6	-0.6	-3.10	-4.61	3.10	7.77	7.47	7.27	-0.44	-0.50	2.64	-2.22	1.83	7.66	4.47	6.46	6.25	7.29	2.32	-1.60	5.66	9.77	8.13	-1.62	-0.30	4.82	10.17	8.30	-0.81	12.04	11.81
1.4	-1.4	-0.67	-2.67	0.76	8.62	7.12	6.92	-1.15	0.34	-0.42	0.55	-0.43	7.25	0.53	6.38	3.25	7.23	3.40	-2.28	2.24	6.76	7.37	-1.95	-0.89	1.69	6.62	7.89	-1.20	9.61	11.12
2.0	-2.0	-0.70	-1.96	-2.08	7.28	5.26	4.37	-3.97	-1.56	-3.34	-1.33	-3.92	3.40	-4.03	2.65	-3.37	3.57	0.70	-5.52	-4.02	0.46	3.05	-5.11	-4.46	-4.07	-0.08	3.74	-4.54	3.75	6.14
2.5	-2.5	1.15	0.03	-0.52	8.93	6.74	6.09	-1.52	1.65	-0.65	2.56	-0.72	6.55	-0.68	5.85	-0.61	6.80	4.55	-1.98	-1.08	1.41	5.66	-1.81	-1.52	-1.32	0.50	6.15	-1.62	4.99	7.86
3.3	-3.3	2.22	1.01	-0.16	8.12	6.10	5.16	-1.19	2.48	-0.29	3.60	-0.45	5.78	-0.42	4.96	-0.21	6.15	5.11	-0.46	-0.47	-0.42	5.24	-0.22	-0.27	-0.29	-0.23	5.98	-0.09	3.98	7.21
4.2	-4.2	3.07	1.86	0.33	6.74	5.23	4.00	-0.43	3.09	0.22	4.27	0.06	4.75	0.02	3.86	0.15	4.94	4.96	0.14	-0.04	-0.02	4.13	0.31	0.22	0.09	0.13	4.72	0.41	2.35	5.48

Depth on String	Actual Depth	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)
(m)	(m)	09-Sep-04	26-May-05	12-Oct-05	14-Jun-06	04-Oct-06	09-May-07	24-Sep-07	24-Jun-08	24-Sep-08	13-Apr-09	20-Apr-09	27-Apr-09	05-May-09	19-May-09	29-Jun-09	15-Sep-09	18-May-10	03-Jun-10	10-Sep-10	26-May-11	13-Jun-11	11-Oct-11
0.6	-0.6	11.06	13.44	13.30	10.79	12.74	16.41	12.54	11.39	12.16	20.13	19.33	18.84	2.26	15.81	11.10	10.90	15.15	12.01	10.40	14.45	12.32	13.93
1.4	-1.4	10.59	15.84	12.76	13.83	12.39	17.01	11.99	13.19	11.92	19.79	19.27	18.82	2.27	16.84	12.55	11.12	17.30	14.74	10.70	16.66	14.20	13.38
2.0	-2.0	12.67	20.04	14.92	20.09	14.82	20.83	14.37	18.38	14.47	23.14	22.79	22.35	2.32	20.67	17.41	13.78	20.77	20.28	14.40	20.53	20.06	15.74
2.5	-2.5	11.19	17.54	12.84	17.80	12.97	18.33	12.72	17.66	12.74	19.57	19.39	19.15	2.29	18.21	17.18	12.35	18.25	17.86	12.90	17.98	17.82	13.49
3.3	-3.3	11.10	16.24	11.92	16.58	12.33	16.97	12.40	16.42	12.25	17.16	17.18	17.13	2.26	16.87	16.65	12.20	16.94	16.64	12.80	16.68	16.64	12.55
4.2	-4.2	11.86	15.82	12.08	16.23	12.72	16.50		16.13	12.76	16.29	16.36	16.37	2.25	16.44	16.43	12.98	16.55	16.31	13.60	16.27	16.29	12.77

Depth on String	Actual Depth	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)
(m)	(m)	09-Sep-04	26-May-05	12-Oct-05	14-Jun-06	04-Oct-06	09-May-07	24-Sep-07	24-Jun-08	24-Sep-08	13-Apr-09	20-Apr-09	27-Apr-09	05-May-09	19-May-09	29-Jun-09	15-Sep-09	18-May-10	03-Jun-10	10-Sep-10	26-May-11	13-Jun-11	11-Oct-11
0.6	-0.6	7.68	3.73	3.94	8.18	4.80	-0.22	5.12	7.07	5.74	-4.17	-3.40	-2.90	43.31	0.51	7.60	7.97	1.28	6.21	9.27	2.29	5.67	3.06
1.4	-1.4	8.49	0.39	4.69	3.08	5.28	-1.00	5.95	4.02	6.07	-3.93	-3.42	-2.96	43.07	-0.81	5.02	7.48	-1.62	1.79	8.62	-0.82	2.59	3.86
2.0	-2.0	4.83	-4.17	1.57	-4.21	1.70	-4.90	2.31	-2.51	2.17	-6.89	-6.60	-6.23	42.55	-4.76	-1.46	3.15	-5.16	-4.66	2.58	-4.92	-4.43	0.70
2.5	-2.5	7.36	-1.60	4.56	-1.89	4.36	-2.45	4.75	-1.73	4.72	-3.71	-3.53	-3.30	42.85	-2.33	-1.20	5.35	-2.65	-2.19	4.75	-2.33	-2.14	3.80
3.3	-3.3	7.52	-0.10	6.07	-0.51	5.38	-0.96	5.27	-0.32	5.51	-1.18	-1.20	-1.14	43.20	-0.84	-0.59	5.60	-1.18	-0.79	4.87	-0.84	-0.79	5.29
4.2	-4.2	6.17	0.41	5.80	-0.09	4.75	-0.41		0.03	4.69	-0.16	-0.24	-0.26	43.35	-0.34	-0.33	4.35	-0.71	-0.39	3.57	-0.34	-0.36	4.94

Notes:
*Shaded results are suspect

Table F-36: Cross Valley Dam
Piezometer CVDC-4

CVDC-4		Location:	Cross Valley Dam Crest Stn. 0+215	2004 Ground Elevation (m amsl):	1033.3		
		Coordinates:	8V580266 6914331	Shallow Tip Elevation (m amsl):	1007.9	2004 Shallow stick-up (m):	0.11
Surface Protector:	Yes	Date Installed:	1981	Deep Tip Elevation (m amsl):	999.7	2004 Deep stick-up (m):	0.3

Date	Water Level from top of pipe (m)		Piezometric Elevation (m amsl)		Pond Elevation (m amsl)	Comments
	Shallow	Deep	Shallow	Deep		
Aug-82	15.10	15.26	1018.33	1018.04		
Dec-82	15.82	15.71	1017.61	1017.59		
Apr-83	15.71	15.84	1017.72	1017.46	1029.33	
Jun-83	16.54	16.33	1016.89	1016.97	1025.88	
Aug-83	16.57	16.52	1016.86	1016.78		
Oct-83	16.34	16.30	1017.09	1017.00		
Feb-84	16.21	16.22	1017.22	1017.08		
Mar-84					1030.60	
Apr-84	16.75	16.58	1016.68	1016.72		
Jun-84	16.40	16.37	1017.03	1016.93	1026.80	
Aug-84	16.50	16.48	1016.93	1016.82		
Jun-85	15.50	15.55	1017.93	1017.75	1031.20	
Oct-85	16.00	16.10	1017.43	1017.20		
May-86	15.58	15.54	1017.85	1017.76	1030.70	
Oct-86	14.99	15.14	1018.44	1018.16	1030.90	
Oct-87	15.42	16.45	1018.01	1016.85		
Jun-88		15.67		1017.63		
Jan-90		15.78		1017.59		
Oct-90		15.54		1017.83		
May-91		15.31		1018.06		
Jun-92		14.32		1019.05		
Sep-92		14.63		1018.74		
May-94		14.93		1018.47		
Sep-94		14.95		1018.45		
Sep-95		14.80		1018.60		
13-Sep-96		14.89		1018.51	1029.92	
7-May-97		15.34		1018.06		
2-Dec-97		14.89		1018.51		shallow standpipe - dry
26-May-98		14.66		1018.92	1031.20	
13-Nov-98		14.91		1018.67	1029.80	
29-Dec-98		14.89		1018.69	1029.80	
03-Jun-99		14.67		1018.91	1031.40	
18-Sep-99		15.60		1017.98	~1029.2	
08-Jun-00		14.73		1018.85	~1030.2	
14-Aug-00		14.88		1018.70		
31-Aug-00		14.86		1018.72		
07-Sep-00		14.83		1018.75		
14-Sep-00		14.76		1018.82		
21-Sep-00		14.84		1018.74		shallow standpipe - plugged
28-Sep-00		14.79		1018.79		shallow standpipe - plugged
06-Oct-00		14.75		1018.83		shallow standpipe - n.r.
12-Oct-00		14.76		1018.82		shallow standpipe - n.r.
20-Oct-00		14.74		1018.84		blocked @ 1.25m
27-Oct-00		14.76		1018.82		shallow standpipe - blocked @ 7.60m
10-Jun-01	7.67	14.87		1018.71		shallow standpipe - blocked @ 7.61m
14-Sep-01	7.61	14.82		1018.76		shallow standpipe - blocked @ 7.61m
16-Oct-01	7.61	14.90		1018.68		shallow standpipe - blocked @ 7.62m
18-Oct-01	7.61	14.93		1018.65		shallow standpipe - blocked @ 7.61m
19-Oct-01	7.61	14.95		1018.63		shallow standpipe - blocked @ 7.61m
20-Oct-01	7.61	14.96		1018.62		shallow standpipe - blocked @ 7.61m
21-Oct-01	7.61	14.97		1018.61		shallow standpipe - blocked @ 7.61m
22-Oct-01	7.61	14.98		1018.60		shallow standpipe - blocked @ 7.61m
25-Oct-01	7.61	14.98		1018.60		shallow standpipe - blocked @ 7.61m
29-Oct-01	7.61	14.98		1018.60		shallow standpipe - blocked @ 7.61m
01-Nov-01	7.61	14.98		1018.61		shallow standpipe - blocked @ 7.61m
05-Nov-01	7.61	14.97		1018.61		
06-Nov-01	7.61	14.97		1018.61		
08-Nov-01	7.61	14.97		1018.62		
12-Nov-01	7.61	14.96		1018.62		

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Table F-36: Cross Valley Dam
Piezometer CVDC-4

Date	Water Level from top of pipe (m)		Piezometric Elevation (m amsl)		Pond Elevation (m amsl)	Comments
	Shallow	Deep	Shallow	Deep		
15-Nov-01	7.61	14.95		1018.63		
19-Nov-01	7.61	14.95		1018.63		
21-Nov-01	7.61	14.95		1018.63		
23-Nov-01	7.61	14.94		1018.64		pond elev approx - 8 ft.
26-Nov-01	7.61	14.95		1018.63		daytime temp -34 C
28-Nov-01	7.61	14.94		1018.64		
30-Nov-01	7.61	14.94		1018.64		
03-Dec-01	7.61	14.96		1018.62		
05-Dec-01	7.61	14.97		1018.61		
12-Dec-01	7.61	14.94		1018.64		
14-Dec-01	7.61	14.82		1018.76		
15-Dec-01	7.61	14.84		1018.74		
16-Dec-01	7.61	14.87		1018.71		
17-Dec-01	7.61	14.90		1018.68		
18-Dec-01	7.61	14.92		1018.66		
19-Dec-01	7.61	14.94		1018.64		
26-Dec-01	7.61	14.96		1018.62		
02-Jan-02	7.61	14.94		1018.64		
09-Jan-02	7.61	14.99		1018.59		
16-Jan-02	7.61	15.04		1018.54		
23-Jan-02	7.61	15.02		1018.56		
30-Jan-02	7.61	15.02		1018.56		
06-Feb-02	7.61	15.00		1018.58		
13-Feb-02	7.61	15.00		1018.58		
20-Feb-02	7.61	14.99		1018.59		
01-May-02	7.61	14.92		1018.67		
12-Jun-02	7.61	14.90		1018.69		
17-Jul-02	7.61	14.85		1018.74		
07-Aug-02	7.61	14.90		1018.69		
09-Sep-02	7.61	14.82		1018.76		
04-Nov-02	7.61	14.86		1018.72		
10-Nov-02	7.61	14.85		1018.73		
30-Jan-03	7.61	14.75		1018.83		
09-Feb-03	7.61	14.76		1018.83		start siphon
11-Feb-03	7.61	14.77		1018.82		
13-Feb-03	7.61	14.78		1018.80		
18-Feb-03	7.61	14.80		1018.78		
21-Feb-03	7.61	14.83		1018.75	1026.18	
23-Apr-03	7.61	14.78		1018.80		
07-May-03	7.61	14.88		1018.71		
16-May-03	7.61	14.87		1018.71		
11-Jun-03	7.61	14.85		1018.73		
15-Jul-03	7.61	14.78		1018.80		
10-Sep-03	7.61	14.97		1018.62		
04-Mar-04	7.61	14.84		1018.76	1030.038	2004 Survey data used from here on
08-Mar-04	7.61	14.86		1018.74	1029.715	
26-Apr-04	7.61	14.83		1018.77	1030.150	
19-Jul-04	7.61	14.88		1018.73	1029.805	
26-Aug-04	7.61	14.78		1018.83	1029.930	
09-Sep-04	7.61	14.89		1018.71	1029.930	
22-Feb-05	7.61	14.84		1018.76	1030.176	
23-Feb-05	7.61	14.84		1018.76	1030.045	
24-Feb-05	7.61	14.85		1018.76	1029.854	
26-May-05	7.61	14.79		1018.81	1028.310	
14-Sep-05	7.61	15.12		1018.48	1027.540	
09-Mar-06	7.61	15.23		1018.38	1027.180	
14-Jun-06	7.61	15.14		1018.46	1027.522	
04-Oct-06	7.61	15.23		1018.38	1027.468	
09-May-07	7.61	14.86		1018.75	1029.295	

Table F-36: Cross Valley Dam
Piezometer CVDC-4

Date	Water Level from top of pipe (m)		Piezometric Elevation (m amsl)		Pond Elevation (m amsl)	Comments
	Shallow	Deep	Shallow	Deep		
24-Sep-07	7.61	15.21		1018.39	1027.755	
25-Sep-07	7.61	15.21		1018.39	1027.755	
09-Apr-08	7.61	14.79		1018.81	1030.211	
14-Apr-08	7.61	14.82		1018.78	1029.930	
21-Apr-08	7.61	14.85		1018.75	1029.625	
28-Apr-08	7.61	14.86		1018.74	1029.250	
05-May-08	7.61	14.86		1018.74	1029.433	
12-May-08	7.61	14.83		1018.77	1029.362	
20-May-08	7.61	14.83		1018.78	1029.340	
26-May-08	7.61	14.81		1018.79	1029.276	
24-Jun-08	7.61	14.85		1018.75	1028.638	
24-Sep-08	7.61	14.82		1018.79	1028.582	
31-Mar-09	7.61	14.76		1018.84	1029.596	
13-Apr-09	7.61	14.91		1018.70	1028.164	
16-Apr-09	7.61	14.95		1018.65	1027.744	
20-Apr-09	7.61	15.04		1018.57	1027.716	
23-Apr-09	7.61	15.15		1018.45	1027.487	
27-Apr-09	7.61	15.20		1018.40	1027.273	
30-Apr-09	7.61	15.23		1018.38	1027.159	
05-May-09	7.61	15.23		1018.38	1027.229	
19-May-09	7.61	15.03		1018.58	1027.831	
29-Jun-09	7.61	14.99		1018.61	1027.668	
15-Sep-09	7.61	14.92		1018.68	1028.360	
19-May-10	7.55	14.73		1018.88	1028.894	
03-Jun-10	7.67	14.73		1018.87	1028.542	shallow well dry
07-Sep-10	7.67	15.07		1018.53	1027.410	shallow well dry
27-Apr-11		15.00		1018.60	1028.349	
10-May-11	7.62	14.95		1018.65	1028.417	shallow well dry
17-May-11	7.61	14.94		1018.66	1028.126	shallow well dry
24-May-11	7.61	14.92		1018.68	1027.964	shallow well dry
30-May-11	7.60	14.94		1018.66	1027.767	shallow well dry
13-Jun-11	7.61	15.02		1018.58	1027.511	
03-Oct-11	7.60	15.03		1018.57	1027.022	

Table F-37: Cross Valley Dam
Piezometer CVDC-7

CVDC-7		Location:	Cross Valley Dam Crest St.0+450	2004 Ground Elevation (m amsl):	1033.24		
		Coordinates:	8V580158 6914127	2004 Shallow Tip Elevation (m amsl):	1007.80	2004 Shallow stick-up (m):	0.31
Surface Protector:	Yes	Date Installed:	1981	Deep Tip Elevation (m amsl):	1002.90	2004 Deep stick-up (m):	0.23

Date	Water Level from top of pipe (m)		Piezometric Elevation (m amsl)		Pond Elevation (m amsl)	Comments
	Shallow	Deep	Shallow	Deep		
Aug-82	17.58	14.44	1016.04	1019.09		
Dec-82	18.02	15.10	1015.60	1018.43		
Apr-83	17.83	15.24	1015.79	1018.29	1029.33	
Jun-83	18.06	14.88	1015.56	1018.65	1025.88	
Aug-83	18.30	16.24	1015.32	1017.29		
Oct-83	18.26	16.01	1015.36	1017.52		
Feb-84	18.24	15.92	1015.38	1017.61		
Mar-84					1030.60	
Apr-84	18.41	16.36	1015.21	1017.17		
Jun-84	18.22	16.06	1015.40	1017.47	1026.80	
Jun-85	17.87	16.06	1015.75	1017.47	1031.20	
Oct-85	18.20	15.55	1015.42	1017.98		
May-86	18.14	15.14	1015.48	1018.39	1030.70	
Oct-86	17.35	14.40	1016.27	1019.13	1030.90	
Oct-87	17.85	14.85	1015.77	1018.68		
Jun-88	17.90	15.10	1015.73	1018.59		
Sep-89	17.88	15.03	1015.75	1018.66		
Oct-90	17.68	15.03	1015.95	1018.66		
May-91	17.89	15.36	1015.74	1018.33		
Sep-91	17.81		1015.82			
Jun-92	17.37	14.48	1016.26	1019.21		
Sep-92	17.33	14.66	1016.30	1019.03		
May-94	17.99	15.50	1015.70	1018.16		
Sep-94	17.95	15.47	1015.74	1018.19		
Sep-95	17.81	15.08	1015.88	1018.58		
13-Sep-96	17.93	15.34	1015.76	1018.32	1029.915	
7-May-97	18.19	16.07	1015.50	1017.59		
20-Nov-97	17.91	15.29	1015.78	1018.37		
26-May-98	17.87	15.12	1015.82	1018.54	1031.2	
15-Nov-98	17.91	15.38	1015.78	1018.28	1029.8	
03-Jun-99	n.r.	15.10		1018.56	1031.4	
18-Sep-99	18.00	15.59	1015.69	1018.07	~1029.2	
08-Jun-00	17.85	15.08	1015.84	1018.58	~1030.2	
14-Aug-00	17.82	15.10	1015.87	1018.56		
31-Aug-00	17.80	15.16	1015.89	1018.50		
07-Sep-00	17.78	15.09	1015.91	1018.57		
14-Sep-00	17.78	15.80	1015.91	1017.86		
19-Sep-00	17.82	15.19	1015.87	1018.47		
21-Sep-00	17.82	15.16	1015.87	1018.50		
28-Sep-00	17.77	15.60	1015.92	1018.06		
06-Oct-00	17.71	14.96	1015.98	1018.70		
12-Oct-00	17.75	15.03	1015.94	1018.63		
20-Oct-00	17.76	15.00	1015.93	1018.66		
27-Oct-00	17.80	15.08	1015.89	1018.58		
10-Jun-01	17.97	15.39	1015.72	1018.27		
14-Sep-01	17.86	15.16	1015.83	1018.50		
16-Oct-01	17.95	15.43	1015.74	1018.23		
18-Oct-01	17.97	15.48	1015.72	1018.18		
19-Oct-01	17.98	15.49	1015.71	1018.17		
20-Oct-01	17.98	15.49	1015.71	1018.17		
21-Oct-01	17.98	15.49	1015.71	1018.17		
22-Oct-01	17.98	15.50	1015.71	1018.16		
25-Oct-01	17.99	15.51	1015.70	1018.15		
29-Oct-01	17.99	15.51	1015.70	1018.15		
01-Nov-01	17.99	15.50	1015.71	1018.17		
05-Nov-01	17.99	15.51	1015.70	1018.16		
06-Nov-01	17.99	15.51	1015.70	1018.16		
08-Nov-01	17.99	15.51	1015.70	1018.15		
12-Nov-01	18.00	15.51	1015.69	1018.15		
15-Nov-01	18.00	15.51	1015.69	1018.15		
19-Nov-01	18.00	15.51	1015.69	1018.15		
21-Nov-01	17.99	15.50	1015.70	1018.17		
23-Nov-01	17.99	15.50	1015.70	1018.17		pond elev approx - 8 ft.
26-Nov-01	18.00	15.50	1015.69	1018.17		daytime temp -34 C
28-Nov-01	18.00	15.50	1015.69	1018.16		

Denison Environmental Services

Table F-37: Cross Valley Dam
Piezometer CVDC-7

Date	Water Level from top of pipe (m)		Piezometric Elevation (m amsl)		Pond Elevation (m amsl)	Comments
	Shallow	Deep	Shallow	Deep		
30-Nov-01	18.01	15.50	1015.68	1018.16		
03-Dec-01	18.01	15.51	1015.68	1018.15		
05-Dec-01	18.01	15.52	1015.68	1018.14		
12-Dec-01	18.01	15.52	1015.68	1018.14		
14-Dec-01	18.01	15.50	1015.68	1018.16		
15-Dec-01	18.02	15.54	1015.67	1018.12		
16-Dec-01	18.03	15.58	1015.66	1018.08		
17-Dec-01	18.04	15.61	1015.65	1018.05		
18-Dec-01	18.05	15.63	1015.64	1018.03		
19-Dec-01	18.06	15.65	1015.63	1018.01		
26-Dec-01	18.07	15.66	1015.62	1018.00		
02-Jan-02	18.07	15.65	1015.62	1018.01		
09-Jan-02	18.08	15.66	1015.61	1018.00		
16-Jan-02	18.08	15.65	1015.61	1018.01		
23-Jan-02	18.07	15.63	1015.62	1018.03		
30-Jan-02	18.08	15.63	1015.61	1018.03		
06-Feb-02	18.08	15.62	1015.62	1018.04		
13-Feb-02	18.07	15.60	1015.62	1018.06		
20-Feb-02	18.08	15.60	1015.62	1018.06		
01-May-02	18.07	15.60	1015.62	1018.06		Water being discharged from the polishing pond
12-Jun-02	17.98	15.35	1015.72	1018.31		
17-Jul-02	17.85	15.23	1015.84	1018.44		
07-Aug-02	17.90	15.35	1015.79	1018.31		
09-Sep-02	17.82	15.17	1015.88	1018.49		
04-Nov-02	17.91	15.36	1015.78	1018.30		
10-Nov-02	17.91	15.36	1015.78	1018.31		
30-Jan-03	17.90	15.24	1015.80	1018.43		
09-Feb-03	17.90	15.25	1015.79	1018.42		start siphon
11-Feb-03	17.91	15.26	1015.79	1018.40		
13-Feb-03	17.91	15.28	1015.78	1018.38		
18-Feb-03	17.93	15.31	1015.77	1018.35		
21-Feb-03	17.93	15.32	1015.76	1018.34	1026.18	
23-Apr-03	17.98	15.37	1015.71	1018.29		
07-May-03	18.01	15.47	1015.68	1018.19		
16-May-03	18.01	15.46	1015.68	1018.21		
11-Jun-03	17.91	15.33	1015.78	1018.33		
15-Jul-03	17.84	15.21	1015.85	1018.46		
10-Sep-03	18.00	15.59	1015.55	1017.88		
04-Mar-04	17.97	15.39	1015.58	1018.08	1030.038	2004 Survey data used from here on
08-Mar-04	18.00	15.46	1015.55	1018.01	1029.715	
26-Apr-04	17.98	15.40	1015.57	1018.07	1030.150	
19-Jul-04	17.91	15.33	1015.64	1018.14	1029.805	
26-Aug-04	17.93	15.34	1015.62	1018.13	1029.930	
09-Sep-04	17.99	15.50	1015.56	1017.97	1029.930	
22-Feb-05	18.00	15.43	1015.55	1018.04	1030.176	
23-Feb-05	18.00	15.45	1015.55	1018.02	1030.045	smells like old oil
24-Feb-05	18.00	15.48	1015.55	1017.99	1029.854	
26-May-05	17.99	15.58	1015.56	1017.89	1028.310	milky on probe
14-Sep-05	18.25	16.04	1015.30	1017.43	1027.540	
09-Mar-06	18.41	16.30	1015.14	1017.17	1027.180	
14-Jun-06	18.26	16.03	1015.29	1017.44	1027.522	
04-Oct-06	18.27	16.10	1015.28	1017.37	1027.468	
09-May-07	18.20	15.80	1015.35	1017.67	1029.295	
24-Sep-07	18.19	15.97	1015.36	1017.50	1027.755	
09-Apr-08	18.11	15.55	1015.44	1017.92	1030.211	
14-Apr-08	18.11	15.61	1015.44	1017.86	1029.930	
21-Apr-08	18.12	15.70	1015.43	1017.77	1029.625	
28-Apr-08	18.13	15.76	1015.42	1017.71	1029.250	
05-May-08	18.14	15.72	1015.41	1017.75	1029.433	
12-May-08	18.14	15.71	1015.41	1017.76	1029.362	
20-May-08	18.14	15.75	1015.41	1017.72	1029.340	
26-May-08	18.15	15.76	1015.40	1017.71	1029.276	
24-Jun-08	18.03	15.60	1015.52	1017.87	1028.638	
24-Sep-08	18.00	15.65	1015.55	1017.82	1028.582	
31-Mar-09	18.12	15.70	1015.43	1017.77	1029.596	
13-Apr-09	18.16	16.00	1015.39	1017.47	1028.164	

Denison Environmental Services

Table F-37: Cross Valley Dam
Piezometer CVDC-7

Date	Water Level from top of pipe (m)		Piezometric Elevation (m amsl)		Pond Elevation (m amsl)	Comments
	Shallow	Deep	Shallow	Deep		
16-Apr-09	18.19	16.06	1015.36	1017.41	1027.744	
20-Apr-09	18.22	16.14	1015.33	1017.33	1027.716	
23-Apr-09	18.28	16.19	1015.27	1017.28	1027.487	
27-Apr-09	18.31	16.26	1015.24	1017.21	1027.273	
30-Apr-09	18.32	16.28	1015.23	1017.19	1027.159	
05-May-09	18.31	16.25	1015.24	1017.22	1027.229	
19-May-09	18.27	16.15	1015.28	1017.32	1027.831	
29-Jun-09	18.11	15.91	1015.44	1017.56	1027.668	
15-Sep-09	18.16	15.92	1015.39	1017.55	1028.360	
19-May-10	15.87	18.14	1017.68	1015.33	1028.894	
03-Jun-10	15.81	18.15	1017.74	1015.32	1028.542	
07-Sep-10	16.15	18.20	1017.40	1015.27	1027.410	
27-Apr-11	18.20	16.14	1015.35	1017.33	1028.349	
03-May-11	18.20	16.12	1015.35	1017.35	1028.413	
09-May-11	18.21	16.07	1015.34	1017.40	1028.417	
17-May-11	18.19	16.08	1015.36	1017.39	1028.126	
24-May-11	18.20	16.08	1015.35	1017.39	1027.964	
30-May-11	18.19	16.12	1015.36	1017.35	1027.767	
13-Jun-11	18.19	16.00	1015.36	1017.47	1027.511	Sulfur smell in shallow well.
03-Oct-11	18.19	16.14	1015.36	1017.33		

Table F-38: Cross Valley Dam
Piezometer CVDC-9

CVDC-9		Location:	Cross Valley Dam Crest St.0+565	2004 Ground Elevation (m amsl):	1033.28		
		Coordinates:	8V580096 6913998	2004 Shallow Tip Elevation (m amsl)	1007.70	2004 Shallow Stick-up (m):	0.27
Surface Protector:	Yes	Date Installed:	1981	2004 Deep Tip Elevation (m amsl):	1000.70	2004 Deep Stick-up (m):	0.19

Date	Water Level below top of pipe (m)	Water Level below top of pipe (m)	Piezometric Elevation (m amsl)		Pond Elevation (m amsl)	Comments
	Shallow	Deep	Shallow	Deep		
Aug-82	8.80	8.85	1024.74	1024.61		
Dec-82	11.04	9.00	1022.50	1024.46		
Apr-83	11.38	9.81	1022.16	1023.65	1029.33	
Jun-83	12.58	10.74	1020.96	1022.72	1025.88	
Aug-83	13.63	11.90	1019.91	1021.56		
Oct-83	13.36	11.13	1020.18	1022.33		
Feb-84	12.24	10.67	1021.30	1022.79		
Mar-84					1030.60	
Apr-84	12.87	11.65	1020.67	1021.81		
Jun-84	10.75	12.28	1022.79	1021.18	1026.80	
Aug-84	12.41	11.05	1021.13	1022.41		
Jun-85	10.80	8.98	1022.74	1024.48	1031.20	
Oct-85	11.45	8.25	1022.09	1025.21		
May-86	9.65	11.18	1023.89	1022.28	1030.70	
Oct-86	10.51	8.79	1023.03	1024.67	1030.90	
Oct-87	10.85	9.10	1022.69	1024.36		
Jun-88	9.74	9.42	1023.90	1024.11		
Sep-89	11.01	9.07	1022.63	1024.46		
Oct-90	10.54	8.83	1023.10	1024.70		
May-91	10.79	9.14	1022.85	1024.39		
Sep-91	10.56		1023.08			
Jun-92	9.79	7.92	1023.85	1025.61		
Sep-92	10.27	8.29	1023.37	1025.24		
May-94	11.68	9.49	1021.94	1024.06		
Sep-94	11.93	9.82	1021.69	1023.73		
Sep-95	11.42	8.86	1022.20	1024.69		
13-Sep-96	11.84	9.52	1021.78	1024.03	1029.915	
7-May-97	13.15	11.57	1020.48	1021.99		
20-Nov-97	11.74	9.58	1021.88	1023.97		
26-May-98	11.57	9.11	1022.05	1024.44	1031.2	
13-Nov-98	12.19	9.90	1021.43	1023.65	1029.8	
03-Jun-99	10.56	8.87	1023.06	1024.68	1031.4	
18-Sep-99	11.50	10.25	1022.12	1023.30	~1029.2	
08-Jun-00	11.60	8.90	1022.02	1024.65	~1030.2	
14-Aug-00	11.73	9.19	1021.89	1024.36		
31-Aug-00	11.77	9.30	1021.85	1024.25		
07-Sep-00	11.66	9.12	1021.96	1024.43		
14-Sep-00	11.65	9.30	1021.97	1024.25		
19-Sep-00	11.83	9.34	1021.79	1024.21		
21-Sep-00	11.78	9.28	1021.84	1024.27		
28-Sep-00	11.61	9.40	1022.01	1024.15		
06-Oct-00	11.46	8.89	1022.16	1024.66		
12-Oct-00	11.57	9.00	1022.05	1024.55		
20-Oct-00	11.53	8.91	1022.09	1024.64		
27-Oct-00	11.62	9.03	1022.00	1024.52		
10-Jun-01	12.09	9.63	1021.53	1023.92		
14-Sep-01	11.75	9.67	1021.87	1023.88		
16-Oct-01	12.24	10.20	1021.38	1023.35		
18-Oct-01	12.35	10.33	1021.27	1023.22		
19-Oct-01	12.37	10.36	1021.25	1023.19		
20-Oct-01	12.38	10.37	1021.24	1023.18		
21-Oct-01	12.39	10.38	1021.23	1023.17		
22-Oct-01	12.40	10.39	1021.22	1023.16		
25-Oct-01	12.42	10.39	1021.20	1023.16		
29-Oct-01	12.41	10.34	1021.22	1023.21		
01-Nov-01	12.40	10.32	1021.23	1023.24		
05-Nov-01	12.41	10.31	1021.21	1023.24		
06-Nov-01	12.41	10.31	1021.21	1023.24		
08-Nov-01	12.41	10.30	1021.21	1023.25		
12-Nov-01	12.42	10.30	1021.20	1023.26		
15-Nov-01	12.42	10.29	1021.20	1023.27		
19-Nov-01	12.39	10.22	1021.23	1023.33		
21-Nov-01	12.37	10.19	1021.25	1023.36		
23-Nov-01	12.37	10.17	1021.25	1023.38		pond elev approx - 8 ft.
26-Nov-01	12.37	10.17	1021.25	1023.38		daytime temp -34 C
28-Nov-01	12.38	10.16	1021.24	1023.39		
30-Nov-01	12.39	10.17	1021.24	1023.38		

Denison Environmental Services

Table F-38: Cross Valley Dam
Piezometer CVDC-9

CVDC-9		Location:	Cross Valley Dam Crest St.0+565	2004 Ground Elevation (m amsl):	1033.28		
		Coordinates:	8V580096 6913998	2004 Shallow Tip Elevation (m amsl)	1007.70	2004 Shallow Stick-up (m):	0.27
Surface Protector:	Yes	Date Installed:	1981	2004 Deep Tip Elevation (m amsl):	1000.70	2004 Deep Stick-up (m):	0.19

Date	Water Level below top of pipe (m)	Water Level below top of pipe (m)	Piezometric Elevation (m amsl)		Pond Elevation (m amsl)	Comments
	Shallow	Deep	Shallow	Deep		
03-Dec-01	12.40	10.19	1021.22	1023.36		
05-Dec-01	12.42	10.20	1021.20	1023.35		
12-Dec-01	12.44	10.20	1021.19	1023.35		
14-Dec-01	12.47	10.25	1021.15	1023.30		
15-Dec-01	12.52	10.31	1021.10	1023.24		
16-Dec-01	12.57	10.38	1021.05	1023.17		
17-Dec-01	12.62	10.43	1021.00	1023.12		
18-Dec-01	12.66	10.48	1020.96	1023.07		
19-Dec-01	12.68	10.51	1020.94	1023.04		
26-Dec-01	12.72	10.53	1020.90	1023.02		
02-Jan-02	12.70	10.49	1020.92	1023.06		
09-Jan-02	12.68	10.45	1020.94	1023.10		
16-Jan-02	12.65	10.41	1020.97	1023.14		
23-Jan-02	12.62	10.36	1021.00	1023.19		
30-Jan-02	12.60	10.33	1021.02	1023.22		
06-Feb-02	12.59	10.31	1021.04	1023.24		
13-Feb-02	12.55	10.26	1021.07	1023.29		
20-Feb-02	12.55	10.25	1021.07	1023.30		
01-May-02	12.55	10.27	1021.07	1023.28		
12-Jun-02	12.16	9.77	1021.47	1023.78		
17-Jul-02	11.91	9.47	1021.71	1024.09		
07-Aug-02	12.10	9.71	1021.52	1023.85		
09-Sep-02	11.75	9.24	1021.87	1024.31		
04-Nov-02	11.85	9.64	1021.77	1023.91		
10-Nov-02	11.86	9.67	1021.76	1023.89		
30-Jan-03	11.81	9.40	1021.82	1024.16		
09-Feb-03	11.84	9.42	1021.78	1024.13		start siphon
11-Feb-03	11.87	9.46	1021.75	1024.10		
13-Feb-03	11.91	9.50	1021.71	1024.05		
18-Feb-03	11.96	9.55	1021.66	1024.00		
21-Feb-03	11.97	9.56	1021.65	1023.99	1026.18	
23-Apr-03	12.06	9.57	1021.57	1023.99		
07-May-03	12.21	9.78	1021.41	1023.77		
16-May-03	12.18	9.70	1021.45	1023.85		
11-Jun-03	11.99	9.46	1021.63	1024.09		
15-Jul-03	11.74	9.13	1021.88	1024.42		
10-Sep-03	12.36	9.95	1021.27	1023.60		
04-Mar-04	12.01	9.52	1021.54	1023.95	1030.038	2004 Survey data used from here on
08-Mar-04	12.11	9.65	1021.44	1023.82	1029.715	
26-Apr-04	12.45	9.50	1021.10	1023.97	1030.150	
19-Jul-04	11.87	9.28	1021.68	1024.19	1029.805	
26-Aug-04	11.88	9.28	1021.67	1024.19	1029.930	
09-Sep-04	12.15	9.64	1021.40	1023.83	1029.930	
22-Feb-05	12.02	9.44	1021.53	1024.03	1030.176	
23-Feb-05	12.06	9.49	1021.49	1023.99	1030.045	
24-Feb-05	12.11	9.56	1021.44	1023.92	1029.854	
26-May-05	12.43	9.95	1021.12	1023.52	1028.310	
14-Sep-05	12.83	10.39	1020.72	1023.09	1027.540	
09-Mar-06	13.27	10.93	1020.28	1022.54	1027.180	
14-Jun-06	12.86	10.40	1020.69	1023.07	1027.522	
04-Oct-06	12.94	10.46	1020.62	1023.02	1027.468	
09-May-07	12.52	9.83	1021.03	1023.64	1029.295	
24-Sep-07	12.76	10.15	1020.79	1023.32	1027.755	
09-Apr-08	12.10	9.18	1021.45	1024.29	1030.211	
14-Apr-08	12.19	9.33	1021.36	1024.15	1029.930	
21-Apr-08	12.37	9.57	1021.18	1023.90	1029.625	
28-Apr-08	12.49	9.73	1021.06	1023.75	1029.250	
5-May-08	12.44	9.66	1021.11	1023.81	1029.433	
12-May-08	12.44	9.74	1021.12	1023.73	1029.362	
20-May-08	12.45	9.64	1021.11	1023.84	1029.340	
26-May-08	12.44	9.59	1021.11	1023.89	1029.276	
24-Jun-08	12.26	9.46	1021.29	1024.02	1028.638	
24-Sep-08	12.26	9.44	1021.29	1024.04	1028.582	
31-Mar-09	12.39	9.50	1021.17	1023.97	1029.596	
13-Apr-09	12.90	10.23	1020.65	1023.25	1028.164	
16-Apr-09	13.02	10.38	1020.54	1023.10	1027.744	

Table F-38: Cross Valley Dam
Piezometer CVDC-9

CVDC-9		Location:	Cross Valley Dam Crest St.0+565	2004 Ground Elevation (m amsl):	1033.28		
		Coordinates:	8V580096 6913998	2004 Shallow Tip Elevation (m amsl)	1007.70	2004 Shallow Stick-up (m):	0.27
Surface Protector:	Yes	Date Installed:	1981	2004 Deep Tip Elevation (m amsl):	1000.70	2004 Deep Stick-up (m):	0.19

Date	Water Level below top of pipe (m)	Water Level below top of pipe (m)	Piezometric Elevation (m amsl)		Pond Elevation (m amsl)	Comments
	Shallow	Deep	Shallow	Deep		
20-Apr-09	13.14	10.55	1020.42	1022.92	1027.716	
23-Apr-09	13.22	10.64	1020.33	1022.83	1027.487	
27-Apr-09	13.34	10.77	1020.22	1022.70	1027.273	
30-Apr-09	13.39	10.85	1020.16	1022.63	1027.159	
05-May-09	13.36	10.82	1020.19	1022.66	1027.229	
19-May-09	13.16	10.48	1020.39	1022.99	1027.831	
29-Jun-09	12.75	10.70	1020.81	1022.77	1027.668	
15-Sep-09	12.66	9.85	1020.89	1023.62	1028.360	
19-May-10	12.73	9.83	1020.82	1023.64	1028.894	
03-Jun-10	12.77	9.80	1020.78	1023.67	1028.542	
07-Sep-10	13.17	10.40	1020.39	1023.07	1027.410	
27-Apr-11	13.20	10.34	1020.35	1023.14	1028.349	
03-May-11	13.18	10.36	1020.37	1023.11	1028.413	
09-May-11	13.12	10.26	1020.43	1023.22	1028.417	
17-May-11	13.15	10.35	1020.40	1023.13	1028.126	
24-May-11	13.13	10.29	1020.42	1023.18	1027.964	
30-May-11	13.18	10.30	1020.37	1023.17	1027.767	
13-Jun-11	13.04	10.22	1020.52	1023.25	1027.511	
3-Oct-11	13.21	10.45	1020.34	1023.02	1027.022	

Table F-39: Cross Valley Dam
Piezometer CVDT-1

CVDT-1		Location:	Cross Valley Dam Toe, black PVC adj. to X11 channel	2004 Stick-up (m):	0.27
		Coordinates:	8V580219 6914353	2004 Ground Elevation (m amsl):	1018.30
Surface Protector:	N/A	Date Installed:	1994	2004 Tip Elevation (m amsl):	1007.90

Date	Water Level from top of pipe (m)	Piezometric Elevation (m amsl)	Pond Elevation (m amsl)	Comments
31-May-94	2.07	1017.13		
15-Sep-94	1.92	1017.28		
22-Sep-95	1.80	1017.40		
13-Sep-96	1.87	1017.33	1029.92	
20-Nov-97	1.78	1017.42		
26-May-98	1.62	1017.58	1031.20	
13-Nov-98	1.87	1017.33	1029.80	
03-Jun-99	0.87	1018.33	1031.40	
18-Sep-99	1.94	1017.26	~1029.20	
08-Jun-00	1.73	1017.47	~1030.20	
14-Aug-00	1.84	1017.36		
31-Aug-00	1.81	1017.39		
07-Sep-00	1.80	1017.40		
14-Sep-00	1.75	1017.45		
21-Sep-00	1.81	1017.39		
28-Sep-00	1.76	1017.44		
6-Oct-00	1.73	1017.47		
12-Oct-00	1.73	1017.47		
20-Oct-00	1.71	1017.49		
27-Oct-00	1.71	1017.49		
10-Jun-01	1.80	1017.40		
14-Sep-01	1.77	1017.43		
16-Oct-01	1.81	1017.39		
18-Oct-01	1.81	1017.39		
19-Oct-01	1.81	1017.39		
20-Oct-01	1.81	1017.39		
21-Oct-01	1.81	1017.39		
22-Oct-01	1.81	1017.39		
25-Oct-01	1.81	1017.39		
29-Oct-01	1.81	1017.39		
01-Nov-01	1.81	1017.39		
05-Nov-01	1.81	1017.39		
06-Nov-01	0.44	1017.39		Stick up changed
08-Nov-01	0.44	1017.39		
12-Nov-01	0.44	1017.39		
15-Nov-01	0.44	1017.39		
19-Nov-01	0.44	1017.39		
21-Nov-01	0.44	1017.39		
23-Nov-01	0.44	1017.39		pond elev approx - 8 ft.
26-Nov-01	0.44	1017.39		daytime temp -34 C
28-Nov-01	0.44	1017.39		
30-Nov-01	0.44	1017.39		
03-Dec-01	0.44	1017.39		
05-Dec-01	0.44	1017.39		
12-Dec-01	0.44	1017.39		
14-Dec-01	0.44	1017.39		
15-Dec-01	0.44	1017.39		
16-Dec-01	0.44	1017.39		
17-Dec-01	0.44	1017.39		
18-Dec-01	0.44	1017.39		
19-Dec-01	0.44	1017.39		
26-Dec-01	0.44	1017.39		
02-Jan-02	0.44	1017.39		
09-Jan-02	0.44	1017.39		
16-Jan-02	0.44	1017.39		

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Table F-39: Cross Valley Dam
Piezometer CVDT-1

Date	Water Level from top of pipe (m)	Piezometric Elevation (m amsl)	Pond Elevation (m amsl)	Comments
23-Jan-02	0.44	1017.39		
30-Jan-02	0.44	1017.39		
06-Feb-02	0.44	1017.39		
13-Feb-02	0.44	1017.39		
20-Feb-02	0.44	1017.39		
01-May-02	0.44	1017.39		
12-Jun-02	0.44	1017.40		
17-Jul-02	0.40	1017.44		
07-Aug-02	0.00			not read
09-Sep-02	0.37	1017.46		
04-Nov-02	0.40	1017.44		
10-Nov-02	0.40	1017.44		
30-Jan-03	0.42	1017.41		
09-Feb-03	0.42	1017.41	1058.60	start siphon
11-Feb-03	0.42	1017.41	1058.50	
13-Feb-03	0.42	1017.41	1058.50	
18-Feb-03	0.42	1017.41		
21-Feb-03	0.42	1017.41	1058.48	
23-Apr-03	0.41	1017.43	1030.14	
07-May-03	0.39	1017.44		
16-May-03	0.39	1017.45		
11-Jun-03	0.36	1017.48		
15-Jul-03	0.31	1017.53		
04-Sep-03	0.36	1017.47		
10-Sep-03	0.47	1017.37	996.28	
04-Mar-04	0.35	1018.23	1030.038	2004 survey data use from here on
08-Mar-04	0.00	1018.57	1029.715	Pulled ice and snow
26-Apr-04	0.32	1018.26	1030.150	
19-Jul-04	0.27	1018.30	1029.805	
26-Aug-04	0.26	1018.31	1029.930	
09-Sep-04	0.36	1018.21	1029.930	
22-Feb-05	0.37	1018.20	1030.176	Frozen
24-Feb-05	0.35	1018.22	1029.854	Frozen
26-May-05	0.29	1018.28	1028.310	
14-Sep-05	0.59	1017.99	1027.540	
09-Mar-06	0.54	1018.03	1027.180	no beep
14-Jun-06	0.60	1017.97	1027.522	
02-Oct-06	0.70	1017.87	1027.320	
09-May-07	0.33	1018.25	1029.295	
24-Sep-07	0.69	1017.89	1027.755	
25-Sep-07	0.32	1018.26	1027.755	
09-Apr-08	0.75	1017.82	1030.211	
14-Apr-08	0.75	1017.82	1029.930	
21-Apr-08	0.76	1017.82	1029.625	
28-Apr-08	0.76	1017.82	1029.250	
05-May-08	0.76	1017.82	1029.433	
12-May-08	0.76	1017.82	1029.362	
20-May-08	0.75	1017.82	1029.340	
26-May-08	0.75	1017.82	1029.276	
24-Jun-08	0.75	1017.82	1028.638	
24-Sep-08	0.72	1017.85	1028.582	
31-Mar-09	0.69	1017.89	1029.596	
13-Apr-09	0.73	1017.85	1028.164	
16-Apr-09	0.00	1018.57	1027.744	
20-Apr-09	0.76	1017.81	1027.716	
23-Apr-09	0.00	1018.57	1027.487	
27-Apr-09	0.79	1017.78	1027.273	
30-Apr-09	0.00	1018.57	1027.159	
05-May-09	0.78	1017.79	1027.229	
19-May-09	0.75	1017.83	1027.831	
29-Jun-09	0.70	1017.87	1027.668	
15-Sep-09	0.68	1017.89	1028.360	
19-May-10	0.64	1017.93	1028.894	

Table F-39: Cross Valley Dam
Piezometer CVDT-1

Date	Water Level from top of pipe (m)	Piezometric Elevation (m amsl)	Pond Elevation (m amsl)	Comments
03-Jun-10	0.65	1017.92	1028.542	
07-Sep-10	0.76	1017.82	1027.410	
10-May-11	0.75	1017.82	1028.417	
17-May-11	0.74	1017.83	1028.126	
24-May-11	0.74	1017.83	1027.964	
02-Jun-11	0.77	1017.80	1027.767	
13-Jun-11	0.79	1017.78	1027.511	
03-Oct-11	0.78	1017.80	1027.022	

Table F-40: Cross Valley Dam
Piezometer CVDT-2

CVDT-2		Location:	Cross Valley Dam Toe black PVC adj. to W3 channel	Stick up:	1.52m/ 0.38m
		Coordinates:	N/A	Ground Elevation (m amsl):	1019.50
Surface Protector:	N/A	Date Installed:	1994	Tip Elevation (m amsl):	1006.20

Date	Water level from top of pipe (m)	Piezometric Elevation (m amsl)	Pond Elevation (m amsl)	Comments
31-May-94	4.86	1016.16		
15-Sep-94	4.81	1016.21		
21-Sep-95	4.65	1016.37		
15-Oct-96	4.84	1016.18	1029.92	
20-Nov-97	4.78	1016.24		
26-May-98	4.73	1016.29	1031.20	
13-Nov-98	4.79	1016.23	1029.80	
03-Jun-99	4.78	1016.24	1031.40	
18-Sep-99	4.81	1016.21	~1029.2	
08-Jun-00	4.70	1016.32	~1030.2	
14-Aug-00	4.65	1016.37		
24-Aug-00	4.57	1016.45		
31-Aug-00	4.62	1016.40		
07-Sep-00	4.60	1016.42		
14-Sep-00	4.61	1016.41		
21-Sep-00	4.65	1016.37		
28-Sep-00	4.60	1016.42		
06-Oct-00	4.53	1016.49		
12-Oct-00	4.59	1016.43		
20-Oct-00	4.61	1016.41		
27-Oct-00	4.66	1016.36		
10-Jun-01	4.85	1016.17		
14-Sep-01	4.71	1016.31		
16-Oct-01	4.83	1016.19		
18-Oct-01	4.85	1016.17		
19-Oct-01	4.86	1016.16		
20-Oct-01	4.86	1016.16		
21-Oct-01	4.86	1016.16		
22-Oct-01	4.86	1016.16		
25-Oct-01	4.87	1016.15		
29-Oct-01	4.87	1016.15		
01-Nov-01	4.88	1016.15		
05-Nov-01	4.88	1016.14		
06-Nov-01	3.74	1016.14		New stick-up of 0.38 m
08-Nov-01	3.74	1016.14		
12-Nov-01	3.76	1016.12		
15-Nov-01	3.76	1016.12		
19-Nov-01	3.76	1016.13		
21-Nov-01	3.75	1016.13		
23-Nov-01	3.75	1016.13		pond elev approx - 8 ft.
26-Nov-01	3.75	1016.13		daytime temp -34 C
28-Nov-01	3.76	1016.12		
30-Nov-01	3.76	1016.12		
03-Dec-01	3.76	1016.12		
05-Dec-01	3.78	1016.11		
12-Dec-01	3.78	1016.11		
14-Dec-01	3.78	1016.11		
15-Dec-01	3.80	1016.08		
16-Dec-01	3.79	1016.09		
17-Dec-01	3.81	1016.07		
18-Dec-01	3.82	1016.07		
19-Dec-01	3.82	1016.06		
26-Dec-01	3.84	1016.04		
02-Jan-02	3.84	1016.04		
09-Jan-02	3.84	1016.05		

Table F-40: Cross Valley Dam
Piezometer CVDT-2

Date	Water level from top of pipe (m)	Piezometric Elevation (m amsl)	Pond Elevation (m amsl)	Comments
16-Jan-02	3.84	1016.04		
23-Jan-02	3.83	1016.05		
30-Jan-02	3.84	1016.04		
06-Feb-02	3.84	1016.04		
13-Feb-02	3.83	1016.05		
20-Feb-02	3.84	1016.04		
01-May-02	3.83	1016.05		
12-Jun-02	3.64	1016.24		
17-Jul-02	3.55	1016.34		
07-Aug-02	0.00			not read
09-Sep-02	3.52	1016.36		
04-Nov-02	3.67	1016.21		
10-Nov-02	3.68	1016.20		
30-Jan-03	3.66	1016.23		
09-Feb-03	3.66	1016.22	1058.60	start siphon
11-Feb-03	3.67	1016.22	1058.50	
13-Feb-03	3.68	1016.21	1058.50	
18-Feb-03	3.69	1016.19		
21-Feb-03	3.70	1016.19	1026.18	
23-Apr-03	3.76	1016.12	997.84	
07-May-03	3.78	1016.11		
16-May-03	3.78	1016.11		
11-Jun-03	3.64	1016.24		
15-Jul-03	3.57	1016.31		
10-Sep-03	3.76	1016.12		
04-Mar-04	3.90	1015.98	1030.038	
08-Mar-04	3.77	1016.11	1029.715	
26-Apr-04	3.75	1016.13	1030.150	
19-Jul-04	3.67	1016.22	1029.805	
26-Aug-04	3.66	1016.23	1029.930	
09-Sep-04	3.72	1016.16	1029.930	
22-Feb-05	3.74	1016.15	1030.176	
24-Feb-05	3.75	1016.14	1029.854	
26-May-05	3.71	1016.17	1028.310	
14-Sep-05	3.99	1015.89	1027.540	
09-Mar-06	4.17	1015.33	1027.180	
14-Jun-06	3.97	1015.54	1027.522	
02-Oct-06	3.99	1015.51	1027.320	
09-May-07	3.95	1015.56	1029.295	
24-Sep-07	3.91	1015.60	1027.755	
09-Apr-08	3.82	1015.68	1030.211	
14-Apr-08	3.84	1015.66	1029.930	
21-Apr-08	3.88	1015.63	1029.625	
28-Apr-08	3.89	1015.61	1029.250	
05-May-08	3.87	1015.63	1029.433	
12-May-08	3.85	1015.65	1029.362	
20-May-08	3.88	1015.62	1029.340	
26-May-08	3.88	1015.62	1029.276	
24-Jun-08	3.68	1015.82	1028.638	
24-Sep-08	3.70	1015.81	1028.582	
31-Mar-09	3.84	1015.66	1029.596	
13-Apr-09	3.85	1015.65	1028.164	
16-Apr-09	0.00	1019.50	1027.744	
20-Apr-09	4.01	1015.49	1027.716	
23-Apr-09	0.00	1019.50	1027.487	
27-Apr-09	4.07	1015.43	1027.273	
30-Apr-09	0.00	1019.50	1027.159	
05-May-09	4.05	1015.45	1027.229	
19-May-09	4.03	1015.47	1027.831	
29-Jun-09	3.81	1015.69	1027.668	
09-Aug-09	3.88	1015.63	1027.966	
19-May-10	3.91	1015.59	1028.894	

Table F-40: Cross Valley Dam
Piezometer CVDT-2

Date	Water level from top of pipe (m)	Piezometric Elevation (m amsl)	Pond Elevation (m amsl)	Comments
03-Jun-10	3.82	1015.68	1028.542	
07-Sep-10	3.96	1015.54	1027.410	
10-May-11	3.963	1015.537	1028.417	
17-May-11	3.964	1015.536	1028.126	
24-May-11	3.964	1015.536	1027.964	
02-Jun-11	4.011	1015.489	1027.767	
13-Jun-11	3.836	1015.664	1027.511	
03-Oct-11	3.9	1015.6	1027.022	

Denison Environmental Services

Table F-41: Cross Valley Dam
Piezometer CVDP-1

CVDP-1		Location:	20m u/s of CL, Stn.0+450		
		Coordinates:	8V580128 6914135	2004 Ground Elevation (m amsl):	1016.86
Surface Protector:	Yes	Date Installed:	1982	Tip Elevation (m amsl):	1014.51

Date	Reading (psi)	Piezometric Elevation (m amsl)	Pond Elevation (m amsl)	Comments
Aug-82	6.60	1019.13		
Dec-82	6.26	1018.89		
Apr-83	5.80	1018.57	1029.33	
Jun-83	4.80	1017.87	1025.88	
Aug-83	4.10	1017.38		
Dec-83	4.50	1017.66		
Mar-84	4.40	1017.59	1029.71	
Jun-84	4.50	1017.66	1026.80	
Oct-84	4.40	1017.59		
May-86	6.70	1019.20	1030.70	
Oct-86	6.90	1019.34	1030.90	
Oct-88	6.10	1018.78		
Sep-89	6.20	1018.85		
Oct-90	6.10	1018.78		
May-91	6.00	1018.71		
Sep-91	6.30	1018.92		
Sep-92	7.20	1019.55		
May-94	6.50	1019.06		
Sep-94	6.00	1018.71		
Sep-95	6.50	1019.06		
Sep-96	6.60	1019.13	1029.92	
06-May-97	5.30	1018.22		
21-Nov-97	6.50	1019.06		
27-May-98	6.70	1019.20	1031.20	
12-Nov-98				no air bubbles returned
04-Dec-98	6.00	1018.71	1029.80	
16-Dec-98			1029.80	black tube broken at connector
11-Jun-03	6.10	1018.78		new piezometer
15-Jul-03	6.20	1018.85		
10-Sep-03	5.70	1018.50		
04-Mar-04	6.20	1018.85	1030.038	2004 Survey data used from here on
08-Mar-04	5.90	1018.64	1029.715	
26-Apr-04	6.00	1018.71	1030.150	
26-Aug-04	6.20	1018.85	1029.930	
09-Sep-04	6.00	1018.71	1029.930	
22-Feb-05	6.10	1018.78	1030.176	
24-Feb-05	3.50		1029.854	
26-May-05	5.80	1018.57	1028.310	
14-Sep-05	5.20	1018.15	1027.540	
09-Mar-06	4.80	1017.87	1027.180	
14-Jun-06	5.10	1018.08	1027.522	
02-Oct-06	5.10	1018.08	1027.320	
09-May-07	5.60	1018.43	1029.295	Good return
24-Sep-07	4.30	1017.52	1027.755	
09-Apr-08	6.00	1018.71	1030.211	
14-Apr-08	5.90	1018.64	1029.930	
21-Apr-08	5.70	1018.50	1029.625	
28-Apr-08	5.70	1018.50	1029.250	
05-May-08	5.80	1018.57	1029.433	
12-May-08	5.70	1018.50	1029.362	
20-May-08	5.60	1018.43	1029.340	
26-May-08	5.70	1018.50	1029.276	
24-Jun-08	5.70	1018.50	1028.638	
24-Sep-08	5.80	1018.57	1028.582	
31-Mar-09	5.80	1018.57	1029.596	

Table F-41: Cross Valley Dam
Piezometer CVDP-1

Date	Reading (psi)	Piezometric Elevation (m amsl)	Pond Elevation (m amsl)	Comments
13-Apr-09	5.30	1018.22	1028.164	
16-Apr-09			1027.744	
20-Apr-09	5.20	1018.15	1027.716	
23-Apr-09			1027.487	
27-Apr-09	5.00	1018.01	1027.273	
30-Apr-09			1027.159	
05-May-09	5.00	1018.01	1027.229	
19-May-09	5.10	1018.08	1027.831	
29-Jun-09	5.20	1018.15	1027.668	
15-Sep-09	5.70	1018.50	1028.360	
19-May-10	5.50	1018.36	1028.894	
03-Jun-10	7.60	1019.83	1028.542	
07-Sep-10	5.00	1018.01	1027.410	
27-Apr-11	5.20	1018.15	1028.349	
03-May-11	5.20	1018.15	1028.413	
09-May-11	5.30	1018.22	1028.417	
17-May-11	5.20	1018.15	1028.126	
24-May-11	5.10	1018.08	1027.964	
30-May-11	5.10	1018.08	1027.767	
13-Jun-11	5.20	1018.15	1027.511	
03-Oct-11	5.00	1018.01	1027.022	

Table F-42: Cross Valley Dam
Piezometer CVDP-2

CVDP-2		Location:	Cross Valley Dam St.0+450 5m u/s of CL.		
		Coordinates:	8V580128 6914135	Ground Elevation (m amsl):	1016.86
Surface Protector:	Yes	Date Installed:	1982	Tip Elevation (m amsl):	1014.51

Date	Reading (psi)	Piezometric Elevation (m amsl)	Pond Elevation (m amsl)	Comments
Aug-82	6.90	1019.37		
Dec-82	6.50	1019.09		
Apr-83	5.90	1018.67	1029.33	
Jun-83	5.30	1018.25	1025.88	
Aug-83	4.80	1017.90		
Dec-83	5.00	1018.04		
Mar-84			1029.71	
Jun-84	5.00	1018.04	1026.80	
Oct-84	5.10	1018.11		
May-86	6.30	1018.95	1030.70	
Oct-86	7.00	1019.44	1030.90	
Oct-88	6.50	1019.09		
Sep-89	6.40	1019.02		
Oct-90	5.40	1018.32		
May-91	3.00	1016.64		
Sep-91	5.10	1018.11		
Sep-92	6.60	1019.16		
May-94	5.50	1018.39		
Sep-94	5.00	1018.04		
Sep-95	5.50	1018.39		
Sep-96	5.30	1018.25	1029.92	
6-May-97	4.30	1017.55		
21-Nov-97		1017.55		Broken
10-Sep-03	16.90			Broken
4-Mar-04				Frozen
8-Mar-04	19.20			Broken
26-Aug-04	2.70	1016.40		Broken
9-Sep-04	2.80	1016.47		Broken
22-Feb-05	11.50			no bubbles, keeps rising
24-Feb-05	16.00			no bubbles, keeps rising
26-May-05	2.70	1016.40		
14-Sep-05	1.60	1015.63		
09-Mar-06	0.90	1015.14		
14-Jun-06	1.20	1015.35		
02-Oct-06	1.30	1015.42	1027.47	
09-May-07	1.60	1015.63	1029.30	Good Return
24-Sep-07	1.30	1015.42	1030.30	
09-Apr-08				stopped at 13.1 psi, no bubbles
14-Apr-08				not working
31-Mar-09	1.80	1015.77	1029.60	
13-Apr-09	1.40	1015.49	1028.16	
16-Apr-09			1027.74	
20-Apr-09	20.30		1027.72	likely erroneous reading (LNW)
23-Apr-09			1027.49	
27-Apr-09	n/r		1027.27	
30-Apr-09			1027.16	
05-May-09	1.00	1015.21	1027.23	
19-May-09	1.00	1015.21	1027.83	
29-Jun-09	0.80	1015.07	1027.67	
15-Sep-09	1.20	1015.35	1028.36	
19-May-10	1.20	1015.35	1029.05	
03-Jun-10	5.70	1018.50	1029.74	
07-Sep-10	0.80	1015.07	1030.44	
03-Oct-11	1.20	1015.35		

Table F-43: Cross Valley Dam
Piezometer CVDP-3

CVDP-3		**Location:**	Cross Valley Dam St.0+450 7m d/s of CL.		
		Coordinates:	8V580128 6914135	**2004 Ground Elevation (m amsl):**	1016.86
Surface Protector:	Yes	**Date Installed:**	1982	**Tip Elevation (m amsl):**	1014.71

Date	Reading (psi)	Piezometric Elevation 2004 (m amsl)	Pond Elevation (m amsl)	Comments
Aug-82	3.70	1017.30		
Dec-82	3.60	1017.23		
Apr-83	3.40	1017.09	1029.33	
Jun-83	2.80	1016.67	1025.88	
Aug-83	2.40	1016.39		
Dec-83	2.40	1016.39		
Mar-84	2.70	1016.60	1029.71	
Jun-84	2.30	1016.32	1026.80	
Oct-84	2.40	1016.39		
May-86	4.00	1017.51	1030.70	
Oct-86	4.00	1017.51	1030.90	
Oct-87	3.80	1017.37		
Oct-88	3.50	1017.16		
Sep-89	3.30	1017.02		
Oct-90	3.20	1016.95		
May-91	4.80	1018.07		
Sep-91	3.30	1017.02		
Sep-92	0.40			likely erroneous reading
May-94	3.00	1016.81		
Sep-94	3.30	1017.02		
Sep-95	3.00	1016.81		
Sep-96	3.25	1016.99	1029.92	
06-May-97	3.10	1016.88		
21-Nov-97	3.48	1017.15		
27-May-98	3.44	1017.12	1031.20	
12-Nov-98	n.r.			no air bubbles returned
4-Dec-98	n.r.			no air bubbles returned
3-Jun-99	3.22	1016.96		
18-Sep-99	3.10	1016.88	1029.20	very slow
14-Jun-00	3.31	1017.03	1030.20	
14-Aug-00	3.40	1017.09		
31-Aug-00	3.40	1017.09		
07-Sep-00	3.40	1017.09		
14-Sep-00	3.50	1017.16		
21-Sep-00	3.50	1017.16		
28-Sep-00	3.50	1017.16		
06-Oct-00	3.60	1017.23		
12-Oct-00	3.60	1017.23		
20-Oct-00	3.50	1017.16		
27-Oct-00	3.50	1017.16		
10-Jun-01	3.20	1016.95		
14-Sep-01	3.40	1017.09		
16-Oct-01	3.20	1016.95		
18-Oct-01	3.20	1016.95		
19-Oct-01	3.20	1016.95		
20-Oct-01	3.22	1016.96		
21-Oct-01	3.21	1016.96		
22-Oct-01	3.20	1016.95		
25-Oct-01	3.20	1016.95		
29-Oct-01	3.10	1016.88		
01-Nov-01	3.20	1016.95		
05-Nov-01	3.10	1016.88		
06-Nov-01	3.10	1016.88		
08-Nov-01	3.20	1016.95		

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Table F-43: Cross Valley Dam
Piezometer CVDP-3

Date	Reading (psi)	Piezometric Elevation 2004 (m amsl)	Pond Elevation (m amsl)	Comments
12-Nov-01	3.20	1016.95		
15-Nov-01	3.20	1016.95		
19-Nov-01	3.20	1016.95		
21-Nov-01	3.20	1016.95		
23-Nov-01	3.20	1016.95		pond elev approx - 8 ft.
26-Nov-01	3.20	1016.95		daytime temp -34 C
28-Nov-01				not read, low pressure in box
30-Nov-01				instrument broken Nov 01 to Feb 02
01-May-02	3.20	1016.95		instrument fixed
12-Jun-02	3.30	1017.02		
17-Jul-02	3.30	1017.02		
07-Aug-02				not read
09-Sep-02	3.40	1017.09		
04-Nov-02	3.30	1017.02		
10-Nov-02	3.20	1016.95		
30-Jan-03	3.30	1017.02		
09-Feb-03	3.30	1017.02		start siphon
11-Feb-03	3.30	1017.02		
13-Feb-03	3.30	1017.02		
18-Feb-03	3.20	1016.95		
21-Feb-03	3.20	1016.95	1026.18	
23-Apr-03	3.20	1016.95		
07-May-03	3.10	1016.88		
16-May-03	3.10	1016.88		
11-Jun-03	3.10	1016.88		*new piezometer readout
15-Jul-03	3.20	1016.95		
10-Sep-03	2.90	1016.74		
04-Mar-04	3.10	1016.88	1030.038	2004 Survey data used from here on
08-Mar-04	3.00	1016.81	1029.715	
26-Apr-04	3.00	1016.81	1030.150	
19-Jul-04	3.10	1016.88	1029.805	
26-Aug-04	3.10	1016.88	1029.930	
09-Sep-04	3.10	1016.88	1029.930	
22-Feb-05	14.00		1030.176	no bubbles, keeps rising
24-Feb-05	16.00		1029.854	no bubbles, keeps rising
26-May-05	2.70	1016.60	1028.310	
14-Sep-05	2.30	1016.32	1027.540	
09-Mar-06	2.20	1016.25	1027.180	
14-Jun-06	2.30	1016.32	1027.522	
02-Oct-06	2.30	1016.32	1027.320	
09-May-07	2.40	1016.39	1029.295	Good Return
24-Sep-07	2.00	1016.11	1027.755	
09-Apr-08	2.70	1016.60	1030.211	
14-Apr-08	2.70	1016.60	1029.930	
21-Apr-08	2.60	1016.53	1029.625	
28-Apr-08	2.60	1016.53	1029.250	
05-May-08	2.60	1016.53	1029.433	
12-May-08	2.70	1016.60	1029.362	
20-May-08	2.60	1016.53	1029.340	
26-May-08	2.60	1016.53	1029.276	
24-Jun-08	2.70	1016.60	1028.638	
24-Sep-08	2.80	1016.67	1028.582	
31-Mar-09	20.20		1029.596	likely erroneous reading (LNW)
13-Apr-09	20.60		1028.164	likely erroneous reading (LNW)
16-Apr-09			1027.744	
20-Apr-09	20.20		1027.716	likely erroneous reading (LNW)
23-Apr-09			1027.487	
27-Apr-09	n/r		1027.273	
30-Apr-09			1027.159	
05-May-09	2.20	1016.25	1027.229	
19-May-09	2.30	1016.32	1027.831	
29-Jun-09	2.30	1016.32	1027.668	
15-Sep-09	n/r		1028.360	no bubbles

Table F-43: Cross Valley Dam
Piezometer CVDP-3

Date	Reading (psi)	Piezometric Elevation 2004 (m amsl)	Pond Elevation (m amsl)	Comments
19-May-10	2.40	1016.39	1028.894	
03-Jun-10	4.20	1017.65	1028.542	
07-Sep-10	2.40	1016.39	1027.410	
27-Apr-11	2.40	1016.39	1028.349	
03-May-11	2.30	1016.32	1028.413	
09-May-11	2.30	1016.32	1028.417	
17-May-11	2.10	1016.18	1028.126	
24-May-11	2.00	1016.11	1027.964	
30-May-11	2.10	1016.18	1027.767	
13-Jun-11	2.40	1016.39	1027.511	
03-Oct-11				wire cracked, no reading taken.

Table F-44: Cross Valley Dam
Piezometer CVDP-5

CVDP-5		Location:	Cross Valley Dam St.0+210 9m u/s of CL.		
		Coordinates:	8V580239 6914346	2004 Ground Elevation (m amsl):	1019.18
Surface Protector:	Yes	Date Installed:	1982	Tip Elevation (m amsl):	1014.28

Date	Reading (psi)	Piezometric Elevation (m amsl)	Pond Elevation (m amsl)	Comments
Aug-82	8.20	1020.02		
Dec-82	8.50	1020.23		
Apr-83	7.60	1019.60	1029.33	
Jun-83	6.50	1018.83	1025.88	
Aug-83	5.50	1018.13		
Dec-83	5.80	1018.34		
Mar-84	5.80	1018.34	1029.71	
Jun-84	5.80	1018.34	1026.80	
May-86			1030.70	
Oct-86			1030.90	
Sep-92	9.90	1021.21		
May-94	9.70	1021.07		
Sep-94	9.20	1020.72		
Sep-95	9.50	1020.93		
Sep-96	9.45	1020.90	1029.92	
06-May-97	8.10	1019.95		
21-Nov-97	9.33	1020.81		
27-May-98	9.60	1021.00		
12-Nov-98				black air tube broken at connector
10-Sep-03	8.50	1020.23		
04-Mar-04	9.20	1020.72	1030.038	2004 Survey data used from here on
08-Mar-04	9.00	1020.58	1029.715	
26-Apr-04	9.10	1020.65	1030.150	
26-Aug-04	9.20	1020.72	1029.930	
09-Sep-04	8.90	1020.51	1029.930	
22-Feb-05	9.10	1020.65	1030.176	
24-Feb-05	8.70	1020.37	1029.854	
26-May-05	9.70	1021.07	1028.310	
14-Sep-05	8.20	1020.02	1027.540	
09-Mar-06	8.00	1019.88	1027.180	
14-Jun-06	8.40	1020.16	1027.522	
02-Oct-06	8.10	1019.95	1027.320	
09-May-07	9.20	1020.72	1029.295	Good Return
24-Sep-07	7.50	1019.53	1027.755	
09-Apr-08	9.50	1020.93	1030.211	
14-Apr-08	9.40	1020.86	1029.930	
21-Apr-08	9.30	1020.79	1029.625	
28-Apr-08	9.10	1020.65	1029.250	
05-May-08	9.20	1020.72	1029.433	
12-May-08	9.20	1020.72	1029.362	
20-May-08	9.20	1020.72	1029.340	
26-May-08	9.20	1020.72	1029.276	
24-Jun-08	9.00	1020.58	1028.638	
24-Sep-08	9.00	1020.58	1028.582	
31-Mar-09	9.50	1020.93	1029.596	
13-Apr-09	8.90	1020.51	1028.164	
16-Apr-09			1027.744	
20-Apr-09	8.30	1020.09	1027.716	
23-Apr-09			1027.487	
27-Apr-09	8.10	1019.95	1027.273	
30-Apr-09			1027.159	
05-May-09	8.10	1019.95	1027.229	
19-May-09	8.50	1020.23	1027.831	
29-Jun-09	8.40	1020.16	1027.668	
15-Sep-09	9.10	1020.65	1028.360	
19-May-10	9.60	1021.00	1028.894	

Table F-44: Cross Valley Dam
Piezometer CVDP-5

Date	Reading (psi)	Piezometric Elevation (m amsl)	Pond Elevation (m amsl)	Comments
03-Jun-10	11.10	1022.05	1028.542	
07-Sep-10	8.20	1020.02	1027.410	
09-May-11	8.60	1020.30	1028.417	
17-May-11	8.40	1020.16	1028.126	
24-May-11	8.50	1020.23	1027.964	
30-May-11	8.40	1020.16	1027.767	
13-Jun-11	8.40	1020.16	1027.511	
03-Oct-11	8.30	1020.09	1027.022	

Table F-45: Cross Valley Dam
Piezometer CVDP-6

CVDP-6		Location:	Cross Valley Dam St.0+210 5m d/s of CL.		
		Coordinates:	8V580239 6914346	2004 Ground Elevation (m amsl):	1019.18
Surface Protector:	Yes	Date Installed:	1982	Tip Elevation (m amsl):	1014.37

Date	Reading (psi)	Piezometric Elevation 2004 (m amsl)	Pond Elevation (m amsl)	Comments
Aug-82	5.60	1018.29		
Dec-82	5.50	1018.22		
Apr-83	5.00	1017.87	1029.33	
Jun-83	5.70	1018.36	1025.88	
Aug-83	3.90	1017.10		
Dec-83	4.10	1017.24		
Mar-84	4.20	1017.31	1029.71	
Jun-84	4.10	1017.24	1026.80	
Oct-84	4.20	1017.31		
May-86	5.80	1018.43	1030.70	
Oct-86	6.00	1018.57	1030.90	
Oct-87	5.40	1018.15		
Oct-88	4.70	1017.66		
Sep-89	5.00	1017.87		
Oct-90	5.50	1018.22		
Sep-92	6.60	1018.99		
May-94	6.10	1018.64		
Sep-94	5.20	1018.01		
Sep-95	5.50	1018.22		
Sep-96	6.25	1018.75	1029.92	
06-May-97	5.40	1018.15		
21-Nov-97	4.45	1017.49		
27-May-98	3.74	1016.99	1031.20	
12-Nov-98	4.50	1017.52	1029.80	
03-Jun-99	4.90	1017.80	1031.40	
18-Sep-99	4.50	1017.52		
14-Jun-00	4.80	1017.73	1030.20	
14-Aug-00	4.80	1017.73		
31-Aug-00	5.00	1017.87		return bubbles "sputtering"
07-Sep-00	5.00	1017.87		
14-Sep-00	5.00	1017.87		
21-Sep-00	4.70	1017.66		
28-Sep-00	4.90	1017.80		
06-Oct-00	5.00	1017.87		
12-Oct-00	4.90	1017.80		
20-Oct-00	5.20	1018.01		
27-Oct-00	5.10	1017.94		
10-Jun-01	4.90	1017.80		
14-Sep-01	4.90	1017.80		
16-Oct-01	4.80	1017.73		
18-Oct-01	4.72	1017.67		
19-Oct-01	4.70	1017.66		
20-Oct-01	4.70	1017.66		
21-Oct-01	4.70	1017.66		
22-Oct-01	4.70	1017.66		
25-Oct-01	4.70	1017.66		
29-Oct-01	4.70	1017.66		
01-Nov-01	4.70	1017.66		
05-Nov-01	4.60	1017.59		
06-Nov-01	4.60	1017.59		
08-Nov-01	4.70	1017.66		
12-Nov-01	4.70	1017.66		
15-Nov-01	4.70	1017.66		
19-Nov-01	4.80	1017.73		
21-Nov-01	4.70	1017.66		

Table F-45: Cross Valley Dam
Piezometer CVDP-6

Date	Reading (psi)	Piezometric Elevation 2004 (m amsl)	Pond Elevation (m amsl)	Comments
23-Nov-01	4.70	1017.66		pond elev approx - 8 ft.
26-Nov-01	-			not read
28-Nov-01	-			not read, low pressure in box
30-Nov-01	4.90	1017.80		
03-Dec-01	4.70	1017.66		
05-Dec-01	4.70	1017.66		
12-Dec-01	4.70	1017.66		
14-Dec-01	4.80	1017.73		
15-Dec-01	4.40	1017.45		
16-Dec-01	4.80	1017.73		
17-Dec-01	4.80	1017.73		
18-Dec-01	4.50	1017.52		
19-Dec-01	4.80	1017.73		
26-Dec-01	4.60	1017.59		
02-Jan-02	4.80	1017.73		
09-Jan-02	4.60	1017.59		
16-Jan-02	4.60	1017.59		
23-Jan-02	4.80	1017.73		
30-Jan-02	4.80	1017.73		
06-Feb-02	4.80	1017.73		
13-Feb-02	4.80	1017.73		
20-Feb-02	4.80	1017.73		
01-May-02	5.20	1018.01		
12-Jun-02	5.00	1017.87		
17-Jul-02	4.90	1017.80		
07-Aug-02				not read
09-Sep-02	5.10	1017.94		
04-Nov-02	5.20	1018.01		
10-Nov-02	5.10	1017.94		
30-Jan-03	5.30	1018.08		
09-Feb-03	5.20	1018.01		start siphon
11-Feb-03	5.20	1018.01		
13-Feb-03	5.00	1017.87		
18-Feb-03				*Piezometer tip broken (-35 oC)
21-Feb-03			1026.18	
23-Apr-03				
07-May-03				
16-May-03	4.80	1017.73		*piezometer tip repaired
11-Jun-03	4.70	1017.66		*new piezometer readout
15-Jul-03	4.80	1017.73		
10-Sep-03	4.70	1017.66		
04-Mar-04	5.00	1017.87	1030.038	2004 Survey data used from here on
08-Mar-04	4.80	1017.73	1029.715	
26-Apr-04	4.80	1017.73	1030.150	
19-Jul-04	4.80	1017.73	1029.805	
26-Aug-04	4.90	1017.80	1029.930	
09-Sep-04	4.80	1017.73	1029.930	
22-Feb-05	4.80	1017.73	1030.176	
24-Feb-05	4.60	1017.59	1029.854	
24-Feb-05	4.60	1017.59	1029.854	
26-May-05	4.80	1017.73	1028.310	
14-Sep-05	4.50	1017.52	1027.540	
09-Mar-06	4.50	1017.52	1027.180	
14-Jun-06	4.40	1017.45	1027.522	
02-Oct-06	4.30	1017.38	1027.320	
09-May-07	4.80	1017.73	1029.295	Good Return
24-Sep-07	4.30	1017.38	1027.755	
09-Apr-08	4.90	1017.80	1030.211	
14-Apr-08	5.10	1017.94	1029.930	
21-Apr-08	5.10	1017.94	1029.625	
28-Apr-08	4.90	1017.80	1029.250	
05-May-08	5.00	1017.87	1029.433	

Table F-45: Cross Valley Dam
Piezometer CVDP-6

Date	Reading (psi)	Piezometric Elevation 2004 (m amsl)	Pond Elevation (m amsl)	Comments
12-May-08	5.10	1017.94	1029.362	
20-May-08	5.00	1017.87	1029.340	
26-May-08	5.00	1017.87	1029.276	
24-Jun-08	4.90	1017.80	1028.638	
24-Sep-08	5.10	1017.94	1028.582	
31-Mar-09	5.10	1017.94	1029.596	
13-Apr-09	4.80	1017.73	1028.164	
16-Apr-09			1027.744	
20-Apr-09	4.80	1017.73	1027.716	
23-Apr-09			1027.487	
27-Apr-09	4.50	1017.52	1027.273	
30-Apr-09			1027.159	
05-May-09	4.60	1017.59	1027.229	
19-May-09	4.70	1017.66	1027.831	
29-Jun-09	4.60	1017.59	1027.668	
15-Sep-09	4.90	1017.80	1028.360	
19-May-10	5.20	1018.01	1028.894	
03-Jun-10	7.40	1019.55	1028.542	
07-Sep-10	4.60	1017.59	1027.410	
09-May-11	4.80	1017.73	1028.417	
17-May-11	4.70	1017.66	1028.126	
24-May-11	4.80	1017.73	1027.964	
30-May-11	4.60	1017.59	1027.767	
13-Jun-11	4.80	1017.73	1027.511	
03-Oct-11	4.80	1017.73	1027.022	

Table F-46: Cross Valley Dam
Piezometer 94 CVDC-1

94 CVDC-1		Location:	Cross Valley Dam Crest Stn. 0+215	2004 Stick-up (m):	0.64
		Coordinates:	8V580263 6914326	2004 Ground Elevation (m amsl):	1033.38
Surface Protector:	Yes	Date Installed:	1994	2004 Tip Elevation (m amsl):	1020.4

Date	Water Level from top of pipe (m)	Piezometric Elevation (m amsl)	Pond Elevation (m amsl)	Comments
May-94	9.90	1024.00		
Sep-94	9.57	1024.33		
Sep-95	9.32	1024.58		
Sep-96	10.04	1023.86	1029.92	
7-May-97	11.00	1022.91		
20-Nov-97	10.07	1023.83		
26-May-98	9.84	1024.06	1031.20	
13-Nov-98	10.16	1023.74	1029.80	
03-Jun-99	9.65	1024.25	1031.40	
18-Sep-99	10.69	1023.21	~1029.2	
08-Jun-00	9.84	1024.06	~1030.2	
14-Aug-00	10.10	1023.80		
31-Aug-00	10.38	1023.52		
07-Sep-00	10.38	1023.52		
14-Sep-00	10.10	1023.80		
21-Sep-00	13.61			frozen?
28-Sep-00	10.30	1023.60		
06-Oct-00	9.99	1023.91		
12-Oct-00	10.06	1023.84		
20-Oct-00	9.87	1024.03		
27-Oct-00	9.91	1023.99		
10-Jun-01	10.28	1023.62		
14-Sep-01	10.08	1023.82		
16-Oct-01	10.39	1023.51		
18-Oct-01	10.51	1023.39		
19-Oct-01	10.53	1023.37		
20-Oct-01	10.54	1023.36		
21-Oct-01	10.55	1023.35		
22-Oct-01	10.53	1023.37		
25-Oct-01	10.53	1023.37		
29-Oct-01	10.44	1023.46		
01-Nov-01	10.43	1023.48		
05-Nov-01	10.49	1023.42		
06-Nov-01	10.49	1023.42		
08-Nov-01	10.41	1023.49		
12-Nov-01	10.41	1023.49		
15-Nov-01	10.39	1023.51		
19-Nov-01	10.38	1023.52		
21-Nov-01	10.38	1023.53		
23-Nov-01	10.42	1023.48		pond elev approx - 8 ft.
26-Nov-01	10.42	1023.48		daytime temp -34 C
28-Nov-01	10.39	1023.51		
30-Nov-01	10.37	1023.53		
03-Dec-01	10.37	1023.53		
05-Dec-01	10.37	1023.54		
12-Dec-01	10.36	1023.54		
14-Dec-01	10.42	1023.48		
15-Dec-01	10.48	1023.42		
16-Dec-01	10.53	1023.37		
17-Dec-01	10.59	1023.31		
18-Dec-01	10.62	1023.28		
19-Dec-01	10.65	1023.25		
26-Dec-01	10.64	1023.26		
02-Jan-02	10.56	1023.34		
09-Jan-02	10.57	1023.33		
16-Jan-02	10.56	1023.34		
23-Jan-02	10.43	1023.47		
30-Jan-02	10.42	1023.48		
06-Feb-02	10.42	1023.48		
13-Feb-02	10.41	1023.49		

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Table F-46: Cross Valley Dam
Piezometer 94 CVDC-1

Date	Water Level from top of pipe (m)	Piezometric Elevation (m amsl)	Pond Elevation (m amsl)	Comments
20-Feb-02	10.41	1023.49		
01-May-02	10.45	1023.45		
12-Jun-02	10.59	1023.31		
17-Jul-02	10.49	1023.42		
07-Aug-02	10.60	1023.31		
09-Sep-02	10.36	1023.54		
04-Nov-02	10.44	1023.47		
10-Nov-02	10.44	1023.46		
30-Jan-03	10.18	1023.72		
09-Feb-03	10.24	1023.67		start siphon
11-Feb-03	10.24	1023.67		
13-Feb-03	10.28	1023.63		
18-Feb-03	10.31	1023.59		
21-Feb-03	10.31	1023.59	1026.18	
23-Apr-03	10.26	1023.64		
07-May-03	10.49	1023.42		
16-May-03	10.47	1023.43		
11-Jun-03	10.47	1023.44		
15-Jul-03	10.38	1023.52		
10-Sep-03	10.76	1023.15		
04-Mar-04	10.25	1023.77	1030.038	2004 Survey data used from here on.
08-Mar-04	10.36	1023.67	1029.715	
26-Apr-04	10.24	1023.78	1030.150	
19-Jul-04	10.38	1023.64	1029.805	
26-Aug-04	10.31	1023.72	1029.930	
09-Sep-04	10.51	1023.51	1029.930	
22-Feb-05	10.15	1023.87	1030.176	
23-Feb-05	10.18	1023.85	1030.045	
24-Feb-05	10.22	1023.81	1029.854	
26-May-05	10.87	1023.16	1028.310	dirty
14-Sep-05	11.10	1022.93	1027.540	
09-Mar-06	11.29	1022.73	1027.180	
14-Jun-06	11.20	1022.83	1027.522	
04-Oct-06	11.11	1022.92	1027.468	
09-May-07	10.54	1023.48	1029.295	
24-Sep-07	11.03	1022.99	1027.755	
09-Apr-08	10.10	1023.92	1030.211	
14-Apr-08	10.20	1023.82	1029.930	
21-Apr-08	10.39	1023.64	1029.625	
28-Apr-08	10.47	1023.55	1029.250	
05-May-08	10.44	1023.58	1029.433	
12-May-08	10.43	1023.59	1029.362	
20-May-08	10.46	1023.56	1029.340	
26-May-08	10.48	1023.54	1029.276	
24-Jun-08	10.69	1023.34	1028.638	
24-Sep-08	10.70	1023.33	1028.582	
31-Mar-09	10.42	1023.61	1029.596	
13-Apr-09	10.89	1023.14	1028.164	
16-Apr-09	10.98	1023.05	1027.744	
20-Apr-09	11.07	1022.96	1027.716	
23-Apr-09	11.13	1022.89	1027.487	
27-Apr-09	11.23	1022.80	1027.273	
30-Apr-09	11.28	1022.75	1027.159	
05-May-09	11.25	1022.78	1027.229	
19-May-09	11.04	1022.98	1027.831	
29-Jun-09	11.11	1022.92	1027.668	
15-Sep-09	10.89	1023.14	1028.360	
19-May-10	10.74	1023.29	1028.894	
03-Jun-10	10.87	1023.15	1028.542	
07-Sep-10	11.22	1022.81	1027.410	
27-Apr-11	10.94	1023.08	1028.349	
09-May-11	10.84	1023.18	1028.417	
17-May-11	10.96	1023.06	1028.126	
24-May-11	11.06	1022.96	1027.964	
30-May-11	11.08	1022.94	1027.767	
13-Jun-11	11.16	1022.87	1027.511	
03-Oct-11	11.31	1022.71	1027.022	

Table F-47: Cross Valley Dam
Piezometer P01-11

P01-11		Location:	Cross Valley Dam Toe	2004 Stick-Up (m):	0.66
		Coordinates:	8V580208 6914301	2004 Surface Elevation (m amsl):	1017.21
Surface Protector:	Yes	Date Installed:	2001	Tip Elevation (m amsl):	1006.61
				Screened Interval (m bgs):	9.15 - 10.67

Date	Water level from top of pipe (m)	Piezometric Elevation (m amsl)	Pond Elevation (m amsl)	Comments
Sep-01	0.65	1017.18		
Sep-02	0.45	1017.38		
Sep-02	0.45	1017.38		
Jul-03	0.00	1017.83		*whole casing filled with water
Sep-03	0.52	1017.31		* Rhonda noted: 'water in casing'
Sep-03	0.63	1017.20		
Jul-04	0.505	1017.37	1029.805	2004 survey data used from here on
Aug-04	0.51	1017.36	1029.740	
Sep-04	0.65	1017.22	1029.930	Ice in tubing, sulphur smell
24-Feb-05	0.6	1017.27	1029.854	Frozen
26-May-05	0.5	1017.37	1028.310	
14-Sep-05	1.06	1016.81	1027.540	
09-Mar-06	1.16	1016.71	1027.180	
14-Jun-06	1.05	1016.82	1027.522	Water in casing
02-Oct-06	1.12	1016.75	1027.320	
09-May-07	1.03	1016.84	1029.295	Good Return
24-Sep-07	1.035	1016.84	1027.755	
09-Apr-08	0.92	1016.95	1030.211	frozen
14-Apr-08	0.66	1017.21	1029.930	frozen
21-Apr-08	0.91	1016.96	1029.625	frozen
28-Apr-08	0.91	1016.96	1029.250	frozen
05-May-08	0.91	1016.96	1029.433	frozen
12-May-08	0.81	1017.06	1029.362	
20-May-08	0.815	1017.06	1029.340	
26-May-08	0.81	1017.06	1029.276	
24-Jun-08	0.82	1017.05	1028.638	
24-Sep-08	0.81	1017.06	1028.582	
31-Mar-09	0.95	1016.92	1029.596	Frozen
13-Apr-09	0.955	1016.92	1028.164	Frozen
16-Apr-09			1027.744	
20-Apr-09	0.955	1016.92	1027.716	Frozen
23-Apr-09			1027.487	
27-Apr-09	0.955	1016.92	1027.273	Frozen
30-Apr-09			1027.159	
05-May-09	0.955	1016.92	1027.229	Frozen
19-May-09	1.055	1016.82	1027.831	
29-Jun-09	1.05	1016.82	1027.668	
15-Sep-09	1.081	1016.79	1028.360	
19-May-10	0.916	1016.95	1028.894	
03-Jun-10	0.912	1016.96	1028.542	
07-Sep-10	1.225	1016.65	1027.410	
27-Apr-11	1.103	1016.77	1028.349	Frozen
17-May-11	1.239	1016.63	1028.126	Frozen
24-May-11	1.167	1016.70	1027.964	Frozen
30-May-11	1.2	1016.67	1027.767	Frozen
13-Jun-11	1.21	1016.66	1027.511	
03-Oct-11	1.264	1016.61	1027.022	

Table F-48: Cross Valley Dam
Piezometer P01-02

P01-02		**Location:**	Cross Valley Dam Toe	**Surface Elevation: (m amsl)**	1019.027	**Surface Elevation: (m advpd)**	1051.33
		Coordinates:	Unknown	**Tip Elevation (A) (m amsl)**	1005.14	**Tip Elevation (A) (m advpd)**	1037.44
Surface Protector:	Yes	**Date Installed:**	2001	**Tip Elevation (B) (m amsl)**	991.33	**Tip Elevation (B) (m advpd)**	1023.63
				Screened Interval (A) (m bgs)	12.37 - 13.89	**Stick Up (A) (m)**	0.68
				Screened Interval (B) (m bgs)	26.21 - 27.70	**Stick Up (B) (m)**	0.70

Date	**Water level from top of pipe (m)**		**Comments**	**Piezometric Elevation (m amsl)**	**Piezometric Elevation (m amsl)**	**Piezometric Elevation (m advpd)**	**Piezometric Elevation (m advpd)**
	A	**B**		**A**	**B**	**A**	**B**
10-Sep-01	1.58	Artesian		1018.13		1050.43	
06-Jun-02	1.72	1.49		1017.99	1018.24	1050.29	1050.5
03-Sep-02	1.41			1018.30	1019.73	1050.60	1052.0
23-Sep-02	1.45	1.87		1018.26	1017.86	1050.56	1050.2
29-Sep-05	2.29	0.795		1017.42	1018.93	1049.72	1051.2
27-Apr-11	2.725	0.642	B Frozen	1016.98	1019.09	1049.28	1051.4
03-May-11	2.7		B Frozen	1017.01	1019.73	1049.31	1052.0
09-May-11	2.582	0.794		1017.13	1018.93	1049.43	1051.2
17-May-11	2.523	0.845		1017.18	1018.88	1049.48	1051.2
24-May-11	2.497	0.869		1017.21	1018.86	1049.51	1051.2
30-May-11	2.541	0.861		1017.17	1018.87	1049.47	1051.2
01-Jun-11	2.549	0.841		1017.16	1018.89	1049.46	1051.2

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Figure F-19: Cross Valley Dam
Thermistor CVDC-6

Faro Mine Closure

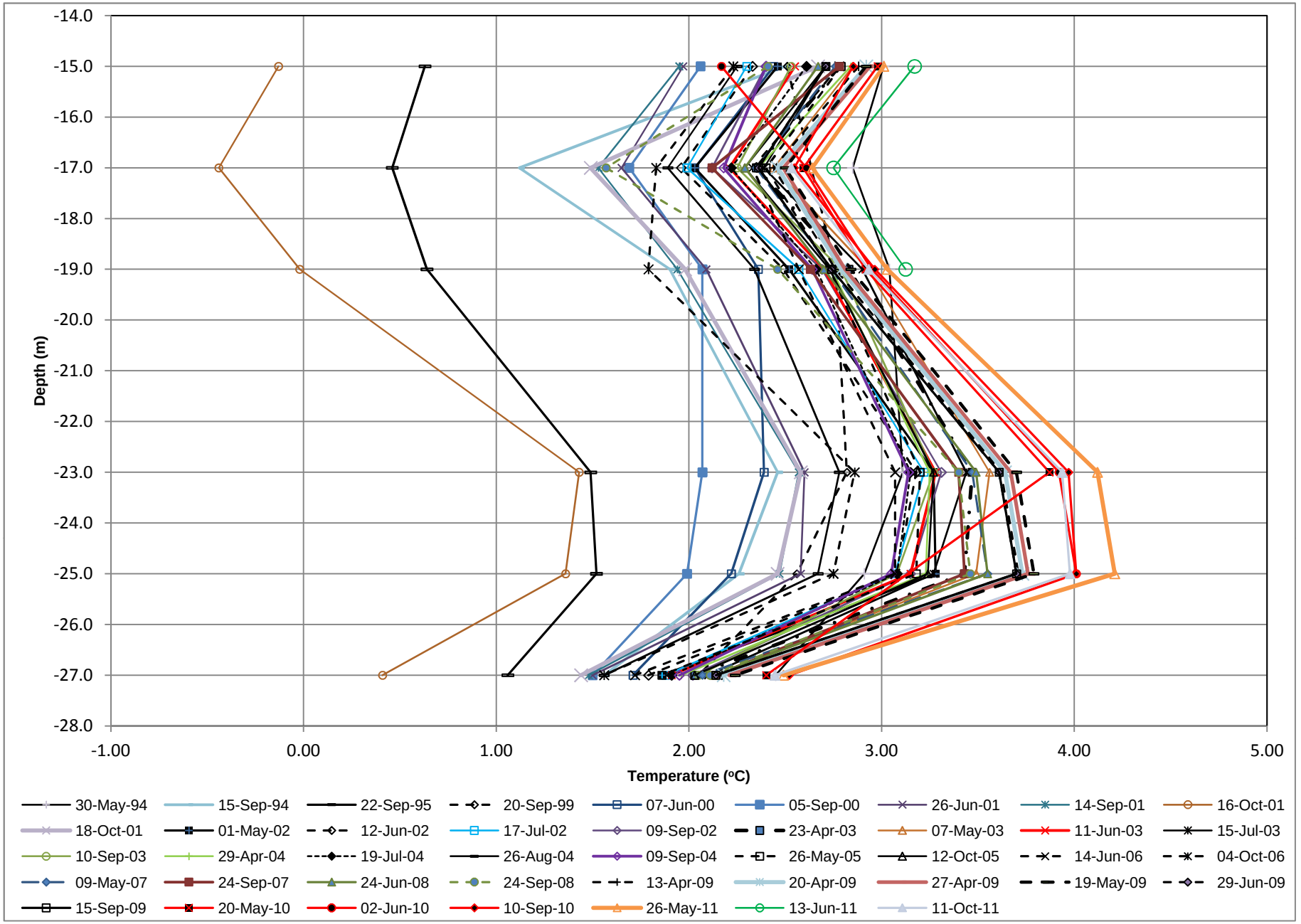

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Figure F-20: Cross Valley Dam
Thermistor BH88-4

Faro Mine Closure

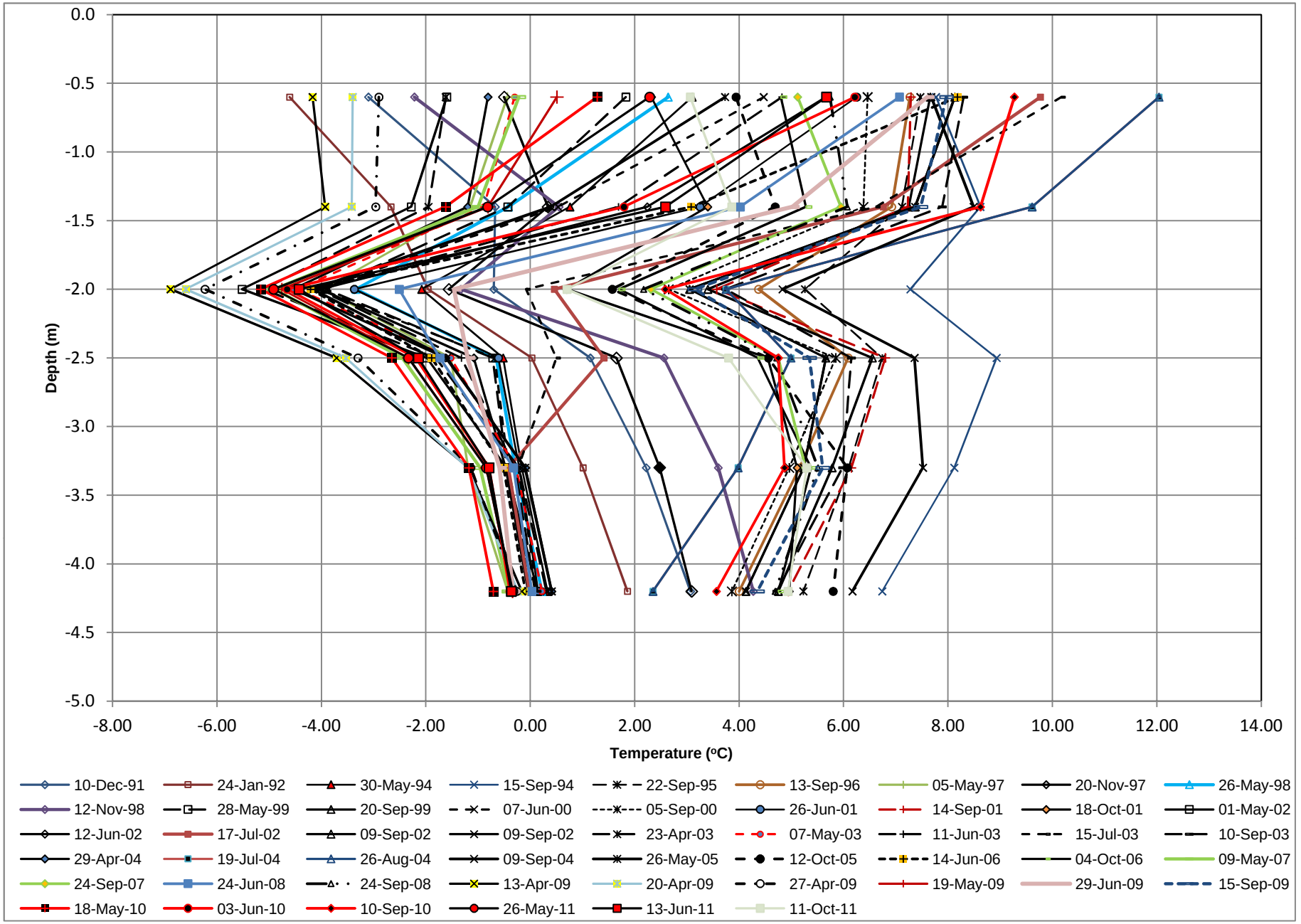

Figure F-21: Cross Valley Dam
Piezometer CVDC-4

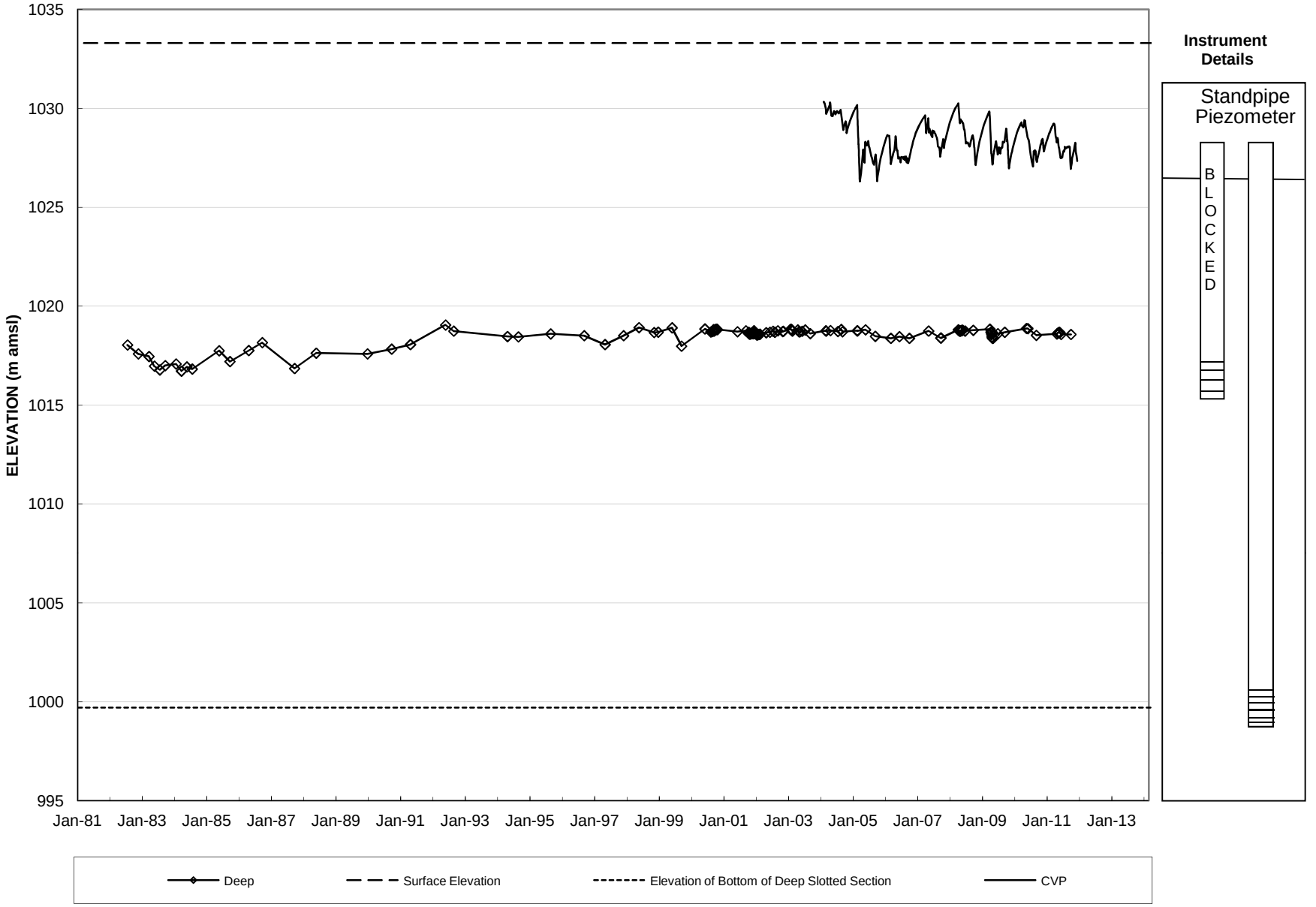

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Figure F-22: Cross Valley Dam
Piezometer CVDC-7 (Both Tips)

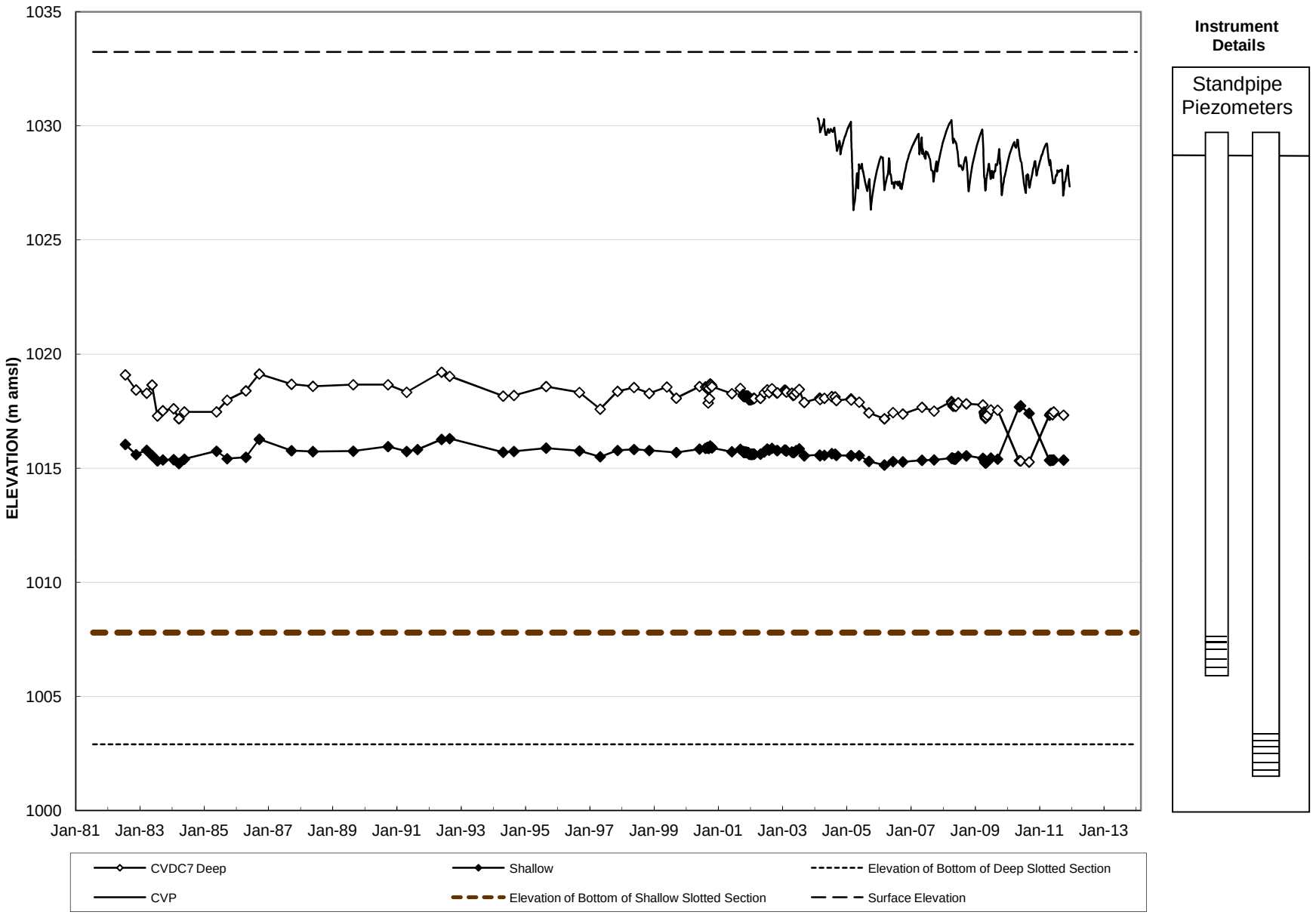

Figure F-23: Cross Valley Dam
Piezometer CVDC-9 (Both Tips)

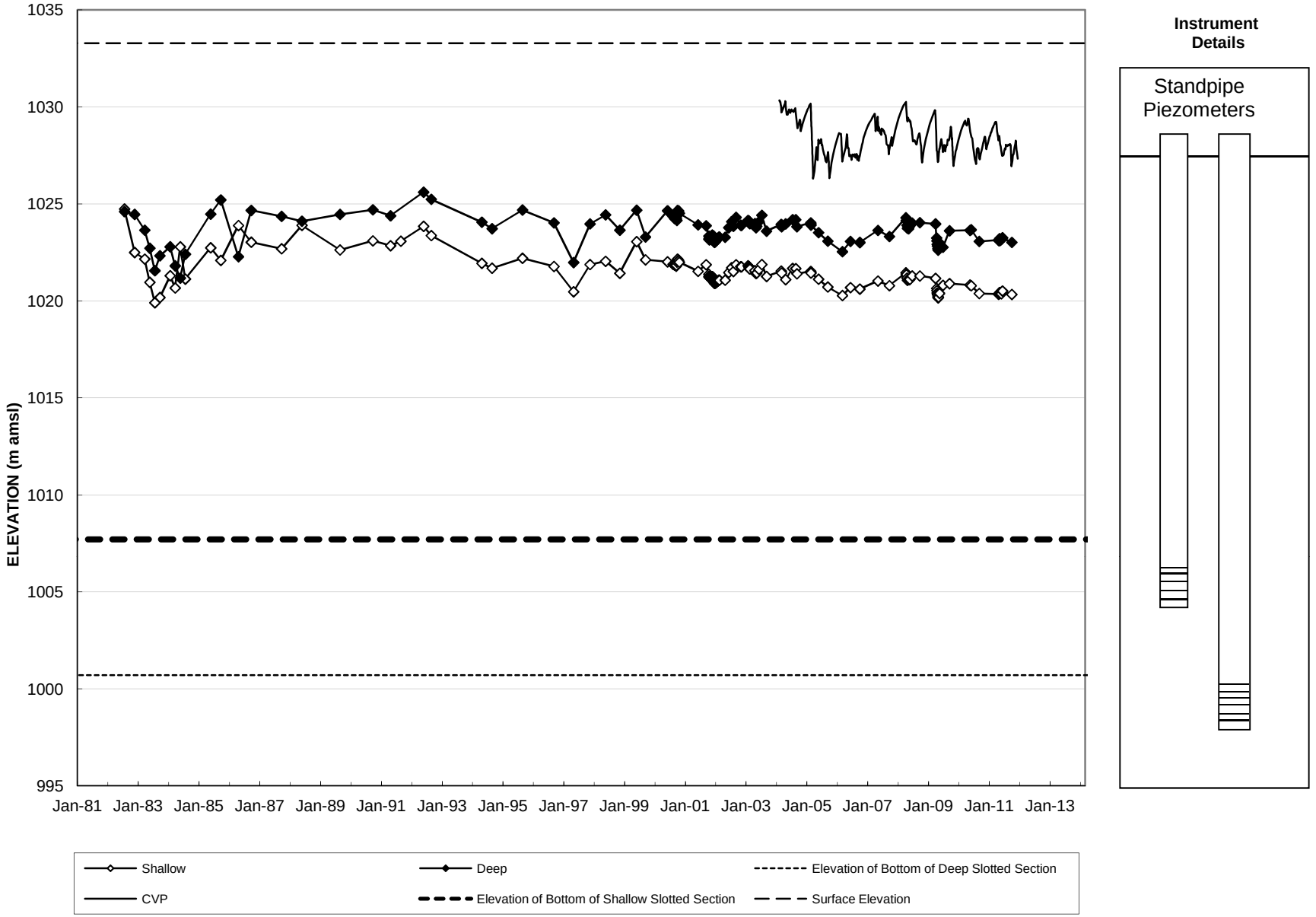

Figure F-24: Cross Valley Dam
Piezometer CVDT-1

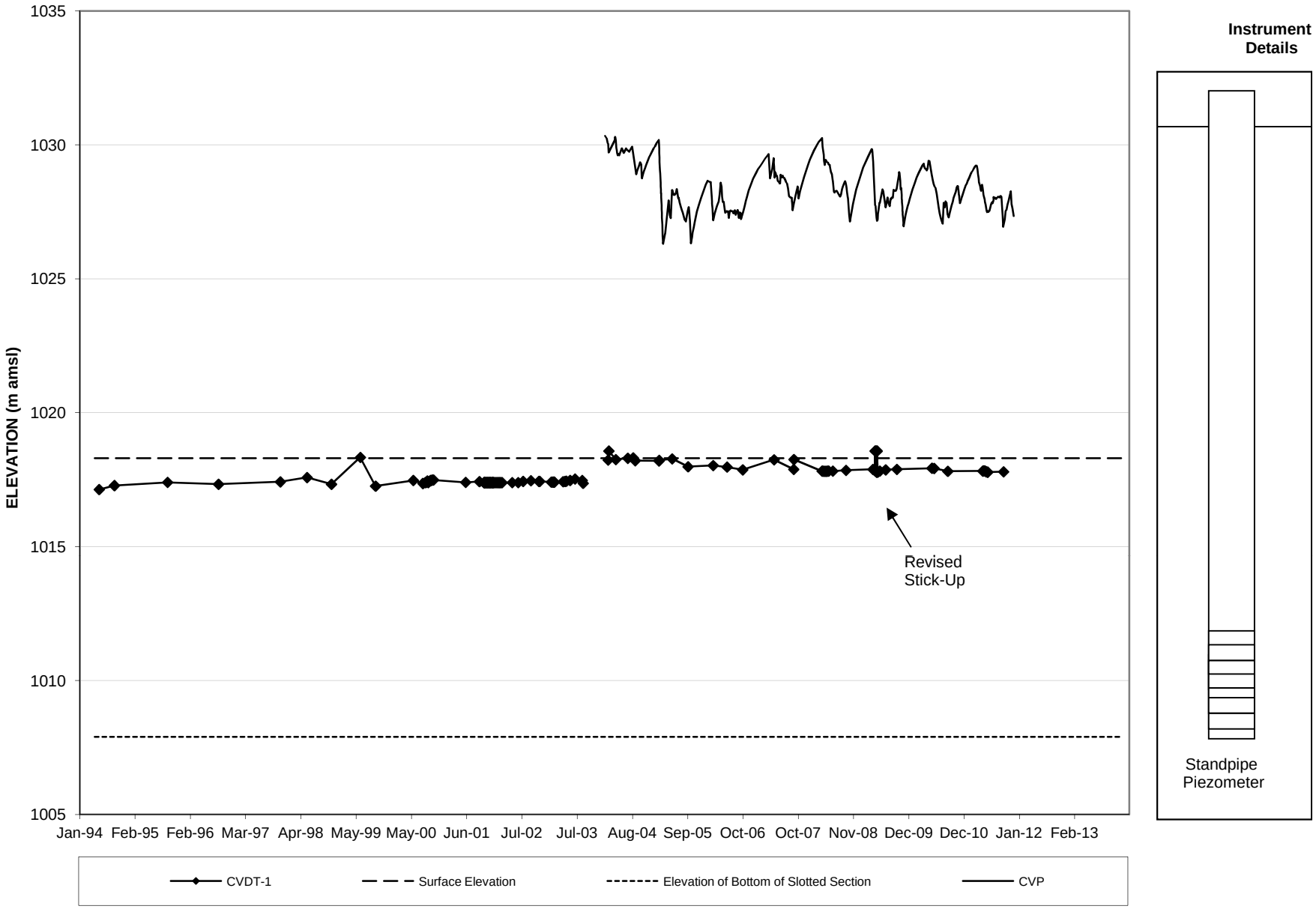

Figure F-25: Cross Valley Dam
Piezometer CVDT-2

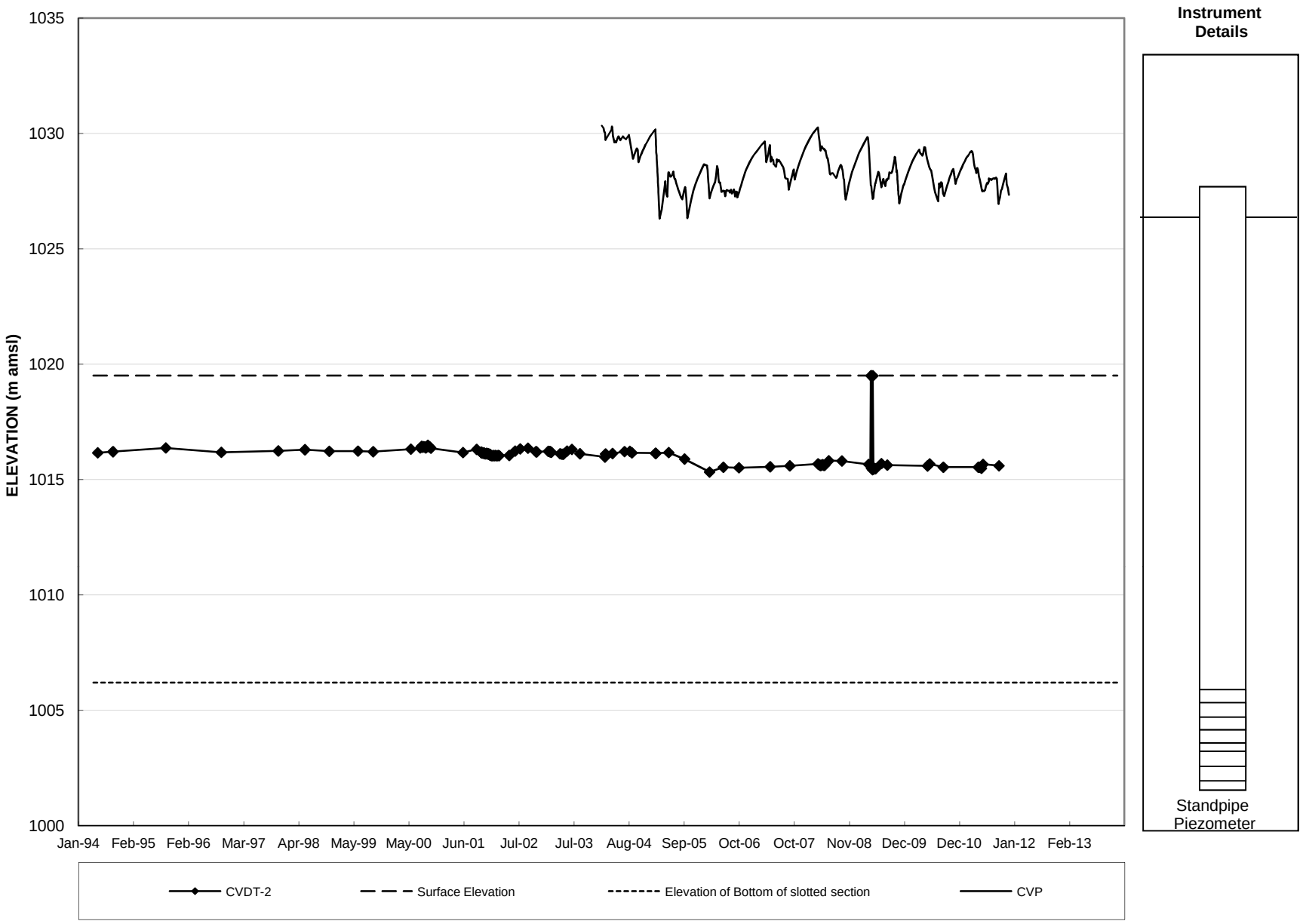

Figure F-26: Cross Valley Dam
Piezometer CVDP-1

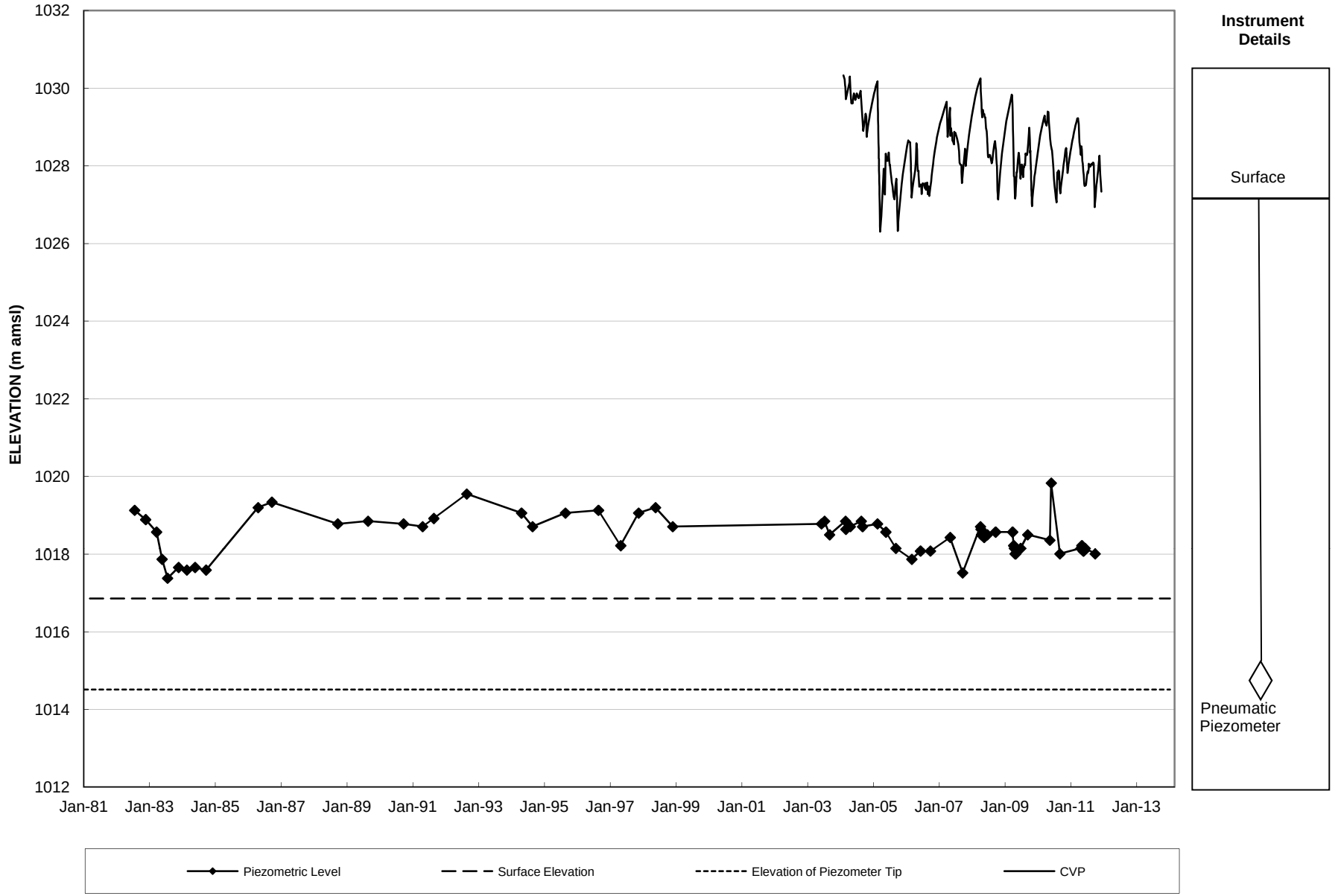

Figure F-27: Cross Valley Dam
Piezometer CVDP-2

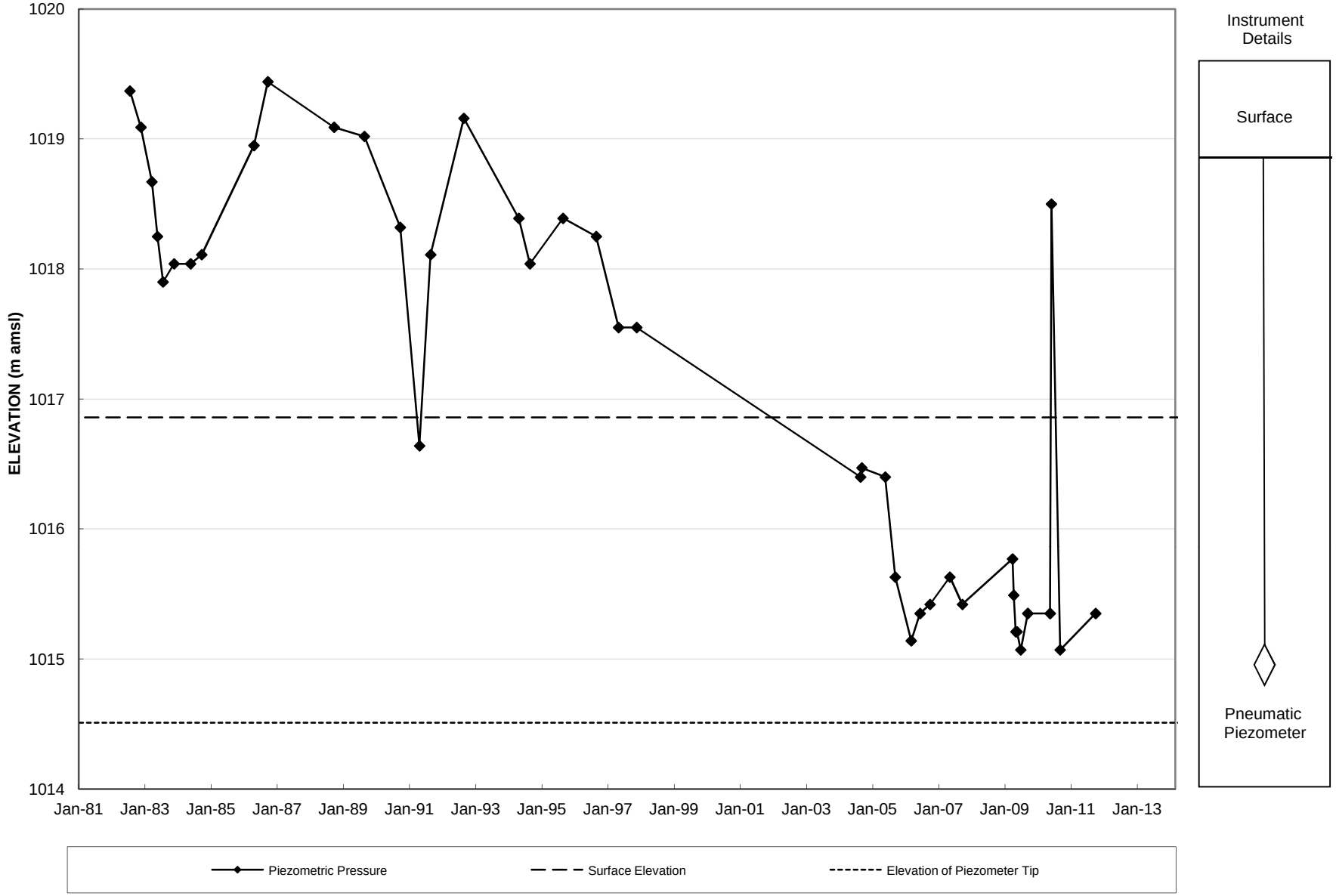

Figure F-28: Cross Valley Dam
Piezometer CVDP-3

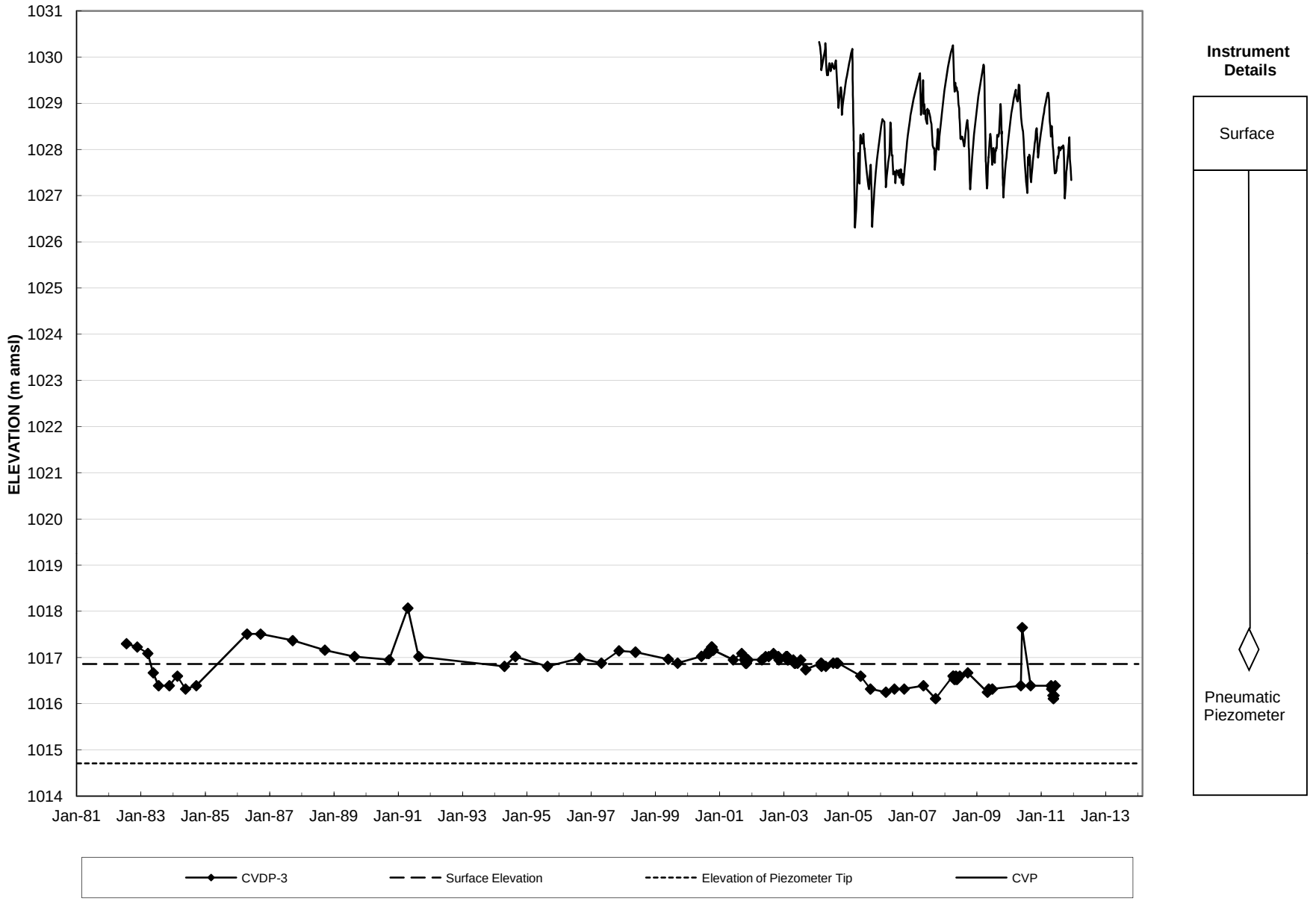

Figure F-29: Cross Valley Dam
Piezometer CVDP-5

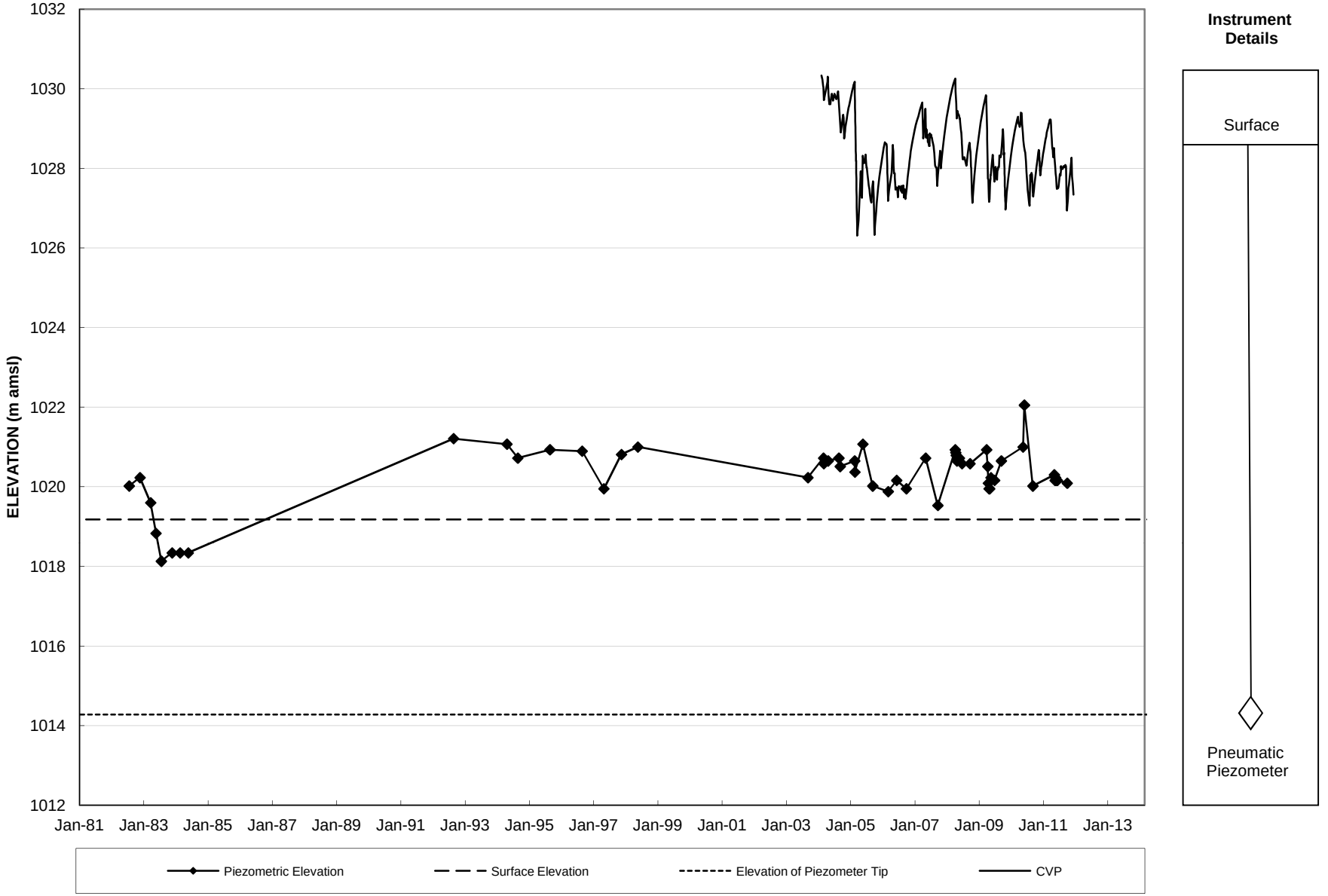

Figure F-30: Cross Valley Dam
Piezometer CVDP-6

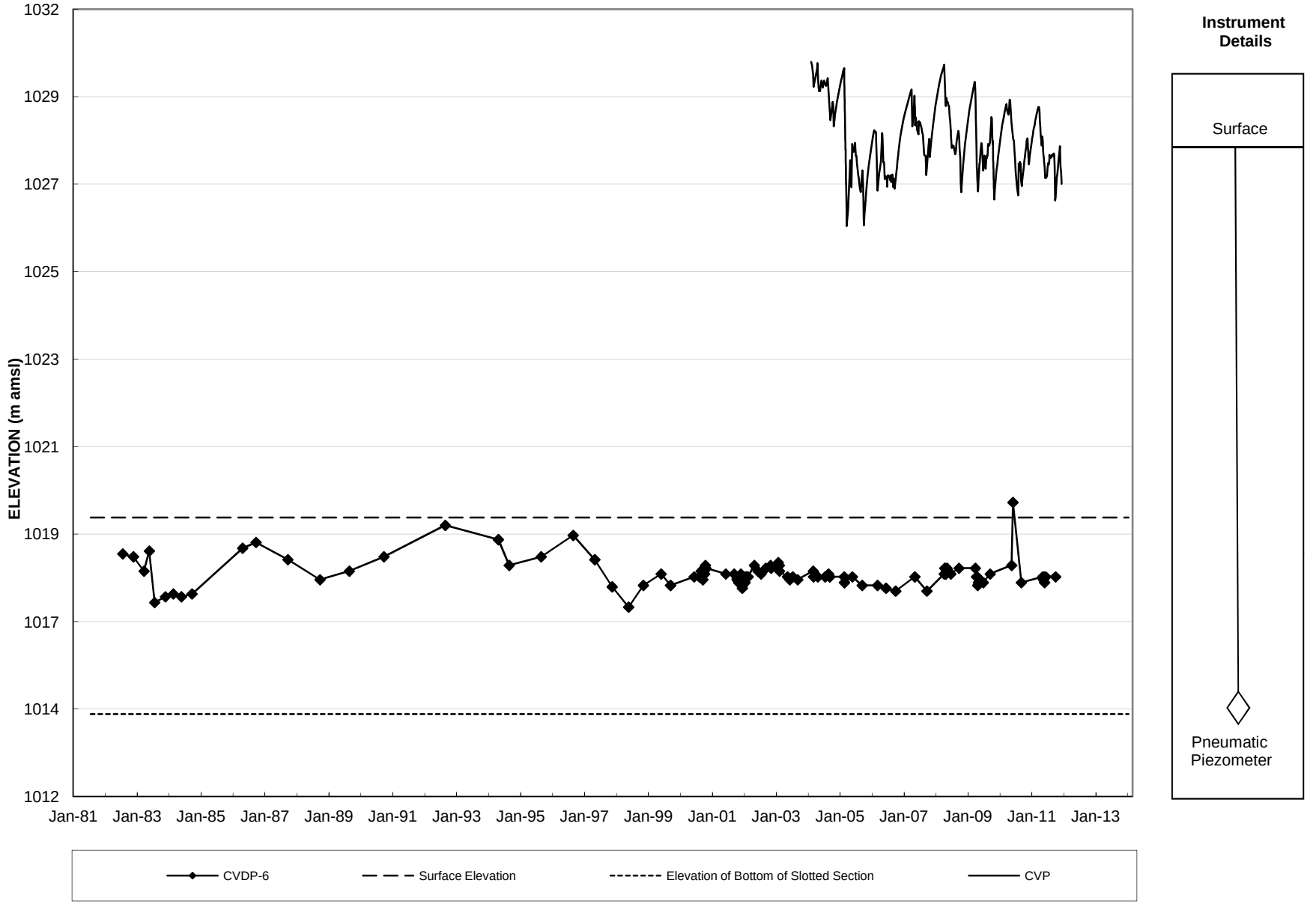

Figure F-31: Cross Valley Dam
Piezometer 94CVDC-1

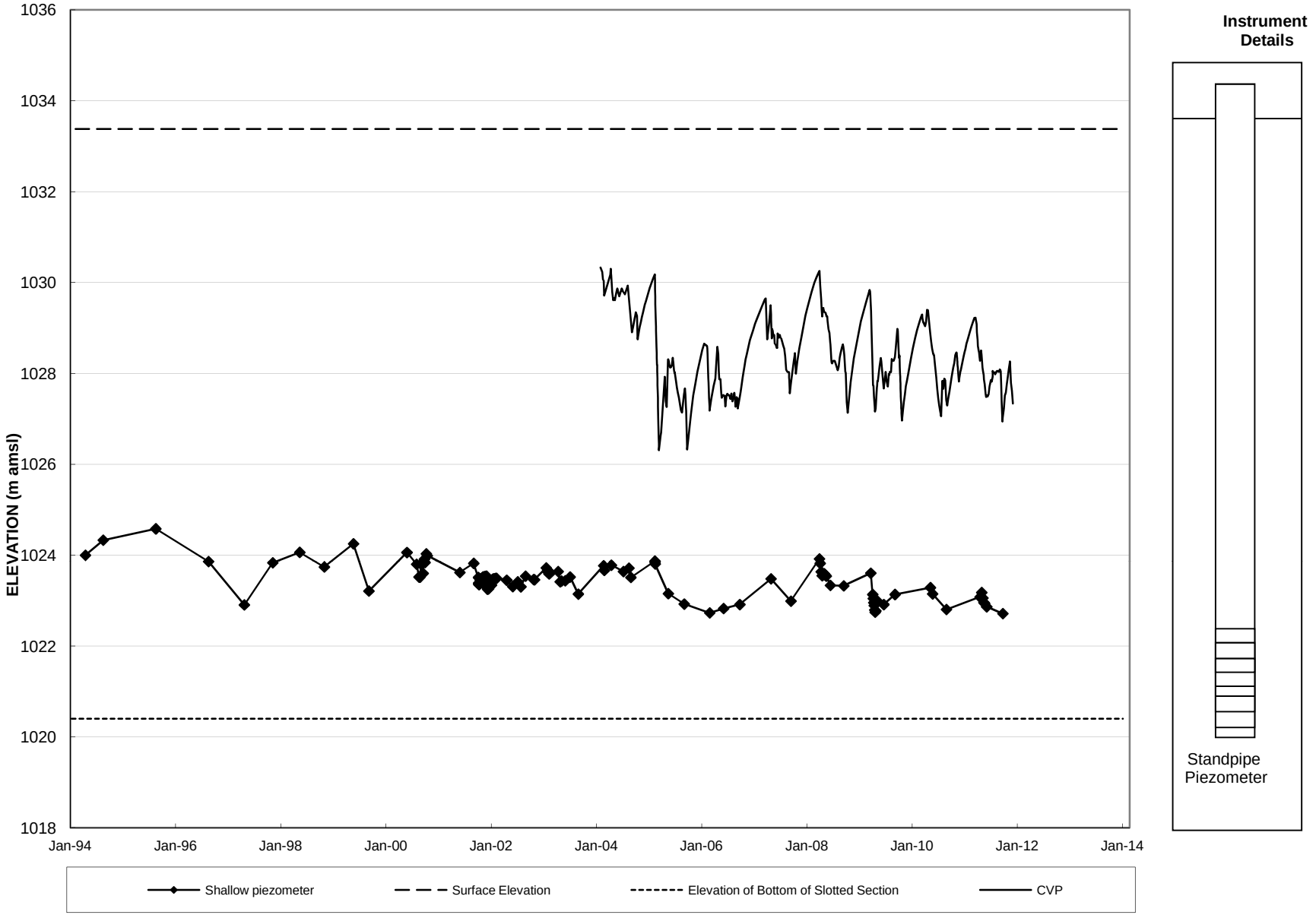

Figure F-32: Cross Valley Dam
Piezometer P01-11

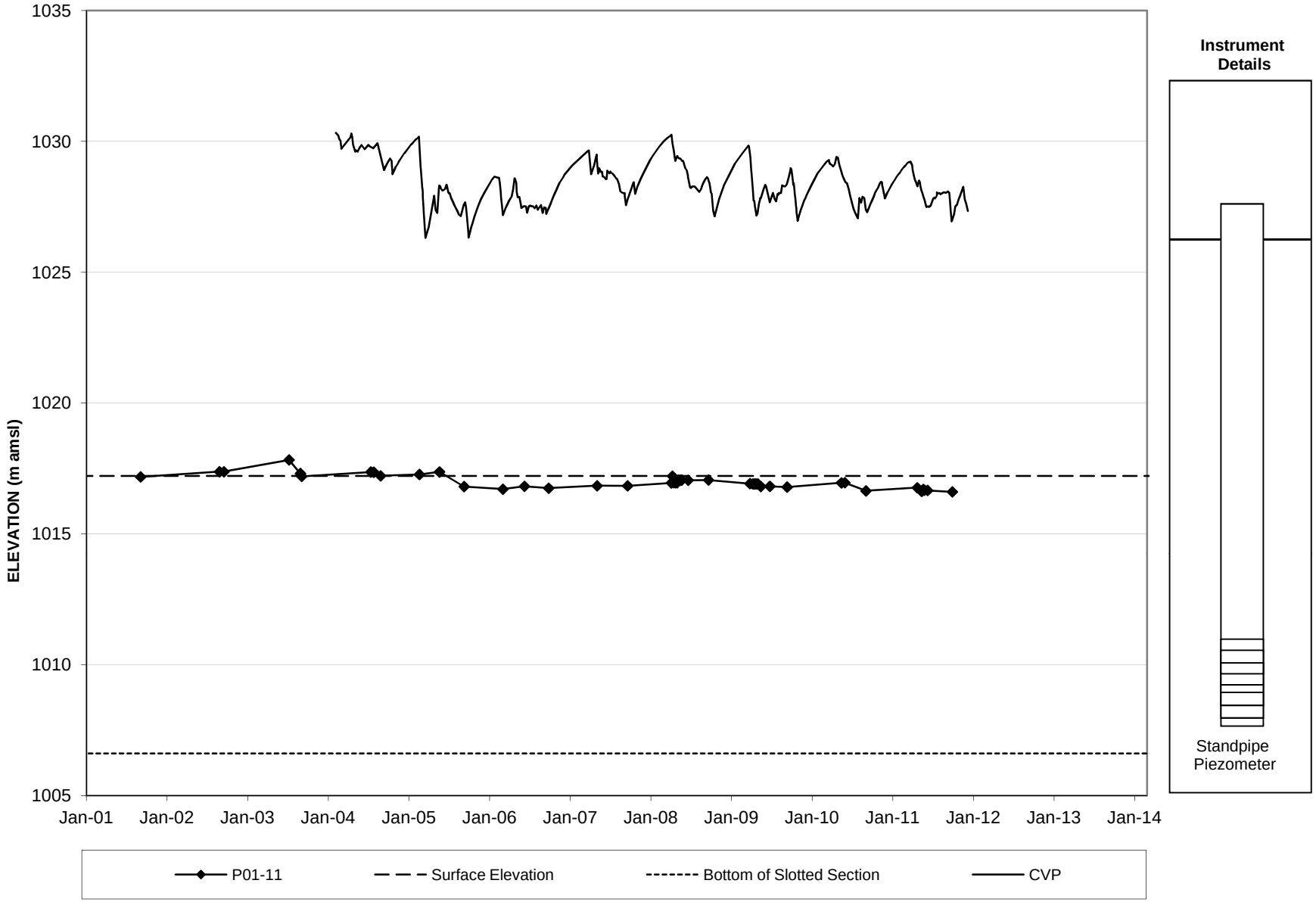

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Figure F-33: Cross Valley Dam
Piezometer P01-02

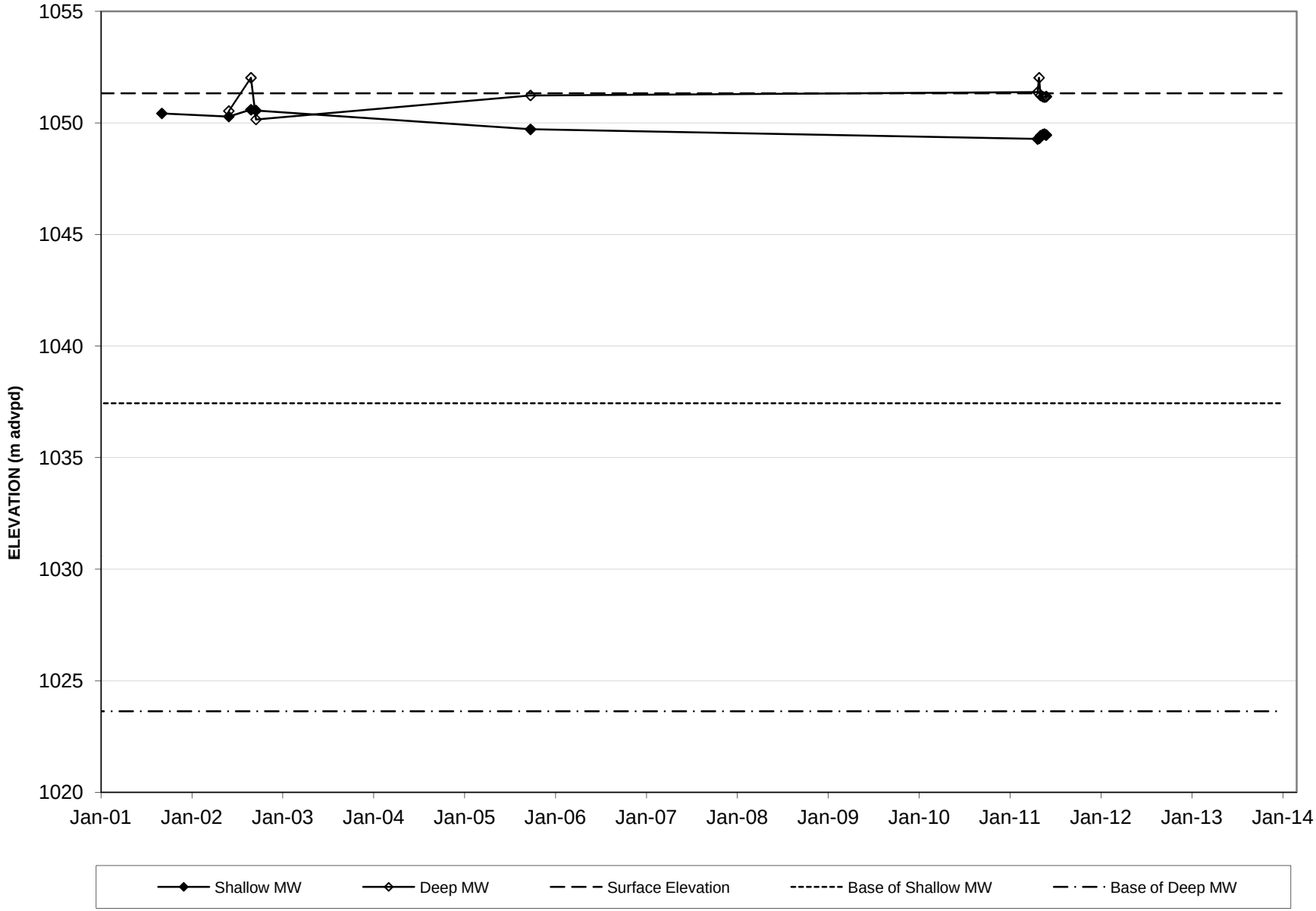

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Figure F-34: Cross Valley Dam
Piezometers - Cross Section 'D'

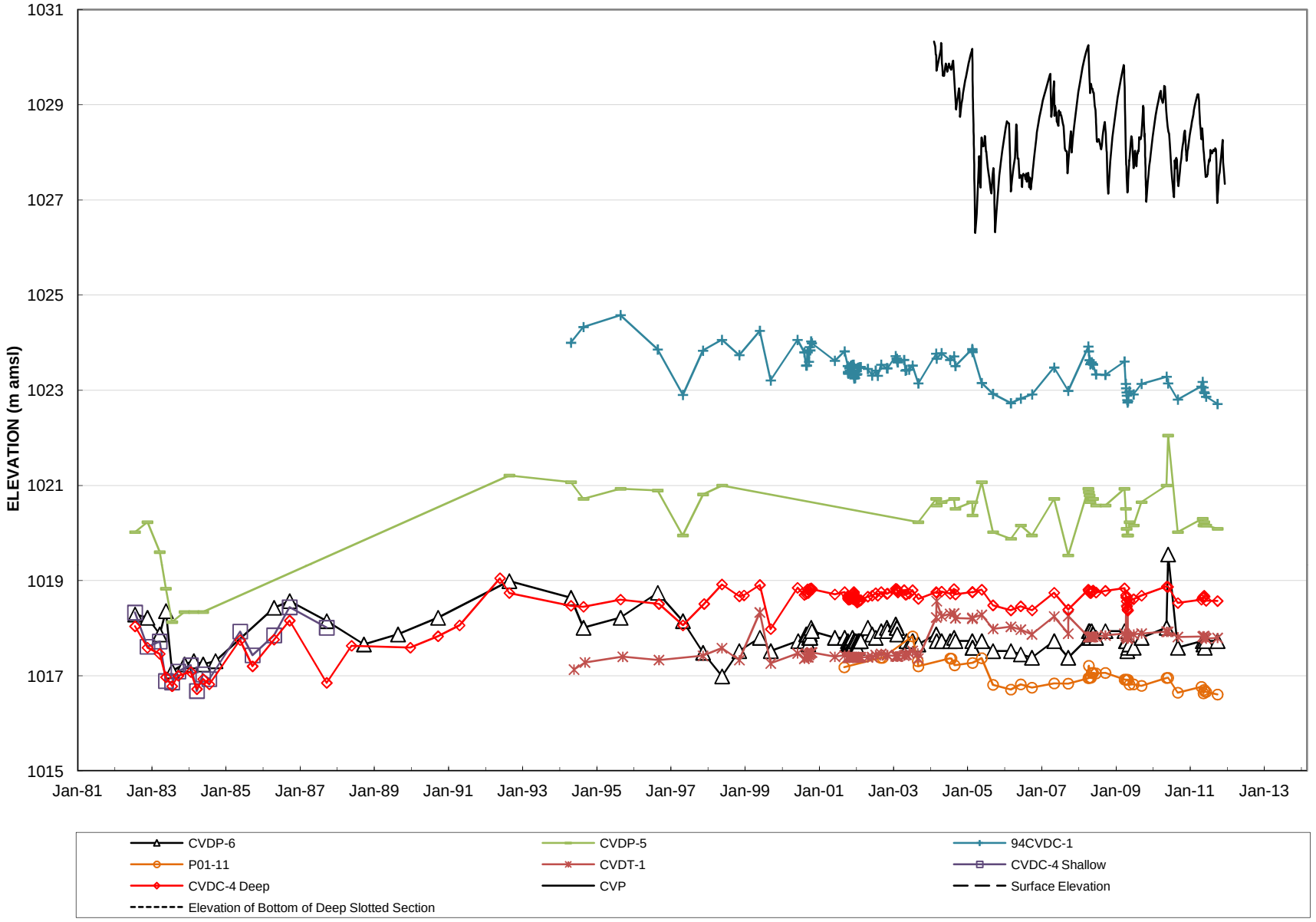

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Figure F-35: Cross Valley Dam
Piezometers - Cross Section 'E'

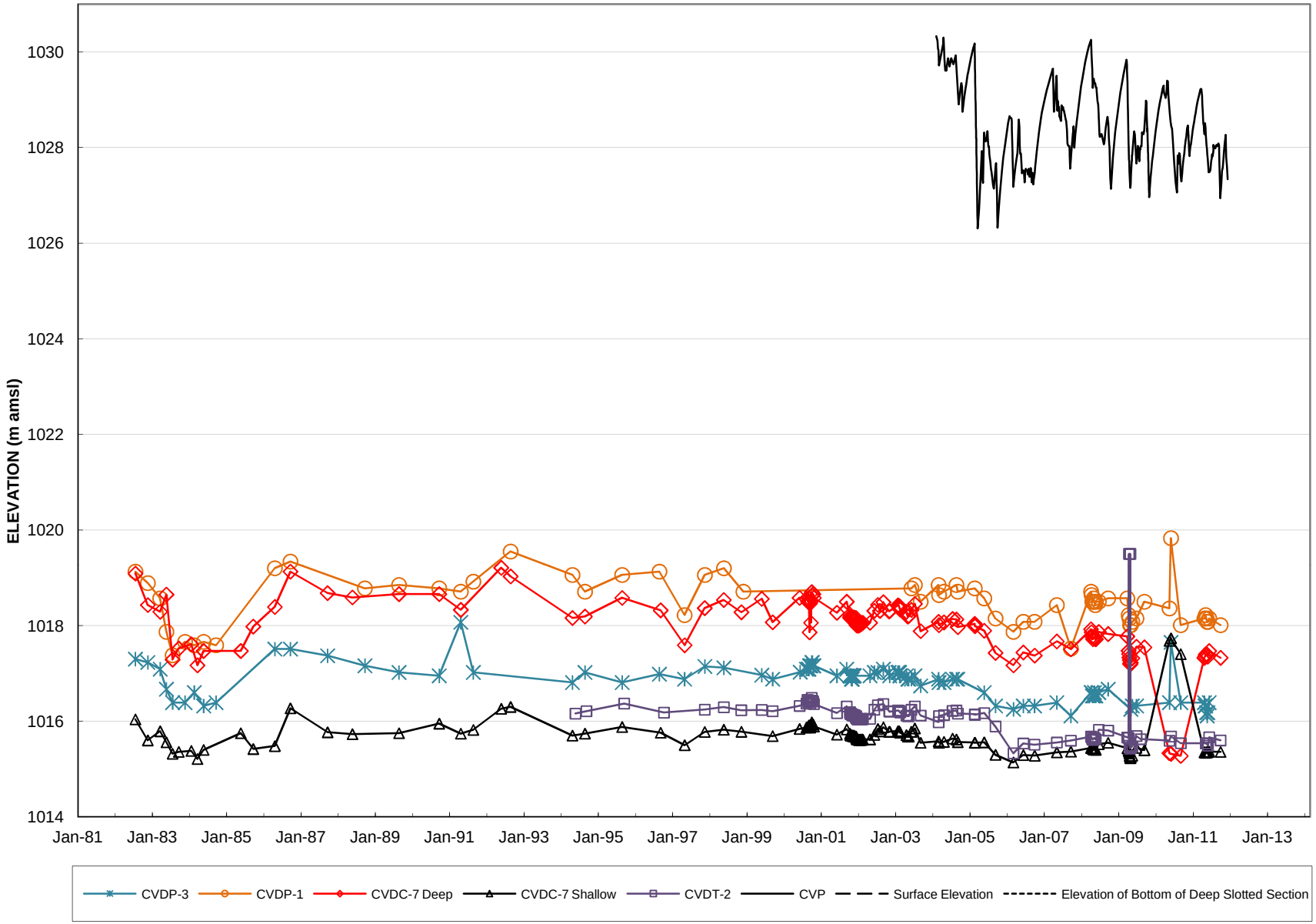

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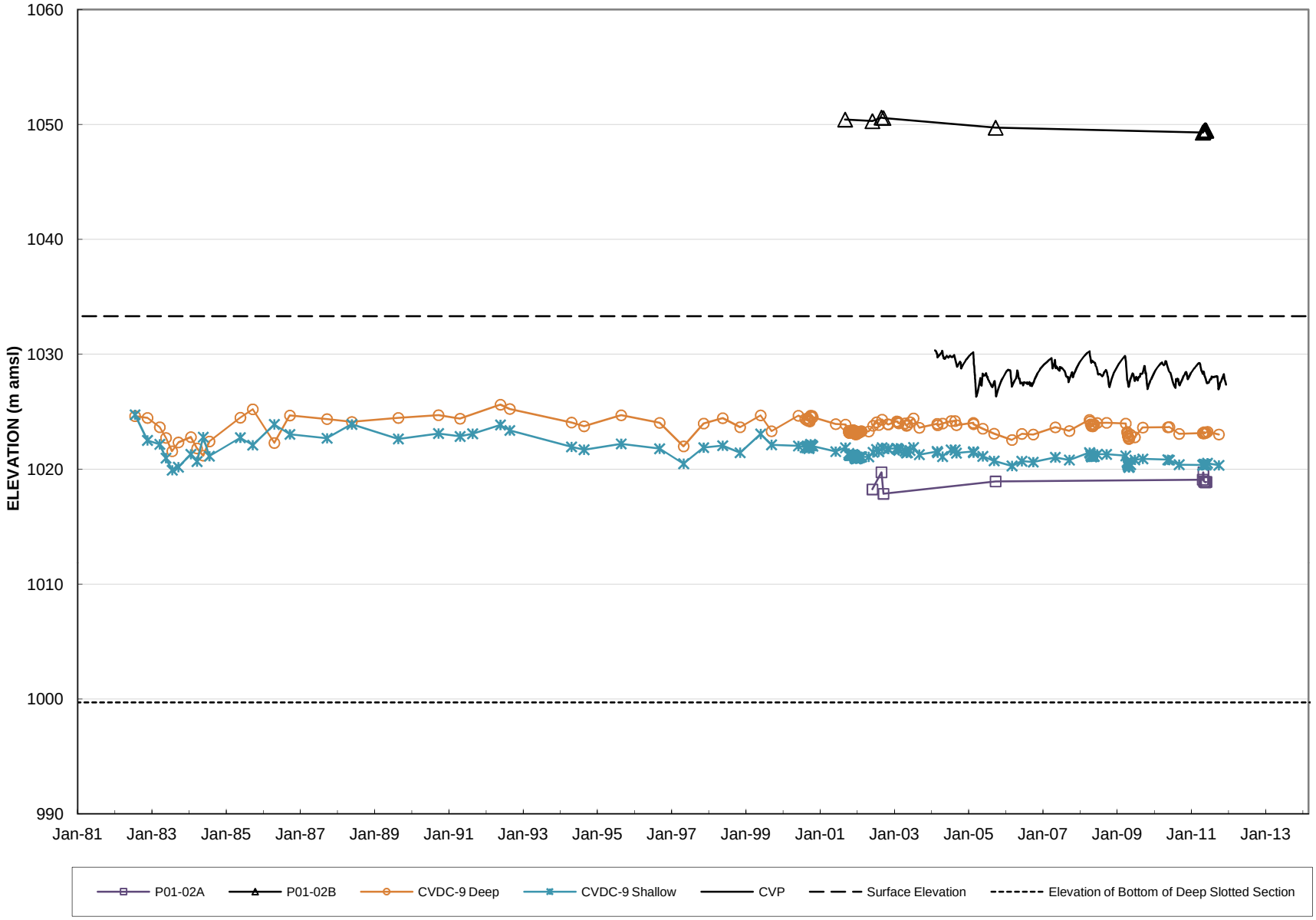
Figure F-36: Cross Valley Dam
Piezometers Cross Section 'F'



TABLES AND FIGURES

Intermediate Dam

Denison Environmental Services

Table F-49: Intermediate Dam Piezometer BH91-ID3

BH91-ID3		Location:	Intermediate Dam South Abutment @ Stn. 0+810	Shallow Tip Elevation (m amsl):	1036.82
		Coordinates:	8V580359 6913723	Deep Tip Elevation (m amsl):	1028.62
Surface Protector:	Yes	Date Installed:	1991	2004 Surface Elevation (m amsl):	1043.82

Date	Reading (psi)		Piezometric Elevation (m amsl)		Pond Elev. (m amsl)	Comments
	Shallow	Deep	Shallow	Deep		
Jul-91	1.23	9.71	1037.68	1035.42	1042.2	
Aug-91	0.04	9.40	1036.85	1035.20	1042.2	
Sep-91		8.60	1036.82	1034.64	1042.2	
Feb-92						
Apr-92						
Jun-92	3.44	13.46	1039.23	1038.04	1047.7	
Sep-92	1.10	10.51	1037.59	1035.98	1047.7	
May-94	0.20	10.70	1036.96	1036.11	1047.7	
Sep-94	0.40	9.10	1037.10	1034.99	1047.7	
Sep-95	0.00	9.50	1036.82	1035.27	1047.7	
Oct-96	0.10	7.50	1036.89	1033.87	1048.1	
7-May-97	0.20	6.40	1036.96	1033.10		
17-Oct-97	0.40	8.31	1037.10	1034.44		
27-May-98	0.10	11.70	1036.89	1036.81	1048.1	
12-Nov-98	0.22	7.10	1036.97	1033.59	1047.8	
16-Dec-98	0.00	6.30	1036.82	1033.03	1047.8	
29-May-99	0.40	11.05	1037.10	1036.36	1048	
16-Sep-99	0.02	8.40	1036.83	1034.50	1047.7	
14-Jun-00	0.01	10.41	1036.83	1035.91	1047.6	
9-Sep-00	0.00	9.50	1036.82	1035.27		
10-Jun-01	0.10	10.30	1036.89	1035.83		
20-Sep-01	0.01	8.20	1036.83	1034.36		
18-Jun-02	0.00	9.10	1036.82	1034.99		
10-Sep-02	0.00	8.20	1036.82	1034.36		
4-Nov-02	0.00	7.10	1036.82	1033.59		
10-Nov-02	0.00	6.50	1036.82	1033.17		
11-Jun-03	0.20	8.70	1036.96	1034.71		*have to continue using old piezometer, tips are too big
10-Sep-03	0.00	6.30	1036.82	1033.03		* Installed new tips, now using new box
10-May-04	0.00	5.20	1036.82	1032.26	1046.590	2004 survey data used from this point on
19-Jul-04	0.00	6.20	1036.82	1032.96	1045.972	
9-Sep-04	0.10	5.70	1036.89	1032.61	1046.272	
26-May-05	0.00	8.40	1036.82	1034.50	1047.012	
14-Sep-05	0.00	4.90	1036.82	1032.05	1046.370	
09-Mar-06	0.00	3.30	1036.82	1030.93	1047.575	
27-Mar-06	0.10	3.40	1036.89	1031.00	1047.550	
14-Jun-06	0.10	7.10	1036.89	1033.59	1046.848	
02-Oct-06	0.10	4.10	1036.89	1031.49	1046.180	
22-May-07	0.00	4.60	1036.82	1031.84	1046.781	Good Flow
26-Sep-07	0.10	5.70	1036.89	1032.61	1046.375	
24-Sep-08	0.10	6.10	1036.89	1032.89	1046.285	
29-Jun-09	0.10	5.70	1036.89	1032.61	1046.480	
30-Sep-09	0.20	5.30	1036.96	1032.33	1046.048	
15-May-10	0.20	5.20	1036.96	1032.26	1046.424	
02-Jun-10	1.00	7.90	1037.52	1034.15	1045.940	
04-Aug-10	0.10	3.40	1036.89	1031.00	1044.285	
10-Sep-10	0.10	3.10	1036.89	1030.79	1043.726	
27-Apr-11	0.10	2.40	1036.89	1030.30	1045.500	
03-May-11	0.10	2.50	1036.89	1030.37	1045.342	
09-May-11	0.10	2.50	1036.89	1030.37	1045.272	

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Table F-49: Intermediate Dam
Piezometer BH91-ID3

Date	Reading (psi)		Piezometric Elevation (m amsl)		Pond Elev. (m amsl)	Comments
	Shallow	Deep	Shallow	Deep		
17-May-11	0.00	2.00	1036.82	1030.02	1045.445	
24-May-11	0.10	5.70	1036.89	1032.61	1045.586	Deep reading checked twice
30-May-11	0.10	7.50	1036.89	1033.87	1045.436	
13-Jun-11	0.70	6.70	1037.31	1033.31	1045.132	Deep reading checked twice
13-Aug-11	0.10	1.00	1036.89	1029.32	1043.945	
03-Oct-11	0.10	3.30	1036.89	1030.93	1043.465	

Table F-50: Intermediate Dam Piezometer BH91-ID4

BH91-ID4		Location:	Intermediate Dam Toe @St.0+567	Shallow Tip Elevation (m amsl):	1024.22
		Coordinates:	8V580517 6913926	Deep Tip Elevation (m amsl):	1017.08
Surface Protector:	Yes	Date Installed:	1991	*Surface Elevation (m amsl):	1031.80

Date	Reading (psi)		Piezometric Elevation (m amsl)		Pond Elev. (m amsl)	Comments
	Shallow (upper)	Deep (lower)	Shallow (upper)	Deep (lower)		
Jul-91	10.34	19.06	1031.46	1030.42	1042.2	
Aug-91	10.81	19.20	1031.79	1030.52	1042.2	
Sep-91	11.10	19.30	1031.99	1030.59	1042.2	
Feb-92	12.24	19.59	1032.79	1030.79	1047.7	
Apr-92	12.44	19.64	1032.93	1030.83	1047.7	
Jun-92	14.80	20.40	1034.58	1031.36	1047.7	
Sep-92	11.86	21.10	1032.52	1031.85	1047.7	
May-94	10.00	18.70	1031.22	1030.17	1047.7	
Sep-94	8.90	17.40	1030.45	1029.26	1047.7	
Sep-95	11.00	19.00	1031.92	1030.38	1047.7	
Sep-96	10.00		1031.22		1048.1	
Oct-96	9.7	18.8	1031.01	1030.24		
7-May-97	6.3		1028.63			
17-Oct-97	11.58		1032.33			
27-May-98	11.04		1031.95		1048.1	
7-Aug-98		19.4		1030.66	1048.1	
12-Nov-98	9.22		1030.67		1047.8	
4-Dec-98	8.7	18.0	1030.31	1029.68	1047.8	
29-May-99	11.40	20.00	1032.20	1031.08	1048	
16-Sep-99	7.7	16.2	1029.61	1028.42	1047.7	
14-Jun-00	10.5	19.1	1031.57	1030.45	1047.6	
9-Sep-00	9.8	18.2	1031.08	1029.82		
10-Jun-01	9.50	18.1	1030.87	1029.75		
20-Sep-01	9.70	18.2	1031.01	1029.82		
18-Jun-02	9.70	18.80	1031.01	1030.24		
10-Sep-02	9.00	17.80	1030.52	1029.54		
4-Nov-02	9.00	17.60	1030.52	1029.40		
10-Nov-02	9.20	17.7	1030.66	1029.47		
11-Jun-03	9.00	17.7	1030.52	1029.47		*New piezometer readout used
10-Sep-03	7.60	16.4	1029.54	1028.56		
10-May-04	8.9	18.1	1030.45	1029.75	1046.590	No 2004 elevation data
19-Jul-04	9.2	17.8	1030.66	1029.54	1045.972	
9-Sep-04	8.6	17.2	1030.24	1029.12	1046.272	
26-May-05	7.5	16	1029.47	1028.28	1047.012	
14-Sep-05	6.5	15.1	1028.77	1027.65	1046.370	
09-Mar-06	5.9	14.5	1028.35	1027.23	1047.575	
27-Mar-06	6.3	14.9	1028.63	1027.51	1047.550	
14-Jun-06	6.3	14.9	1028.63	1027.51	1046.848	
02-Oct-06	6.3	14.9	1028.63	1027.51	1046.180	
22-May-07	8.2	16.8	1029.96	1028.84	1046.781	Good Flow
26-Sep-07	5.8	15	1028.28	1027.58	1046.375	
20-May-08	9.2	17.5	1030.66	1029.33	1046.727	
11-Jun-08	8.7	16.9	1030.31	1028.91	1046.040	
24-Sep-08	7.9	16.4	1029.75	1028.56	1046.285	
29-Jun-09	6.7	15.2	1028.91	1027.72	1046.480	
30-Sep-09	8.7	16.9	1030.31	1028.91	1046.048	
15-May-10	8.4	16.9	1030.10	1028.91	1046.424	
02-Jun-10	16.7	13.8	1035.91	1026.74	1045.940	
10-Sep-10	6.7	14.6	1028.91	1027.30	1043.726	
27-Apr-11	7.7	16	1029.61	1028.28	1045.500	
09-May-11	7.8	16.1	1029.68	1028.35	1045.272	
17-May-11	7.4	15.6	1029.40	1028.00	1045.445	
24-May-11	7.3	15.8	1029.33	1028.14	1045.586	

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Table F-50: Intermediate Dam
Piezometer BH91-ID4

Date	Reading (psi)		Piezometric Elevation (m amsl)		Pond Elev. (m amsl)	Comments
	Shallow	Deep	Shallow	Deep		
	(upper)	(lower)	(upper)	(lower)		
30-May-11	6.8	15.2	1028.98	1027.72	1045.436	
13-Jun-11	7.8	15	1029.68	1027.58	1045.132	
03-Oct-11	6.1	14.2	1028.49	1027.02	1043.465	

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Table F-51: Intermediate Dam Piezometer BH91-ID6

BH91-ID6		Location:	Intermediate Dam Toe @St.0+630	Shallow Tip Elevation (m amsl):	1024.80
		Coordinates:	8V580475 6913866	Deep Tip Elevation (m amsl):	1016.90
Surface Protector:	Yes	Date Installed:	1991	2004 Surface Elevation (m amsl):	1031.36

Date	Reading (psi)		Piezometric Elevation (m amsl)		Pond Elev. (m amsl)	Comments
	Shallow (upper)	Deep (lower)	Shallow (upper)	Deep (lower)		
Jul-91	7.89	20.33	1030.32	1031.13	1042.20	
Aug-91	8.06	20.91	1030.44	1031.54	1042.20	
Sep-91	8.20	20.80	1030.54	1031.46	1042.20	
Feb-92	8.20	20.70	1030.54	1031.39	1047.70	
Apr-92	9.06	23.10	1031.14	1033.07	1047.70	
Jun-92	9.91	25.80	1031.74	1034.96	1047.70	
Sep-92	8.67	21.36	1030.87	1031.85	1047.70	
May-94	7.20	20.00	1029.84	1030.90	1047.70	
Sep-94	6.20	18.90	1029.14	1030.13	1047.70	
Sep-95	7.50	20.00	1030.05	1030.90	1047.70	
Sep-96	6.60		1029.42		1048.10	
Oct-96	5.80	21.10	1028.86	1031.67		
7-May-97	2.90		1026.83			
17-Oct-97	8.41		1030.69			
27-May-98	8.56		1030.79		1048.10	
7-Aug-98		20.80		1031.46	1048.10	
12-Nov-98	6.57		1029.40		1047.80	
4-Dec-98	6.80	19.50	1029.56	1030.55	1047.80	
29-May-99	8.78	21.50	1030.95	1031.95	1048.00	
16-Sep-99	5.30	17.60	1028.51	1029.22	1047.70	
14-Jun-00	7.70	20.41	1030.19	1031.19	1047.60	
9-Sep-00	6.80	19.70	1029.56	1030.69		
10-Jun-01	6.80	19.50	1029.56	1030.55		
20-Sep-01	7.00	19.70	1029.70	1030.69		
18-Jun-02	6.80	19.60	1029.56	1030.62		
10-Sep-02	6.50	19.20	1029.35	1030.34		
4-Nov-02	6.30	19.00	1029.21	1030.20		
10-Nov-02	6.30	19.20	1029.21	1030.34		
11-Jun-03	6.40	19.00	1029.28	1030.20		*New piezometer started use here
10-Sep-03	5.10	17.60	1028.37	1029.22		
10-May-04	6.30	19.00	1029.21	1030.20	1046.590	2004 survey data used from this point on
19-Jul-04	6.50	19.10	1029.35	1030.27	1045.972	
9-Sep-04	5.90	18.60	1028.93	1029.92	1046.272	
26-May-05	4.50	17.40	1027.95	1029.08	1047.012	
14-Sep-05	3.60	16.50	1027.32	1028.45	1046.370	
9-Mar-06	3.50	16.10	1027.25	1028.17	1047.575	
27-Mar-06	3.40	16.40	1027.18	1028.38	1047.550	3.4/3.5 won't stabilize
14-Jun-06	3.70	16.30	1027.39	1028.31	1046.848	
2-Oct-06	3.50	16.30	1027.25	1028.31	1046.180	
22-May-07	5.40	18.10	1028.58	1029.57	1046.781	Good flow
26-Sep-07	3.60	16.60	1027.32	1028.52	1046.375	
20-May-08	6.10	18.90	1029.07	1030.13	1046.727	
11-Jun-08	5.70	18.40	1028.79	1029.78	1046.040	
24-Sep-08	5.20	17.90	1028.44	1029.43	1046.285	
29-Jun-09	3.90	16.60	1027.53	1028.52	1046.480	
15-Sep-09	4.80	n/r	1028.16		1046.259	
30-Sep-09	5.50	18.50	1028.65	1029.85	1046.048	
15-May-10	5.60	18.30	1028.72	1029.71	1046.424	
2-Jun-10	23.00	5.60	1040.90	1020.82	1045.940	
10-Sep-10	3.30	16.00	1027.11	1028.10	1043.726	

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Table F-51: Intermediate Dam
Piezometer BH91-ID6

Date	Reading (psi)		Piezometric Elevation (m amsl)		Pond Elev. (m amsl)	Comments
	Shallow (upper)	Deep (lower)	Shallow (upper)	Deep (lower)		
27-Apr-11	4.70	17.10	1028.09	1028.87	1045.500	
3-May-11	4.70	17.50	1028.09	1029.15	1045.342	
11-May-11	4.40	17.30	1027.88	1029.01	1045.272	
17-May-11	4.20	17.00	1027.74	1028.80	1045.445	
24-May-11	4.20	16.80	1027.74	1028.66	1045.586	
30-May-11	3.90	16.60	1027.53	1028.52	1045.436	
13-Jun-11	4.70	16.50	1028.09	1028.45	1045.132	
3-Oct-11	2.60	15.60	1026.62	1027.82	1043.465	

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Table F-52: Intermediate Dam Piezometer BH91-ID7

BH91-ID7		Location:	Intermediate Dam Toe @St.0+759		
		Coordinates:	8V580377 6913751	Tip Elevation (m amsl):	1025.95
Surface Protector:	Yes	Date Installed:	1991	2004 Ground Elevation (amsl):	1032.42

Date	Reading (psi)	Piezometric Elevation (m amsl)	Pond Elev. (m amsl)	Comments
Jul-91	8.94	1032.21	1042.20	
Aug-91	9.06	1032.29	1042.20	
Sep-91	8.90	1032.18	1042.20	
Feb-92	13.21	1035.20	1047.70	
Apr-92	10.01	1032.96	1047.70	
Jun-92	10.61	1033.38	1047.70	
Sep-92	9.21	1032.40	1047.70	
May-94	8.60	1031.97	1047.70	
Sep-94	7.40	1031.13	1047.70	
Sep-95	9.00	1032.25	1047.70	
Sep-96	8.10	1031.62	1048.10	
7-May-97	5.10	1029.52		
17-Oct-97	9.36	1032.50		
27-May-98	9.49	1032.59	1048.10	
12-Nov-98	7.56	1031.24	1047.80	
16-Dec-98	7.60	1031.27	1047.80	
29-May-99	9.60	1032.67	1048.00	
16-Sep-99	6.60	1030.57	1047.70	
14-Jun-00	8.90	1032.18	1047.60	
9-Sep-00	7.50	1031.20		
10-Jun-01	8.20	1031.69		
20-Sep-01	8.10	1031.62		
18-Jun-02	8.30	1031.76		
10-Sep-02	7.70	1031.34		
4-Nov-02	7.50	1031.20		
10-Nov-02	7.40	1031.13		
11-Jun-03	7.70	1031.34		*New piezometer started use here
10-Sep-03	6.20	1030.29		
10-May-04	7.20	1030.99	1046.590	2004 survey data used from here on
19-Jul-04	7.40	1031.13	1045.972	
9-Sep-04	6.90	1030.78	1046.272	
26-May-05	6.10	1030.22	1047.012	
14-Sep-05	5.10	1029.52	1046.370	
9-Mar-06	4.60	1029.17	1047.575	
27-Mar-06	4.80	1029.31	1047.550	
14-Jun-06	5.40	1029.73	1046.848	
2-Oct-06	4.90	1029.38	1046.180	
22-May-07	6.30	1030.36	1046.781	Good Flow
26-Sep-07	5.50	1029.80	1046.375	
20-May-08	7.30	1031.06	1046.727	
11-Jun-08	6.90	1030.78	1046.040	
24-Sep-08	6.40	1030.43	1046.285	
29-Jun-09	5.30	1029.66	1046.480	
15-Sep-09	5.80	1030.01	1046.259	
30-Sep-09	6.50	1030.50	1046.048	
15-May-10	6.50	1030.50	1046.424	
2-Jun-10	5.80	1030.01	1045.940	
10-Sep-10	4.30	1028.96	1043.726	
3-May-11	5.40	1029.73	1045.342	
9-May-11	5.40	1029.73	1045.272	
17-May-11	5.00	1029.45	1045.445	
24-May-11	5.40	1029.73	1045.586	

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Table F-52: Intermediate Dam
Piezometer BH91-ID7

Date	Reading (psi)	Piezometric Elevation (m amsl)	Pond Elev. (m amsl)	Comments
30-May-11	5.70	1029.94	1045.436	
13-Jun-11	5.40	1029.73	1045.132	
3-Oct-11	4.10	1028.82	1043.465	

Table F-53: Intermediate Dam Piezometer BH94-IDC-1

BH94-IDC-1		Location:	Intermediate Dam Crest	2004 Stick Up (m):	0.27
		Coordinates:	8V580605 6913969	2004 Surface Elevation (m amsl):	1049.21
Surface Protector:	Yes	Date Installed:	1994	Tip Elevation:	N/A

Date	Water level from top of pipe (m)	Piezometric Elevation (m amsl)	Pond Elev. (m amsl)	Comments
2-Jun-94			1047.70	dry
16-Sep-94			1047.70	dry
22-Sep-95			1047.70	dry
25-Sep-96			1048.10	dry
28-May-98			1048.10	dry
13-Nov-98	14.10	1035.48	1047.80	dry
8-Jun-99	14.10	1035.48	1047.80	dry
16-Sep-99	14.18	1035.40	1047.70	dry
14-Jun-00	14.11	1035.47	1047.60	dry
9-Sep-00	14.11	1035.47	1047.60	H2O
10-Jun-01	14.11	1035.47	1047.60	
1-Aug-01	14.11	1035.47	1047.60	dry
18-Jun-02	14.11	1035.47		dry
5-Aug-02	14.19	1035.40		dry
2-Sep-02	14.11	1035.47		dry
2-Nov-02	14.11	1035.47		dry
10-Nov-02	14.11	1035.47		dry
11-Jun-03	14.12	1035.46		dry
10-Sep-03	14.11	1035.47		dry
10-May-03	14.11	1035.47		dry
19-Jul-04	14.11	1035.37	1045.972	dry
9-Sep-04	14.11	1035.37	1046.272	dry
26-May-05	14.12	1035.36	1047.012	bottom
14-Sep-05	14.12	1035.36	1046.370	bottom
9-Mar-06	14.17	1035.31	1047.575	
27-Mar-06	14.13	1035.35	1047.550	no beep, ice crystals
14-Jun-06	14.13	1035.36	1046.848	bottom
2-Oct-06	14.12	1035.36	1046.180	
22-May-07	14.14	1035.35	1046.781	bottom and beep
26-Sep-07	14.13	1035.36	1046.375	no beep
20-May-08	14.15	1035.33	1046.727	no beep
11-Jun-08	14.14	1035.34	1046.040	no beep
24-Sep-08	14.14	1035.34	1046.285	no beep
29-Jun-09	14.15	1035.33	1046.480	no beep
30-Sep-09	14.16	1035.33	1046.048	no beep
15-May-10	14.17	1035.31	1046.424	no beep
2-Jun-10	14.15	1035.33	1045.940	no beep
10-Sep-10	14.15	1035.33	1043.726	no beep
10-May-11	14.14	1035.35	1045.272	dry
17-May-11	14.14	1035.34	1045.445	
24-May-11	14.14	1035.34	1045.586	dry
30-May-11	14.13	1035.35	1045.436	dry
13-Jun-11	14.13	1035.35	1045.132	dry
3-Oct-11	14.12	1035.36	1043.465	dry

Table F-54: Intermediate Dam Piezometer BH96-1

BH96-1		Location:	Intermediate Dam Crest		
		Coordinates:	8V580563 6913908	2004 Stick Up:	0.68
Surface Protector:	Yes	Date Installed:	1996	2004 Surface Elevation (m amsl):	1049.15
		Screened Interval (m bgs):	18.77 - 21.80	Tip Elevation (m amsl):	1027.35

Date	Water level from top of pipe (m)	Piezometric Elevation (m amsl)	Comments
8-Sep-96	20.06	1029.99	
26-Sep-96			
27-Sep-96			
13-May-97			
6-Jun-97			
11-Jul-97			
7-Oct-97	18.77	1031.28	
1-Jun-98	18.73	1031.32	
31-Oct-98	20.08	1029.97	
13-Nov-98	19.97	1030.08	
8-Jun-99	18.40	1031.65	
19-Jun-99			
3-Jul-99			
29-Oct-99	20.55	1029.50	
31-Oct-99			
31-May-00			
27-Jun-00			
25-Jul-00			
21-Sep-00	20.13	1029.92	
10-Oct-00			
6-Jun-01			
15-Jul-01			
5-Sep-01			
18-Jun-02			
5-Aug-02	20.48	1029.57	
10-Sep-02	20.02	1030.03	
4-Nov-02	20.14	1029.91	
10-Nov-02	20.06	1029.99	
11-Jun-03	20.03	1030.03	
10-Sep-03	20.96	1029.09	
12-May-04	19.93	1029.91	2004 survey data used from here on
8-Jul-04	19.70	1030.14	
19-Jul-04	19.95	1029.89	
9-Sep-04	20.33	1029.51	clear
26-May-05	21.17	1028.66	ice
14-Sep-05	21.82	1028.01	
9-Mar-06			
27-Mar-06			no read, frozen
14-Jun-06	2.27		likely a mistake
2-Oct-06	21.98	1027.85	
22-May-07			no read, frozen
26-Sep-07	21.66	1028.18	
20-May-08	1.22		no beep, frozen
11-Jun-08	1.20		no beep, frozen
24-Sep-08	20.97	1028.86	
29-Jun-09	3.08		frozen
30-Sep-09	20.59	1029.24	
15-May-10	20.59	1029.24	slush present
2-Jun-10	21.02	1028.81	
10-Sep-10	22.20	1027.63	

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Table F-54: Intermediate Dam
Piezometer BH96-1

Date	Water level from top of pipe (m)	Piezometric Elevation (m amsl)	Comments
10-May-11	21.17	1028.67	
17-May-11	21.40	1028.43	
24-May-11	21.56	1028.27	
30-May-11	21.69	1028.15	
13-Jun-11	21.91	1027.92	
3-Oct-11	22.46	1027.37	

Table F-55: Intermediate Dam Piezometer BH96-2

BH96-2		Location:	Intermediate Dam Crest		
		Coordinates:	8V580696 6914096	Tip Elevation (m amsl):	1028.87
Surface Protector:	Yes	Date Installed:	1996	2004 Surface Elevation: (m amsl)	1049.22
		Screened Interval (m bgs):	17.13 - 20.12	2004 Stick Up (m):	0.72

Date	Water level from top of pipe (m)	Piezometric Elevation (m amsl)	Comments
8-Sep-96	19.74	1030.31	
26-Sep-96			
27-Sep-96	19.94	1030.11	
13-May-97			
6-Jun-97			
11-Jul-97			
7-Oct-97	18.30	1031.75	
1-Jun-98	18.44	1031.61	
31-Oct-98	19.80	1030.25	
13-Nov-98	19.69	1030.36	
8-Jun-99	18.11	1031.94	
19-Jun-99			
3-Jul-99			
29-Oct-99	20.25	1029.80	
31-Oct-99			
31-May-00			
27-Jun-00			
25-Jul-00			
21-Sep-00	19.78	1030.27	
10-Oct-00			
6-Jun-01			
15-Jul-01			
5-Sep-01			
18-Jun-02	19.38	1030.68	
5-Aug-02	20.15	1029.90	
10-Sep-02	19.68	1030.37	
4-Nov-02	19.82	1030.24	
10-Nov-02	19.73	1030.32	
11-Jun-03	19.71	1030.34	
10-Sep-03	20.65	1029.40	
10-May-04	21.07	1028.87	Dry reading, 2004 survey data used from here on
19-Jul-04	19.62	1030.33	
9-Sep-04	20.02	1029.92	
26-May-05	19.95	1029.99	
14-Sep-05	21.04	1028.90	bottom iron mud on probe
9-Mar-06	21.15	1028.79	
27-Mar-06	21.03	1028.91	no beep, mud on probe
14-Jun-06	13.05		
2-Oct-06	21.04	1028.90	
22-May-07	20.34	1029.60	no beep, dry
26-Sep-07	21.40	1028.54	
20-May-08	19.89	1030.06	
11-Jun-08	20.19	1029.75	
24-Sep-08	20.58	1029.36	
29-Jun-09	21.50	1028.44	no beep
30-Sep-09	20.24	1029.70	
15-May-10	20.27	1029.67	
2-Jun-10	20.67	1029.27	
10-Sep-10	21.04	1028.91	
27-Apr-11	20.93	1029.02	

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Table F-55: Intermediate Dam
Piezometer BH96-2

Date	Water level from top of pipe (m)	Piezometric Elevation (m amsl)	Comments
3-May-11	20.81	1029.13	
9-May-11	20.84	1029.10	
17-May-11	21.05	1028.89	
24-May-11	21.06	1028.88	Soft bottom; muddy tip on tape.
30-May-11	21.05	1028.89	Bottom
13-Jun-11	21.05	1028.89	
3-Oct-11	21.06	1028.88	dry reading

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Table F-56: Intermediate Dam Piezometer BH96-3

BH96-3		Location:	Intermediate Dam Toe, near the North Abutment	2004 Stick Up - A (m):	0.65
		Coordinates:	8V580529 6913934	2004 Stick Up - B (m):	0.59
Surface Protector:	Yes	Date Installed:	1996	2004 Surface Elevation (m amsl):	1031.48
		Tip Elevation - A (m amsl):	1022.43	Screened Interval-A (m bgs):	7.44 - 8.97
		Tip Elevation - B (m amsl):	1012.23	Screened Interval - B (m bgs):	17.7 - 19.17

Date	Water level from top of pipe (m)		Piezometric Elevation (m amsl)		Comments
	A	B	96-3A (Shallow)	96-3B (Deep)	
08-Sep-96	2.37	2.25	1029.71	1029.78	
26-Sep-96	2.53	2.40	1029.55	1029.63	
27-Sep-96					
13-May-97	4.50	4.32	1027.58	1027.71	
06-Jun-97					
11-Jul-97					
07-Oct-97	1.06	0.95	1031.02	1031.08	
01-Jun-98	1.07	0.99	1031.01	1031.04	
31-Oct-98	2.44	2.34	1029.64	1029.69	
13-Nov-98					
08-Jun-99					
19-Jun-99	0.70	0.58	1031.38	1031.45	
03-Jul-99					
29-Oct-99	2.94	2.82	1029.14	1029.21	
31-Oct-99					
31-May-00					
27-Jun-00	2.41	2.26	1029.67	1029.77	
25-Jul-00					
21-Sep-00					
10-Oct-00	2.20	2.05	1029.88	1029.98	
06-Jun-01	2.38	2.24	1029.70	1029.79	
15-Jul-01	2.00	1.86	1030.08	1030.17	
05-Sep-01	1.98	1.86	1030.10	1030.17	
18-Jun-02	1.81		1030.27		
05-Aug-02					
10-Sep-02	2.57	2.42	1029.52	1029.61	
04-Nov-02					
10-Nov-02					
11-Jun-03	2.47	2.34	1029.61	1029.69	
10-Sep-03	3.43	3.28	1028.65	1028.75	
08-Jul-04	2.15	2.01	1029.98	1030.06	2004 survey data used from here on
19-Jul-04	2.40	2.23	1029.73	1029.85	
09-Sep-04	2.77	2.65	1029.36	1029.43	clear, sulphur smell
26-May-05	3.66	3.49	1028.47	1028.58	
14-Sep-05	4.37	4.18	1027.77	1027.89	
09-Mar-06	4.76	4.59	1027.37	1027.48	
27-Mar-06	4.43	4.26	1027.70	1027.81	
14-Jun-06	4.45	4.26	1027.68	1027.81	
2-Oct-06	4.42	4.30	1027.71	1027.77	
22-May-07	2.29	2.88	1029.84	1029.19	a- frozen no beep
26-Sep-07	4.06	3.94	1028.07	1028.13	
20-May-08	2.56	2.48	1029.57	1029.59	
11-Jun-08	2.91	2.81	1029.22	1029.26	
24-Sep-08	3.36	3.25	1028.77	1028.82	
29-Jun-09	4.17	4.04	1027.96	1028.03	

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Table F-56: Intermediate Dam
Piezometer BH96-3

Date	Water level from top of pipe (m)		Piezometric Elevation (m amsl)		Comments
	A	B	96-3A (Shallow)	96-3B (Deep)	
30-Sep-09	2.97	2.87	1029.16	1029.20	
15-May-10	2.95	2.85	1029.18	1029.22	
02-Jun-10	3.39	3.28	1028.74	1028.79	
10-Sep-10	5.51	3.77	1026.62	1028.31	
27-Apr-11	3.57	3.47	1028.56	1028.60	
03-May-11	3.46	3.37	1028.67	1028.70	
09-May-11	3.48	3.38	1028.65	1028.69	
17-May-11	3.79	3.68	1028.34	1028.39	
24-May-11	3.92	3.81	1028.21	1028.26	
30-May-11	4.08	3.98	1028.05	1028.09	
13-Jun-11	4.35	4.22	1027.78	1027.86	
03-Oct-11	4.35	4.22	1027.78	1027.86	

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Table F-57: Intermediate Dam Piezometer BH96-4

BH96-4		Location:	Intermediate Dam Toe, near South Abutment	2004 Stick Up - A (m):	0.95
		Coordinates:	8V580669 6914113	2004 Stick Up - B (m):	0.87
Surface Protector:	N/A	Date Installed:	1996	2004 Stick Up - C (m):	0.91
Screened Interval - A (m bgs):	5.7-6.48	Screened Interval-C (m bgs):	14.97-16.47	2004 Stick Up - D (m):	0.88
Screened Interval - B (m bgs):	9.8-11.3	Screened Interval-D (m bgs):	26.84-28.34	2004 Surface Elevation (m amsl):	1032.16

Date	Water level from top of pipe (m)				Piezometric Elevation (m amsl)				Comments
	A	B	C	D	A	B	C	D	
08-Sep-96	3.11	3.04	2.98	2.88	1029.99	1030.01	1030.02	1030.12	
26-Sep-96	3.27	3.25	3.12	3.05	1029.83	1029.80	1029.88	1029.95	
27-Sep-96									
13-May-97	5.21		4.85		1027.89		1028.15		
06-Jun-97									
11-Jul-97		3.51				1029.54			
07-Oct-97	1.45	1.87	1.82		1031.65	1031.18	1031.18		
01-Jun-98	1.84	1.84	1.83	1.62	1031.26	1031.21	1031.17	1031.38	
31-Oct-98	3.18	3.15	3.09	3.01	1029.92	1029.90	1029.91	1029.99	
13-Nov-98									
08-Jun-99									
19-Jun-99	1.43	1.38	1.36	1.25	1031.67	1031.67	1031.64	1031.75	
03-Jul-99									
29-Oct-99	3.68	3.62	3.60	3.48	1029.42	1029.43	1029.40	1029.52	
31-Oct-99									
31-May-00									
27-Jun-00	3.14	3.08	3.07	2.93	1029.96	1029.97	1029.93	1030.07	
25-Jul-00			2.84				1030.16		
21-Sep-00									
10-Oct-00	2.92	2.85	2.83	2.71	1030.18	1030.20	1030.17	1030.29	
06-Jun-01	3.13	3.04	3.06	2.94	1029.97	1030.01	1029.94	1030.06	
15-Jul-01									
05-Sep-01	2.77	2.68	2.71	2.57	1030.33	1030.37	1030.29	1030.43	
18-Jun-02	1.06	0.77			1032.04	1032.28			
05-Aug-02									
10-Sep-02	3.31	3.24	3.25	3.11	1029.80	1029.82	1029.75	1029.90	
04-Nov-02									
10-Nov-02									
11-Jun-03	3.24	3.15	3.21	3.06	1029.86	1029.90	1029.79	1029.94	
10-Sep-03	4.19	3.82	4.15	3.99	1028.91	1029.23	1028.85	1029.01	
10-May-04	3.18	3.10	3.14	3.01	1029.93	1029.94	1029.93	1030.03	2004 survey info used from here on
08-Jul-04	3.16	3.09	3.12	2.99	1029.95	1029.94	1029.96	1030.06	
19-Jul-04	3.56	3.09	3.12	2.99	1029.55	1029.94	1029.96	1030.06	
09-Sep-04	3.41	3.41	3.50	3.38	1029.70	1029.62	1029.57	1029.67	a, b and c - dirty; d - clear; a and d - sulphur smell
26-May-05	4.415	3.74		4.22	1028.70	1029.29		1028.83	coarse sand frozen
14-Sep-05	5.1	3.75	5.25	4.89	1028.01	1029.28	1027.82	1028.15	b- bottom blocked
09-Mar-06	5.50	blocked	5.33	5.31	1027.61		1027.74	1027.73	b- bottom blocked
27-Mar-06	5.19	blocked	5.12	4.99	1027.92		1027.96	1028.05	b- bottom blocked, ice crystals on probe
14-Jun-06	2.66	3.75	0.40	4.98		1028.41		1028.06	b-bottom. C-bottom fine sand
02-Oct-06	5.28	3.75	5.20	5.07	1027.83	1028.41	1027.87	1027.97	

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Table F-57: Intermediate Dam
Piezometer BH96-4

Date	Water level from top of pipe (m)				Piezometric Elevation (m amsl)				Comments
	A	B	C	D	A	B	C	D	
22-May-07	3.15	3.75	1.52	3.11	1029.96	1028.41	1031.55	1029.93	a, b and d- frozen no beep
26-Sep-07	4.92	3.74	4.84	4.71	1028.20	1028.42	1028.23	1028.34	b: dry
20-May-08	3.46	3.37	3.39	2.60	1029.65	1028.79	1029.68	1030.44	
11-Jun-08	3.79	3.70	3.72	3.60	1029.32	1028.46	1029.35	1029.44	
24-Sep-08	4.23	3.75	4.15	4.01	1028.88	1028.41	1028.92	1029.03	b: dry
29-Jun-09	5.03	3.77	4.93	4.80	1028.08	1028.39	1028.14	1028.24	b: no beep
30-Sep-09	3.85	3.77	3.77	2.65	1029.26	1028.39	1029.30	1030.39	
15-May-10				3.66				1029.38	
2-Jun-10				4.08				1028.96	
27-Apr-11				4.28				1028.76	
3-May-11				4.17				1028.87	
9-May-11				4.19				1028.86	
17-May-11				4.45				1028.59	
24-May-11				4.59				1028.45	frozen
30-May-11				4.75				1028.29	
13-Jun-11				4.99				1028.05	frozen
28-Sep-11				5.42				1027.62	frozen

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Table F-58: Intermediate Dam Piezometer P01-03

P01-03		**Location:**	Intermediate Dam Toe	**2004 Stick-Up (m):**	0.61
		Coordinates:	8V580636 6914064	**2004 Surface Elevation (m amsl):**	1031.52
Surface Protector:	Yes	**Date Installed:**	1996	**Tip Elevation (m amsl):**	1022.35
				Screened Interval (m bgs):	7.78 - 9.30

Date	Water level from top of pipe (m)	Piezometric Elevation (m amsl)	Pond Elev. (m amsl)	Comments
11-Sep-01	1.58	1030.63		
10-Jun-02	2.39	1029.82		
23-Sep-02	2.06	1030.15	1047.19	
11-Jun-03	1.61	1030.60		
10-Sep-03	3.08	1029.14		
10-May-04	1.70	1030.43	1046.59	2004 survey info used from here on
8-Jul-04	1.82	1030.31	1045.86	
19-Jul-04	2.07	1030.06	1045.97	
9-Sep-04	2.46	1029.68	1046.27	Dirty, strong sulphur smell
26-May-05	3.29	1028.85	1047.01	ph=6.7, temp=9.0C
14-Sep-05	3.96	1028.17	1046.37	ph=6.8, temp=6.4C
9-Mar-06	4.38	1027.75	1047.58	
27-Mar-06	4.07	1028.06	1047.55	
14-Jun-06	4.06	1028.07	1046.85	
2-Oct-06	4.14	1027.99	1046.18	
22-May-07	2.45	1029.69	1046.78	No Beep, frozen
26-Sep-07	4.01	1028.12	1046.38	
20-May-08	1.85	1030.28	1046.73	No Beep, frozen
11-Jun-08	2.71	1029.42	1046.04	
24-Sep-08	3.12	1029.02	1046.29	
29-Jun-09	3.92	1028.21	1046.48	
30-Sep-09	2.76	1029.37	1046.05	
15-May-10	2.77	1029.36	1046.42	
2-Jun-10	3.19	1028.94	1045.94	
10-Sep-10	4.40	1027.74	1043.73	
10-May-11	2.49	1029.64	1045.27	frozen
17-May-11	2.49	1029.64	1045.45	
24-May-11	2.49	1029.64	1045.59	frozen
30-May-11	2.49	1029.64	1045.44	frozen
13-Jun-11	2.50	1029.63	1045.13	frozen
12-Jul-11	3.79	1028.35	1044.60	
3-Oct-11	4.65	1027.48	1043.47	

Table F-59: Intermediate Dam Piezometer P01-04

P01-04		Location:	Intermediate Dam Toe	2004 Stick Up - A (m):	0.45
		Coordinates:	8V580489 6913888	2004 Stick Up -B (m):	0.45
Surface Protector:	Yes	Date Installed:	1996	2004 Surface Elevation (m amsl):	1032.32
		Screened Interval -A (m bgs):	31.7 - 33.22	Tip Elevation - A (m amsl):	998.17
		Screened Interval - B (m bgs):	51.0 - 52.5	Tip Elevation - B (m amsl):	978.89

Date	Water level from top of pipe (m)		Piezometric Elevation (m amsl)		Comments
	A	B	A	B	
11-Sep-01	0.78	0.43	1031.12	1031.46	
10-Jun-02	1.67	1.29	1030.23	1030.60	
23-Sep-02	1.39	1.00	1030.51	1030.89	
11-Jun-03	1.45	1.03	1030.45	1030.86	
10-Sep-03	2.35	1.90	1029.55	1029.99	
10-May-04	1.25	1.17	1031.52	1031.60	2004 survey info used from this point on
08-Jul-04	1.18	0.76	1031.59	1032.02	
19-Jul-04	1.42	0.99	1031.35	1031.78	
09-Sep-04	1.83	1.40	1030.95	1031.37	
26-May-05	0.53	0.60	1032.24	1032.17	bottom, no beep
14-Sep-05	2.69	3.22	1030.08	1029.56	
09-Mar-06	1.99	3.71	1030.78	1029.06	
27-Mar-06	1.99	3.42	1030.78	1029.35	bottom
14-Jun-06	1.99	2.60	1030.79	1030.18	bottom
02-Oct-06	2.85	3.40	1029.92	1029.37	
22-May-07	0.82	2.13	1031.95	1030.64	a-beep, b-frozen no beep
26-Sep-07	2.45	3.00	1030.33	1029.77	
20-May-08	0.69	1.56	1032.09	1031.21	b-no beep, frozen
11-Jun-08	1.39	1.93	1031.38	1030.84	
24-Sep-08	1.65	2.26	1031.13	1030.51	
29-Jun-09	2.44	3.04	1030.33	1029.73	
30-Sep-09	1.37	1.85	1031.41	1030.93	
15-May-10	1.60	2.04	1031.18	1030.73	
02-Jun-10	1.78	2.05	1030.99	1030.72	
10-Sep-10	3.50	2.95	1029.27	1029.82	
10-May-11	1.346	2.10	1031.42	1030.67	both wells frozen
17-May-11	1.851	2.10	1030.92	1030.67	both wells frozen
24-May-11	1.853	2.10	1030.92	1030.67	both wells frozen
30-May-11	1.851	2.10	1030.92	1030.67	both wells frozen
13-Jun-11	1.846	2.09	1030.92	1030.68	both wells frozen
12-Jul-11	2.275	2.85	1030.50	1029.93	both wells frozen
03-Oct-11	3.092	3.70	1029.68	1029.07	

Table F-60: Intermediate Dam
Piezometer BKS04-06

BKS04-06		**Location:**	Intermediate Dam South Abutment	**2004 Stick-Up (m):**	1.51
		Coordinates:	N 6913803 E 580454.9	**Tip Elevation (m amsl):**	1036.00
Surface Protector:	Yes	**Date Installed:**	1996	**2004 Surface Elevation (m amsl):**	1049.1
				Screened Interval (m bgs):	12.8 - 13.1

Date	Water level from top of pipe (m)	Piezometric Elevation (m amsl)	Pond Elev. (m amsl)	Comments
26-May-05	13.01	1037.60	1047.012	
14-Sep-05	14.15	1036.46	1046.370	bottom - no beep
09-Mar-06	13.87	1036.74	1047.575	
27-Mar-06	13.04	1037.57	1047.550	no beep
14-Jun-06	14.14	1036.47	1046.848	sticky at 11.0m
02-Oct-06	14.11	1036.50	1046.180	
22-May-07	13.86	1036.75	1046.781	Bottom no beep
26-Sep-07	14.15	1036.46	1046.375	no beep
20-May-08	1.82		1046.727	no beep
11-Jun-08	1.79		1046.040	no beep
24-Sep-08	14.16	1036.45	1046.285	no beep
29-Jun-09	14.17	1036.44	1046.480	beeped
30-Sep-09	14.27	1036.34	1046.048	no beep
15-May-10	1.94		1046.424	Stuck in slush; No beep
02-Jun-10	14.17	1036.44	1045.940	
10-Sep-10	13.88	1036.73	1043.726	Stuck in slush; No beep
11-May-11	14.02	1036.59	1045.272	dry
17-May-11	14.01	1036.60	1045.445	dry
24-May-11	13.89	1036.72	1045.586	frozen; ice on tip of tape
30-May-11	14.01	1036.60	1045.436	dry
13-Jun-11	13.89	1036.72	1045.132	frozen; ice on tip of tape
03-Oct-11	13.87	1036.73	1043.465	dry

Table F-61: Intermediate Dam
Piezometer BKS04-07

BKS04-07		**Location:**	Intermediate Dam South Abutment	**2004 Stick-Up (m):**	1.51
		Coordinates:	N 6913747 E 580407.6	**Tip Elevation (m amsl):**	1037.29
Surface Protector:	Yes	**Date Installed:**	1996	**2004 Surface Elevation (m amsl):**	1049.2
				Screened Interval (m bgs):	11.5 - 11.81

Date	Water level from top of pipe (m)	Piezometric Elevation (m amsl)	Pond Elev. (m amsl)	Comments
26-May-05	14.155		1047.012	Impossible reading
14-Sep-05	12.99	1037.72	1046.370	
09-Mar-06	13.03	1037.68	1047.575	
27-Mar-06	14.16	1036.55	1047.550	no beep
14-Jun-06	13.02	1037.69	1046.848	sticky at 12.7 m
02-Oct-06	13.01	1037.70	1046.180	
22-May-07	2.03		1046.781	no beep, frozen
26-Sep-07	13.025	1037.69	1046.375	
20-May-08	1.99		1046.727	no beep
11-Jun-08	2.89		1046.040	no beep
24-Sep-08	13.405	1037.31	1046.285	
29-Jun-09	3.58		1046.480	blocked
30-Sep-09	13.053	1037.66	1046.048	
15-May-10	13.081	1037.63	1046.424	
02-Jun-10			1045.940	Hit something solid - either ground or ice.
10-Sep-10	12.785	1037.93	1043.726	Hit something solid - probably ground; No beep.
11-May-11	12.935	1037.78	1045.272	
17-May-11	12.926	1037.78	1045.445	
25-May-11	12.770	1037.94	1045.586	
30-May-11	12.919	1037.79	1045.436	dry
13-Jun-11	12.806	1037.90	1045.132	
03-Oct-11	12.766	1037.94	1043.465	dry

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Figure F-37: Intermediate Dam
Piezometer BH91-ID3 (Both Tips)

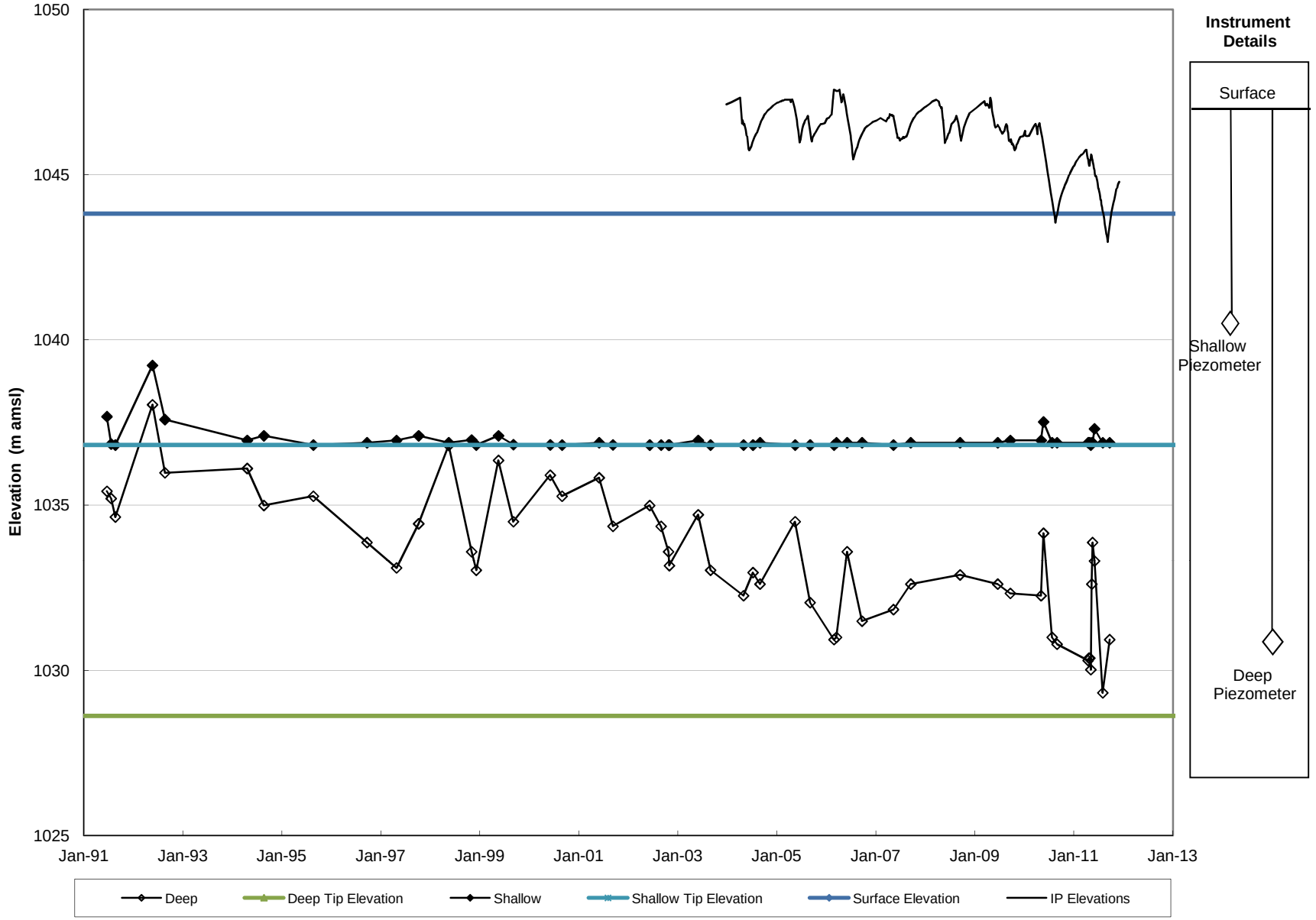

Figure F-38: Intermediate Dam
Piezometer BH91-ID4 (Both Tips)

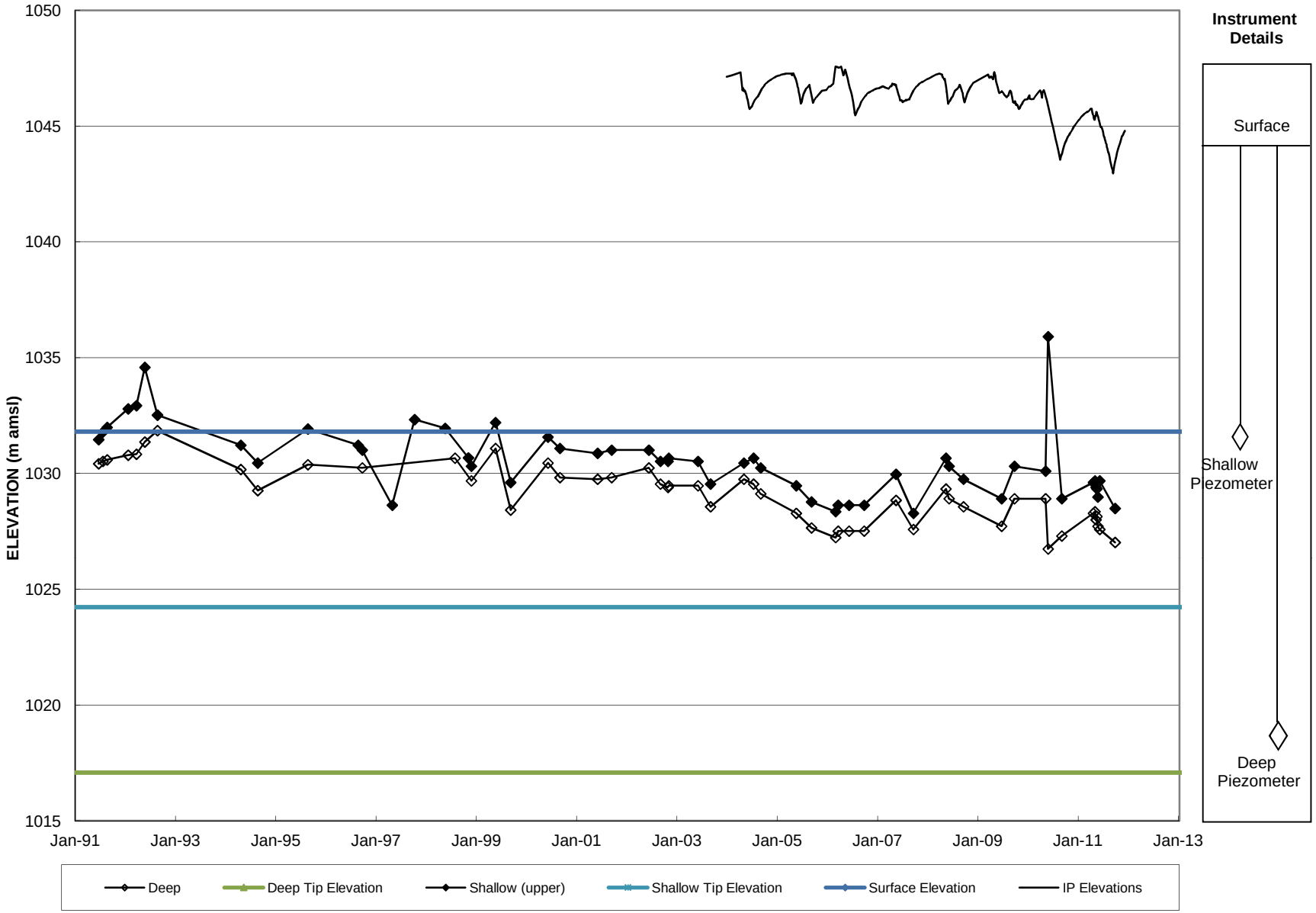

Figure F-39: Intermediate Dam
Piezometer BH91-ID6 (Both Tips)

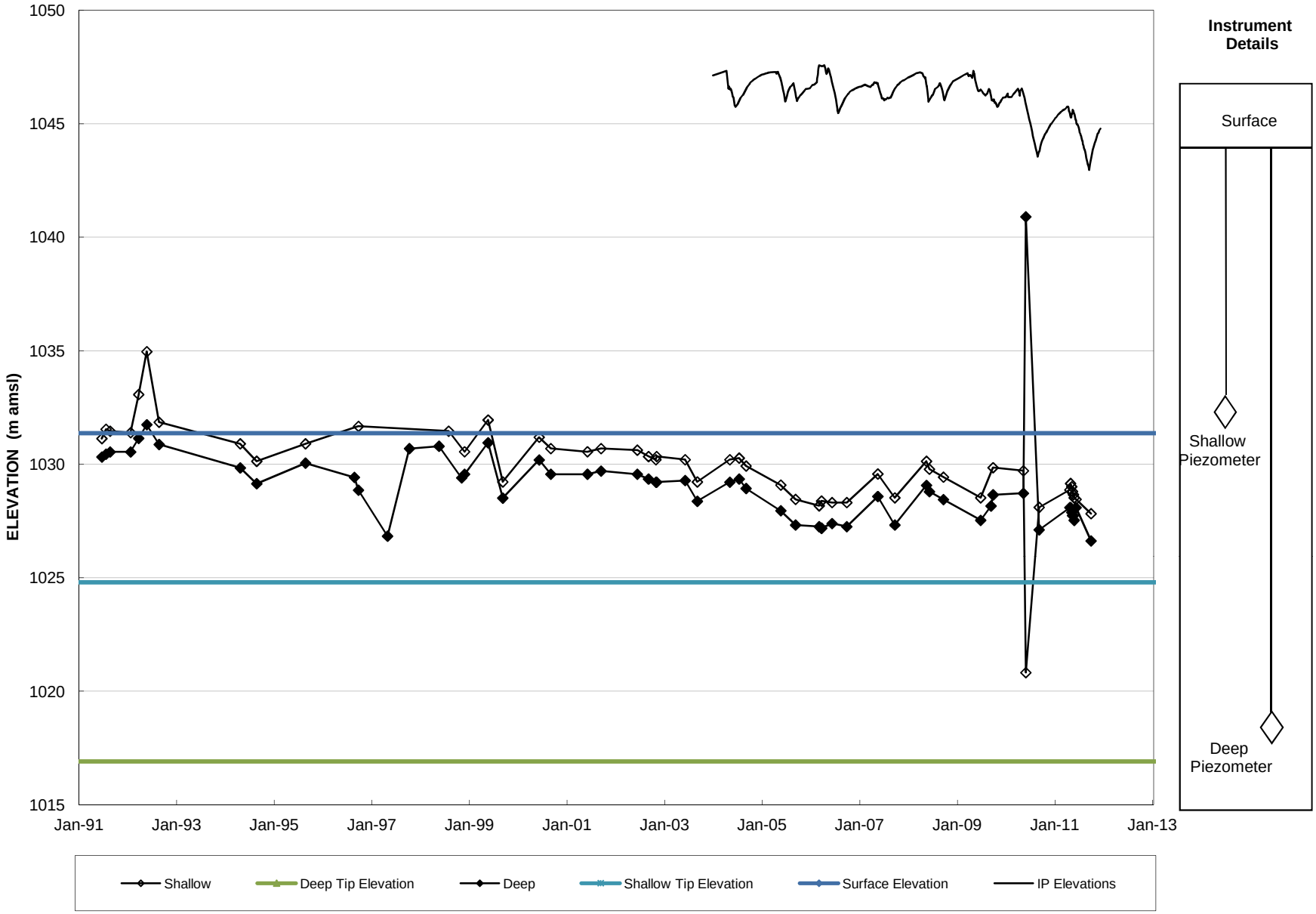

Figure F-40: Intermediate Dam
Piezometer BH91-ID7

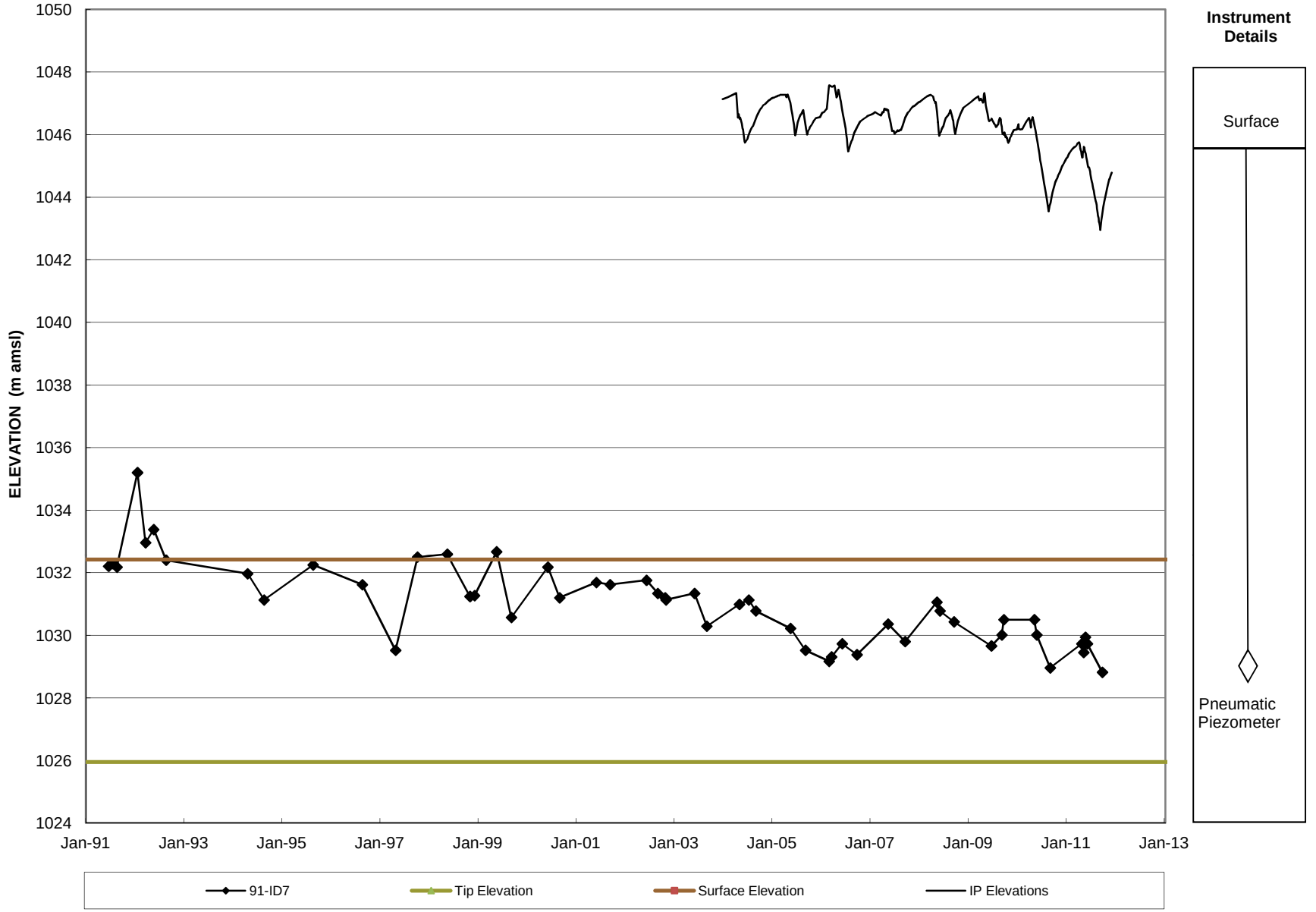

Figure F-41: Intermediate Dam
Piezometer BH94-IDC-1

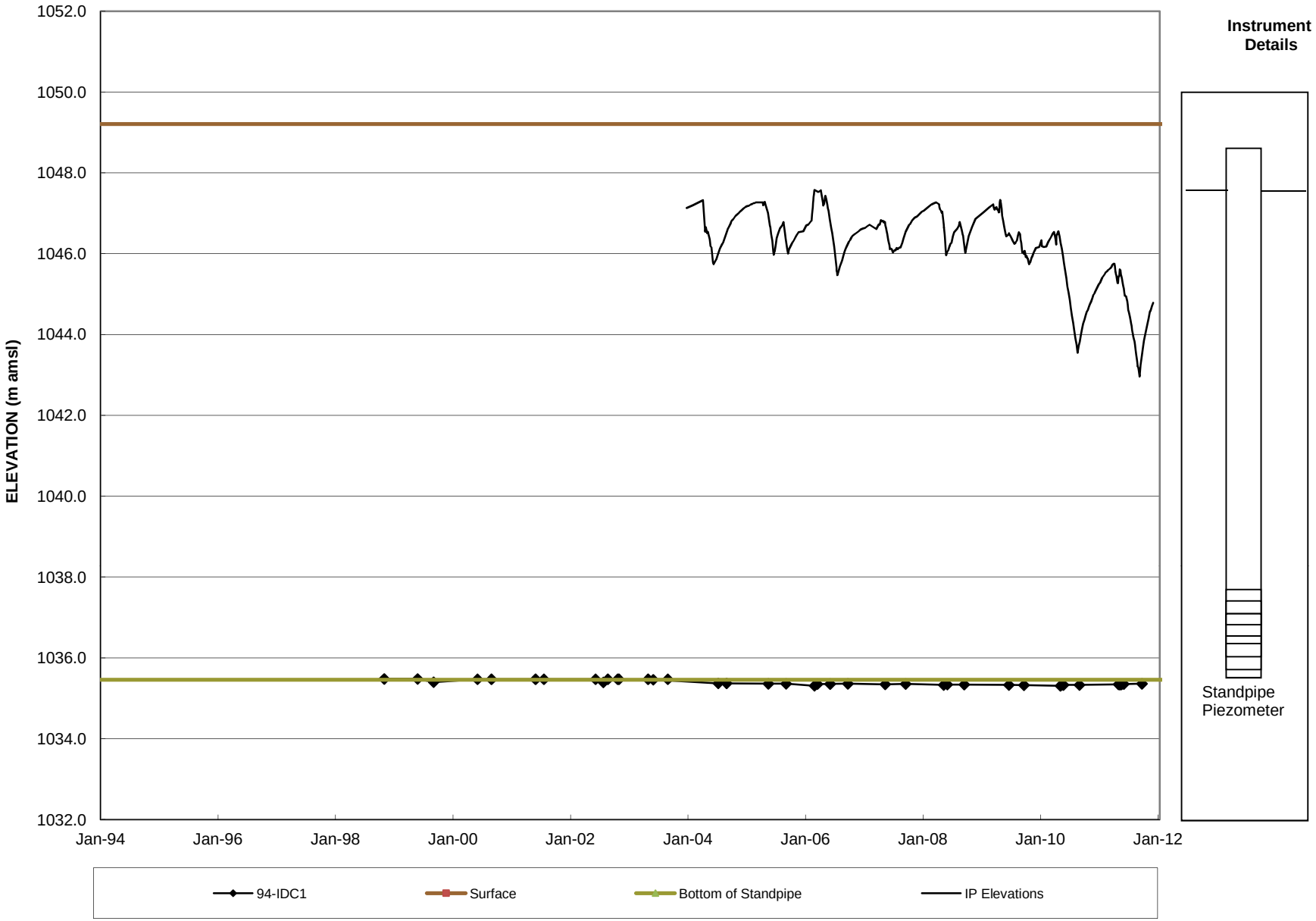

Figure F-42: Intermediate Dam
Piezometer BH96-1

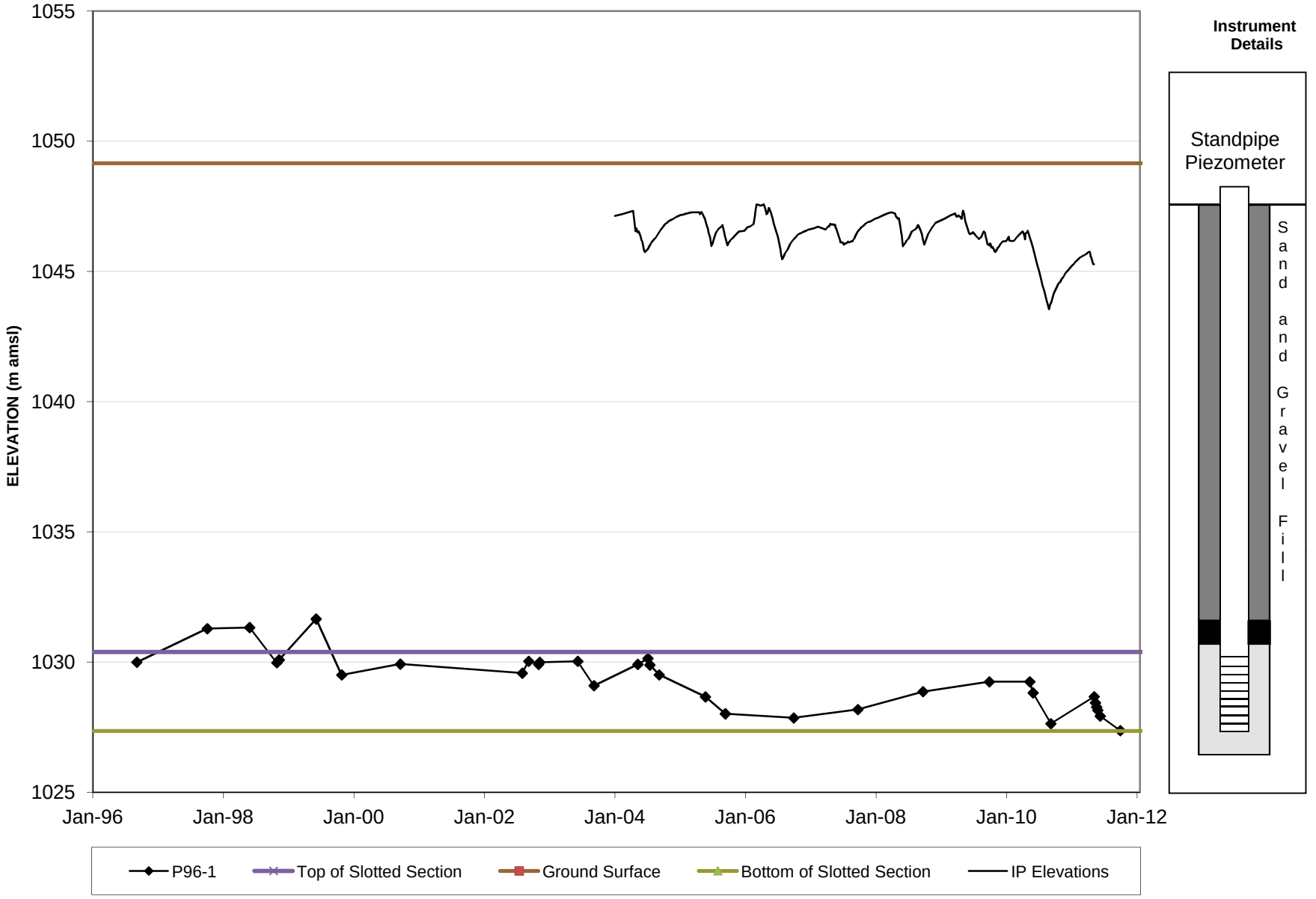

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Figure F-43: Intermediate Dam Piezometer BH96-2

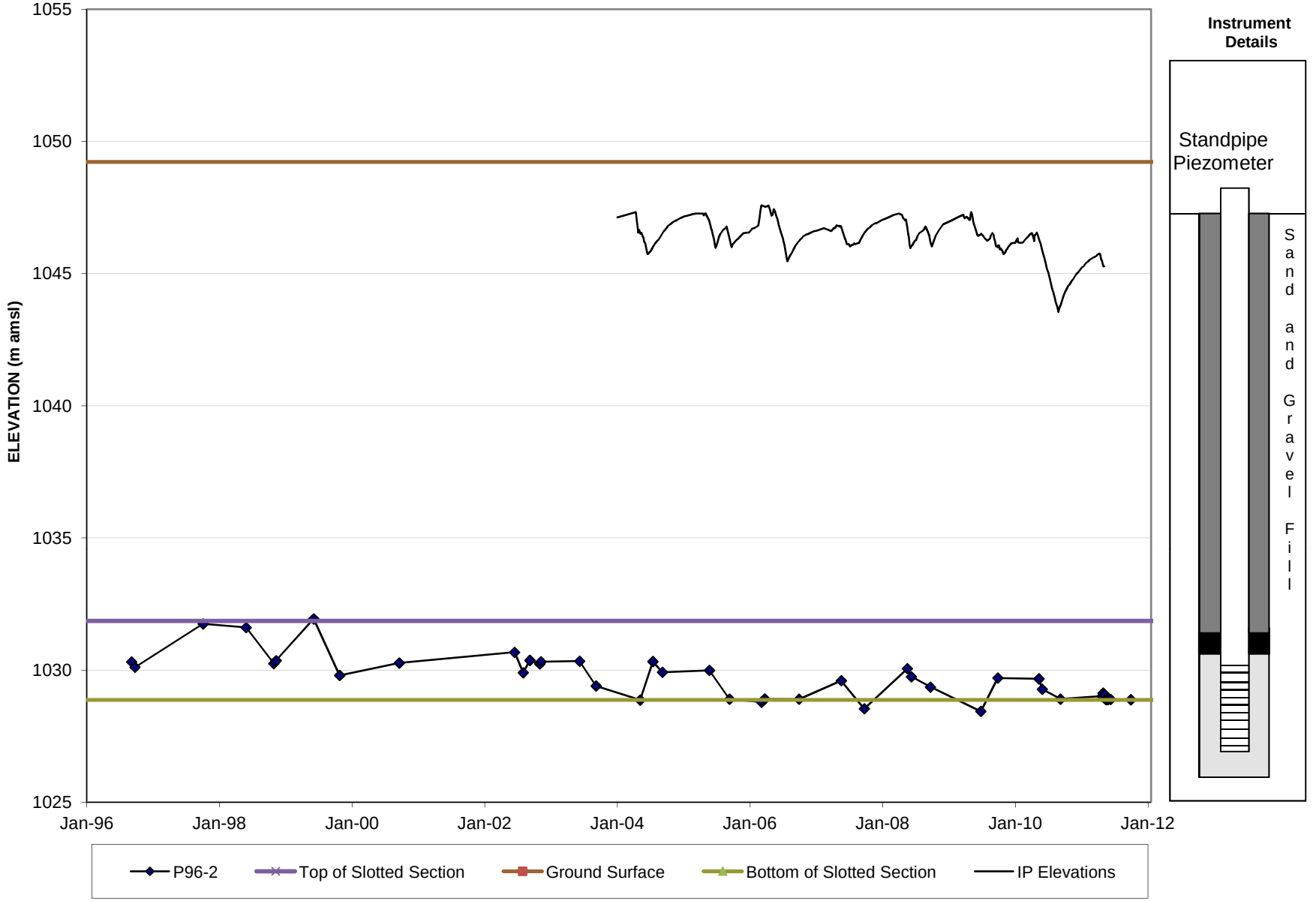

Figure F-44: Intermediate Dam
Piezometer BH96-3 (A/B)

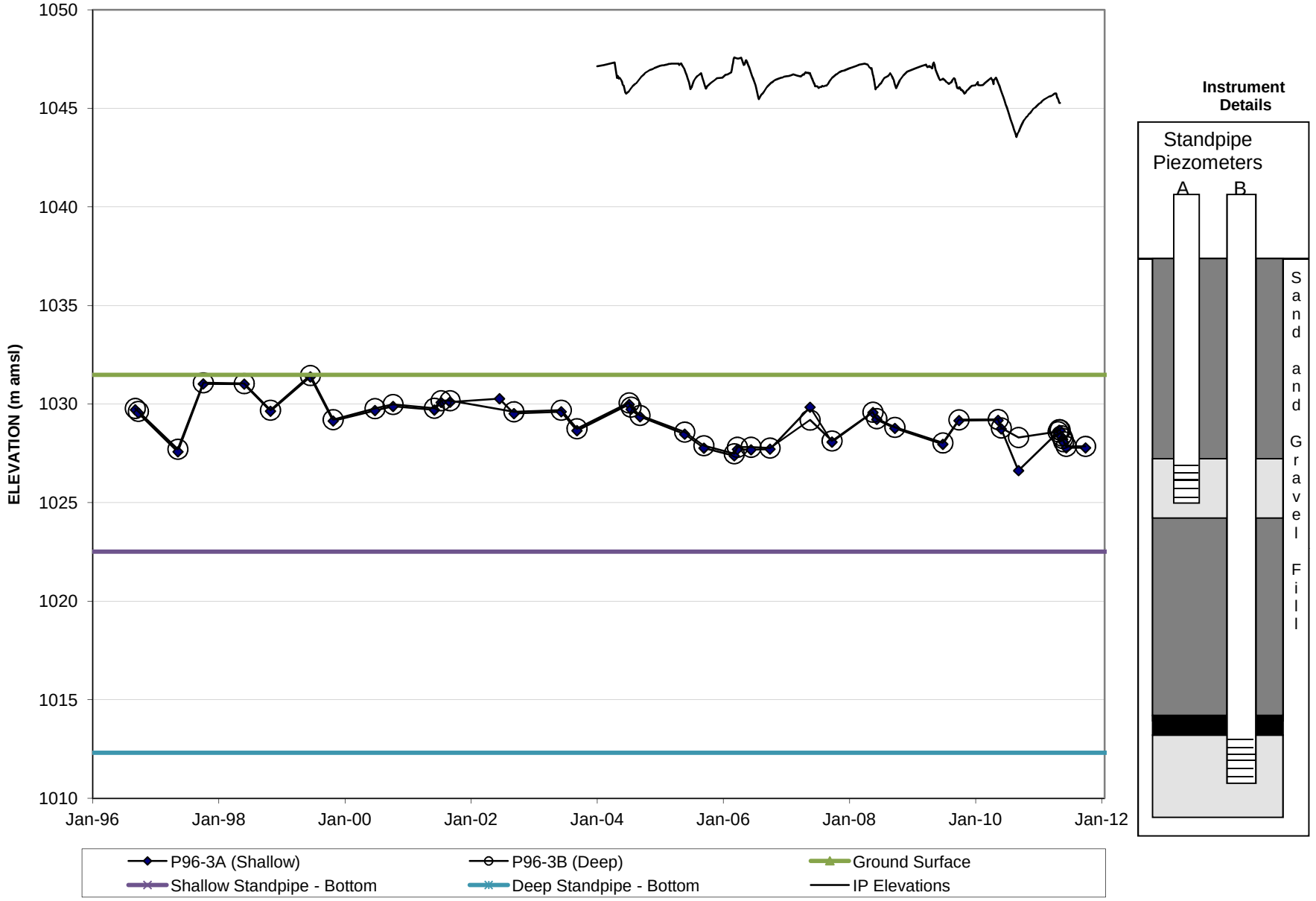

Figure F-45: Intermediate Dam
Piezometer BH96-4 (A/B/C/D)

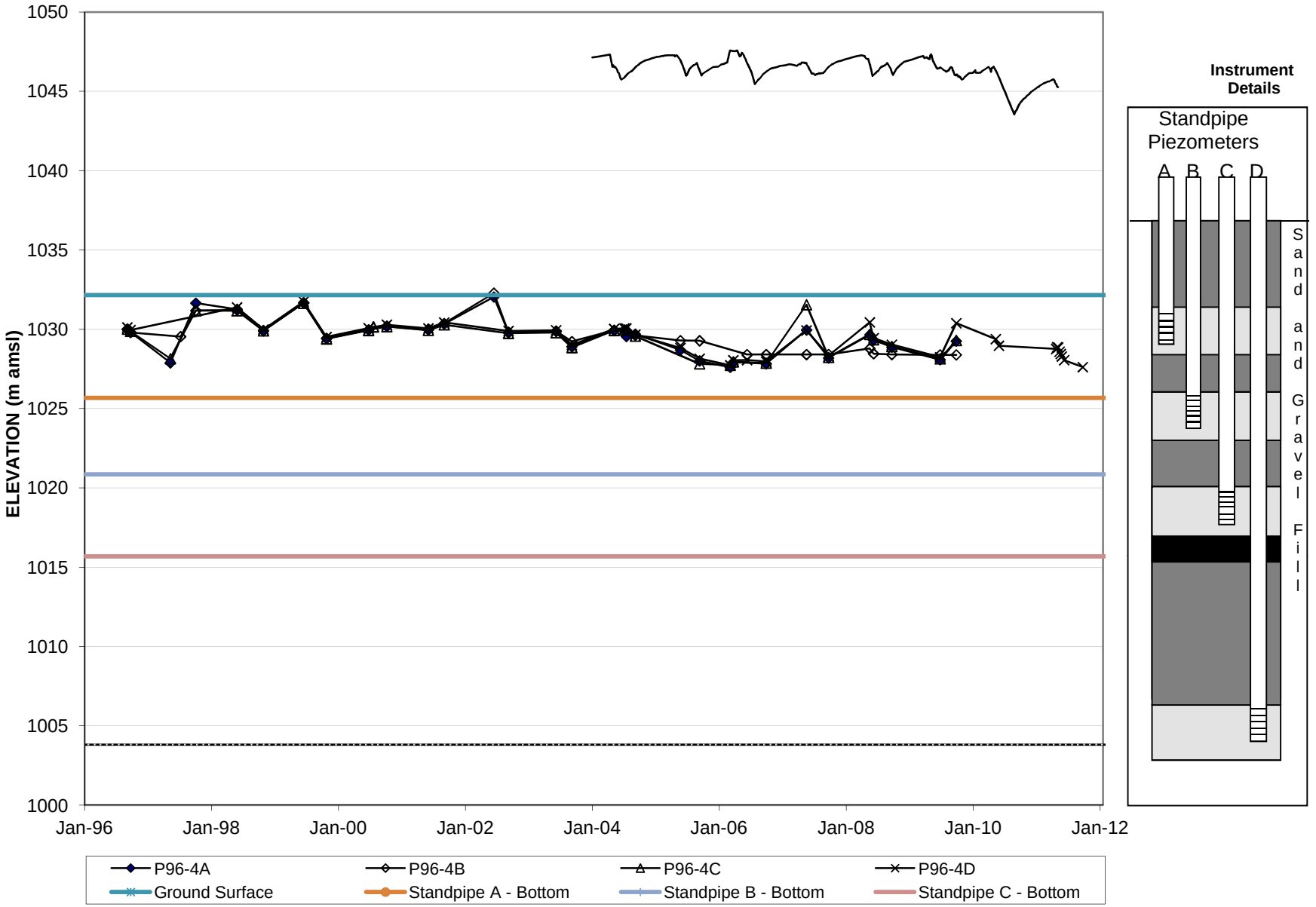

Figure F-46: Intermediate Dam
Piezometer P01-03

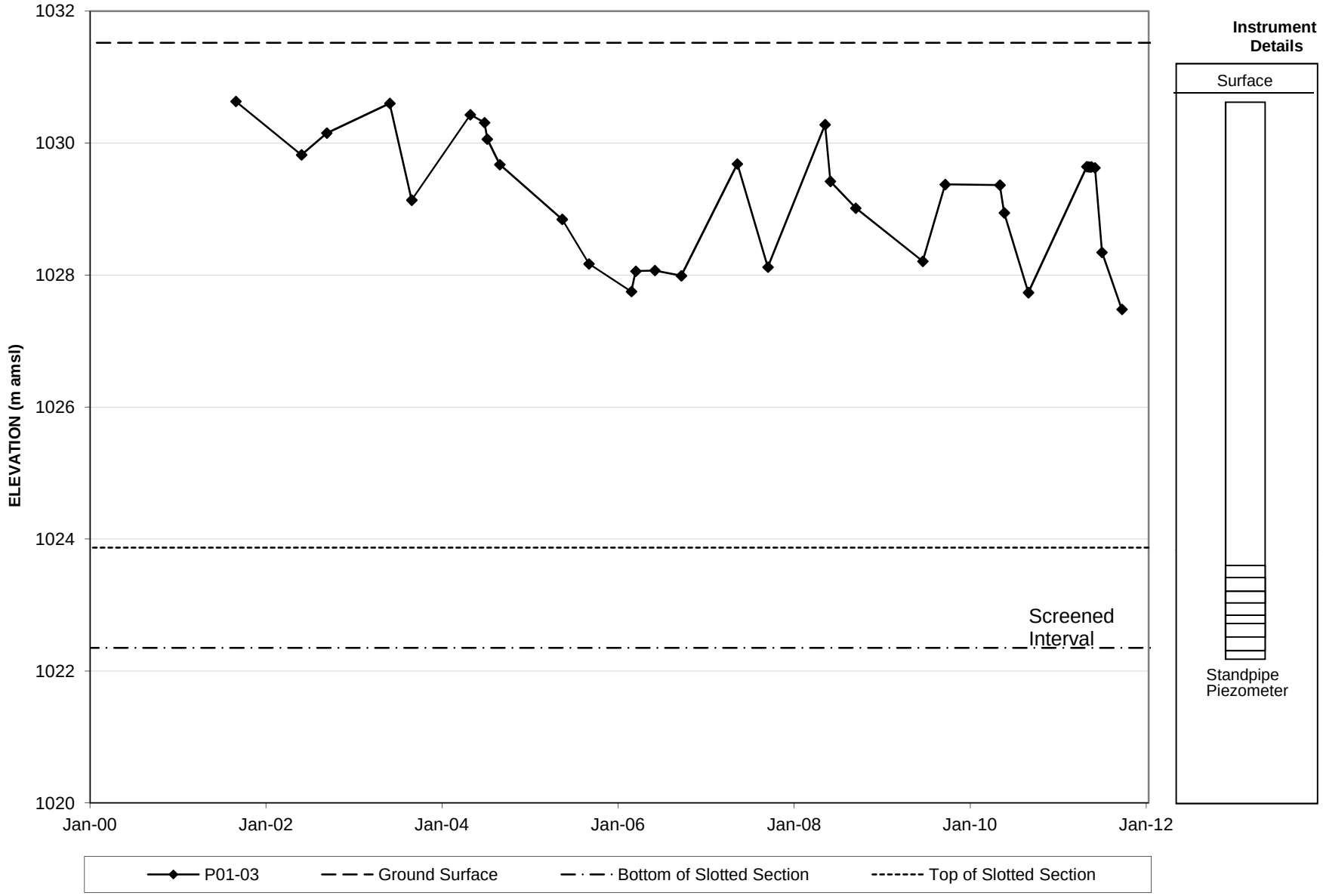

Figure F-47: Intermediate Dam
Piezometer P01-04 (A/B)

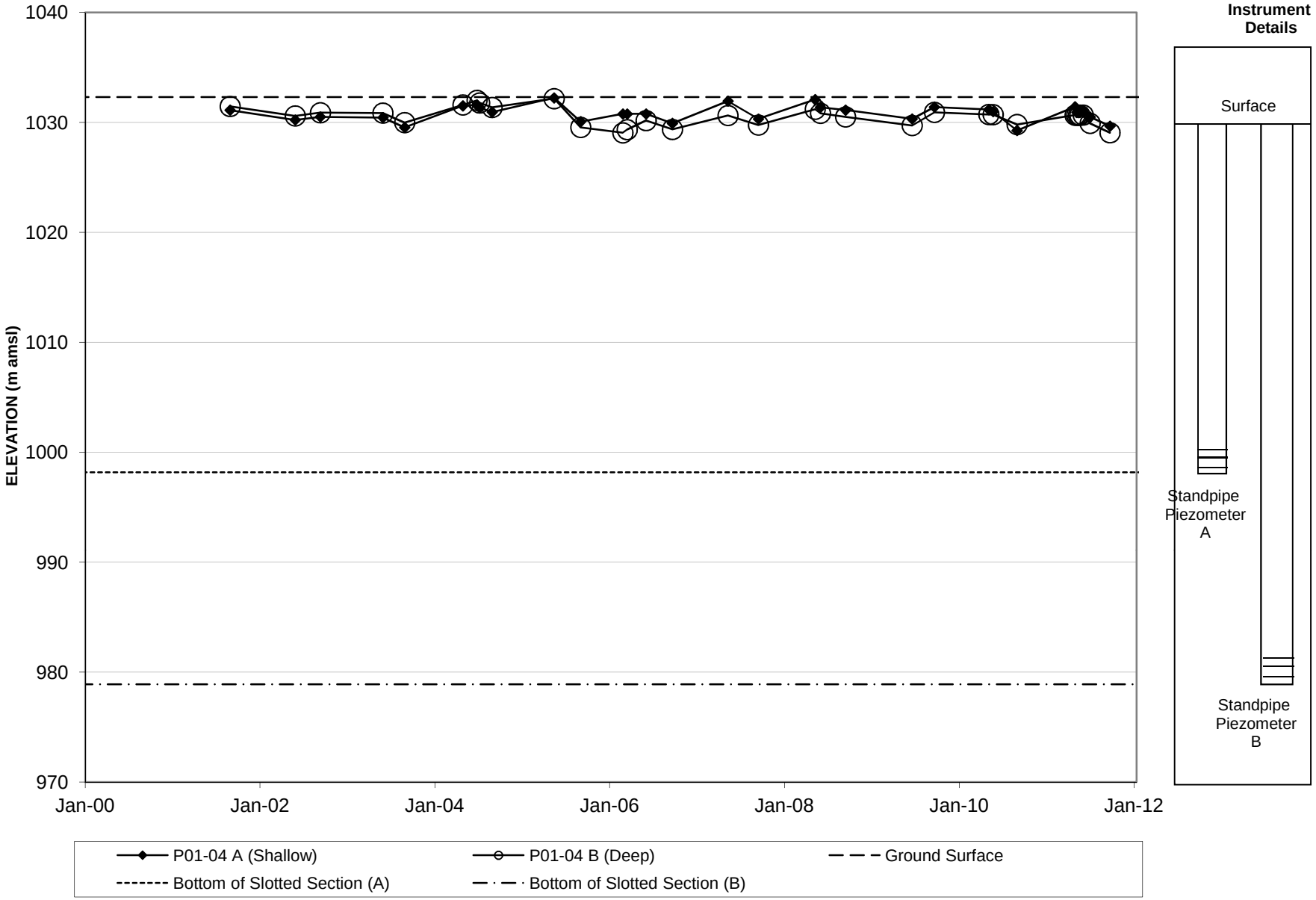

Figure F-48: Intermediate Dam
Piezometer BKS04-06

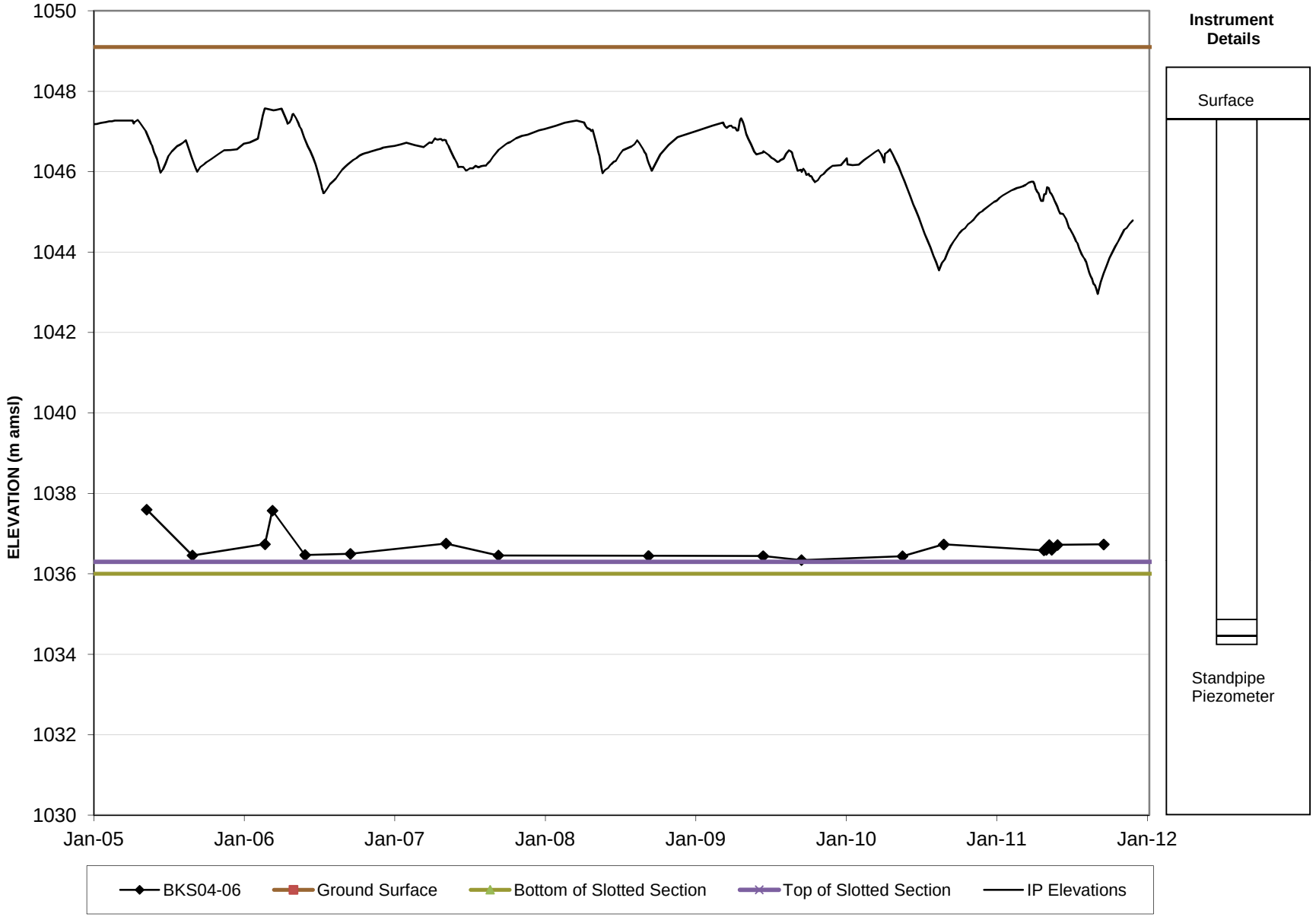

Figure F-49: Intermediate Dam
Piezometer BKS04-07

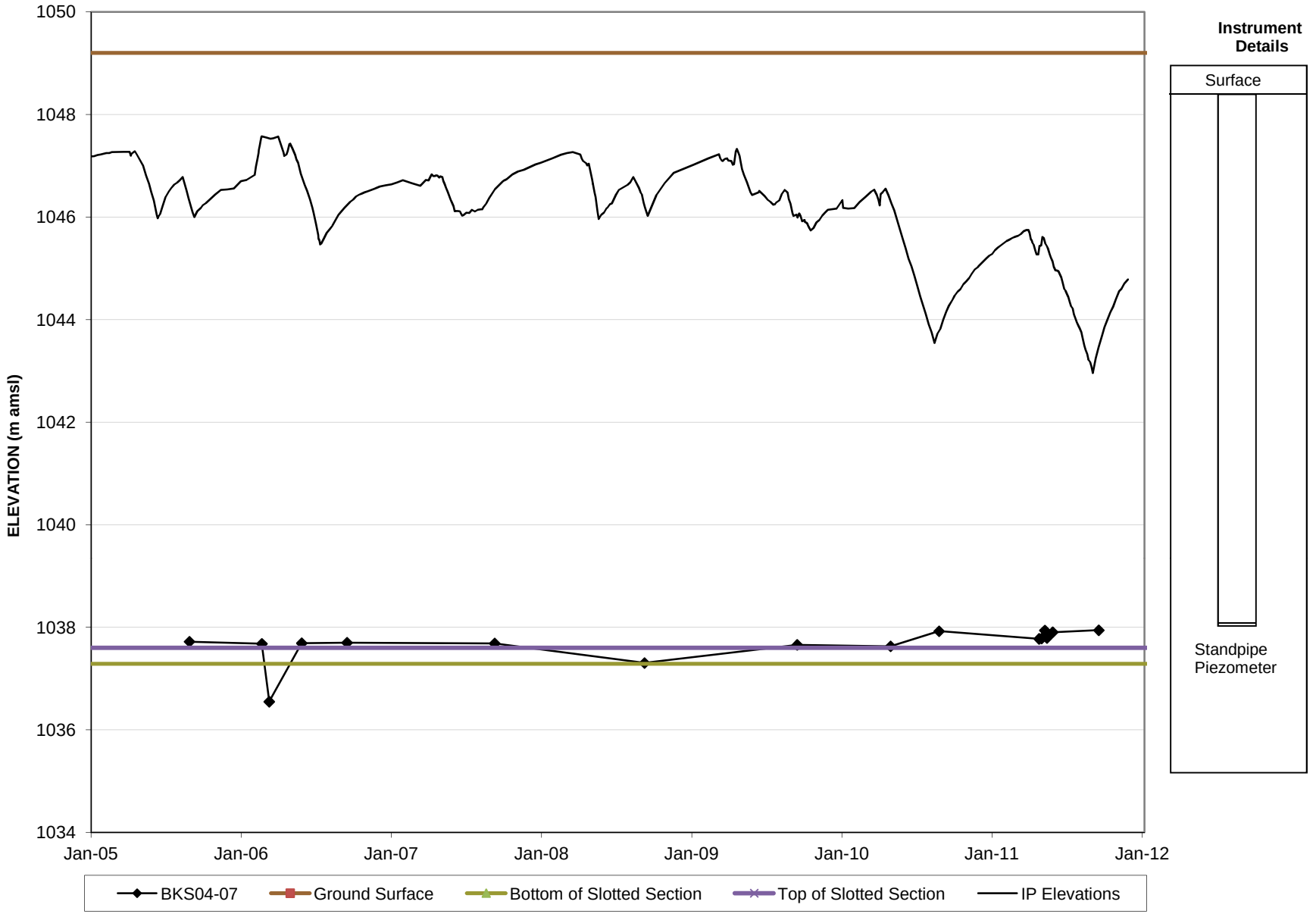

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Figure F-50: Intermediate Dam Piezometers - Cross Section 'A'

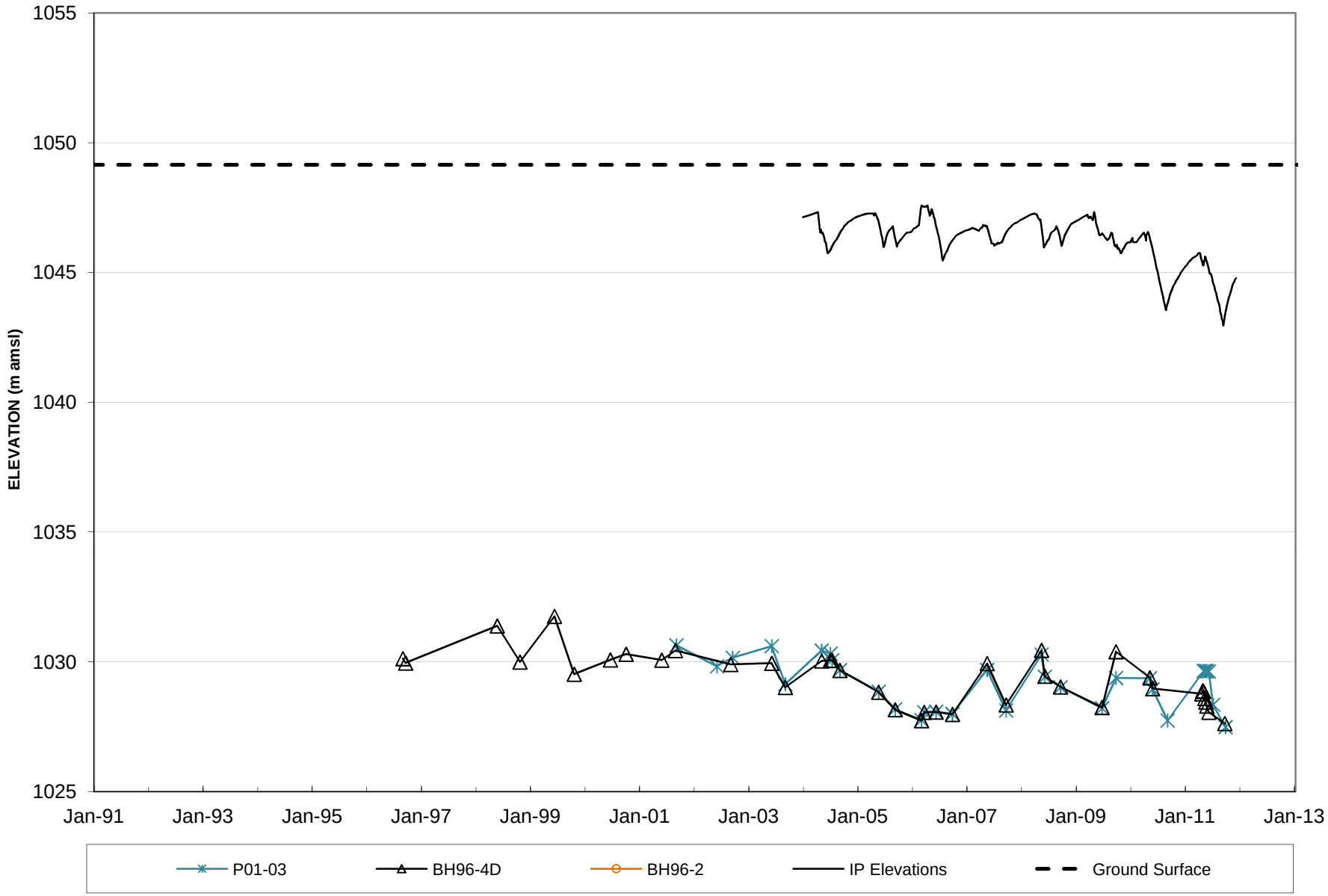

Figure F-51: Intermediate Dam
Piezometers - Cross Section 'B'

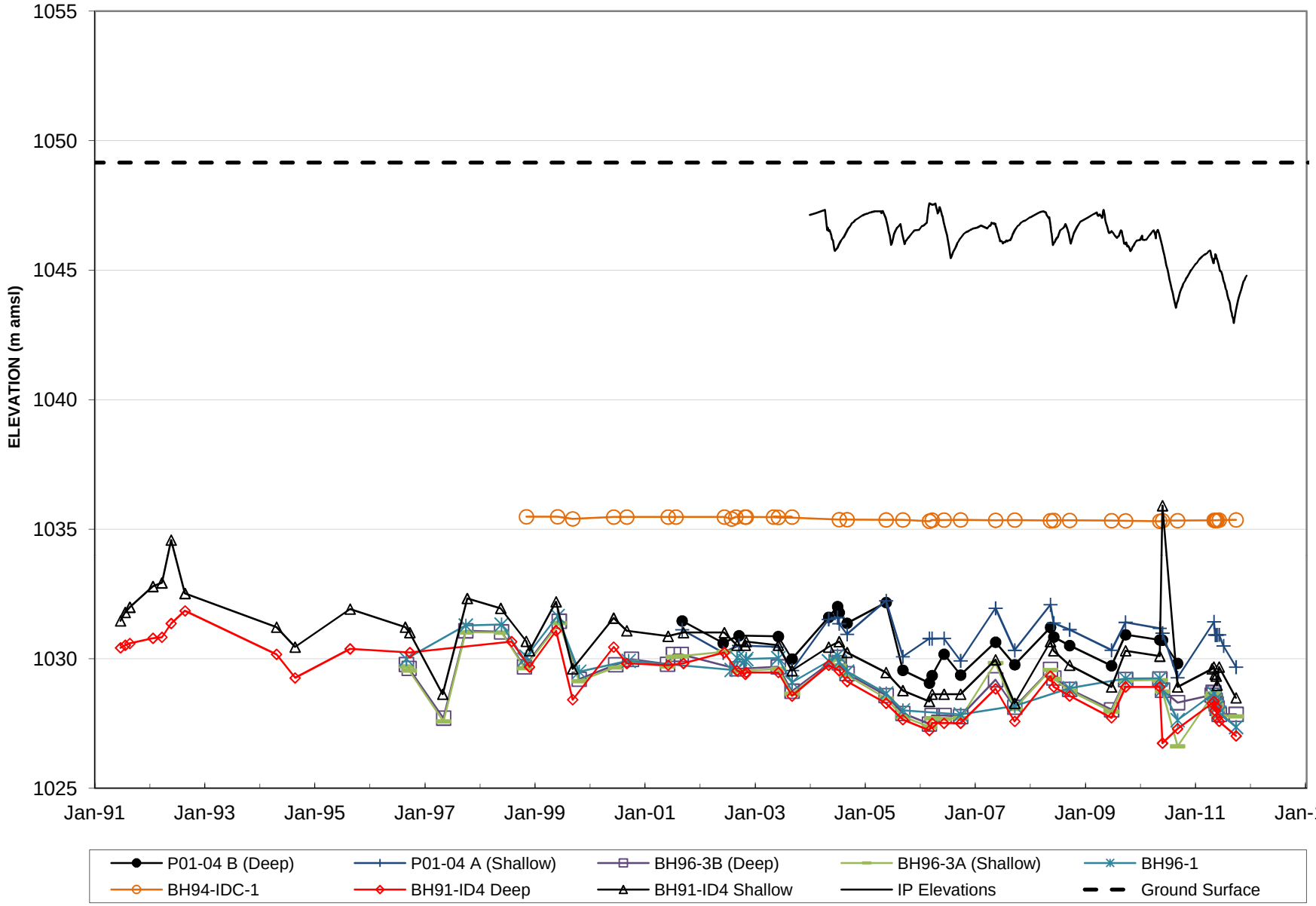

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Figure F-52: Intermediate Dam Piezometers - Cross Section 'C'

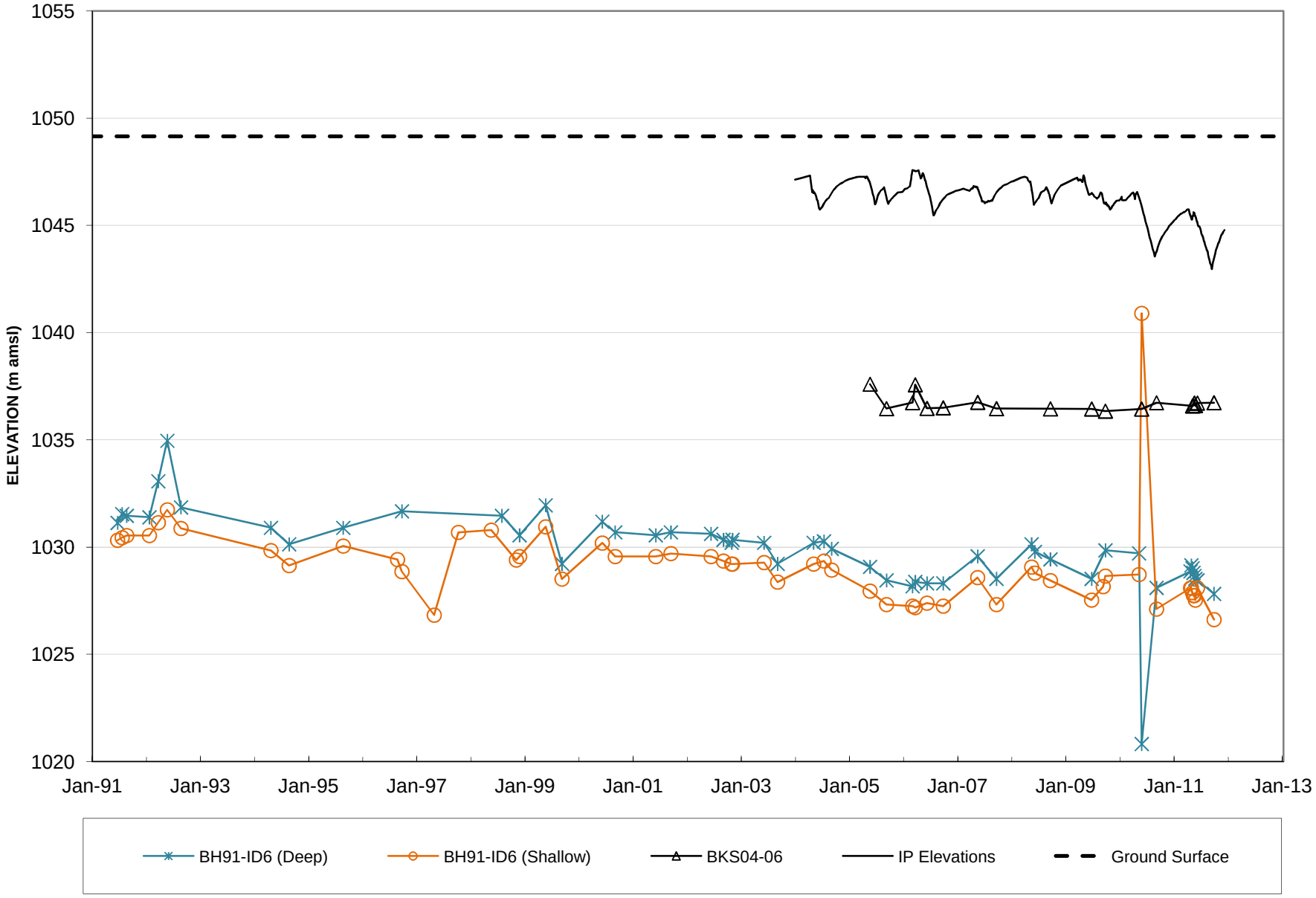

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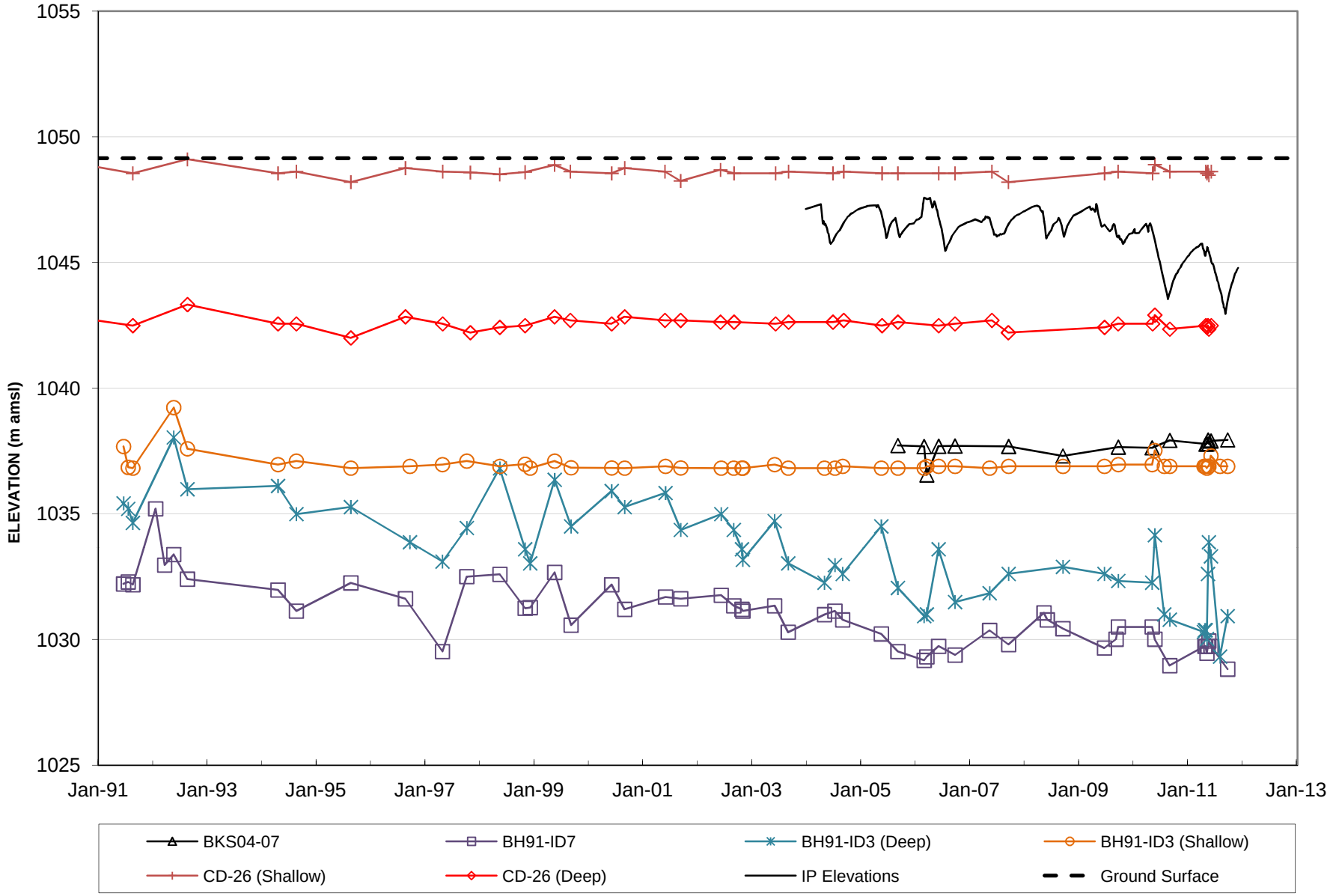
Figure F-53: Intermediate Dam
Piezometers Cross Section 'S Abut'



TABLES AND FIGURES

Secondary Tailings Dam

Table F-62: Secondary Tailings Dam
Piezometer P81-06

P81-06		Location:	Secondary Dam	2004 Stick-Up (m):	0.13
		Coordinates:	8V582791 6912684	2004 Surface Elevation (m amsl):	1060.74
Surface Protector:	N/A	Date Installed:	1981	Tip Elevation (m amsl):	1054.71
				Screened Interval (m bgs):	Unknown

Date	Water level from top of pipe (m)	Piezometric Elevation (m amsl)	Int. Pond Elev. (m amsl)	Comments
20-Jun-05	6.81	1054.72	1046.321	
1-Aug-05	6.16	1054.71	1046.565	
14-Sep-05	6.81	1054.72	1046.370	
2-Oct-06	6.805	1054.73	1046.180	
6-Jun-07	6.79	1054.74	1046.490	no beep, bottom
26-Sep-07	6.79	1054.74	1046.375	no beep, bottom
25-Jun-08	6.79	1054.74	1046.169	no beep, bottom
25-Sep-08	6.805	1054.73	1046.197	
30-Sep-09	6.815	1054.72	1046.048	
20-May-10	6.802	1054.73	1046.269	All Measurements To Top Of Well - Plastic Casing Broken
5-Jun-10	6.812	1054.72	1045.940	
10-Sep-10	6.800	1054.73	1043.726	
27-May-11	6.807	1054.72	1045.482	Frozen
15-Jun-11	6.821	1054.71	1045.132	Dry

Table F-63: Secondary Tailings Dam
Piezometer P81-07

P81-07		Location:	Secondary Dam	2004 Stick-Up (m):	0.77
		Coordinates:	8V583222 6912420	2004 Surface Elevation (m amsl):	1063.31
Surface Protector:	N/A	Date Installed:	1981	Tip Elevation (m amsl):	1057.17
				Screened Interval (m bgs):	Unknown

Date	Water level from top of pipe (m)	Piezometric Elevation (m amsl)	Int. Pond Elev. (m amsl)	Comments
20-Jun-05	6.95	1057.13	1046.321	
1-Aug-05	6.91	1057.17	1046.565	
14-Sep-05	6.91	1057.17	1046.370	
2-Oct-06	6.91	1057.17	1046.180	
6-Jun-07	6.91	1057.17	1046.490	
26-Sep-07	6.9	1057.18	1046.375	Beep
25-Jun-08	6.905	1057.18	1046.169	
25-Sep-08	6.91	1057.17	1046.197	
30-Sep-09	6.908	1057.17	1046.048	
20-May-10	6.905	1057.18	1046.269	
5-Jun-10	6.909	1057.17	1045.940	
10-Sep-10	6.925	1057.16	1043.726	
27-May-11	6.901	1057.18	1045.482	Water present at bottom of well.
15-Jun-11	6.993	1057.09	1045.132	Dry

Table F-64: Secondary Tailings Dam
Piezometer P81-08

P81-08		Location:	Secondary Dam	2004 Stick-Up (m):	0.74
		Coordinates:	8V583322 6912403	2004 Surface Elevation (m amsl):	1063.26
Surface Protector:	N/A	Date Installed:	1981	Tip Elevation (m amsl):	1055.80
				Screened Interval (m bgs):	Unknown

Date	Water level from top of pipe (m)	Piezometric Elevation (m amsl)	Int. Pond Elev. (m amsl)	Comments
20-Jun-05	8.19	1055.81	1046.321	
1-Aug-05	8.2	1055.80	1046.565	Dry
14-Sep-05	8.19	1055.81	1046.370	
2-Oct-06	8.195	1055.81	1046.180	Dry
6-Jun-07	8.2	1055.80	1046.490	no beep, bottom
26-Sep-07	8.2	1055.80	1046.375	no beep, bottom
25-Jun-08	8.195	1055.81	1046.169	no beep, bottom
25-Sep-08	8.195	1055.81	1046.197	no beep, bottom
30-Sep-09	8.192	1055.81	1046.048	no beep, bottom
20-May-10	8.193	1055.81	1046.269	no beep, assumed dry
5-Jun-10	8.210	1055.79	1045.940	
10-Sep-10	8.210	1055.79	1043.726	
27-May-11	8.163	1055.84	1045.482	Frozen
15-Jun-11	8.206	1055.79	1045.132	Dry

Table F-65: Secondary Tailings Dam
Piezometer P03-01

P03-01		Location:	Secondary Impoundment Tailings	2004 Stick-Up (m):	0.53
		Coordinates:		2004 Surface Elevation (masl):	1060.581
Surface Protector:	?	Date Installed:	2003	Tip Elevation (m amsl):	?
				Screened Interval (m bgs):	?

Date	Water level from top of pipe (m)	Piezometric Elevation (m amsl)	Int. Pond Elev. (m amsl)	Comments
20-Jun-05	6.055	1055.06	1046.321	
16-Sep-05	6.395	1054.72	1046.370	
2-Oct-06	6.56	1054.55	1046.180	
6-Jun-07	6.455	1054.66	1046.490	Gartner Lee did the wells alread
26-Sep-07	6.57	1054.54	1046.375	Beep
25-Jun-08	6.215	1054.90	1046.169	
25-Sep-08	6.285	1054.83	1046.197	
30-Sep-09	5.858	1055.25	1046.048	
20-May-10	1.808	1059.30	1046.269	frozen, blocked
5-Jun-10	6.414	1054.70	1045.940	
10-Sep-10	6.112	1055.00	1043.726	
27-May-11	5.514	1055.60	1045.482	
21-Jun-11	5.915	1055.20	1044.959	
4-Oct-11	5.862	1055.25	1043.465	

Table F-66: Secondary Tailings Dam
Piezometer P03-02

P03-02		Location:	Secondary Impoundment Tailings	2004 Stick-Up (m):	0.69
		Coordinates:		2004 Surface Elevation (m amsl):	1059.9
Surface Protector:	?	Date Installed:	2003	Tip Elevation (m amsl):	?
				Screened Interval (m bgs):	?

Date	Water level from top of pipe (m)	Piezometric Elevation (m amsl)	Int. Pond Elev. (m amsl)	Comments
20-Jun-05	5.745	1054.85	1046.321	
16-Sep-05	5.77	1054.82	1046.370	
2-Oct-06	5.87	1054.72	1046.180	
6-Jun-07	2.24	1058.35	1046.490	No beep, bottom
26-Sep-07	5.955	1054.64	1046.375	Beep
25-Jun-08	5.89	1054.70	1046.169	
25-Sep-08	5.755	1054.84	1046.197	
30-Sep-09	6.875	1053.72	1046.048	
20-May-10	6.162	1054.43	1046.269	
5-Jun-10	6.025	1054.57	1045.940	
10-Sep-10	5.986	1054.60	1043.726	
27-May-11	6.109	1054.48	1045.482	
21-Jun-11	6.06	1054.53	1044.959	
5-Oct-11	7.159	1053.43	1043.465	

Table F-67: Secondary Tailings Dam
Piezometer P03-03

P03-03		Location:	Secondary Impoundment Tailings	2004 Stick-Up (m):	0.82
		Coordinates:		2004 Surface Elevation (m amsl):	1060.67
Surface Protector:	?	Date Installed:	2003	Tip Elevation (m amsl):	?
				Screened Interval (m bgs):	?

Date	Water level from top of pipe (m)	Piezometric Elevation (m amsl)	Int. Pond Elev. (m amsl)	Comments
20-Jun-05	4.01	1057.48	1046.321	
16-Sep-05	4.125	1057.37	1046.370	
2-Oct-06	4.2	1057.29	1046.180	
6-Jun-07	1.22	1060.27	1046.490	
26-Sep-07	1.22	1060.27	1046.375	No Beep - Bottom
25-Jun-08	6.95	1054.54	1046.169	
25-Sep-08	5.475	1056.02	1046.197	
30-Sep-09	6.875	1054.62	1046.048	No Beep - Bottom
20-May-10	6.901	1054.59	1046.269	
5-Jun-10	6.910	1054.58	1045.940	
10-Sep-10	6.855	1054.64	1043.726	
27-May-11	7.084	1054.41	1045.482	
21-Jun-11	1.133	1060.36	1044.959	Frozen, blocked

Figure F-54: Secondary Tailings Dam
Piezometer P81-06

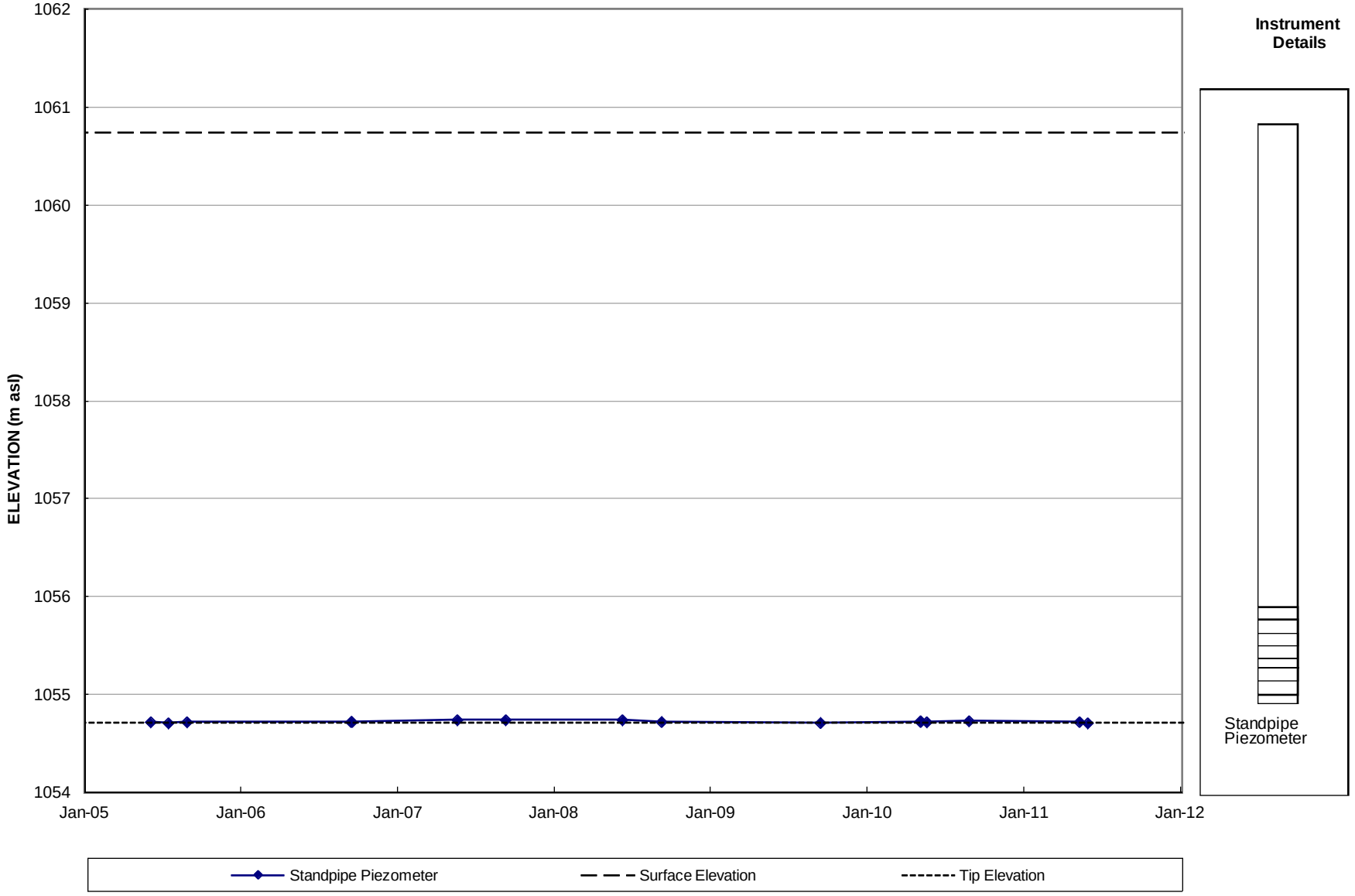


Figure F-55: Secondary Tailings Dam
Piezometer P81-07

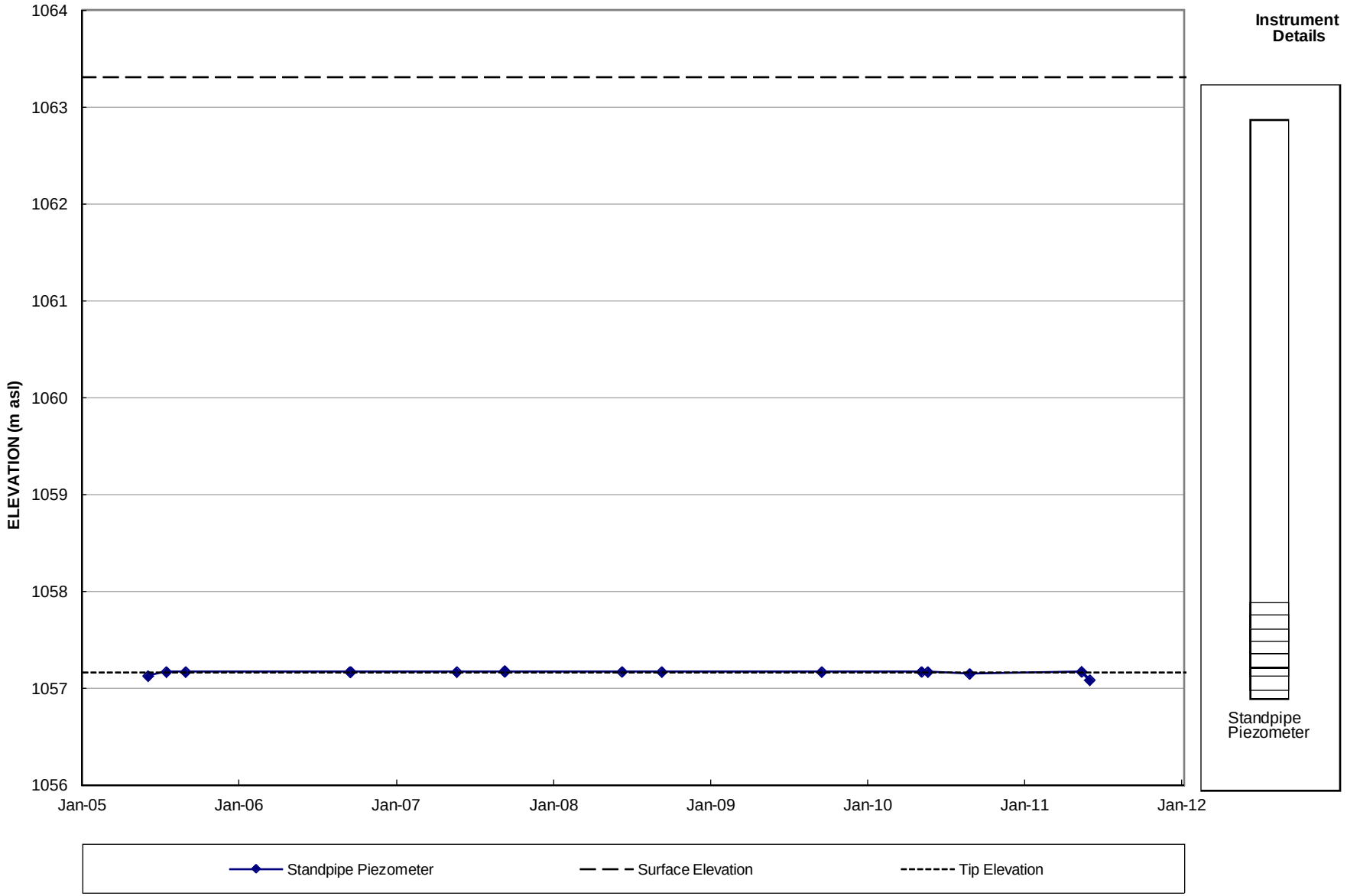


Figure F-56: Secondary Tailings Dam
Piezometer P81-08

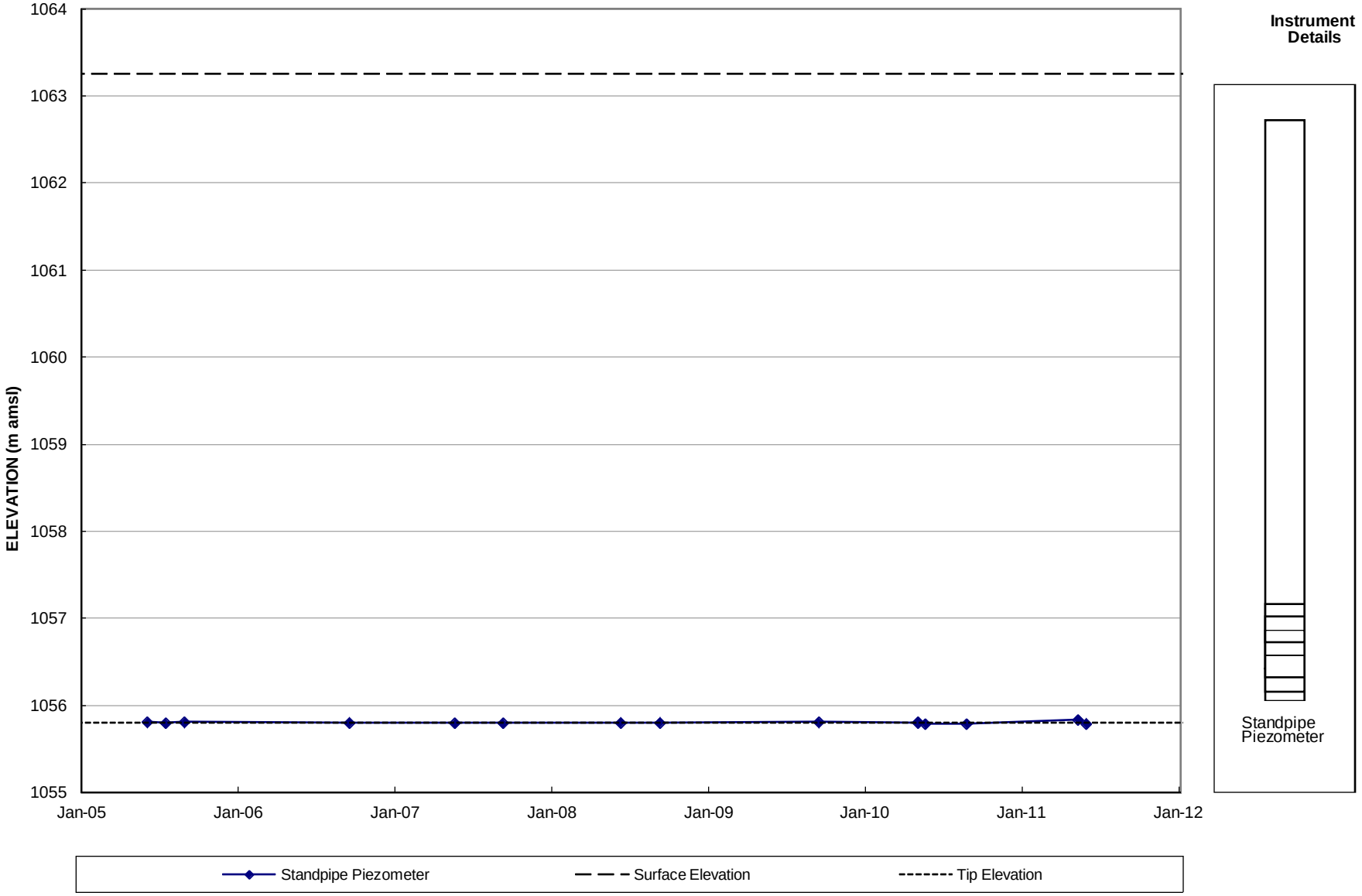


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Figure F-57: Secondary Tailings Dam
Piezometer P03-01

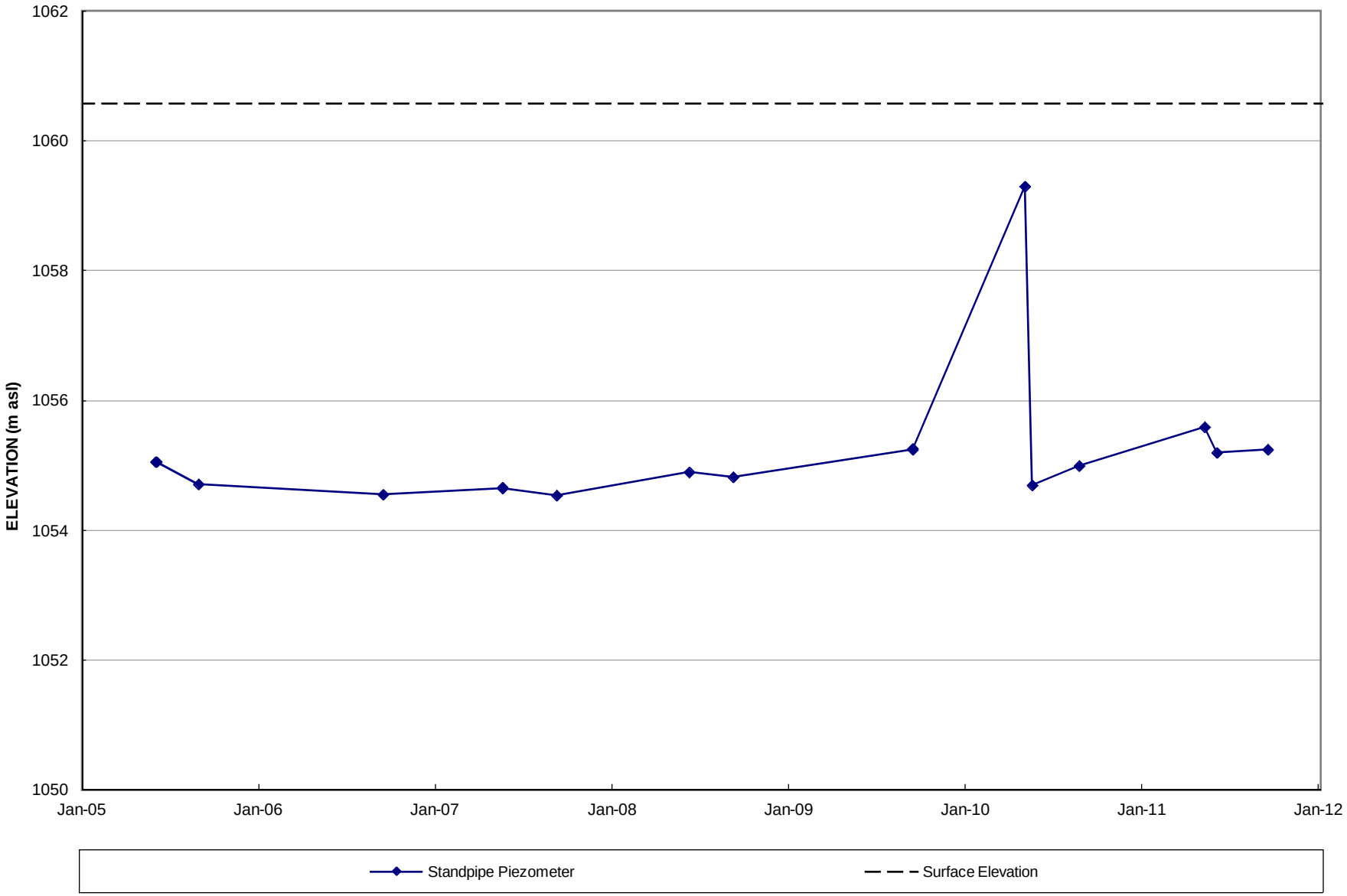

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Figure F-58: Secondary Tailings Dam
Piezometer P03-02

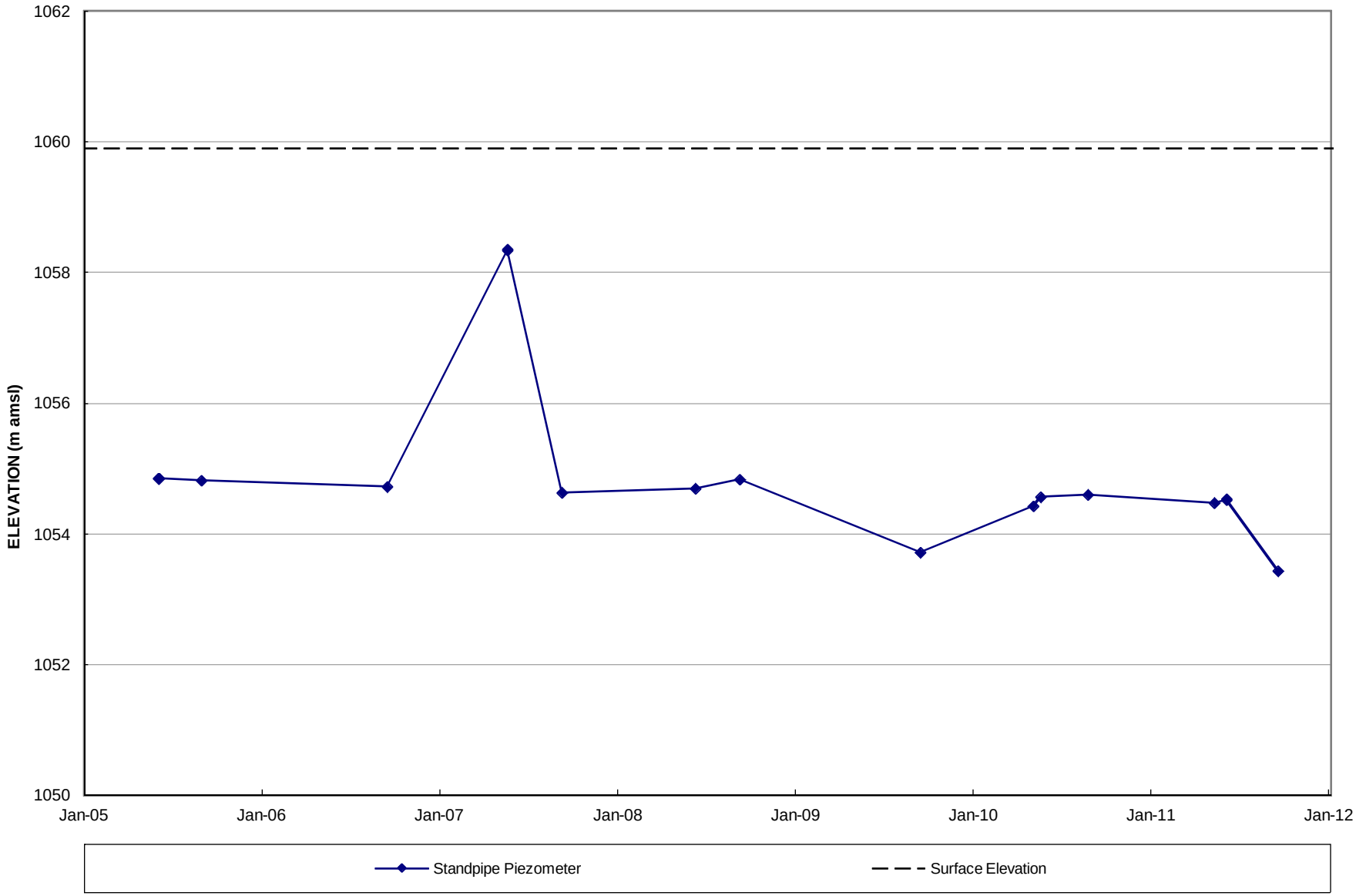

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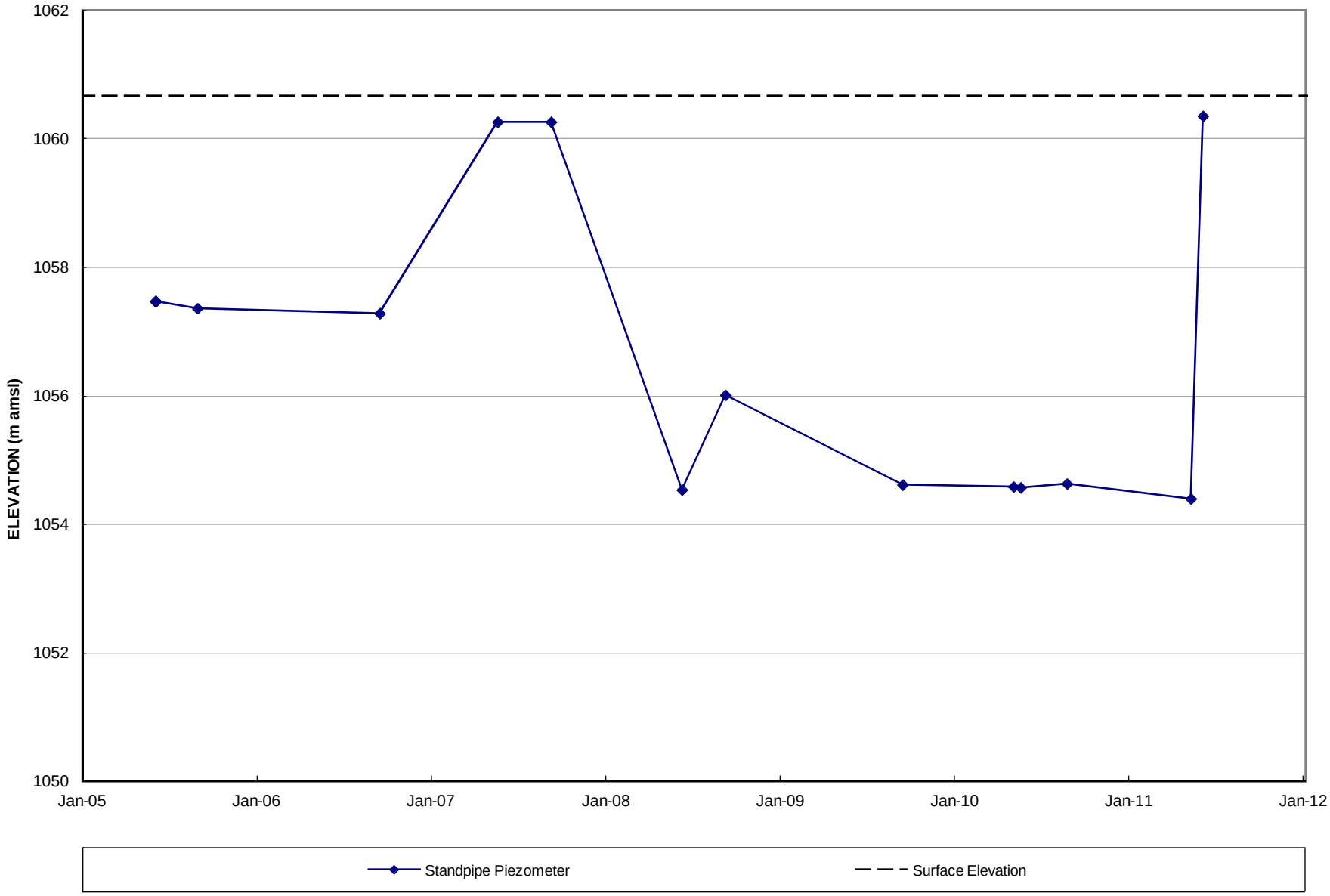
Figure F-59: Secondary Tailings Dam
Piezometer P03-03



TABLES AND FIGURES

North Fork Rock Drain

Table F-68: North Fork Rock Drain (NFRD-23) and X2 Staff Gauge Readings 2011

Date	X2SG		NFRD-23		Comments
	Time	Reading (m)	Time	Reading (m)	
5-Apr-11	2:03 PM	0.474	2:05 PM	0.470	Staff gauges steamed out this morning.
6-Apr-11	10:01 AM	0.465	10:00 AM	0.555	
7-Apr-11	11:20 AM	0.453	11:23 AM	0.550	
9-Apr-11	9:02 AM	0.420			
10-Apr-11	8:23 AM		8:27 AM	0.464	X2 frozen
11-Apr-11	8:40 AM	0.462	8:35 AM	0.490	
13-Apr-11	8:24 AM	0.479	8:25 AM		NFRD-23 slushy and cannot take a read.
14-Apr-11	8:42 AM	0.480	8:43 AM		NFRD-23 slushy and cannot take a read.
15-Apr-11	8:55 AM	0.500	8:56 AM		NFRD-23 frozen
17-Apr-11	8:54 AM	0.450	8:55 AM		NFRD-23 frozen
18-Apr-11	10:30 AM	0.452	10:31 AM		NFRD-23 frozen
19-Apr-11	10:26 AM	0.405	10:35 AM		NFRD-23 frozen
20-Apr-11	9:20 AM	0.400	9:22 AM		NFRD-23 frozen
21-Apr-11	9:10 AM	0.410	9:12 AM		NFRD-23 frozen
22-Apr-11	9:29 AM	0.440			
24-Apr-11	9:14 AM	0.410	9:12 AM		NFRD-23 frozen
25-Apr-11	10:00 AM	0.337	10:02 AM		NFRD-23 frozen
26-Apr-11	10:16 AM	0.290	10:17 AM	0.360	
27-Apr-11	10:24 AM	0.305	10:26 AM	0.370	
28-Apr-11	12:22 PM	0.320	12:23 PM	0.380	
29-Apr-11	11:15 AM	0.310	11:17 AM	0.360	
30-Apr-11	8:36 AM	0.320	8:38 AM	0.365	
1-May-11	8:34 AM	0.185	8:37 AM	0.375	
3-May-11	10:55 AM		10:56 AM	0.375	X2SG is in a pool of slush
4-May-11	9:10 AM		9:12 AM	0.350	X2SG is in a pool of slush
9-May-11	9:10 AM		9:11 AM	0.360	X2SG is in a pool of slush
10-May-11	8:55 AM		8:56 AM		
11-May-11	8:47 AM		8:46 AM	0.449	
12-May-11	9:03 AM		9:02 AM	0.561	
13-May-11	4:22 PM		4:25 PM	0.365	
14-May-11	5:50 PM		5:55 PM	0.370	
15-May-11	8:50 AM		8:48 AM	0.440	
16-May-11	9:19 AM	0.156	9:20 AM	0.599	
17-May-11	8:34 AM	0.743	10:03 AM	1.199	
18-May-11	8:52 AM	0.561	8:53 AM	1.375	
19-May-11	8:45 AM	0.450	8:46 AM	1.125	
20-May-11	9:34 AM	0.435	9:35 AM	1.188	
21-May-11	8:48 AM	0.495	8:49 AM	1.375	
22-May-11	8:38 AM	0.485	8:40 AM	1.355	
23-May-11	8:35 AM	0.645	8:36 AM	1.750	Estimate for NFRD-23 - could not read
24-May-11	8:05 AM	0.662	8:06 AM	1.690	
25-May-11	11:01 AM	0.605	11:10 AM	0.575	Wavy @ X2 & NFRD-23 (read at bottom of crest).
26-May-11	4:15 PM	0.510	4:16 PM	0.260	
27-May-11	11:11 AM	0.495	11:16 AM	0.315	
28-May-11	9:24 AM	0.510	9:25 AM	0.350	Water wavy @ X2, NFRD-23
29-May-11	8:43 AM	0.505	8:44 AM	0.280	
30-May-11	9:18 AM	0.495	9:20 AM	1.270	

Table F-68: North Fork Rock Drain (NFRD-23) and X2 Staff Gauge Readings 2011

Date	X2SG		NFRD-23		Comments
	Time	Reading (m)	Time	Reading (m)	
31-May-11	11:02 AM	0.580	11:04 AM	1.275	
1-Jun-11	9:01 AM	0.455	9:03 AM	1.255	
2-Jun-11	8:50 AM	0.435	8:51 AM	1.080	
3-Jun-11	8:24 AM	0.390	8:26 AM	0.965	
4-Jun-11	8:21 AM	0.320	8:23 AM	0.840	Water wavy @ X2 & NFRD-23
5-Jun-11	7:54 AM	0.340	7:55 AM	0.875	Water wavy @ X2 & NFRD-23
6-Jun-11	8:58 AM	0.315	8:59 AM	0.815	Water wavy @ X2 & NFRD-23
7-Jun-11	10:17 AM	0.285	10:18 AM	0.770	
8-Jun-11	9:50 AM	0.310	9:52 AM	0.780	Water wavy @ X2 & NFRD-23
9-Jun-11	9:02 AM	0.290	9:03 AM	0.772	
10-Jun-11	8:53 AM	0.275	8:55 AM	0.735	
11-Jun-11	9:11 AM	0.290	9:09 AM	0.768	
12-Jun-11	8:52 AM	0.360	8:53 AM	0.945	
13-Jun-11	1:32 PM	0.299	1:33 PM	0.780	
14-Jun-11	9:04 AM	0.275	9:05 AM	0.730	
15-Jun-11	8:52 AM	0.255	8:53 AM	0.695	
16-Jun-11	8:26 AM	0.244	8:24 AM	0.674	
17-Jun-11	7:10 AM	0.238	7:12 AM	0.652	
18-Jun-11	9:32 AM	0.238	9:33 AM	0.653	
19-Jun-11	10:25 AM	0.226	10:27 AM	0.635	
20-Jun-11	8:49 AM	0.295	8:50 AM	0.760	Water wavy @ X2 & NFRD-23
21-Jun-11	8:29 AM	0.360	8:27 AM	0.954	Water wavy @ X2 & NFRD-23
22-Jun-11	9:18 AM	0.355	9:20 AM	0.952	
23-Jun-11	8:34 AM	0.410	8:35 AM	1.056	
24-Jun-11	8:03 AM	0.330	8:04 AM	0.910	
25-Jun-11	8:07 AM	0.290	8:09 AM	0.800	
26-Jun-11	7:58 AM	0.290	7:59 AM	0.790	
27-Jun-11	9:03 AM	0.345	9:01 AM	0.914	
28-Jun-11	10:20 AM	0.340	10:21 AM	0.928	
29-Jun-11	8:47 AM	0.410	8:48 AM	1.110	
1-Jul-11	8:09 AM	0.365	8:11 AM	0.994	
2-Jul-11	8:17 AM	0.355	8:18 AM	0.940	Water wavy @ X2 & NFRD-23
3-Jul-11	8:22 AM	0.325	8:25 AM	0.867	Water wavy @ X2 & NFRD-23
4-Jul-11	8:13 AM	0.300	8:18 AM	0.824	
5-Jul-11	10:23 AM	0.285	10:24 AM	0.790	Water wavy @ X2 & NFRD-23
6-Jul-11	9:12 AM	0.298	9:13 AM	0.820	Water wavy @ X2 & NFRD-23
7-Jul-11	9:46 AM	0.285	9:49 AM	0.768	
10-Jul-11	9:30 AM	0.260	9:35 AM	0.730	
11-Jul-11	8:54 AM	0.289	8:55 AM	0.770	
12-Jul-11	10:13 AM	0.242	10:14 AM	0.701	
18-Jul-11	9:01 AM	0.250	9:02 AM	0.735	
25-Jul-11	9:55 AM	0.235	9:59 AM	0.607	
1-Aug-11	9:16 AM	0.230	9:15 AM	0.674	
8-Aug-11	9:27 AM	0.165	9:28 AM	0.569	

Table F-68: North Fork Rock Drain (NFRD-23) and X2 Staff Gauge Readings 2011

Date	X2SG		NFRD-23		Comments
	Time	Reading (m)	Time	Reading (m)	
15-Aug-11	9:34 AM	0.235	9:33 AM	0.696	
22-Aug-11	8:42 AM	0.245	8:44 AM	0.715	
29-Aug-11	10:48 AM	0.203	10:49 AM	0.635	
6-Sep-11	9:32 AM	0.255	9:33 AM	0.572	
12-Sep-11	8:49 AM	0.178	8:50 AM	0.598	
19-Sep-11	9:50 AM	0.150	9:52 AM	0.540	
24-Sep-11	8:36 AM	0.257	8:34 AM	0.542	
3-Oct-11	9:38 AM	0.129	9:40 AM	0.450	
17-Oct-11	8:38 AM	0.100	8:39 AM	0.450	NFRD-23 SG rusty.
2-Nov-11	11:30 AM		11:32 AM	0.120	X2 slushy/frozen

Denison Environmental Services

Table F-69: North Fork Rock Drain
NF1 Water Elevations 2011

Faro Mine Closure

Date	Elevation (masl)	Freeboard* (masl)	Comments
12-May-11	1094.345	0.425	
20-Jun-11	1091.185	3.585	
27-Jun-11	1091.847	2.923	
04-Jul-11	1091.470	3.300	
11-Jul-11	1091.044	3.726	
20-Jul-11	1091.770	3.000	
25-Jul-11	1090.488	4.282	
08-Aug-11	1089.970	4.800	
22-Aug-11	1090.847	3.923	
05-Sep-11	1090.011	4.759	
19-Sep-11	1089.841	4.929	

*Freeboard calculated based on maximum elevation of 1094.77 m asl

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Table F-70: North Fork Rock Drain
NF2 Water Elevations 2011

Faro Mine Closure

Date	Elevation* (masl)	Freeboard** (masl)	Comments
12-May-11	1087.444	-0.900	Avg Elevation: 1088.50
12-May-11	1088.768	-2.224	
12-May-11	1088.418	-1.874	
12-May-11	1089.114	-2.570	
12-May-11	1088.402	-1.858	
26-May-11	1087.188	-0.644	Avg Elevation: 1086.99
26-May-11	1087.393	-0.849	
26-May-11	1087.053	-0.509	
26-May-11	1086.798	-0.254	
26-May-11	1086.508	0.036	
13-Jun-11	1086.298	0.246	Avg Elevation: 1086.55
13-Jun-11	1086.575	-0.031	
13-Jun-11	1086.7	-0.156	
13-Jun-11	1086.686	-0.142	
13-Jun-11	1086.506	0.038	
20-Jun-11	1085.787	0.757	Avg Elevation: 1086.31
20-Jun-11	1086.266	0.278	
20-Jun-11	1086.596	-0.052	
20-Jun-11	1086.621	-0.077	
20-Jun-11	1086.304	0.240	
27-Jun-11	1086.445	0.099	Avg Elevation: 1086.73
27-Jun-11	1086.828	-0.284	
27-Jun-11	1086.872	-0.328	
27-Jun-11	1086.724	-0.180	
27-Jun-11	1086.777	-0.233	
4-Jul-11	1085.444	1.100	Avg Elevation: 1086.16
4-Jul-11	1085.603	0.941	
4-Jul-11	1086.659	-0.115	
4-Jul-11	1086.568	-0.024	
4-Jul-11	1086.515	0.029	
11-Jul-11	1086.323	0.221	Avg Elevation: 1086.58
11-Jul-11	1086.402	0.142	
11-Jul-11	1086.789	-0.245	
11-Jul-11	1086.652	-0.108	
11-Jul-11	1086.722	-0.178	
20-Jul-11	1086.385	0.159	Avg Elevation: 1086.64
20-Jul-11	1086.736	-0.192	
20-Jul-11	1086.545	-0.001	
20-Jul-11	1086.754	-0.210	
20-Jul-11	1086.77	-0.226	
25-Jul-11	1086.264	0.280	Avg Elevation: 1086.49
25-Jul-11	1086.374	0.170	
25-Jul-11	1086.663	-0.119	
25-Jul-11	1086.594	-0.050	
25-Jul-11	1086.547	-0.003	

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Table F-70: North Fork Rock Drain
NF2 Water Elevations 2011

Faro Mine Closure

Date	Elevation* (masl)	Freeboard** (masl)	Comments
8-Aug-11	1086.245	0.299	Avg Elevation: 1094.5022
8-Aug-11	1086.394	0.150	
8-Aug-11	1086.403	0.141	
8-Aug-11	1085.938	0.606	
8-Aug-11	1085.901	0.643	
22-Aug-11	1086.589	-0.045	Avg Elevation: 1086.6208
22-Aug-11	1086.738	-0.194	
22-Aug-11	1086.641	-0.097	
22-Aug-11	1086.63	-0.086	
22-Aug-11	1086.506	0.038	
5-Sep-11	1085.215	1.329	Avg Elevation: 1085.3334
5-Sep-11	1084.845	1.699	
5-Sep-11	1085.097	1.447	
5-Sep-11	1085.629	0.915	
5-Sep-11	1085.881	0.663	
19-Sep-11	1086.202	0.342	Avg Elevation: 1086.3466
19-Sep-11	1086.45	0.094	
19-Sep-11	1086.378	0.166	
19-Sep-11	1086.384	0.16	
19-Sep-11	1086.319	0.225	

*Max elevation measured at several locations across rock drain on date - average used to determine head

**Freeboard calculated based on maximum elevation of 1086.544 m asl

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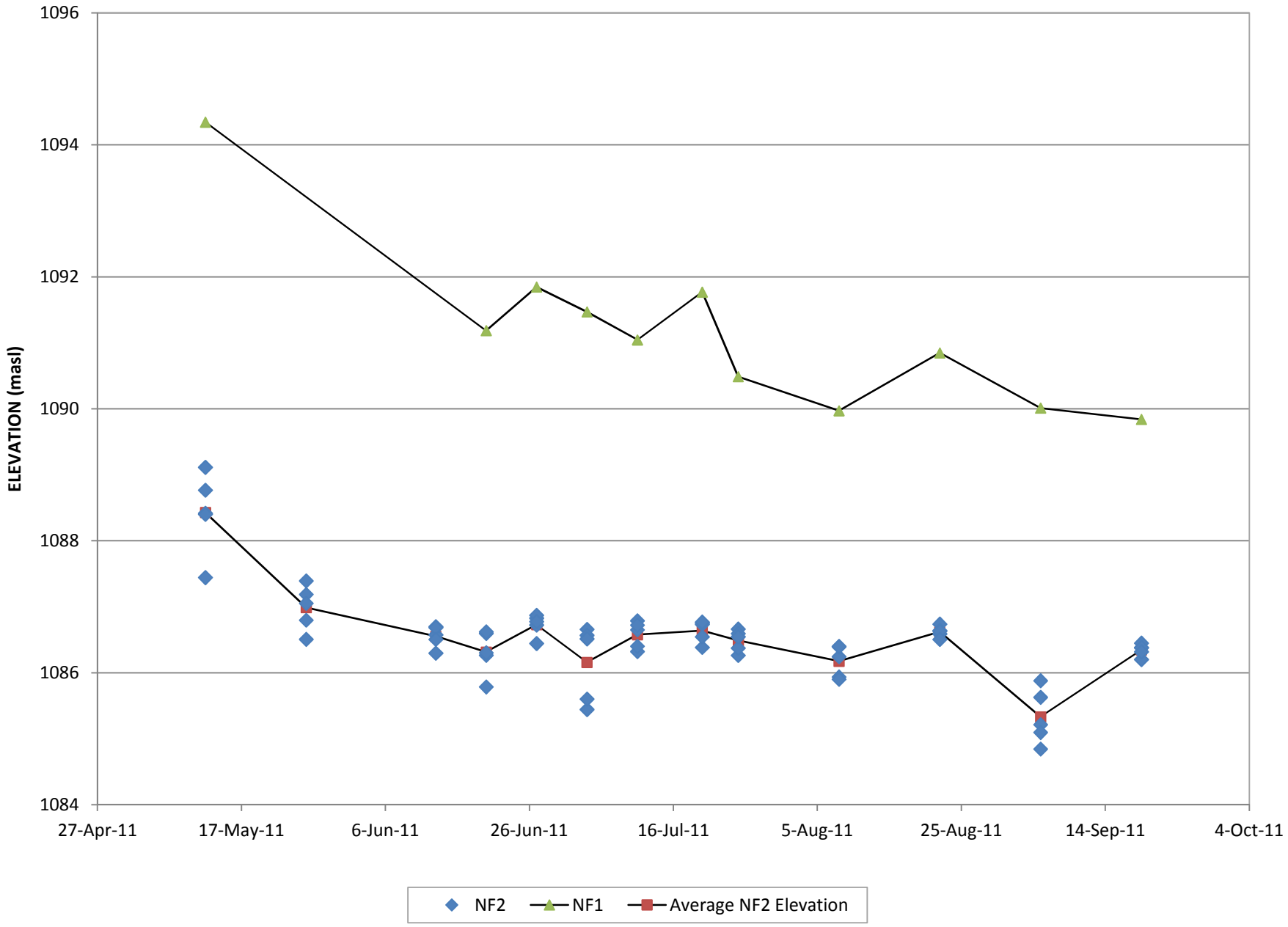
Figure F-60: North Fork Rock Drain
2011 NF1 and NF2 Water Elevations



TABLES AND FIGURES

Faro Creek Diversion Channel

Denison Environmental Services

Table F-71: Faro Creek Diversion Channel
Staff Gauge Readings

FCD-1			FCD-2			FCD-3			FCD-4		
Date	Time	Reading (m)	Date	Time	Reading (m)	Date	Time	Reading (m)	Date	Time	Reading (m)
24-May-07	19:50:00	0.480	24-May-07	18:30:00	0.460						
25-May-07	09:40:00	0.412	25-May-07	11:40:00	0.475						
13-Jun-07	15:20:00	0.300	13-Jun-07	16:05:00	0.340						
26-Jun-07	15:10:00	0.215	26-Jun-07	15:30:00	0.255						
27-Jun-07	09:30:00	0.218	27-Jun-07	12:30:00	0.247						
11-Jul-07	13:30:00	0.175	11-Jul-07	14:30:00	0.195						
18-Jul-07	14:00:00	0.200	18-Jul-07	14:20:00	0.210						
18-Jul-07	12:40:00	0.200	18-Jul-07	11:30:00	0.210						
24-Jul-07		0.153	24-Jul-07	17:00:00	0.185						
1-Aug-07	11:50:00	0.170	1-Aug-07	12:25:00	0.195						
8-Aug-07	15:20:00	0.172	8-Aug-07	14:40:00	0.200						
4-Sep-07	15:40:00		4-Sep-07	15:10:00	0.202						
6-Sep-07		0.220	6-Sep-07		0.241						
7-Sep-07			7-Sep-07								
26-Jun-08	08:00:00	0.240	26-Jun-08	08:00:00	0.325	26-Jun-08	08:00:00	0.250	26-Jun-08	08:00:00	0.250
4-Jul-08	10:40:00	0.220	4-Jul-08	10:40:00	0.280	4-Jul-08	10:40:00	0.230	4-Jul-08	10:40:00	0.270
7-Jul-08	11:40:00	0.250	7-Jul-08	11:40:00	0.355	7-Jul-08	11:40:00	0.270	7-Jul-08	11:40:00	0.270
14-Jul-08	11:00:00	0.265	14-Jul-08	11:00:00	0.390	14-Jul-08	11:00:00	0.285	14-Jul-08	11:00:00	0.290
15-Jul-08	10:40:00	0.630	15-Jul-08	10:40:00	0.880	15-Jul-08	10:40:00	0.640	15-Jul-08	10:40:00	0.540
6-Aug-08	11:00:00	0.185	6-Aug-08	11:00:00	0.195	6-Aug-08	11:00:00	0.190	6-Aug-08	11:00:00	0.195
25-Aug-08	12:55:00	0.440	25-Aug-08	12:55:00	0.590	25-Aug-08	12:55:00	0.400	25-Aug-08	12:55:00	0.405
13-Sep-08	08:15:00	0.250	13-Sep-08	08:15:00	0.395	13-Sep-08	08:15:00	0.290	13-Sep-08	08:15:00	0.285
05-May-09		0.400	05-May-09		0.690	05-May-09		0.980	05-May-09		0.820
14-May-09	8:20 AM	0.195	14-May-09	8:20 AM	0.380	14-May-09	8:20 AM	0.300	14-May-09	8:20 AM	
22-May-09	6:35 AM	0.300	22-May-09	6:35 AM	0.570	22-May-09	6:35 AM	0.350	22-May-09	6:35 AM	0.320
24-May-09	7:00 AM	0.450	24-May-09	7:00 AM	0.730	24-May-09	7:00 AM	0.480	24-May-09	7:00 AM	0.450
29-May-09	8:40 AM	0.380	29-May-09	8:40 AM	0.590	29-May-09	8:40 AM	0.400	29-May-09	8:40 AM	0.400
31-May-09	7:00 AM	0.350	31-May-09	7:00 AM	0.650	31-May-09	7:00 AM	0.390	31-May-09	7:00 AM	0.360
04-Jun-09	1:45 PM	0.370	04-Jun-09	1:45 PM	0.650	04-Jun-09	1:45 PM	0.390	04-Jun-09	1:45 PM	0.385
05-Jun-09	6:30 AM	0.410	05-Jun-09	6:30 AM	0.625	05-Jun-09	6:30 AM	0.400	05-Jun-09	6:30 AM	0.420
06-Jun-09	7:55 AM	0.390	06-Jun-09	7:55 AM	0.570	06-Jun-09	7:55 AM	0.390	06-Jun-09	7:55 AM	0.400
09-Jun-09	6:48 AM	0.310	09-Jun-09	6:48 AM	0.470	09-Jun-09	6:48 AM	0.300	09-Jun-09	6:48 AM	0.300
10-Jun-09	6:48 AM	0.310	10-Jun-09	6:48 AM	0.470	10-Jun-09	6:48 AM	0.300	10-Jun-09	6:48 AM	0.300
10-Jun-09	2:30 PM	0.250	10-Jun-09	2:30 PM	0.390	10-Jun-09	2:30 PM	0.270	10-Jun-09	2:30 PM	0.260
13-Jun-09	8:55 AM	0.250	13-Jun-09	8:55 AM	0.378	13-Jun-09	8:55 AM	0.265	13-Jun-09	8:55 AM	0.250
17-Jun-09	5:15 PM	0.255	17-Jun-09	5:15 PM	0.400	17-Jun-09	5:15 PM	0.275	17-Jun-09	5:15 PM	0.270
25-Jun-09	3:10 PM	0.200	25-Jun-09	3:10 PM	0.280	25-Jun-09	3:10 PM	0.210	25-Jun-09	3:10 PM	0.240
02-Jul-09	12:53 PM	0.185	02-Jul-09	12:53 PM	0.220	02-Jul-09	12:53 PM	0.185	02-Jul-09	12:53 PM	0.215
07-Jul-09	5:40 PM	0.155	07-Jul-09	5:40 PM	0.115	07-Jul-09	5:40 PM	0.150	07-Jul-09	5:40 PM	0.190
15-Jul-09	10:30 AM	0.145	15-Jul-09	10:30 AM	0.110	15-Jul-09	10:30 AM	0.141	15-Jul-09	10:30 AM	0.150
30-Jul-09	3:05 PM	0.110	30-Jul-09	3:05 PM	0.092	30-Jul-09	3:05 PM	0.105	30-Jul-09	3:05 PM	0.150
02-Aug-09	8:05 AM	0.115	02-Aug-09	8:05 AM	0.085	02-Aug-09	8:05 AM		02-Aug-09	8:05 AM	
07-Aug-09	9:00 AM	0.110	07-Aug-09	9:00 AM	0.090	07-Aug-09	9:00 AM	0.100	07-Aug-09	9:00 AM	
17-Aug-09	8:20 AM	0.135	17-Aug-09	8:20 AM	0.100	17-Aug-09	8:20 AM	0.125	17-Aug-09	8:20 AM	0.160
21-Aug-09	10:25 AM	0.140	21-Aug-09	10:25 AM	0.110	21-Aug-09	10:25 AM	0.135	21-Aug-09	10:25 AM	0.170
29-Aug-09	12:32 PM	0.150	29-Aug-09	12:32 PM	0.115	29-Aug-09	12:32 PM	0.160	29-Aug-09	12:32 PM	0.195
04-Sep-09	9:57 AM	0.155	04-Sep-09	9:57 AM	0.120	04-Sep-09	9:57 AM	0.160	04-Sep-09	9:57 AM	0.190
11-Sep-09	8:05 AM	0.150	11-Sep-09	8:05 AM	0.110	11-Sep-09	8:05 AM	0.155	11-Sep-09	8:05 AM	0.180
19-Sep-09	4:24 PM	0.165	19-Sep-09	4:24 PM	0.120	19-Sep-09	4:24 PM	0.150	19-Sep-09	4:24 PM	0.199
20-Sep-09	12:14 PM	0.170	20-Sep-09	12:14 PM	0.125	20-Sep-09	12:14 PM	0.170	20-Sep-09	12:14 PM	0.200
21-Sep-09	4:22 PM	0.190	21-Sep-09	4:22 PM	0.140	21-Sep-09	4:22 PM	0.190	21-Sep-09	4:22 PM	0.220
4-Oct-09	5:35 PM	0.175	4-Oct-09	5:35 PM	0.125	4-Oct-09	5:35 PM	0.175	4-Oct-09	5:35 PM	0.205
30-Apr-10			30-Apr-10			30-Apr-10	10:00 AM	0.370	30-Apr-10	10:05 AM	0.410
03-May-10	12:08 PM		3-May-10	12:07 PM		3-May-10	12:06 PM		3-May-10	12:05 PM	0.239
04-May-10	8:17 AM		04-May-10	8:15 AM		4-May-10	8:14 AM	0.197	4-May-10	8:12 AM	0.238
05-May-10	9:37 AM		5-May-10	9:36 AM		5-May-10	9:35 AM		5-May-10	9:33 AM	
17-May-10	11:52 AM	0.245	17-May-10	11:55 AM	0.219	17-May-10	11:57 AM		17-May-10	12:00 PM	0.200
02-Jun-10	11:50 AM	0.270	2-Jun-10	11:52 AM	0.260	2-Jun-10	11:54 AM	0.210	2-Jun-10	11:56 AM	0.240
14-Jun-10	12:06 PM	0.199	14-Jun-10	12:04 PM	0.143	14-Jun-10	12:02 PM	0.196	14-Jun-10	12:00 PM	0.245
03-Jul-10	3:10 PM	0.225	3-Jul-10	3:08 PM	0.165	3-Jul-10	3:07 PM	0.220	3-Jul-10	3:05 PM	0.250
12-Jul-10	1:15 PM	0.165	12-Jul-10	1:45 PM	0.100	12-Jul-10	2:32 PM	0.150	12-Jul-10	2:50 PM	0.200
03-Aug-10	3:15 PM	0.113	3-Aug-10	3:25 PM	0.071	3-Aug-10	3:40 PM	0.106	3-Aug-10	3:55 PM	0.158
15-Aug-10	2:24 PM	0.105	15-Aug-10	2:45 PM	0.064	15-Aug-10	2:56 PM	0.100	15-Aug-10	3:10 PM	0.154
02-Sep-10	5:10 PM	0.139	2-Sep-10	5:06 PM	0.088	2-Sep-10	4:48 PM	0.132	2-Sep-10	4:36 PM	0.175
23-Sep-10	5:32 PM	0.110	23-Sep-10	5:28 PM		23-Sep-10	5:08 PM		23-Sep-10	4:52 PM	

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Table F-71: Faro Creek Diversion Channel
Staff Gauge Readings

FCD-1			FCD-2			FCD-3			FCD-4		
Date	Time	Reading (m)	Date	Time	Reading (m)	Date	Time	Reading (m)	Date	Time	Reading (m)
04-Oct-10	1:19 PM	0.113	4-Oct-10	1:39 PM		4-Oct-10	1:38 PM		4-Oct-10	1:19 PM	
18-Oct-10	4:46 PM		18-Oct-10	4:43 PM		18-Oct-10	4:40 PM		18-Oct-10	4:37 PM	
14-Apr-11	5:00 PM		14-Apr-11	5:02 PM		14-Apr-11	5:03 PM		14-Apr-11	5:05 PM	
28-Apr-11	2:25 PM		28-Apr-11	2:21 PM		28-Apr-11	2:19 PM		28-Apr-11	2:18 PM	
16-May-11	3:40 PM		16-May-11	3:45 PM		16-May-11	3:50 PM		16-May-11	3:55 PM	
25-May-11	1:31 PM	0.600	25-May-11	1:38 PM		25-May-11	1:53 PM	0.580	25-May-11	1:56 PM	0.610
14-Jun-11	10:36 AM	0.226	14-Jun-11	10:39 AM		14-Jun-11	10:42 AM	0.192	14-Jun-11	10:45 AM	
4-Jul-11	3:01 PM	0.238	4-Jul-11	2:24 PM	0.335	4-Jul-11	2:08 PM	0.231	4-Jul-11	1:14 PM	0.268
5-Jul-11	10:05 AM	0.240	5-Jul-11	10:40 AM	0.350	5-Jul-11	11:20 AM	0.239	5-Jul-11	11:55 AM	0.285
7-Jul-11	10:00 AM	0.221	7-Jul-11	10:30 AM	0.305	7-Jul-11	11:00 AM	0.211	7-Jul-11	11:30 AM	0.250
11-Jul-11	3:35 PM	0.210	11-Jul-11	4:03 PM	0.293	11-Jul-11	4:39 PM	0.195	11-Jul-11	5:07 PM	0.240
24-Jul-11	2:57 PM	0.220	24-Jul-11	3:19 PM	0.300	24-Jul-11	3:42 PM	0.201	24-Jul-11	4:03 PM	0.250
25-Jul-11	11:00 AM	0.205	25-Jul-11	11:36 AM	0.284	25-Jul-11	1:30 PM	0.186	25-Jul-11	2:00 PM	0.225
27-Jul-11	2:11 PM	0.195	27-Jul-11	2:45 PM	0.269	27-Jul-11	3:18 PM	0.176	27-Jul-11	3:45 PM	0.218
7-Aug-11	12:30 PM	0.174	7-Aug-11	1:30 PM	0.238	7-Aug-11	1:50 PM	0.149	7-Aug-11	2:15 PM	0.185
22-Aug-11	2:00 PM	0.201	22-Aug-11	2:30 PM	0.358	22-Aug-11	3:00 PM	0.184	22-Aug-11	3:30 PM	0.219
24-Aug-11	8:25 AM	0.199	24-Aug-11	9:00 AM	0.264	24-Aug-11	9:30 AM	0.179	24-Aug-11	10:00 AM	0.215
6-Sep-11	9:50 AM	0.177	6-Sep-11	9:52 AM	0.170	6-Sep-11	9:54 AM	0.235	6-Sep-11	9:56 AM	0.260
26-Sep-11	9:06 AM	0.166	26-Sep-11	9:11 AM	0.210	26-Sep-11	9:13 AM	0.133	26-Sep-11	9:18 AM	0.161
6-Oct-11	2:08 PM	0.149	6-Oct-11	2:05 PM	0.198	6-Oct-11	1:49 PM	0.110	6-Oct-11	1:23 PM	0.170
2-Nov-11	10:30 AM	0.138	2-Nov-11	10:40 AM	0.195	2-Nov-11	10:45 AM		2-Nov-11	10:55 AM	0.157

Figure F-61: Faro Creek Diversion Channel
FCD-1

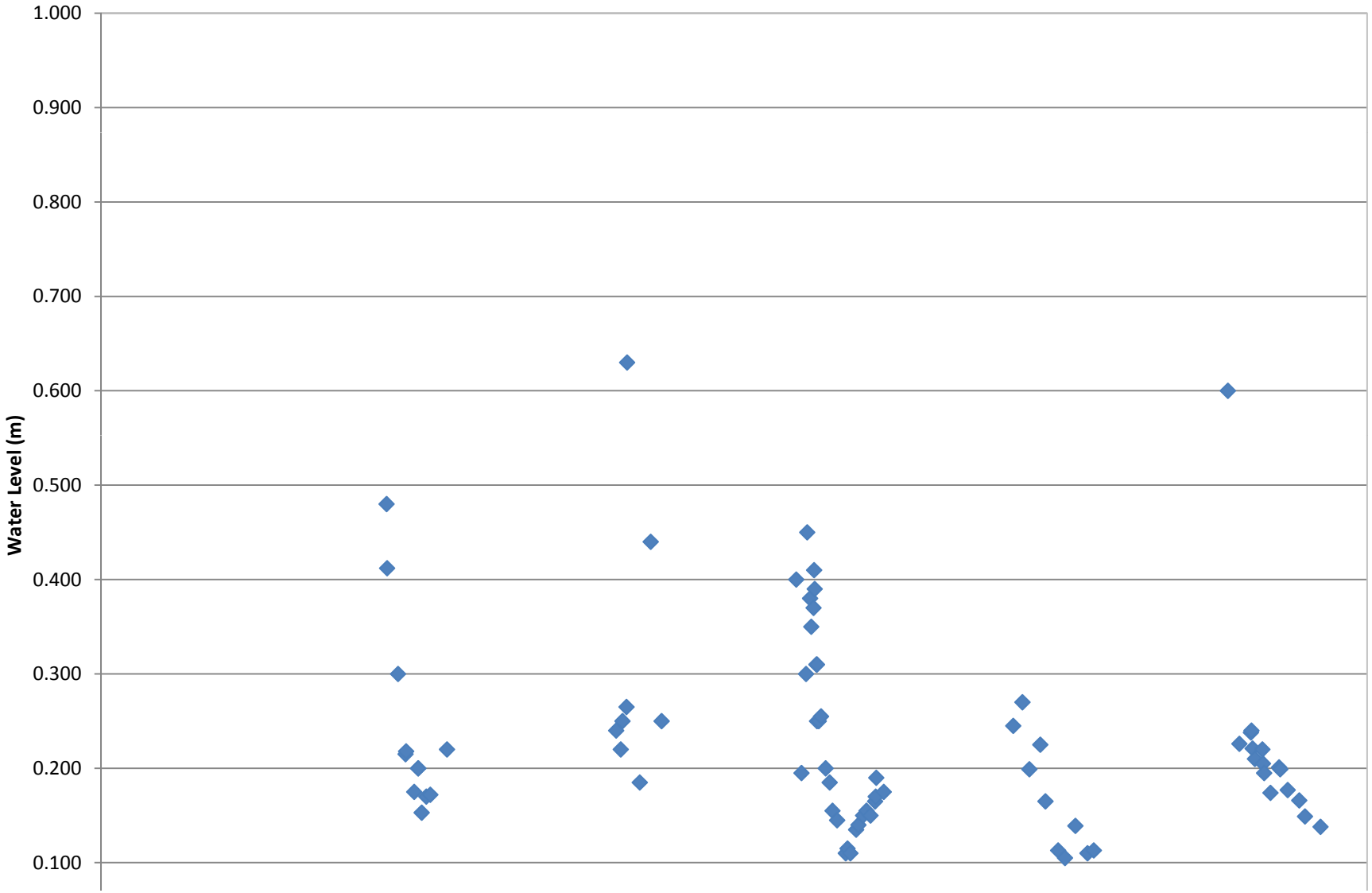

Figure F-62: Faro Creek Diversion Channel
FCD-2

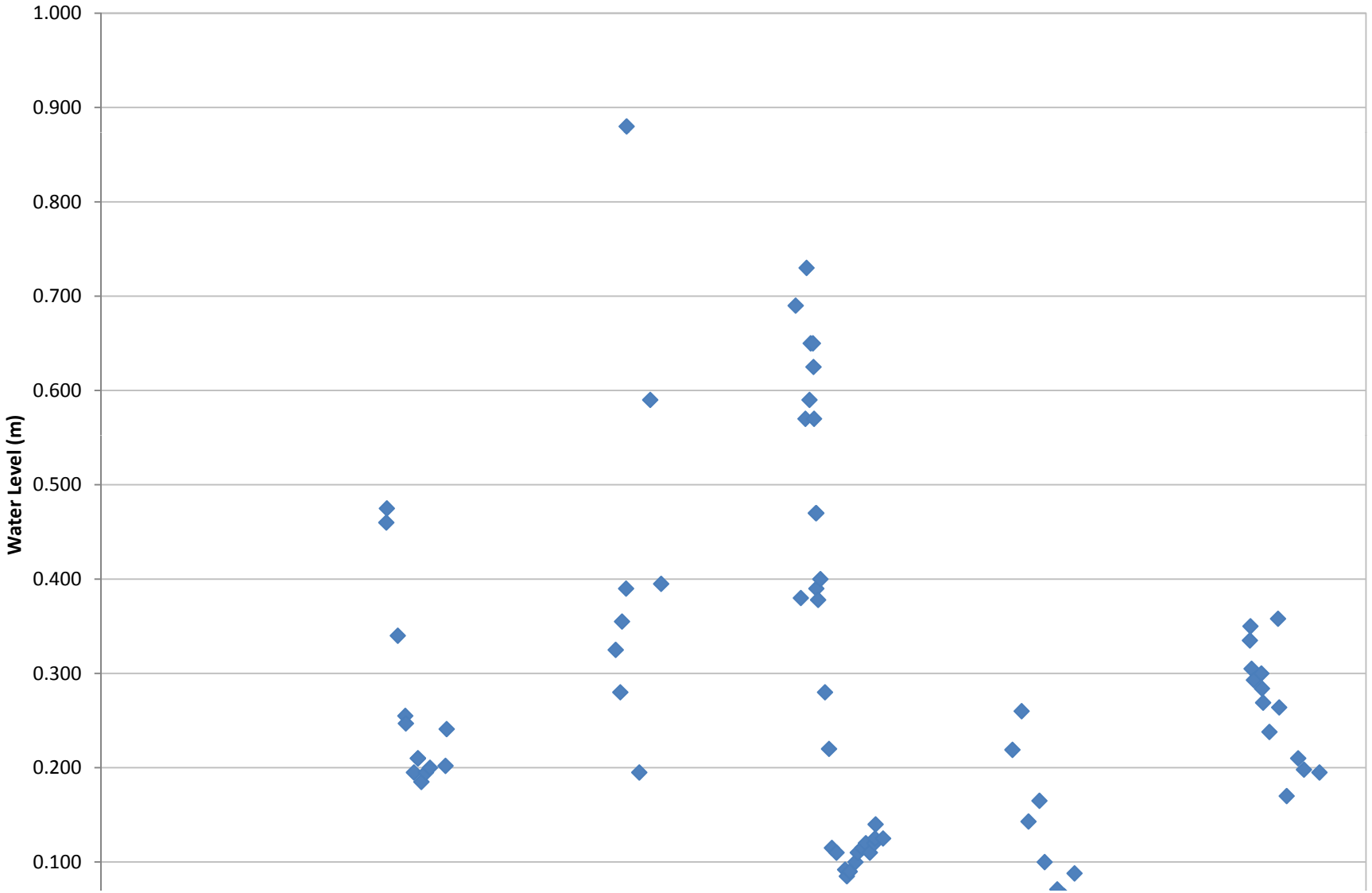

Figure F-63: Faro Creek Diversion Channel FCD-3

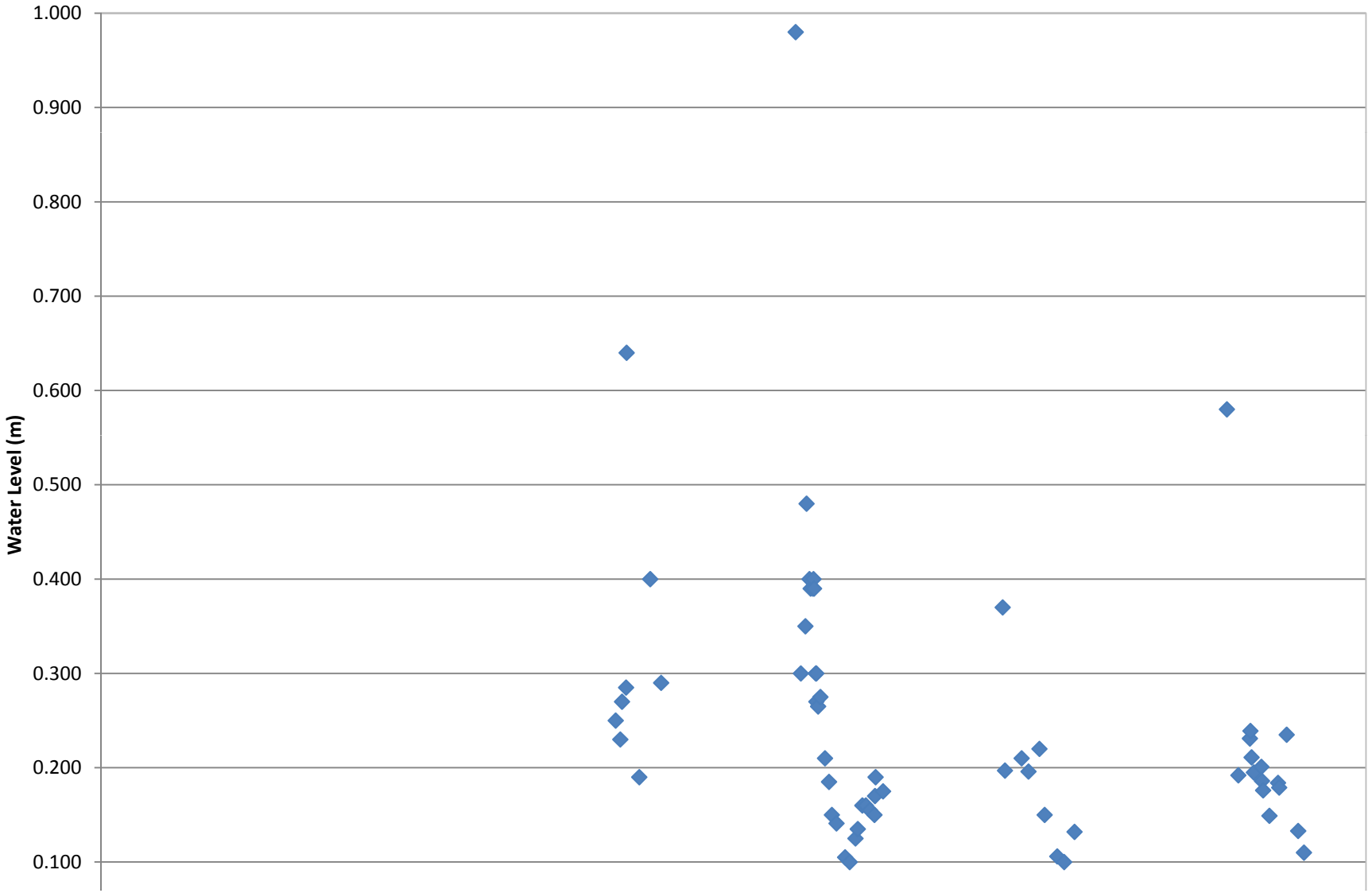

Figure F-64: Faro Creek Diversion Channel
FCD-4

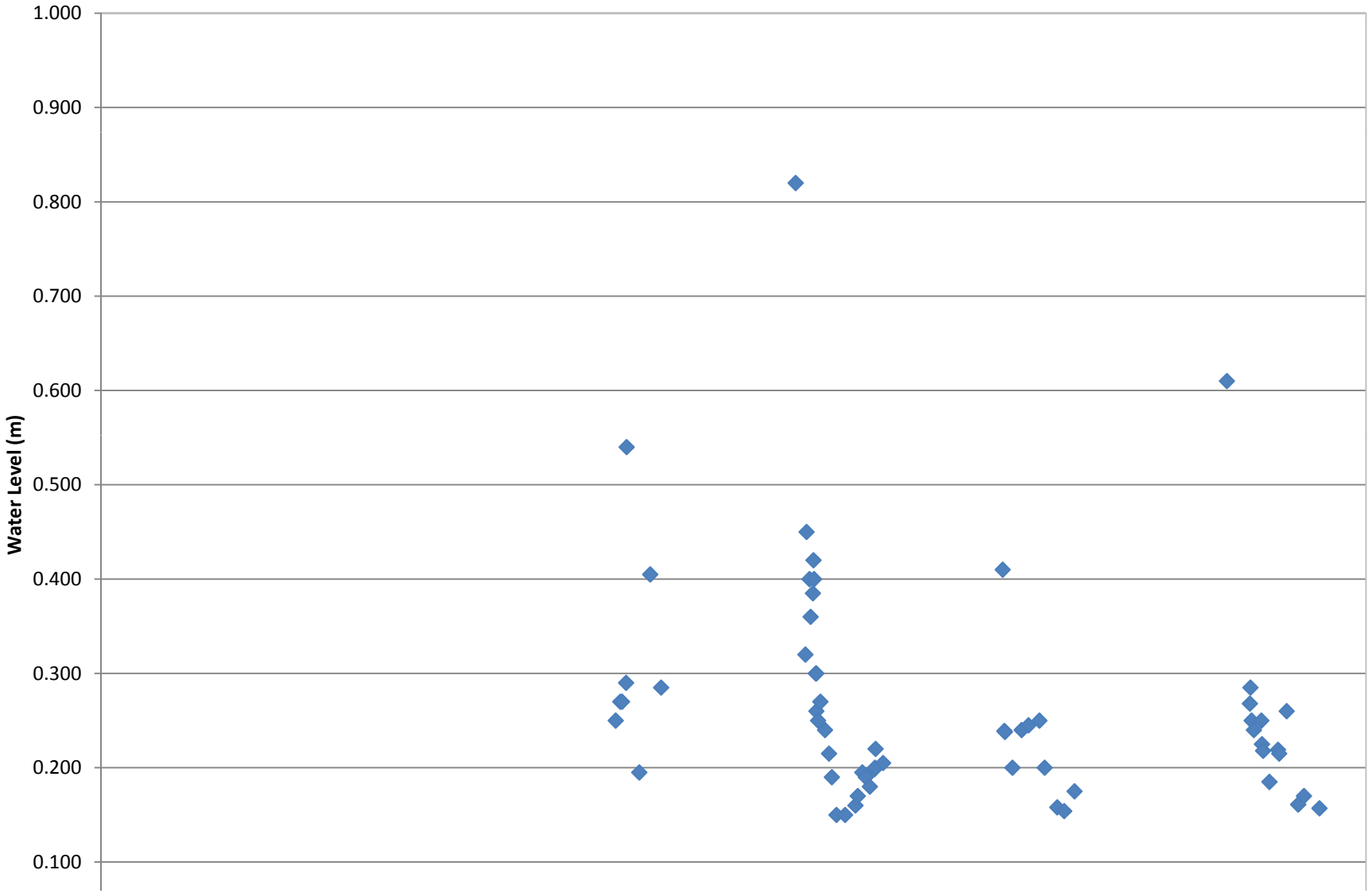

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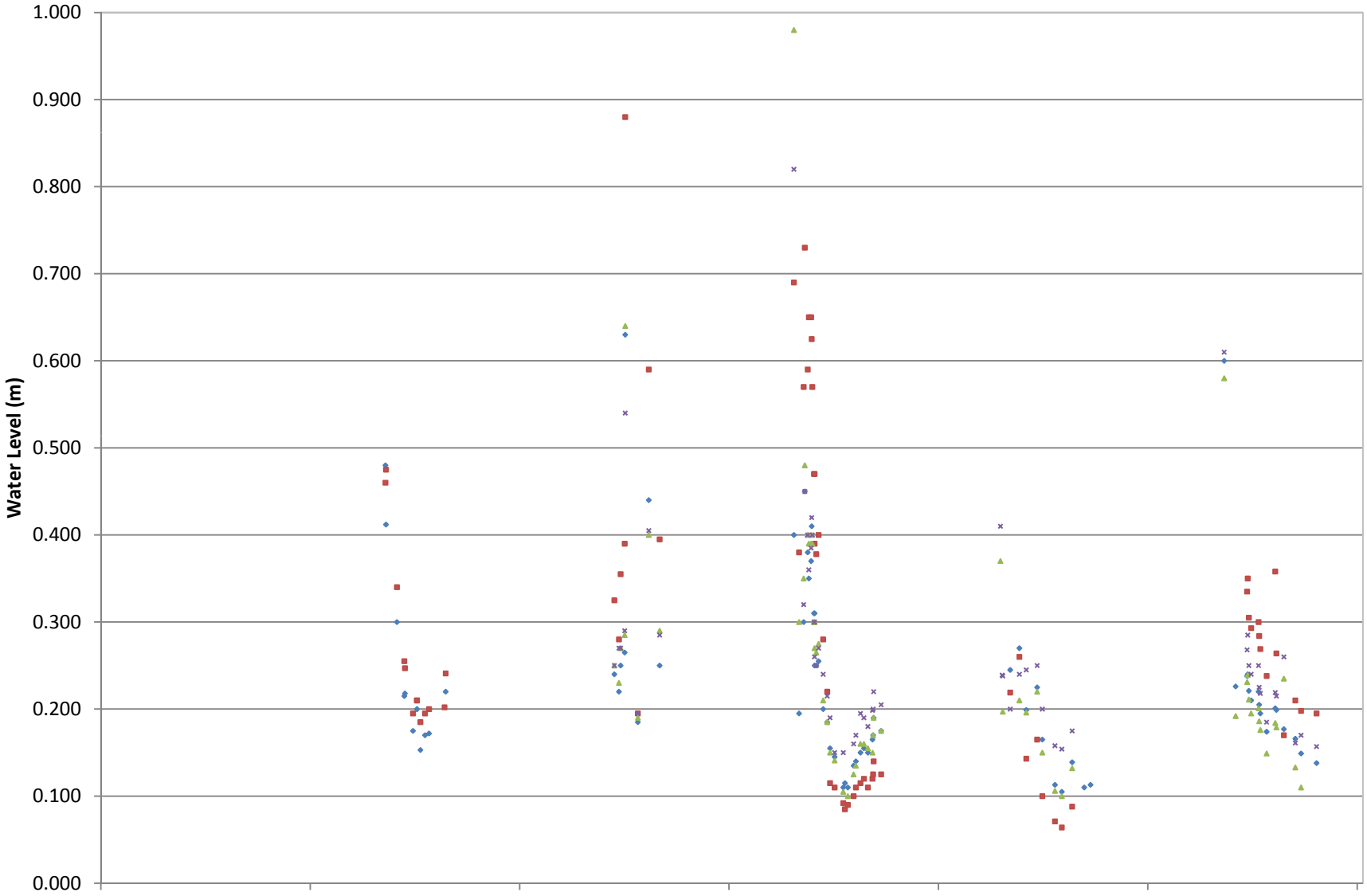
Figure F-65: Faro Creek Diversion Channel
FCD-1 to FCD-4



TABLES

Faro Pit

Table F-72: Faro Pit Regression Monitoring

Date	Pins								
	15356	15717	15355	15737	15354	15742	15353	15352	15351
08/07/2008	17.550		5.590		8.060		17.410	11.250	11.190
Δ Since last Measurement	-		-		-		-	-	-
20/08/2008	17.550		5.580		8.040		17.400	11.250	11.190
Δ Since last Measurement	0.000		-0.010		-0.020		-0.010	0.000	0.000
22/09/2008	17.550		5.580		8.010		17.390	11.250	11.180
Δ Since last Measurement	0.000		0.000		-0.030		-0.010	0.000	-0.010
02/07/2009	17.550		5.415		7.440		17.375	11.250	11.180
Δ Since last Measurement	0.000		-0.165		-0.570		-0.015	0.000	0.000
16/08/2009	17.600		5.320		7.830		19.100	12.000	11.640
Δ Since last Measurement	0.050		-0.095		0.390		1.725	0.750	0.460
30/09/2009	17.590		5.420		7.395		17.360	11.710	11.810
Δ Since last Measurement	-0.010		0.100		-0.435		-1.740	-0.290	0.170
24/06/2010	17.400		5.100		7.900		17.300	11.300	11.200
Δ Since last Measurement	-0.190		-0.320		0.505		-0.060	-0.410	-0.610
20/07/2010	17.740		5.120		7.780		17.530	11.500	13.230
Δ Since last Measurement	0.340		0.020		-0.120		0.230	0.200	2.030
20/08/2010	17.55		5.02		8.00		16.75	10.89	13.11
Δ Since last Measurement	-0.191		-0.105		0.219		-0.779	-0.615	-0.120
23/09/2010	17.530		5.100		7.900		16.890	10.600	12.960
Δ Since last Measurement	-0.019		0.085		-0.099		0.139	-0.285	-0.150
24/07/2011	17.540		4.980		7.840			11.050	13.130
Δ Since last Measurement	0.010		-0.120		-0.060		-	0.450	0.170
21/08/2011	17.260	3.820	5.080	4.920	7.850	6.770	17.270	11.100	13.160
Δ Since last Measurement	-0.280		0.100		0.010		0.380	0.050	0.030
06/10/2011	17.570	3.750	5.070	4.890	7.800	6.820	17.290	10.910	13.130
Δ Since last Measurement	0.310	-0.070	-0.010	-0.030	-0.050	0.050	0.020	-0.190	-0.030
03/11/2011	17.260	3.800	5.060	4.930	7.680	6.390	16.980	11.230	
Δ Since last Measurement	-0.310	0.050	-0.010	0.040	-0.120	-0.430	-0.310	0.320	-

Table F-73: YES Prism Survey Results 2011

Datum: NAD27
Geoid Model: GSD95
Date: September 20
File: August 2011.dat

Observation Points (Control) - Fixed Location

Point #	Northing	Easting	Elev.
274	6914173.162	584763.276	1195.519
275	6914246.141	583937.823	1208.705
276	6914995.038	584016.996	1255.410

Standard Deviations @ 95th Percentile

S_N (mm)	S_E (mm)	S_Z (mm)
0.0	0.0	0.0
0.0	0.0	0.0
0.0	0.0	0.0

Original Coordinates (Monitoring Points) August 2006

Point #	Northing	Easting	Elevation	S_N (mm)	S_E (mm)	S_Z (mm)
13872	6915376.00	584838.73	1289.09	5.5	5.8	14.8
13873	6915330.14	584922.20	1298.26	5.3	5.5	14.6
13874	6915302.30	584972.86	1297.44	6.1	6.0	15.9
13875	6915262.94	585078.53	1303.92	7.1	6.7	18.7
13876	6915108.37	585074.49	1281.13	7.1	6.3	19.5
13877	6915066.79	585200.63	1300.46	7.6	6.3	19.9
13878	6915002.33	585128.77	1280.65	7.0	5.7	17.1
13879	6914854.63	585228.55	1275.00	7.3	5.3	18.5
13880	6914786.53	585240.53	1269.17	7.7	5.4	19.4

Coordinates (Monitoring Points) October 2006

Changes Between August and Ocotber 2006

Point #	Northing	Easting	Elevation	S_N (mm)	S_E (mm)	S_Z (mm)	D_N(cm)	D_E(cm)	D_Z(cm)
13872	6915376.01	584838.71	1289.08	6.3	6.9	33.3	-0.44	1.86	1.06
13873	6915330.15	584922.18	1298.32	8.0	1.1	47.0	-0.57	1.60	-5.83
13874	6915302.31	584972.83	1297.46	7.0	7.0	34.5	-1.05	2.15	-2.56
13875	6915262.95	585078.50	1303.92	7.3	6.6	35.8	-1.07	2.68	0.04
13876	6915108.37	585074.48	1281.08	7.0	5.9	33.1	-0.11	1.40	5.06
13877	6915066.79	585200.61	1300.46	7.7	6.0	34.7	-0.47	1.74	0.07
13878	6915002.36	585128.75	1280.73	7.2	5.6	32.2	-2.12	2.13	-8.01
13879	6914854.65	585228.53	1275.01	7.6	5.3	31.6	-2.12	1.84	-0.72
13880	6914786.55	585240.51	1269.13	7.6	5.1	30.6	-1.84	1.32	3.07

Coordinates (Monitoring Points) August 2009

Changes Between August 2009 and August 2006

Point #	Northing	Easting	Elevation	S_N (cm)	S_E (cm)	S_Z (cm)	D_N(m)	D_E(cm)	D_Z(cm)
13872	6915376.016	584838.717	1289.068	0.9	1.0	3.2	1.48	-1.41	-2.22
13873	6915330.160	584922.193	1298.200	0.9	1.0	3.2	1.87	-0.45	-6.03
13874	6915302.306	584972.841	1297.387	0.9	0.9	3.3	0.67	-1.55	-4.99
13875	6915262.939	585078.500	1303.852	1.0	0.9	3.4	0.30	-2.85	-6.77
13876	6915108.370	585074.493	1281.030	1.0	0.8	3.1	-0.16	-0.01	-9.95
13877	6915066.804	585200.621	1300.452	1.1	0.8	3.3	1.92	-0.36	-0.77
13878	6915002.363	585128.755	1280.709	1.0	0.8	3.1	2.92	-1.37	5.89
13879	6914854.644	585228.540	1274.949	1.1	0.7	3.0	1.81	-0.71	-5.09
13880	6914786.552	585240.522	1269.126	1.1	0.7	2.9	2.54	-0.26	-3.95

Coordinates (Monitoring Points) September 2010

Changes Between September 2010 and August 2006

Changes Between September 2010 and August 2009

Point #	Northing	Easting	Elevation	S_N (cm)	S_E (cm)	S_Z (cm)	D_N(cm)	D_E(cm)	D_Z(cm)	D_N(cm)	D_E(cm)	D_Z(cm)
13872	6915376.017	584838.715	1289.073	0.81	0.91	2.98	1.630	-1.640	-1.680	0.15	-0.23	0.54
13873	6915330.162	584922.186	1298.246	0.85	0.88	2.99	2.070	-1.060	-1.370	0.2	-0.61	4.66
13874	6915302.288	584972.853	1297.365	0.87	0.87	3.03	-1.090	-0.290	-7.250	-1.76	1.26	-2.26
13875	6915262.932	585078.501	1303.913	1.11	1.46	4.10	-0.430	-2.670	-0.670	-0.73	0.18	6.1
13876	6915108.383	585074.485	1281.028	0.89	0.77	2.90	1.090	-0.840	-10.120	1.25	-0.83	-0.17
13877	6915066.778	585200.616	1300.455	0.98	0.78	3.05	-0.680	-0.860	-0.530	-2.6	-0.5	0.24
13878	6915002.375	585128.754	1280.727	0.91	0.73	2.83	4.080	-1.480	7.650	1.16	-0.11	1.76
13879	6914854.642	585228.544	1275.018	0.97	0.69	2.78	1.600	-0.350	1.780	-0.21	0.36	6.87
13880	6914786.558	585240.513	1269.161	1.23	1.03	3.08	3.100	-1.160	-0.450	0.56	-0.9	3.5

Coordinates (Monitoring Points) September 2012011

Changes Between August 2011 and August 2006

Changes Between August 2011 and September 2010

Changes Between August 2011 and August 2009

Point #	Northing	Easting	Elevation	S_N (cm)	S_E (cm)	S_Z (cm)	D_N(cm)	D_E(cm)	D_Z(cm)	D_N(cm)	D_E(cm)	D_Z(cm)	D_N(cm)	D_E(cm)	D_Z(cm)
13872	6915376.004	584838.718	1289.076	0.604	0.653	1.456	0.29	-1.31	-1.44	-1.34	0.33	0.24	-1.19	0.1	0.78
13873	6915330.143	584922.190	1298.250	0.621	0.647	1.488	0.24	-0.68	-1.00	-1.83	0.38	0.37	-1.63	-0.23	5.03
13874	6915302.296	584972.842	1297.378	0.632	0.644	1.508	-0.30	-1.40	-5.92	0.79	-1.11	1.33	-0.97	0.15	-0.93
13875	6915262.923	585078.492	1303.853	0.660	0.644	1.564	-1.26	-3.60	-6.70	-0.83	-0.93	-6.03	-1.56	-0.75	0.07
13876	6915108.356	585074.495	1281.032	0.642	0.602	1.448	-1.62	0.18	-9.74	-2.71	1.02	0.38	-1.46	0.19	0.21
13877	6915066.803	585200.619	1300.452	0.682	0.607	1.522	1.82	-0.59	-0.82	2.50	0.27	-0.29	-0.1	-0.23	-0.05
13878	6915002.362	585128.751	1280.711	0.651	0.584	1.416	2.84	-1.78	6.06	-1.24	-0.30	-1.59	-0.08	-0.41	0.17
13879	6914854.631	585228.532	1274.975	0.673	0.567	1.396	0.46	-1.47	-2.46	-1.14	-1.12	-4.24	-1.35	-0.76	2.63
13880	6914786.538	585240.518	1269.139	0.673	0.558	1.359	1.08	-0.68	-2.62	-2.02	0.48	-2.17	-1.46	-0.42	1.33

TABLES AND FIGURES

Grum Pit

Table F-74: Grum Pit Slope Stability Monitoring
South of Transformer Station

Table F-74a: Distance Between Pins (m)

Date	GP-S1	GP-S2	GP-S3	GP-S4	Comments
24-Jun-10	4	5.562	7.814		Fourth pin to be installed
29-Jul-10	4	5.562	7.814	15.63	Fourth pin installed
04-Aug-10	4	5.65	7.810	15.619	
12-Aug-10	4	5.565	7.812	15.635	
19-Aug-10	4	5.565	7.810	15.626	
26-Aug-10	4	5.564	7.810	15.631	*1st measurements using steel tape
02-Sep-10	4	5.56	7.812	15.632	
09-Sep-10	4	5.563	7.807	15.623	
16-Sep-10	4	5.564	7.811	15.625	
23-Sep-10	4	5.558	7.808	15.623	
30-Sep-10	4	5.56	7.805	15.622	
07-Oct-10	4	5.562	7.806	15.632	
10-Nov-10	4	5.561	7.809	15.623	Start of monthly monitoring frequency
07-Dec-10	4	5.561	7.811	15.627	
05-Jan-11	4	5.559	7.781	15.629	
01-Feb-11	4	5.559	7.808	15.63	
07-Mar-11	4	5.559	7.808	15.636	
05-Apr-11	4	5.557	7.806	15.635	
03-May-11	4	5.558	7.807	15.630	
09-Jun-11	4	5.565	7.803	15.622	
01-Jul-11	4	5.562	7.804	15.622	
07-Aug-11	4	5.566	7.804	15.625	
05-Sep-11	4	5.559	7.802	15.612	
06-Oct-11	4	5.561	7.801	15.621	
03-Nov-11	4	5.560	7.811	15.627	
06-Dec-11	4	5.560	7.803	15.620	

Table F-74b: Velocity of Pins Movement (m/day)

Date	GP-S1	GP-S2	GP-S3	GP-S4
24-Jun-10	-	-	-	-
29-Jul-10	0.00000	0.00000	0.00000	-
04-Aug-10	0.00000	-0.01467	-0.01400	-0.01217
12-Aug-10	0.00000	0.01062	0.01037	0.00838
19-Aug-10	0.00000	0.00000	0.00029	0.00157
26-Aug-10	0.00000	0.00014	0.00014	-0.00057
02-Sep-10	0.00000	0.00057	0.00029	0.00014
09-Sep-10	0.00000	-0.00043	0.00029	0.00157
16-Sep-10	0.00000	-0.00014	-0.00071	-0.00100
23-Sep-10	0.00000	0.00086	0.00129	0.00157
30-Sep-10	0.00000	-0.00029	0.00014	0.00029
07-Oct-10	0.00000	-0.00029	-0.00043	-0.00186
10-Nov-10	0.00000	0.00003	-0.00006	0.00021
07-Dec-10	0.00000	0.00000	-0.00007	-0.00022
05-Jan-11	0.00000	0.00007	0.00111	0.00104
01-Feb-11	0.00000	0.00000	-0.00100	-0.00104
07-Mar-11	0.00000	0.00000	0.00000	-0.00018
05-Apr-11	0.00000	0.00007	0.00014	0.00017
03-May-11	0.00000	-0.00004	-0.00007	0.00011
09-Jun-11	0.00000	-0.00019	-0.00008	0.00014
01-Jul-11	0.00000	0.00014	0.00009	0.00009
07-Aug-11	0.00000	-0.00011	-0.00011	-0.00019
05-Sep-11	0.00000	0.00024	0.00031	0.00076
06-Oct-11	0.00000	-0.00006	-0.00003	-0.00032
03-Nov-11	0.00000	0.00004	-0.00032	-0.00054
06-Dec-11	0.00000	0.00000	0.00024	0.00045

Note: Negative values indicate movement away from Grum Pit; positive values indicate movement towards Grum Pit.

Denison Environmental Services

Table F-75: Grum Pit Slope Stability Monitoring
North of Transformer Station

Table F-75a: Distance Between Pins (m)

Date	GP-N1	GP-N2	GP-N3	GP-N4	GP-N5	GP-N6	Comments
24-Jun-10	4	5.382	5.226	6.126	6.264	5.74	
29-Jul-10	4	5.381	5.329	6.124	6.270	5.743	
04-Aug-10	4	5.381	5.228	6.123	6.217	5.74	
12-Aug-10	4	5.385	5.230	6.123	6.271	5.748	
19-Aug-10	4	5.383	5.230	6.126	6.270	5.74	
26-Aug-10	4	5.381	5.230	6.126	6.270	5.742	*1st measurements using steel tape
02-Sep-10	4	5.383	5.230	6.127	6.273	5.734	
09-Sep-10	4	5.380	5.250	6.124	6.265	5.737	
16-Sep-10	4	5.383	5.229	6.127	6.270	5.739	
23-Sep-10	4	5.378	5.231	6.122	6.266	5.735	
30-Sep-10	4	5.379	5.225	6.122	6.265	5.732	
07-Oct-10	4	5.380	5.229	6.125	6.267	5.736	
10-Nov-10	4	5.390	5.230	6.123	6.268	5.738	Start of monthly monitoring frequency
07-Dec-10	4	5.388	5.324	6.12	6.272	5.739	
05-Jan-11	4	5.380	5.234	6.121	6.270	5.739	
01-Feb-11	4	5.381	5.235	6.123	6.269	5.737	
07-Mar-11	4	5.381	5.234	6.124	6.270	5.738	
05-Apr-11	4	5.387	5.234	6.121	6.268	5.737	
03-May-11	4	5.382	5.234	6.122	6.272	5.737	
09-Jun-11	4	5.381	5.240	6.134	6.273	5.731	
01-Jul-11	4	5.380	5.232	6.127	6.274	5.732	
07-Aug-11	4	5.377	5.228	6.125	6.275	5.734	
05-Sep-11	4	5.370	5.224	6.119	6.265	5.715	
06-Oct-11	4	5.374	5.231	6.124	6.271	5.726	
03-Nov-11	4	5.372	5.235	6.124	6.273	5.731	
06-Dec-11	4	5.376	5.235	6.117	6.271	5.726	

Table F-75b: Velocity of Pins Movement (m/day)

Date	GP-N1	GP-N2	GP-N3	GP-N4	GP-N5	GP-N6
24-Jun-10	-	-	-	-	-	-
29-Jul-10	0.00000	0.00003	-0.00291	-0.00286	-0.00303	-0.00311
04-Aug-10	0.00000	0.00000	0.01683	0.01700	0.02583	0.02633
12-Aug-10	0.00000	-0.00050	-0.00075	-0.00075	-0.00750	-0.00850
19-Aug-10	0.00000	0.00029	0.00029	-0.00014	0.00000	0.00114
26-Aug-10	0.00000	0.00029	0.00029	0.00029	0.00029	0.00000
02-Sep-10	0.00000	-0.00029	-0.00029	-0.00043	-0.00086	0.00029
09-Sep-10	0.00000	0.00043	-0.00243	-0.00200	-0.00086	-0.00129
16-Sep-10	0.00000	-0.00043	0.00257	0.00214	0.00143	0.00114
23-Sep-10	0.00000	0.00071	0.00043	0.00114	0.00171	0.00229
30-Sep-10	0.00000	-0.00014	0.00071	0.00071	0.00086	0.00129
07-Oct-10	0.00000	-0.00014	-0.00071	-0.00114	-0.00143	-0.00200
10-Nov-10	0.00000	-0.00029	-0.00032	-0.00026	-0.00029	-0.00035
07-Dec-10	0.00000	0.00007	-0.00341	-0.00330	-0.00344	-0.00348
05-Jan-11	0.00000	0.00028	0.00338	0.00334	0.00341	0.00341
01-Feb-11	0.00000	-0.00004	-0.00007	-0.00015	-0.00011	-0.00004
07-Mar-11	0.00000	0.00000	0.00003	0.00000	-0.00003	-0.00006
05-Apr-11	0.00000	-0.00021	-0.00021	-0.00010	-0.00003	0.00000
03-May-11	0.00000	0.00018	0.00018	0.00014	0.00000	0.00000
09-Jun-11	0.00000	0.00003	-0.00014	-0.00046	-0.00049	-0.00032
01-Jul-11	0.00000	0.00005	0.00041	0.00073	0.00068	0.00064
07-Aug-11	0.00000	0.00008	0.00019	0.00024	0.00022	0.00016
05-Sep-11	0.00000	0.00024	0.00038	0.00059	0.00093	0.00159
06-Oct-11	0.00000	-0.00013	-0.00035	-0.00052	-0.00071	-0.00106
03-Nov-11	0.00000	0.00007	-0.00007	-0.00007	-0.00014	-0.00032
06-Dec-11	0.00000	-0.00012	-0.00012	0.00009	0.00015	0.00030

Note: Negative values indicate movement away from Grum Pit; positive values indicate movement towards Grum Pit.

Table F-76: Grum Slot Cut Piezometers
P09-GS1 (A/B)

Top of Pipe Elevations (masl)	
P09-GS1A	P09-GS1B
1230.00	1229.98

Well Dry
Well Frozen

Date	P09-GSA (GS-1A)		P09-GSB (GS-1B)		Comments
	Static Water Level (m bgs)	Piezometric Elevation (masl)	Static Water Level (m bgs)	Piezometric Elevation (masl)	
6-Aug-09	2.52	1227.48	2.39	1227.59	
4-Nov-09	3.14	1226.86	2.93	1227.05	
18-Apr-10	8.72	1221.28			
16-May-10	2.326	1227.67	2.17	1227.81	
11-Jun-10	2.33	1227.67	2.26	1227.72	
14-Jul-10	2.42	1227.59	2.27	1227.72	
12-Aug-10	2.68	1227.32	2.53	1227.45	
17-Sep-10	2.88	1227.12	2.74	1227.24	SRK09-GS-1B Reading taken 16-Sep-10
14-Dec-10	6.75	1223.25	4.48	1225.50	
24-Jan-11	6.71	1223.29	6.63	1223.36	
17-Feb-11	7.33	1222.67	7.62	1222.36	
20-Apr-11	9.16	1220.84	7.38	1222.61	Slushy water levels
19-May-11	1.99	1228.02	1.76	1228.23	
28-Jun-11	1.96	1228.04	1.85	1228.13	
20-Jul-11	2.08	1227.92	1.95	1228.03	
8-Aug-11	2.09	1227.91	2.28	1227.70	
6-Oct-11	2.65	1227.35	2.29	1227.69	
6-Dec-11	2.72	1227.28	2.59	1227.39	

Figure F-66: Grum Pit Slope Stability Monitoring
South of Transformer Station

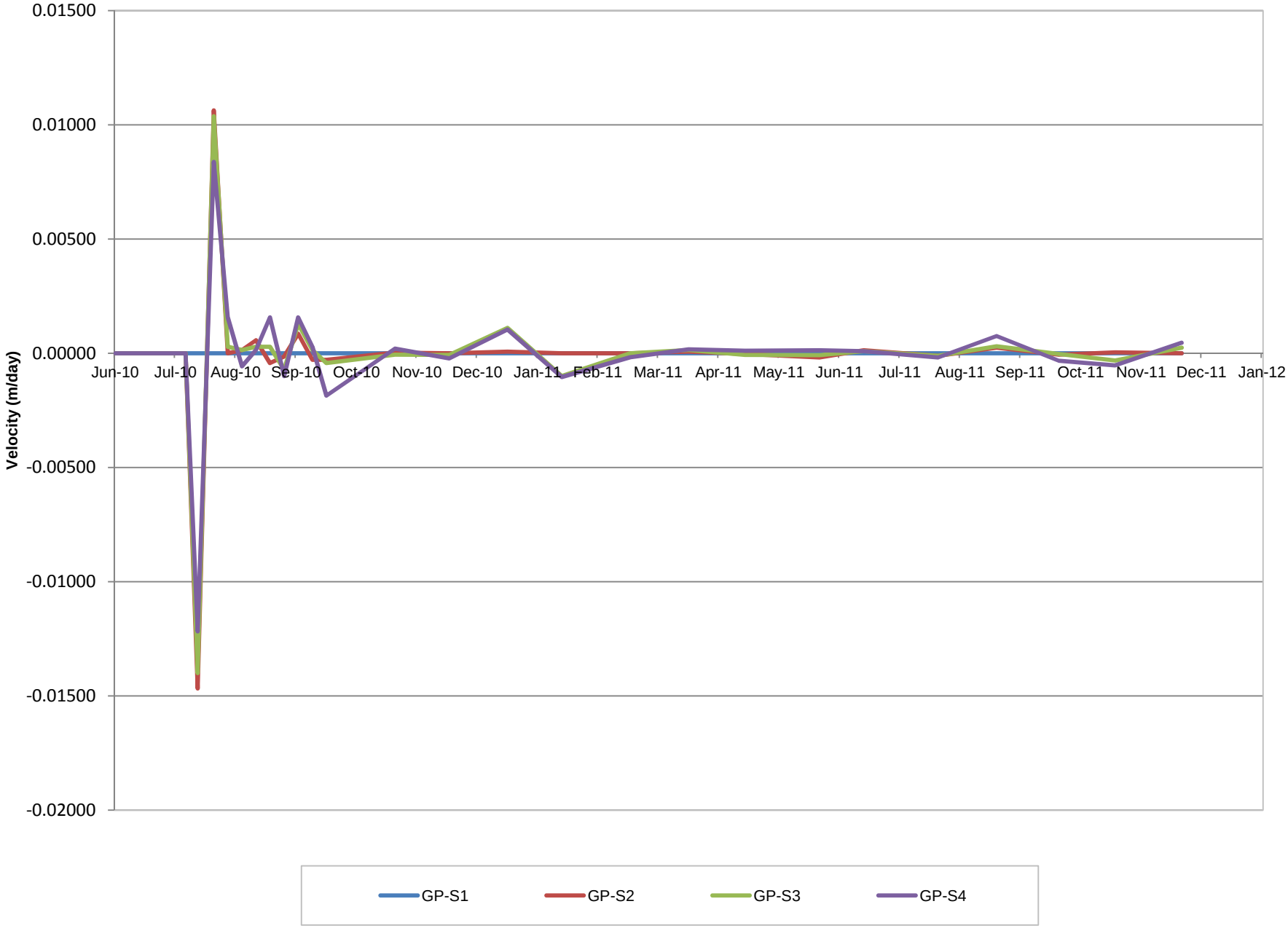


Figure F-67: Grum Pit Slope Stability Monitoring
North of Transformer Station

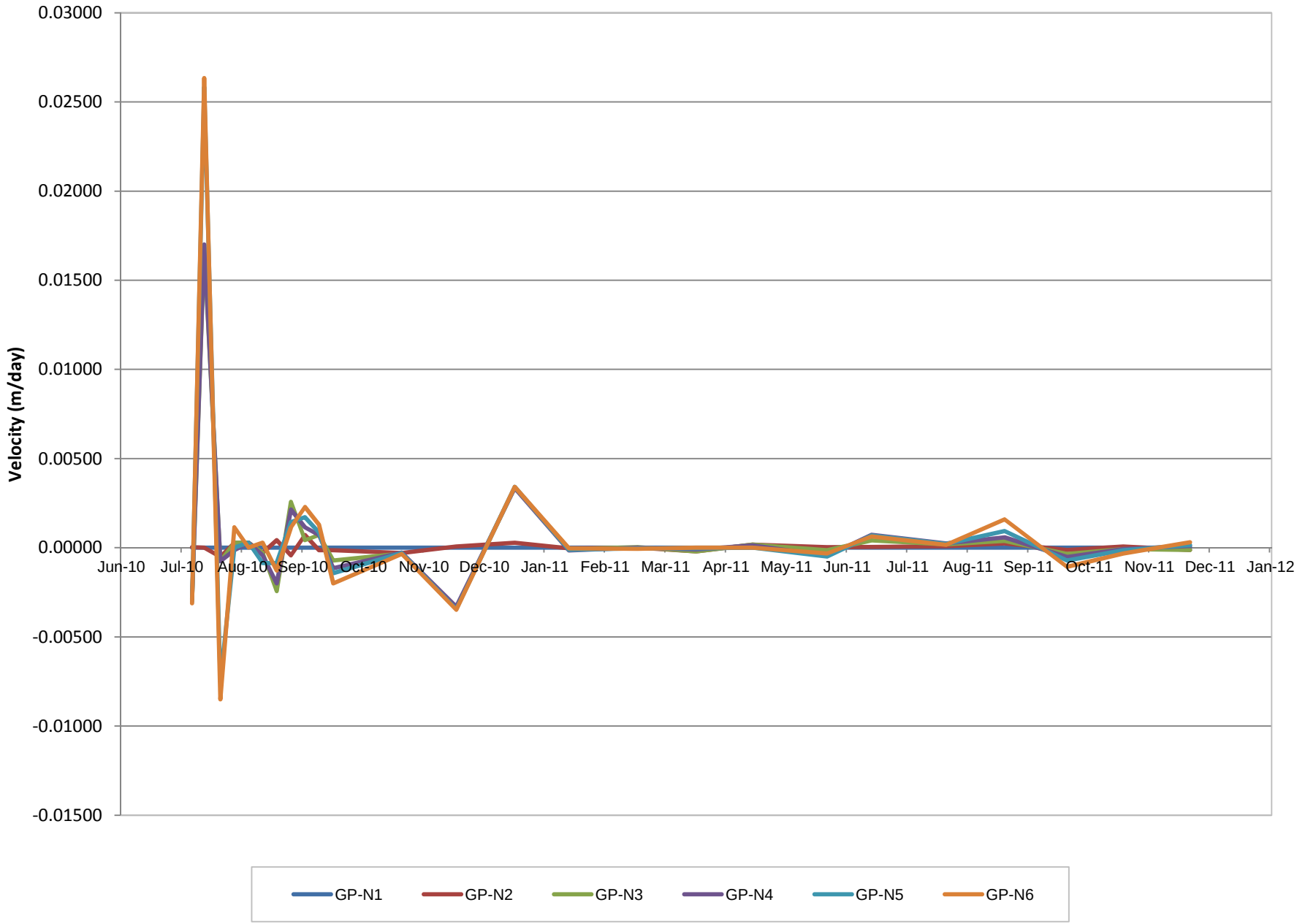


Figure F-68: Grum Slot Cut Piezometers
P09-GS1 (A/B)

TABLES AND FIGURES

Little Creek Dam

Denison Environmental Services

Table F-77: Little Creek Dam
Thermistor BH94 LCD4

BH94 LCD4		Location:	Little Creek Dam Crest			Elevation (m amsl):	1114.5	Coordinates:	3015N 13465E	
		Thermistor String #26	Date Installed:	08-Jun-94	Thermistor Type:	SINCA RTD's	Ice-Bath Calibration:	Applied	Surface Protector:	Yes
Depth Correction:	0.0									

Depth on String	Actual Depth	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)
(m)	(m)	15-Jun-94	16-Sep-94	22-Sep-95	25-Sep-96	08-May-97	17-Oct-97	28-May-98	17-Sep-98	04-Jun-99	12-Sep-99	06-Jun-00	08-Sep-00	09-May-02	04-Sep-02	10-May-03	09-Sep-03	08-Sep-04	19-May-05	09-Sep-05	16-May-06	11-Sep-06	10-May-07	27-Aug-07	27-Mar-08 (1)	27-Mar-08 (2)	03-Apr-08	10-Apr-08
1.0	-1.0	1893	1908	1909	1896	1847	1872	1872	1909	1867	1914	1873	1900	1842	1912	1851	1921	1921	1862	1921	1849	1915	1849	1937	1843	1839	1837	1835
1.5	-1.5	1869	1913	1906	1898	1845	1881	1854	1911	1853	1913	1854	1902	1841	1909	1850	1919	1925	1852	1980	1848	1915	1847	1929	1906	1857	1870	1837
2.0	-2.0	1852	1911	1900	1894	1840	1884	1849	1908	1848	1906	1849	1898	1838	1900	1846	1913	1921	1848	1915	1845	1910	1842	1917	1837	1835	1836	1837
2.5	-2.5	1851	1909	1898	1892	1841	1888	1850	1906	1848	1902	1850	1897	1841	1896	1848	1909	1918	1849	1912	1847	1909	1845	1910	1896	1857	1845	1842
14.5	-14.5	1873	1871	1872	1874	1874	1873	1873	1872	1874	1873	1874	1873	1876	1874	1876	1875	1875	1878	1877	1878	1878	1878	1879	2012	1880	1885	1879
15.0	-15.0	1872	1870	1871	1872	1872	1871	1871	1871	1873	1872	1873	1872	1874	1873	1874	1873	1874	1876	1876	1877	1876	1877	1876	1884	1877	1886	1877
15.5	-15.5	1874	1873	1875	1876	1876	1875	1875	1875	1877	1876	1876	1876	1878	1877	1878	1877	1878	1880	1880	1880	1880	1881	1881	1992	1901	1885	1881
16.0	-16.0	1870	1868	1870	1871	1871	1870	1870	1870	1871	1871	1871	1871	1873	1872	1873	1872	1873	1875	1875	1875	1875	1876	1876	1887	1878	1875	1876
16.5	-16.5	1870	1869	1869	1871	1871	1871	1870	1871	1872	1871	1871	1871	1873	1872	1873	1873	1873	1875	1875	1875	1875	1876	1876	1877	1875	1876	1876
17.0	-17.0	1870	1870	1871	1872	1872	1872	1872	1871	1873	1872	1873	1872	1874	1873	1874	1874	1874	1876	1876	1876	1877	1879	1900	1929	1877	1877	1878

Depth on String	Actual Depth	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)
(m)	(m)	15-Jun-94	16-Sep-94	22-Sep-95	25-Sep-96	08-May-97	17-Oct-97	28-May-98	17-Sep-98	04-Jun-99	12-Sep-99	06-Jun-00	08-Sep-00	09-May-02	04-Sep-02	10-May-03	09-Sep-03	08-Sep-04	19-May-05	09-Sep-05	16-May-06	11-Sep-06	10-May-07	27-Aug-07	27-Mar-08 (1)	27-Mar-08 (2)	03-Apr-08	10-Apr-08
1.0	-1.0	5.4	7.5	7.7	5.9	-1.0	2.5	2.5	7.7	1.8	8.3	2.7	6.4	-1.7	8.1	-0.4	9.3	9.3	1.1	9.3	-0.7	8.5	-0.7	11.5	-1.5	-2.1	-2.4	-2.7
1.5	-1.5	2.1	8.2	7.2	6.1	-1.3	3.8	0.0	7.9	-0.1	8.2	0.0	6.7	-1.8	7.7	-0.6	9.0	9.8	-0.3	17.3	-0.8	8.5	-1.0	10.4	7.2	0.4	2.2	-2.4
2.0	-2.0	-0.3	7.9	6.4	5.6	-2.0	4.2	-0.7	7.5	-0.8	7.2	-0.7	6.1	-2.3	6.4	-1.1	8.2	9.3	-0.8	8.5	-1.3	7.8	-1.7	8.8	-2.4	-2.7	-2.5	-2.4
2.5	-2.5	-0.4	7.7	6.1	5.3	-1.8	4.7	-0.6	7.2	-0.8	6.7	-0.6	6.0	-1.8	5.9	-0.8	7.7	8.9	-0.7	8.1	-1.0	7.7	-1.3	7.8	5.9	0.4	-1.3	-1.7
14.5	-14.5	2.7	2.4	2.5	2.8	2.8	2.7	2.7	2.5	2.8	2.7	2.8	2.7	3.1	2.8	3.1	2.9	2.9	3.4	3.2	3.4	3.4	3.5	3.4	21.6	3.6	4.3	3.5
15.0	-15.0	2.5	2.2	2.4	2.5	2.5	2.4	2.4	2.4	2.7	2.5	2.7	2.5	2.8	2.7	2.8	2.7	2.8	3.1	3.1	3.2	3.1	3.2	3.1	4.2	3.2	4.5	3.2
15.5	-15.5	2.8	2.7	2.9	3.1	3.1	2.9	2.9	2.9	3.2	3.1	3.1	3.1	3.4	3.2	3.4	3.2	3.4	3.6	3.6	3.6	3.6	3.8	3.8	18.9	6.5	4.3	3.8
16.0	-16.0	2.2	2.0	2.2	2.4	2.4	2.2	2.2	2.2	2.4	2.4	2.4	2.4	2.7	2.5	2.7	2.5	2.7	2.9	2.9	2.9	2.9	3.1	3.1	4.6	3.4	2.9	3.1
16.5	-16.5	2.2	2.1	2.1	2.4	2.4	2.4	2.2	2.4	2.5	2.4	2.4	2.4	2.7	2.5	2.7	2.7	2.7	2.9	2.9	2.9	2.9	3.1	3.1	3.2	2.9	3.1	3.1
17.0	-17.0	2.2	2.2	2.4	2.5	2.5	2.5	2.5	2.4	2.7	2.5	2.7	2.5	2.8	2.7	2.8	2.8	2.8	3.1	3.1	3.1	3.2	3.5	6.4	10.4	3.2	3.2	3.4

Depth on String	Actual Depth	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (Ohms)	Resistivity (Ohms)
(m)	(m)	21-Apr-08	28-Apr-08	05-May-08	12-May-08	15-May-08	20-May-08	26-May-08	02-Jun-08	11-Jun-08	17-Jun-08	24-Jun-08	02-Jul-08	07-Jul-08	15-Jul-08	22-Jul-08	29-Jul-08	04-Aug-08	11-Aug-08	21-Aug-08	18-Sep-08	26-Jun-09	09-Sep-09	15-May-10	10-Sep-10	27-May-11	26-Sep-11
1.0	-1.0	1839	1843	1848	1849	1867	1852	1885	1875	1884	1891	1903	1909	1915	1914	1915	1913	1916	1924	1922	1903	1904	1960	1855	2120	1861	1903
1.5	-1.5	1842	1843	1846	1850	1850	1850	1852	1856	1867	1874	1885	1897	1906	1902	1904	1904	1906	1913	1915	1904	1886	1970	1852	2190	1851	1906
2.0	-2.0	1840	1841	1843	1845	1845	1847	1848	1851	1851	1853	1862	1876	1879	1884	1889	1892	1894	1899	1904	1899	1865	1960	1848	2370	1847	1902
2.5	-2.5	1844	1844	1845	1847	1847	1848	1849	1851	1851	1852	1853	1858	1864	1873	1879	1884	1884	1891	1897	1898	1852	1960	1849	2340	1848	1901
14.5	-14.5	1879	1879	1878	1879	1879	1879	1879	1880	1878	1878	1878	1879	1881	1879	1877	1877	1877	1877	1877	1877	1877	1930	1877	2100	1878	1876
15.0	-15.0	1877	1877	1877	1878	1880	1877	1877	1878	1877	1876	1877	1878	1879	1876	1876	1876	1876	1876	1876	1875	1876	1930	1876	2090	1876	1875
15.5	-15.5	1881	1881	1882	1882	1881	1880	1881	1882	1881	1880	1881	1881	1882	1896	1880	1880	1880	1880	1880	1879	1880	1930	1880	2090	1880	1878
16.0	-16.0	1876	1875	1875	1882	1876	1876	1876	1877	1879	1875	1879	1876	1875	1895	1875	1875	1875	1875	1875	1874	1875	1930	1875	2090	1875	1874
16.5	-16.5	1876	1876	1876	1900	1876	1876	1876	1877	1876	1876	1876	1878	1878	1880	1875	1875	1875	1875	1875	1875	1875	1930	1875	2090	1875	1875
17.0	-17.0	1896	1877	1878	1877	1877	1877	1879	1879	1879	1877	1878	1879	1879	1892	1877	1877	1877	1876	1877	1876	1877	1930	0	2050	0	0

Depth on String	Actual Depth	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)
(m)	(m)	21-Apr-08	28-Apr-08	05-May-08	12-May-08	15-May-08	20-May-08	26-May-08	02-Jun-08	11-Jun-08	17-Jun-08	24-Jun-08	02-Jul-08	07-Jul-08	15-Jul-08	22-Jul-08	29-Jul-08	04-Aug-08	11-Aug-08	21-Aug-08	18-Sep-08	26-Jun-09	09-Sep-09	15-May-10	10-Sep-10	27-May-11	26-Sep-11
1.0	-1.0	-2.1	-1.5	-0.8	-0.7	1.8	-0.3	4.3	2.9	4.2	5.2	6.8	7.7	8.5	8.3	8.5	8.2	8.6	9.7	9.4	6.8	7.0	14.6	0.1	35.7	1.1	6.8
1.5	-1.5	-1.7	-1.5	-1.1	-0.6	-0.6	-0.6	-0.3	0.3	1.8	2.8	4.3	6.0	7.2	6.7	7.0	7.0	7.2	8.2	8.5	7.0	4.5	16.0	-0.3	44.6	-0.4	7.2
2.0	-2.0	-2.0	-1.8	-1.5	-1.3	-1.3	-1.0	-0.8	-0.4	-0.4	-0.1	1.1	3.1	3.5	4.2	4.9	5.3	5.6	6.3	7.0	6.3	1.5	14.6	-0.8	66.7	-1.0	6.7
2.5	-2.5	-1.4	-1.4	-1.3	-1.0	-1.0	-0.8	-0.7	-0.4	-0.4	-0.3	-0.1	0.6	1.4	2.7	3.5	4.2	4.2	5.2	6.0	6.1	-0.3	14.6	-0.7	63.1	-0.8	6.5
14.5	-14.5	3.5	3.5	3.4	3.5	3.5	3.5	3.5	3.6	3.4	3.4	3.4	3.5	3.8	3.5	3.2	3.2	3.2	3.2	3.2	3.2	3.2	10.5	3.2	33.1	3.4	3.1
15.0	-15.0	3.2	3.2	3.2	3.4	3.6	3.2	3.2	3.4	3.2	3.1	3.2	3.4	3.5	3.1	3.1	3.1	3.1	3.1	3.1	2.9	3.1	10.5	3.1	31.8	3.1	3.0
15.5	-15.5	3.8	3.8	3.9	3.9	3.8	3.6	3.8	3.9	3.8	3.6	3.8	3.8	3.9	5.9	3.6	3.6	3.6	3.6	3.6	3.5	3.6	10.5	3.6	31.8	3.6	3.4
16.0	-16.0	3.1	2.9	2.9	3.9	3.1	3.1	3.1	3.2	3.5	2.9	3.5	3.1	2.9	5.7	2.9	2.9	2.9	2.9	2.9	2.8	2.9	10.5	2.9	31.8	2.9	2.8
16.5	-16.5	3.1	3.1	3.1	6.4	3.1	3.1	3.1	3.2	3.1	3.1	3.1	3.4	3.4	3.6	2.9	2.9	2.9	2.9	2.9	2.9	2.9	10.5	2.9	31.8	2.9	3.0
17.0	-17.0	5.9	3.2	3.4	3.2	3.2	3.2	3.5	3.5	3.5	3.2	3.4	3.5	3.5	5.3	3.2	3.2	3.2	3.1	3.2	3.1	3.2	10.5		26.6		

Notes:
*The 3 metre depth tip is suspect
*Shaded results suspect; not graphed

Denison Environmental Services

Table F-78: Little Creek Dam
Thermistor BH94 LCD5

BH94 LCD5		Location:	Little Creek Dam Crest			Elevation (m amsl):	1114.5	Coordinates:	3090N 13500E	
			Date Installed:	08-Jun-94	Thermistor Type:	SINCA RTD's	Ice-Bath Calibration:	Applied	Surface Protector:	Yes
Depth Correction:	0.0						Ro (Ohms)=	1854		

Depth on String	Actual Depth	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)
(m)	(m)	15-Jun-94	16-Sep-94	22-Sep-95	25-Sep-96	08-May-97	17-Oct-97	28-May-98	17-Sep-98	04-Jun-99	12-Sep-99	06-Jun-00	08-Sep-00	09-May-02	04-Sep-02	10-May-03	09-Sep-03	08-Sep-04	19-May-05	09-Sep-05	16-May-06	11-Sep-06	10-May-07	27-Aug-07	27-Mar-08 (1)	27-Mar-08 (2)	03-Apr-08	10-Apr-08
1.0	-1.0	1903	1908	1906	1887	1847	1863	1882	1900	1873	1907	1882	1893	1842	1910	1852	1917	1916	1877	1919	1849	1909	1849	1937	1827	1837	1846	1834
1.5	-1.5	1880	1909	1902	1890	1843	1873	1854	1904	1854	1906	1856	1895	1841	1907	1849	1917	1923	1854	1919	1848	1911	1849	1928	1836	1860	1840	1837
2.0	-2.0	1864	1910	1899	1890	1842	1879	1851	1903	1851	1903	1852	1894	1842	1902	1849	1913	1922	1852	1917	1848	1909	1845	1918	1839	1840	1856	1840
2.5	-2.5	1855	1907	1896	1888	1842	1882	1851	1900	1850	1897	1852	1892	1844	1897	1851	1909	1918	1853	1914	1849	1907	1847	1910	1852	1851	1845	1844
14.5	-14.5	1879	1872	1871	1873	1872	1872	1871	1870	1872	1871	1871	1870	1873	1872	1873	1872	1873	1875	1875	1876	1875	1876	1876	1968	1879	1877	1876
15.0	-15.0	1879	1873	1873	1876	1874	1874	1873	1872	1874	1873	1873	1872	1875	1874	1875	1874	1875	1877	1877	1878	1877	1878	1877	1877	1879	1877	1877
15.5	-15.5	1880	1875	1874	1876	1875	1875	1874	1873	1874	1874	1874	1873	1875	1875	1876	1875	1876	1878	1877	1878	1878	1879	1879	1896	1909	1879	1878
16.0	-16.0	1878	1876	1877	1879	1877	1877	1876	1875	1877	1876	1876	1875	1877	1877	1878	1877	1878	1879	1879	1880	1880	1880	1883	1885	1904	1879	1879
16.5	-16.5	1868	1868	1868	1870	1869	1869	1867	1867	1868	1868	1868	1867	1869	1868	1869	1869	1870	1871	1871	1871	1871	1872	1873	1871	1871	1884	1871
17.0	-17.0	1873	1873	1874	1876	1874	1874	1873	1872	1873	1873	1873	1872	1874	1874	1874	1874	1875	1876	1876	1877	1877	1877	1884	1881	1884	1876	1876

Depth on String	Actual Depth	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)
(m)	(m)	15-Jun-94	16-Sep-94	22-Sep-95	25-Sep-96	08-May-97	17-Oct-97	28-May-98	17-Sep-98	04-Jun-99	12-Sep-99	06-Jun-00	08-Sep-00	09-May-02	04-Sep-02	10-May-03	09-Sep-03	08-Sep-04	19-May-05	09-Sep-05	16-May-06	11-Sep-06	10-May-07	27-Aug-07	27-Mar-08 (1)	27-Mar-08 (2)	03-Apr-08	10-Apr-08
1.0	-1.0	6.8	7.5	7.2	4.6	-1.0	1.3	3.9	6.4	2.7	7.4	3.9	5.4	-1.7	7.8	-0.3	8.8	8.6	3.2	9.0	-0.7	7.7	-0.7	11.5	-3.8	-2.4	-1.1	-2.8
1.5	-1.5	3.6	7.7	6.7	5.0	-1.5	2.7	0.0	7.0	0.0	7.2	0.3	5.7	-1.8	7.4	-0.7	8.8	9.6	0.0	9.0	-0.8	7.9	-0.7	10.3	-2.5	0.8	-2.0	-2.4
2.0	-2.0	1.4	7.8	6.3	5.0	-1.7	3.5	-0.4	6.8	-0.4	6.8	-0.3	5.6	-1.7	6.7	-0.7	8.2	9.4	-0.3	8.8	-0.8	7.7	-1.3	8.9	-2.1	-2.0	0.3	-2.0
2.5	-2.5	0.1	7.4	5.9	4.7	-1.7	3.9	-0.4	6.4	-0.6	6.0	-0.3	5.3	-1.4	6.0	-0.4	7.7	8.9	-0.1	8.3	-0.7	7.4	-1.0	7.8	-0.3	-0.4	-1.3	-1.4
14.5	-14.5	3.5	2.5	2.4	2.7	2.5	2.5	2.4	2.2	2.5	2.4	2.4	2.2	2.7	2.5	2.7	2.5	2.7	2.9	2.9	3.1	2.9	3.1	3.1	15.7	3.5	3.2	3.1
15.0	-15.0	3.5	2.7	2.7	3.1	2.8	2.8	2.7	2.5	2.8	2.7	2.7	2.5	2.9	2.8	2.9	2.8	2.9	3.2	3.2	3.4	3.2	3.4	3.2	3.2	3.5	3.2	3.2
15.5	-15.5	3.6	2.9	2.8	3.1	2.9	2.9	2.8	2.7	2.8	2.8	2.8	2.7	2.9	2.9	3.1	2.9	3.1	3.4	3.2	3.4	3.4	3.5	3.5	5.9	7.7	3.5	3.4
16.0	-16.0	3.4	3.1	3.2	3.5	3.2	3.2	3.1	2.9	3.2	3.1	3.1	2.9	3.2	3.2	3.4	3.2	3.4	3.5	3.5	3.6	3.6	3.6	4.1	4.3	7.0	3.5	3.5
16.5	-16.5	2.0	2.0	2.0	2.2	2.1	2.1	1.8	1.8	2.0	2.0	2.0	1.8	2.1	2.0	2.1	2.1	2.2	2.4	2.4	2.4	2.4	2.5	2.7	2.4	2.4	4.2	2.4
17.0	-17.0	2.7	2.7	2.8	3.1	2.8	2.8	2.7	2.5	2.7	2.7	2.7	2.5	2.8	2.8	2.8	2.8	2.9	3.1	3.1	3.2	3.2	3.2	4.2	3.8	4.2	3.1	3.1

Depth on String	Actual Depth	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (Ohms)	Resistivity (Ohms)
(m)	(m)	21-Apr-08	28-Apr-08	05-May-08	12-May-08	15-May-08	20-May-08	26-May-08	02-Jun-08	11-Jun-08	17-Jun-08	24-Jun-08	02-Jul-08	07-Jul-08	15-Jul-08	22-Jul-08	29-Jul-08	04-Aug-08	11-Aug-08	21-Aug-08	18-Sep-08	26-Jun-09	09-Sep-09	15-May-10	10-Sep-10	27-May-11	26-Sep-11
1.0	-1.0	1838	1842	1845	1849	1852	1853	1866	1882	1889	1895	1908	1910	1915	1914	1914	1913	1916	1924	1920	1899	1909	2034	1859	2390	1875	1897
1.5	-1.5	1841	1843	1845	1847	1848	1850	1851	1857	1873	1878	1887	1895	1897	1908	1903	1904	1906	1913	1914	1901	1893	1930	1851	2390	1851	1902
2.0	-2.0	1843	1844	1846	1847	1848	1849	1850	1853	1857	1863	1872	1881	1882	1889	1892	1892	1894	1899	1906	1899	1876	1910	1849	2390	1849	1900
2.5	-2.5	1846	1847	1848	1849	1850	1850	1851	1853	1853	1855	1858	1867	1870	1878	1881	1884	1884	1891	1898	1897	1861	1910	1850	2380	1849	1900
14.5	-14.5	1876	1876	1876	1876	1875	1875	1876	1876	1875	1875	1876	1877	1877	1877	1875	1877	1877	1877	1874	1874	1875	1890	1874	2340	1875	1874
15.0	-15.0	1877	1877	1877	1890	1877	1877	1877	1878	1877	1877	1878	1878	1879	1877	1876	1876	1876	1876	1876	1876	1877	1880	1876	2350	1877	1875
15.5	-15.5	1878	1878	1878	1879	1878	1878	1878	1879	1878	1878	1878	1878	1878	1888	1877	1880	1880	1880	1877	1877	1877	1880	1877	2350	1877	1875
16.0	-16.0	1879	1879	1880	1910	1880	1879	1890	1880	1881	1879	1880	1881	1882	1899	1879	1875	1875	1875	1879	1879	1879	1880	1878	2350	1878	1878
16.5	-16.5	1871	1871	1874	1879	1872	1874	1872	1872	1871	1871	1874	1874	1873	1882	1871	1875	1875	1875	1871	1871	1871	1880	1870	2340	1871	1870
17.0	-17.0	1876	1877	1877	1895	1877	1877	1876	1876	1877	1877	1877	1877	1878	1878	1876	1877	1877	1876	1876	1876	1876	1880	1875	2350	1876	1875

Depth on String	Actual Depth	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)
(m)	(m)	21-Apr-08	28-Apr-08	05-May-08	12-May-08	15-May-08	20-May-08	26-May-08	02-Jun-08	11-Jun-08	17-Jun-08	24-Jun-08	02-Jul-08	07-Jul-08	15-Jul-08	22-Jul-08	29-Jul-08	04-Aug-08	11-Aug-08	21-Aug-08	18-Sep-08	26-Jun-09	09-Sep-09	15-May-10	10-Sep-10	27-May-11	26-Sep-11
1.0	-1.0	-2.3	-1.7	-1.3	-0.7	-0.3	-0.1	1.7	3.9	4.9	5.7	7.5	7.8	8.5	8.3	8.3	8.2	8.6	9.7	9.2	6.3	7.7	24.5	0.7	69.1	2.9	6.0
1.5	-1.5	-1.8	-1.5	-1.3	-1.0	-0.8	-0.6	-0.4	0.4	2.7	3.4	4.6	5.7	6.0	7.5	6.8	7.0	7.2	8.2	8.3	6.5	5.4	10.5	-0.4	69.1	-0.4	6.6
2.0	-2.0	-1.5	-1.4	-1.1	-1.0	-0.8	-0.7	-0.6	-0.1	0.4	1.3	2.5	3.8	3.9	4.9	5.3	5.3	5.6	6.3	7.2	6.3	3.1	7.8	-0.7	69.1	-0.7	6.4
2.5	-2.5	-1.1	-1.0	-0.8	-0.7	-0.6	-0.6	-0.4	-0.1	-0.1	0.1	0.6	1.8	2.2	3.4	3.8	4.2	4.2	5.2	6.1	6.0	1.0	7.8	-0.6	67.9	-0.7	6.4
14.5	-14.5	3.1	3.1	3.1	3.1	2.9	2.9	3.1	3.1	2.9	2.9	3.1	3.2	3.2	3.2	2.9	3.2	3.2	3.2	2.8	2.8	2.9	5.0	2.8	63.1	2.9	2.8
15.0	-15.0	3.2	3.2	3.2	5.0	3.2	3.2	3.2	3.4	3.2	3.2	3.4	3.4	3.5	3.2	3.1	3.1	3.1	3.1	3.1	3.1	3.2	3.6	3.1	64.3	3.2	2.9
15.5	-15.5	3.4	3.4	3.4	3.5	3.4	3.4	3.4	3.5	3.4	3.4	3.4	3.4	3.4	4.7	3.2	3.6	3.6	3.6	3.2	3.2	3.2	3.6	3.2	64.3	3.2	2.9
16.0	-16.0	3.5	3.5	3.6	7.8	3.6	3.5	5.0	3.6	3.8	3.5	3.6	3.8	3.9	6.3	3.5	2.9	2.9	2.9	3.5	3.5	3.5	3.6	3.4	64.3	3.4	3.3
16.5	-16.5	2.4	2.4	2.8	3.5	2.5	2.8	2.5	2.5	2.4	2.4	2.8	2.8	2.7	3.9	2.4	2.9	2.9	2.9	2.4	2.4	2.4	3.6	2.2	63.1	2.4	2.2
17.0	-17.0	3.1	3.2	3.2	5.7	3.2	3.2	3.1	3.1	3.2	3.2	3.2	3.2	3.4	3.4	3.1	3.2	3.2	3.1	3.1	3.1	3.1	3.6	2.9	64.3	3.1	2.9

Notes:
*The 3 metre depth tip is suspect
*Shaded results suspect; not graphed

Denison Environmental Services

Table F-79: Little Creek Dam
Thermistor BH94 LCD6

BH94 LCD6		Location:	Little Creek Dam Crest			Elevation (m amsl):	1114.5	Coordinates:	3125N 13535E	
			Date Installed:	08-Jun-94	Thermistor Type:	SINCA RTD's	Ice-Bath Calibration:	Not Applied	Surface Protector:	Yes
Depth Correction:	0.4						Ro (Ohms)=	1854		

Depth on String	Actual Depth	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)
(m)	(m)	15-Jun-94	16-Sep-94	22-Sep-95	25-Sep-96	08-May-97	17-Oct-97	28-May-98	17-Sep-98	04-Jun-99	12-Sep-99	06-Jun-00	08-Sep-00	09-May-02	04-Sep-02	10-May-03	09-Sep-03	08-Sep-04	19-May-05	09-Sep-05	16-May-06	11-Sep-06	10-May-07	27-Aug-07	Mar. 27/08 (1)	Mar. 27/08 (2)	Apr. 03/08	Apr. 10/08
1.0	-1.4	1881	1915	1913	1909	1853	1875	1866	1909	1864	1912	1868	1903	1850	1913	1857	1920	1923	1860	1921	1855	1915	1853	1949	1841	1852	1840	1845
1.5	-1.9	1858	1909	1902	1903	1841	1877	1849	1901	1849	1899	1850	1894	1841	1899	1848	1908	1916	1850	1912	1847	1906	1844	1913	1842	1847	1842	1841
2.0	-2.4	1857	1910	1901	1903	1843	1882	1850	1901	1850	1896	1852	1895	1845	1896	1851	1906	1915	1852	1910	1849	1904	1846	1904	1850	1848	1847	1847
2.5	-2.9	1858	1907	1899	1901	1843	1883	1850	1897	1849	1891	1851	1891	1846	1891	1852	1901	1910	1853	1906	1850	1900	1847	1904	1856	1872	1851	1850
10.0	-10.4	1896	1884	1884	1894	1883	1881	1882	1881	1883	1880	1883	1881	1886	1883	1886	1884	1884	1888	1886	1889	1886	1888	1907	1922	1903	1890	1888
10.5	-10.9	1877	1875	1875	1887	1875	1873	1875	1873	1876	1873	1874	1873	1877	1875	1878	1876	1876	1880	1878	1881	1878	1880	1913	1894	1909	1880	1880
11.0	-11.4	1880	1877	1877	1889	1878	1874	1876	1875	1878	1875	1876	1875	1880	1877	1881	1878	1879	1882	1880	1883	1880	1882	1892	1894	1894	1883	1882
11.5	-11.9	1877	1875	1875	1886	1875	1872	1874	1872	1875	1872	1874	1873	1877	1875	1878	1875	1876	1880	1877	1880	1878	1879	1892	1893	1880	1881	1879
12.0	-12.4	1880	1875	1875	1885	1874	1871	1873	1872	1874	1871	1874	1872	1877	1874	1877	1874	1875	1879	1877	1880	1877	1878	1895	1893	1879	1879	1879
12.5	-12.9	1876	1875	1875	1886	1875	1872	1873	1872	1875	1872	1874	1872	1876	1874	1877	1874	1875	1879	1877	1879	1877	1879	1878	1880	1880	1879	1878

Depth on String	Actual Depth	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)
(m)	(m)	15-Jun-94	16-Sep-94	22-Sep-95	25-Sep-96	08-May-97	17-Oct-97	28-May-98	17-Sep-98	04-Jun-99	12-Sep-99	06-Jun-00	08-Sep-00	09-May-02	04-Sep-02	10-May-03	09-Sep-03	08-Sep-04	19-May-05	09-Sep-05	16-May-06	11-Sep-06	10-May-07	27-Aug-07	Mar. 27/08 (1)	Mar. 27/08 (2)	Apr. 03/08	Apr. 10/08
1.0	-1.4	3.8	8.5	8.2	7.7	-0.1	2.9	1.7	7.7	1.4	8.1	2.0	6.8	-0.6	8.2	0.4	9.2	9.6	0.8	9.3	0.1	8.5	-0.1	13.1	-1.8	-0.3	-2.0	-1.3
1.5	-1.9	0.6	7.7	6.7	6.8	-1.8	3.2	-0.7	6.5	-0.7	6.3	-0.6	5.6	-1.8	6.3	-0.8	7.5	8.6	-0.6	8.1	-1.0	7.2	-1.4	8.2	-1.7	-1.0	-1.7	-1.8
2.0	-2.4	0.4	7.8	6.5	6.8	-1.5	3.9	-0.6	6.5	-0.6	5.9	-0.3	5.7	-1.3	5.9	-0.4	7.2	8.5	-0.3	7.8	-0.7	7.0	-1.1	7.0	-0.6	-0.8	-1.0	-1.0
2.5	-2.9	0.6	7.4	6.3	6.5	-1.5	4.1	-0.6	6.0	-0.7	5.2	-0.4	5.2	-1.1	5.2	-0.3	6.5	7.8	-0.1	7.2	-0.6	6.4	-1.0	7.0	0.3	2.5	-0.4	-0.6
10.0	-10.4	5.9	4.2	4.2	5.6	4.1	3.8	3.9	3.8	4.1	3.6	4.1	3.8	4.5	4.1	4.5	4.2	4.2	4.7	4.5	4.9	4.5	4.7	7.4	9.4	6.8	5.0	4.7
10.5	-10.9	3.2	2.9	2.9	4.6	2.9	2.7	2.9	2.7	3.1	2.7	2.8	2.7	3.2	2.9	3.4	3.1	3.1	3.6	3.4	3.8	3.4	3.6	8.2	5.6	7.7	3.6	3.6
11.0	-11.4	3.6	3.2	3.2	4.9	3.4	2.8	3.1	2.9	3.4	2.9	3.1	2.9	3.6	3.2	3.8	3.4	3.5	3.9	3.6	4.1	3.6	3.9	5.3	5.6	5.6	4.1	3.9
11.5	-11.9	3.2	2.9	2.9	4.5	2.9	2.5	2.8	2.5	2.9	2.5	2.8	2.7	3.2	2.9	3.4	2.9	3.1	3.6	3.2	3.6	3.4	3.5	5.3	5.4	3.6	3.8	3.5
12.0	-12.4	3.6	2.9	2.9	4.3	2.8	2.4	2.7	2.5	2.8	2.4	2.8	2.5	3.2	2.8	3.2	2.8	2.9	3.5	3.2	3.6	3.2	3.4	5.7	5.4	3.5	3.5	3.5
12.5	-12.9	3.1	2.9	2.9	4.5	2.9	2.5	2.7	2.5	2.9	2.5	2.8	2.5	3.1	2.8	3.2	2.8	2.9	3.5	3.2	3.5	3.2	3.5	3.4	3.6	3.6	3.5	3.4

Depth on String	Actual Depth	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (Ohms)	Resistivity (Ohms)
(m)	(m)	Apr. 21/08	Apr. 28/08	May 05/08	May 12/08	May 15/08	May 20/08	May 26/08	June 2/09	Jun.11/08	Jun. 17/08	Jun. 24/08	Jul. 02/08	Jul. 07/08	Jul. 15/08	July 22/08	July 29/08	Aug. 04/08	Aug 11/08	Aug. 21/08	Sept. 18/08	Jun. 26/09	Sept. 09/09	15-May-10	10-Sep-10	27-May-11	26-Sep-11
1.0	-1.4	1849	1851	1853	1855	1861	1853	1859	1865	1879	1884	1900	1899	1904	1919	1910	1909	1912	1920	1920	1905	1897	1950	1857	1930	1857	1906	
1.5	-1.9	1844	1845	1847	1848	1848	1850	1849	1852	1853	1855	1870	1874	1877	1897	1890	1891	1894	1899	1903	1897	1869	1970	1849	2240	1847	1898	
2.0	-2.4	1848	1849	1850	1850	1851	1849	1852	1854	1853	1854	1855	1862	1867	1886	1882	1885	1888	1892	1897	1897	1855	2010	1851	1940	1849	1898	
2.5	-2.9	1850	1851	1851	1851	1852	1850	1852	1854	1853	1853	1853	1854	1855	1868	1874	1878	1881	1885	1890	1894	1852	1900	1851	1940	1849	1897	
10.0	-10.4	1888	1888	1887	1888	1888	1875	1886	1888	1886	1886	1886	1887	1889	1887	1885	1884	1884	1884	1884	1884	1884	1890	1886	1940	1887	1884	
10.5	-10.9	1880	1880	1879	1882	1881	1877	1879	1880	1879	1879	1882	1878	1877	1878	1878	1877	1877	1877	1877	1877	1877	1880	1878	1940	1879	1876	
11.0	-11.4	1882	1882	1882	1882	1884	1878	1881	1882	1881	1880	1880	1882	1881	1893	1879	1879	1879	1879	1879	1878	1879	1880	1880	1920	1881	1878	
11.5	-11.9	1879	1880	1879	1880	1879	1879	1882	1880	1878	1878	1882	1878	1877	1885	1877	1877	1877	1876	1876	1876	1877	1880	1878	1910	1879	1876	
12.0	-12.4	1879	1879	1879	1884	1878	1874	1878	1879	1878	1877	1876	1877	1876	1880	1875	1875	1875	1875	1875	1875	1875	1880	1877	1960	1878	1875	
12.5	-12.9	1878	1879	1881	1878	1881	1877	1879	1879	1878	1878	1883	1881	1879	1878	1876	1876	1876	1876	1876	1875	1876	1880	1877	2000	1878	1875	

Depth on String	Actual Depth	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)	Temperature (°C)
(m)	(m)	Apr. 21/08	Apr. 28/08	May 05/08	May 12/08	May 15/08	May 20/08	May 26/08	June 2/09	Jun.11/08	Jun. 17/08	Jun. 24/08	Jul. 02/08	Jul. 07/08	Jul. 15/08	July 22/08	July 29/08	Aug. 04/08	Aug 11/08	Aug. 21/08	Sept. 18/08	Jun. 26/09	Sept. 09/09	15-May-10	10-Sep-10	27-May-11	26-Sep-11		
1.0	-1.4	-0.7	-0.4	-0.1	0.1	1.0	-0.1	0.7	1.5	3.5	4.2	6.4	6.3	7.0	9.0	7.8	7.7	8.1	9.2	9.2	7.1	6.0	13.3	0.4	10.5	0.4	7.2		
1.5	-1.9	-1.4	-1.3	-1.0	-0.8	-0.8	-0.6	-0.7	-0.3	-0.1	0.1	2.2	2.8	3.2	6.0	5.0	5.2	5.6	6.3	6.8	6.0	2.1	16.0	-0.7	50.9	-1.0	6.1		
2.0	-2.4	-0.8	-0.7	-0.6	-0.6	-0.4	-0.7	-0.3	0.0	-0.1	0.0	0.1	1.1	1.8	4.5	3.9	4.3	4.7	5.3	6.0	6.0	0.1	21.3	-0.4	11.9	-0.7	6.1		
2.5	-2.9	-0.6	-0.4	-0.4	-0.4	-0.3	-0.6	-0.3	0.0	-0.1	-0.1	-0.1	0.0	0.1	2.0	2.8	3.4	3.8	4.3	5.0	5.6	-0.3	6.4	-0.4	11.9	-0.7	6.0		
10.0	-10.4	4.7	4.7	4.6	4.7	4.7	2.9	4.5	4.7	4.5	4.5	4.5	4.6	4.9	4.6	4.3	4.2	4.2	4.2	4.2	4.2	4.2	5.0	4.5	11.9	4.6	4.2		
10.5	-10.9	3.6	3.6	3.5	3.9	3.8	3.2	3.5	3.6	3.5	3.5	3.9	3.4	3.2	3.4	3.4	3.2	3.2	3.2	3.2	3.2	3.2	3.6	3.4	11.9	3.5	3.1		
11.0	-11.4	3.9	3.9	3.9	3.9	4.2	3.4	3.8	3.9	3.8	3.6	3.6	3.9	3.8	5.4	3.5	3.5	3.5	3.5	3.5	3.4	3.5	3.6	3.6	9.2	3.8	3.4		
11.5	-11.9	3.5	3.6	3.5	3.6	3.5	3.5	3.9	3.6	3.4	3.4	3.9	3.4	3.2	4.3	3.2	3.2	3.2	3.1	3.1	3.1	3.2	3.6	3.4	7.8	3.5	3.1		
12.0	-12.4	3.5	3.5	3.5	4.2	3.4	2.8	3.4	3.5	3.4	3.2	3.1	3.2	3.1	3.6	2.9	2.9	2.9	2.9	2.9	2.9	2.9	3.6	3.2	14.6	3.4	2.9		
12.5	-12.9	3.4	3.5	3.8	3.4	3.8	3.2	3.5	3.5	3.4	3.4	4.1	3.8	3.5	3.4	3.1	3.1	3.1	3.1	3.1	2.9	3.1	3.6	3.2	20.0	3.4	2.9		

Notes:
*The 3 metre depth tip is suspect
*Shaded results suspect; not graphed

Denison Environmental Services

Table F-80: Little Creek Dam
Piezometer BH94 LCD1

BH94 LCD1	Date Installed:	June '94	Shallow Tip Elevation:	1103.6	Little Creek Dam Crest Elev.	1114.5
Surface Protector:	Yes		Deep Tip Elevation:	1097.0		

Date	Reading (psi)		Piezometric Elevation (m asl)		Pond Elevation (m asl)	Comment
	Shallow	Deep	Shallow	Deep		
May-94	2.9	12.1	1105.63	1105.47		
Sep-94	2.0	11.6	1105.00	1105.12		
Sep-95	2.5	11.0	1105.35	1104.70		
Sep-96	3.1	12.1	1105.77	1105.47		
May-97	2.3	11.4	1105.21	1104.98		
Oct-97	3.02	12.36	1105.71	1105.65		
May-98	2.79	12.46	1105.55	1105.72		
Sep-98	2.85	11.33	1105.60	1104.93	~1109.5	
May-99	1.85	10.95	1104.90	1104.67		
Sep-99	1.71	9.70	1104.80	1103.79	~1105	
Jun-00	1.30	11.40	1104.51	1104.98		
Aug-00	1.60	10.60	1104.72	1104.42		
Sep-00	1.80	11.00	1104.86	1104.70		
05-Jun-01	2.40	12.60	1105.28	1105.82	1109.33	
30-Aug-01	2.60	11.20	1105.42	1104.84	1108.55	
09-May-02	2.20	11.40	1105.14	1104.98	1109.78	
10-May-03	2.00	11.40	1105.00	1104.98	1110.54	
09-Sep-03	2.10	10.30	1105.07	1104.21	1108.13	
08-May-04	1.40	10.60	1104.58	1104.42	1110.01	
19-May-05	2.30	11.30	1105.21	1104.91	1110.27	
09-Sep-05	1.90	10.70	1104.93	1104.49	1108.57	
16-May-06	1.50	10.90	1104.65	1104.63	1109.99	
11-Sep-06	1.80	10.60	1104.86	1104.42	1108.40	
10-May-07	1.50	10.50	1104.65	1104.35	1110.18	
27-Aug-07	1.60	10.70	1104.72	1104.49	1108.69	
27-Mar-08	1.7	10.3	1104.79	1104.21	1108.91	
04-Apr-08	1.70	10.30	1104.79	1104.21	1108.90	
10-Apr-08	1.80	10.30	1104.86	1104.21	1108.90	
21-Apr-08	1.50	10.20	1104.65	1104.14	1108.94	
28-Apr-08	1.70	10.30	1104.79	1104.21	1109.225	
05-May-08	1.60	10.70	1104.72	1104.49	1110.191	
12-May-08	1.80	11.30	1104.86	1104.91	1111.696	
15-May-08	1.70	11.30	1104.79	1104.91	1110.697	
20-May-08	1.60	11.30	1104.72	1104.91	1110.311	
26-May-08	1.60	11.30	1104.72	1104.91	1109.919	
02-Jun-08	1.80	11.20	1104.86	1104.84	1109.116	
11-Jun-08	1.60	11.30	1104.72	1104.91	1109.176	
18-Jun-08	1.60	11.40	1104.72	1104.98	1109.213	
24-Jun-08	1.70	11.50	1104.79	1105.05	1109.272	
02-Jul-08	1.60	11.50	1104.72	1105.05	1109.295	
07-Jul-08	1.60	11.60	1104.72	1105.12	1109.323	
15-Jul-08	1.60	11.80	1104.72	1105.26	1109.732	
22-Jul-08	1.70	12.20	1104.79	1105.54	1109.903	
29-Jul-08	1.80	12.30	1104.86	1105.61	1109.948	
04-Aug-08	1.60	12.20	1104.72	1105.54	1109.968	
11-Aug-08	1.70	11.90	1104.79	1105.33	1109.181	
21-Aug-08	1.90	11.20	1104.93	1104.84	1108.010	
18-Sep-08	1.90	11.80	1104.93	1105.26	1108.909	
26-Jun-09	1.90	12.00	1104.93	1105.40	1110.237	
09-Sep-09	2.20	11.00	1105.14	1104.70	1108.731	

Table F-80: Little Creek Dam
Piezometer BH94 LCD1

Date	Reading (psi)		Piezometric Elevation (m asl)		Pond Elevation (m asl)	Comment
	Shallow	Deep	Shallow	Deep		
15-May-10	1.50	10.60	1104.65	1104.42	1107.545	
10-Sep-10	1.20	09.80	1104.44	1103.86	1107.715	
27-May-11	0.80	10.60	1104.16	1104.42	1109.161	Pond Elevation: May 30, 2011
26-Sep-11	1.20	10.30	1104.44	1104.21	1106.778	Pond Elevation: September 19

Table F-81: Little Creek Dam
Piezometer BH94 LCD2

BH94 LCD2		Date Installed:	June '94	Shallow Tip Elevation:	1100.5
Surface Protector:	Yes	Little Creek Dam Crest Elev.:	1114.5	Deep Tip Elevation:	1094.9

Date	Reading (psi)		Piezometric Elevation (m asl)		Pond Elevation (m asl)	Comment
	Shallow	Deep	Shallow	Deep		
May-94	0.4	6.4	1100.78	1099.38		
Sep-94	0.2	6.3	1100.64	1099.31		
Sep-95	0.0	06.0	1100.50	1099.10		
Sep-96	1.0	7.0	1101.17	1099.80		
May-97	0.8	7.2	1101.06	1099.94		
Oct-97	1.00	7.34	1101.20	1100.04		
May-98	1.25	7.78	1101.38	1100.35		
Sep-98	0.98	7.00	1101.19	1099.80	~1109.5	
May-99	1.10	7.05	1101.27	1099.84		
Sep-99	0.91	6.00	1101.14	1099.10	~1105	
Jun-00	0.90	07.00	1101.13	1099.80		
Aug-00	0.90	06.40	1101.13	1099.38		
Sep-00	0.90	06.70	1101.13	1099.59		
05-Jun-01	1.00	07.60	1101.20	1100.22	1109.33	
30-Aug-01	1.20	06.90	1101.34	1099.73	1108.55	
09-May-02	1.10	05.20	1101.27	1098.54	1109.78	
10-May-03	1.00	07.30	1101.20	1100.01	1110.54	
09-Sep-03	1.00	06.40	1101.20	1099.38	1108.13	
08-May-04	0.90	06.80	1101.13	1099.66	1109.32	
08-Sep-04	0.80	06.90	1101.06	1099.73		
19-May-05	1.30	06.80	1101.41	1099.66		
09-Sep-05	0.90	06.40	1101.13	1099.38		
16-May-06	1.00	06.90	1101.20	1099.73	1110.29	
11-Sep-06	1.80	10.60	1101.76	1102.32	1108.40	
10-May-07	1.50	10.50	1101.55	1102.25		
27-Aug-07	1.6	10.7	1101.62	1102.39		
27-Mar-08	1.00	6.30	1101.20	1099.31	1108.91	
04-Apr-08	1.10	6.40	1101.27	1099.38	1108.90	
10-Apr-08	1.20	6.50	1101.34	1099.45	1108.90	
21-Apr-08	0.90	6.40	1101.13	1099.38	1108.943	
28-Apr-08	1.10	6.50	1101.27	1099.45	1109.225	
05-May-08	1.10	6.70	1101.27	1099.59	1110.191	
12-May-08	1.20	7.00	1101.34	1099.80	1111.696	
15-May-08	1.10	6.90	1101.27	1099.73	1110.697	
20-May-08	1.00	6.90	1101.20	1099.73	1110.311	
26-May-08	1.00	6.80	1101.20	1099.66	1109.919	
02-Jun-08	1.20	6.80	1101.34	1099.66	1109.116	
11-Jun-08	1.00	6.70	1101.20	1099.59	1109.176	
18-Jun-08	1.00	6.70	1101.20	1099.59	1109.213	
24-Jun-08	1.10	6.70	1101.27	1099.59	1109.272	
02-Jul-08	1.00	6.70	1101.20	1099.59	1109.295	
07-Jul-08	1.10	6.70	1101.27	1099.59	1109.323	
15-Jul-08	1.00	6.80	1101.20	1099.66	1109.732	
22-Jul-08	1.10	7.00	1101.27	1099.80	1109.903	
29-Jul-08	1.20	7.10	1101.34	1099.87	1109.948	
04-Aug-08	1.00	7.00	1101.20	1099.80	1109.968	
11-Aug-08	1.00	6.80	1101.20	1099.66	1109.181	
21-Aug-08	1.20	6.60	1101.34	1099.52	1108.010	

Table F-81: Little Creek Dam
Piezometer BH94 LCD2

Date	Reading (psi)		Piezometric Elevation (m asl)		Pond Elevation (m asl)	Comment
	Shallow	Deep	Shallow	Deep		
18-Sep-08	1.20	6.80	1101.34	1099.66	1108.909	
26-Jun-09	1.20	6.90	1101.34	1099.73	1110.237	
09-Sep-09	1.30	6.40	1101.41	1099.38	1108.731	
15-May-10	1.00	6.30	1101.20	1099.31	1107.545	
10-Sep-10	0.90	5.70	1101.13	1098.89	1107.715	
27-May-11	0.90	6.20	1101.13	1099.24	1109.161	Pond Elevation: May 30, 2011
26-Sep-11	1.10	5.80	1101.27	1098.96	1106.778	Pond Elevation: September 19, 201

Table F-82: Little Creek Dam
Piezometer BH94 LCD3

BH94 LCD3		Date Installed:	June '94	Shallow Tip Elevation:	1105.5	
Surface Protector:	Yes	Little Creek Dam Crest Elevation:	1114.5	Deep Tip Elevation:	1101.2	

Date	Reading (psi)		Piezometric Elevation (m asl)		Pond Elevation (m asl)	Comment
	Shallow	Deep	Shallow	Deep		
May-94	0.8	4.3	1106.06	1104.21		
Sep-94	0.2	3.7	1105.64	1103.79		
Sep-95	0.0	03.5	1105.50	1103.65		
Sep-96	0.2	4.0	1105.61	1104.00		
May-97	0.2	3.8	1105.64	1103.86		
Oct-97	0.14	4.54	1105.60	1104.38		
May-98	0.54	4.58	1105.88	1104.41		
Sep-98	0.17	3.62	1105.62	1103.73	~1109.5	
May-99	0.40	3.50	1105.78	1103.65		
Sep-99	0.30	2.42	1105.71	1102.89	~1105	
Jun-00	0.10	3.40	1105.57	1103.58		
Aug-00	0.00	3.10	1105.50	1103.37		
Sep-00	0.01	3.40	1105.51	1103.58		
05-Jun-01	0.00	4.80	1105.50	1104.56	1109.33	
30-Aug-01	0.01	3.49	1105.51	1103.64	1108.55	
09-May-02	0.01	3.50	1105.51	1103.65	1109.78	
10-May-03	0.00	3.60	1105.50	1103.72	1110.54	
09-Sep-03	0.00	2.70	1105.50	1103.09	1108.13	
08-May-04	0.00	2.80	1105.50	1103.16	1109.32	
08-Sep-04	0.10	3.30	1105.57	1103.51		
19-May-05	0.01	4.00	1105.51	1104.00		
09-Sep-05	0.00	2.80	1105.50	1103.16		
16-May-06	0.00	3.30	1105.50	1103.51	1110.29	
11-Sep-06	1.80	10.60	1106.76	1108.62	1108.40	
10-May-07	1.50	10.50	1106.55	1108.55		
27-Aug-07	1.6	10.70	1106.62	1108.69		
27-Mar-08	0.80	2.80	1106.06	1103.16	1108.91	
04-Apr-08	0.90	2.90	1106.13	1103.23	1108.90	
10-Apr-08	0.90	2.90	1106.13	1103.23	1108.90	
21-Apr-08	0.70	2.90	1105.99	1103.23	1108.943	
28-Apr-08	1.00	3.00	1106.20	1103.30	1109.225	
05-May-08	0.80	3.20	1106.06	1103.44	1110.191	
12-May-08	0.90	3.60	1106.13	1103.72	1111.696	
15-May-08	1.00	3.70	1106.20	1103.79	1110.697	
20-May-08	0.90	3.80	1106.13	1103.86	1110.311	
26-May-08	0.90	3.80	1106.13	1103.86	1109.919	
02-Jun-08	1.00	3.80	1106.20	1103.86	1109.116	
11-Jun-08	0.90	3.60	1106.13	1103.72	1109.176	
18-Jun-08	0.90	3.50	1106.13	1103.65	1109.213	
25-Jun-08	1.00	3.60	1106.20	1103.72	1109.272	
02-Jul-08	0.80	3.50	1106.06	1103.65	1109.295	
07-Jul-08	0.90	3.60	1106.13	1103.72	1109.323	
15-Jul-08	0.90	3.80	1106.13	1103.86	1109.732	
22-Jul-08	1.20	4.20	1106.34	1104.14	1109.903	
29-Jul-08	1.00	4.20	1106.20	1104.14	1109.948	
04-Aug-08	0.80	4.10	1106.06	1104.07	1109.968	
11-Aug-08	0.90	4.10	1106.13	1104.07	1109.181	

Table F-82: Little Creek Dam
Piezometer BH94 LCD3

Date	Reading (psi)		Piezometric Elevation (m asl)		Pond Elevation (m asl)	Comment
	Shallow	Deep	Shallow	Deep		
21-Aug-08	1.10	4.30	1106.27	1104.21	1108.010	
18-Sep-08	1.10	4.10	1106.27	1104.07	1108.909	
26-Jun-09	1.20	4.10	1106.34	1104.07	1110.237	
09-Sep-09	1.40	3.30	1106.48	1103.51	1108.731	
15-May-10	0.10	3.30	1105.57	1103.51	1108.731	
10-Sep-10	0.00	2.50	1105.50	1102.95	1108.731	
27-May-11	0.10	3.1	1105.57	1103.37	1109.161	Pond Elevation: May 30, 2011
26-Sep-11	0.10	2.9	1105.57	1103.23	1106.778	Pond Elevation: September 19

Table F-83: Little Creek Dam
Static Water Levels and Piezometric Elevations

Top of Pipe Elevations (masl)

	P09-LCD-1	P-09-LCD-2	P09-LCD-3	P09-LCD-4	P09-LCD-6	P09-LCD-7
	1097.53	1097.69	1093.71	1093.68	1096.21	1101.68

Measured Static Water Level (meters from top of plastic piezometer pipe)

Date	P09-LCD-1	P09-LCD-2	P09-LCD-3	P09-LCD-4	P09-LCD-6	P09-LCD-7
12-Jun-10	3.823			3.739	5.710	
20-Sep-10	3.978			7.257	5.792	
26-Jan-11	4.078	4.431	1.877	5.765	5.808	4.754
9-May-11				2.722		
16-May-11				2.561		
23-May-11				2.408		
30-May-11	3.795	4.197	1.856	2.255	5.605	4.562
7-Jun-11	3.84	4.270	1.680	2.120	5.67	4.590
13-Jun-11	3.913	4.321	1.876	2.064	5.784	4.592
2-Jul-11	3.786	4.234	1.675	11.182	5.638	4.555
13-Jul-11				10.581		
8-Aug-11	3.916	4.345	1.754	9.14	5.729	4.466
22-Aug-11	3.868	4.305	1.699	8.388	5.682	4.388
4-Sep-11	3.867	4.306	1.68	7.688	5.677	4.278
11-Sep-11	3.905	4.347	1.703	7.447	5.688	4.316
20-Sep-11	3.880	4.306	1.685	7.018	5.69	4.267
26-Sep-11	3.870	4.32	1.677	6.739	6.75	4.29
3-Oct-11	3.922	4.347	1.710	6.479	5.706	4.320
11-Oct-11	3.929	4.355	1.713	6.12	5.715	4.349
17-Oct-11	3.932	4.359	1.729	11.421	5.716	4.367
31-Oct-11	3.945	4.357	1.732	11.685	5.719	4.394
3-Nov-11	3.867	4.321	1.722	11.548	5.718	4.406

Piezometric Elevation (masl)

Date	P09-LCD-1	P-09-LCD-2	P09-LCD-3	P09-LCD-4	P09-LCD-6	P09-LCD-7
12-Jun-10	1093.707			1089.941	1090.5	
20-Sep-10	1093.552			1086.423	1090.418	
26-Jan-11	1093.452	1093.259	1091.833	1087.915	1090.402	1096.926
9-May-11				1090.958		
16-May-11				1091.119		
23-May-11				1091.272		
30-May-11				1091.425		
7-Jun-11	1093.69	1093.42	1092.03	1091.56	1090.54	1097.09
13-Jun-11	1093.617	1093.369	1091.834	1091.616	1090.426	1097.088
2-Jul-11	1093.744	1093.456	1092.035	1082.498	1090.572	1097.125
13-Jul-11				1083.099		
8-Aug-11	1093.614	1093.345	1091.956	1084.54	1090.481	1097.214
22-Aug-11	1093.662	1093.385	1092.011	1085.292	1090.528	1097.292
4-Sep-11	1093.663	1093.384	1092.03	1085.992	1090.533	1097.402
11-Sep-11	1093.625	1093.343	1092.007	1086.233	1090.522	1097.364
20-Sep-11	1093.65	1093.384	1092.025	1086.662	1090.52	1097.413
26-Sep-11	1093.66	1093.37	1092.033	1086.941	1089.46	1097.39
3-Oct-11	1093.608	1093.343	1092	1087.201	1090.504	1097.36
11-Oct-11	1093.601	1093.335	1091.997	1087.56	1090.495	1097.331
17-Oct-11	1093.598	1093.331	1091.981	1082.259	1090.494	1097.313
31-Oct-11	1093.585	1093.333	1091.978	1081.995	1090.491	1097.286
3-Nov-11	1093.663	1093.369	1091.988	1082.132	1090.492	1097.274

Denison Environmental Services

Figure F-69: Little Creek Dam
Thermistor BH94 LCD4

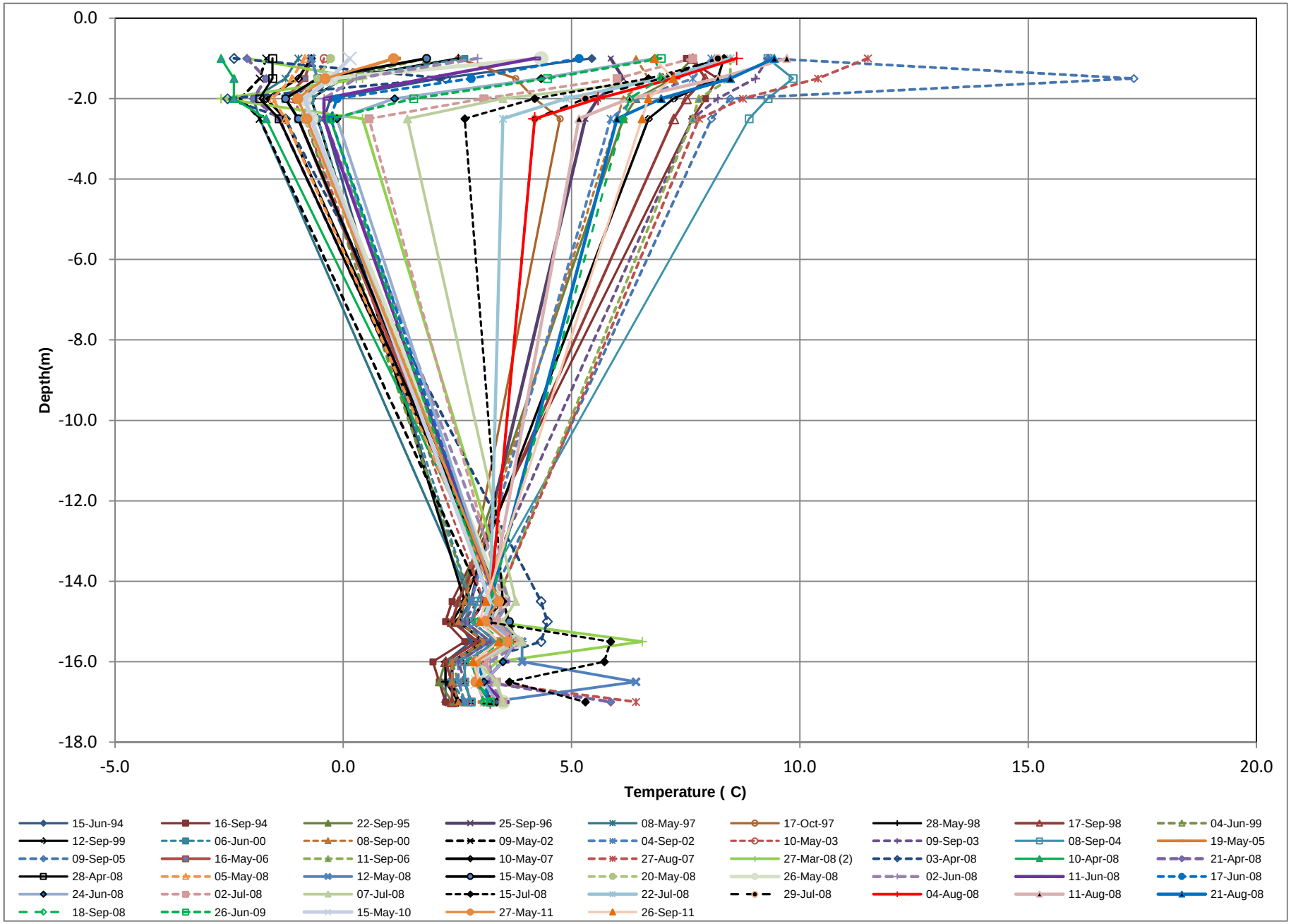


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Figure F-70: Little Creek Dam
Thermistor BH94 LCD5

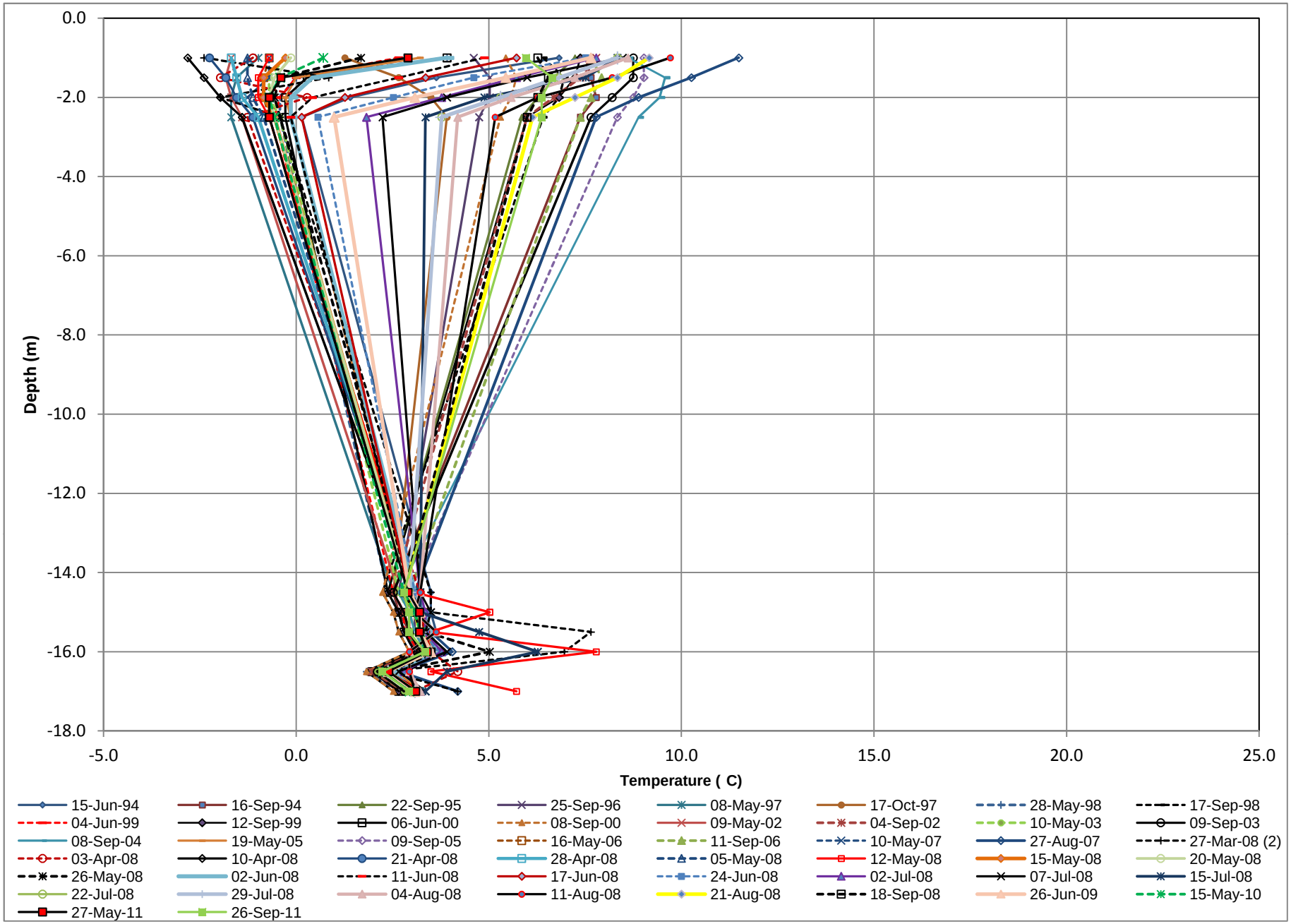

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Figure F-71: Little Creek Dam
Thermistor BH94 LCD6

Faro Mine Closure

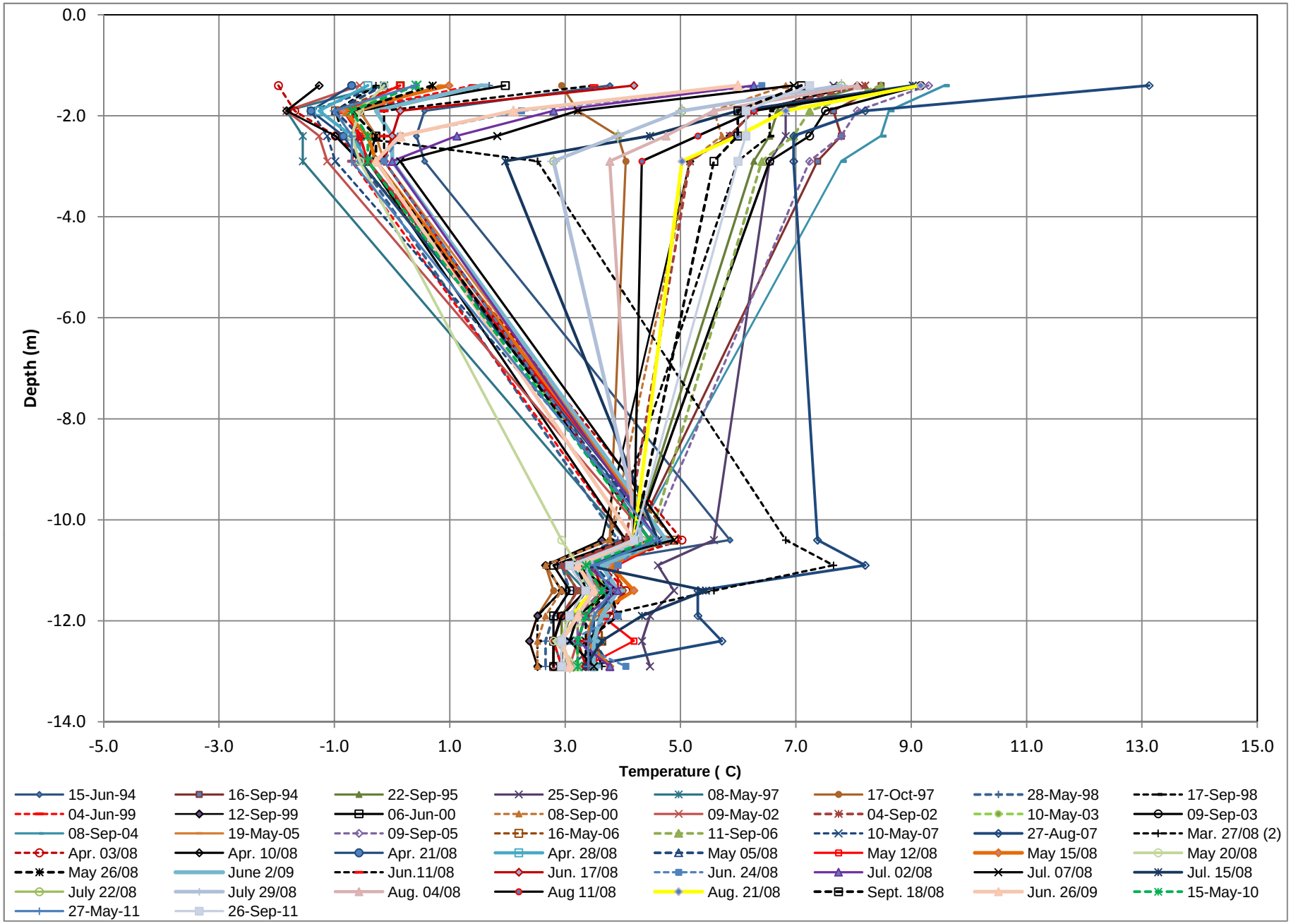

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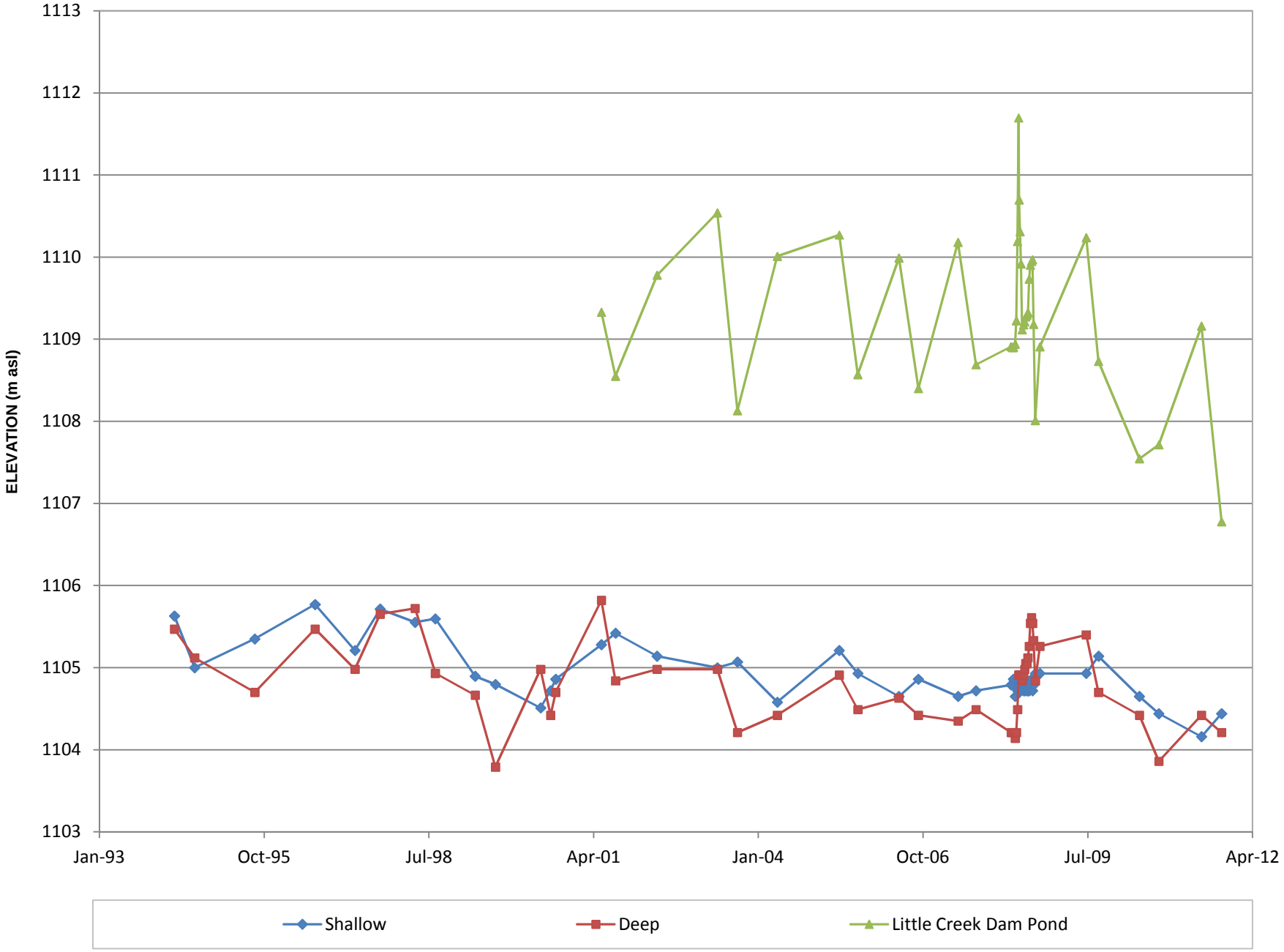
Figure F-72: Little Creek Dam
Piezometer BH94 LCD1



Denison Environmental Services

Figure F-73: Little Creek Dam
Piezometer BH94 LCD2

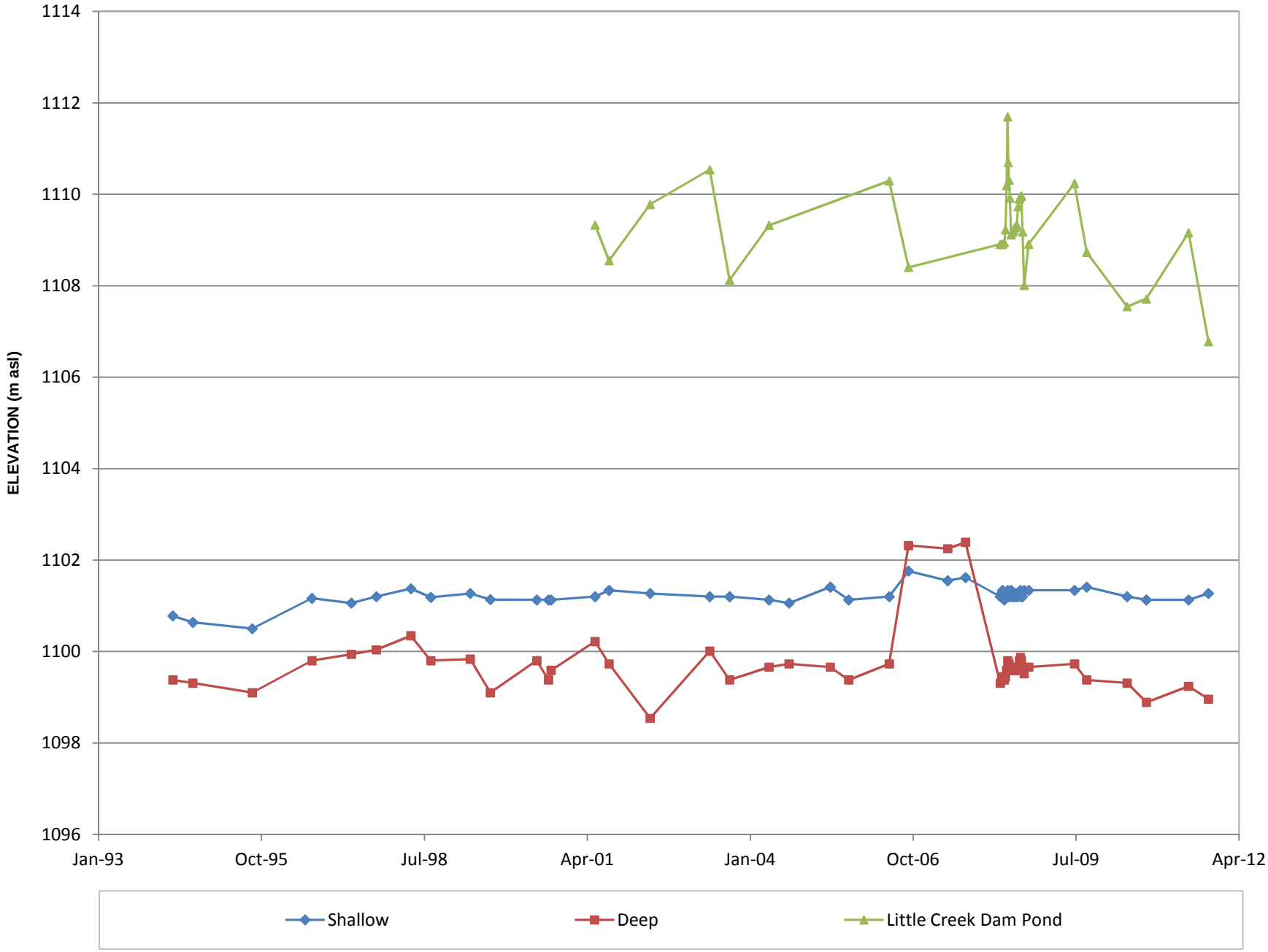


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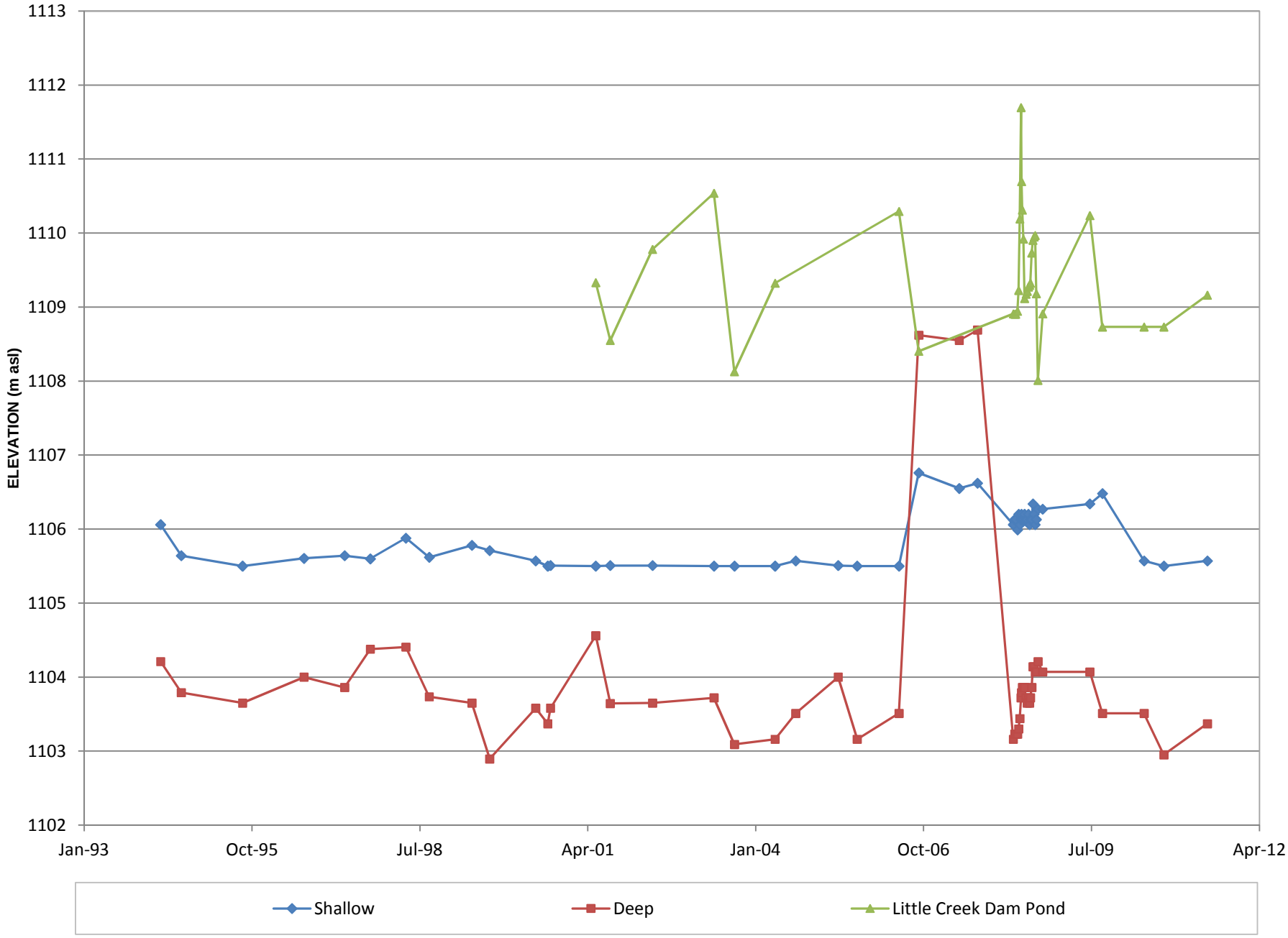
Figure F-74: Little Creek Dam
Piezometer BH94 LCD3



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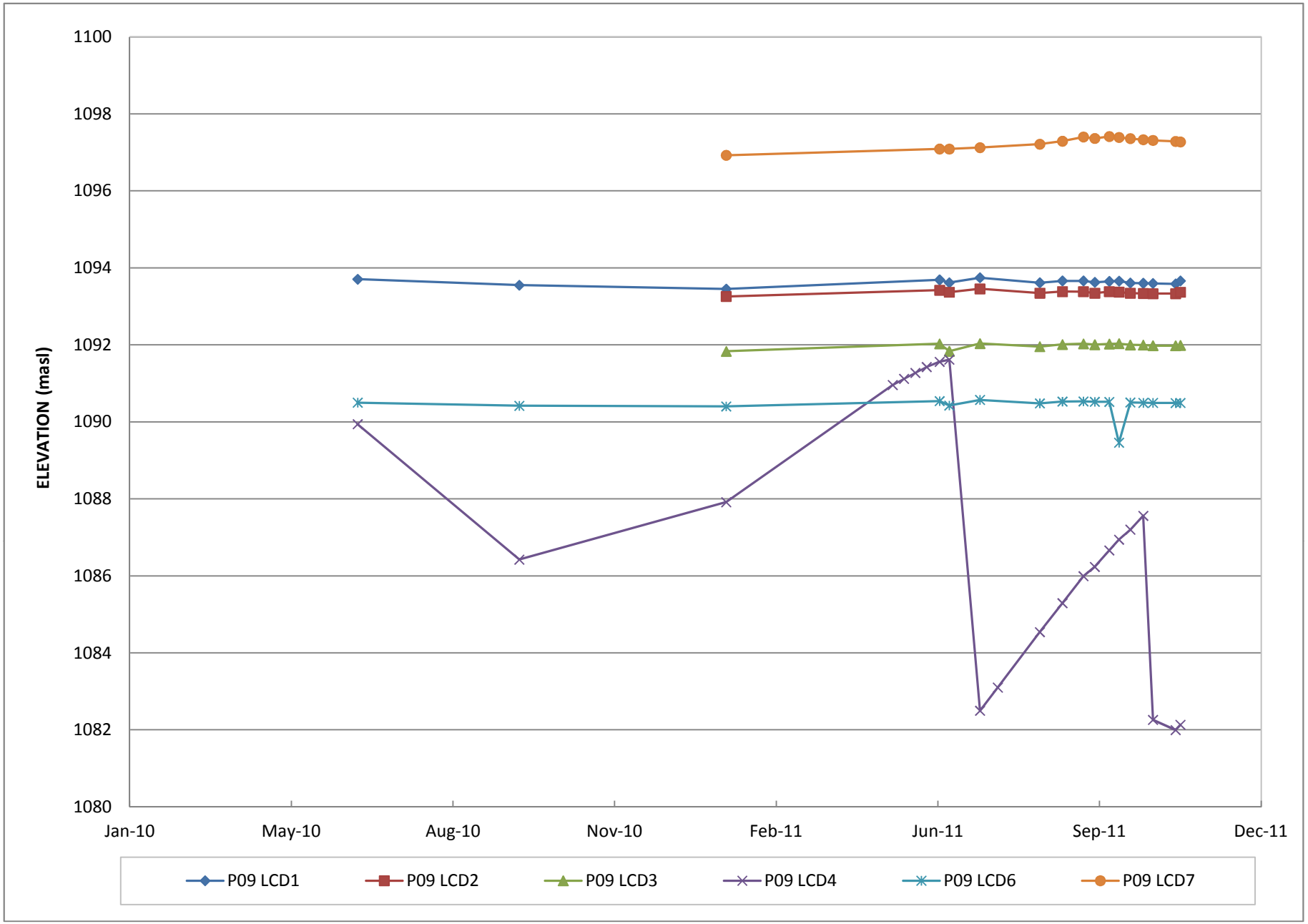
Denison Environmental Services

Figure F-75: Little Creek Dam
Piezometric Elevations

Faro Mine Closure



TABLES AND FIGURES

Vangorda Waste Rock Dump

Denison Environmental Services

Table F-84a: Vangorda Waste Rock Dump Piezometers
Static Water Levels

Measured Static Water Level (meters)

Date	V34	V35	V36	V37	V38	V39	V40	V41	V42	V43	V44	V45	V47				DH1	DH2	DH3	DH4	DH5
	GW-94-01	GW-94-02	GW-94-03	GW-94-04	GW-94-05*	P-94-01A	P-94-01B	P-94-02A	P-94-02B	P-94-02C	P-94-03A	P-94-03B	P-94-04B	P2001-02A	P2001-02B	P2001-03	PW-10-01	PW-10-02	PW-10-03	PW-10-04	PW-10-05
03-May-94	8.28	14.33	11.28	14.33	11.56	12.37	6.05	10.57	6.12	13.08	14.10	9.80	8.99								
21-Jun-94	7.45	8.65	9.15	9.65																	
30-Jun-95						7.79	5.62	8.02	6.11	9.02	13.91	9.80	8.99								
13-Jul-95						7.80	5.59														
30-Jul-95						7.86	5.48	7.99	6.12	8.81	13.68	9.80	8.99								
26-Aug-95	6.89	8.47		9.05																	
31-Aug-95	7.36					7.93	4.85	7.97	6.06	8.66	13.62										
17-Oct-95	7.14	8.26		9.37		7.90	4.23	8.70	5.76	8.54	13.41										
20-Nov-95	7.10	8.18		9.19																	
13-Mar-96	7.44	9.23		9.39																	
28-May-96	7.50	9.34	10.00	10.25		8.34	5.38	9.94	6.12	9.37	14.12										
24-Sep-96	7.50	7.43	7.95	9.17		10.40	5.30	8.30	6.12	8.66	13.68	9.88	8.99								
13-May-97	6.84	9.42	9.96	9.53		9.17	5.67	7.74	6.40	9.51	12.78	9.96	9.62								
11-Jul-97						9.80	5.90	7.92	6.12	8.97	14.10	9.80	9.00								
11-Aug-97	6.75	8.38	8.41	8.81	1.99	9.59	5.25	8.10	6.25	8.77	12.84	9.96	9.21								
14-Oct-97	6.76	8.58	9.15	8.99		9.51	4.96	7.99	6.23	8.94	12.96	9.96	9.21								
23-Dec-97	6.70	9.05	9.53	9.13		9.25	4.76	7.68	6.07	8.95	12.70	9.81	9.02								
31-May-98	6.72	8.60	9.73	9.59	1.86	9.52	5.25	8.05	6.24	9.20	12.87	9.95	9.20								
25-Jul-98						10.20	5.22	8.04	6.20	9.11	12.58	9.92	9.18								
15-Sep-98	6.67	8.85	9.52	9.10	2.40	10.02	5.22	7.98	6.20	9.22	12.54	9.92	9.19								
16-Nov-98						10.32	5.11	7.93	6.11	9.06	12.45	9.78	8.99								
31-Dec-98	6.70	9.06	9.91	9.23																	
18-Jun-99	6.88	9.24	10.24	10.18		9.96	5.09	8.35	6.11	9.48	12.48	9.77	8.99								
12-Oct-99	6.61	7.58	8.81	8.79		10.01	5.10	8.16	5.73	8.82	12.49	9.78	8.97								
31-May-00	5.75	8.68	8.26	9.33	1.84	10.20	5.10	7.85	5.93	8.97	12.48	9.78	8.88								
05-Sep-00	6.66																				
09-Oct-00	4.98	3.96	6.90	8.35	0.93																
09-Jul-01						10.42	4.84	8.86	7.72	5.46	12.84	9.78	8.88								
11-Jun-02														4.72	4.76	30.00					
04-Sep-02						10.75	5.30	7.99	6.02	9.33	13.53	9.78	8.91								
27-May-03						10.57	5.06	7.82	5.87	9.20	14.08	9.78	8.93								
5-Jun-03														4.66	4.65						
9-Sep-03						10.65	5.04	7.84	5.87	9.15	13.86	9.78	8.93								
8-May-04						10.61	5.26	8.03	5.94	9.21	14.08	9.78	8.98								
8-Jun-04														4.64	4.62						
8-Sep-04						10.72	5.20	7.79	5.77	9.44	14.08	9.78	8.99								
22-Sep-04														4.78	5.05						
3-May-05														5.10							
19-May-05						10.27	5.08	7.48	5.62	8.88	12.85	9.78	8.99								
8-Sep-05														4.76							
9-Sep-05						10.37	4.88	7.44	5.45	8.91	13.28	9.78	8.99								
16-May-06						10.70	5.39	8.09	6.11	9.35	14.08	9.78									
7-Jun-06														4.74	4.83						
11-Sep-06						11.04	5.54	7.99	5.84	9.17	13.89	9.78									
19-Sep-06														4.87	4.96						
10-May-07						10.62	5.89	7.95	6.12	9.57	14.07	9.77	8.99								
29-May-07	6.52	9.16	9.989											5.11	5.14	38.36					
03-Jun-07				9.275																	
27-Aug-07						10.94	6.04	8.21	6.12	8.88	14.04	9.78	8.99								
11-Oct-07	6.21	6.2	9.06	8.82										4.94	4.99						
04-Jun-08	6.037	7.44	7.802	8.754										3.52	3.55	30.50					
18-Sep-08	5.079	5.1	8.352	8.303		6.86	4.41	7.32	5.01	8.60	12.47	9.82	8.89	3.78	3.78						
30-May-09		7.606	8.152																		
31-May-09	5.717			8.77																	
12-Sep-09	5.536	7.521	9	8.658										4.33	4.46	37.12					
03-Feb-10						10.31	5.11	7.62	5.94		10.87	9.78	8.89								
15-May-10	6.508	9.3	8.767	9.335		10.679	5.565	7.839	6.082	8.517	11.637	9.776	8.886								
12-Jun-10														4.590	4.340	37.000					
27-Jun-10						11.069	5.719	7.931	6.125	8.863	13.575	9.776	8.890								
13-Jul-10						11.706	5.832	8.145	6.117	5.707	13.635	9.780	8.899								
4-Aug-10						11.703	5.848	8.172	6.123	8.732	13.684	9.788	8.898								
3-Sep-10	5.902	5.275	9.404			11.738	5.813	8.189	6.181	9.023	13.666	9.778	8.889								
15-Sep-10														4.567	4.866	37.810					
20-Sep-10																					
14-Oct-10						11.478	5.854	8.045	6.113	8.574	13.723	9.827	8.990								
18-Oct-10																	23.4	14.51	14.5		42.535
3-Nov-10						11.446	5.856	8.263	6.115	8.764	13.776	9.779	8.895								
15-Nov-10				8.901																	
24-Jan-11						11.294	5.882	8.248	6.117	9.743	14.005	9.785	8.897				23.785	14.732	14.252	9.269	42.518
26-Jan-11																					
3-Feb-11	5.997	8.974	9.766	9.056										4.832	4.832	37.935				9.120	
28-Mar-11																				9.120	
12-Apr-11						11.349	6.080	8.427					8.889				24.185	15.21	14.577		42.548
18-Apr-11						11.317	6.099	8.262	6.185		14.118	9.875	9.055				24.201	15.296	14.63		42.557
21-Apr-11	6.218	9.176	9.837	9.099										5.171	5.234	38.222					
25-Apr-11	6.220	9.183	9.839	9.253		11.438	6.020	8.399	6.099		14.059	9.762	9.059	5.174	5.228	38.035	24.105	15.306	14.585		42.554
2-May-11																	24.22	15.46	14.71		42.58
9-May-11	6.265	9.18	9.823	9.114		11.545	6.030	8.519	6.095	9.017	14.420	9.760	8.898	4.617	4.626	38.100	24.182	15.368	14.619	9.58	42.577
16-May-11	6.118	9.665	9.788	9.465		11.471	6.013	8.266	6.109	8.940	14.073	9.782	8.891	4.358	4.400	38.100	24.313	15.366	14.641	9.267	42.568
23-May-11	6.112	8.937	9.335	9.069		11.512	6.035	8.364	6.097	9.071	14.064	9.765	8.911	3.763	3.843	38.127	23.894	11.189	14.368	9.128	42.437
30-May-11	6.059	8.792	8.561	9.026		11.532	6.031	8.324	6.097	8.930	14.061	9.763	8.904	3.815	3.816	38.070	23.727	11.123	14.334	9.126	43.444
7-Jun-11	5.99	8.89	8.71	8.99		11.570	6.050	8.430	6.110	8.880	14.080	9.780	8.930	4.150	4.410	38.080	23.790	12.420	14.570	9.250	42.570
13-Jun-11	6.011	9.866	8.941	10.36		11.568	6.063	8.428	6.127	8.727	14.094	9.798	9.009	4.421	4.302		23.878	12.946	14.709	9.156	42.722
2-Jul-11	5.903	8.175	8.436	8.579		11.560	6.041	8.318	6.090	8.599	13.976	9.761	8.899	3.889	4.187	37.878	23.39	13.91	14.749	9.149	42.529
13-Jul-11																					
8-Aug-11	5.992	7.434	9.09	8.522		11.717	6.066	8.765	6.125	8.878	13.739	9.794	8.950	4.702	4.474	38.048					
10-Aug-11																	23.145	13.105	14.534	9.244	43.612
22-Aug-11	5.934	7.192	8.871	8.475		11.680	6.030	8.383	6.092	8.571	13.639	9.762	8.933	4.444	4.267	37.820	23.108	13.189	14.48	9.239	42.62
4-Sep-11	5.866	7.035	9.98	8.45		11.664	6.035	8.328	6.094	8.326	13.571	9.760	8.905	4.439	4.257	37.816	23.135	13.379	14.497	9.130	42.614
11-Sep-11	5.946	7.185	9.152	8.599		11.769	6.065	8.310	6.137	8.501	13.596	9.791	8.887	4.586	4.389	37.904	23.231	13.514	14.578	9.275	42.643
20-Sep-11	5.972	7.25	9.04	8.515		11.629	6.035	8.016	6.094	8.237	13.475	9.760	8.850	4.520	4.340	37.781	23.15	13.56	14.475	9.24	42.613
26-Sep-11	5.877	7.15	9.16	8.555		11.631	6.020	8.005	6.088	8.265	13.440	9.750	9.018	4.564	4.407	37.800	23.06	13.585	14.477	9.22	42.613
3-Oct-11	5.925	7.232	9.180	8.611		11.715	6.065	8.069	6.126	8.251	13.471	9.782	8.882	4.570	4.431	37.840	23.231	13.750	14.545	9.255	42.645
11-Oct-11	5.908	7.298	9.284	9.676		11.543	6.001	7.941	6.091	8.309	13.412	9.759	8.851	4.604	4.518	38.819	23.030	13.842	14.486	9.255	42.615
17-Oct-11	5.981	7.334	9.323	10.170		11.551	5.945	7.953	6.125	8.355	13.459	9.793	8.884	4.601	4.599	37.841	23.082	14.018	14.534	9.255	42.647
27-Oct-11						11.522	5.847	8.886	6.091	8.396	13.445	9.758	8.869				24.129	14.704	14.715		42.624
31-Oct-11	5.964	7.392	9.388	8.722										4.795	4.583	37.689				9.238	
3-Nov-11	6.001	7.427	9.422	8.742		11.519	5.793	7.960	6.091	8.531	13.476	9.755	8.875	4.910	4.619	37.748	23.469	14.55	14.574	9.241	42.649

Notes:
*Underlined readings (beginning in 1998) indicate no water was identified (hole was dry or frozen)
*Readings post-Sep/98 given as metres below top of plastic piezometer pipe
*Readings prior to Nov/98 could be metres below top of piezometer pipe or steel casing
*Depth to bottom of hole GW-94-05 (V38) checked as 14.7m on Sep 15/98
*Sept. 3, 2010 V37 water level (btoc) of 5.815m was removed from dataset b/c likely erroneous, based water level check Nov 15, 2010

Table F-84b: Vangorda Waste Rock Dump Piezometers
Piezometric Elevations

Top of Pipe Elevations (masl)

V34	V35	V36	V37	V38	V39	V40	V41	V42	V43	V44	V45	V47				DH1	DH2	DH3	DH4	DH5
GW-94-01	GW-94-02	GW-94-03	GW-94-04	GW-94-05	P94-01A	P94-01B	P94-02A	P94-02B	P94-02C	P94-03A	P94-03B	P94-04B	P2001-02A	P2001-02B	P2001-03	PW-10-01	PW-10-02	PW-10-03	PW-10-04	PW-10-05
1117.445	1117.405	1118.431	1116.165	1101.673	1136.555	1136.493	1138.41	1138.332	1129.84	1134.373	1134.459	1134.327	1122.78	1122.77	1120	1149.08	1139.30	1137.72	1141.69	1180.39

Piezometric Elevation (masl)

Date	V34	V35	V36	V37	V38	V39	V40	V41	V42	V43	V44	V45	V47				DH1	DH2	DH3	DH4	DH5
	GW-94-01	GW-94-02	GW-94-03	GW-94-04	GW-94-05	P-94-01A	P-94-01B	P-94-02A	P-94-02B	P-94-02C	P-94-03A	P-94-03B	P-94-04B	P2001-02A	P2001-02B	P2001-03	PW-10-01	PW-10-02	PW-10-03	PW-10-04	PW-10-05
3-May-94	1109.17	1103.08	1107.15	1101.84	1090.11	1124.19	1130.44	1127.84	1132.21	1116.76	1120.27	1124.66	1125.34								
21-Jun-94	1110.00	1108.76	1109.28	1106.52																	
30-Jun-95						1128.77	1130.87	1130.39	1132.22	1120.82	1120.46	1124.66	1125.34								
13-Jul-95						1128.76	1130.90														
30-Jul-95						1128.70	1131.01	1130.42	1132.21	1121.03	1120.69	1124.66	1125.34								
26-Aug-95	1110.56	1108.94		1107.12																	
31-Aug-95	1110.09					1128.63	1131.64	1130.44	1132.27	1121.18	1120.75										
17-Oct-95	1110.31	1109.15		1106.80		1128.66	1132.26	1129.71	1132.57	1121.30	1120.96										
20-Nov-95	1110.35	1109.23		1106.98																	
13-Mar-96	1110.01	1108.18		1106.78																	
28-May-96	1109.95	1108.07	1108.43	1105.92		1128.22	1131.11	1128.47	1132.21	1120.47	1120.25										
24-Sep-96	1109.95	1109.98	1110.48	1107.00		1126.16	1131.19	1130.11	1132.21	1121.18	1120.69	1124.58	1125.34								
13-May-97	1110.61	1107.99	1108.48	1106.64		1127.39	1130.82	1130.67	1131.93	1120.33	1121.59	1124.50	1124.71								
11-Jul-97						1126.76	1130.59	1130.49	1132.21	1120.87	1120.27	1124.66	1125.33								
11-Aug-97	1110.70	1109.03	1110.02	1107.36	1099.68	1126.97	1131.24	1130.31	1132.08	1121.07	1121.53	1124.50	1125.12								
14-Oct-97	1110.69	1108.83	1109.28	1107.18		1127.05	1131.53	1130.42	1132.10	1120.90	1121.41	1124.50	1125.12								
23-Dec-97	1110.75	1108.36	1108.90	1107.04		1127.31	1131.73	1130.73	1132.26	1120.89	1121.67	1124.65	1125.31								
31-May-98	1110.73	1108.81	1108.70	1106.58	1099.81	1127.04		1130.36		1120.64		1124.51	1125.13								
25-Jul-98						1126.36		1130.37		1120.73											
15-Sep-98	1110.78	1108.56	1108.91	1107.07	1099.27	1126.54		1130.43		1120.62											
16-Nov-98						1126.24		1130.48		1120.78											
31-Dec-98	1110.75	1108.35	1108.52	1106.94																	
18-Jun-99	1110.57	1108.17	1108.19	1105.99		1126.60		1130.06		1120.36											
12-Oct-99	1110.84	1109.83	1109.62	1107.38		1126.55		1130.25		1121.02											
31-May-00	1111.70	1108.73	1110.17	1106.84	1099.83	1126.36		1130.56	1132.40	1120.87			1125.45								
5-Sep-00	1110.79																				
9-Oct-00	1112.47	1113.45	1111.53	1107.82	1100.74																
9-Jul-01						1126.14	1131.65	1129.55	1130.61	1124.38	1121.53	1124.68	1125.45								
11-Jun-02														1118.06	1118.01	1090.00					
4-Sep-02						1125.81	1131.19	1130.42	1132.31	1120.52	1120.85	1124.68	1125.42								
27-May-03						1125.99	1131.43	1130.59	1132.46	1120.64	1120.30	1124.68	1125.40								
5-Jun-03														1118.12	1118.12						
9-Sep-03						1125.91	1131.45	1130.57	1132.46	1120.69	1120.51	1124.68	1125.40								
8-May-04						1125.95	1131.23	1130.38	1132.40	1120.64	1120.30	1124.68	1125.35								
8-Jun-04														1118.14	1118.15						
8-Sep-04						1125.84	1131.29	1130.62	1132.56	1120.40	1120.29	1124.68	1125.34								
22-Sep-04														1118.00	1117.72						
3-May-05														1117.68							
19-May-05						1126.29	1131.41	1130.93	1132.71	1120.96	1121.53	1124.68	1125.34								
8-Sep-05														1118.02							
9-Sep-05						1126.19	1131.61	1130.97	1132.89	1120.93	1121.10	1124.68	1125.34								
16-May-06						1125.86	1131.10	1130.32	1132.22	1120.49	1120.29	1124.68									
7-Jun-06														1118.04	1117.94						
11-Sep-06						1125.52	1130.95	1130.42	1132.49	1120.67	1120.48	1124.68									
19-Sep-06														1117.91	1117.81						
10-May-07						1125.94	1130.60	1130.47	1132.21	1120.27	1120.30	1124.69	1125.34								
29-May-07	1110.93	1108.25	1108.44											1117.67	1117.63	1081.64					
3-Jun-07				1106.89																	
27-Aug-07						1125.62	1130.46	1130.20	1132.21	1120.96	1120.33	1124.68	1125.34								
11-Oct-07	1111.24	1111.21		1107.35										1117.84	1117.79						
4-Jun-08	1111.41	1109.97	1110.63	1107.41										1119.26	1119.23	1089.50					
18-Sep-08	1112.37	1112.31	1110.08	1107.86		1129.70	1132.09	1131.10	1133.32	1121.24	1121.91	1124.64	1125.44	1119.00	1118.99						
30-May-09		1109.80	1110.28																		
31-May-09	1111.73			1107.40																	
12-Sep-09	1111.91	1109.88	1109.43	1107.51										1118.45	1118.31	1082.88					
3-Feb-10						1126.24	1131.38	1130.79	1132.39		1123.50	1124.68	1125.44								
15-May-10						1125.88	1130.93	1130.57	1132.25	1121.32	1122.74	1124.68	1125.44								
12-Jun-10														1118.19	1118.43	1083.00					
27-Jun-10						1125.49	1130.77	1130.48	1132.21	1120.98	1120.80	1124.68	1125.44								
13-Jul-10						1124.85	1130.66	1130.27	1132.22	1124.13	1120.74	1124.68	1125.43								
4-Aug-10						1124.85	1130.65	1130.24	1132.21	1121.11	1120.69	1124.67	1125.43								
3-Sep-10	1111.54	1112.13	1109.03			1124.82	1130.68	1130.22	1132.15	1120.82	1120.71	1124.68	1125.44								
15-Sep-10														1118.21	1117.90	1082.19					
20-Sep-10																					
14-Oct-10						1125.08	1130.64	1130.37	1132.22	1121.27	1120.65	1124.63	1125.34								
18-Oct-10																	1125.68	1124.79	1123.22		1137.86
3-Nov-10						1125.11	1130.64	1130.15	1132.22	1121.08	1120.60	1124.68	1125.43								
15-Nov-10				1107.26																	
24-Jan-11						1125.26	1130.61	1130.16	1132.22	1120.10	1120.37	1124.67	1125.43				1125.30	1124.57	1123.47	1132.42	1137.87
26-Jan-11																					
3-Feb-11	1111.45	1108.43	1108.67	1107.11										1117.95	1117.94	1082.07				1132.57	
28-Mar-11																				1132.57	
12-Apr-11						1125.21		1129.98					1125.44				1124.90	1124.09	1123.14		1137.84
18-Apr-11						1125.24	1130.39	1130.15	1132.15		1120.26	1124.58	1125.27				1124.88	1124.00	1123.09		1137.83
21-Apr-11	1111.23	1108.23	1108.59	1107.07										1117.61	1117.54	1081.78					
25-Apr-11	1111.23	1108.22	1108.59	1106.91		1125.12	1130.47	1130.01	1132.23		1120.31	1124.70	1125.27	1117.61	1117.54	1081.97	1124.98	1123.99	1123.14		1137.84
2-May-11																	1124.86	1123.84	1123.01		1137.81
9-May-11	1111.18	1108.23	1108.61	1107.05		1125.01	1130.46	1129.89	1132.24	1120.82	1119.95	1124.70	1125.43	1118.16	1118.14	1081.900	1124.90	1123.93	1123.10	1132.11	1137.81
16-May-11	1111.33	1107.74	1108.64	1106.70		1125.08	1130.48	1130.14	1132.22	1120.90	1120.30	1124.68	1125.44	1118.42	1118.37	1081.90	1124.77	1123.93	1123.08	1132.42	1137.82
23-May-11	1111.33	1108.47	1109.10	1107.10		1125.04	1130.46	1130.05	1132.24	1120.77	1120.31	1124.69	1125.42	1119.02	1118.93	1081.87	1125.19	1128.11	1123.35	1132.56	1137.95
30-May-11	1111.39	1108.61	1109.87	1107.14		1125.02	1130.46	1130.09	1132.24	1120.91	1120.31	1124.70	1125.42	1118.97	1118.95	1081.93	1125.35	1128.18	1123.39	1132.56	1136.95
7-Jun-11	1111.46	1108.52	1109.72	1107.18		1124.99	1130.44	1129.98	1132.22	1120.96	1120.29	1124.68	1125.40	1118.63	1118.36	1081.92	1125.29	1126.88	1123.15	1132.44	1137.82
13-Jun-11	1111.43	1107.54	1109.49	1105.81		1124.99	1130.43	1129.98	1132.21	1121.11	1120.28	1124.66	1125.32	1118.36	1118.47		1125.20	1126.35	1123.01	1132.53	1137.67
2-Jul-11	1111.54	1109.23	1110.00	1107.59		1125.00	1130.45	1130.09	1132.24	1121.24	1120.40	1124.70	1125.43	1118.89	1118.58	1082.12	1125.69	1125.39	1122.97	1132.54	1137.86
13-Jul-11																					
8-Aug-11	1111.45	1109.97	1109.34	1107.64		1124.84	1130.43	1129.65	1132.21	1120.96	1120.63	1124.67	1125.38	1118.08	1118.30	1081.95					
10-Aug-11																	1125.94	1126.20	1123.19	1132.45	1136.78
22-Aug-11	1111.51	1110.21	1109.56	1107.69		1124.88	1130.46	1130.03	1132.24	1121.27	1120.73	1124.70	1125.39	1118.34	1118.50	1082.18	1125.97	1126.11	1123.24	1132.45	1137.77
4-Sep-11	1111.58	1110.37	1108.45	1107.72		1124.89	1130.46	1130.08	1132.24	1121.51	1120.80	1124.70	1125.42	1118.34	1118.51	1082.18	1125.95	1125.92	1123.22	1132.56	1137.78
11-Sep-11	1111.50	1110.22	1109.28	1107.57		1124.79	1130.43	1130.10	1132.20	1121.34	1120.78	1124.67	1125.44	1118.19	1118.38	1082.10	1125.85	1125.79	1123.14	1132.42	1137.75
20-Sep-11	1111.47	1110.16	1109.39	1107.65		1124.93	1130.46	1130.39	1132.24	1121.60	1120.90	1124.70	1125.48	1118.26	1118.43	1082.22	1125.93	1125.74	1123.25	1132.45	1137.78
26-Sep-11	1111.57	1110.26	1109.27	1107.61		1124.92	1130.47	1130.41	1132.24	1121.58	1120.93	1124.71	1125.31	1118.22	1118.36	1082.20	1126.02	1125.72	1123.24	1132.47	1137.78
3-Oct-11	1111.52	1110.17	1109.25	1107.55		1124.84	1130.43	1130.34	1132.21	1121.59	1120.90	1124.68	1125.45	1118.21	1118.34	1082.16	1125.85	1125.55	1123.18	1132.44	1137.75
11-Oct-11	1111.54	1110.11	1109.15	1106.49		1125.01	1130.49	1130.47	1132.24	1121.53	1120.96	1124.70	1125.48	1118.18	1118.25	1081.18	1126.05	1125.46	1123.23	1132.44	1137.78
17-Oct-11	1111.46	1110.07	1109.11	1106.00		1125.00	1130.55	1130.46	1132.21	1121.49	1120.91	1124.67	1125.44	1118.18	1118.17	1082.16	1126.00	1125.28	1123.19	1132.44	1137.74
27-Oct-11						1125.03	1130.65	1129.52	1132.24	1121.44	1120.93	1124.70	1125.46				1124.95	1124.60	1123.01		1137.77
31-Oct-11	1111.48	1110.01	1109.04	1107.44										1117.99	1118.19	1082.31				1132.45	
3-Nov-11	1111.44	1109.98	1109.01	1107.42		1125.04	1130.70	1130.45	1132.24	1121.31	1120.90	1124.70	1125.45	1117.87	1118.15	1082.25	1125.61	1124.75	1123.15	1132.45	1137.74

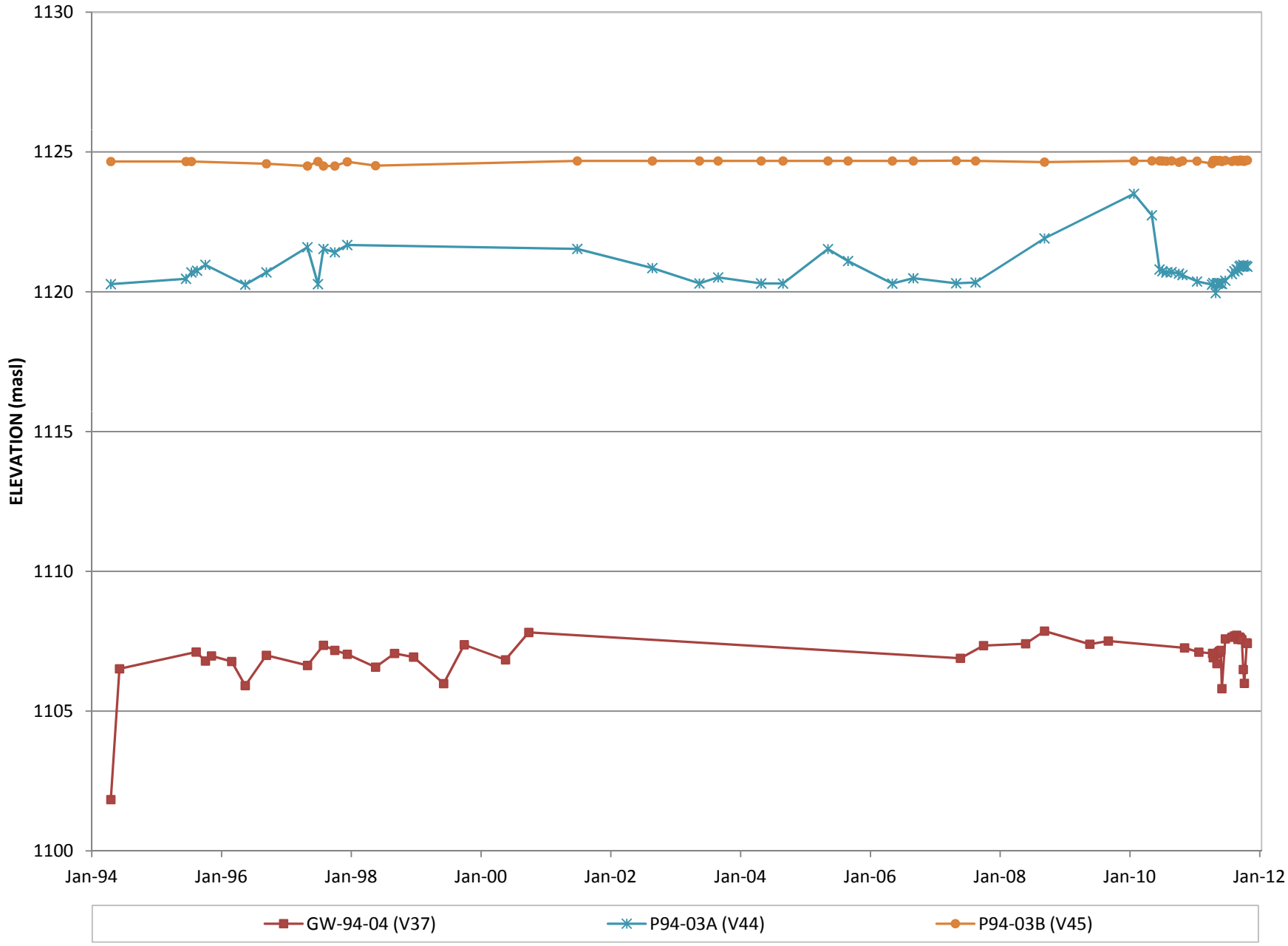
Table F-85: Vangorda Waste Rock Dump Drains

	V28		V29		V30		V31		V32		V33	
Date	**Drain 1**		**Drain 2**		**Drain 3**		**Drain 4**		**Drain 5**		**Drain 6**	
	Flow L/s	Observations	Flow L/s	Observations	Flow L/s	Observations	Flow L/s	Observations	Flow L/s	Observations	Flow L/s	Observations
16-May-11	0.18	Water flowing off dump, pooling behind drain. Estimated flow of 0.18 l/s. Photo taken.	0.03	Drain snowed in. Estimated flow of 0.03 l/s. Photo taken.	0.03	Snow and ice behind weir. Estimated flow of 0.03 l/s. Photo taken.	none	No flow. Photo taken.	none	No flow. Photo taken.	0.25	Snow and ice behind weir. Estimated flow of 0.25 l/s. Photo taken.
23-May-11	none	Dry. Photo taken.	0.04	Drain snowed in. Weir measured at 0.015m. Photo taken.	0.25	Esimated flow of 0.25 l/s. Weir tilted so not measured. Photo taken.	0.20	Partially covered with snow. Estimated flow of 0.20 l/s. Photo taken.	0.10	Weir still buried in snow. Esimated flow of 0.10 l/s downstream. Photo taken.	0.41	Still partially covered in snow but flowing at weir; Weir measured at 0.039m. Photo taken.
30-May-11	none	Dry. Photo taken.	0.05	Estimated flow of 0.05 l/s.Photo taken.	0.13	Estimated flow of 0.13 l/s. Photo taken.	0.10	Estimated flow of 0.10 l/s. Photo taken.	none	Standing water. Photo taken.	0.10	Weir measured at 0.022m. Estimated flow of 0.10 l/s. Photo taken.
07-Jun-11	none	Dry. Photo taken.	none	No flow through weir. Photo taken.	0.08	Weir measured at 0.020m. Photo taken.	0.10	Estimatd flow of 0.10 l/s. Photo taken.	0.20	Estimated flow of 0.20 l/s. Photo taken.	0.04	Weir measured at 0.016m. Photo taken.
14-Jun-11	none	Dry. Photo taken.	none	Dry. Photo taken.	0.02	Weir measured at 0.011m. Photo taken.	0.13	Estimated flow of 0.13 l/s. Photo taken.	none	Standing water. Photo taken.	0.06	Weir measured at 0.018m. Photo taken.
28-Jun-11	none	Dry. Photo taken.	none	Dry. Photo taken.	0.08	Estimated flow of 0.08 l/s. Photo taken.	0.05	Estimated flow of 0.05 l/s. Photo taken.	<0.01	Estimated flow of <0.01 l/s. Photo taken.	0.04	Weir measured at0.016m. Photo taken.
03-Jul-11	none	Dry. Photo taken.	none	Dry. Photo taken.	flow not taken.	Weir measured at0.019m. Photo taken.	0.50	Estimated flow of 0.50 l/s. Oily film. Photo taken.	0.15	Weir measured at 0.026m. Photo taken.	flow not taken.	Weir measured at 0.017m. Photo taken.
22-Jul-11	none	Dry. Photo taken.	none	Dry. Photo taken.	0.06	Estimated flow of 0.06 l/s. Photo taken.	0.05	Esimated flow of 0.05 l/s. Photo taken.	0.01	Estimated flow of 0.01 l/s. Photo taken.	0.09	Weir measured at 0.021m Photo taken.
03-Aug-11	none	Dry, Photo taken	none	Dry; Photo taken	0.08	Weir measured at 0.020m; Photo taken	0.01	Estimated flow of 0.01 l/s. Photo taken.	none	Standing water; Photo taken	0.07	Weir measured at 0.019m. Photo taken.
19-Aug-11	none	Dry.	none	Dry.	0.05	Weir measured at 0.016m. Estimated flow of 0.05 l/s.	<0.1	Estimated flow of <0.1 l/s.	none	Standing water.	0.07	Weir measured at 0.019m.
02-Sep-11	none	Dry. Photo taken.	none	Dry. Photo taken.	0.03	Weir measured at 0.013m. Photo taken.	0.02	Estimated flow of 0.02 l/s. Photo taken.	0.01	Estimated flow of 0.01 l/s. Photo taken.	0.18	Weir measured at 0.028m. Photo taken.
09-Sep-11	none	Dry. Photo taken	none	Dry; Photo taken	0.11	Weir measured at 0.013m. Estimated flow of 0.11 l/s. Photo taken.	<0.1	Estimated flow of <0.1 l/s. Photo taken.	none	Standing water; Photo taken	0.04	Weir measured at 0.016m. Photo taken.
16-Sep-11	none	Dry.	none	Dry.	0.08	Weir measured at 0.019m. Estimated flow of 0.08 l/s.	<0.1	Estimated flow of 0.001 l/s.	none	Standing water.	0.12	Weir measured at 0.024m.
26-Sep-11	none	Dry. Photo taken.	none	Dry. Photo taken.	0.04	Weir measured at 0.015m. Photo taken.	0.02	Estimated flow of 0.02 l/s. Photo taken.	0.01	Estimated flow of 0.01 l/s. Photo taken.	0.01	Weir measured at 0.010m. Photo taken.
04-Oct-11	none	Dry, Photo taken	none	Dry; Photo taken	0.03	Weir measured at 0.014m. Estimated flow of 0.03 l/s. Photo taken.	<0.1	Estimated flow of <0.1 l/s. Photo taken.	none	Standing water; Photo taken	0.07	Weir measured at 0.019m. Photo taken.
11-Oct-11	none	Dry.	none	Dry.	0.05	Weir measured at 0.018m. Estimated flow of 0.05 l/s.	<0.1	Estimated flow of <0.1 l/s.	none	Standing water.	0.15	Weir measured at 0.026m.
17-Oct-11	none	Dry.	none	Dry.	0.0002	Weir measured at 0.002m.	none	No Flow	0.0002	Weir measured at 0.002m.	0.01	weir measured at 0.01m.
31-Oct-11	none	Dry, Photo taken	none	Dry, Photo taken	0.03	Weir measured at 0.013m. Estimated flow of 0.03 l/s. Photo taken.	none	No flow. Photo taken.	0.0024	Weir measured at 0.005m. Photo taken.	0.12	Weir measured at 0.024m. Photo taken.
03-Nov-11	none	Dry, Photo taken	none	Dry, Photo taken	0.03	Weir measured at 0.012m. Estimated flow of 0.03 l/s. Photo taken.	none	No flow. Photo taken.	none	No flow. Photo taken.	0.044	Weir measured at 0.016m. Photo taken.

Denison Environmental Services

Figure F-76: Vangorda Waste Rock Dump
Piezometric Elevations - Cross Section 'A'

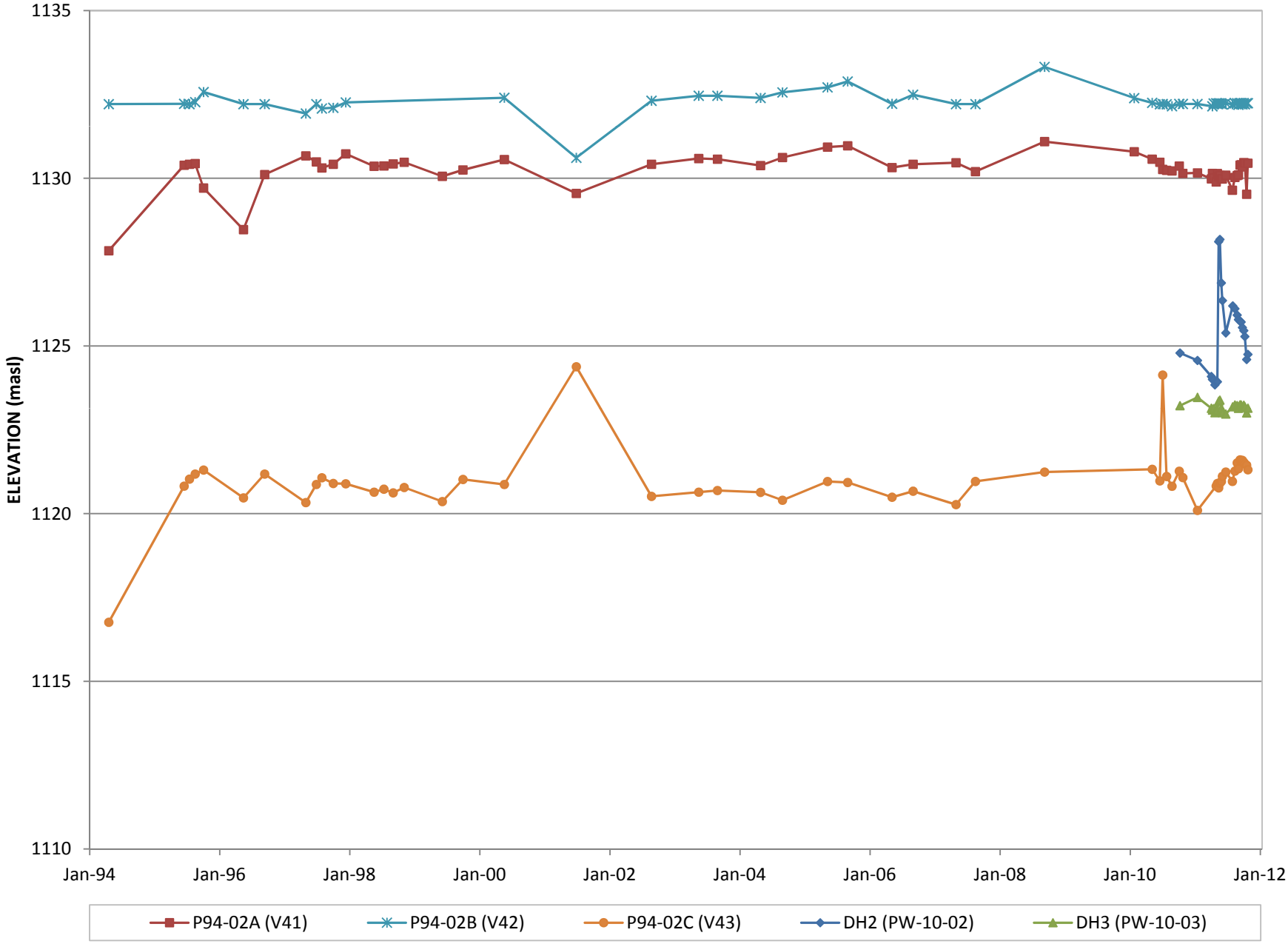
Faro Mine Closure



Denison Environmental Services

Figure F-77: Vangorda Waste Rock Dump
Piezometric Elevations - Cross Section 'B'

Faro Mine Closure



Denison Environmental Services

Figure F-78: Vangorda Waste Rock Dump
Piezometric Elevations - Cross Section 'C'

Faro Mine Closure

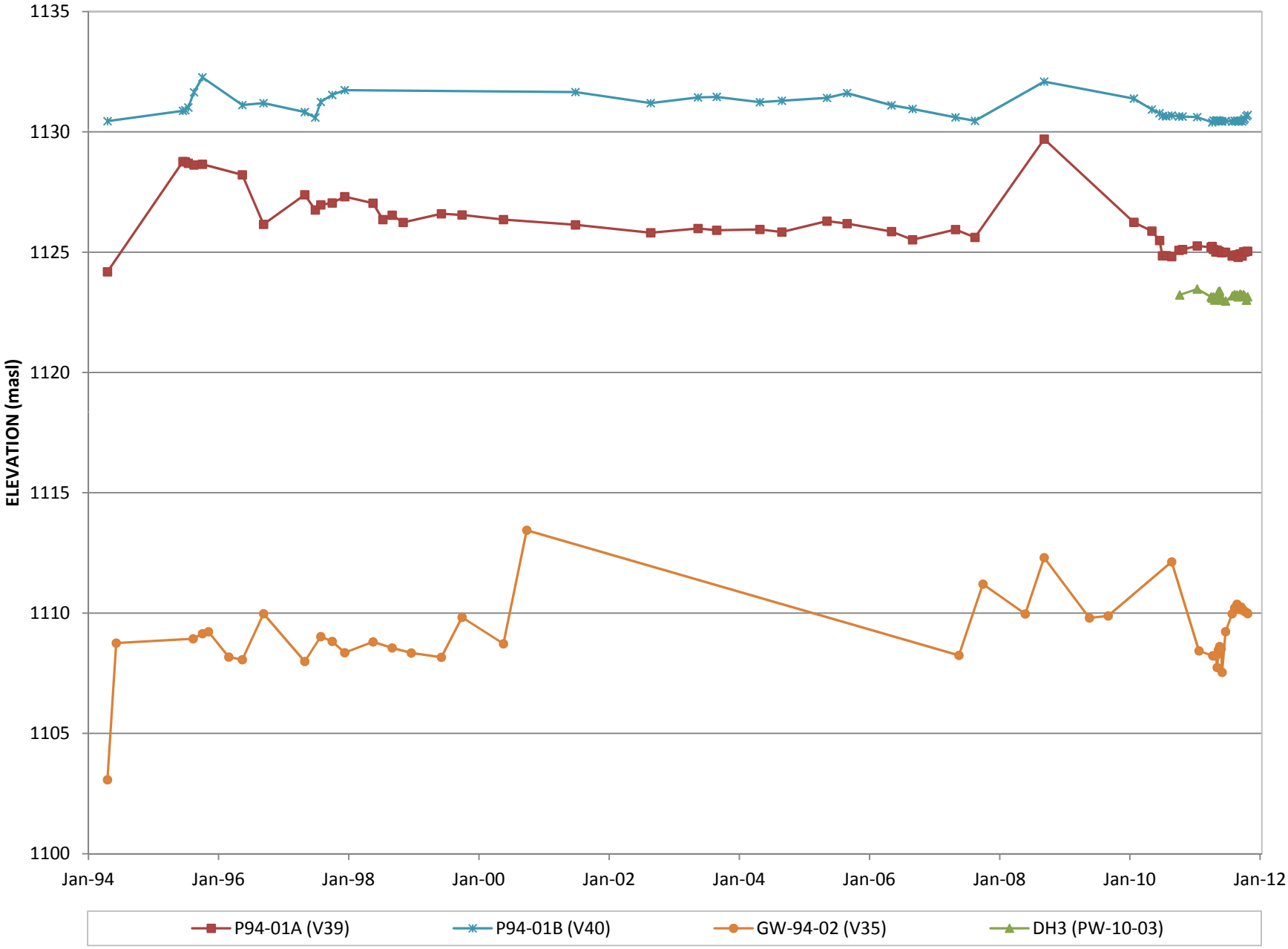
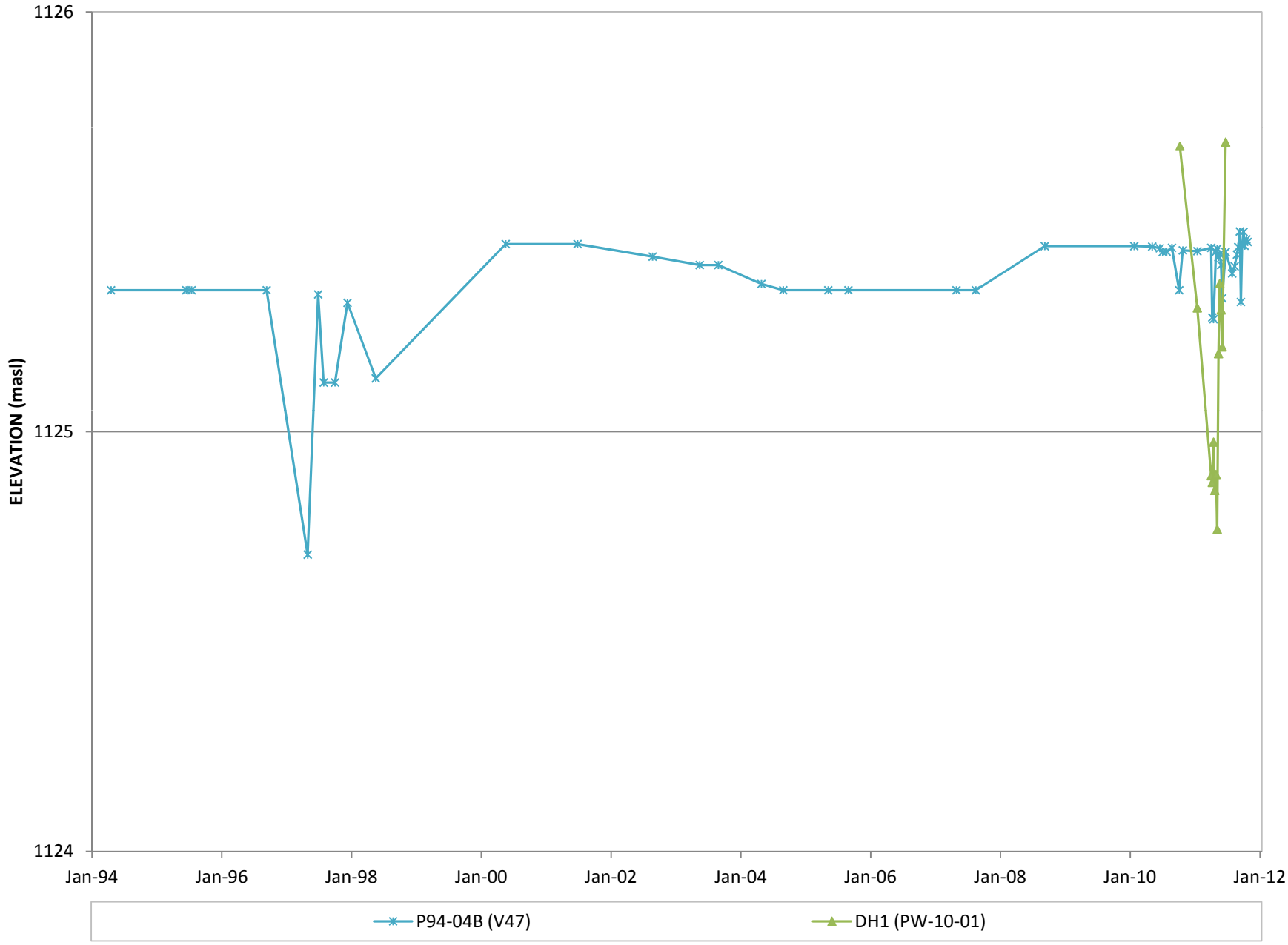


Figure F-79: Vangorda Waste Rock Dump
Piezometric Elevations - Cross Section 'D'



Denison Environmental Services

Figure F-80: Vangorda Waste Rock Dump
Piezometric Elevations - Cross Section 'E'

Faro Mine Closure

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Event 1: Degraded Groundwater Quality in Rose Creek Valley Aquifer

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Golder Associates; "*Grum Pit Storage Capacity Below Elevation 1230 m",* October 14, 2011.

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Denison Environmental Services

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2009-2011

	2009		2010		2011		Comments
	Sulphate	Zinc	Sulphate	Zinc	Sulphate	Zinc	
Intermediate Dam Toe: X24 & X25							
X24-96D	Activated	Activated	Activated	Activated	Activated	Activated	2011 - Activated for both for threshold exceedance and increasing trend projecting threshold exceedance within 3 years.
X25-96A	Activated	Not Activated	Activated	Not Activated	Activated	Not Activated	2011 - Activated for both for threshold exceedance and increasing trend projecting threshold exceedance within 3 years.
X25-96B	Activated	Not Activated	Activated	Not Activated	Activated	Not Activated	2011 - Activated for both for threshold exceedance and increasing trend projecting threshold exceedance within 3 years.
Secondary Tailings Impoundment: P03-04							
~~P03-04-1~~							
P03-04-2	Not Activated	Not Activated	Not Activated	Not Activated	-	-	2011 - Insufficient water for sample.
~~P03-04-3~~							
P03-04-4	Not Activated	Not Activated	Not Activated	Not Activated	-	-	2011 - Insufficient water for sample.
~~P03-04-5~~							
P03-04-6	Not Activated	Not Activated	Not Activated	Not Activated	-	-	2011 - Insufficient water for sample.
~~P03-04-7~~							
P03-04-8	Not Activated	Not Activated	Not Activated	Not Activated	-	-	2011 - Insufficient water for sample.
~~P03-04-9~~							
Intermediate Tailings Impoundment: P03-08							
~~P03-08-1~~							
P03-08-2	Not Activated	Not Activated	Not Activated	Not Activated	Not Activated	Not Activated	
~~P03-08-3~~							
P03-08-4	Not Activated	Not Activated	Not Activated	Not Activated	Not Activated	Not Activated	
~~P03-08-5~~							
P03-08-6	Not Activated	Not Activated	Not Activated	Not Activated	Not Activated	Not Activated	
P03-08-7	Not Activated	Not Activated	Not Activated	Not Activated	-	-	2011 - Insufficient water for sample.
P03-08-8	Not Activated	Not Activated	Not Activated	Not Activated	-	-	2011 - Insufficient water for sample.
Toe of Cross Valley Dam: P03-09							
~~P03-09-1~~							
P03-09-2	Not Activated	Not Activated	Not Activated	Not Activated	Activated	Not Activated	22011 - New trigger for SO4.
~~P03-09-3~~							
P03-09-4	Activated	Not Activated	Activated	Not Activated	Activated	Not Activated	
~~P03-09-5~~							
P03-09-6	Activated	Not Activated	Activated	Not Activated	Activated	Not Activated	
~~P03-09-7~~							
P03-09-8	Activated	Not Activated	Activated	Not Activated	Activated	Not Activated	
P03-09-9	Activated	Not Activated	Activated	Not Activated	Activated	Not Activated	

Table G-2: Sulphate and Zinc (Dissolved) at X24-96D (Intermediate Dam)

DATE	SO4	DATE	ZN-D
	mg/L		mg/L
26/09/1996	1048.0	26/09/1996	0.01
06/01/1997	951.0	06/01/1997	0.06
07/10/1997	917.0	07/10/1997	0.02
01/06/1998	713.0	01/06/1998	0.03
31/10/1998	997.0	31/10/1998	0.02
19/06/1999	1084.0	19/06/1999	0.17
29/10/1999	1050.0	29/10/1999	0.05
27/06/2000	922.0	27/06/2000	2.84
27/09/2000	996.0	27/09/2000	0.062
10/10/2000	447.0	10/10/2000	0.005
06/06/2001	1026.0	06/06/2001	0.03
06/09/2001	1020.0	06/09/2001	0.028
12/06/2002	1060.0	12/06/2002	0.03
23/09/2002	1150.0	23/09/2002	0.03
02/06/2003	1340.0	02/06/2003	0.039
22/09/2003	1340.0	22/09/2003	0.033
10/06/2004	1420.0	10/06/2004	0.0464
04/08/2004	1430.0	04/08/2004	0.0437
21/09/2004	1450.0	21/09/2004	0.0561
17/11/2004	1380.0	17/11/2004	0.048
04/05/2005	1450.0	04/05/2005	0.0517
21/07/2005	1490.0	21/07/2005	0.0488
09/09/2005	1390.0	09/09/2005	0.0569
31/10/2005	1340.0	31/10/2005	0.0482
09/06/2006	1410.0	09/06/2006	0.29
02/08/2006	1650.0	02/08/2006	0.068
21/09/2006	1710.0	21/09/2006	0.0926
01/11/2006	1700.0	01/11/2006	0.078
01/08/2007	1840.0	01/08/2007	0.0697
04/10/2007	1890.0	04/10/2007	0.0824
06/11/2007	1930.0	06/11/2007	0.076
12/08/2008	2100.0	12/08/2008	0.083
17/09/2008	1900.0	17/09/2008	0.082
04/11/2008	2200.0	04/11/2008	0.085
04/08/2009	1900.0	04/08/2009	0.102
09/09/2009	1900.0	09/09/2009	0.102
03/11/2009	1900.0	03/11/2009	0.119
07/06/2010	2800.0	07/06/2010	0.12
09/09/2010	2700.0	09/09/2010	0.132
02/06/2011	2300.0	02/06/2011	0.187
28/09/2011	2360.0	28/09/2011	0.136
Threshold	**1057**		**0.03**

DLs (at half value)

Table G-3: Sulphate and Zinc (Dissolved) at X25-96A (Intermediate Dam)

DATE	SO4	DATE	ZN-D
	mg/L		mg/L
10/06/1990	316.0	26/09/1996	0.03
21/08/1990	404.0	06/01/1997	0.06
26/09/1996	269.0	13/05/1997	0.03
06/01/1997	194.0	07/10/1997	0.0050
13/05/1997	213.0	01/06/1998	0.0050
07/10/1997	227.0	31/10/1998	0.01
01/06/1998	209.0	19/06/1999	0.07
31/10/1998	285.0	29/10/1999	0.0050
19/06/1999	292.0	27/06/2000	0.57
29/10/1999	294.0	10/10/2000	0.0050
27/06/2000	276.0	06/06/2001	0.19
10/10/2000	206.0	15/07/2001	0.01
06/06/2001	287.0	05/09/2001	0.005
15/07/2001	294.0	12/06/2002	0.0050
05/09/2001	298.0	24/09/2002	0.0050
12/06/2002	312.0	02/06/2003	0.0050
24/09/2002	292.0	23/09/2003	0.005
02/06/2003	261.0	10/06/2004	0.0056
23/09/2003	249.0	04/08/2004	0.0075
10/06/2004	229.0	21/09/2004	0.0214
04/08/2004	232.0	17/11/2004	0.011
21/09/2004	355.0	21/07/2005	0.0067
17/11/2004	239.0	09/09/2005	0.0057
21/07/2005	292.0	31/10/2005	0.016
09/09/2005	295.0	09/06/2006	0.041
31/10/2005	288.0	02/08/2006	0.0091
09/06/2006	260.0	21/09/2006	0.0132
02/08/2006	289.0	01/11/2006	0.0078
21/09/2006	326.0	31/05/2007	0.0071
01/11/2006	296.0	01/08/2007	0.0064
31/05/2007	285.0	04/10/2007	0.0067
01/08/2007	301.0	06/11/2007	0.008
04/10/2007	293.0	29/05/2008	0.0025
06/11/2007	334.0	08/2008	0.0019
29/05/2008	327.0	09/2008	0.0014
08/2008	369.0	11/2008	0.002
09/2008	379.0	01/06/2009	0.0025
11/2008	410.0	09/09/2009	0.0025
01/06/2009	480.0	07/06/2010	0.0025
09/09/2009	440.0	09/09/2010	0.0025
07/06/2010	570.0	01/02/2011	0.0039
09/09/2010	580.0	02/06/2011	0.0025
01/02/2011	580.0	28/09/2011	0.0050
02/06/2011	590.0		
28/09/2011	652.0		
Threshold	**293.5**		**0.055**

DLs (at half value)

Table G-4: Sulphate and Zinc (Dissolved) at X25-96B (Intermediate Dam)

DATE	SO4	DATE	ZN-D
	mg/L		mg/L
10/06/1990	96.0	26/09/1996	0.01
21/08/1990	155.0	06/01/1997	0.08
26/09/1996	468.0	13/05/1997	0.005
06/01/1997	352.0	07/10/1997	0.01
13/05/1997	383.0	01/06/1998	0.005
07/10/1997	448.0	31/10/1998	0.01
01/06/1998	372.0	19/06/1999	0.03
31/10/1998	429.0	29/10/1999	0.005
19/06/1999	445.0	27/06/2000	0.47
29/10/1999	408.0	27/09/2000	0.037
27/06/2000	348.0	10/10/2000	0.005
27/09/2000	373.0	06/06/2001	0.005
10/10/2000	177.0	15/07/2001	0.03
06/06/2001	344.0	05/09/2001	0.0025
15/07/2001	381.0	12/06/2002	0.005
05/09/2001	334.0	24/09/2002	0.005
12/06/2002	333.0	02/06/2003	0.0025
24/09/2002	341.0	23/09/2003	0.0025
02/06/2003	332.0	10/06/2004	0.0064
23/09/2003	339.0	04/08/2004	0.0025
10/06/2004	335.0	24/09/2004	0.0051
04/08/2004	366.0	17/11/2004	0.0025
24/09/2004	247.0	21/07/2005	0.0025
17/11/2004	360.0	09/09/2005	0.0025
21/07/2005	347.0	31/10/2005	0.0025
09/09/2005	335.0	09/06/2006	0.03
31/10/2005	331.0	02/08/2006	0.0065
09/06/2006	274.0	21/09/2006	0.0025
02/08/2006	359.0	01/11/2006	0.0063
21/09/2006	388.0	31/05/2007	0.0056
01/11/2006	363.0	01/08/2007	0.0025
31/05/2007	356.0	04/10/2007	0.0064
01/08/2007	348.0	06/11/2007	0.0025
04/10/2007	311.0	29/05/2008	0.0025
06/11/2007	378.0	12/08/2008	0.0004
29/05/2008	383.0	16/09/2008	0.0006
12/08/2008	410.0	04/11/2008	0.0002
16/09/2008	430.0	01/06/2009	0.0025
04/11/2008	420.0	09/09/2009	0.0025
01/06/2009	450.0	07/06/2010	0.0025
09/09/2009	350.0	09/09/2010	0.0025
07/06/2010	450.0	01/02/2011	0.0009
09/09/2010	480.0	02/06/2011	0.0025
01/02/2011	480.0	28/09/2011	0.008
02/06/2011	510.0		
28/09/2011	542.0		
Threshold	**394.5**		**0.02**

DLs (at half value)

Table G-5: Sulphate and Zinc (Dissolved) at P03-04-2 (Secondary Tailings Impoundment)

DATE	SO4	DATE	ZN-D
	mg/L		mg/L
26/09/2003	16.0	26/09/2003	0.02
09/06/2004	768.0	09/06/2004	0.0291
03/08/2004	758.0	03/08/2004	0.0372
24/09/2004	787.0	24/09/2004	0.0614
18/11/2004	684.0	18/11/2004	0.0388
03/05/2005	745.0	03/05/2005	0.0459
22/07/2005	726.0	22/07/2005	0.0459
10/09/2005	776.0	10/09/2005	0.0817
31/10/2005	679.0	31/10/2005	0.0503
07/06/2006	696.0	07/06/2006	0.061
02/08/2006	878.0	02/08/2006	0.066
20/09/2006	999.0	20/09/2006	0.079
02/11/2006	1040.0	02/11/2006	0.067
30/05/2007	977.0	30/05/2007	0.0575
02/08/2007	1010.0	02/08/2007	0.0643
04/10/2007	1000.0	04/10/2007	0.0641
05/11/2007	994.0	05/11/2007	0.074
28/05/2008	771.0	28/05/2008	0.042
12/08/2008	780.0	12/08/2008	0.040
17/09/2008	850.0	17/09/2008	0.043
04/11/2008	700.0	04/11/2008	0.034
12/09/2009	860.0	12/09/2009	0.047
20/09/2010	750.0	20/09/2010	0.04
05/10/2011	Insufficient water for sample.	05/10/2011	Insufficient water for sample.

Table G-6: Sulphate and Zinc (Dissolved) at P03-04-4 (Secondary Tailings Impoundment)

DATE	SO4	DATE	ZN-D
	mg/L		mg/L
26/09/2003	14.0	26/09/2003	0.012
09/06/2004	409.0	09/06/2004	0.0059
03/08/2004	390.0	03/08/2004	0.0071
24/09/2004	414.0	24/09/2004	0.0134
18/11/2004	371.0	18/11/2004	0.0064
03/05/2005	409.0	03/05/2005	0.0059
22/07/2005	422.0	22/07/2005	0.0054
10/09/2005	702.0	10/09/2005	0.0569
31/10/2005	361.0	31/10/2005	0.0078
07/06/2006	356.0	07/06/2006	0.0055
02/08/2006	394.0	02/08/2006	0.0054
20/09/2006	404.0	20/09/2006	0.0232
02/11/2006	459.0	02/11/2006	0.015
30/05/2007	448.0	30/05/2007	0.0054
02/08/2007	432.0	02/08/2007	0.0081
04/10/2007	399.0	04/10/2007	0.0064
05/11/2007	464.0	05/11/2007	0.0062
28/05/2008	421.0	28/05/2008	0.005
12/08/2008	480.0	12/08/2008	0.011
17/09/2008	520.0	04/11/2008	0.002
04/11/2008	440.0	12/09/2009	0.0025
12/09/2009	440.0	20/09/2010	0.011
20/09/2010	480.0	11/10/2011	Insufficient water for sample.
11/10/2011	Insufficient water for sample.		

DLs (at half value)

Table G-7: Sulphate and Zinc (Dissolved) at P03-04-6 (Secondary Tailings Impoundment)

DATE	SO4	DATE	ZN-D
	mg/L		mg/L
26/09/2003	4340.0	26/09/2003	2.12
11/06/2004	4550.0	11/06/2004	6.48
03/08/2004	6230.0	03/08/2004	2.32
24/09/2004	10100.0	24/09/2004	5.9
03/05/2005	8060.0	03/05/2005	5.08
22/07/2005	4400.0	22/07/2005	5.11
10/09/2005	12200.0	10/09/2005	12
31/10/2005	11700.0	31/10/2005	7.92
07/06/2006	4810.0	07/06/2006	4.3
02/08/2006	4970.0	02/08/2006	4.5
21/09/2006	4910.0	21/09/2006	3.78
02/11/2006	6120.0	02/11/2006	2.88
30/05/2007	4650.0	30/05/2007	3.57
02/08/2007	4280.0	02/08/2007	5.42
04/10/2007	4010.0	04/10/2007	5.01
05/11/2007	4150.0	05/11/2007	4.53
28/05/2008	3990.0	28/05/2008	3.320
12/08/2008	3900.0	12/08/2008	3.830
17/09/2008	4000.0	17/09/2008	3.950
04/11/2008	3800.0	04/11/2008	1.400
12/09/2009	15000.0	12/09/2009	5.73
20/09/2010	5200.0	20/09/2010	1.97
11/10/2011	Insufficient water for sample.	11/10/2011	Insufficient water for sample.

Table G-8: Sulphate and Zinc (Dissolved) at P03-04-8 (Secondary Tailings Impoundment)

DATE	SO4	DATE	ZN-D
	mg/L		mg/L
11/06/2004	6120.0	11/06/2004	2.06
03/08/2004	8350.0	03/08/2004	3.92
24/09/2004	9410.0	24/09/2004	2.73
03/05/2005	8350.0	03/05/2005	2.76
22/07/2005	9350.0	22/07/2005	2.68
10/09/2005	10100.0	10/09/2005	3.08
07/06/2006	7320.0	07/06/2006	4.27
21/09/2006	8290.0	21/09/2006	3.8
30/05/2007	7940.0	30/05/2007	3.22
04/10/2007	5650.0	04/10/2007	2.91
28/05/2008	6260.0	28/05/2008	2.330
12/09/2009	13000.0	12/09/2009	2.29
20/09/2010	9000.0	20/09/2010	3.93
11/10/2011	Insufficient water for sample.	11/10/2011	Insufficient water for sample.

Table G-9: Sulphate and Zinc (Dissolved) at P03-08-2 (Intermediate Tailings Impoundment)

DATE	SO4	DATE	ZN-D
	mg/L		mg/L
26/09/2003	154.0	26/09/2003	0.005
08/06/2004	112.0	08/06/2004	0.0062
04/08/2004	132.0	04/08/2004	0.0055
24/09/2004	141.0	24/09/2004	0.0072
05/05/2005	138.0	05/05/2005	0.0050
23/07/2005	94.2	23/07/2005	0.0025
09/09/2005	75.1	09/09/2005	0.0072
01/11/2005	83.2	01/11/2005	0.0053
06/06/2006	106.0	06/06/2006	0.0062
02/08/2006	70.2	02/08/2006	0.0059
19/09/2006	76.7	19/09/2006	0.0077
01/11/2006	91.2	01/11/2006	0.0097
29/05/2007	118.0	29/05/2007	0.148
02/08/2007	68.9	02/08/2007	0.0084
05/11/2007	60.8	05/11/2007	0.0062
27/05/2008	82.3	27/05/2008	0.006
12/08/2008	90.0	12/08/2008	0.002
04/11/2008	78.0	04/11/2008	0.001
12/09/2009	110.0	12/09/2009	0.006
20/09/2010	110.0	20/09/2010	0.0025
02/02/2011	120.0	02/02/2011	0.0042
12/10/2011	114.0	12/10/2011	0.0034

DLs (at half value)

Table G-10: Sulphate and Zinc (Dissolved) at P03-08-4 (Intermediate Tailings Impoundment)

DATE	SO4	DATE	ZN-D
	mg/L		mg/L
26/09/2003	147.0	26/09/2003	0.165
08/06/2004	448.0	08/06/2004	0.009
24/09/2004	587.0	24/09/2004	0.633
05/05/2005	532.0	05/05/2005	0.013
23/07/2005	620.0	23/07/2005	0.0195
09/09/2005	538.0	09/09/2005	0.0143
01/11/2005	461.0	01/11/2005	0.0123
06/06/2006	437.0	06/06/2006	0.0202
02/08/2006	431.0	02/08/2006	0.013
19/09/2006	458.0	19/09/2006	0.023
01/11/2006	434.0	01/11/2006	0.011
29/05/2007	357.0	29/05/2007	0.005
02/08/2007	330.0	02/08/2007	0.0025
03/10/2007	369.0	03/10/2007	0.0159
05/11/2007	415.0	05/11/2007	0.01
27/05/2008	437.0	27/05/2008	0.030
12/08/2008	460.0	12/08/2008	0.002
16/09/2008	550.0	16/09/2008	0.026
04/11/2008	640.0	04/11/2008	0.003
12/09/2009	340.0	12/09/2009	0.006
20/09/2010	390.0	20/09/2010	0.02
12/10/2011	339.0	12/10/2011	0.0164

DLs (at half value)

Table G-11: Sulphate and Zinc (Dissolved) at P03-08-6 (Intermediate Tailings Impoundment)

DATE	SO4	DATE	ZN-D
	mg/L		mg/L
26/09/2003	47.0	26/09/2003	0.016
08/06/2004	1510.0	08/06/2004	0.0456
24/09/2004	1560.0	04/08/2004	0.0143
05/05/2005	1490.0	24/09/2004	0.0262
09/09/2005	1340.0	05/05/2005	0.0244
06/06/2006	1220.0	09/09/2005	0.0089
19/09/2006	1270.0	01/11/2005	0.0056
29/05/2007	1260.0	06/06/2006	0.035
27/05/2008	1130.0	19/09/2006	0.057
12/09/2009	640.0	29/05/2007	0.0125
20/09/2010	390.0	27/05/2008	0.008
12/10/2011	321.0	12/09/2009	0.009
		20/09/2010	0.0025
		12/10/2011	0.0387

DLs (at half value)

Table G-12: Sulphate and Zinc (Dissolved) at P03-08-7 (Intermediate Tailings Impoundment)

DATE	SO4	DATE	ZN-D
	mg/L		mg/L
26/09/2003	57.0	26/09/2003	0.008
24/09/2004	1520.0	08/06/2004	0.0169
05/05/2005	1410.0	04/08/2004	0.0104
09/09/2005	1390.0	24/09/2004	0.0114
06/06/2006	801.0	05/05/2005	0.0094
20/09/2006	732.0	09/09/2005	0.0104
29/05/2007	551.0	06/06/2006	0.028
03/10/2007	476.0	20/09/2006	0.01
27/05/2008	442.0	29/05/2007	0.005
16/09/2008	370.0	03/10/2007	0.0099
12/09/2009	260.0	27/05/2008	0.009
20/09/2010	180.0	16/09/2008	0.015
11/10/2011	Insufficient water for sample.	12/09/2009	0.015
		20/09/2010	0.0025
		11/10/2011	Insufficient water for sample.

DLs (at half value)

Table G-13: Sulphate and Zinc (Dissolved) at P03-08-8 (Intermediate Tailings Impoundment)

DATE	SO4	DATE	ZN-D
	mg/L		mg/L
08/06/2004	3040.0	08/06/2004	56.6
24/09/2004	178.0	04/08/2004	0.0074
05/05/2005	143.0	24/09/2004	0.0051
10/09/2005	150.0	05/05/2005	0.0084
06/06/2006	126.0	10/09/2005	0.0395
20/09/2006	114.0	06/06/2006	0.0066
29/05/2007	118.0	20/09/2006	0.0057
03/10/2007	97.0	29/05/2007	0.0082
27/05/2008	102.0	03/10/2007	0.0072
16/09/2008	92.0	27/05/2008	0.010
12/09/2009	98.0	16/09/2008	0.011
12/10/2011	Insufficient water for sample.	12/09/2009	0.01
		12/10/2011	Insufficient water for sample.

Table G-14: Sulphate and Zinc (Dissolved) at P03-09-2 (Down Valley)

DATE	SO4	DATE	ZN-D
	mg/L		mg/L
26/09/2003	363.0	26/09/2003	0.0025
08/06/2004	376.0	08/06/2004	0.0053
04/08/2004	382.0	04/08/2004	0.0055
21/09/2004	372.0	21/09/2004	0.0025
18/11/2004	370.0	18/11/2004	0.0064
04/05/2005	378.0	04/05/2005	0.0055
22/07/2005	372.0	22/07/2005	0.0025
09/09/2005	344.0	09/09/2005	0.0054
01/11/2005	324.0	01/11/2005	0.0025
06/06/2006	357.0	06/06/2006	0.0025
02/08/2006	347.0	02/08/2006	0.0051
19/09/2006	345.0	19/09/2006	0.0092
01/11/2006	373.0	01/11/2006	0.0059
29/05/2007	372.0	29/05/2007	0.0025
02/08/2007	391.0	02/08/2007	0.0025
02/10/2007	341.0	02/10/2007	0.0066
05/11/2007	407.0	05/11/2007	0.0055
27/05/2008	443.0	27/05/2008	0.0025
12/08/2008	420.0	12/08/2008	0.002
16/09/2008	420.0	16/09/2008	0.002
04/11/2008	450.0	04/11/2008	0.001
29/05/2009	480.0	29/05/2009	0.0025
09/09/2009	260.0	09/09/2009	0.0025
13/09/2010	410.0	13/09/2010	0.0025
25/09/2011	820.0	25/09/2011	0.005

DLs (at half value)

Table G-15: Sulphate and Zinc (Dissolved) at P03-09-4 (Down Valley)

DATE	SO4	DATE	ZN-D
	mg/L		mg/L
26/09/2003	365.0	26/09/2003	0.0025
08/06/2004	327.0	08/06/2004	0.0085
04/08/2004	346.0	04/08/2004	0.0075
21/09/2004	332.0	21/09/2004	0.0025
18/11/2004	342.0	18/11/2004	0.0066
04/05/2005	319.0	04/05/2005	0.0071
22/07/2005	370.0	22/07/2005	0.0025
09/09/2005	393.0	09/09/2005	0.0065
01/11/2005	374.0	01/11/2005	0.0025
06/06/2006	286.0	06/06/2006	0.0025
02/08/2006	406.0	02/08/2006	0.006
19/09/2006	447.0	19/09/2006	0.012
01/11/2006	458.0	01/11/2006	0.0083
29/05/2007	372.0	29/05/2007	0.0025
02/08/2007	444.0	02/08/2007	0.0055
02/10/2007	465.0	02/10/2007	0.0078
05/11/2007	514.0	05/11/2007	0.0064
27/05/2008	451.0	27/05/2008	0.0025
12/08/2008	600.0	12/08/2008	0.002
16/09/2008	650.0	16/09/2008	0.002
04/11/2008	630.0	04/11/2008	0.002
29/05/2009	510.0	29/05/2009	0.0025
09/09/2009	530.0	09/09/2009	0.0025
13/09/2010	610.0	13/09/2010	0.0025
25/09/2011	410.0	25/09/2011	0.0012

DLs (at half value)

Table G-16: Sulphate and Zinc (Dissolved) at P03-09-6 (Down Valley)

DATE	SO4	DATE	ZN-D
	mg/L		mg/L
26/09/2003	394.0	26/09/2003	0.0025
08/06/2004	354.0	08/06/2004	0.0064
04/08/2004	376.0	04/08/2004	0.0056
21/09/2004	385.0	21/09/2004	0.0051
18/11/2004	363.0	18/11/2004	0.0025
04/05/2005	372.0	04/05/2005	0.0025
22/07/2005	362.0	22/07/2005	0.0025
09/09/2005	368.0	09/09/2005	0.0025
01/11/2005	385.0	01/11/2005	0.0025
06/06/2006	355.0	06/06/2006	0.008
02/08/2006	331.0	02/08/2006	0.0056
19/09/2006	416.0	19/09/2006	0.0088
01/11/2006	469.0	01/11/2006	0.0087
29/05/2007	417.0	29/05/2007	0.0025
02/08/2007	388.0	02/08/2007	0.0025
02/10/2007	442.0	02/10/2007	0.0068
05/11/2007	550.0	05/11/2007	0.0062
27/05/2008	506.0	27/05/2008	0.007
12/08/2008	490.0	12/08/2008	0.001
16/09/2008	510.0	16/09/2008	0.003
04/11/2008	720.0	04/11/2008	0.001
29/05/2009	600.0	29/05/2009	0.0025
09/09/2009	550.0	09/09/2009	0.0025
13/09/2010	690.0	13/09/2010	0.0025
25/09/2011	770.0	25/09/2011	0.0022

DLs (at half value)

Table G-17: Sulphate and Zinc (Dissolved) at P03-09-8 (Down Valley)

DATE	SO4	DATE	ZN-D
	mg/L		mg/L
26/09/2003	363.0	26/09/2003	0.0025
21/09/2004	438.0	21/09/2004	0.0051
04/05/2005	412.0	04/05/2005	0.0055
09/09/2005	418.0	09/09/2005	0.0088
06/06/2006	248.0	06/06/2006	0.0089
19/09/2006	471.0	19/09/2006	0.011
29/05/2007	467.0	29/05/2007	0.0025
02/10/2007	498.0	02/10/2007	0.0083
27/05/2008	554.0	27/05/2008	0.006
16/09/2008	630.0	16/09/2008	0.002
29/05/2009	610.0	29/05/2009	0.0025
09/09/2009	660.0	09/09/2009	0.0025
13/09/2010	720.0	13/09/2010	0.0025
25/09/2011	860.0	25/09/2011	0.0032

DLs (at half value)

Table G-18: Sulphate and Zinc (Dissolved) at P03-09-9 (Down Valley)

DATE	SO4	DATE	ZN-D
	mg/L		mg/L
26/09/2003	443.0	26/09/2003	0.0025
08/06/2004	421.0	08/06/2004	0.0053
04/08/2004	435.0	04/08/2004	0.0057
21/09/2004	433.0	21/09/2004	0.0051
18/11/2004	426.0	18/11/2004	0.0025
04/05/2005	417.0	04/05/2005	0.0051
22/07/2005	435.0	22/07/2005	0.0025
09/09/2005	429.0	09/09/2005	0.0085
06/06/2006	250.0	06/06/2006	0.009
02/08/2006	379.0	02/08/2006	0.0061
19/09/2006	474.0	19/09/2006	0.0099
01/11/2006	532.0	01/11/2006	0.0093
29/05/2007	459.0	29/05/2007	0.0025
02/08/2007	459.0	02/08/2007	0.0058
02/10/2007	497.0	02/10/2007	0.0077
05/11/2007	588.0	05/11/2007	0.0068
27/05/2008	544.0	27/05/2008	0.0025
12/08/2008	550.0	12/08/2008	0.0017
16/09/2008	630.0	16/09/2008	0.0034
04/11/2008	800.0	04/11/2008	0.0021
29/05/2009	580.0	29/05/2009	0.0025
09/09/2009	620.0	09/09/2009	0.0025
13/09/2010	680.0	13/09/2010	0.0025
25/09/2011	830.0	25/09/2011	0.0045

DLs (at half value)

Table G-19: Sulphate and Zinc (Dissolved) at P03-06-1 (Intermediate Tailings Impoundment)

DATE	SO4	DATE	ZN-D
	mg/L		mg/L
26/09/2003	492.0	26/09/2003	0.007
10/06/2004	705.0	10/06/2004	0.103
22/09/2004	746.0	22/09/2004	0.137
03/05/2005	775.0	03/05/2005	0.176
10/09/2005	804.0	10/09/2005	0.199
07/06/2006	959.0	07/06/2006	1.55
21/09/2006	932.0	21/09/2006	0.9
30/05/2007	1460.0	30/05/2007	0.837
04/10/2007	1390.0	04/10/2007	1.33
28/05/2008	1740.0	28/05/2008	1.89
01/06/2009	2800.0	01/06/2009	3.19
05/08/2009	2800.0	05/08/2009	4.21
09/09/2009	2800.0	09/09/2009	4.49
03/11/2009	2700.0	03/11/2009	5.8
14/06/2010	3100.0	14/06/2010	6.68
22/09/2010	2900.0	22/09/2010	8.260
29/06/2011	2600.0	29/06/2011	11.7
06/10/2011	3050.0	06/10/2011	14.200

Table G-20: Sulphate and Zinc (Dissolved) at P03-06-2 (Intermediate Tailings Impoundment)

DATE	SO4	DATE	ZN-D
	mg/L		mg/L
26/09/2003	586.0	26/09/2003	0.045
10/06/2004	763.0	10/06/2004	0.179
22/09/2004	780.0	22/09/2004	0.200
03/05/2005	810.0	03/05/2005	0.239
10/09/2005	734.0	10/09/2005	0.288
07/06/2006	921.0	07/06/2006	0.358
21/09/2006	1020.0	21/09/2006	0.731
30/05/2007	2120.0	30/05/2007	1.990
04/10/2007	1730.0	04/10/2007	2.230
28/05/2008	2260.0	28/05/2008	3.980
01/06/2009	3800.0	01/06/2009	5.910
05/08/2009	2700.0	05/08/2009	3.840
09/09/2009	2900.0	09/09/2009	4.470
03/11/2009	2800.0	03/11/2009	4.850
14/06/2010	3200.0	14/06/2010	8.010
22/09/2010	3000.0	22/09/2010	7.500
29/05/2011	4300.0	29/05/2011	17.800
06/10/2011	3150.0	06/10/2011	13.500

Table G-21: Sulphate and Zinc (Dissolved) at P03-06-3 (Intermediate Tailings Impoundment)

DATE	SO4	DATE	ZN-D
	mg/L		mg/L
26/09/2003	967.0	26/09/2003	0.165
10/06/2004	907.0	10/06/2004	0.436
22/09/2004	386.0	22/09/2004	1.24
03/05/2005	643.0	03/05/2005	0.348
10/09/2005	1170.0	10/09/2005	1.41
07/06/2006	1070.0	07/06/2006	0.93
21/09/2006	1460.0	21/09/2006	1.81
30/05/2007	1900.0	30/05/2007	2.24
04/10/2007	2150.0	04/10/2007	3.77
28/05/2008	2610.0	28/05/2008	5.24
01/06/2009	4400.0	01/06/2009	9.490
05/08/2009	3600	05/08/2009	9.4
09/09/2009	3800	09/09/2009	11
03/11/2009	3200	03/11/2009	11.1
14/06/2010	4200	14/06/2010	14
22/09/2010	4100	22/09/2010	14.6
29/05/2011	4200	29/05/2011	21.5
06/10/2011	4040	06/10/2011	18.9

Table G-22: Sulphate and Zinc (Dissolved) at P03-06-4 (Intermediate Tailings Impoundment)

DATE	SO4	DATE	ZN-D
	mg/L		mg/L
26/09/2003	428.0	26/09/2003	0.774
10/06/2004	336.0	10/06/2004	1.49
22/09/2004	399.0	22/09/2004	1.3
03/05/2005	685.0	03/05/2005	6.66
10/09/2005	451.0	10/09/2005	1.77
07/06/2006	538.0	07/06/2006	3.36
21/09/2006	609.0	21/09/2006	2.11
30/05/2007	904.0	30/05/2007	3.26
04/10/2007	731.0	04/10/2007	3.4
28/05/2008	1090.0	28/05/2008	4.81
01/06/2009	1400.0	01/06/2009	5.470
05/08/2009	1100.0	05/08/2009	4.360
09/09/2009	1100	09/09/2009	4.46
03/11/2009	1200	03/11/2009	4.47
14/06/2010	1400	14/06/2010	3.46
22/09/2010	1700	22/09/2010	4.14
29/05/2011	2100	29/05/2011	7.11
06/10/2011	1850	06/10/2011	5.58

Table G-23: Sulphate and Zinc (Dissolved) at P03-06-5 (Intermediate Tailings Impoundment)

DATE	SO4	DATE	ZN-D
	mg/L		mg/L
26/09/2003	1030.0	26/09/2003	0.043
10/06/2004	331.0	10/06/2004	0.0745
22/09/2004	1160.0	22/09/2004	9.77
03/05/2005	1560.0	03/05/2005	242
10/09/2005	613.0	10/09/2005	4.49
07/06/2006	851.0	07/06/2006	42.3
21/09/2006	1340.0	21/09/2006	34.7
30/05/2007	2740.0	30/05/2007	57.5
04/10/2007	886.0	04/10/2007	16.3
28/05/2008	805.0	28/05/2008	28.500
01/06/2009	1000.0	01/06/2009	27.800
05/08/2009	1600.0	05/08/2009	46.100
09/09/2009	940.0	09/09/2009	15.300
03/11/2009	940.0	03/11/2009	20.400
14/06/2010	840.0	14/06/2010	14.300
22/09/2010	2800.0	22/09/2010	215.000
28/05/2011	2100.0	28/05/2011	122.000
06/10/2011	Insufficient water for sample.	06/10/2011	Insufficient water for sample.

Table G-24: Sulphate and Zinc (Dissolved) at X21-96A (Intermediate Dam Toe)

DATE	SO4	DATE	ZN-D
	mg/L		mg/L
01/09/1999	20000	01/09/1999	595
27/09/2000	13325	27/09/2000	787.9
06/09/2001	8920	06/09/2001	367
12/06/2002	2070	12/06/2002	2.23
26/09/2002	4070	26/09/2002	6.72
04/06/2003	1730	04/06/2003	1.06
23/09/2003	8170	23/09/2003	12.2
23/09/2004	9840	23/09/2004	16.4
10/05/2005	1760	10/05/2005	0.837
11/09/2005	11900	11/09/2005	104
13/06/2006	2090	13/06/2006	2.99
23/09/2006	13800	23/09/2006	59.3
01/06/2007	18500	01/06/2007	79.2
10/10/2007	16500	10/10/2007	36.9
05/06/2008	9800	05/06/2008	29.5
17/09/2008	13000	17/09/2008	60.9
01/06/2009	18000	01/06/2009	46.6
05/08/2009	19000	05/08/2009	148.000
09/09/2009	25000	09/09/2009	147.000
03/11/2009	25000	03/11/2009	217.000
11/06/2010	21000	11/06/2010	290.000
22/09/2010	20000	22/09/2010	265
09/06/2011	3900	09/06/2011	30.0
13/10/2011	20200	13/10/2011	659

Table G-25: Sulphate and Zinc (Dissolved) at X21-96B (Intermediate Dam Toe)

DATE	SO4	DATE	ZN-D
	mg/L		mg/L
02/06/1998	584	02/06/1998	0.01
31/10/1998	440	31/10/1998	0.005
03/07/1999	405	03/07/1999	0.005
01/09/1999	440	01/09/1999	0.12
31/10/1999	504	31/10/1999	0.005
31/05/2000	386	31/05/2000	0.005
27/09/2000	390	27/09/2000	0.244
10/10/2000	158	10/10/2000	0.02
07/06/2001	489	07/06/2001	0.1
06/09/2001	149	06/09/2001	0.828
12/06/2002	434	12/06/2002	0.09
26/09/2002	576	26/09/2002	0.09
04/06/2003	446	04/06/2003	0.136
23/09/2003	644	23/09/2003	0.12
22/06/2004	568	22/06/2004	0.114
23/09/2004	1010	23/09/2004	4.23
10/05/2005	544	10/05/2005	0.166
11/09/2005	931	11/09/2005	4.120
13/06/2006	590	13/06/2006	0.160
23/09/2006	1100	23/09/2006	6.070
01/06/2007	851	01/06/2007	0.224
10/10/2007	947	10/10/2007	0.321
05/06/2008	867	05/06/2008	0.206
17/09/2008	940	17/09/2008	0.28
01/06/2009	1400	01/06/2009	0.452
05/08/2009	1400	05/08/2009	2.86
09/09/2009	1300	09/09/2009	1.71
03/11/2009	1300	03/11/2009	3.79
11/06/2010	1500	11/06/2010	2.29
22/09/2010	1800	22/09/2010	13.3
09/06/2011	1400	09/06/2011	0.312
13/10/2011	1920	13/10/2011	18.3

DLs (at half value)

Table G-26: Sulphate and Zinc (Dissolved) at P01-03 (Intermediate Dam Toe)

DATE	SO4	DATE	ZN-D
	mg/L		mg/L
10/09/2001	769	10/09/2001	0.009
12/06/2002	1090	12/06/2002	0.015
23/09/2002	1260	23/09/2002	0.015
22/09/2003	1130	22/09/2003	0.011
22/06/2004	1290	22/06/2004	0.0134
28/09/2004	1240	28/09/2004	0.014
04/05/2005	1360	04/05/2005	0.0188
09/09/2005	1230	09/09/2005	0.0172
08/06/2006	1090	08/06/2006	0.335
21/09/2006	1570	21/09/2006	0.0186
04/10/2007	1620	04/10/2007	0.0308
17/09/2008	1700	17/09/2008	0.0201
04/08/2009	1800	04/08/2009	0.03
09/09/2009	1700	09/09/2009	0.033
03/11/2009	1700	03/11/2009	0.029
07/06/2010	2600	07/06/2010	0.033
09/09/2010	1900	09/09/2010	0.042
12/07/2011	2700	12/07/2011	0.055
28/09/2011	2420	28/09/2011	0.052

DLs (at half value)

Table G-27: Sulphate and Zinc (Dissolved) at P01-04A (Intermediate Dam Toe)

DATE	SO4	DATE	ZN-D
	mg/L		mg/L
10/09/2001	331	10/09/2001	0.0025
12/06/2002	377	12/06/2002	0.005
27/09/2002	338	27/09/2002	0.09
06/06/2003	191	06/06/2003	0.25
23/09/2003	399	23/09/2003	0.0025
30/09/2004	460	30/09/2004	0.0025
21/07/2005	31.8	21/07/2005	0.0025
10/09/2005	26	10/09/2005	0.0025
21/09/2006	34	21/09/2006	0.0025
31/05/2007	34.3	31/05/2007	0.0025
04/10/2007	31.2	04/10/2007	0.0065
17/09/2008	750	17/09/2008	0.00025
04/08/2009	33	04/08/2009	0.0025
09/09/2009	32	09/09/2009	0.005
07/06/2010	40	07/06/2010	0.0025
09/09/2010	44	09/09/2010	0.0025
12/07/2011	30	12/07/2011	0.0025
26/09/2011	28.7	26/09/2011	0.0025

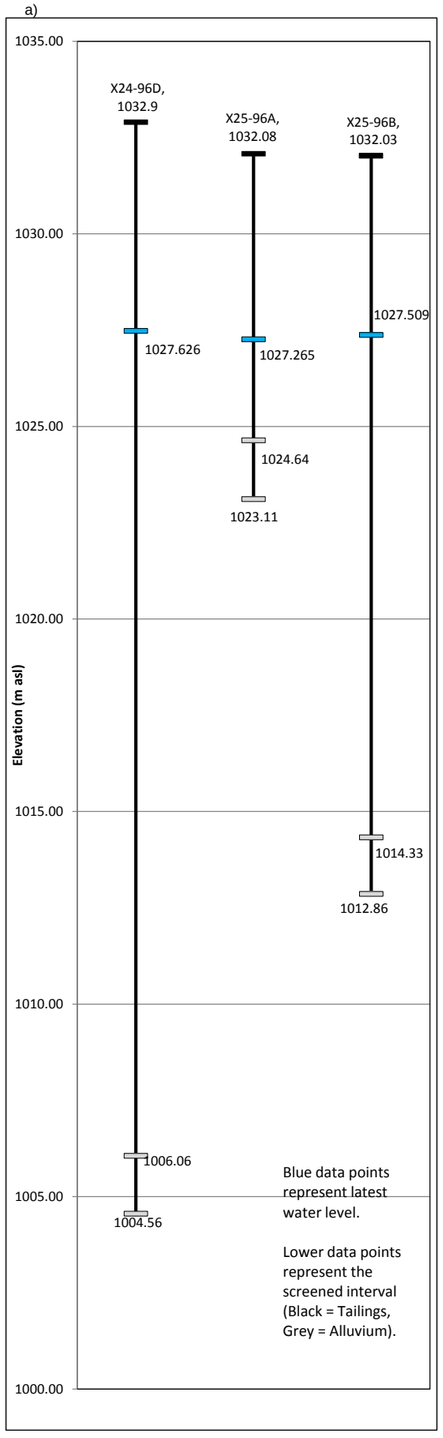
DLs (at half value)

Table G-28: Sulphate and Zinc (Dissolved) at P01-04B (Intermediate Dam Toe)

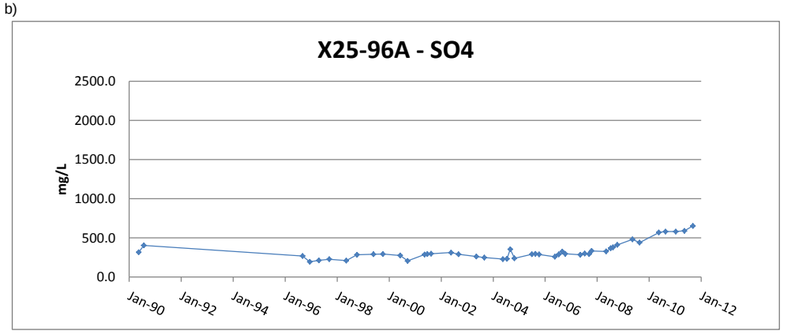
DATE	SO4	DATE	ZN-D
	mg/L		mg/L
10/09/2001	30	10/09/2001	0.0025
12/06/2002	46	12/06/2002	0.025
24/09/2002	44	24/09/2002	0.005
03/06/2003	50	03/06/2003	0.0025
23/09/2003	43	23/09/2003	0.0025
30/09/2004	26.7	30/09/2004	0.0025
21/07/2005	494	21/07/2005	0.0025
10/09/2005	463	10/09/2005	0.0056
21/09/2006	555	21/09/2006	0.0025
31/05/2007	613	31/05/2007	0.0053
04/10/2007	546	04/10/2007	0.0063
17/09/2008	41	17/09/2008	0.0002
04/08/2009	710	04/08/2009	0.0025
09/09/2009	680	09/09/2009	0.0025
09/09/2010	930	09/09/2010	0.0025
01/02/2011	980	01/02/2011	0.0012
12/07/2011	1100	12/07/2011	0.006
26/09/2011	1120	26/09/2011	0.0025
	DLs (at half value)		

Figure G-1: Sulphate and Zinc (Dissolved) at X24-96D and X25-96A/B (Intermediate Dam)

a)



b)



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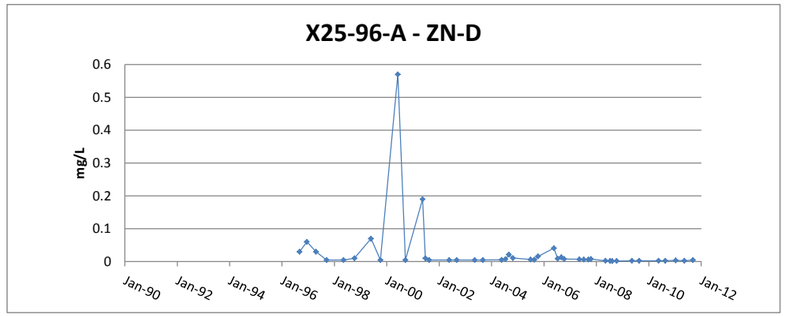

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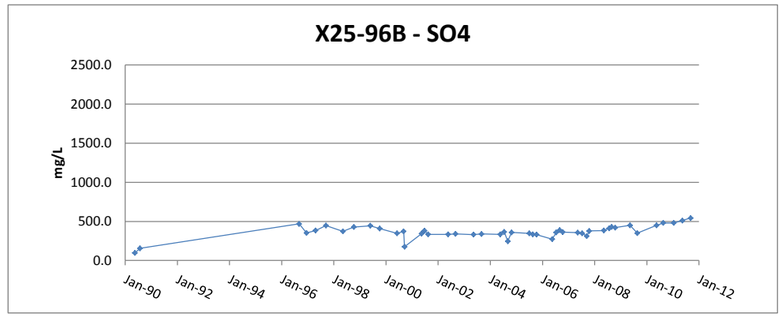

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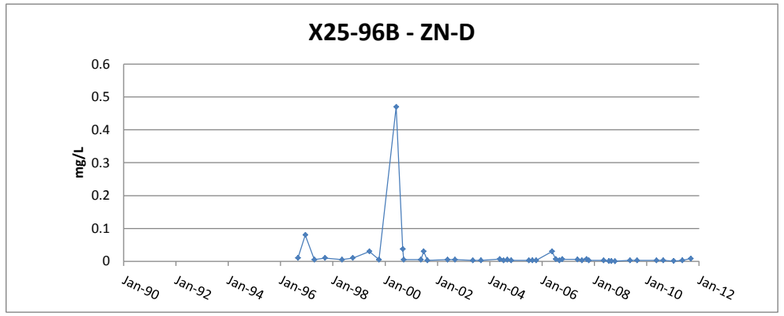

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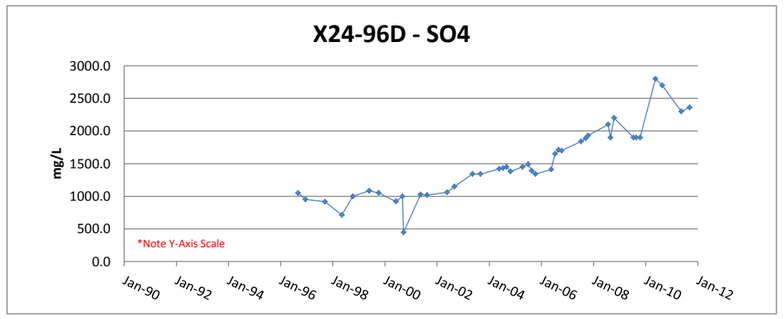


g)

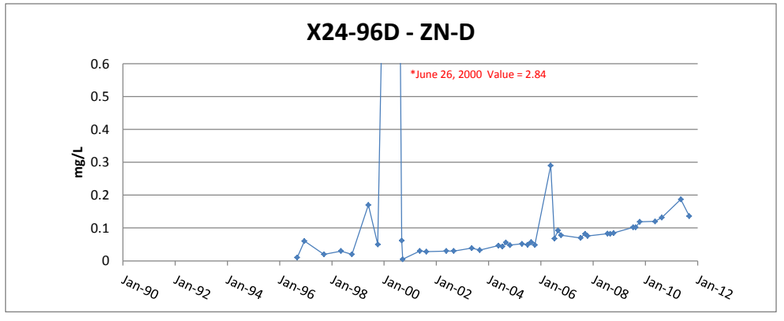
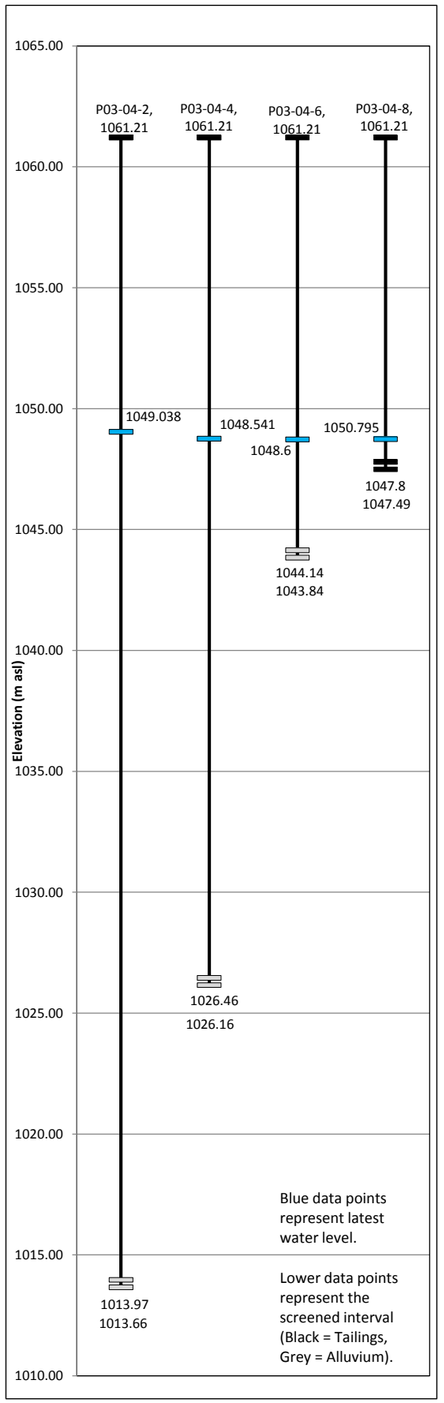
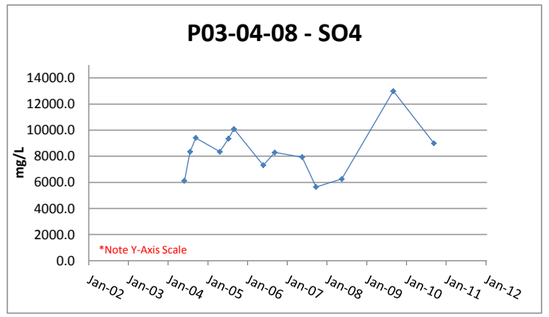


Figure G-2: Sulphate and Zinc (Dissolved) at P03-04 (Secondary Tailings Impoundment)

a)



b)



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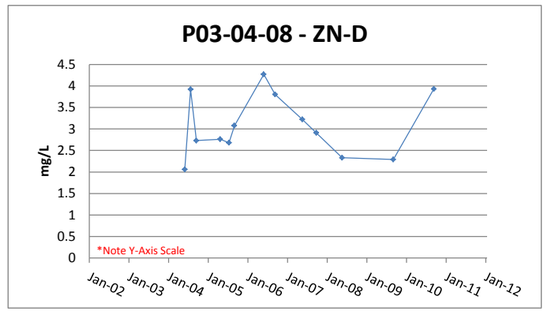
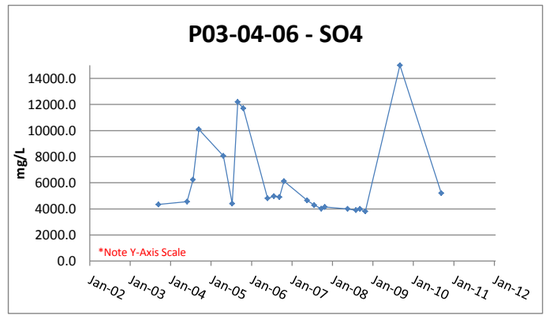


d)



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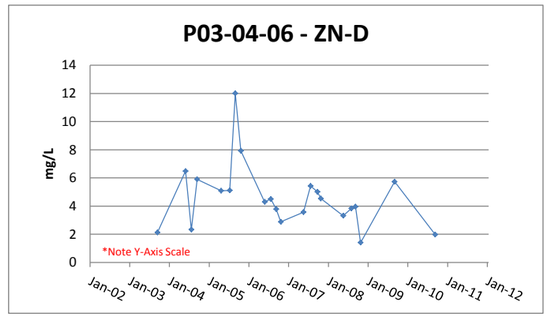

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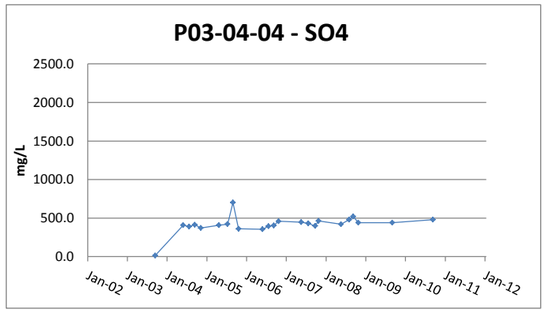

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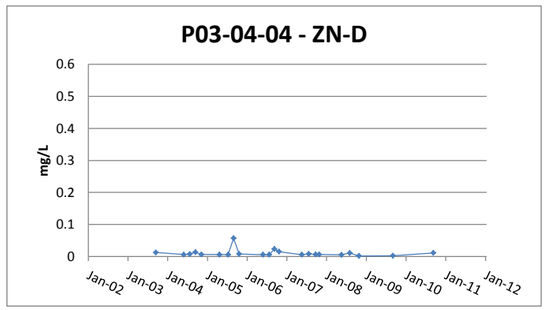

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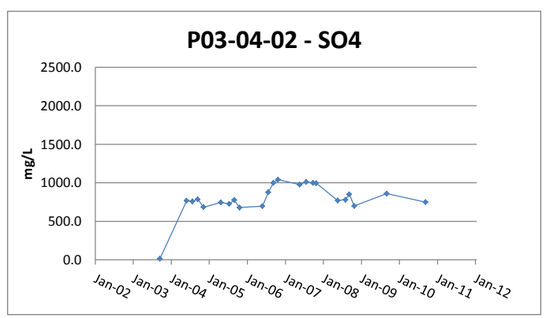

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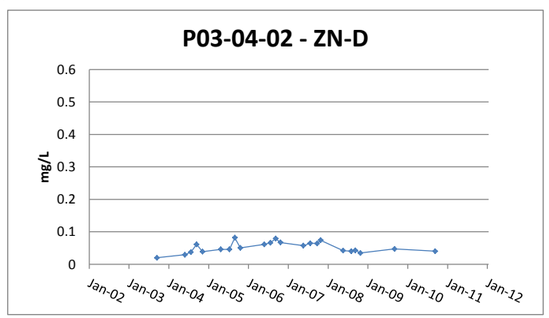
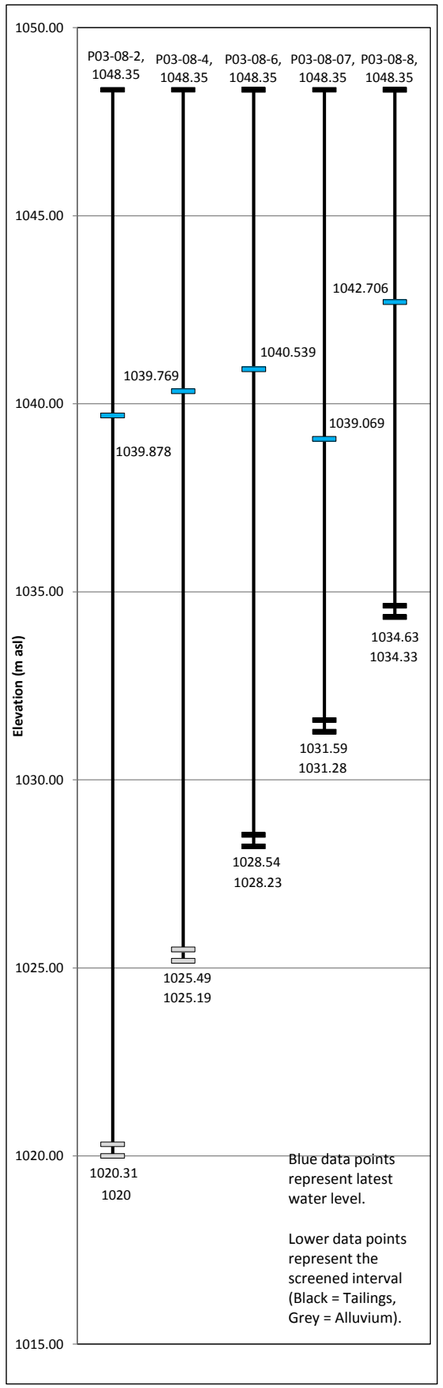
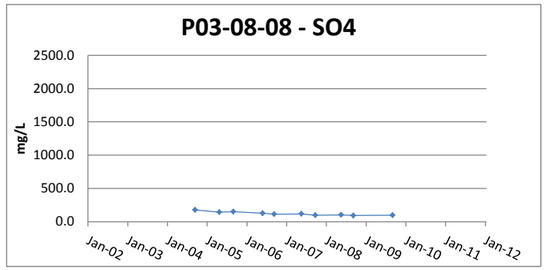


Figure G-3: Sulphate and Zinc (Dissolved) at P03-08 (Intermediate Tailings Impoundment)

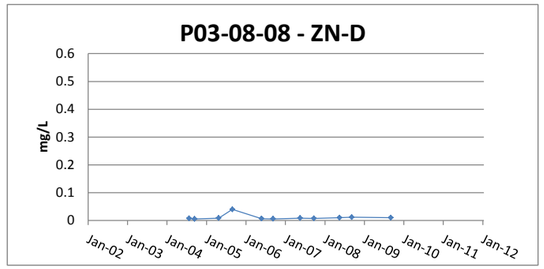
a)



b)



c)



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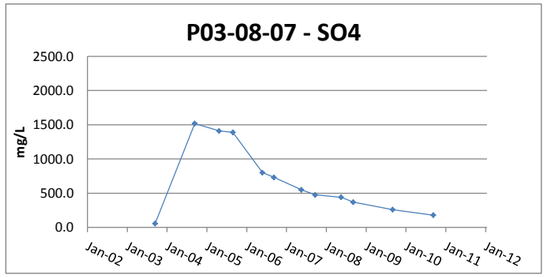

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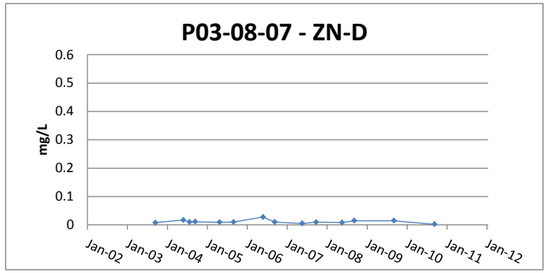

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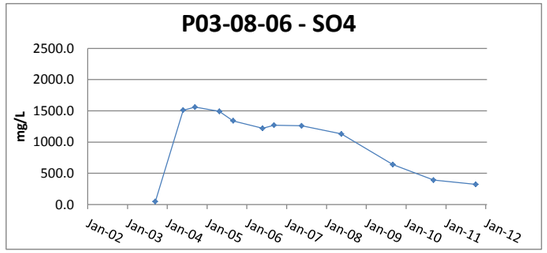

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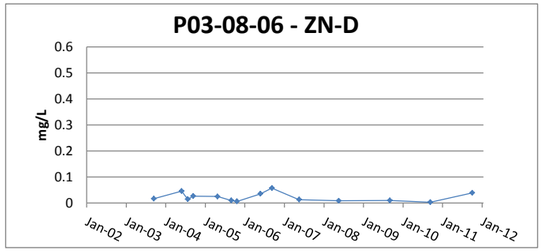

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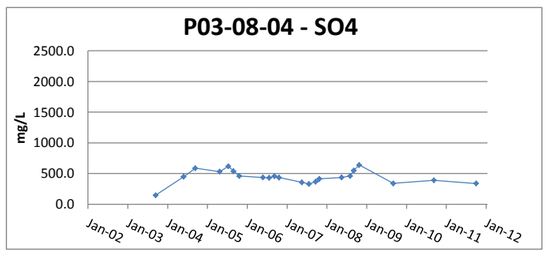

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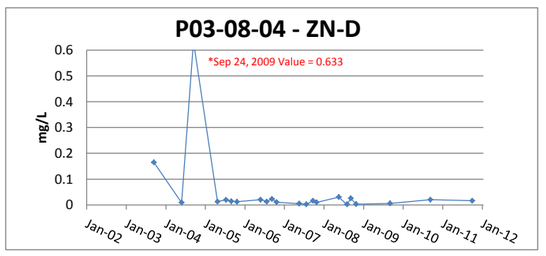

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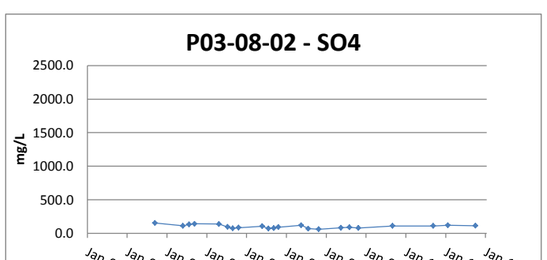

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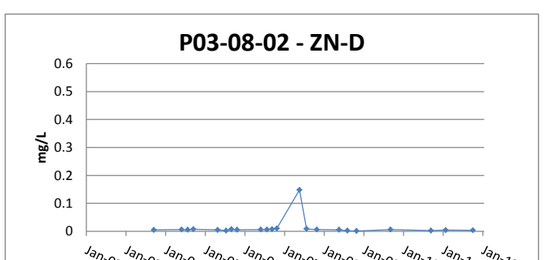

Figure G-4: Sulphate and Zinc (Dissolved) at P03-09 (Down Valley)

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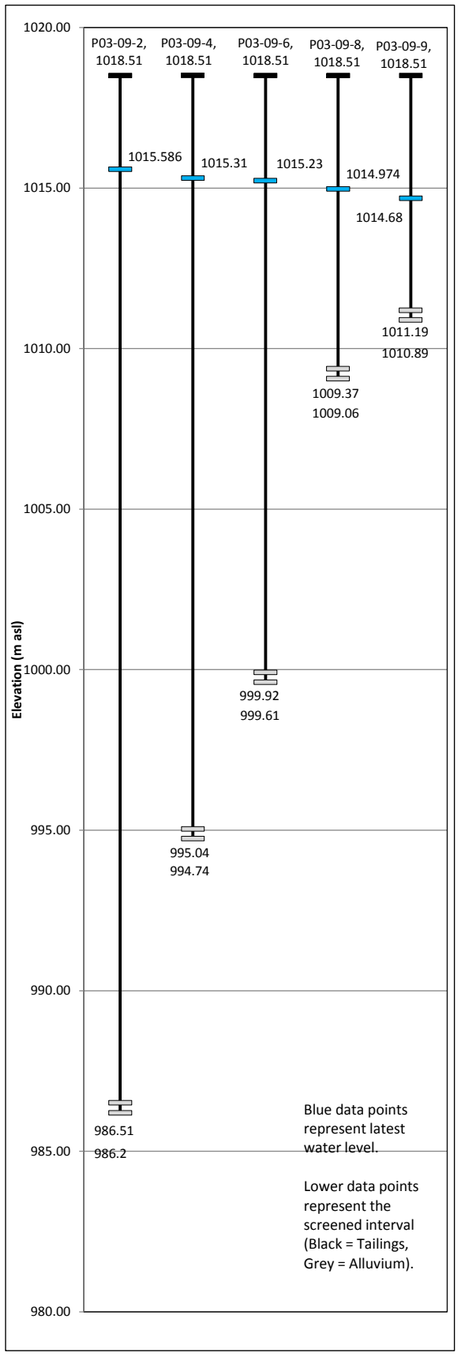
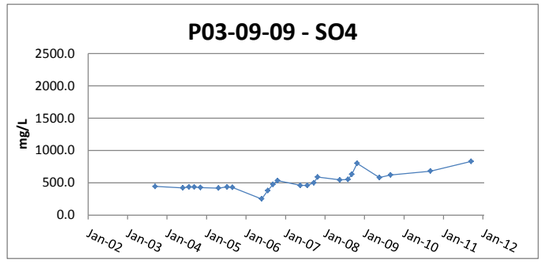
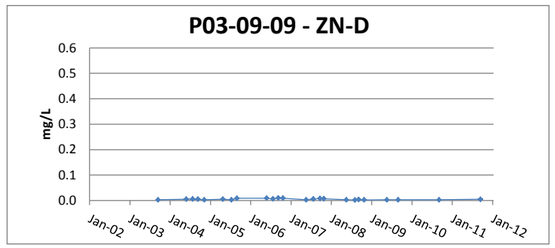


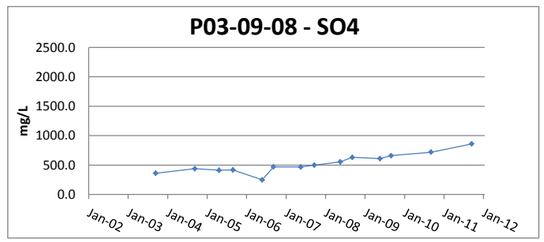
b)



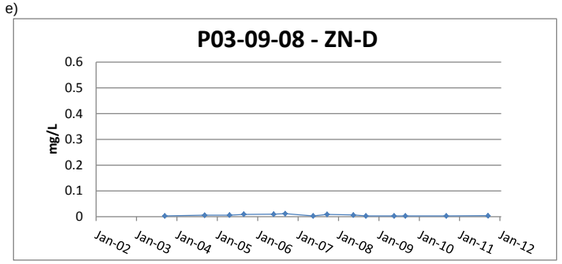
c)



d)



e)



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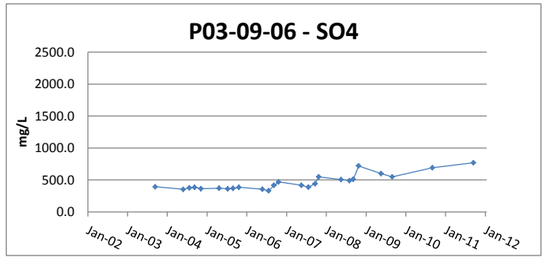
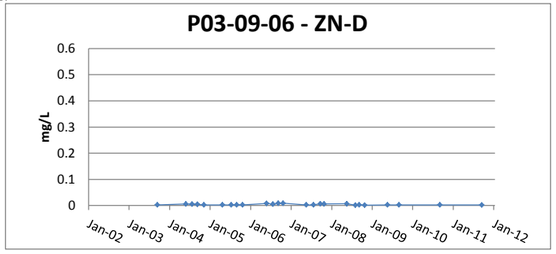


g)



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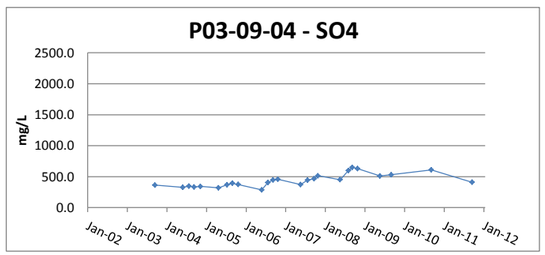

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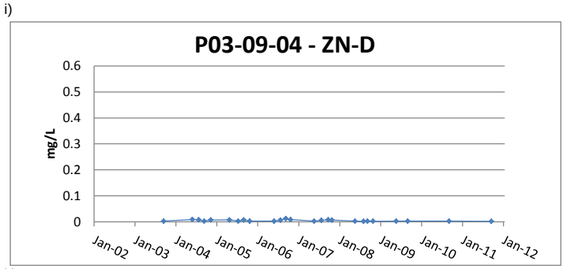

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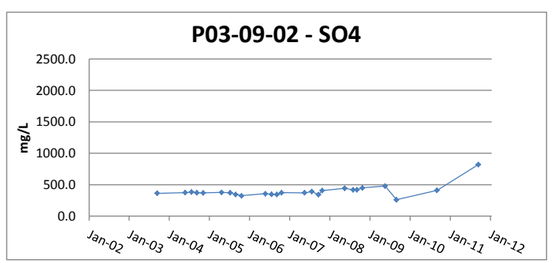


k)

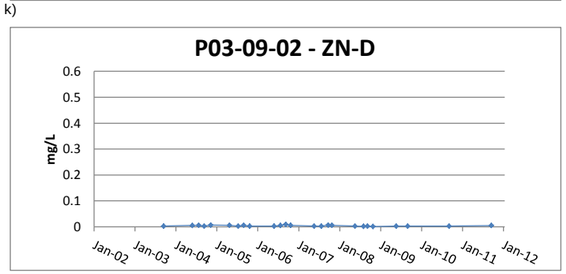
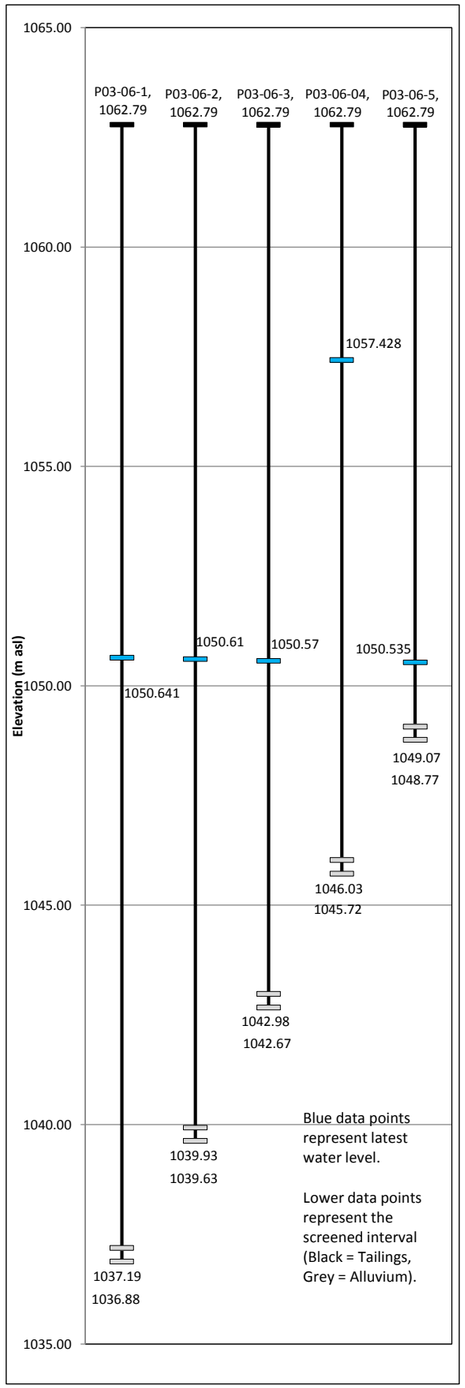


Figure G-5: Sulphate and Zinc (Dissolved) at P03-06 (Intermediate Tailings Impoundment)

a)



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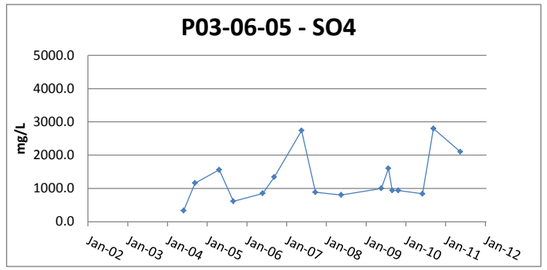
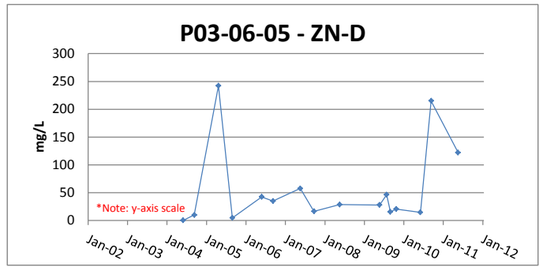
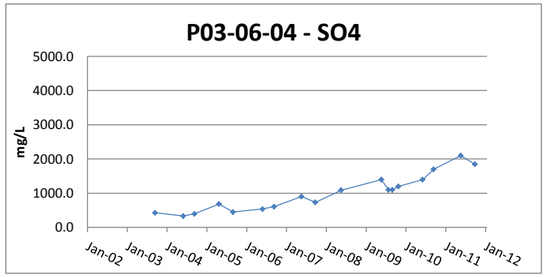


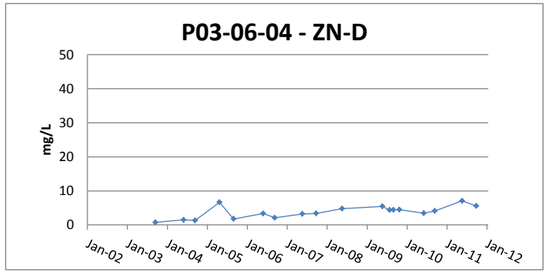
c)



d)



e)



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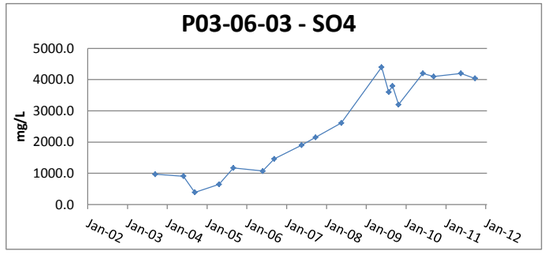
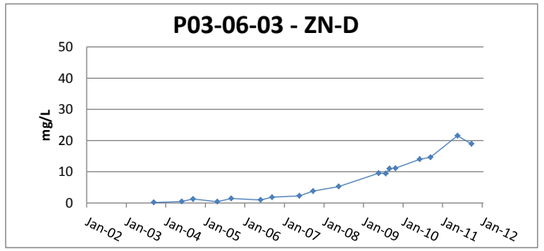
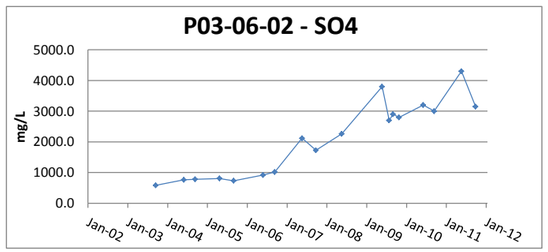


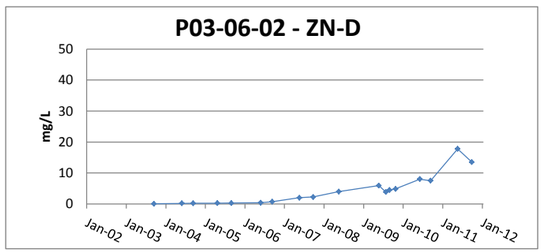
g)



h)



i)



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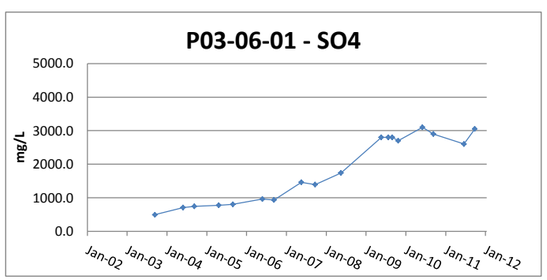


k)

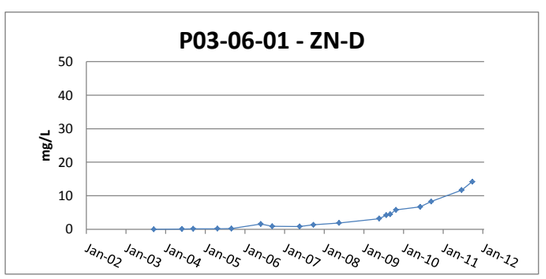
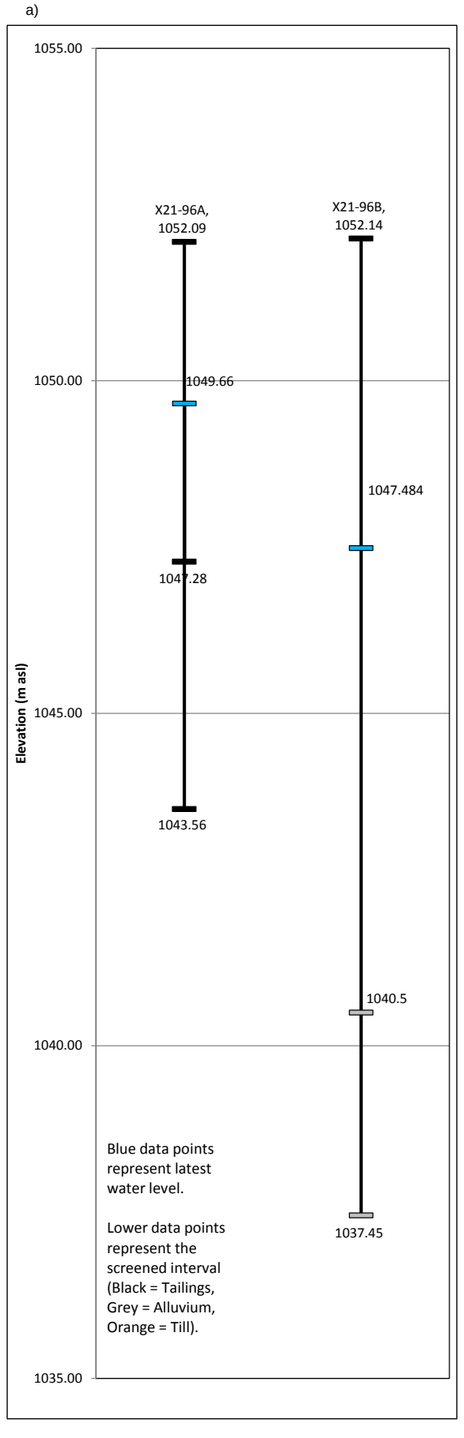
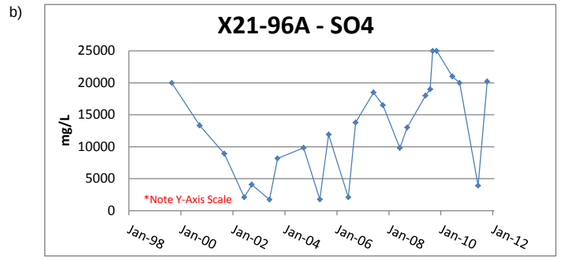
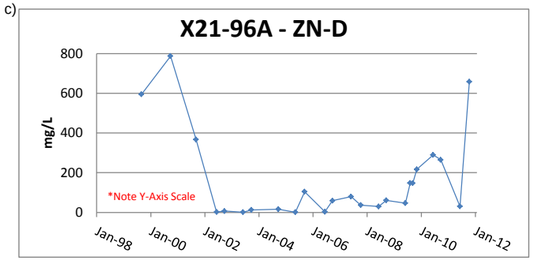
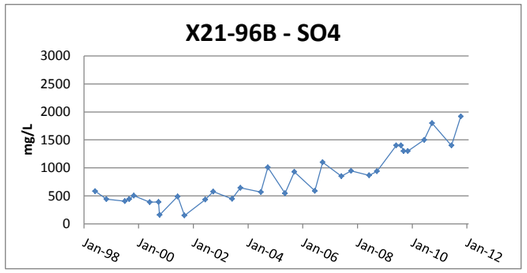


Figure G-6: Sulphate and Zinc (Dissolved) at X21-96A/B (Northeast Intermediate Tailings Impoundment)









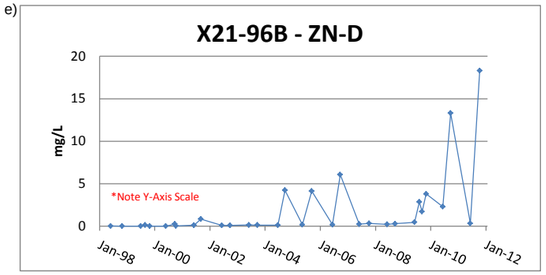
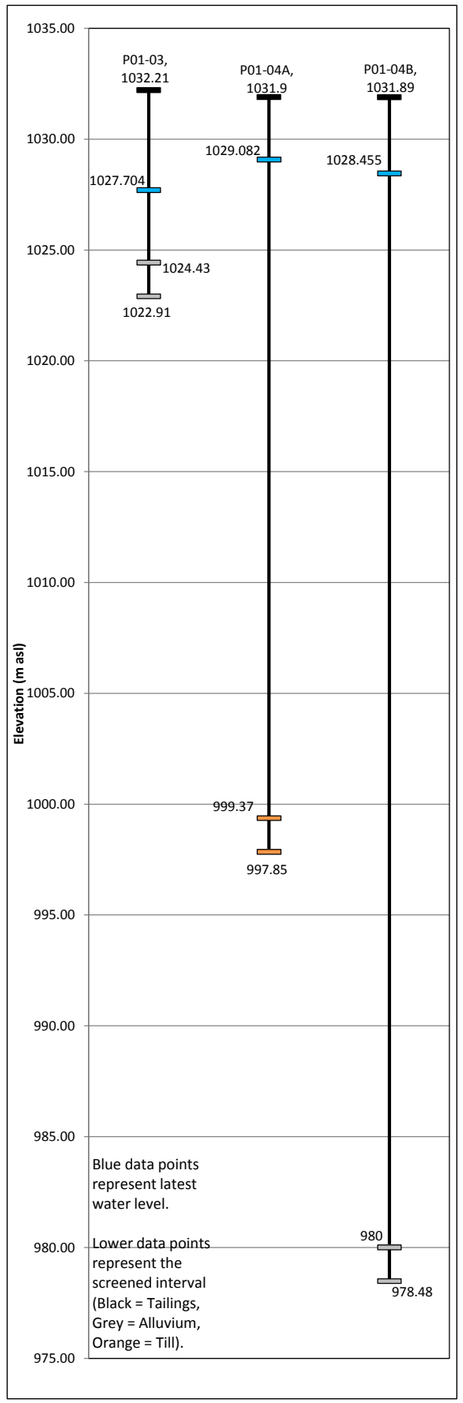
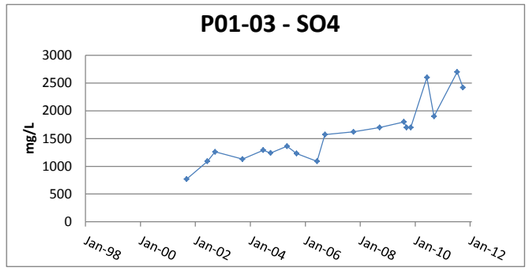


Figure G-7: Sulphate and Zinc (Dissolved) at P01-03 and P01-04A/B (Intermediate Dam Toe)

a)



b)



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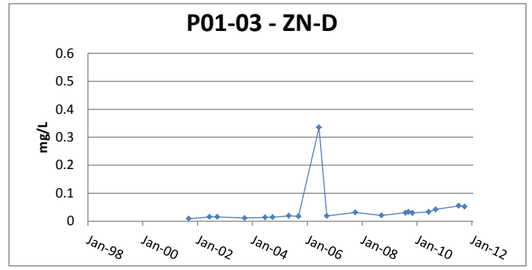
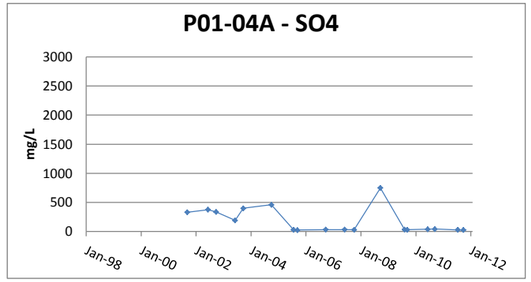
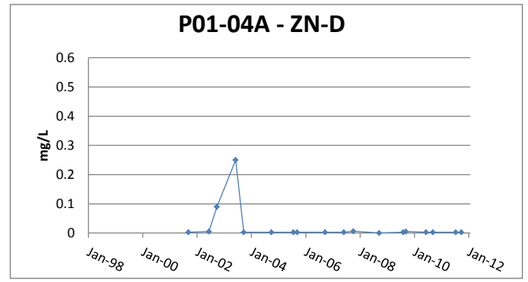


d)



e)



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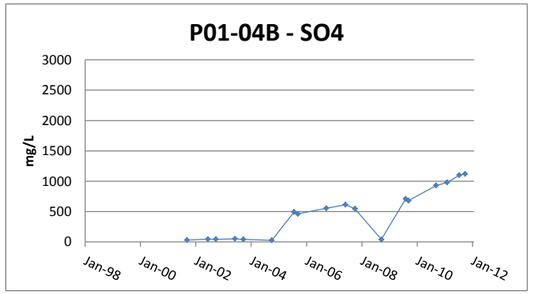
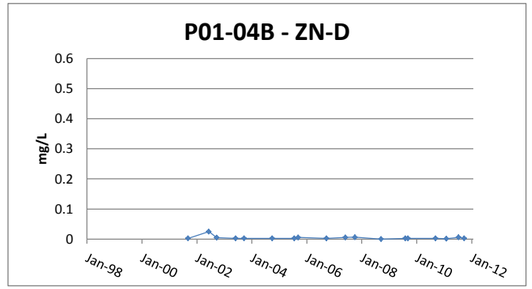


g)



TABLES AND FIGURES

Event 2: Degraded Water Quality in Vangorda Creek Downstream of Mine Facilities

Denison Environmental Services

Table G-29: AMP Event 2 - Trigger Activation Summary 2011

V8		January	February	March	April	May	June
SO4	Significant Increasing Trend Projecting Threshold Exceedance within 3 Years	N	N	N	N	N	N
	Result > Threshold (May-Oct: 75 mg/L; Nov-Apr: 171 mg/L)	N	Y	Y	Y	Y	N
Zn	Significant Increasing Trend Projecting Threshold Exceedance within 3 Years	N	N	N	N	N	N
	Result > Threshold (0.05 mg/L)	N	N	N	N	N	N
Cu	Significant Increasing Trend Projecting Threshold Exceedance within 3 Years	N	N	N	N	N	N
	Result > Threshold (0.023 mg/L)	N	N	N	N	Y	N
TSS	Significant Increasing Trend Projecting Threshold Exceedance within 3 Years	Y	Y	Y	N	Y	Y
	Result > Threshold (8 mg/L)	N	N	N	N	Y	Y

V8		July	August	September	October	November	December
SO4	Significant Increasing Trend Projecting Threshold Exceedance within 3 Years	N	N	N	N	N	N
	Result > Threshold (May-Oct: 75 mg/L; Nov-Apr: 171 mg/L)	Y	Y	Y	Y	N	N
Zn	Significant Increasing Trend Projecting Threshold Exceedance within 3 Years	N	N	N	N	N	N
	Result > Threshold (0.05 mg/L)	N	N	N	N	N	N
Cu	Significant Increasing Trend Projecting Threshold Exceedance within 3 Years	N	N	N	N	N	N
	Result > Threshold (0.023 mg/L)	N	N	N	N	N	N
TSS	Significant Increasing Trend Projecting Threshold Exceedance within 3 Years	Y	Y	Y	Y	Y	N
	Result > Threshold (8 mg/L)	Y	Y	Y	N	N	N

Trigger Activated

Denison Environmental Services

Table G-30: Water Quality in Vangorda Creek at Station V8

Date	Sulphate	Zinc (T)	Copper (T)	TSS
	mg/L	mg/L	mg/L	mg/L
14-Jan-03	143	0.04	0.027	5
15-Feb-03	152	0.033	0.008	14
06-Mar-03	146	0.014	0.013	4
15-Apr-03	172	0.018	0.01	3
13-May-03	61	0.025	0.0005	12
14-Jun-03	42	0.03	0.031	11
17-Jun-03	43	0.026	0.024	6
14-Jul-03	107	0.054	0.021	9
11-Aug-03	225	0.071	0.048	5
03-Sep-03	109	0.015	0.02	2
08-Sep-03	88	0.019	0.036	1
15-Sep-03	75	0.015	0.021	2
14-Oct-03	95	0.02	0.019	1
15-Nov-03	97	0.015	0.014	2
13-Dec-03	134	0.014	0.013	1
15-Dec-03	117	0.014	0.013	1
12-Jan-04	133	0.017	0.016	2
16-Feb-04	148	0.017	0.017	0.5
14-Mar-04	153	0.022	0.01	1
15-Mar-04	154	0.013	0.0005	1.5
15-Apr-04	159	0.013	0.01	0.5
14-May-04	44.4	0.032	0.008	84
14-Jun-04	43.3	0.018	0.002	25
12-Jul-04	144	0.013	0.0005	1
09-Aug-04	327	0.021	0.001	2
13-Sep-04	109	0.010	0.0010	2
12-Oct-04	100	0.010	0.0010	1
15-Nov-04	115	0.011	0.0010	0.5
03-Dec-04	130	0.016	0.0010	0.5
21-Jan-05	159	0.012	0.0005	2
08-Feb-05	155	0.014	0.0005	0.5
15-Mar-05	176	0.009	0.0005	0.5
11-Apr-05	175	0.011	0.0010	0.5
09-May-05	33.3	0.037	0.0060	67
20-Jun-05	133	0.022	0.0020	1
25-Jul-05	238	0.024	0.0020	10
22-Aug-05	312	0.015	0.0005	1
05-Sep-05	102	0.026	0.0010	0.5
11-Oct-05	82.1	0.007	0.0005	0.5
01-Nov-05	112	0.031	0.0450	0.5
15-Dec-05	139	0.022	0.0005	0.5
24-Jan-06	166	0.015	0.0005	0.5
13-Feb-06	191	0.017	0.0005	0.5
24-Mar-06	204	0.019	0.0005	0.5
25-Apr-06	184	0.013	0.0005	0.5
17-May-06	51.9	0.022	0.0060	54
19-Jun-06	35	0.011	0.0030	24
17-Jul-06		0.010	0.0020	12
21-Aug-06	61.5	0.010	0.0020	13
11-Sep-06	58.7	0.010	0.0005	4
16-Oct-06	84	0.011	0.0010	11
14-Nov-06	130	0.013	0.0005	1
13-Dec-06	144	0.028	0.0005	0.5
15-Jan-07	165	0.064	0.0005	0.5
15-Feb-07	163	0.011	0.0005	0.5
11-Mar-07	201	0.028	0.0010	0.5
18-Apr-07	185	0.045	0.0010	0.5
14-May-07	61.2	0.018	0.0040	7
18-Jun-07	35.8	0.030	0.0020	13
16-Jul-07	48.4	0.017	0.0050	52
13-Aug-07	73	0.019	0.0010	2
10-Sep-07	74	0.007	0.0005	0.5
23-Oct-07	99.8	0.010	0.0010	0.5
13-Nov-07	111	0.010	0.0005	2
09-Dec-07	129	0.013	0.0005	2
Trigger	**75[a]/171[b]**	**0.05**	**0.023**	**8**

Date	Sulphate	Zinc (Total)	Copper (Tota	TSS
	mg/L	mg/L	mg/L	mg/L
07-Jan-08	137	0.016	0.0005	0.5
18-Feb-08	150	0.015	0.0010	2
17-Mar-08	168	0.011	0.0005	2
14-Apr-08	165	0.011	0.0005	0.5
14-May-08	69.6	0.022	0.0050	54
16-Jun-08	86.7	0.035	0.0010	4
14-Jul-08	78.7	0.025	0.0030	30
11-Aug-08	149	0.019	0.0010	8
15-Sep-08	56.8	0.020	0.0040	49
15-Oct-08	83.8	0.013	0.0010	4
03-Nov-08	104	0.019	0.0020	6
01-Dec-08	134	0.035	0.0010	2
12-Jan-09	183	0.015	0.0010	1
02-Feb-09	182	0.018	0.0005	1
03-Mar-09	210	0.014	0.0007	1
06-Apr-09	220	0.014	0.0005	1
06-May-09	45	0.044	0.0078	140
08-Jun-09	48	0.010	0.0013	16
13-Jul-09	190	0.024	0.0025	73
11-Aug-09	170	0.013	0.00104	14
10-Sep-09	110	0.012	0.00010	17
07-Oct-09	91	0.148	0.00070	8
10-Nov-09	110	0.0105	0.00060	4
02-Dec-09	130	0.014	0.00080	5
06-Jan-10	170	0.016	0.00090	2
18-Feb-10	200	0.0126	0.00050	2
30-Mar-10	200	0.0127	0.00060	2
20-Apr-10	160	0.0255	0.00510	130
12-May-10	110	0.0114	0.00210	23
17-Jun-10	59	0.0129	0.00200	48
14-Jul-10	230	0.0190	0.00130	26
04-Aug-10	100	0.0092	0.00090	2
07-Sep-10	97	0.0072	0.00090	3
05-Oct-10	100	0.0075	0.00070	0.5
02-Nov-10	120	0.0099	0.00090	2
01-Dec-10	150	0.0110	0.00060	2
25-Jan-11	160	0.0123	0.00050	2
17-Feb-11	180	0.0112	0.0005	2
22-Mar-11	200	0.0145	0.00080	2
21-Apr-11	190	0.0102	0.00050	0.5
11-May-11	120	0.0170	0.00470	49
18-May-11	76	0.0189	0.06400	1500
15-Jun-11	53	0.0146	0.00270	160
13-Jul-11	200	0.0220	0.00270	22
10-Aug-11	76	0.0117	0.00113	64
12-Sep-11	200	0.0247	0.00110	9
25-Oct-11	121	0.0098	0.00066	1
23-Nov-11	122	0.0119	0.00088	4.1
08-Dec-11	144	0.0147	0.00070	2
Trigger	**75[a]/171[b]**	**0.05**	**0.023**	**8**

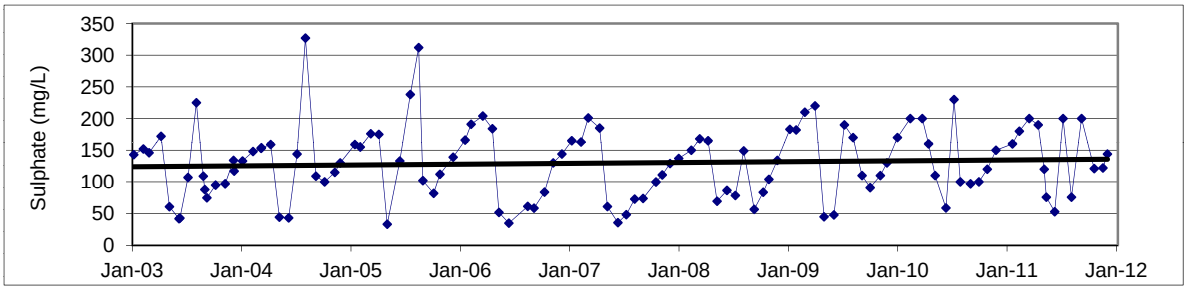
DLs (at half value)

a: May to October Threshold

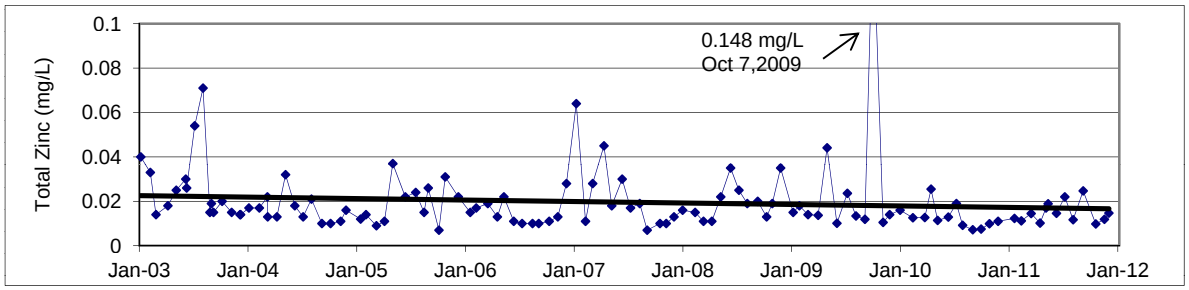
b: November to April Threshold

Figure G-8: Water Quality in Vangorda Creek at Station V8

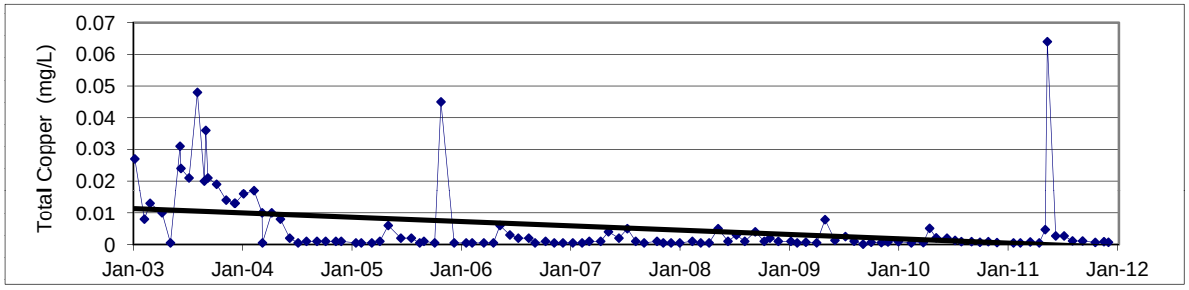
a) Sulphate



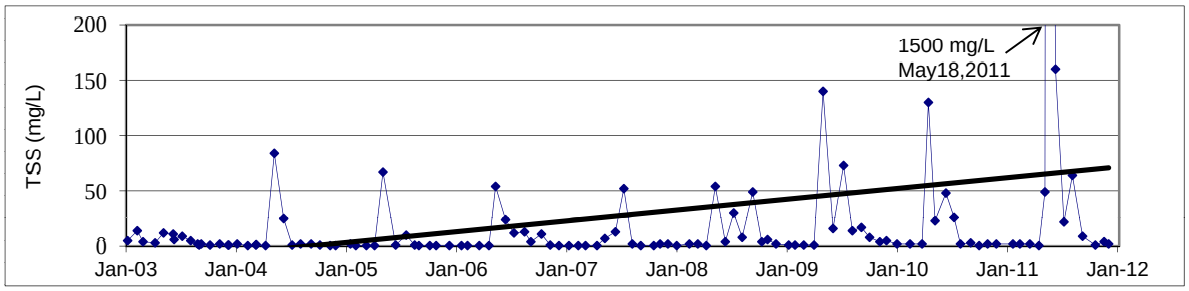
b) Total Zinc



c) Total Copper



d) TSS



TABLES AND FIGURES

Event 3: Degraded Water Quality in Rose Creek Downstream of Mine Facilities

Denison Environmental Services

Table G-31: AMP Event 3 - Trigger Activation Summary 2011

X14		January	February	March	April	May	June
SO4	Significant Increasing Trend Projecting Threshold Exceedance within 3 Years	Y	Y	Y	Y	Y	Y
	Result > Threshold (166 mg/L)	Y	Y	Y	Y	Y	N
Zn	Significant Increasing Trend Projecting Threshold Exceedance within 3 Years	N	N	N	N	N	N
	Result > Threshold (0.08 mg/L)	N	N	Y	Y	N	N
Cu	Significant Increasing Trend Projecting Threshold Exceedance within 3 Years	N	N	N	N	N	N
	Result > Threshold (0.022 mg/L)	N	N	N	N	N	N
Comments:				Discharging	Discharging	Discharging	Discharging

X14		July	August	September	October	November	December
SO4	Significant Increasing Trend Projecting Threshold Exceedance within 3 Years	Y	Y	Y	Y	Y	Y
	Result > Threshold (166 mg/L)	N	N	N	N	Y	Y
Zn	Significant Increasing Trend Projecting Threshold Exceedance within 3 Years	N	N	N	N	N	N
	Result > Threshold (0.08 mg/L)	N	N	N	N	Y	Y
Cu	Significant Increasing Trend Projecting Threshold Exceedance within 3 Years	N	N	N	N	N	N
	Result > Threshold (0.022 mg/L)	N	N	N	N	N	N
Comments:		Discharging	Discharging	Discharging		Discharging	Discharging

Trigger Activated

Denison Environmental Services

Table G-32: Water Quality in Rose Creek at Station X14

Date	Sulphate mg/L	Zinc (T) mg/L	Copper (T) mg/L
14-Jan-03	113	0.038	0.013
15-Feb-03	165	0.033	0.016
15-Mar-03	186	0.027	0.019
15-Apr-03	175	0.025	0.008
13-May-03	153	0.077	0.016
14-Jun-03	79	0.039	0.028
14-Jul-03	129	0.03	0.016
14-Jul-03		0.057	
11-Aug-03	43	0.026	0.023
08-Sep-03	42	0.039	0.056
14-Oct-03	66	0.028	0.035
15-Nov-03	77	0.037	0.01
15-Dec-03	102	0.033	0.009
12-Jan-04	133	0.041	0.019
16-Feb-04	225	0.057	0.024
15-Mar-04	171	0.023	0.0005
02-May-04	255	0.076	0.003
09-May-04	166	0.058	0.002
14-May-04	37	0.089	0.006
25-May-04	16.9	0.085	0.0005
01-Jun-04	27.3	0.01	0.0005
14-Jun-04	57.8	0.014	0.0005
12-Jul-04	52.7	0.02	0.0005
09-Aug-04	72.6	0.024	0.0005
24-Aug-04	219	0.061	0.0005
31-Aug-04	228	0.079	0.001
14-Sep-04	187	0.073	0.0005
12-Oct-04	58.4	0.034	0.001
15-Nov-04	84.7	0.039	0.0005
03-Dec-04	106	0.032	0.0005
12-Jan-05	182	0.028	0.0005
08-Feb-05	165	0.028	0.0005
08-Mar-05	409	0.25	0.001
14-Mar-05	541	0.19	0.001
22-Mar-05	557	0.2	0.0005
11-Apr-05	145	0.019	0.0005
10-May-05	34.3	0.035	0.003
31-May-05	40.7	0.019	0.001
11-Jun-05	45.2	0.017	0.0005
19-Jun-05	64.2	0.022	0.001
21-Jun-05	77.1	0.027	0.0005
02-Jul-05	86.1	0.011	0.0005
10-Jul-05	89.7	0.029	0.002
17-Jul-05	91.6	0.035	0.0005
25-Jul-05	71.4	0.024	0.0005
31-Jul-05	65.4	0.029	0.001
06-Aug-05	88.9	0.037	0.001
13-Aug-05	111	0.051	0.0005
20-Aug-05	109	0.051	0.0005
23-Aug-05	109	0.05	0.0005
27-Aug-05	97.7	0.049	0.004
05-Sep-05	139	0.06	0.001
06-Sep-05	136	0.057	0.0005
11-Sep-05	130	0.05	0.0005
18-Sep-05	123	0.03	0.0005
24-Sep-05	111	0.034	0.0005
01-Oct-05	129	0.066	0.0005
10-Oct-05	41.4	0.028	0.0005
01-Nov-05	67	0.043	0.0005
13-Dec-05	111	0.056	0.002
23-Jan-06	181	0.062	0.0005
14-Feb-06	254	0.04	0.0005
24-Mar-06	259	0.044	0.0005
25-Apr-06	225	0.045	0.0005
09-May-06	339	0.17	0.002
18-May-06	16.8	0.03	0.003
23-May-06	34.5	0.035	0.003
30-May-06	56.8	0.028	0.002
06-Jun-06	43.6	0.022	0.001
19-Jun-06	63.5	0.027	0.001
20-Jun-06	73.5	0.026	0.001
11-Jul-06	70.9	0.016	0.001
17-Jul-06	107	0.023	0.001
18-Jul-06	109	0.033	0.001
25-Jul-06	137	0.028	0.0005
01-Aug-06	104	0.023	0.0005
15-Aug-06	94.7	0.028	0.0005
21-Aug-06	82.2	0.026	0.001
22-Aug-06	83.3	0.027	0.001
29-Aug-06	117	0.039	0.0005
12-Sep-06	32.8	0.018	0.0005
17-Oct-06	65.4	0.032	0.001
14-Nov-06	111	0.049	0.0005
13-Dec-06	164	0.06	0.0005
16-Jan-07	225	0.053	0.001
13-Feb-07	273	0.031	0.001
12-Mar-07	420	0.024	0.001
10-Apr-07	704	0.22	0.003
19-Apr-07	216	0.07	0.0005
Trigger	**166**	**0.08**	**0.022**

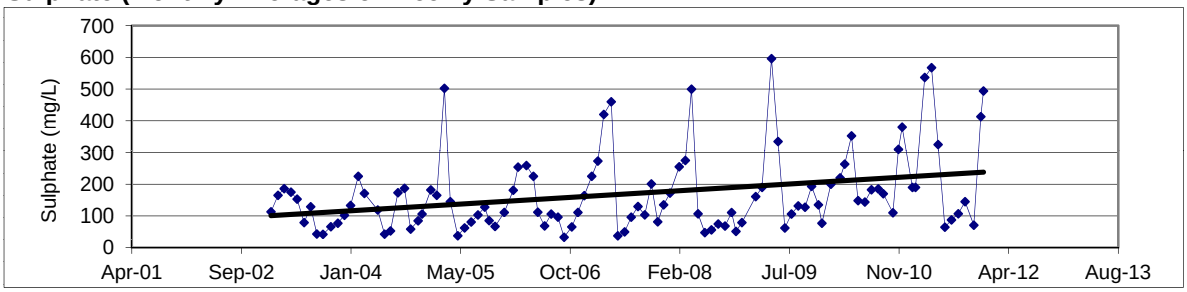
Date	Sulphate mg/L	Zinc (T) mg/L	Copper (T) mg/L
14-May-07	31.1	0.043	0.003
15-May-07	29.4	0.045	0.003
22-May-07	46	0.034	0.003
29-May-07	42.9	0.016	0.003
05-Jun-07	22.9	0.014	0.002
12-Jun-07	31.4	0.016	0.002
18-Jun-07	66	0.019	0.001
19-Jun-07	82.6	0.019	0.001
26-Jun-07	45.6	0.02	0.002
03-Jul-07	53.6	0.019	0.001
10-Jul-07	99.3	0.066	0.012
16-Jul-07	68	0.025	0.001
17-Jul-07	135	0.023	0.003
24-Jul-07	110	0.031	0.001
31-Jul-07	111	0.022	0.0005
07-Aug-07	118	0.026	0.0005
14-Aug-07	121	0.032	0.0005
21-Aug-07	163	0.11	0.002
28-Aug-07	117	0.034	0.002
04-Sep-07	132	0.038	0.001
10-Sep-07	122	0.038	0.0005
11-Sep-07	78.4	0.033	0.002
17-Sep-07	81.1	0.027	0.0005
23-Oct-07	219	0.07	0.0005
29-Oct-07	183	0.069	0.001
13-Nov-07	81.5	0.051	0.0005
10-Dec-07	135	0.052	0.0005
08-Jan-08	172	0.049	0.0005
19-Feb-08	255	0.052	0.0005
18-Mar-08	275	0.058	0.001
14-Apr-08	466	0.1	0.002
15-Apr-08	467	0.096	0.002
22-Apr-08	594	0.089	0.001
29-Apr-08	472	0.13	0.002
06-May-08	269	0.12	0.003
13-May-08	97.2	0.071	0.003
15-May-08	108	0.059	0.003
20-May-08	39.5	0.034	0.003
27-May-08	19.5	0.025	0.003
03-Jun-08	45.9	0.015	0.001
10-Jun-08	47.6	0.025	0.002
16-Jun-08	56.1	0.021	0.001
17-Jun-08	56.8	0.018	0.0005
24-Jun-08	30.4	0.027	0.002
01-Jul-08	78.3	0.041	0.001
08-Jul-08	59	0.026	0.0005
14-Jul-08	40.7	0.022	0.001
16-Jul-08	33.6	0.031	0.003
22-Jul-08	48.2	0.022	0.001
31-Jul-08	76.6	0.027	0.001
05-Aug-08	93.8	0.033	0.001
11-Aug-08	86.3	0.028	0.0005
12-Aug-08	82.8	0.032	0.001
19-Aug-08	75.9	0.031	0.001
28-Aug-08	34	0.018	0.002
02-Sep-08	60.1	0.023	0.001
09-Sep-08	49.8	0.016	0.002
15-Sep-08	68	0.025	0.0005
16-Sep-08	66.8	0.023	0.001
23-Sep-08	84.3	0.031	0.0005
30-Sep-08	79.8	0.036	0.0005
07-Oct-08	79.7	0.044	0.0005
14-Oct-08	122	0.059	0.0005
15-Oct-08	111	0.06	0.0005
21-Oct-08	130	0.076	0.001
03-Nov-08	51.2	0.062	0.0005
01-Dec-08	79	0.075	0.0005
02-Feb-09	161	0.1	0.0005
03-Mar-09	190	0.088	0.001
02-Apr-09	550	0.131	0.0004
08-Apr-09	360	0.146	0.0005
16-Apr-09	710	0.156	0.0004
23-Apr-09	650	0.16	0.00030
29-Apr-09	710	0.183	0.00050
07-May-09	45	0.143	0.00413
14-May-09	110	0.0506	0.00156
21-May-09	51	0.0439	0.00264
31-May-09	41	0.0176	0.00125
07-Jun-09	29	0.0132	0.00098
08-Jun-09	30	0.0182	0.00121
14-Jun-09	64	0.0221	0.00072
21-Jun-09	96	0.0375	0.00095
28-Jun-09	91	0.0379	0.00088
05-Jul-09	77	0.033	0.00140
12-Jul-09	88	0.0300	0.00055
13-Jul-09	89	0.0402	0.00075
19-Jul-09	170	0.0607	0.00065
Trigger	**166**	**0.08**	**0.022**

Date	Sulphate mg/L	Zinc (T) mg/L	Copper (T) mg/L
02-Aug-09	150.0	0.0462	0.00063
09-Aug-09	160.0	0.0457	0.00067
15-Aug-09	150.0	0.0483	0.00068
23-Aug-09	88.0	0.0327	0.00065
30-Aug-09	110.0	0.0407	0.00077
03-Sep-09	110.0	0.042	0.00060
06-Sep-09	120.0	0.0511	0.00050
13-Sep-09	130.0	0.0577	0.00050
20-Sep-09	150.0	0.0611	0.00050
07-Oct-09	160.0	0.0836	0.0004
17-Oct-09	190.0	0.0895	0.0005
25-Oct-09	230.0	0.0959	0.00051
01-Nov-09	200.0	0.095	0.0005
04-Nov-09	70.0	0.030	0.0004
01-Dec-09	77.0	0.0331	0.0004
11-Jan-10	200.0	0.0431	0.0005
22-Feb-10	220.0	0.022	0.0003
10-Mar-10	240.0	0.0241	0.0003
22-Mar-10	260.0	0.0321	0.0003
30-Mar-10	290.0	0.101	0.0003
06-Apr-10	470.0	0.11	0.0003
13-Apr-10	470.0	0.0925	0.00015
20-Apr-10	360.0	0.0738	0.0012
27-Apr-10	110.0	0.0427	0.0015
04-May-10	230.0	0.063	0.0016
11-May-10	180.0	0.0454	0.0015
18-May-10	120.0	0.0385	0.0016
25-May-10	63.0	0.0226	0.0013
01-Jun-10	99.0	0.0426	0.0011
08-Jun-10	130.0	0.0399	0.0007
15-Jun-10	160.0	0.0484	0.0007
22-Jun-10	150.0	0.0455	0.0011
29-Jun-10	180.0	0.0493	0.0007
06-Jul-10	130.0	0.0334	0.0008
13-Jul-10	170.0	0.0429	0.0007
20-Jul-10	180.0	0.0583	0.0005
27-Jul-10	250.0	0.0726	0.0006
03-Aug-10	56.0	0.019	0.0006
10-Aug-10	220.0	0.0614	0.0006
17-Aug-10	270.0	0.052	0.0005
24-Aug-10	160.0	0.0424	0.0006
31-Aug-10	220.0	0.0496	0.0005
07-Sep-10	170.0	0.0411	0.0005
21-Oct-10	110.0	0.0239	0.0004
09-Nov-10	120.0	0.036	0.0004
18-Nov-10	420.0	0.135	0.0007
25-Nov-10	390.0	0.130	0.0004
02-Dec-10	380.0	0.108	0.00015
18-Jan-11	190.0	0.0296	0.0003
01-Feb-11	190.0	0.0256	0.0003
14-Mar-11	350.0	0.0259	0.0003
24-Mar-11	710.0	0.1250	0.0008
29-Mar-11	550.0	0.1090	0.0016
05-Apr-11	580.0	0.1090	0.0006
12-Apr-11	580.0	0.1130	0.0004
19-Apr-11	580.0	0.1070	0.00015
26-Apr-11	530.0	0.0975	0.0007
03-May-11	940.0	0.1890	0.0007
04-May-11	430.0	0.0620	0.0009
10-May-11	380.0	0.0997	0.0018
17-May-11	150.0	0.0625	0.003
24-May-11	19.0	0.0226	0.0023
31-May-11	31.0	0.0138	0.0015
07-Jun-11	72.0	0.0740	0.0015
14-Jun-11	78.0	0.0186	0.0008
21-Jun-11	55.0	0.0137	0.0012
28-Jun-11	53.0	0.0194	0.0012
05-Jul-11	68.0	0.0206	0.001
12-Jul-11	81.0	0.0190	0.0008
19-Jul-11	91.0	0.0223	0.0009
26-Jul-11	110.0	0.0356	0.0007
02-Aug-11	110	0.0351	0.00075
09-Aug-11	120.0	0.0276	0.00066
16-Aug-11	95.0	0.0161	0.00076
23-Aug-11	98.0	0.0166	0.00068
25-Aug-11	98.0	0.0166	0.00073
30-Aug-11	120.0	0.0182	0.00062
06-Sep-11	130.0	0.0236	0.0006
13-Sep-11	130.0	0.0211	0.0009
20-Sep-11	150.0	0.0247	0.0006
27-Sep-11	170.0	0.0296	0.0004
25-Oct-11	70.8	0.0263	0.00043
23-Nov-11	349.0	0.0861	0.00068
29-Nov-11	477.0	0.1020	0.00060
08-Dec-11	494.0	0.1460	0.00037
Trigger	**166**	**0.08**	**0.022**

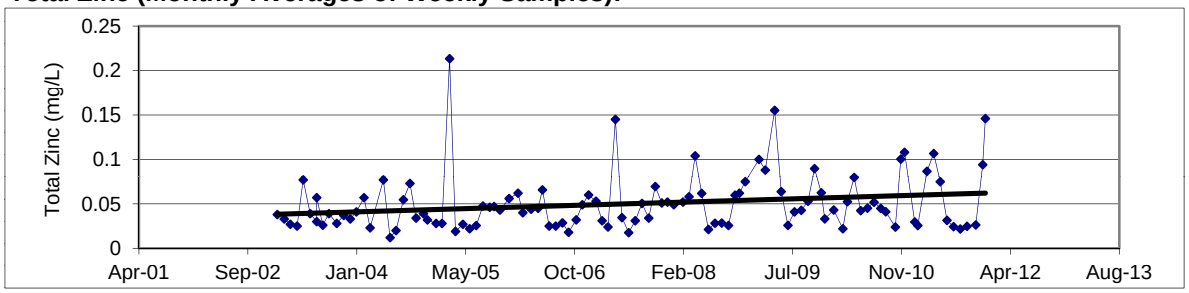
DLs (at half value)

Figure G-9: Water Quality in Rose Creek at Station X14

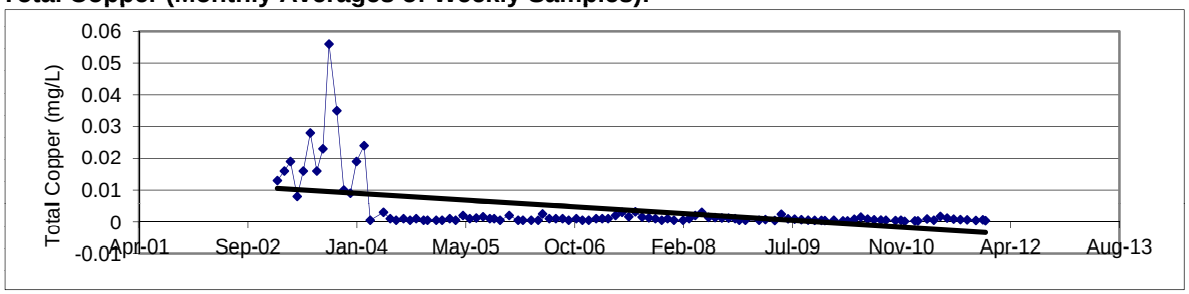
Sulphate (Monthly Averages of Weekly Samples):



Total Zinc (Monthly Averages of Weekly Samples):



Total Copper (Monthly Averages of Weekly Samples):



TABLES AND FIGURES

Event 4: Degraded Seepage Quality from the Grum Rock Dump

Denison Environmental Services

Table G-33: AMP Event 4 - Trigger Activation Summary 2011

V2		January	February	March	April	May	June
SO4	Significant Increasing Trend Projecting Threshold Exceedance within 3 Years	Y	Y	Y	Y	Y	Y
	Result > Threshold (567 mg/L)	Y	Y	Y	Y	Y	Y
Zn	Significant Increasing Trend Projecting Threshold Exceedance within 3 Years	N	N	N	N	N	N
	Result > Threshold (0.5 mg/L)	N	N	N	N	Y	N
Cu	Significant Increasing Trend Projecting Threshold Exceedance within 3 Years	N	N	N	N	N	N
	Result > Threshold (0.031 mg/L)	N	N	N	N	Y	N

V2		July	August	September	October	November	December
SO4	Significant Increasing Trend Projecting Threshold Exceedance within 3 Years	Y	Y	Y	Y	Y	Y
	Result > Threshold (567 mg/L)	Y	Y	Y	Y	Y	Y
Zn	Significant Increasing Trend Projecting Threshold Exceedance within 3 Years	N	N	N	N	N	N
	Result > Threshold (0.5 mg/L)	N	N	N	N	N	N
Cu	Significant Increasing Trend Projecting Threshold Exceedance within 3 Years	N	N	N	N	N	N
	Result > Threshold (0.031 mg/L)	N	N	N	N	N	N

Trigger Activated

Denison Environmental Services

Table G-34: Sulphate, TSS, Copper (Total and Dissolved), and Zinc (Total and Dissolved) at V2

Date	Cu	Cu-d	SO4-d	TSS	Zn	Zn-d
	µg/L	µg/L	mg/L	mg/L	µg/L	µg/L
12/01/1998	8.0		82	9	20.0	
17/03/1998	18.0		28	9	<10.0	
18/05/1998	32.0		234	1	100.0	
29/06/1998	22.0		115	1	10.0	
14/09/1998	26.0		125	2	30.0	
31/12/1998	57.0		154	12	40.0	
17/03/1999	36.0	17.0	202	11	70.0	<10.0
18/06/1999	32.0	13.0	180	8	110.0	<10.0
10/09/1999	17.0	7.0	169	5	240.0	70.0
12/10/1999	27.0	12.0	191	4	<10.0	<10.0
13/12/1999	36.0	9.0	146	6	50.0	<10.0
22/03/2000	12.0	<2.0	183	10	<10.0	<10.0
20/06/2000	35.0	26.0	571	1	250.0	<10.0
12/09/2000	61.0	26.0	638	7	1020.0	80.0
12/11/2000	13.0	2.0	543	7	540.0	260.0
15/01/2002	3.0	<2.0	564	11	20.0	20.0
12/02/2002	4.0	<2.0	527	10	<10.0	<10.0
21/03/2002	<2.0	11.0	609	10	<10.0	<10.0
15/04/2002	4.0	2.0	349	6	100.0	120.0
13/05/2002	10.0	4.0	482	11	220.0	170.0
25/06/2002	13.0	6.0	615	6	38.0	18.0
27/09/2002	17.0	11.0	622	7	11.0	7.0
15/12/2002	16.0	9.0	620	24	11.0	11.0
06/03/2003	17.0	7.0	646	11	14.0	11.0
17/06/2003	26.0	7.0	577	7	19.0	4.0
15/09/2003	49.0	25.0	641	2	11.0	8.0
13/12/2003	7.0	7.0	659	5	7.0	6.0
14/04/2004	<20.0	<20.0	630	6	10.0	<5.0
14/05/2004	3.0	1.0	664	23	35.0	32.0
14/06/2004	<1.0	<1.0	670	1	8.0	7.0
12/07/2004	1.0	<1.0	865	<1.0	9.0	6.0
09/08/2004	2.0	<1.0	941	9	15.0	7.0
13/09/2004	2.0	1.0	957	<1.0	10.0	7.0
12/10/2004	1.0	1.0	784	<1.0	9.0	8.0
15/11/2004	2.0	1.0	777	1	13.0	8.0
21/01/2005	2.0	<1.0	941	18	22.0	15.0
08/02/2005	2.0	1.0	816	7	24.0	21.0
14/03/2005	3.0	2.0	909	2	11.0	7.0
11/04/2005	1.0	<1.0	788	<1.0	10.0	6.0
09/05/2005	2.0	1.0	718	2	48.0	39.0
21/06/2005	1.0	<1.0	1000	<1.0	8.0	8.0
25/07/2005	4.0	1.0	1010	<1.0	36.0	36.0
22/08/2005	1.0	<1.0	1000	<1.0	31.0	15.0
06/09/2005	2.0	<1.0	1020	<1.0	10.0	10.0
21/09/2005	<1.0	<1.0	974	5	14.0	10.0
11/10/2005	<1.0	<1.0	918	<1.0	36.0	24.0
25/10/2005	1.0	1.0	1010	2	9.0	8.0
01/11/2005	1.0	<1.0	1000	<1.0	28.0	18.0
15/11/2005	<20.0	<20.0	1020	<1.0	9.0	<5.0
14/12/2005	1.0	1.0	1160	1	33.0	33.0
23/01/2006	2.0	1.0	1110	1	14.0	14.0
07/02/2006	1.0	1.0	554	<1.0	<5.0	<5.0
17/05/2006	1.0	1.0	939	4	25.0	25.0
05/06/2006	<20.0	<20.0	860	<1.0	14.0	12.0
19/06/2006	1.0	1.0	850	<1.0	13.0	13.0
10/07/2006	<20.0	<20.0	1000	<1.0	18.0	19.0
18/07/2006	1.0	1.0		<1.0	27.0	27.0
08/08/2006	<20.0	<20.0	1060	<1.0	23.0	13.0
22/08/2006	1.0	1.0	1040	<1.0	18.0	18.0
11/09/2006	<1.0	<1.0	1020	<1.0	22.0	21.0
26/09/2006	1.0	1.0	980	<1.0	22.0	16.0
16/10/2006	1.0	1.0	902	<1.0	21.0	36.0
23/10/2006	<20.0	<20.0	978	<1.0	18.0	10.0
13/11/2006	1.0	<1.0	923	2	74.0	43.0
21/11/2006	<20.0	<20.0	948	2	10.0	8.0
05/12/2006	<20.0	<20.0	1000	3	13.0	13.0
14/12/2006	3.0	<1.0	953	<1.0	13.0	<1.0
08/01/2007	<20.0	<20.0	1040	1	17.0	10.0
01/05/2007	2.0	1.0	1000	3	31.0	29.0
14/05/2007	2.0	2.0	850	3	28.0	27.0
07/06/2007	2.0	1.0	732	<1.0	18.0	18.0
18/06/2007	1.0	<1.0	647	<1.0	53.0	8.0
03/07/2007	1.0	1.0	766	<1.0	26.0	9.0
16/07/2007	1.0	1.0	880	<1.0	34.0	23.0
02/08/2007	1.0	<1.0	996	<1.0	28.0	22.0
14/08/2007	2.0	1.0	944	<1.0	24.0	11.0
11/09/2007	2.0	1.0	699	<1.0	16.0	21.0
Trigger	**0.031**		**567**		**0.50**	

Date	Cu	Cu-d	SO4-d	TSS	Zn	Zn-d
	µg/L	µg/L	mg/L	mg/L	µg/L	µg/L
25/09/2007	1.3	1.1	637	3	5.0	5.0
10/10/2007	2.0	2.0	643	<1.0	8.0	8.0
22/10/2007	1.0	1.0	668	<1.0	13.0	40.0
13/11/2007	1.0	1.0	712	2	17.0	11.0
26/11/2007	1.0	3.0	696	<1.0	7.0	7.0
10/12/2007	2.0	1.0	761	5	16.0	110.0
17/12/2007	1.0	1.0	751	1	9.0	<5.0
07/01/2008	2.0	2.0	763	2	59.0	28.0
14/02/2008	1.0	2.0	760	<1.0	6.0	5.0
19/02/2008	<1.0	<1.0	693	<1.0	41.0	<5.0
06/05/2008	2.0	1.0	729	2	83.0	33.0
14/05/2008	2.0	3.0	650	4	53.0	47.0
04/06/2008	2.0	1.0	654	<1.0	13.0	5.0
17/06/2008	2.0	2.0	650	<1.0	39.0	30.0
03/07/2008	2.0	1.0	717	<1.0	22.0	14.0
15/07/2008	20.0	2.0	519	115	200.0	24.0
04/08/2008	1.0	1.0	698	<1.0	10.0	11.0
12/08/2008	1.0	1.0	693	1	12.0	12.0
09/09/2008	1.0	1.0	697	1	10.0	<5.0
15/09/2008	2.0	2.0	704	<1.0	10.0	19.0
01/10/2008	2.0	1.0	728	<1.0	9.0	6.0
15/10/2008	1.0	1.0	743	<1.0	14.0	53.0
03/11/2008	2.0	2.0	818	<1.0	8.0	8.0
13/11/2008	1.0	2.0	839	<1.0	9.0	9.0
02/12/2008	3.0	2.0	859	6	14.0	10.0
10/12/2008	1.0	1.0	870	1	11.0	11.0
13/01/2009	2.0	1.0	997	18	23.0	15.0
20/01/2009	1.0	1.0	932	2	14.0	13.0
08/04/2009	0.9	1.1	1000	2	11.9	11.2
06/05/2009	10.4	1.7	600	63	794.0	518.0
23/05/2009	1.0	1.0	890	3	36.3	34.9
09/06/2009	1.6	1.3	840	<1.0	24.2	21.0
28/06/2009	1.7	1.4	810	<1.0	15.2	17.1
14/07/2009	1.6	1.4	890	<1.0	14.2	16.7
29/07/2009	1.3	1.3	860	<1.0	18.0	16.9
11/08/2009	1.0	33.4	860	<1.0	14.8	17.9
25/08/2009	3.6	2.2	770	<4.0	14.2	18.7
06/09/2009	0.9	1.0	770	<1.0	11.9	14.3
22/09/2009	1.0	1.0	670	<1.0	12.3	13.8
08/10/2009	1.6	0.9	850	<1.0	13.7	11.6
20/10/2009	1.3	0.9	790	4	13.3	14.7
09/11/2009	0.7	0.6	860	<1.0	14.6	15.0
26/11/2009	0.8	1.0	860	3	17.1	15.9
02/12/2009	0.9	1.0	940	<1.0	12.7	12.4
07/01/2010	1.4	0.8	970	10	22.5	17.8
03/02/2010	1.0	1.1	1200	3	32.3	30.4
02/03/2010	0.8	0.9	1100	2	21.6	23.2
07/04/2010	0.8	0.9	1100	2	17.0	17.6
01/05/2010	1.4	1.1	930	8	39.8	34.4
18/05/2010	1.4	1.2	1100	4	33.3	29.7
02/06/2010	9.2	0.9	970	3	24.8	33.7
20/06/2010	1.3	1.9	930	2	19.9	24.8
07/07/2010	1.0	0.9	900	<1.0	14.4	14.9
22/07/2010	1.0	1.0	990	<1.0	14.2	15.5
05/08/2010	1.6	1.2	990	<1.0	22.0	17.3
18/08/2010	1.8	1.4	1100	<1.0	20.7	16.0
07/09/2010	1.0	1.1	1200	<1.0	13.5	15.3
23/09/2010	1.0	1.0	1000	<1.0	15.9	25.6
07/10/2010	1.1	0.9	950	<1.0	22.2	13.3
21/10/2010	1.0	0.9	980	<1.0	13.7	17.1
04/11/2010	1.1	1.5	950	<1.0	12.7	15.0
02/12/2010	1.1	0.9	1200	2	25.4	21.9
04/01/2011	1.7	1.4	1300	4	31.8	24.1
03/02/2011	1.5	1.0	1300	2	25.1	27.7
03/03/2011	1.6	1.2	1400	3	26.9	22.6
11/04/2011	1.1	1.2	1200	2	23.3	22.9
10/05/2011	1.8	1.7	1000	5	35.0	29.7
18/05/2011	179.0	1.2	280	2600	1930.0	16.5
25/05/2011	1.1	1.2	1000	2	19.6	27.4
06/06/2011	1.0	1.1	800	<1.0	12.2	14.0
23/06/2011	1.7	1.2	700	4	11.4	11.2
05/07/2011	1.3	1.1	810	2	21.3	21.9
21/07/2011	1.2	2.2	880	<1.0	12.6	34.7
03/08/2011	1.4	1.3	880	<1.0	13.1	12.2
18/08/2011	1.2	1.2	940	<1.0	12.9	10.7
07/09/2011	1.3	1.6	940	<1.0	14.1	19.7
20/09/2011	1.1	1.1	960	<1.0	12.3	11.5
11/10/2011	1.0	1.3	928	<1.0	10.2	14.2
27/10/2011	1.0	1.0	886	<1.0	14.6	28.6
08/11/2011	0.9	0.8	1050	3	13.1	10.4
01/12/2011	1.4	1.1	967	2	15.2	15.4
Trigger	**0.031**		**567**		**0.50**	

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Table G-35: Sulphate, TSS, Copper (Dissolved), and Zinc (Dissolved) at V15

Date	Cu-d	SO4-d	TSS	Zn-d
	µg/L	mg/L	mg/L	µg/L
12/01/1998		112	61	
17/03/1998		39	271	
18/05/1998		90	366	
29/06/1998		35	<1.0	
14/09/1998		189	5	
31/12/1998	14.0	192	1213	<10.0
17/03/1999	12.0	200	6	<10.0
03/07/1999	15.0	215	8	<10.0
10/09/1999	17.0	240	5	<10.0
12/10/1999	19.0	320	3	<10.0
13/12/1999	16.0	330	5	<10.0
22/03/2000	3.0	340	63	<10.0
20/06/2000	21.0	305	2	<10.0
12/09/2000	28.0	560	5	<10.0
12/11/2000	<2.0	1040	7	<10.0
05/03/2001	43.0	124	607	1050.0
13/06/2001	<2.0	905	13	10.0
08/09/2001	<2.0	1044	31	40.0
12/11/2001	<2.0	1040	7	<10.0
15/01/2002	<2.0	1052	13	30.0
12/02/2002	<2.0	916	15	10.0
21/03/2002	<2.0	1067	17	20.0
15/04/2002	<2.0	921	11	<10.0
13/05/2002	2.0	717	8	370.0
25/06/2002	7.0	1022	10	<1.0
27/09/2002	10.0	1052	42	38.0
15/12/2002	15.0	1051	19	15.0
15/02/2003	9.0	794	13	34.0
06/03/2003	15.0	1016	6	18.0
15/04/2003	4.0	1005	7	4.0
17/06/2003	14.0	997	9	7.0
15/09/2003	16.0	1025	<1.0	6.0
13/12/2003	8.0	1157	2	4.0
14/03/2004	4.0	999	2	7.0
14/04/2004	<20.0	1120	5	<5.0
14/05/2004	1.0	813	70	17.0
14/06/2004	<1.0	1190	<1.0	9.0
12/07/2004	<1.0	1400	<1.0	9.0
09/08/2004	1.0	1460	<1.0	14.0
13/09/2004	2.0	1600	<1.0	10.0
12/10/2004	2.0	1600	<1.0	11.0
15/11/2004	2.0	1520	1	10.0
21/01/2005	1.0	1270	1	34.0
08/02/2005	1.0	1080	<1.0	42.0
14/03/2005	3.0	2990	<1.0	5.0
11/04/2005	2.0	1580	3	5.0
09/05/2005	1.0	1200	2	14.0
21/06/2005	1.0	1700	<1.0	16.0
25/07/2005	1.0	2060	<1.0	29.0
22/08/2005	1.0	1750	<1.0	25.0
06/09/2005	1.0	1800	<1.0	12.0
21/09/2005	1.0	1800	<1.0	12.0
11/10/2005	1.0	1860	<1.0	13.0
25/10/2005	2.0	1910	<1.0	9.0
01/11/2005	2.0	1890	<1.0	13.0
15/11/2005	<20.0	1920	<1.0	12.0
14/12/2005	2.0	1900	<1.0	48.0
23/01/2006	1.0	1820	2	67.0
07/02/2006	3.0	1850	13	69.0
13/02/2006	1.0	2090	<1.0	160.0
07/03/2006	<20.0	1850	<1.0	140.0
24/03/2006	2.0	1940	<1.0	160.0
08/04/2006	<20.0	1960	<1.0	190.0
25/04/2006	1.0	1940	<1.0	190.0
17/05/2006	1.0	1600	<1.0	100.0
05/06/2006	<20.0	1730	<1.0	210.0
19/06/2006	1.0	1810	<1.0	200.0
10/07/2006	<20.0	1910	<1.0	260.0
18/07/2006	2.0		<1.0	190.0
08/08/2006	<20.0	1820	<1.0	280.0
22/08/2006	2.0	1870	<1.0	300.0
11/09/2006	<1.0	1850	2	400.0
26/09/2006	1.0	1770	<1.0	430.0
16/10/2006	2.0	1700	<1.0	460.0
23/10/2006	<20.0	1740	<1.0	510.0
13/11/2006	2.0	1780	<1.0	600.0
21/11/2006	<20.0	1830	<1.0	640.0
05/12/2006	<20.0	1770	<1.0	690.0
14/12/2006	2.0	1780	<1.0	540.0
08/01/2007	<20.0	1760	<1.0	540.0
14/01/2007	3.0	1720	<1.0	670.0
06/02/2007	2.0	1690	<1.0	660.0
13/02/2007	1.0	1600	6	510.0
05/03/2007	<20.0	1580	1	630.0
11/03/2007	2.0	1690	10	590.0
04/04/2007	2.0	1600	13	670.0
18/04/2007	2.0	1710	<1.0	850.0
01/05/2007	1.0	1510	18	690.0
14/05/2007	2.0	1330	43	520.0
07/06/2007	2.0	1390	8	420.0
18/06/2007	<1.0	1430	3	430.0
03/07/2007	2.0	1480	<1.0	300.0
16/07/2007	2.0	1690	2	540.0
02/08/2007	2.0	1870	<1.0	690.0
14/08/2007	2.0	1630	<1.0	610.0
11/09/2007	3.0	1790	<1.0	890.0
25/09/2007	2.1	1800	<1.0	630.0
10/10/2007	3.0	1710	<1.0	1180.0
22/10/2007	2.0	1630	<1.0	1170.0
13/11/2007	2.0	1660	<1.0	1130.0
26/11/2007	3.0	1670	1	1440.0
10/12/2007	2.0	1670	<1.0	1140.0
17/12/2007	2.0	1580	<1.0	1020.0
07/01/2008	2.0	1610	<1.0	850.0
20/01/2008	3.0	1680	<1.0	1110.0
14/02/2008	3.0	1590	<1.0	900.0
19/02/2008	3.0	1530	<1.0	800.0
10/03/2008	4.0	1690	1	1040.0
17/03/2008	3.0	1690	29	830.0
02/04/2008	2.0	1700	<1.0	900.0
15/04/2008	2.0	1630	<1.0	950.0
06/05/2008	<1.0	948	6	170.0
14/05/2008	1.0	861	3	330.0
04/06/2008	2.0	1410	<1.0	750.0
17/06/2008	2.0	1450	<1.0	790.0
03/07/2008	2.0	1570	<1.0	1010.0
15/07/2008	2.0	1490	13	760.0
04/08/2008	2.0	1730	1	980.0
12/08/2008	2.0	1630	<1.0	950.0
09/09/2008	2.0	1680	1	1190.0
15/09/2008	2.0	1690	<1.0	1080.0
01/10/2008	2.0	1740	<1.0	1430.0
15/10/2008	2.0	1770	<1.0	1230.0
03/11/2008	2.0	1930	<1.0	1500.0
13/11/2008	4.0	1900	11	1220.0
02/12/2008	2.0	1940	<1.0	1530.0
10/12/2008	4.0	1980	1	1290.0
13/01/2009	2.0	1920	<1.0	810.0
20/01/2009	3.0	2100	<1.0	1430.0
03/02/2009	3.0	2170	<1.0	1280.0
05/02/2009	3.0	2050	<1.0	870.0
05/03/2009	2.1	2100	<1.0	1790.0
17/03/2009	2.1	2400	<1.0	1600.0
08/04/2009	1.9	2300	<1.0	1400.0
23/04/2009	3.7	2300	5	1600.0
06/05/2009	1.1	1100	3	1070.0
24/05/2009	1.5	2100	3	2290.0
09/06/2009	2.2	1900	2	2020.0
28/06/2009	2.1	1900	<1.0	2130.0
13/07/2009	1.9	1600	<1.0	2200.0
29/07/2009	2.1	1800	<1.0	2070.0
11/08/2009	2.1	1800	<1.0	2060.0
25/08/2009	3.4	1700	<4.0	1940.0
06/09/2009	1.8	1700	3	1830.0
22/09/2009	1.4	1800	3	2350.0
08/10/2009	1.2	1700	<1.0	2090.0
20/10/2009	1.3	1600	<1.0	2080.0
09/11/2009	1.0	1700	4	1950.0
26/11/2009	2.1	1800	96	3400.0
02/12/2009	1.9	1900	20	3220.0
15/12/2009	1.9	2000	2	2800.0
07/01/2010	1.9	2500	<1.0	2910.0
21/01/2010	2.3	2700	<1.0	2920.0
03/02/2010	2.1	2500	<1.0	2740.0
18/02/2010	1.9	2800	3	2740.0
02/03/2010	2.1	2000	<1.0	2620.0
23/03/2010	2.2	2500	<1.0	2920.0
07/04/2010	2.2	1900	<1.0	3500.0
19/04/2010	1.5	1400	2	1950.0
01/05/2010	1.7	1500	2	2310.0
18/05/2010	2.2	2400	3	2750.0
02/06/2010	2.1	2600	<1.0	2980.0
15/06/2010	2.5	2600	2	3220.0
07/07/2010	1.8	2000	<1.0	2560.0
22/07/2010	1.9	2700	2	2700.0
05/08/2010	2.3	2600	<1.0	3040.0
18/08/2010	2.2	2500	<1.0	2800.0
07/09/2010	2.3	2200	<1.0	2660.0
23/09/2010	2.4	2000	<1.0	3050.0
07/10/2010	2.1	2500	<1.0	3240.0
21/10/2010	2.3	1900	<1.0	3240.0
04/11/2010	2.1	2500	<1.0	3590.0
18/11/2010	2.6	2900	<1.0	3750.0
01/12/2010	2.4	2600	3	3600.0
16/12/2010	2.4	2700	<1.0	4170.0
04/01/2011	3.0	2400	2	3580.0
18/01/2011	2.3	2600	8	3370.0
03/02/2011	2.2	2600	<1.0	3090.0
16/02/2011	2.4	2300	2	3250.0
03/03/2011	2.2	2300	2	2980.0
23/03/2011	2.3	2500	<1.0	2930.0
11/04/2011	2.5	2000	2	2640.0
26/04/2011	2.0	2000	<1.0	2920.0
10/05/2011	1.9	1400	16	1450.0
18/05/2011	1.6	1600	7	1880.0
25/05/2011	1.9	1800	<1.0	2740.0
06/06/2011	2.2	1800	<1.0	2670.0
22/06/2011	2.1	1500	53	1530.0
05/07/2011	2.0	1900	2	2690.0
21/07/2011	2.3	2200	<1.0	3300.0
03/08/2011	2.1	2100	<1.0	3310.0
18/08/2011	2.3	2100	2	2950.0
07/09/2011	2.2	2200	<1.0	3020.0
20/09/2011	2.3	2100	<1.0	2720.0
11/10/2011	2.0	1820	5	2700.0
27/10/2011	2.3	1590	<1.0	3160.0
08/11/2011	2.0	1980	2	2920.0
22/11/2011	2.1	1970	<1.0	3330.0
01/12/2011	2.4	1920	2	3230.0
14/12/2011	2.7	1890	2	2970.0

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Table G-36: Sulphate, TSS, Copper (Total and Dissolved), and Zinc (Total and Dissolved) at V2A

Date	Cu	Cu-d	SO4-d	TSS	Zn	Zn-d
	µg/L	µg/L	mg/L	mg/L	µg/L	µg/L
29/06/1998	19.0		124	<1.0	10.0	
14/09/1998	28.0		116	4	20.0	
03/07/1999	33.0	16.0	379	7	50.0	<10.0
10/09/1999	24.0	17.0	370		80.0	50.0
12/10/1999	31.0	12.0	269		20.0	<10.0
05/03/2001	29.0	2.0	380	3	90.0	10.0
13/06/2001	8.0	<2.0	836	5	3370.0	510.0
12/11/2001	13.0	2.0	543	7	540.0	260.0
21/03/2002	<2.0	14.0	488	5	120.0	130.0
25/06/2002	15.0	10.0	663	8	1096.0	1012.0
16/07/2002	17.0	5.0	696	9	952.0	905.0
27/09/2002	21.0	13.0	536	10	344.0	294.0
15/10/2002	21.0	25.0	512	5	332.0	329.0
15/12/2002	18.0	14.0	636	14	317.0	285.0
06/03/2003	14.0	16.0	312	4	58.0	73.0
15/04/2003	9.0	3.0	448	2	79.0	76.0
17/06/2003	42.0	6.0	612	8	236.0	99.0
15/09/2003	10.0	8.0	633	1	211.0	201.0
13/12/2003	18.0	21.0	423	1	70.0	65.0
14/05/2004	1.0	1.0	311	<1.0	46.0	24.0
14/06/2004	<1.0	<1.0	732	1	2890.0	1060.0
12/07/2004	1.0	<1.0	796	<1.0	1310.0	460.0
09/08/2004	1.0	1.0	899	<1.0	1060.0	750.0
13/09/2004	1.0	1.0	829	<1.0	700.0	460.0
12/10/2004	1.0	<1.0	700	<1.0	460.0	250.0
15/11/2004	1.0	<1.0	650	<1.0	500.0	260.0
21/01/2005	1.0	<1.0	572	<1.0	310.0	220.0
14/03/2005	1.0	<1.0	380	<1.0	91.0	60.0
11/04/2005	2.0	1.0	325	3	110.0	62.0
09/05/2005	6.0	1.0	575	12	590.0	330.0
21/06/2005	1.0	1.0	851	<1.0	1520.0	1530.0
25/07/2005	<1.0	<1.0	886	<1.0	1040.0	480.0
22/08/2005	<1.0	<1.0	868	<1.0	780.0	500.0
06/09/2005	1.0	<1.0	862	<1.0	620.0	400.0
21/09/2005	<1.0	<1.0	867	1	490.0	270.0
11/10/2005	<1.0	<1.0	816	<1.0	450.0	450.0
25/10/2005	<1.0	<1.0	845	<1.0	380.0	240.0
01/11/2005	<1.0	<1.0	823	<1.0	410.0	260.0
15/11/2005	<20.0	<20.0	758	<1.0	370.0	210.0
14/12/2005	<1.0	<1.0	468	<1.0	120.0	94.0
25/04/2006	<1.0	<1.0	475	1	110.0	650.0
17/05/2006	2.0	1.0	381	4	61.0	45.0
05/06/2006	<20.0	<20.0	812	1	360.0	240.0
19/06/2006	2.0	1.0	741	1	270.0	170.0
10/07/2006	<20.0	<20.0	850	16	330.0	260.0
18/07/2006	1.0	1.0		1	270.0	160.0
08/08/2006	<20.0	<20.0	937	2	270.0	130.0
22/08/2006	1.0	1.0	931	<1.0	200.0	200.0
11/09/2006	<1.0	<1.0	891	<1.0	190.0	160.0
26/09/2006	1.0	<1.0	826	<1.0	170.0	120.0
16/10/2006	1.0	<1.0	782	<1.0	150.0	110.0
23/10/2006	<20.0	<20.0	808	<1.0	130.0	70.0
07/06/2007	2.0	2.0	864	<1.0	250.0	230.0
18/06/2007	1.0	<1.0	860	<1.0	260.0	160.0
03/07/2007	1.0	1.0	751	<1.0	200.0	32.0
16/07/2007	1.0	1.0	927	<1.0	200.0	140.0
02/08/2007	<1.0	1.0	972	<1.0	180.0	180.0
14/08/2007	2.0	2.0	926	<1.0	170.0	94.0
11/09/2007	2.0	1.0	975	<1.0	160.0	84.0
25/09/2007	1.0	1.1	1000	<1.0	86.0	98.0
10/10/2007	1.0	2.0	954	<1.0	130.0	140.0
22/10/2007	1.0	1.0	982	<1.0	150.0	70.0
13/11/2007	1.0	1.0	937	<1.0	180.0	110.0
26/11/2007	1.0	2.0	944	<1.0	150.0	150.0

Date	Cu	Cu-d	SO4-d	TSS	Zn	Zn-d
	µg/L	µg/L	mg/L	mg/L	µg/L	µg/L
06/05/2008	1.0	1.0	609	1	30.0	13.0
14/05/2008	2.0	1.0	657	3	150.0	55.0
04/06/2008	1.0	1.0	1050	<1.0	2820.0	1710.0
17/06/2008	2.0	1.0	1020	<1.0	2360.0	1270.0
03/07/2008	1.0	2.0	996	<1.0	1860.0	1120.0
15/07/2008	2.0	1.0	791	7	2000.0	1200.0
04/08/2008	1.0	<1.0	969	<1.0	1870.0	1230.0
12/08/2008	1.0	1.0	972	<1.0	1680.0	1210.0
09/09/2008	1.0	1.0	1050	<1.0	2320.0	1020.0
15/09/2008	2.0	1.0	1050	1	1580.0	920.0
01/10/2008	1.0	<1.0	1060	<1.0	1920.0	940.0
15/10/2008	1.0	<1.0	1090	<1.0	1560.0	730.0
03/11/2008	1.0	1.0	1170	<1.0	1630.0	880.0
13/11/2008	1.0	2.0	1200	<1.0	1380.0	1400.0
02/12/2008	1.0	1.0	1210	1	1420.0	1460.0
10/12/2008	1.0	1.0	1230	<1.0	1270.0	1270.0
06/05/2009	1.3	0.9	640	4	384.0	358.0
24/05/2009	1.1	0.9	1100	5	1380.0	1600.0
09/06/2009	1.1	1.2	1100	<1.0	2140.0	2150.0
28/06/2009	1.3	1.3	1100	<1.0	1670.0	1630.0
13/07/2009	1.4	1.1	1000	<1.0	1300.0	1400.0
29/07/2009	1.7	1.8	1300	3	1390.0	1390.0
11/08/2009	0.8	1.4	1000	<1.0	950.0	1100.0
25/08/2009	5.0	1.7	1100	<4.0	972.0	958.0
06/09/2009	1.0	0.8	1000	2	899.0	886.0
22/09/2009	1.1	0.8	1100	<1.0	757.0	806.0
08/10/2009	1.0	2.1	1200	<1.0	718.0	707.0
20/10/2009	1.1	0.8	1000	2	717.0	731.0
09/11/2009	0.5	0.5	1200	<1.0	647.0	644.0
26/11/2009	<0.3	0.7	1100	<1.0	617.0	670.0
02/12/2009	0.8	1.0	1100	<1.0	609.0	626.0
03/02/2010	1.8	1.6	1000	6	667.0	680.0
02/03/2010	1.5	1.2	1100	4	710.0	744.0
07/04/2010	1.5	1.3	1000	8	736.0	725.0
01/05/2010	1.9	1.1	860	8	514.0	463.0
18/05/2010	1.2	1.3	1200	2	747.0	811.0
02/06/2010	1.2	1.1	1100	<1.0	794.0	838.0
15/06/2010	1.3	1.5	1200	4	907.0	921.0
07/07/2010	1.3	1.4	1200	2	811.0	794.0
22/07/2010	1.2	1.0	1200	<1.0	795.0	846.0
05/08/2010	1.6	1.6	1400	<1.0	1120.0	1140.0
18/08/2010	1.4	1.2	1400	3	882.0	875.0
07/09/2010	1.3	1.4	1400	<1.0	951.0	854.0
23/09/2010	1.3	1.5	1300	2	913.0	874.0
07/10/2010	1.3	1.2	1200	<1.0	1010.0	1050.0
21/10/2010	1.3	1.3	1300	3	1060.0	1030.0
04/11/2010	1.5	3.5	1200	4	880.0	1110.0
03/02/2011	1.1	1.1	710	5	107.0	110.0
11/04/2011	12.4	1.6	640	120	231.0	58.8
10/05/2011	4.2	2.0	680	59	244.0	218.0
19/05/2011	60.0	2.2	380	940	1020.0	97.7
25/05/2011	3.3	2.7	880	47	465.0	457.0
06/06/2011	1.8	2.9	1000	11	462.0	465.0
22/06/2011	7.4	1.6	820	260	666.0	487.0
05/07/2011	2.3	1.2	1100	11	1070.0	1000.0
21/07/2011	2.4	1.8	1300	6	1310.0	1250.0
03/08/2011	1.9	1.5	1400	8	1470.0	1480.0
18/08/2011	3.8	1.9	1100	72	1470.0	1360.0
07/09/2011	1.5	1.7	1400	2	1430.0	1420.0
20/09/2011	1.4	2.0	1300	<1.0	1300.0	1370.0
11/10/2011	1.4	1.6	1230	<1.0	1130.0	1140.0
27/10/2011	1.3	1.5	1170	4	1080.0	1110.0
08/11/2011	1.3	1.1	1250	6	905.0	973.0
01/12/2011	3.5	1.6	1120	60	939.0	782.0

Table G-37: Sulphate, TSS, Copper (Dissolved), and Zinc (Dissolved) at SRK05-9

Date	Cu-d	SO4-d	TSS	Zn-d
	µg/L	mg/L	mg/L	µg/L
08/06/2006	<5.0	480.0		64.000
19/09/2006	<5.0	676.0		67.000
30/05/2007	3.5000	376.0		9.300
12/10/2007	<5.0	895.0		<5.0
05/06/2008	<5.0	913.0		6.100
18/09/2008	2.5800	1000.0		5.500
06/05/2009	2.9000	850.0	12000	4.400
23/05/2009	4.1700	920.0	17000	4.000
10/06/2009	4.4000	1200.0	1900	24.200
28/06/2009	4.2000	1200.0	1600	4.500
14/07/2009	2.9000	1100.0	490	2.900
29/07/2009	3.2000	1100.0	580	14.700
11/08/2009	2.1000	1100.0	740	6.100
25/08/2009	2.9000	1100.0	330	8.000
06/09/2009	1.7000	1100.0	720	7.100
22/09/2009	1.3000	1200.0	220	7.200
08/10/2009	1.8000	1100.0	7400	7.600
20/10/2009	1.4000	1100.0	1600	10.100
09/11/2009	1.0000	1100.0	670	8.500
26/11/2009	1.7000	1100.0	380	9.500
02/12/2009	1.2000	1100.0	340	6.500
15/12/2009	1.4000	1100.0	620	6.400
07/01/2010	1.4000	1100.0	680	8.100
21/01/2010	1.6100	1100.0	130	11.300
04/02/2010	1.3000	1100.0	710	6.100
18/02/2010	1.7000	1100.0	160	11.900
02/03/2010	1.2000	940.0	330	6.400
23/03/2010	0.9200	950.0	43	7.400
07/04/2010	1.1000	950.0	170	5.800
19/04/2010	0.9000	1000.0	400	8.000
01/05/2010	3.1000	990.0	620	8.300
18/05/2010	2.5000	1000.0	1300	6.000
02/06/2010	2.2000	1000.0	440	23.300
20/06/2010	2.6900	1100.0	400	6.300
07/07/2010	2.7000	1100.0	210	25.300
22/07/2010	3.2000	1200.0	100	12.700
05/08/2010	2.2000	1200.0	200	9.500
18/08/2010	1.6000	1300.0	170	8.300
07/09/2010	1.6000	1400.0	230	9.200
23/09/2010	1.9000	1300.0	920	68.200
07/10/2010	1.5000	1200.0	440	6.000
21/10/2010	1.5000	1200.0	170	24.300
04/11/2010	2.1000	1200.0	360	81.200
18/11/2010	2.0000	1200.0	250	47.900
02/12/2010	1.2000	1200.0	150	6.900
16/12/2010	1.5000	1100.0	610	6.700

Date	Cu-d	SO4-d	TSS	Zn-d
	µg/L	mg/L	mg/L	µg/L
04/01/2011	2.0000	990.0	170	8.100
18/01/2011	1.7000	900.0	420	6.700
03/02/2011	1.9000	750.0	210	6.700
16/02/2011	1.0000	770.0	180	4.200
03/03/2011	0.8700	710.0	220	3.800
23/03/2011	1.1300	620.0	650	13.000
11/04/2011	0.8100	540.0	260	3.700
26/04/2011	0.9800	550.0	190	5.700
10/05/2011	3.6000	1300.0	510	14.800
18/05/2011	3.4200	630.0	650	6.700
06/06/2011	2.6300	640.0	290	3.300
22/06/2011	2.8300	890.0	820	4.400
05/07/2011	3.3000	930.0	350	18.400
21/07/2011	3.5000	1100.0	220	5.400
03/08/2011	3.3000	1300.0	56	6.600
18/08/2011	3.7000	1200.0	100	11.900
07/09/2011	3.1000	1200.0	290	43.900
20/09/2011	2.9000	1300.0	230	55.500
11/10/2011	2.5000	1270.0	130	7.100
27/10/2011	2.1000	1190.0	140	15.700
08/11/2011	2.0000	1270.0	550	6.500
22/11/2011	1.6000	1170.0	150	6.300
01/12/2011	1.8000	1190.0	77	24.100
14/12/2011	2.0000	1130.0	19	6.200

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Table G-38: Sulphate, TSS, Copper (Dissolved), and Zinc (Dissolved) at Moose Seep

Date	Cu-d µg/L	SO4-d mg/L	TSS mg/L	Zn-d µg/L
06/09/2005	1.0	764	<1.0	12.0
21/09/2005	<1.0	743	<1.0	8.0
11/10/2005	<1.0	799	<1.0	<5.0
25/10/2005	1.0	801	<1.0	10.0
01/11/2005	<1.0	814		<5.0
15/11/2005	<20.0	798		5.0
07/02/2006	<1.0	819		7.0
13/02/2006	<1.0	166		6.0
17/05/2006	<1.0	703		<5.0
05/06/2006	<20.0	698		6.0
19/06/2006	<1.0	612		6.0
10/07/2006	<20.0	630		<5.0
18/07/2006	<1.0	623		<5.0
08/08/2006	<20.0	675		6.0
22/08/2006	<1.0	658		7.0
11/09/2006	<1.0	676		<5.0
26/09/2006	<1.0	655		7.0
16/10/2006	<1.0	713		<5.0
23/10/2006	<20.0	734		5.0
15/05/2007	1.0	578		7.0
07/06/2007	<1.0	560		6.0
18/06/2007	<1.0	515		7.0
03/07/2007	1.0	543		<5.0
16/07/2007	<1.0	570		<5.0
02/08/2007	<1.0	626		6.0
14/08/2007	<1.0	571		<5.0
11/09/2007	2.0	610		6.0
25/09/2007	0.9	634		5.0
10/10/2007	2.0	677		<5.0
22/10/2007	1.0	753		<5.0
13/11/2007	<1.0	802		<5.0
26/11/2007	3.0	798		6.0
10/12/2007	<1.0	800		<5.0
17/12/2007	<1.0	807		6.0
06/05/2008	<1.0	648		<5.0
14/05/2008	<1.0	720		<5.0
04/06/2008	<1.0	596		<5.0
17/06/2008	<1.0	862		26.0
03/07/2008	2.0	907		10.0
15/07/2008	2.0	821		12.0
04/08/2008	<1.0	882		<5.0
12/08/2008	<1.0	987		<5.0
09/09/2008	1.0	949		<5.0
15/09/2008	1.0	986		5.0
01/10/2008	<1.0	986		5.0
15/10/2008	<1.0	984		9.0
03/11/2008	<1.0	1070		<5.0
13/11/2008	2.0	1080		7.0

Date	Cu-d µg/L	SO4-d mg/L	TSS mg/L	Zn-d µg/L
08/04/2009	0.9	1200	23	9.1
06/05/2009	0.9	1000	2	5.5
23/05/2009	0.7	930	<1.0	5.5
10/06/2009	0.7	1000	6	6.7
28/06/2009	1.0	1100	3	6.5
14/07/2009	1.4	1100	2	8.3
29/07/2009	1.0	1100	6	8.1
11/08/2009	1.6	1100	<1.0	9.6
25/08/2009	2.6	1100	<4.0	8.0
06/09/2009	1.1	1100	<1.0	7.8
22/09/2009	1.0	1100	<1.0	7.1
08/10/2009	1.1	1100	<1.0	6.4
20/10/2009	0.8	1100	<1.0	7.7
09/11/2009	0.7	1100	<1.0	7.7
26/11/2009	1.1	1100	<1.0	7.9
02/12/2009	0.9	1100	3	7.6
07/01/2010	0.8	1100	<1.0	7.7
03/02/2010	1.1	1100	6	7.9
02/03/2010	1.0	1100	<1.0	7.8
07/04/2010	0.7	1100	<1.0	8.8
01/05/2010	1.0	1100	<1.0	7.7
18/05/2010	1.1	1000	2	6.9
02/06/2010	1.1	1000	6	17.4
20/06/2010	1.6	1000	<1.0	10.0
07/07/2010	1.2	1000	2	7.3
22/07/2010	2.6	1100	<1.0	10.9
05/08/2010	1.4	1100	<1.0	16.8
18/08/2010	1.2	1200	2	8.4
07/09/2010	0.9	1300	<1.0	6.3
23/09/2010	1.1	1300	<1.0	8.0
07/10/2010	1.0	1300	<1.0	8.7
21/10/2010	1.2	1200	<1.0	15.4
04/11/2010	1.3	1300	<1.0	9.4
02/12/2010	1.3	1200	2	11.1
04/01/2011	1.9	1200	3	8.1
03/02/2011	2.7	1100	6	10.8
03/03/2011	1.5	1100	22	8.7
11/04/2011	1.5	1000	11	8.6
10/05/2011	2.1	1100	5	7.7
18/05/2011	1.1	950	<1.0	6.8
06/06/2011	1.0	690	<1.0	3.2
22/06/2011	1.1	710	<1.0	3.9
05/07/2011	1.6	800	<1.0	93.0
21/07/2011	1.4	940	<1.0	19.1
03/08/2011	1.3	1100	6	7.0
18/08/2011	1.4	980	<1.0	11.3
07/09/2011	1.7	1100	2	12.7
20/09/2011	1.3	1200	<1.0	10.5
11/10/2011	1.9	1180	<4.0	15.6
27/10/2011	2.7	1140	8	41.4
08/11/2011	1.1	1260	2	7.1

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Table G-39: Sulphate, TSS, Copper (Total and Dissolved), and Zinc (Total and Dissolved) at Additional Monitoring Locations Downgradient of the Grum Rock Dump

Station	Date	Cu	Cu-d	SO4-d	TSS	Zn	Zn-d
		µg/L	µg/L	mg/L	mg/L	µg/L	µg/L
BH05-9B-R	03/08/2006		<1.0	160.0			5.1
BH05-9B-R	19/09/2006		<2.0	161.0			7.2
BH05-9B-R	29/05/2007		<2.0	179.0			<5.0
BH05-9B-R	18/09/2008		0.45	150.0			4.7
BH05-9B-R	31/05/2009		0.21	150.0	370		3.1
BH05-9B-R	13/09/2009		0.21	150.0	1100		5.5
BH05-9B-R	12/06/2010		0.08	180.0	680		1.7
BH05-9B-R	20/09/2010		0.32	180.0	100		4.1
BH05-9B-R	10/06/2011		0.09	160.0	97		1.2
BH05-9B-R	04/10/2011		0.15	166.0	180		1.7
GD05 d/s	29/06/2010		0.90	1700.0	6		1.8
GD05 d/s	18/10/2010		0.60	1700.0	2		5.9
GD05 d/s	18/10/2010		1.44	<0.5	<1.0		17.9
GD05 d/s	22/05/2011		1.40	1300.0	<1.0		4.2
GD05 d/s	22/09/2011		0.70	1700.0	<1.0		2.0
P96-9A	09/10/1996		5.00	52.0			<10.0
P96-9A	30/06/1997		<2.0	432.0			70.0
P96-9A	14/10/1997		8.00	81.0			<10.0
P96-9A	31/05/1998		6.00	102.0			<10.0
P96-9A	15/09/1998		26.00	203.0			70.0
P96-9A	18/06/1999		12.00	181.0			<10.0
P96-9A	12/10/1999		<2.0	168.0			<10.0
P96-9A	31/05/2000		13.00	668.0			<10.0
P96-9A	09/10/2000		29.00	545.0			10.0
P96-9A	05/06/2001		<2.0	948.0			30.0
P96-9A	24/09/2002		<5.0	1280.0			<30.0
P96-9A	05/06/2003		<5.0	1180.0			12.0
P96-9A	25/09/2003		<5.0	1290.0			19.0
P96-9A	08/06/2004		<5.0	955.0			12.8
P96-9A	24/09/2004		<10.0	1500.0			17.6
P96-9A	03/05/2005		<5.0	994.0			19.2
P96-9A	08/09/2005		<5.0	1600.0			16.0
P96-9A	07/06/2006		<5.0	1400.0			25.5
P96-9A	19/09/2006		<5.0	1700.0			91.0
P96-9A	29/05/2007		<5.0	1500.0			14.1
P96-9A	12/10/2007		<10.0	1760.0			<50.0
P96-9A	04/06/2008		<5.0	1360.0			13.6
P96-9A	18/09/2008		2.90	1700.0			15.8
P96-9A	31/05/2009		1.70	1500.0	9		11.2
P96-9A	13/09/2009		3.00	1800.0	9		13.0
P96-9A	12/06/2010		2.61	2000.0	3		20.7
P96-9A	20/09/2010		2.70	2700.0	11		29.3
P96-9A	10/06/2011		2.30	1700.0	12		14.0
P96-9A	04/10/2011		3.20	1930.0	3		64.3
Sheep Creek	29/06/2010		0.39	120.0	2		5.5
Sheep Creek	18/10/2010		0.33	120.0	<1.0		5.7
Sheep Creek	22/05/2011		0.40	110.0	100		0.6
Sheep Creek	22/09/2011		0.60	120.0	<1.0		7.8
SRK GD01	03/07/1999		21.00	578.0			<10.0
SRK GD01	29/06/2010		2.30	1600.0	2		3660.0
SRK GD01	01/12/2010		2.10	1900.0	25		2150.0
SRK GD01	24/01/2011		1.90	1800.0	2		1430.0
SRK GD01	17/02/2011		1.60	1800.0	<1.0		1240.0
SRK GD01	28/03/2011		2.30	1700.0	44		1350.0
SRK GD01	20/04/2011		2.40	2000.0	2		1430.0
SRK GD01	17/05/2011		2.56	490.0	33		1410.0
SRK GD01	16/06/2011		2.60	1600.0	7		4000.0
SRK GD01	11/07/2011		2.60	1600.0	<1.0		2990.0
SRK GD01	10/08/2011		2.50	1600.0	4		2870.0
SRK GD01	13/09/2011		3.60	1500.0	3		2880.0
SRK GD01	18/10/2011	2.50	2.60	1610.0	1	2860.0	3730.0
SRK GD01	23/11/2011		1.60	1640.0	1		1650.0
SRK GD01	13/12/2011		1.30	1560.0	2		1440.0
SRK05-5C	22/11/2005		<10.0	173.0			<5.0
SRK05-5C	21/09/2006		<2.0	387.0			19.5
SRK05-5C	12/10/2007		<2.0	372.0			12.0
SRK05-5C	04/06/2008		<2.0	410.0			7.0
SRK05-5C	18/09/2008		0.41	340.0			6.2
SRK05-5C	31/05/2009		1.44	310.0	7900		9.7
SRK05-5C	13/09/2009		0.72	160.0	4000		5.0
SRK05-5C	12/06/2010		1.80	250.0	22000		5.2
SRK05-5C	20/09/2010		0.45	190.0	8400		1.9
SRK05-5C	10/06/2011		1.44	350.0	6700		6.8
SRK05-5C	04/10/2011		17.80	95.0	15000		2.4
SRK05-7	31/05/2009		0.80	1500.0	1000		12.0
SRK05-7	14/06/2011		3.90	1500.0	6100		15.6
SRK05-7	05/10/2011		2.10	1770.0	3200		21.4

Station	Date	Cu	Cu-d	SO4-d	TSS	Zn	Zn-d
		µg/L	µg/L	mg/L	mg/L	µg/L	µg/L
SRK05-8	31/05/2009		1.20	850	320		5.7
SRK05-8	13/09/2009		2.90	770	220		1.4
SRK05-8	12/06/2010		1.90	890	790		8.0
SRK05-8	20/09/2010		2.90	900	2500		4.2
SRK05-8	11/06/2011		2.90	1000	610		3.4
SRK05-8	04/10/2011		2.00	1050	260		4.9
SRK-GD21	09/06/2010		2.10	2700			3270.0
SRK-GD21b	22/05/2011		1.80	1600	470		2340.0
SRK-GD4	22/05/2011		1.57	400	6		929.0
SRK-GD5	29/06/2010		2.00	1900	13		2490.0
SRK-GD5	21/05/2011		1.60	1500	12		2320.0
SRK-GD5	27/09/2011		2.00	1760	<1.0		2940.0
SRK-GD6	29/06/2010		1.50	1700	<1.0		3750.0
SRK-GD6	21/05/2011		1.80	1700	<1.0		2970.0
SRK-GD6	27/09/2011		1.80	1670	2		3510.0
Sweet Creek	29/06/2010		0.80	1500	<1.0		2.4
Sweet Creek	18/10/2010		0.90	1600	<1.0		125.0
Sweet Creek	22/05/2011		1.90	1500	<1.0		11.5
Sweet Creek	22/09/2011		0.60	1600	<1.0		2.5
V14	29/05/1989	7.00		4	8	20.0	
V14	12/06/2001	7.00	3.00	1740	12	40.0	40.0
V14	11/06/2002	5.00	<1.0	1619	4	3.0	<1.0
V14	28/06/2004	2.00	2.00	2510	2	26.0	18.0
V14	20/09/2004	2.00	2.00	2820	1	40.0	26.0
V14	22/06/2005	2.00	<1.0	554	11	<5.0	<5.0
V14	08/06/2006	2.00	2.00	2030	2	12.0	12.0
V14	18/09/2006	<1.0	<1.0	836	2	13.0	<5.0
V14	30/05/2009		0.90	980	<4.0		8.7
V14	26/09/2009		0.44	25	<1.0		6.6
V14	01/06/2010		2.10	2800	7		11.1
V14	22/05/2011		1.70	1300	12		6.9
V16	16/10/1995	<2.0	3.00	330		10.0	<10.0
V16	14/11/1995	3.00		117		<10.0	
V16	14/03/1996	7.00		46	<5.0	<10.0	
V16	10/04/1996		7.00				<10.0
V16	22/04/1996	8.00		55	17	<10.0	
V16	12/06/1996		<2.0	19	6		<10.0
V16	15/07/1996		3.00	49	66		<10.0
V16	14/08/1996		<2.0	63	6		<10.0
V16	11/09/1996	2.00		62	19	20.0	
V16	21/10/1996	35.00		65	8	40.0	
V16	12/06/2001	4.00	<2.0	381	4	20.0	20.0
V16	11/06/2002	5.00	<1.0	556	15	19.0	<1.0
V16	15/06/2003	94.00	22.00	1706	19	43.0	32.0
V16	28/06/2004	2.00	2.00	565	<1.0	13.0	11.0
V16	22/06/2005	2.00	1.00	2620	1	11.0	11.0
V16	19/09/2005	2.00	2.00	2830	3	31.0	22.0
V16	08/06/2006	10.00	<1.0	684	153	21.0	10.0
V16	18/09/2006	2.00	<1.0	2270	7	13.0	16.0
V16	11/06/2007	2.00	2.00	1880	9	19.0	7.0
V16	01/10/2007	4.00	6.00	2100	15	10.0	11.0
V16	01/06/2008	3.00	2.00	2060	3	20.0	26.0
V16	29/09/2008	3.00	3.00	2220	4	10.0	10.0
V16	30/05/2009		1.50	2300	22		7.4
V16	26/09/2009		1.68	750	<1.0		10.5
V16	06/10/2010		0.80	1200	3		5.6
V16	22/05/2011		1.52	670	23		46.2
WGD01	29/06/2010		1.07	460	2		3.1
WGD01	21/05/2011		0.71	360	<1.0		2.3
WGD01	27/09/2011		0.71	622	<1.0		3.7
WTA02	29/06/2010		0.68	32	<1.0		1.2
WTA02	27/09/2011		0.41	29	15		0.5

Figure G-10: Zinc (Total) at V15, GC Weir, V2A, and V2

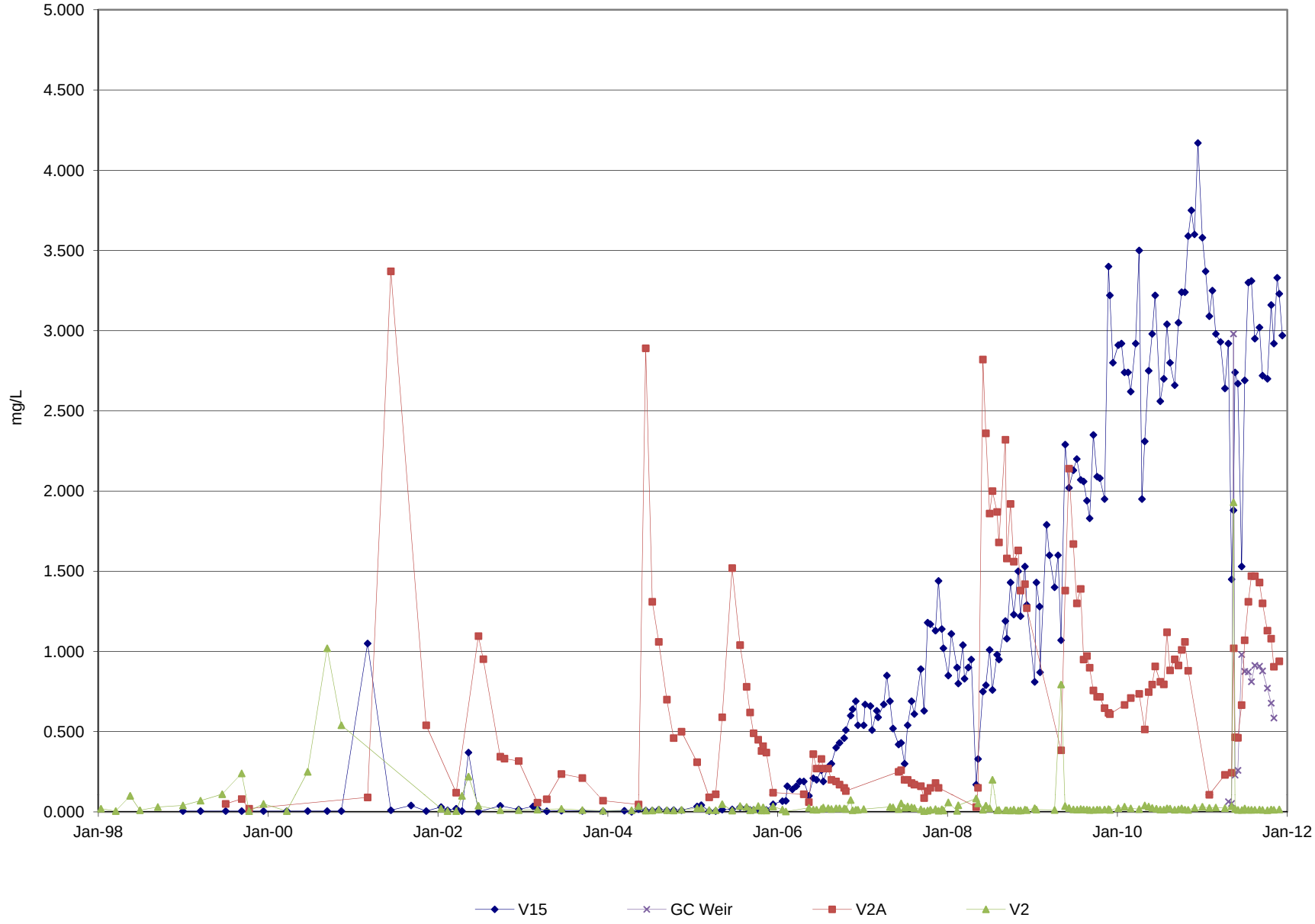


Figure G-11: Sulphate at V15, GC Weir, V2A, and V2

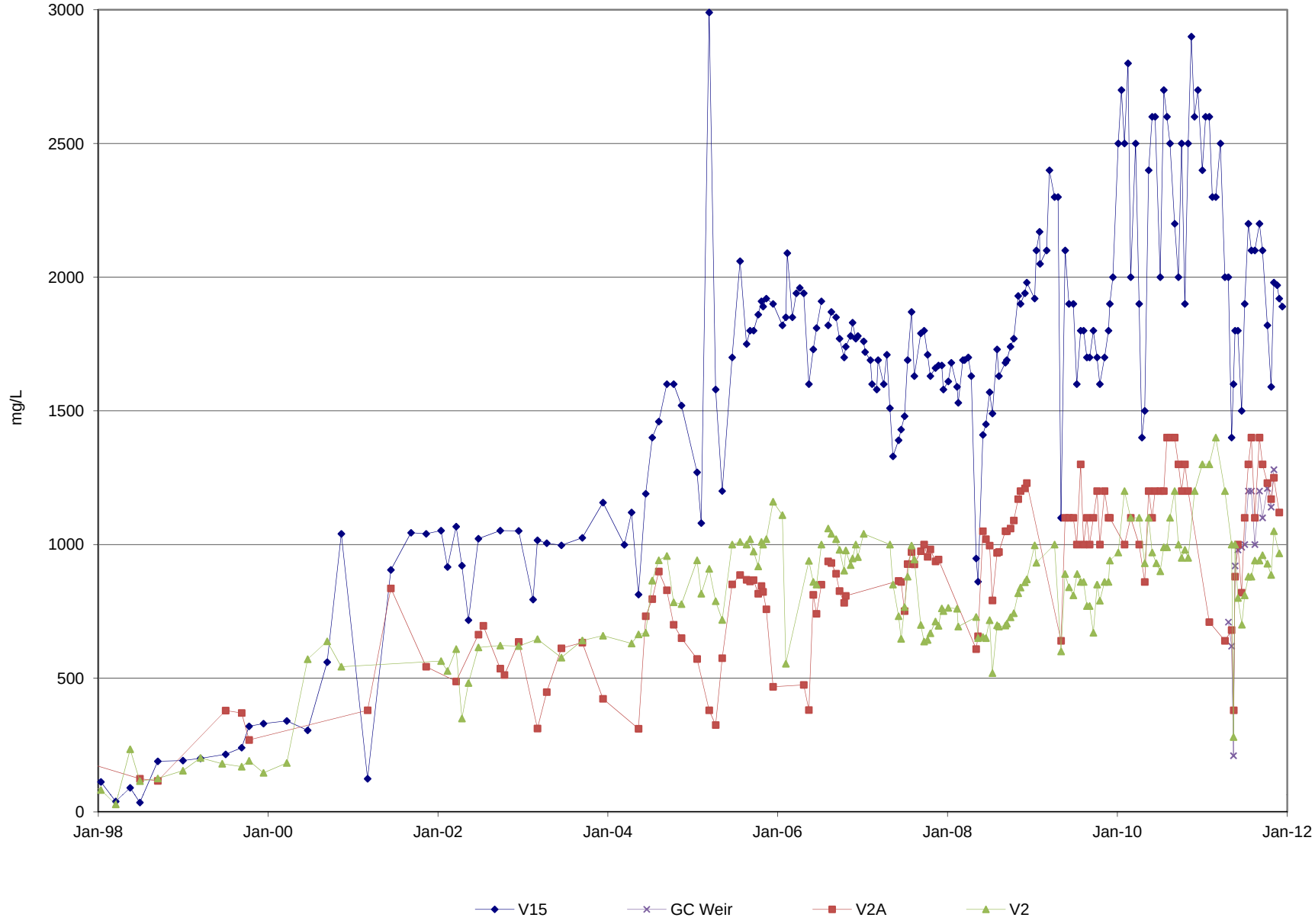


Figure G-12: Zinc (Total) at SRK05-9, Moose Seep, and V2

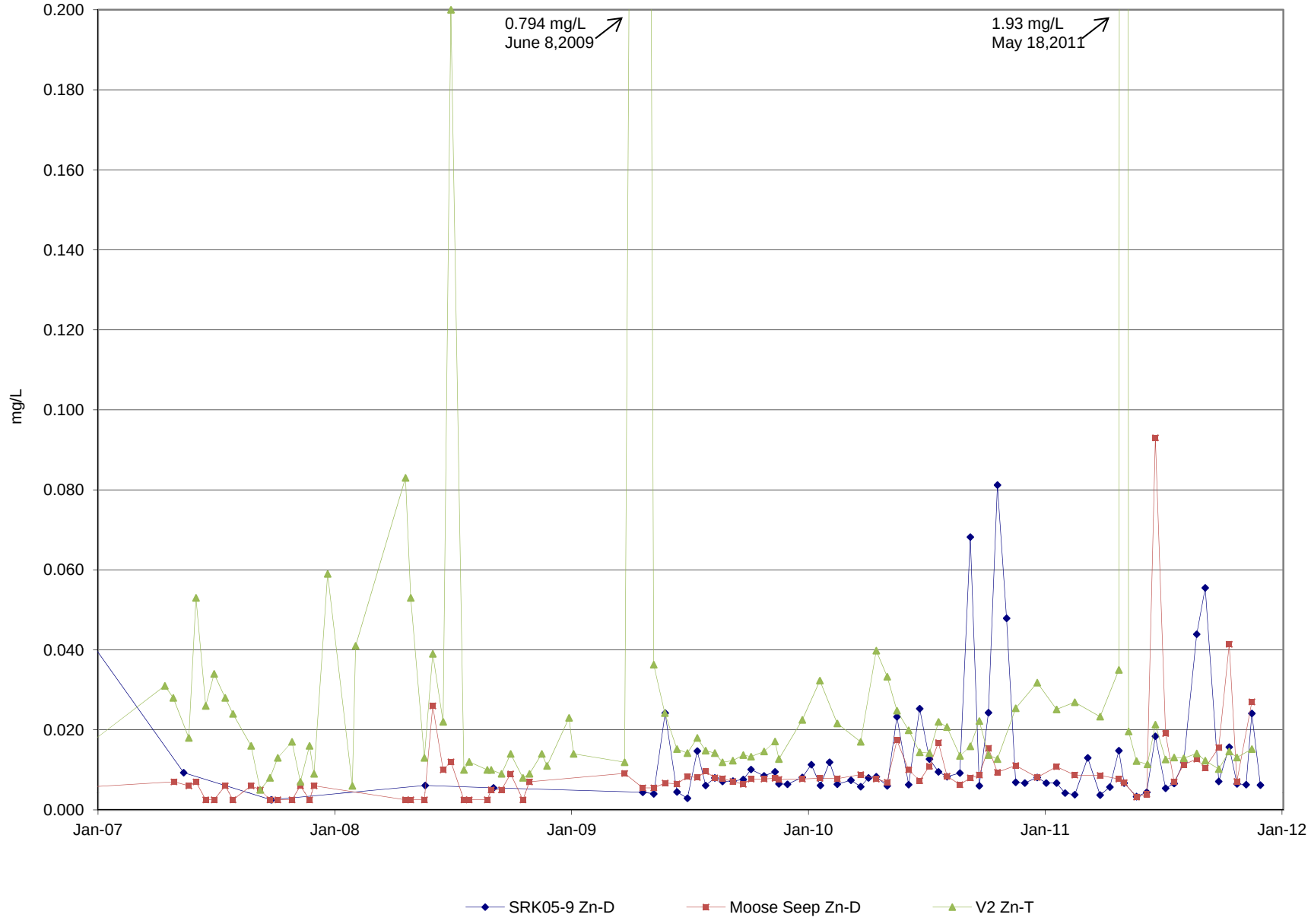
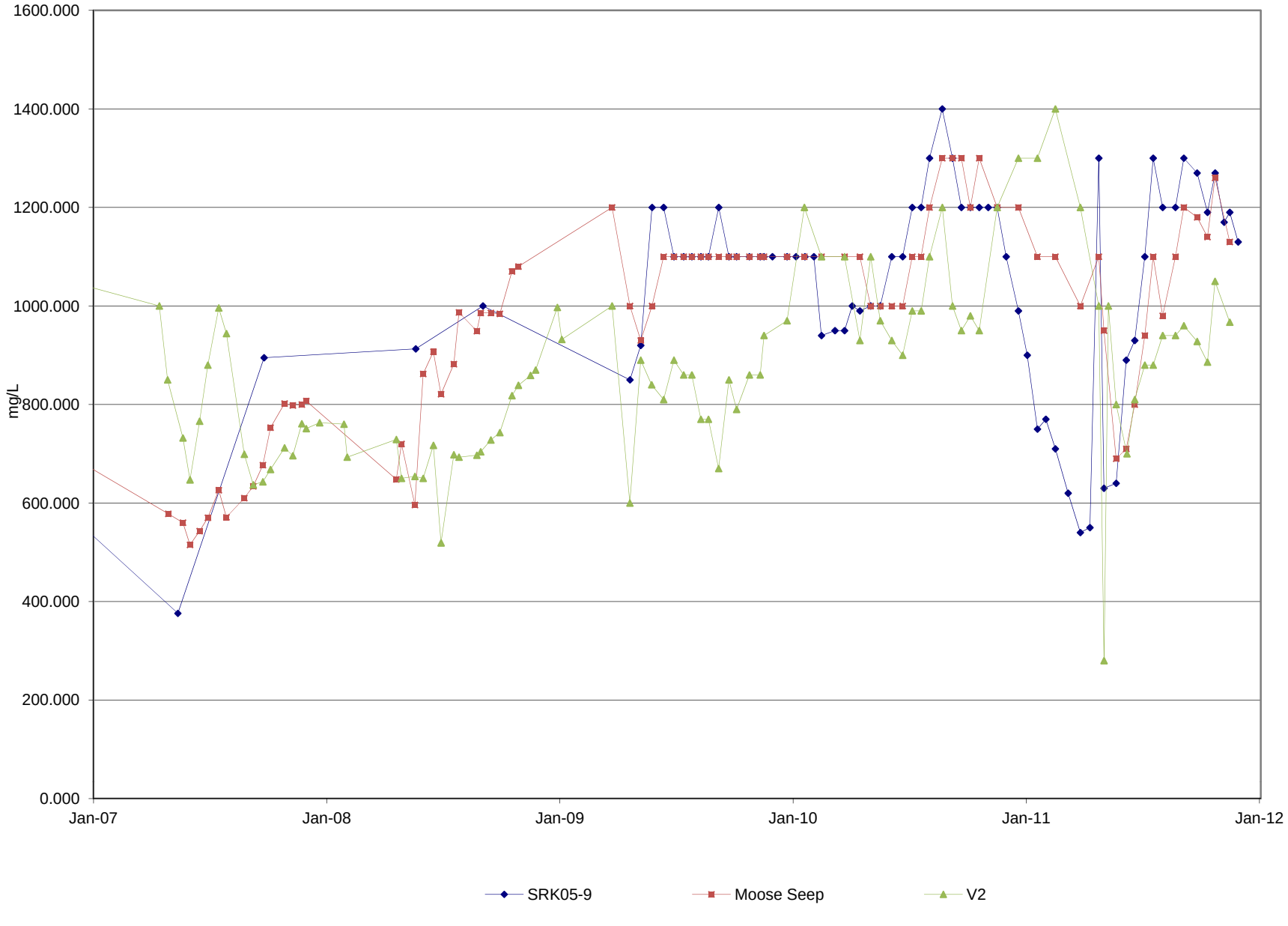


Figure G-13: Sulphate at SRK05-9, Moose Seep, and V2



TABLES AND FIGURES

Event 5: Degraded Water Quality in the North Fork of Rose Creek

Denison Environmental Services

Table G-40: AMP Event 5 - Trigger Activation Summary 2011

X2		January	February	March	April	May	June
SO4	Significant Increasing Trend Projecting Threshold Exceedance within 3 Years	N	N	N	N	N	N
	Result > Threshold (May-Oct: 14.8 mg/L; Nov-Apr: 29.5 mg/L)	N	N	Y	N	Y	N
Zn	Significant Increasing Trend Projecting Threshold Exceedance within 3 Years	N	N	N	N	N	N
	Result > Threshold (0.06 mg/L)	N	N	N	N	Y	N
Cu	Significant Increasing Trend Projecting Threshold Exceedance within 3 Years	N	N	N	N	N	N
	Result > Threshold (0.028 mg/L)	N	N	N	N	N	N

X2		July	August	September	October	November	December
SO4	Significant Increasing Trend Projecting Threshold Exceedance within 3 Years	N	N	N	N	N	N
	Result > Threshold (May-Oct: 14.8 mg/L; Nov-Apr: 29.5 mg/L)	N	N	N	Y	N	N
Zn	Significant Increasing Trend Projecting Threshold Exceedance within 3 Years	N	N	N	N	N	N
	Result > Threshold (0.06 mg/L)	N	N	N	N	N	N
Cu	Significant Increasing Trend Projecting Threshold Exceedance within 3 Years	N	N	N	N	N	N
	Result > Threshold (0.028 mg/L)	N	N	N	N	N	N

Trigger Activated

Denison Environmental Services

Table G-41: Water Quality in the North Fork of Rose Creek at Station X2

Faro Mine Closure

Date	Sulphate	Zinc (T)	Copper (T)
	mg/L	mg/L	mg/L
14/01/2003	29	0.029	0.019
15/02/2003	29	0.023	0.008
15/03/2003	31	0.022	0.021
15/04/2003	28	0.021	0.018
13/05/2003	7	0.037	0.107
14/06/2003	9	0.016	0.034
14/07/2003	11	0.034	0.023
11/08/2003	15	0.011	0.02
08/09/2003	13	0.012	0.021
14/10/2003	26	0.027	0.049
15/11/2003	21	0.022	0.01
15/12/2003	18	0.014	0.008
12/01/2004	24	0.024	0.015
16/02/2004	34	0.032	0.031
15/03/2004	32	0.031	0.0005
13/04/2004	32.4	0.024	0.01
14/05/2004	7.8	0.027	0.003
14/06/2004	7.8	0.007	0.0005
12/07/2004	15.7	0.009	0.0005
09/08/2004	19.3	0.011	0.0005
13/09/2004	19.4	0.012	0.0005
12/10/2004	28	0.025	0.0005
15/11/2004	24.7	0.024	0.0005
03/12/2004	25	0.02	0.0005
21/01/2005	37.2	0.031	0.002
08/02/2005	31.8	0.035	0.0005
15/03/2005	33.2	0.031	0.0005
11/04/2005	34	0.038	0.0005
09/05/2005	4	0.031	0.003
20/06/2005	10.4	0.016	0.001
25/07/2005	10.6	0.015	0.001
22/08/2005	15.1	0.023	0.0005
06/09/2005	16.4	0.036	0.0005
10/10/2005	16.6	0.028	0.0005
01/11/2005	24.6	0.035	0.0005
13/12/2005	28.1	0.058	0.0005
23/01/2006	37.2	0.094	0.0005
14/02/2006	39.7	0.035	0.0005
25/04/2006	38.8	0.14	0.0005
17/05/2006	4.85	0.042	0.003
19/06/2006	8.95	0.017	0.001
18/07/2006	11.7	0.02	0.001
21/08/2006	12.2	0.023	0.0010
11/09/2006	12.8	0.023	0.0005
16/10/2006	27.4	0.065	0.0010
14/11/2006	31.1	0.064	0.0005
18/04/2007	33.7	0.18	0.0005
14/05/2007	12.8	0.068	0.0030
18/06/2007	9.25	0.029	0.0020
16/07/2007	10.1	0.025	0.0010
Trigger	**14.8[a]/29.5[b]**	**0.06**	**0.028**

Date	Sulphate	Zinc (T)	Copper (T)
	mg/L	mg/L	mg/L
13/08/2007	15.3	0.031	0.0010
10/09/2007	14.2	0.025	0.0005
22/10/2007	19.9	0.063	0.0005
13/11/2007	24.5	0.068	0.0005
09/12/2007	28.1	0.097	0.0005
08/01/2008	30.9	0.056	0.0005
18/02/2008	36.4	0.099	0.0005
17/03/2008	38.2	0.094	0.0005
14/04/2008	36.3	0.097	0.0005
14/05/2008	6.12	0.076	0.0030
16/06/2008	8.35	0.037	0.0020
14/07/2008	7.3	0.024	0.0010
11/08/2008	11.7	0.03	0.0005
15/09/2008	10.1	0.024	0.0020
15/10/2008	14.6	0.039	0.0005
03/11/2008	22.2	0.1	0.0005
01/12/2008	23.7	0.092	0.0005
12/01/2009	44	0.2	0.0005
02/02/2009	35.3	0.14	0.0005
03/03/2009	38	0.121	0.0004
06/04/2009	39	0.0994	0.0003
06/05/2009	0.6	0.168	0.0033
08/06/2009	4	0.0092	0.0012
13/07/2009	13	0.033	0.0009
17/08/2009	18.0	0.0272	0.00059
02/09/2009	12.0	0.0169	0.00060
05/10/2009	13.0	0.0189	0.00050
04/11/2009	20.0	0.0284	0.00040
01/12/2009	25.0	0.0239	0.00040
11/01/2010	29.0	0.0237	0.00040
22/02/2010	28.0	0.0247	0.00030
10/03/2010	31.0	0.0255	0.00030
14/04/2010	28.0	0.0311	0.00050
03/05/2010	4.5	0.0162	0.00230
04/06/2010	6.6	0.0082	0.00090
08/07/2010	15.0	0.0078	0.00080
03/08/2010	15.0	0.0097	0.00060
02/09/2010	13.0	0.0144	0.00050
18/10/2010	19.0	0.0142	0.00040
09/11/2010	25.0	0.0218	0.00050
01/12/2010	29.0	0.0194	0.00040
19/01/2011	28.0	0.0179	0.00030
01/02/2011	26.0	0.0197	0.00030
16/03/2011	31.0	0.0407	0.00050
13/04/2011	26.0	0.0180	0.00040
11/05/2011	17.0	0.083	0.00035
20/06/2011	8.7	0.0451	0.00270
13/07/2011	10.0	0.0069	0.00080
25/08/2011	9.3	0.0063	0.00063
21/09/2011	14.0	0.0081	0.00060
20/10/2011	25.8	0.0160	0.00060
14/11/2011	22.7	0.0232	0.00049
06/12/2011	19.9	0.0128	0.00041
Trigger	**14.8[a]/29.5[b]**	**0.06**	**0.028**

Retest Result

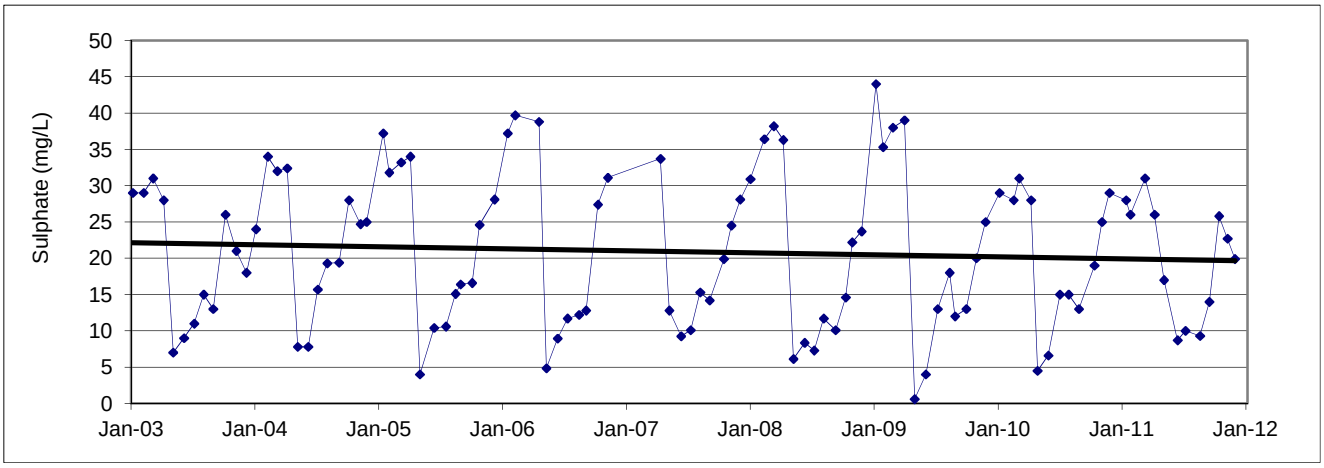
DLs (at half value)

a: May to October Threshold

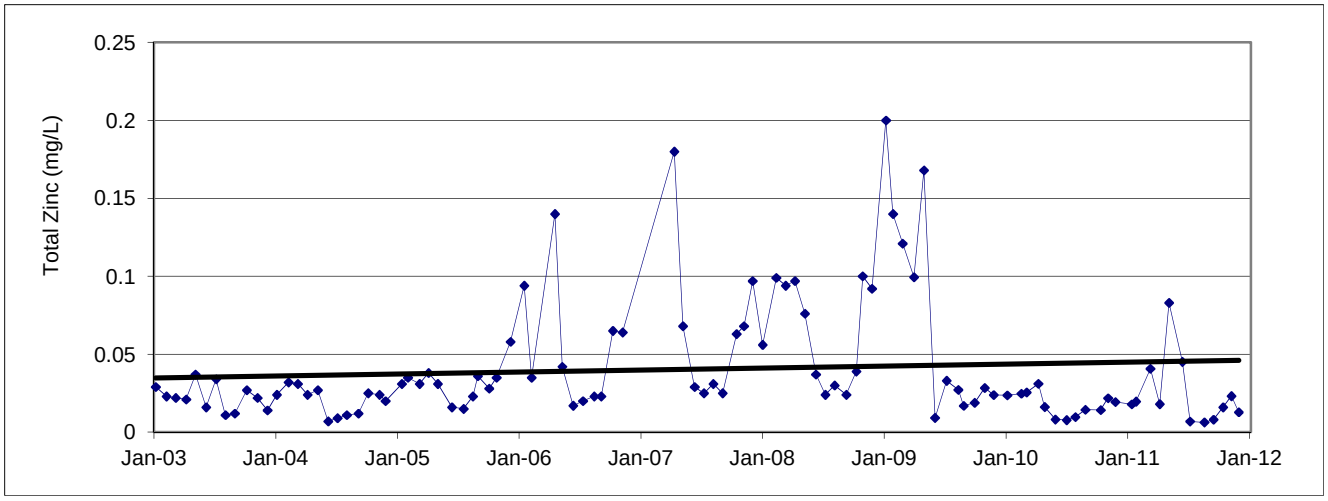
b: November to April Threshold

Figure G-14: Water Quality in the North Fork of Rose Creek at Station X2

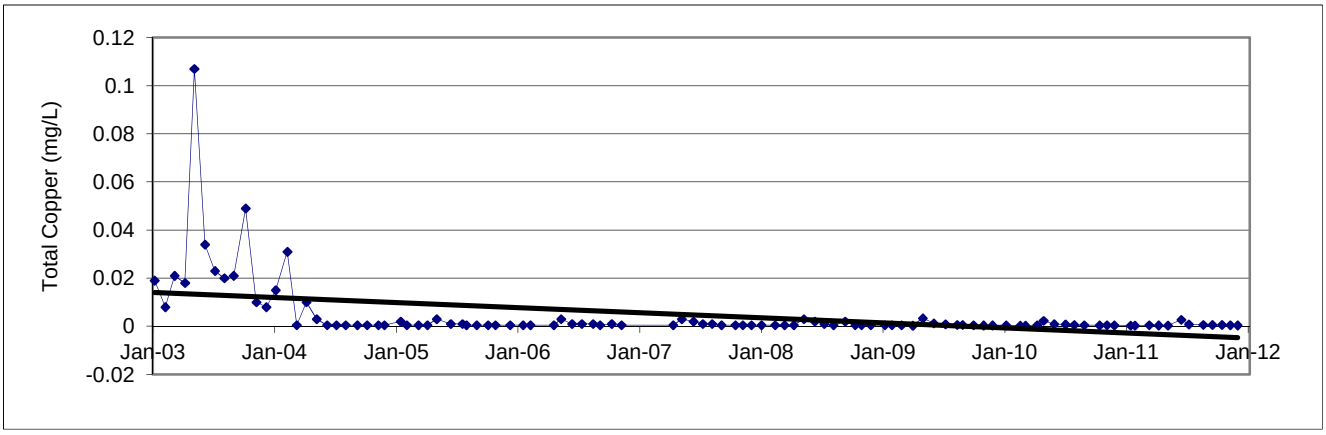
a) Sulphate



b) Total Zinc



c) Total Copper



TABLES, FIGURES & Memorandum

Event 6: Water Level in Grum Pit Reaches Maximum Desired Elevation

Denison Environmental Services

Table G-42: Zinc (Total and Dissolved) at the Surface of the Grum Pit (V23)

Faro Mine Closure

Date	Zn (Total) mg/L	Zn (Dissolved) mg/L
14/01/1997	0.010	
26/05/1997	7.790	
22/07/1997	2.530	
14/09/1998	1.030	
10/09/1999	3.420	0.200
12/10/1999	5.910	1.300
22/03/2000	7.190	0.300
20/06/2000	0.020	0.020
26/06/2000	5.920	0.690
12/09/2000	11.940	0.480
05/03/2001	0.005	0.005
13/06/2001	13.800	0.400
08/09/2001	12.270	3.700
21/03/2002	1.810	1.930
25/06/2002	7.822	7.439
27/09/2002	5.923	4.950
14/01/2003	6.198	5.616
06/03/2003	10.043	9.836
17/06/2003	3.654	3.098
15/09/2003	5.507	5.179
13/12/2003	8.216	7.597
14/03/2004	8.495	8.557
07/09/2004	2.000	0.360
07/03/2005	2.050	1.740
07/06/2005	5.760	3.070
12/09/2005	1.340	0.590
01/12/2005	6.100	5.390
20/03/2006	5.040	4.390
05/06/2006	3.400	3.110
09/06/2006	2.440	1.210
05/12/2006	5.380	5.380
05/03/2007	5.100	4.910
18/06/2007	3.500	1.860
24/09/2007	3.660	2.440
10/12/2007	5.260	4.560
10/03/2008	5.860	5.900
10/06/2008	5.810	4.660
02/09/2008	6.260	5.510
02/12/2008	7.360	5.710

Date	Zn (Total) mg/L	Zn (Dissolved) mg/L
19/03/2009	4.410	4.150
15/06/2009	3.770	3.640
05/09/2009	0.929	0.800
10/12/2009	3.550	3.430
04/03/2010	3.110	2.810
16/06/2010	3.830	3.320
07/09/2010	2.010	1.720
16/12/2010	5.140	4.960
23/03/2011	3.990	4.100
28/06/2011	2.720	1.670
11/09/2011	2.080	1.810
22/12/2011	4.250	4.340

DLs (at half value)

Table G-43: 2011 Depth Profiles for Zinc (Total) in Grum Pit

Station	Depth m	Date	Zn (Total) mg/L
V23	-0.25	23/03/2011	3.990
GL-1	-1	12/04/2011	2.440
GL-3	-3	12/04/2011	3.960
GL-5	-5	12/04/2011	4.020
GL-15	-15	12/04/2011	4.690
GL-30	-30	12/04/2011	4.780
GL-60	-60	12/04/2011	4.580
GL-1	-1	14/06/2011	4.340
GL-3	-3	14/06/2011	5.030
GL-5	-5	14/06/2011	4.680
GL-15	-15	14/06/2011	4.930
GL-30	-30	14/06/2011	4.870
GL-60	-60	14/06/2011	4.830
V23	-0.25	28/06/2011	2.720
GL-1	-1	12/07/2011	0.254
GL-3	-3	12/07/2011	0.700
GL-5	-5	12/07/2011	4.450
GL-15	-15	12/07/2011	5.080
GL-30	-30	12/07/2011	5.030
GL-60	-60	12/07/2011	4.730
GL-1	-1	09/08/2011	0.878
GL-3	-3	09/08/2011	0.897
GL-5	-5	09/08/2011	5.620
GL-15	-15	09/08/2011	5.090
GL-30	-30	09/08/2011	5.210
GL-60	-60	09/08/2011	5.100
GL-1	-1	06/09/2011	2.120
GL-3	-3	06/09/2011	2.220
GL-5	-5	06/09/2011	3.050
GL-15	-15	06/09/2011	5.710
GL-30	-30	06/09/2011	5.850
GL-60	-60	06/09/2011	5.630
V23	-0.25	11/09/2011	2.080
V23	-0.25	22/12/2011	4.250

Note: Surface samples collected from Grum Pit (V23) assigned a depth of 0.25 m below water surface.

Figure G-15: Grum Pit Water Elevations

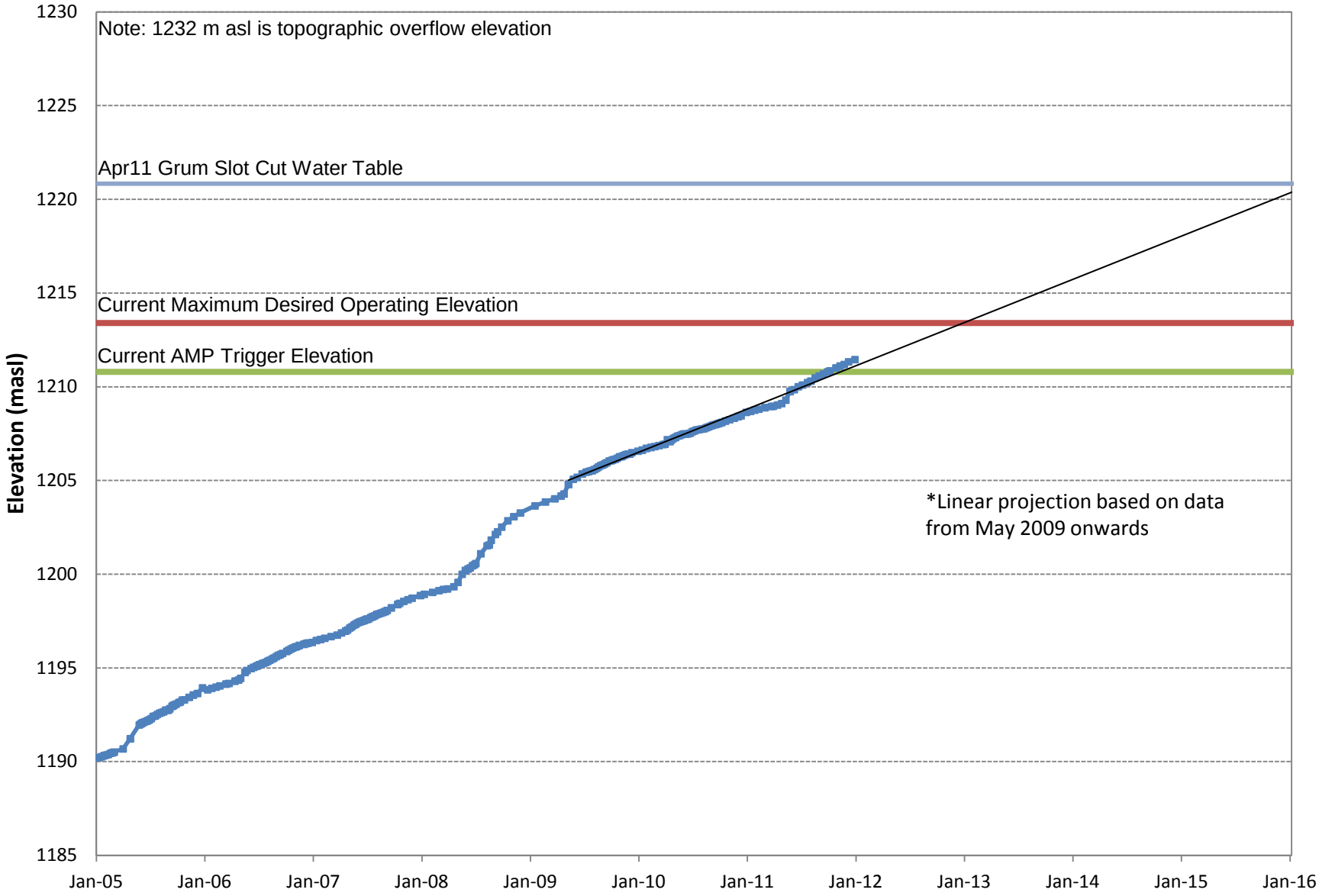


Figure G-16: Zinc (Total and Dissolved) at the Surface of the Grum Pit

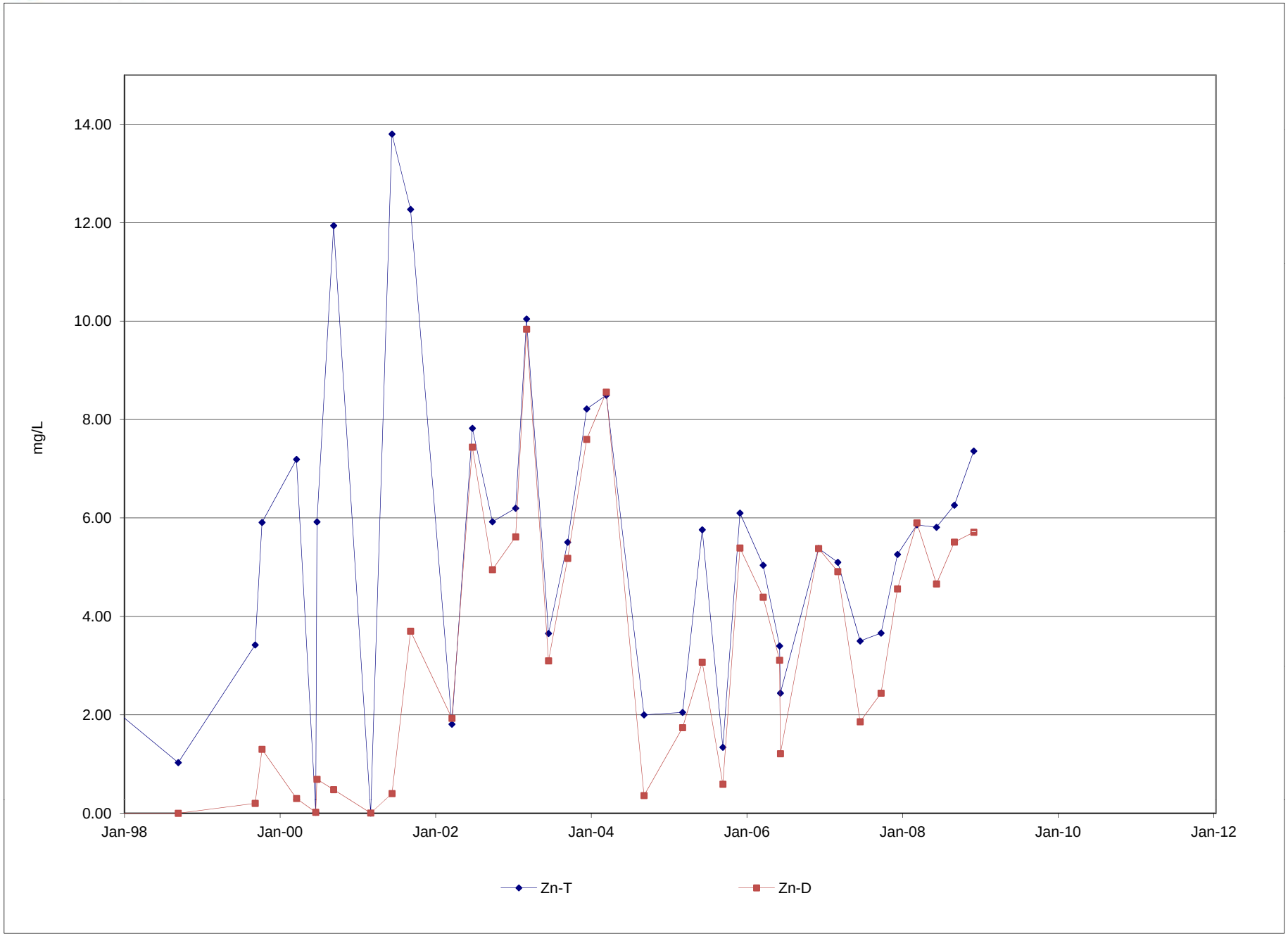
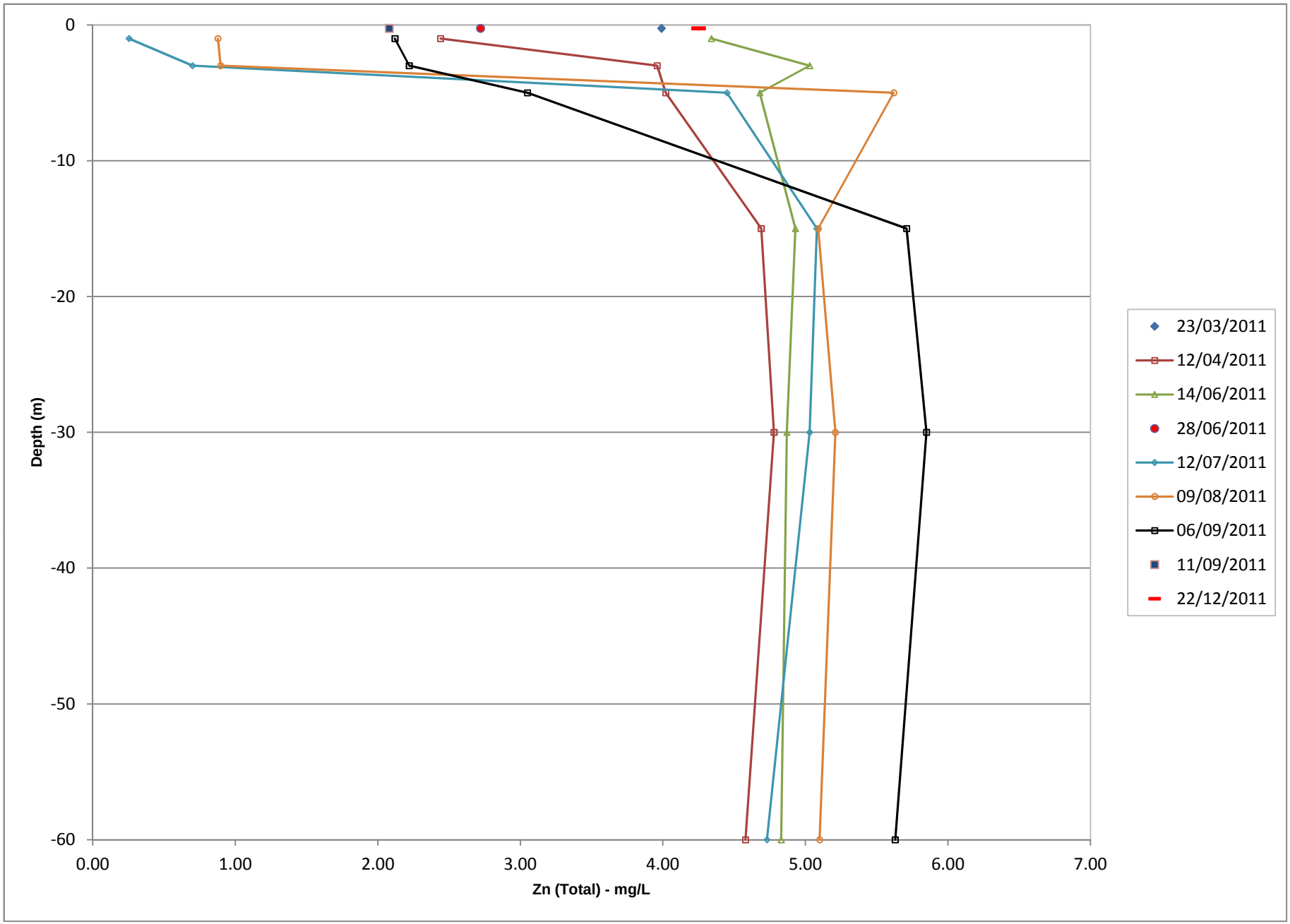


Figure G-17: 2011 Depth Profiles for Zinc (Total) in Grum Pit



TECHNICAL MEMORANDUM

DATE October 14, 2011 **REFERENCE No.** 0914260021-010-TM-Rev0-1000

TO Jay Cherian
Denison Environmental Services

FROM A.V. Chance and Justin Bieber **EMAIL** achance@golder.com
jbieber@golder.com

GRUM PIT STORAGE CAPACITY BELOW ELEVATION 1230 M

1.0 INTRODUCTION

This memorandum presents the results for the storage capacity calculation of Grum Pit below El. 1230 metres. This memorandum includes a description of methods and summary of results.

2.0 METHODS

The storage capacity of Grum Pit was completed using the following method.

1) A base surface topography was created in AutoCAD™ for the existing pit, including the 2009 pit topography contours prepared from the digital elevation model (DEM) provided by the Yukon Government and 2009 bathymetry data provided by Laberge Environmental services.

    a. To estimate the storage capacity of Grum Pit the two sets of information needed to be merged into a single file to provide a continuous surface. There were instances where the 2009 pit topography and the 2009 Grum Pit bathymetry overlapped, where this occurred, the bathymetry data was assumed to be correct and the offending 2009 pit contours were removed. As a result, the lowest valid contour from the 2009 pit contours was considered to be 1210 metres. The highest valid contour from the 2009 Grum Pit bathymetry was approximately 1200 metres. Therefore, there is a "ring" between the 2009 pit contours and the 2009 Grum Pit bathymetry between elevations 1210 metres and 1200 metres where there is limited intermediate data. A straight line approximation between these two contours was assumed.

2) The merged pit topography and bathymetry contours were exported into an xyz text file, that consists of approximately 435,000 points.

3) These points were imported into Surfer 8 and the Kriging method was used to generate a grid file with 5 metre spacing.

4) This grid file was then used in GoldTail to estimate the storage capacity of Grum Pit between the pit bottom at El. 1136 metres and the pit outlet at El. 1230 metres on a 1 metre spacing.

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There are three potential sources of error in the storage capacity estimate of Grum Pit, which are listed below;

a) The accuracy of the 2009 pit contours is unknown and influences the estimated storage values and plan areas above elevation 1210 metres.

b) The accuracy of the 2009 Grum Pit bathymetry is unknown and influences the estimated storage values and plan areas below elevation 1200 metres. The bathymetry was generated by others from eight bathymetry lines along which soundings were taken. Contours were then generated from the sounding data. The contours appear reasonable, however on the east side of Grum Pit where the pit is known to be experiencing instabilities, the sounding density is likely insufficient to accurately define this area.

c) The merging of the 2009 pit contours and the 2009 Grum Pit bathymetry is also a source of error. The "ring" between the 1210 metre contour and the 1200 metre contour represents an approximate area of 26,000 m^2, if this "ring" area is multiplied by the difference in elevation, 10 metres, then the storage volume represented is approximately 260,000 m^3, or less than 5% of the total storage volume.

3.0 RESULTS

Between the pit bottom at El. 1136 metres and the outlet at El. 1230 metres, Grum Pit has a storage capacity of approximately 8.3 Mm^3. The Grum Pit stage storage curve is presented below in Chart 1 and a summary of the data is attached in Table 1. This data has also been provided in an Excel™ spreadsheet.

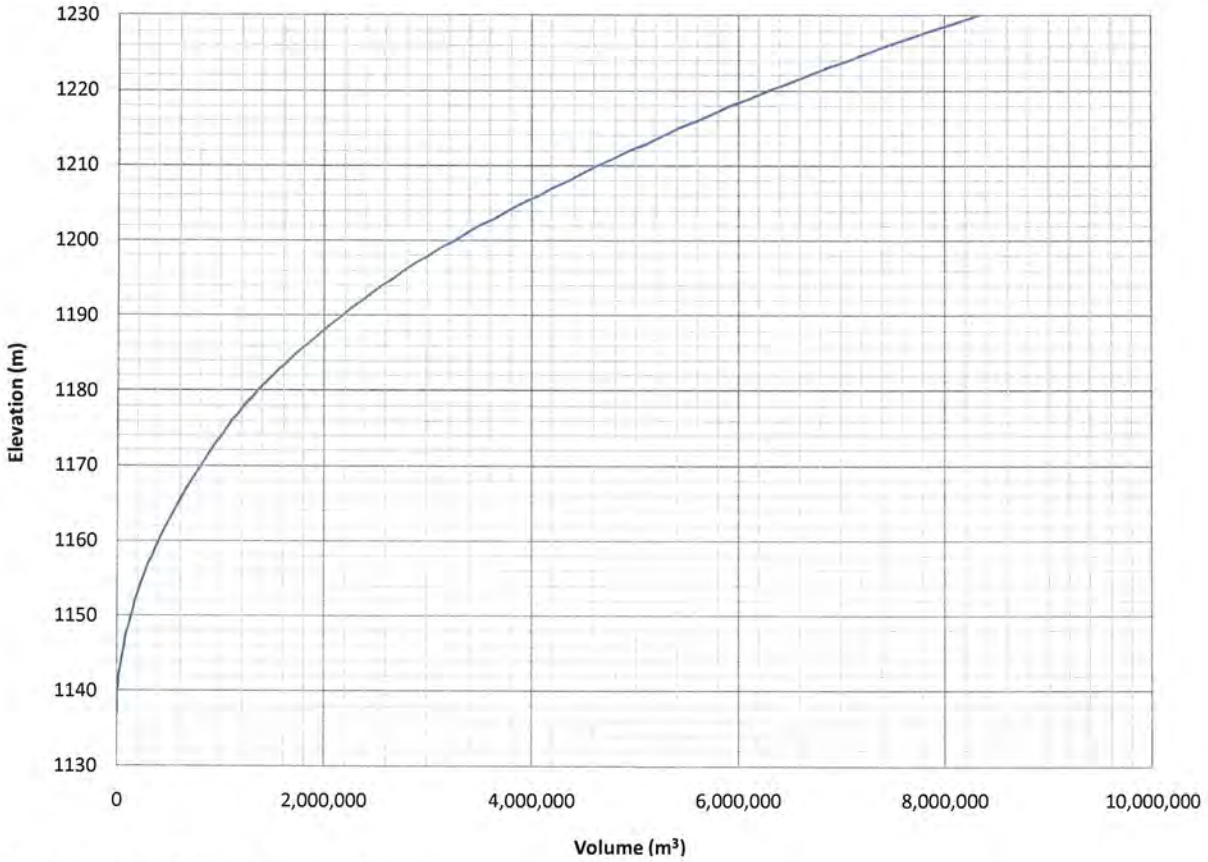

Chart 1: Grum Pit Stage Storage Curve

4.0 CLOSURE

We trust the technical memorandum is sufficient for your needs at this time. Should you have any questions, or require additional information, please do not hesitate to contact us.

GOLDER ASSOCIATES LTD.

Justin Bieber, E.I.T.
Geotechnical Engineer

A.V. Chance, P.Eng.
Principal, Mining Division

JB/AVC/ja

Attachment: Table 1: Summary of Grum Pit Storage Data

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Table 1: Summary of Grum Pit Storage Data

Elevation (m)	Plan Area (m^2)	Volume (m^3)	Elevation (m)	Plan Area (m^2)	Volume (m^3)
1136	0	0	1184	78,613	1,651,950
1137	7	1	1185	81,117	1,731,805
1138	112	52	1186	83,524	1,814,143
1139	1,433	375	1187	85,974	1,898,901
1140	3,778	2,844	1188	88,450	1,986,146
1141	5,720	7,675	1189	90,826	2,075,793
1142	7,726	14,366	1190	93,132	2,167,770
1143	9,757	23,130	1191	95,508	2,262,085
1144	11,766	33,931	1192	98,047	2,358,842
1145	13,476	46,557	1193	100,985	2,458,339
1146	14,924	60,783	1194	103,930	2,560,793
1147	16,233	76,376	1195	107,111	2,666,248
1148	17,477	93,238	1196	110,484	2,775,007
1149	18,574	111,271	1197	113,891	2,887,177
1150	19,630	130,365	1198	117,437	3,002,813
1151	20,891	150,613	1199	121,257	3,122,181
1152	22,321	172,238	1200	125,064	3,245,403
1153	23,754	195,249	1201	128,958	3,372,385
1154	25,352	219,794	1202	132,800	3,503,284
1155	26,857	245,920	1203	135,683	3,637,567
1156	28,249	273,452	1204	138,376	3,774,614
1157	30,007	302,613	1205	140,412	3,914,077
1158	31,391	333,370	1206	142,172	4,055,368
1159	32,595	365,346	1207	143,991	4,198,446
1160	33,899	398,589	1208	145,892	4,343,383
1161	35,224	433,156	1209	147,977	4,490,283
1162	36,652	469,077	1210	150,730	4,639,571
1163	38,172	506,522	1211	153,638	4,791,805
1164	39,470	545,347	1212	156,301	4,946,758
1165	40,724	585,438	1213	159,146	5,104,520
1166	41,853	626,736	1214	161,986	5,265,069
1167	42,911	669,121	1215	164,638	5,428,396
1168	43,988	712,579	1216	167,589	5,594,378
1169	45,023	757,084	1217	170,728	5,763,669
1170	46,132	802,650	1218	175,292	5,936,037
1171	47,442	849,408	1219	179,369	6,113,539
1172	49,000	897,610	1220	183,759	6,294,885
1173	50,802	947,497	1221	187,384	6,480,545
1174	52,618	999,273	1222	190,997	6,669,640
1175	54,535	1,052,856	1223	194,417	6,862,418
1176	56,605	1,108,416	1224	197,654	7,058,388
1177	58,800	1,166,103	1225	200,671	7,257,595
1178	61,284	1,226,135	1226	203,871	7,459,745
1179	64,934	1,288,989	1227	207,240	7,665,387
1180	68,874	1,355,953	1228	211,724	7,874,468
1181	71,683	1,426,341	1229	218,400	8,089,505
1182	74,097	1,499,205	1230	257,023	8,314,102
1183	76,372	1,574,459			

TABLES

Event 7: Disruption of Fannin Sheep Migration Through the Mine Site

Table G-44: 2011 Fannin Sheep Sightings

Date	Time	Quantity	Description of Sighting
19/05/2011	8:40 PM	1	Sheep sighted at Grum Pit
20/05/2011	2:30 PM	4	Sheep sighted on Grum Side
20/05/2011	4:45 PM	13	9 ewes and 4 lambs sighted on Grum Side
20/05/2011	8:47 PM	12	Sheep sighted at Grum Pit
21/05/2011	5:30 PM	3	Sheep sighted at bottom of Vangorda Flume
21/05/2011	5:36 PM	2	Sheep sighted at Vangorda Pit
21/05/2011	10:40 PM	2	Sheep sighted at Vangorda Flume
22/05/2011	6:30 PM	1	Sheep sightedon Grum Road
23/05/2011	8:00 AM	3	Sheep sighted at Grum Water Treatment Plant
23/05/2011	11:15 AM	10	Sheep sighted at Vangorda Flume
23/05/2011	11:30 AM	1	Sheep sighted at Vangorda Substation
23/05/2011	9:00 PM	6	Sheep sighted at Rose Creek
24/05/2011	5:00 PM	2	Sheep sighted on Grum Side
24/05/2011	9:00 PM	6	Sheep sighted at Grum Pit
25/05/2011	9:30 AM	24	Sheep sighted at Grum Dump
26/05/2011	9:00 AM	16	Sheep sighted at Grum Pit
26/05/2011	10:55 AM	11	Sheep sighted at Grum Water Treatment Plant
27/05/2011	10:55 AM	6	Sheep sighted on Haul Road
27/05/2011	1:00 PM	7	Sheep sighted at Grum Pit
28/05/2011	10:30 AM	6	Sheep sighted at Grum Pit
28/05/2011	10:00 PM	8	6 ewes and 2 lambs sighted at Vangorda Pit
30/05/2011	10:00 AM	2	Sheep sighted at V25BSP
30/05/2011	11:15 AM	27	Sheep sighted at Grum Pit
31/05/2011	9:30 PM	2	Sheep sighted on Grum Side
03/06/2011	2:05 PM	18	Sheep sighted at Swimming Hole
03/06/2011	9:30 PM	23	Sheep sighted at Swimming Hole
04/06/2011	2:30 PM	32	Sheep sighted at Swimming Hole
05/06/2011	9:38 AM	22	15 sheep and 7 lambs sighted at Grum Pit
05/06/2011	11:15 AM	26	Sheep sighted on Grum Side
06/06/2011	4:30 PM	24	Sheep sighted at Groucho Pond
06/06/2011	9:00 PM	43	37 sheep and 6 lambs sighted above north wall of Grum Pit
07/06/2011	8:15 AM	25	Sheep sighted at Fresh Water Pond
07/06/2011	4:30 PM	12	Sheep sighted on north side of Grum Pit
07/06/2011	9:00 PM	15	Sheep sighted on north side of Grum Pit
08/06/2011	2:37 PM	2	Sheep sighted at Grum Pit
09/06/2011	9:00 PM	17	Sheep sighted on north side of Grum Pit
12/06/2011	9:22 PM	12	10 sheep and 2 lambs sighted on Grum Side
13/06/2011	10:20 PM	10	9 sheep and 1 lamb sighted
23/07/2011	4:15 PM	10	5 ewes and 5 lambs sighted on Grum Side
21/08/2011	8:48 AM	3	Sheep sighted at Grum Pit
06/09/2011	1:33 PM	14	Sheep sighted at Grum Water Treatment Plant
07/09/2011	11:31 AM	18	Sheep sighted at Grum Water Treatment Plant
11/09/2011	5:45 PM	40	Sheep sighted at Vangorda Substation
12/09/2011	9:00 AM	2	Rams sighted at Grum Water Treatment Plant
13/09/2011	9:00 AM	20	Sheep sighted at Grum Pit
13/09/2011	11:05 AM	27	Sheep sighted at V27
16/09/2011	10:15 AM	2	Sheep sighted at V15 Access Road
18/09/2011	3:15 PM	30	Sheep sighted at Grum Water Treatment Plant
17/10/2011	2:00 PM	4	Sheep sighted at Grum Dump
22/11/2011	10:05 AM	1	Ram sighted at Grum Pit