



**BGC ENGINEERING INC.**  
AN APPLIED EARTH SCIENCES COMPANY

## **DELOITTE & TOUCHE INC.**

### **2006 ANNUAL GEOTECHNICAL EVALUATION AND INSTRUMENT REVIEW**

### **VARIOUS FACILITIES AT FARO MINE, YUKON**

PROJECT NO.: 0257-039-05  
DATE: FEBRUARY 14, 2007

DISTRIBUTION LIST:	
ANVIL RANGE FARO	2 COPIES
DELOITTE & TOUCHE TORONTO	8 COPIES
DELOITTE & TOUCHE CALGARY	1 COPY
GARTNER LEE – YELLOWKNIFE	1 COPY
GARTNER LEE – WHITEHORSE	6 COPIES
BGC CALGARY	2 COPIES
BGC VANCOUVER	1 COPY

 **BGC ENGINEERING INC.**  
AN APPLIED EARTH SCIENCES COMPANY  
1605, 840 - 7 Avenue SW  
Calgary, Alberta T2P 3G2  
Tel.: (403) 250-5185  
Fax: (403) 250-5330

Project No. 0257-039-05  
February 14, 2007

Mr. Doug Sedgwick  
Deloitte & Touche Inc., as Interim Receiver for Anvil Range Mining Corporation  
Suite 1900, TD Centre  
79 Wellington Street West  
Toronto, ON  
M5K 1B9

**RE: 2006 ANNUAL GEOTECHNICAL EVALUATION AND INSTRUMENT REVIEW  
VARIOUS MINE WASTE FACILITIES AT FARO MINE, YUKON**

Dear Mr. Sedgwick:

Please find attached our final report on the Annual Geotechnical Evaluation and Instrument Review of various mine waste facilities at Faro Mine. This report has been sent to the distribution list shown on the front cover.

If there are any questions regarding this report, please contact the undersigned at your convenience.

Yours truly,  
**BGC Engineering Inc.**  
per:

Gerry Ferris, M.Sc., P.Eng.  
Geotechnical Engineer

encl.: Final Report

GWF/sf

## TABLE OF CONTENTS

<b>1.0</b>	<b>Introduction .....</b>	<b>1</b>
1.1	Scope of Services.....	1
1.2	General Background Relating to Inspection and Instrumentation .....	2
1.3	Additional Relevant Studies.....	3
<b>2.0</b>	<b>2006 Monitoring Program .....</b>	<b>4</b>
2.1	Introduction.....	4
2.2	Elevations within the Down Valley Project Area .....	4
2.3	2006 Water Management .....	5
2.4	Precipitation Information.....	5
2.5	Air temperature Information.....	6
2.6	Measured Flow in Rose Creek Diversion Canal.....	6
<b>3.0</b>	<b>Inspection Conditions and Approach.....</b>	<b>6</b>
<b>4.0</b>	<b>Findings and Conclusions.....</b>	<b>7</b>
<b>5.0</b>	<b>Instrumentation, Monitoring and Annual Review .....</b>	<b>30</b>
5.1	Instrumentation Readings.....	30
5.2	Routine Inspections by On-Site Personnel.....	30
5.2.1	Rose Creek Diversion Canal.....	30
5.2.2	Intermediate Dam .....	31
5.2.3	Cross Valley Dam .....	31
5.2.4	North Fork Rose Creek Flow-Through Causeway .....	31
5.2.5	Faro Creek Diversion Canal.....	32
5.2.6	Faro Waste Rock Dumps.....	32
5.2.7	Secondary Tailings Dam – East Leg.....	32
5.3	Annual Reviews.....	32
<b>6.0</b>	<b>Closure .....</b>	<b>34</b>
	<b>References.....</b>	<b>35</b>

## LIST OF TABLES

Table 1	Summary of Polishing Pond and Intermediate Pond Levels
Table 2	Total Monthly Precipitation at Faro Airport, Yukon
Table 3	Monthly Average Temperature (°C) at Faro Airport, Yukon
Table 4	Diversion Canal – Canal Dike – Piezometers
Table 5	Diversion Canal – Canal Dike – Thermistors
Table 6	Diversion Canal – Canal Dike – Slope Inclinometers
Table 7	Diversion Canal – Spoil Piles – Thermistors
Table 8	Diversion Canal – Spoil Piles – Slope Inclinometers
Table 9	Diversion Canal – Back Slope – Piezometers
Table 10	Diversion Canal – Back Slope – Thermistors
Table 11	Diversion Canal – Back Slope – Slope Inclinometers
Table 12	Intermediate Dam – Piezometers
Table 13	Cross Valley Dam – 2006 Weir Flows
Table 14	Cross Valley Dam Seepage Flows – Weir X13 (1982-2006)
Table 15	Cross Valley Dam – Piezometers
Table 16	Cross Valley Dam – Thermistors
Table 17	Secondary Dam - Piezometers

## LIST OF FIGURES

Figure 1	Site Plan
Figure 2	Down Valley Tailings Containment Instrument Locations - 1 of 2
Figure 3	Down Valley Tailings Containment Instrument Locations - 2 of 2
Figure 4	Cross Valley Dam Pond Elevations (1999 – 2006)
Figure 5	Intermediate Dam Pond Elevations (1999 – 2006)
Figure 6	Rose Creek Diversion Flows
Figure 7	Diversion Canal Dike Inspection Photos
Figure 8	Diversion Canal Dike Inspection Photos
Figure 9	Diversion Canal Dike Inspection Photos
Figure 10	Diversion Canal Dike Inspection Photos
Figure 11	Canal Dike - Current Piezometric Conditions
Figure 12	Canal Dike/ Intermediate Pond – Hydraulic Connectivity
Figure 13	Spoil Pile Inspection Photos
Figure 14	North Valley Interceptor Ditch Inspection Photos
Figure 15	Intermediate Dam Inspection Photos
Figure 16	Intermediate Dam Inspection Photos
Figure 17	Intermediate Dam Inspection Photos
Figure 18	Intermediate Dam Inspection Photos
Figure 19	Section View of Intermediate Dam
Figure 20	Cross Valley Dam Inspection Photos

Figure 21	Cross Valley Dam Inspection Photos
Figure 22	Cross Valley Dam Inspection Photos
Figure 23	Cross Valley Dam 2005 Weir Flows
Figure 24	Cross Valley Dam Measured Flow Rates at X13 (1997-2006)
Figure 25	Section View of Cross Valley Dam
Figure 26	Flow Through Rock Drain Inspection Photos
Figure 27	Flow Through Rock Drain Inspection Photos
Figure 28	North Fork rock Drain Measured Pond Elevation
Figure 29	North Fork Rock Drain Flow Through Performance
Figure 30	Faro Creek Diversion Channel Inspection Photos
Figure 31	Secondary Dam Inspection Photos
Figure 32	Secondary Dam Inspection Photos
Figure 33	Secondary Dam Inspection Photos
Figure 34	Secondary Dam – Current Piezometric Conditions
Figure 35	2007 Monitoring Schedule

## **LIST OF APPENDICES**

Appendix I	Site Visit Inspection Memos (June, August and September)
Appendix II	Instrumentation Data Records and Graphs

## LIMITATIONS OF REPORT

BGC Engineering Inc. (BGC) prepared this report for the account of Deloitte & Touche Inc., the Interim Receiver for Anvil Range Mining Corporation. The material in it reflects the judgement of BGC staff in light of the information available to BGC at the time of report preparation. Any use which a third party makes of this report, or any reliance on decisions to be based on it are the responsibility of such third parties. BGC accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

As a mutual protection to our client, the public, and ourselves, all reports and figures are submitted for the confidential information of our client for a specific project. Authorization for any use and/or publication of this report or any data, statements, conclusions or abstracts from or regarding our reports and drawings, through any form of print or electronic media, including without limitation, posting or reproduction of same on any website, is reserved pending BGC's written approval.

## 1.0 INTRODUCTION

### 1.1 Scope of Services

BGC Engineering Inc. (BGC) provided a proposal (No. 06-032) for the annual geotechnical evaluation and instrumentation review work at Faro Mine, dated April 25, 2006, to Mr. Doug Sedgwick of Deloitte & Touche Inc. (Deloitte), Interim Receiver for Anvil Range Mining Corporation. The noted scope of work comprised the following components:

- a) Field geotechnical inspection, review of relevant instrumentation data and preparation of maintenance recommendations concerning the following structures:
  - Cross Valley Dam and emergency spillway;
  - Intermediate Dam and emergency spillway;
  - Rose Creek Diversion Channel, dike crest, top of backslope and toe of slope;
  - North Valley Wall Interceptor Ditch;
  - North-Fork Rose Creek flow-through rock drain;
  - Selected portions of the Faro Waste Rock dumps;
  - Secondary Tailings Impoundment; and
  - Faro Creek Diversion Channel above the Faro Pit.
- b) Synthesis and interpretation of field instrumentation data (collected by site staff).
- c) June, August and September site visits to inspect conditions.
- d) Preparation and presentation of site staff geotechnical training seminar.
- e) Preparation of a compilation report that provides interpretation and recommendations resulting from the instrumentation data and field inspections. The report provides a compendium of all relevant instrumentation data and plots.

This annual inspection report does not include the Fresh Water Supply (FWS) Dam Breach Project as it has in the past. As detailed in Section 1.2, this dam was breached in 2003 and inspection of the breach and channel works constructed is reported under a separate water licence and inspection report.

Three separate site inspections were performed in 2006; June, August and September. The purpose of the June inspection was to examine site conditions of the major structures in the Down Valley immediately following the spring freshet. The August inspection was conducted in conjunction with a review of the Grum Quarry and repair of the Intermediate Dam Spillway. The September inspection coincided with the timing of the annual inspection visits that have been performed for over 20 years. The structures listed above were assessed.

In addition to the annual inspection and assessment work, BGC was responsible for the preparation of a training seminar for site staff. During the September inspection, a seminar was given to provide site staff with continued training related to the relationship between dam monitoring and dam integrity.

## 1.2 General Background Relating to Inspection and Instrumentation

Golder Geotechnical Consultants provided design recommendations for the Down Valley Tailings Disposal Project (Golder 1980). Following the subsequent construction of the facilities (Golder 1982), an extensive geotechnical monitoring program was initiated and is continuing to-date. Golder Associates was responsible for the annual inspection and instrumentation review of the Down Valley Tailings project between 1981 and 1999. Beginning in 2000, BGC has conducted the annual geotechnical inspection and instrumentation review duties.

The report provided herein presents an assessment of the monitoring data collected in 2006. Monitoring data from piezometers, slope inclinometers, thermistors and seepage weirs is collected by site staff. The data is forwarded to BGC for review and inclusion in this report. In addition to reviewing the instrumentation data, visual inspections of the various facilities were undertaken by BGC personnel. This report compiles and reviews the instrumentation and inspection components in order to assess the physical performance of the noted structures.

As noted earlier, the FWS Dam was breached in November/December 2003, in accordance with the terms and conditions provide in the Yukon Water Board Licence Number QZ03-058. This licence is in effect until December 31, 2008 and provides details on reporting, effluent quality standards, monitoring and surveillance required for this specific project. The requirements provided in that licence are supplemental to those provided in Water Licence QZ03-059 which are applicable to the Faro Site.

The following components of Faro Mine are included within the present report, and are shown in Figure 1:

- **The Rose Creek Diversion Canal** – The Canal Dike was built as part of the former Down Valley Tailings Project in 1980-81, it was constructed as an expansion of the existing facility. The Canal Dike separates the diversion canal from the Polishing Pond, the Intermediate Dam pond and tailings deposit. Structures associated with the Rose Creek Diversion Canal include the Canal Dike, the Spoil Piles and the Back Slope.
- **The Intermediate Dam** – The Intermediate Dam was designed to retain tailings solids, supernatant water and run-off water. It was built as part of the Down Valley Tailings Project in 1980-81, and underwent crest raisings in 1988, 1989 and 1991.
- **The Cross Valley Dam** – The Cross Valley Dam was designed to have capacity for 60-day retention of seepage/discharge water from the Intermediate Dam. It was originally used as a polishing pond and later for water treatment residue retention. Built as part of the former Down Valley Tailings Project, it was constructed in 1980-81.
- **North-Fork Rose Creek Flow-Through Causeway (“the Rock Drain”)** - The causeway was built of waste rock in 1987. The causeway was advanced by dumping waste from causeway grade to provide a zone of preferentially larger particles in the lower portion of the fill. This zone conveys creek flows through the structure; the driving head being provided by a small pond of water on the upstream side of the causeway.

- **Faro Creek Diversion Canal and East Wall of Faro Pit** – Faro Creek was diverted around the top of the Faro Pit through the construction of a diversion channel. The stability of the east wall of the Faro pit has been a concern throughout the lifetime of the pit operation. A number of structural discontinuities within the east pit wall, coupled with seepage from the Faro Creek diversion channel along the top of this pit wall, contribute to the slope instability that has occurred along this pit wall. A visual inspection along the diversion channel was initiated in 2000 to assess the concern that instability of the East Pit Wall could lead to the potential loss of the diversion channel.
- **Faro Waste Rock Dumps** – The Waste Rock dumps were built throughout the operating life of the Faro Pit. These dumps were generally constructed by end dumping and spreading from the final bench elevation of the dump. Portions of the Faro Waste Rock Dumps are adjacent to the North Fork of Rose Creek. Generally, the physical stability of waste dumps are of concern during construction and the first few years following construction. However, given their location adjacent to a creek, these portions of the waste dumps are reviewed on a two-year cycle.
- **Secondary Tailings Impoundment** – Built in 1974 to accommodate expanding tailings storage requirements. The stability of the eastern portion (east of the Diversion Dam) of the secondary tailings component is a concern since it is retaining tailings from the upper section of the Rose Creek Diversion Canal.

### 1.3 Additional Relevant Studies

In addition to instrumentation monitoring and visual inspections, Deloitte and the Faro Mine closure planning office has done a number of assessment studies relevant to structures and facilities at Faro Mine that are discussed in this annual report. These additional studies are documented in the following reports:

1. BGC (2003) has written an Emergency Preparedness Plan for potential failure of the dams at the Faro Mine.
2. BGC (2004), with input from SRK, has prepared an Operations, Maintenance and Surveillance Manual (OM & S) for the dams at the Faro Mine site (including Little Creek Dam near the Vangorda/Grum mining area).
3. SRK (2004) has undertaken a review of the Intermediate Dam; this review included commentary on the classification of the dam, the hydraulic capacity of the emergency spillway and a preliminary review of the seismic stability.
4. Klohn (2005) prepared a detailed assessment of the seismic stability of the Cross Valley, Intermediate and Secondary Dams under the condition of the Maximum Credible Earthquake.
5. Klohn (2006a) updated their 2005 seismic stability assessment of the Cross Valley, Intermediate and Secondary Dams for the Maximum Credible Earthquake.
6. Golder (2006) reported on the performance of the stability of the soil slope between the Faro Pit and the Faro Creek Diversion Canal.

7. NHC (2006a) recommended that spillway repairs be completed on the Intermediate Dam.
8. NHC (2006b) assessed the required capacity of the Rose Creek Diversion Canal, and Intermediate Dam spillway during a 500 year return period flood in Rose Creek. The required capacity was compared to the actual capacity.
9. Klohn (2006b) reported on the seismic stability of the Cross Valley Dam for the 500 year return period earthquake.

These reports, including the drafts when finalized, should be reviewed in conjunction with the assessment provided herein. Each report provides conclusions and recommendations that are relevant to structures and facilities at Faro Mine and the Down Valley Tailings Project.

## **2.0 2006 MONITORING PROGRAM**

### **2.1 Introduction**

Historically, the monitoring program has been comprised of a specific schedule for reading the instrumentation, which depended on the type of instrument, its location and the performance trend indicated by the accumulated data. In those areas where good performance of the structures was demonstrated over time, the frequency of readings was reduced for reasons of economy or irrelevance of additional data, or because the installations became non-functional. Conversely, there have been some instances where instrumentation and visual observation justified more frequent readings and installation of additional instrumentation. A recommended instrumentation monitoring schedule for 2006 was provided as Figure 33 of the 2005 Annual Geotechnical Inspection (BGC 2006b).

Instruments in the Rose Creek Diversion Canal (canal dike and spoil piles), the Intermediate Dam, Cross Valley Dam, and Secondary Tailings Impoundment Dam were scheduled for monitoring in May, June and September. The proposed schedule was followed with minor changes. All of the instruments monitored as part of this evaluation are shown in Figures 2 and 3.

As a complement to the instrumentation data obtained, various components of the Faro Mine were visually inspected by BGC personnel during the periods between June 6 to 9, August 24 to 29 and September 19 to 21, 2006. Details of the visual inspection are discussed in Section 4.0.

### **2.2 Elevations within the Down Valley Project Area**

Elevations within the Down Valley project were originally documented with respect to the Down Valley Project Datum (DVPD). The DVPD is 32.3 m above mean sea level (m amsl). The Interim Receiver has completed a program to present information concerning the facilities in terms of metres above mean sea level (or a geodetic datum) rather than in DVPD or mine datum.

All elevations documented in this report concerning structures and instrumentation are reported with respect to geodetic datum. An elevation survey of all instruments at the Cross Valley and Intermediate Dams was performed in 2004, allowing the data to be presented in terms of the geodetic datum. Surveys of crest and instrument collar elevations for the Diversion Canal (Canal Dike, Back Slope, and Spoil Piles) and the Secondary Tailings Dam were performed in 2005. These surveys have allowed all the instrumentation data collected at the Faro Mine to be presented in terms of the geodetic datum.

### **2.3 2006 Water Management**

Water pumped from the Faro Pit passes through the mill water treatment plant and then flows to a pipe located in the spillway of the Intermediate Dam. After discharge, the water flows down to the polishing pond behind the Cross Valley Dam. Decant siphons are used to convey any retained water from the Intermediate Pond over the Intermediate Dam. Water from the polishing pond is then discharged to the environment over the Cross Valley Dam by siphon pipes.

The Intermediate and Cross Valley Pond water levels are measured with respect to a geodetic datum using either staff gauge readings or direct survey from a local benchmark. Figures 4 and 5 provide a summary of the Cross Valley Pond and Intermediate Pond water levels throughout the year. Table 1 also contains the 2006 water level data from the Intermediate and Cross Valley Ponds in tabular format. The water level information is used to aid in the interpretation of the instrumentation response in the following sections.

In 2006, similar to the past few years, the pond levels in both the intermediate impoundment and polishing pond were kept low since the water quality was suitable for discharge. The Cross Valley Pond fluctuated from a high of 1028.8 m on December 21 down to a low of 1027.2 m on March 9. The Intermediate Pond level ranged from a high of approximately 1047.6 m on March 9 to a low of 1045.5 m on July 29.

### **2.4 Precipitation Information**

Yearly climatic conditions significantly affect the performance of water retaining and water conveying earth structures. Table 2 provides a summary, on a month-by-month basis, of the total precipitation at the Faro Airport from 1978 to 2006. At the bottom of the table, the minimum, mean and maximum monthly precipitation values are also provided. The year 2006 was a below average year with respect to precipitation. The total annual precipitation was 277 mm, 30 mm below the mean annual value of 307 mm.

## **2.5 Air temperature Information**

Yearly climatic conditions significantly affect the performance of water retaining and water conveying earth structures. Table 3 provides a summary, on a month-by-month basis, of the air temperature at the Faro Airport from 1977 to 2006. At the bottom of the table, the minimum, mean and maximum values are provided. In 2006, the average monthly temperature was lower than the average year. The average monthly temperature in 2006 was  $-2.4^{\circ}\text{C}$  or  $0.3^{\circ}\text{C}$  cooler than the mean annual value  $-2.1^{\circ}\text{C}$ .

## **2.6 Measured Flow in Rose Creek Diversion Canal**

The amount of flow within the Rose Creek Diversion Canal (RCDC) affects the performance of the diversion structure and the expected results in the instruments monitoring the performance of the Canal Dike. Figure 6 provides a summary of the measured daily flows at the inlet of the Rose Creek Diversion Canal. The flows are determined based on a daily reading (normally early morning) of a staff gauge located about 50 m downstream of the inlet to the Canal. The staff gauge readings are converted to flow based on a rating curve. The peak flow measured in 2006 was  $10.6 \text{ m}^3/\text{sec}$ , with decreasing quantity through the summer. Also included in Figure 6 is a summary plot of the peak daily flows measured at this location, plus a data point from 1975 (Sigma 1975). As can be seen, the 2006 peak value is approximately half the average for the 2004 to 2006.

## **3.0 INSPECTION CONDITIONS AND APPROACH**

Messrs. Gerry Ferris, P.Eng. and Jim Cassie, P.Eng., from BGC undertook the three site inspections of the selected structures. Mr Gerry Ferris was on site in June and August and Mr. Jim Cassie undertook an inspection of selected facilities at Faro Mine in September.

Each of the selected structures was inspected in a walking tour. Pertinent observations concerning both condition and seepage (or lack thereof) were recorded by camera and dictaphone.

In general, during the June inspections, the site appeared in good condition, with only minor maintenance required. No major concerns were noted but some recommended maintenance was required the findings were reviewed verbally with Mr. Dana Hagggar, Site Manager before BGC personnel left site. A summary memo pertaining to the conditions and maintenance items was prepared for Deloitte; a copy is attached in Appendix I.

Overall, the structures appeared to be in good condition during the August inspection, however a few recommendations were made. Repairs to the Intermediate Dam spillway were being completed during this inspection. Concerns regarding the rip rap on the Intermediate Dam were expressed. Similar concerns were becoming evident at the Cross Valley Dam. An excavated breach in the Secondary Impoundment Dam was recommended to be repaired. Vegetation on the crest and downstream side of Cross Valley and Intermediate Dams should be removed. The findings of the August inspection were reviewed verbally with Mr. Hagggar, before BGC personnel left site. A summary memo regarding the dam conditions and maintenance items was prepared for Deloitte; this is attached in Appendix I.

During the September inspection, the inspected facilities appeared in satisfactory condition and the recommendations made for some repairs were related to minor maintenance and monitoring. Repairs to the Intermediate Dam spillway and the Secondary Dam crest were completed by the time of the inspection. The result of this inspection and the minor maintenance items were reviewed verbally with Mr. Hagggar and a summary was left for Deloitte; this is also attached in Appendix I.

#### **4.0 FINDINGS AND CONCLUSIONS**

The results of the inspections of each of the structures are presented on the following pages in standardized format, complemented by a selection of site photographs. Please refer to Figure 1 for the general location of each structure and to Figures 2 and 3 for the locations of individual instruments. Specific maintenance requirements are documented on the individual sheets and in the summary memos provided in Appendix I. Instrumentation data reviewed on the summary sheets are attached in Appendix II.

In general, the structures appeared in good condition and the instruments appeared in good working condition. There are a total of 64 active instruments at the Faro Mine site, which includes 39 piezometers, 13 thermistors, and 12 slope inclinometers.

Visual monitoring and reading of instrumentation (as recommended) should be continued and the instrumentation data immediately conveyed to BGC for review. Should any atypical or deteriorating conditions be observed or recorded, BGC should be contacted immediately for comment. Protocols for anomalous readings were reviewed in the Emergency Action Plan (EAP) presented in BGC (2003).

## **ROSE CREEK DIVERSION CANAL (RCDC) – CANAL DIKE**

<b>LOCATION:</b>	Borders the southern edge of the tailings impoundments (see Figures 2 and 3). The Canal Dike is considered to start at the 1981 Diversion Dam.
<b>FUNCTION:</b>	The Canal Dike separates the diversion canal from the Polishing Pond, the Intermediate Dam pond and tailings deposit. Figures 7 through 10 provide photographs of the RCDC Canal Dike and Backslope.
<b>LENGTH:</b>	+/- 3,800 m
<b>MAX HEIGHT:</b>	+/- 4 m above downstream toe/native ground.
<b>CREST ELEVATION:</b>	1063.1 m at the start of the dike, grading downwards at 0.3% to the start of the upper weirs, where the crest elevation is 1052.4 m. The dike then grades at 4.6% through the weir sections to an elevation of 1024.9 m. After the weir section, the dike grades at 2.2% to a final elevation of 1014.8 m.
<b>CREST WIDTH AND CONDITION:</b>	+/- 5 m wide; approximately 1 km of the dike crest was resurfaced in 2004 with sand and gravel from the Haul Road borrow area. No signs of cracking or settlement were noted on the Canal Dike crest.
<b>FLOW</b>	Figure 6 presents the measured flow in the Rose Creek Diversion during 2006. The measured maximum daily flow in 2006 occurred at the end of May and was 11 m <sup>3</sup> /s, which is about 50% of the average.
<b>RIPRAP:</b>	Rip rap repairs undertaken in a portion of the 1 km section of dike crest raised in 2004 (BGC 2005). The new rip rap matched the gradation of the existing rip rap which consisted of broadly graded rockfill between 90 mm to 500 mm in size. The rip rap is in satisfactory condition.
<b>WEIRS:</b>	Central boulders have been displaced downstream slightly. Overall, the weir sections appeared in satisfactory condition.
<b>INSTRUMENTATION:</b>	Readings of the Canal Dike instruments for 2006 were obtained in May and September. Tabulated data and plotted records are presented in Appendix II and summarised in Tables 4, 5 and 6.
<b>PIEZOMETERS:</b>	The observed piezometric pressures generally reflect the anticipated conditions. Figure 11 provides a longitudinal section of the piezometric conditions observed within the canal dike observed during 2006. Additional observations with regards to the 2006 Canal Dike piezometric monitoring data include the following:

### **ROSE CREEK DIVERSION CANAL (RCDC) – CANAL DIKE CONTINUED**

- Eight pneumatic piezometer installations exist in the Canal Dike, three of which were installed in 2005. The newly installed piezometers are: BGC05-02, BGC05-03 and BGC05-06. BGC05-02 and -03 replaced CD-19, and BGC05-06, replaced piezometer 88-11. Data recorded in the newly installed piezometers were similar to previously recorded conditions from 88-11 and CD-19.
- Data collected from piezometers CD-21, CD-26 and BGC05-06 indicates a downward hydraulic gradient, and low pore pressures at depth indicate that the subsurface is essentially free draining. These pressures are lower than the adjacent water levels in the Intermediated Pond.
- Downstream of the Intermediate Dam, Piezometer CD-26 at Station 2+600 indicates essentially free drainage at depth. The lower piezometer, although some 70 m southwest of the pond shoreline, indicates a water level approximately 12.5 m above the full supply elevation of the polishing pond (1030.33 m). This is thought to be due to the influence of the upstream reservoir, the water level in the diversion canal and hillside seepage.
- Data collected from CD-13 and -15 indicates that a weak upward hydraulic gradient exists at these locations. The upward hydraulic gradient at CD-15 has been consistent since 2002.

During 2006, the water level in the tailings pond retained by the Intermediate Dam was at full supply in the first part of the year, then was lowered from the beginning of May till the end of July, with a gradual increase during the rest of the year. The average pond level for 2006 is 1046.7 m.

The Canal Dike crest elevation opposite the south abutment of the Intermediate Dam is approximately 1052.9 m. The invert of the 0.6 m deep pilot channel (of the diversion canal) is at approximately 1048.9 m. Fall flows typically just inundate the bench adjacent to the pilot channel, suggesting a diversion canal water surface elevation of about 1049.6 to 1049.7 m, i.e., an elevation approximately two and a half metres above the level of the tailings pond at the Intermediate Dam. The gradient of the Diversion Canal is 0.19%. The tails beach limit, when the pond is at its full supply level, is about 1100 m upstream of the Intermediate Dam. In addition, higher spring and summer flows in the canal will produce a higher driving head for potential seepage.

## **ROSE CREEK DIVERSION CANAL (RCDC) – CANAL DIKE CONTINUED**

Based on the above, the difference in elevation between the surface of the water in the Diversion Canal and the base level (water or tailings) upstream of the Intermediate Dam ranges from about 2 m at the Intermediate Dam to approximately 4 m at the beach limit. Upstream of the beach limit, the difference in elevation is about 4 m. Under these conditions, and a uniform head loss between the Diversion Canal and the tailings pond, piezometric levels recorded by piezometers installed in the Canal Dike should range from about 1049.2 m just upstream of the Intermediate Dam (Sta 2+500), to about 1051.2 m at the limit of the tailings beach (Sta 1+400). The geometry and piezometric assumptions reviewed here are graphically displayed on Figure 12. In general, the piezometer readings are within the expected range, however as can be seen on Figure 11 a few exceptions occur, particularly for deep piezometers located near the Intermediate Dam. Those piezometers do not appear to be part of the same groundwater regime, but more influenced by hillside drainage to the Polishing pond. All of the piezometer readings are within the expected historical range.

### **THERMISTORS:**

The data continues to indicate a warming trend at depth at thermistor locations CD-10, CD-21, CD-26 and BGC01-02. No frozen conditions were measured by the thermistors at these locations. In general, readings from the thermistors in 2006 were within the expected range.

- At thermistor location CD-15, the cooling trend at 10 m depth measured since 1999 reversed and warming was measured. Permafrost still exists at 10 m depth.
- A thermistor string was installed in Borehole BGC01-02 to verify the geothermal conditions indicated by installation 88-11. The data collected in 2006 indicates that permafrost no longer exists within 13 m of the ground surface.
- BGC05-04 and 07 were installed in 2005 but have not been read due to a incompatibility of the switchbox. This should be repaired in 2007.

### **SLOPE**

#### **INCLINOMETERS:**

The slope inclinometer indicated only minor movements in 2006. The majority of the movement, when encountered, was surficial and appeared to be creep. Many instruments showed past evidence of settlement.

## **ROSE CREEK DIVERSION CANAL (RCDC) – CANAL DIKE CONTINUED**

In addition to these general comments the plots for slope inclinometer at BGC01-01 shows significant variation to other installations. When installed, this casing was 14 m deep (below the ground) but can be only measured in its upper 10 m in 2006. This is likely due to freezing at depth and gradual build up of ice in the casing. This has made on going comparison difficult. This SI should no longer be read as it is not providing useful information, with the 2005 installations near this location, the SI does not need to be replaced.

### **MAINTENANCE**

**RECOMMENDATIONS:** As part of an on going maintenance the crest of the Canal Dike should be graded each September or October after the annual inspection to cover areas where cracks and potholes have developed. The purpose of this treatment is to prevent ingress of surface run-off water that may be concentrated in the settled areas, potentially reducing stability. Blading should be used to accomplish this work. Care must be taken not to disturb the existing instrumentation that has been installed to monitor performance of the dike.

### **CONCLUSIONS:**

The majority of the permafrost that was originally in the Canal Dike has degraded beyond the depth of instrumentation. Given the above summary of monitoring results, it is recommended that selected instruments be monitored in 2007. The select instruments are located in the area of 2004 dike crest raise and the piezometers throughout the dike crest. Monitoring of all working instruments should be moved to a two year cycle outside of this 1 km zone.

### **RCDC – SPOIL PILES**

- LOCATION:** Downslope of the diversion canal dike, on the southern edge of the tailings impoundments (see Figures 2 and 3).
- FUNCTION:** The construction waste of the diversion canal dike formed the spoil piles. Figure 13 provides photographs of the toe area of the Spoil Piles.
- LENGTH:** Discontinuous over the approximate 3,800 m length of the Canal Dike.
- MAX HEIGHT:** Variable heights, ranging from approximately 1 m to 8 m above downstream toe/native ground.
- SEEPAGE:** Increased seepage quantity and sloughing occurring at the toe of one portion of the spoil piles, located between the Cross Valley and Intermediate Dams. Seepage and related sloughing is caused by very low polishing pond level. This sloughing has been noted since 2005 and appears to be worsening since that time. Significantly more seepage was noted in 2006 at the toe of the spoil pile within the polishing pond as compared to past observations. This area should be visually monitored for deteriorating conditions and repaired as necessary.
- INSTRUMENTATION:** Readings for the spoil pile instruments for 2006 were obtained in June and October. Tabulated data and plotted records are presented in Appendix II and summarised in Tables 7 and 8.
- THERMISTORS:** Thermistor SP-2 and SP-3 indicates that there is no longer any permafrost above a depth of 9 m at this location. A slight warming trend is apparent in the data.
- SLOPE INDICATORS:** Inclinator SP-2 showed some minor downslope creep movement in 2006. The spoil pile has settled in the vicinity of Station 1+530, based on the distinctive shape of the deflection versus depth curves for data obtained from SP-2.
- MAINTENANCE**
- RECOMMENDATIONS:** Increased seepage quantity and sloughing occurring at the toe of the spoil piles, located between the Cross Valley and Intermediate Dams, likely caused by very low polishing pond levels. Visually monitor sloughing and retrogression for the short term and undertake rehabilitation if the retrogression becomes worse.

### **RCDC – SPOIL PILES CONTINUED**

#### **CONCLUSIONS:**

The spoil pile is experiencing some on-going creep movements near SP-2, which are located downslope from areas of the canal dike that have moved in the past. There is no measured permafrost remaining in the foundations of the spoil piles, although melting permafrost is suspected near SP-5. Monitoring of the spoil pile instruments currently is on a two year cycle; this schedule should be continued.

Continued monitoring required along the toe of the Spoil Piles between the two dams.

### **RCDC – BACKSLOPE**

- LOCATION:** Upslope of the Canal Dike, on the southern edge of the tailings impoundments (see Figures 2 and 3).
- FUNCTION:** Forms part of the canal excavation above the elevation at which water will flow. The Canal Backslope was constructed when the Canal was excavated. Figures 7 to 9 provide photographs of the Canal Backslope.
- LENGTH:** +/- 3,800 m, the entire length of the Canal Dike
- INSTRUMENTATION:** Readings for the Back Slope instruments for 2006 were obtained in June and October. Tabulated data and plotted records are presented in Appendix II and summarised in Tables 9, 10 and 11.
- PIEZOMETERS:** Two piezometers located in the Back Slope, BS-5 and BS-9 were read. Pore pressures measured at both locations are generally in the historical range, although historically low readings were recorded at BS-5
- THERMISTORS:** A cooling trend was evident at depth in BS-10 and steady temperatures at BS-12. No frozen conditions were measured at BS-12, while the depth to permafrost at BS-10 was approximately 6.5 m.
- SLOPE INDICATORS:** No significant movement was measured in the 2004 to 2006 period, although some minor creep movement was measured in the upper 1.5 m at BS-9.
- OBSERVATIONS:** Approx. 2H:1V slope and in good condition with no signs of settlement. Previously noticed sloughs (with small headscarps and cracks) at two locations on the Backslope appear inactive. The sloughs are located approximately 30 m east of CD-19 and one directly south of the first weir. These sloughs likely resulted from surficial saturation of the backslope materials.
- MAINTENANCE**
- RECOMMENDATIONS :** Monitor sloughing on backslope and assess for deteriorating conditions.
- CONCLUSIONS:** The Canal Backslope is performing satisfactorily with some minor occurrences of local sloughing within the granular material and erosion. The Canal Backslope is monitored every two years. Readings were acquired in 2006 and consequently, no instrumentation should be monitored in 2007.

### **NORTH VALLEY WALL INTERCEPTOR DITCH (NVWID)**

- LOCATION:** North side of the valley containing the tailings impoundments, along the north side of Rose Creek Valley (see Figure 1).
- FUNCTION:** The NVWID diverts the water from the Upper Guardhouse Creek around the tailings and polishing ponds. The NVWID was constructed in 1980/81 as part of the Down Valley Tailings Project. The design flood for the ditch was the 50 year return period flood with one half (0.5) meter freeboard above the design flood level (Golder, 1980). Figure 14 provides photographs of the NVWID.
- LENGTH:** +/- 3,000 m
- GRADIENT:** 1.25 to 2.5% in the Mine Leg; 1.5% in the Borrow Area "F" Segment; and 4.5 to 5% at the north abutment of the Cross Valley Dam (the "Outfall Section").
- INSTRUMENTATION:** None.
- OBSERVATIONS:** During the winter of 2005/2006, the culvert at the outfall section became plugged with ice requiring regular "steaming" and ice removal from the upstream side of the culvert to allow water flow. This performance was similar to past performance in this area.
- A pilot channel was constructed in 2005 which attempted to give the water additional energy upstream of the culvert. This was done in an attempt to reduce icing during the winter. The pilot channel did not significantly reduce icing of the culvert.
- MAINTENANCE**
- RECOMMENDATIONS:** Continue "steaming" of the culvert within the Outfall section to ensure passage of water throughout the winter. Depending on the performance of the culvert during the winter of 2006, additional work may be warranted.
- CONCLUSIONS:** Selected sections were inspected, including the Outfall Section at the access road, and no concerns were noted. Overall, the NVWID appears to be performing acceptably.
- In an attempt to reduce culvert icing, a wooden cover was placed over the upstream end of the culvert to reduce cold air flow. A modest decrease in the amount of ice formed in the culvert has been reported. The performance of this method in reducing icing will be reviewed over the winter of 2006/2007.

### **INTERMEDIATE DAM**

- LOCATION:** Located at the west end of the Intermediate Pond, immediately east of the Polishing Pond (see Figure 2).
- FUNCTION:** Retain tailings solids, supernatant water and run-off water. Figures 15 to 18 provide photographs of the Intermediate Dam.
- LENGTH:** 650 m.
- MAX HEIGHT:** 32 m.
- CREST ELEVATION:** 1049.2 m; spillway elevation: 1047.7 m.
- CREST WIDTH AND CONDITION:** Crest width 6–7 m. The crest was repaired in 2003. The repairs consisted of the recommended crack filling and regrading (placement of about 250 mm of granular material on the crest). Cracking is occurring in the edge of the rip rap, which is discussed further in the rip rap section. Only minor cracking was noticed in the early spring due to frost action
- Small shrubs and trees are beginning to grow on the crest.
- SPILLWAY:** At the time of the inspections, the pond level in the Intermediate Reservoir was lower than the spillway inlet. Following the hydraulic recommendations (NHC 2006b) made in 2006, the large rip rap that formed the weirs in the lower steeper section of the spillway were reworked to form a smoother profile. Additionally, the large feature boulders located in the central portion of the spillway were removed and placed into the new apron within the lower steep portion of the spillway.
- The capacity of the spillway was calculated in 2006 (NHC 2006a) based on survey information collected in 2004 and 2005. The calculated capacity of the spillway was 32 m<sup>3</sup>/sec (reservoir water at dam core).
- There are some areas of the upstream portion of the spillway that have been disturbed as part of the water treatment within the spillway. It is understood that this treatment system may be removed in 2007. Following removal, the area should be examined to see if repairs are needed.
- Sludge ponds have been added to the Down Valley Treatment System, within the Polishing Pond, at the discharge point of the Intermediate Spillway

### **INTERMEDIATE DAM CONTINUED**

- RIPRAP:** The water elevation in the Intermediate Pond appears to be lower than typical due to the release of water through the siphon pipe. The water level appears to have been held lower than the lowest elevation of the rip rap for some time this year and in the past. An erosion scarp has formed on the face of the dam below the lowest elevation of the rip rap. This has led to both tension crack formation on the crest of the dam (either in the shell or rip rap) and in some locations, the rip rap has slid down the face of the dam exposing the shell of the dam. If the water level rises and wave actions begin to act on these areas, further erosion will occur. The rip rap should be repaired and then the water level in the pond should be maintained such that the water is within the zone protected by rip rap.
- DOWNSTREAM SLOPE:** 2:1 slope angle, 2.1:1 overall, including 20 m berm. The downstream slope of the dam was rehabilitated in 2003. The surface of the downstream face of the dam was generally smooth; only minor rilling was noted in the site inspections. The excess debris and slough material at the toe should be removed (so the internal drain can work properly) and the gullies should be monitored next spring following runoff and thaw.
- Small shrubs and trees are beginning to grow on the downstream slope. This vegetation should be removed, including the roots. When the roots are removed, the soil disturbed in the process should be compacted
- SEEPAGE:** During this year's inspections, no signs of seepage were noted at the south abutment toe.
- INSTRUMENTATION:** Readings of the ID instruments for 2006 were obtained in beginning and end of March, June and October. Tabulated data and plotted records are presented in Appendix II and summarised in Table 12. The positions of these instruments are shown in the section in Figure 19.

## **INTERMEDIATE DAM CONTINUED**

### **PIEZOMETERS:**

The deep piezometer located in 91-ID3 continues to indicate an overall trend of declining pore pressures with time, with 2006 being the historically low. It is inferred that the piezometer data reflects abutment conditions dominated by drainage from upslope, not the level of the tailings pond upstream of the dam. That inference is supported by the sudden increase in piezometric level of 2 m recorded by both tips in June 1992, which would be coincident with the spring freshet in the adjacent diversion channel. Therefore, the decline in piezometric pressure recorded by 91-ID3 may be related to better drainage associated with ongoing loss of permafrost in the abutment downstream of the dam.

Additional general observations about the 2006 Intermediate Dam piezometric monitoring data include the following:

- Similar conditions to historical readings were observed in 96-2
- Lower than historical readings were observed in 96-ID3, 96-ID4, 96-ID6, 96-ID7, 96-1, 96-3, 96-4, 94-IDC-1, P01-03, and P01-04
- The data from the pneumatic piezometer 91-ID3, 91-ID4, 91-ID6 and P01-04 indicates the presence of a downward hydraulic gradient.
- Hydrostatic conditions exist within the nested standpipe piezometers located at P96-3, and P96-4.
- The piezometric information from P01-04 indicates pore pressures within the foundation of the dam and not the pore pressures within the dam itself.
- Piezometer BKS04-06 and 94-IDC-1 are dry.

### **MAINTENANCE**

**RECOMMENDATIONS:** The following maintenance/monitoring requirements are recommended:

- As recommended in the OM & S manual (BGC 2004), “trigger levels” for instruments at this dam should be established. Deloitte has requested proposals for completion of this work in 2007.
- Monitor the crest cracking of the dam for deteriorating conditions following thaw.
- Monitor the erosion gullies that have formed on the downstream slope.
- All excess slough and debris accumulated at the toe of the downstream face should be excavated/graded off.

### **INTERMEDIATE DAM CONTINUED**

- The rip rap should be repaired and then the water level in the pond should be maintained such that the water is within the zone protected by rip rap.
- Continue to monitor for seepage discharge at the south abutment.
- The small shrubs that are accumulating at the upstream edge of the crest should be removed, including the roots. When the roots are removed, the soil disturbed in the process should be compacted.

### **CONCLUSIONS:**

Overall, the Intermediate Dam appears to be performing in an acceptable manner. The piezometers and monitoring wells along the toe of the dam indicate a piezometric surface ranging between 2.2 and 4.3 m below ground surface (bgs). The piezometers and monitoring wells installed at the crest of the dam indicate a piezometric surface ranging from 19.2 to 21.1 m bgs. The piezometer in the south abutment of the dam indicates drained conditions in the upper 7 m. The deep tip (15.2 m bgs) in the south abutment indicates pore pressures at depth are continuing a declining trend. It is recommended that monitoring of all functional piezometers and monitoring wells in the Intermediate Dam continue in 2007.

### **CROSS VALLEY DAM**

- LOCATION:** Immediately west of the Polishing Pond, at the downstream (western) limit of the Rose Creek Tailings Area (see Figure 2).
- FUNCTION:** Designed to have capacity for 60-day retention of seepage/discharge water from the intermediate dam. Used as a polishing pond and later for treatment residue retention. Figures 20 through 22 provide photographs of the Cross Valley Dam (CVD).
- LENGTH:** 500 m.
- MAX HEIGHT:** 17 m.
- CREST ELEVATION:** 1033.1 m
- CREST WIDTH AND CONDITION:** 6–7 m. Some minor crest cracking located near upstream side of rip rap.
- SPILLWAY:** Elevation: 1031.7 m. During the site inspections, the upstream pond was lower than the inlet elevation of the spillway. During the inspections, no water was being transferred from the polishing pond. The inlet to both the spillway and pilot channel were in satisfactory condition, based on the visual inspection. The capacity of the spillway was calculated in 2006 (NHC 2006a) based on survey information collected in 2004 and 2005. The calculated capacity of the spillway was 300 m<sup>3</sup>/sec (reservoir water at dam core).
- RIPRAP:** The water level appears to have been held lower than the lowest elevation of the rip rap for some time this year. An erosion scarp has formed on the face of the dam below the lowest elevation of the rip rap. Locally small sloughs have occurred in the riprap due to this erosion. Some cracking is appearing in the riprap surface on the crest of the dam.
- DOWNSTREAM SLOPE:** 2:1 slope angle. The downstream face appears to be in satisfactory condition, with no seepage, cracking or deformation noted.
- SEEPAGE:** The 2006 data and the historic summary of weir flows are presented in Tables 13 and 14. Weir flows for 2006 are summarised on Figure 23. The Weir X13 quantity is slightly more than to the combined flow volumes of X11, X12 and W3, but a difference exists between the calculated combined flow rates and the flow rate, as presented in Table 13. This difference is due to contributing surface run-off or from additional groundwater flow which comes to surface downstream of the seepage trench.

### **CROSS VALLEY DAM CONTINUED**

The north portion of the seepage collection trench, as measured by Weir X-11, produces the majority of the seepage water. Additionally, this area has artesian pressures at depth. This performance is consistent with past performance. It is thought that this area experiences high pressures and seepage due to it being located near the location of the creek prior to the construction of the dam.

The average 2006 flow rate at Weir X13 is 26 l/s, which is comparable to the 27 l/s recorded in 2005. This continues the trend, Figure 24, of decreasing average seepage over the years. There are three main potential causes of this reduction; lower pond levels, "fines" accumulation on the base of the Polishing Pond and clogging of the drains in the downstream toe. The upper plot on Figure 24 shows a comparison of the measured flow at X13 to the pond elevations. This shows the decreasing seepage flow trend, despite having similar pond elevations for the period 1988, 1999 and 2000. There has been no measured increase in the pore water pressures at the downstream toe and clogged drains would cause the pore water pressure to increase in this area. Therefore, the most probable explanation of the reduced seepage is that the fines and sludge that are pumped in the Polishing Pond are settling and decreasing the hydraulic conductivity of the dam.

**INSTRUMENTATION:** Readings of the CVD instruments for 2006 were obtained in March, June and October. Tabulated data and plotted records are presented in Appendix II and summarised in Tables 15 and 16. The positions of these instruments are shown in section in Figure 25.

**PIEZOMETERS:** Low pore pressures within the foundation and cut-off trench of the dam are indicated by readings taken at instruments CVDC-4, CVDC-7 and CVDP-6. Slightly higher pore pressures are observed at instrument CVDC-9. Higher pore pressures recorded at CVDC-9 are likely related to the fact that the instrument is located in the approximate area of the former Rose Creek channel. Instruments CVDP-1, CVDP-3, CVDP-5, CVDT-1 and P01-11 along the dam toe indicate artesian or near artesian pressures, as observed in previous monitoring.

Additional general observations with regards to the 2006 Cross Valley Dam piezometric monitoring data include the following:

- Instrument 94CVDC-1 indicates the piezometric surface within the core of the dam is approximately 10 m below the surface of the dam. Similar to past performance.

### **CROSS VALLEY DAM CONTINUED**

- Piezometer CVDP-2 malfunctioned twice in 2005, and three times in 2006. This instrument should be abandoned.
- Upward gradient conditions exist in the crest at the location of the nested standpipe piezometer CVDC-7. Similar to past performance.

#### **THERMISTORS:**

The 2006 readings indicate the ground temperatures at depth appear to be stable in Thermistors CVDC-6 and BH-88-4T. The thermistor beads at 21 and 29 m depth in CVDC-6 appear to be malfunctioning and therefore have been ignored.

Data collected in the spring from piezometer BH-88-4 indicates that winter frost penetration extends to a depth of approximately 4 m at this location.

#### **MAINTENANCE**

**RECOMMENDATIONS:** The following maintenance/monitoring requirements are recommended:

- Monitor the cracking in the crest of the dam following spring thaw.
- An erosion scarp has formed on the face of the dam below the lowest elevation of the rip rap. Spot repairs of the rip rap are recommended.
- The water level in the pond should be maintained such that the water is within the zone protected by rip rap.
- The small shrubs and trees that are beginning to grow on the crest and other surfaces of the dam should be removed, including the roots. When the roots are removed, the soil disturbed in the process should be compacted
- In some sections of this spillway, the rip rap protection on the banks of the North Valley Wall Interceptor Ditch has been disturbed by equipment traffic some time in the past. The rip rap in the disturbed sections should be re-instated.
- Weirs were repaired in 2005. A calibration check should be undertaken in 2007.

### **CROSS VALLEY DAM CONTINUED**

#### **CONCLUSIONS:**

The piezometric pressures recorded from the instrumentation in the Cross Valley Dam indicate that pore pressures remain consistent with previous years' readings. Instrument 94CVDC-1 indicates the piezometric surface within the core of the dam is approximately 10 m below the surface of the dam (approximately 1022.7 to 1023.9 m).

Geothermal instrumentation within the CV Dam indicates that no permafrost is encountered within the foundation of the dam and winter frost penetration is observed to be approximately 3.5 to 4 m below the crest.

Overall, the dam is exhibiting acceptable performance which is consistent with the historical monitoring at this dam. Continued monitoring of the seepage weirs and functioning instruments in the CV Dam is recommended for 2007.

**NORTH FORK ROCK DRAIN (NFRD)**

- LOCATION:** West of the waste rock piles, part of the haul road that extends to the Vangorda pit (see Figure 1).
- FUNCTION:** The NFRD was designed to transmit the water flow of the North Fork Rose Creek through the haul road. Figures 26 and 27 provide photographs of the rock drain.
- MAX HEIGHT:** +/- 55 m
- CREST ELEVATION:** 1143.9 m
- CREST WIDTH AND CONDITION:** +/- 25 m, no signs of cracking or settlement evident.
- UPSTREAM FACE:** Minor channelized erosion and related sloughing is occurring on the upstream side of the rock drain. Some woody debris and silty materials have collected at the base of the upstream face.
- DOWNSTREAM FACE:** Channelized erosion and related sloughing is occurring on the downstream side of the rock drain due to runoff from the crest haul road. The majority of the woody debris below the water line was removed in 2006.
- SEEPAGE:** Head pond level was normal during the inspections and the drain appears to be passing the flows in a satisfactory manner.
- INSTRUMENTATION:**
- POND WATER LEVEL:** A sensor and datalogger are located in the pond to measure pond water elevations. A benchmark was established on the upstream side of the pond to allow regular pond elevation surveys as a check on the sensor readings. Pond water levels from 2006 and the toe discharge quantities are shown on Figure 28 and in Appendix II.
- By combining the pond water elevation, on the upstream face the elevation of water discharge on the downstream face, and the dimension of the drain, the hydraulic gradient through the drain can be estimated. Comparison of the hydraulic gradient in 2006 to the gradient in 2005 indicates that the performance was similar see Figure 29 and in Appendix II. This indicates that the capacity of the drain is not reducing. Further evaluation of the hydraulic gradient based on future monitoring is recommended to evaluate the possibility of the drain clogging.

### **NORTH FORK ROCK DRAIN (NFRD) CONTINUED**

**FLOW:**

Three staff gauges and a sensor with datalogger are located near the main access road, at environmental station X2, to measure the discharge in the creek. The flow measurements from 2006 are presented on Figure 29

The detailed results of this monitoring was presented in a separate report by BGC (2006a).

**MAINTENANCE**

**RECOMMENDATIONS:** None required.

**CONCLUSIONS:**

The flow-through rock drain was observed during the site inspections. The discharge area was observed to be flowing clear water from the downstream side. No evidence of significant instability on the slope above the discharge area, other than some old cracks along the top edge of the crest and a minor slough on the upstream face, was observed. On this basis, it appeared that the downstream portion of the causeway section was functioning as intended, and that its performance is not deteriorating.

### **FARO CREEK DIVERSION CHANNEL**

- LOCATION:** Top of the east wall of the Faro Pit (see Figure 1).
- FUNCTION:** The channel transmits creek water, which previously flowed directly through the pit area, over to the North Fork Rose Creek upstream of the rock drain. Figure 30 provides photographs of the diversion channel.
- LENGTH:** +/- 1,500 m with an elevation loss of approximately 21 m.
- INSTRUMENTATION:** None.
- OBSERVATIONS:** A portion of the road adjacent to the channel near the Faro Valley dump was raised in 2006. This work was undertaken by Mine site staff. A general raise of the road was undertaken in 2005; the 2006 work raised the corner that was not completed in 2005. A new berm was constructed on the downhill side of the canal dike access road. The purpose of the berm is to prevent overland surface run-off and related ravelling of proximal overburden at the edge of the Faro pit.
- Retrogression of the soil slope between the access road and the edge of the Faro Pit appears to be less than in past years. A detailed review of the stability of the pit wall was performed in 2006 (Golder 2006).
- Exposed geotextile was noted in June 2006, these areas had been fixed by the August inspection.
- RIPRAP:** Some slight movement of pilot channel rip rap has occurred.
- MAINTENANCE**
- RECOMMENDATIONS:** No maintenance is required. Monitoring recommendations contained in Golder 2006 for the Faro Pit wall located downstream of the diversion needs to be continued in 2007.
- In order to gain further understanding of the performance of the Diversion Channel, it is recommended that two staff gauges be installed to measure the flow. One staff gauge to be installed downstream of the upstream rip rap and the second be installed near the transition to steeper grade in the channel. These staff gauges should be read twice per month. In order to convert the staff gauge readings to flow, concurrent flow (in stream) measurements should be made in order to establish a rating curve.
- CONCLUSIONS:** There were no notable concerns of the channel condition in 2006.

**SELECTED WASTE ROCK DUMPS**

**LOCATION:** Southeast of the Faro Main Pit (see Figure 1), overlooking North Fork of Rose Creek.

**MAX HEIGHT:** Variable

**INSTRUMENTATION:** None.

**MAINTENANCE RECOMMENDATIONS:** No maintenance is required.

**CONCLUSIONS:** Waste rock dumps were not reviewed in detail for 2006. The review of these dumps is on a two year cycle. Visual inspection of the waste dumps should be performed in 2007.

## **SECONDARY TAILINGS IMPOUNDMENT (EAST OF DIVERSION DAM)**

<b>LOCATION:</b>	Located on the east side of the Down Valley project area. The east leg of the Secondary Tailings Dam is directly adjacent to either the North Fork of Rose Creek or the original portion of the RCDC. See Figure 3.
<b>FUNCTION:</b>	Retain tailings solids, supernatant water and run-off water from flowing into the Rose Creek Diversion Canal. Figures 31 to 33 provide photographs of the Secondary Dam and Tailings Impoundment.
<b>LENGTH:</b>	Approximately 1120 m.
<b>MAX HEIGHT:</b>	Approximately 28 m.
<b>CREST ELEVATION:</b>	Varies from 1060.2 m to 1063.3 m.
<b>CREST WIDTH AND CONDITION:</b>	6.1 m, capped with a protective layer of sand and gravel fill. A small breach in the crest of the Secondary Dam, near the 1981 Diversion Dam, was noted in the past. The purpose of this breach was to drain the Secondary Impoundment into the Intermediate Impoundment. Significant erosion of this small breach occurred in 2006. Tailings were washed out of the Secondary impoundment into the Intermediate Impoundment (no release of tailings occurred). The breach was repaired shortly after. Figure 32 shows photos before and after the repairs were done.
<b>LOWER ROAD</b>	Cracking of the road occurred within about 2 m of the edge, adjacent to the Diversion. Additionally, some settlement occurred adjacent to the borehole drilled for the 2006 seismic assessment (Klohn 2006a). These settlement locations were within a low area down slope of P81-09. This area was filled and graded between the June and August inspections.
<b>SPILLWAY:</b>	N/A
<b>BACKSLOPE:</b>	2:1 slope angle.
<b>SEEPAGE:</b>	During this year's inspections, no signs of seepage were noted at the toe of the Secondary Dam.
<b>INSTRUMENTATION:</b>	Readings of the Secondary Tailings Impoundment instruments for 2006 were obtained in October. Tabulated data and plotted records are presented in Appendix II and summarised in Table 17. The piezometric data for the P03 series of instruments was supplied by Gartner Lee and is in Appendix II.

## **SECONDARY TAILINGS IMPOUNDMENT (EAST OF DIVERSION DAM) CONTINUED**

**PIEZOMETERS:** Readings were taken from six piezometers in the Secondary Dam and Impoundment Areas. The readings acquired in 2005 and 2006 are the only readings on record. Therefore, no long term trends can be identified.

The three piezometers within the Secondary Dam: P81-06, P81-07 and P81-08, recorded dry conditions in 2006.

The three piezometers within the tailings impoundment and near to the eastern portion of the secondary dam, P03-01, P03-02, and P03-03, indicated conditions at or near hydrostatic at an elevation of approximately 1054 m to 1055 m amsl, are shown on Figure 34.

### **MAINTENANCE**

**RECOMMENDATIONS:** None required

**CONCLUSIONS:** Based on the piezometric information available, the elevation of the water table in the secondary tailings impoundment ranges from approximately 1054.4 m to 1055.3 m, depending on seasonal variability. The elevation of Rose Creek in the Diversion Canal along the east arm of the Secondary Dam is approximately 1054.1 m. Under these conditions, and assuming a uniform head loss between the tailings and the water levels in the Diversion Canal, the piezometric levels in the Secondary Dam should be at an elevation of approximately 1054.3 m, but were dry since the piezometers terminate above this elevation. The geometry and piezometric assumptions mentioned above are conceptually illustrated on Figure 34.

The low piezometric levels in the secondary tailings impoundment is a result of the long term “drain down” in the tailings area and appears to be reflective of the overall valley piezometric conditions.

Overall, the Secondary Dam and Tailings Impoundments is performing in an acceptable manner. The piezometers and monitoring wells installed at the crest of the dam indicate dry, well drained conditions. It is recommended that monitoring of all functional piezometers and monitoring wells in the Secondary Dam and Tailings Impoundment continue in 2007.

## **5.0 INSTRUMENTATION, MONITORING AND ANNUAL REVIEW**

### **5.1 Instrumentation Readings**

The frequency of readings of the instrumentation has been greatly reduced from the initial practice of quarterly observations because confidence in the performance of the structures has been substantiated by accumulated data. Figure 35 provides a schedule of readings for 2007 for the major structures, broken down by month. As has been the case over the last several years, all instrumentation data collected by site staff should be immediately forwarded to BGC for review.

If any rapid lowering of either reservoir in the Down Valley is expected, then BGC should be consulted and changes to the monitoring program may be made.

It is recommended that the pond levels on the upstream side of the flow-through causeway be measured and correlated to measured flow in the North Fork of Rose Creek. The two dataloggers, located in the pond and downstream of the flow-through causeway at X2, should be downloaded periodically to ensure they are functioning properly. These electronic readings should be supplemented with manual readings at the pond, downstream toe and at station X2.

### **5.2 Routine Inspections by On-Site Personnel**

Any change in condition that is noted as a consequence of this program of routine inspection must be brought immediately to the attention of the inspector's superiors. BGC must also be notified so that the condition can be evaluated in light of the database and prior performance history of the structures, and to provide any necessary geotechnical advice related to the concern at hand. Photos of the changed condition should be taken and forwarded to BGC.

#### **5.2.1 Rose Creek Diversion Canal**

It is important that current site staff continue with their inspection program as described below, and that a log of observations be maintained:

1. To inspect the Rose Creek Diversion Channel before run-off to ensure any snow and/or ice blockages are removed.
2. To inspect, on a monthly basis, the 400 m reach of the Diversion Canal dike crest immediately upstream of the Intermediate Dam for evidence of cracking.
3. To view on a monthly basis, the opposite side of the Diversion Canal from the canal dike looking for change to the top profile of the gravelly backslope, possible narrowing of the flow channel, and other changes which might be attributed to sloughing of the backslope.

4. To inspect in June, just after spring runoff is completed, the top of the thermal liner on the backslope of the Diversion Canal at the location situated about 500 m upstream of the Intermediate Dam; such inspection to determine if new (sharp-edged) cracking has developed.
5. Visually monitor the sloughing of the top of the Spoil Pile at the Polishing Pond shoreline.

### 5.2.2 Intermediate Dam

Weekly inspections should continue at the abutments of the Intermediate Dam for evidence of: changing conditions (sloughing of the embankment fill and/or the adjacent slopes); active crest cracking; sloughing of the riprap; and for evidence of changing seepage rates (especially the south abutment toe seepage) and locations.

The Intermediate Dam Pond levels should be noted and recorded on a weekly basis. Consideration should be given to automating this task through the installation of pore pressure transducers and dataloggers so that continuous data may be collected. Any pressure transducer must be able to withstand the water environment within the pond.

### 5.2.3 Cross Valley Dam

Weekly inspections should continue at the Cross Valley Dam's abutments and downstream toe berm culverts. The abutments should be inspected for evidence of: changing conditions (sloughing of the embankment fill and/or the adjacent slopes); sloughing of the riprap; active crest cracking; and for evidence of changing seepage rates and locations. The downstream toe berm culverts should be inspected for consistency of flow rate.

The Polishing Pond levels should be noted and recorded on a weekly basis. Consideration should be given to automating this task through the installation of pore pressure transducers and dataloggers so that continuous data may be collected.

### 5.2.4 North Fork Rose Creek Flow-Through Causeway

Additional data should be collected in 2007 as detailed in Section 5.1. This additional data should include pond levels, water levels at the downstream toe of the drain, and flow downstream of the drain. Head pond water level observations for both the causeway and the road culvert downstream should be downloaded periodically from the dataloggers to ensure they are functioning properly. If there is a problem with the dataloggers or the quality of the data, manual surveys of the water levels will be required. Data during periods of high flow is particularly important and, as a minimum, the head pond should be viewed weekly in the late afternoon for the period from about April 15th until June 30th.

The upstream and downstream faces of the rock drain should also be inspected monthly for any signs of instability or sloughing.

#### 5.2.5 Faro Creek Diversion Canal

Continue with both visual and survey monitoring of the overburden ravelling proximal to the access road and diversion channel. Assess if the average ravelling rate noted by Golder (2006) is appropriate or if conditions have changed following rehabilitation of the channel. The monitoring program recommended by Golder should be implemented.

Visual inspection of the access road and channel sections for cracks and for overburden ravelling overlooking the Faro Pit should be undertaken monthly from May until October. Any signs of deformation should be forwarded to BGC for comment.

It is recommended that two staff gauges will be installed within this canal. One staff gauge to be located downstream of the upstream limit of rip rap and the other upstream of the transition to steeper grade. Following installation of these gauges a rating curve needs to be established to convert staff gauge readings to flow. The staff gauges should be read twice per month, as recommended in Figure 35.

#### 5.2.6 Faro Waste Rock Dumps

Continue visual monitoring of dump slopes by site staff. It is also recommended that the inspection of the Faro waste dumps be undertaken again in 2007.

#### 5.2.7 Secondary Tailings Dam – East Leg

Continue visual monitoring of the crest and the toe of this dam on a weekly basis by site staff. Monitoring of the instrumentation within this structure should continue.

### 5.3 Annual Reviews

As has been noted in previous annual reports, the performance monitoring and annual inspections of facilities has served as a basis for:

- a. judging current performance of the facilities;
- b. providing some forewarning of any trends towards potentially troublesome performance;
- c. adjusting the frequency of observation of instrumentation;
- d. recommending the installation of additional instrumentation; and
- e. undertaking maintenance work.

In keeping with the important nature of these facilities, and the inherent value of keeping a comprehensive performance record, it remains prudent to continue with the data acquisition. As such, Figure 35 provides a proposed schedule of instrumentation monitoring for 2007. The collection of current data is of both immediate and ongoing value, to review such data in relation to the existing database and to visually inspect the works on an annual basis for evidence of deteriorating or deficient performance.

Annual inspections in 2007 should be performed in May/June (near the freshet period) and early September, in keeping with the schedules held for previous inspections, and for the advantage of consistency of conditions.

## 6.0 CLOSURE

This report summarizes the physical conditions as observed by BGC and the instrumentation results as collected by site staff on various mine waste facilities and structures at Faro Mine. Thank you for the opportunity to be of service to Deloitte & Touche and Faro Mine. Should you have any questions on this report, please contact BGC at your convenience.

Respectfully submitted,  
**BGC ENGINEERING INC.**  
**Per:**

Gudjon Bjornsson, E.I.T. (AB)  
Geotechnical Engineer-in-Training

Gerry Ferris, M.Sc., P.Eng. (AB)  
Geotechnical Engineer

James W. Cassie, M.Sc., P.Eng.  
Specialist Geotechnical Engineer

## REFERENCES

- BGC Engineering Inc. 2003. Emergency Preparedness Plan for Selected Dams and Water Diversion Structures. Submitted to Deloitte and Touche Inc., October 20, 2003.
- BGC Engineering Inc. 2004. Operations Maintenance & Surveillance Manual for Selected Dams. Interim Final Draft Manual submitted to Deloitte and Touche Inc., February 1, 2005.
- BGC Engineering Inc. 2005. 2004 Annual Geotechnical Evaluation & Instrumentation Review. Various Facilities at Faro Mine, Yukon. Report submitted to Deloitte and Touche Inc., Project No 0257-022-06, February, 2005.
- BGC Engineering Inc. 2006a Task 8 – Instrument repair and replacement. Report submitted to Deloitte and Touche Inc. February 16, 2006
- BGC Engineering Inc. 2006b. 2005 Annual Geotechnical Evaluation & Instrumentation Review. Various Facilities at Faro Mine, Yukon. Report submitted to Deloitte and Touche Inc., Project No 0257-032-05, February, 2006.
- BGC Engineering Inc. 2006c, Task 22D – North Fork Rock Drain. Report submitted to Deloitte and Touche Inc. September 15, 2006
- Golder Geotechnical Consultants Ltd. 1980. Final Design Recommendations for the Down Valley Tailings Disposal Project, Faro, Yukon Territory. Report No. 792-2025 submitted to Cyprus Anvil Mining, three volumes, June, 1980.
- Golder Associates 1982. Down Valley Tailings Containment Project, 1980-81 Construction, Faro, Yukon. Report 802-2038 submitted to Cyprus Anvil Mining Corporation, February 1982, three volumes.
- Golder Associates Ltd. 2006. Faro Pit slope movement monitoring. Letter report submitted to Deloitte and Touche Inc.
- Klohn Crippen Consultants Ltd. 2005. Anvil Range Mining Complex, Yukon, Rose Creek Tailings Impoundment, Seismic Stability Assessment. A report in submitted to Deloitte & Touche Inc in May 2005.
- Klohn Crippen Consultants Ltd. 2006a. Anvil Range Mining Complex, Yukon, Rose Creek Tailings Impoundment, Seismic Stability Assessment – Addendum. A report prepared for Deloitte & Touche Inc
- Klohn Crippen Consultants Ltd. 2006b. Anvil Range Mining Complex, Yukon, Rose Creek Tailings Impoundment, Seismic Stability of Cross Valley Dam – 1 in 500 Year Earthquake. A report submitted to Deloitte & Touche Inc.
- Northwest Hydraulic Consultants Inc. 2006a Faro Mine Hydraulic Capacity Analysis. Final Report submitted to Deloitte and Touche Inc. June 2006.
- Northwest Hydraulic Consultants Inc. 2006b Faro Mine Site Inspection. Memo submitted to Deloitte and Touche Inc July 5<sup>th</sup> 2006.

Sigma Resource Consultants LTD, 1975. Rose Creek Diverisons Works, Observations and Measurements Made During Spring Runoff -1975. Cyprus Anvil Mining Corporation.

SRK Consulting Inc. 2004. Dam Safety Studies for the Intermediate Dam, Anvil Range Mining Complex. Report submitted to Deloitte and Touche Inc.

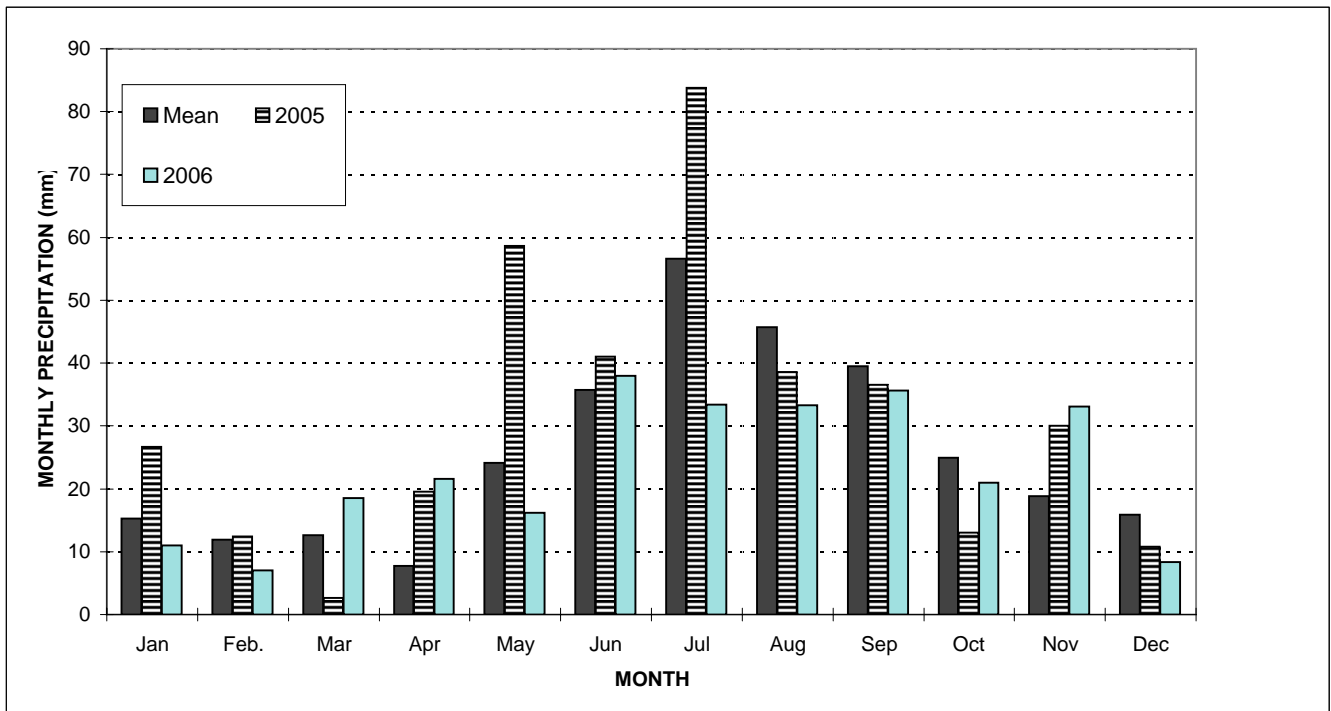
## TABLES

**Table 1 Summary of Polishing Pond and Intermediate Pond Levels**

<b>DATE</b>	<b>Cross Valley Pond Elevation (m amsl)</b>	<b>Intermediate Dam Pond Elevation (m amsl)</b>
January 17, 2006	1028.515	1046.697
January 30, 2006	1028.655	
January 31, 2006		1046.723
February 13, 2006	1028.613	
February 15, 2006	1028.615	1046.800
February 20, 2006	1028.602	1046.820
February 21, 2006	1028.545	
February 23, 2006	1028.420	1046.982
February 27, 2006	1028.050	1047.150
March 1, 2006	1027.890	1047.255
March 2, 2006	1027.795	1047.308
March 4, 2006	1027.630	1047.400
March 6, 2006	1027.452	1047.480
March 8, 2006	1027.275	1047.550
March 9, 2006	1027.180	1047.575
March 20, 2006	1027.433	1047.550
March 30, 2006	1027.610	1047.525
April 6, 2006	1027.725	1047.535
April 18, 2006	1027.890	1047.570
April 24, 2006	1028.160	1047.430
May 1, 2006	1028.585	1047.258
May 3, 2006	1028.550	1047.190
May 8, 2006	1028.422	1047.220
May 11, 2006	1028.065	1047.287
May 15, 2006	1027.870	1047.422
May 17, 2006		1047.432
May 23, 2006	1027.872	1047.335
May 25, 2006	1027.777	
May 29, 2006	1027.585	1047.208
June 1, 2006	1027.463	1047.125
June 5, 2006	1027.475	1047.060
June 12, 2006	1027.522	1046.848
June 21, 2006	1027.510	1046.630
June 27, 2006	1027.272	1046.512
July 4, 2006	1027.520	1046.345
July 6, 2006	1027.521	
July 10, 2006	1027.552	1046.180
July 13, 2006	1027.522	1046.078
July 19, 2006	1027.522	1045.862
July 24, 2006	1027.518	1045.651
July 25, 2006		1045.584
July 27, 2006		1045.541
July 29, 2006		1045.465
July 31, 2006	1027.437	1045.480
August 7, 2006	1027.555	1045.580
August 14, 2006	1027.387	1045.690
August 22, 2006	1027.490	1045.771
August 28, 2006	1027.570	1045.832
August 29, 2006	1027.525	
September 5, 2006	1027.268	1045.950
September 12, 2006	1027.473	1046.050
September 19, 2006	1027.450	1046.115
September 20, 2006	1027.336	
September 21, 2006	1027.227	
September 26, 2006	1027.320	1046.180
October 4, 2006	1027.468	
October 10, 2006	1027.601	1046.295
October 17, 2006	1027.749	1046.338
October 24, 2006	1027.902	1046.400
October 31, 2006	1028.035	1046.435
November 7, 2006	1028.168	1046.460
November 14, 2006	1028.303	1046.480
November 21, 2006	1028.420	1046.500
December 7, 2006	1028.635	1046.550
December 14, 2006	1028.732	1046.570
December 21, 2006	1028.818	1046.597

**Table 2 Total Monthly Preceipation (mm) At Faro Airport, Yukon**

Year	Jan	Feb.	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total (mm)
1978	0.4	miss.	trace	4.1	11.6	27.0	38.1	41.6	7.8	32.4	20.2	19.0	
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	4.0	4.5	7.8	42.8	41.3	22.5	41.9	21.5	17.0	5.4	238.3
1982	10.2	18.0	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	49.0	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	20.0	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	14.0	2.8	10	40.1	50.8	92.4	63.5	30.2	26.6	17.8	6.2	357.5
1988	7.0	10.4	17.2	8.2	38.0	37.3	97.2	25.5	43.8	29.0	17.9	16.5	348.0
1989	19.8	3.6	19.8	2.0	17.9	41.0	51.7	16.9	30.8	46.3	39.8	13.8	303.4
1990	14.4	25.8	5.0	7.0	23.4	45.4	30.0	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	33.0	48.2	49.6	43.4	40.0	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	13.0	290.5
1993	22.2	15.0	1.6	6.0	76.7	48.6	50.2	56.0	50.8	35.7	miss.	miss.	
1994	20.2	8.4	11.4	5.0	39.8	24.2	19.6	25.2	45.6	41.6	24.4	8.0	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	20.0	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	7.0	2.8	4.8	4.2	14.4	29.6	19.2	24.2	23.4	24.0	4.6	8.2	166.4
1999	24.4	10.0	15.4	1.8	44.4	64.8	42.0	33.8	27.0	22.4	12.8	21.6	320.4
2000	12.2	2.0	trace	6.0	9.6	39.6	48.1	116.2	102.2	8.6	19.4	5.8	369.7
2001	7.4	3.0	4.0	14.6	30.8	35	58.4	14.2	44.6	28.6	12.2	15.4	268.2
2002	9.2	5.8	9.0	7.0	19.6	19.4	34.9	64.1	38.4	18.2	9.6	9.4	244.6
2003	22.4	8.0	16.0	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	45.0	4.0	15.6	34.0	13.5	38.0	48.5	33.6	9.8	45.0	329.5
2005	26.7	12.4	2.6	19.5	58.6	41.0	83.8	38.6	36.6	13.0	30.0	10.8	373.6
2006	11.0	7.0	18.5	21.6	16.2	38.0	33.4	33.3	35.6	21.0	33.1	8.3	277.0
Max	35.7	25.8	45	21.6	76.7	68.2	115.4	116.2	102.2	49.6	43.4	45	
Year	1983	1990	2004	2005	1993	1979	1991	2000	2000	1991	1991	2004	
<b>Mean</b>	<b>15.3</b>	<b>11.9</b>	<b>12.7</b>	<b>7.8</b>	<b>24.2</b>	<b>35.8</b>	<b>56.6</b>	<b>45.7</b>	<b>39.5</b>	<b>24.9</b>	<b>18.8</b>	<b>15.9</b>	<b>307.1</b>
Min	0.4	2	trace	0.4	7.6	11.1	13.5	13.8	trace	8.6	3.5	3.9	
Year	1978	2000	1978	2003	2003	1980	2004	1979	1997	2000	1996	1983	
St.Dev	9.2	7.9	10.7	5.0	16.6	15.2	26.6	24.2	19.0	11.5	9.9	10.6	



**Table 3 Monthly Average Temperature (°C) At Faro Airport, Yukon**

Year	Jan	Feb.	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
1977	miss.	miss.	miss.	miss.	miss.	miss.	miss.	miss.	miss.	miss.	miss.	miss.	-30.5
1978	-21.9	-13.9	-7.3	0.3	7.4	12.8	15.3	13.2	8.6	1.6	-15.7	-19.9	-1.6
1979	-26.7	-30.6	-5.1	-0.7	6.5	11.7	15.1	14.1	8.7	1.3	-8.2	-21.6	-3.0
1980	-26.6	-11.1	-8.6	2.6	8.6	14.5	14.4	11.3	5.1	2.6	-7.6	-34.6	-2.5
1981	-8.9	-15.8	-4.0	-3.3	10.0	11.0	14.8	12.8	5.5	-1.2	-8.8	-24.7	-1.1
1982	-37.3	-21.2	-13.4	-2.0	5.6	13.9	15.9	11.7	7.6	-3.8	-17.6	-19.0	-5.0
1983	-22.7	-15.8	-10.0	1.4	7.7	13.3	14.6	11.0	3.7	-1.9	-14.7	-32.0	-3.8
1984	-18.6	-9.7	-3.1	2.4	6.8	11.7	13.7	11.5	5.9	-3.6	-16.6	-24.0	-2.0
1985	-9.0	-21.2	-8.5	-1.9	6.2	10.6	14.4	10.4	5.9	-3.9	-24.2	-12.5	-2.8
1986	-12.1	-15.6	-8.2	-4.9	5.7	12.3	15.5	10.8	6.4	0.6	-18.6	-12.9	-1.8
1987	-14.4	-11.5	-12.4	0.5	7.2	12.1	15.2	12.2	6.4	1.9	-8.4	-14.5	-0.5
1988	-21.5	-12.0	-4.4	1.8	8.3	13.3	14.0	12.2	6.0	-1.8	-11.7	-16.1	-1.0
1989	-26.4	-19.3	-14.6	1.5	8.9	13.7	16.4	15.0	7.2	-2.6	miss.	-13.1	
1990	-20.8	-24.0	-6.0	1.6	8.8	12.8	15.6	13.5	8.2	-3.1	-23.8	-23.1	-3.4
1991	-20.0	-11.2	-9.2	1.8	8.5	13.3	14.2	11.0	7.7	-4.6	-13.2	-16.5	-1.5
1992	-13.3	-13.8	-5.6	-0.7	5.0	13.0	15.3	12.1	1.4	-4.2	-9.0	miss.	
1993	-21.3	-16.1	-7.2	2.6	8.8	13.3	14.4	12.0	6.9	0.4	-11.6	-14.2	-1.0
1994	-23.9	-25.6	-4.4	2.9	7.2	13.1	16.2	16.1	5.5	0.1	-17.3	-20.0	-2.5
1995	-20.1	-14.8	-11.1	3.5	10.0	14.4	14.6	11.3	9.9	-0.9	-17.2	-21.2	-1.8
1996	-34.8	-15.0	-11.8	-1.2	5.7	12.2	14.7	10.5	5.7	-6.4	-18.9	-23.9	-5.3
1997	-25.6	-10.7	-12.7	1.2	7.5	13.5	16.0	13.0	8.3	-5.9	-10.4	-11.7	-1.5
1998	-25.2	-10.8	-8.1	2.6	9.5	14.1	15.7	11.9	6.3	-1.3	-14.3	-19.8	-1.6
1999	-23.3	-17.7	-7.7	1.1	5.7	14.2	14.0	14.1	7.4	0.1	-13.1	-12.6	-1.5
2000	-18.7	-10.2	-4.8	-1.1	5.7	13.6	14.1	10.6	5.1	-1.4	-10.3	miss.	
2001	-10.8	-16.4	-8.6	0.9	5.6	13.3	14.7	14.0	7.5	-2.0	-13.9	-21.2	-1.4
2002	-17.8	-14.8	-14.4	miss.	miss.	miss.	miss.	miss.	miss.	miss.	miss.	miss.	-14.9
2003	miss.	miss.	miss.	miss.	miss.	miss.	miss.	miss.	miss.	miss.	miss.	miss.	
2004	-9.2	-8.7	1.6	8.4	17.1	15.9	13.7	4.5	-1.9	miss.	miss.	miss.	
2005	-22.4	-15.8	-3.3	2.0	11.1	14.8	14.5	13.7	7.4	-0.1	-9.3	-13.6	-0.1
2006	-20.1	-14.1	-11.8	0.5	7.7	15.0	16.4	12.5	7.8	-1.4	-26.4	-14.7	-2.4
Max	-8.9	-8.7	1.6	8.4	17.1	15.9	16.4	16.1	9.9	2.6	-7.6	-11.7	
Year	1981	2004	2004	2004	2004	2004	2006	1994	1995	1980	1980	1997	
Mean	-20.5	-15.6	-8.0	0.9	7.9	13.2	14.9	12.1	6.3	-1.6	-14.4	-19.3	-2.1
Min	-37.3	-30.6	-14.6	-4.9	5.0	10.6	13.7	4.5	-1.9	-6.4	-26.4	-34.6	
Year	1982	1979	1989	1986	1992	1985	2004	2004	2004	1996	2006	1996	
St.Dev	7.0	5.1	3.9	2.5	2.4	1.2	0.8	2.1	2.4	2.4	5.2	6.3	

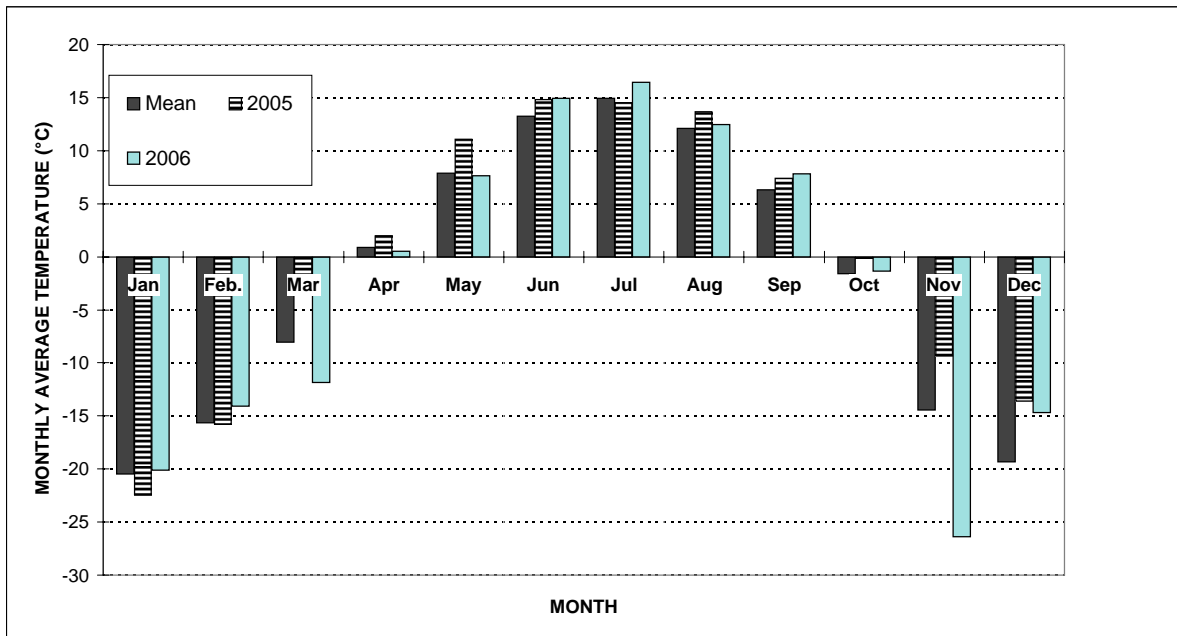


Table 4 Diversion Canal - Canal Dike - Piezometers

Installation	Date Installed	Standpipe (S) or Pneumatic (P)	# of Readings in 2006	Ground Elevation (m amsl)	Tip Elev. (m amsl)	Historic Low Reading/ Date	Historic High Reading/ Date	2006 Low Reading/ Date (Compared to 2005 Low)	2006 High Reading/ Date (Compared to 2005 High)	Comments
CD-10	1981	P	2	1056.4	1045.3	1045.97/ Mar 1982	1050.48/ Sep 1992	1049.01/ Oct 2 (+0.87)	1049.50/ Jun 14 (-0.49)	Readings consistent with previous data.
CD-13	1981	P	2	1055.2	1048.7/ <b>1044.7</b>	1049.05/ Sep 1995 <b>1047.57/ May 1982</b>	1051.64/ Jun 2000, Jun 2001 <b>1051.07/ Jun 2000, May 2005</b>	<b>1050.09/ Oct 2 (+0.07)</b>	<b>1050.79/ Jun 14 (-0.28)</b>	Shallow piezometer no longer functioning properly. Historically the gradient was downward.
CD-15	1981	P	2	1054.9	1048.10/ <b>1043.30</b>	1048.1 (dry)/ Nov 1981, Dec 1981, Sep 2001, Jun 2003 <b>1043.31/ Dec, 1981</b>	1051.25/ Oct 1985 <b>1050.96/ Sep 2000</b>	1048.52/ Oct 2 (+0.13) <b>1049.6/ Oct 2 (+0.21)</b>	1048.59/ Jun 14 (-0.35) <b>1049.60/ Jun 14 (-0.7)</b>	Normally an upward hydraulic gradient. Sub-zero temperatures at depth (thermistor CD-15) correlate with variable pressures at depth.
CD-21	1981	P	2	1053.45	1047.50/ <b>1042.00</b>	1047.92/ Apr 1991 <b>1042.28/ Nov 1988, May 1982 to Sep 1983</b>	1052.26/ Jun 1992 <b>1047.51/ Jun 1992</b>	1048.13/ Jun 14 (0.00)	1048.27/ Oct 2 (-0.16)	Historically downward gradient, likely free drainage at depth. Pressures dropped in shallow piezometer from 1999 to 2003, stable from 2003 to 2005. Deep tip piezometer destroyed in 2005.
CD-26	1981	P	2	1053.1	1048.2/ <b>1042.0</b>	1048.2/ Sep 1995 <b>1042.0/ Sep 1995</b>	1049.81/ Jul 1988 <b>1043.61/ Jul 1988</b>	1048.55/ Jun 14, Oct 2 (0.00) <b>1042.49/ Jun 14 (0.00)</b>	1048.55/ Jun 14, Oct 2 (0.00) <b>1042.56/ Oct 2 (-0.07)</b>	Downward gradient, likely free drainage at depth. Readings are very consistent since 2001.
BGC05-03 <b>BGC05-02</b>	2005	P	2	1054.68 <b>1054.1</b>	1050.64 <b>1044.65</b>	1050.85 /Jun 2006 <b>1045.84 / Oct 2006</b>	1050.99 /Oct 2006 <b>1045.98 / Jun 2006</b>	1050.85 /Jun 2006 (NA) <b>1045.84 / Oct 2006 (NA)</b>	1050.99 /Jun 2006 (NA) <b>1045.98 / Jun 2006 (NA)</b>	Replaced former piezometer CD-19. Downward gradient, likely free draining at depth. Pressures may not be equalized yet.
BGC05-06	2005	P	2	1050.31	1046.78 <b>1041.50</b>	1046.92/ Sep 2005 <b>1041.71/ Sep 2005</b>	1046.92/ Sep 2005 <b>1041.71/ Sep 2005</b>	1046.92/ Jun 14, Oct 2 (0.00) <b>1041.71/ Jun 14, Oct 2 (0.00)</b>	1046.92/ Jun 14, Oct 2 (0.00) <b>1041.71/ Jun 14, Oct 2 (0.00)</b>	Downward gradient, likely free drainage at depth. Replaced former piezometers 88-11. Conditions were similar to the former piezometer 88-11. Pressures may not be equalized yet.

Note: Bold values correspond to deep tip readings.

**Table 5 Diversion Canal - Canal Dike - Thermistors**

<b>Installation</b>	<b>Date Installed</b>	<b>Length of String (m)</b>	<b># of Readings in 2006</b>	<b>Depth to Permafrost 2005 (depth below ground surface (m))</b>	<b>Depth to Permafrost 2006 (depth below ground surface (m))</b>	<b>Comments</b>
CD-10	1981	10	2	Not observed within 9.9 m of ground surface.	~5	Data indicating subzero temperatures beneath 5m, data from October 2006 looks skeptical
CD-15	1981	10	2	9.5	Not observed within 9 m of ground surface.	Data from a node at 3m depth was not included in the analysis
CD-21	1981	13	2	Not observed within 13.0 m of ground surface.	Not observed within 13.0 m of ground surface.	Warming trend indicated at depth.
CD-26	1981	10	2	Not observed within upper 9.6 m of ground surface.	Not observed within upper 9.6 m of ground surface.	Warming trend indicated at depth.
BGC01-02	2001	13.9	2	Not observed within upper 13 m of ground surface.	Not observed within upper 13 m of ground surface.	Upper nodes malfunctioning. Warming trend at depth.
BGC05-04	2005	11.9	0	No readings available.	No readings available.	No readings taken in 2005 and 2006. Replaced thermistor CD-19.
BGC05-07	2005	11.4	0	No readings available.	No readings available.	No readings taken in 2005 and 2006. Replaced thermistor 88-11.

**Table 6 Diversion Canal - Canal Dike - Slope Indicators**

<b>Installation</b>	<b>Date Installed</b>	<b>Length of Casing (m)</b>	<b># of Readings in 2006</b>	<b>Comments</b>
CD-10	1981	10	0	Negligible movement since 1996. Not read in 2005 and 2006.
CD-15	1981	10	2	Negligible subsurface movement since 1996. Minor surficial movement in upper 2 m.
91CD-1	1991	11	2	Negligible movement since 1996.
CD-19	1981	10	2	Some movement was detected in readings prior to 1998. This movement has previously been attributed to settlement of the dike and settlement of the SI casing in the borehole. Minor surficial movement in upper 2 m
CD-21	1981	10	2	Some movement was detected in readings prior to 1998. This movement has been attributed to settlement of the dike and settlement of the SI casing in the borehole. Indications of settlement have been observed at surface during the annual inspection since 1991.
BGC01-01 (88-10 replacement)	2001	14	2	Original depth of casing was 14 m bgs, frozen to 11.8 m in 2004. Frozen to 10 m in 2006. Makes interpretation difficult. Only minor movements in casing
94CD-1	1994	14	2	Negligible subsurface movement since 1996. Surficial movements in upper 2 m.
BGC05-05	2005	11.5	2	Minor movements recorded, likely due to grout settlement.
BGC05-08	2005	12.5	2	Minor movements recorded, likely due to grout settlement.

**Table 7 Diversion Canal - Spoil Piles - Thermistors**

Installation	Date Installed	Length of String (m)	# of Readings in 2006	Depth to Permafrost 2005 (m below surface)	Depth to Permafrost 2006 (m below surface)	Comments
SP-2	1981	9	1	none	unknown	Readings taken on June 26, 2001 were recorded as "noisy". Therefore the data is invalid. Many tips not working or giving spurious data.
SP-2	1981	10	2	Not observed with 10 m of ground surface	Not observed with 10 m of ground surface	Warming trend at depth
SP-3	1981	10	2	Not observed with 10 m of ground surface	Not observed with 10 m of ground surface	Apparent warming trend at depth.
SP-5	1981	10	0	-	-	Not read in 2005 and 2006.

**Table 8 Diversion Canal - Spoil Piles - Slope Inclinerometers**

<b>Installation</b>	<b>Date Installed</b>	<b>Length of Casing (m)</b>	<b># of Readings in 2006</b>	<b>Comments</b>
SP-2	1981	7.5	2	Some settlement in the vicinity of SP-2, based on the distinctive shape of the deflection versus depth curves. Also some downslope movement noted in upper 2 m.
SP-5	1981	10	0	No movement at depth has been recorded since 1994. Minor surface displacements have been occurring in the upper 2 m since September 2000. No readings for 2006.

**Table 9 Canal Backslope Piezometers**

Installation	Date Installed	Standpipe (S) or Pneumatic (P)	# of Readings in 2006	Ground Elevation (m amsl)	Tip Elev. (m amsl)	Historic Low Reading/ Date	Historic High Reading/ Date	2006 Low Reading/ Date (Compared to 2004 Low)	2006 High Reading/ Date (Compared to 2004 High)	Comments
BS-5	1981	P	2	1060.2	1053.0	1053.28/ Sep 2006	1057.69/ May 1994	1053.28 (-0.84)	1053.91 (-0.56)	Historically low in 2006
BS-9	1981	P	2	1056.3	1045.0	1047.73/ May 1982	1051.65/ Oct 1986, Oct 1990	1048.43 (-0.98 )	1050.11 (+0.35)	

**Table 10 Canal Backslope Thermistors**

<b>Installation</b>	<b>Date Installed</b>	<b>Length of String (m)</b>	<b># of Readings in 2006</b>	<b>Depth to Permafrost 2004 (m below surface)</b>	<b>Depth to Permafrost 2006 (m below surface)</b>	<b>Comments</b>
BS-5	1981	10	0	6.5	N/A	Not read in 2006.
BS-10	1981	10	2	7	6.5	Depth to permafrost steady at approximately 6 to 7 m from 2002 to 2006. Some cooling at depth.
BS-12	1981	10	2	N/A	N/A	Completely thawed profile to 10 m depth in 2006

**Table 11 Canal Backslope - Slope Inclinerometers**

<b>Installation</b>	<b>Date Installed</b>	<b>Length of Casing (m)</b>	<b># of Readings in 2006</b>	<b>Comments</b>
BS-5	1981	10	2	No movements since 2004
BS-9	1981	10	2	No movements since 2004
BS-10	1981	10	2	No movements since 2004

Table 12 Intermediate Dam - Piezometers

Installation	Date Installed	Standpipe (S) or Pneumatic (P)	# of Readings in 2006	Ground Elevation (m amsl)	Tip Elev. (m amsl)	Historic Low Reading/ Date	Historic High Reading/ Date	2006 Low Reading/ Date (Compared to 2005)	2006 High Reading/ Date (Compared to 2005)	Comments
91-ID3	1991	P	4	1043.82	1036.82/ <b>1028.62</b>	1036.82/ Sep 95, Dec 98, Sep 00, Sep 02, Sep 03, May and Sep 05 <b>1030.93/ Mar 2006</b>	1039.23/ Jun 1992 <b>1038.04/ Jun 1992</b>	Dry/ Mar 09, (0.0) <b>1030.93/ Mar 09 (-1.12)</b>	1036.86/ Mar 27, Oct 02 (+0.07) <b>1033.49/ Jun 14 (-1.01)</b>	Shallow tip readings dry or almost dry in 2006. Deep tip indicates declining pore pressures with high seasonal fluctuation. Historically low readings Downward gradient.
91-ID4	1991	P	4	1031.8*	1024.22/ <b>1017.08</b>	1028.35/ Mar 2006 <b>1027.23/ Mar 2006</b>	1034.58/ Jun 1992 <b>1031.85/ Sep 1992</b>	1028.35/ Mar 09 (-0.42) <b>1027.23/ Mar 09 (-0.42)</b>	1028.63/ Jun 14 (-0.84) <b>1028.28/ Jun 14 (-0.77)</b>	Downward gradient, declining pore pressures since 2002. Historically low values were recorded in 2006
91-ID5	1991	P	2	1031.64	1024.3/ <b>1017.08</b>					Both tips are leaking, making the instrument inoperable. Tips should be replaced.
91-ID6	1991	P	4	1031.36	1024.8/ <b>1016.9</b>	1026.83/ May 1997 <b>1028.17/ Mar 2006</b>	1031.74/ Jun 1992 <b>1034.96/ Jun 1992</b>	1027.18/ Mar 27 (-0.14) <b>1028.48/ Mar 09 (-0.31)</b>	1027.39/ Jun 14 (-0.56) <b>1028.38/ Mar 27 (-0.71)</b>	Downward gradient. Pore pressures declining since 1999. Historically low values were recorded in 2006
91-ID7	1991	P	4	1032.42	1025.95	1029.17/ Mar 2006	1032.20/ Feb 1992	1029.17/ Mar 09 (-0.35)	1029.73/ Jun 14 (-0.49)	Pore pressures appear to be declining since 1999. Historically low value recorded in 2006
94-IDC-1	1994	S	4	1049.21	1035.1 (approx)					Has recorded dry conditions since initial monitoring in 1994
P96-1	1996	S	1	1049.15	1027.35	1027.85/ Oct 2006	1031.65/ Jun 1999	1027.85/ Oct 02 (-0.16)	1027.85/ Oct 02 (-0.81)	Piezometric Elev. Approx. 20 - 22 m bgs. Historically low value was recorded in 2006
P96-2	1996	S	3	1049.22	1029.18	1028.27/ May 10, 2004	1031.94/ Jun 1999	1028.78/ Mar 09 (-0.11)	1028.91/ Mar 27 (-1.08)	Piezometric Elev. Approx. 18 - 20 m bgs.
P96-3	1996	S	4	1031.48	1022.43/ <b>1012.23</b>	1027.37/ Mar 2006 <b>1027.48/ Mar 2006</b>	1031.38/ Jun 1999 <b>1031.45/ Jun 1999</b>	1027.77/ Mar 09 (-0.4) <b>1027.89/ Mar 09 (-0.41)</b>	1027.71/ Oct 02 (-0.76) <b>1028.58/ Jun 14 (-0.77)</b>	Piezometric Elev. Approx. 3.0 - 5.0 m bgs. Historically low values were recorded in 2006
P96-4	1996	S	4	1032.16	1025.68 1020.86 1015.69 <b>1003.82</b>	1027.61/ Mar 2006 1028.41/ Jun 2006 1027.74/ Mar 2006 <b>1027.73/ Mar 2006</b>	1032.04/ Jun 2002 1032.08/ Jun 2002 1031.64/ Jun 1999 <b>1031.75/ Jun 1999</b>	1027.61/ Mar 09 (-0.4) 1028.41/ Jun 14 (-0.87) 1027.74/ Mar 09 (-0.08) <b>1027.73/ Mar 09 (-0.42)</b>	1030.45/ Jun 14 (1.75) 1028.41/ Jun 14, Oct 02 (0.12) 1027.96/ Mar 27 (0.14) <b>1028.06/ Jun 14 (-0.77)</b>	Piezometric Elev. Approx. 2.5 - 4.5 m bgs. Historically low values were recorded in 2006
P01-03	2001	S	4	1031.52	1022.35	1027.75/ Mar 2006	1030.63/ Sep 2001	1027.75/ Mar 09 (-0.42)	1028.07/ Jun 14 (-0.78)	Piezometric Elev. Approx. 2.5 - 3.5 m bgs. Historic lows recorded in 2006.
P01-04	2001	S	4	1032.32	998.17/ <b>978.89</b>	1029.55/ Sep 2003 <b>1029.06/ Mar 2006</b>	1032.24/ May 2005 <b>1032.17/ May 2005</b>	1029.92/ Oct 02 (-0.2) <b>1029.06/ Mar 9 (-0.5)</b>	1030.18/ Jun 14 (-1.45) <b>1030.18/ Jun 14 (-1.99)</b>	Piezometric Elev. Approx. 0 - 3.0 m bgs; Historic lows recorded in 2006. Gradient small downward
BKS04-06	2004	S	4	1049.1	1036	1036.46/ Sep 2005	1037.60/ May 2005	1036.47/ Jun 14 (0.01)	1037.57/ Mar 27 (-0.03)	
BKS04-07	2004	S	4	1049.2	1037.3	1036.55/ Mar 2006	1037.72/ Sep 2005	1036.55/ Mar 27 (-1.17)	1037.70/ Oct 02 (-0.02)	Dry

Note: Bold values correspond to deep piezometer tips

**Table 13 Cross Valley Dam 2006 Weir Flows**

DATE	X13 (comb.) FLOW* (Lps)	X11 (North) FLOW* (Lps)	X12 (South) FLOW* (Lps)	W3 (Central) FLOW* (Lps)	X13-(X11+X12+W3) FLOW (Lps)
Jan. 05/06	27.84	14.02	0.77	4.89	8
Jan. 12/06	31.12	14.02	0.77	5.49	11
Jan. 19/06	31.12	15.14	0.77	6.14	9
Jan. 23/06	31.12				
Jan. 31/06	31.12	15.14	0.77	6.14	9
Feb. 02/06	31.12	15.14	0.77	6.14	9
Feb. 14/06	31.12				
Feb. 15/06	34.51	17.54	0.77	6.83	9
Feb. 21/06		17.54	0.97	6.83	
Feb. 23/06	31.12	17.54	0.97	6.83	6
Feb. 27/06	27.84	16.32	0.77	6.14	5
Mar. 02/06	24.69	11.93	0.77	6.14	6
Mar. 09/06	18.79	8.34	0.77	5.49	4
Mar. 16/06	18.79	6.83	0.77	6.14	5
Mar. 23/06	21.67	8.34	0.77	6.14	6
Mar. 24/06	21.67				
Mar. 30/06	21.67	10.04	0.77	6.14	5
Apr. 06/06	23.47	10.96	0.77	5.49	6
Apr. 13/06	24.69	14.02		4.33	6
Apr. 20/06	31.12	16.80	0.77	4.33	9
Apr. 25/06	31.12				
Apr. 27/06	31.12	18.82	0.77	3.91	8
May 04/06	44.61	24.49	0.77	4.33	15
May 11/06	35.20	19.35	0.77	4.33	11
May 18/06	32.46	16.08	0.44	4.33	12
May 25/06	27.20	12.54	0.44	4.01	10
Jun. 01/06	23.47	10.04	0.44	3.33	10
Jun. 08/06	24.69	9.51	0.44	3.33	11
Jun. 15/06	24.69	10.04	0.44	4.33	10
Jun. 19/06	24.69				
Jun. 22/06	27.20	10.04	0.59	4.33	12
Jun. 29/06	25.94	9.51	0.77	4.33	11
July 04/06	27.20				
July 05/06		9.69	0.77	4.89	
July 13/06	27.20	9.34	0.77	4.33	13
July 17/06	29.79	8.50	0.77	5.37	15
July 20/06	27.20				
July 27/06	24.69	8.34	0.77	4.89	11
Aug. 03/06	24.69	7.56	0.97	4.89	11
Aug. 08/06		7.56	0.97	4.89	
Aug. 09/06	24.69	8.34	0.97	4.89	10
Aug. 17/06	20.50	6.83	0.97	4.89	8
Aug. 21/06	20.50				
Aug. 24/06	24.69	6.83	0.97	4.89	12
Aug. 31/06	20.50	6.83	0.97	4.89	8
Sept. 07/06	21.67	6.55	0.97	3.81	10
Sept. 12/06	21.67				
Sept. 14/06	21.67	6.55	1.11	3.81	10
Sept. 21/06	21.67	7.41	1.36	3.61	9
Sept. 28/06	21.08	6.83	1.36	3.33	10
Oct. 05/06	24.69	6.83	1.21	3.33	13
Oct. 12/06	22.27	6.83	0.84	3.61	11
Oct. 17/06	22.27	6.83			
Oct. 19/06	23.47	8.03	0.59	3.52	11
Oct. 26/06	23.47	8.50	0.44	3.81	11
Nov. 02/06	23.47	9.34	0.44	4.01	10
Nov. 09/06	23.47	9.34	0.44	4.01	10
Nov. 14/06	24.69				
Nov. 16/06	24.69	10.59	0.44	5.49	8
Nov. 30/06	27.84	11.93	0.44	6.14	9
Dec. 07/06	24.69	11.34	0.31	5.75	7
Dec. 13/06	24.69				
Dec. 14/06	24.69	11.34	0.31	5.75	7
Dec. 21/06	24.69	11.54	0.31	5.75	7
Dec. 28/06	24.69	11.54	0.31	5.75	7

\*Flows calculated from standard weir formulas and applied to staff gauge levels. Staff levels prior to September 2, 2005 corrected according to Laberge Environmental Services (2005).  
The difference of flow at X13 less (X11+X12+W3) is due additional seepage discharge beyond the other three weirs

**Table 14 Cross Valley Dam Seepage Flows - Weir X13 (1982 - 2006)**

<b>YEAR</b>	<b>MEAN POND ELEVATION (m amsl)</b>	<b>MINIMUM FLOW RATE (month recorded) (L/s)</b>	<b>MAXIMUM FLOW RATE (month recorded) (L/s)</b>	<b>AVERAGE YEARLY FLOW RATE (L/s)</b>
1982	1026.25	75.9 (Sept)	277.6 (June)	115.3
1984	1027.55	67.8 (Oct)	84.9 (Dec)	76.3
1985	1029.69	83.9 (Sept - Dec)	113.6 (Jul)	93.2
1986	1030.9	79.8 (May)	113.2 (Sept)	93.8
1987	~1030.9	77.0 (May)	106.1 (Aug - Sept)	94.4
1988	~1030.9	78.9 (Jun)	110.4 (Aug)	95.5
1989	~1030.9	72.3 (Mar)	97.9 (Aug)	85.7
1990	~1030.9	64.9 (Mar)	102.9 (Sept)	82.8
1991	~1030.9	66.6 (Oct)	91.0 (Jun)	81.6
1992	N/A	53.8 (Nov)	90.8	68.4
1995	1031.2	29.1 (Dec)	52.8 (Jun)	50.2
1996	1029.9 (Sep)	15.8 (Apr)	58.3 (Sep)	34.8
1997	N/A	30.0 (Apr)	109.9 (Sep)	28.6
1998	1030.5	49.0 (Dec)	119.0 (Sep)	52.7
1999	1030.7	44.0 (Feb - Sep)	82.0 (July)	53.6
2000	1031.5	35.0 (Nov)	78.0 (June 26)	48.7
2001	N/A	<b>35.0</b> (Jan - Feb)	<b>49</b> (Jun to Sep)	48.0
2002	N/A	<b>38</b> (Oct - Nov)	<b>49</b> (May to Sep)	46.4
2003	1029.7	<b>28</b> (Sept - Oct)	<b>46</b> (Jan to Mar)	38.1
2004	1029.8	<b>31.6</b> (Apr, Sep to Dec)	<b>49.5</b> (Jun)	35.3
2005	1028.0	<b>16.0</b> (Mar - Apr)	<b>49.2</b> (May)	27.3
2006	1027.8	<b>18.8</b> (Mar)	<b>44.61</b> (May)	26.0

- Notes:
1. For locations of weirs see Figure 1.
  2. Flows for 1983, 1984 and 1985 based on records for period June to December and flow for 1991 based on records for period January to November.
  3. High flow through Weir 3 in June, 1982 due to siphon discharge above weir.
  4. Weir 3 was replaced by X13 as a consequence of the seepage filter construction conducted in the summer of 1991.
  5. Drainage from west of south abutment road crossed to berm drainage collector during 1995 and perhaps in 1996; therefore some readings may higher than expected.
  6. Insufficient data for average pond level in 2001 - 2003 as water level was below staff gauge.
  7. Weir plates at X-11 and X-13 were replaced in August 2003.
  8. Weir maintenance and calibrations conducted in 2005.
  9. Mean pond elevation data from 1982-2003 converted from m advd to m amsl.

Table 15 Cross Valley Dam - Piezometers

Installation	Date Installed	Standpipe (S) or Pneumatic (P)	# of Readings in 2006	Ground Elevation (m amsl)	Tip Elev. (m amsl)	Historic Low Reading/ Date	Historic High Reading/ Date	2006 Low Reading/ Date (Compared to 2004 Low)	2006 High Reading/ Date (Compared to 2004 High)	Comments
CVDC-4	1981	S	3	1033.30	1007.9/ <b>999.7</b>	1016.68/ Apr 1984 <b>1016.72/ Apr 1984</b>	1018.44/ Oct 1986 <b>1019.05/ Jun 1992</b>	N/A <b>1018.38/ Mar 9 (-0.10)</b>	N/A <b>1018.46/ May 26 (-0.35)</b>	Shallow piezometer blocked 7.6 m below top of pipe since 1987. Deep piezometer has been very consistent since 1992.
CVDC-7	1981	S	3	1033.24	1007.80/ <b>1002.90</b>	1015.14/ Mar 2006 <b>1017.17/ Mar 2006</b>	1016.30/ Sep 1992 <b>1019.21/ Jun 1992</b>	1015.14/ Mar 9 (-0.16) <b>1017.17/ Mar 9 (-0.26)</b>	1015.29/ May 26 (-0.27) <b>1017.44/ Feb 22 (-0.60)</b>	Very consistent readings in both piezometers. Upward gradient. Historic Low in 2006.
CVDC-9	1981	S	3	1033.28	1007.70/ <b>1000.70</b>	1019.91/ Aug 1983 <b>1021.18/ Jun 1984</b>	1024.74/ Aug 1982 <b>1025.61/ Jun 1992</b>	1020.28/ Mar 9 (-0.44) <b>1022.54/ Mar 9 (-0.54)</b>	1020.69/ Jun 14 (-0.84) <b>1023.07/ Jun 14 (-0.96)</b>	Moderately higher pore pressures than in other places of the dam. Slight upward gradient.
CVDP-1	1982	P	3	1016.86	1014.51	1017.38/ Aug 1983	1019.55/ Sep 1992	1017.87/ Jun 14 (-0.28)	1018.08/ Oct 02 (-0.7)	Minor seasonal fluctuations, artesian conditions
CVDP-2	1982	P	3	1016.86	1014.51	1015.14/ Mar 2006	1019.44/ Oct 1986	-	-	Readings do not seem reliable, piezometer may still be broken
CVDP-3	1982	P	3	1016.86	1014.71	1014.99/ Sep 1992	1018.07/ May 1991	1016.25/ Mar 9 (-0.07)	1016.32/ Jun 14 (-0.28)	Minor seasonal fluctuations, pore pressures at grade.
CVDP-5	1982	P	3	1019.18	1014.28	1018.13/ Aug 1983	1021.21/ Sep 1992	1019.88/ Sep 14 (-0.14)	1020.16/ May 26 (10.91)	Artesian conditions
CVDP-6	1982	P	3	1019.18	1014.37	1016.99/ May 1998	1018.99/ Sep 1992	1017.38/ Oct 02 (-0.14)	1017.52/ Mar 09 (-0.21)	Stable seasonally, Low pore pressures in the shallow foundation area.
CVDT-1	1994	S	3	1018.31	1007.9	1017.13/ May 1994	1018.32/ Aug 2004	1017.87/ Oct 02, Jun 14 (-0.12)	1018.03/ Mar 9 (-0.25)	Minor seasonal fluctuation.
CVDT-2	1994	S	3	1019.50	1006.2	1015.33/ Mar 2006	1016.49/ Oct 2000	1015.33/ Mar 9 (-0.56)	1016.17/ Jun 14 (-0.63)	Minor seasonal fluctuation, 3.5 m below grade. Historic Low in 2006.
BH94CVDC-1	1994	S	3	1033.38	1020.4	1022.73/ Mar 2006	1024.58/ Sep 1995	1022.73/ Mar 9 (-0.20)	1023.87/ Oct 4 (-0.95)	Minor seasonal fluctuation. Historic Low in 2006.
P01-11	2001	S	3	1017.21	1006.61	1016.71/ Mar 2006	1017.83/ Jul 2003	1016.71/ Mar 9 (-0.1)	1016.82/ Jun 14 (-0.55)	Piezometric elevation located just below ground surface. Minor seasonal fluctuation. Historic low in 2006.

Note: Bold values correspond to deep tip readings

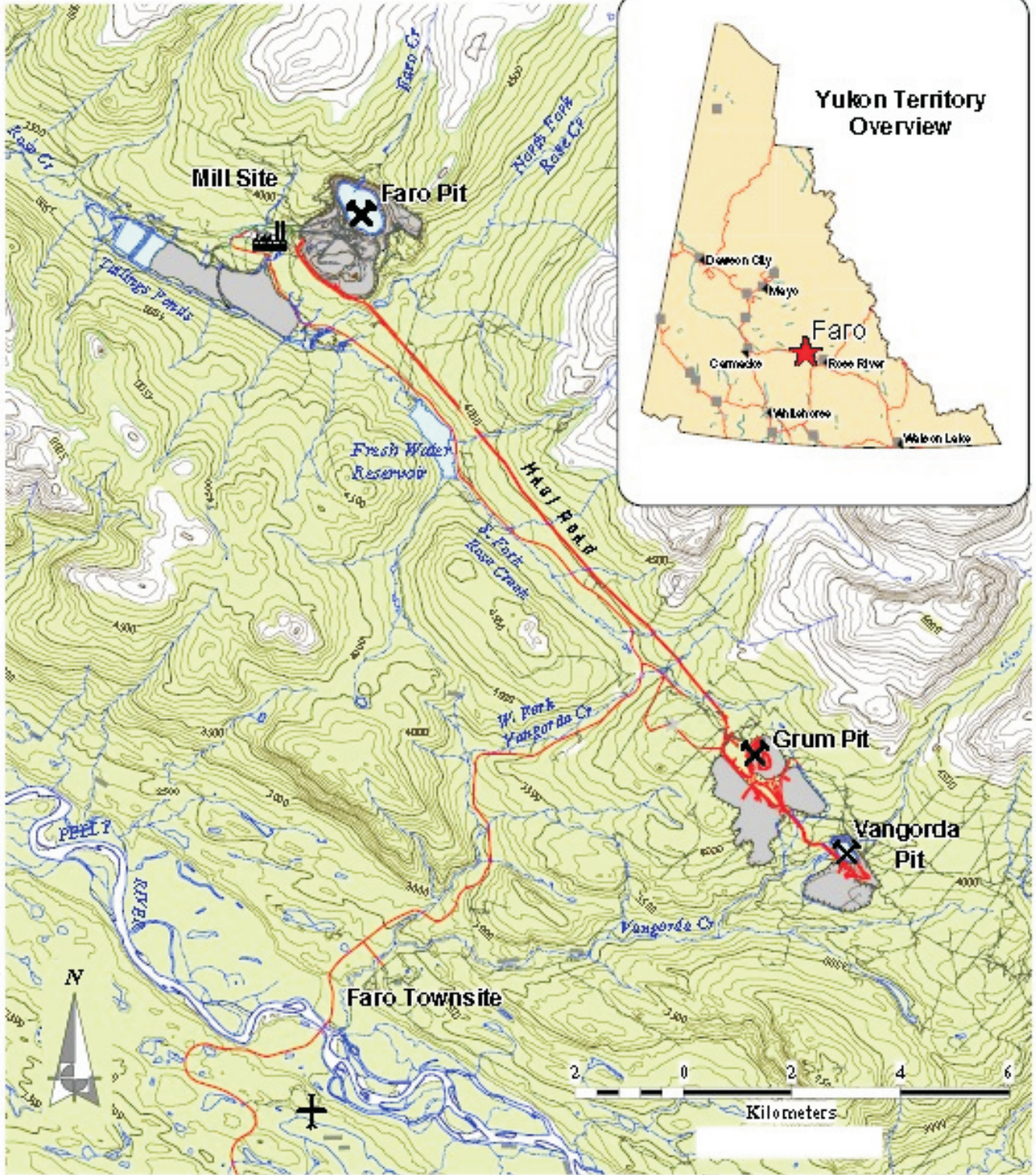
**Table 16 Cross Valley Dam - Thermistors**

<b>Installation</b>	<b>Date Installed</b>	<b>Length of String (m)</b>	<b># of Readings in 2006</b>	<b>Depth to Permafrost 2005 (m below ground surface)</b>	<b>Depth to Permafrost 2006 (m below ground surface)</b>	<b>Comments</b>
CVDC-6	1981	29	2	N/A	N/A	Readings at 21 and 29 m are unavailable. Temperatures in the whole profile have been between 2 and 3°C since 1995
88-4-4T	1988	4.2	2	N/A	N/A	Depth of winter frost extends to approximately 4 m.

Table 17 Secondary Dam - Piezometers

Installation	Date Installed	Standpipe (S) or Pneumatic (P)	# of Readings in 2006	Ground Elevation (m amsl)	Tip Elev. (m amsl)	Historic Low Reading/ Date	Historic High Reading/ Date	2006 Low Reading/ Date (Compared to 2005)	2006 High Reading/ Date (Compared to 2005)	Comments
P03-01	2003	S	1	1060.58	9 Tips, Variable Depths	1054.55/ Oct 2006	1055.06/ Jun 2005	1054.55/ Oct 03 (-0.17)	1054.55/ Oct 03 (-0.79)	Gartner Lee monitoring well, 9 tips at varying elevations. Hydrostatic conditions. Historically low values recorded in 2006.
P03-02	2003	S	1	1059.91	9 Tips, Variable Depths	1054.72/ Oct 2006	1054.85/ Jun 2005	1054.72/ Oct 02 (-0.1)	1054.72/ Oct 02 (-0.13)	Gartner Lee monitoring well, 9 tips at varying elevations. Hydrostatic conditions. Historically low values recorded in 2006.
P03-03	2003	S	1	1060.67	9 Tips, Variable Depths	1057.87/ Oct 2006	1059.55/ Jun 2005	1054.72/ Oct 02 (-1.1)	1054.72/ Oct 02 (-1.7)	Gartner Lee monitoring well, 9 tips at varying elevations. Hydrostatic conditions. Historically low values recorded in 2006.
P81-06	1981	S	1	1060.74	1054.71	1054.71/ Aug 2005	1054.73/ Oct 2006	1054.73/ Oct 2 (+0.02)	1054.73/ Oct 2 (0.01)	Piezometric levels near bottom of standpipe or dry.
P81-07	1981	S	1	1063.31	1057.17	1057.17/ 2005 and 2006	1057.13/ 2005	1057.17/ 2006 (+0.04)	1057.17/ 2005 (0.00)	Piezometer dry in 2005 and 2006
P81-08	1981	S	1	1063.26	1055.8	1055.80/ Aug 2005	1055.81/ 2005 and 2006	1055.81/ Oct 02 (-0.01)	1055.81/ Oct 02 (0.00)	Piezometric levels near bottom of standpipe or dry.

## FIGURES



Note: Base map figure provided by Gartner Lee Limited.

AS A MUTUAL PROTECTION TO OUR CLIENT, THE PUBLIC AND OURSELVES, ALL REPORTS AND DRAWINGS ARE SUBMITTED FOR THE CONFIDENTIAL INFORMATION OF OUR CLIENT FOR A SPECIFIC PROJECT AND AUTHORIZATION FOR USE AND/OR PUBLICATION OF DATA STATEMENTS CONCLUSIONS OR ABSTRACTS FROM OR REGARDING OUR REPORTS AND DRAWINGS IS RESERVED PENDING OUR WRITTEN APPROVAL.

SCALE:	As Shown	DESIGNED:	GOB
DATE:	FEBRAURY 2007	CHECKED:	GWF
DRAWN:	SLF	APPROVED:	JWC

CLIENT: **Deloitte & Touche**

PROJECT: **2006 ANNUAL GEOTECHNICAL EVALUATION AND INSTRUMENTATION REVIEW**

TITLE: **SITE LOCATION PLAN**

PROJECT No.	FIGURE No.	REV.
0257-039-05	1	0

**BGC**

**BGC Engineering Inc.**  
AN APPLIED EARTH SCIENCES COMPANY

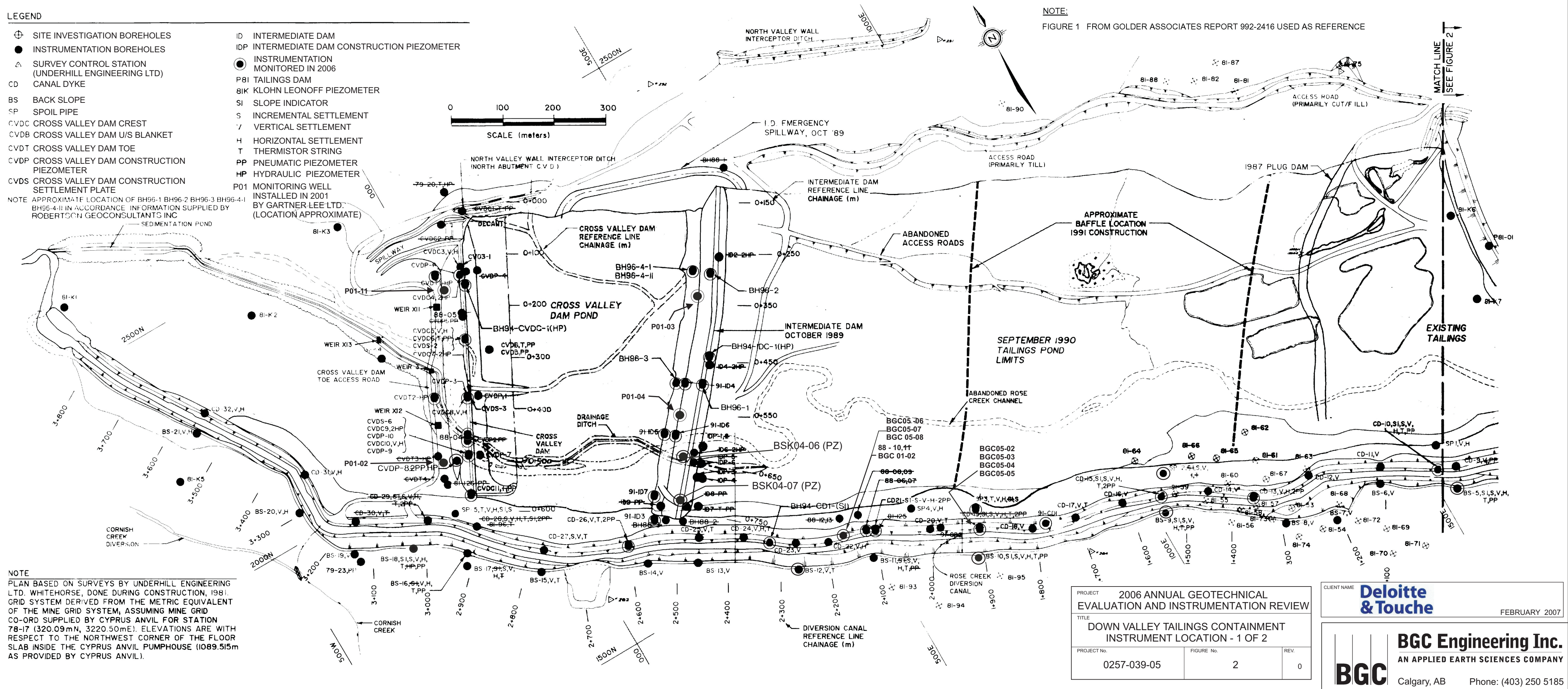
Calgary, Alberta. Phone: (403) 250-5185

**LEGEND**

- ⊕ SITE INVESTIGATION BOREHOLES
- INSTRUMENTATION BOREHOLES
- △ SURVEY CONTROL STATION (UNDERHILL ENGINEERING LTD)
- CD CANAL DYKE
- BS BACK SLOPE
- SP SPOIL PIPE
- CVDC CROSS VALLEY DAM CREST
- CVDB CROSS VALLEY DAM U/S BLANKET
- CVDT CROSS VALLEY DAM TOE
- CVDP CROSS VALLEY DAM CONSTRUCTION PIEZOMETER
- CVDS CROSS VALLEY DAM CONSTRUCTION SETTLEMENT PLATE
- NOTE APPROXIMATE LOCATION OF BH96-1 BH96-2 BH96-3 BH96-4-1 BH96-4-11 IN ACCORDANCE WITH INFORMATION SUPPLIED BY ROBERTSON GEOCONSULTANTS INC
- ID INTERMEDIATE DAM
- IDP INTERMEDIATE DAM CONSTRUCTION PIEZOMETER
- INSTRUMENTATION MONITORED IN 2006
- P8I TAILINGS DAM
- 8IK KLOHN LEONOFF PIEZOMETER
- SI SLOPE INDICATOR
- S INCREMENTAL SETTLEMENT
- V VERTICAL SETTLEMENT
- H HORIZONTAL SETTLEMENT
- T THERMISTOR STRING
- PP PNEUMATIC PIEZOMETER
- HP HYDRAULIC PIEZOMETER
- P01 MONITORING WELL INSTALLED IN 2001 BY GARTNER-LEE LTD. (LOCATION APPROXIMATE)

**NOTE:**

FIGURE 1 FROM GOLDER ASSOCIATES REPORT 992-2416 USED AS REFERENCE

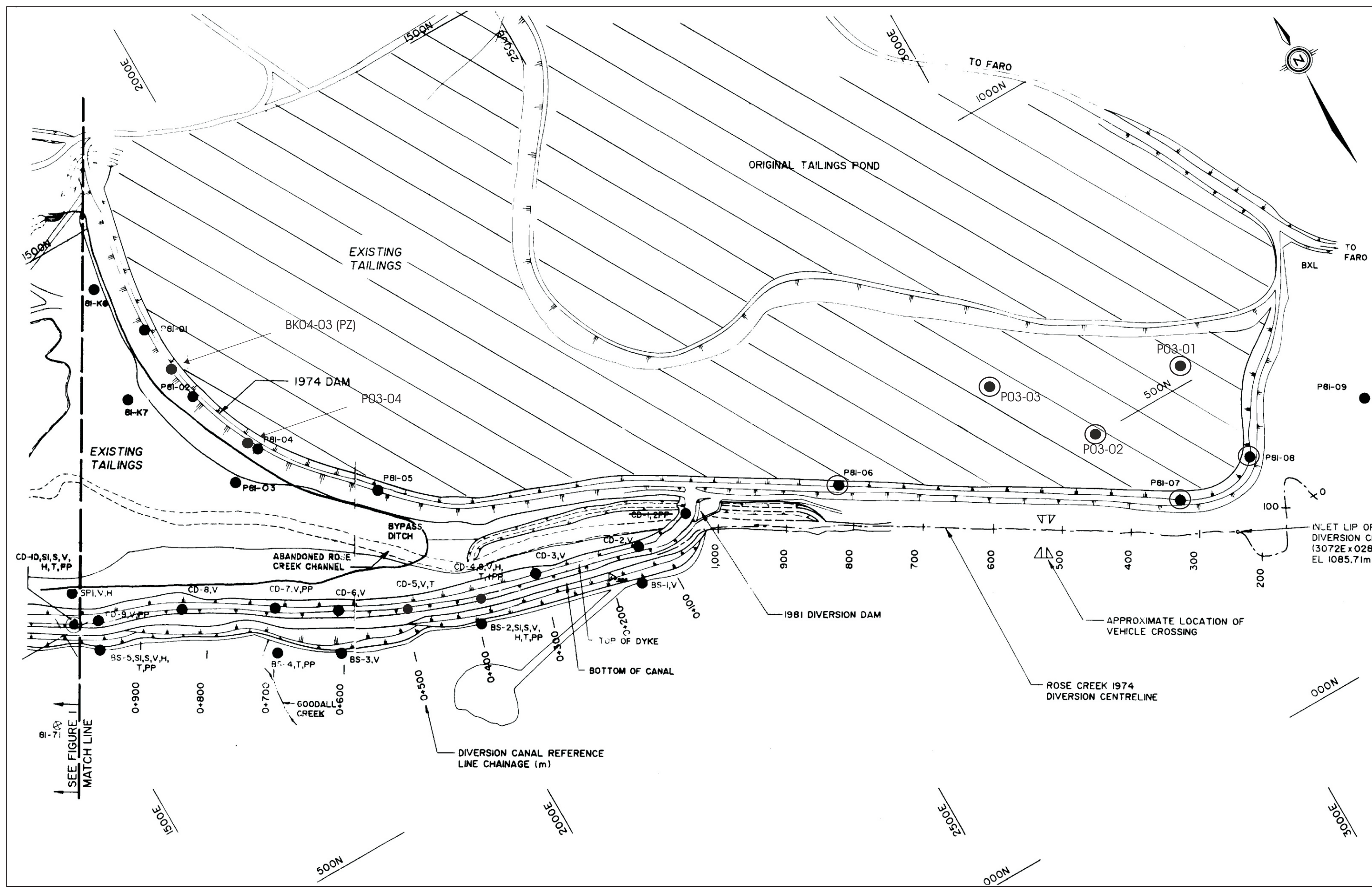


**NOTE**  
 PLAN BASED ON SURVEYS BY UNDERHILL ENGINEERING LTD. WHITEHORSE, DONE DURING CONSTRUCTION, 1981. GRID SYSTEM DERIVED FROM THE METRIC EQUIVALENT OF THE MINE GRID SYSTEM, ASSUMING MINE GRID CO-ORD SUPPLIED BY CYPRUS ANVIL FOR STATION 78-17 (320.09mN, 3220.50mE). ELEVATIONS ARE WITH RESPECT TO THE NORTHWEST CORNER OF THE FLOOR SLAB INSIDE THE CYPRUS ANVIL PUMPHOUSE (1089.515m AS PROVIDED BY CYPRUS ANVIL).

PROJECT 2006 ANNUAL GEOTECHNICAL EVALUATION AND INSTRUMENTATION REVIEW		
TITLE DOWN VALLEY TAILINGS CONTAINMENT INSTRUMENT LOCATION - 1 OF 2		
PROJECT No. 0257-039-05	FIGURE No. 2	REV. 0

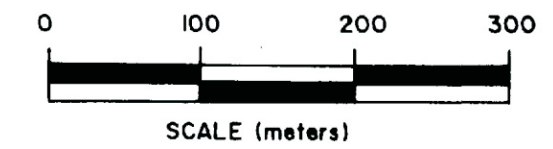
CLIENT NAME **Deloitte & Touche** FEBRUARY 2007

**BGC Engineering Inc.**  
 AN APPLIED EARTH SCIENCES COMPANY  
 Calgary, AB Phone: (403) 250 5185



**LEGEND**

- ⊕ SITE INVESTIGATION BOREHOLES
- INSTRUMENTATION BOREHOLES
- △ SURVEY CONTROL STATION (UNDERHILL ENGINEERING LTD)
- CD CANAL DYKE
- BS BACK SLOPE
- SP SPOIL PIPE
- CVDC CROSS VALLEY DAM CREST
- CVDB CROSS VALLEY DAM U/S BLANKET
- CVDT CROSS VALLEY DAM TOE
- CVDP CROSS VALLEY DAM CONSTRUCTION PIEZOMETER
- CVDS CROSS VALLEY DAM CONSTRUCTION SETTLEMENT PLATE
- ⊙ INSTRUMENTATION MONITORED IN 2006
- ID INTERMEDIATE DAM
- IDP INTERMEDIATE DAM CONSTRUCTION PIEZOMETER
- PBI TAILINGS DAM
- BK KLOHN LEONOFF PIEZOMETER
- SI SLOPE INDICATOR
- S INCREMENTAL SETTLEMENT
- V VERTICAL SETTLEMENT
- H HORIZONTAL SETTLEMENT
- T THERMISTOR STRING
- PP PNEUMATIC PIEZOMETER
- HP HYDRAULIC PIEZOMETER
- P01 MONITORING WELL INSTALLED IN 2001 BY GARTNER LEE LTD. (LOCATION APPROXIMATE)
- P03 MONITORING WELL INSTALLED IN 2003 BY GARTNER LEE LTD. (LOCATION APPROXIMATE)



**NOTE**

PLAN BASED ON SURVEYS BY UNDERHILL ENGINEERING LTD. WHITEHORSE, DONE DURING CONSTRUCTION, 1981. GRID SYSTEM DERIVED FROM THE METRIC EQUIVALENT OF THE MINE GRID SYSTEM, ASSUMING MINE GRID CO-ORD SUPPLIED BY CYPRUS ANVIL FOR STATION 78-17 (320.09mN, 3220.50mE). ELEVATIONS ARE WITH RESPECT TO THE NORTHWEST CORNER OF THE FLOOR SLAB INSIDE THE CYPRUS ANVIL PUMPHOUSE (1089.515m AS PROVIDED BY CYPRUS ANVIL).

FIGURE 2 FROM GOLDER ASSOCIATES REPORT 992-2416 USED AS REFERENCE

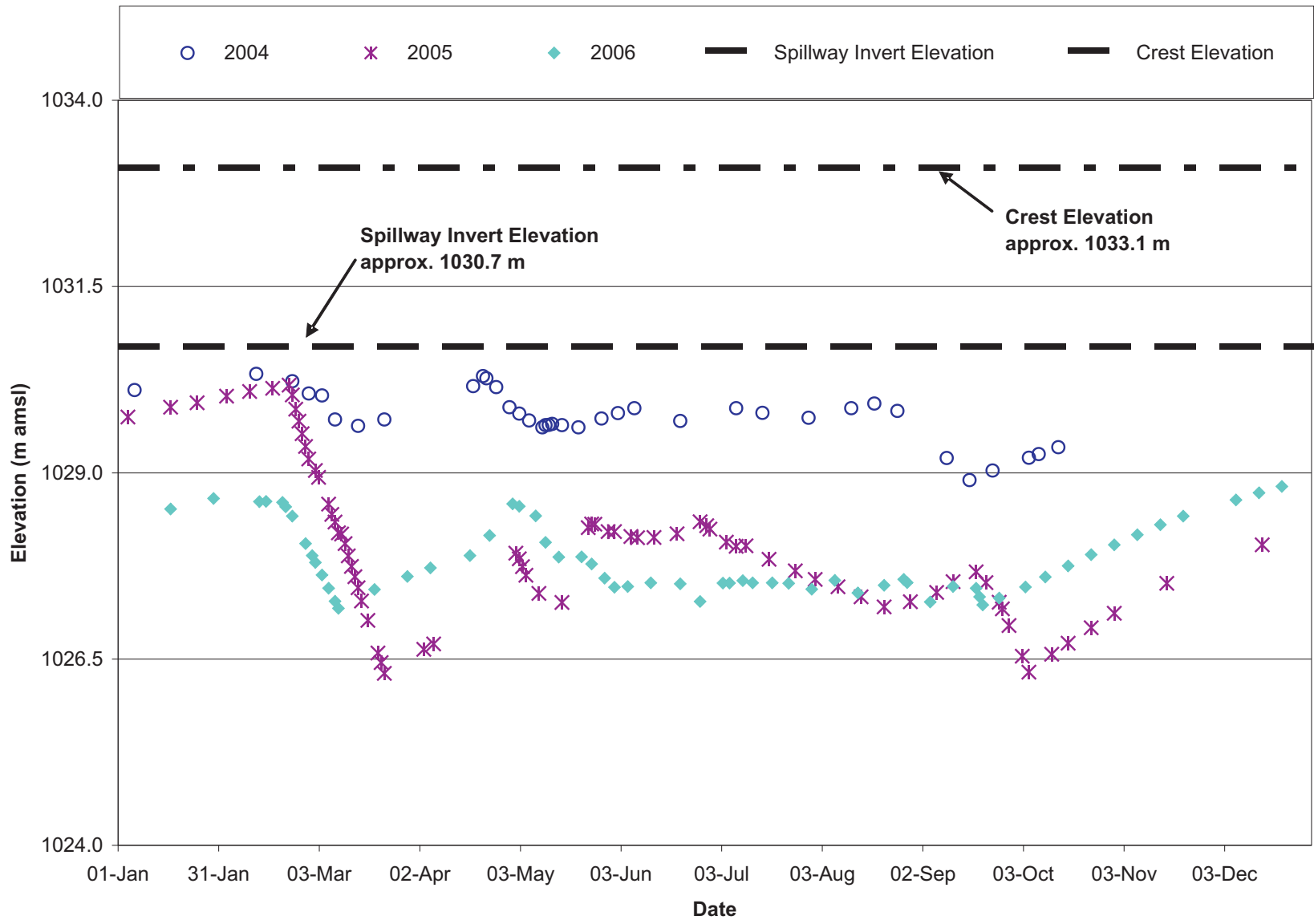


SCALE:	AS SHOWN
DATE:	FEBRUARY 2007
DRAWN:	SLF
DESIGNED:	JMS
CHECKED:	GWJ
APPROVED:	JWC

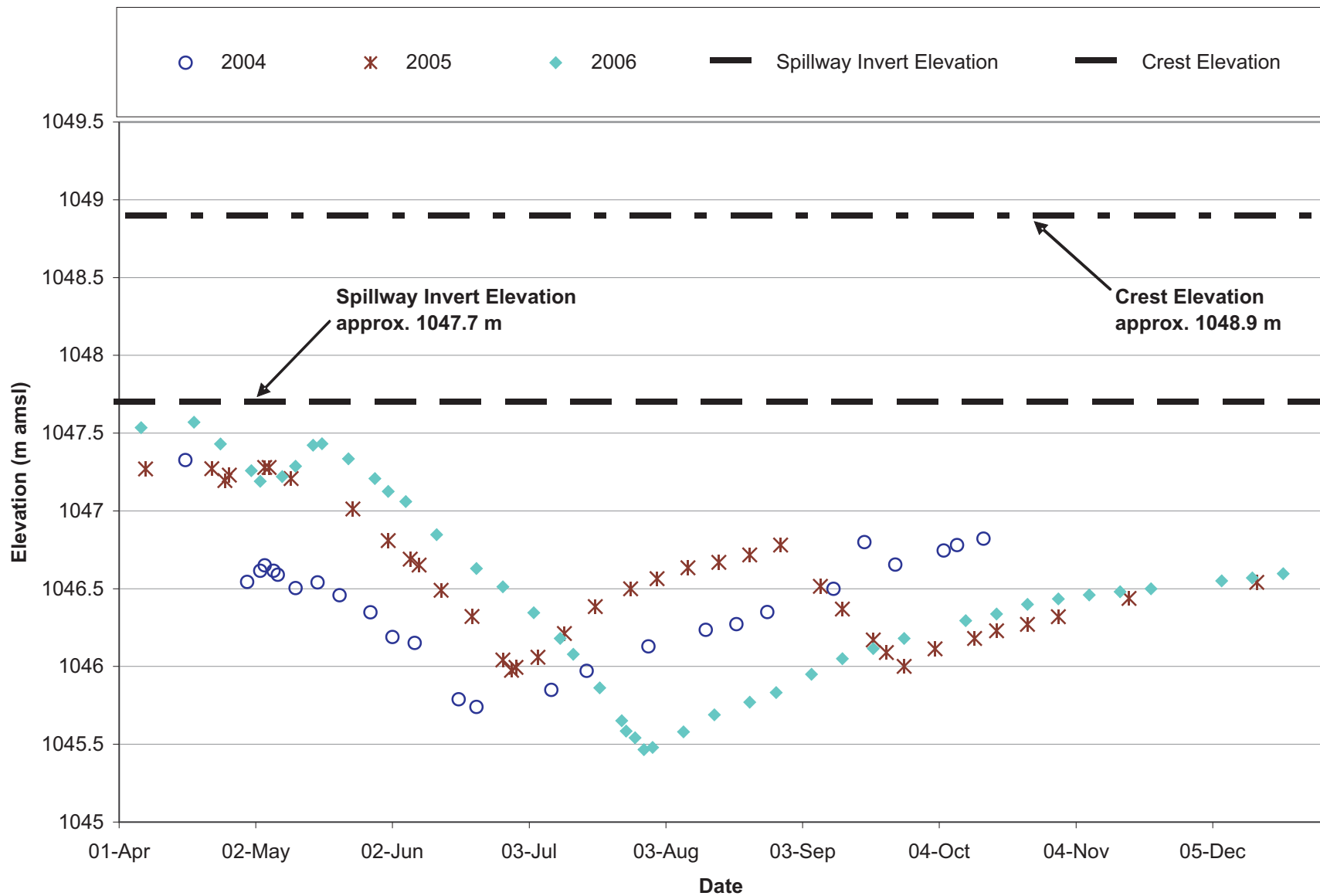
PROJECT 2006 ANNUAL GEOTECHNICAL EVALUATION AND INSTRUMENTATION REVIEW		
TITLE DOWN VALLEY TAILINGS CONTAINMENT INSTRUMENT LOCATION - 2 OF 2		
PROJECT No. 0257-039-05	FIGURE No. 3	REV. 0

**BGC Engineering Inc.**  
AN APPLIED EARTH SCIENCES COMPANY

**BGC** Calgary, AB Phone: (403) 250 5185



DATE: FEB 2007	DRAWN SLF	 <b>BGC ENGINEERING INC.</b> AN APPLIED EARTH SCIENCES COMPANY Calgary, Alberta Phone: (403) 250-5185	PROJECT 2006 ANNUAL GEOTECHNICAL EVALUATION & INSTRUMENTATION REVIEW		
REFERENCED DRAWING DESCRIPTION AS A MUTUAL PROTECTION TO OUR CLIENT, THE PUBLIC AND OURSELVES, ALL REPORTS AND DRAWINGS ARE SUBMITTED FOR THE CONFIDENTIAL INFORMATION OF OUR CLIENT FOR A SPECIFIC PROJECT AND AUTHORIZATION FOR USE AND/OR PUBLICATION OF DATA, STATEMENTS, CONCLUSIONS OR ABSTRACTS FROM OR REGARDING OUR REPORTS AND DRAWINGS IS RESERVED PENDING OUR WRITTEN APPROVAL.			TITLE CROSS VALLEY DAM POND ELEVATIONS (2004-2006)		
CLIENT 		PROJECT No. 0257-039-05	FIGURE No. 4	REV. 0	



DATE: FEB 2007	DRAWN SLF	 <b>BGC ENGINEERING INC.</b> AN APPLIED EARTH SCIENCES COMPANY Calgary, Alberta Phone: (403) 250-5185	PROJECT 2006 ANNUAL GEOTECHNICAL EVALUATION & INSTRUMENTATION REVIEW		
REFERENCED DRAWING DESCRIPTION AS A MUTUAL PROTECTION TO OUR CLIENT, THE PUBLIC AND OURSELVES, ALL REPORTS AND DRAWINGS ARE SUBMITTED FOR THE CONFIDENTIAL INFORMATION OF OUR CLIENT FOR A SPECIFIC PROJECT AND AUTHORIZATION FOR USE AND/OR PUBLICATION OF DATA, STATEMENTS, CONCLUSIONS OR ABSTRACTS FROM OR REGARDING OUR REPORTS AND DRAWINGS IS RESERVED PENDING OUR WRITTEN APPROVAL.			TITLE INTERMEDIATE DAM POND ELEVATIONS (2004-2006)		
CLIENT 		PROJECT No. 0257-039-05	FIGURE No. 5	REV. 0	

CLIENT:



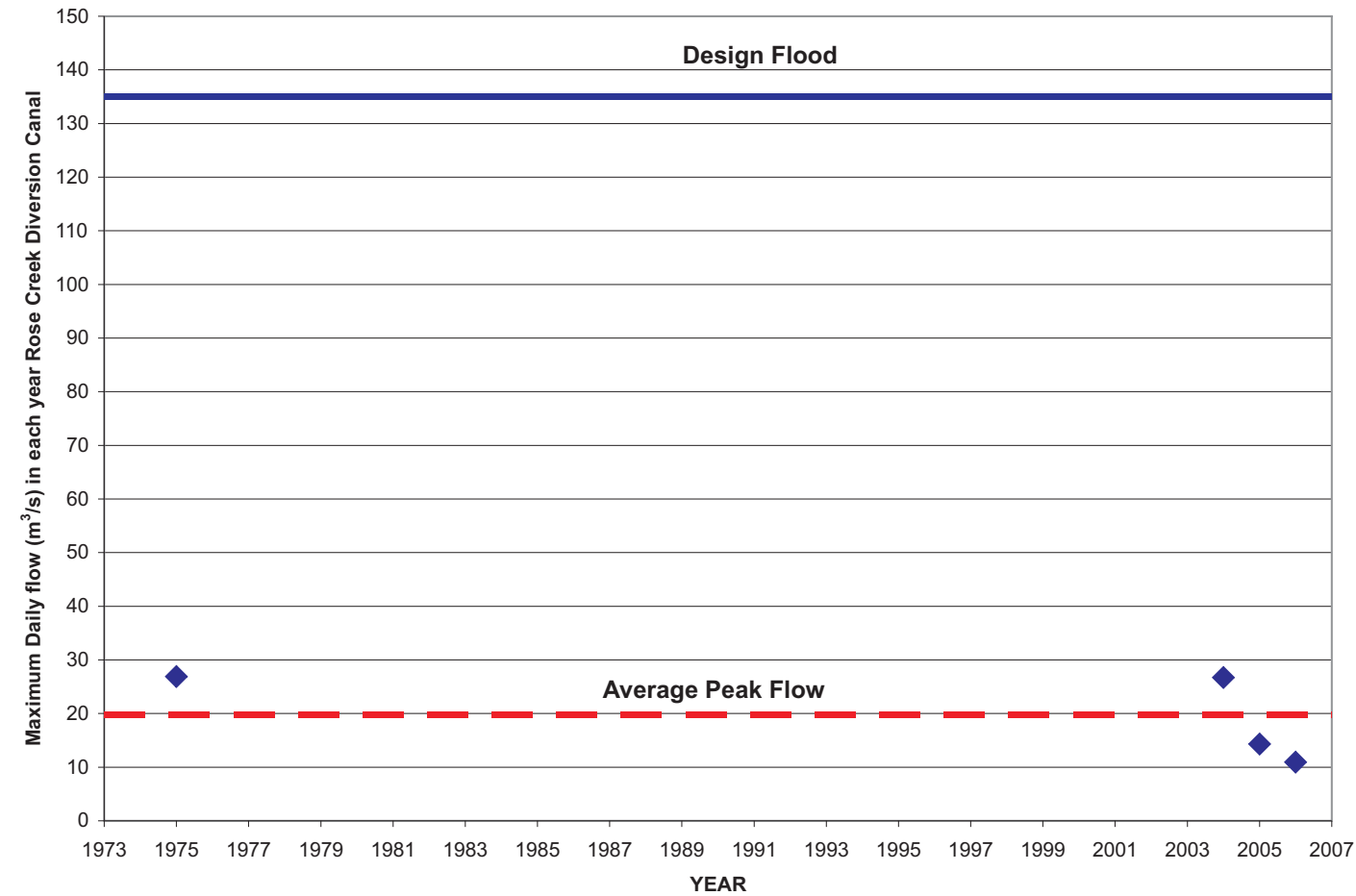
AS A MUTUAL PROTECTION TO OUR CLIENT, THE PUBLIC AND OURSELVES, ALL REPORTS AND DRAWINGS ARE SUBMITTED FOR THE CONFIDENTIAL INFORMATION OF OUR CLIENT FOR A SPECIFIC PROJECT AND AUTHORIZATION FOR USE AND/OR PUBLICATION OF DATA STATEMENTS CONCLUSIONS OR ABSTRACTS FROM OR REGARDING OUR REPORTS AND DRAWINGS IS RESERVED PENDING OUR WRITTEN APPROVAL.

REV.	DATE	REVISION NOTES	DRAWN	CHECKED	APPROVED
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-

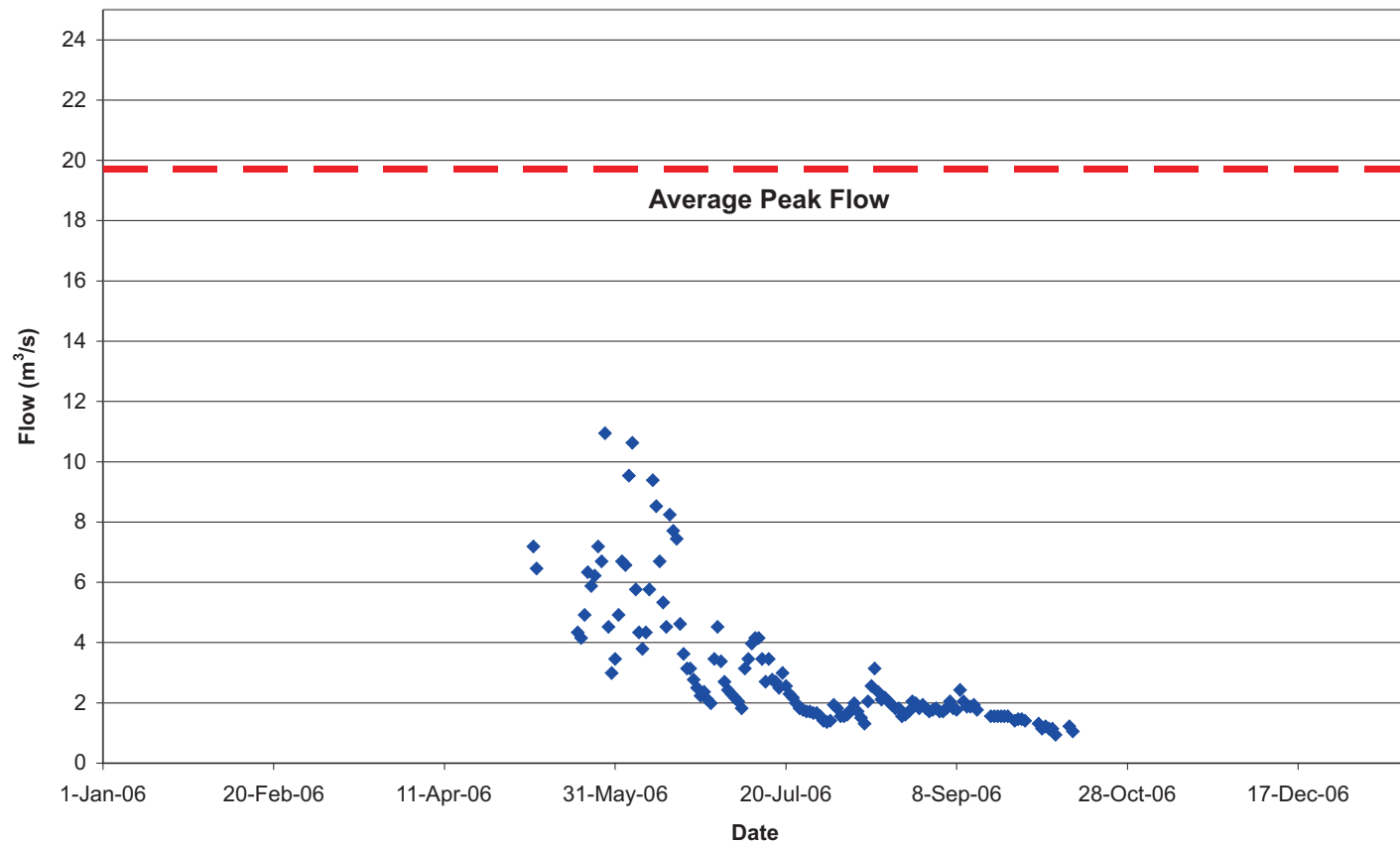
SCALE:	N/A	
DATE:	FEBRUARY 2007	
DRAWN:	SLF	
DESIGNED:	GOB	
CHECKED:	GWF	
APPROVED:	JWC	

PROJECT	2006 ANNUAL GEOTECHNICAL EVALUATION AND INSTRUMENTATION REVIEW	
TITLE	ROSE CREEK DIVERSION FLOWS	
PROJECT No.	FIGURE No.	REV.
0257-039-05	6	0

	<b>BGC Engineering Inc.</b>	
	AN APPLIED EARTH SCIENCES COMPANY	
Calgary Alberta	Phone: (403) 250-5185	



Rose Creek Diversion Canal  
2006 Flows (Based on Rating Curve)





September: shows the erosional gullies and small instability which previously occurred on the backslope, just west of Goodall Creek.



September: looking in the upstream direction at the canal and the backslope.



September: show a panoramic view of the thermal protection berm along with the large riprap which was previously placed within a erosional gully. At the bottom of the slope there is a significant amount of vegetation in the erosion gullies indicating water flow.



September: shows the placed riprap blanket which was placed on an old slough on the backslope.

CLIENT:

**Deloitte  
& Touche**

AS A MUTUAL PROTECTION TO OUR CLIENT, THE PUBLIC AND OURSELVES, ALL REPORTS AND DRAWINGS ARE SUBMITTED FOR THE CONFIDENTIAL INFORMATION OF OUR CLIENT FOR A SPECIFIC PROJECT AND AUTHORIZATION FOR USE AND/OR PUBLICATION OF DATA STATEMENTS CONCLUSIONS OR ABSTRACTS FROM OR REGARDING OUR REPORTS AND DRAWINGS IS RESERVED PENDING OUR WRITTEN APPROVAL.

REV.	DATE	REVISION NOTES	DRAWN	CHECKED	APPROVED
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-

SCALE:	N/A	
DATE:	FEBRUARY 2007	
DRAWN:	SLF	
DESIGNED:	GOB	
CHECKED:	GWF	
APPROVED:	JWC	

PROJECT			2006 ANNUAL GEOTECHNICAL EVALUATION AND INSTRUMENTATION REVIEW		
TITLE					
RCDC BACKSLOPE INSPECTION PHOTOS					
PROJECT No.	FIGURE No.	REV.			
0257-039-05	7	0			

**BGC Engineering Inc.**  
AN APPLIED EARTH SCIENCES COMPANY

**BGC** Calgary Alberta Phone: (403) 250-5185



September: panoramic view showing the condition of the weirs located within the upper weir section. A number of the central boulders have been displaced due to concentrated water flow.



September: shows a view looking downstream on the canal. As can be seen, this is a low gradient part of the diversion between the upper and lower weir sections.



June: looking in a downstream direction at the location of the 1981 Diversion Dam.



June: shows the first main corner in the portion of the RCDC that was upgraded in 2004.

CLIENT:

**Deloitte  
& Touche**

AS A MUTUAL PROTECTION TO OUR CLIENT, THE PUBLIC AND OURSELVES, ALL REPORTS AND DRAWINGS ARE SUBMITTED FOR THE CONFIDENTIAL INFORMATION OF OUR CLIENT FOR A SPECIFIC PROJECT AND AUTHORIZATION FOR USE AND/OR PUBLICATION OF DATA STATEMENTS CONCLUSIONS OR ABSTRACTS FROM OR REGARDING OUR REPORTS AND DRAWINGS IS RESERVED PENDING OUR WRITTEN APPROVAL.

	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
REV.	DATE	REVISION NOTES	DRAWN	CHECKED	APPROVED

SCALE:	N/A	
DATE:	FEBRUARY 2007	
DRAWN:	SLF	
DESIGNED:	GOB	
CHECKED:	GWF	
APPROVED:	JWC	

PROJECT	2006 ANNUAL GEOTECHNICAL EVALUATION AND INSTRUMENTATION REVIEW	
TITLE	RCDC CHANNEL INSPECTION PHOTOS	
PROJECT No.	FIGURE No.	REV.
0257-039-05	8	0

**BGC Engineering Inc.**  
AN APPLIED EARTH SCIENCES COMPANY

**BGC** Calgary Alberta Phone: (403) 250-5185



June: A view of three instruments installed in 2005. The oversteepened slope in this area should be backfilled to buttress the slope.



September: view of the riprapped area shown from the crest of the backslope in the bottom right photograph on Figure 7.



September: same location as in the photo above. Note that the oversteepened slope has been backfilled.



June: Shows the erosion gullies that have formed in the thermal protection berm above the boreholes drilled in 2005.

CLIENT:

**Deloitte  
& Touche**

AS A MUTUAL PROTECTION TO OUR CLIENT, THE PUBLIC AND OURSELVES, ALL REPORTS AND DRAWINGS ARE SUBMITTED FOR THE CONFIDENTIAL INFORMATION OF OUR CLIENT FOR A SPECIFIC PROJECT AND AUTHORIZATION FOR USE AND/OR PUBLICATION OF DATA STATEMENTS CONCLUSIONS OR ABSTRACTS FROM OR REGARDING OUR REPORTS AND DRAWINGS IS RESERVED PENDING OUR WRITTEN APPROVAL.

	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
REV.	DATE	REVISION NOTES	DRAWN	CHECKED	APPROVED

SCALE:	N/A	
DATE:	FEBRUARY 2007	
DRAWN:	SLF	
DESIGNED:	GOB	
CHECKED:	GWF	
APPROVED:	JWC	

PROJECT	2006 ANNUAL GEOTECHNICAL EVALUATION AND INSTRUMENTATION REVIEW		
TITLE	DIVERSION CANAL DIKE INSPECTION PHOTOS		
PROJECT No.	FIGURE No.	REV.	
0257-039-05	9	0	

**BGC Engineering Inc.**  
AN APPLIED EARTH SCIENCES COMPANY

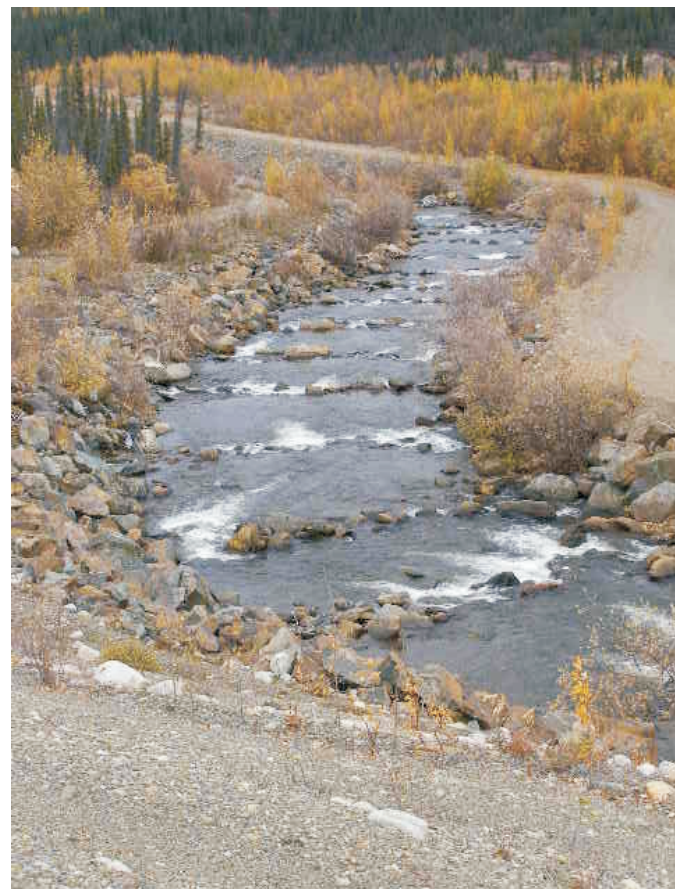
**BGC** Calgary Alberta Phone: (403) 250-5185



June: Shows a view looking upslope into Severin Creek as it enters the RCDC at the east weir of the lower weir section.



June: Shows a view at the start of the upper weir section.



September: shows the weirs in the lower part of the upper weir section. This is where Cornish Creek joins the diversion. Some of the central boulders have been displaced.



September: looking in an upstream direction at the weirs in the upper weir section. This photo was taken from the confluence with Cornish Creek.

CLIENT:

**Deloitte  
& Touche**

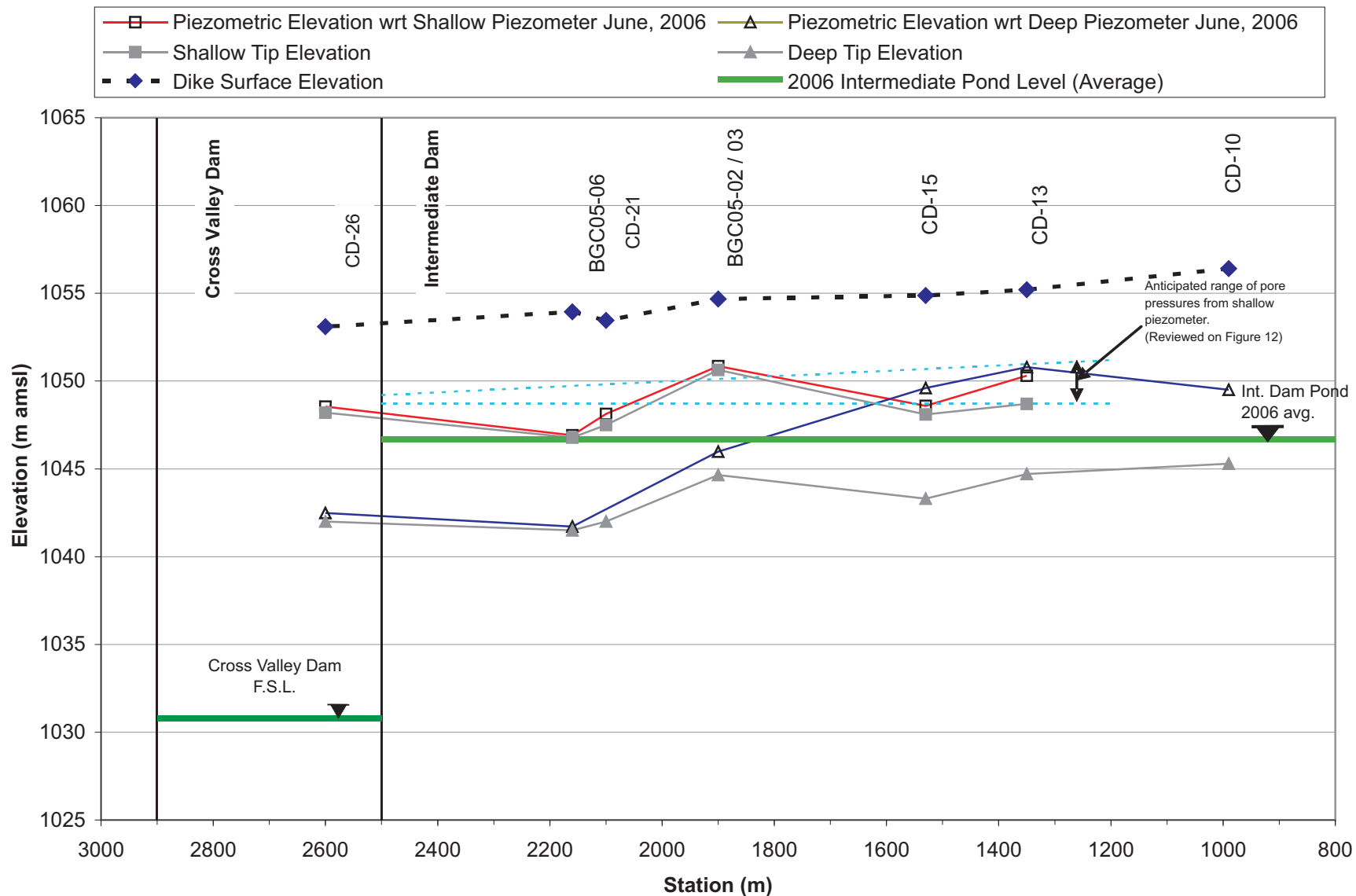
AS A MUTUAL PROTECTION TO OUR CLIENT, THE PUBLIC AND OURSELVES, ALL REPORTS AND DRAWINGS ARE SUBMITTED FOR THE CONFIDENTIAL INFORMATION OF OUR CLIENT FOR A SPECIFIC PROJECT AND AUTHORIZATION FOR USE AND/OR PUBLICATION OF DATA STATEMENTS CONCLUSIONS OR ABSTRACTS FROM OR REGARDING OUR REPORTS AND DRAWINGS IS RESERVED PENDING OUR WRITTEN APPROVAL.

REV.	DATE	REVISION NOTES	DRAWN	CHECKED	APPROVED
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-

SCALE:	N/A	
DATE:	FEBRUARY 2007	
DRAWN:	SLF	
DESIGNED:	GOB	
CHECKED:	GWF	
APPROVED:	JWC	

PROJECT	2006 ANNUAL GEOTECHNICAL EVALUATION AND INSTRUMENTATION REVIEW		
TITLE	RCDC WEIR SECTION DIVERSION CANAL DIKE INSPECTION PHOTOS		
PROJECT No.	FIGURE No.	REV.	
0257-039-05	10	0	

BGC	BGC Engineering Inc.
	AN APPLIED EARTH SCIENCES COMPANY
Calgary Alberta	Phone: (403) 250-5185



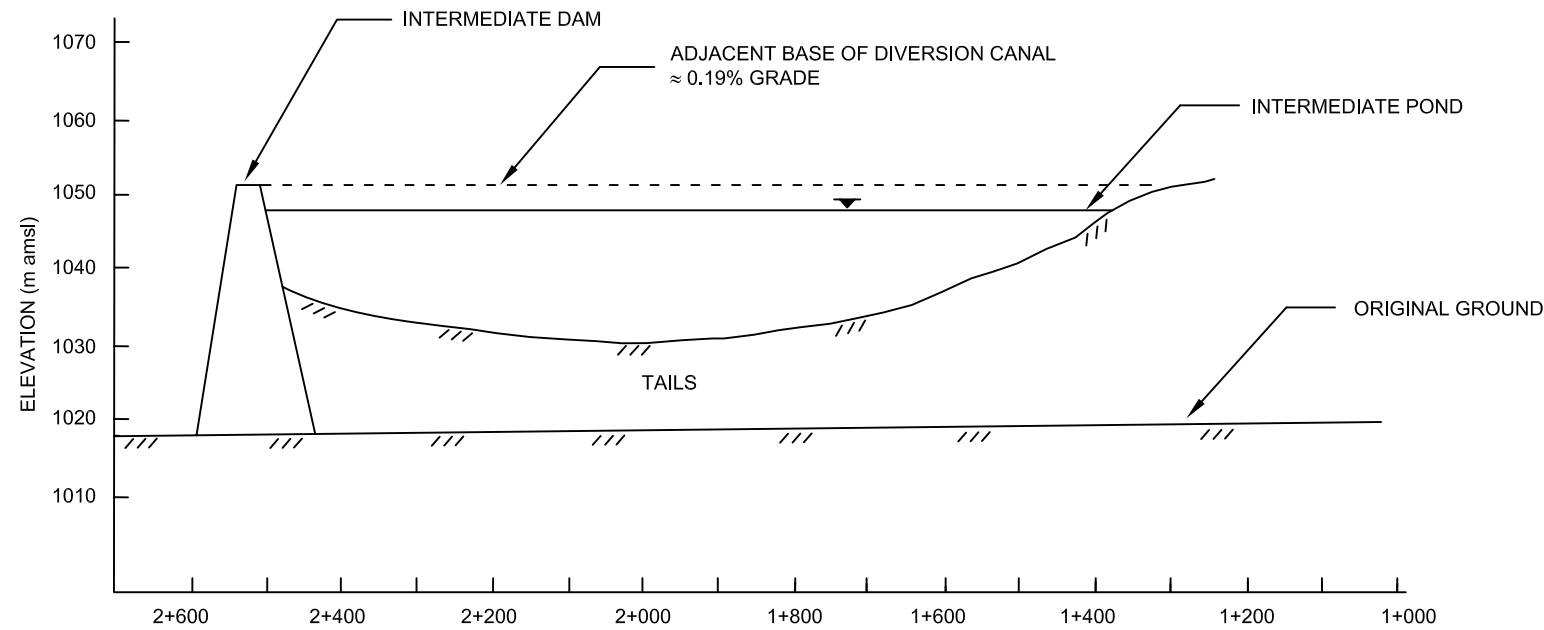
DATE: FEB 2007  
 DRAWN: SLF

AS A MUTUAL PROTECTION TO OUR CLIENT, THE PUBLIC AND OURSELVES, ALL REPORTS AND DRAWINGS ARE SUBMITTED FOR THE CONFIDENTIAL INFORMATION OF OUR CLIENT FOR A SPECIFIC PROJECT AND AUTHORIZATION FOR USE AND/OR PUBLICATION OF DATA, STATEMENTS, CONCLUSIONS OR ABSTRACTS FROM OR REGARDING OUR REPORTS AND DRAWINGS IS RESERVED PENDING OUR WRITTEN APPROVAL.

**BGC ENGINEERING INC.**  
 AN APPLIED EARTH SCIENCES COMPANY  
 Calgary, Alberta Phone: (403) 250-5185

CLIENT: **Deloitte & Touche**

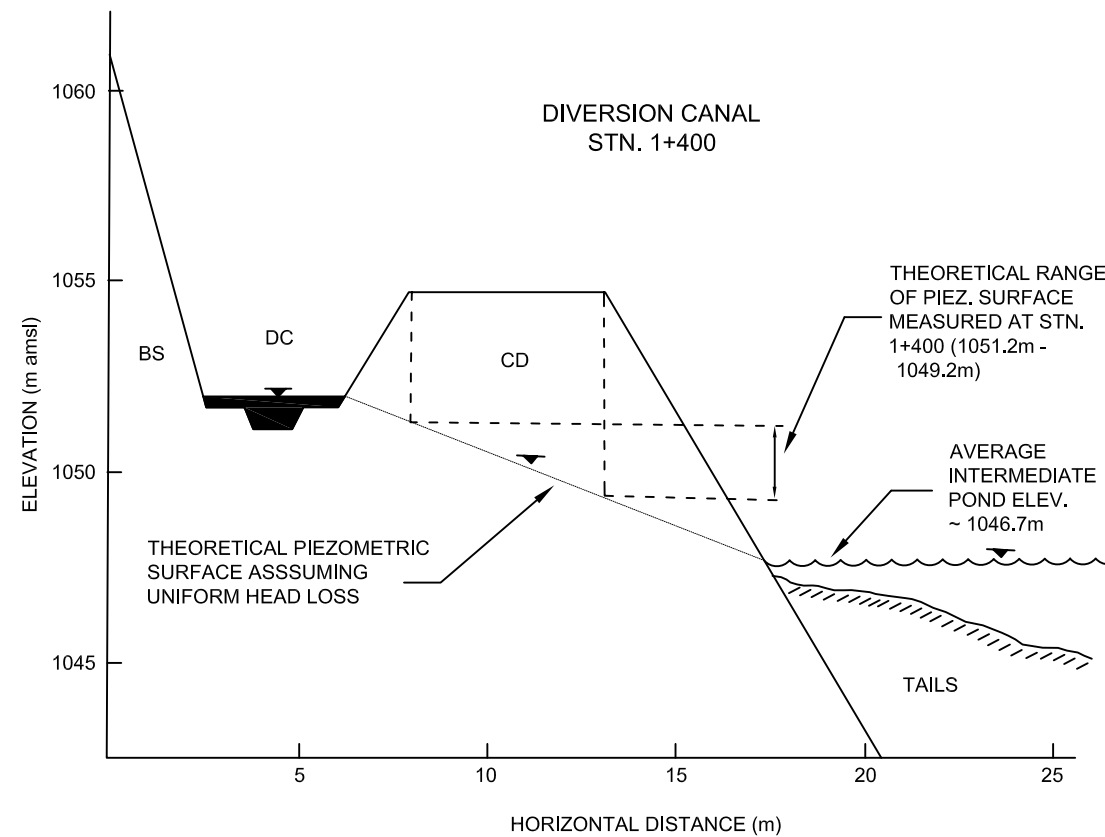
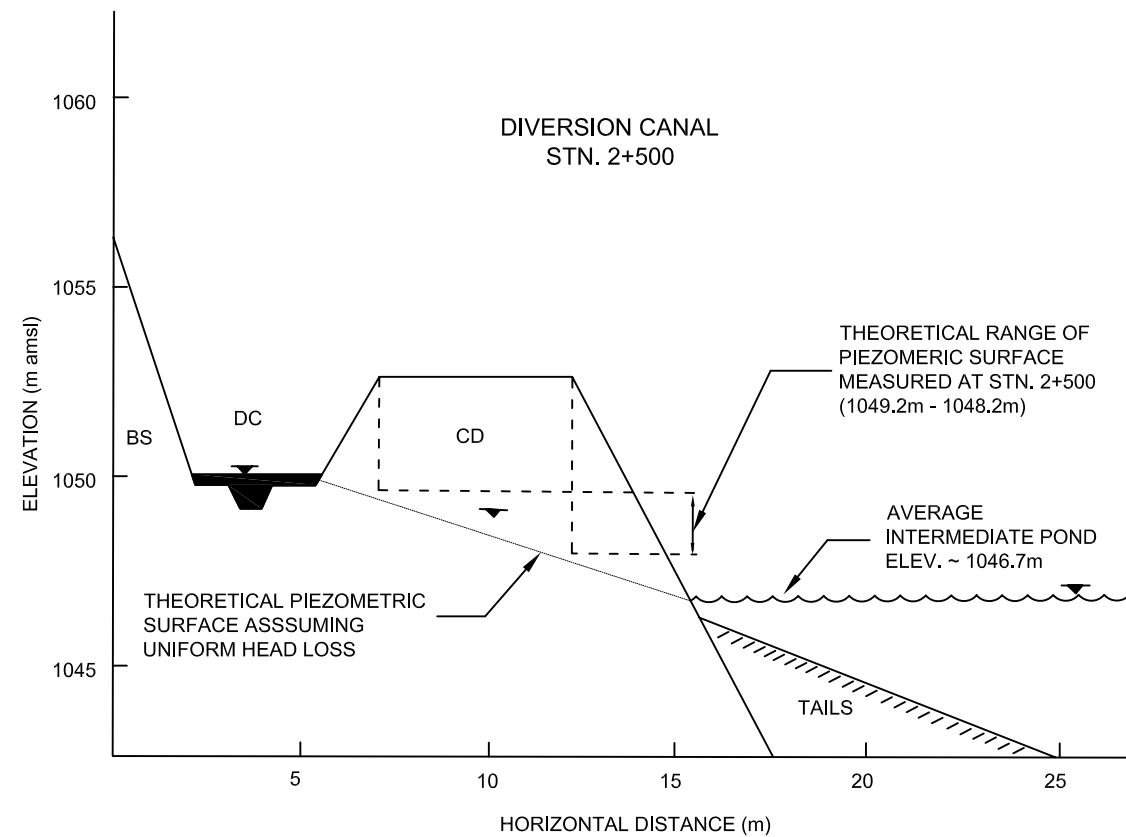
PROJECT 2006 ANNUAL GEOTECHNICAL EVALUATION & INSTRUMENTATION REVIEW		
TITLE CANAL DIKE, CURRENT PIEZOMETRIC CONDITIONS		
PROJECT No. 0257-039-05	FIGURE No. 11	REV. 0



- NOTES: 1) DRAWING IS A SCHEMATIC, CONSTRUCTED FOR ILLUSTRATIVE PURPOSES ONLY.  
 2) ALL ELEVATIONS ARE APPROXIMATE AND ARE BASED ON AVAILABLE INFORMATION.  
 3) LOCATION OF TAILINGS IN THE INTERMEDIATE POND IS APPROXIMATE. NO BATHYMETRIC INFORMATION IS AVAILABLE.

LEGEND	
BS	BACK SLOPE
DC	DIVERSION CANAL
CD	CANAL DIKE

NOTE: 10X VERTICAL EXAGGERATION



K:\Projects\0257 D&T\039 2006 Faro Annual\05 Annual Geotech Inspection Rpt\Graphics\Drawings\0257-039-05 Fig 12.dwg Layout: Figure 12 Plot Date Jan 26 07 Time: 10:26 AM

AS A MUTUAL PROTECTION TO OUR CLIENT, THE PUBLIC AND OURSELVES, ALL REPORTS AND DRAWINGS ARE SUBMITTED FOR THE CONFIDENTIAL INFORMATION OF OUR CLIENT FOR A SPECIFIC PROJECT AND AUTHORIZATION FOR USE AND/OR PUBLICATION OF DATA, STATEMENTS, CONCLUSIONS OR ABSTRACTS FROM OR REGARDING OUR REPORTS AND DRAWINGS IS RESERVED PENDING OUR WRITTEN APPROVAL.

REV.	DATE	REVISION NOTES	DRAWN	CHECK	APPR.

SCALE:	AS SHOWN
DATE:	FEBRUARY 2007
DRAWN:	REM
DESIGNED:	GOB
CHECKED:	GWF
APPROVED:	JWC

PROFESSIONAL SEAL:

**BGC ENGINEERING INC.**  
 AN APPLIED EARTH SCIENCES COMPANY

CLIENT: **Deloitte & Touche**

PROJECT: 2006 ANNUAL GEOTECHNICAL EVALUATION AND INSTRUMENTATION REVIEW		
TITLE: CANAL DIKE INTERMEDIATE POND HYDRAULIC CONNECTIVITY		
PROJECT No.: 0257-039-05	FIGURE No. 12	REV.: 0



September: lower edge of the Rose Creek Diversion Canal/spoil pile adjacent to the Intermediate Pond.



September: headscarp in seepage area on the southern limit of the Polishing Pond.



June: Headscarp formed near seepage discharge.



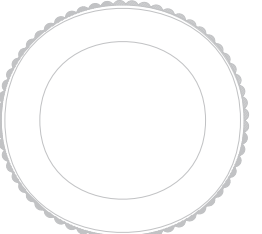
September: seepage discharge.

CLIENT:

**Deloitte  
& Touche**

AS A MUTUAL PROTECTION TO OUR CLIENT, THE PUBLIC AND OURSELVES, ALL REPORTS AND DRAWINGS ARE SUBMITTED FOR THE CONFIDENTIAL INFORMATION OF OUR CLIENT FOR A SPECIFIC PROJECT AND AUTHORIZATION FOR USE AND/OR PUBLICATION OF DATA STATEMENTS CONCLUSIONS OR ABSTRACTS FROM OR REGARDING OUR REPORTS AND DRAWINGS IS RESERVED PENDING OUR WRITTEN APPROVAL.

REV.	DATE	REVISION NOTES	DRAWN	CHECKED	APPROVED
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-

SCALE:	N/A	
DATE:	FEBRUARY 2007	
DRAWN:	SLF	
DESIGNED:	GOB	
CHECKED:	GWF	
APPROVED:	JWC	

PROJECT	2006 ANNUAL GEOTECHNICAL EVALUATION AND INSTRUMENTATION REVIEW		
TITLE	SPOIL PILE INSPECTION PHOTOS		
PROJECT No.	FIGURE No.	REV.	
0257-039-05	13	0	

	<b>BGC Engineering Inc.</b>	
	AN APPLIED EARTH SCIENCES COMPANY	
Calgary Alberta	Phone: (403) 250-5185	



June: The deflection berm area near the guard house.



September: is a view of the ditch bottom looking in an upstream direction.



June: Culvert outlet, note the ice partly plugging the culvert.



June: Sloughing of the berm near the steep section of the channel upslope from the Intermediate Dam.

CLIENT:

**Deloitte  
& Touche**

AS A MUTUAL PROTECTION TO OUR CLIENT, THE PUBLIC AND OURSELVES, ALL REPORTS AND DRAWINGS ARE SUBMITTED FOR THE CONFIDENTIAL INFORMATION OF OUR CLIENT FOR A SPECIFIC PROJECT AND AUTHORIZATION FOR USE AND/OR PUBLICATION OF DATA STATEMENTS CONCLUSIONS OR ABSTRACTS FROM OR REGARDING OUR REPORTS AND DRAWINGS IS RESERVED PENDING OUR WRITTEN APPROVAL.

REV.	DATE	REVISION NOTES	DRAWN	CHECKED	APPROVED
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-

SCALE:	N/A	
DATE:	FEBRUARY 2007	
DRAWN:	SLF	
DESIGNED:	GOB	
CHECKED:	GWF	
APPROVED:	JWC	

PROJECT	2006 ANNUAL GEOTECHNICAL EVALUATION AND INSTRUMENTATION REVIEW		
TITLE	NORTH VALLEY INTERCEPTOR DITCH INSPECTION PHOTOS		
PROJECT No.	FIGURE No.	REV.	
0257-039-05	14	0	

**BGC Engineering Inc.**  
AN APPLIED EARTH SCIENCES COMPANY

**BGC** Calgary Alberta Phone: (403) 250-5185



September: Shows the upstream side of the Intermediate Dam including the exposed riprap due to the low level of the pond.



September: shows a small scarp formed on the riprap.



September: view of the crest looking towards the south abutment. No signs of settlement, cracking or deformation have been seen on the crest.



September: view of the upstream side of the crest. Vegetation which is catching on and should be removed.

CLIENT:

**Deloitte  
& Touche**

AS A MUTUAL PROTECTION TO OUR CLIENT, THE PUBLIC AND OURSELVES, ALL REPORTS AND DRAWINGS ARE SUBMITTED FOR THE CONFIDENTIAL INFORMATION OF OUR CLIENT FOR A SPECIFIC PROJECT AND AUTHORIZATION FOR USE AND/OR PUBLICATION OF DATA STATEMENTS CONCLUSIONS OR ABSTRACTS FROM OR REGARDING OUR REPORTS AND DRAWINGS IS RESERVED PENDING OUR WRITTEN APPROVAL.

REV.	DATE	REVISION NOTES	DRAWN	CHECKED	APPROVED
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-

SCALE:	N/A	
DATE:	FEBRUARY 2007	
DRAWN:	SLF	
DESIGNED:	GOB	
CHECKED:	GWF	
APPROVED:	JWC	

PROJECT	2006 ANNUAL GEOTECHNICAL EVALUATION AND INSTRUMENTATION REVIEW	
TITLE	INTERMEDIATE DAM INSPECTION PHOTOS	
PROJECT No.	FIGURE No.	REV.
0257-039-05	15	0

**BGC Engineering Inc.**  
AN APPLIED EARTH SCIENCES COMPANY

**BGC** Calgary Alberta Phone: (403) 250-5185



September: a view of the downstream side of the dam. The slope has a good, even, consistent grade with no signs of bulging, deformation or erosion. Minor amount of vegetation catching on upper portion of the slope.



September: taken along the toe looking towards the north abutment. From this perspective, there are no signs of seepage discharge on the toe berm road.



September: shows the downstream slope and crest of the Intermediate Dam.



September: shows the minor erosional rills located on the downstream face.

CLIENT:

**Deloitte  
& Touche**

AS A MUTUAL PROTECTION TO OUR CLIENT, THE PUBLIC AND OURSELVES, ALL REPORTS AND DRAWINGS ARE SUBMITTED FOR THE CONFIDENTIAL INFORMATION OF OUR CLIENT FOR A SPECIFIC PROJECT AND AUTHORIZATION FOR USE AND/OR PUBLICATION OF DATA STATEMENTS CONCLUSIONS OR ABSTRACTS FROM OR REGARDING OUR REPORTS AND DRAWINGS IS RESERVED PENDING OUR WRITTEN APPROVAL.

	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
REV.	DATE	REVISION NOTES	DRAWN	CHECKED	APPROVED

SCALE:	N/A	
DATE:	FEBRUARY 2007	
DRAWN:	SLF	
DESIGNED:	GOB	
CHECKED:	GWF	
APPROVED:	JWC	

PROJECT	2006 ANNUAL GEOTECHNICAL EVALUATION AND INSTRUMENTATION REVIEW	
TITLE	INTERMEDIATE DAM INSPECTION PHOTOS	
PROJECT No.	FIGURE No.	REV.
0257-039-05	16	0



June: Two shot panorama showing the lower steep section of the Intermediate Dam Spillway. Note the riffle/pool form of this section of the spillway.



June: Middle portion of spillway, including large boulders.



September: looking upstream in the spillway at the recent completed regrading of the riprap.



September: another view of the recently repaired riprap.

CLIENT:

**Deloitte  
& Touche**

AS A MUTUAL PROTECTION TO OUR CLIENT, THE PUBLIC AND OURSELVES, ALL REPORTS AND DRAWINGS ARE SUBMITTED FOR THE CONFIDENTIAL INFORMATION OF OUR CLIENT FOR A SPECIFIC PROJECT AND AUTHORIZATION FOR USE AND/OR PUBLICATION OF DATA STATEMENTS CONCLUSIONS OR ABSTRACTS FROM OR REGARDING OUR REPORTS AND DRAWINGS IS RESERVED PENDING OUR WRITTEN APPROVAL.

	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
REV.	DATE	REVISION NOTES	DRAWN	CHECKED	APPROVED

SCALE:	N/A	
DATE:	FEBRUARY 2007	
DRAWN:	SLF	
DESIGNED:	GOB	
CHECKED:	GWF	
APPROVED:	JWC	

PROJECT	2006 ANNUAL GEOTECHNICAL EVALUATION AND INSTRUMENTATION REVIEW	
TITLE	INTERMEDIATE DAM INSPECTION PHOTOS	
PROJECT No.	FIGURE No.	REV.
0257-039-05	17	0

	<b>BGC Engineering Inc.</b> AN APPLIED EARTH SCIENCES COMPANY
	Calgary Alberta Phone: (403) 250-5185



September: shows the sump arrangement located at the toe of the north abutment of the Intermediate Dam.



September: overlooking the sludge collection area. Looking at the riprap apron that was repaired by removing the riffle/pool arrangement between August and September 2007.



June: Three shot panorama showing the sludge collection area built at outlet of the Intermediate Dam Spillway.

CLIENT:

**Deloitte  
& Touche**

AS A MUTUAL PROTECTION TO OUR CLIENT, THE PUBLIC AND OURSELVES, ALL REPORTS AND DRAWINGS ARE SUBMITTED FOR THE CONFIDENTIAL INFORMATION OF OUR CLIENT FOR A SPECIFIC PROJECT AND AUTHORIZATION FOR USE AND/OR PUBLICATION OF DATA STATEMENTS CONCLUSIONS OR ABSTRACTS FROM OR REGARDING OUR REPORTS AND DRAWINGS IS RESERVED PENDING OUR WRITTEN APPROVAL.

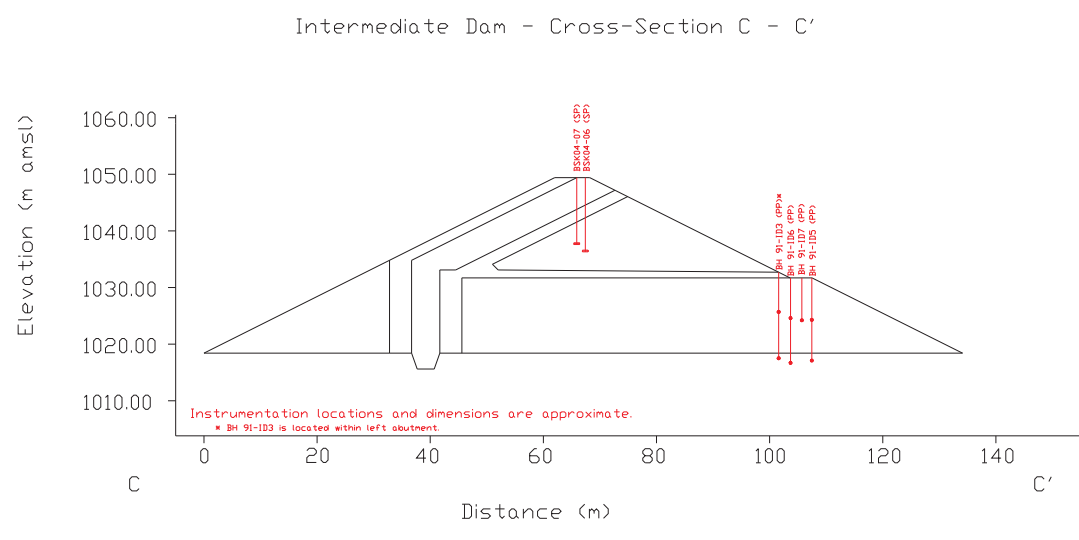
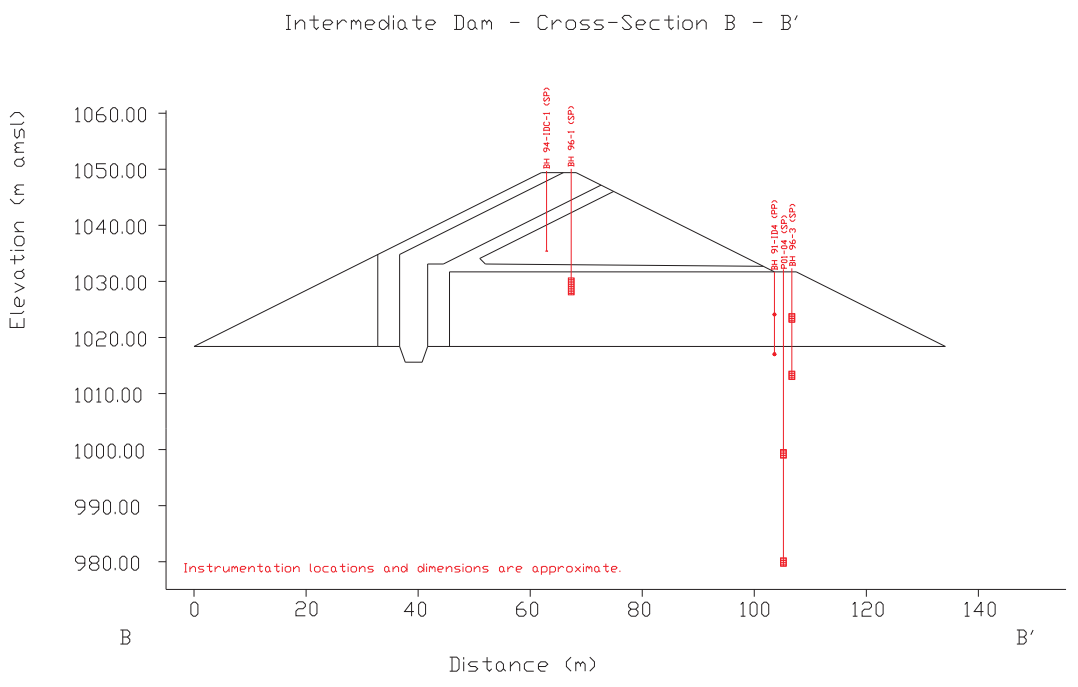
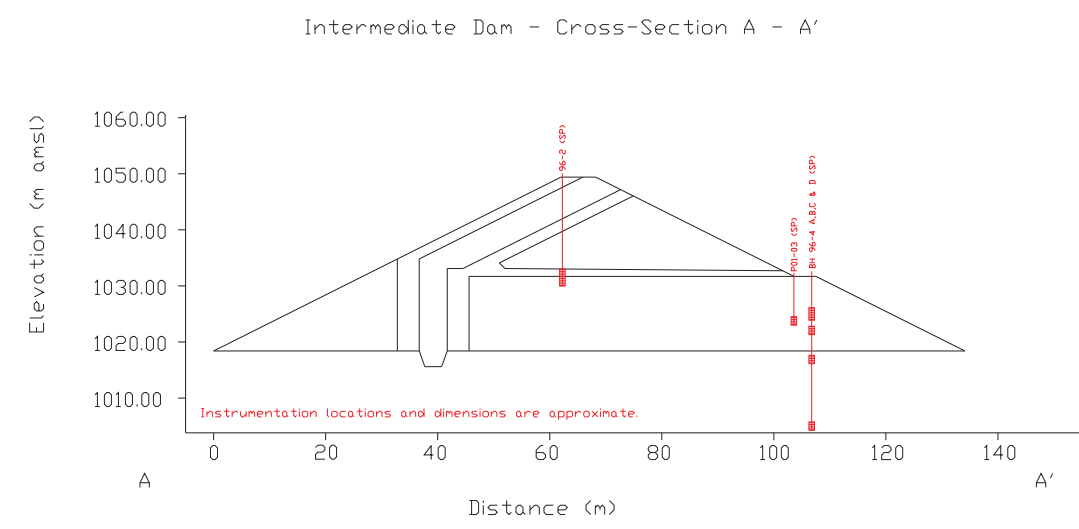
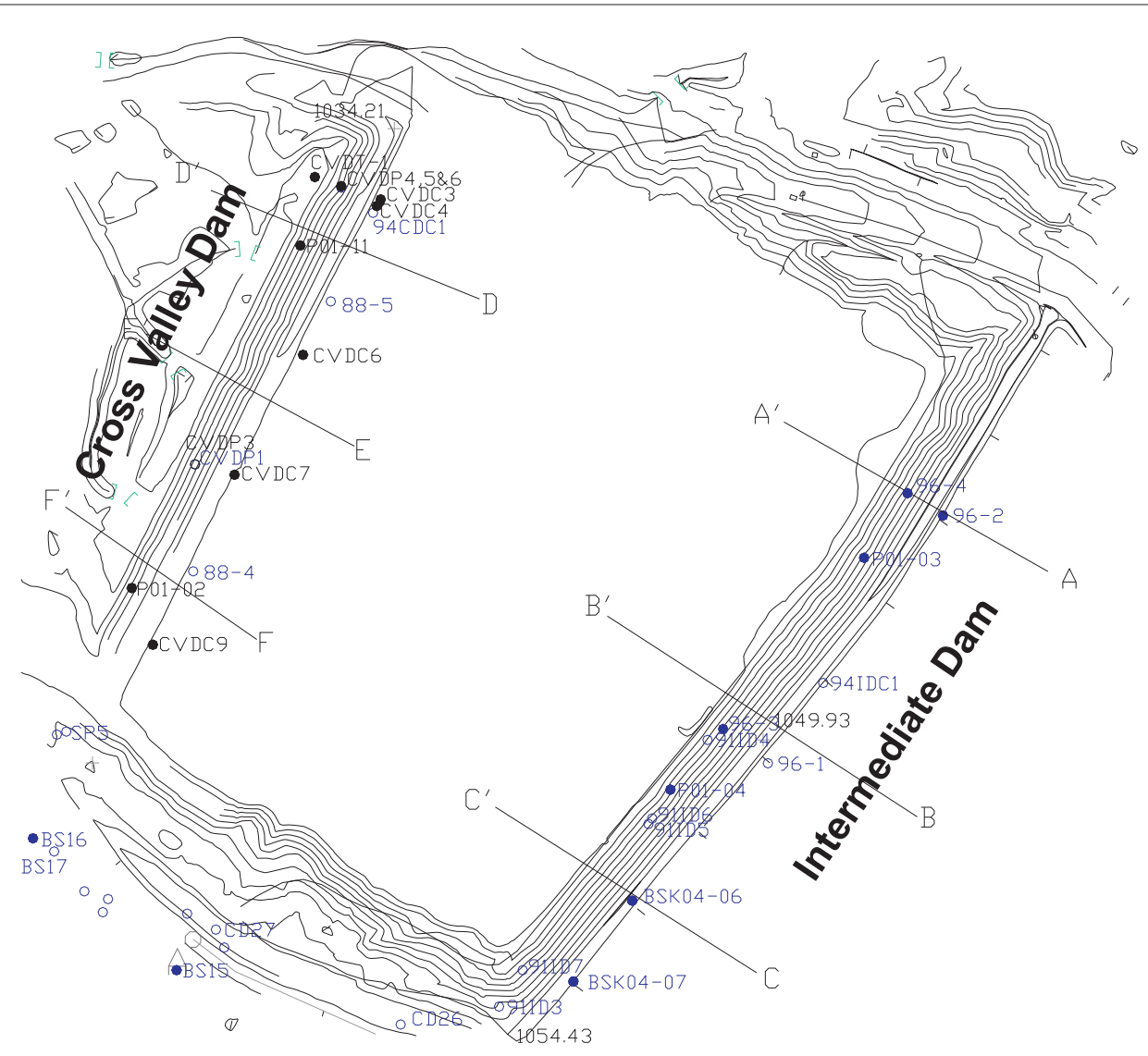
REV.	DATE	REVISION NOTES	DRAWN	CHECKED	APPROVED
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-

SCALE:	N/A	
DATE:	FEBRUARY 2007	
DRAWN:	SLF	
DESIGNED:	GOB	
CHECKED:	GWF	
APPROVED:	JWC	

PROJECT	2006 ANNUAL GEOTECHNICAL EVALUATION AND INSTRUMENTATION REVIEW		
TITLE	INTERMEDIATE DAM INSPECTION PHOTOS		
PROJECT No.	FIGURE No.	REV.	
0257-039-05	18	0	

**BGC Engineering Inc.**  
AN APPLIED EARTH SCIENCES COMPANY

**BGC** Calgary Alberta Phone: (403) 250-5185



CLIENT:  
**Deloitte & Touche**

- Standpipe Piezometers
- Pneumatic Piezometers
- Thermistor Cables
- ▭ Screened Intervals of Standpipe Piezometers
- ⊥ Bottom of Standpipe Piezometers
- Pneumatic Piezometer Tips
- ▲ Thermistor Nodes

AS A MUTUAL PROTECTION TO OUR CLIENT, THE PUBLIC AND OURSELVES, ALL REPORTS AND DRAWINGS ARE SUBMITTED FOR THE CONFIDENTIAL INFORMATION OF OUR CLIENT FOR A SPECIFIC PROJECT AND AUTHORIZATION FOR USE AND/OR PUBLICATION OF DATA STATEMENTS CONCLUSIONS OR ABSTRACTS FROM OR REGARDING OUR REPORTS AND DRAWINGS IS RESERVED PENDING OUR WRITTEN APPROVAL.

REV.	DATE	REVISION NOTES	DRAWN	CHECKED	APPROVED
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-

SCALE:	N/A	
DATE:	FEBRUARY 2007	
DRAWN:	SLF	
DESIGNED:	GOB	
CHECKED:	GWJ	
APPROVED:	JWC	

PROJECT <b>2006 ANNUAL GEOTECHNICAL EVALUATION AND INSTRUMENTATION REVIEW</b>		
TITLE <b>SECTION VIEW OF INTERMEDIATE DAM</b>		
PROJECT No. <b>0257-039-05</b>	FIGURE No. <b>19</b>	REV. <b>0</b>

**BGC Engineering Inc.**  
AN APPLIED EARTH SCIENCES COMPANY

Calgary Alberta Phone: (403) 250-5185



September: shows a view of the riprap on the upstream side. A small scarp which has formed at the pond level due to the lack of riprap.



September: shows a view of the upstream side looking towards the north abutment. Some rather large riprap is evident in the mid section of the slope. In the foreground we can see some erosion at the lower pond level, where there is no riprap.



June: Water level is below the lowest elevation of the riprap protection.



June: Siphon system in the spillway.

CLIENT:

**Deloitte  
& Touche**

AS A MUTUAL PROTECTION TO OUR CLIENT, THE PUBLIC AND OURSELVES, ALL REPORTS AND DRAWINGS ARE SUBMITTED FOR THE CONFIDENTIAL INFORMATION OF OUR CLIENT FOR A SPECIFIC PROJECT AND AUTHORIZATION FOR USE AND/OR PUBLICATION OF DATA STATEMENTS CONCLUSIONS OR ABSTRACTS FROM OR REGARDING OUR REPORTS AND DRAWINGS IS RESERVED PENDING OUR WRITTEN APPROVAL.

REV.	DATE	REVISION NOTES	DRAWN	CHECKED	APPROVED
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-

SCALE:	N/A	
DATE:	FEBRUARY 2007	
DRAWN:	SLF	
DESIGNED:	GOB	
CHECKED:	GWF	
APPROVED:	JWC	

PROJECT	2006 ANNUAL GEOTECHNICAL EVALUATION AND INSTRUMENTATION REVIEW		
TITLE	CROSS VALLEY DAM INSPECTION PHOTOS		
PROJECT No.	FIGURE No.	REV.	
0257-039-05	20	0	

<b>BGC</b>	<b>BGC Engineering Inc.</b>
	<b>AN APPLIED EARTH SCIENCES COMPANY</b>
Calgary Alberta	Phone: (403) 250-5185



September: shows a very subtle manifestation of some previously existing cracks in the crest. The outline of a small trace of a settlement trough can be seen in this photo.



June: Nearing the south abutment, with a faint crack on the crest of the dam.



June: Note the faint evidence of past cracking on crest, near the northern quarter point.



June: View along downstream face of the dam.

CLIENT:

**Deloitte  
& Touche**

AS A MUTUAL PROTECTION TO OUR CLIENT, THE PUBLIC AND OURSELVES, ALL REPORTS AND DRAWINGS ARE SUBMITTED FOR THE CONFIDENTIAL INFORMATION OF OUR CLIENT FOR A SPECIFIC PROJECT AND AUTHORIZATION FOR USE AND/OR PUBLICATION OF DATA STATEMENTS CONCLUSIONS OR ABSTRACTS FROM OR REGARDING OUR REPORTS AND DRAWINGS IS RESERVED PENDING OUR WRITTEN APPROVAL.

REV.	DATE	REVISION NOTES	DRAWN	CHECKED	APPROVED
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-

SCALE:	N/A	
DATE:	FEBRUARY 2007	
DRAWN:	SLF	
DESIGNED:	GOB	
CHECKED:	GWF	
APPROVED:	JWC	

PROJECT	2006 ANNUAL GEOTECHNICAL EVALUATION AND INSTRUMENTATION REVIEW		
TITLE	CROSS VALLEY DAM INSPECTION PHOTOS		
PROJECT No.	FIGURE No.	REV.	
0257-039-05	21	0	

	<b>BGC Engineering Inc.</b>
	AN APPLIED EARTH SCIENCES COMPANY
Calgary Alberta	Phone: (403) 250-5185



June: Looking at the seepage collection trench below the spillway.



June: Siphon discharge at lower end of spillway.



June: View of riprap in the decant of the Cross Valley Dam spillway.



August: looking at downstream face.

CLIENT:

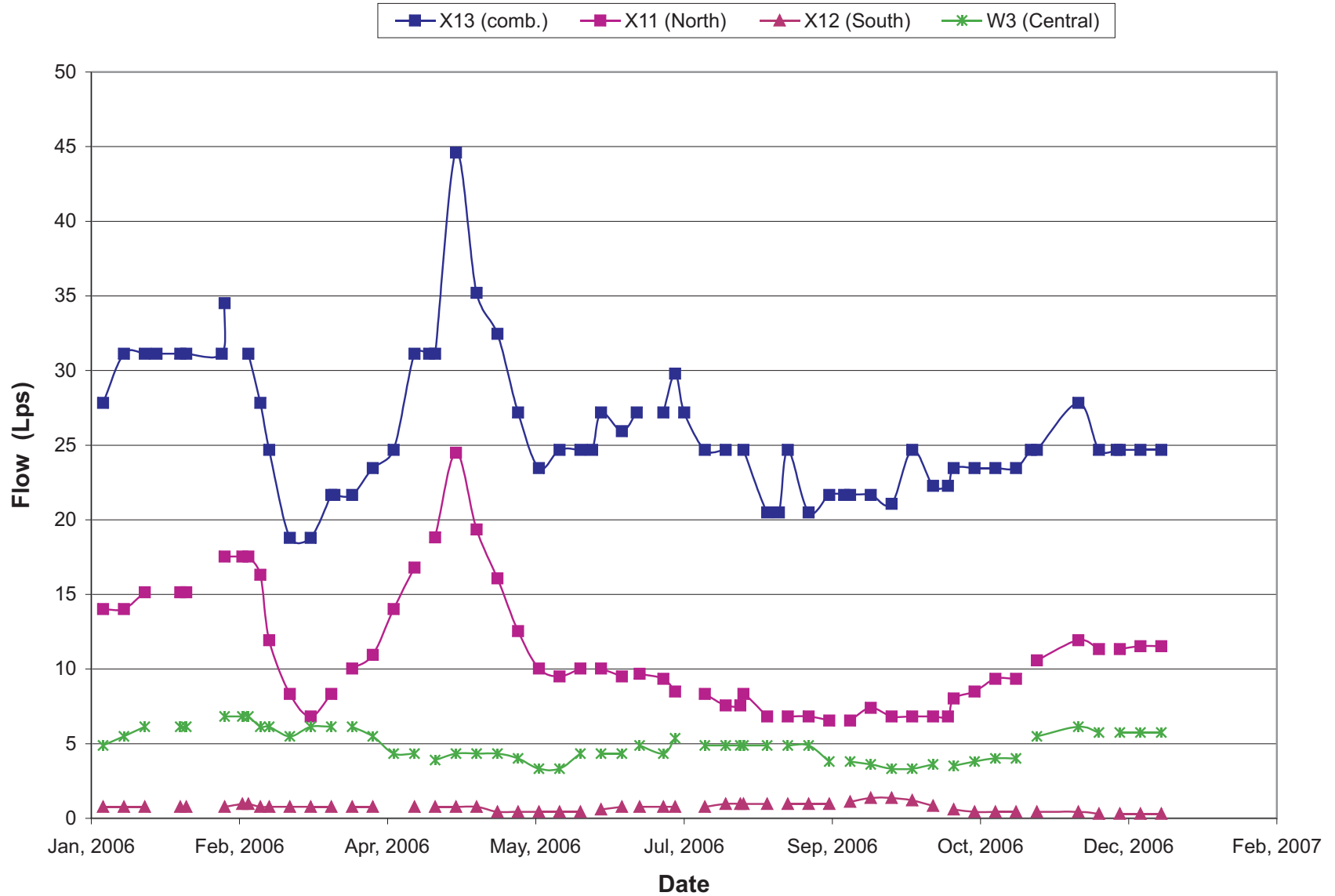
**Deloitte  
& Touche**

AS A MUTUAL PROTECTION TO OUR CLIENT, THE PUBLIC AND OURSELVES, ALL REPORTS AND DRAWINGS ARE SUBMITTED FOR THE CONFIDENTIAL INFORMATION OF OUR CLIENT FOR A SPECIFIC PROJECT AND AUTHORIZATION FOR USE AND/OR PUBLICATION OF DATA STATEMENTS CONCLUSIONS OR ABSTRACTS FROM OR REGARDING OUR REPORTS AND DRAWINGS IS RESERVED PENDING OUR WRITTEN APPROVAL.

REV.	DATE	REVISION NOTES	DRAWN	CHECKED	APPROVED
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-

SCALE:	N/A	
DATE:	FEBRUARY 2007	
DRAWN:	SLF	
DESIGNED:	GOB	
CHECKED:	GWF	
APPROVED:	JWC	

PROJECT	2006 ANNUAL GEOTECHNICAL EVALUATION AND INSTRUMENTATION REVIEW	
TITLE	CROSS VALLEY DAM INSPECTION PHOTOS	
PROJECT No.	FIGURE No.	REV.
0257-039-05	22	0



DATE: FEB 2007      DRAWN: SLF

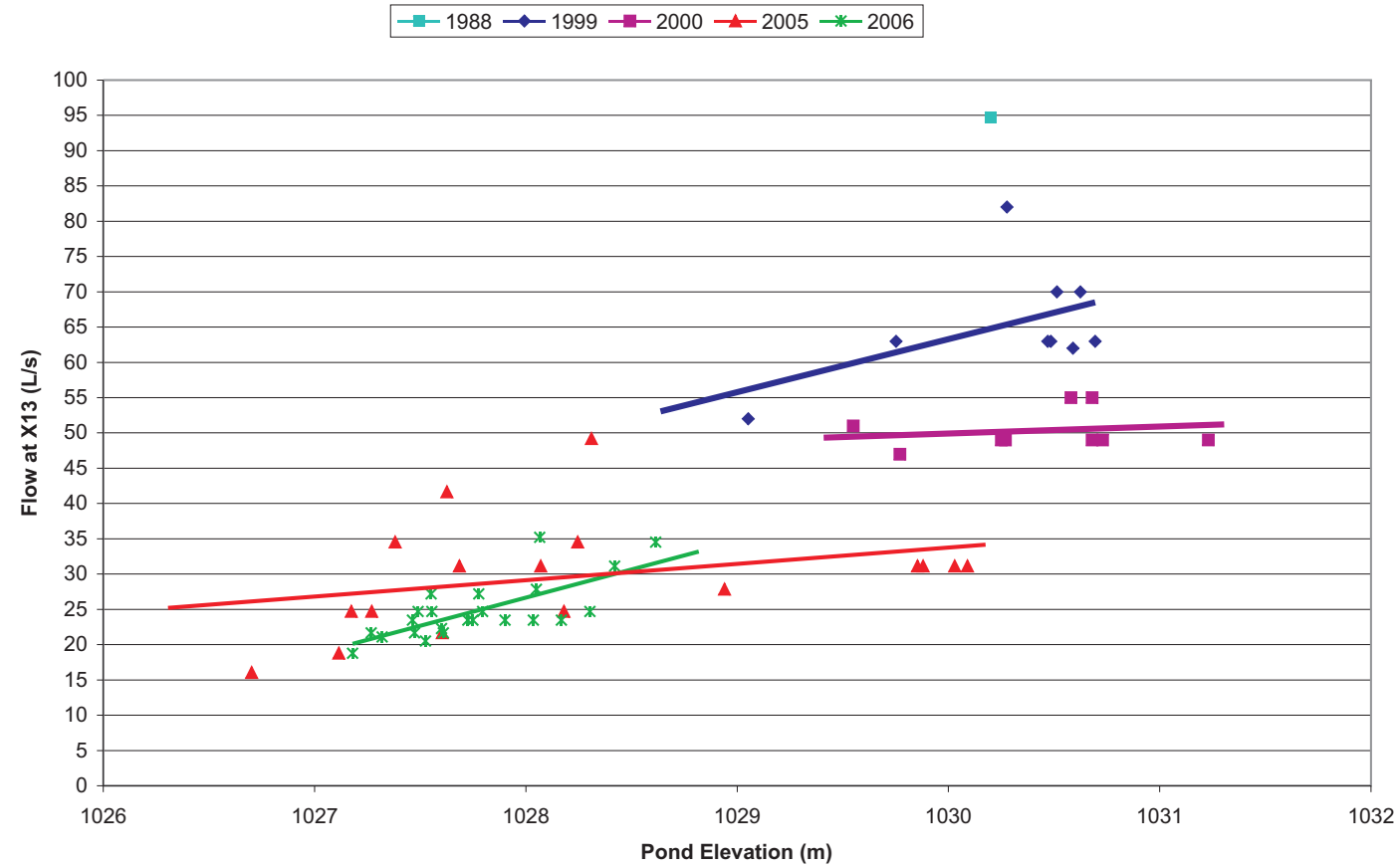
**REFERENCED DRAWING DESCRIPTION**  
 AS A MUTUAL PROTECTION TO OUR CLIENT, THE PUBLIC AND OURSELVES, ALL REPORTS AND DRAWINGS ARE SUBMITTED FOR THE CONFIDENTIAL INFORMATION OF OUR CLIENT FOR A SPECIFIC PROJECT AND AUTHORIZATION FOR USE AND/OR PUBLICATION OF DATA, STATEMENTS, CONCLUSIONS OR ABSTRACTS FROM OR REGARDING OUR REPORTS AND DRAWINGS IS RESERVED PENDING OUR WRITTEN APPROVAL.

**BGC ENGINEERING INC.**  
 AN APPLIED EARTH SCIENCES COMPANY  
 Calgary, Alberta      Phone: (403) 250-5185

CLIENT: **Deloitte & Touche**

PROJECT: 2006 ANNUAL GEOTECHNICAL EVALUATION & INSTRUMENTATION REVIEW		
TITLE: CROSS VALLEY DAM 2006 WEIR FLOWS		
PROJECT No. 0257-039-05	FIGURE No. 23	REV. 0

**Cross Valley Pond Elevation vs. Flow Rate at X13**



CLIENT:

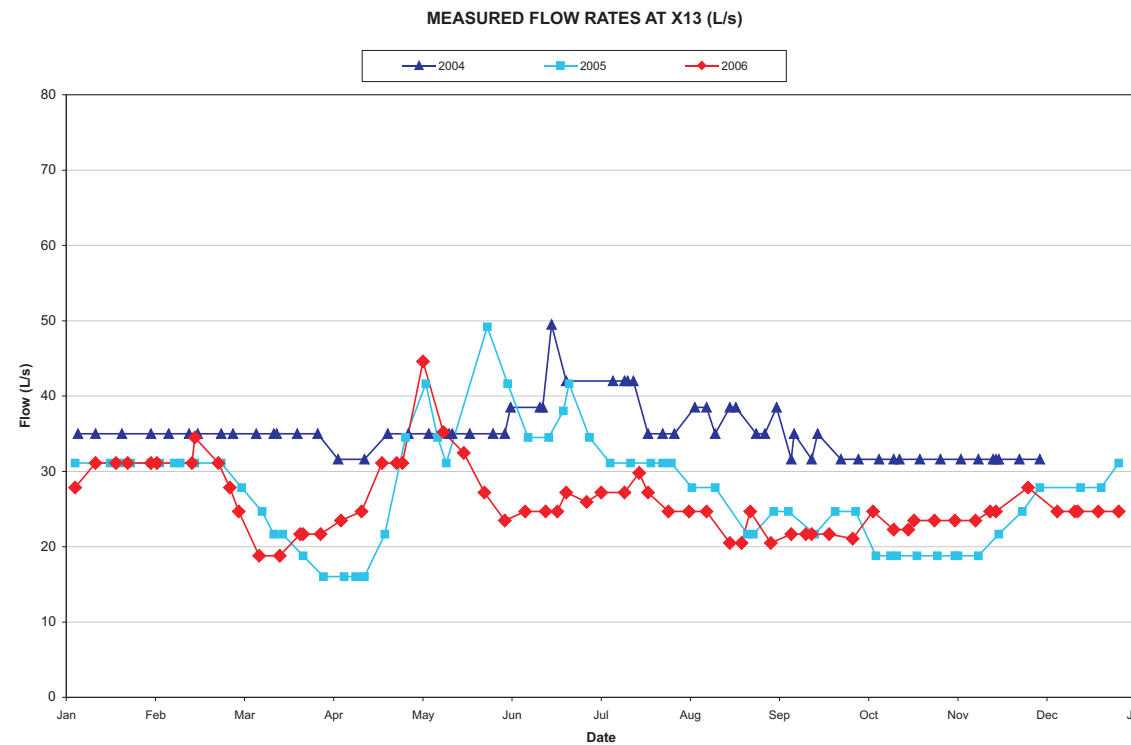
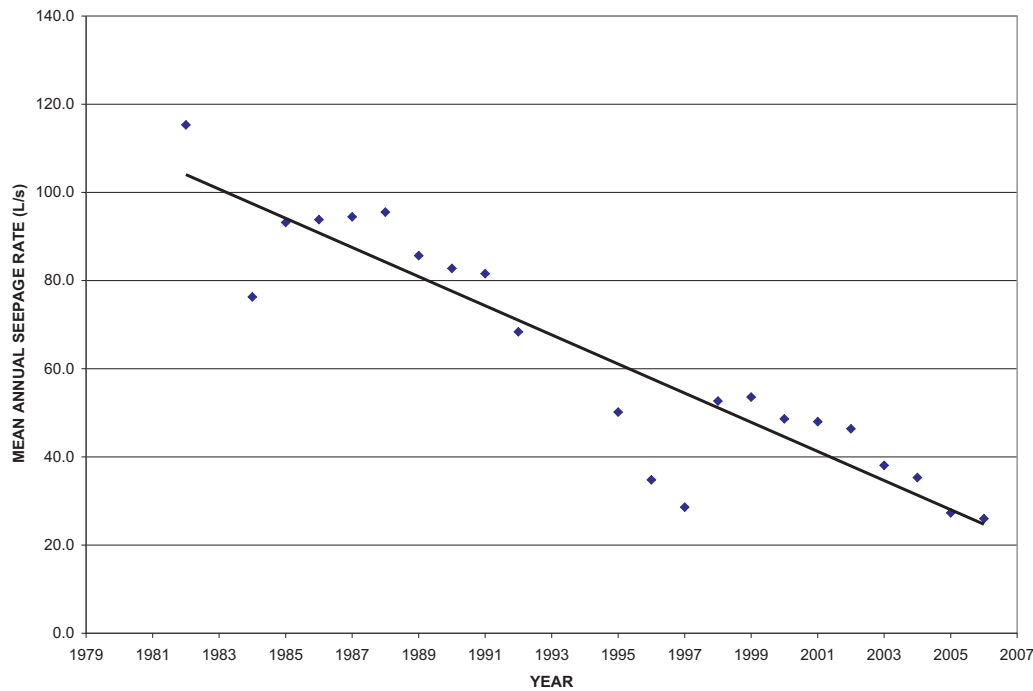
**Deloitte & Touche**

AS A MUTUAL PROTECTION TO OUR CLIENT, THE PUBLIC AND OURSELVES, ALL REPORTS AND DRAWINGS ARE SUBMITTED FOR THE CONFIDENTIAL INFORMATION OF OUR CLIENT FOR A SPECIFIC PROJECT AND AUTHORIZATION FOR USE AND/OR PUBLICATION OF DATA STATEMENTS CONCLUSIONS OR ABSTRACTS FROM OR REGARDING OUR REPORTS AND DRAWINGS IS RESERVED PENDING OUR WRITTEN APPROVAL.

REV.	DATE	REVISION NOTES	DRAWN	CHECKED	APPROVED
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-

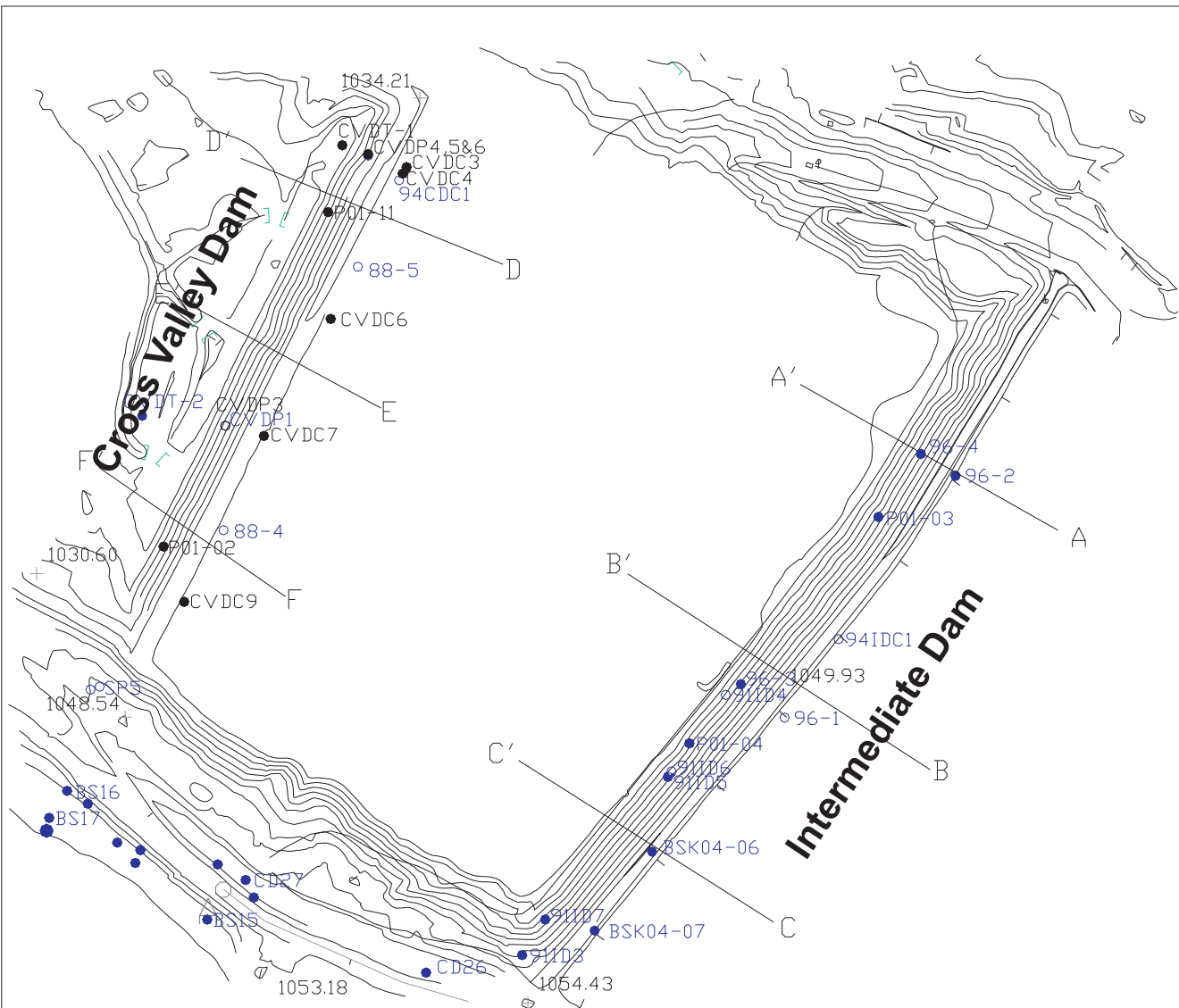
SCALE:	N/A	
DATE:	FEBRUARY 2006	
DRAWN:	SLF	
DESIGNED:	JMS	
CHECKED:	GWF	
APPROVED:	JWC	

PROJECT	2006 ANNUAL GEOTECHNICAL EVALUATION AND INSTRUMENTATION REVIEW	
TITLE	CROSS VALLEY DAM MEASURED FLOW RATES AT X13 (2004-2006)	
PROJECT No.	0257-039-05	FIGURE No.
		24
REV.		0

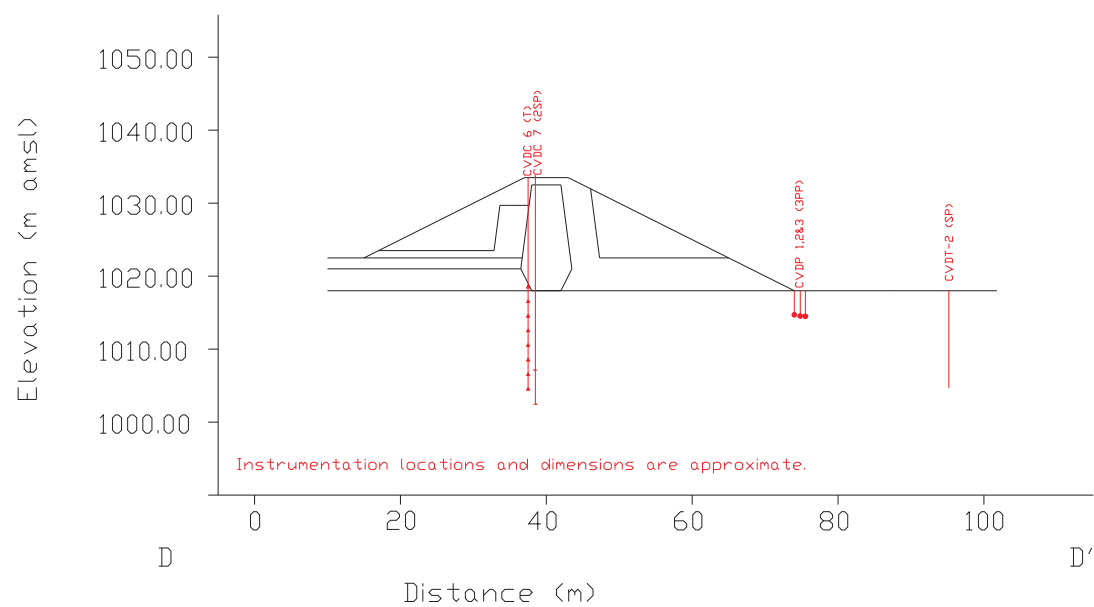


**BGC Engineering Inc.**  
AN APPLIED EARTH SCIENCES COMPANY

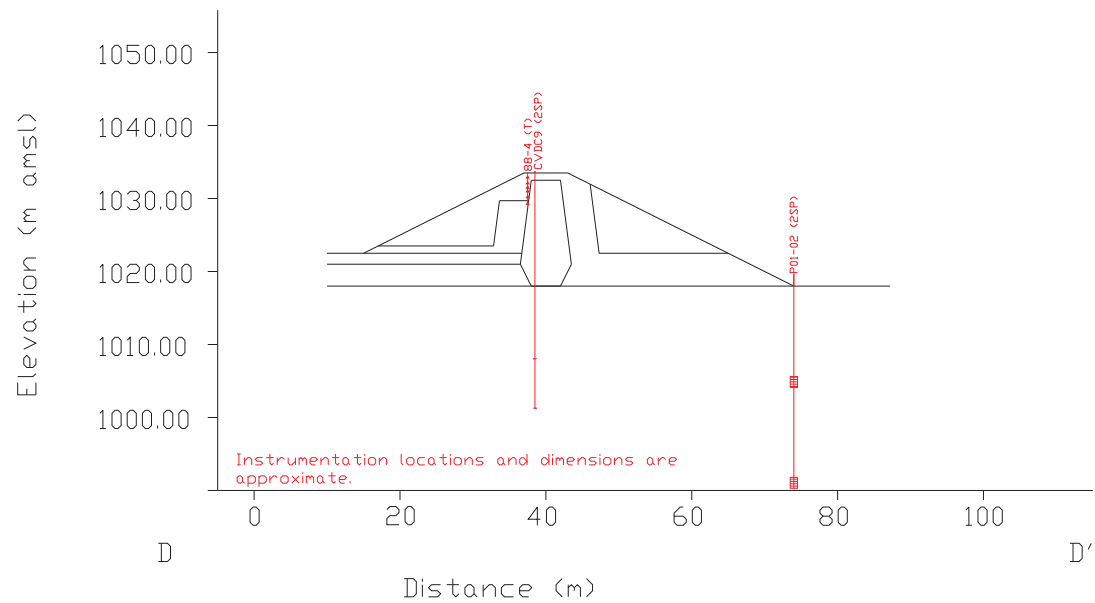
**BGC** Calgary Alberta Phone: (403) 250-5185



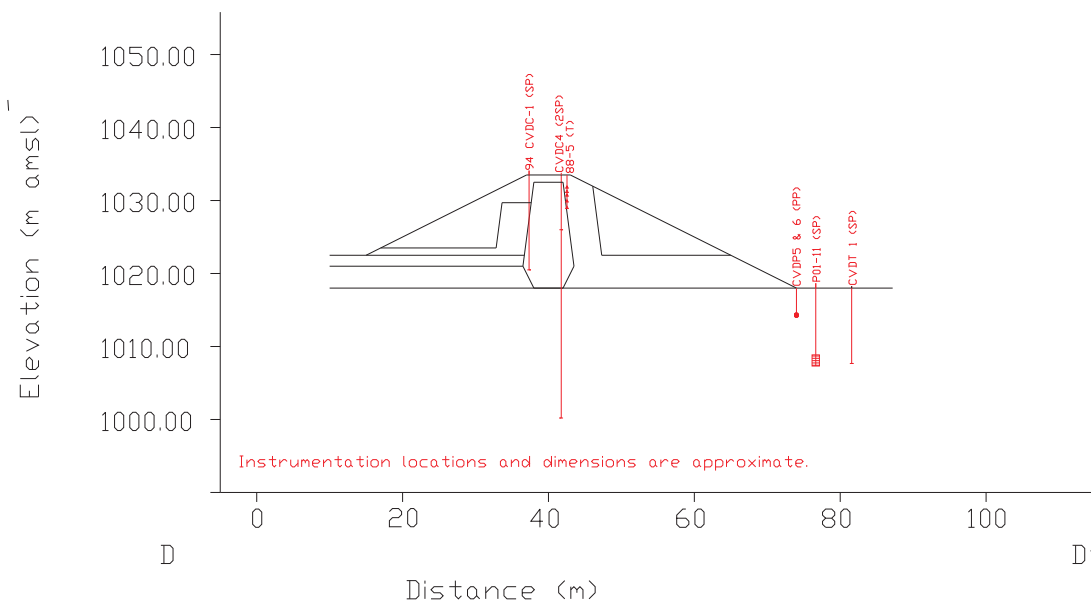
Cross Valley Dam - Cross-Section E - E'



Cross Valley Dam - Cross-Section F - F'



Cross Valley Dam - Cross-Section D - D'



CLIENT:

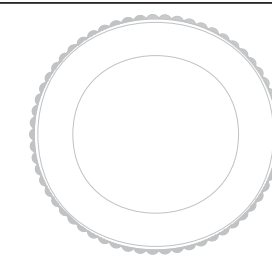


- SP Standpipe Piezometers
- PP Pneumatic Piezometers
- T Thermistor Cables
- Screened Intervals of Standpipe Piezometers
- | Bottom of Standpipe Piezometers
- Pneumatic Piezometer Tips
- △ Thermistor Nodes

AS A MUTUAL PROTECTION TO OUR CLIENT, THE PUBLIC AND OURSELVES, ALL REPORTS AND DRAWINGS ARE SUBMITTED FOR THE CONFIDENTIAL INFORMATION OF OUR CLIENT FOR A SPECIFIC PROJECT AND AUTHORIZATION FOR USE AND/OR PUBLICATION OF DATA STATEMENTS CONCLUSIONS OR ABSTRACTS FROM OR REGARDING OUR REPORTS AND DRAWINGS IS RESERVED PENDING OUR WRITTEN APPROVAL.

REV.	DATE	REVISION NOTES	DRAWN	CHECKED	APPROVED

SCALE:	N/A
DATE:	FEBRUARY 2007
DRAWN:	SLF
DESIGNED:	GOB
CHECKED:	GWF
APPROVED:	JWC



PROJECT		
2006 ANNUAL GEOTECHNICAL EVALUATION AND INSTRUMENTATION REVIEW		
TITLE		
SECTION VIEW OF CROSS VALLEY DAM		
PROJECT No.	FIGURE No.	REV.
0257-039-05	25	0

**BGC Engineering Inc.**  
AN APPLIED EARTH SCIENCES COMPANY

Calgary Alberta Phone: (403) 250-5185



September: a panoramic showing the head pond on the upstream side of the North Fork Rock Drain. The pond appears slightly lower than last year at this time. From this perspective, there does not appear to be any signs of significant sloughing or erosion ongoing.



June: shows a view of the upstream side of the pond upstream of the Rock Drain.



September: view of the upstream side of the North Fork Rock Drain. Note that some of the driftwood below the water line has been removed.



September: shows the discharge emerging from the bottom of the rock drain. The creek configuration appears consistent with previous years. There are no signs of sloughing or ongoing problems with stability.

CLIENT:

**Deloitte  
& Touche**

AS A MUTUAL PROTECTION TO OUR CLIENT, THE PUBLIC AND OURSELVES, ALL REPORTS AND DRAWINGS ARE SUBMITTED FOR THE CONFIDENTIAL INFORMATION OF OUR CLIENT FOR A SPECIFIC PROJECT AND AUTHORIZATION FOR USE AND/OR PUBLICATION OF DATA STATEMENTS CONCLUSIONS OR ABSTRACTS FROM OR REGARDING OUR REPORTS AND DRAWINGS IS RESERVED PENDING OUR WRITTEN APPROVAL.

	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
REV.	DATE	REVISION NOTES	DRAWN	CHECKED	APPROVED

SCALE:	N/A	
DATE:	FEBRUARY 2007	
DRAWN:	SLF	
DESIGNED:	GOB	
CHECKED:	GWF	
APPROVED:	JWC	

PROJECT	2006 ANNUAL GEOTECHNICAL EVALUATION AND INSTRUMENTATION REVIEW	
TITLE	FLOW THROUGH ROCK DRAIN INSPECTION PHOTOS	
PROJECT No.	FIGURE No.	REV.
0257-039-05	26	0

**BGC Engineering Inc.**  
AN APPLIED EARTH SCIENCES COMPANY

**BGC** Calgary Alberta Phone: (403) 250-5185



June: shows a view of the upper portion of the downstream face. Note the two areas with finer grained material covering coarser rock. This is due to erosion gullies coming off the haul road surface on the crest.



June: two shot panorama of downstream toe of Rock Drain.



June: shows a close up view of the area noted last year as being eroded out. It is almost in the centre of the Rock Drain.



June: shows a view looking at the creek as it flowing out of the base of the Rock Drain free and clear with no obstructions.

CLIENT:

**Deloitte  
& Touche**

AS A MUTUAL PROTECTION TO OUR CLIENT, THE PUBLIC AND OURSELVES, ALL REPORTS AND DRAWINGS ARE SUBMITTED FOR THE CONFIDENTIAL INFORMATION OF OUR CLIENT FOR A SPECIFIC PROJECT AND AUTHORIZATION FOR USE AND/OR PUBLICATION OF DATA STATEMENTS CONCLUSIONS OR ABSTRACTS FROM OR REGARDING OUR REPORTS AND DRAWINGS IS RESERVED PENDING OUR WRITTEN APPROVAL.

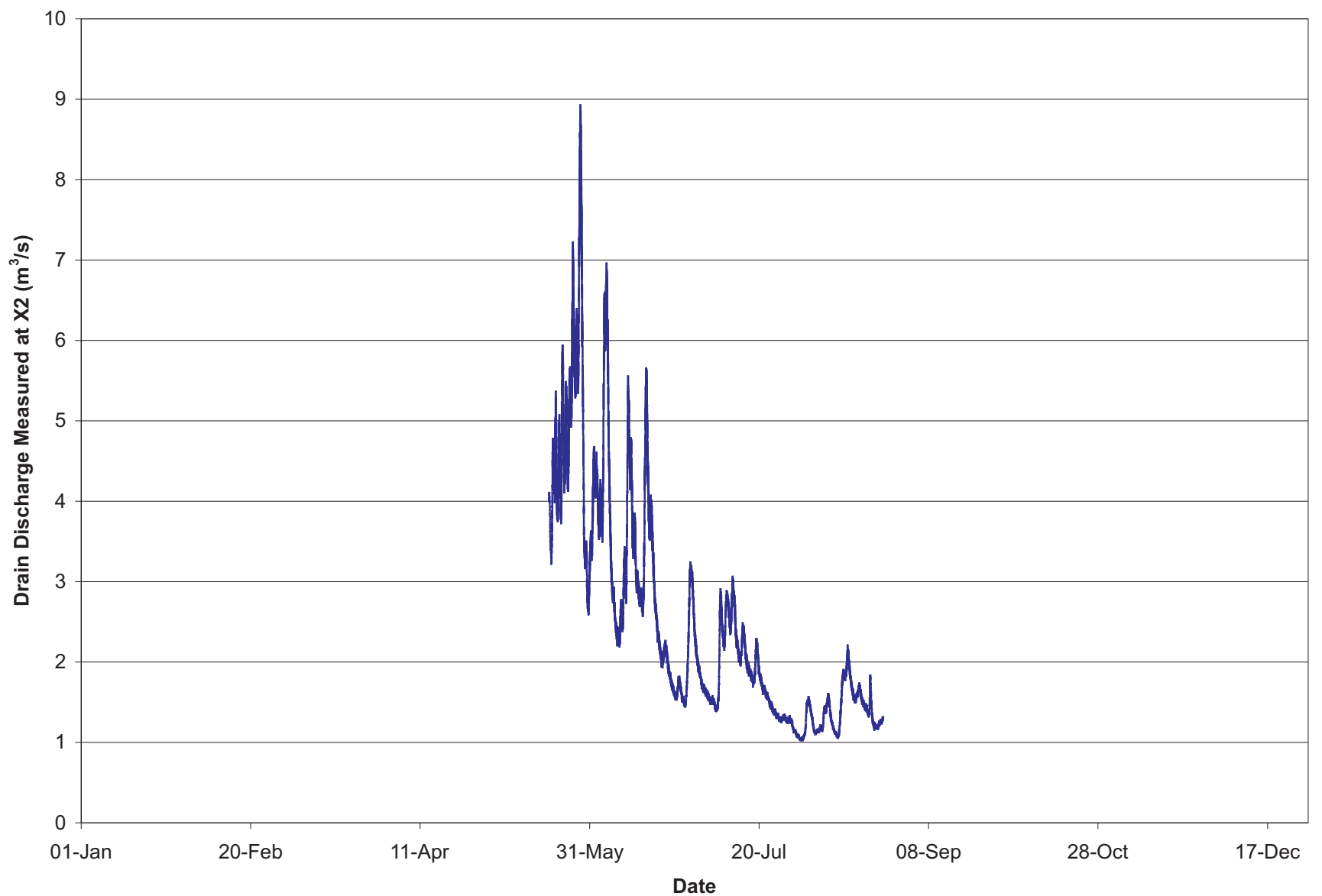
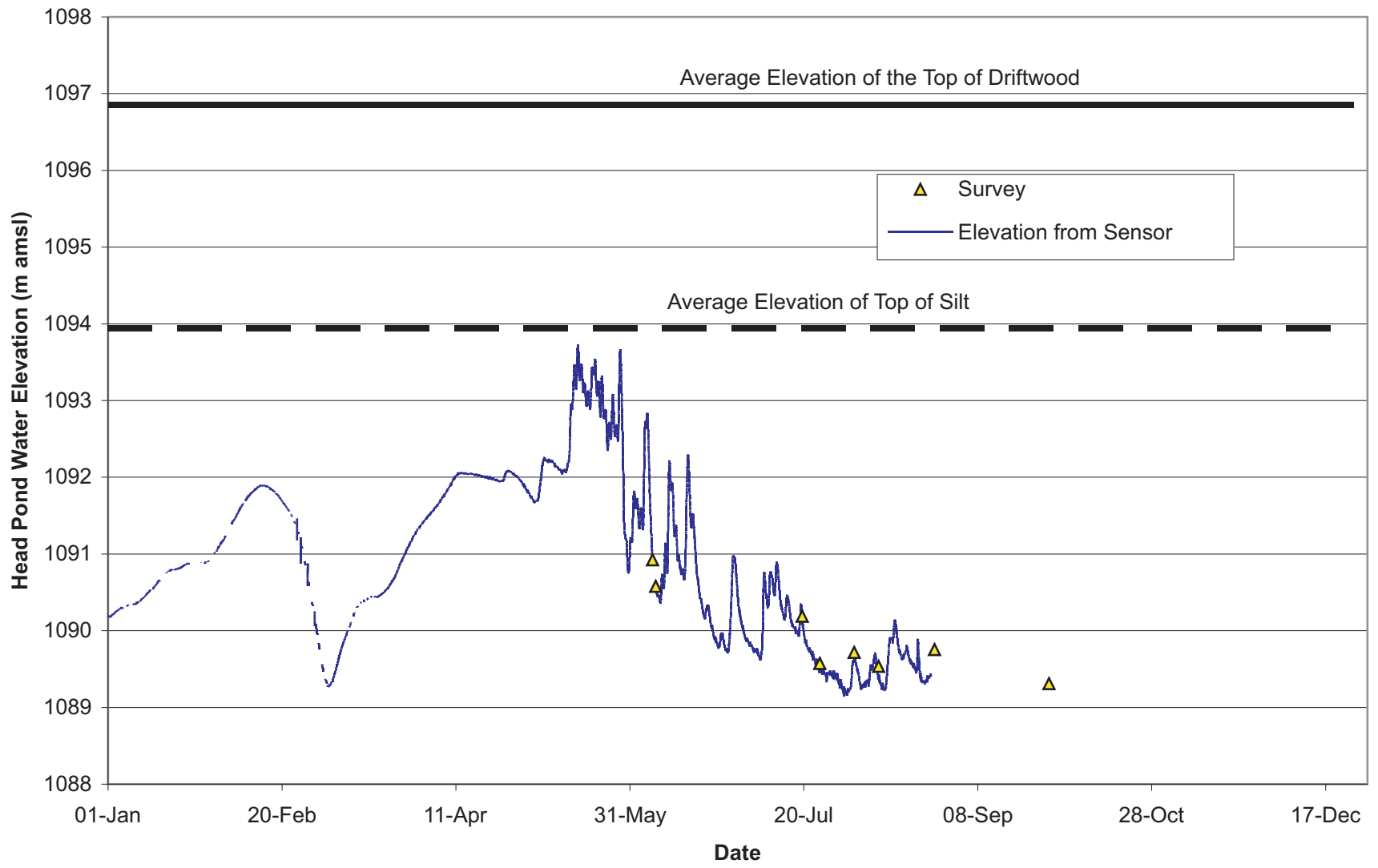
REV.	DATE	REVISION NOTES	DRAWN	CHECKED	APPROVED
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-

SCALE:	N/A	
DATE:	FEBRUARY 2007	
DRAWN:	SLF	
DESIGNED:	GOB	
CHECKED:	GWF	
APPROVED:	JWC	

PROJECT	2006 ANNUAL GEOTECHNICAL EVALUATION AND INSTRUMENTATION REVIEW	
TITLE	FLOW THROUGH ROCK DRAIN INSPECTION PHOTOS	
PROJECT No.	FIGURE No.	REV.
0257-039-05	27	0

**BGC Engineering Inc.**  
AN APPLIED EARTH SCIENCES COMPANY

**BGC** Calgary Alberta Phone: (403) 250-5185



AS A MUTUAL PROTECTION TO OUR CLIENT, THE PUBLIC AND OURSELVES, ALL REPORTS AND DRAWINGS ARE SUBMITTED FOR THE CONFIDENTIAL INFORMATION OF OUR CLIENT FOR A SPECIFIC PROJECT AND AUTHORIZATION FOR USE AND/OR PUBLICATION OF DATA STATEMENTS CONCLUSIONS OR ABSTRACTS FROM OR REGARDING OUR REPORTS AND DRAWINGS IS RESERVED PENDING OUR WRITTEN APPROVAL.

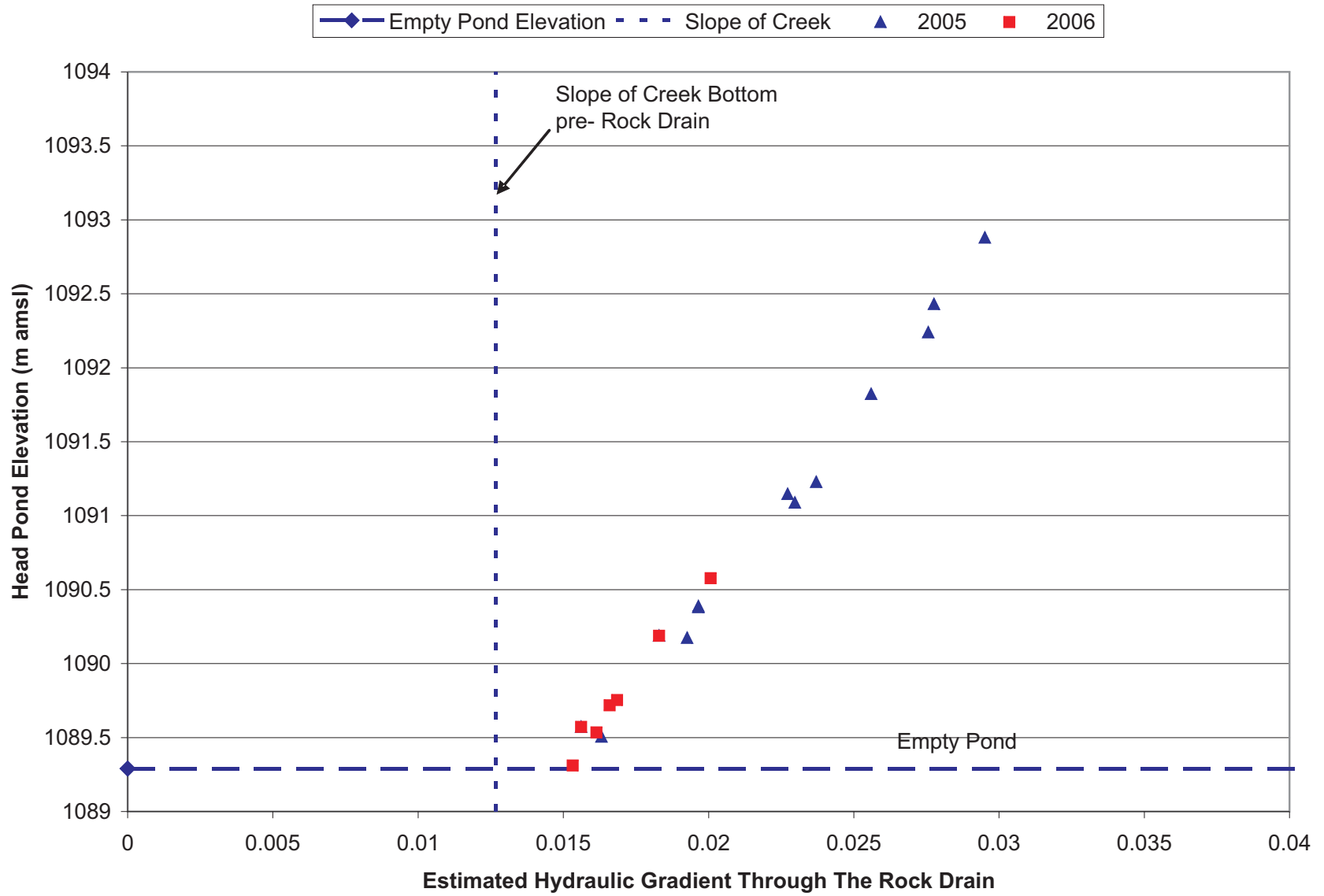
SCALE:	N/A	DESIGNED:	GOB
DATE:	FEBRUARY 2007	CHECKED:	GWF
DRAWN:	SLF	APPROVED:	JWC

CLIENT: **Deloitte & Touche**

**BGC Engineering Inc.**  
AN APPLIED EARTH SCIENCES COMPANY

**BGC** Calgary, Alberta. Phone: (403) 250-5185

PROJECT 2006 ANNUAL GEOTECHNICAL EVALUATION AND INSTRUMENTATION REVIEW		
TITLE NORTH FORK ROCK DRAIN MEASURED POND ELEVATION AND CREEK DISCHARGE		
PROJECT No.	FIGURE No.	REV.
0257-039-05	28	0



DATE: FEB 2007	DRAWN SLF	 <b>BGC ENGINEERING INC.</b> AN APPLIED EARTH SCIENCES COMPANY Calgary, Alberta Phone: (403) 250-5185	PROJECT 2006 ANNUAL GEOTECHNICAL EVALUATION AND INSTRUMENTATION REVIEW		
REFERENCED DRAWING DESCRIPTION AS A MUTUAL PROTECTION TO OUR CLIENT, THE PUBLIC AND OURSELVES, ALL REPORTS AND DRAWINGS ARE SUBMITTED FOR THE CONFIDENTIAL INFORMATION OF OUR CLIENT FOR A SPECIFIC PROJECT AND AUTHORIZATION FOR USE AND/OR PUBLICATION OF DATA, STATEMENTS, CONCLUSIONS OR ABSTRACTS FROM OR REGARDING OUR REPORTS AND DRAWINGS IS RESERVED PENDING OUR WRITTEN APPROVAL.			TITLE NORTH FORK ROCK DRAIN FLOW THROUGH PERFORMANCE		
CLIENT 		PROJECT No. 0257-039-05	FIGURE No. 29	REV. 0	



September: shows the continuation of the previously constructed Pilot Channel with the Faro Creek Diversion. The channel appears to be in good condition, no signs of significant erosion or deformation.



September: Three shot panoramic of seepage discharge area in Faro Pit wall.



June: Note the exposed geotextile in the channel bottom. This was repaired prior to the August inspection.



June: Northern leg of the diversion. Note the overhanging banks of snow and ice.

CLIENT:

**Deloitte  
& Touche**

AS A MUTUAL PROTECTION TO OUR CLIENT, THE PUBLIC AND OURSELVES, ALL REPORTS AND DRAWINGS ARE SUBMITTED FOR THE CONFIDENTIAL INFORMATION OF OUR CLIENT FOR A SPECIFIC PROJECT AND AUTHORIZATION FOR USE AND/OR PUBLICATION OF DATA STATEMENTS CONCLUSIONS OR ABSTRACTS FROM OR REGARDING OUR REPORTS AND DRAWINGS IS RESERVED PENDING OUR WRITTEN APPROVAL.

REV.	DATE	REVISION NOTES	DRAWN	CHECKED	APPROVED
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-

SCALE:	N/A	
DATE:	FEBRUARY 2007	
DRAWN:	SLF	
DESIGNED:	GOB	
CHECKED:	GWF	
APPROVED:	JWC	

PROJECT	2006 ANNUAL GEOTECHNICAL EVALUATION AND INSTRUMENTATION REVIEW	
TITLE	FARO CREEK DIVERSION CHANNEL INSPECTION PHOTOS	
PROJECT No.	FIGURE No.	REV.
0257-039-05	30	0

BGC	BGC Engineering Inc.
	AN APPLIED EARTH SCIENCES COMPANY
Calgary Alberta	Phone: (403) 250-5185



June: shows a view of the abutment of the Secondary Tailings Impoundment as it meets the main road.



June: shows a view of the Original Tailings Impoundment inside the Secondary Tailings Dike.



June: shows a view of the crest of the dike the Secondary Tailings Dam looking towards the south. This shows the location where the North Fork Rose Creek Diversion flows near the toe of the dam.



June: shows a view of the Secondary Tailings Impoundment immediately above previously used pumping wells.

CLIENT:

**Deloitte  
& Touche**

AS A MUTUAL PROTECTION TO OUR CLIENT, THE PUBLIC AND OURSELVES, ALL REPORTS AND DRAWINGS ARE SUBMITTED FOR THE CONFIDENTIAL INFORMATION OF OUR CLIENT FOR A SPECIFIC PROJECT AND AUTHORIZATION FOR USE AND/OR PUBLICATION OF DATA STATEMENTS CONCLUSIONS OR ABSTRACTS FROM OR REGARDING OUR REPORTS AND DRAWINGS IS RESERVED PENDING OUR WRITTEN APPROVAL.

REV.	DATE	REVISION NOTES	DRAWN	CHECKED	APPROVED
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-

SCALE:	N/A	
DATE:	FEBRUARY 2007	
DRAWN:	SLF	
DESIGNED:	GOB	
CHECKED:	GWF	
APPROVED:	JWC	

PROJECT	2006 ANNUAL GEOTECHNICAL EVALUATION AND INSTRUMENTATION REVIEW		
TITLE	SECONDARY DAM INSPECTION PHOTOS		
PROJECT No.	FIGURE No.	REV.	
0257-039-05	31	0	

	<b>BGC Engineering Inc.</b>	
	AN APPLIED EARTH SCIENCES COMPANY	
Calgary Alberta	Phone: (403) 250-5185	



June: shows of the continuing view of the crack on the lower road of the Secondary Tailings Dam, just near the area of the pumping wells.



June: shows a view of a settlement trough crack along the edge of the lower road. This is near the entrance to the Diversion Canal.



August: lower road surface near pumphouse pond, showing the re-graded surface.



September: photo shows a view of the crest looking towards the west. At the current time there is no standing water on the upstream side.

CLIENT:

**Deloitte  
& Touche**

AS A MUTUAL PROTECTION TO OUR CLIENT, THE PUBLIC AND OURSELVES, ALL REPORTS AND DRAWINGS ARE SUBMITTED FOR THE CONFIDENTIAL INFORMATION OF OUR CLIENT FOR A SPECIFIC PROJECT AND AUTHORIZATION FOR USE AND/OR PUBLICATION OF DATA STATEMENTS CONCLUSIONS OR ABSTRACTS FROM OR REGARDING OUR REPORTS AND DRAWINGS IS RESERVED PENDING OUR WRITTEN APPROVAL.

	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
REV.	DATE	REVISION NOTES	DRAWN	CHECKED	APPROVED

SCALE:	N/A	
DATE:	FEBRUARY 2007	
DRAWN:	SLF	
DESIGNED:	GOB	
CHECKED:	GWF	
APPROVED:	JWC	

PROJECT	2006 ANNUAL GEOTECHNICAL EVALUATION AND INSTRUMENTATION REVIEW	
TITLE	SECONDARY DAM INSPECTION PHOTOS	
PROJECT No.	FIGURE No.	REV.
0257-039-05	32	0

<b>BGC</b>	<b>BGC Engineering Inc.</b>
	<b>AN APPLIED EARTH SCIENCES COMPANY</b>
Calgary Alberta	Phone: (403) 250-5185



June: shows a view of this breach in the Secondary Tailings Dam. The tailings were washed into the Intermediate Impoundment.



June: shows a view looking upslope towards the main part of the breach in the dam. Note, in the foreground, the appearance of tailings.



September: shows the re-graded crest on the Secondary Impoundment Dike where, it connects to the road coming from the Diversion Dam. The ditch line that was in here has now been backfilled over with sand and gravel.



September: a two shot panoramic showing the repair which has been done to the small trench in the crest of the Secondary Impoundment Dike, (see first photo).

CLIENT:

**Deloitte  
& Touche**

AS A MUTUAL PROTECTION TO OUR CLIENT, THE PUBLIC AND OURSELVES, ALL REPORTS AND DRAWINGS ARE SUBMITTED FOR THE CONFIDENTIAL INFORMATION OF OUR CLIENT FOR A SPECIFIC PROJECT AND AUTHORIZATION FOR USE AND/OR PUBLICATION OF DATA STATEMENTS CONCLUSIONS OR ABSTRACTS FROM OR REGARDING OUR REPORTS AND DRAWINGS IS RESERVED PENDING OUR WRITTEN APPROVAL.

REV.	DATE	REVISION NOTES	DRAWN	CHECKED	APPROVED
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-

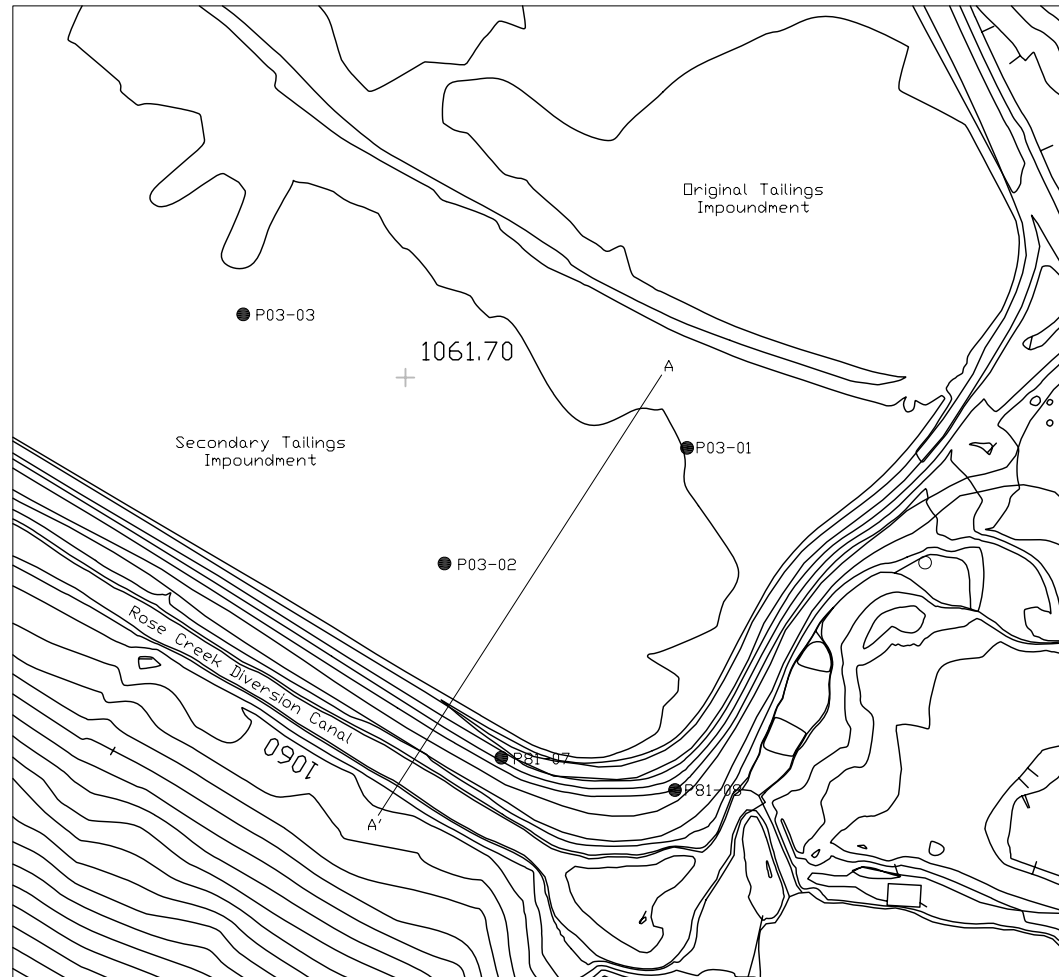
SCALE:	N/A	
DATE:	FEBRUARY 2007	
DRAWN:	SLF	
DESIGNED:	GOB	
CHECKED:	GWF	
APPROVED:	JWC	

PROJECT			2006 ANNUAL GEOTECHNICAL EVALUATION AND INSTRUMENTATION REVIEW		
TITLE					
SECONDARY DAM INSPECTION PHOTOS					
PROJECT No.	FIGURE No.	REV.			
0257-039-05	33	0			

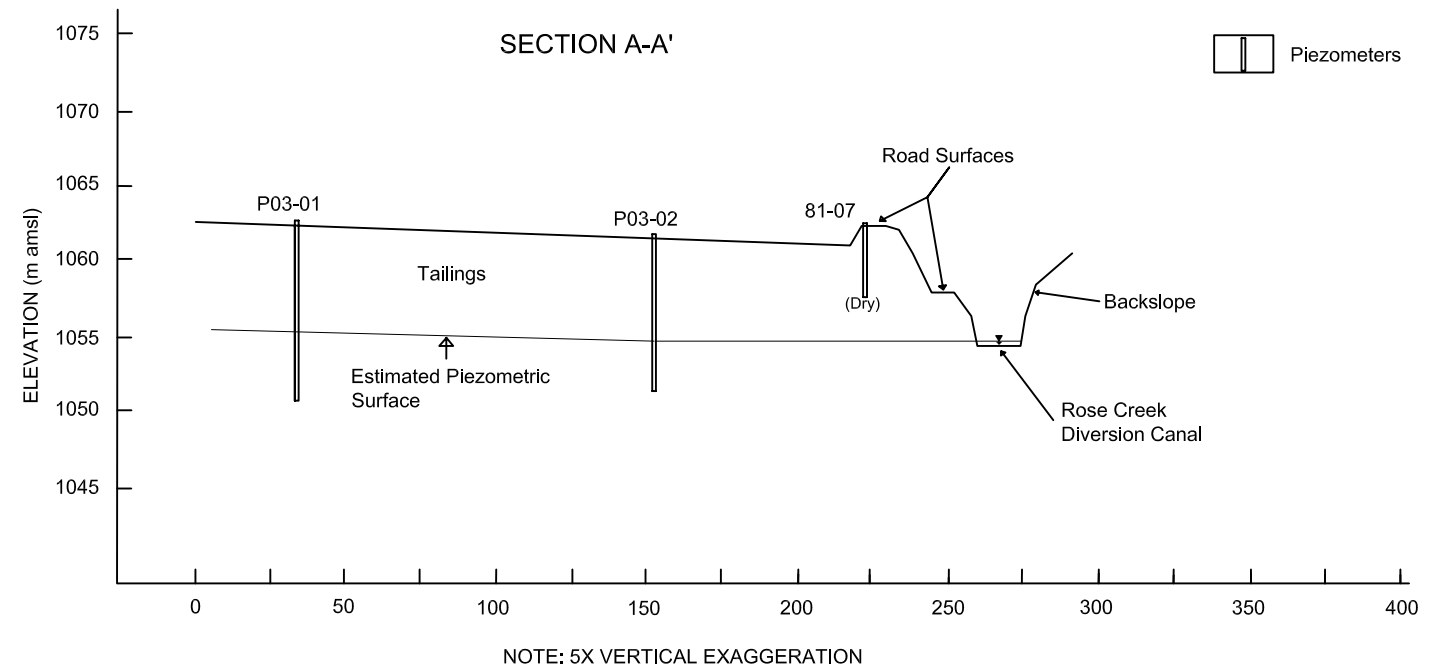
**BGC Engineering Inc.**  
AN APPLIED EARTH SCIENCES COMPANY

**BGC** Calgary Alberta Phone: (403) 250-5185

K:\Projects\0257 D&T\039 2006 Faro Annual Geotech Inspection Rpt\Graphics\Drawings\0257-039-05 001 Fig 34.dwg Layout: Figure 34 Plot Date Jan 26 07 Time: 10:41 AM



NOTES: 1) DRAWING IS A SCHEMATIC, CONSTRUCTED FOR ILLUSTRATIVE PURPOSES ONLY.  
2) ALL ELEVATIONS ARE APPROXIMATE.



AS A MUTUAL PROTECTION TO OUR CLIENT, THE PUBLIC AND OURSELVES, ALL REPORTS AND DRAWINGS ARE SUBMITTED FOR THE CONFIDENTIAL INFORMATION OF OUR CLIENT FOR A SPECIFIC PROJECT AND AUTHORIZATION FOR USE AND/OR PUBLICATION OF DATA, STATEMENTS, CONCLUSIONS OR ABSTRACTS FROM OR REGARDING OUR REPORTS AND DRAWINGS IS RESERVED PENDING OUR WRITTEN APPROVAL.

REV.	DATE	REVISION NOTES	DRAWN	CHECK	APPR.

SCALE:	AS SHOWN
DATE:	FEBRUARY 2007
DRAWN:	REM
DESIGNED:	GOB
CHECKED:	GWF
APPROVED:	JWC

PROFESSIONAL SEAL:

**BGC ENGINEERING INC.**  
AN APPLIED EARTH SCIENCES COMPANY

CLIENT: **Deloitte & Touche**

PROJECT: 2006 ANNUAL GEOTECHNICAL EVALUATION AND INSTRUMENTATION REVIEW		
TITLE: SECONDARY DAM CURRENT PIEZOMETRIC CONDITIONS		
PROJECT No.: 0257-039-05	FIGURE No. 34	REV.: 0

2007 INSTRUMENTATION READINGS SCHEDULE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
	07	07	07	07	07	07	07	07	07	07	07	07
<b>1. Diversion Canal</b>												
<b>THERMISTORS</b>												
- Canal Dyke: CD-15, CD-21, BGC01-02, BGC05-04 <sup>4</sup> , BGC05-07 <sup>5</sup>					***	***			***			
- Spoil Pile: SP-3, SP-5						***						
<b>SLOPE INDICATORS</b>												
- Canal Dike: CD-10, CD-15, CD-19, CD-21, BH94CD-1, BH91-CD1, BGC05-05, BGC05-08					***				***			
- Spoil Pile: SP-2, SP-5						***						
<b>PIEZOMETERS</b>												
- Canal Dyke: CD-13, CD-15, CD-21 BGC05-02, BGC05-03, BGC05-06					***	***			***			
<b>STAFF GAUGE:</b> RCDC-4				daily	daily	daily	daily	daily	daily			
<b>2. Cross Valley Dam</b>												
<b>THERMISTORS</b> - CVDC-6, BH88-4					***	***			***			
<b>PIEZOMETERS:</b> CVDC-4, CVDC-7, CVDC-9, CVDT-1, CVDT-2, CVDP-1, CVDP-3, CVDP-5, CVDP-6, 94 CVDC-1, P01-11 <sup>2</sup>					***	***			***			
<b>WEIR FLOWS</b> <sup>1</sup> : X-11, X-12, W3 <sup>3</sup>	***	***	***	***	***	***	***	***	***	***	***	***
<b>WEIR FLOWS</b> <sup>1</sup> : X-13	weekly	weekly	weekly	weekly	weekly	weekly	weekly	weekly	weekly	weekly	weekly	weekly
<b>POLISHING POND WATER LEVEL</b> <sup>1</sup> (or automate with datalogger)	weekly	weekly	weekly	weekly	weekly	weekly	weekly	weekly	weekly	weekly	weekly	weekly
<b>3. Intermediate Dam</b>												
<b>PIEZOMETERS:</b> 91ID-4, 91-ID-6, 91-ID-7, 94-IDC-1, 96-1, 96-2, 96-3, 96-4, P01-03 <sup>2</sup> , P01-04 <sup>2</sup> , BKS04-06, BKS04-07, 91-ID3 (with seepage observations near south abutment)					***	***		***	***			
<b>RETAINED POND WATER LEVEL</b> <sup>1</sup> (or automate with datalogger)	weekly	weekly	weekly	weekly	weekly	weekly	weekly	weekly	weekly	weekly	weekly	weekly
<b>4. Secondary Tailings Dam</b>												
<b>PIEZOMETERS:</b> P81-6, P81-7, P81-8; P03-01 <sup>4</sup> , P03-02 <sup>4</sup> , P03-03 <sup>4</sup>					***	***			***			
<b>5. North Fork Rock Drain</b>												
<b>DATALOGGERS (automatic):</b> Pond, Creek												
<b>STAFF GAUGES</b> <sup>1</sup> : NFRD23 and X2				daily	daily	daily	weekly	weekly	weekly	weekly		
<b>Survey or Staff Gauge</b> <sup>1</sup> : NFRD20, NFRD21, Pond, Toe of drain				weekly	weekly	weekly	weekly	weekly	weekly	weekly		
<b>6. Faro Creek Diversion Channel</b>												
<b>STAFF GAUGES</b> <sup>6</sup> :				bi-weekly	bi-weekly	bi-weekly	bi-weekly	bi-weekly	bi-weekly	bi-weekly		
<b>Flow measurements, establish a rating curve</b>					bi-weekly		bi-weekly		bi-weekly			
<b>NOTES:</b>												
1 Confirm accuracy of monitoring techniques.												
2 Before monitoring P01 series monitoring wells, confirm with GLL staff in Whitehorse that it is alright to do so.												
3 Monitor Instrumentation twice per month												
4 Monitored as part of Environmental Monitoring Program, provide elevation data to BGC												
5 These instruments need a different switch box for thermistor to read. Will be provided in early 2007												
6 Scheduled installation in 2007												

CLIENT:



AS A MUTUAL PROTECTION TO OUR CLIENT, THE PUBLIC AND OURSELVES, ALL REPORTS AND DRAWINGS ARE SUBMITTED FOR THE CONFIDENTIAL INFORMATION OF OUR CLIENT FOR A SPECIFIC PROJECT AND AUTHORIZATION FOR USE AND/OR PUBLICATION OF DATA STATEMENTS CONCLUSIONS OR ABSTRACTS FROM OR REGARDING OUR REPORTS AND DRAWINGS IS RESERVED PENDING OUR WRITTEN APPROVAL.

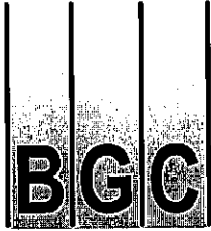
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
REV.	DATE	REVISION NOTES	DRAWN	CHECKED	APPROVED

SCALE:	N/A	
DATE:	FEBRUARY 2007	
DRAWN:	SLF	
DESIGNED:	GOB	
CHECKED:	GWF	
APPROVED:	JWC	

PROJECT	2006 ANNUAL GEOTECHNICAL EVALUATION AND INSTRUMENT REVIEW	
TITLE	2007 MONITORING SCHEDULE	
PROJECT No.	FIGURE No.	REV.
0257-039-05	35	0

**BGC** **BGC Engineering Inc.**  
 AN APPLIED EARTH SCIENCES COMPANY  
 Calgary Alberta Phone: (403) 250-5185

**APPENDIX I**  
**SITE VISIT INSPECTION MEMOS**  
**(JUNE, AUGUST AND SEPTEMBER)**



# **BGC ENGINEERING INC.**

**AN APPLIED EARTH SCIENCES COMPANY**

1605, 840 – 7 Avenue S.W., Calgary, Alberta, Canada. T2P 3G2  
Phone (403) 250-5185 Fax (403) 250-5330

---

## **PROJECT MEMORANDUM**

---

<b>To:</b>	<b>Anvil Range Mining / Deloitte &amp; Touche</b>	<b>Fax No.:</b>	<b>(867) 994-3459</b>
<b>Attention:</b>	<b>Dana Hagggar / Doug Sedgwick</b>	<b>CC:</b>	<b>(416) 601-5902</b>
<b>From:</b>	<b>Gerry Ferris, P.Eng.</b>	<b>Date:</b>	<b>June 27, 2006</b>
<b>Subject:</b>	<b>June Site Inspection Conditions Selected Facilities, Faro Mine, YT</b>		
<b>No. of Pages (including this page):</b>	<b>3 Pages</b>	<b>Project No:</b>	<b>0257-039-02</b>

---

Mr. Gerry Ferris, P.Eng., from BGC Engineering Inc.(BGC), undertook a visual inspection of selected facilities at Faro Mine between June 6 and 9, 2006. During this inspection the items contained in this memo were discussed on site with Mr. Dana Hagggar, Mine Manager. This memo summarizes the conditions observed, along with any required maintenance or monitoring:

### **FWSD Breach**

- Minor cracking continues in the backslope behind the rip rap on both sides of the floodplain.
- Slough at the south abutment appears to have expanded compared to last year. This slough appears to be related to seepage discharge from the valley wall. Repair of this slough can be accomplished by excavating and replacing a portion of the finer grained slough material with granular material. This would allow the water to freely drain from the slope. Following this repair the area should be re-vegetated. Until the construction is completed this area should be visually monitored.
- Erosion and bank undercutting continues downstream of the breach works, within the Fresh Water Channel. This behaviour was expected and does not require further intervention at this time.
- Otherwise appears in satisfactory condition.

### **K8 Creek Rehab.**

- Appears in satisfactory condition.

---

**This communication is intended for the use of the above named recipient. Any unauthorized use, copying, review or disclosure of the contents by other than the recipient is prohibited.**

---

### Cross Valley Dam

- This spring there were almost no surface cracks evident on the crest of the dam.
- The water elevation in the Polishing Pond appears to be lower than typical due to the release of water through the siphon pipe. The water level appears to be lower than the lowest elevation of the rip rap. The water level in the pond should be maintained such that the water is within the zone protected by rip rap.
- In some sections of this spillway the rip rap protection has been disturbed. The rip rap in the disturbed sections should be re-instated.
- Appears in satisfactory condition.

### Intermediate Dam

- No crest cracking or toe seepage noted.
- Downstream face experienced only minor rilling erosion.
- The granular material collected on the road surface (eroded down the face of the dam in previous years) should be removed in order to expose the gravel drain.
- Sludge ponds have been added to the down valley treatment system, within the Polishing Pond, at the discharge point of the Intermediate Spillway. If the emergency spillway flows near its design capacity, it is likely that these works will be destroyed.
- Recommendations for some repairs of the Intermediate Dam spillway are forthcoming in a Northwest Hydraulic consulting report on the hydraulic capacity in the Down Valley.
- Appears in satisfactory condition.

### Secondary Impoundment Dam

- Upstream crest berm needs to be re-established at the north abutment to prevent crest overtopping and downstream face erosion. This is located near the fuse plug of the Rose Creek diversion Canal.
- Extensive cracking is located along the toe of the lower road surface, adjacent to the North Fork Rose Creek diversion and the start of the Rose Creek Diversion. This section of cracking opened up much more than previously experienced. This area should be graded to close the crack and ensure water does not flow into the crack, which would worsen the cracking.
- No other visual concerns were noted.

### Rose Creek Diversion Channel

- Previously noted sloughs in the backslope do not appear currently active.
- No signs of cracking or settlement noted on the canal dike crest.
- Increased seepage quantity and sloughing occurring at the toe of the spoil piles, located between the Cross Valley and Intermediate Dams. Seepage and related sloughing is caused by very low polishing pond level. This sloughing has been noted since 2005 and appears to be worsening / expanding since then. This sloughing and retrogression should be monitored to ensure that the current loss of toe support does not retrogress

---

**This communication is intended for the use of the above named recipient. Any unauthorized use, copying, review or disclosure of the contents by other than the recipient is prohibited.**

---

into a larger failure of the spoil pile. This sloughing can be repaired via the installation of granular trenches (running perpendicular to the shoreline) which would serve to collect the seepage water and lower the ground water pressure in the area.

- Otherwise appears in satisfactory condition.

#### North Fork Rose Creek Rock Drain

- Rock drain appears to be discharging water with no signs of significant instability.
- The following monitoring program should be followed throughout the summer period:
  - Once per week record the water levels at staff gauges NFRC 20 / 21. Once per month measure the top of the staff gauge (elevation survey).
  - Once per week measure the water elevation in the pond.
  - Once per week measure the water elevation exit at the downstream toe of the drain.
  - Once per week record the water levels at staff gauges NFRC 23 and X2. Once per month measure the top of the staff gauge (elevation survey).

#### North Valley Wall Interceptor Ditch

- Selected sections of the channel were inspected and found to be flowing properly.
- Appears in satisfactory condition.

#### Faro Creek Diversion Channel

- Some minor rip rap movement has occurred in select locations, exposing the underlying geotextile. This was likely caused by ice action during this past winter. The rip rap should be reinstated.
- Channel appears to be performing in a satisfactory manner.

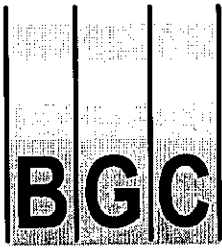
In general, the inspected facilities appear in satisfactory condition and only some minor maintenance and monitoring is required. Please contact the undersigned should you have any questions or comments.

Respectfully submitted,

**BGC Engineering Inc.**

per:

Gerry Ferris, M.Sc., P.Eng.  
Geotechnical Engineer



# **BGC ENGINEERING INC.**

**AN APPLIED EARTH SCIENCES COMPANY**

1605, 840 – 7 Avenue S.W., Calgary, Alberta, Canada. T2P 3G2  
Phone (403) 250-5185 Fax (403) 250-5330

---

## **PROJECT MEMORANDUM**

---

<b>To:</b>	<b>Anvil Range Mining/Deloitte &amp; Touche</b>	<b>Fax No.:</b>	<b>(867) 994-3459</b>
<b>Attention:</b>	<b>Dana Haggar/Doug Sedgwick</b>	<b>CC:</b>	<b>(416) 601-5902</b>
<b>From:</b>	<b>Gerry Ferris, P.Eng.</b>	<b>Date:</b>	<b>September 7, 2006</b>
<b>Subject:</b>	<b>August Site Inspection Conditions Selected Facilities, Faro Mine, YT</b>		
<b>No. of Pages (including this page):</b>	<b>4 Pages</b>	<b>Project No:</b>	<b>0257-039-02</b>

---

Mr. Gerry Ferris, P.Eng., from BGC Engineering Inc.(BGC), undertook a visual inspection of selected facilities at Faro Mine between August 24 and 29, 2006. During this inspection the items contained in this memo were discussed on site with Mr. Dana Haggar, Mine Manager. This memo summarizes the conditions observed, along with any required maintenance or monitoring:

### **FWSD Breach**

- Minor cracking continues in the backslope behind the rip rap on both sides of the floodplain.
- Slough at the south abutment appears to have expanded compared to last year. This slough appears to be related to seepage discharge from the valley wall. Repair of this slough can be accomplished by excavating and replacing a portion of the finer grained slough material with granular material. This would allow the water to freely drain from the slope. Following this repair the area should be re-vegetated. Until the construction is completed this area should be visually monitored.
- Erosion and bank undercutting continues downstream of the breach works, within the Fresh Water Channel. This behaviour was expected and does not require further intervention at this time.
- Erosion is occurring within Reach 2 of the former reservoir. This area should be visually monitored.
- A portion of K8 Creek has not yet been willow staked. This work was awaiting the channel to finalize its position, which has now occurred. The final section of this tributary should have the willow staking completed, as originally planned.
- Otherwise appears in satisfactory condition.

---

This communication is intended for the use of the above named recipient. Any unauthorized use, copying, review or disclosure of the contents by other than the recipient is prohibited.

---

### **K8 Creek Rehab.**

- Appears in satisfactory condition.

### **Cross Valley Dam**

- The water elevation in the Polishing Pond appears to be lower than typical due to the release of water through the siphon pipe. The water level appears to have been held lower than the lowest elevation of the rip rap for some time this year. An erosion scarp has formed on the face of the dam below the lowest elevation of the rip rap. The water level in the pond should be maintained such that the water is within the zone protected by rip rap. Two courses of action are available: either buttress the scarp to stop rip rap movement or await the movement and then repair the rip rap.
- Small shrubs and trees are beginning to grow on the crest and other surfaces of the dam. This vegetation should be removed, including the roots. When the roots are removed the soil disturbed in the process should be compacted.
- In some sections of this spillway, the rip rap protection on the banks of the North Valley Wall Interceptor Ditch has been disturbed by equipment traffic some time in the past. The rip rap in the disturbed sections should be re-instated.
- Appears in satisfactory condition.

### **Intermediate Dam**

- No crest cracking or toe seepage noted.
- Downstream face experienced only minor rilling.
- The granular soil which has eroded down the face of the dam in previous years to the road surface should be carefully removed to expose the gravel drain.
- Sludge ponds have been added to the down valley treatment system, within the Polishing Pond, at the discharge point of the Intermediate Spillway. If the emergency spillway flows near its design capacity, it is likely that these works will be destroyed.
- The water elevation in the Intermediate Pond appears to be lower than typical due to the release of water through the siphon pipe. The water level appears to have been held lower than the lowest elevation of the rip rap for some time this year and in the past. An erosion scarp has formed on the face of the dam below the lowest elevation of the rip rap. This has lead to both tension crack formation on the crest of the dam (either in the shell or rip rap) and in some locations the rip rap has slid down the face of the dam exposing the shell of the dam. If the water level rises and wave actions begin to act on these areas further erosion will occur. The rip rap should be repaired and then the water level in the pond should be maintained such that the water is within the zone protected by rip rap. Note: Rip rap was placed on the face of this dam multiple times as part of past dam raises and likely exists at lower elevations.

- Recommendations for some repairs of the Intermediate Dam spillway were made by Northwest Hydraulic Consultants (nhc)<sup>1</sup>. As recommended, the large boulders have been moved out of the middle portion of the spillway to the lower steep section. The riffle and pool lower section of the spillway was actively being modified into a rough apron area. This work was not yet complete but was being completed in accordance with the nhc recommendations.
- Small shrubs and trees are beginning to grow on the crest and other surfaces of the dam. This vegetation should be removed, including the roots. When the roots are removed the soil disturbed in the process should be compacted.
- Generally the dam appears in satisfactory condition, although rip rap repairs as noted above are necessary.

### Secondary Impoundment Dam

- Upstream crest berm needs to be re-established at the north abutment to prevent crest overtopping and downstream face erosion.
- An excavated breach (located downstream of the diversion dam/ fuse plug) was cut through the crest of the dam at some point in the past. This area appears to have further eroded during 2005/06. Water and associated tailings have flowed through this breach and into the downstream end of the fuse plug (within the Intermediate Impoundment). This breach should be repaired.
- The area with extensive cracking near the upstream limit of the Rose Creek Diversion Canal (noted in the June 2006 inspection) has been repaired.
- No other visual concerns were noted.

### Rose Creek Diversion Channel

- Previously noted sloughs in the backslope do not appear currently active.
- No signs of cracking or settlement noted on the canal dike crest.
- Instruments were installed in 2005 on the downstream side of the diversion (tailings side). A small access road was created to get to this location, and locally required over steepening of the downstream slope. This slope should be buttressed.
- Increased seepage quantity and sloughing occurring at the toe of the spoil piles, located between the Cross Valley and Intermediate Dams. Seepage and related sloughing is caused by very low polishing pond level. This sloughing has been noted since 2005 and appears to be worsening/expanding since then. This sloughing and retrogression should be monitored to ensure that the current loss of toe support does not retrogress into a larger failure of the spoil pile. This sloughing can be repaired via the installation of granular trenches (running perpendicular to the shoreline) which would serve to collect the seepage water and lower the ground water pressure in the area.
- Otherwise appears in satisfactory condition.

---

<sup>1</sup> Northwest Hydraulic Consultants 2006 Faro Mine Site Inspection. Memorandum issued to Faro Mine Closure Planning Office and Deloitte and Touche Inc., dated July 5, 2006

### North Fork Rose Creek Rock Drain

- Rock drain appears to be discharging water with no signs of significant instability.
- The following monitoring program should be followed throughout the remaining open water period:
  - On a bi-weekly basis record the water levels at staff gauges NFRC 20/21. Once per month measure the top of the staff gauge (elevation survey).
  - On a bi-weekly basis measure the water elevation in the pond.
  - On a bi-weekly basis measure the water elevation exit at the downstream toe of the drain.
  - Once per day record the water levels at staff gauges NFRC 23 and X2. Once per month measure the top of the staff gauge (elevation survey).

### North Valley Wall Interceptor Ditch

- Selected sections of the channel were inspected and found to be flowing properly.
- Appears in satisfactory condition.

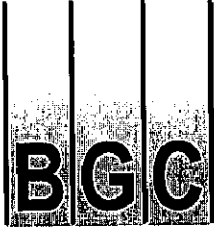
### Faro Creek Diversion Channel

- The areas with exposed geotextile noted in the June 2006 inspection have been repaired.
- Channel appears to be performing in a satisfactory manner.

In general, the inspected facilities appear in satisfactory condition and generally only some minor maintenance and monitoring is required. Repairs to the rip rap are required on the upstream side of the Intermediate Dam. Please contact the undersigned should you have any questions or comments.

Respectfully submitted,  
**BGC Engineering Inc.**  
per:

Gerry Ferris, M.Sc., P.Eng.  
Geotechnical Engineer



# **BGC ENGINEERING INC.**

---

## **AN APPLIED EARTH SCIENCES COMPANY**

1605, 840 – 7 Avenue S.W., Calgary, Alberta, Canada. T2P 3G2  
Phone (403) 250-5185 Fax (403) 250-5330

---

### **PROJECT MEMORANDUM**

---

<b>To:</b>	<b>Anvil Range Mining/Deloitte &amp; Touche</b>	<b>Fax No.:</b>	<b>By email</b>
<b>Attention:</b>	<b>Dana Haggard/Doug Sedgwick</b>	<b>CC:</b>	
<b>From:</b>	<b>Jim Cassie, P.Eng.</b>	<b>Date:</b>	<b>October 13, 2006</b>
<b>Subject:</b>	<b>September Site Inspection Conditions Selected Facilities, Faro Mine, YT</b>		
<b>No. of Pages (including this page):</b>	<b>2</b>	<b>Project No:</b>	<b>0257-039-03</b>

---

Mr. Jim Cassie, P.Eng., from BGC Engineering Inc.(BGC), undertook a visual inspection of selected facilities at Faro Mine between Sep. 19 and 21, 2006. This memo summarizes the conditions observed, along with any required maintenance or monitoring.

#### **FWSD Breach**

- Minor sloughing of the core material on the cut slopes. Monitor situation for now.
- Slough at the south abutment appears pseudo-stable. It is possible that some minor regrading of oversteepened slope in combination with seeding may be enough to stabilize the area. This potential step could be undertaken before any significant regrading and buttressing work is actually implemented.
- Channel appears in satisfactory condition.

#### **K8 Creek Rehabilitation**

- Appears in satisfactory condition.

#### **Cross Valley Dam**

- Pond level below spillway inlet causing erosion at spillway edge due to lack of riprap, where some should be placed.
- Riprap required at new lower pond elevation - especially south of access ramp.
- Remove all large vegetation (shrubs and trees) from the upstream slope and crest.
- No active cracking on crest noted.
- Appears in satisfactory condition.
- 

#### **Intermediate Dam**

- No crest cracking or toe seepage noted.
- Minor sloughs on upstream side riprap - localized replacement and grading needed.
- Remove all large vegetation from the upstream side and crest.

---

**This communication is intended for the use of the above named recipient. Any unauthorized use, copying, review or disclosure of the contents by other than the recipient is prohibited.**

---

#### Secondary Impoundment Dam

- No visual concerns were noted.

#### Rose Creek Diversion Channel

- Previously noted sloughs in the backslope do not appear currently active.
- No signs of cracking or settlement noted on the canal dike crest.
- Sloughing occurring at the toe of the spoil piles, located between the Cross Valley and Intermediate Dams. Limited consequences so would propose to monitor the situation.

#### North Fork Rose Creek Rock Drain

- Rock drain appears to be discharging water with no signs of significant instability.

#### North Valley Wall Interceptor Ditch

- Selected sections of the channel were inspected and found to be flowing properly.
- Appears in satisfactory condition.

#### Faro Creek Diversion Channel

- Channel appears to be performing in a satisfactory manner. Continue to monitor retrogression.

In general, the inspected facilities appear in satisfactory condition and only some minor maintenance and monitoring is required. After the inspection tour, the items contained in this memo were discussed on site with Mr. Dana Hagggar, Mine Manager.

Mr. Ferris also provided some recommendations following his June observations when site conditions were different. His recommendations should be considered in addition to the ones provided herein.

Please contact the undersigned should you have any questions or comments.

Respectfully submitted,

**BGC Engineering Inc.**

per:



James Cassie, M.Sc., P.Eng.  
Specialist Geotechnical Engineer

---

**This communication is intended for the use of the above named recipient. Any unauthorized use, copying, review or disclosure of the contents by other than the recipient is prohibited.**

---

## **APPENDIX II**

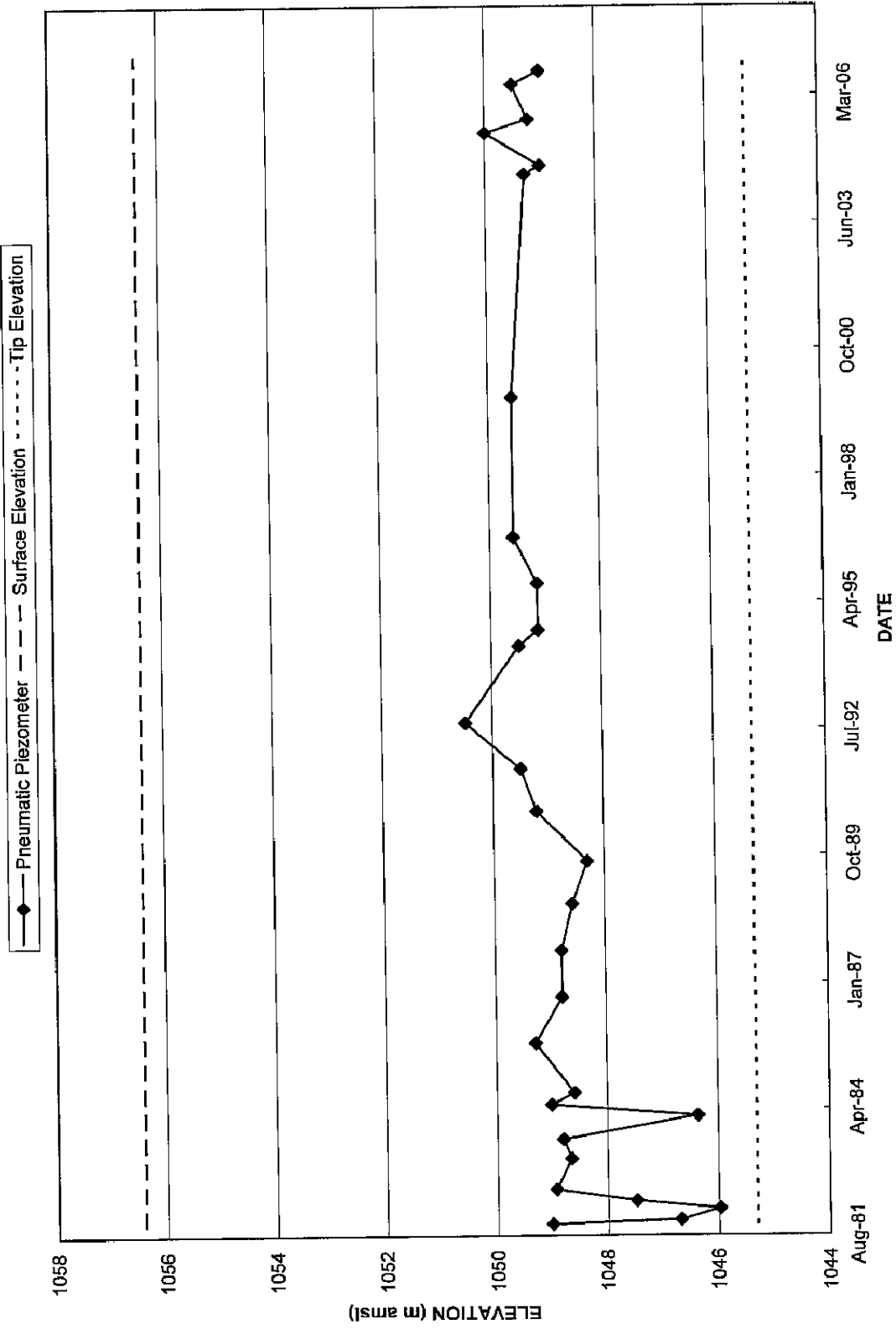
# **INSTRUMENTATION DATA RECORDS AND GRAPHS**

**DIVERSION CANAL  
CANAL DIKE**


## **PIEZOMETERS**

CD-10		Location:	Canal Dike St.0+990	Date Installed:	1981
		Coordinates:	1008.7N, 1519.7E	Ground Elevation (m amsl):	1056.41
Surface Protector:	Yes			Tip Elevation (m amsl):	1045.30
Date		Reading (psi)		Piezometric Elevation (m amsl)	Comments
Nov-81		5.3		1049.01	
Dec-81		1.95		1046.67	
Mar-82		0.95		1045.97	
May-82		3.1		1047.47	
Aug-82		5.2		1048.94	
Apr-83		4.8		1048.66	
Sep-83		5		1048.80	
Mar-84		1.5		1046.35	
Jun-84		5.3		1049.01	
Sep-84		4.7		1048.59	
Oct-85		5.7		1049.29	
Oct-86		5		1048.80	
Oct-87		5		1048.80	
Oct-88		4.7		1048.59	
Sep-89		4.3		1048.31	
Oct-90		5.6		1049.22	
Sep-91		6		1049.50	
Sep-92		7.4		1050.48	
May-94		6		1049.50	
Sep-94		5.5		1049.15	
Sep-95		5.5		1049.15	
Sep-96		6.1		1049.57	
11-Sep-99		6.1		1049.57	
6-Jul-04		5.7		1049.29	
16-Sep-04		5.3		1049.01	
31-May-05		6.7		1049.99	
14-Sep-05		5.6		1049.22	
14-Jun-06		6		1049.50	
2-Oct-06		5.3		1049.01	

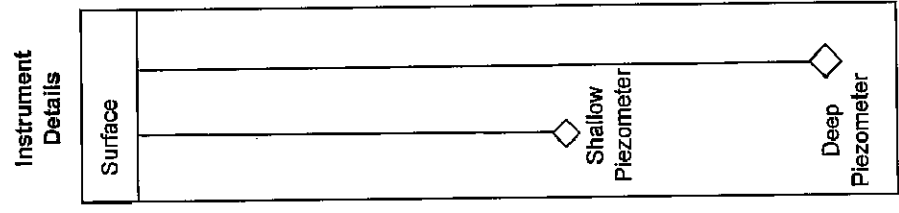
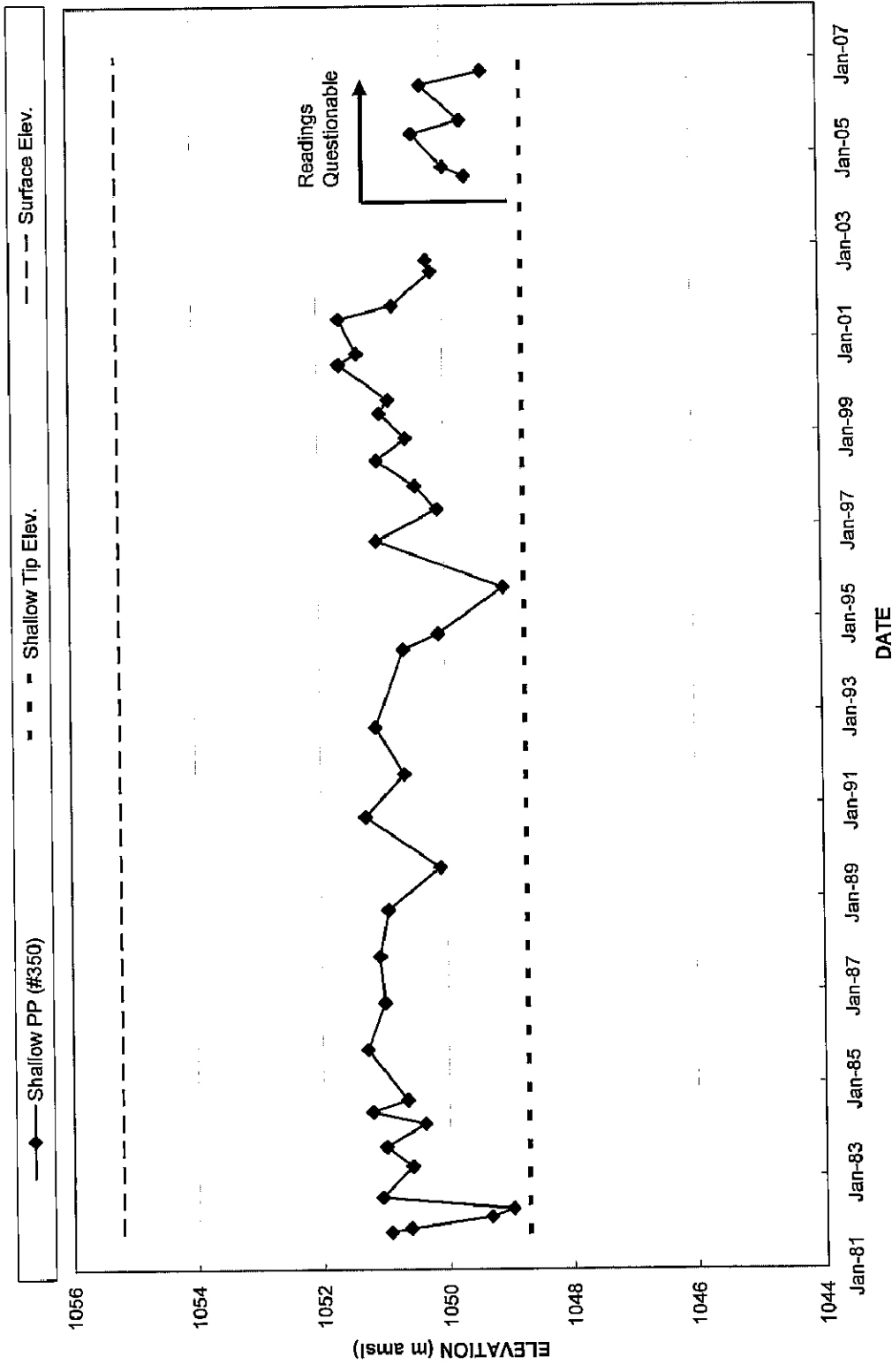
**DIVERSIONAL CANAL DIKE  
Piezometric Monitoring  
CD-10 Pneumatic Piezometer**



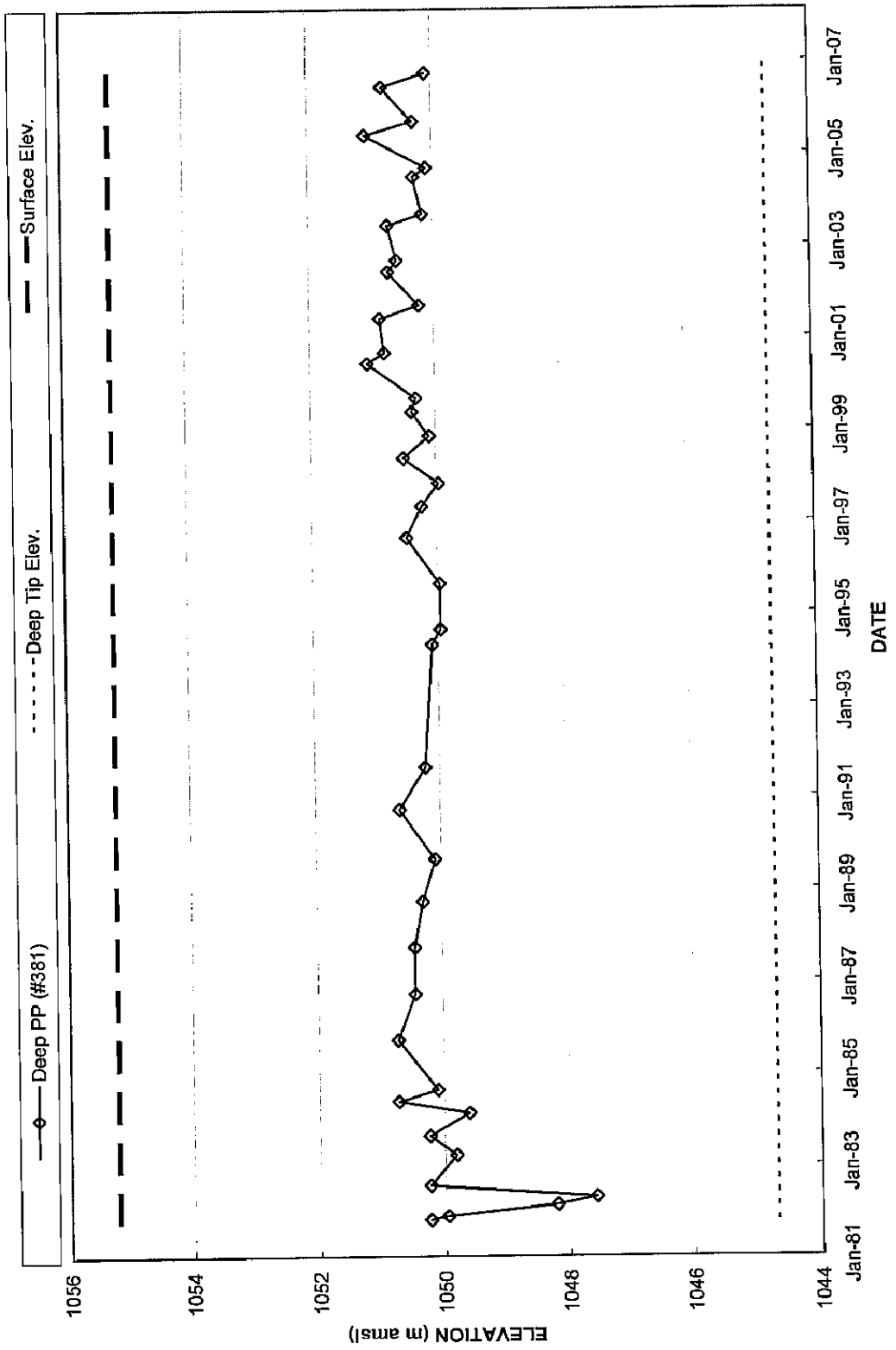
CD-13		Location:	Canal Dike St.1+350	Ground Elevation (m amsl):	1055.214
		Coordinates:	8V581400 6913185	Shallow Tip Elevation (m amsl):	1048.70
Surface Protector:	yes	Date Installed:	1981	Deep Tip Elevation (m amsl):	1044.70
Date	Reading (psi)		Piezometric Elevation (m amsl)		Comments
	Shallow PP (#350)	Deep PP (#381)	Shallow (#350)	Deep (#381)	
Nov-81	3.2	7.9	1050.94	1050.23	
Dec-81	2.75	7.5	1050.63	1049.95	
Mar-82	0.9	5	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	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	1050.94	1050.30	
Sep-89	2	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	3.45		1051.12		
May-94	2.8	7.7	1050.66	1050.09	
Sep-94	2	7.5	1050.10	1049.95	
Sep-95	0.5	7.5	1049.05	1049.95	
Sep-96	3.4	8.25	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	3.37	8.30	1051.06	1050.51	
15-Nov-98	2.70	7.70	1050.59	1050.09	
28-May-99	3.30	8.10	1051.01	1050.37	
11-Sep-99	3.10	8.00	1050.87	1050.30	
14-Jun-00	4.20	9.10	1051.64	1051.07	
09-Sep-00	3.80	8.70	1051.36	1050.79	
06-Jun-01	4.20	8.80	1051.64	1050.86	
19-Sep-01	3.00	7.90	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	1049.61	1050.30	(#350 kept rising)
16-Sep-04	1.8	7.7	1049.96	1050.09	(#350 kept rising)
31-May-05	2.5	9.1	1050.45	1051.07	(#350 kept rising)
14-Sep-05	1.4	8	1049.68	1050.30	#350 Bubbles stop then numbers start rising
14-Jun-06	2.3	8.7	1050.91	1050.79	#350 Keeps Climbing
2-Oct-06	0.9	7.7	1049.33	1050.09	Ice in casing and on cable

 Questionable values

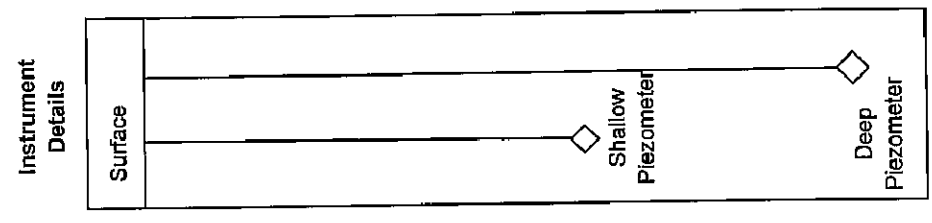
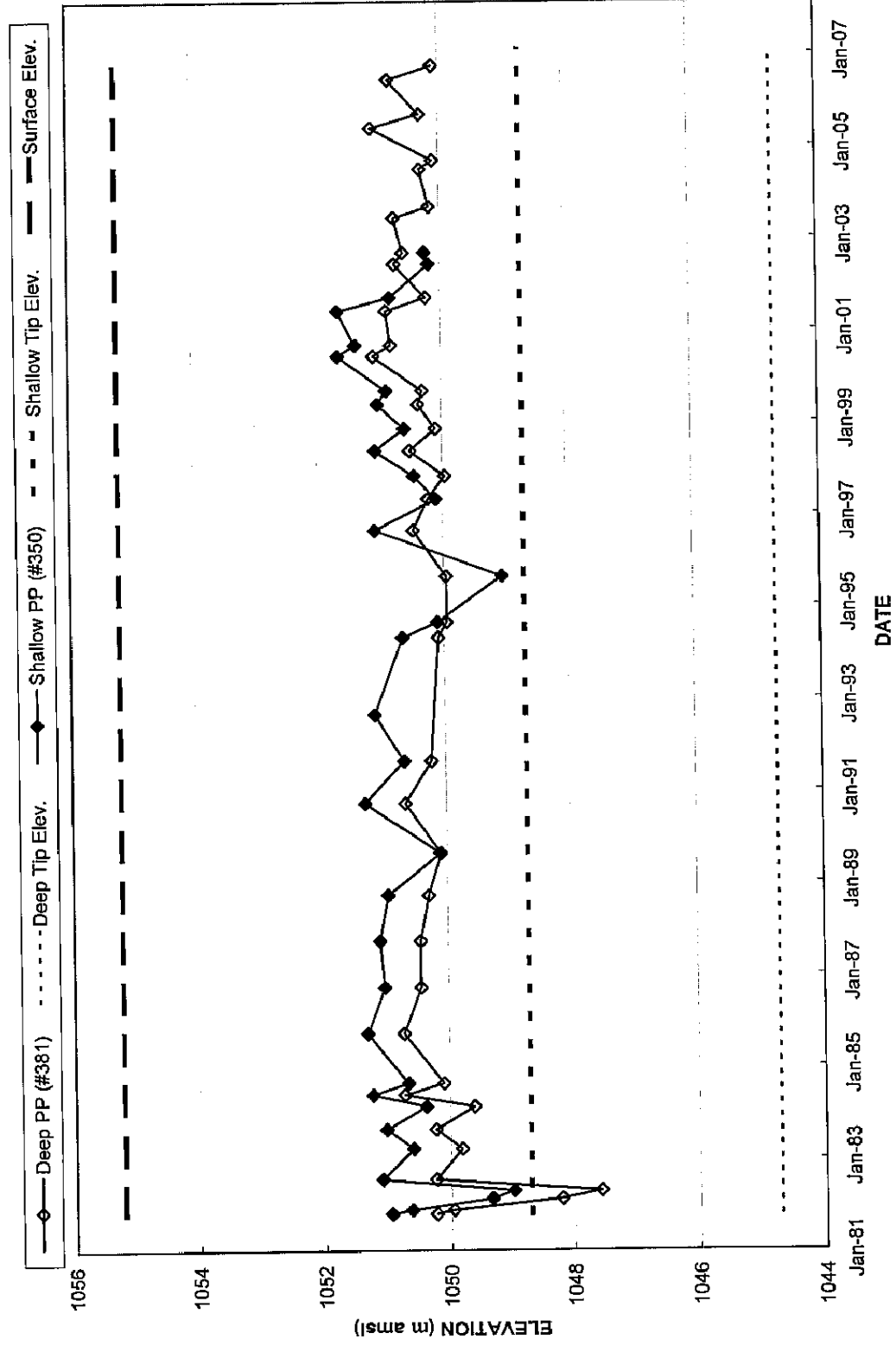
## DIVERSION CANAL DIKE Piezometric Monitoring CD-13 Pneumatic Piezometer (Shallow Tip)



### DIVERSION CANAL DIKE Piezometric Monitoring CD-13 Pneumatic Piezometer (Deep Tip)

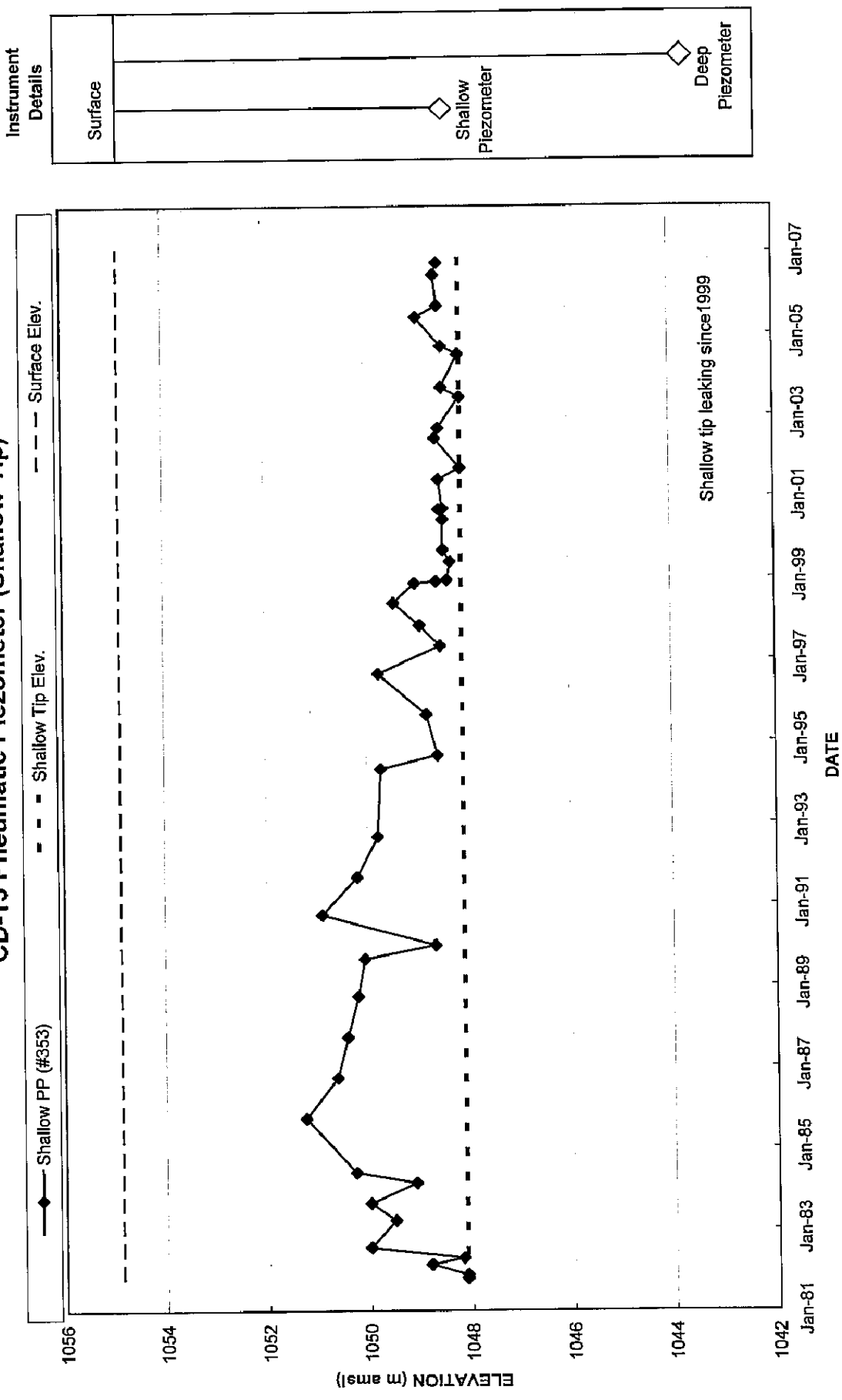


### DIVERSION CANAL DIKE Piezometric Monitoring CD-13 Pneumatic Piezometer (Both Tips)

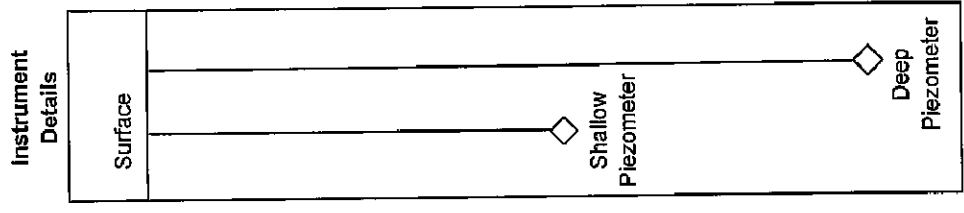
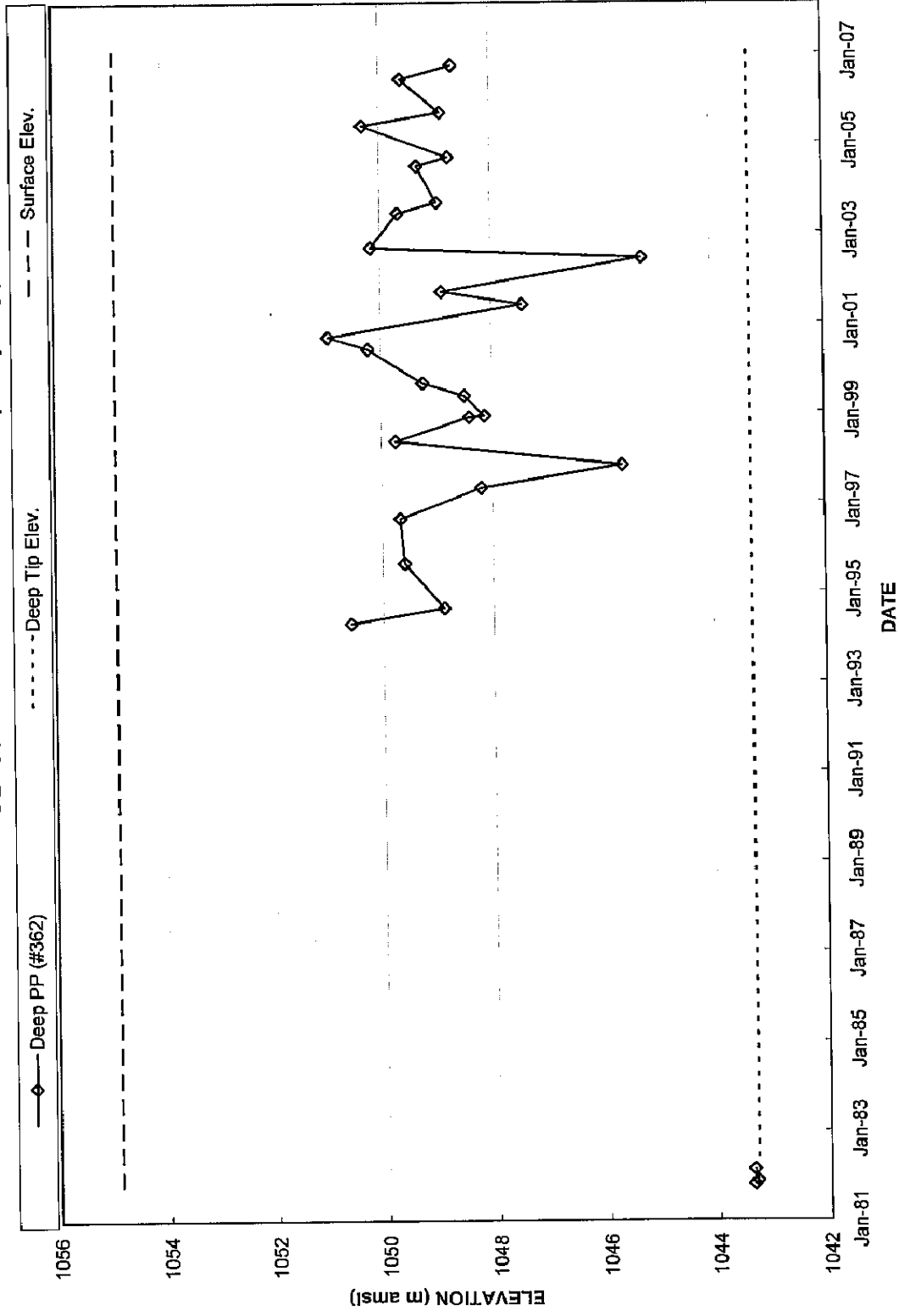


CD-15		Location: Canal Dike St.1+530		Ground Elevation (m amsl):	
		Coordinates: 1233.7N, 1028.7E 8V581245 6913275		Shallow Tip Elevation (m amsl):	
Surface Protector: yes		Date Installed: 1981		Deep Tip Elevation (m amsl):	
Date	Reading (psi)		Piezometric Elevation (m amsl)		Comments
	Shallow PP (#353)	Deep PP (#362)	Shallow (#353)	Deep (#362)	
Nov-81	0	0.1	1048.1	1043.37	
Dec-81	0	0.02	1048.1	1043.314	
Mar-82	1	0.1	1048.8	1043.37	
May-82	0.1		1048.17		
Aug-82	2.7		1049.99		
Apr-83	2		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		1050.2		
Sep-89	2.8		1050.06		
Jan-90	0.8		1048.66		
Oct-90	4		1050.9		
Sep-91	3		1050.2		
Sep-92	2.4		1049.78		
May-94	2.3	10.4	1049.71	1050.58	
Sep-94	0.7	8	1048.59	1048.9	
Sep-95	1	9	1048.8	1049.6	
Sep-96	2.35	9.1	1049.745	1049.67	
08-May-97	0.6	7.0	1048.52	1048.2	
06-Nov-97	1.17	3.35	1048.919	1045.645	
26-May-98	1.90	9.20	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	0.30	7.42	1048.31	1048.494	
11-Sep-99	0.50	8.5	1048.45	1049.25	
14-Jun-00	0.50	9.9	1048.45	1050.23	
09-Sep-00	0.60		1048.52		No return in deep piezo
19-Sep-00	0.50	10.95	1048.45	1050.965	
06-Jun-01	0.60	5.9	1048.52	1047.43	
19-Sep-01	0.00	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	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	0.04	8.6	1048.128	1049.32	
16-Sep-04	0.5	7.8	1048.45	1048.76	
31-May-05	1.2	10	1048.94	1050.3	
14-Sep-05	0.6	8	1048.52	1048.9	
14-Jun-06	0.7	9	1048.59	1049.6	
2-Oct-06	0.6	7.7	1048.52	1048.69	

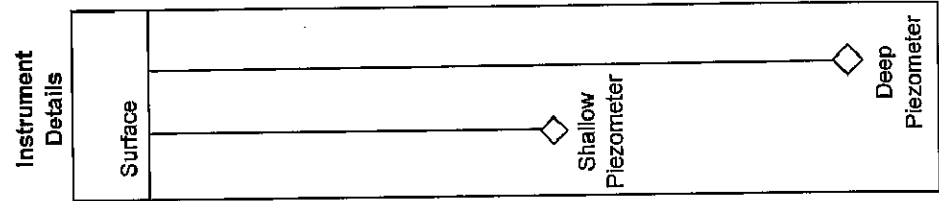
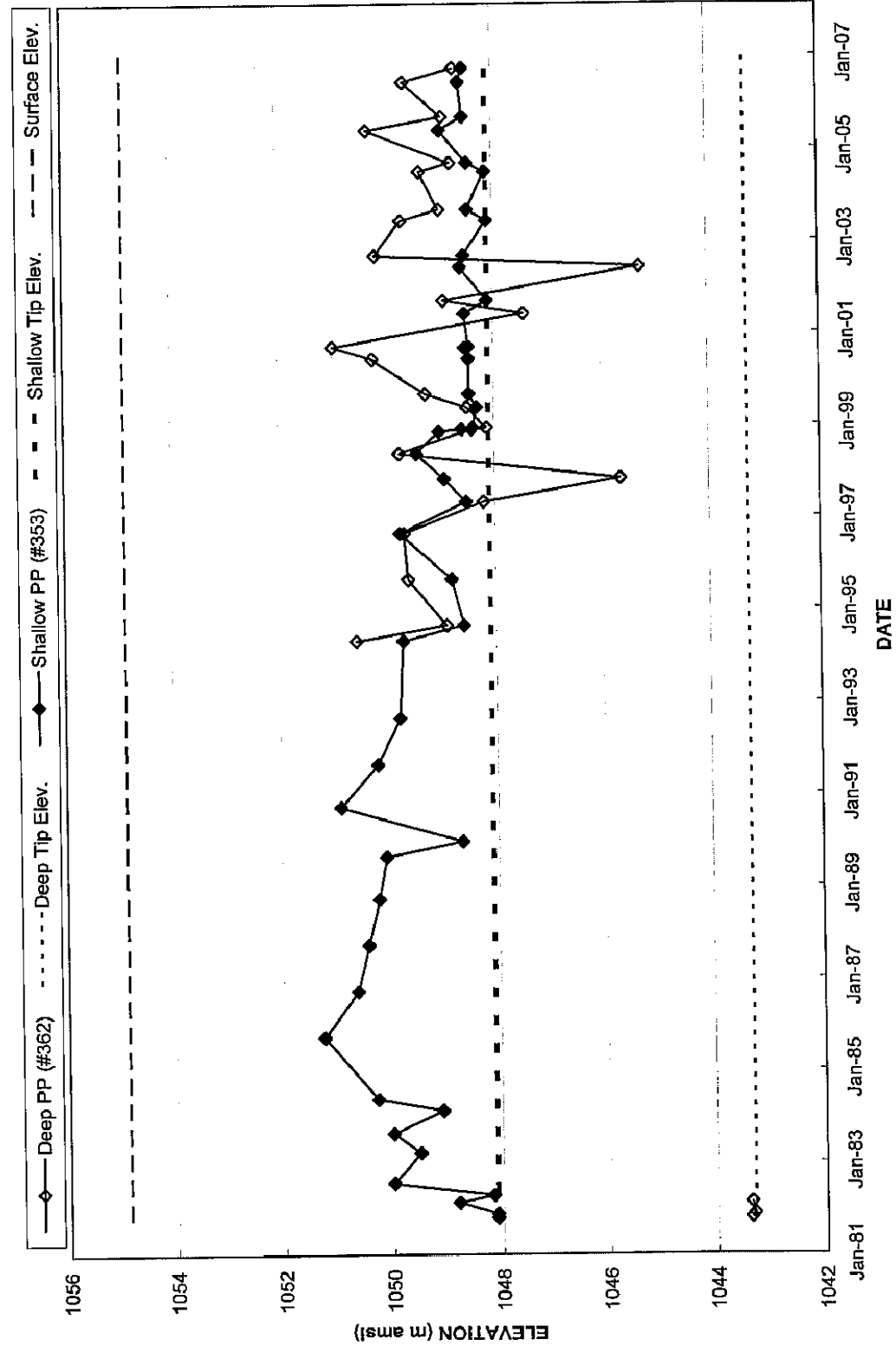
**DIVERSION CANAL DIKE**  
**Piezometric Monitoring**  
**CD-15 Pneumatic Piezometer (Shallow Tip)**



**DIVERSION CANAL DIKE**  
**Piezometric Monitoring**  
**CD-15 Pneumatic Piezometer (Deep Tip)**

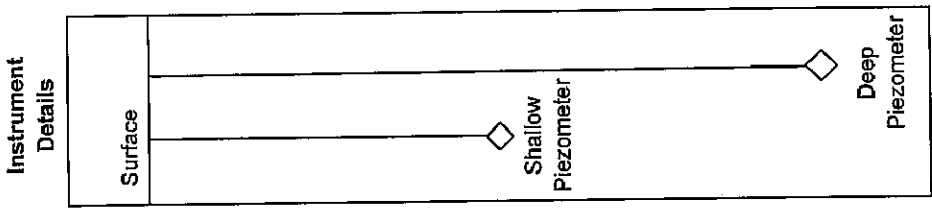
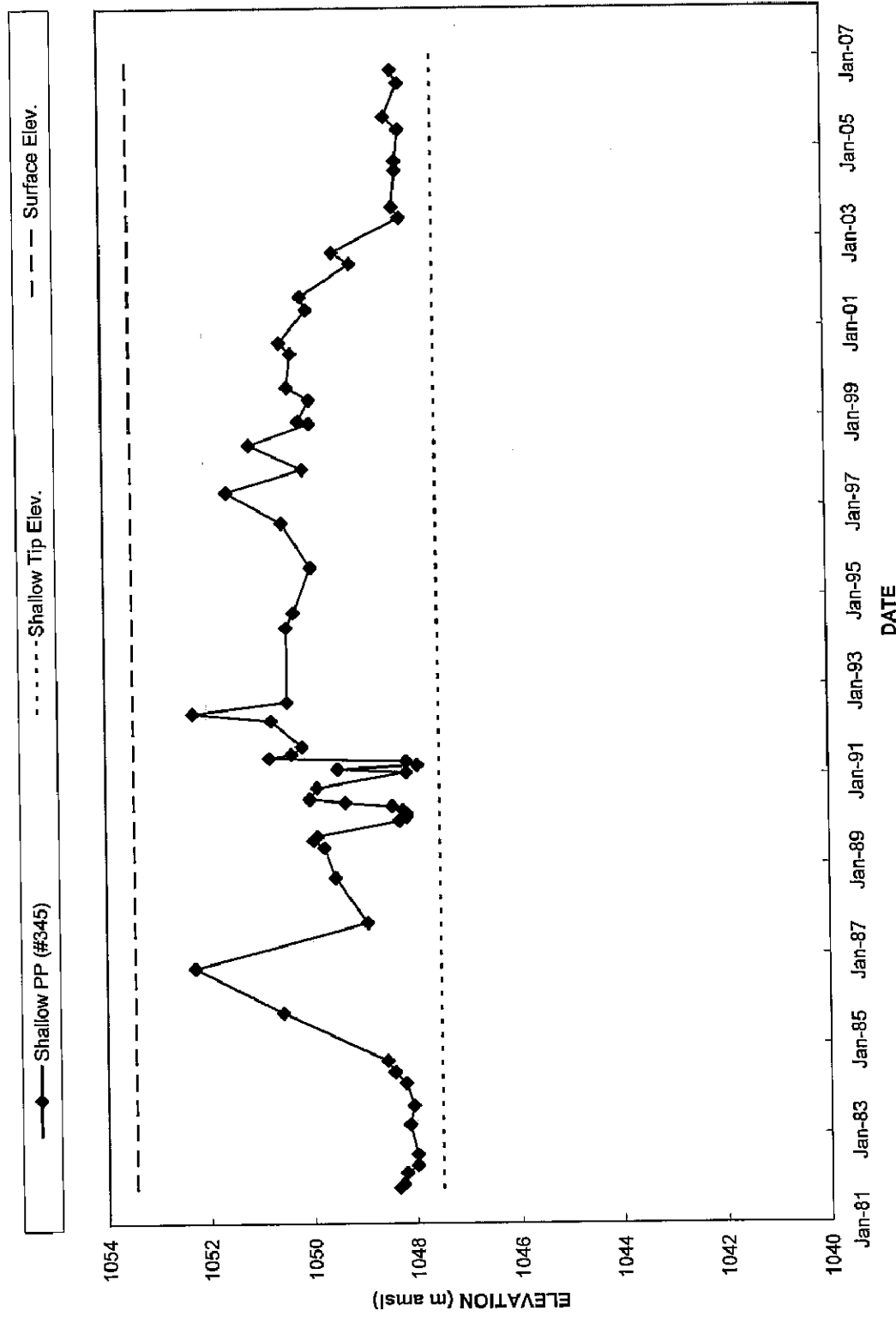


### DIVERSION CANAL DIKE Piezometric Monitoring CD-15 Pneumatic Piezometer (Both Tips)

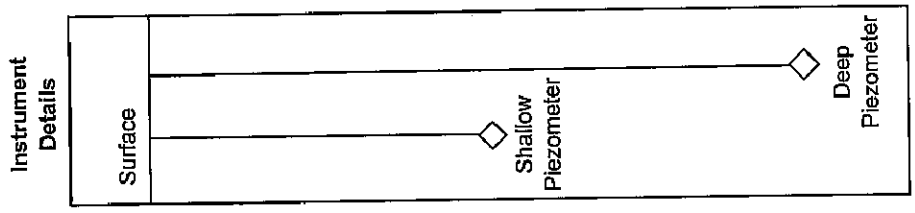
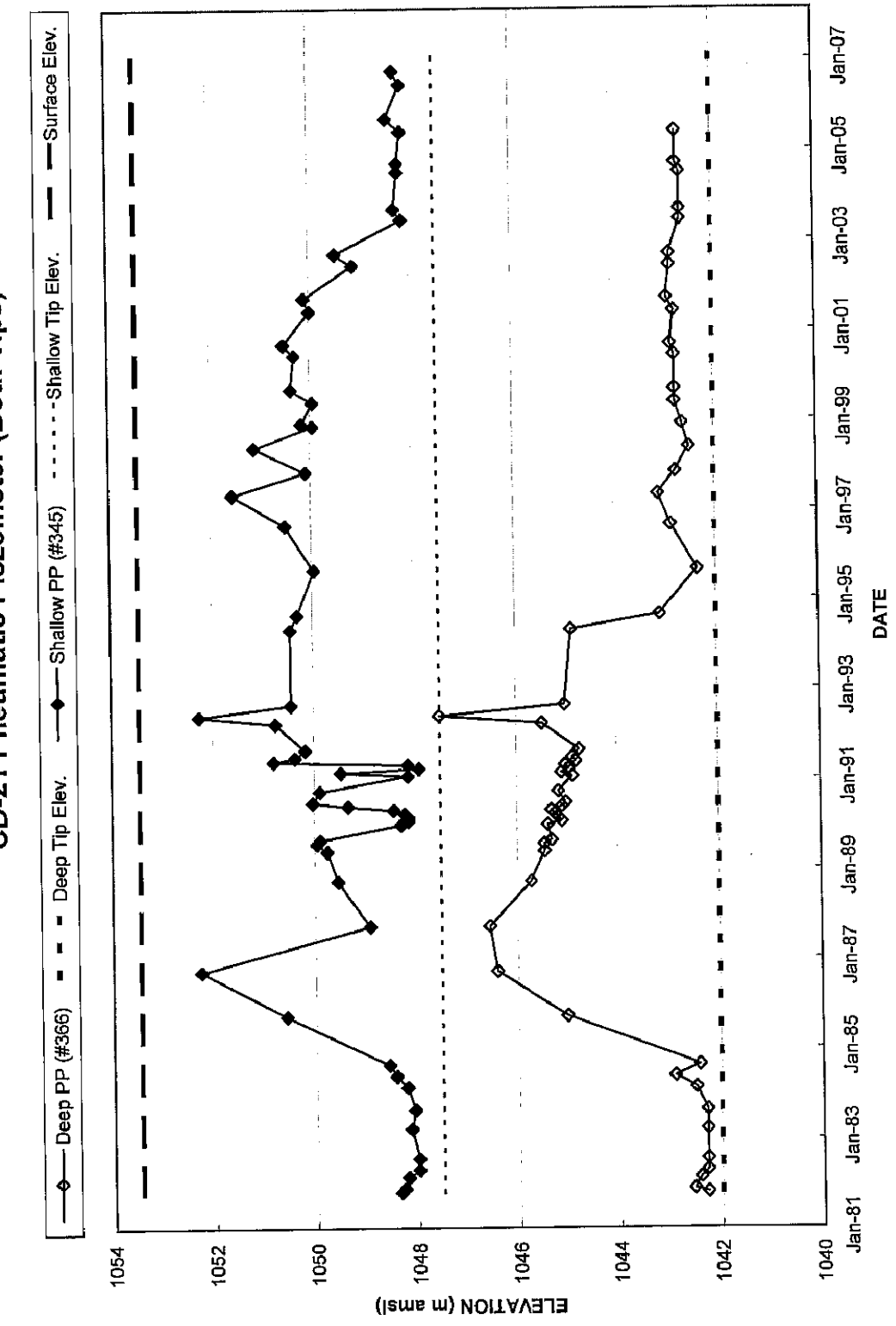


CD-21		Location:	Canal Dike St.2+100	Ground Elevation (m amsl):	1053.447
		Coordinates:	1455.9N, 509.5E 8V580724 6913495	Shallow Tip Elevation (m amsl):	1047.50
Surface Protector:	yes	Date Installed:	1981	Deep Tip Elevation (m amsl):	1042.00
Date	Reading (psi)		Piezometric Elevation (m amsl)		Comments
	Shallow PP (#345)	Deep PP (#366)	Shallow (#345)	Deep (#366)	
Nov-81	1.2	0.4	1048.34	1042.28	
Dec-81	1.1	0.78	1048.27	1042.546	
Mar-82	1	0.6	1048.2	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	0.7	1048.2	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	6.5	1048.9	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	4.6	1048.2	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	1050.79	1044.8	
Jul-91	4.1	4.1	1050.37	1044.87	
Sep-91	3.8	3.9	1050.16	1044.73	
Apr-92	4.65	4.95	1050.755	1045.465	
Jun-92	6.8	7.87	1052.26	1047.509	
Sep-92	4.2	4.3	1050.44	1045.01	
May-94	4.2	4.1	1050.44	1044.87	
Sep-94	4	1.6	1050.3	1043.12	
Sep-95	3.5	0.5	1049.95	1042.35	
Sep-96	4.3	1.25	1050.51	1042.875	
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	5.16	0.70	1051.112	1042.49	
15-Nov-98	3.50	n.r.	1049.95		
04-Dec-98	3.80	0.90	1050.16	1042.63	
28-May-99	3.49	1.10	1049.943	1042.77	
11-Sep-99	4.10	1.10	1050.37	1042.77	
14-Jun-00	4.00	1.10	1050.3	1042.77	
09-Sep-00	4.30	1.20	1050.51	1042.84	
06-Jun-01	3.55	1.10	1049.985	1042.77	
19-Sep-01	3.70	1.30	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	0.9	1048.2	1042.63	#366 Bubbles stopped at 1.7Psi
16-Sep-04	1	1	1048.2	1042.7	
31-May-05	0.9	1	1048.13	1042.7	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

**DIVERSION CANAL DIKE**  
**Piezometric Monitoring**  
**CD-21 Pneumatic Piezometer (Shallow Tip)**

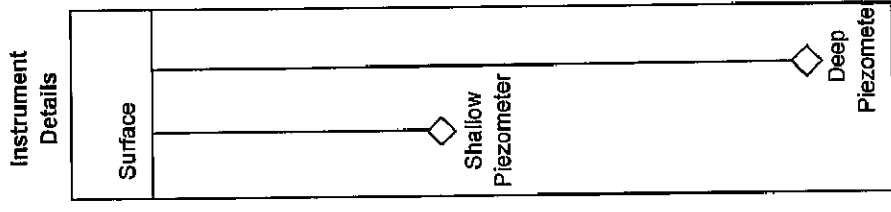
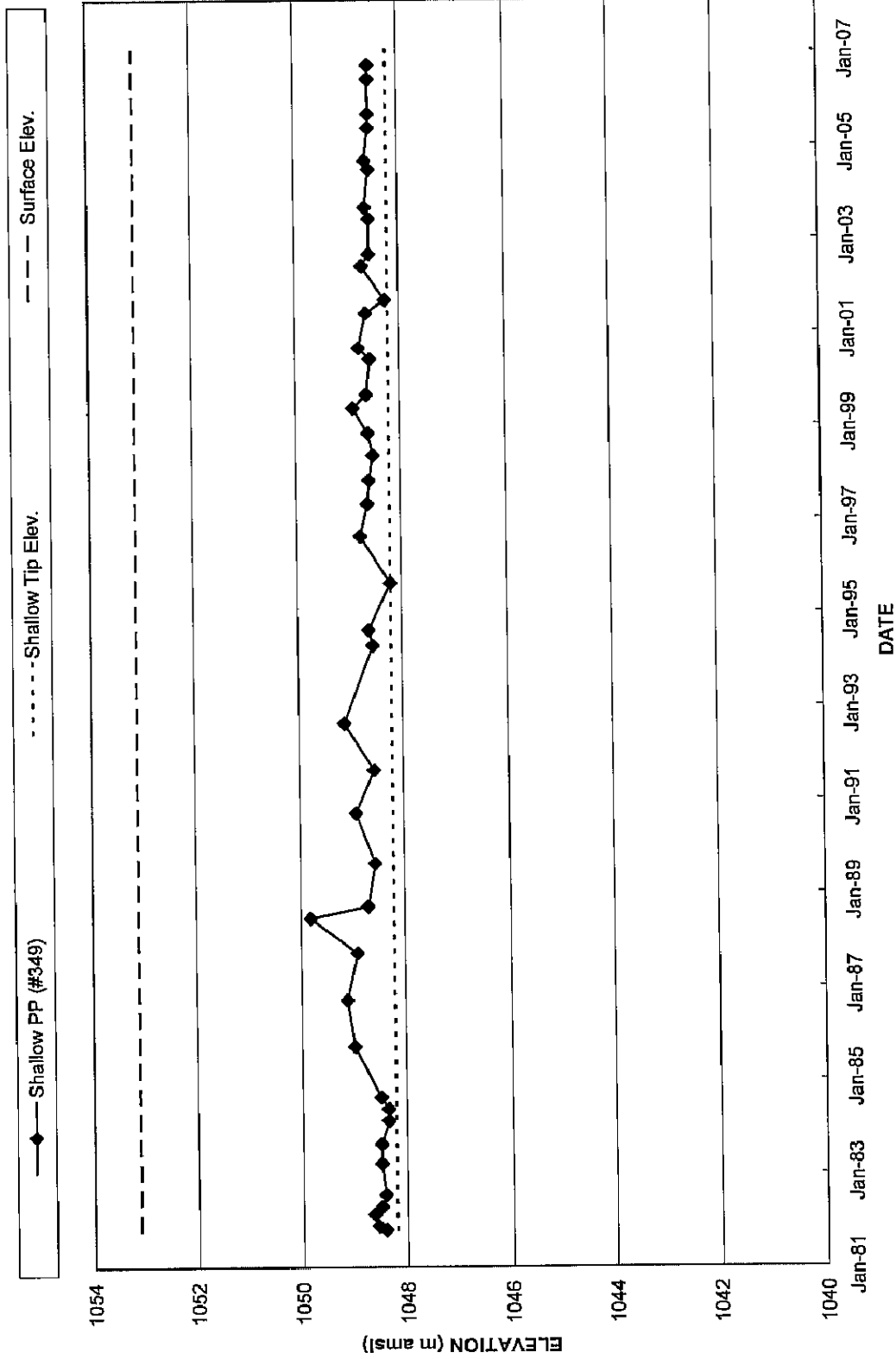


### DIVERSION CANAL DIKE Piezometric Monitoring CD-21 Pneumatic Piezometer (Both Tips)

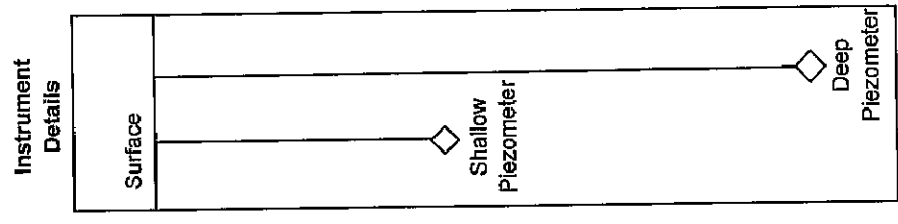
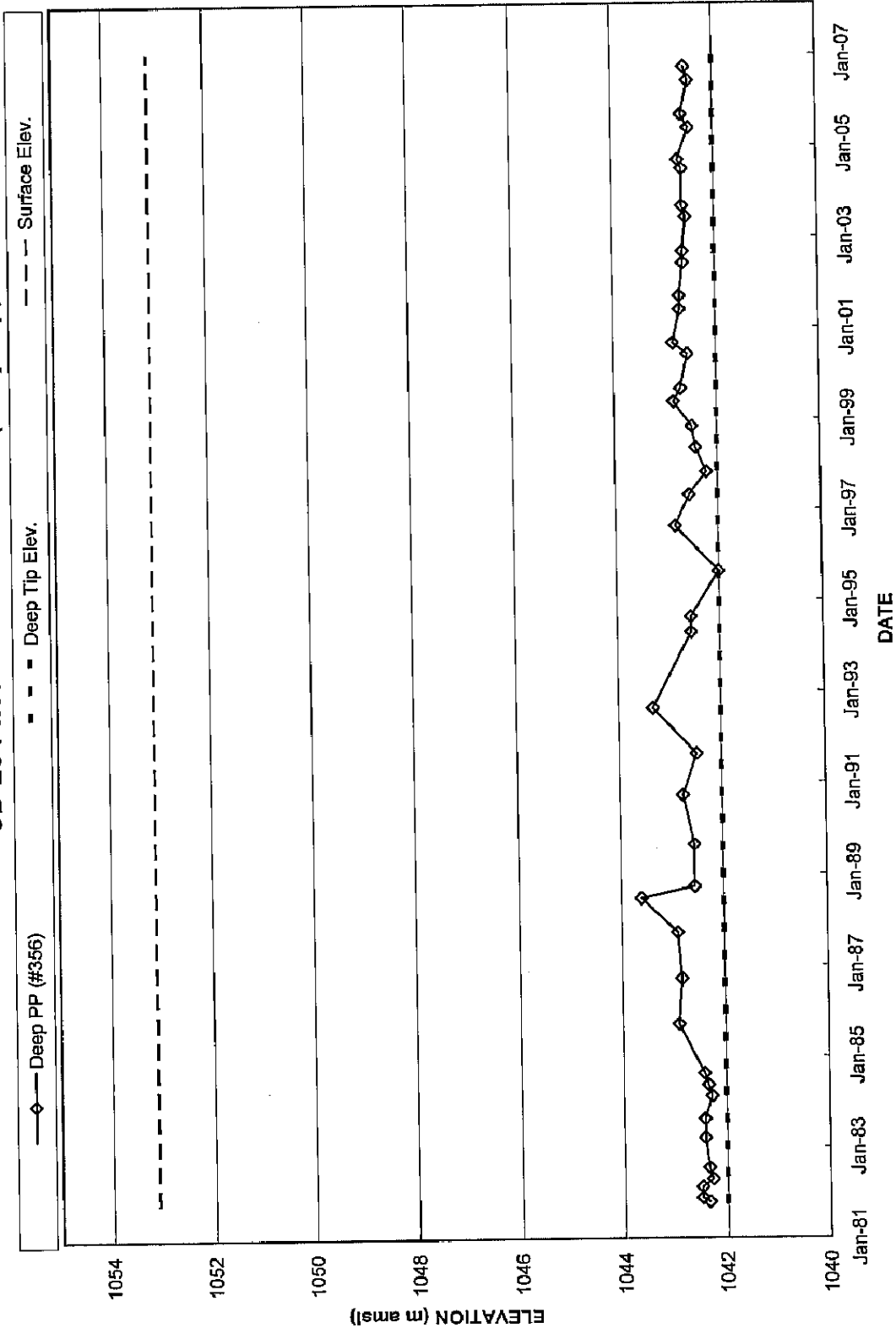


CD-26		Location:	Canal Dike St.2+600	Ground Elevation (m amsl):	1053.10
		Coordinates:	1674.7N, 71.7E 8V580284 6913710	Shallow Tip Elevation (m amsl):	1048.20
Surface Protector:	yes <th>Date Installed:</th> <td>1981</td> <th>Deep Tip Elevation (m amsl):</th> <td>1042.00</td>	Date Installed:	1981	Deep 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	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	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	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	0.55	0.30	1048.59	1042.21	
26-May-98	0.44	0.60	1048.51	1042.42	
12-Nov-98	0.57	0.70	1048.60	1042.49	
28-May-99	0.98	1.20	1048.89	1042.84	
11-Sep-99	0.60	1.0	1048.62	1042.70	
14-Jun-00	0.50	0.8	1048.55	1042.56	
09-Sep-00	0.80	1.2	1048.76	1042.84	
06-Jun-01	0.60	1.0	1048.62	1042.70	
19-Sep-01	0.07	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 piezomete
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	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

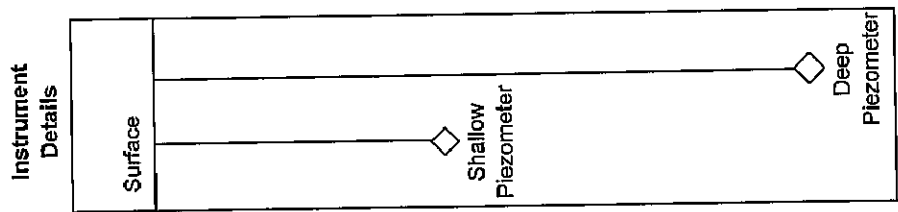
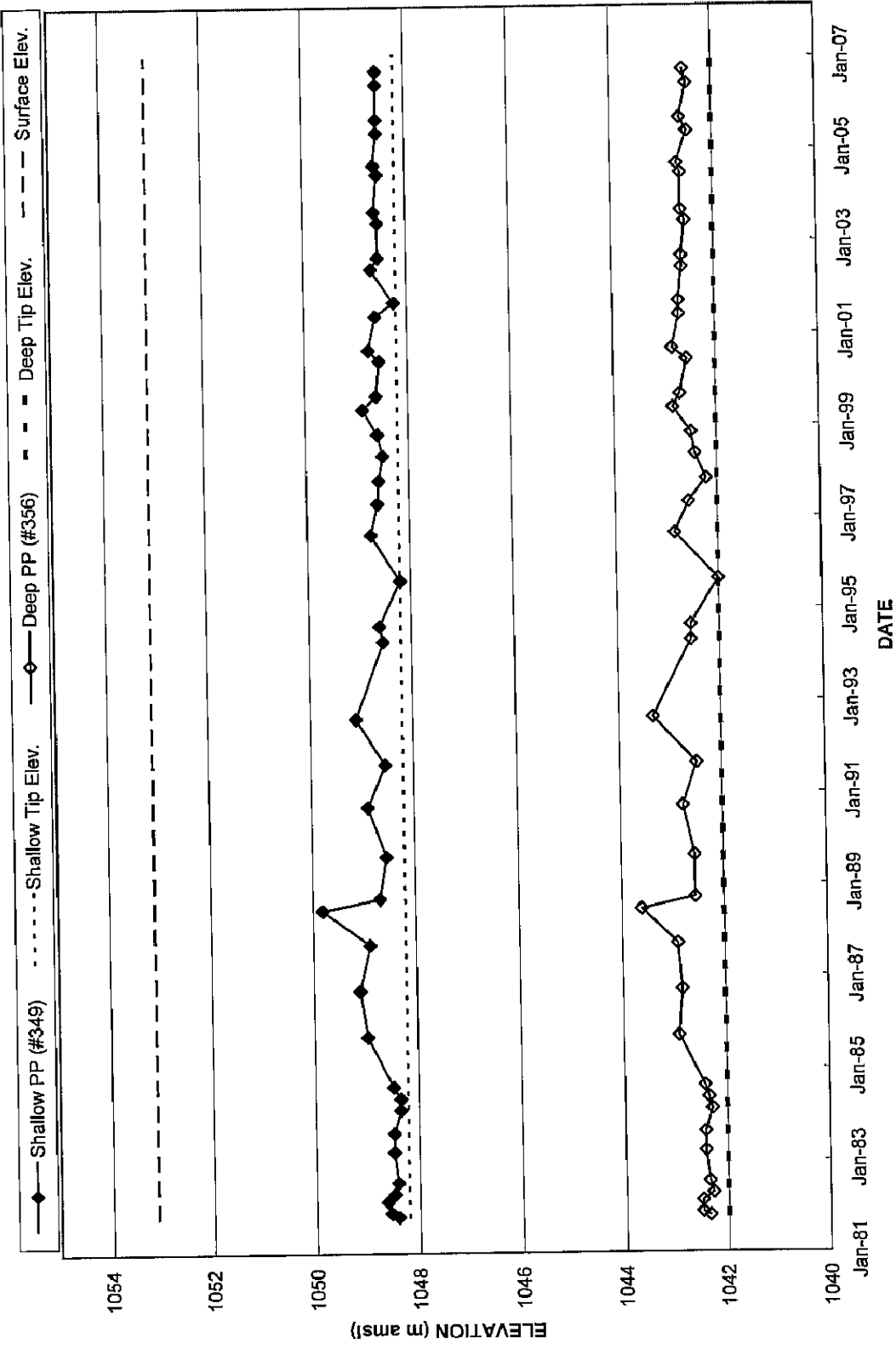
## DIVERSION CANAL DIKE Piezometric Monitoring CD-26 Pneumatic Piezometer (Shallow Tip)



### DIVERSION CANAL DIKE Piezometric Monitoring CD-26 Pneumatic Piezometer (Deep Tip)



### DIVERSION CANAL DIKE Piezometric Monitoring CD-26 Pneumatic Piezometers (Both Tips)



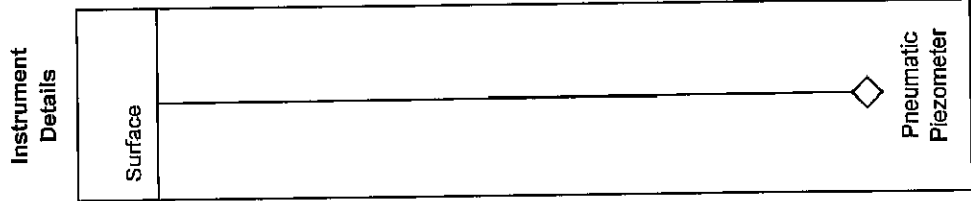
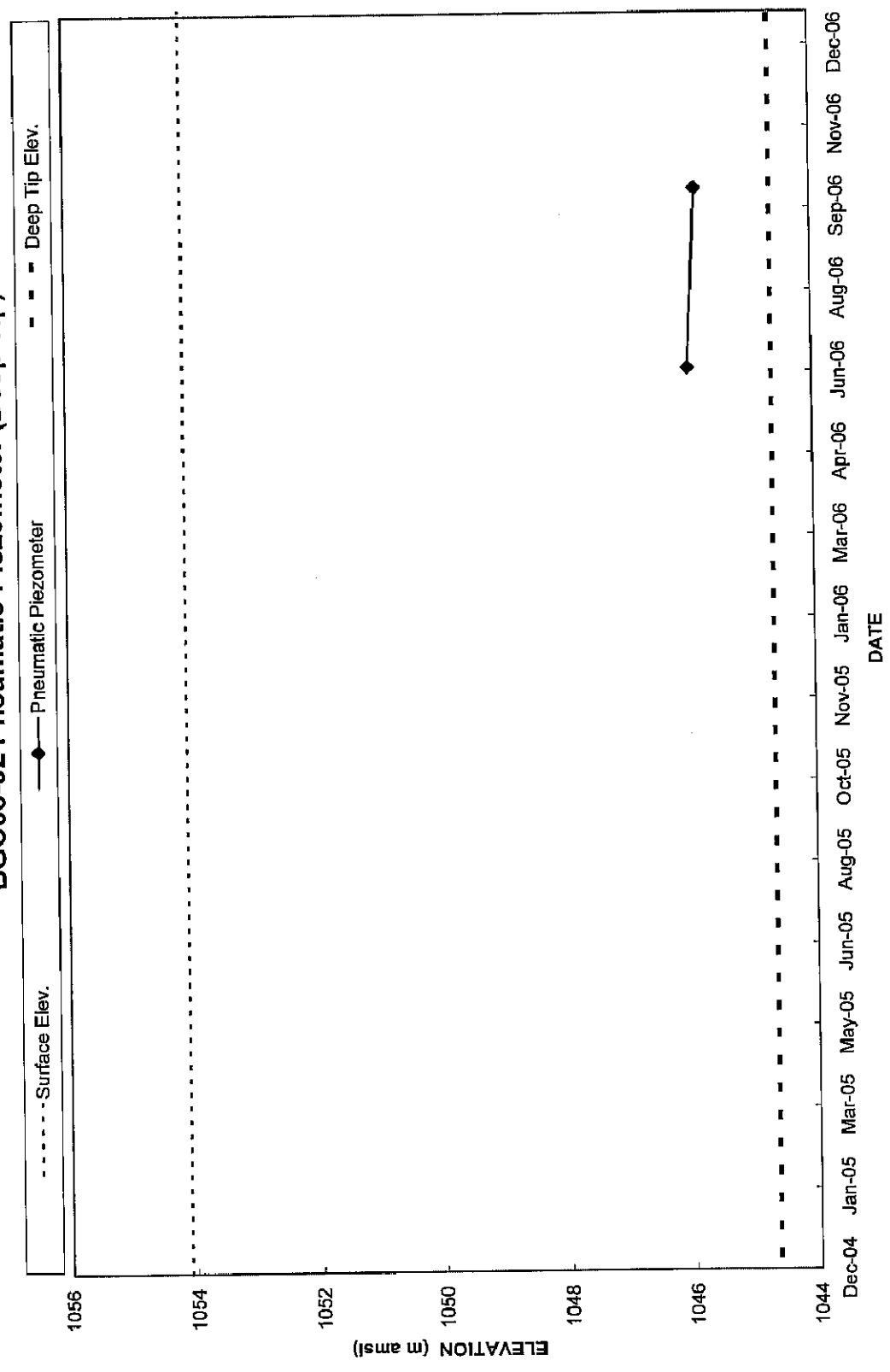
**Faro Mine Instrumentation  
 Canal Dike**

<b>BGC05-02</b>		<b>Location:</b>	Canal Dike St.1+900		
		<b>Coordinates:</b>	8V580881 6913412	<b>Ground Elevation (m amsl):</b>	1054.10
<b>Surface Protector:</b>	Yes	<b>Date Installed:</b>	2005	<b>Tip Elevation (m amsl):</b>	1044.65
<b>Date</b>		<b>Reading (psi) (#030137)</b>		<b>Piezometric Elevation (m amsl)</b>	<b>Comments</b>
14-Jun-06		1.9		1045.98	
2-Oct-06		1.7		1045.84	

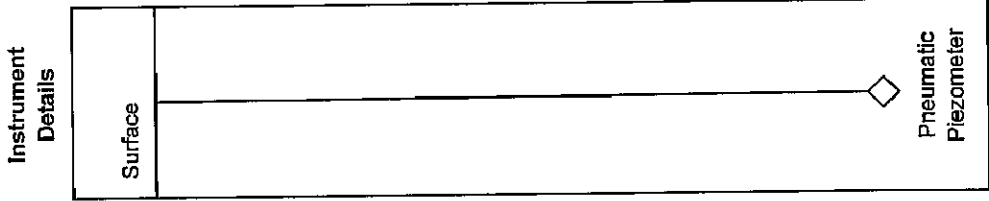
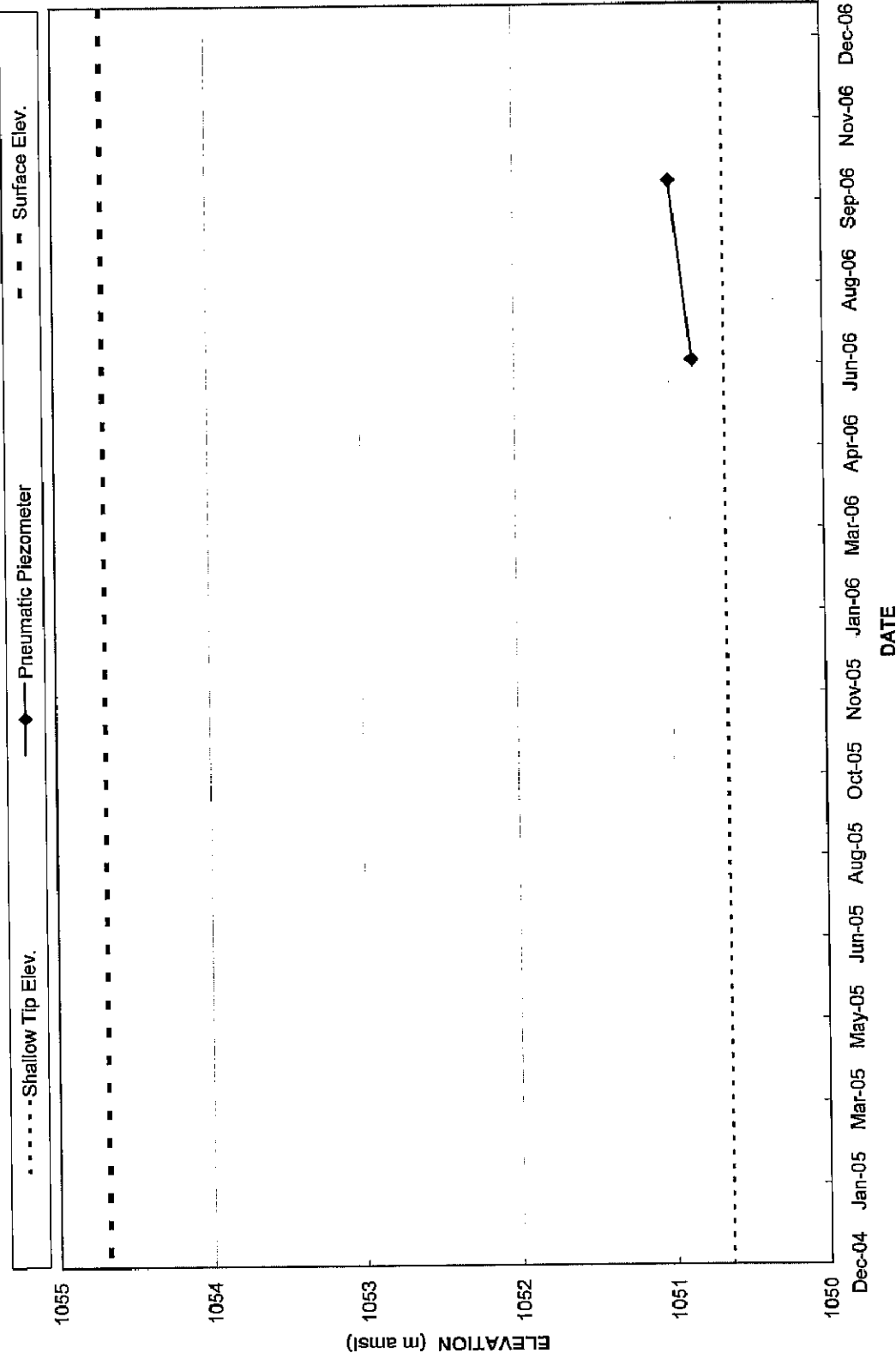
**Faro Mine Instrumentation  
 Canal Dike**

<b>BGC05-03</b>		<b>Location:</b>	Canal Dike St.1+900		
		<b>Coordinates:</b>	8V580868 6913418	<b>Ground Elevation (m amsl):</b>	1054.68
<b>Surface Protector:</b>	Yes	<b>Date Installed:</b>	2005	<b>Tip Elevation (m amsl):</b>	1050.64
<b>Date</b>		<b>Reading (psi) (#030139)</b>		<b>Piezometric Elevation (m amsl)</b>	<b>Comments</b>
14-Jun-06		0.3		1050.85	
2-Oct-06		0.5		1050.99	

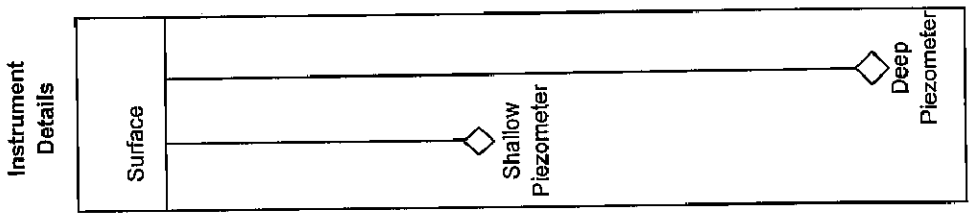
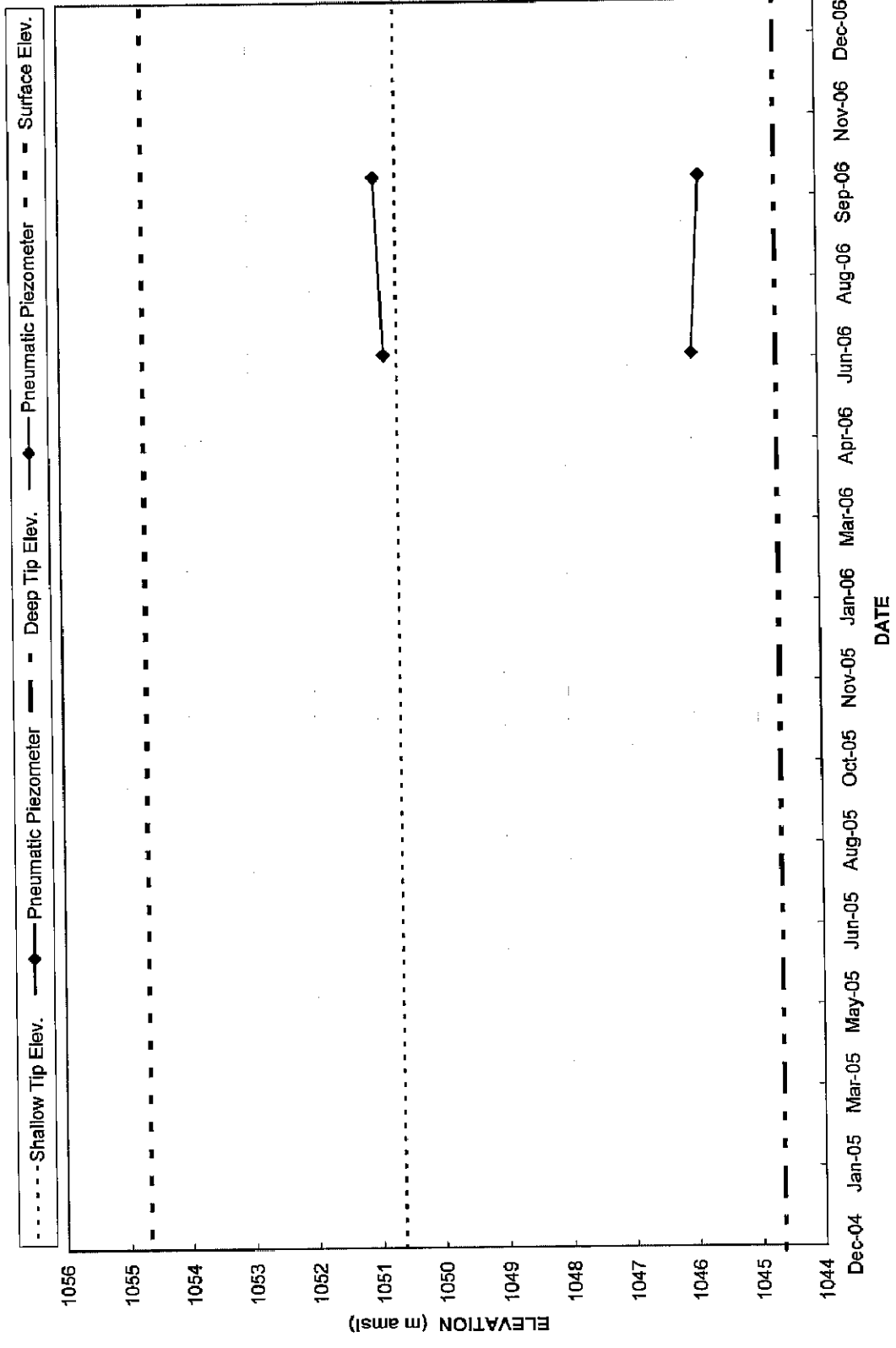
**DIVERSION CANAL DIKE**  
**Piezometric Monitoring**  
**BGC05-02 Pneumatic Piezometer (Deep Tip)**



**DIVERSION CANAL DIKE**  
**Piezometric Monitoring**  
**BGC05-03 Pneumatic Piezometer (Shallow Tip)**

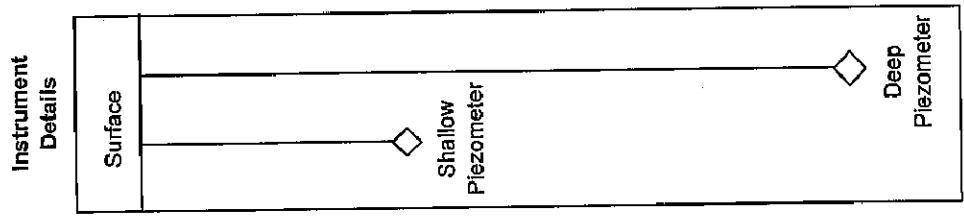
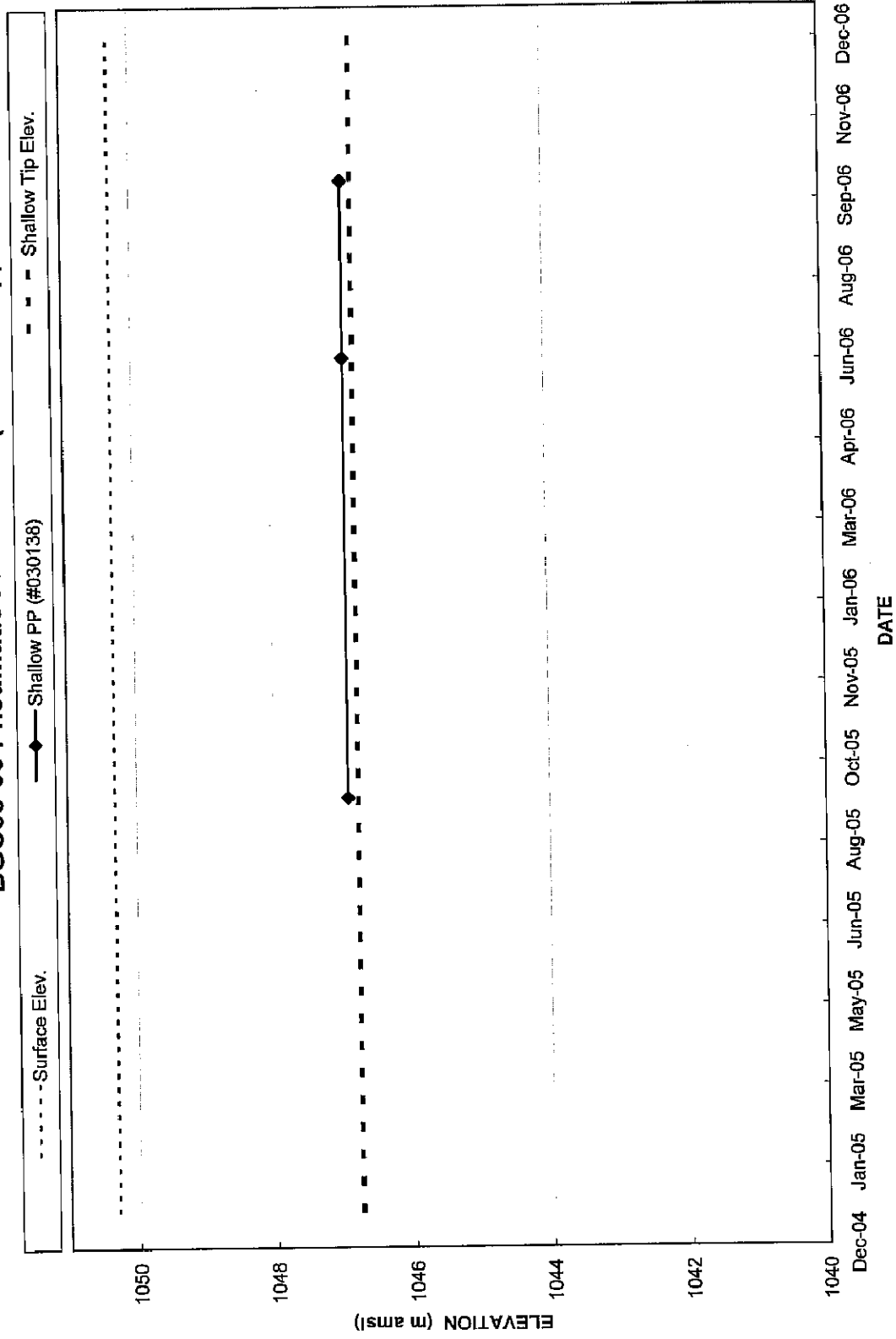


## DIVERSION CANAL DIKE Piezometric Monitoring BGC05-02/-03 Pneumatic Piezometer

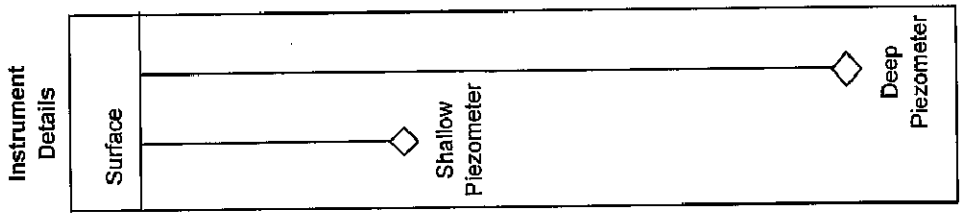
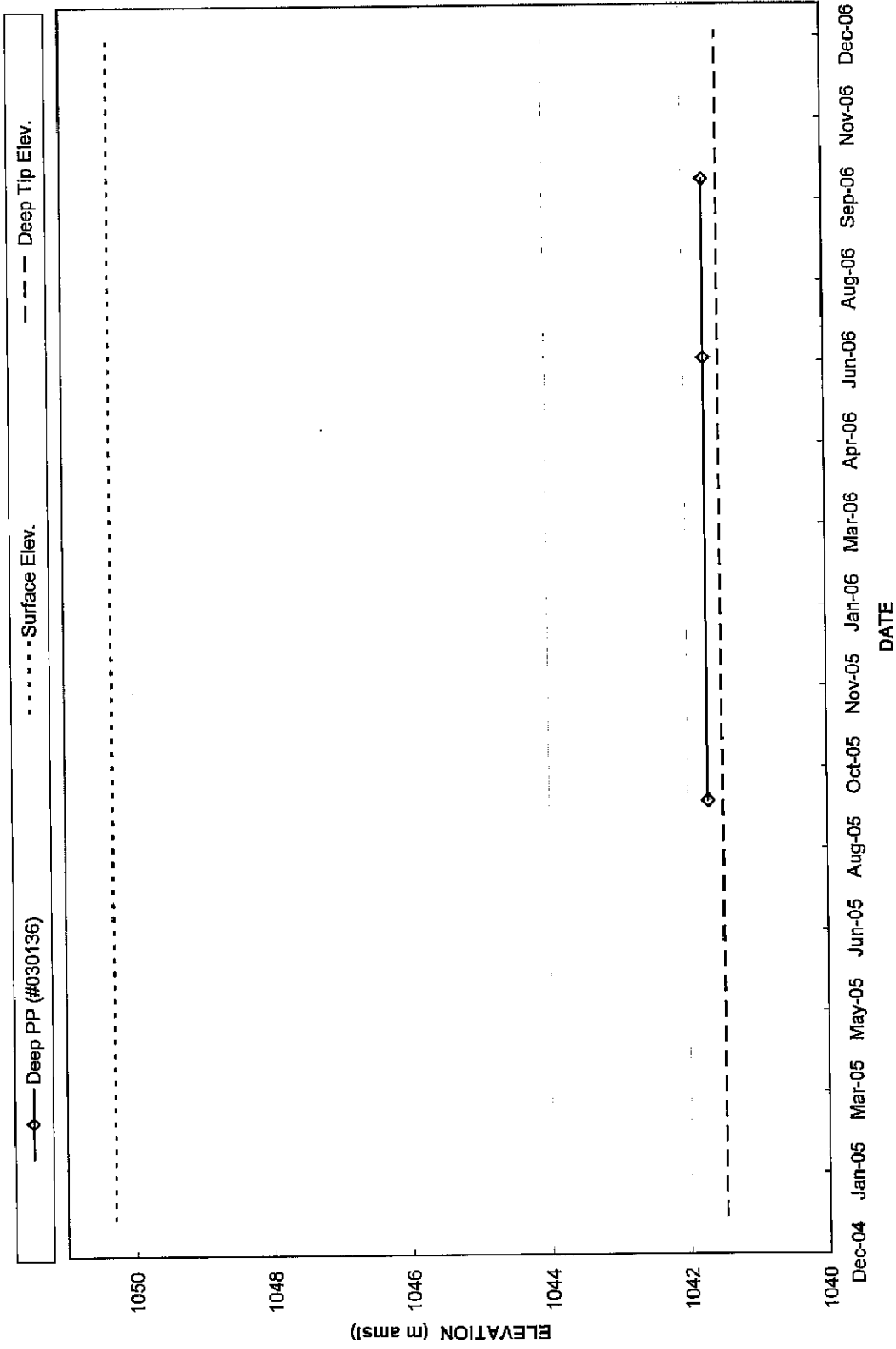


<b>BGC05-06</b>		<b>Location:</b>	Canal Dike St. 2+160 (approx)	<b>Ground Elevation (m amsl):</b>	1050.31
		<b>Coordinates:</b>	8V580715 6913517	<b>Shallow Tip Elevation (m amsl):</b>	1046.78
<b>Surface Protector:</b>	Yes	<b>Date Installed:</b>	2005	<b>Deep Tip Elevation (m amsl):</b>	1041.50
<b>Date</b>	<b>Reading (psi)</b>		<b>Piezometric Elevation (m amsl)</b>		<b>Comments</b>
	<b>Shallow PP (#030138)</b>	<b>Deep PP (#030136)</b>	<b>Shallow (#030138)</b>	<b>Deep (#030136)</b>	
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	

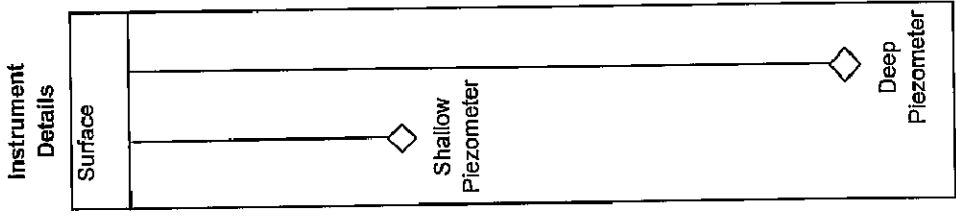
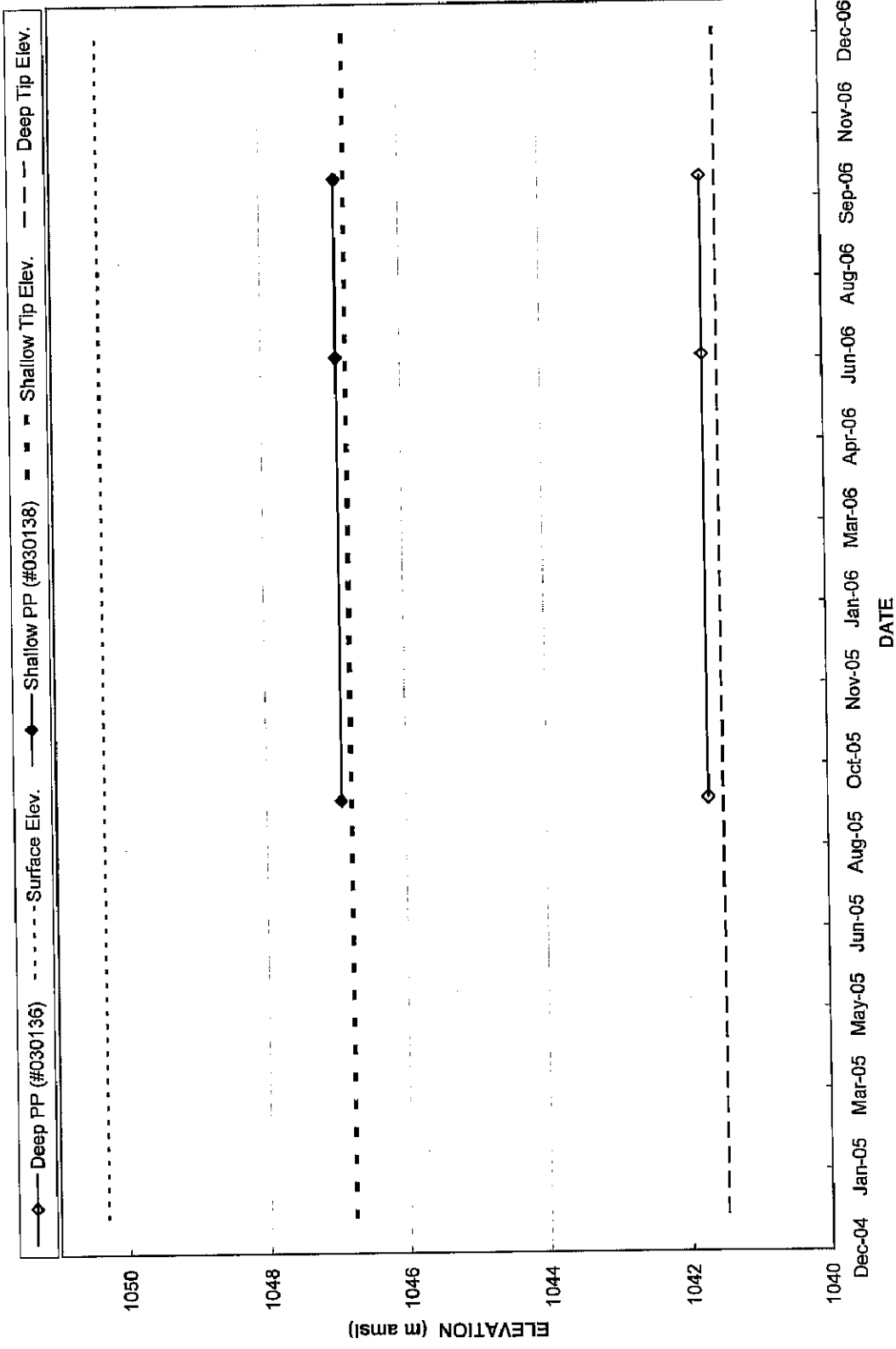
### DIVERSION CANAL DIKE Piezometric Monitoring BGC05-06 Pneumatic Piezometer (Shallow Tip)



### DIVERSION CANAL DIKE Piezometric Monitoring BGC05-06 Pneumatic Piezometer (Deep Tip)



### DIVERSION CANAL DIKE Piezometric Monitoring BGC05-06 Pneumatic Piezometer (Both Tips)



## THERMISTORS

Faro Mine Instrumentation  
Diversion Canal Dike

Depth Connection	Actual Depth Siting (m)	Location: ST 04-80	Canal Dike	Thermistor String #23	Date Installed	1981	Thermistor Type	YSI 44007	Ice-Bath Calibration	Coordinates: 1519.7 ME 8913048		1008.7 mN 8V581754	1519.7 ME	Surface Protector	yes	
										Resistivity (kOhms)	Temperature (C)					Resistivity (kOhms)
0.1																
1.0	11.16	09-Dec-81	13.83	12.20	11.98	11.86	11.86	11.86	11.86	11.86	11.86	11.86	11.86	11.86	11.86	11.86
2.0	10.90	13-May-84	16.31	10.90	11.74	12.25	11.76	12.94	12.94	12.94	12.94	12.94	12.94	12.94	12.94	12.94
3.0	10.90	13-May-84	16.31	10.90	11.74	12.25	11.76	12.94	12.94	12.94	12.94	12.94	12.94	12.94	12.94	12.94
4.0	10.90	13-May-84	16.31	10.90	11.74	12.25	11.76	12.94	12.94	12.94	12.94	12.94	12.94	12.94	12.94	12.94
5.0	10.90	13-May-84	16.31	10.90	11.74	12.25	11.76	12.94	12.94	12.94	12.94	12.94	12.94	12.94	12.94	12.94
6.0	10.90	13-May-84	16.31	10.90	11.74	12.25	11.76	12.94	12.94	12.94	12.94	12.94	12.94	12.94	12.94	12.94
7.0	10.90	13-May-84	16.31	10.90	11.74	12.25	11.76	12.94	12.94	12.94	12.94	12.94	12.94	12.94	12.94	12.94
8.0	10.90	13-May-84	16.31	10.90	11.74	12.25	11.76	12.94	12.94	12.94	12.94	12.94	12.94	12.94	12.94	12.94
9.0	10.90	13-May-84	16.31	10.90	11.74	12.25	11.76	12.94	12.94	12.94	12.94	12.94	12.94	12.94	12.94	12.94
10.0	10.90	13-May-84	16.31	10.90	11.74	12.25	11.76	12.94	12.94	12.94	12.94	12.94	12.94	12.94	12.94	12.94

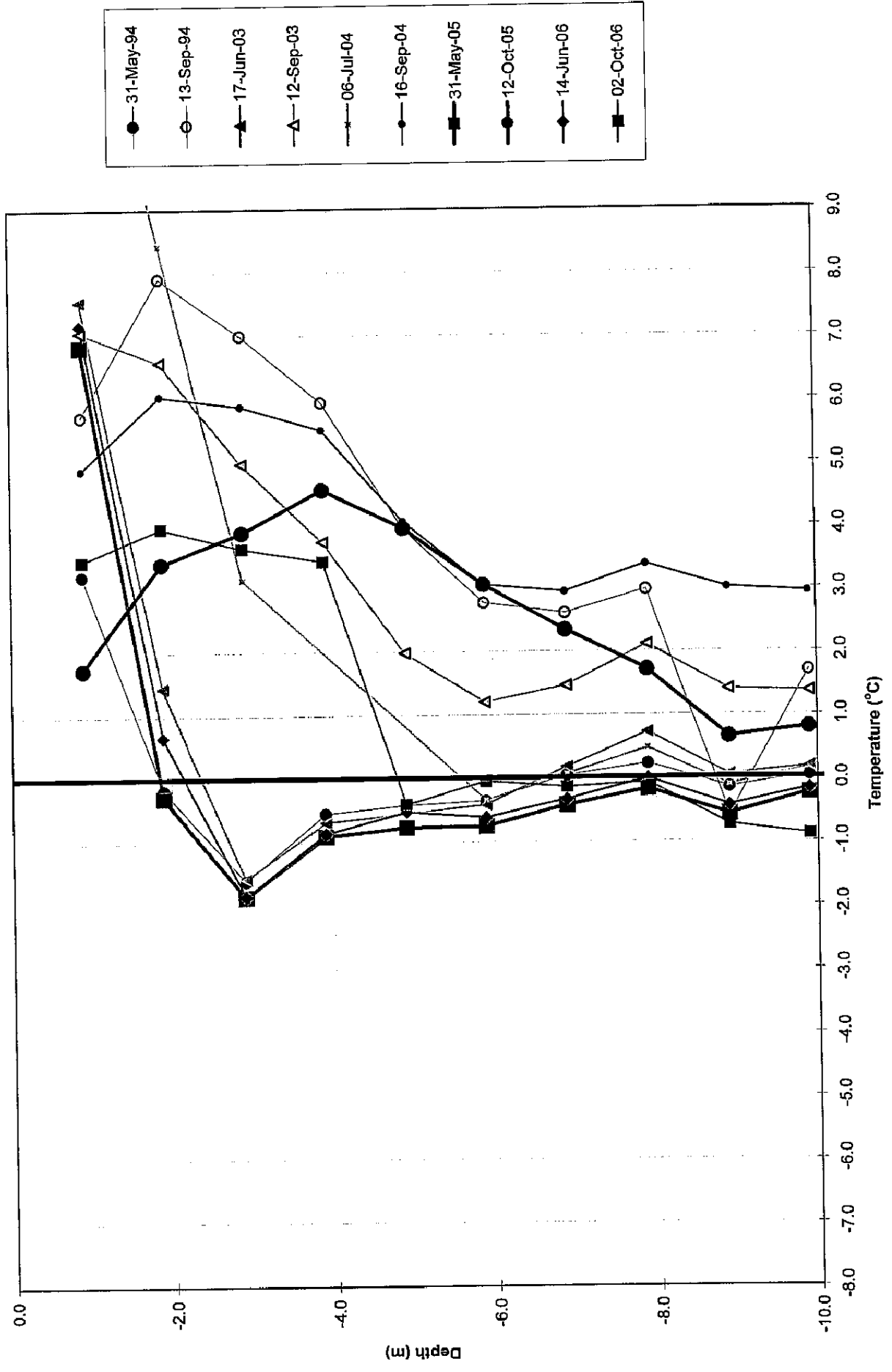
\*The initial reading (Nov 15/03) is excluded from the data set because post-installation equilibrium may not have been complete.

Depth on Siting (m)	Temperature (C)	Resistivity (kOhms)	Temperature (C)	Resistivity (kOhms)	Temperature (C)	Resistivity (kOhms)	Temperature (C)	Resistivity (kOhms)	Temperature (C)	Resistivity (kOhms)	Temperature (C)	Resistivity (kOhms)	Temperature (C)	Resistivity (kOhms)	Temperature (C)	Resistivity (kOhms)	Temperature (C)	Resistivity (kOhms)	Temperature (C)	
0.1																				
1.0	-2.20	11.16	3.22	5.74	6.11	5.65	6.67	8.72	6.33	5.85	6.33	6.33	6.33	6.33	6.33	6.33	6.33	6.33	6.33	
2.0	-0.90	11.16	-0.16	7.91	6.40	5.17	6.33	6.14	4.69	4.56	4.69	4.69	4.69	4.69	4.69	4.69	4.69	4.69	4.69	
3.0	-2.9	11.16	-0.40	7.00	5.05	3.35	4.43	-1.22	3.22	3.22	3.22	3.22	3.22	3.22	3.22	3.22	3.22	3.22	3.22	
4.0	-3.9	11.16	-0.54	6.55	4.48	1.44	2.51	-0.74	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	
5.0	-4.9	11.16	-0.41	3.95	3.16	-0.24	-0.39	-0.70	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	
6.0	-5.9	11.16	-0.20	2.77	2.75	-0.24	0.36	-0.60	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	
7.0	-6.9	11.16	0.05	2.60	1.61	0.78	1.56	-1.23	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	
8.0	-7.9	11.16	0.09	0.33	0.58	1.01	1.36	-0.01	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	
9.0	-8.9	11.16	-0.20	0.84	1.12	0.76	1.18	0.44	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	
10.0	-9.9	11.16	0.00	0.04	1.69	0.76	1.18	0.44	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	

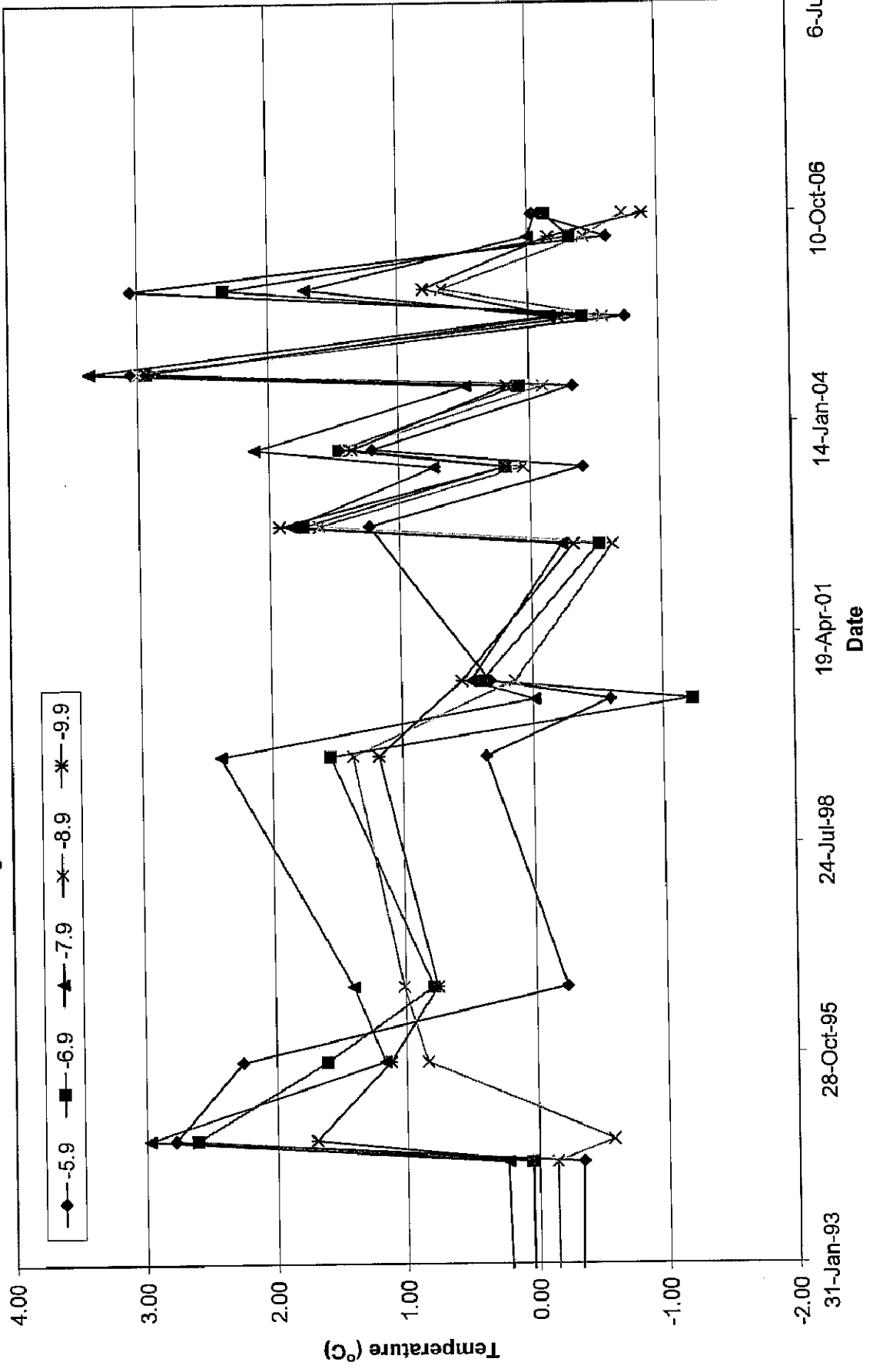
Resistivity (kOhms)	Temperature (C)	Resistivity (kOhms)	Temperature (C)	Resistivity (kOhms)	Temperature (C)	Resistivity (kOhms)	Temperature (C)	Resistivity (kOhms)	Temperature (C)	Resistivity (kOhms)	Temperature (C)	Resistivity (kOhms)	Temperature (C)	Resistivity (kOhms)	Temperature (C)	Resistivity (kOhms)	Temperature (C)	Resistivity (kOhms)	Temperature (C)
12-Sep-02	11.85	11.16	11.43	8.82	12.72	11.56	14.90	11.87	13.67	13.67	13.67	13.67	13.67	13.67	13.67	13.67	13.67	13.67	13.67
17-Jun-03	15.03	11.16	10.63	16.41	13.62	15.63	15.63	15.63	15.63	15.63	15.63	15.63	15.63	15.63	15.63	15.63	15.63	15.63	15.63
12-Sep-03	17.52	12.58	13.79	12.03	17.78	13.28	17.77	13.45	13.45	13.45	13.45	13.45	13.45	13.45	13.45	13.45	13.45	13.45	13.45
16-Sep-04	16.79	13.42	14.61	12.29	10.98	12.88	16.94	13.63	13.63	13.63	13.63	13.63	13.63	13.63	13.63	13.63	13.63	13.63	13.63
15.16	16.48	15.18	16.42	13.83	16.77	13.83	16.65	16.17	16.17	16.17	16.17	16.17	16.17	16.17	16.17	16.17	16.17	16.17	16.17
14.82	16.04	14.53	16.13	13.85	16.54	14.38	16.46	16.3	16.3	16.3	16.3	16.3	16.3	16.3	16.3	16.3	16.3	16.3	16.3
14.75	15.60	14.55	15.80	13.65	14.84	14.84	16.19	16.24	16.24	16.24	16.24	16.24	16.24	16.24	16.24	16.24	16.24	16.24	16.24
14.81	16.15	15.08	16.28	13.91	16.67	15.66	16.55	16.81	16.81	16.81	16.81	16.81	16.81	16.81	16.81	16.81	16.81	16.81	16.81
14.70	16.06	15.12	16.07	13.87	16.40	15.56	16.34	16.96	16.96	16.96	16.96	16.96	16.96	16.96	16.96	16.96	16.96	16.96	16.96

Temperature (C)	Resistivity (kOhms)	Temperature (C)	Resistivity (kOhms)	Temperature (C)	Resistivity (kOhms)	Temperature (C)	Resistivity (kOhms)	Temperature (C)	Resistivity (kOhms)	Temperature (C)	Resistivity (kOhms)	Temperature (C)	Resistivity (kOhms)	Temperature (C)	Resistivity (kOhms)	Temperature (C)	Resistivity (kOhms)	Temperature (C)	Resistivity (kOhms)
12-Sep-02	6.33	7.05	13.67	4.89	6.83	1.73	7.17	3.45	3.45	3.45	3.45	3.45	3.45	3.45	3.45	3.45	3.45	3.45	3.45
6.07	1.44	6.58	8.43	6.05	-0.28	3.40	0.67	3.97	3.97	3.97	3.97	3.97	3.97	3.97	3.97	3.97	3.97	3.97	3.97
4.77	-1.57	4.99	3.14	5.89	-1.85	3.90	-1.84	3.64	3.64	3.64	3.64	3.64	3.64	3.64	3.64	3.64	3.64	3.64	3.64
2.94	0.68	3.75	3.14	5.82	-0.90	4.57	-0.85	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44
1.23	-0.41	1.21	-0.34	3.06	-0.75	3.06	-0.82	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
1.74	0.73	2.11	0.48	2.94	-0.42	2.34	-0.32	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04
1.83	0.73	2.11	0.48	2.94	-0.42	2.34	-0.32	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04
1.62	0.05	1.40	-0.11	3.00	-0.57	1.71	0.00	-0.06	-0.06	-0.06	-0.06	-0.06	-0.06	-0.06	-0.06	-0.06	-0.06	-0.06	-0.06
1.32	0.18	1.36	0.17	2.93	-0.23	0.80	-0.16	-0.89	-0.89	-0.89	-0.89	-0.89	-0.89	-0.89	-0.89	-0.89	-0.89	-0.89	-0.89

### DIVERSION CANAL DIKE Geothermal Monitoring CD-10



**Diversion Canal Dike  
Geothermal Monitoring  
Long Term Monitoring for Nodes in CD-10**



Faro Mine Instrumentation  
Diversion Canal Dike

CD-15	Location: Canal Dyke St. 1-530		Elevation (m amsl):		Coordinates:		1233.7 mN 8V581226 1028.7 mE 5913287	
	Thermistor String #26	Date Installed: 1991	Thermistor Type:	Canlec Controls YSI 44007	Ice-Bath Calibration:	applied	Surface Protector:	yes
Depth Correction: 0.1	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)
Actual Depth (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
1.0	20.00	13.84	11.56	11.52	11.93	13.04	13.04	12.03
2.0	16.29	16.58	10.64	11.36	12.23	11.48	16.96	11.74
3.0	15.99	23.62	15.29	16.47	18.13	17.45	24.88	17.37
4.0	15.65		11.34	11.81	13.10	12.17	16.64	12.06
5.0	15.71	13.11	13.11	11.65	13.06	12.38	16.12	11.88
6.0	15.75	15.80	12.17	11.72	13.07	12.50	15.77	12.10
7.0	15.47	15.49	12.61	12.28	13.67	13.09	12.10	12.60
8.0	15.47	15.33	13.42	13.09	14.26	13.78	15.24	13.65
9.0	15.41	15.19	14.09	13.78	14.68	14.38	15.23	14.39
10.0	15.45	15.96	15.21	14.97	15.78	16.64	17.33	16.94
								17.64

\*The initial reading (Nov:1981) is excluded from the data set because post-installation equilibrium may not have been complete.

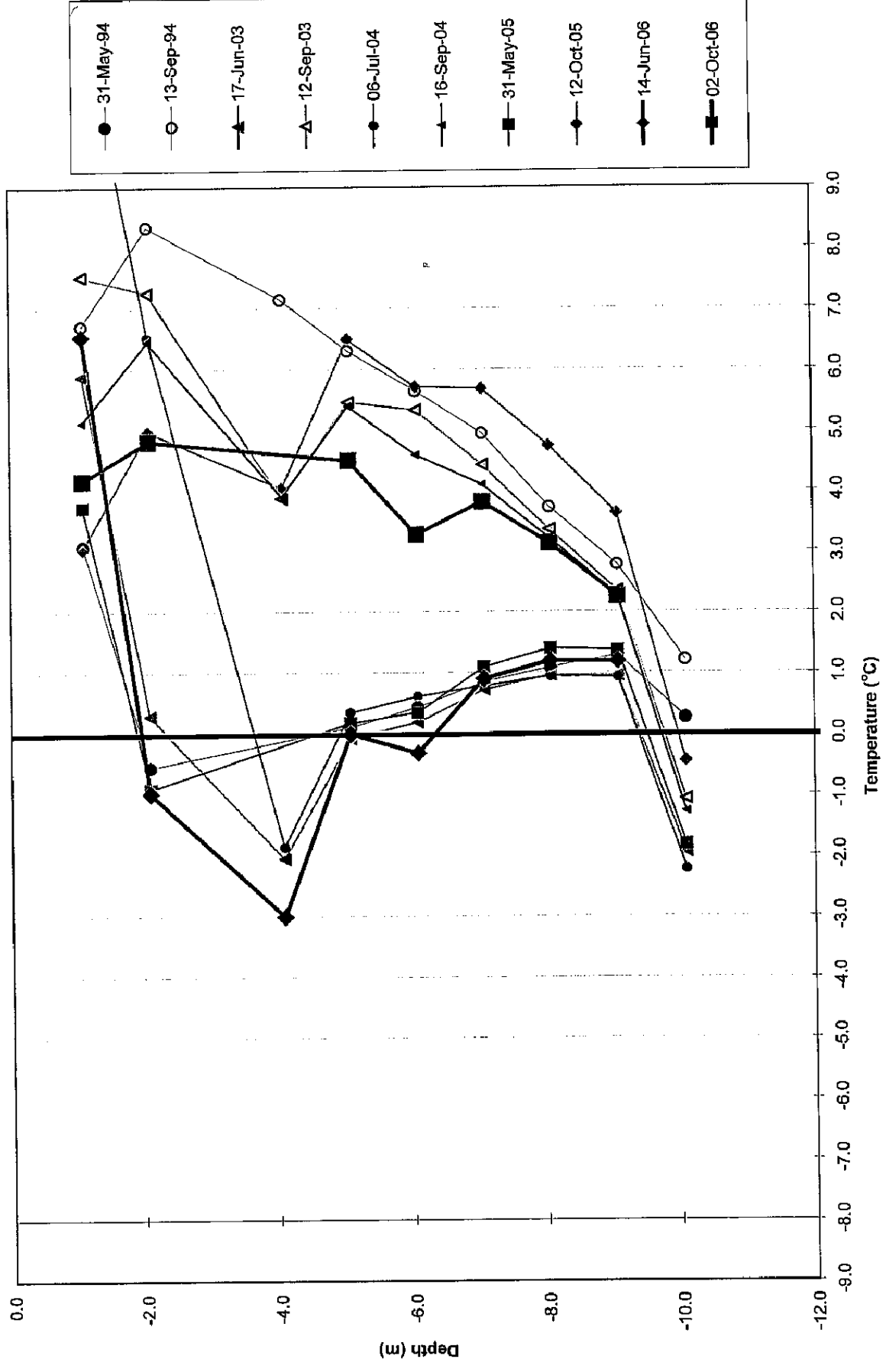
Depth on String (m)	Temperature (C)	Temperature (C)	Temperature (C)	Temperature (C)	Temperature (C)	Temperature (C)	Temperature (C)	Temperature (C)
0.0	09-Dec-81	31-May-94	13-Sep-94	20-Sep-95	11-Sep-96	13-Sep-99	07-Jun-00	05-Sep-00
1.0	-4.10	3.09	6.72	6.79	6.08	7.08	4.28	5.91
2.0	-0.20	-0.55	8.35	7.01	5.51	6.79	-0.99	6.34
3.0	0.20	0.20	7.15	6.67	4.23	5.72	-0.51	5.87
4.0	0.70	0.70	6.31	6.58	4.27	5.35	0.09	6.19
5.0	0.60	0.11	5.65	6.41	4.21	5.11	0.48	5.76
6.0	0.50	0.44	4.95	5.48	3.33	4.20	0.98	4.96
7.0	0.90	0.85	3.73	4.23	2.49	3.20	1.20	3.53
8.0	1.00	1.28	2.77	3.22	1.96	2.37	1.23	2.35
9.0	0.90	0.26	1.21	1.52	0.48	-0.56	-1.35	-0.90
10.0								-1.69

\* The 3 metre depth tip is suspect

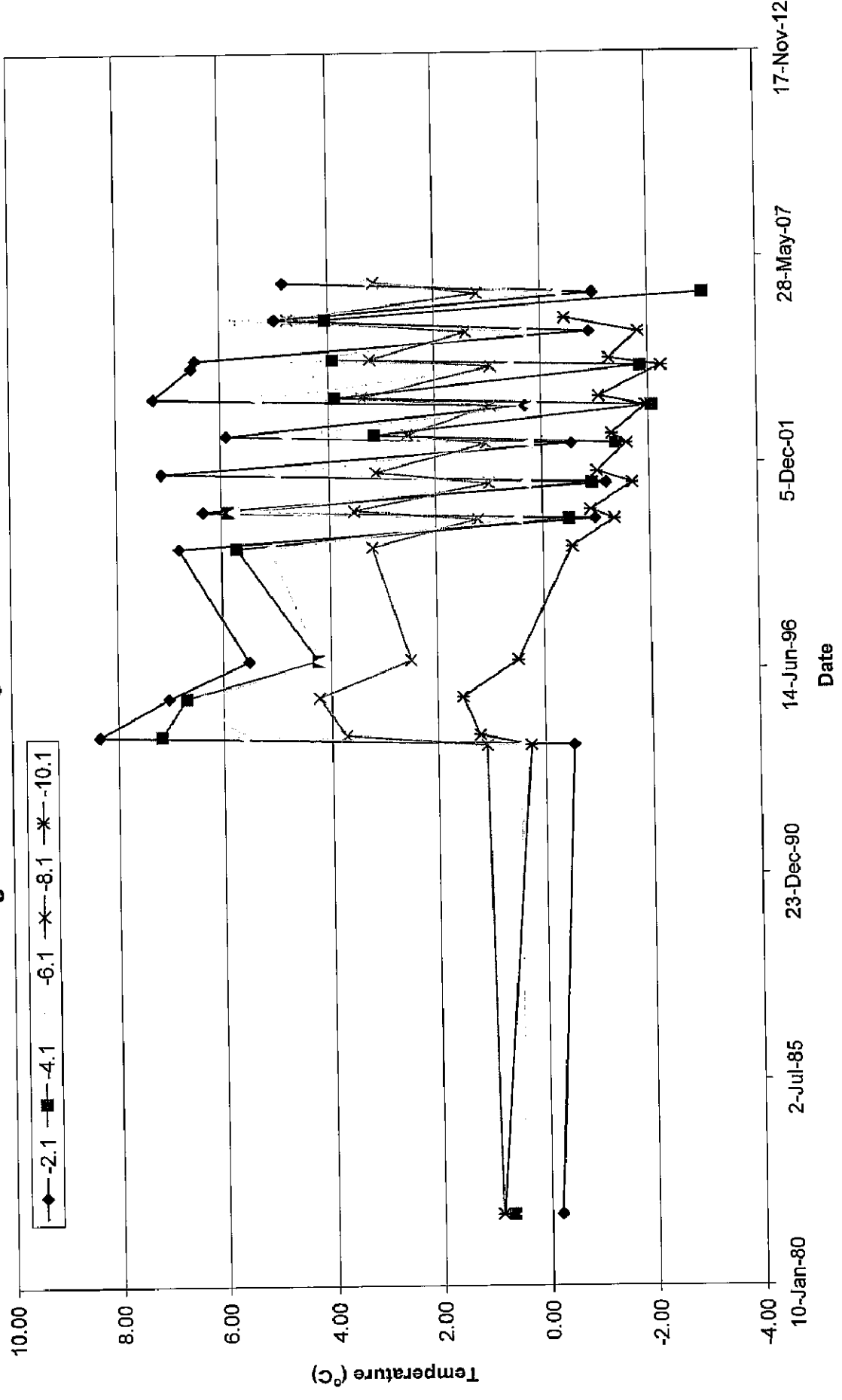
Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)
13-Sep-01	13-Jun-02	12-Sep-02	17-Jun-03	12-Sep-03	06-Jul-04	16-Sep-04	31-May-05	12-Oct-05
11.56	12.16	11.57	12.04	11.11	8.67	12.50	13.40	13.87
11.30	16.99	12.00	15.88	11.22	11.63	11.67	16.88	12.65
17.05	24.82	18.61	24.71	17.12	21.04	16.94	24.35	17.39
17.42	17.42	13.84	18.02	13.33	17.84	13.31	16.05	13.22
12.98	16.24	12.68	16.26	12.31	15.81	12.35	11.70	16.20
12.57	15.95	12.70	16.00	12.36	15.66	12.82	15.87	12.13
13.10	15.53	13.43	15.59	12.94	15.54	13.15	15.30	12.16
13.63	15.37	14.26	15.43	13.67	15.44	13.77	15.09	12.78
14.52	15.37	14.88	15.45	14.40	15.47	14.46	15.13	13.50
17.05	17.56	17.30	17.86	17.09	18.14	17.27	17.76	16.55
								16.93
								18.43
								11.66
								16.95
								12.85
								18.43
								16.93
								18.93
								12.91
								16.42
								13.69
								15.45
								15.25
								14.46
								5.17
								5.14

Temperature (C)	Temperature (C)	Temperature (C)	Temperature (C)	Temperature (C)	Temperature (C)	Temperature (C)	Temperature (C)	Temperature (C)
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
6.72	5.69	6.70	5.98	7.63	12.20	5.14	3.74	3.05
7.12	-0.56	5.88	0.30	7.28	6.53	6.46	-0.91	4.98
								4.05
								6.50
								3.28
								5.68
								3.21
								3.63
								1.18
								4.82
								3.00
								0.00
								4.50
								3.28
								0.90
								3.13
								2.26
								-0.45

**DIVERSION CANAL DIKE**  
**Geothermal Monitoring**  
**CD-15**

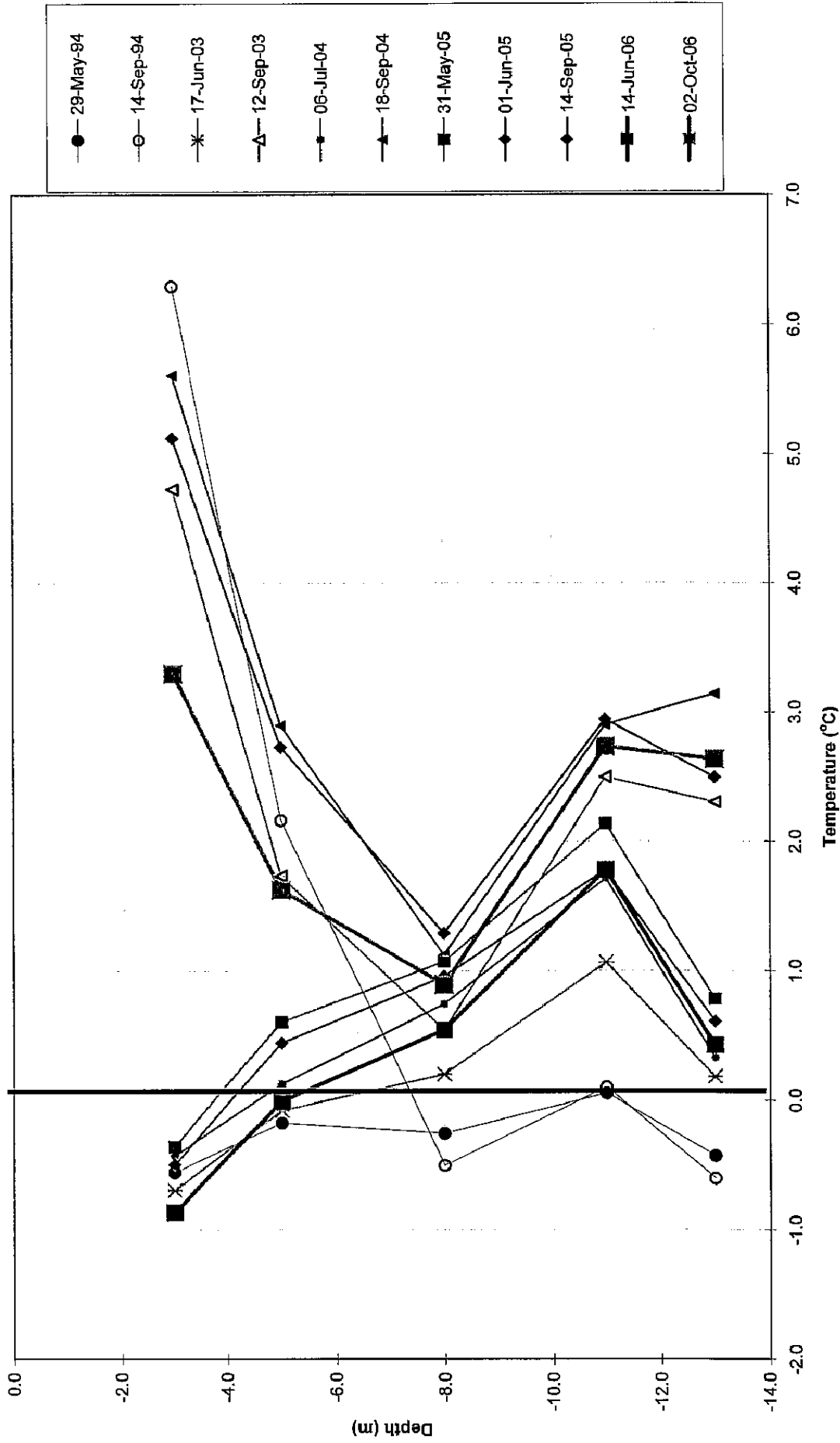


### Diversion Canal Dike Geothermal Monitoring Long Term Monitoring for Nodes in CD-15

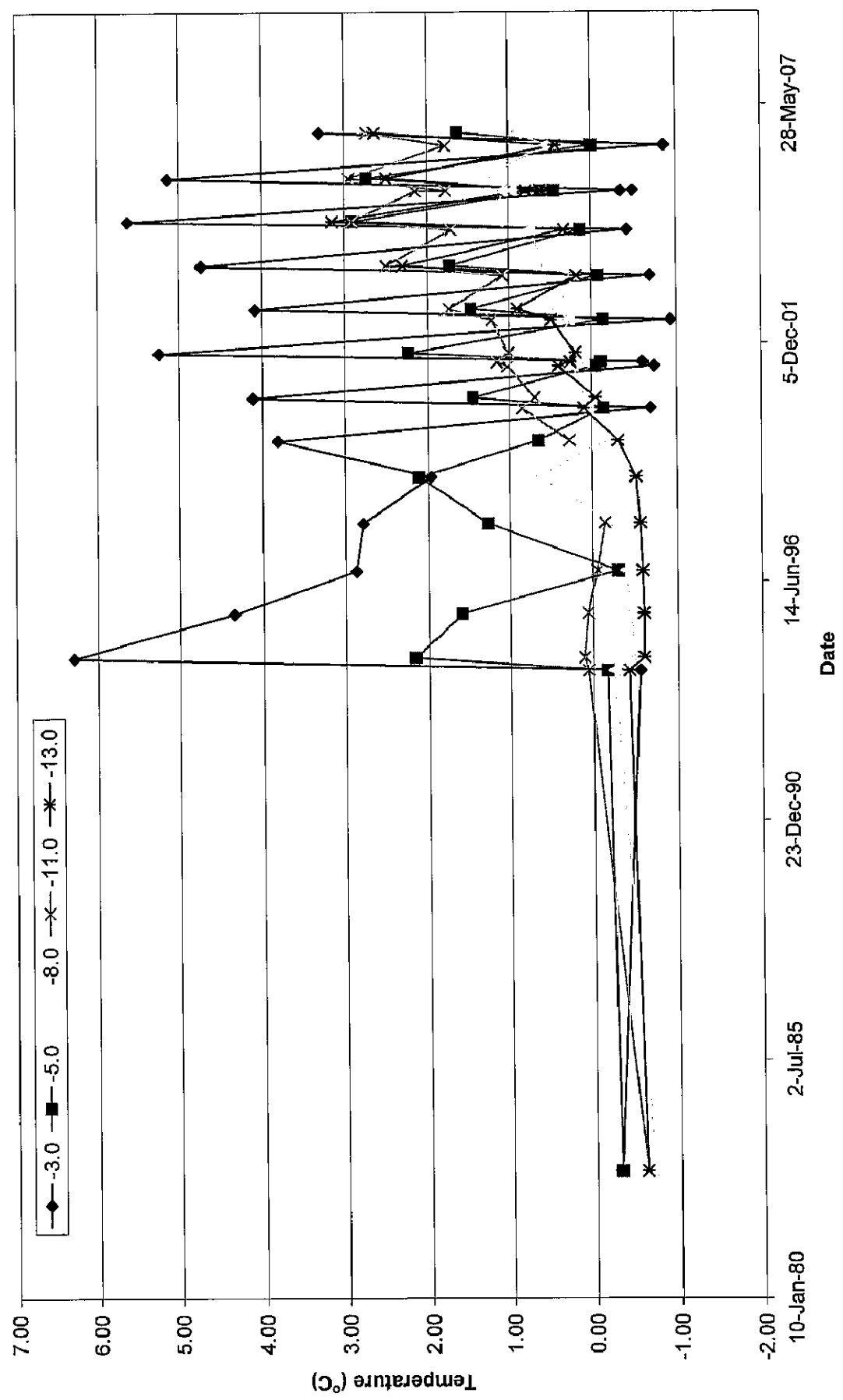




**DIVERSION CANAL DIKE**  
**Geothermal Monitoring**  
**CD-21**



### Diversion Canal Dike Geothermal Monitoring Long Term Monitoring for Nodes in CD-21



Faro Mine Instrumentation  
Diversion Canal Dike

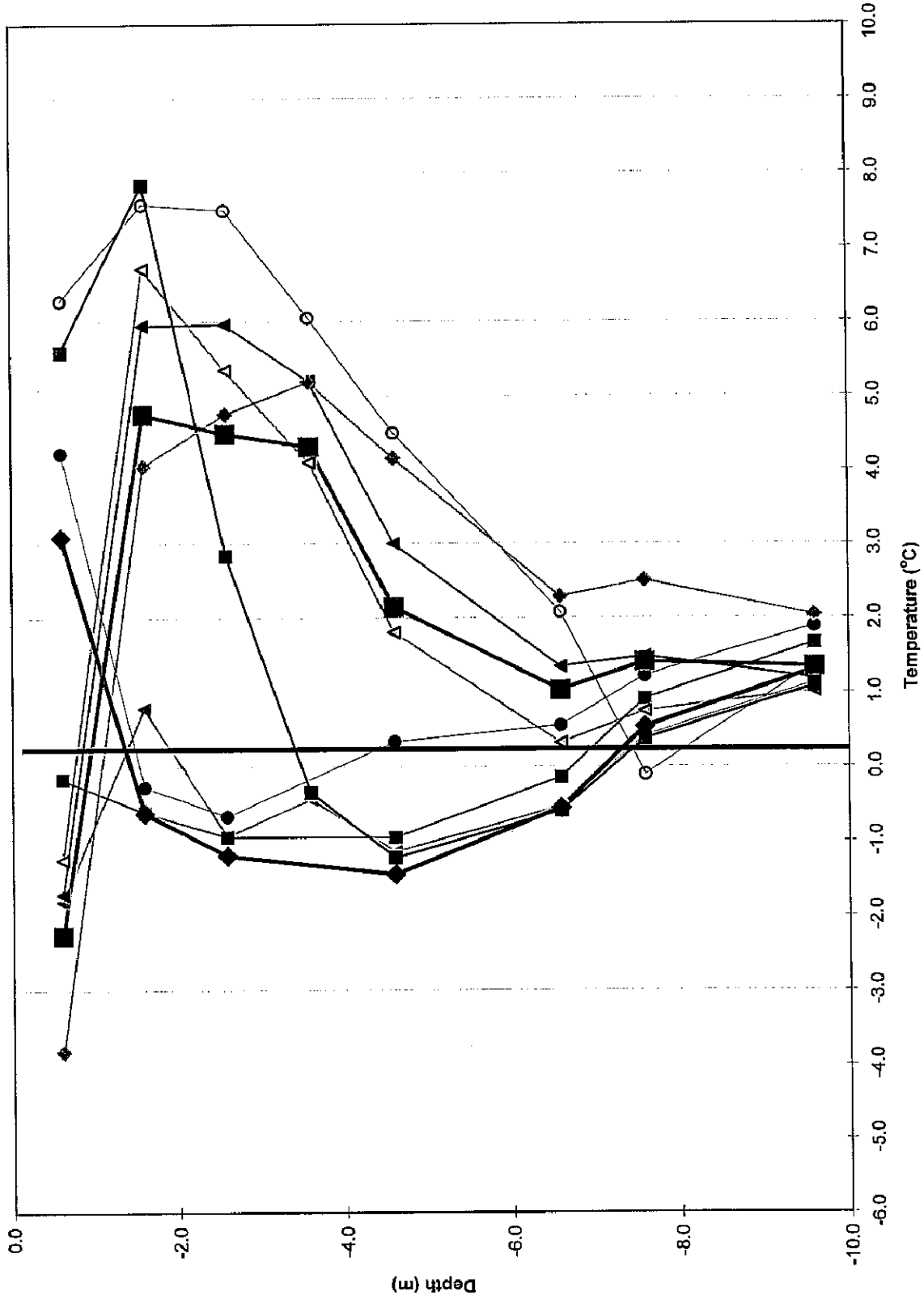
CD-26		Location:	Canal Dyke SL2+600	Elevation (m amsl):	1053.1	Coordinates:	1674.7 mN, 71.7 mE	8V560269 6913720	Surface Protector:	yes			
Depth Correction:	Thermistor Sling #17	Date Installed:	1991	Thermistor Type:	Carlec Controls YSI 44007	Ice-Bath Calibration:	applied						
-0.4													
Actual	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)			
Depth on Sling (m)	09-Dec-81	01-Jun-94	14-Sep-94	21-Sep-95	13-Sep-96	14-Sep-99	13-Jun-02	17-Jun-03	18-Sep-04	07-Jun-05	12-Oct-05	14-Jun-06	02-Oct-06
1.0	22.70	13.14	11.87	11.54	11.98	11.51	14.85	17.34	17.76	16.40	19.82	13.91	18.27
2.0	-0.6	16.32	11.07	11.52	11.97	11.63	16.08	15.64	12.28	16.87	13.17	16.68	12.72
3.0	-1.6	16.38	11.07	12.01	12.77	12.40	17.06	15.52	10.93	17.00	12.75	17.22	12.92
4.0	-2.6	16.76	11.14	12.60	13.59	13.26	16.60	14.03	12.38	17.00	12.46	17.40	13.03
5.0	-3.6	16.17	11.94	12.60	13.59	14.38	16.99	16.54	14.03	17.20	13.10	17.40	14.53
6.0	-4.6	16.24	15.88	12.88	14.58	14.38	16.60	17.13	14.74	13.88	13.10	17.40	14.53
7.0	-5.6	16.28	17.71	15.00	22.69	27.08	35.50	37.50	35.00	40.20	38.00	44.20	42.3
8.0	-6.6	16.43	15.73	14.56	15.61	15.69	16.51	16.63	16.63	15.11	14.11	16.55	15.37
9.0	-7.6	16.50	15.19	16.25	15.35	15.42	16.70	15.83	15.86	14.99	14.24	15.73	15.08
10.0	-8.6	16.46	15.33	15.60	15.80	16.10	16.90	17.38	17.43	17.99	18.06	19.84	19.38
	-9.6	16.24	15.07	14.91	15.01	15.04	15.11	15.26	15.34	15.29	14.85	14.57	15.13

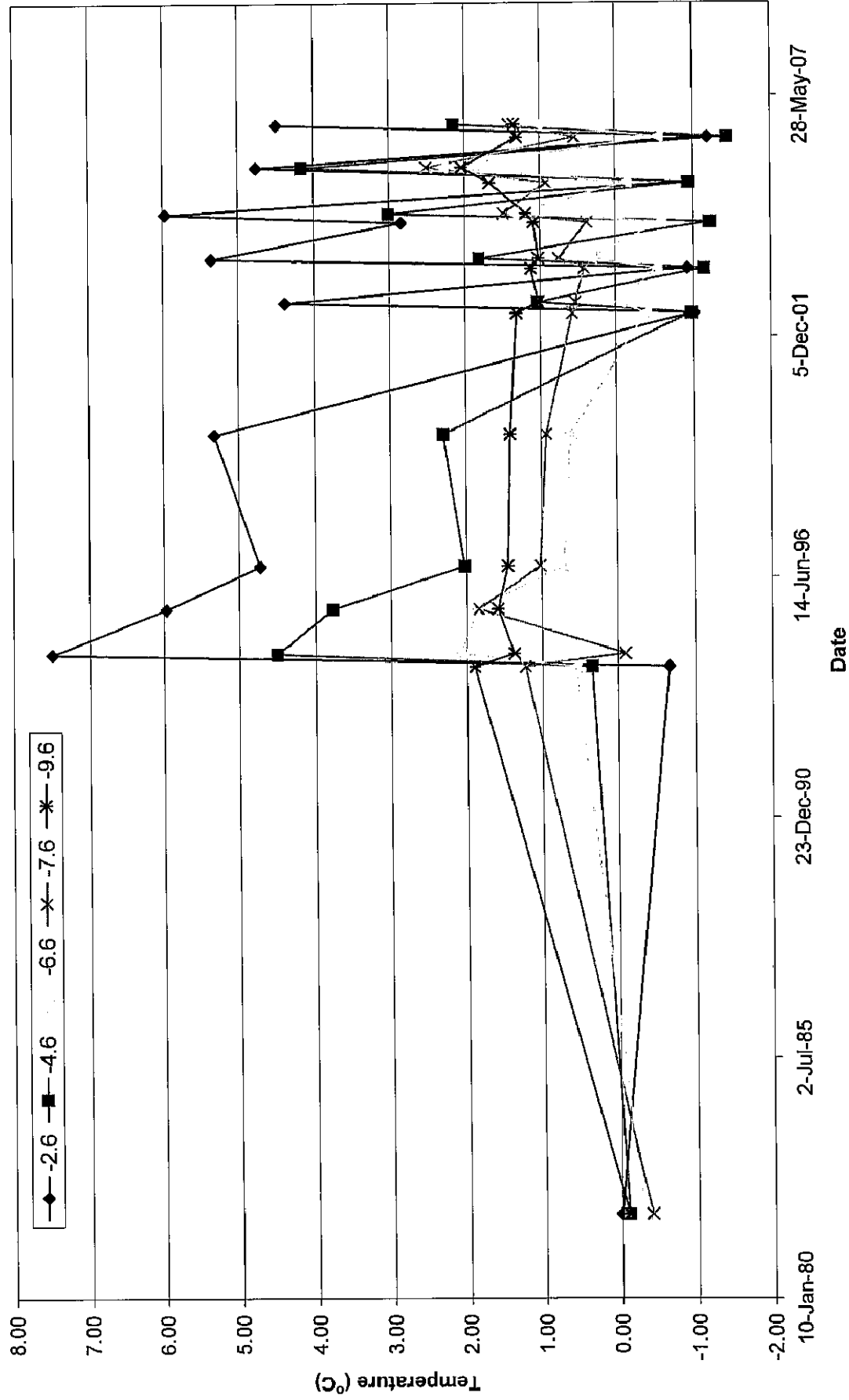
Depth on Sling (m)	Temperature (C)	Temperature (C)	Temperature (C)	Temperature (C)	Temperature (C)	Temperature (C)	Temperature (C)	Temperature (C)	Temperature (C)	Temperature (C)	Temperature (C)	Temperature (C)	Temperature (C)
09-Dec-81	01-Jun-94	14-Sep-94	21-Sep-95	13-Sep-96	14-Sep-99	13-Jun-02	12-Sep-02	17-Jun-03	12-Sep-03	06-Jul-04	18-Sep-04	01-Jun-05	12-Oct-05
-6.40	4.23	6.28	6.86	6.10	6.91	1.79	0.77	-1.81	-1.25	5.99	-1.71	-0.16	-3.82
-0.20	-0.27	7.58	6.76	5.98	6.57	0.09	5.98	0.79	6.71	7.84	5.95	-0.81	4.05
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
0.00	0.34	6.05	4.96	3.45	3.94	-0.51	3.10	-0.44	4.10	-0.34	6.21	5.19	4.49
-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
-0.10	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
-0.30	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
-0.40	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
-0.35													
-0.10													

\*Tips at 5.6 m and 8.6 depth are suspect

### DIVERSION CANAL DIKE Geothermal Monitoring CD-26



### Diversion Canal Dike Geothermal Monitoring Long Term Monitoring for Nodes in CD-26

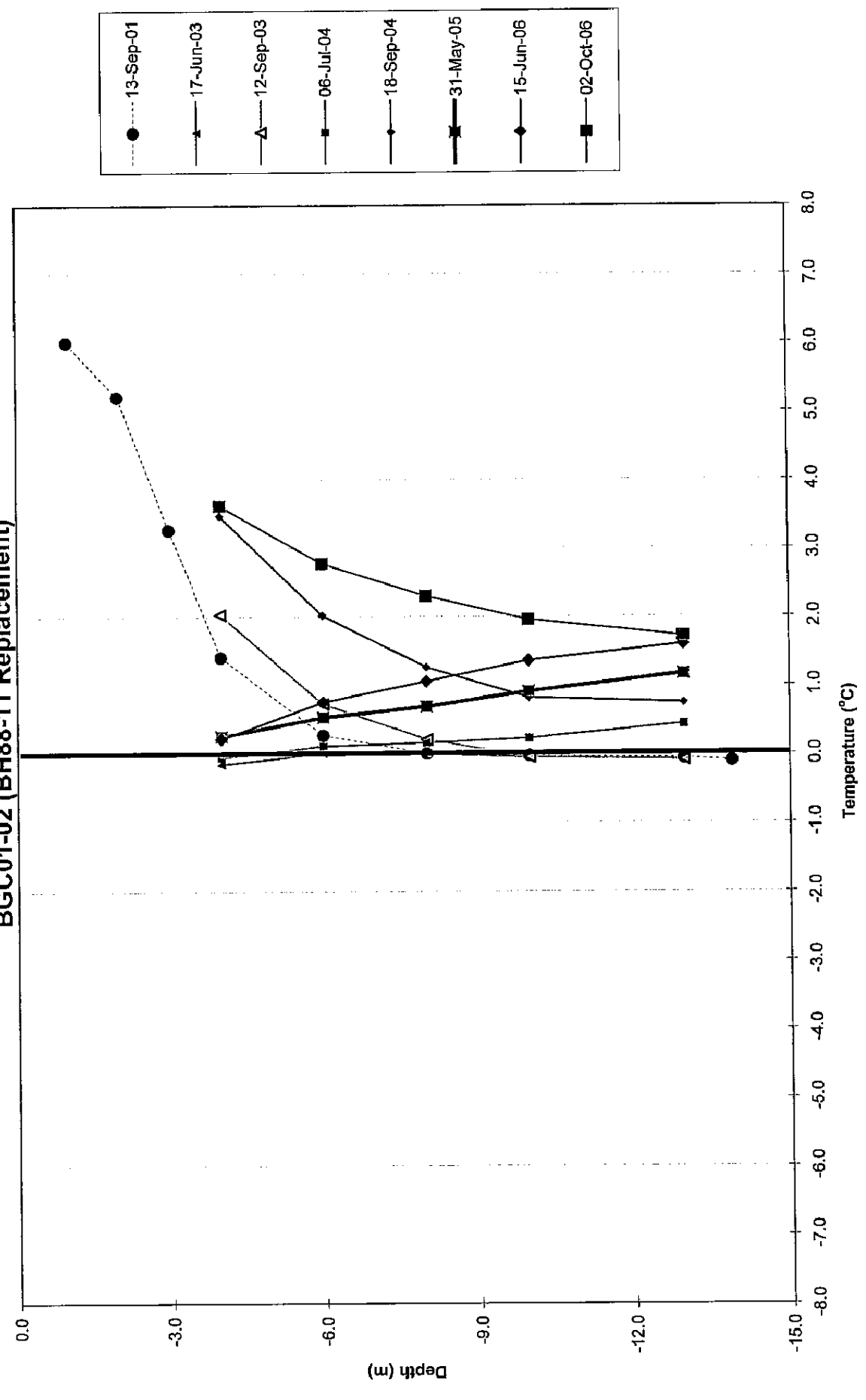


BGC01-02		Location: SL2+160	Canal Dyke Installed:	2001	Thermistor Type:	Elevation (m amsl):	Ice-Bath Calibration:	Coordinates:	1478.8mN 456.6mE	8V580652 6913530
Depth Correction:	0	Thermistor String #	Date Installed:	2001	Thermistor Type:	Elevation (m amsl):	Ice-Bath Calibration:	Coordinates:	1478.8mN 456.6mE	8V580652 6913530
Actual	Resistivity	Resistivity	Resistivity	Resistivity	Resistivity	Resistivity	Resistivity	Resistivity	Resistivity	Resistivity
Depth	(kOhms)	(kOhms)	(kOhms)	(kOhms)	(kOhms)	(kOhms)	(kOhms)	(kOhms)	(kOhms)	(kOhms)
(m)	05-Sep-01	06-Sep-01	13-Sep-01	02-Apr-02	05-Apr-02	09-Apr-02	12-Apr-02	12-Apr-02	13-Jun-02	12-Sep-02
1.0	10.96	11.05	12.05	20.50	20.50	16.33	16.34	16.33	16.36	14.76
2.0	11.82	11.97	12.53			16.33	16.34	16.33	16.36	15.80
3.0	13.25	13.53	13.63			16.33	16.34	16.33	16.36	15.80
4.0	15.31	15.40	15.19	16.34	16.33	16.33	16.34	16.33	16.36	15.80
6.0	15.62	16.09	16.30	16.31	16.30	16.35	16.35	16.35	16.36	15.80
8.0	16.32	16.32	16.33	16.35	16.35	16.38	16.39	16.37	16.36	15.80
10.0	16.32	16.33	16.35	16.39	16.38	16.39	16.39	16.37	16.36	15.80
13.0	16.32	16.32	16.34	16.40	16.39	16.39	16.39	16.36	16.36	15.80
13.9	16.35	16.35	16.38			20.90				
	15.37	15.42	15.43							

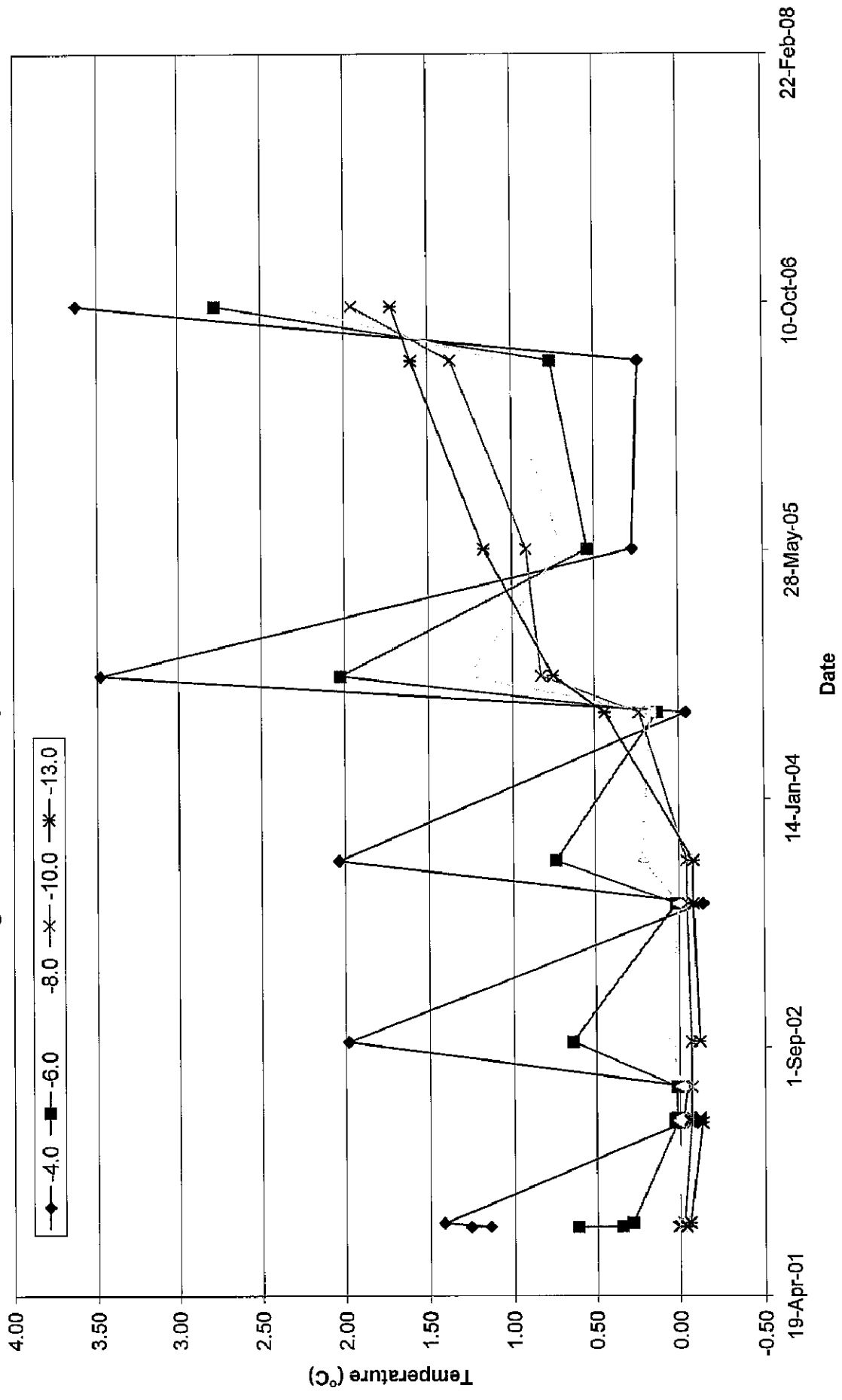
  

Depth on String (m)	Temperature (C)	Temperature (C)	Temperature (C)	Temperature (C)	Temperature (C)	Temperature (C)	Temperature (C)	Temperature (C)	Temperature (C)	Temperature (C)	Temperature (C)	Temperature (C)
1.0	8.13	7.77	6.01	-4.44	09-Apr-02	12-Apr-02	12-Sep-02	12-Sep-03	06-Jul-04	18-Sep-04	31-May-05	15-Jun-06
2.0	6.40	6.14	5.22									
3.0	4.13	3.71	3.28									
4.0	1.26	1.14	1.41	-0.02	-0.01	-0.01	-0.02	2.04	-0.04	3.48	0.27	0.23
6.0	0.61	0.34	0.28	0.02	0.03	0.02	0.02	0.74	0.12	2.02	0.54	0.76
8.0	0.02	0.02	0.01	-0.01	0.00	-0.01	-0.01	0.22	0.17	1.27	0.70	1.06
10.0	0.01	0.00	-0.02	-0.07	-0.06	-0.07	-0.07	-0.05	0.23	0.82	0.91	1.36
13.0	-0.04	-0.04	-0.06	-0.13	-0.12	-0.12	-0.12	-0.08	0.44	0.75	1.17	1.60
13.9	-0.06	-0.06	-0.10									

**DIVERSION CANAL DIKE**  
**Geothermal Monitoring**  
**BGC01-02 (BH88-11 Replacement)**

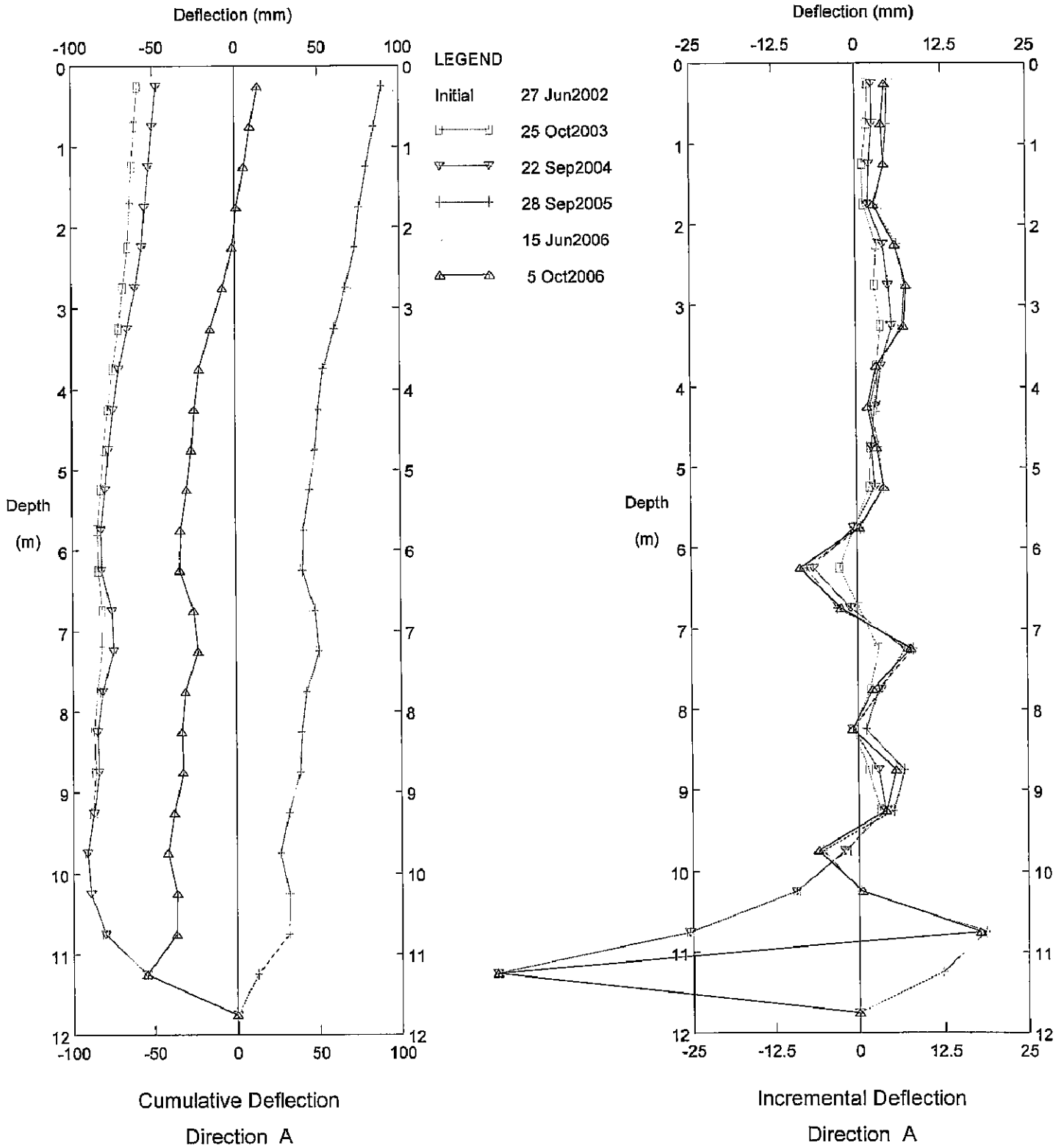


### Diversion Canal Dike Geothermal Monitoring Long Term Monitoring for Nodes in BGC01-02



## SLOPE INDICATORS

BGC Engineering Inc. - Calgary, AB

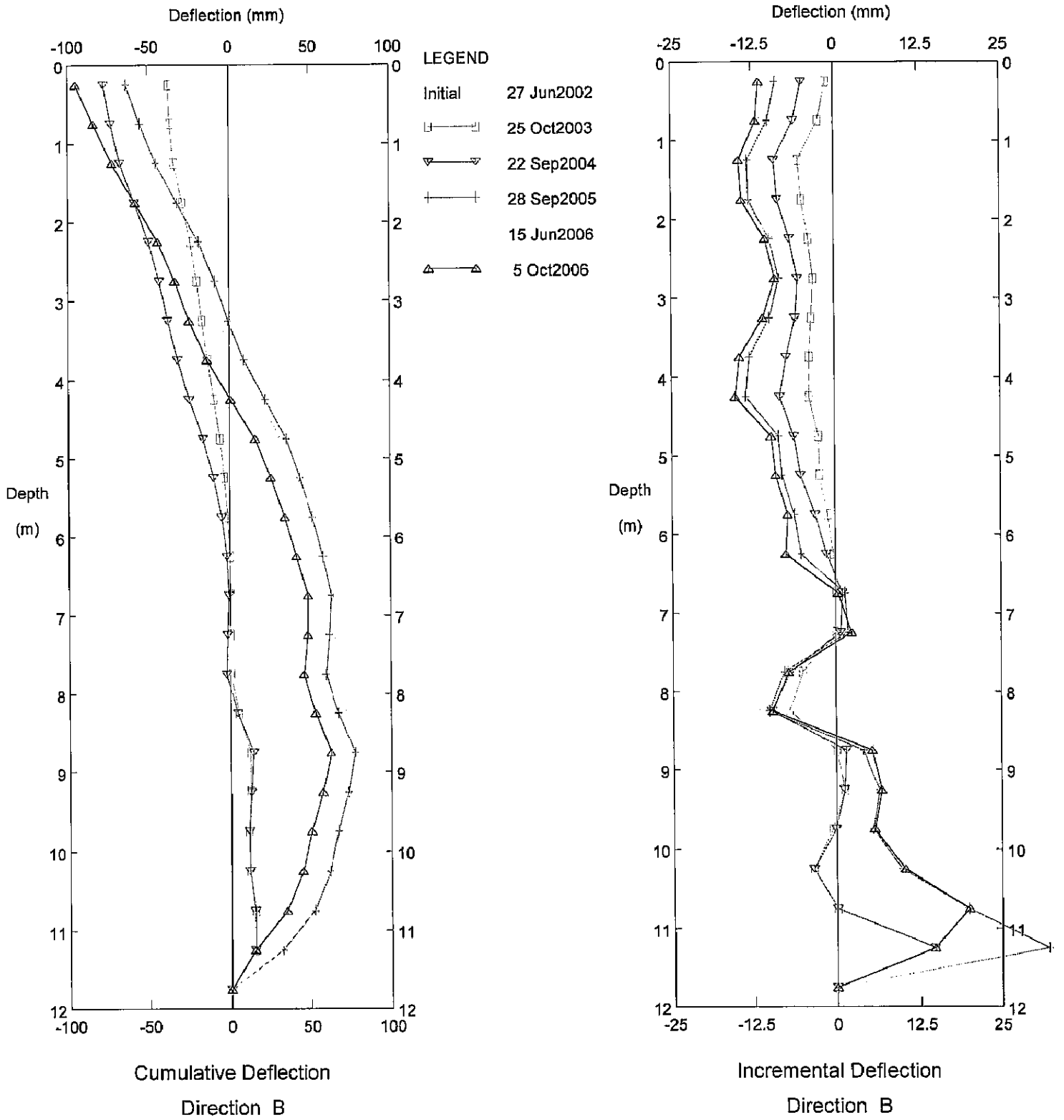


BGC01-01, Inclinometer BGC01-01

Deloitte and Touche

Sets marked \* Include zero shift and/or rotation corrections.

BGC Engineering Inc. - Calgary, AB

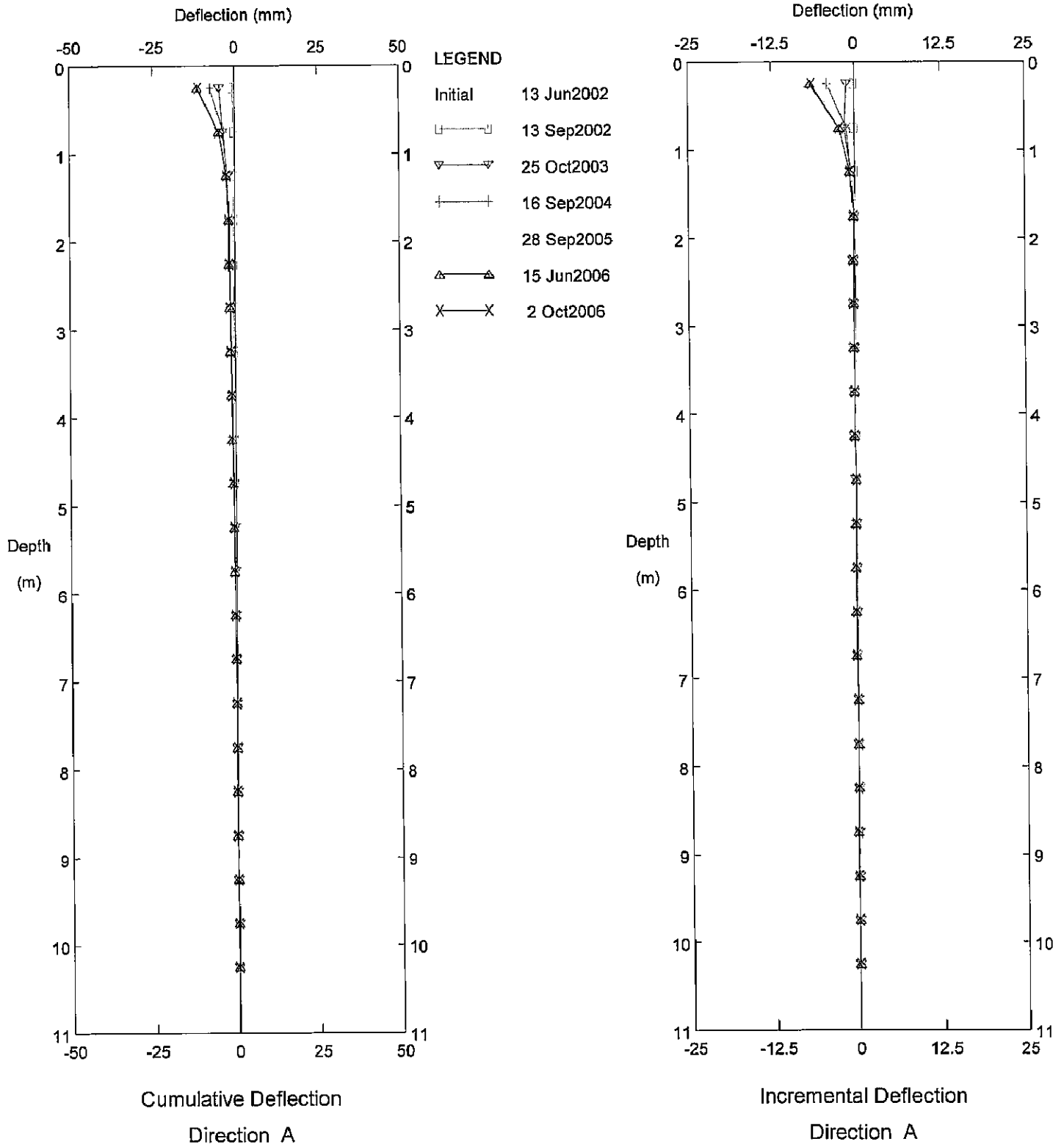


BGC01-01, Inclinometer BGC01-01

Deloitte and Touche

Sets marked \* include zero shift and/or rotation corrections.

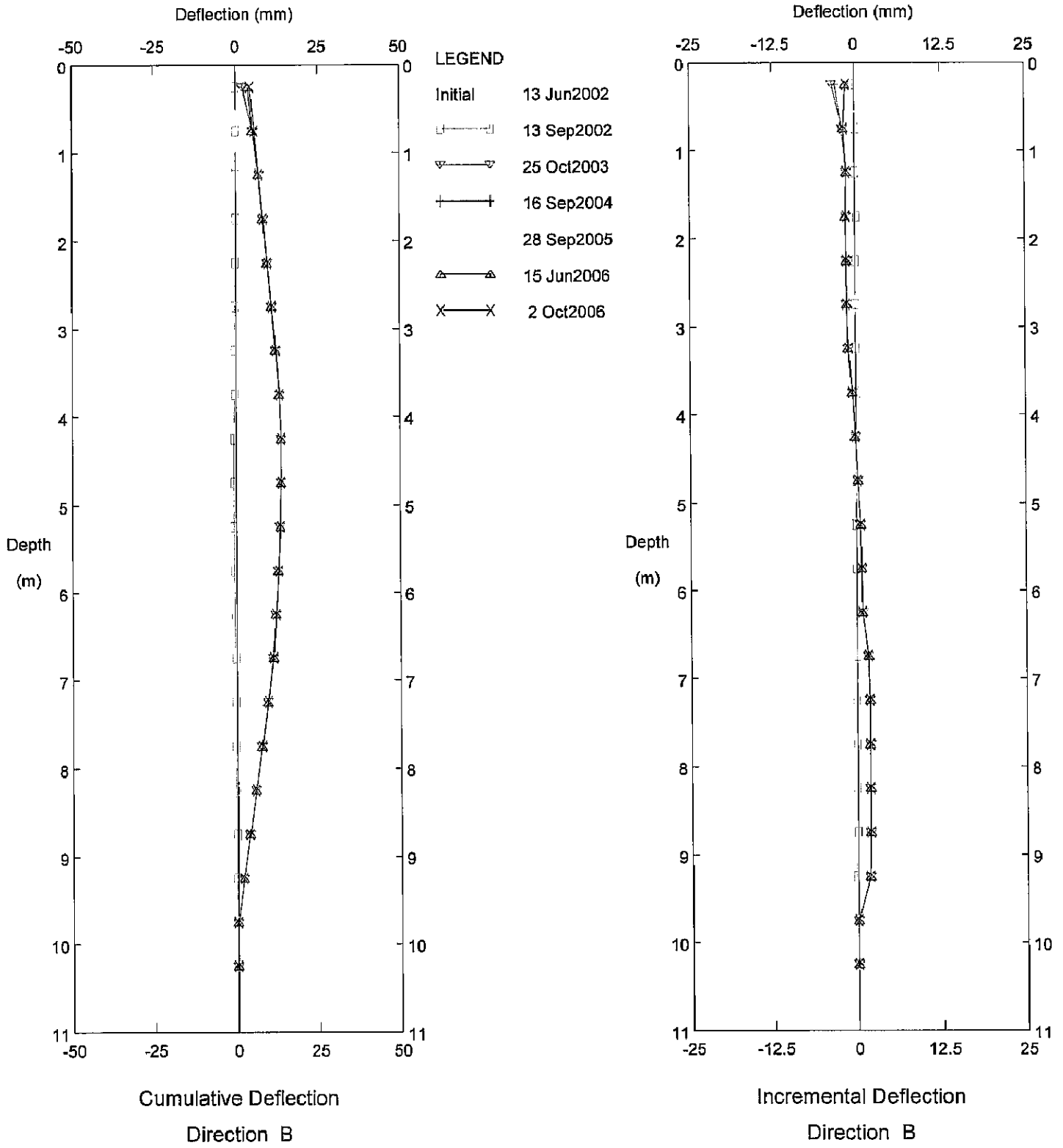
BGC Engineering Inc. - Calgary, AB



CD-15, Inclinometer 1+530

Sets marked \* include zero shift and/or rotation corrections.

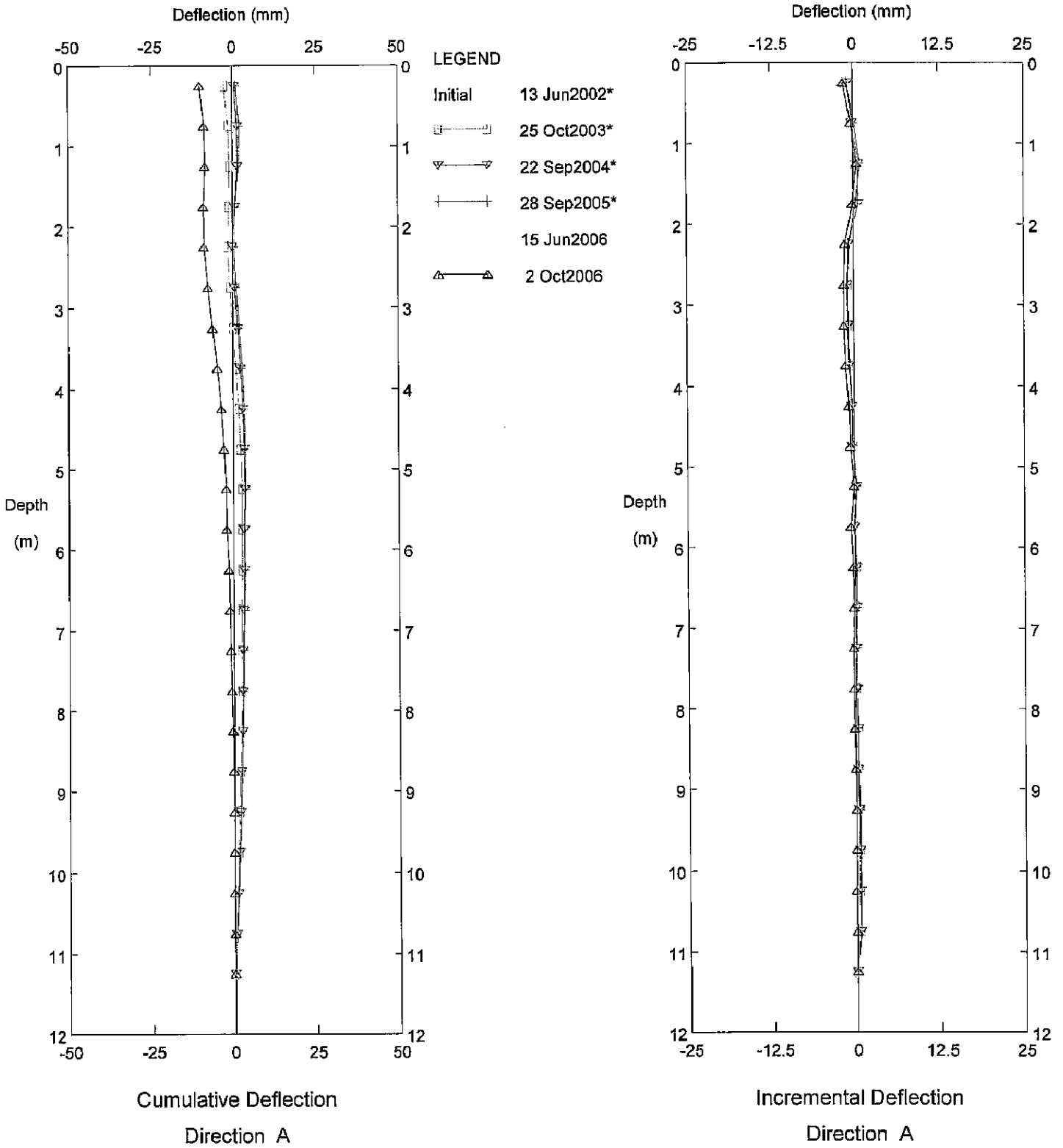
BGC Engineering Inc. - Calgary, AB



CD-15, Inclinometer 1+530

Sets marked \* include zero shift and/or rotation corrections.

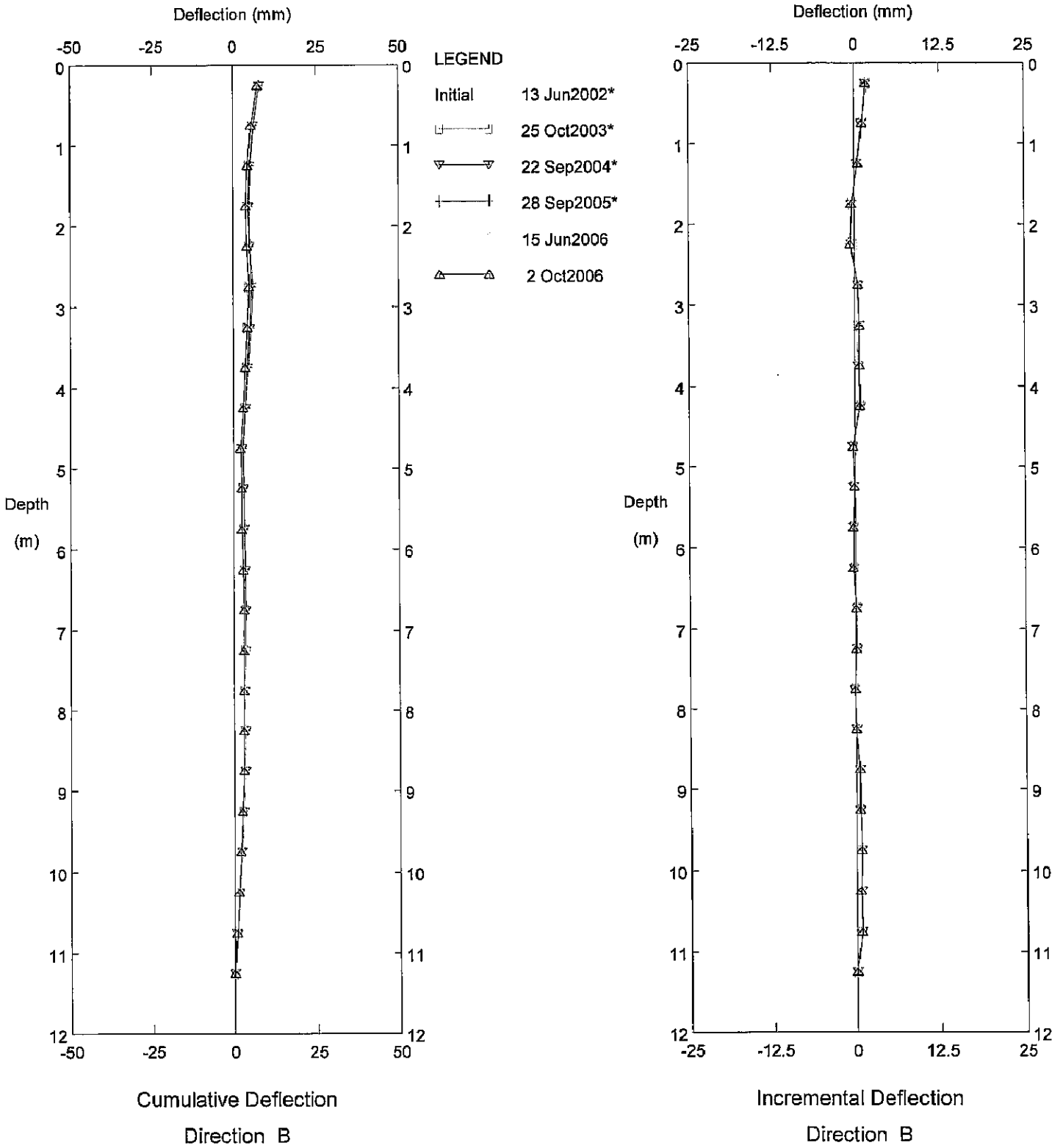
BGC Engineering Inc. - Calgary, AB



91CD-1, Inclinometer 1+767

Sets marked \* include zero shift and/or rotation corrections.

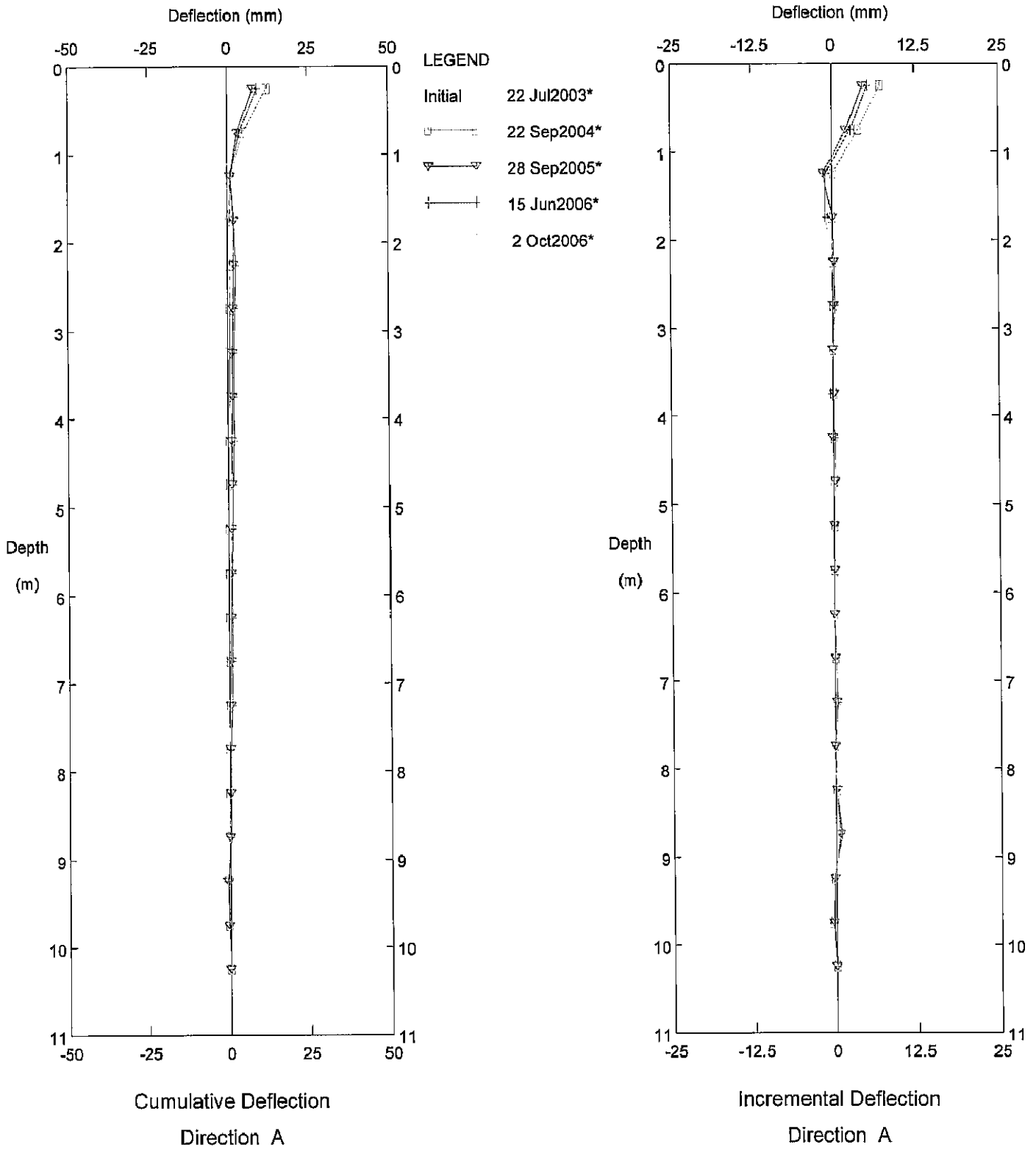
BGC Engineering Inc. - Calgary, AB



91CD-1, Inclinator 1+767

Sets marked \* include zero shift and/or rotation corrections.

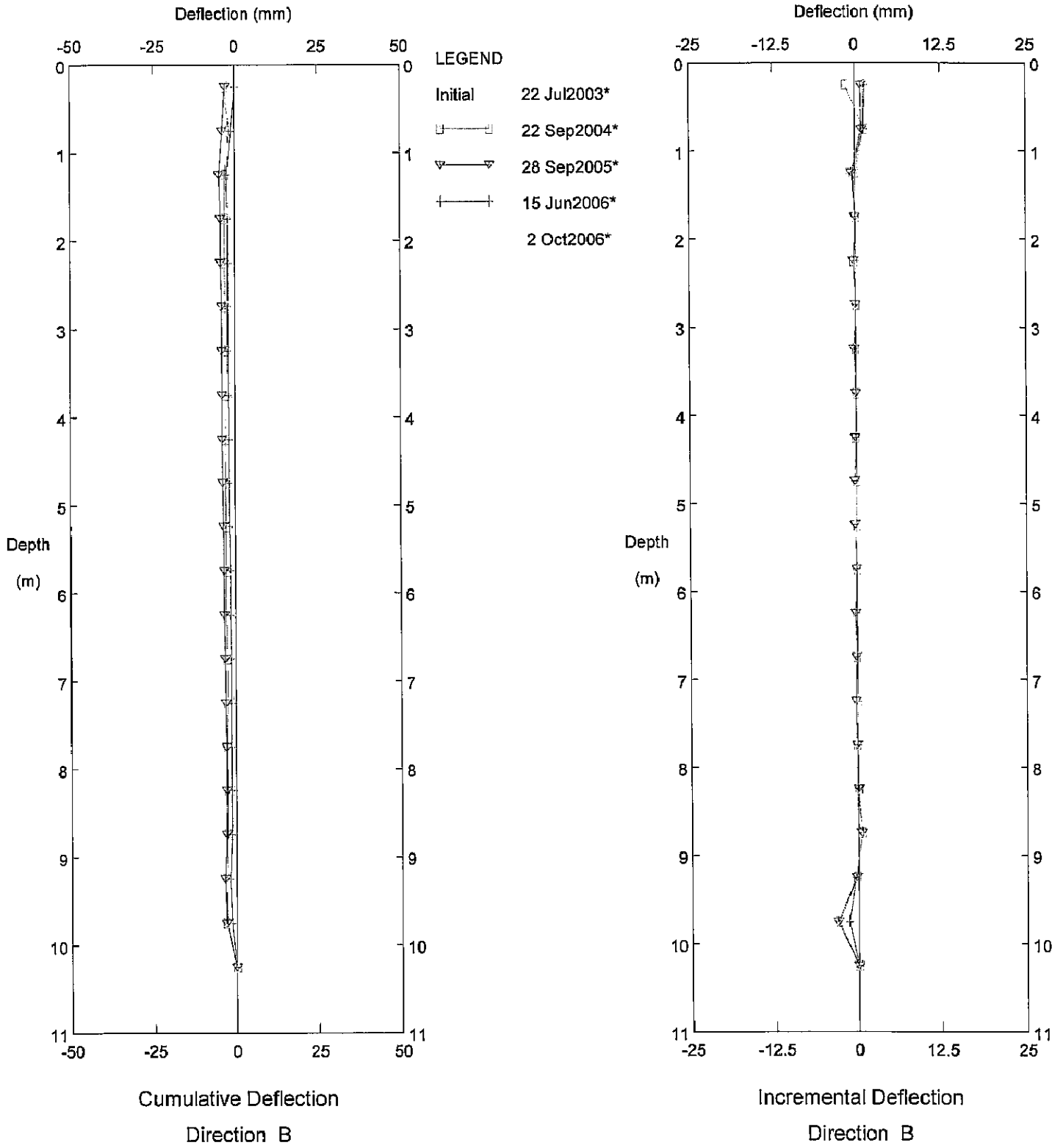
BGC Engineering Inc. - Calgary, AB



CD-19, Inclinometer 1+900

Sets marked \* include zero shift and/or rotation corrections.

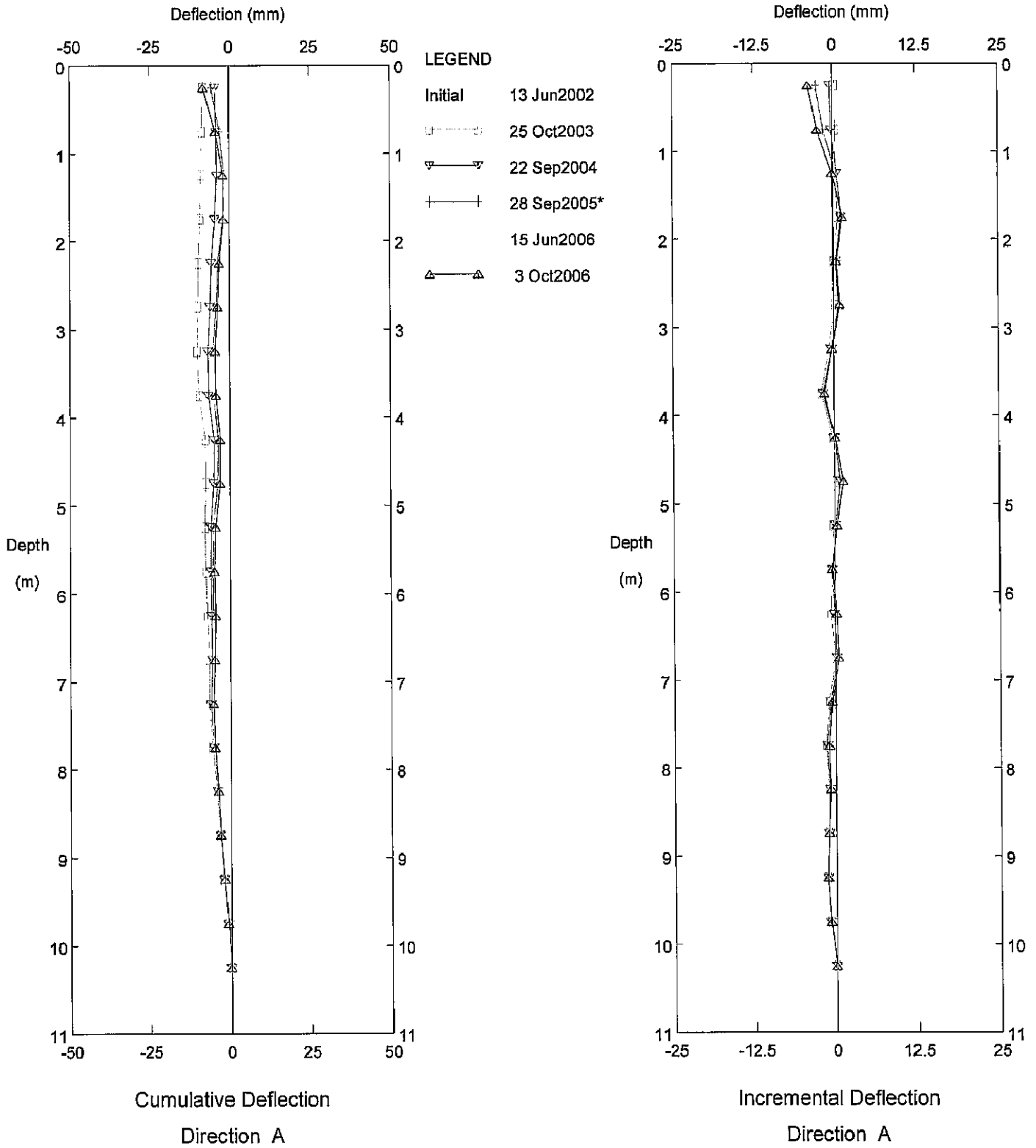
BGC Engineering Inc. - Calgary, AB



CD-19, Inclinator 1+900

Sets marked \* include zero shift and/or rotation corrections.

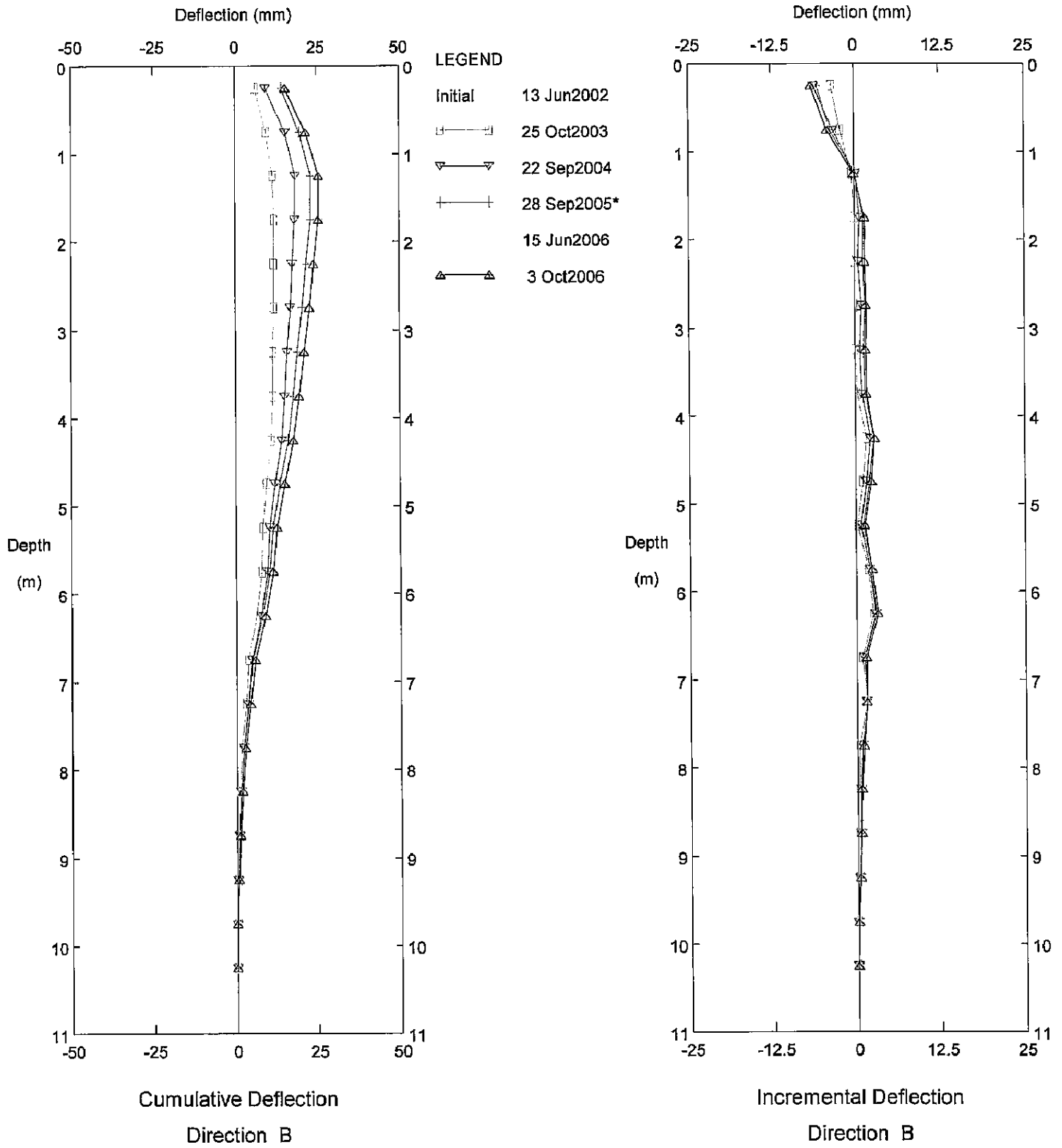
BGC Engineering Inc. - Calgary, AB



CD-21, Inclinometer 2+100

Sets marked \* include zero shift and/or rotation corrections.

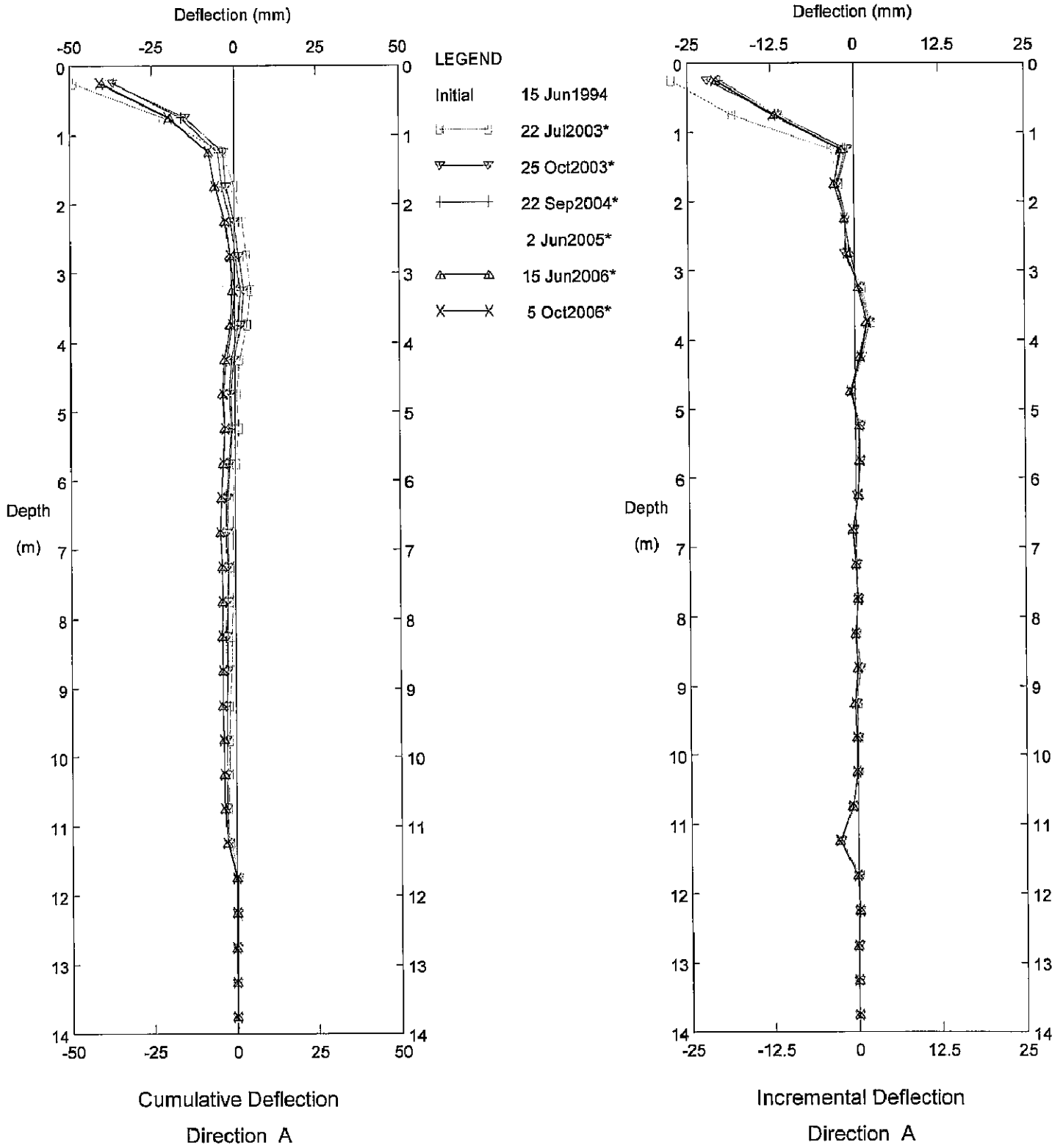
BGC Engineering Inc. - Calgary, AB



CD-21, Inclinator 2+100

Sets marked \* include zero shift and/or rotation corrections.

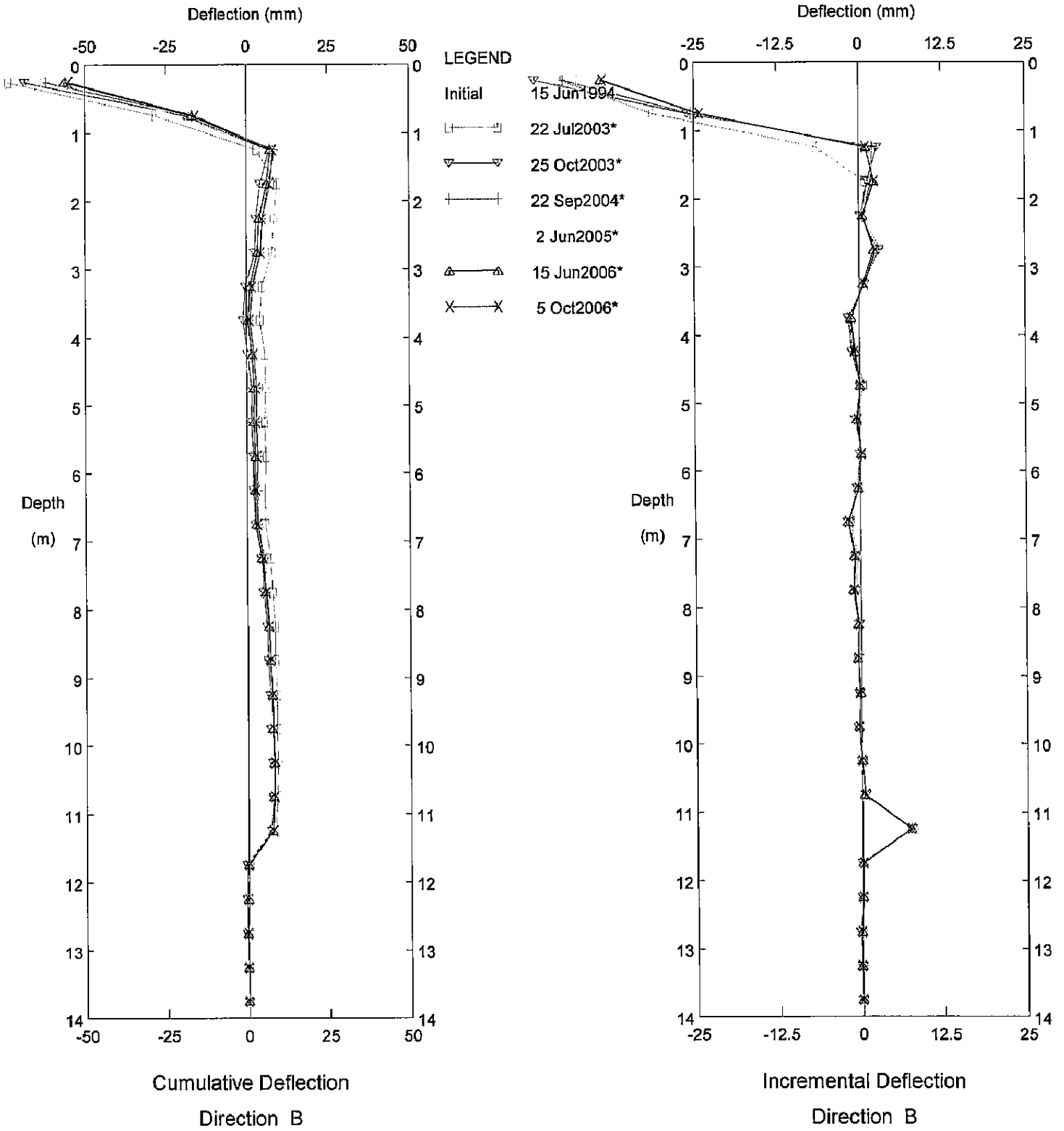
BGC Engineering Inc. - Calgary, AB



94CD-1, Inclinometer BH-94CD-1

Sets marked \* include zero shift and/or rotation corrections.

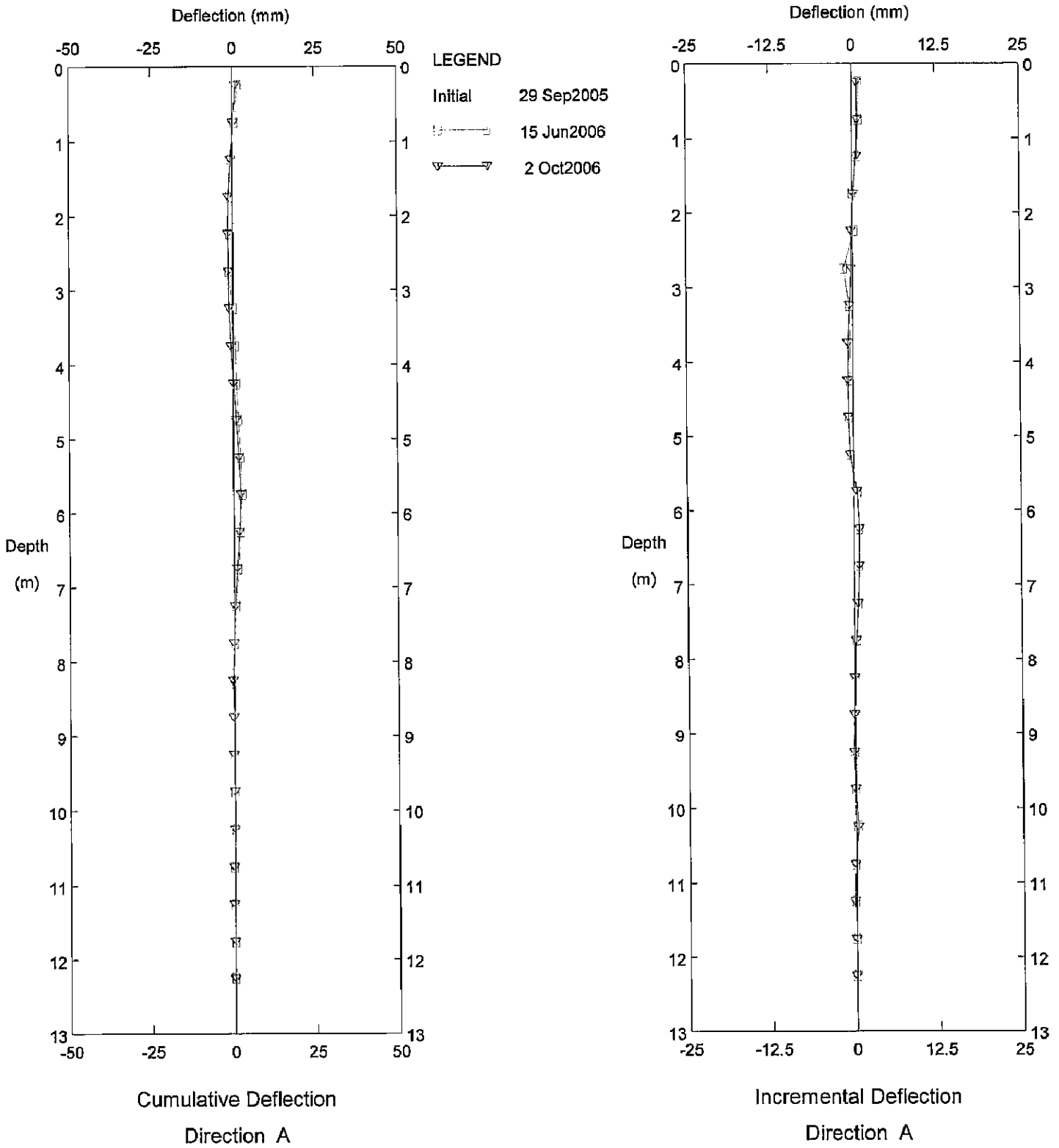
BGC Engineering Inc. - Calgary, AB



94CD-1, Inclinometer BH-94CD-1

Sets marked \* include zero shift and/or rotation corrections.

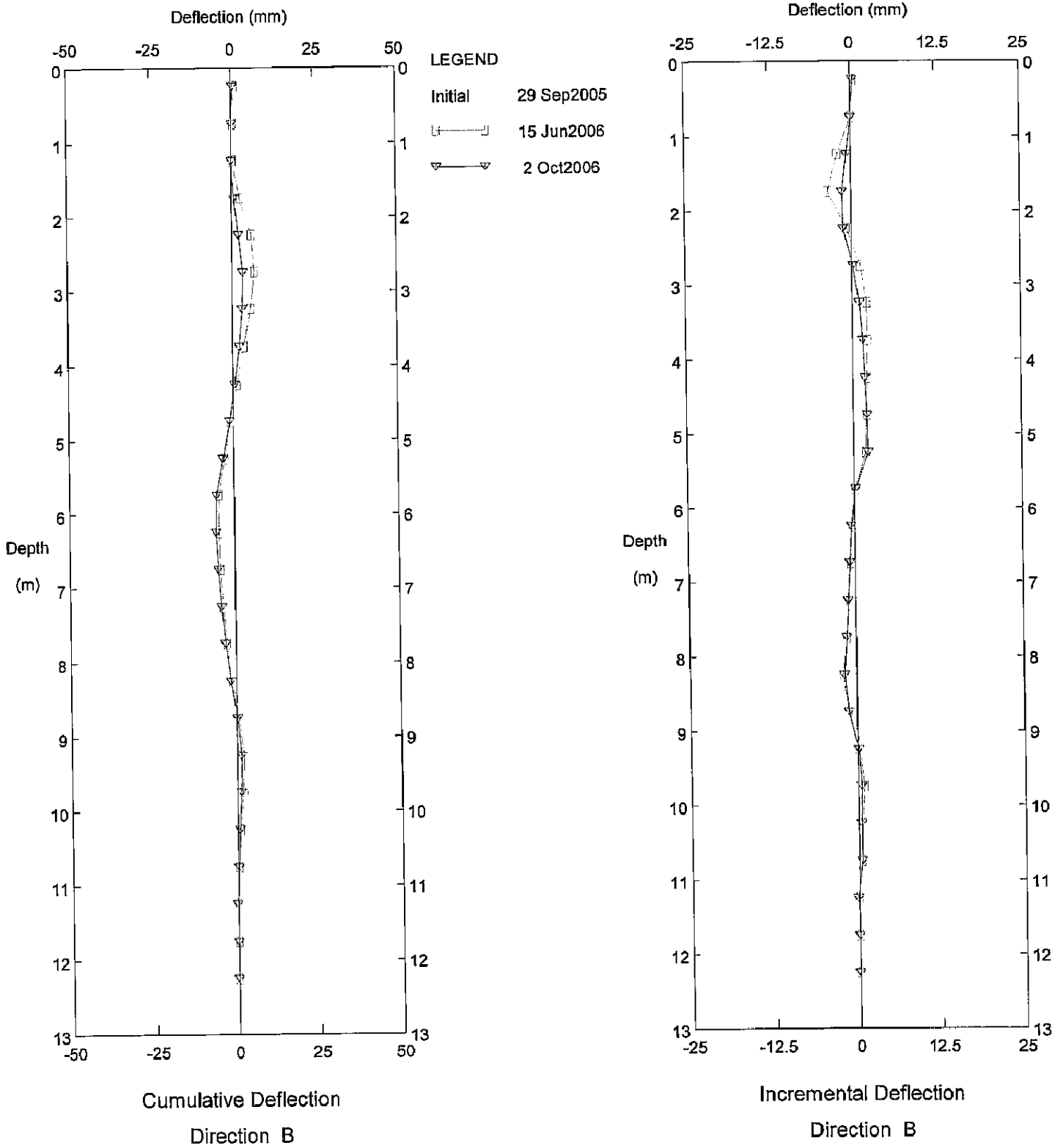
BGC Engineering Inc. - Calgary, AB



Canal Dike, Inclinometer BGC05-05

Sets marked \* include zero shift and/or rotation corrections.

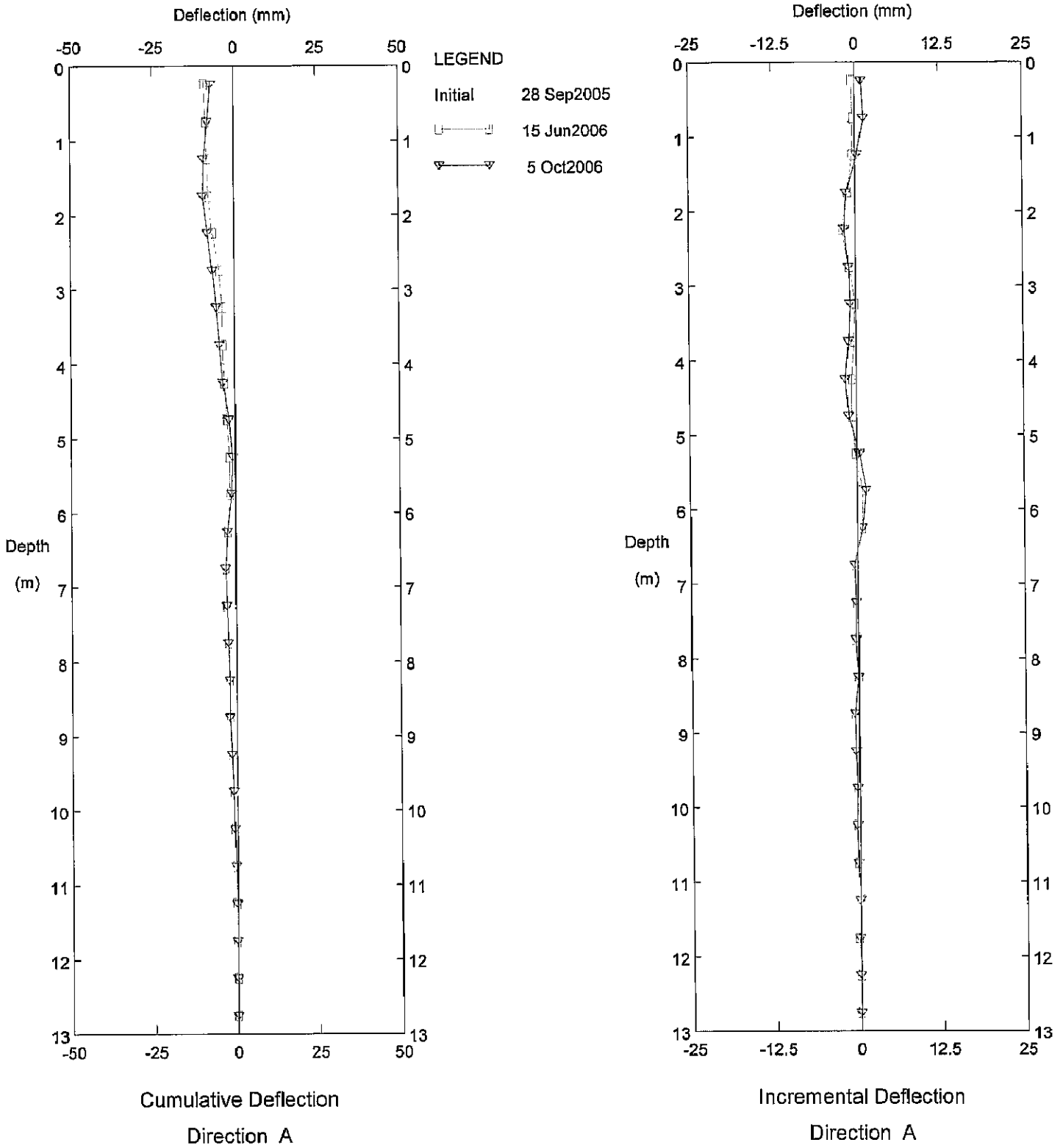
BGC Engineering Inc. - Calgary, AB



Canal Dike, Inclinator BGC05-05

Sets marked \* include zero shift and/or rotation corrections.

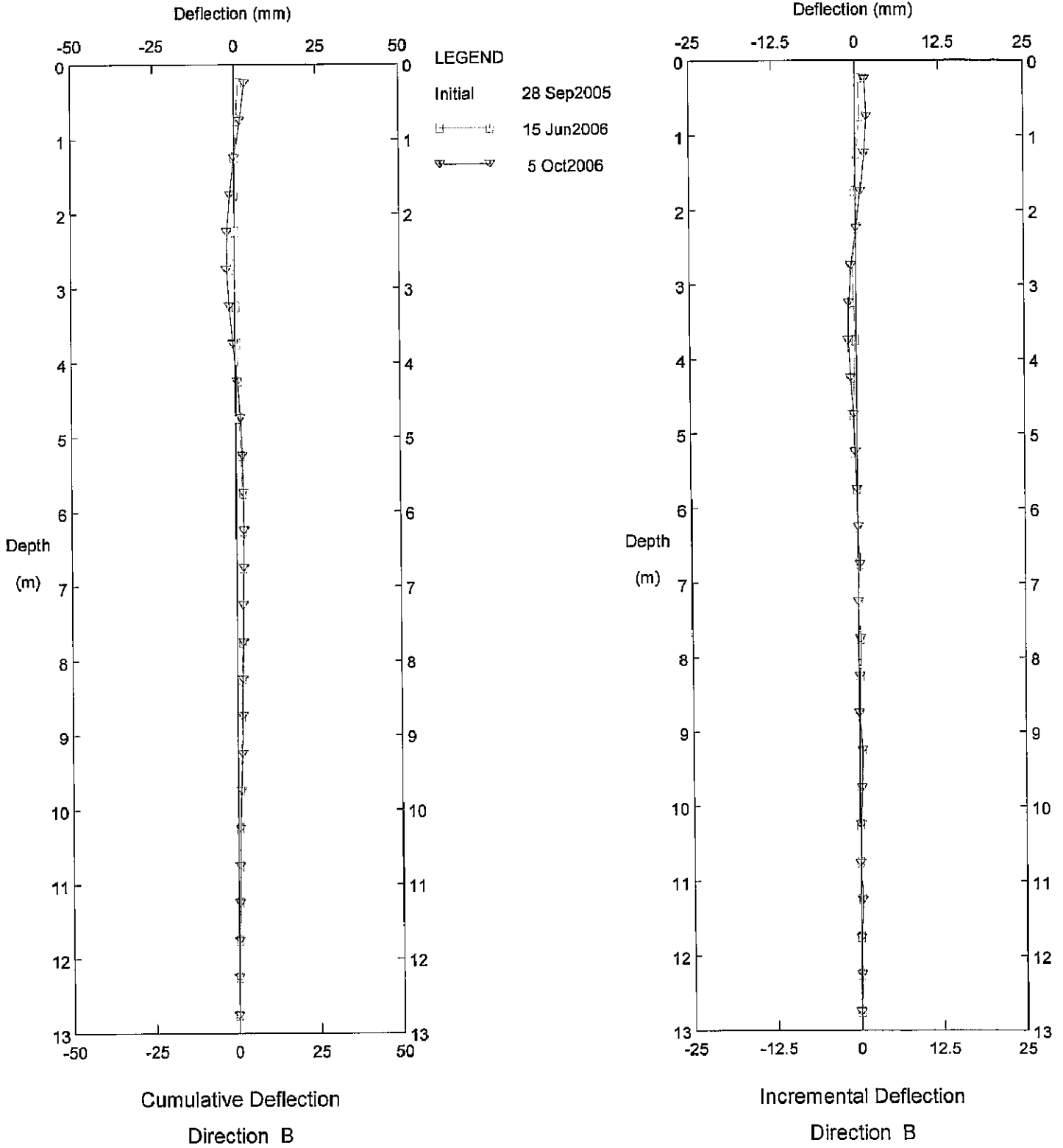
BGC Engineering Inc. - Calgary, AB



Canal Dike, Inclinometer BGC05-08

Sets marked \* include zero shift and/or rotation corrections.

BGC Engineering Inc. - Calgary, AB



Canal Dike, Inclinator BGC05-08

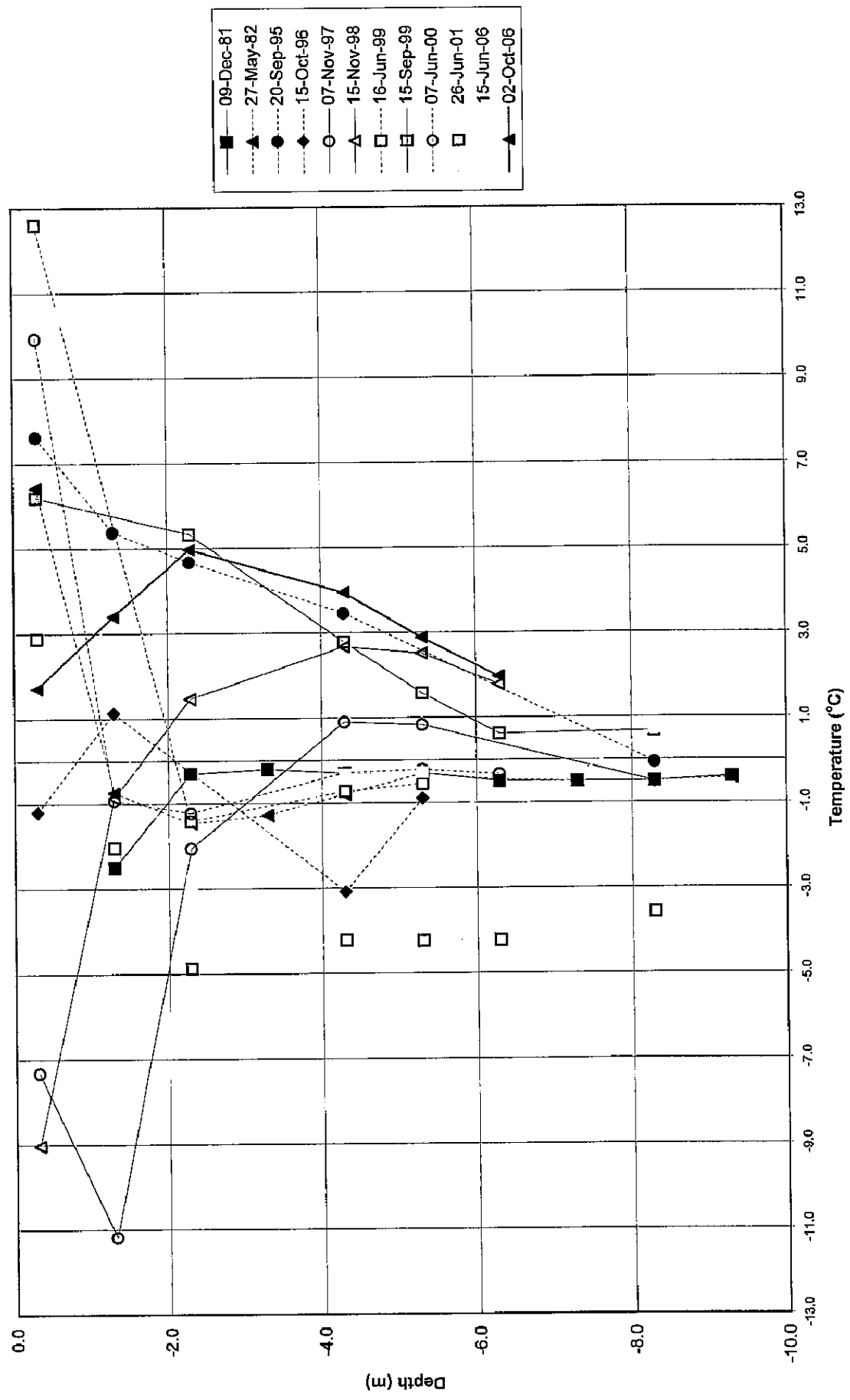
Sets marked \* include zero shift and/or rotation corrections.

## **DIVERSION CANAL SPOIL PILES**

## THERMISTORS

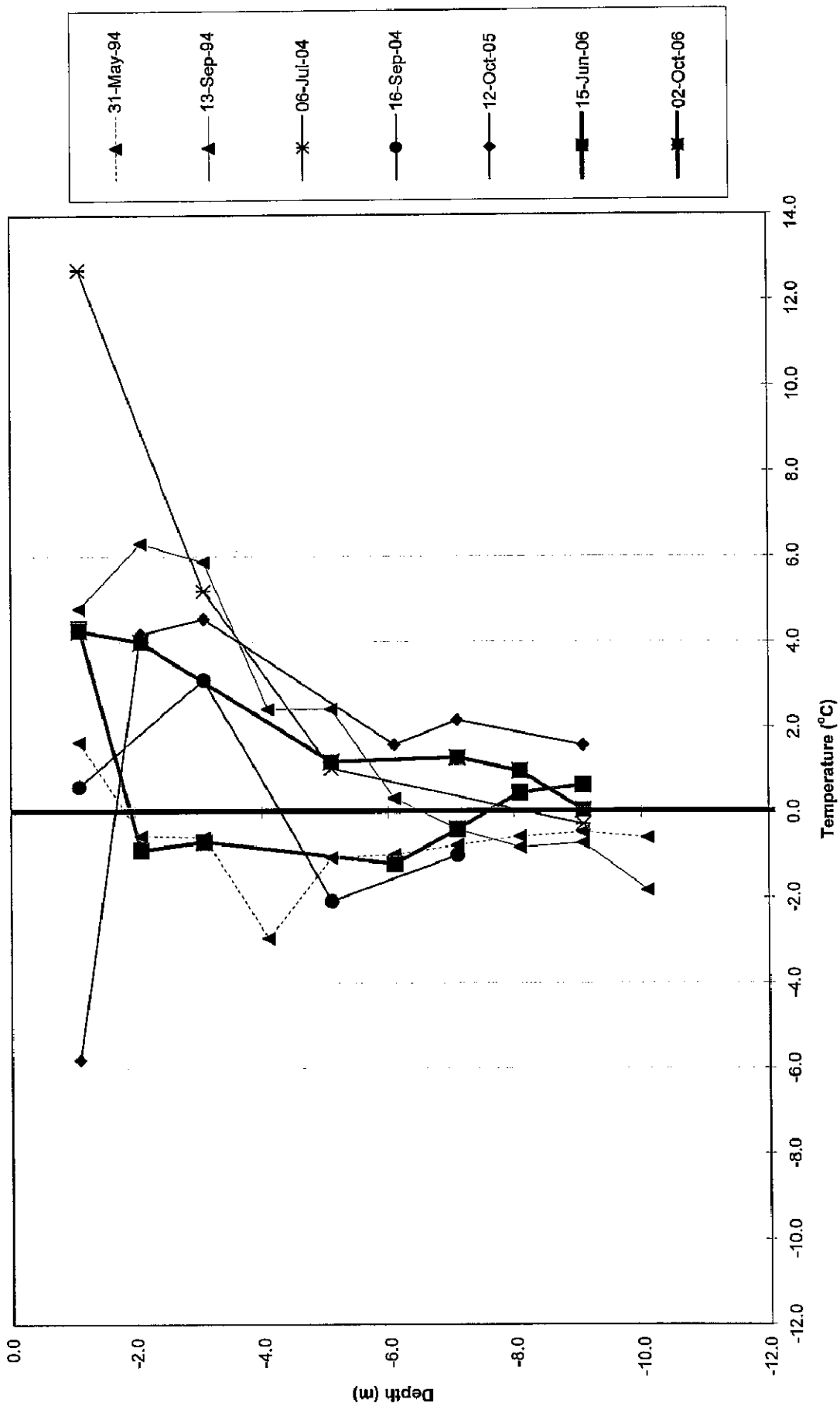


**THERMISTOR SP-2**  
(installed 1981)

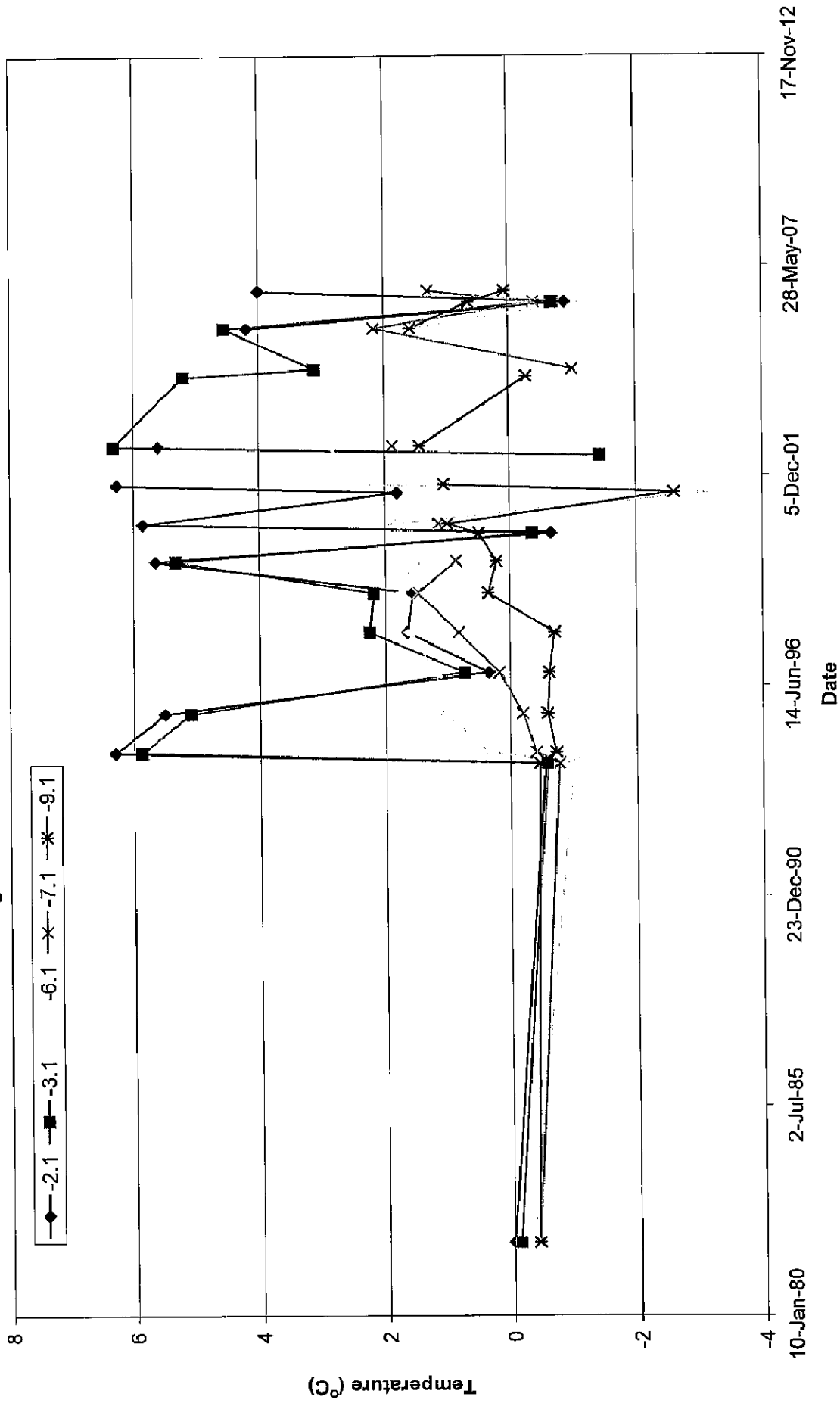




### DIVERSION CANAL SPOIL PILE Geothermal Monitoring SP-3

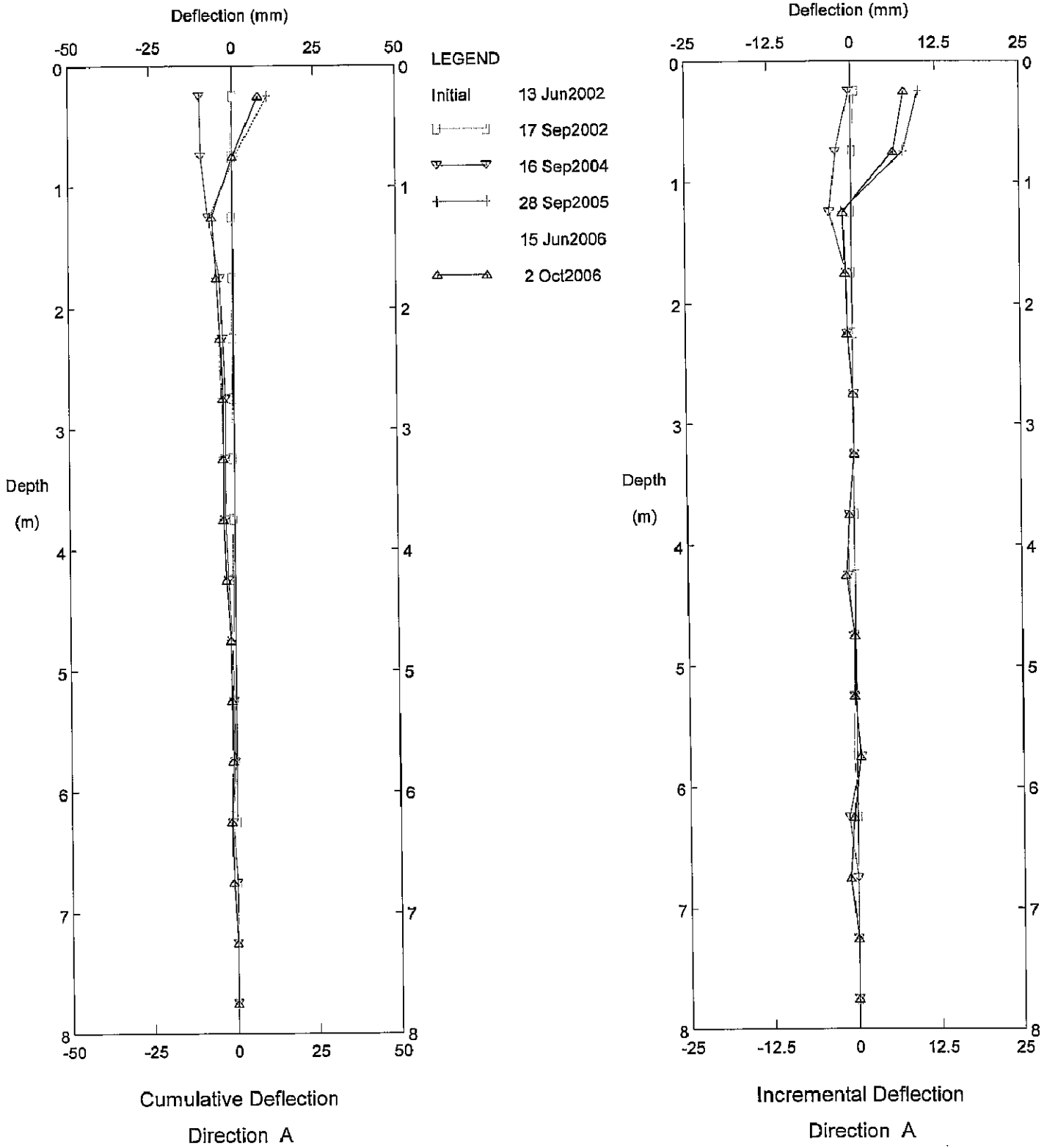


### Diversion Canal Spoil Pile Geothermal Monitoring Long Term Monitoring for Nodes in SP-3



## SLOPE INDICATORS

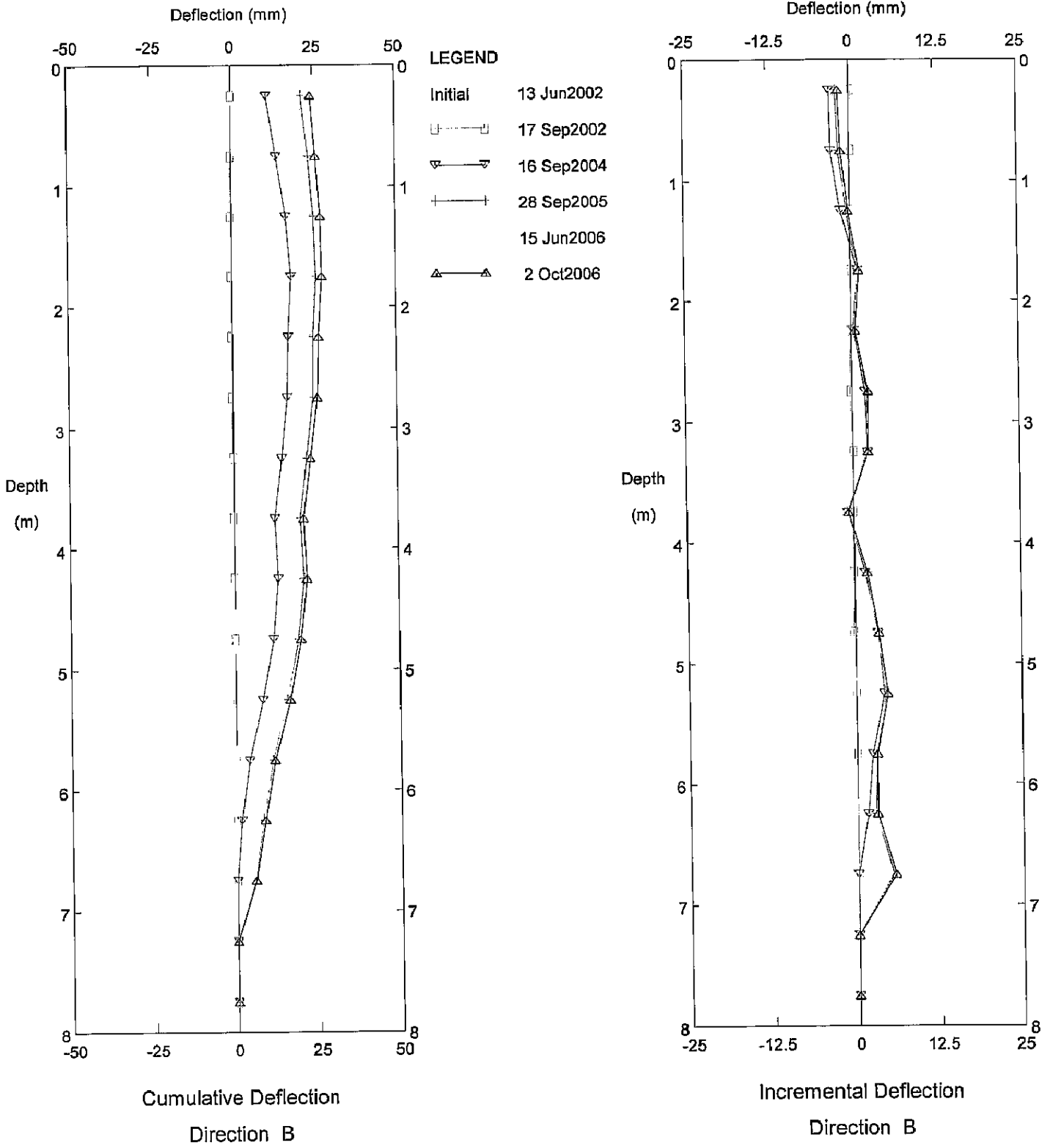
BGC Engineering Inc. - Calgary, AB



SP-2, Inclinometer 1+530

Sets marked \* include zero shift and/or rotation corrections.

BGC Engineering Inc. - Calgary, AB



SP-2, Inclinometer 1+530

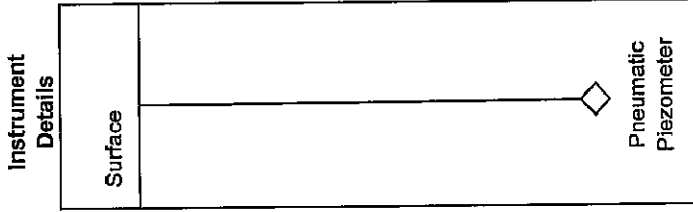
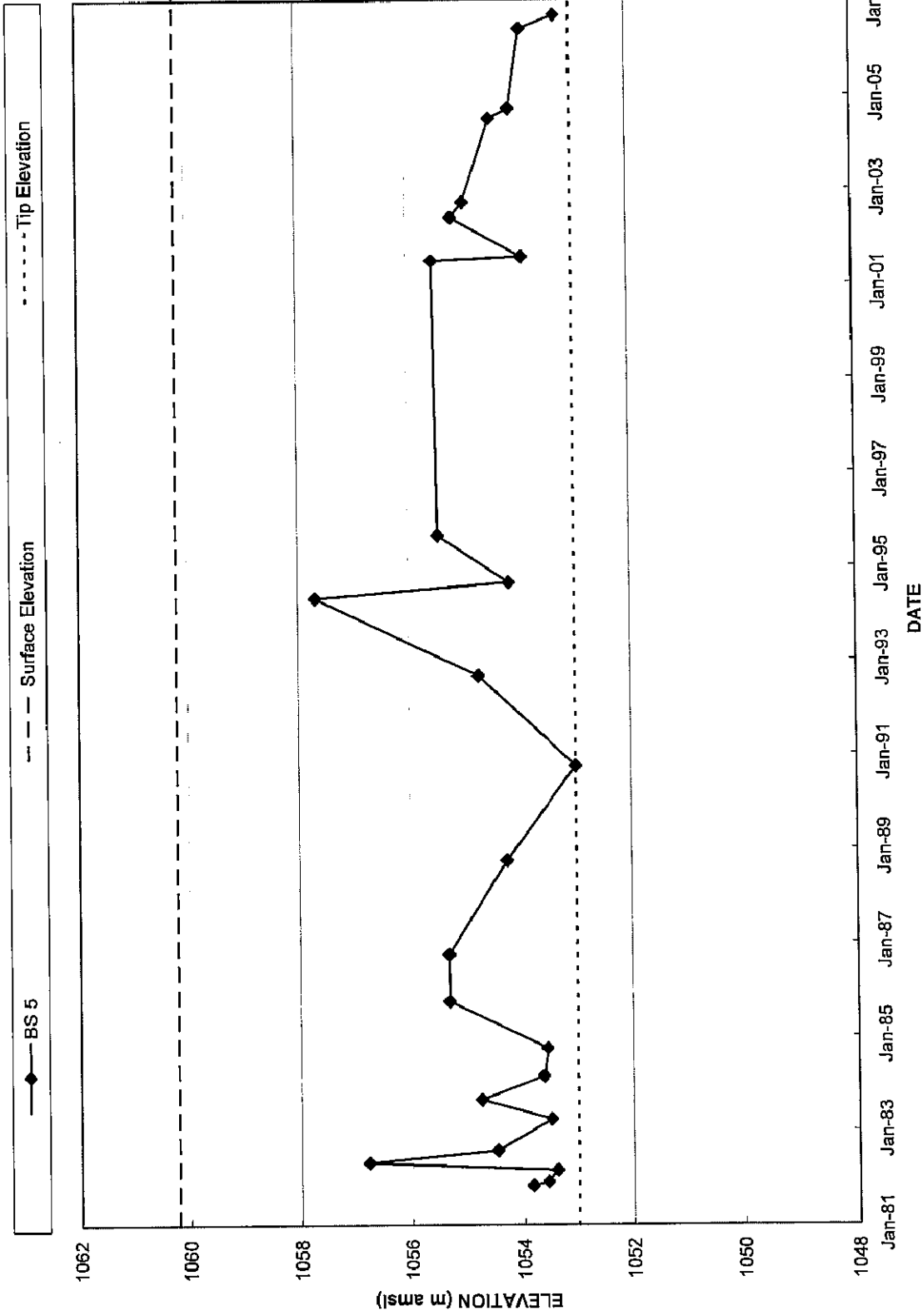
Sets marked \* include zero shift and/or rotation corrections.

## **DIVERSION CANAL BACK SLOPE**

## **PIEZOMETERS**

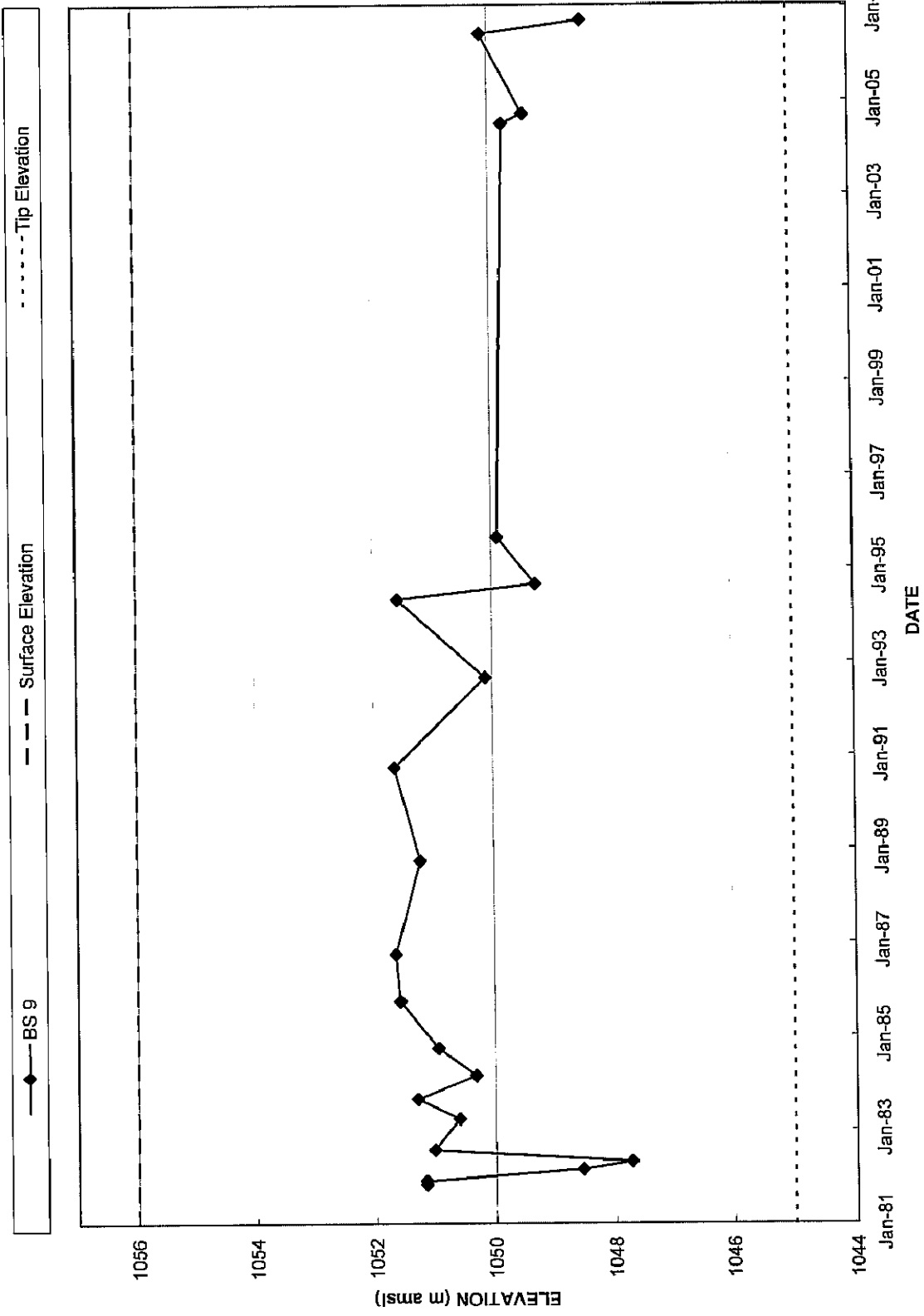
BS-5		Location:	Canal Dyke Backslope	Date Installed:	1981
Surface Protector:		Coordinates:	St.0+960	Ground Elevation (m amsl):	1060.20
yes		953.2N, 1534.6E		Tip Elevation (m amsl):	1053.00
Date		Reading (psi)		Piezometric Elevation (m amsl)	Comments
Nov-81		1.20		1053.84	
Dec-81		0.80		1053.56	
Mar-82		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	
Jun-02		3.10		1055.17	
Sep-02		2.80		1054.96	
Jul-04		2.10		1054.47	
Sep-04		1.60		1054.12	
Jun-06		1.3		1053.91	
Sep-06		0.40		1053.28	

**DIVERSION CANAL BACKSLOPE  
Piezometric Monitoring  
BS5**



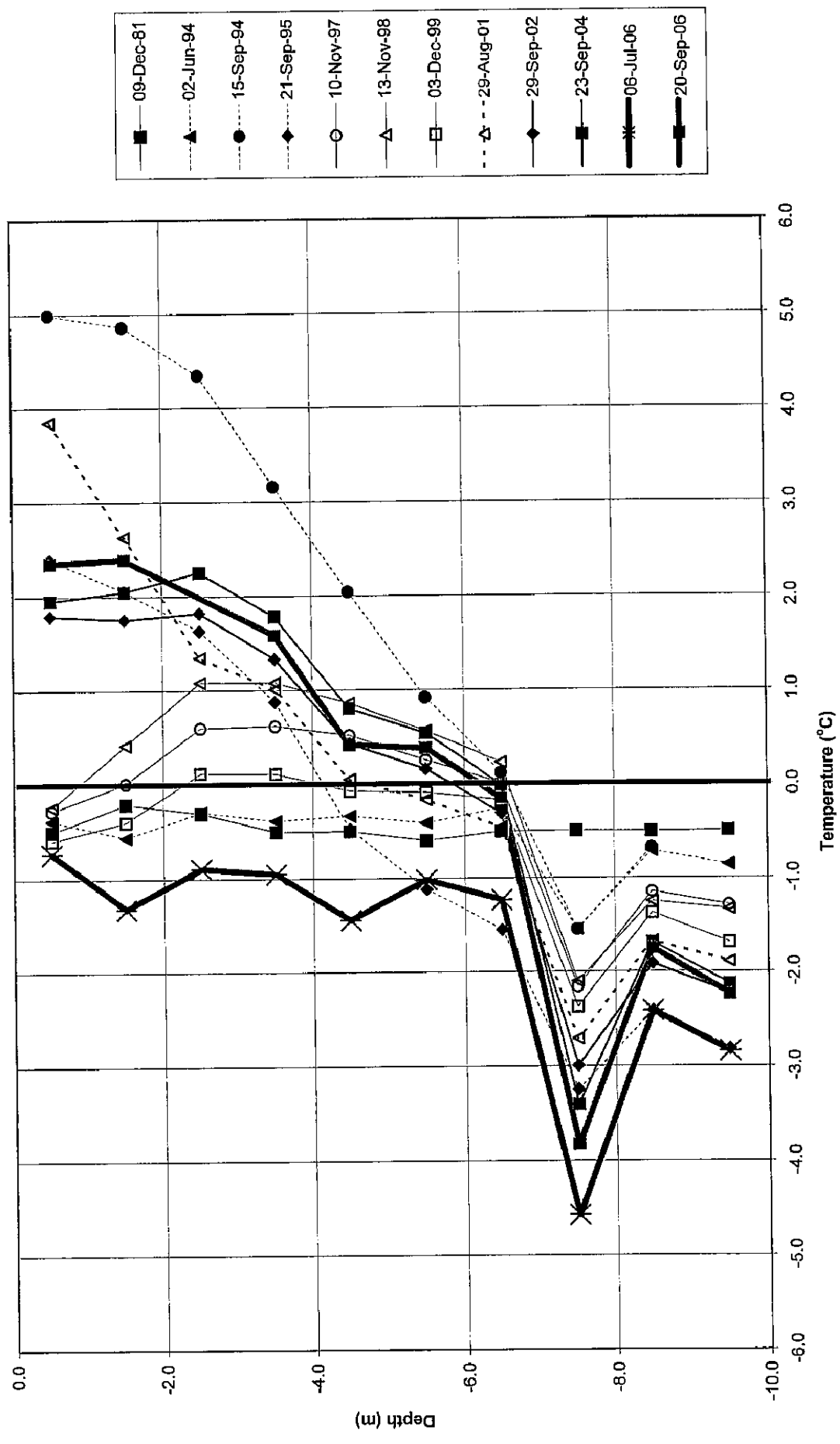
BS-9		Location:	Canal Dyke Backslope	Date installed:	1981
Surface Protector:		Coordinates:	St. 1+530	Ground Elevation (m amsl):	1056.00
yes		Coordinates:	1200N, 1018.4E	Tip Elevation (m amsl):	1045.00
Date		Reading (psi)		Piezometric Elevation (m amsl)	Comments
Nov-81		8.80		1051.16	
Dec-81		8.80		1051.16	
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		8.80		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	
7-Jul-04		6.80		1049.76	
23-Sep-04		6.30		1049.41	
6-Jun-06		7.30		1050.11	
20-Sep-06		4.80		1048.43	

**DIVERSION CANAL BACKSLOPE**  
**Piezometric Monitoring**  
**BS9**

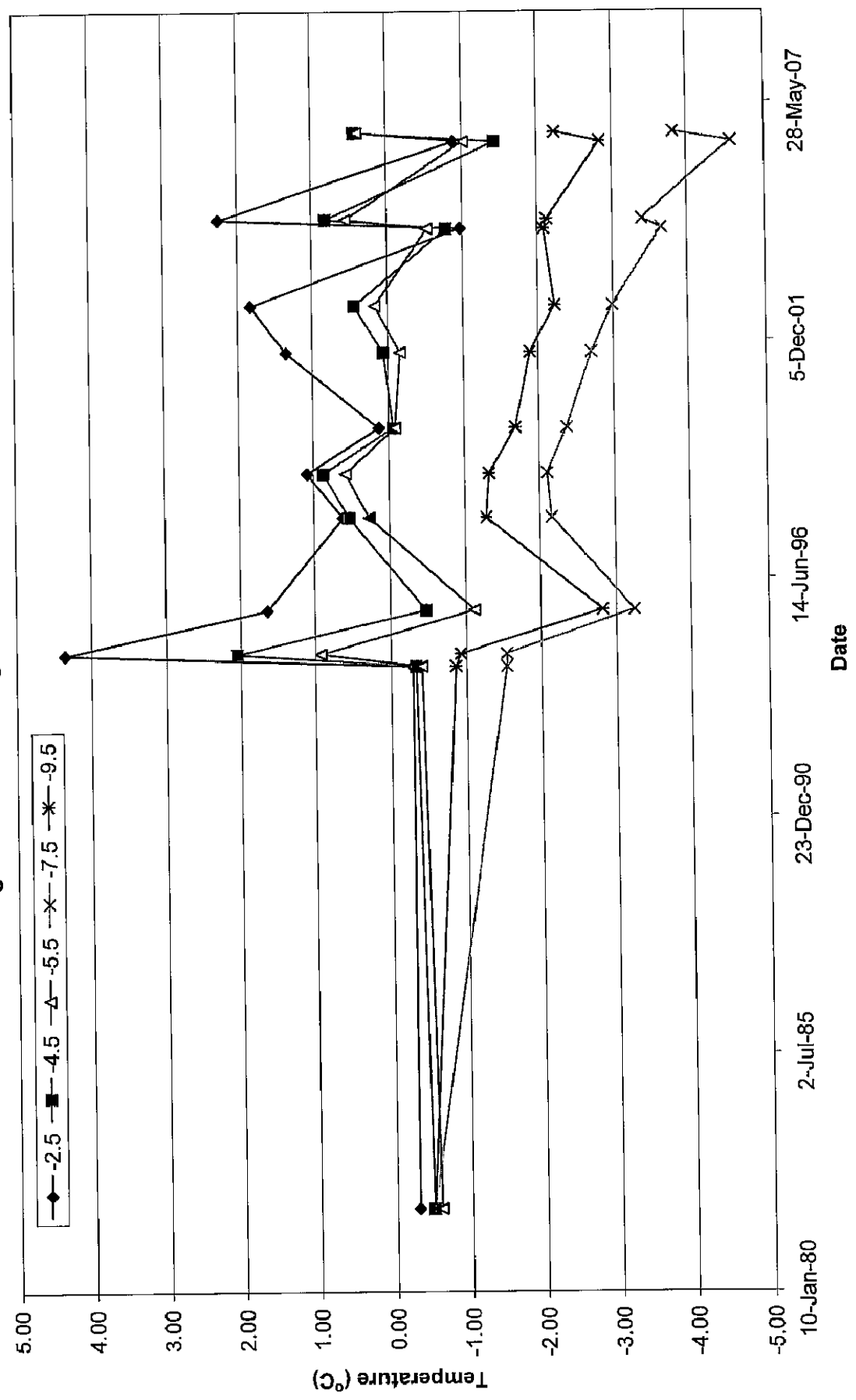


## THERMISTORS

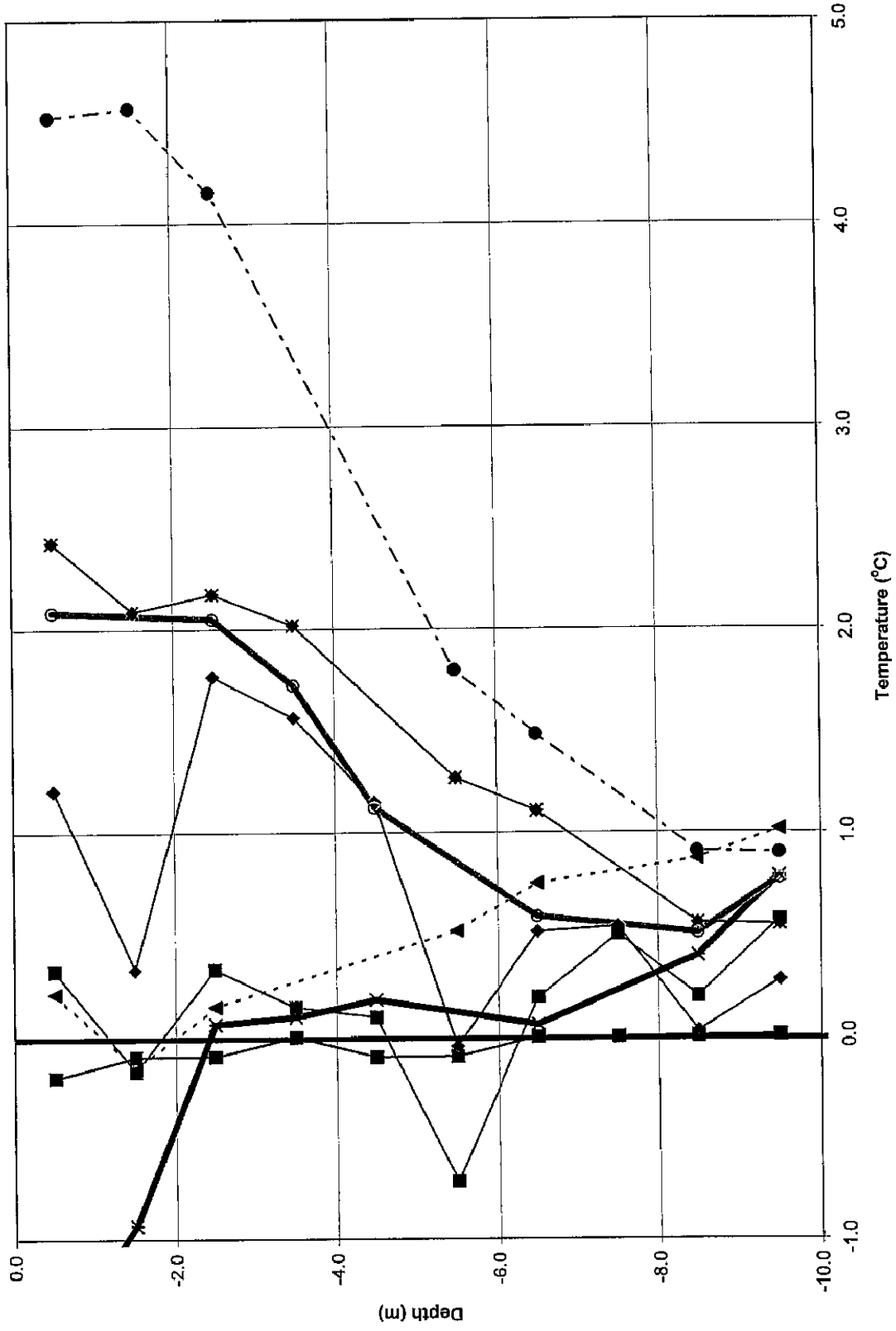
**DIVERSION CANAL BACKSLOPE**  
Geothermal Monitoring  
**BS-10**



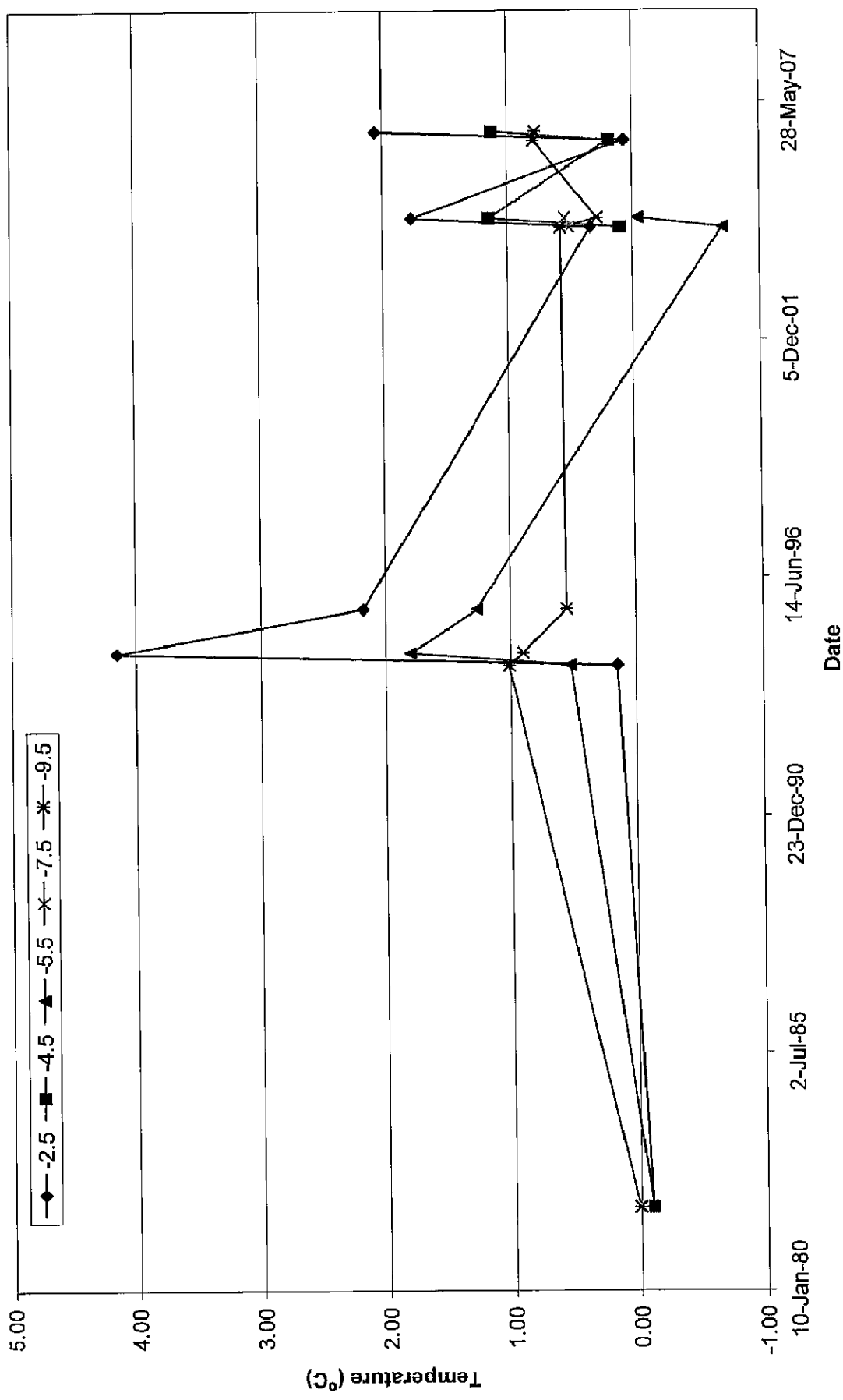
### Diversion Canal Backslope Geothermal Monitoring Long Term Monitoring for Nodes in BS-10



**DIVERSION CANAL BACKSLOPE**  
Geothermal Monitoring  
BS-12

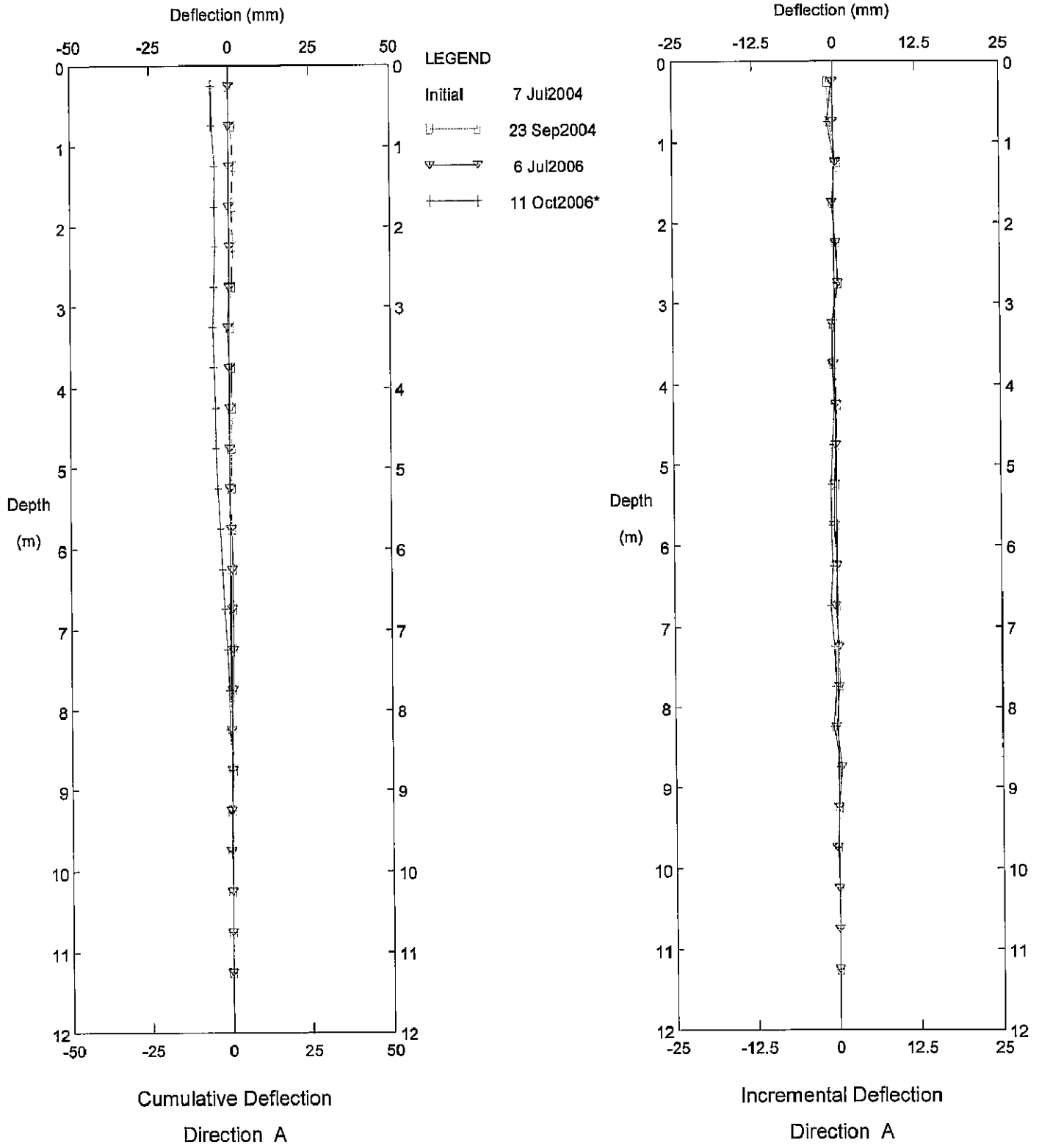


### Diversion Canal Backslope Geothermal Monitoring Long Term Monitoring for Nodes in BS-12



## **SLOPE INDICATORS**

BGC Engineering Inc. - Calgary, AB

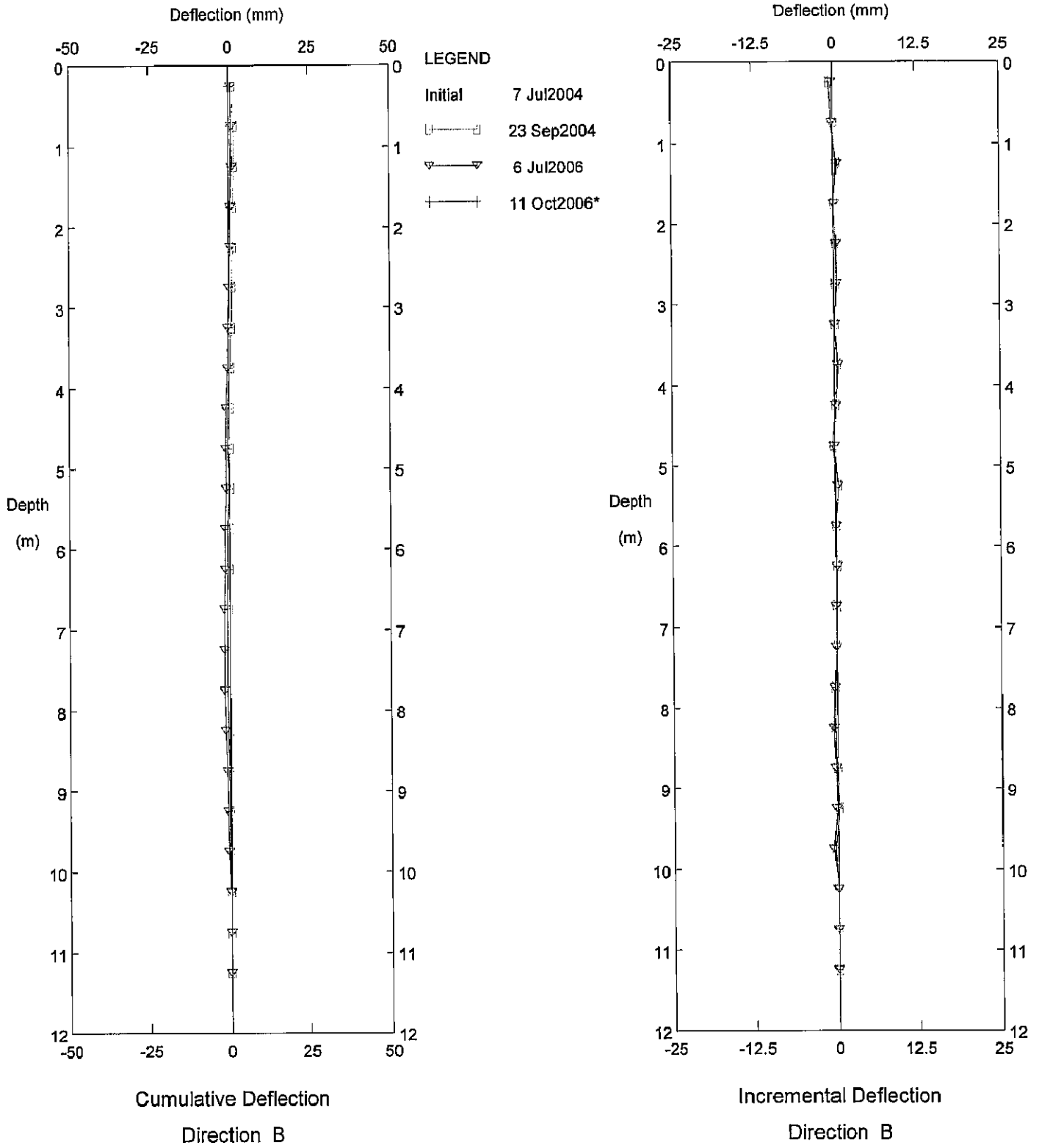


Faro, Inclinometer BS-5

Deloitte and Touche

Sets marked \* include zero shift and/or rotation corrections.

BGC Engineering Inc. - Calgary, AB

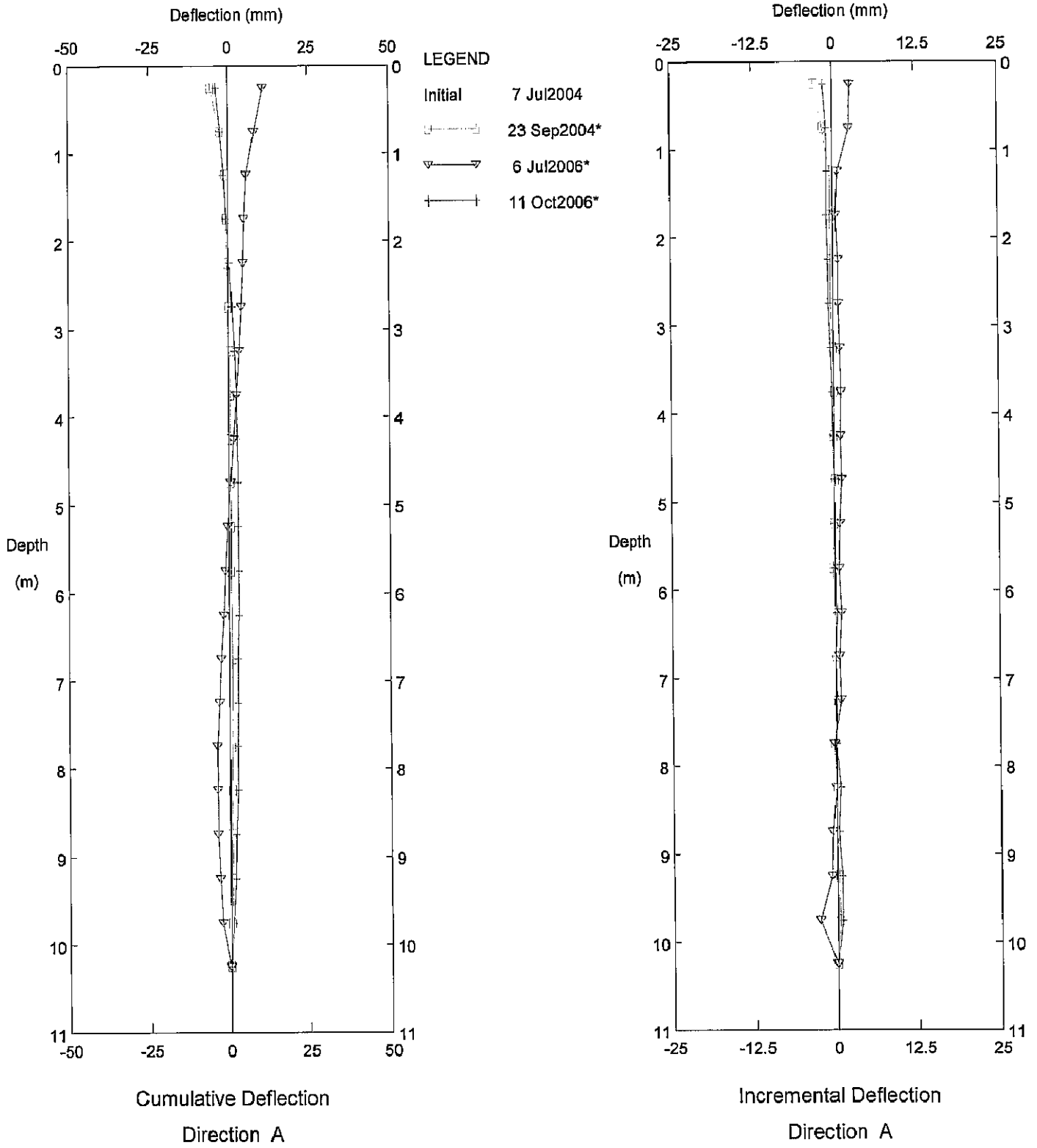


Faro, Inclinometer BS-5

Deloitte and Touche

Sets marked \* include zero shift and/or rotation corrections.

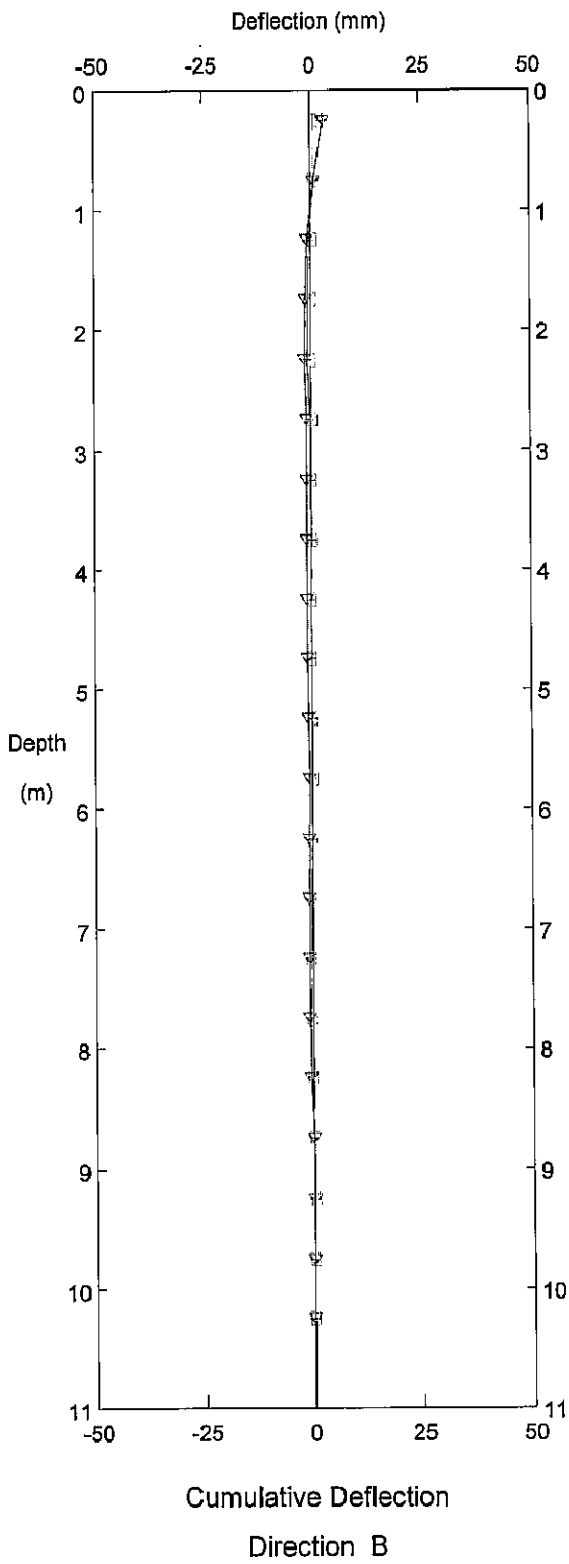
BGC Engineering Inc. - Calgary, AB



BS-9, Inclinator 1+530

Sets marked \* include zero shift and/or rotation corrections.

BGC Engineering Inc. - Calgary, AB



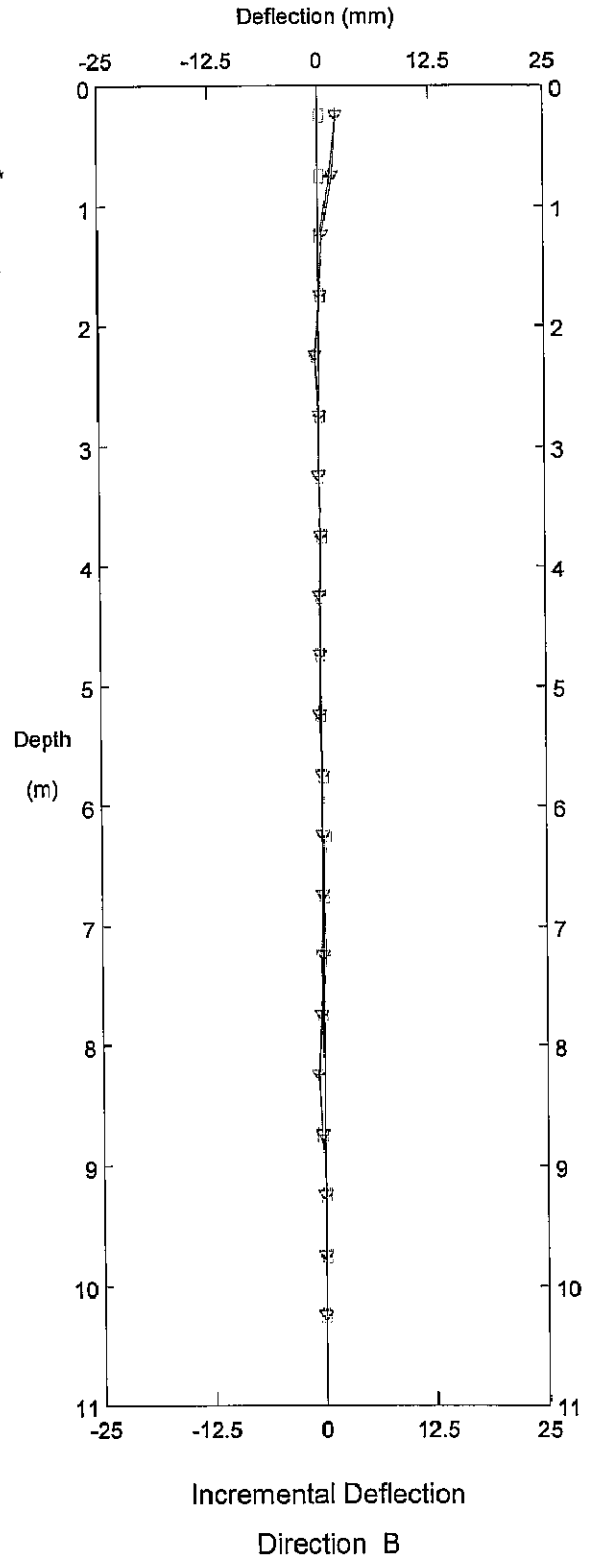
LEGEND

Initial 7 Jul 2004

□ 23 Sep 2004\*

▽ 6 Jul 2006\*

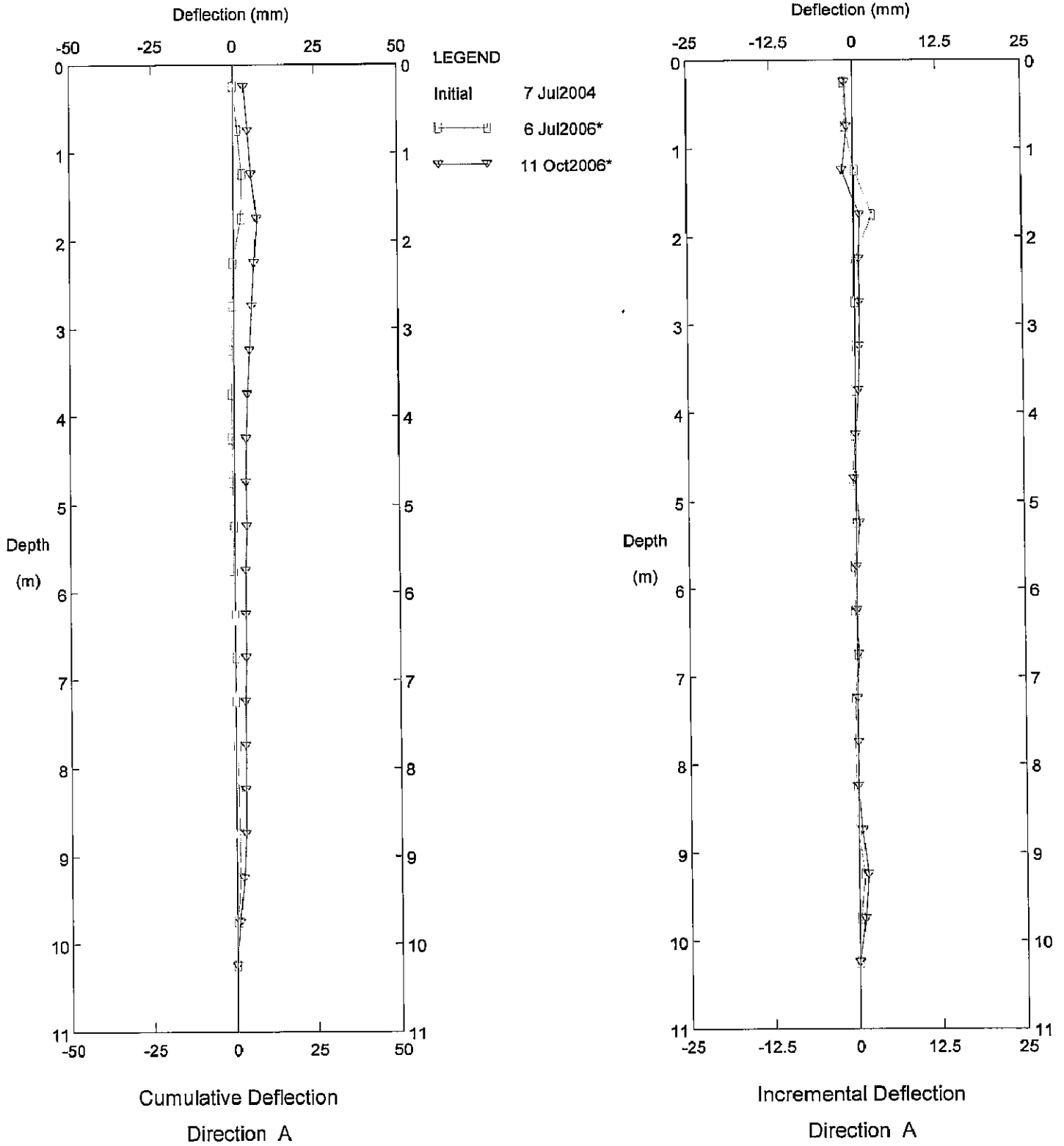
+ 11 Oct 2006\*



BS-9, Inclinator 1+530

Sets marked \* include zero shift and/or rotation corrections.

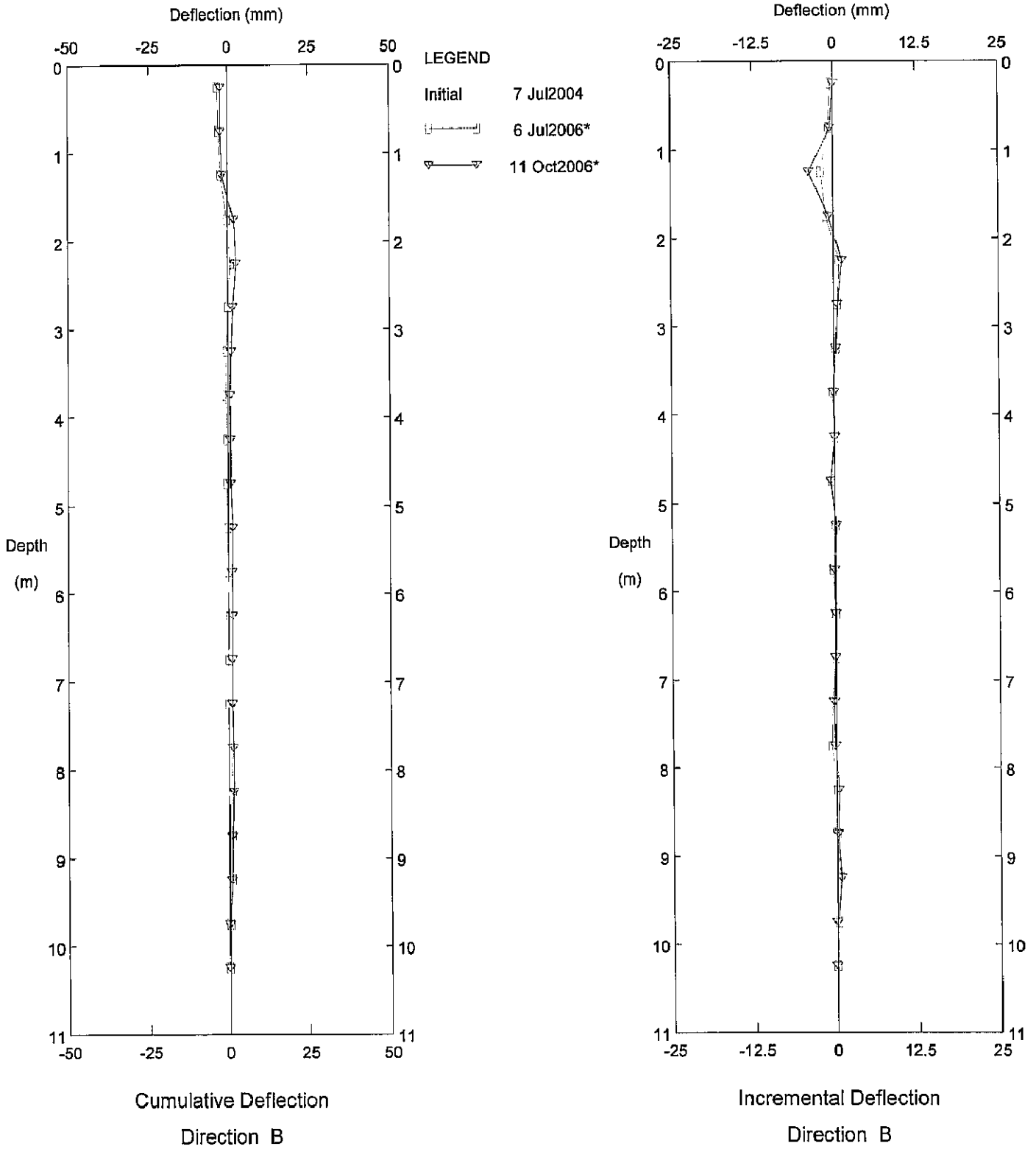
BGC Engineering Inc. - Calgary, AB



BS-10, Inclinometer 1+900

Sets marked \* include zero shift and/or rotation corrections.

BGC Engineering Inc. - Calgary, AB



BS-10, Inclinometer 1+900

Sets marked \* include zero shift and/or rotation corrections.

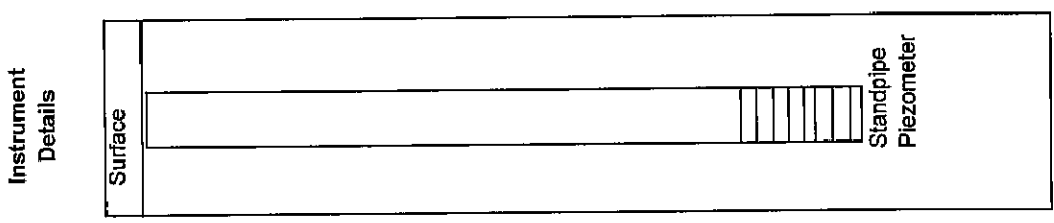
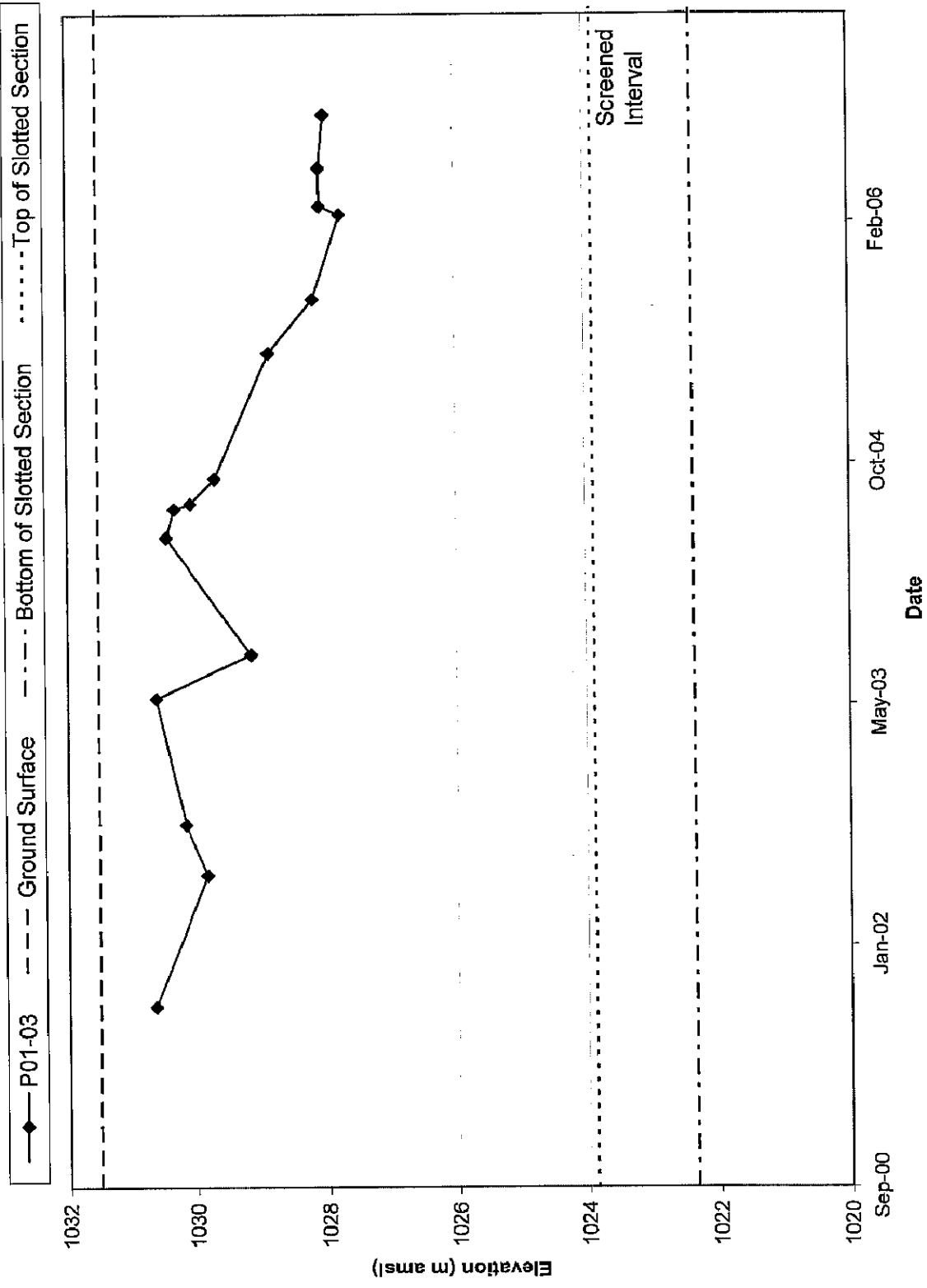
## INTERMEDIATE DAM

## **PIEZOMETERS**

**Faro Mine Instrumentation Intermediate Dam**

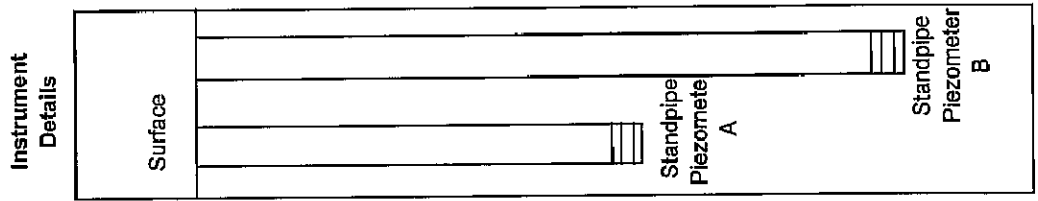
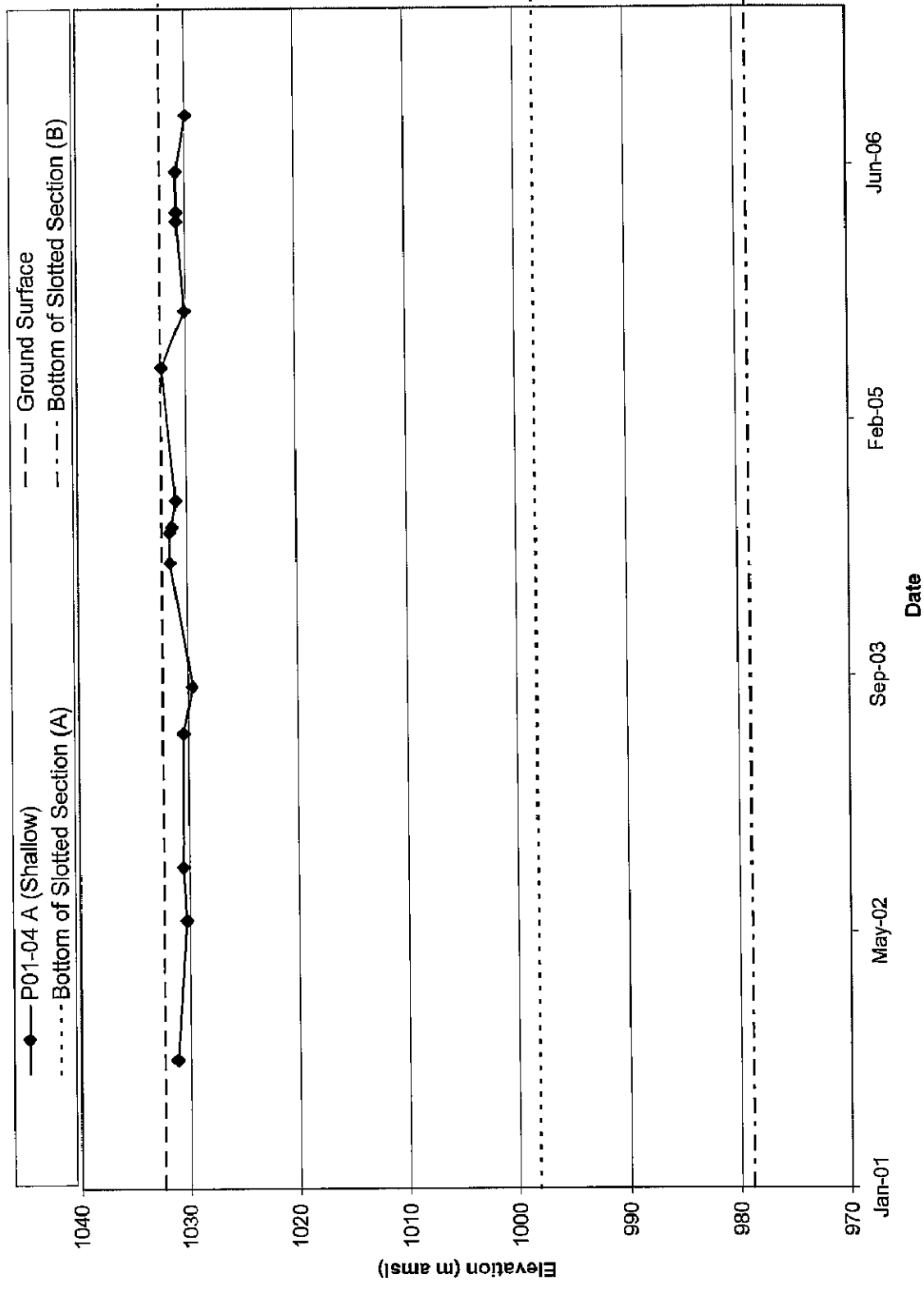
<b>P01-03</b>		<b>Location:</b>	Intermediate Dam Toe	<b>2004 Stick-Up (m):</b>	0.61
		<b>Coordinates:</b>	8V580636 6914064	<b>2004 Surface Elevation ( m amsl):</b>	1031.52
<b>Surface Protector:</b>	yes	<b>Date Installed:</b>	1996	<b>Tip Elevation (m amsl):</b>	1022.35
				<b>Screened Interval (m bgs):</b>	7.78 - 9.30
<b>Date</b>		<b>Water level from top of pipe (m)</b>	<b>Piezometric Elevation (m amsl)</b>	<b>Pond El. (m amsl)</b>	<b>Comments</b>
11-Sep-01		1.58	1030.63		
10-Jun-02		2.39	1029.82		
23-Sep-02		2.06	1030.15	1047.2	
11-Jun-03		1.61	1030.60		
10-Sep-03		3.075	1029.14		
10-May-04		1.7	1030.43		2004 survey info used from here on
08-Jul-04		1.82	1030.31		
19-Jul-04		2.07	1030.06		
09-Sep-04		2.455	1029.68		Dirty, strong sulphur smell
26-May-05		3.285	1028.85		ph=6.7, temp=9.0C
14-Sep-05		3.96	1028.17		ph=6.8, temp=6.4C
09-Mar-06		4.38	1027.75		
27-Mar-06		4.07	1028.06		
14-Jun-06		4.06	1028.07		
02-Oct-06		4.14	1027.99		

**INTERMEDIATE DAM  
Piezometric Monitoring  
P01-03 (2001 GLL Monitoring Well)**

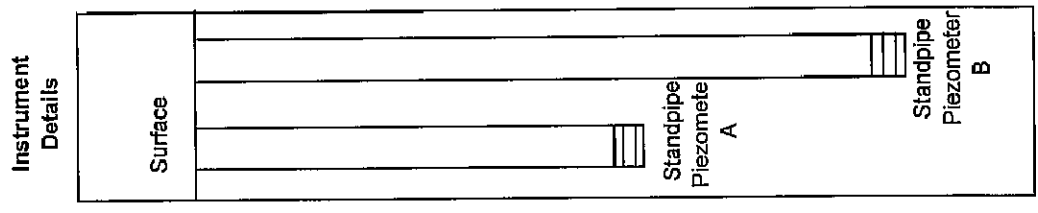
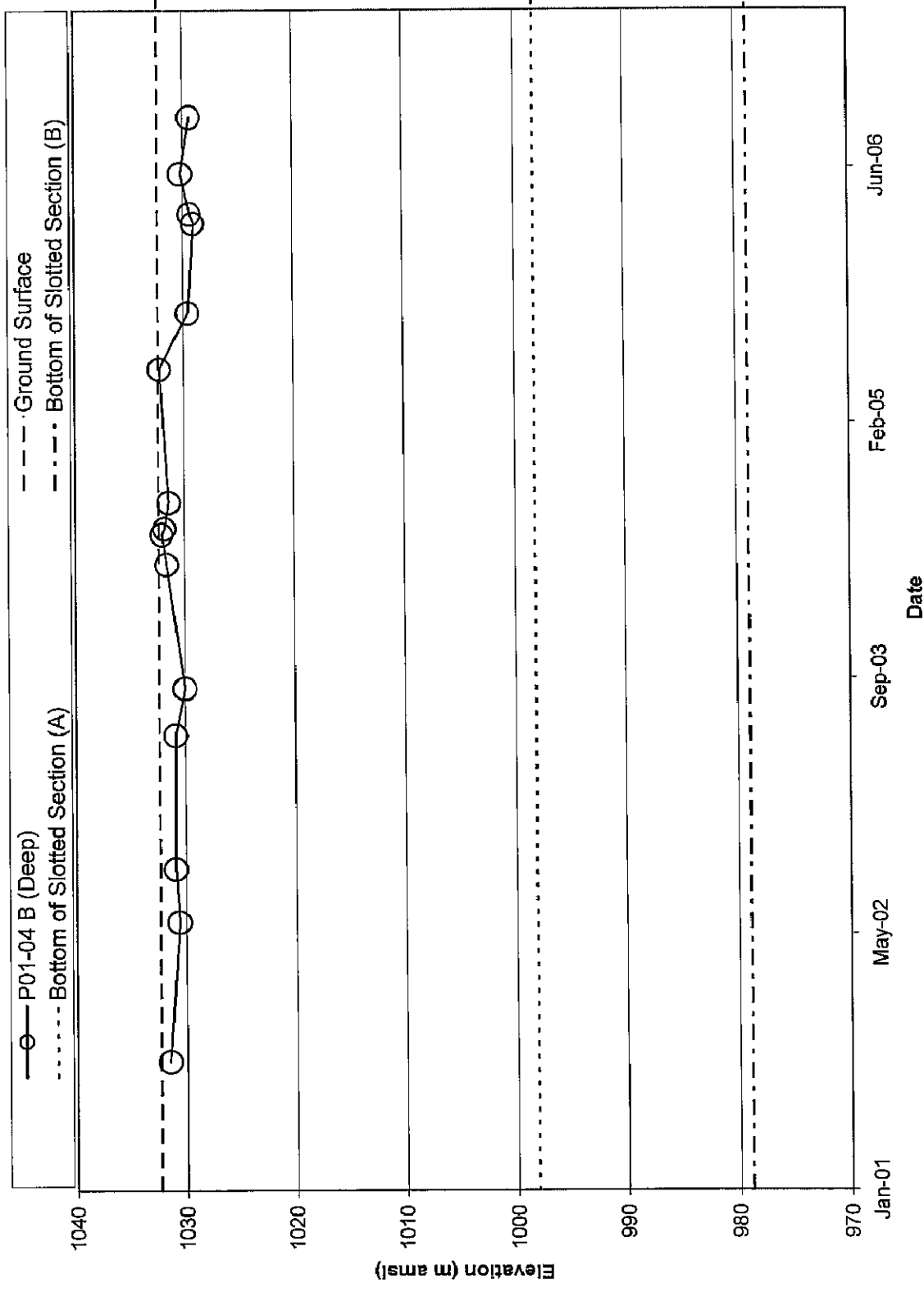


<b>P01-04</b>		<b>Location:</b>	Intermediate Dam Toe	<b>2004 Stick Up - A (m):</b>	0.45
		<b>Coordinates:</b>	8V580489 6913888	<b>2004 Stick Up -B (m):</b>	0.45
<b>Surface Protector:</b>	yes	<b>Date Installed:</b>	1996	<b>2004 Surface Elevation ( m amsl):</b>	1032.32
		<b>Screened Interval -A (m bgs):</b>	31.7 - 33.22	<b>Tip Elevation - A (m amsl):</b>	998.17
		<b>Screened Interval - B (m bgs):</b>	51.0 - 52.5	<b>Tip Elevation - B (m amsl):</b>	978.89
<b>Date</b>	<b>Water level from top of pipe (m)</b>		<b>Piezometric Elevation (m amsl)</b>		<b>Comments</b>
	<b>A</b>	<b>B</b>	<b>A</b>	<b>B</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	0.755	1031.59	1032.02	
19-Jul-04	1.42	0.99	1031.35	1031.78	
09-Sep-04	1.825	1.4	1030.95	1031.37	
26-May-05	0.53	0.6	1032.24	1032.17	bottom, no beep
14-Sep-05	2.69	3.215	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	1.985	2.595	1030.79	1030.18	bottom
02-Oct-06	2.85	3.4	1029.92	1029.37	

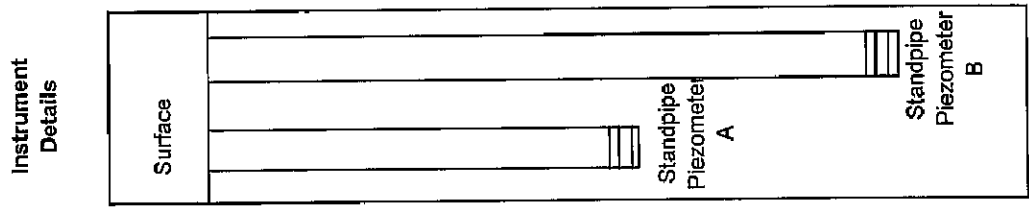
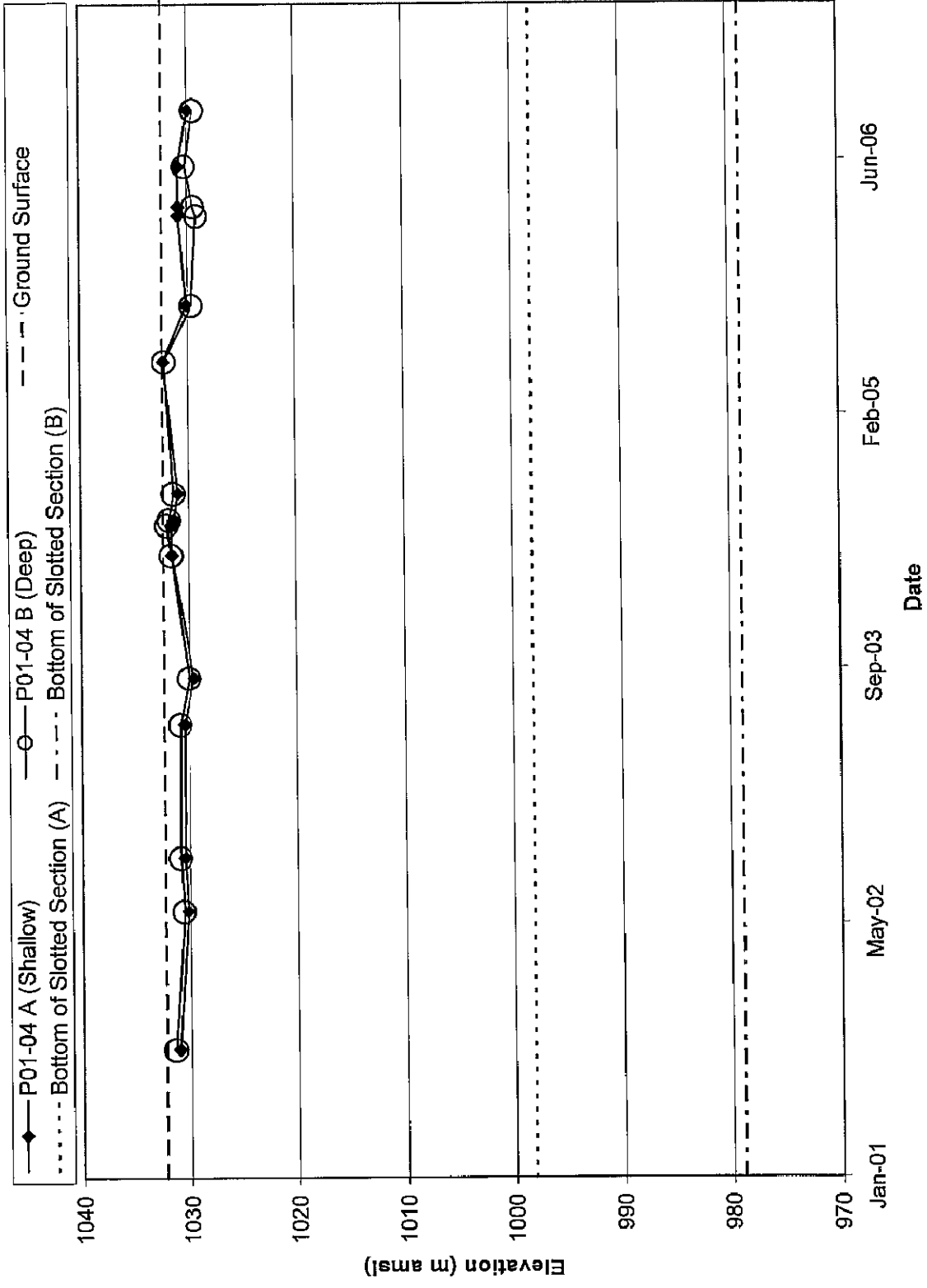
**INTERMEDIATE DAM  
Piezometric Monitoring  
P01-04A (2001 - GLL Monitoring Well)**



## INTERMEDIATE DAM Piezometric Monitoring P01-04B (2001 - GLL Monitoring Well)



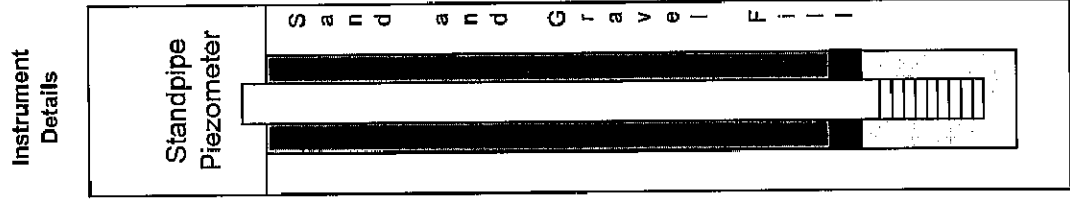
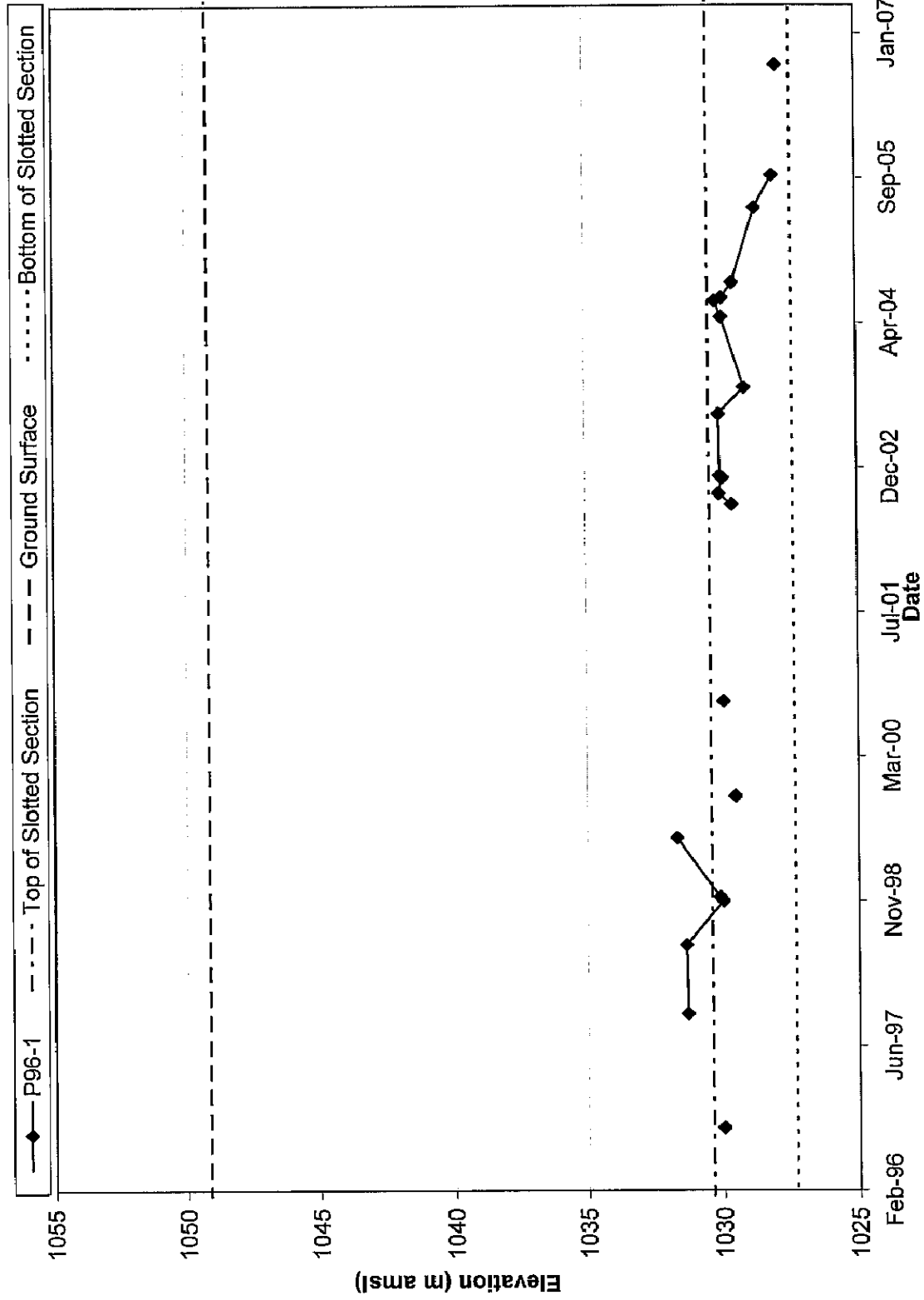
**INTERMEDIATE DAM  
Piezometric Monitoring  
P01-04 (2001 - GLL Monitoring Well)**



Faro Mine Instrumentation - Intermediate Dam

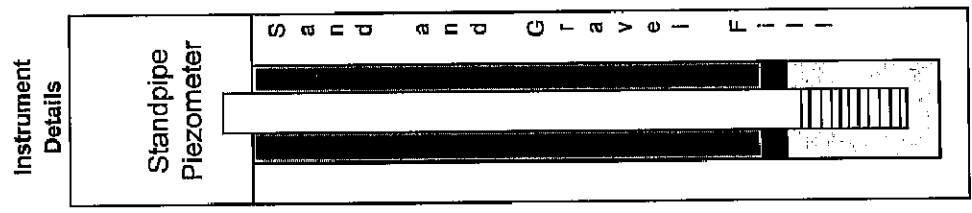
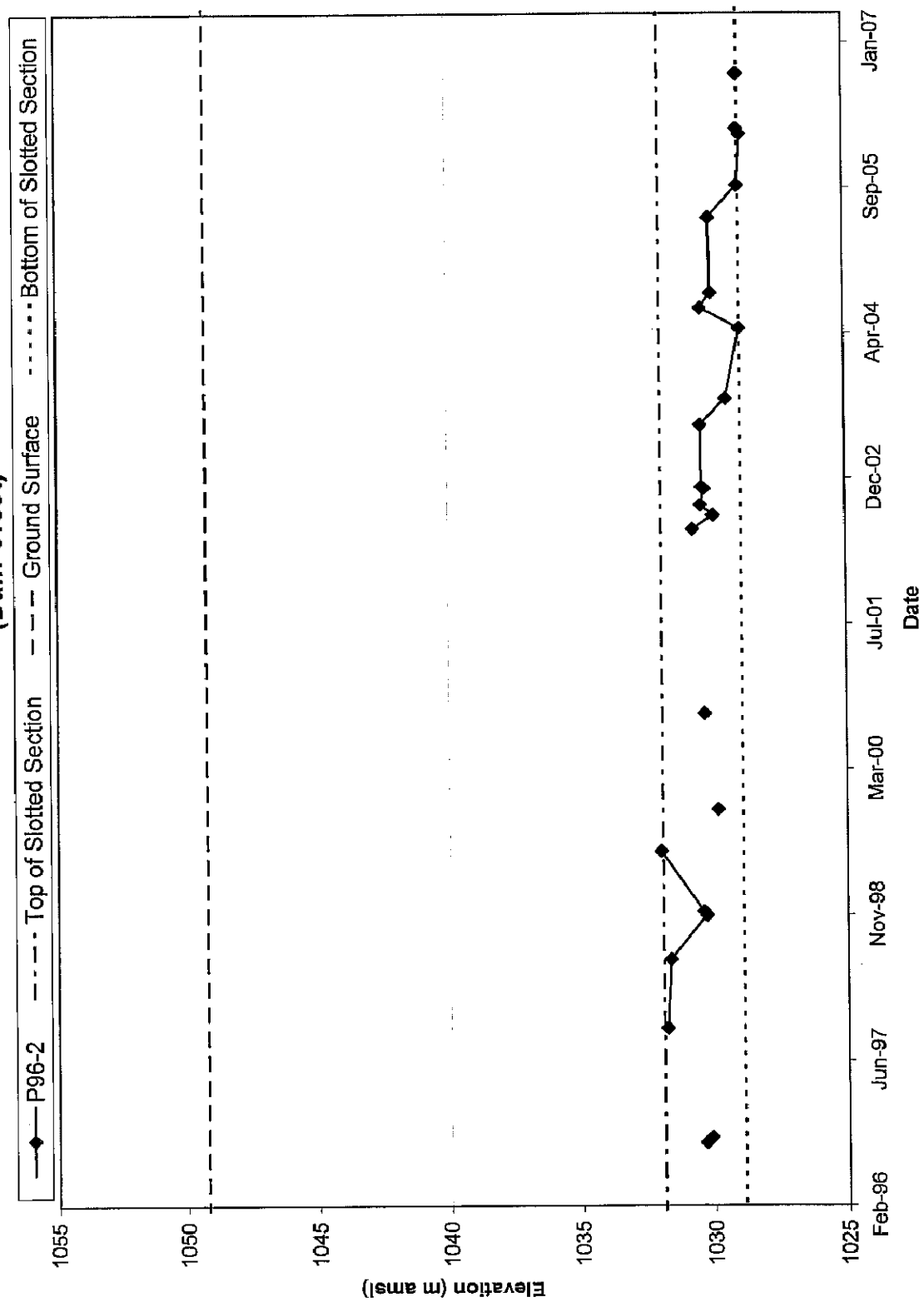
BH96-1		Location: Intermediate Dam Crest			
		Coordinates:	8V580563 6913908	2004 Stick Up:	0.68
Surface Protector:	yes	Date Installed:	1996	2004 Surface Elevation (m amsl):	1049.15
		Screened Interval (m bgs):	18.77 - 21.80	Tip Elevation (m amsl):	1027.35
Date		Water level from top of pipe (m)		Piezometric 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		18.4		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		20.025		1030.03	
10-Sep-03		20.96		1029.09	
12-May-04		19.925		1029.91	2004 survey data used from here on
8-Jul-04		19.695		1030.14	
19-Jul-04		19.945		1029.89	
9-Sep-04		20.325		1029.51	clear
26-May-05		21.17		1028.66	ICE
14-Sep-05		21.82		1028.01	
09-Mar-06					
27-Mar-06					no read, frozen
14-Jun-06		2.27			likely a mistake
02-Oct-06		21.98		1027.85	

**INTERMEDIATE DAM  
Piezometric Monitoring  
P96-1 Monitoring Well (Robertson, 1996)  
(Dam Crest)**



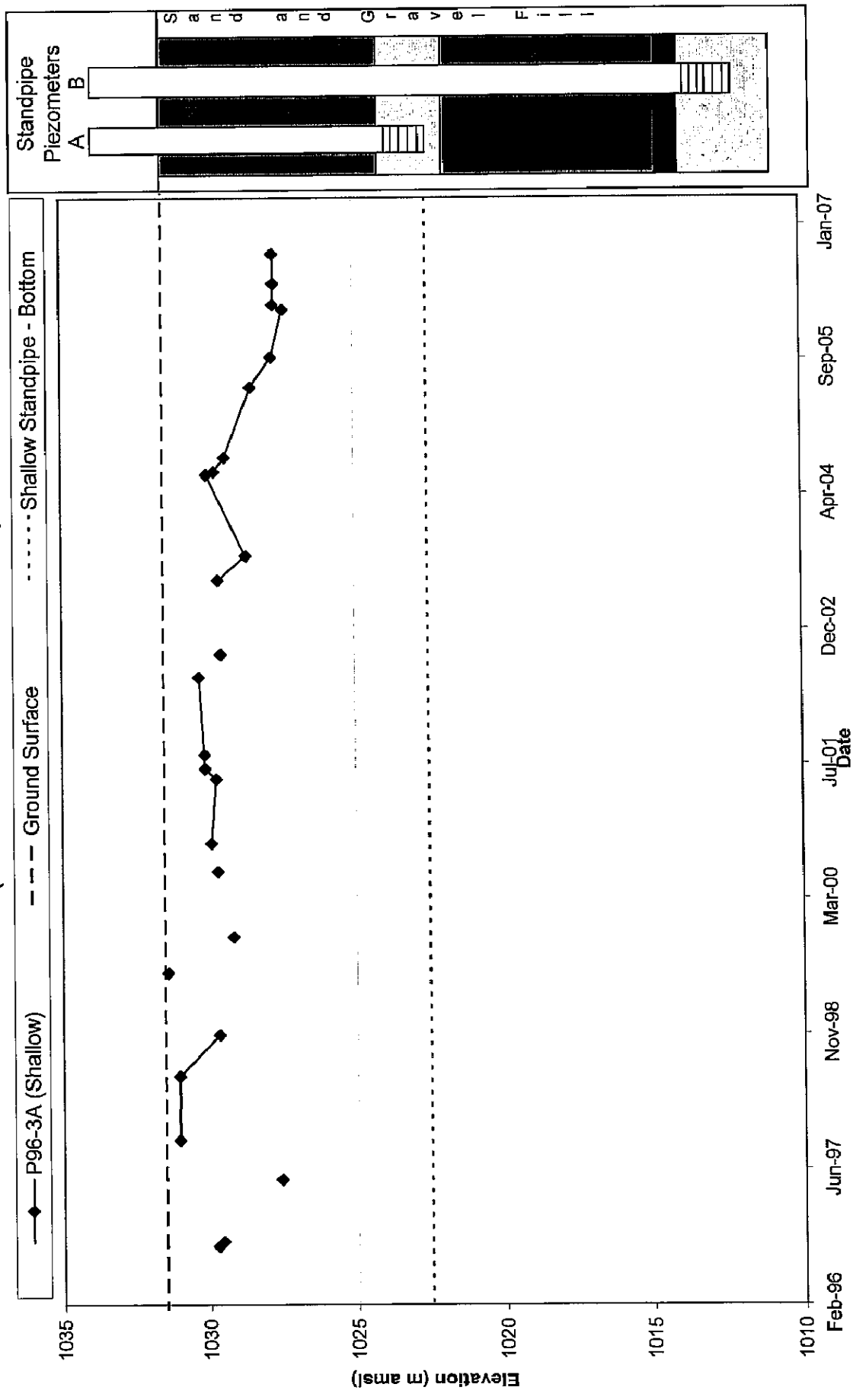
BH96-2		Location: Intermediate Dam Crest			
		Coordinates:	8V580696 6914096	Tip Elevation (m amsl):	1028.87
Surface Protector:	yes	Date Installed:	1996 <th>2004 Surface Elevation: (m amsl)</th> <td>1049.22</td>	2004 Surface Elevation: (m amsl)	1049.22
		Screened Interval (m bgs):	17.13 - 20.12	2004 Stick 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		18.3		1031.75	
1-Jun-98		18.44		1031.61	
31-Oct-98		19.8		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		1029.60	
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		19.375		1030.68	
5-Aug-02		20.15		1029.90	
10-Sep-02		19.68		1030.37	
4-Nov-02		19.815		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		19.615		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
09-Mar-06		21.15		1028.79	
27-Mar-06		21.03		1028.91	no beep, mud on probe
14-Jun-06		13.05			
02-Oct-06		21.04		1028.90	

**Intermediate Dam  
Piezometric Monitoring  
P96-2 Monitoring Well (Robertson, 1996)  
(Dam Crest)**

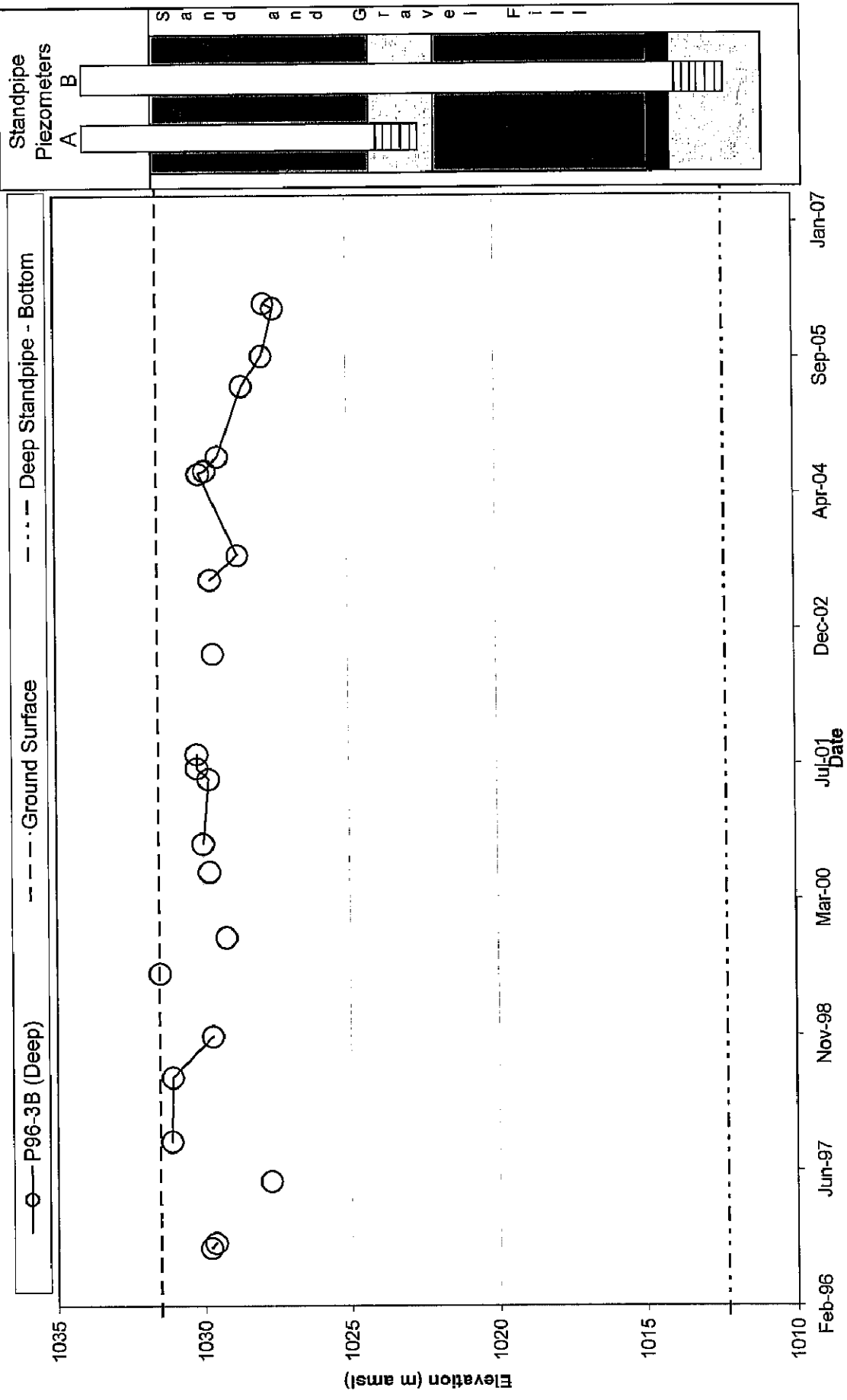


BH96-3		Location:	Intermediate Dam Toe, near the North Abutment		2004 Stick Up - A (m):	0.65
		Coordinates:	8V580529 6913934		2004 Stick Up - B (m):	0.59
Surface Protector:	yes	Date Installed:	1996		2004 Surface Elevation (m amsl):	1031.48
		Tip Elevation - A (m amsl):	1022.43		Screened Interval - A (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	2.4	1029.55	1029.63		
27-Sep-96						
13-May-97	4.5	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	0.7	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	2.2	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	2.565	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	2.4	2.225	1029.73	1029.85		
09-Sep-04	2.77	2.645	1029.36	1029.43	clear, sulphur smell	
26-May-05	3.66	3.49	1028.47	1028.58		
14-Sep-05	4.365	4.18	1027.77	1027.69		
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	4.3	1027.71	1027.77		

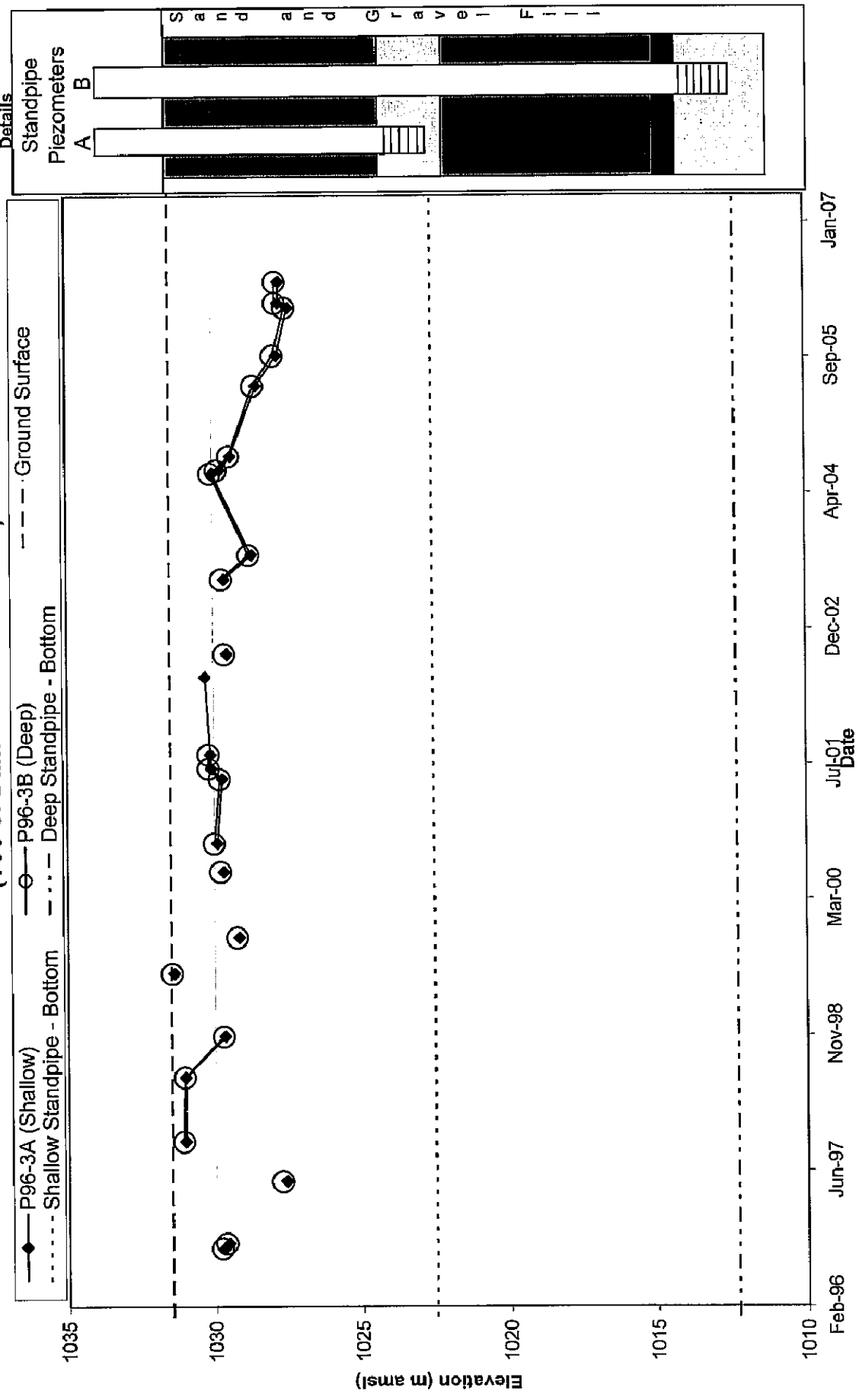
**INTERMEDIATE DAM**  
**Piezometric Monitoring**  
**P96-3A Monitoring Well (Robertson, 1996)**  
**(Toe of Dam - North Abutment)**



**INTERMEDIATE DAM**  
**Piezometric Monitoring**  
**P96-3B Monitoring Well (Robertson, 1996)**  
**(Toe of Dam - North Abutment)**

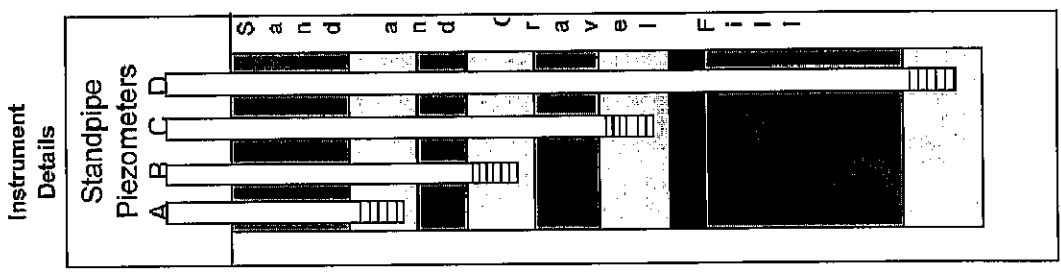
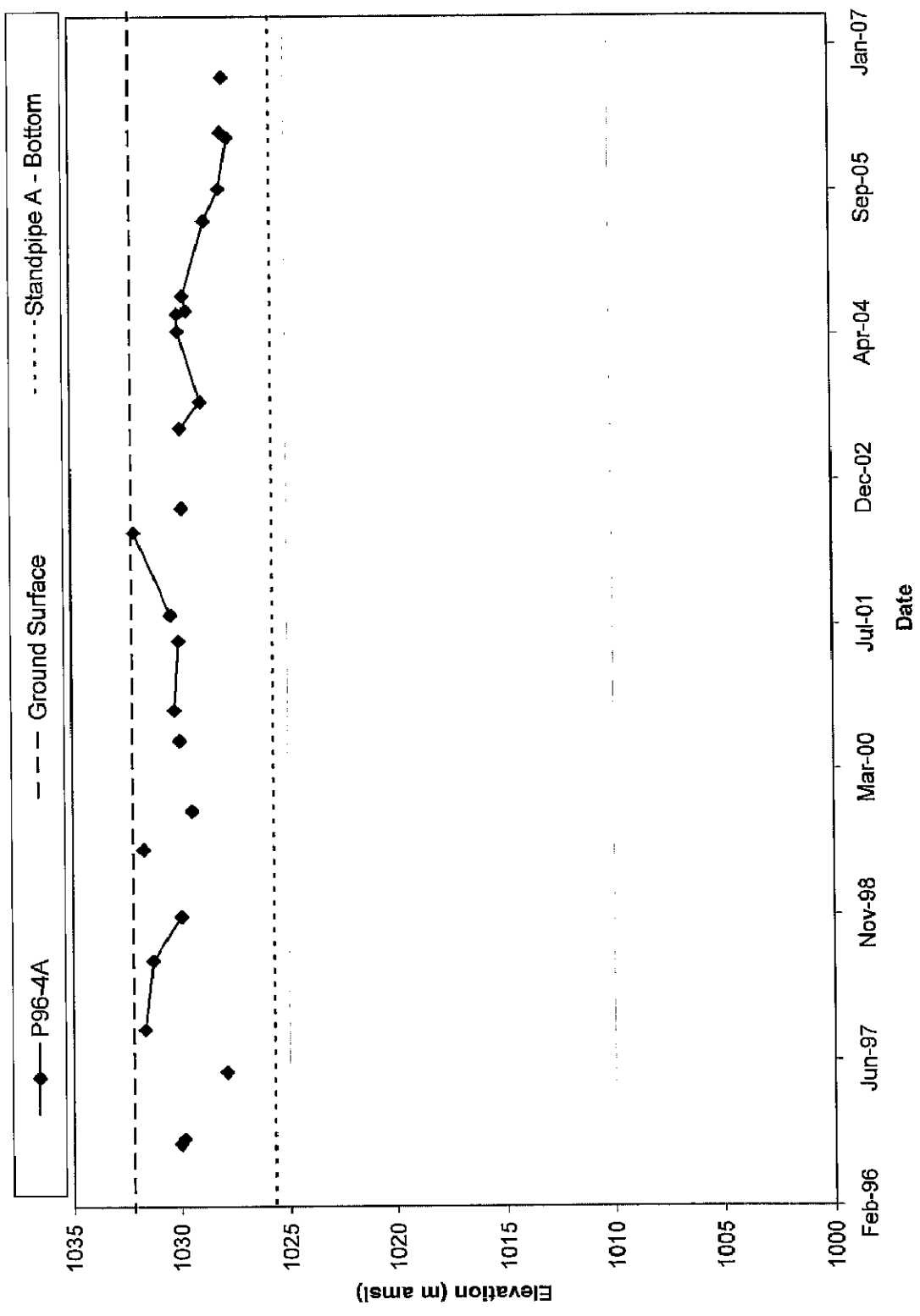


**INTERMEDIATE DAM**  
**Piezometric Monitoring**  
**P96-3 Monitoring Well (Robertson, 1996)**  
**(Toe of Dam - North Abutment)**

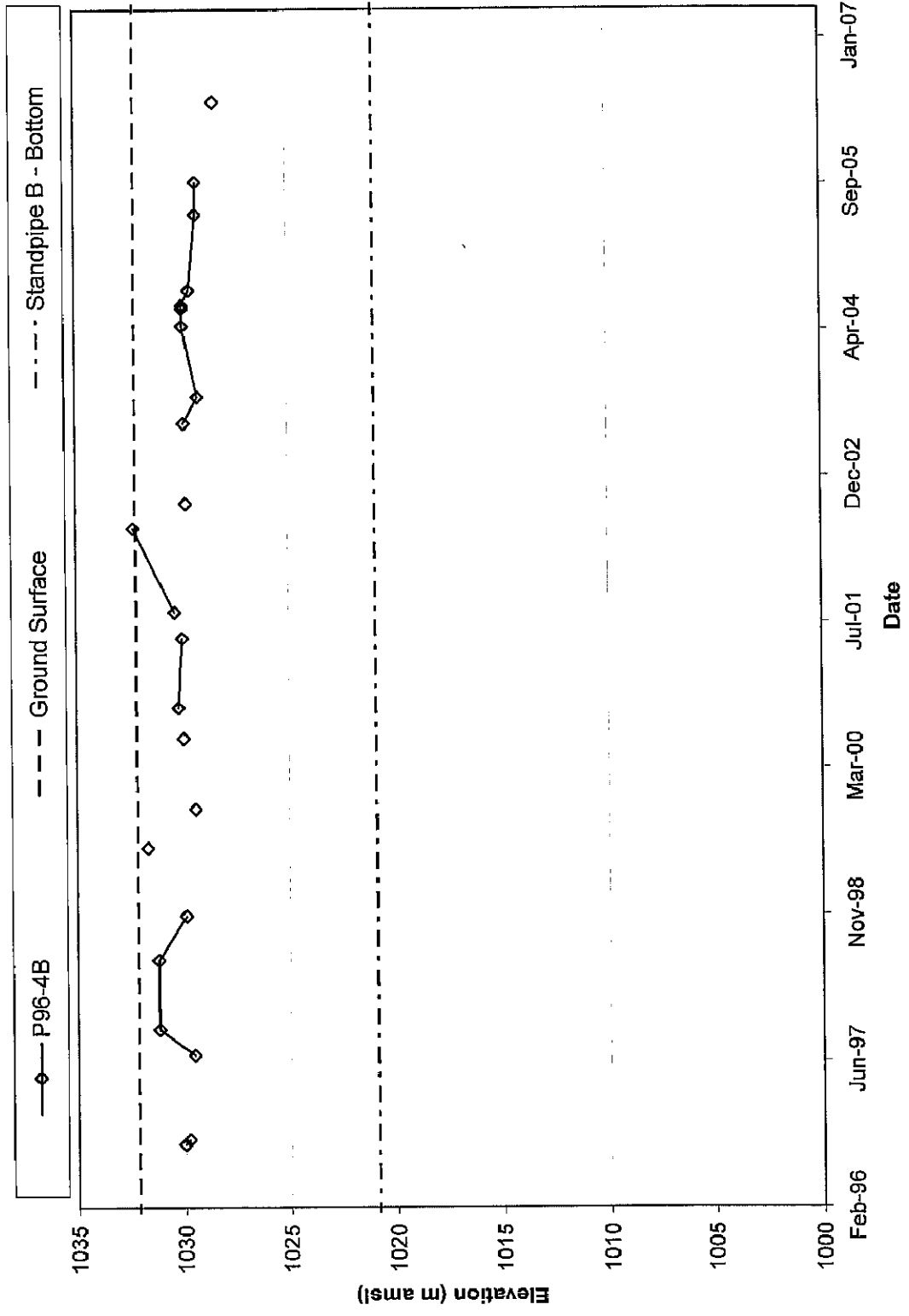
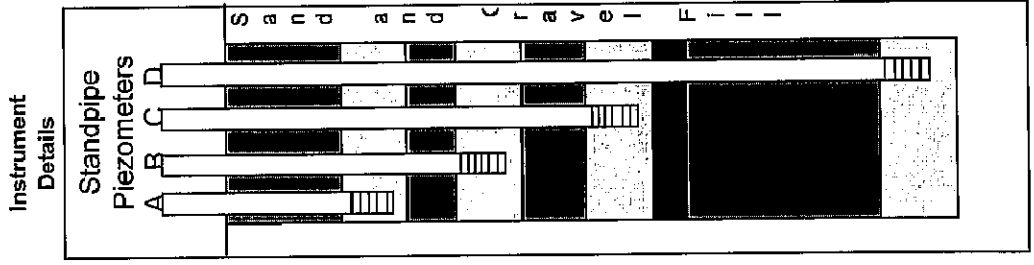


BH96-4		Location:	Intermediate Dam Toe, near South Abutment	2004 Stick Up - A (m):	0.95				
		Coordinates:	8V580669 6914113	2004 Stick Up - B (m):	0.87				
Surface Protector:	N/A	Date Installed:	1996	2004 Stick Up - C (m):	0.91				
Screened Interval - A (m bgs):	5.7-6.48	Screened Interval - C (m bgs):	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	1031.16	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	1031.54	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	2.65	2.63	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	

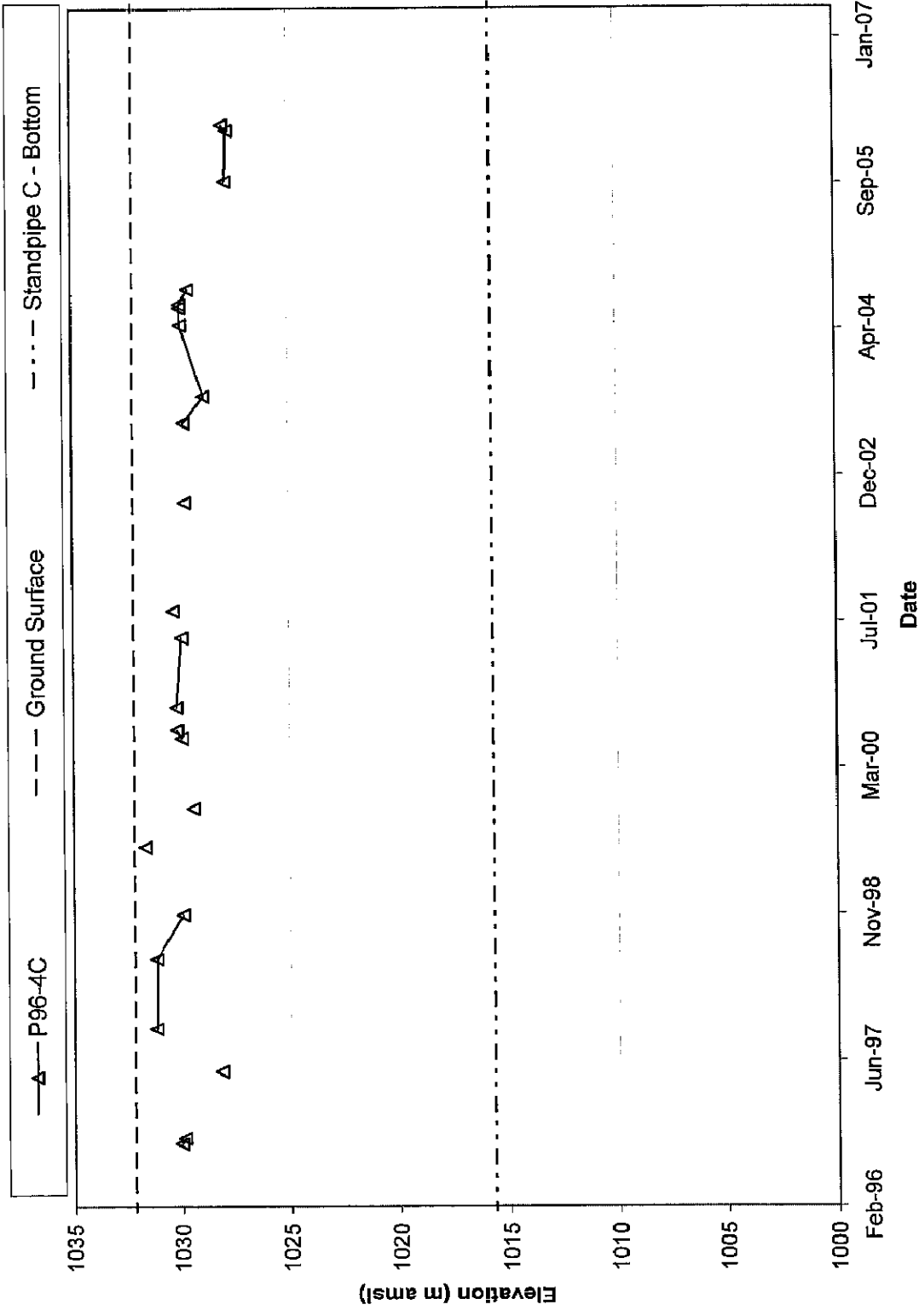
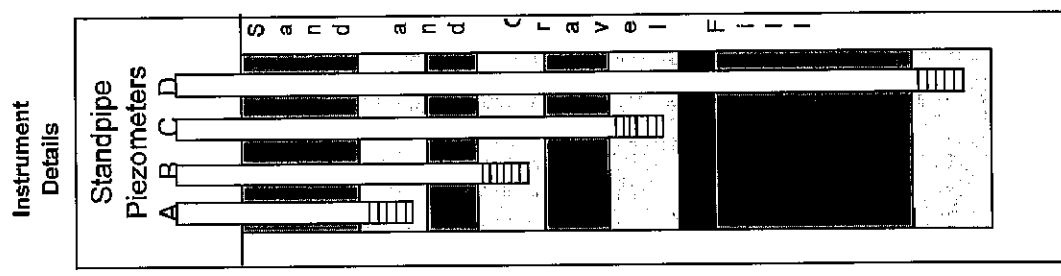
**INTERMEDIATE DAM**  
**Piezometric Monitoring**  
**P96-4A Monitoring Well (Robertson, 1996)**  
**(Toe of Dam - South Abutment)**



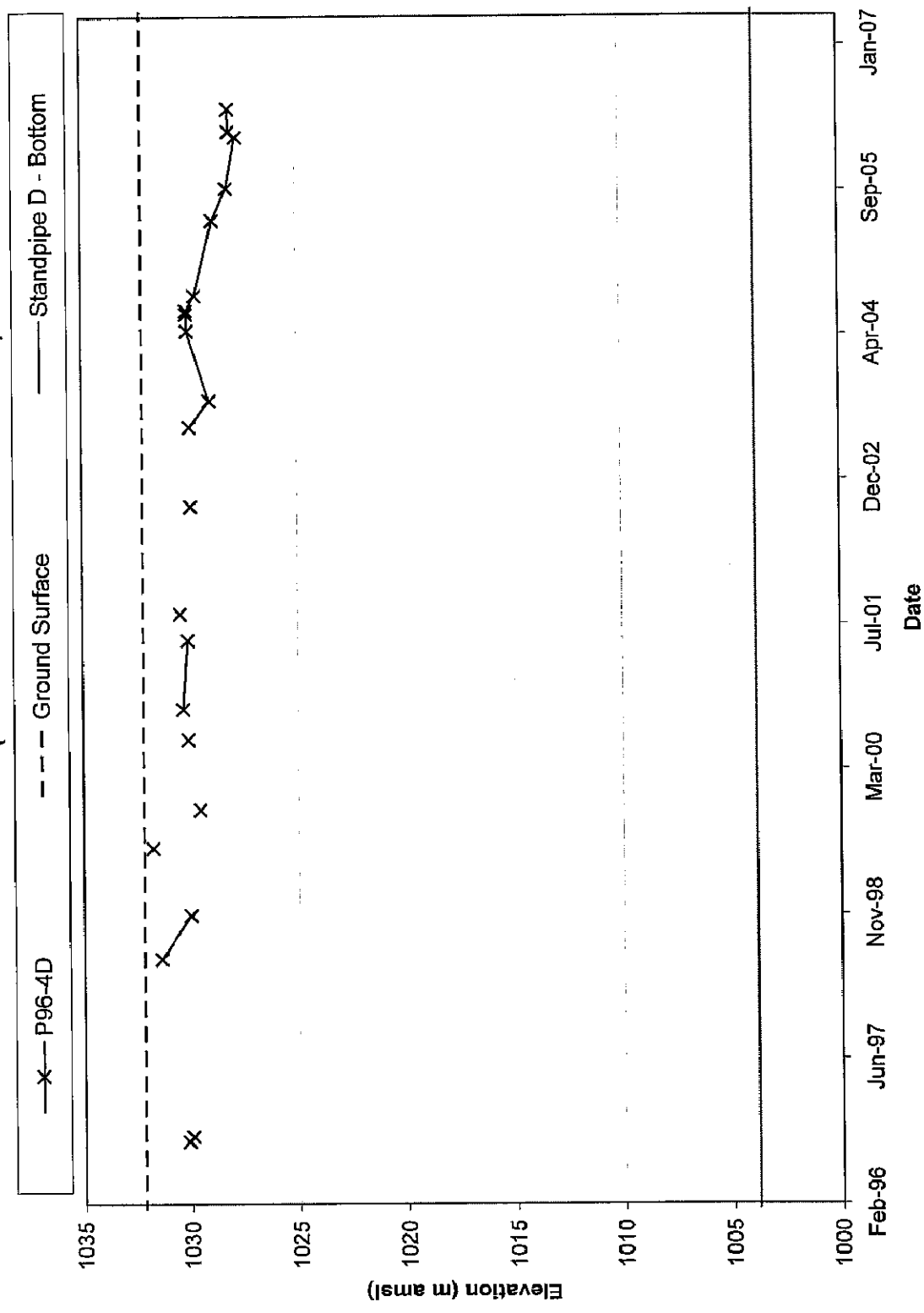
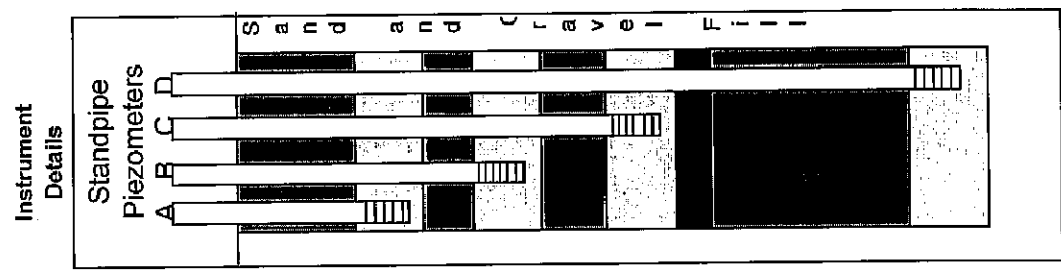
**INTERMEDIATE DAM**  
**Piezometric Monitoring**  
**P96-4B Monitoring Well (Robertson, 1996)**  
**(Toe of Dam - South Abutment)**



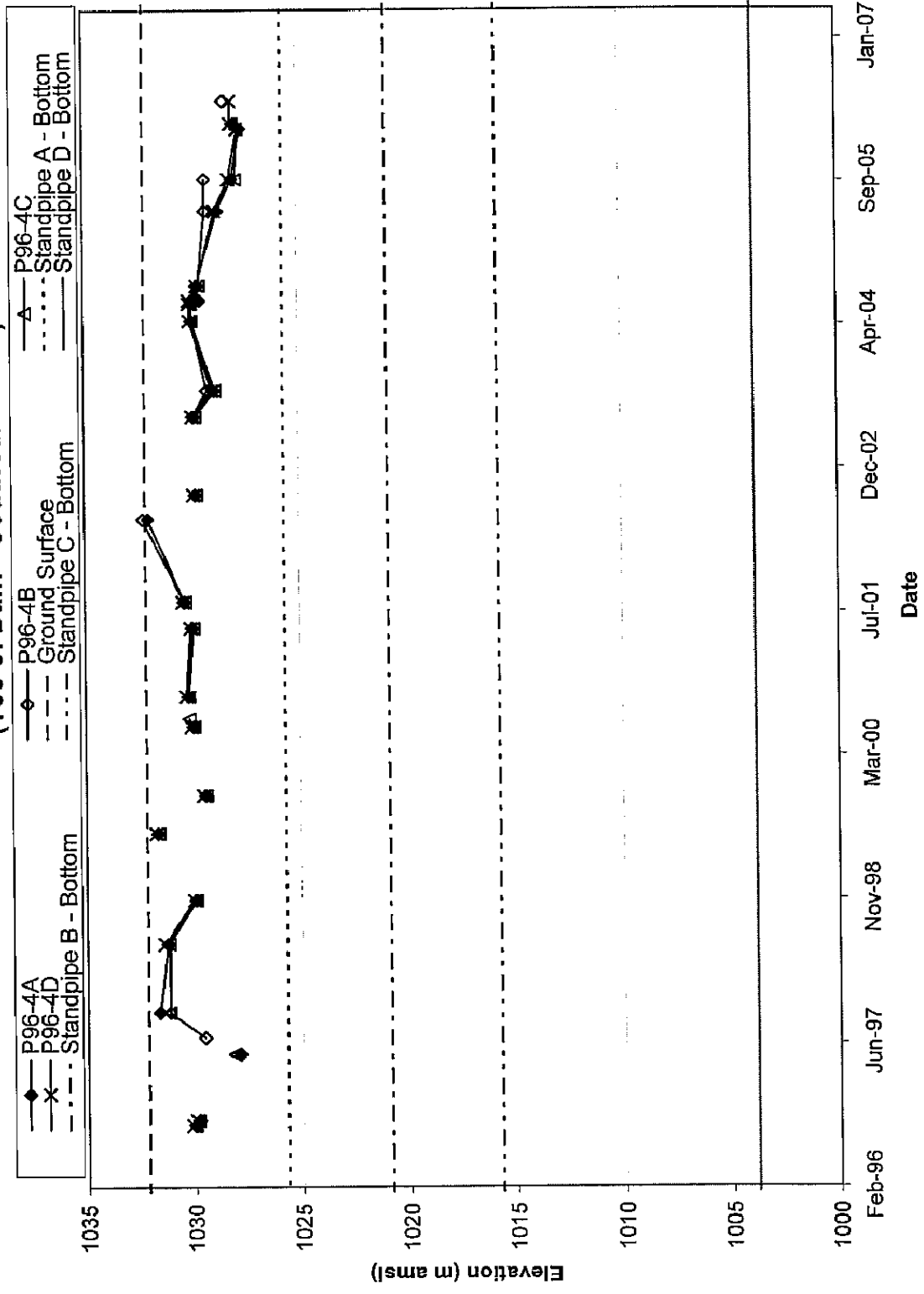
**INTERMEDIATE DAM**  
**Piezometric Monitoring**  
**P96-4C Monitoring Well (Robertson, 1996)**  
**(Toe of Dam - South Abutment)**



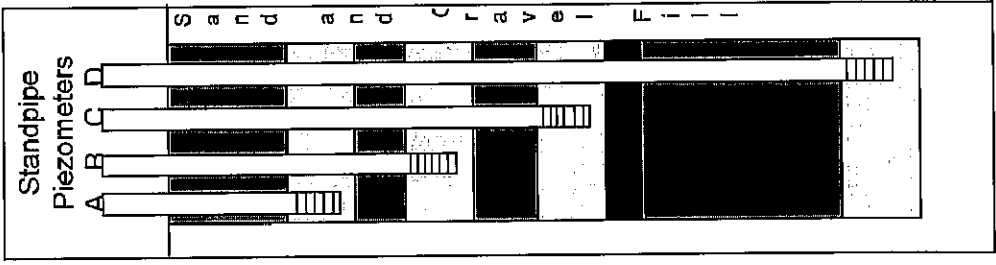
**INTERMEDIATE DAM**  
**Piezometric Monitoring**  
**P96-4D Monitoring Well (Robertson, 1996)**  
**(Toe of Dam - South Abutment)**



## INTERMEDIATE DAM Piezometric Monitoring P96-4 Monitoring Well (Robertson, 1996) (Toe of Dam - South Abutment)

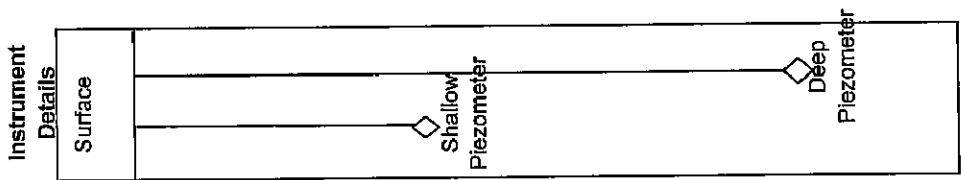
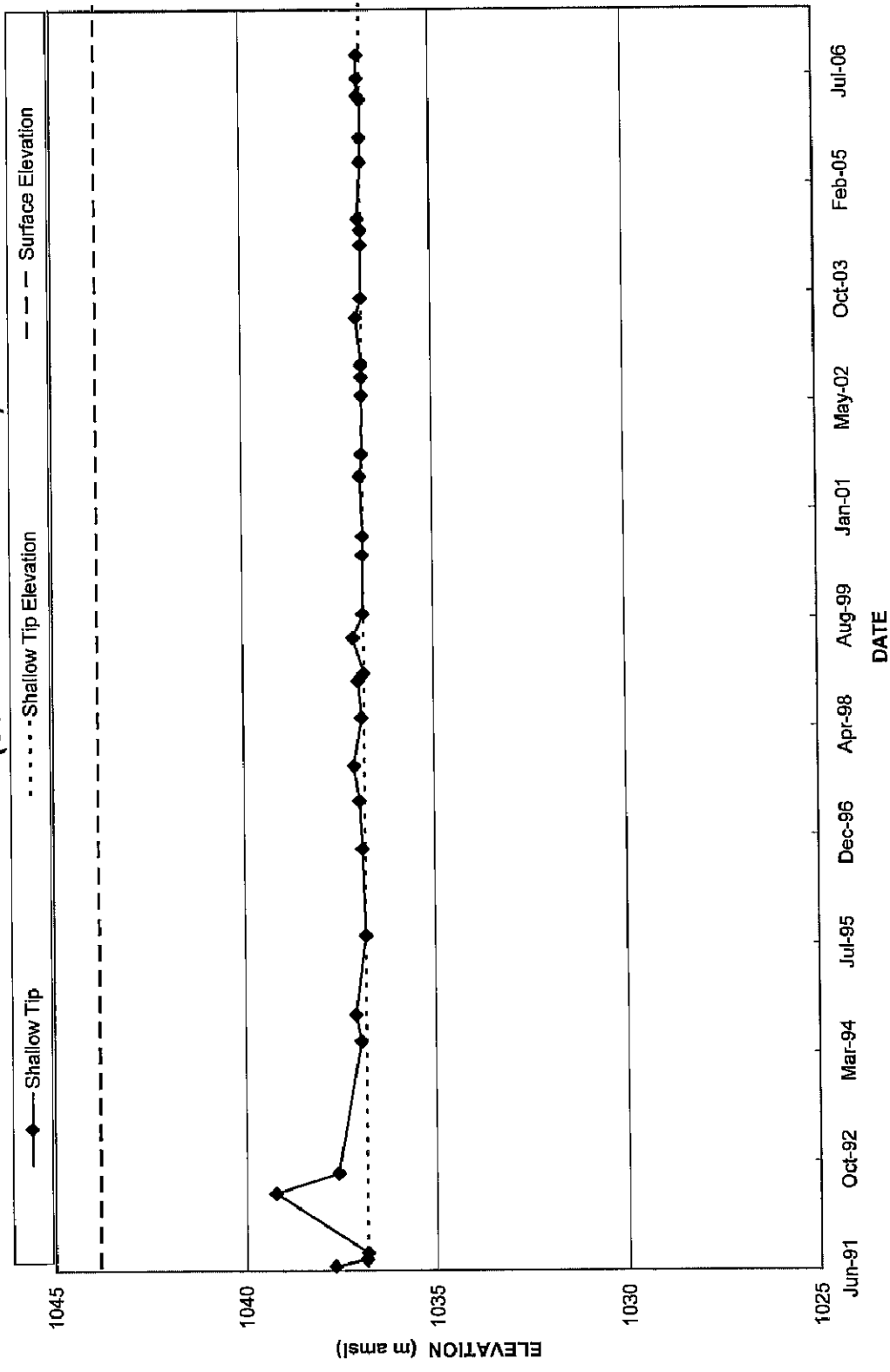


Instrument  
Details

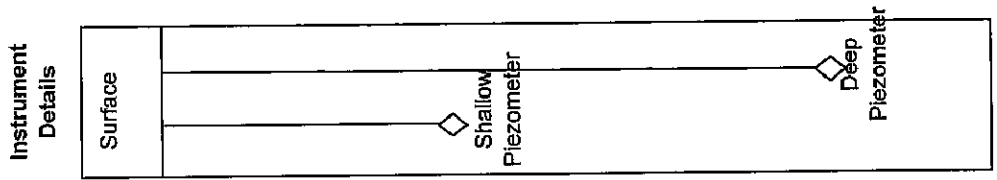
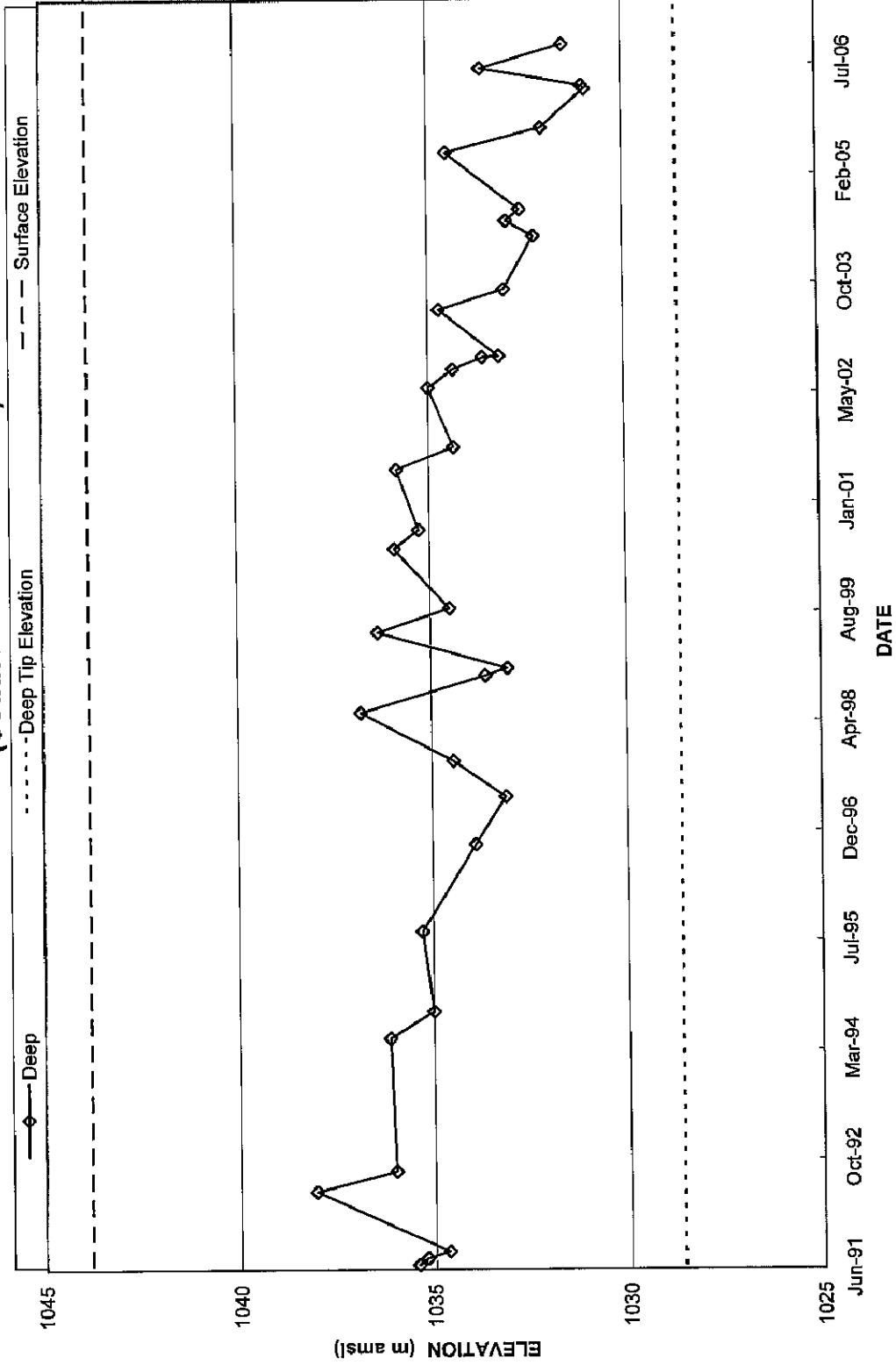


BH91-ID3		Location:	Intermediate Dam South Abutment @ Stn. 0+810		Shallow Tip Elevation (m amsl):	1036.82
		Coordinates:	8V580359 6913723		Deep Tip Elevation (m amsl):	1028.62
Surface Protector:	yes	Date Installed:	1991		2004 Surface Elevation (m amsl):	1043.82
Date	Reading (psi)		Piezometric Elevation (m amsl)		Pond El. (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	1035.2	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	1037.1	1034.99	1047.7	
Sep-95	0.00	9.50	1036.82	1035.27	1047.7	
Oct-96	0.1	7.5	1036.89	1033.87	1048.1	
7-May-97	0.2	6.4	1036.96	1033.1		
17-Oct-97	0.40	8.31	1037.1	1034.437		
27-May-98	0.10	11.70	1036.89	1036.81	1048.1	
12-Nov-98	0.22	7.10	1036.974	1033.59	1047.8	
16-Dec-98	0.0	6.3	1036.82	1033.03	1047.8	
29-May-99	0.40	11.05	1037.1	1036.355	1048	
16-Sep-99	0.02	8.4	1036.834	1034.5	1047.7	
14-Jun-00	0.01	10.4	1036.827	1035.907	1047.6	
9-Sep-00	0.00	9.5	1036.82	1035.27		
10-Jun-01	0.10	10.3	1036.89	1035.83		
20-Sep-01	0.01	8.2	1036.827	1034.36		
18-Jun-02	0.00	9.1	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	5.2	1036.82	1032.26		2004 survey data used from this point on
19-Jul-04	0	6.2	1036.82	1032.96		
9-Sep-04	0.1	5.7	1036.89	1032.61		
26-May-05	0	8.4	1036.82	1034.5		
14-Sep-05	0	4.9	1036.82	1032.05		
09-Mar-06	0	3.3	1036.82	1030.93		
27-Mar-06	0.1	3.4	1036.89	1031		
14-Jun-06	0.1	7.1	1036.89	1033.59		
02-Oct-06	0.1	4.1	1036.89	1031.49		

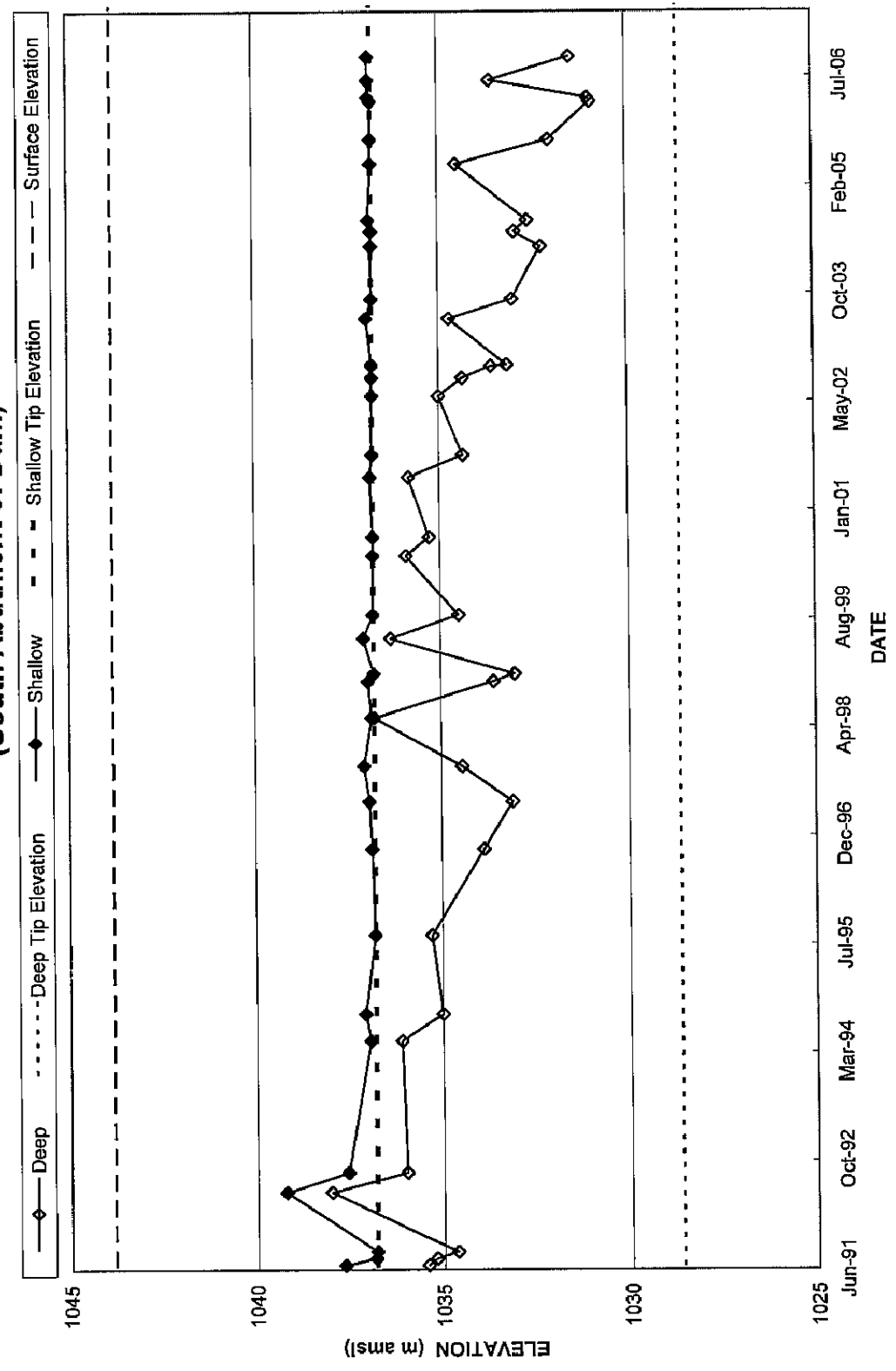
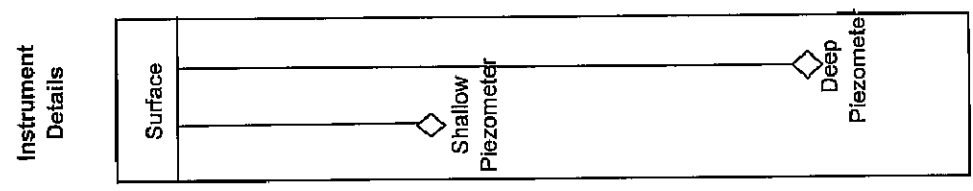
**INTERMEDIATE DAM  
Piezometric Monitoring  
BH91-ID3 Pneumatic Piezometer (Shallow Tip)  
(South Abutment of Dam)**



**INTERMEDIATE DAM**  
**Piezometric Monitoring**  
**BH91-ID3 Pneumatic Piezometer (Deep Tip)**  
**(South Abutment of Dam)**

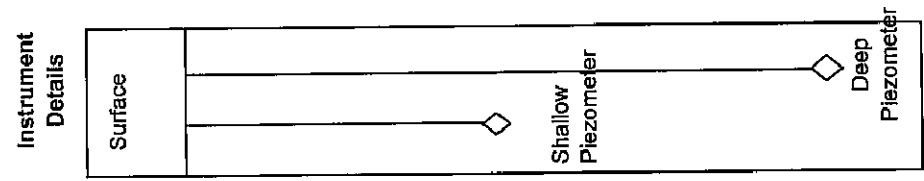
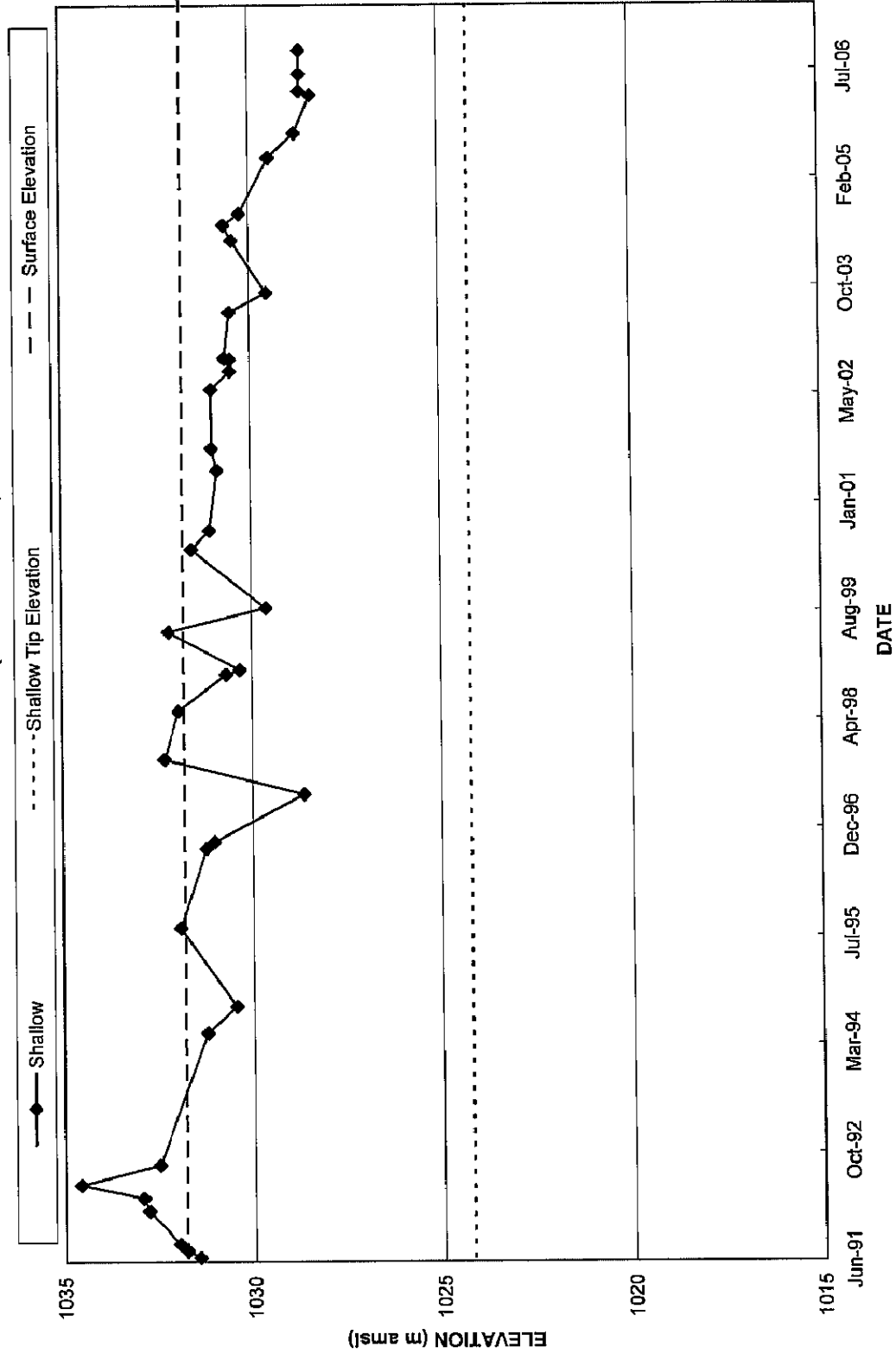


**INTERMEDIATE DAM**  
**Piezometric Monitoring**  
**BH91-ID3 Pneumatic Piezometer (Both Tips)**  
**(South Abutment of Dam)**

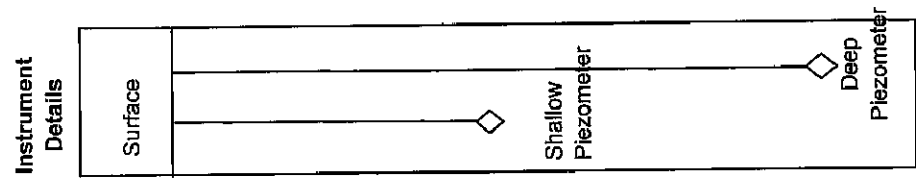
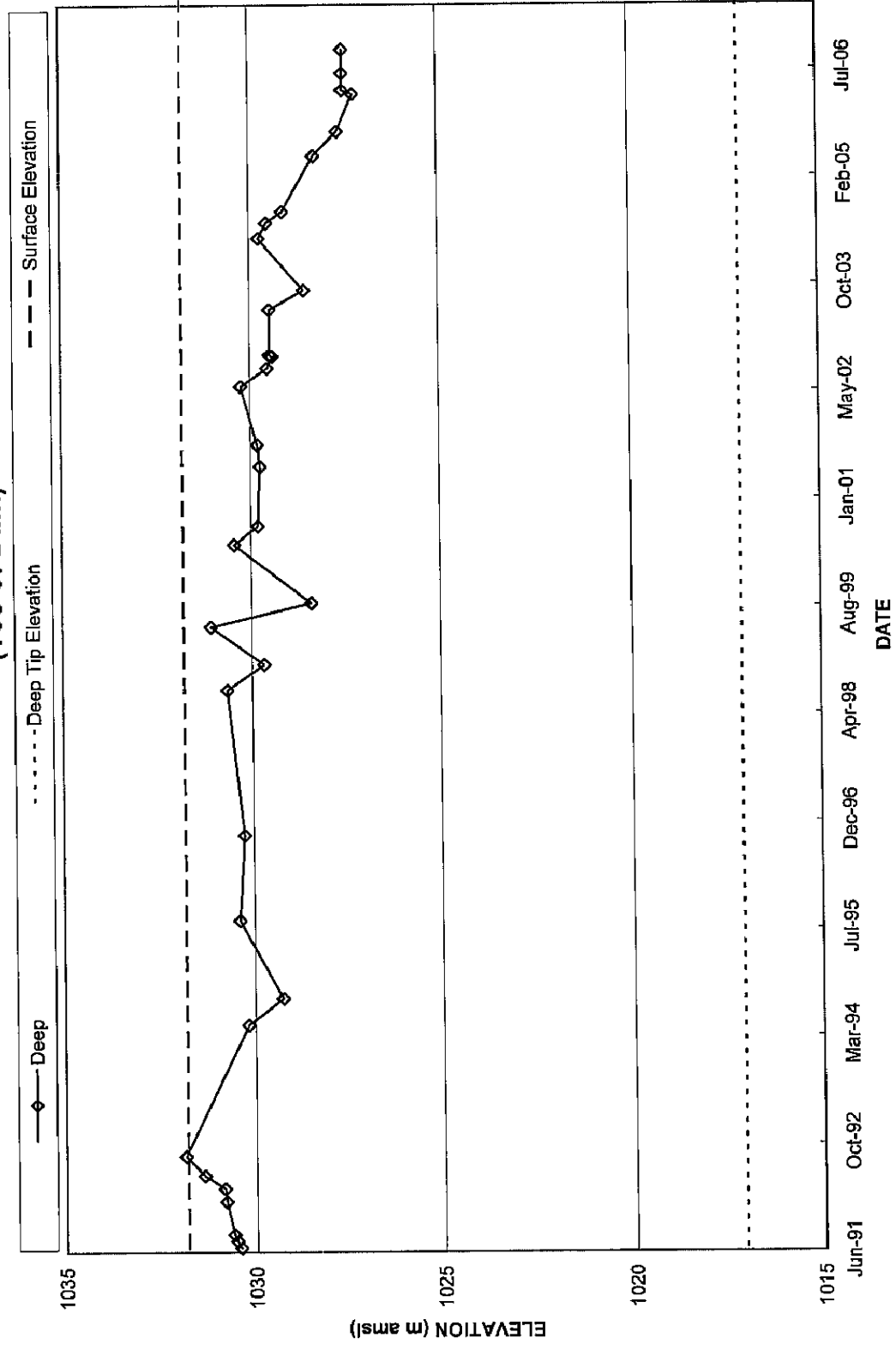


BH91-ID4		Location:	Intermediate Dam Toe @St.0+567	Shallow Tip Elevation (m amsl):	1024.22	
		Coordinates:	8V580517 6913926	Deep Tip Elevation (m amsl):	1017.08	
Surface Protector:	yes	Date Installed:	1991	*Surface Elevation (m amsl):	1031.80	
Date	Reading (psi)		Piezometric Elevation (m amsl)		Pond El. (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		No 2004 elevation data
19-Jul-04	9.2	17.8	1030.66	1029.54		
9-Sep-04	8.6	17.2	1030.24	1029.12		
26-May-05	7.5	16	1029.47	1028.28		
14-Sep-05	6.5	15.1	1028.77	1027.65		
09-Mar-06	5.9	14.5	1028.35	1027.23		
27-Mar-06	6.3	14.9	1028.63	1027.51		
14-Jun-06	6.3	14.9	1028.63	1027.51		
02-Oct-06	6.3	14.9	1028.63	1027.51		

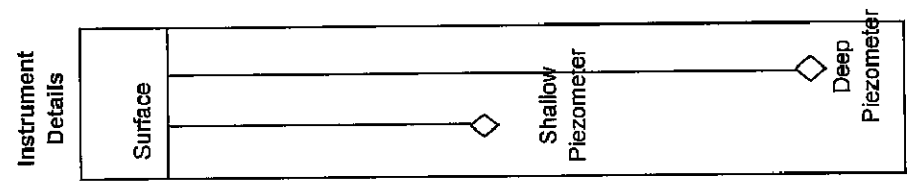
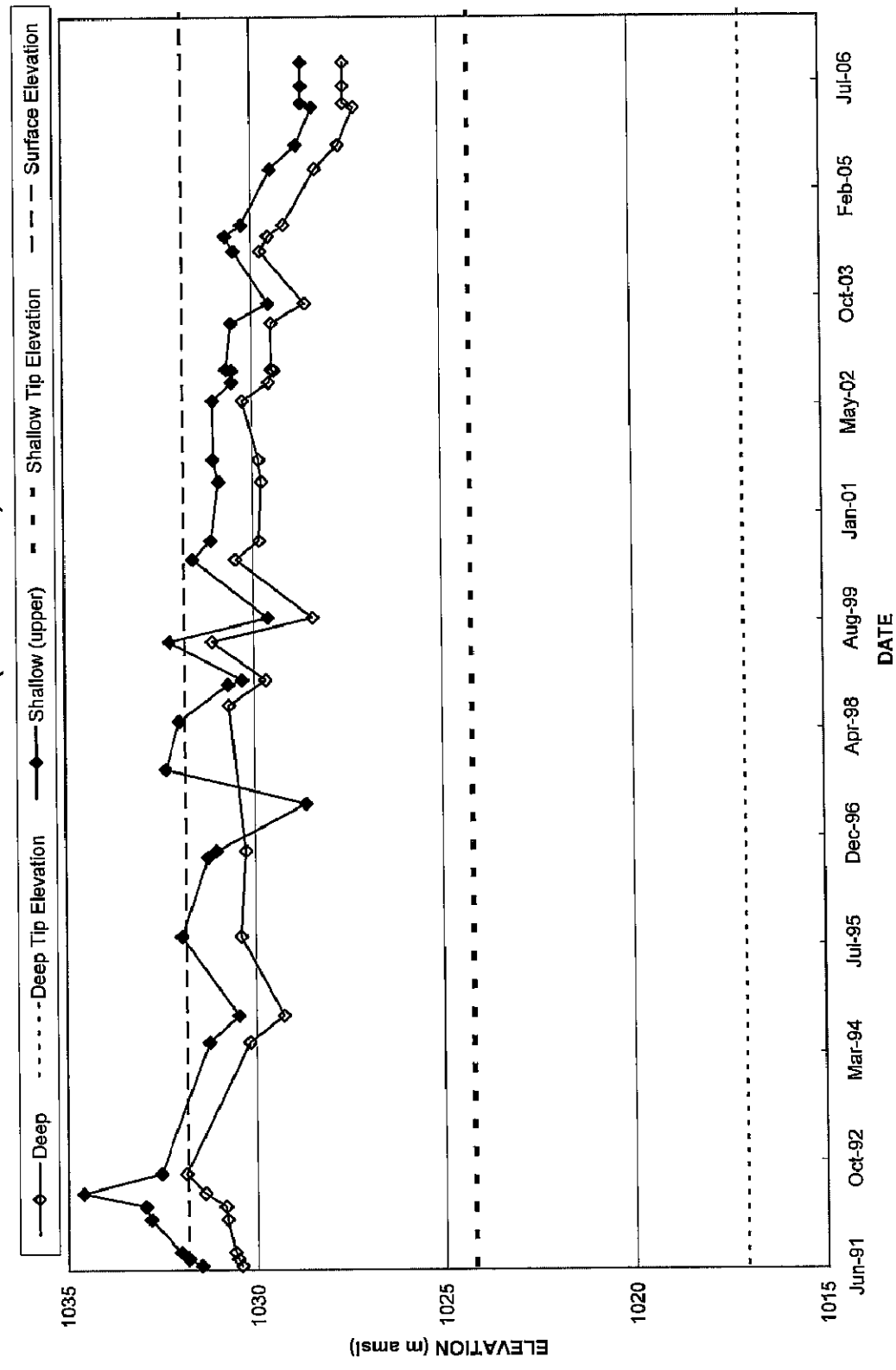
**INTERMEDIATE DAM**  
**Piezometric Monitoring**  
**BH91-ID4 Pneumatic Piezometer (Shallow Tip)**  
**(Toe of Dam)**



**INTERMEDIATE DAM  
Piezometric Monitoring  
BH91-ID4 Pneumatic Piezometer (Deep Tip)  
(Toe of Dam)**

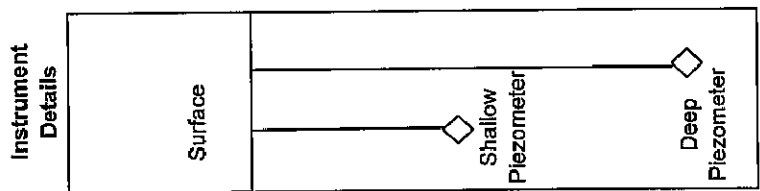
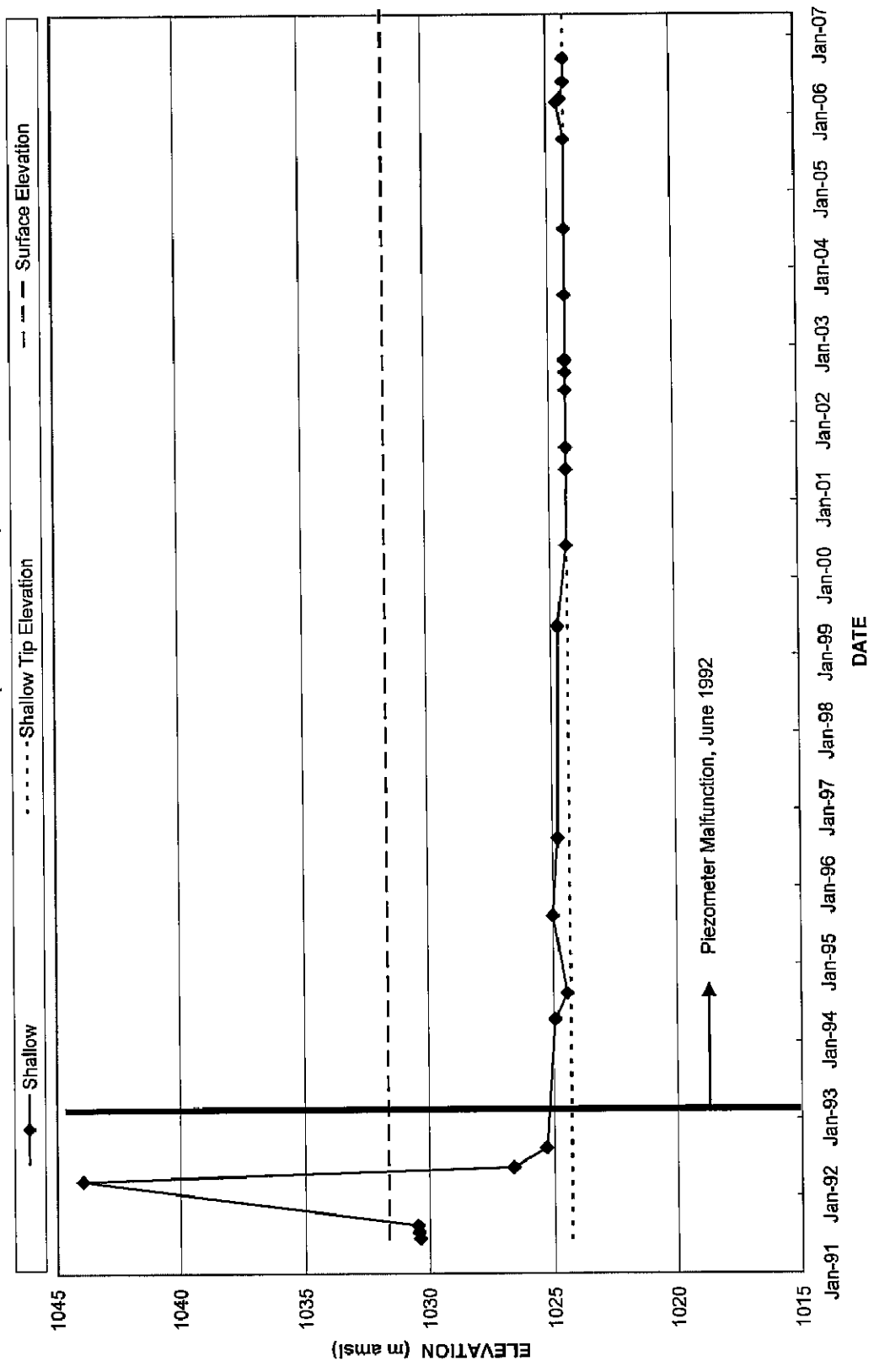


### INTERMEDIATE DAM Piezometric Monitoring BH91-ID4 Pneumatic Piezometer (Both Tips) (Toe of Dam)

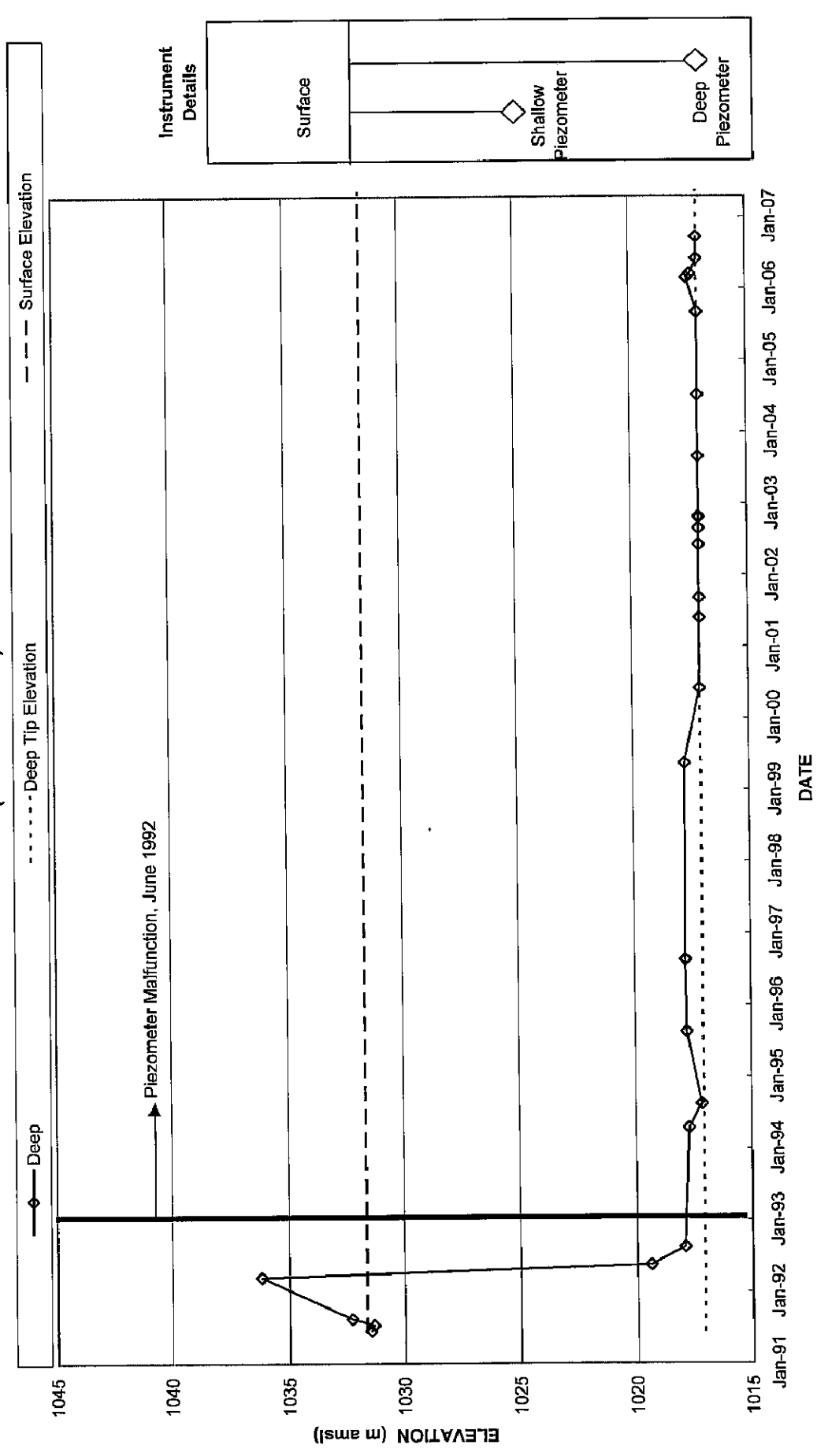


BH91-ID5		Location:		Intermediate Dam Toe @ St.0+625		Shallow Tip Elevation (m amsl):		1024.30	
		Coordinates:		8V580472 6913862		Deep Tip Elevation (m amsl):		1017.08	
Surface Protector:	yes	Date Installed:		1991		2004 Surface Elevation (m amsl):		1031.64	
Date		Reading (psl)		Piezometric Elevation (m amsl)		Pond El. (m amsl)	Comments		
		Shallow (upper)	Deep (lower)	Shallow (upper)	Deep (lower)				
Jul-91		8.67	20.54	1030.37	1031.46	1042.2			
Aug-91		8.76	20.36	1030.43	1031.33	1042.2			
Sep-91		8.60	21.70	1030.46	1032.27	1042.2			
Feb-92									
Apr-92		28.10	27.30	1043.97	1036.19	1047.7			
Jun-92		3.30	3.30	1026.61	1019.39	1047.7			
Sep-92		1.46	1.20	1025.32	1017.92	1047.7			
May-94		0.90	0.90	1024.93	1017.71	1047.7			
Sep-94		0.20	0.10	1024.44	1017.15	1047.7			
Sep-95		1.00	1.00	1025	1017.78	1047.7			
Sep-96		0.7	1.05	1024.79	1017.815	1048.1			
07-May-97		no reading							
17-Oct-97		no reading							
27-May-98		no reading							
29-May-99		0.60	1.00	1024.72	1017.78	1048			
16-Sep-99		no reading; no bubbles							
14-Jun-00		0.03	0.03	1024.321	1017.101	1047.6			
10-Jun-01		0.00	0	1024.3	1017.08				
20-Sep-01		0.00	0.00	1024.3	1017.08				
18-Jun-02		0.00	0	1024.3	1017.08				
10-Sep-02		0.00	0	1024.3	1017.08				
04-Nov-02		0.00	0	1024.3	1017.08				
10-Nov-02		0.00	0	1024.3	1017.08				
10-Sep-03		0.00	0	1024.3	1017.08				
19-Jul-04		0.00	0	1024.30	1017.08			2004 survey data used from here on	
Sep-05		0.00	0	1024.3	1017.08				
09-Mar-06		0.4	0.6	1024.58	1017.5				
27-Mar-06		0.2	0.4	1024.44	1017.36			no bubbles	
14-Jun-06		0	0	1024.3	1017.08				
02-Oct-06		0	0	1024.3	1017.08				
Both tips have leaking leads as of June, 1992.									

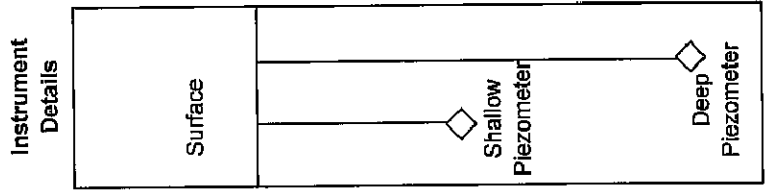
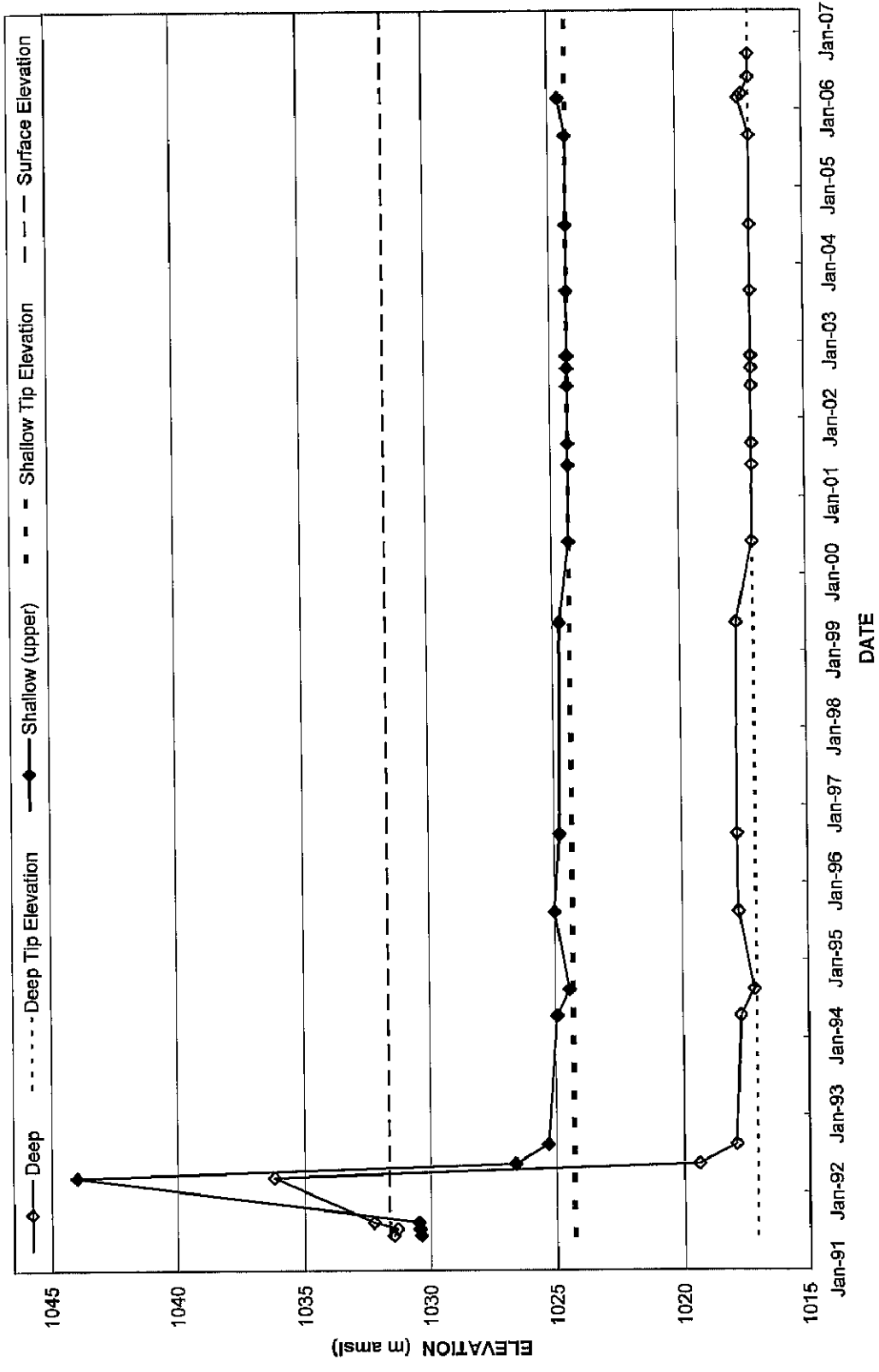
**INTERMEDIATE DAM  
Piezometric Monitoring  
BH91-ID5 Pneumatic Piezometer (Shallow Tip)  
(Toe of Dam)**



**INTERMEDIATE DAM  
Piezometric Monitoring  
BH91-ID5 Pneumatic Piezometer (Deep Tip)  
(Toe of Dam)**

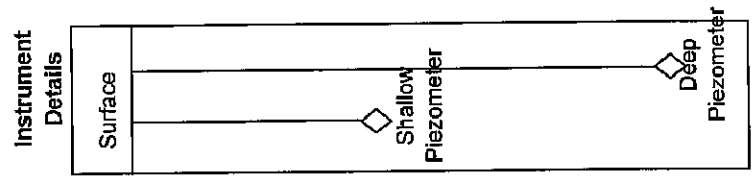
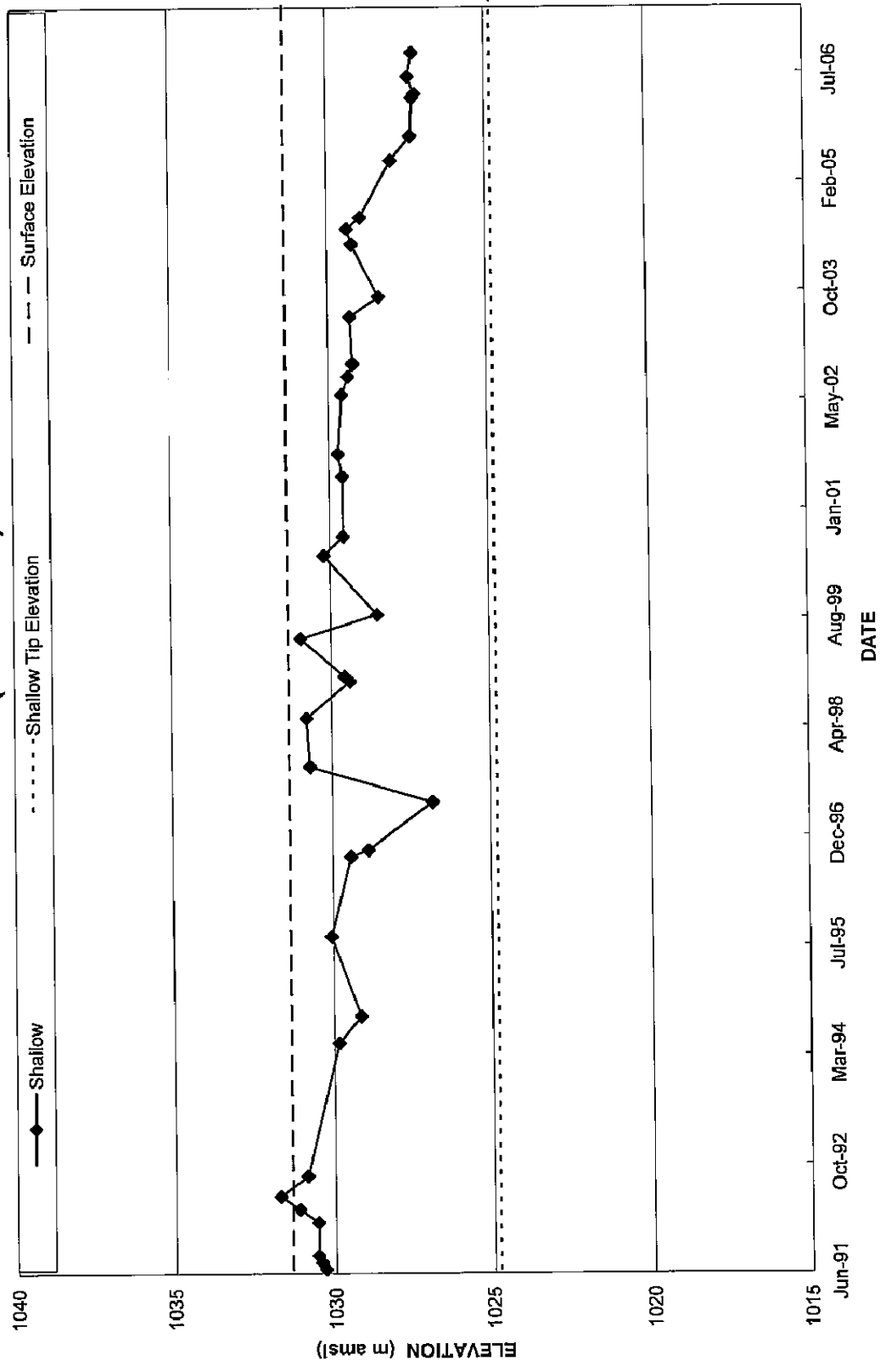


**INTERMEDIATE DAM  
Piezometric Monitoring  
BH91-ID5 Pneumatic Piezometer (Both Tips)  
(Toe of Dam)**

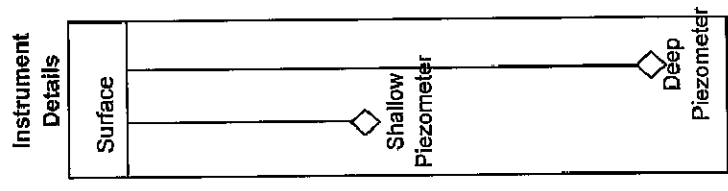
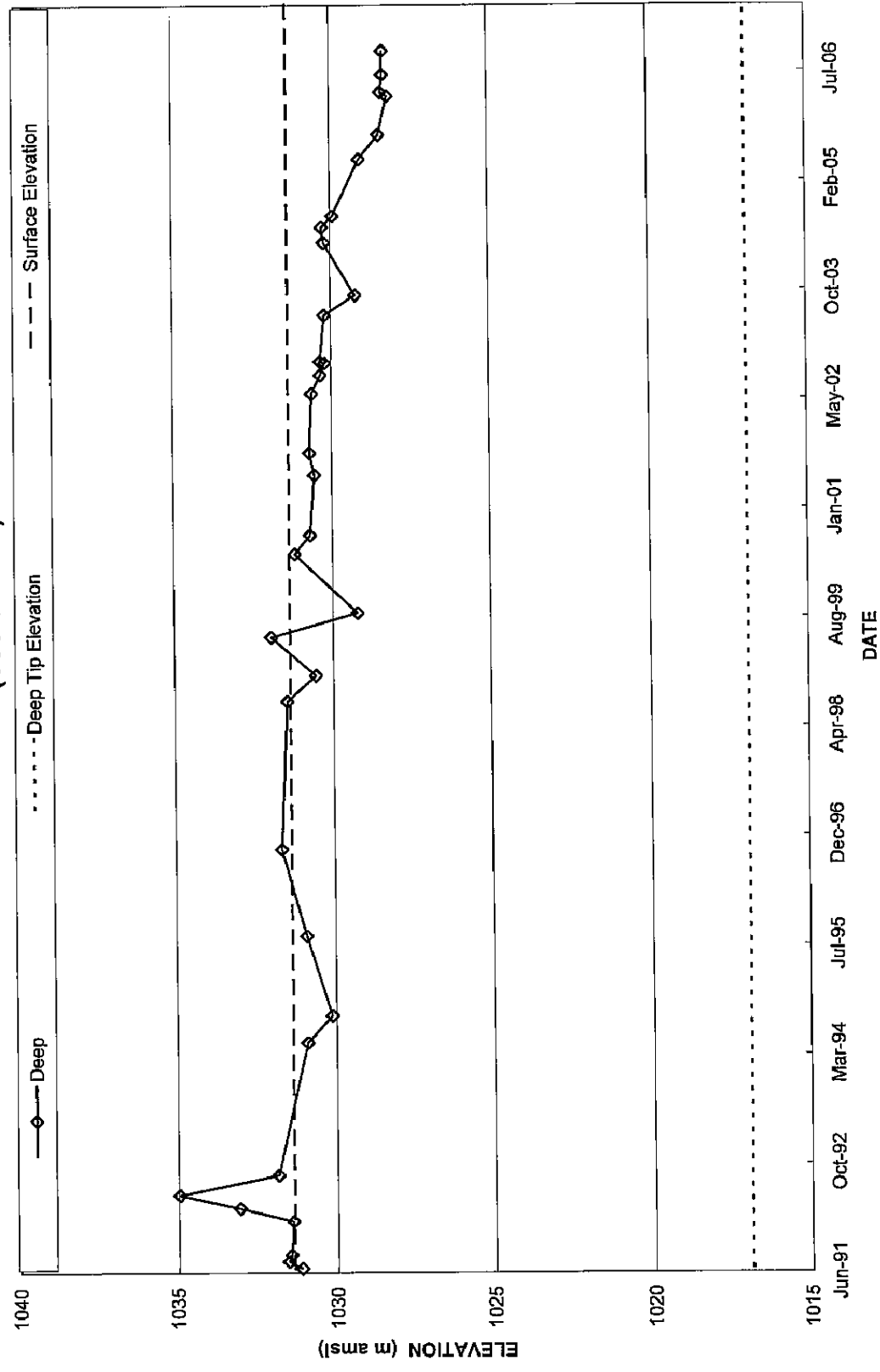


BH91-ID6		Location:	Intermediate Dam Toe @St.0+630		Shallow Tip Elevation (m amsl):	1024.80
		Coordinates:	8V580475 6913866		Deep Tip Elevation (m amsl):	1016.90
Surface Protector:	yes	Date Installed:	1991		2004 Surface Elevation (m amsl):	1031.36
Date	Reading (psi)		Piezometric Elevation (m amsl)		Pond El. (m amsl)	Comments
	Shallow (upper)	Deep (lower)	Shallow (upper)	Deep (lower)		
Jul-91	7.89	20.33	1030.32	1031.13	1042.2	
Aug-91	8.06	20.91	1030.44	1031.54	1042.2	
Sep-91	8.20	20.80	1030.54	1031.46	1042.2	
Feb-92	8.20	20.70	1030.54	1031.39	1047.7	
Apr-92	9.06	23.10	1031.14	1033.07	1047.7	
Jun-92	9.91	25.80	1031.74	1034.96	1047.7	
Sep-92	8.67	21.36	1030.87	1031.85	1047.7	
May-94	7.20	20.00	1029.84	1030.9	1047.7	
Sep-94	6.20	18.90	1029.14	1030.13	1047.7	
Sep-95	7.50	20.00	1030.05	1030.9	1047.7	
Sep-96	6.6		1029.42		1048.1	
Oct-96	5.8	21.1	1028.86	1031.67		
7-May-97	2.9		1026.83			
17-Oct-97	8.41		1030.687			
27-May-98	8.56		1030.792		1048.1	
7-Aug-98		20.8		1031.46	1048.1	
12-Nov-98	6.57		1029.399		1047.8	
4-Dec-98	6.8	19.5	1029.56	1030.55	1047.8	
29-May-99	8.78	21.50	1030.946	1031.95	1048	
16-Sep-99	5.3	17.60	1028.51	1029.22	1047.7	
14-Jun-00	7.7	20.41	1030.19	1031.187	1047.6	
9-Sep-00	6.8	19.70	1029.56	1030.69		
10-Jun-01	6.80	19.50	1029.56	1030.55		
20-Sep-01	7.00	19.70	1029.7	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	1030.2		
10-Nov-02	6.30	19.2	1029.21	1030.34		
11-Jun-03	6.40	19	1029.28	1030.2		*New piezometer started use here
10-Sep-03	5.10	17.6	1028.37	1029.22		
10-May-04	6.3	19	1029.21	1030.2		2004 survey data used from this point on
19-Jul-04	6.5	19.1	1029.35	1030.27		
9-Sep-04	5.9	18.6	1028.93	1029.92		
28-May-05	4.5	17.4	1027.95	1029.08		
14-Sep-05	3.6	16.5	1027.32	1028.45		
09-Mar-06	3.5	16.1	1027.25	1028.17		
27-Mar-06	3.4	16.4	1027.18	1028.38		3.4/3.5 won't stabilize
14-Jun-06	3.7	16.3	1027.39	1028.31		
02-Oct-06	3.5	16.3	1027.25	1028.31		

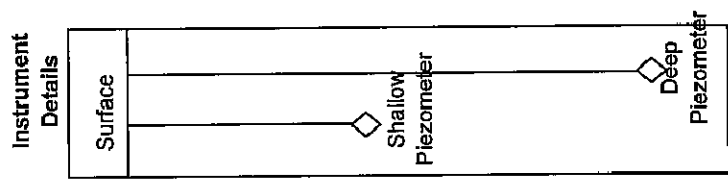
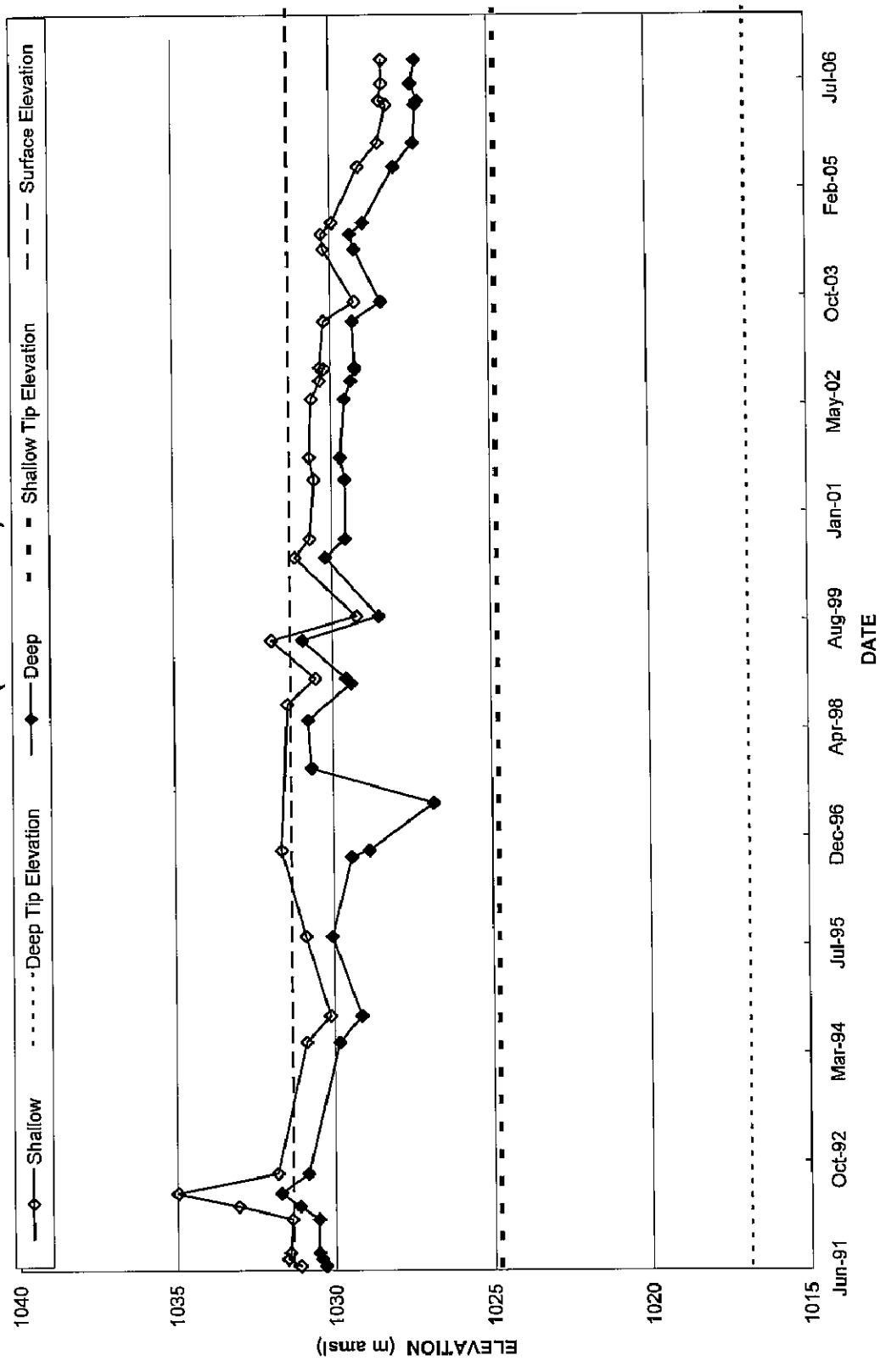
**INTERMEDIATE DAM  
Piezometric Monitoring  
BH91-ID6 Pneumatic Piezometer (Shallow Tip)  
(Toe of Dam)**



**INTERMEDIATE DAM  
Piezometric Monitoring  
BH91-ID6 Pneumatic Piezometer (Deep Tip)  
(Toe of Dam)**

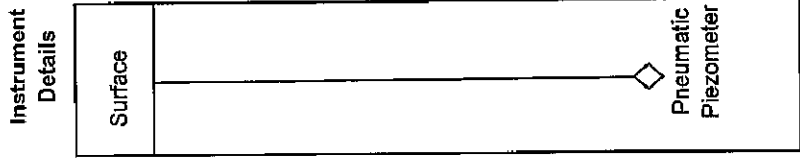
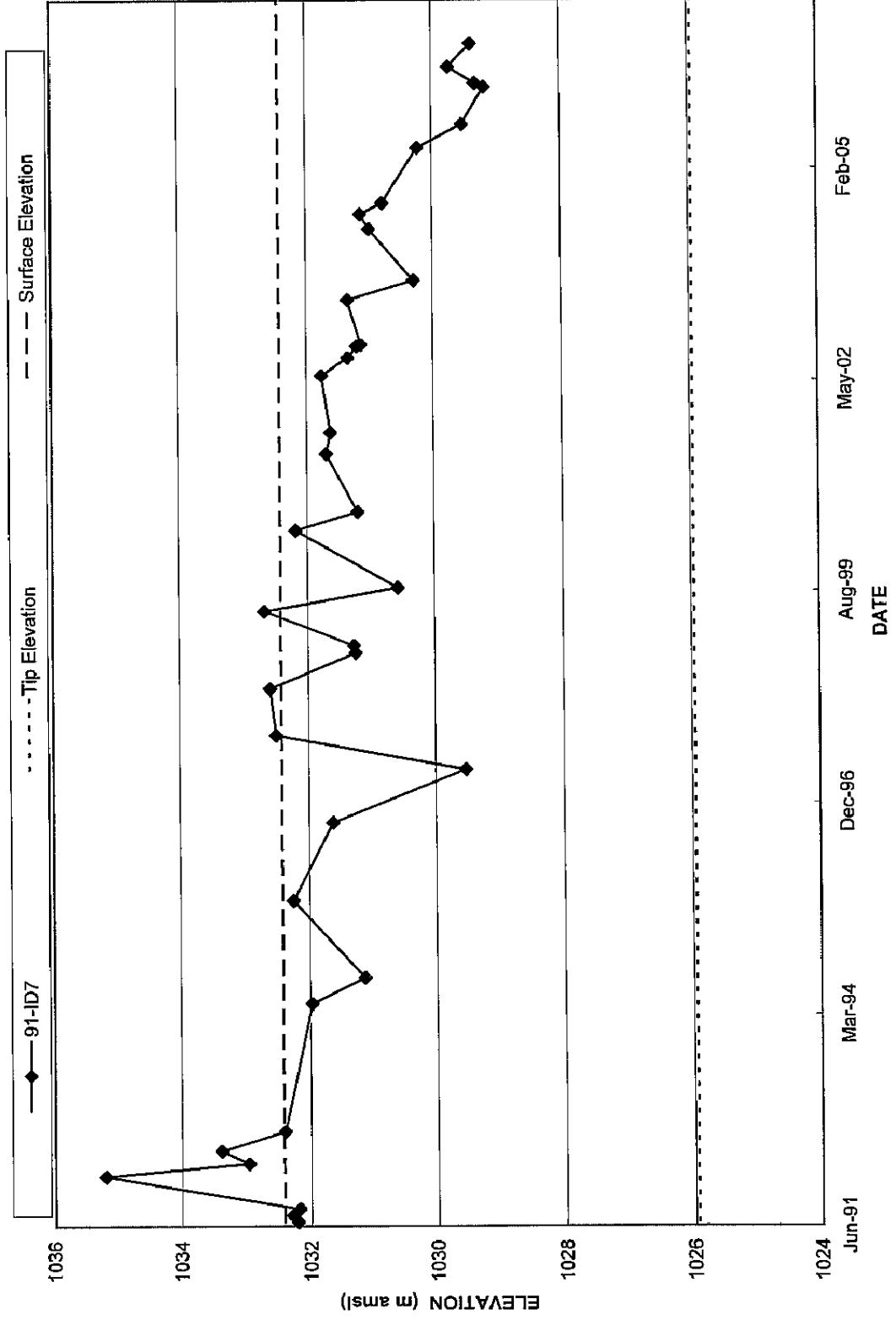


**INTERMEDIATE DAM  
Piezometric Monitoring  
BH91-ID6 Pneumatic Piezometer (Both Tips)  
(Toe of Dam)**



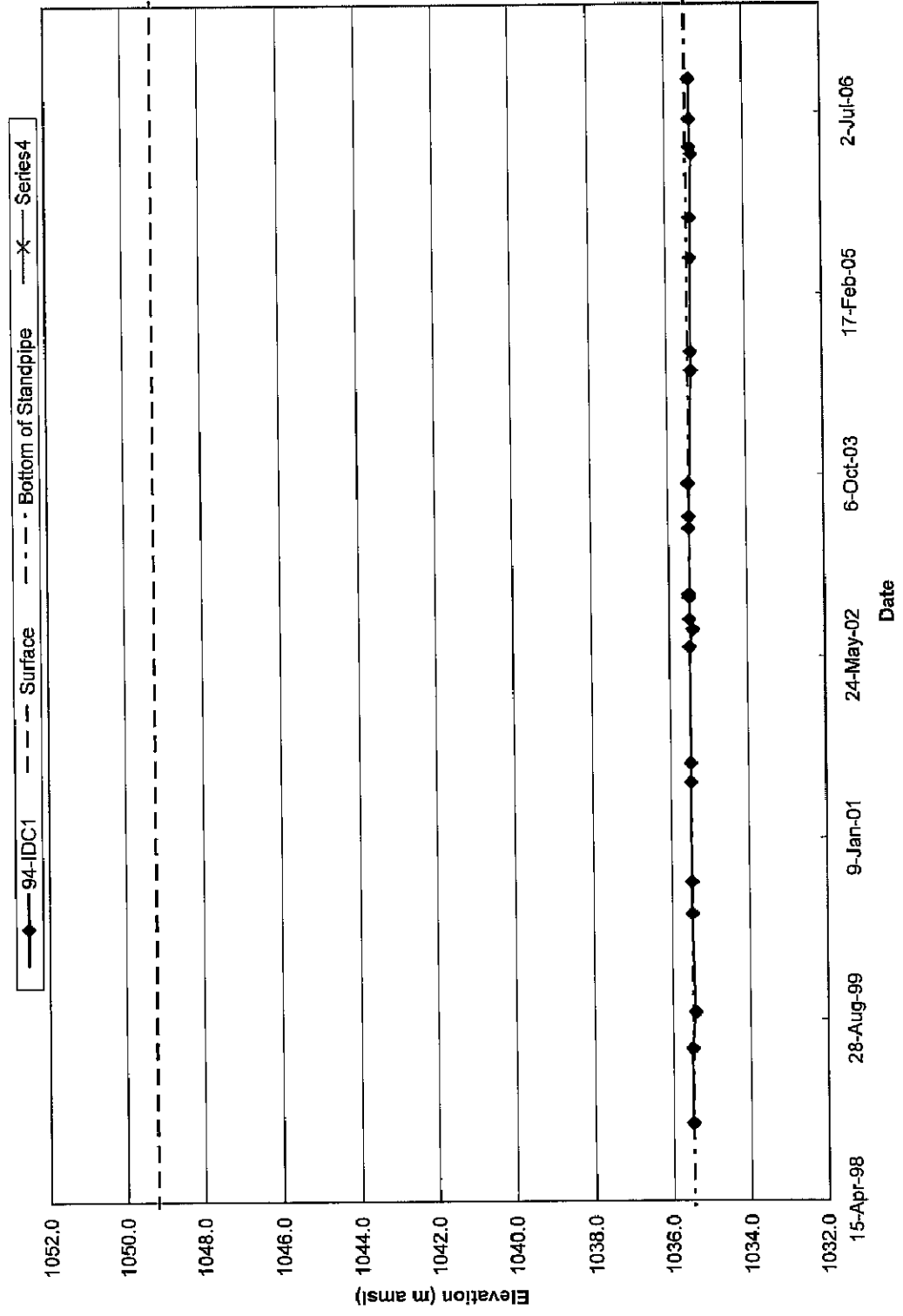
BH91-ID7		Location: Intermediate Dam Toe @St.0+759			
		Coordinates:		Tip Elevation (m amsl):	
Surface Protector:	yes <th>Date Installed:</th> <td>1991 <th>2004 Ground Elevation (amsl):</th> <td>1032.42</td> </td>	Date Installed:	1991 <th>2004 Ground Elevation (amsl):</th> <td>1032.42</td>	2004 Ground Elevation (amsl):	1032.42
Date		Reading (psi)	Piezometric Elevation (m amsl)	Pond El. (m amsl)	Comments
Jul-91		8.94	1032.21	1042.2	
Aug-91		9.06	1032.29	1042.2	
Sep-91		8.90	1032.18	1042.2	
Feb-92		13.21	1035.2	1047.7	
Apr-92		10.01	1032.96	1047.7	
Jun-92		10.61	1033.38	1047.7	
Sep-92		9.21	1032.4	1047.7	
May-94		8.60	1031.97	1047.7	
Sep-94		7.40	1031.13	1047.7	
Sep-95		9.00	1032.25	1047.7	
Sep-96		8.1	1031.62	1048.1	
7-May-97		5.1	1029.52		
17-Oct-97		9.36	1032.502		
27-May-98		9.49	1032.593	1048.1	
12-Nov-98		7.56	1031.242	1047.8	
16-Dec-98		7.6	1031.27	1047.8	
29-May-99		9.60	1032.67	1048	
16-Sep-99		6.6	1030.57	1047.7	
14-Jun-00		8.9	1032.18	1047.6	
9-Sep-00		7.5	1031.2		
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	1031.2		
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		2004 survey data used from here on
19-Jul-04		7.40	1031.13		
9-Sep-04		6.90	1030.78		
26-May-05		6.1	1030.22		
14-Sep-05		5.1	1029.52		
09-Mar-06		4.6	1029.17		
27-Mar-06		4.8	1029.31		
14-Jun-06		5.4	1029.73		
02-Oct-06		4.9	1029.38		

**INTERMEDIATE DAM  
Piezometric Monitoring  
BH91-ID7 Pneumatic Piezometer  
(Toe of Dam)**

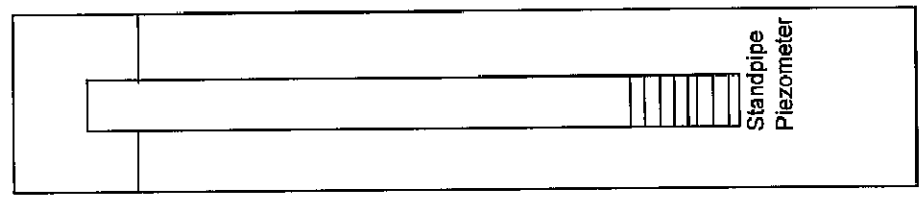


BH94-IDC-1		Location:	Intermediate Dam Crest	2004 Stick Up (m):	0.27
		Coordinates:	8V580605 6913969	2004 Surface Elevation (m amsl):	1049.21
Surface Protector:	Yes	Date Installed:	1994	Tip Elevation:	N/A
Date	Water level from top of pipe (m)	Piezometric Elevation (m amsl)	Pond El. (m amsl)	Comments	
2-Jun-94			1047.7	dry	
16-Sep-94			1047.7	dry	
22-Sep-95			1047.7	dry	
25-Sep-96			1048.1	dry	
28-May-98			1048.1	dry	
13-Nov-98	14.10	1035.48	1047.8	dry	
8-Jun-99	14.10	1035.48	1047.8	dry	
16-Sep-99	14.18	1035.40	1047.7	dry	
14-Jun-00	14.11	1035.47	1047.6	dry	
9-Sep-00	14.11	1035.47	1047.6	H2O	
10-Jun-01	14.11	1035.47	1047.6		
1-Aug-01	14.11	1035.47	1047.6	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		dry	
9-Sep-04	14.11	1035.37		dry	
26-May-05	14.12	1035.36		bottom	
14-Sep-05	14.12	1035.36		bottom	
09-Mar-06	14.17	1035.31			
27-Mar-06	14.13	1035.35		no beep, ice crystals	
14-Jun-06	14.125	1035.355		bottom	
02-Oct-06	14.12	1035.36			

**INTERMEDIATE DAM**  
**Piezometric Monitoring**  
**BH94-IDC-1 Standpipe Piezometer**  
**Crest of Dam**

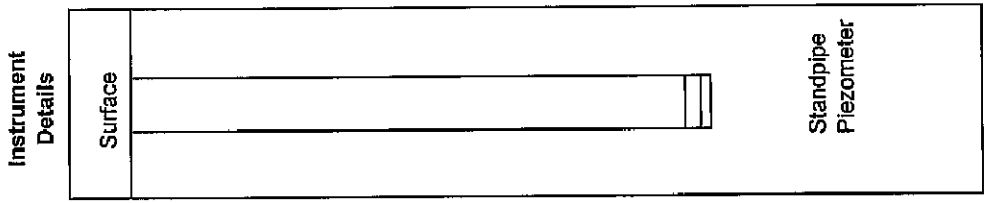
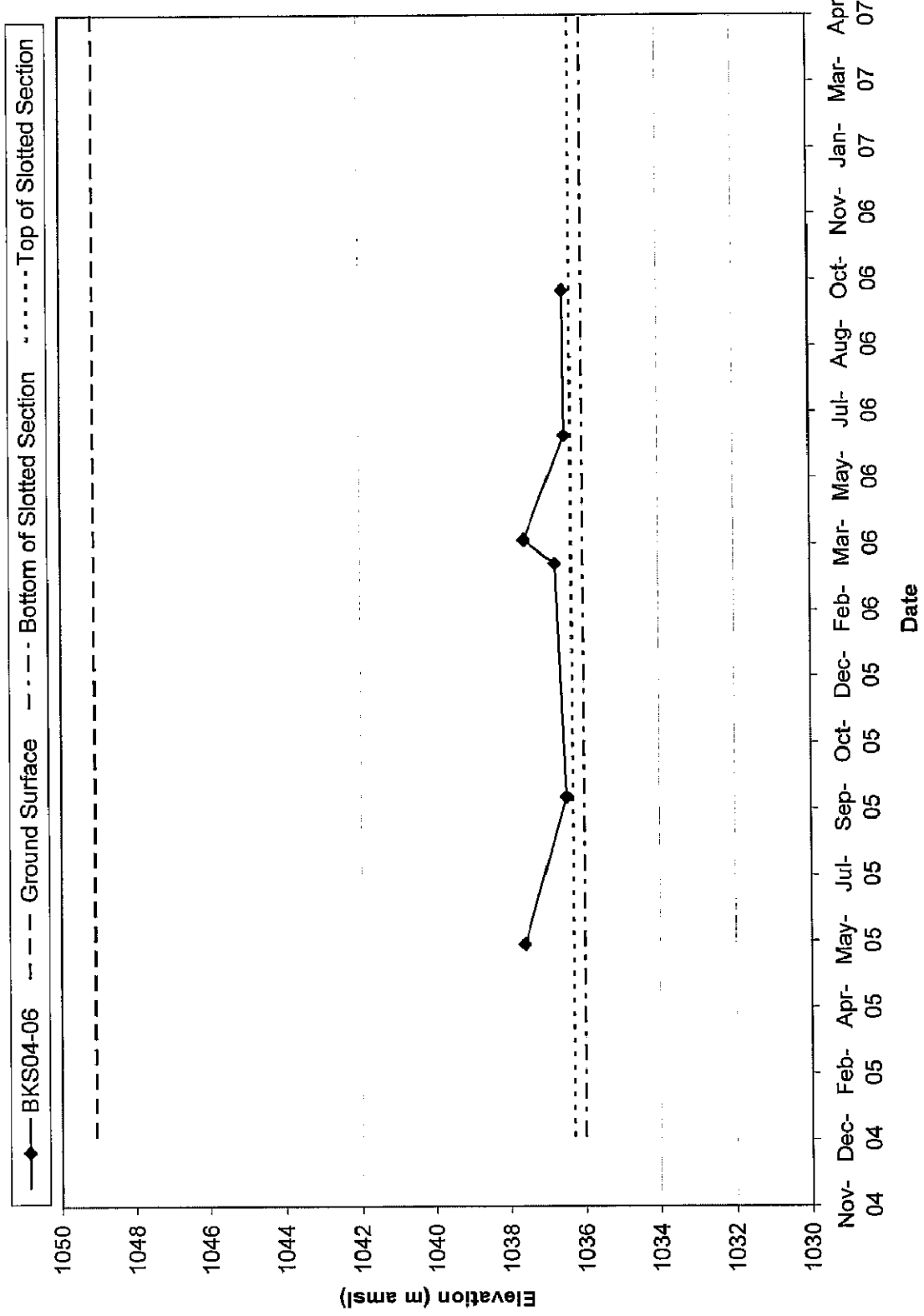


Instrument  
Details



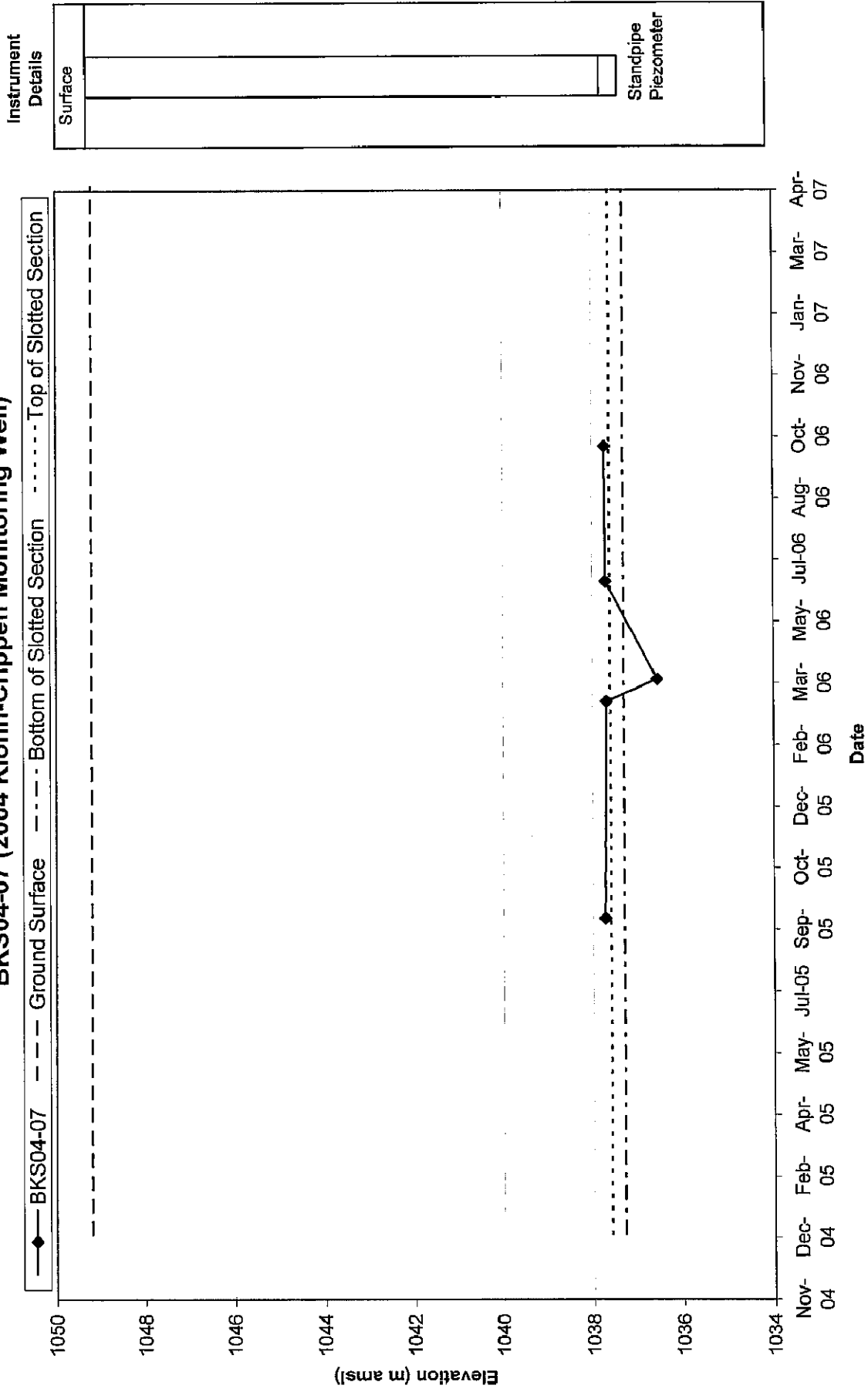
<b>BKS04-06</b>		<b>Location:</b>	Intermediate Dam South Abutment	<b>2004 Stick-Up (m):</b>	1.51
		<b>Coordinates:</b>	N 6913803 E 580454.9	<b>Tip Elevation (m amsl):</b>	1036.00
<b>Surface Protector:</b>	yes	<b>Date Installed:</b>	1996	<b>2004 Surface Elevation ( m amsl):</b>	1049.1
				<b>Screened Interval (m bgs):</b>	12.8 - 13.1
<b>Date</b>	<b>Water level from top of pipe (m)</b>		<b>Piezometric Elevation (m amsl)</b>	<b>Pond El. (m amsl)</b>	<b>Comments</b>
26-May-05	13.01		1037.60		
14-Sep-05	14.15		1036.46		bottom - no beep
09-Mar-06	13.87		1036.74		
27-Mar-06	13.035		1037.57		no beep
14-Jun-06	14.14		1036.47		sticky at 11.0m
02-Oct-06	14.11		1036.50		

**INTERMEDIATE DAM**  
**Piezometric Monitoring**  
**BKS04-06 (2004 Klohn-Crippen Monitoring Well)**



<b>BKS04-07</b>		<b>Location:</b>	Intermediate Dam South Abutment	<b>2004 Stick-Up (m):</b>	1.51
		<b>Coordinates:</b>	N 6913747 E 580407.6	<b>Tip Elevation (m amsl):</b>	1037.29
<b>Surface Protector:</b>	yes	<b>Date Installed:</b>	1996	<b>2004 Surface Elevation ( m amsl):</b>	1049.2
				<b>Screened Interval (m bgs):</b>	11.5 - 11.81
<b>Date</b>		<b>Water level from top of pipe (m)</b>	<b>Piezometric Elevation (m amsl)</b>	<b>Pond El. (m amsl)</b>	<b>Comments</b>
26-May-05		14.155			Impossible reading
14-Sep-05		12.99	1037.72		
09-Mar-06		13.03	1037.68		
27-Mar-06		14.16	1036.55		no beep
14-Jun-06		13.02	1037.69		sticky at 12.7 m
02-Oct-06		13.01	1037.70		

**INTERMEDIATE DAM**  
**Piezometric Monitoring**  
**BKS04-07 (2004 Klohn-Crippen Monitoring Well)**



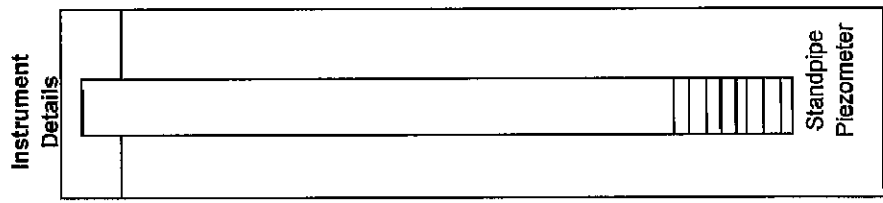
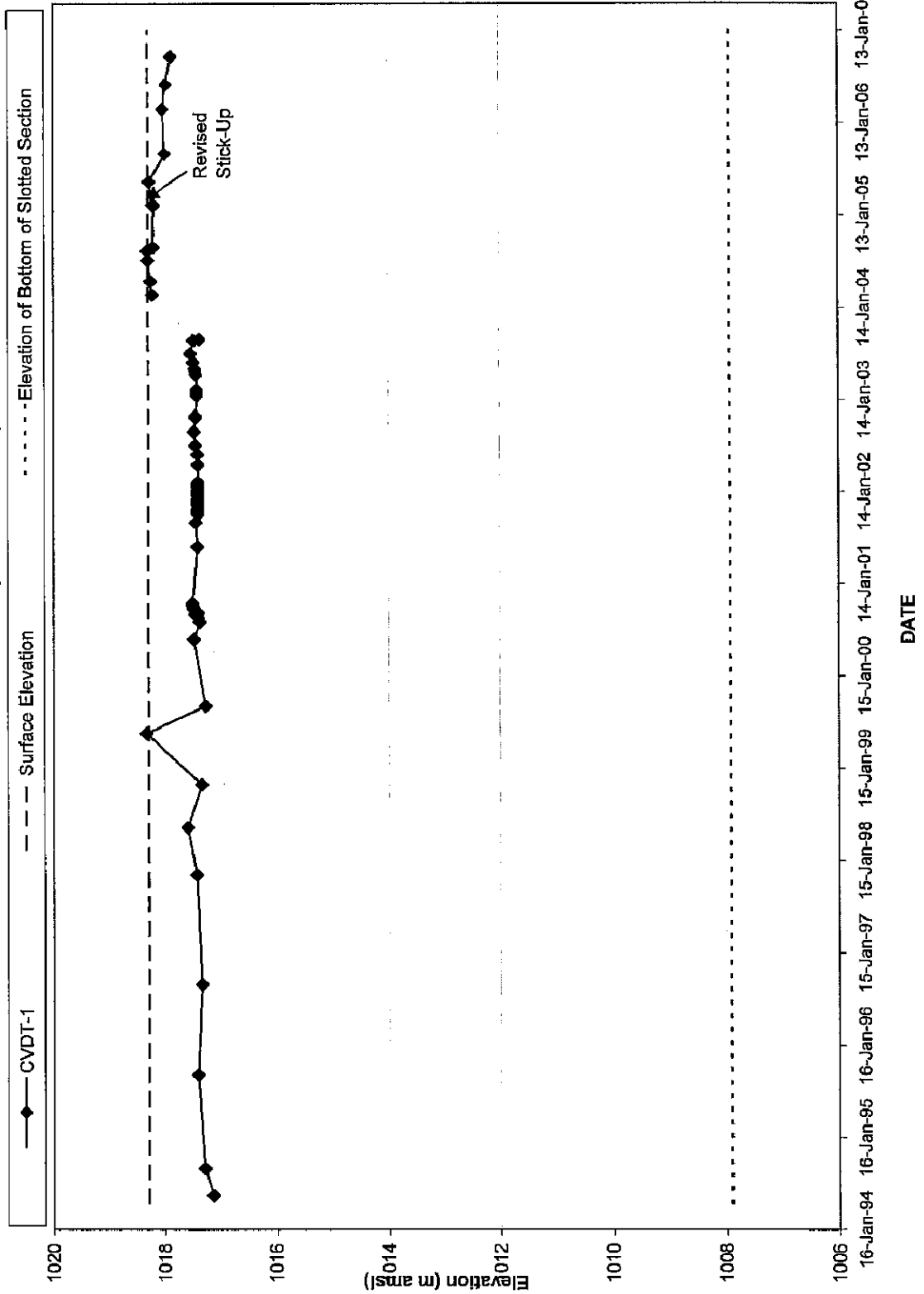
## **CROSS VALLEY DAM**

## **PIEZOMETERS**

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	1029.915	
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	
3-Jun-99		-0.868	1018.33	1031.40	
18-Sep-99		-1.940	1017.26	~1029.2	
8-Jun-00		-1.73	1017.47	~1030.2	
14-Aug-00		-1.84	1017.36		
31-Aug-00		-1.81	1017.39		
7-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		
1-Nov-01		-1.81	1017.39		
5-Nov-01		-1.81	1017.39		
6-Nov-01		-0.44	1017.39		Stick up changed
8-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		
3-Dec-01		-0.44	1017.39		
5-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		
2-Jan-02		-0.44	1017.39		
9-Jan-02		-0.44	1017.39		
16-Jan-02		-0.44	1017.39		

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
23-Jan-02		-0.44	1017.39		
30-Jan-02		-0.44	1017.39		
6-Feb-02		-0.44	1017.39		
13-Feb-02		-0.44	1017.39		
20-Feb-02		-0.44	1017.39		
1-May-02		-0.44	1017.39		
12-Jun-02		-0.435	1017.40		
17-Jul-02		-0.395	1017.44		
7-Aug-02					not read
9-Sep-02		-0.37	1017.46		
4-Nov-02		-0.395	1017.44		
10-Nov-02		-0.395	1017.44		
30-Jan-03		-0.42	1017.41		
9-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		-0.405	1017.43	1030.14	
7-May-03		-0.39	1017.44		
16-May-03		-0.385	1017.45		
11-Jun-03		-0.355	1017.48		
15-Jul-03		-0.305	1017.53		
4-Sep-03		-0.36	1017.47		
10-Sep-03		-0.465	1017.37	996.28	
4-Mar-04		-0.345	1018.23		2004 survey data use from here on
8-Mar-04					Pulled ice and snow
26-Apr-04		-0.315	1018.26	997.85	
19-Jul-04		-0.27	1018.30		
26-Aug-04		-0.26	1018.31		
9-Sep-04		-0.36	1018.21		
22-Feb-05		-0.37	1018.20		Frozen
24-Feb-05		-0.35	1018.22		Frozen
26-May-05		-0.29	1018.28		
14-Sep-05		-0.585	1017.99		
9-Mar-06		-0.54	1018.03		no beep
14-Jun-06		-0.6	1017.97		
2-Oct-06		-0.7	1017.87	1027.468	

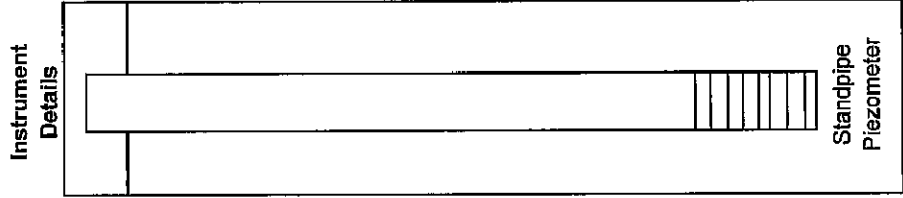
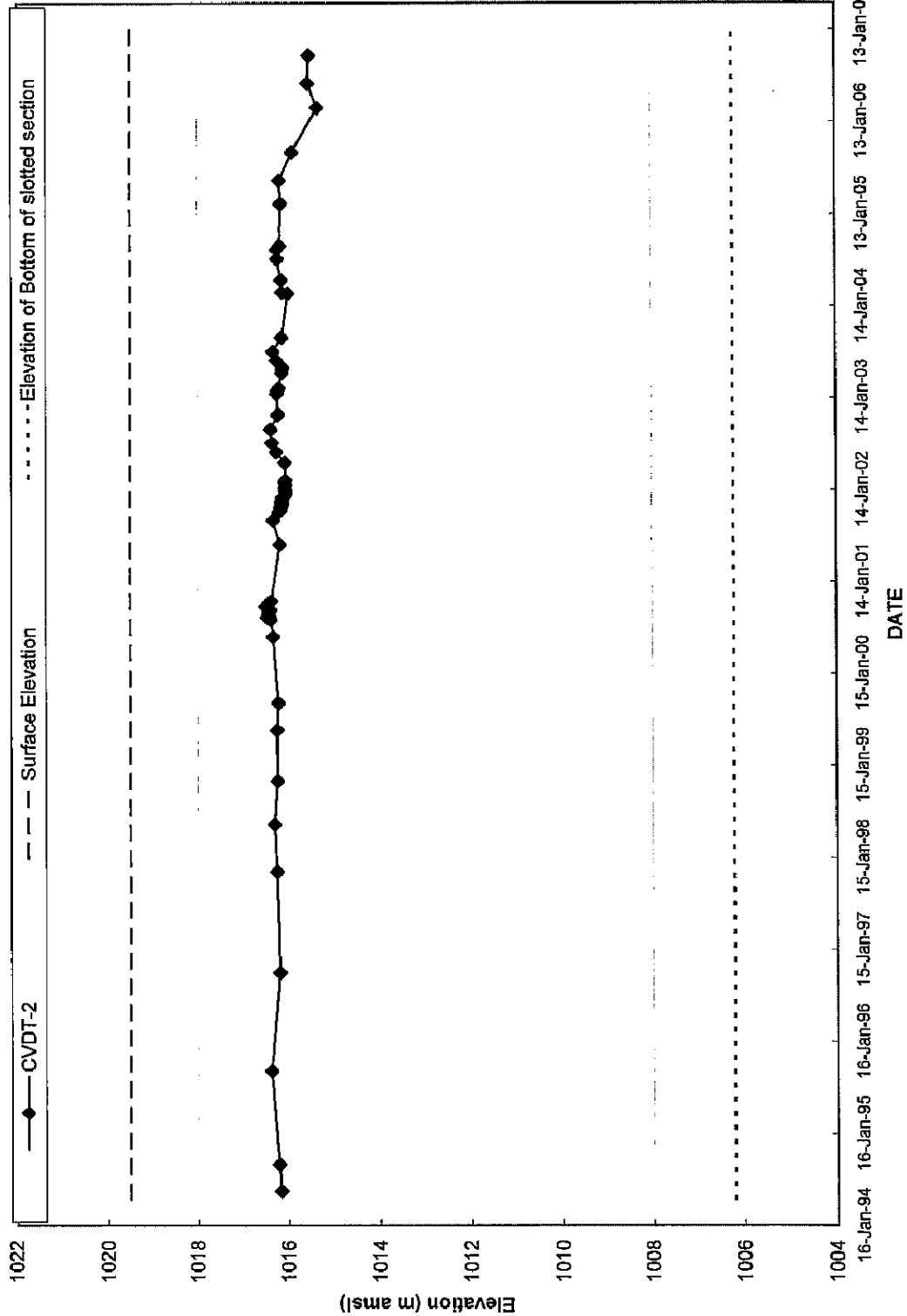
### CROSS VALLEY DAM Piezometric Monitoring CVDT-1 Standpipe Piezometer (Toe of Dam)



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	1029.915	
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	
3-Jun-99		-4.784	1016.24	1031.40	
18-Sep-99		-4.81	1016.21	~1029.2	
8-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		
7-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		
6-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		
1-Nov-01		-4.875	1016.15		
5-Nov-01		-4.88	1016.14		
6-Nov-01		-3.74	1016.14		New stick-up of 0.38 m
8-Nov-01		-3.74	1016.14		
12-Nov-01		-3.76	1016.12		
15-Nov-01		-3.76	1016.12		
19-Nov-01		-3.755	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		
3-Dec-01		-3.76	1016.12		
5-Dec-01		-3.775	1016.11		
12-Dec-01		-3.775	1016.11		
14-Dec-01		-3.775	1016.11		
15-Dec-01		-3.8	1016.08		
16-Dec-01		-3.79	1016.09		
17-Dec-01		-3.81	1016.07		
18-Dec-01		-3.815	1016.07		
19-Dec-01		-3.82	1016.06		
26-Dec-01		-3.84	1016.04		
2-Jan-02		-3.84	1016.04		
9-Jan-02		-3.835	1016.05		

CVDP-2		Location:	Cross Valley Dam St.0+450 5m u/s of CL.	Ground Elevation (m amsl):	1016.86
		Coordinates:	8V580128 6914135	Tip Elevation (m amsl):	1014.51
Surface Protector:	yes	Date Installed:	1982		
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	1029.915		
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	11.5				no bubbles, keeps rising
24-Feb-05	16				no bubbles, keeps rising
26-May-05	2.7	1016.40			
14-Sep-05	1.6	1015.63			
09-Mar-06	0.9	1015.14			
14-Jun-06	1.2	1015.35			
02-Oct-06	1.3	1015.42	1027.468		

# CROSS VALLEY DAM Piezometric Monitoring CVDT-2 Standpipe Piezometer (Toe of Dam)

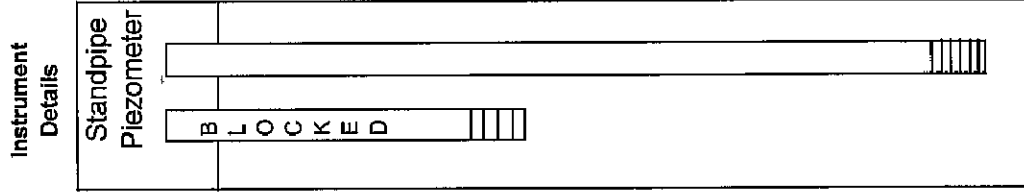
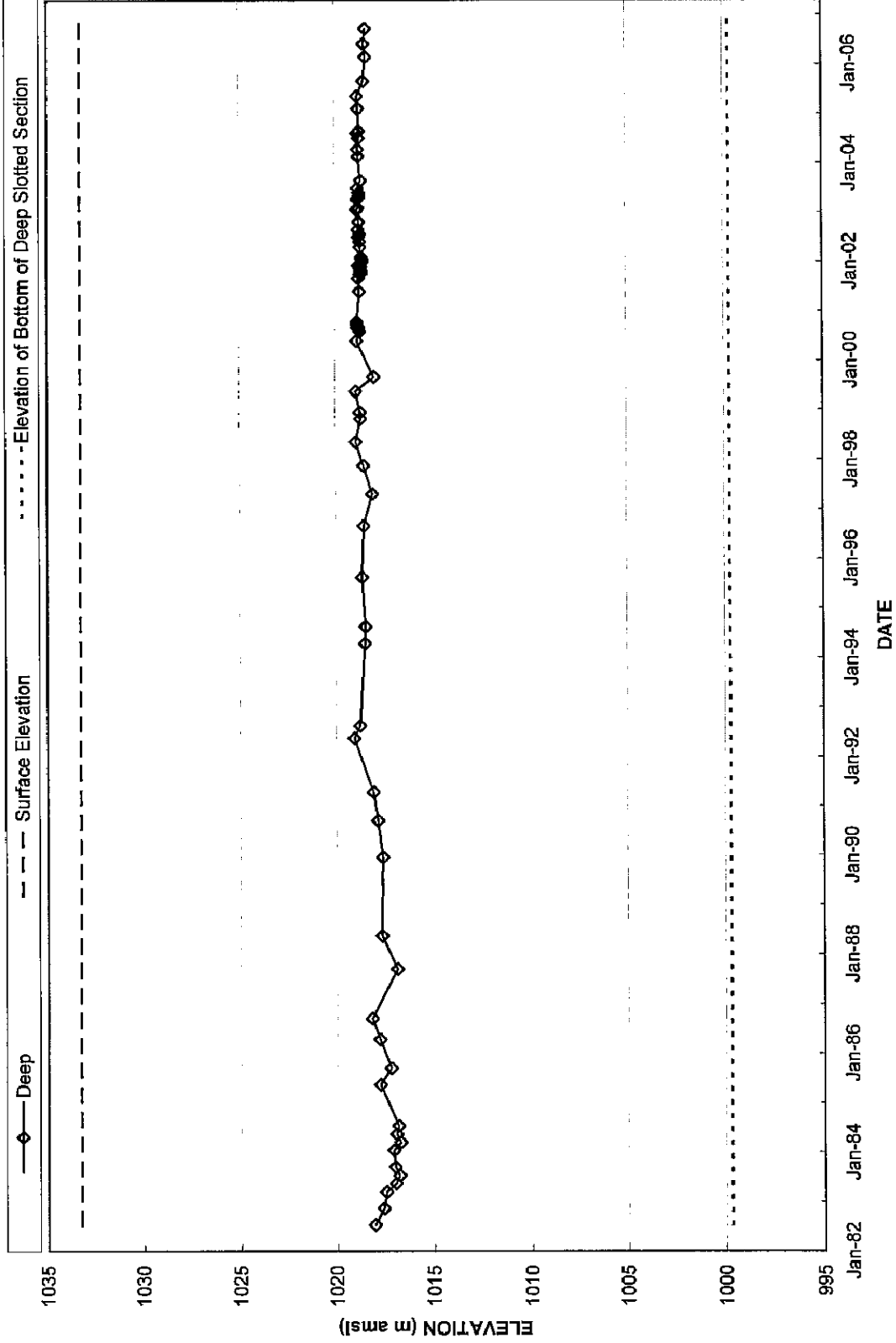


CVDC-4		Location:	Cross Valley Dam Crest Stn. 0+215	2004 Ground Elevation (m amsl):	1033.3		
		Coordinates:	8V580266 6914331	Shallow Tip Elevation (m amsl):	1007.9	2004 Shallow stick-up 2004 (m):	0.11
Surface Protector:	yes	Date Installed:	1981	Deep Tip Elevation (m amsl):	999.7	2004 Deep stick-up (m):	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	1029.915	
7-May-97			15.34		1018.06		
2-Dec-97			14.89		1018.51		shallow standpipe - dry
26-May-98			14.66		1018.92	1031.2	
13-Nov-98			14.91		1018.67	1029.8	
29-Dec-98			14.89		1018.69	1029.8	
3-Jun-99			14.671		1018.91	1031.4	
18-Sep-99			15.60		1017.98	~1029.2	
8-Jun-00			14.73		1018.85	~1030.2	
14-Aug-00			14.88		1018.70		
31-Aug-00			14.86		1018.72		
7-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
6-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
1-Nov-01		7.61	14.975		1018.61		shallow standpipe - blocked @ 7.61m
5-Nov-01		7.61	14.97		1018.61		
6-Nov-01		7.61	14.97		1018.61		
8-Nov-01		7.61	14.965		1018.62		
12-Nov-01		7.61	14.96		1018.62		
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		
3-Dec-01		7.61	14.96		1018.62		
5-Dec-01		7.61	14.97		1018.61		

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 2004 (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	1029.915	
7-May-97			15.34		1018.06		
2-Dec-97			14.89		1018.51		shallow standpipe - dry
26-May-98			14.65		1018.92	1031.2	
13-Nov-98			14.91		1018.67	1029.8	
29-Dec-98			14.89		1018.69	1029.8	
3-Jun-99			14.671		1018.91	1031.4	
18-Sep-99			15.60		1017.98	~1029.2	
8-Jun-00			14.73		1018.85	~1030.2	
14-Aug-00			14.68		1018.70		
31-Aug-00			14.86		1018.72		
7-Sep-00			14.63		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
6-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
1-Nov-01		7.61	14.975		1018.61		shallow standpipe - blocked @ 7.61m
5-Nov-01		7.61	14.97		1018.61		
6-Nov-01		7.61	14.97		1018.61		
8-Nov-01		7.61	14.985		1018.62		
12-Nov-01		7.61	14.96		1018.62		
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		
3-Dec-01		7.61	14.96		1018.62		
5-Dec-01		7.61	14.97		1018.61		

CVDC-4		Location:	Cross Valley Dam Crest Stn. 0+215	2004 Ground Elevation (m amsl):	1033.3	2004 Shallow stick-up 2004 (m):	0.11
		Coordinates:	8V580266 6914331	Shallow Tip Elevation (m amsl):	1007.9		
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			
12-Dec-01	7.61	14.84		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	14.9		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			
2-Jan-02	7.61	14.94		1018.64			
9-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			
6-Feb-02	7.61	15.00		1018.58			
13-Feb-02	7.61	15		1018.58			
20-Feb-02	7.61	14.99		1018.59			
1-May-02	7.61	14.915		1018.67			
12-Jun-02	7.61	14.895		1018.69			
17-Jul-02	7.61	14.845		1018.74			
7-Aug-02	7.61	14.895		1018.69			
9-Sep-02	7.61	14.82		1018.76			
4-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			
9-Feb-03	7.61	14.755		1018.83		start siphon	
11-Feb-03	7.61	14.765		1018.82			
13-Feb-03	7.61	14.78		1018.80			
18-Feb-03	7.61	14.8		1018.78			
21-Feb-03	7.61	14.83		1018.75	1026.18		
23-Apr-03	7.61	14.78		1018.80			
7-May-03	7.61	14.875		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	14.965		1018.62			
4-Mar-04	7.61	14.84		1018.76		2004 Survey data used from here on	
8-Mar-04	7.61	14.86		1018.74			
26-Apr-04	7.61	14.83		1018.77			
19-Jul-04	7.61	14.875		1018.725			
26-Aug-04	7.61	14.775		1018.825			
9-Sep-04	7.61	14.89		1018.71			
22-Feb-05	7.61	14.84		1018.76			
23-Feb-05	7.61	14.84		1018.76			
24-Feb-05	7.61	14.645		1018.76			
26-May-05	7.61	14.79		1018.81			
14-Sep-05	7.61	15.12		1018.48			
9-Mar-06	7.61	15.225		1018.38			
14-Jun-06	7.61	15.14		1018.46			
4-Oct-06	7.61	15.225		1018.38	1027.468		

**CROSS VALLEY DAM**  
**Pieometric Monitoring**  
**CVDC-4 Deep Standpipe**  
**(Dam Crest)**



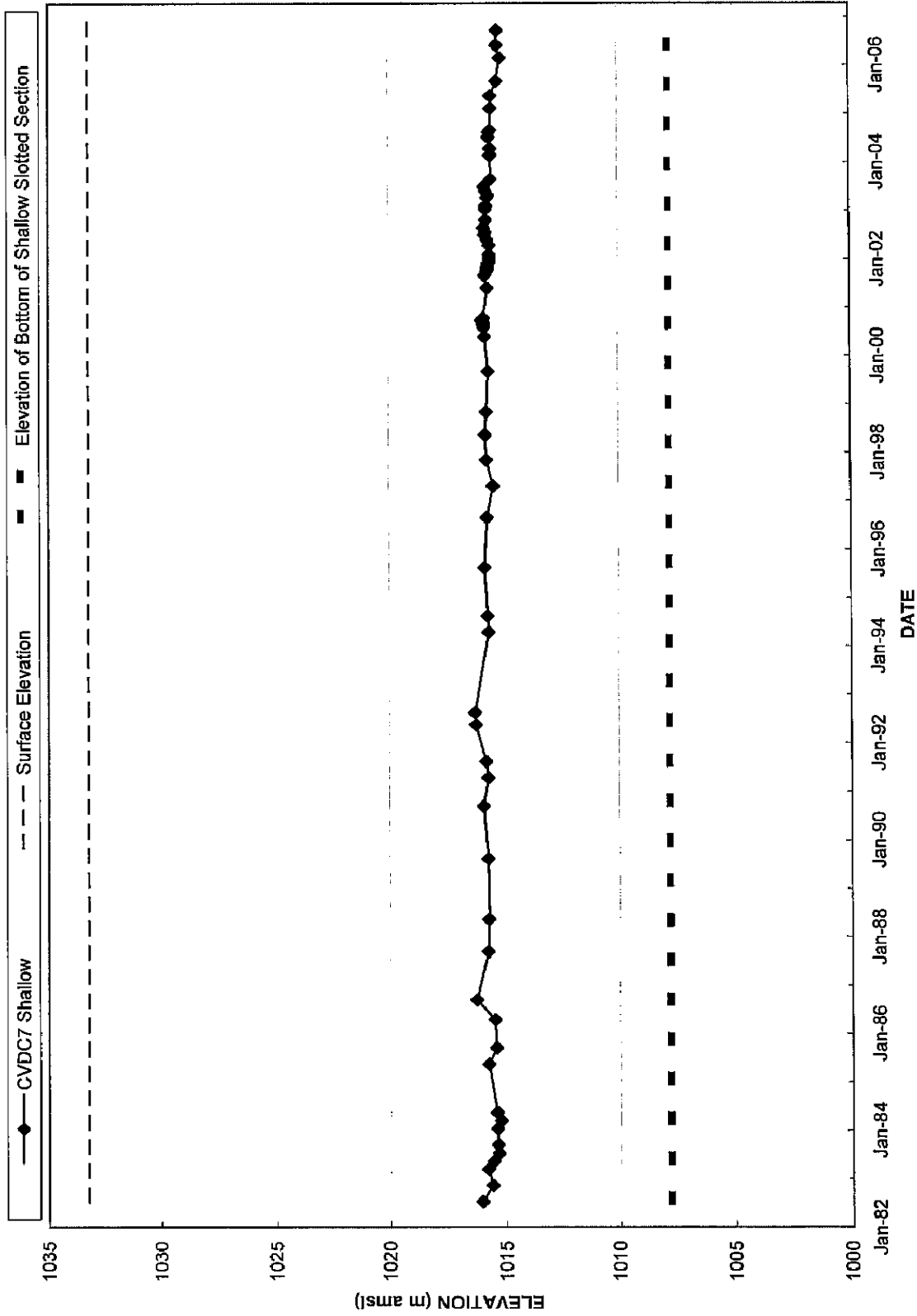
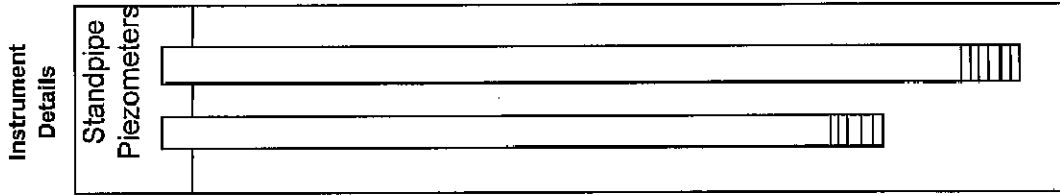
Faro Mine Instrumentation - Cross Valley Dam

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		
3-Jun-99		n.r.	15.10		1018.56	1031.4		
18-Sep-99		18.00	15.59	1015.69	1018.07	~1029.2		
8-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			
7-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			
6-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	15.5	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			
1-Nov-01		17.985	15.495	1015.71	1018.17			
5-Nov-01		17.99	15.505	1015.70	1018.16			
6-Nov-01		17.99	15.505	1015.70	1018.16			
8-Nov-01		17.99	15.51	1015.70	1018.15			
12-Nov-01		18	15.51	1015.69	1018.15			
15-Nov-01		18	15.51	1015.69	1018.15			
19-Nov-01		18	15.51	1015.69	1018.15			
21-Nov-01		17.99	15.495	1015.70	1018.17			
23-Nov-01		17.99	15.495	1015.70	1018.17		pond elev approx - 8 ft.	
26-Nov-01		18	15.495	1015.69	1018.17		daytime temp -34 C	
28-Nov-01		18	15.5	1015.69	1018.16			

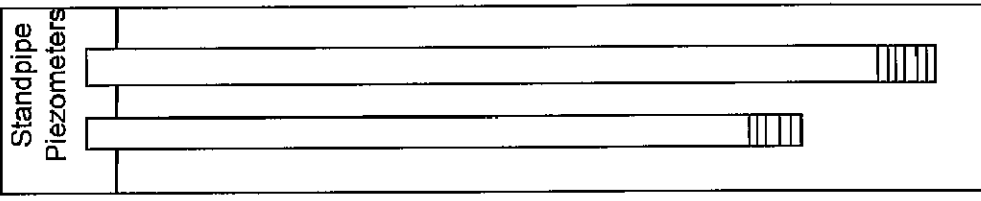
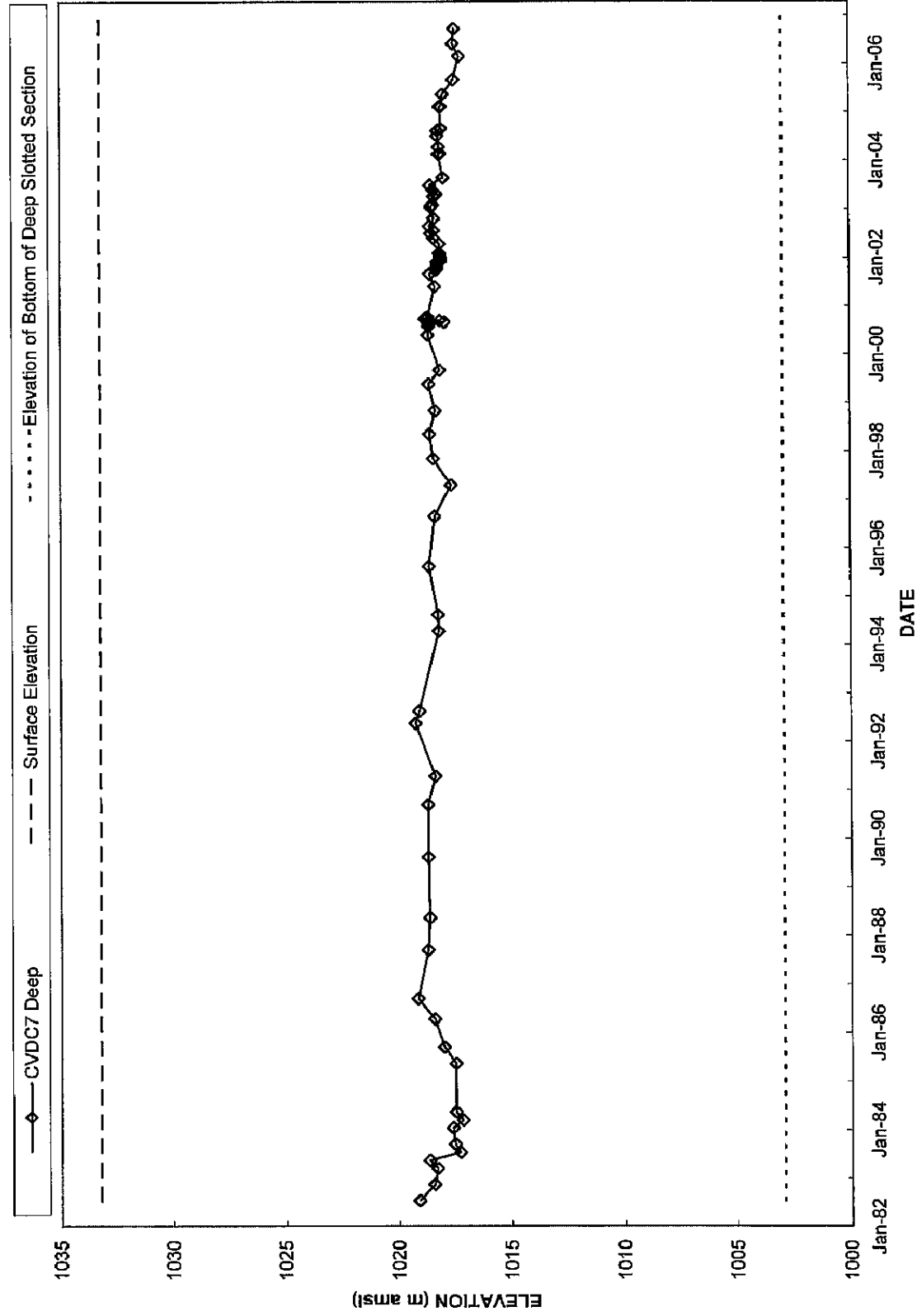
Faro Mine Instrumentation - Cross Valley Dam

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				
30-Nov-01	18.01	15.5	1015.68	1018.16				
3-Dec-01	18.01	15.51	1015.68	1018.15				
5-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	15.5	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				
2-Jan-02	18.07	15.65	1015.62	1018.01				
9-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				
6-Feb-02	18.075	15.62	1015.62	1018.04				
13-Feb-02	18.07	15.6	1015.62	1018.06				
20-Feb-02	18.075	15.6	1015.62	1018.06				
1-May-02	18.07	15.6	1015.62	1018.06		Water being discharged from the polishing pond		
12-Jun-02	17.975	15.35	1015.72	1018.31				
17-Jul-02	17.85	15.225	1015.84	1018.44				
7-Aug-02	17.9	15.35	1015.79	1018.31				
9-Sep-02	17.815	15.17	1015.88	1018.49				
4-Nov-02	17.91	15.36	1015.78	1018.30				
10-Nov-02	17.91	15.355	1015.78	1018.31				
30-Jan-03	17.895	15.235	1015.80	1018.43				
9-Feb-03	17.9	15.245	1015.79	1018.42		start siphon		
11-Feb-03	17.905	15.256	1015.79	1018.40				
13-Feb-03	17.91	15.28	1015.78	1018.38				
18-Feb-03	17.925	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				
7-May-03	18.01	15.47	1015.68	1018.19				
16-May-03	18.01	15.455	1015.68	1018.21				
11-Jun-03	17.91	15.33	1015.78	1018.33				
15-Jul-03	17.84	15.205	1015.85	1018.46				
10-Sep-03	18	15.585	1015.55	1017.88				
4-Mar-04	17.97	15.39	1015.58	1018.08		2004 Survey data used from here on		
8-Mar-04	18	15.46	1015.55	1018.01				
26-Apr-04	17.98	15.4	1015.57	1018.07				
19-Jul-04	17.91	15.33	1015.64	1018.14				
26-Aug-04	17.93	15.34	1015.619	1018.129				
9-Sep-04	17.985	15.5	1015.564	1017.97				
22-Feb-05	17.995	15.43	1015.554	1018.039				
23-Feb-05	18	15.45	1015.549	1018.019		smells like old oil		
24-Feb-05	18	15.48	1015.549	1017.989				
26-May-05	17.99	15.575	1015.559	1017.894		milky on probe		
14-Sep-05	18.25	16.04	1015.299	1017.429				
9-Mar-06	18.41	16.3	1015.14	1017.17				
14-Jun-06	18.255	16.03	1015.29	1017.44				
4-Oct-06	18.27	16.095	1015.28	1017.37	1027.47			

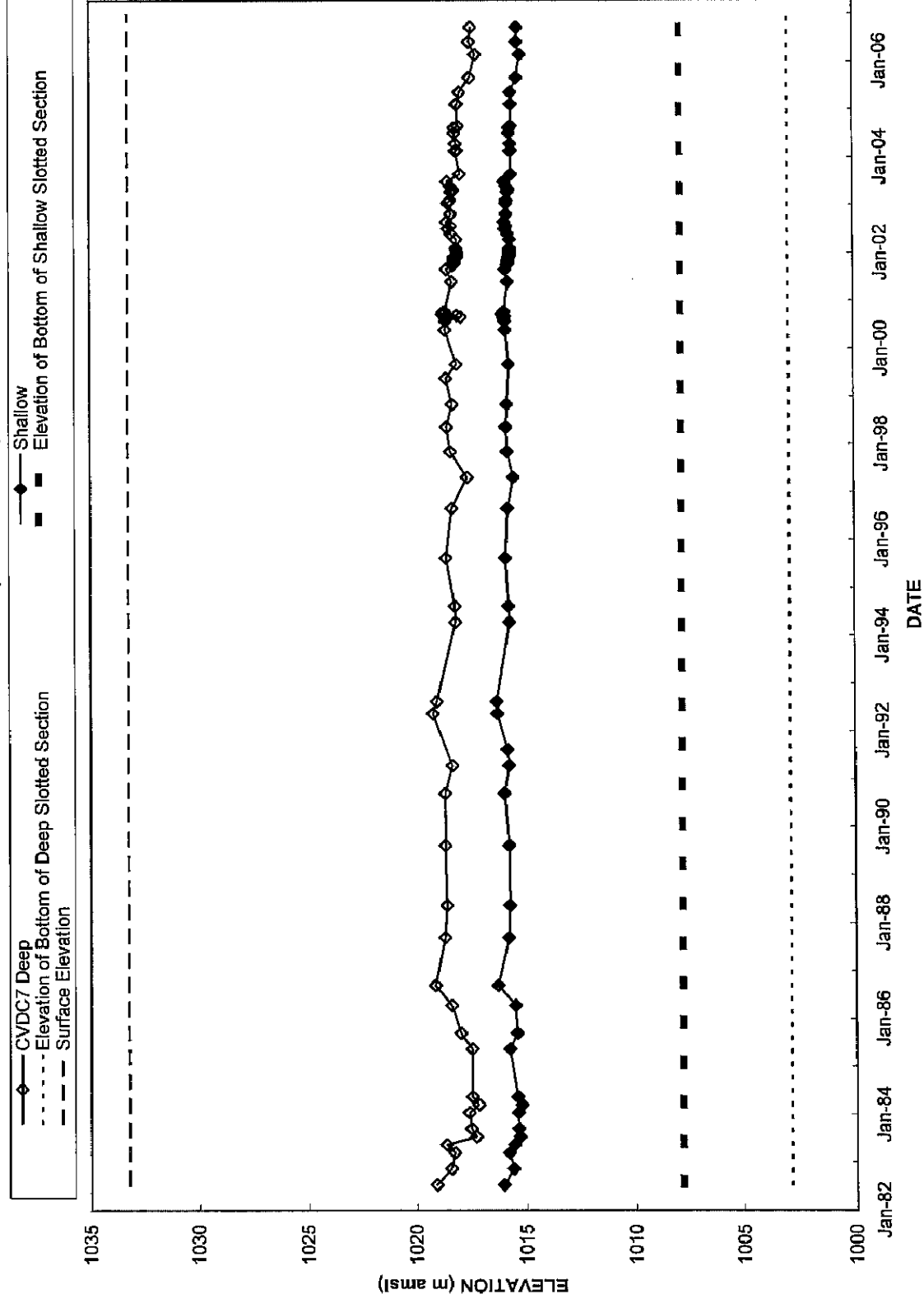
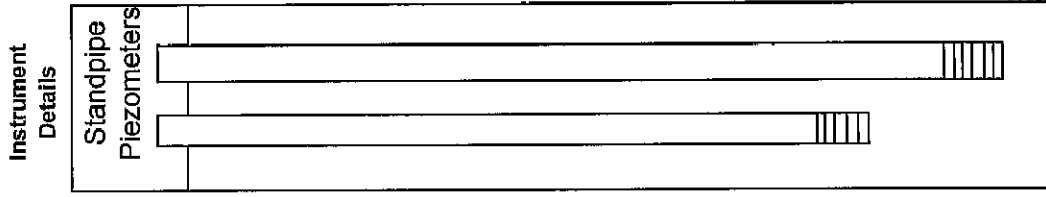
# CROSS VALLEY DAM Piezometric Monitoring CVDC-7 Shallow Standpipe Piezometer (Dam Crest)



**CROSS VALLEY DAM**  
**Piezometric Monitoring**  
**CVDC-7 Deep Standpipe Piezometer**  
**(Dam Crest)**



# CROSS VALLEY DAM Piezometric Monitoring CVDC-7 Standpipe Piezometers (Dam Crest)



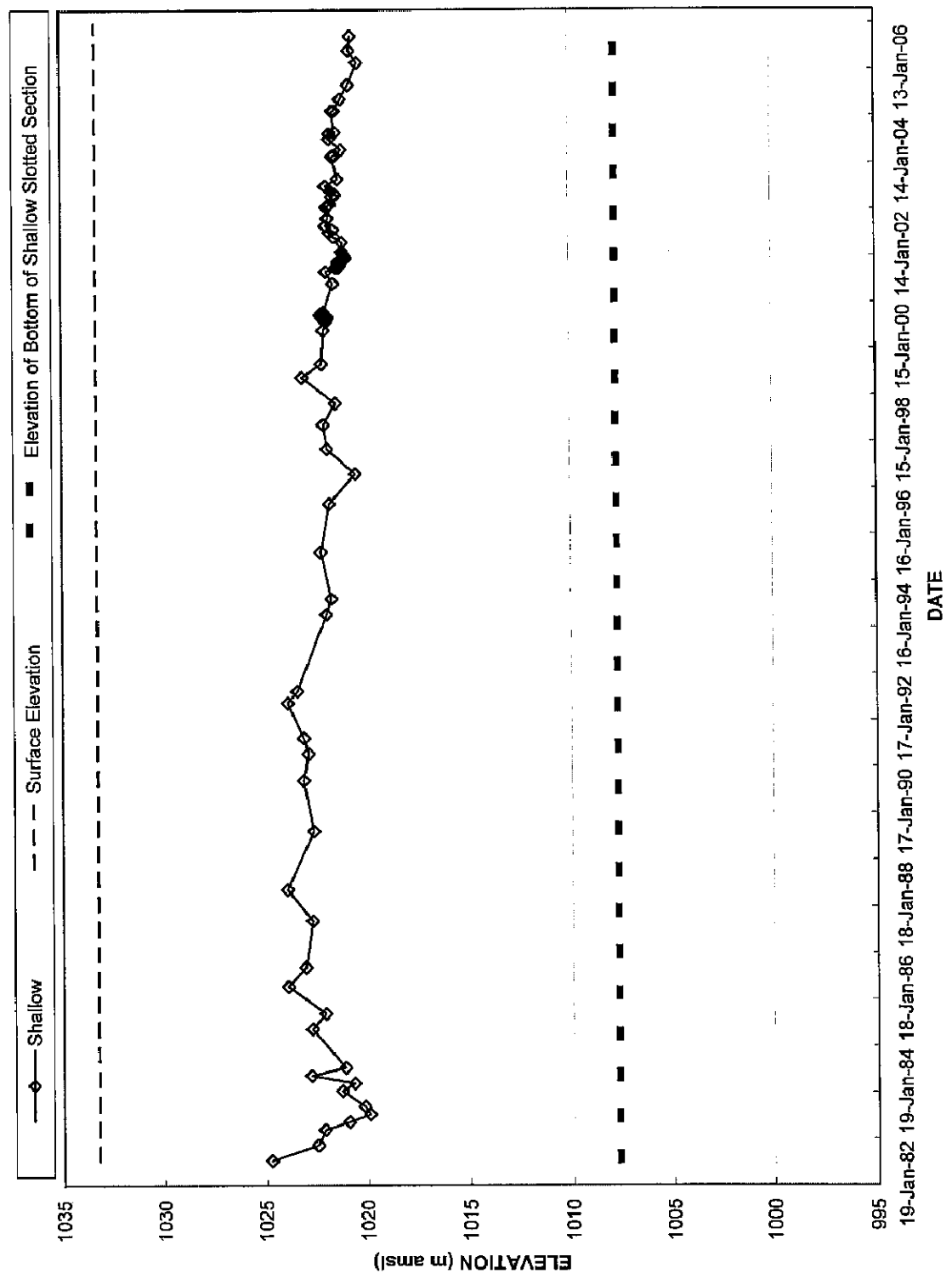
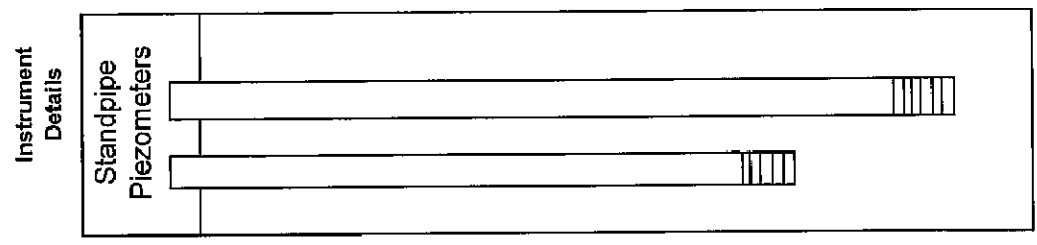
**Faro Mine Instrumentation - Cross Valley Dam**

CVDC-9		Location:	Cross Valley Dam Crest St.0+565	2004 Ground Elevation (m amsl):	1033.28	2004 Shallow stick-up (m):	0.27
		Coordinates:	8V580096 6913998	2004 Shallow Tip Elevation (m amsl):	1007.70		
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			
1-Aug-82	8.80	8.85	1024.74	1024.61			
1-Dec-82	11.04	9.00	1022.50	1024.46			
1-Apr-83	11.38	9.81	1022.16	1023.65	1029.33		
1-Jun-83	12.58	10.74	1020.96	1022.72	1025.88		
1-Aug-83	13.63	11.90	1019.91	1021.55			
1-Oct-83	13.36	11.13	1020.18	1022.33			
1-Feb-84	12.24	10.67	1021.30	1022.79			
1-Mar-84					1030.60		
1-Apr-84	12.87	11.65	1020.67	1021.81			
1-Jun-84	10.75	12.28	1022.79	1021.18	1026.80		
1-Aug-84	12.41	11.05	1021.13	1022.41			
1-Jun-85	10.80	8.98	1022.74	1024.48	1031.20		
1-Oct-85	11.45	8.25	1022.09	1025.21			
1-May-86	9.65	11.18	1023.89	1022.28	1030.70		
1-Oct-86	10.51	8.79	1023.03	1024.67	1030.90		
1-Oct-87	10.85	9.10	1022.69	1024.36			
1-Jun-88	9.74	9.42	1023.90	1024.11			
1-Sep-89	11.01	9.07	1022.63	1024.46			
1-Oct-90	10.54	8.83	1023.10	1024.70			
1-May-91	10.79	9.14	1022.85	1024.39			
1-Sep-91	10.56		1023.08				
1-Jun-92	9.79	7.92	1023.85	1025.61			
1-Sep-92	10.27	8.29	1023.37	1025.24			
1-May-94	11.68	9.49	1021.94	1024.06			
1-Sep-94	11.93	9.82	1021.69	1023.73			
1-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		
3-Jun-99	10.560	8.868	1023.06	1024.68	1031.4		
18-Sep-99	11.50	10.25	1022.12	1023.30	~1029.2		
8-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			
7-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			
6-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	10.2	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	12.405	10.34	1021.22	1023.21			
1-Nov-01	12.395	10.315	1021.23	1023.24			
5-Nov-01	12.41	10.31	1021.21	1023.24			
6-Nov-01	12.41	10.31	1021.21	1023.24			
8-Nov-01	12.41	10.3	1021.21	1023.25			
12-Nov-01	12.42	10.295	1021.20	1023.26			
15-Nov-01	12.42	10.285	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	

Faro Mine Instrumentation - Cross Valley Dam

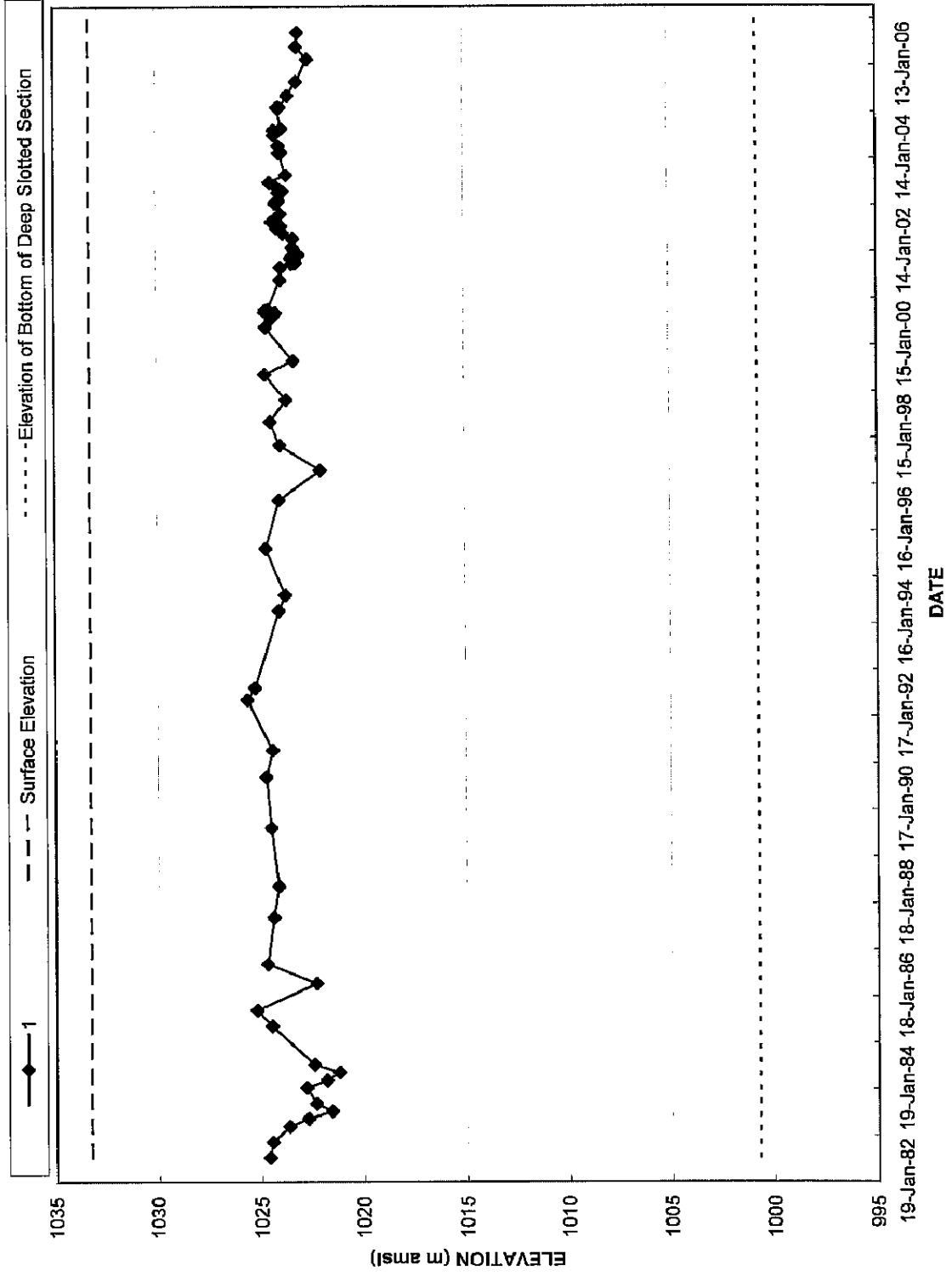
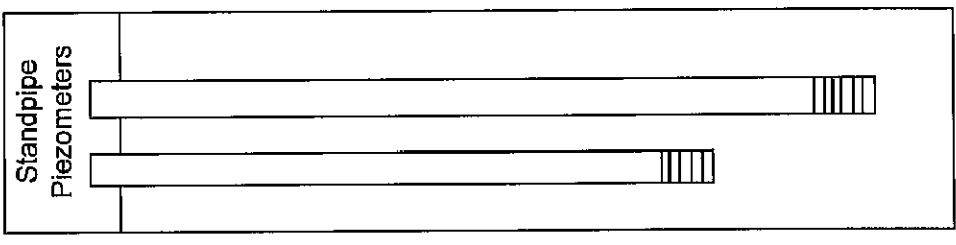
CVDC-9		Location:	Cross Valley Dam Crest St.D+565	2004 Ground Elevation (m amsl):	1033.28		
		Coordinates:	8V580096 6913998	2004 Shallow Tip Elevation (m amsl)	1007.70	2004 Shallow stick-up (m):	0.27
Surface Protector:	yes	Date Installed:	1981	2004 Deep Tip Elevation (m amsl):	1000.70	2004 Deep stick-up (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		
28-Nov-01		12.38	10.16	1021.24	1023.39		
30-Nov-01		12.385	10.17	1021.24	1023.38		
3-Dec-01		12.4	10.19	1021.22	1023.36		
5-Dec-01		12.42	10.2	1021.20	1023.35		
12-Dec-01		12.435	10.2	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		
2-Jan-02		12.7	10.49	1020.92	1023.06		
9-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		12.6	10.33	1021.02	1023.22		
6-Feb-02		12.585	10.31	1021.04	1023.24		
13-Feb-02		12.55	10.28	1021.07	1023.29		
20-Feb-02		12.55	10.25	1021.07	1023.30		
1-May-02		12.55	10.27	1021.07	1023.28		
12-Jun-02		12.155	9.77	1021.47	1023.78		
17-Jul-02		11.91	9.465	1021.71	1024.09		
7-Aug-02		12.1	9.705	1021.52	1023.85		
9-Sep-02		11.75	9.24	1021.87	1024.31		
4-Nov-02		11.85	9.64	1021.77	1023.91		
10-Nov-02		11.86	9.665	1021.76	1023.89		
30-Jan-03		11.805	9.395	1021.82	1024.16		
9-Feb-03		11.84	9.42	1021.78	1024.13		start siphon
11-Feb-03		11.87	9.455	1021.75	1024.10		
13-Feb-03		11.91	9.5	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		12.055	9.565	1021.57	1023.99		
7-May-03		12.21	9.78	1021.41	1023.77		
16-May-03		12.175	9.7	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		12.355	9.95	1021.27	1023.60		
4-Mar-04		12.01	9.52	1021.54	1023.95		2004 Survey data used from here on
8-Mar-04		12.11	9.65	1021.44	1023.82		
26-Apr-04		12.45	9.5	1021.10	1023.97		
19-Jul-04		11.87	9.28	1021.68	1024.19		
26-Aug-04		11.88	9.28	1021.67	1024.19		
9-Sep-04		12.15	9.64	1021.40	1023.83		
22-Feb-05		12.02	9.44	1021.53	1024.03		
23-Feb-05		12.06	9.485	1021.49	1023.985		
24-Feb-05		12.11	9.555	1021.44	1023.915		
26-May-05		12.43	9.95	1021.12	1023.52		
14-Sep-05		12.83	10.385	1020.72	1023.085		
9-Mar-06		13.27	10.93	1020.28	1022.54		
14-Jun-06		12.86	10.4	1020.69	1023.07		
4-Oct-06		12.935	10.455	1020.62	1023.015	1027.468	

# CROSS VALLEY DAM Piezometric Monitoring CVDC-9 Shallow Standpipe Piezometer (Dam Crest)

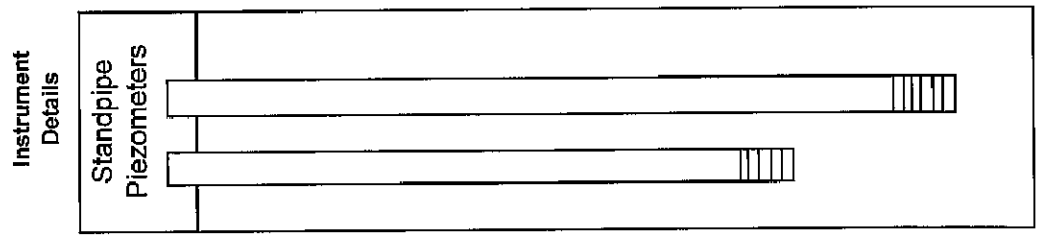
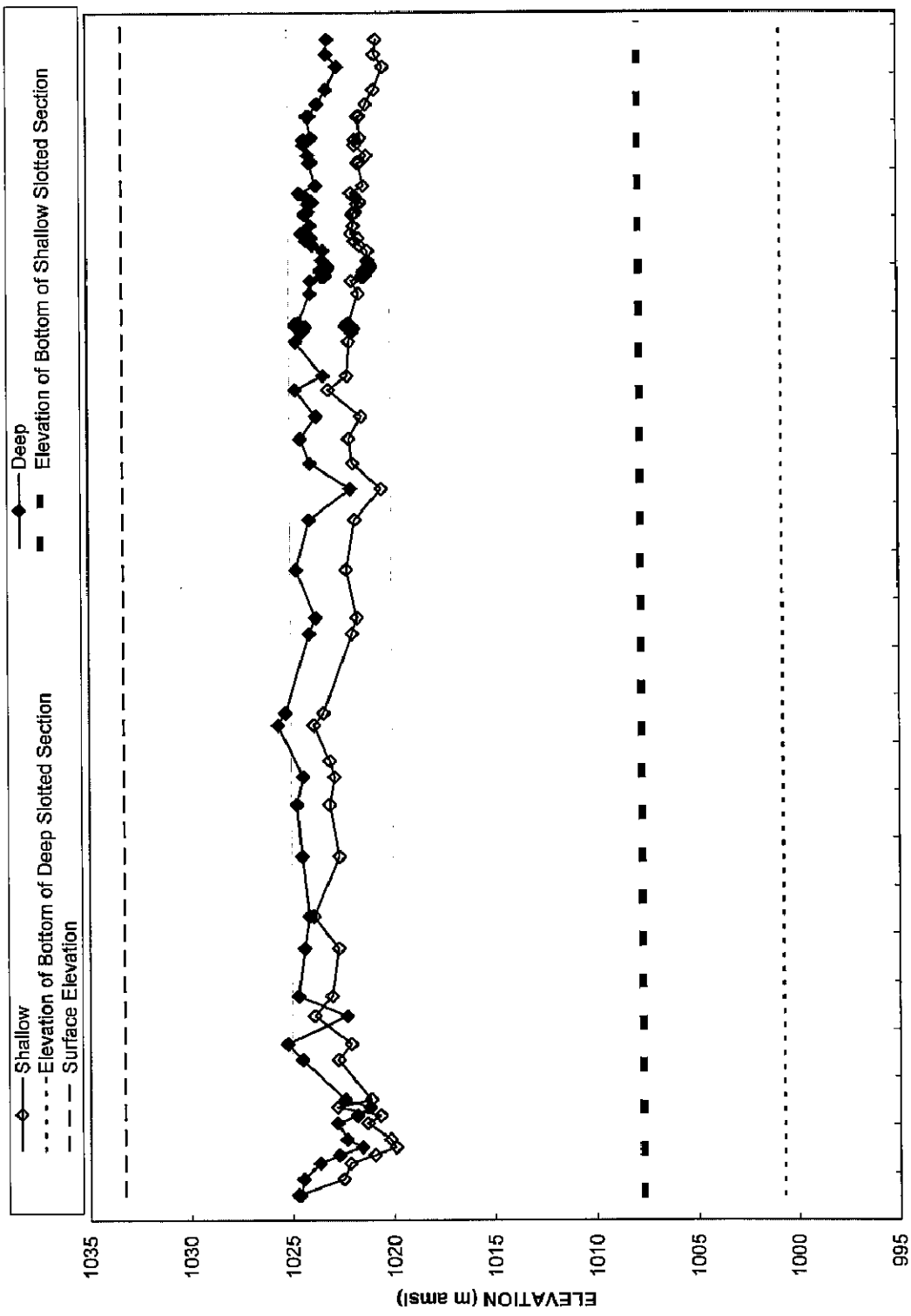


**CROSS VALLEY DAM**  
Piezometric Monitoring  
CVDC-9 Deep Standpipe Piezometer  
(Dam Crest)

Instrument  
Details



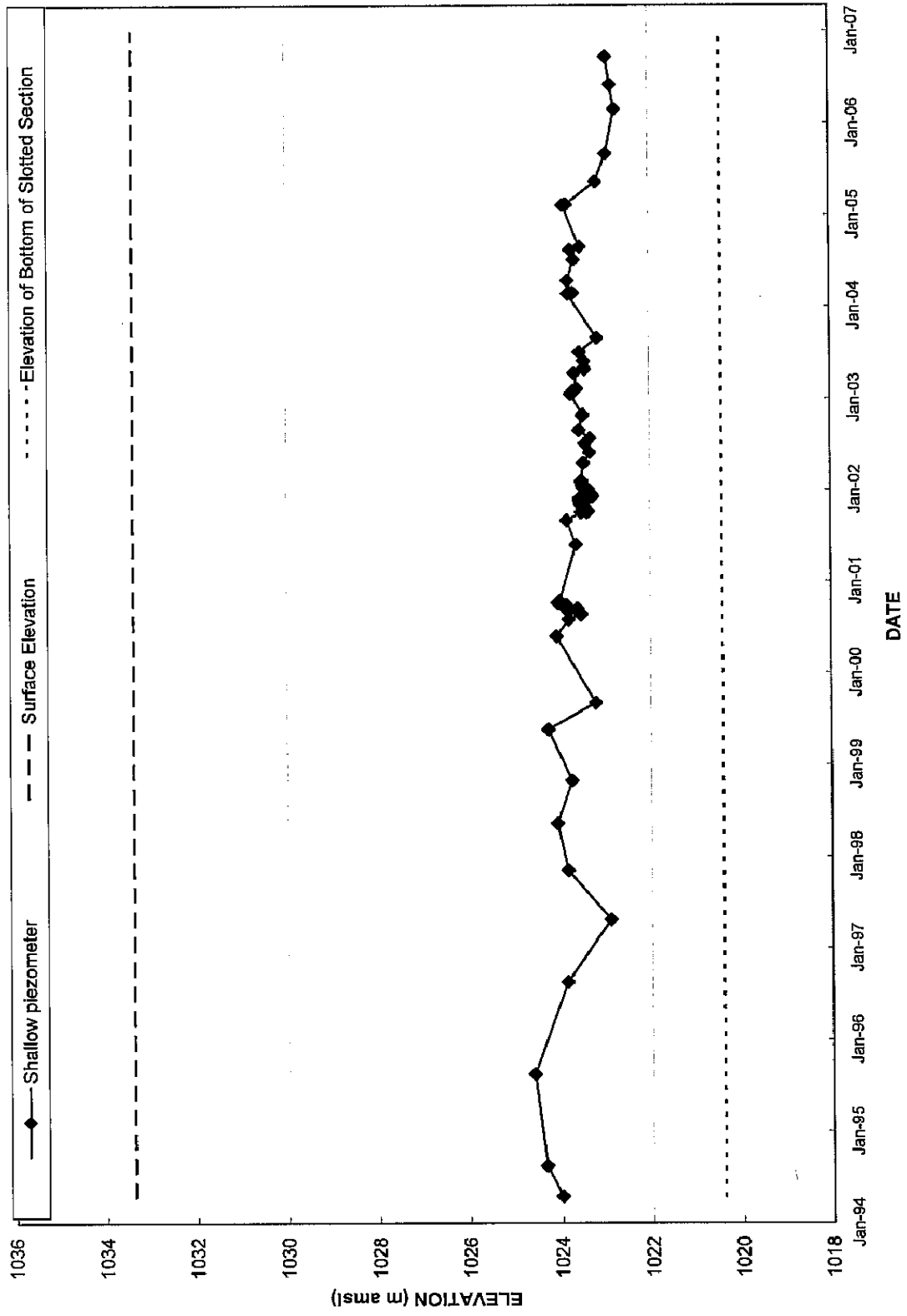
### CROSS VALLEY DAM Piezometric Monitoring CVDC-9 Standpipe Piezometers (Dam Crest)



94CVDC-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	1029.915	
7-May-97		11.00	1022.91		
20-Nov-97		10.07	1023.83		
26-May-98		9.84	1024.06	1031.2	
13-Nov-98		10.16	1023.74	1029.8	
3-Jun-99		9.650	1024.25	1031.4	
18-Sep-99		10.69	1023.21	~1029.2	
8-Jun-00		9.84	1024.06	~1030.2	
14-Aug-00		10.10	1023.80		
31-Aug-00		10.38	1023.52		
7-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		
6-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		
1-Nov-01		10.425	1023.48		
5-Nov-01		10.485	1023.42		
6-Nov-01		10.485	1023.42		
8-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		10.375	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		
3-Dec-01		10.37	1023.53		
5-Dec-01		10.365	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		
2-Jan-02		10.56	1023.34		
9-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		

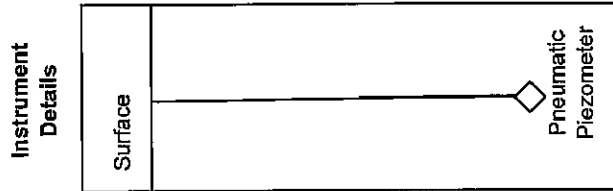
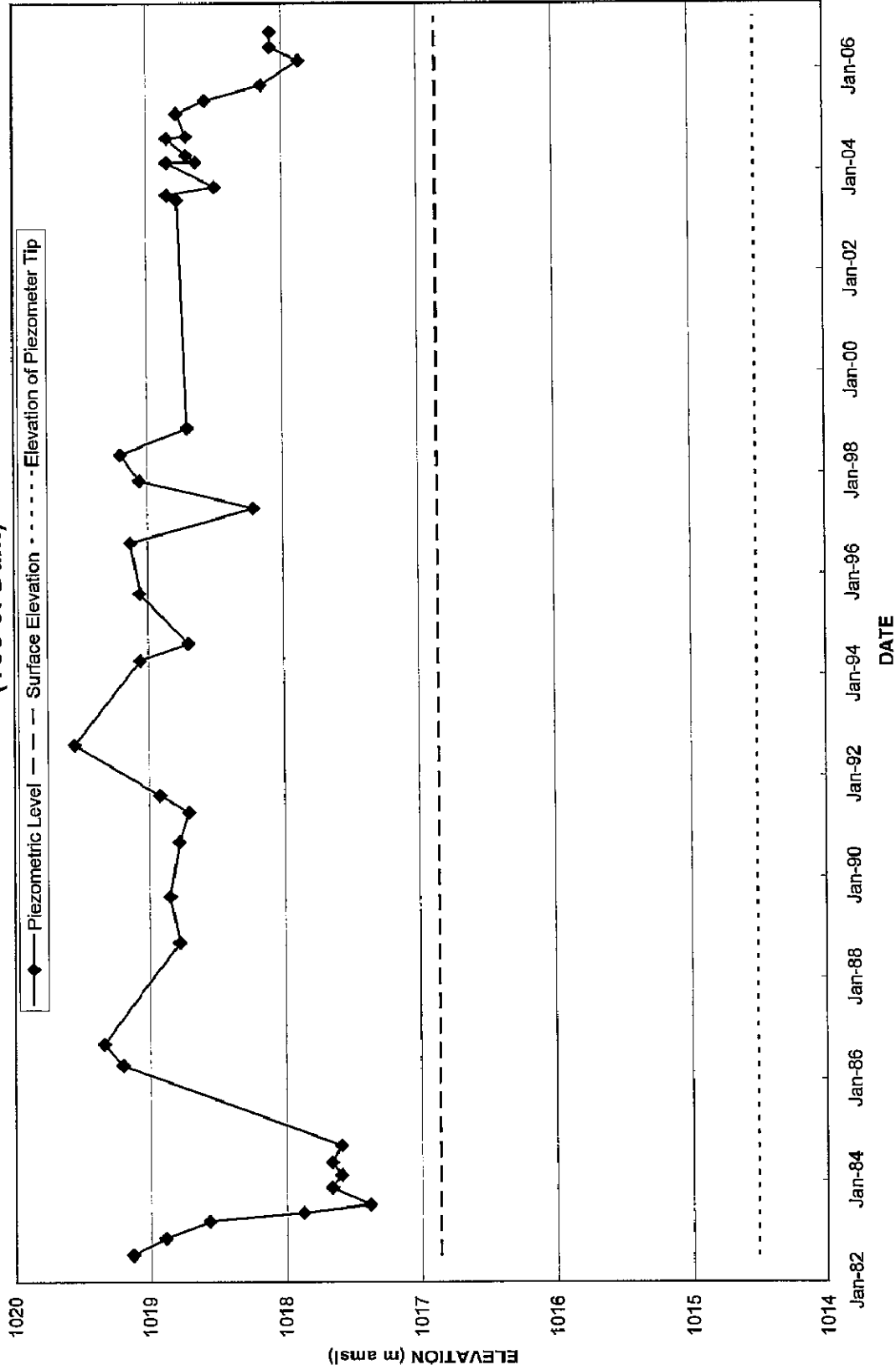
94CVDC-1		Location:	Cross Valley Dam Crest Stn. 0+215	2004 Stick-up (m):	0.64
		Coordinates:	8V580263 6914326	2004 Ground Elevation (m amsl):	1033.38
Surface Protector:	yes	Date Installed:	1994	2004 Tip Elevation (m amsl):	1020.4
Date	Water Level from top of pipe (m)	Piezometric Elevation (m amsl)	Pond Elevation (m amsl)	Comments	
6-Feb-02	10.42	1023.48			
13-Feb-02	10.41	1023.49			
20-Feb-02	10.41	1023.49			
1-May-02	10.45	1023.45			
12-Jun-02	10.59	1023.31			
17-Jul-02	10.485	1023.42			
7-Aug-02	10.595	1023.31			
9-Sep-02	10.36	1023.54			
4-Nov-02	10.435	1023.47			
10-Nov-02	10.44	1023.46			
30-Jan-03	10.18	1023.72			
9-Feb-03	10.235	1023.67		start siphon	
11-Feb-03	10.235	1023.67			
13-Feb-03	10.275	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			
7-May-03	10.485	1023.42			
16-May-03	10.47	1023.43			
11-Jun-03	10.465	1023.44			
15-Jul-03	10.38	1023.52			
10-Sep-03	10.755	1023.15			
4-Mar-04	10.25	1023.77		2004 Survey data used from here on.	
8-Mar-04	10.355	1023.67			
26-Apr-04	10.24	1023.78			
19-Jul-04	10.38	1023.64			
26-Aug-04	10.305	1023.72			
9-Sep-04	10.51	1023.51			
22-Feb-05	10.15	1023.87			
23-Feb-05	10.175	1023.85			
24-Feb-05	10.215	1023.81			
26-May-05	10.865	1023.16		dirty	
14-Sep-05	11.095	1022.93			
9-Mar-06	11.29	1022.73			
14-Jun-06	11.195	1022.83			
4-Oct-06	11.105	1022.92	1027.47		

**CROSS VALLEY DAM**  
**Piezometric Monitoring**  
**BH94 CVDC-1 Standpipe Piezometer**  
**(Dam Crest)**



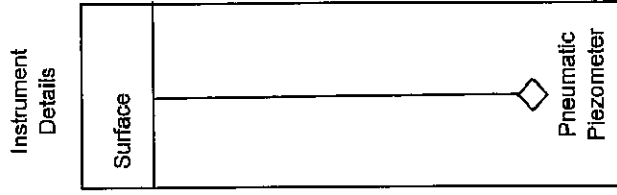
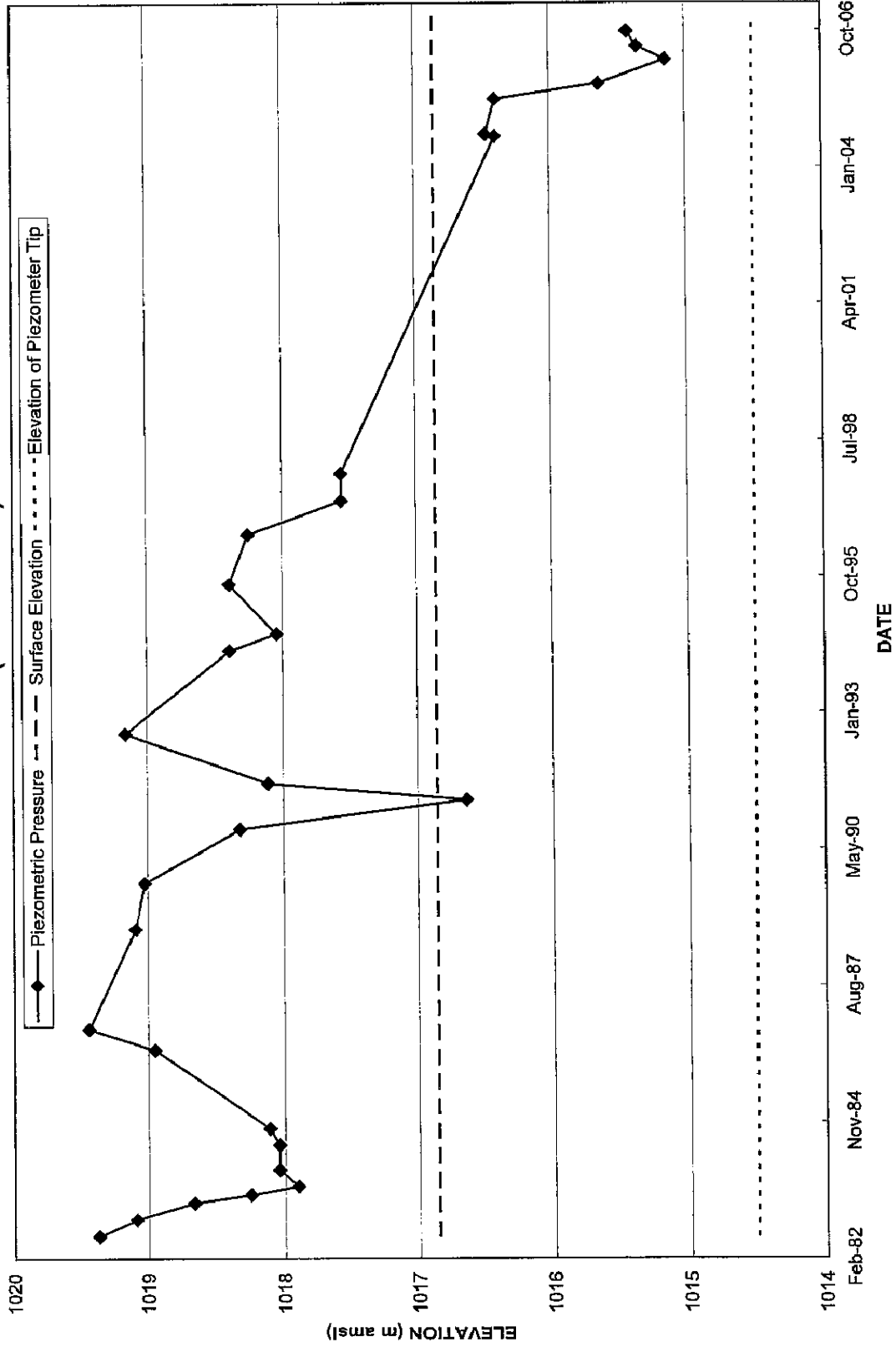
CVDP-1		Location:	20m u/s of CL, Stn.0+450		
		Coordinates:	8V580128 6914135	2004 Ground Elevation (m amsl):	1016.86
Surface Protector:	yes	Date Installed:	1982	Tip Elevation (m amsl):	1014.51
Date	Reading (psi)	Piezometric Elevation (m amsl)	Pond Elevation (m amsl)	Comments	
Aug-82	6.60	1019.13			
Dec-82	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	1029.915		
6-May-97	5.30	1018.22			
21-Nov-97	6.50	1019.06			
27-May-98	6.70	1019.20	1031.2		
12-Nov-98					no air bubbles returned
4-Dec-98	6.0	1018.71	1029.8		
16-Dec-98			1029.8		black tube broken at connector
11-Jun-03	6.1	1018.78			new piezometer
15-Jul-03	6.2	1018.85			
10-Sep-03	5.7	1018.50			
4-Mar-04	6.2	1018.85			2004 Survey data used from here on
8-Mar-04	5.9	1018.64			
26-Apr-04	6	1018.71			
26-Aug-04	6.2	1018.85			
9-Sep-04	6	1018.71			
22-Feb-05	6.1	1018.78			
24-Feb-05	3.5				
26-May-05	5.8	1018.57			
14-Sep-05	5.2	1018.15			
9-Mar-06	4.8	1017.87			
14-Jun-06	5.1	1018.08			
2-Oct-06	5.1	1018.08	1027.468		

### CROSS VALLEY DAM Piezometric Monitoring CVDP-1 Pneumatic Piezometer (Toe of Dam)



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	1029.915	
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	11.5			no bubbles, keeps rising
24-Feb-05	16			no bubbles, keeps rising
26-May-05	2.7	1016.40		
14-Sep-05	1.6	1015.63		
09-Mar-06	0.9	1015.14		
14-Jun-06	1.2	1015.35		
02-Oct-06	1.3	1015.42	1027.468	

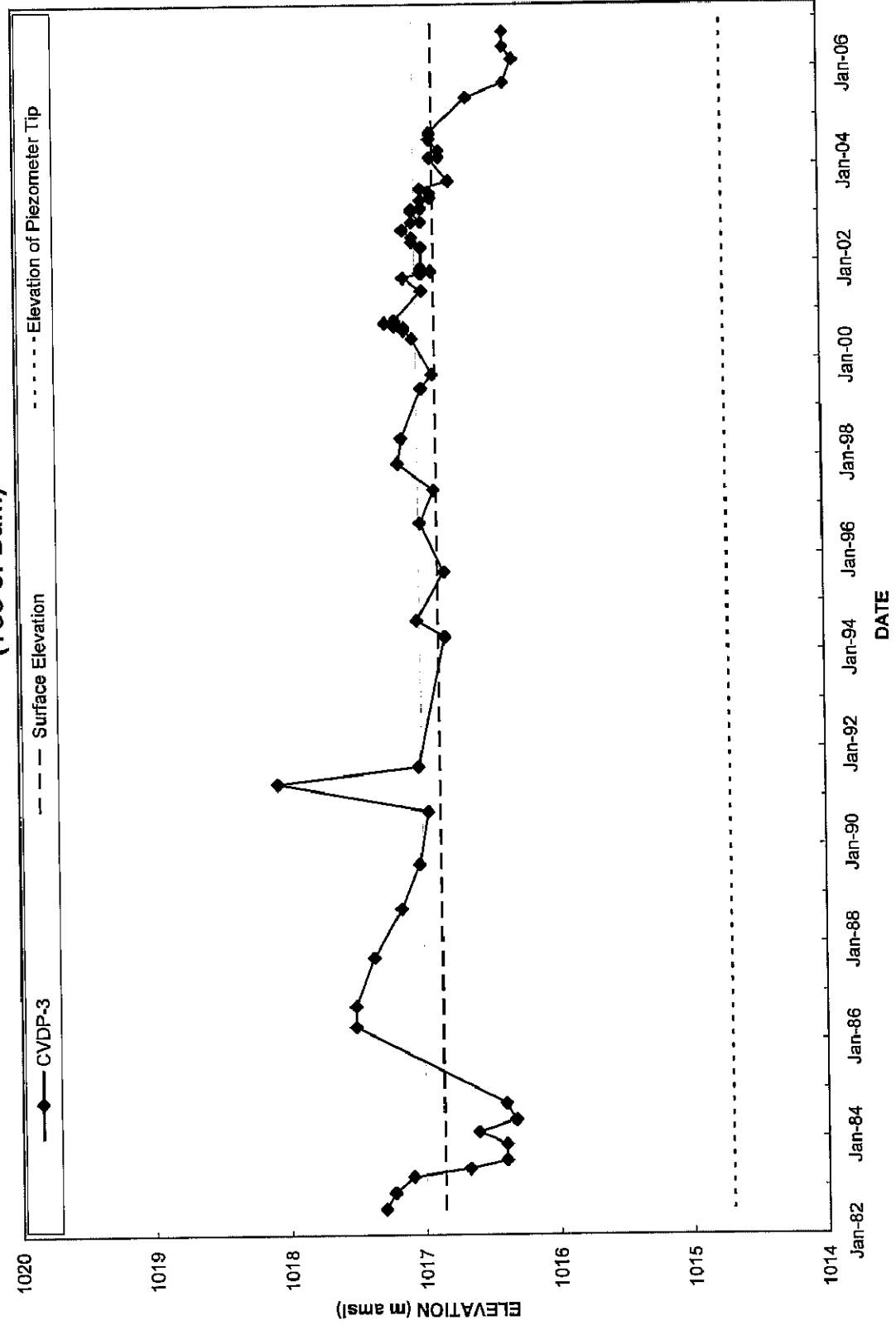
### CROSS VALLEY DAM Piezometric Monitoring CVDP-2 Pneumatic Piezometer (Toe of Dam)



CVDP-3		Location:	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	1029.915		
6-May-97	3.10	1016.88			
21-Nov-97	3.48	1017.15			
27-May-98	3.44	1017.12	1031.2		
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	1029.2		very slow
14-Jun-00	3.31	1017.03	1030.2		
14-Aug-00	3.40	1017.09			
31-Aug-00	3.40	1017.09			
7-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			
6-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	3.2	1016.95			
18-Oct-01	3.2	1016.95			
19-Oct-01	3.2	1016.95			
20-Oct-01	3.22	1016.96			
21-Oct-01	3.21	1016.96			
22-Oct-01	3.2	1016.95			
25-Oct-01	3.2	1016.95			
29-Oct-01	3.1	1016.88			
1-Nov-01	3.2	1016.95			
5-Nov-01	3.1	1016.88			

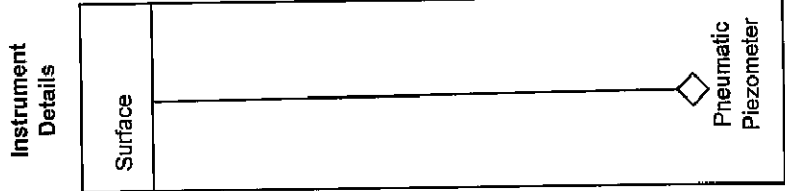
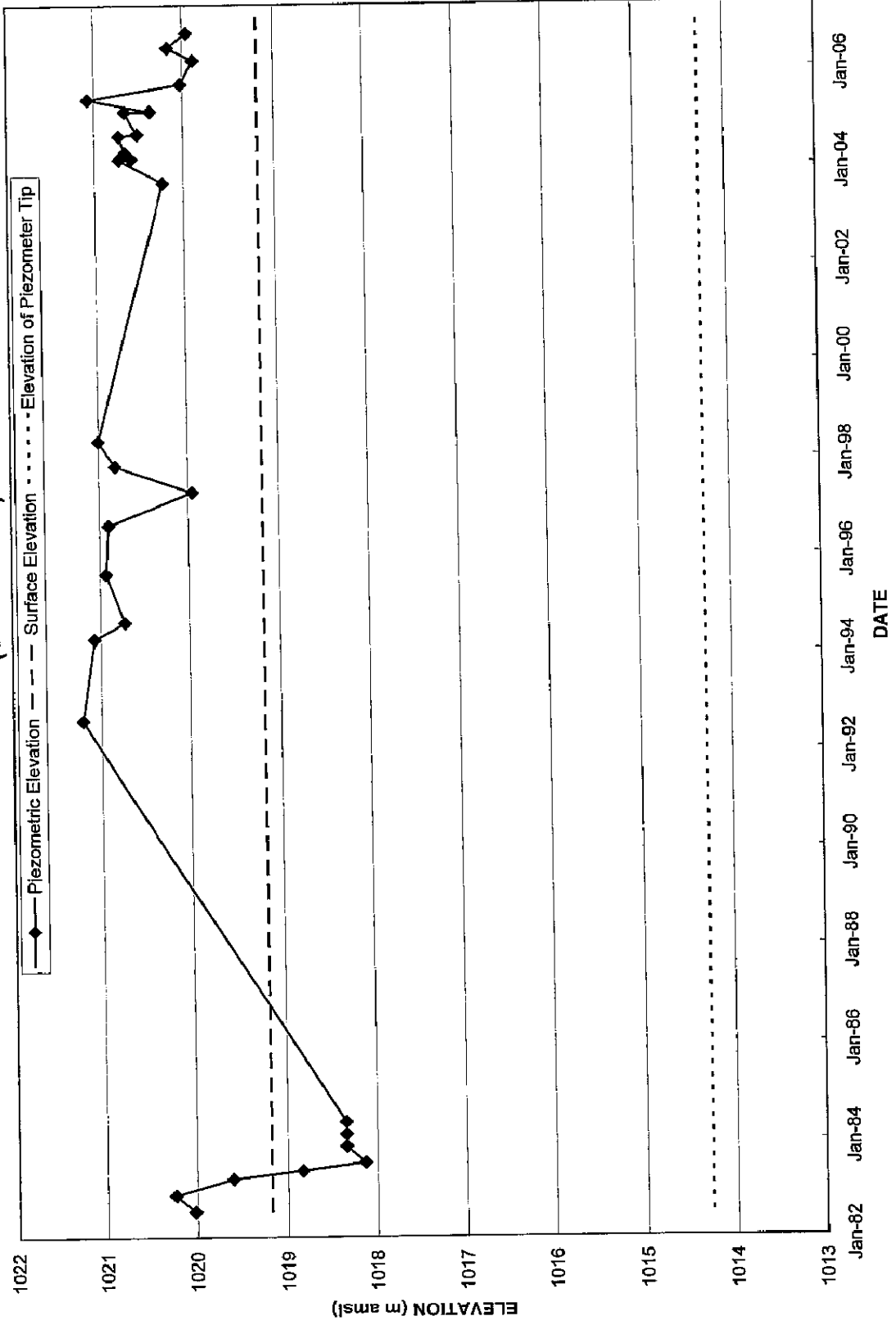
CVDP-3		Location:	St.0+450 7m d/s of CL.		
		Coordinates:	8V580128 6914135	2004 Ground Elevation (m amsl):	1016.86
Surface Protector:	yes	Date Installed:	1982	Tip Elevation (m amsl):	1014.71
Date	Reading (psi)	Piezometric Elevation 2004 (m amsl)	Pond Elevation (m amsl)	Comments	
6-Nov-01	3.1	1016.88			
8-Nov-01	3.2	1016.95			
12-Nov-01	3.2	1016.95			
15-Nov-01	3.2	1016.95			
19-Nov-01	3.2	1016.95			
21-Nov-01	3.2	1016.95			
23-Nov-01	3.2	1016.95			pond elev approx - 8 ft.
26-Nov-01	3.2	1016.95			daytime temp -34 C
28-Nov-01					not read, low pressure in box
30-Nov-01					instrument broken from Nov 01 to Feb 02
1-May-02	3.2	1016.95			instrument fixed
12-Jun-02	3.3	1017.02			
17-Jul-02	3.3	1017.02			
7-Aug-02					not read
9-Sep-02	3.4	1017.09			
4-Nov-02	3.3	1017.02			
10-Nov-02	3.2	1016.95			
30-Jan-03	3.3	1017.02			
9-Feb-03	3.3	1017.02			start siphon
11-Feb-03	3.3	1017.02			
13-Feb-03	3.3	1017.02			
18-Feb-03	3.2	1016.95			
21-Feb-03	3.2	1016.95	1026.18		
23-Apr-03	3.2	1016.95			
7-May-03	3.1	1016.88			
16-May-03	3.1	1016.88			
11-Jun-03	3.1	1016.88			*new piezometer readout
15-Jul-03	3.2	1016.95			
10-Sep-03	2.9	1016.74			
4-Mar-04	3.1	1016.88			2004 Survey data used from here on
8-Mar-04	3	1016.81			
26-Apr-04	3	1016.81			
19-Jul-04	3.1	1016.88			
26-Aug-04	3.1	1016.88			
9-Sep-04	3.1	1016.88			
22-Feb-05	14				no bubbles, keeps rising
24-Feb-05	16				no bubbles, keeps rising
26-May-05	2.7	1016.60			
14-Sep-05	2.3	1016.32			
9-Mar-06	2.2	1016.25			
14-Jun-06	2.3	1016.32			
2-Oct-06	2.3	1016.32	1027.47		

### CROSS VALLEY DAM Piezometric Monitoring CVDP-3 Pneumatic Piezometer (Toe of Dam)



CVDP-5		Location:	Cross Valley Dam St.0+210 9m u/s of CL.			
Surface Protector:		yes	Date Installed:	1982	2004 Ground Elevation (m amsl):	1019.18
			Coordinates:	8V580239 6914346	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	1029.915			
6-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				
4-Mar-04	9.20	1020.72		2004 Survey data used from here on		
8-Mar-04	9.00	1020.58				
26-Apr-04	9.10	1020.65				
26-Aug-04	9.20	1020.72				
9-Sep-04	8.90	1020.51				
22-Feb-05	9.1	1020.65				
24-Feb-05	8.7	1020.37				
26-May-05	9.7	1021.07				
14-Sep-05	8.2	1020.02				
9-Mar-06	8.0	1019.88				
14-Jun-06	8.4	1020.16				
2-Oct-06	8.1	1019.95	1027.468			

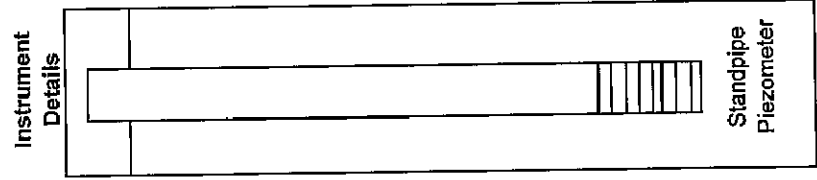
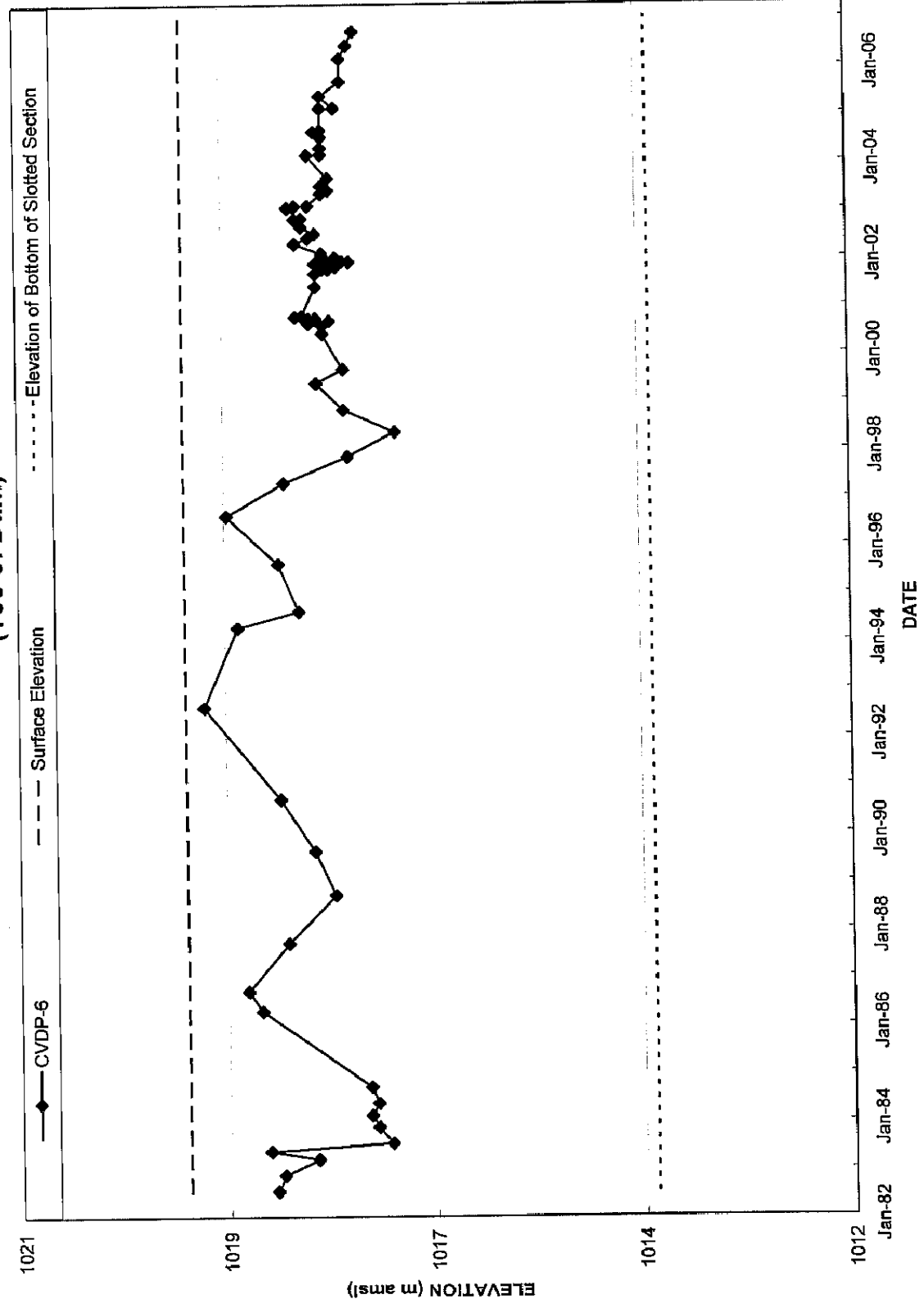
**CROSS VALLEY DAM  
Piezometric Monitoring  
CVDP-5 Pneumatic Piezometer  
(Toe of Dam)**



CVDP-6		Location:	Cross Valley Dam St.0+210	
			5m d/s of CL.	
		Coordinates:	8V580239	2004 Ground Elevation (m amsl):
			6914346	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	1017.1		
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	1018.745	1029.915	
6-May-97	5.40	1018.15		
21-Nov-97	4.45	1017.485		
27-May-98	3.74	1016.988	1031.2	
12-Nov-98	4.50	1017.52	1029.8	
3-Jun-99	4.90	1017.8	1031.4	
18-Sep-99	4.50	1017.52		
14-Jun-00	4.80	1017.73	1030.2	
14-Aug-00	4.80	1017.73		
31-Aug-00	5.00	1017.87		return bubbles "sputtering"
7-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	1017.8		
6-Oct-00	5.00	1017.87		
12-Oct-00	4.90	1017.8		
20-Oct-00	5.20	1018.01		
27-Oct-00	5.10	1017.94		
10-Jun-01	4.90	1017.8		
14-Sep-01	4.9	1017.8		
16-Oct-01	4.8	1017.73		
18-Oct-01	4.72	1017.674		
19-Oct-01	4.7	1017.66		
20-Oct-01	4.7	1017.66		
21-Oct-01	4.7	1017.66		
22-Oct-01	4.7	1017.66		
25-Oct-01	4.70	1017.66		
29-Oct-01	4.7	1017.66		
1-Nov-01	4.7	1017.66		
5-Nov-01	4.6	1017.59		
6-Nov-01	4.6	1017.59		
8-Nov-01	4.7	1017.66		
12-Nov-01	4.7	1017.66		
15-Nov-01	4.7	1017.66		
19-Nov-01	4.8	1017.73		
21-Nov-01	4.7	1017.66		
23-Nov-01	4.7	1017.66		pond elev approx - 8 ft.
26-Nov-01	-			not read
28-Nov-01	-			not read, low pressure in box
30-Nov-01	4.9	1017.8		
3-Dec-01	4.7	1017.66		
5-Dec-01	4.7	1017.66		

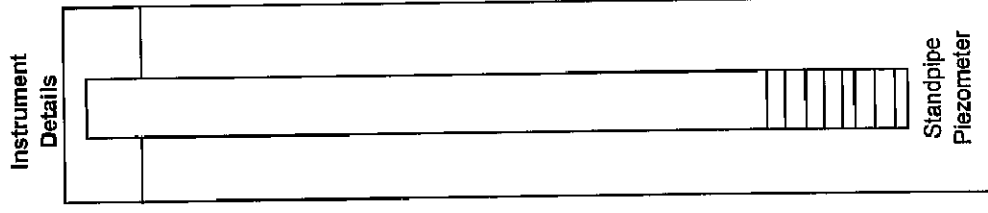
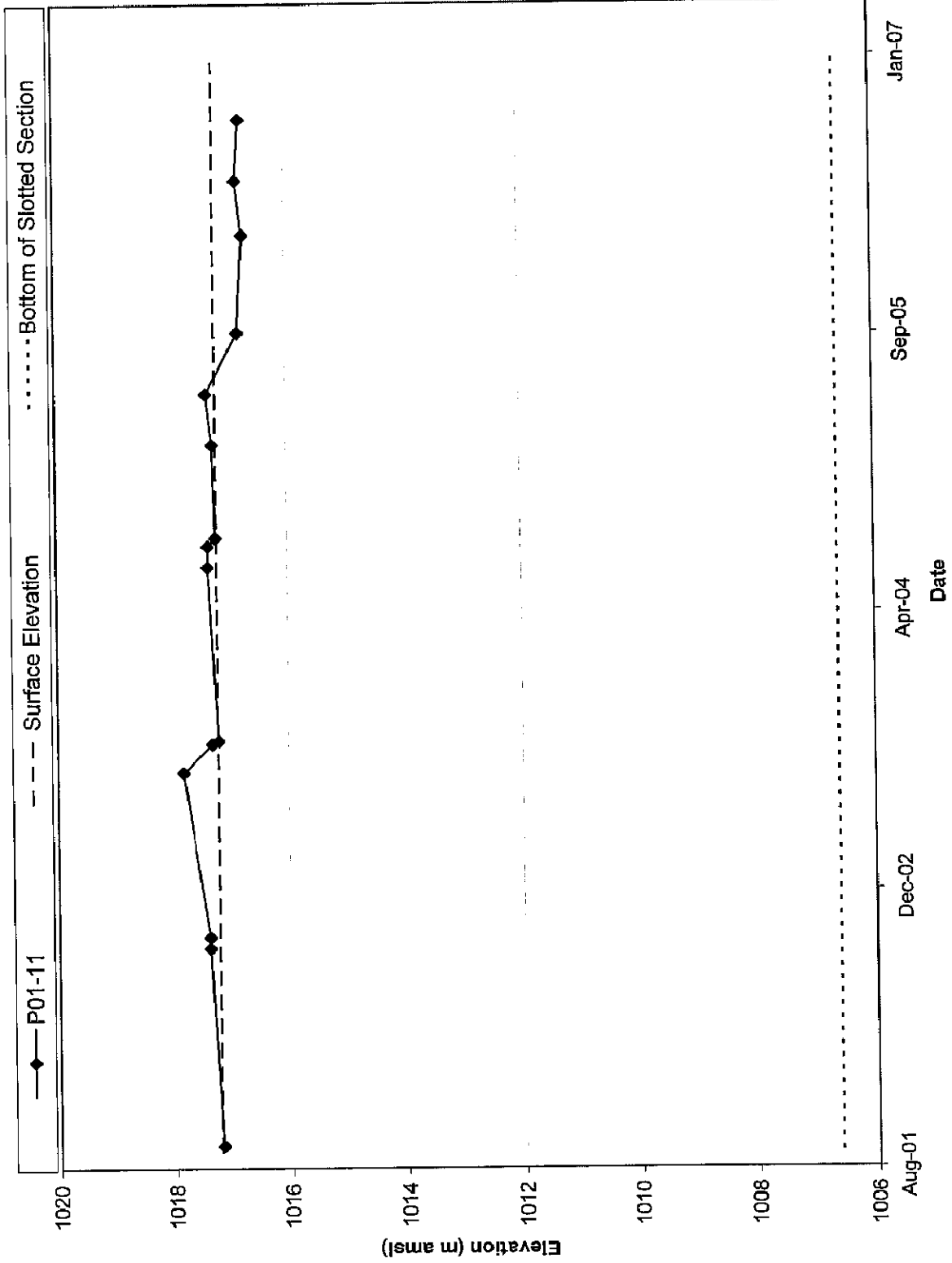
CVDP-6		Location:	Cross Valley Dam St.0+210 5m d/s of CL.		
Surface Protector:		Date Installed:	8V580239 6914346	2004 Ground Elevation (m amsl):	1019.18
yes			1982	Tip Elevation (m amsl):	1014.37
Date	Reading (psi)	Piezometric Elevation 2004 (m amsl)	Pond Elevation (m amsl)	Comments	
12-Dec-01	4.7	1017.66			
14-Dec-01	4.8	1017.73			
15-Dec-01	4.4	1017.45			
16-Dec-01	4.8	1017.73			
17-Dec-01	4.8	1017.73			
18-Dec-01	4.5	1017.52			
19-Dec-01	4.8	1017.73			
26-Dec-01	4.6	1017.59			
2-Jan-02	4.8	1017.73			
9-Jan-02	4.6	1017.59			
16-Jan-02	4.6	1017.59			
23-Jan-02	4.8	1017.73			
30-Jan-02	4.8	1017.73			
6-Feb-02	4.8	1017.73			
13-Feb-02	4.8	1017.73			
20-Feb-02	4.8	1017.73			
1-May-02	5.2	1018.01			
12-Jun-02	5.0	1017.87			
17-Jul-02	4.9	1017.8			
7-Aug-02					not read
9-Sep-02	5.1	1017.94			
4-Nov-02	5.2	1018.01			
10-Nov-02	5.1	1017.94			
30-Jan-03	5.3	1018.08			
9-Feb-03	5.2	1018.01			start siphon
11-Feb-03	5.2	1018.01			
13-Feb-03	5	1017.87			
18-Feb-03					*Piezometer tip broken (-35 oC)
21-Feb-03			1026.18		
23-Apr-03					
7-May-03					
16-May-03	4.8	1017.73			*piezometer tip repaired
11-Jun-03	4.7	1017.66			*new piezometer readout
15-Jul-03	4.8	1017.73			
10-Sep-03	4.7	1017.66			
4-Mar-04	5	1017.87			2004 Survey data used from here on
8-Mar-04	4.8	1017.73			
26-Apr-04	4.8	1017.73			
19-Jul-04	4.8	1017.73			
26-Aug-04	4.9	1017.80			
9-Sep-04	4.8	1017.73			
22-Feb-05	4.8	1017.73			
24-Feb-05	4.6	1017.59			
24-Feb-05	4.6	1017.59			
26-May-05	4.8	1017.73			
14-Sep-05	4.5	1017.52			
09-Mar-06	4.5	1017.52			
14-Jun-06	4.4	1017.45			
02-Oct-06	4.3	1017.38	1027.468		

### CROSS VALLEY DAM Piezometric Monitoring CVDP-6 Pneumatic Piezometer (Toe of Dam)



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)		Comments
11-Sep-01		0.65	1017.18		
3-Sep-02		0.45	1017.38		
23-Sep-02		0.45	1017.38		
15-Jul-03		0.00	1017.83		*whole casing filled with water
4-Sep-03		0.52	1017.31		* Rhonda noted: 'water in casing'
10-Sep-03		0.63	1017.20		
19-Jul-04		0.505	1017.37		2004 survey data used from here on
26-Aug-04		0.51	1017.36		
9-Sep-04		0.65	1017.22		Ice in tubing, sulphur smell
24-Feb-05		0.6	1017.27		Frozen
26-May-05		0.5	1017.37		
14-Sep-05		1.06	1016.81		
9-Mar-06		1.16	1016.71		
14-Jun-06		1.05	1016.82		Water in casing
2-Oct-06		1.12	1016.75		

### CROSS VALLEY DAM Piezometric Monitoring P01-11 (2001 - GLL Monitoring Well)



## THERMISTORS

Faro Mine Instrumentation  
Cross Valley Dam

<b>CVDC-6</b>		Location:	Stn 0+340, Cross Valley Dam Crest	Elevation (m amsl):	1033.3 Gantic Controls YSI 44007	Coordinates:	2182.1 m N 4.7 m E	8V580210 68r4218	
Thermistor String #32	Depth Correction:	Date Installed:	1981	Thermistor Type:		Ice-Bath Calibrations:	applied	Surface Protection:	yes
Resistivity (kOhms)	0								
Actual Depth (m)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)	Resistivity (kOhms)
15.0	13.87	15-Sep-94	15-Sep-94	15-Sep-94	15-Sep-94	13-Sep-96	13-Sep-96	05-Sep-00	14-Sep-01
17.0	11.05	13.95	15.22	15.74	15.74	fluctuating	14.54	14.79	14.82
19.0	12.58	13.81	14.63	16.59	16.59		14.29	14.49	14.60
21.0	13.48	18.73	19.53	20.59	20.59		22.55	22.55	22.82
23.0	14.16	13.80	14.26	14.97	14.97		14.16	14.16	14.17
25.0	15.37	13.98	14.42	14.97	14.97		14.45	14.62	14.27
27.0	14.26	14.81	15.29	15.29	15.29		14.80	14.96	14.97
29.0	15.35	14.46	14.14	15.44	15.44		15.12	15.22	16.15

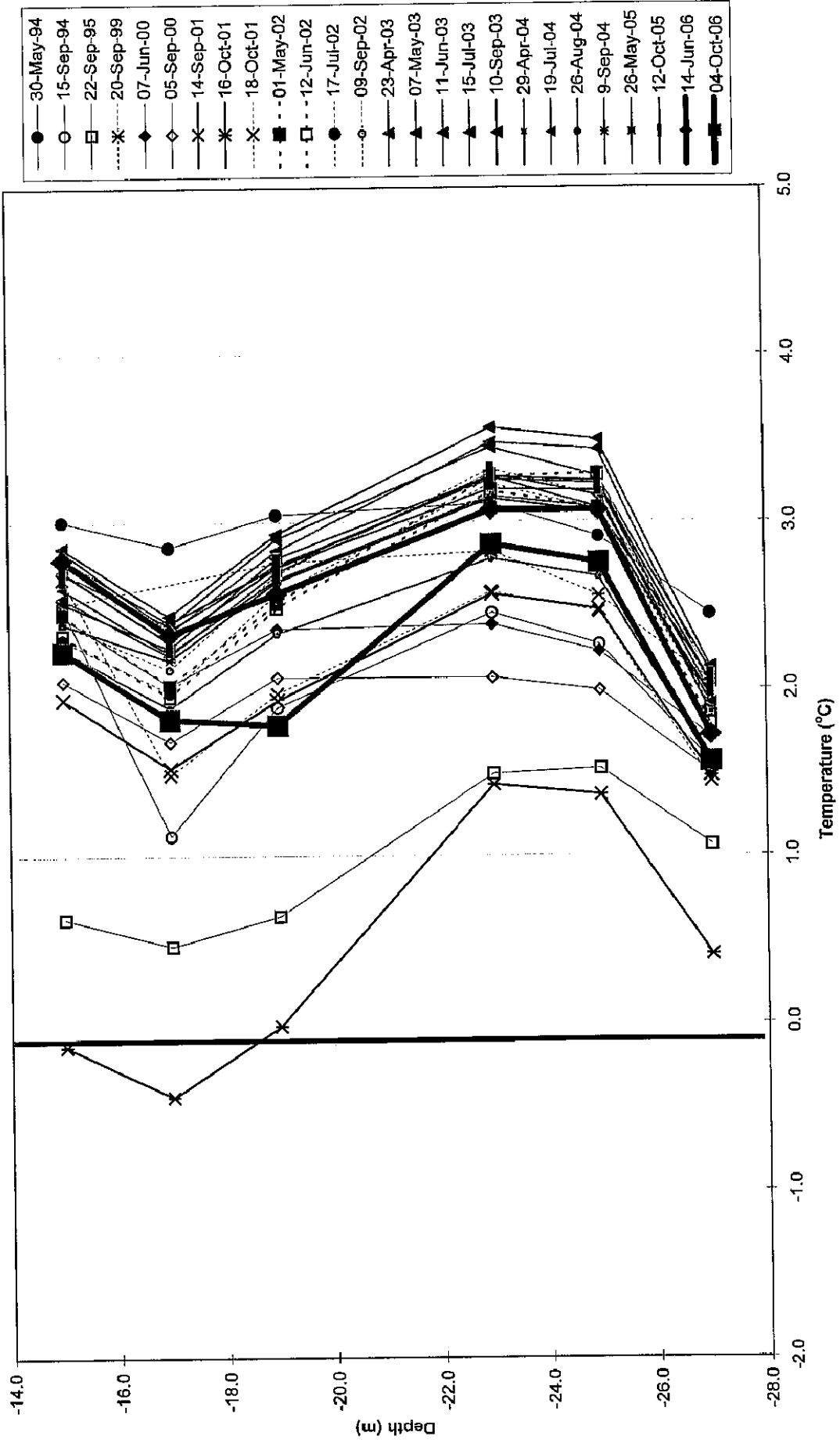
\* The initial reading (Nov 15/81) is excluded from data set because post-installation equilibrium may not have been complete.

Depth on String (m)	Temperature (C)	Resistivity (kOhms)	Temperature (C)	Resistivity (kOhms)	Temperature (C)	Resistivity (kOhms)	Temperature (C)	Resistivity (kOhms)	Temperature (C)	Resistivity (kOhms)	Temperature (C)	Resistivity (kOhms)
09-Dec-81	3.01	15-Sep-94	22-Sep-95	13-Sep-96	07-Jun-00	05-Sep-00	26-Jun-01	14-Sep-01	16-Oct-01	18-Oct-01	16-Oct-01	01-May-02
7.60	3.01	2.90	0.63	2.51	2.44	2.06	1.97	1.85	-0.13	2.67	2.46	2.46
6.40	2.85	1.12	0.46	2.03	2.03	1.69	1.65	1.63	-0.44	1.49	2.03	2.03
4.90	3.04	1.90	0.64	2.76	2.36	2.07	2.09	1.94	-0.02	1.96	2.52	2.52
2.10	3.11	2.46	1.49	2.82	2.39	2.07	2.00	2.57	1.43	2.58	3.27	3.27
23.0	2.91	2.26	1.52	2.56	2.22	1.99	2.58	2.47	1.36	2.46	3.28	3.28
25.0	2.45	1.56	1.06	2.05	1.71	1.50	1.50	1.46	0.41	1.44	1.86	1.86

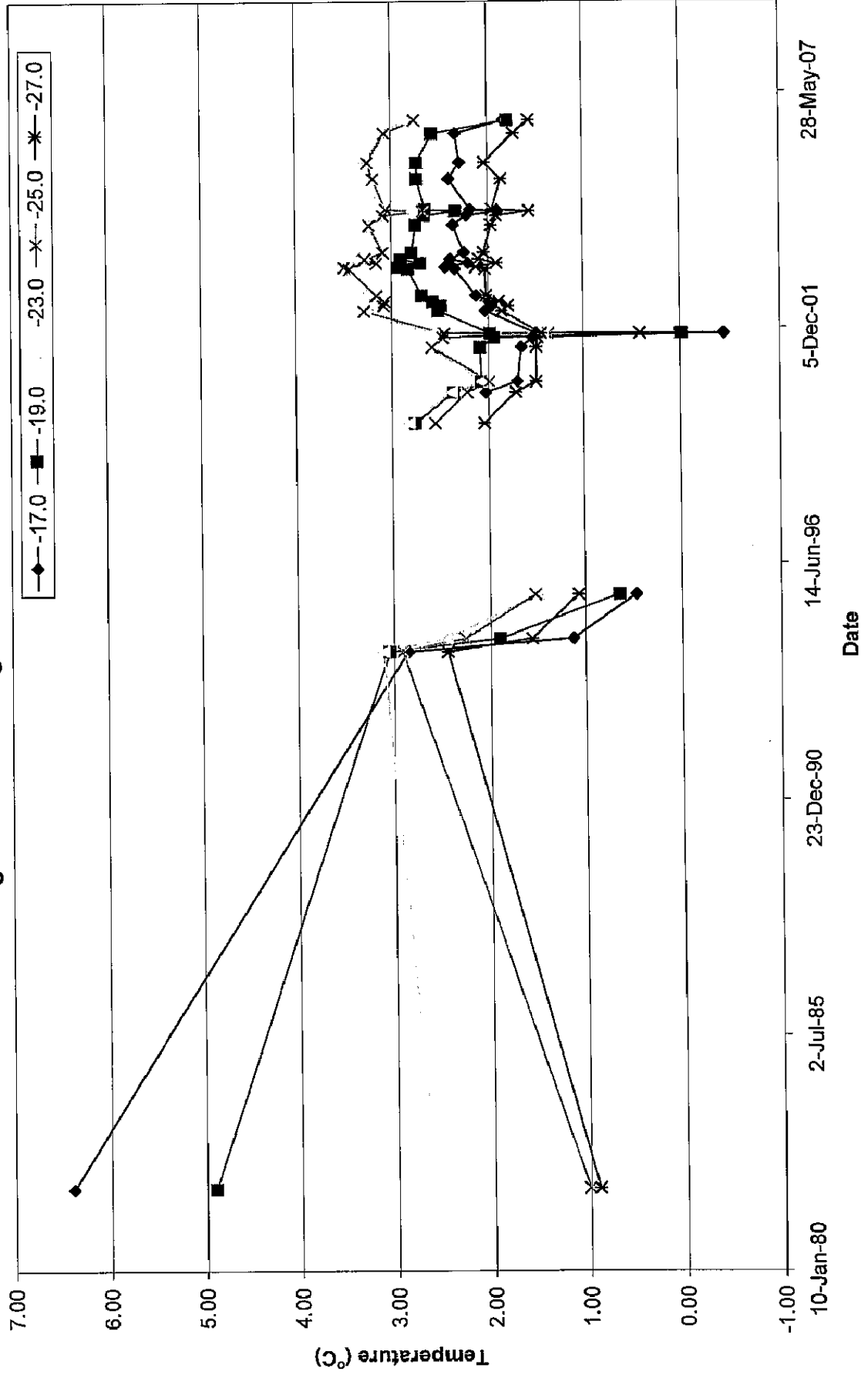
The -21 and -29 metre depth tips are suspect

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)
12-Jun-02	17-Jul-02	09-Sep-02	23-Apr-03	07-May-03	11-Jun-03	15-Jul-03	29-Apr-04	19-Jul-04	08-Sep-04	26-May-05	12-Oct-05	14-Jun-06	04-Oct-06
14.35	14.37	14.30	14.03	13.56	14.19	14.08	13.99	14.15	14.30	14.02	14.08	14.03	14.42
14.59	14.57	14.47	14.31	14.24	14.41	14.28	14.30	14.40	14.43	14.27	14.35	14.32	14.69
14.20	14.14	14.05	13.95	13.89	14.05	13.91	14.02	14.08	14.31	14.03	14.03	14.14	14.71
22.43	22.43	22.44	22.74	22.70	22.29	23.29	24.02	24.55	24.98	26.06	26.70	28.20	30.07
13.75	13.72	13.66	13.55	13.48	13.68	13.57	13.70	13.77	14.03	13.77	13.69	13.63	13.97
13.84	13.85	13.79	13.60	13.56	13.79	13.71	13.74	13.84	14.13	13.86	13.73	13.85	14.07
14.74	14.67	14.57	14.56	14.49	14.55	14.51	14.61	14.65	14.62	14.69	14.56	14.79	14.91
16.37	16.28	16.16	17.97	18.01	18.44	18.53	20.24	20.55	20.93	21.77	21.15	23.59	24.08

**CROSS VALLEY DAM**  
Geothermal Monitoring  
CVDC-6  
(installed 1981)



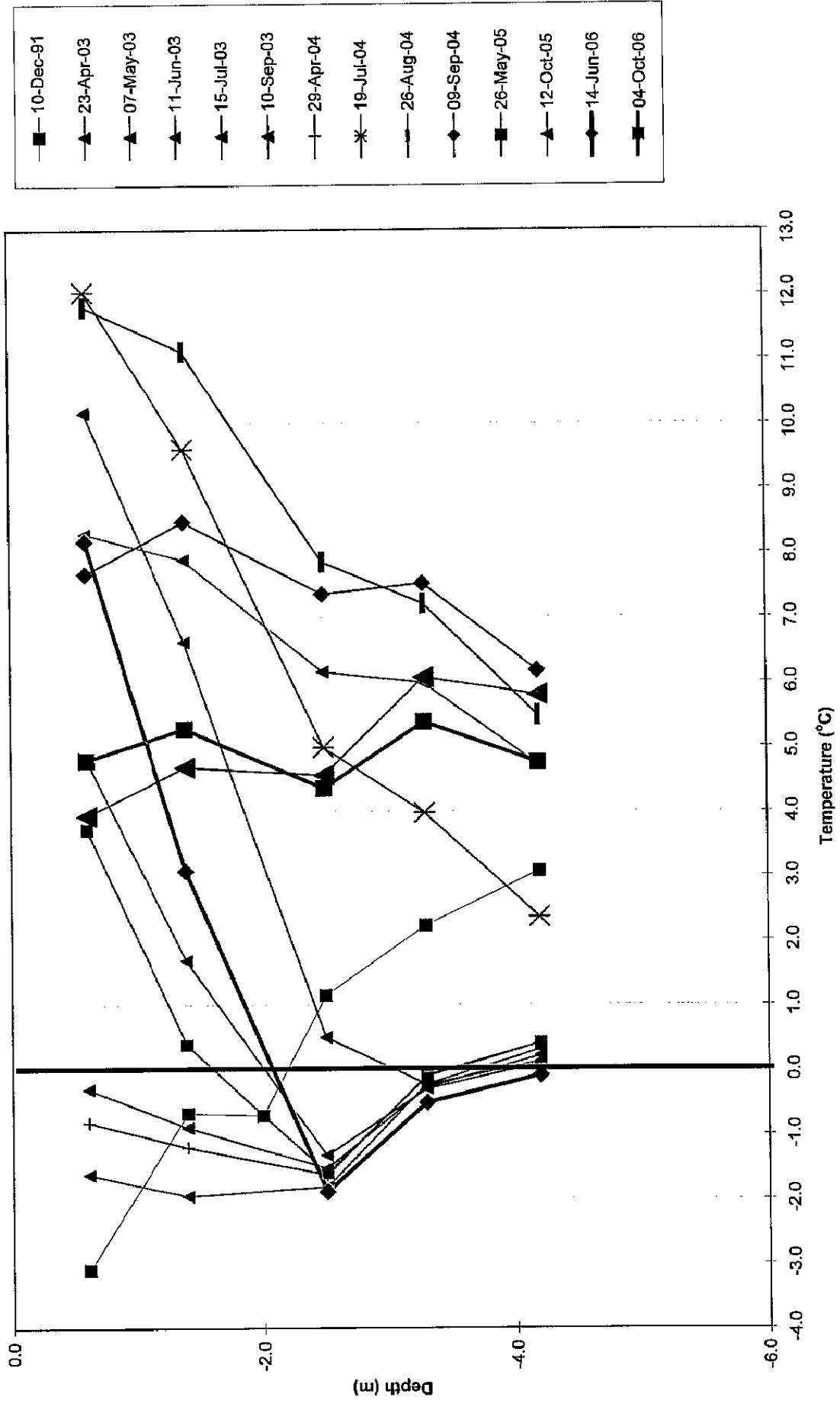
**Cross Valley Dam  
Geothermal Monitoring  
Long Term Monitoring for Nodes in CVDC-6**



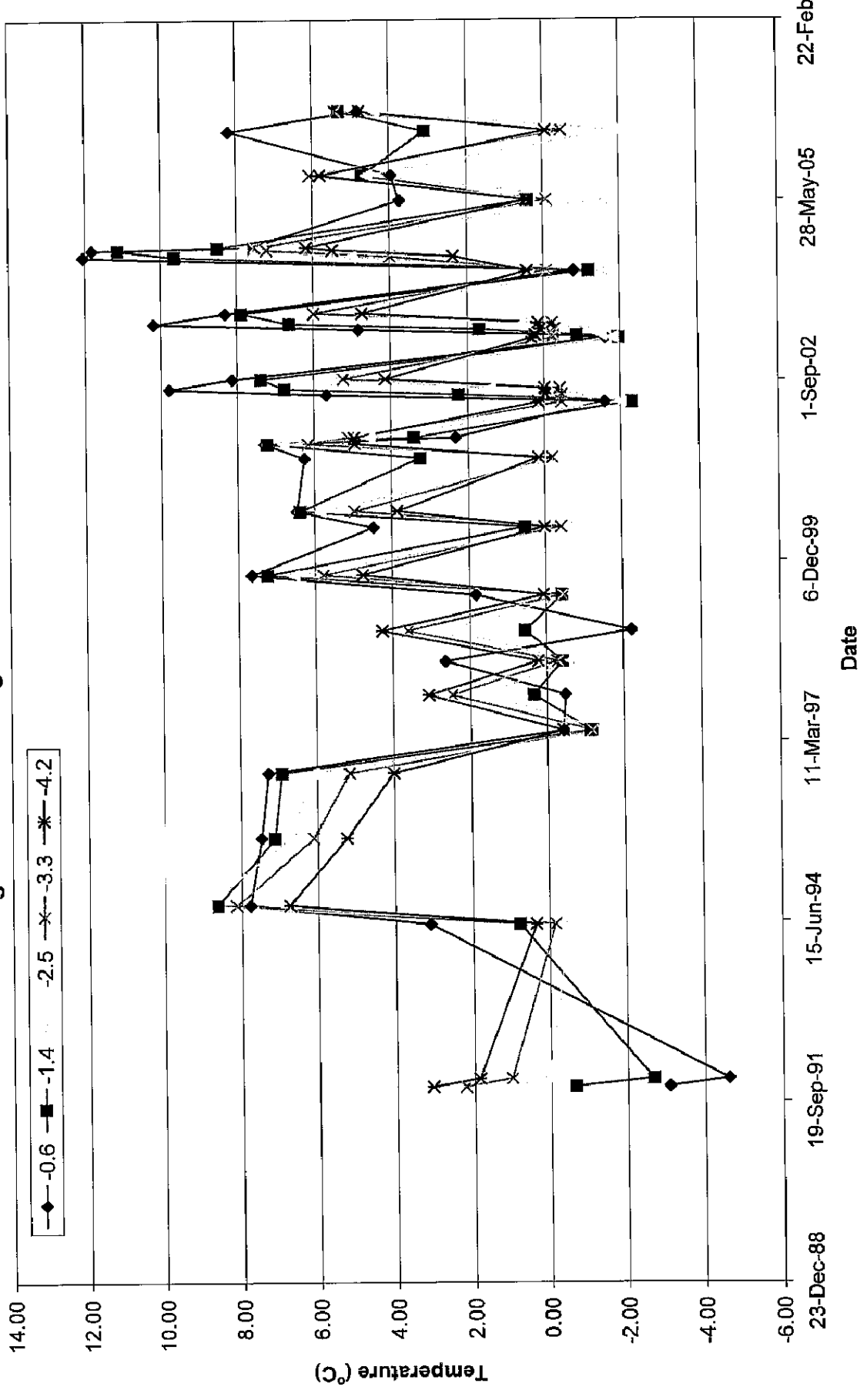
Faro Mine Instrumentation Cross Valley Dam

BH 88-4		Location: D+480, Cross Valley Dam Crest		Elevation: 1033.4		Coordinates: 8V580127 6974054		2018.3 m N. 76.6 m W	
Date Installed: 1988		Thermistor Type: 44007		Centec Controls YSI		Ice-Bath Calibration: no		Surface Protector: Yes	
Depth Correction: 0		Resistivity (kOhms)		Resistivity (kOhms)		Resistivity (kOhms)		Resistivity (kOhms)	
Depth on String (m)	Actual Depth (m)	Resistivity (kOhms)	Temperature (C)	Resistivity (kOhms)	Temperature (C)	Resistivity (kOhms)	Temperature (C)	Resistivity (kOhms)	Temperature (C)
0.6	-0.6	13.87	13.87	11.01	11.01	16.59	16.59	14.19	14.19
1.4	-1.4	16.72	16.72	18.54	18.54	17.14	17.14	15.88	15.88
2.0	-2.0	16.81	16.81	17.93	17.93	19.84	19.84	17.50	17.50
2.5	-2.5	15.23	15.23	19.14	19.14	17.47	17.47	14.86	14.86
3.3	-3.3	14.45	14.45	15.36	15.36	17.47	17.47	14.25	14.25
4.2	-4.2	13.82	13.82	14.69	14.69	15.92	15.92	13.82	13.82
				11.91	11.91	13.19	13.19	15.96	15.96
				12.41	12.41	13.82	13.82	16.11	16.11
				12.41	12.41	15.96	15.96	16.14	16.14
				13.19	13.19	16.52	16.52	16.14	16.14
				13.82	13.82	17.47	17.47	16.51	16.51
				14.25	14.25	17.47	17.47	16.51	16.51
				14.86	14.86	17.47	17.47	16.51	16.51
				15.88	15.88	17.47	17.47	16.51	16.51
				16.51	16.51	17.47	17.47	16.51	16.51
				17.14	17.14	17.47	17.47	16.51	16.51
				17.50	17.50	17.47	17.47	16.51	16.51
				18.54	18.54	17.47	17.47	16.51	16.51
				19.84	19.84	17.47	17.47	16.51	16.51
				20.60	20.60	17.47	17.47	16.51	16.51
				21.43	21.43	17.47	17.47	16.51	16.51
				22.45	22.45	17.47	17.47	16.51	16.51
				23.82	23.82	17.47	17.47	16.51	16.51
				25.92	25.92	17.47	17.47	16.51	16.51
				28.64	28.64	17.47	17.47	16.51	16.51
				32.95	32.95	17.47	17.47	16.51	16.51
				38.11	38.11	17.47	17.47	16.51	16.51
				44.44	44.44	17.47	17.47	16.51	16.51
				52.23	52.23	17.47	17.47	16.51	16.51
				61.91	61.91	17.47	17.47	16.51	16.51
				73.74	73.74	17.47	17.47	16.51	16.51
				87.82	87.82	17.47	17.47	16.51	16.51
				104.26	104.26	17.47	17.47	16.51	16.51
				123.19	123.19	17.47	17.47	16.51	16.51
				144.61	144.61	17.47	17.47	16.51	16.51
				168.54	168.54	17.47	17.47	16.51	16.51
				205.96	205.96	17.47	17.47	16.51	16.51
				256.87	256.87	17.47	17.47	16.51	16.51
				322.28	322.28	17.47	17.47	16.51	16.51
				404.10	404.10	17.47	17.47	16.51	16.51
				503.33	503.33	17.47	17.47	16.51	16.51
				621.00	621.00	17.47	17.47	16.51	16.51
				758.11	758.11	17.47	17.47	16.51	16.51
				924.66	924.66	17.47	17.47	16.51	16.51
				1120.66	1120.66	17.47	17.47	16.51	16.51
				1347.11	1347.11	17.47	17.47	16.51	16.51
				1605.00	1605.00	17.47	17.47	16.51	16.51
				1905.33	1905.33	17.47	17.47	16.51	16.51
				2248.11	2248.11	17.47	17.47	16.51	16.51
				2733.44	2733.44	17.47	17.47	16.51	16.51
				3361.11	3361.11	17.47	17.47	16.51	16.51
				4141.33	4141.33	17.47	17.47	16.51	16.51
				5084.00	5084.00	17.47	17.47	16.51	16.51
				6200.33	6200.33	17.47	17.47	16.51	16.51
				7491.44	7491.44	17.47	17.47	16.51	16.51
				8968.11	8968.11	17.47	17.47	16.51	16.51
				10641.33	10641.33	17.47	17.47	16.51	16.51
				12521.00	12521.00	17.47	17.47	16.51	16.51
				14617.33	14617.33	17.47	17.47	16.51	16.51
				16940.66	16940.66	17.47	17.47	16.51	16.51
				19501.00	19501.00	17.47	17.47	16.51	16.51
				22308.33	22308.33	17.47	17.47	16.51	16.51
				25372.66	25372.66	17.47	17.47	16.51	16.51
				28704.00	28704.00	17.47	17.47	16.51	16.51
				32313.33	32313.33	17.47	17.47	16.51	16.51
				36200.66	36200.66	17.47	17.47	16.51	16.51
				40376.00	40376.00	17.47	17.47	16.51	16.51
				44849.33	44849.33	17.47	17.47	16.51	16.51
				49620.66	49620.66	17.47	17.47	16.51	16.51
				54699.99	54699.99	17.47	17.47	16.51	16.51
				60087.32	60087.32	17.47	17.47	16.51	16.51
				65783.65	65783.65	17.47	17.47	16.51	16.51
				71789.98	71789.98	17.47	17.47	16.51	16.51
				78106.31	78106.31	17.47	17.47	16.51	16.51
				84732.64	84732.64	17.47	17.47	16.51	16.51
				91669.97	91669.97	17.47	17.47	16.51	16.51
				98917.30	98917.30	17.47	17.47	16.51	16.51
				106475.63	106475.63	17.47	17.47	16.51	16.51
				114354.96	114354.96	17.47	17.47	16.51	16.51
				122555.29	122555.29	17.47	17.47	16.51	16.51
				131076.62	131076.62	17.47	17.47	16.51	16.51
				140018.95	140018.95	17.47	17.47	16.51	16.51
				149382.28	149382.28	17.47	17.47	16.51	16.51
				159166.61	159166.61	17.47	17.47	16.51	16.51
				169381.94	169381.94	17.47	17.47	16.51	16.51
				180028.27	180028.27	17.47	17.47	16.51	16.51
				191104.60	191104.60	17.47	17.47	16.51	16.51
				202611.93	202611.93	17.47	17.47	16.51	16.51
				214550.26	214550.26	17.47	17.47	16.51	16.51
				226919.59	226919.59	17.47	17.47	16.51	16.51
				239719.92	239719.92	17.47	17.47	16.51	16.51
				252950.25	252950.25	17.47	17.47	16.51	16.51
				266610.58	266610.58	17.47	17.47	16.51	16.51
				280700.91	280700.91	17.47	17.47	16.51	16.51
				295221.24	295221.24	17.47	17.47	16.51	16.51
				310181.57	310181.57	17.47	17.47	16.51	16.51
				325581.90	325581.90	17.47	17.47	16.51	16.51
				341422.23	341422.23	17.47	17.47	16.51	16.51
				357702.56	357702.56	17.47	17.47	16.51	16.51
				374422.89	374422.89	17.47	17.47	16.51	16.51
				391583.22	391583.22	17.47	17.47	16.51	16.51
				409183.55	409183.55	17.47	17.47	16.51	16.51
				427223.88	427223.88	17.47	17.47	16.51	16.51
				445704.21	445704.21	17.47	17.47	16.51	16.51
				464624.54	464624.54	17.47	17.47	16.51	16.51
				483984.87	483984.87	17.47	17.47	16.51	16.51
				503785.20	503785.20	17.47	17.47	16.51	16.51
				524025.53	524025.53	17.47	17.47	16.51	16.51
				544705.86	544705.86	17.47	17.47	16.51	16.51
				565826.19	565826.19	17.47	17.47	16.51	16.51
				587386.52	587386.52	17.47	17.47	16.51	16.51
				609386.85	609386.85	17.47	17.47	16.51	16.51
				631827.18	631827.18	17.47	17.47	16.51	16.51
				654707.51	654707.51	17.47	17.47	16.51	16.51
				678027.84	678027.84	17.47	17.47	16.51	16.51
				701788.17	701788.17	17.47	17.47	16.51	16.51
				725988.50	725988.50	17.47	17.47	16.51	16.51
				750628.83	750628.83	17.47	17.47	16.51	16.51
				775709.16	775709.16	17.47	17.47	16.51	16.51
				801229.49	801229.49	17.47</			

**CROSS VALLEY DAM**  
Geothermal Monitoring  
88-4



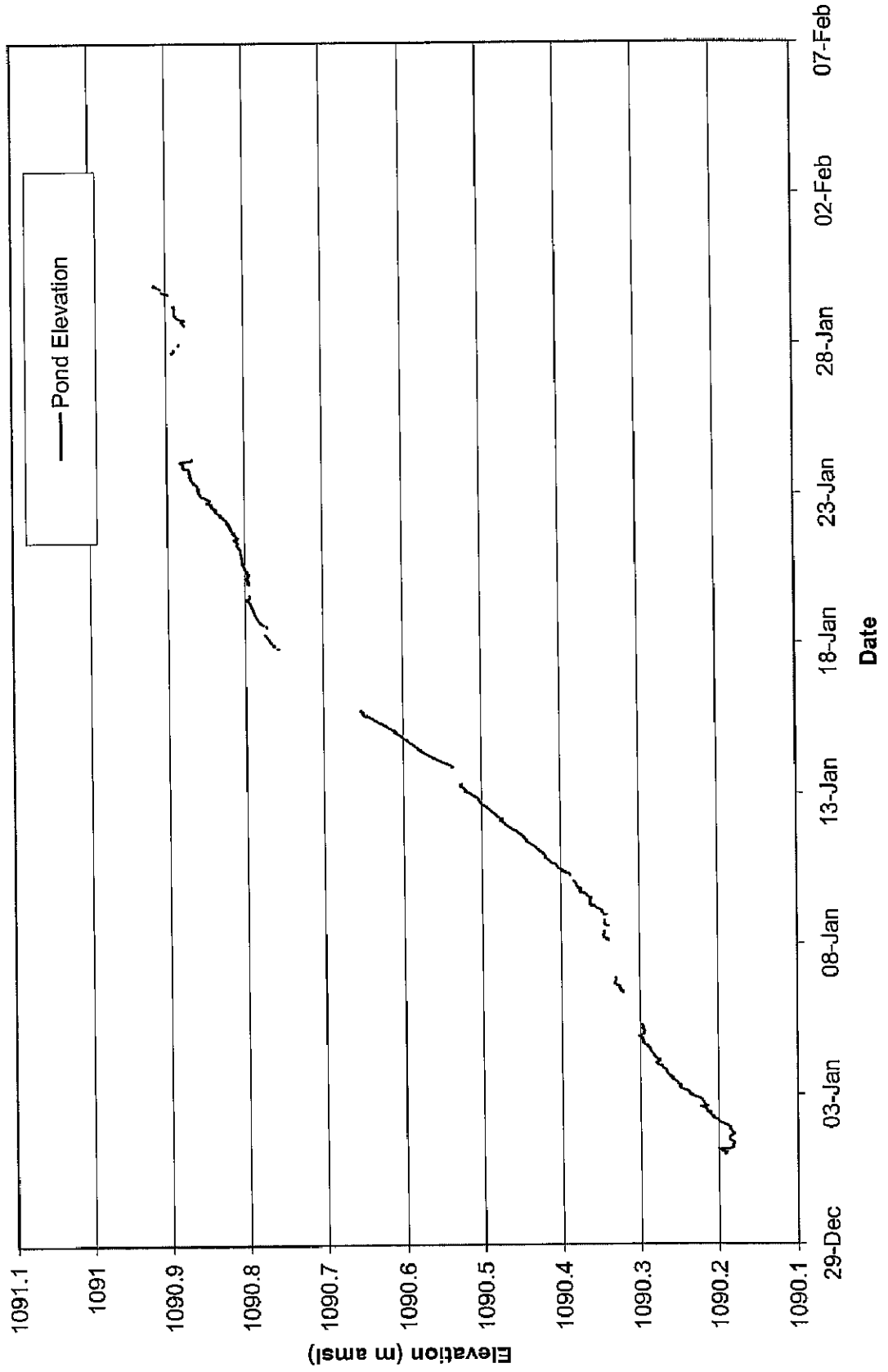
Cross Valley Dam  
Geothermal Monitoring  
Long Term Monitoring for Nodes in 88-4-4T



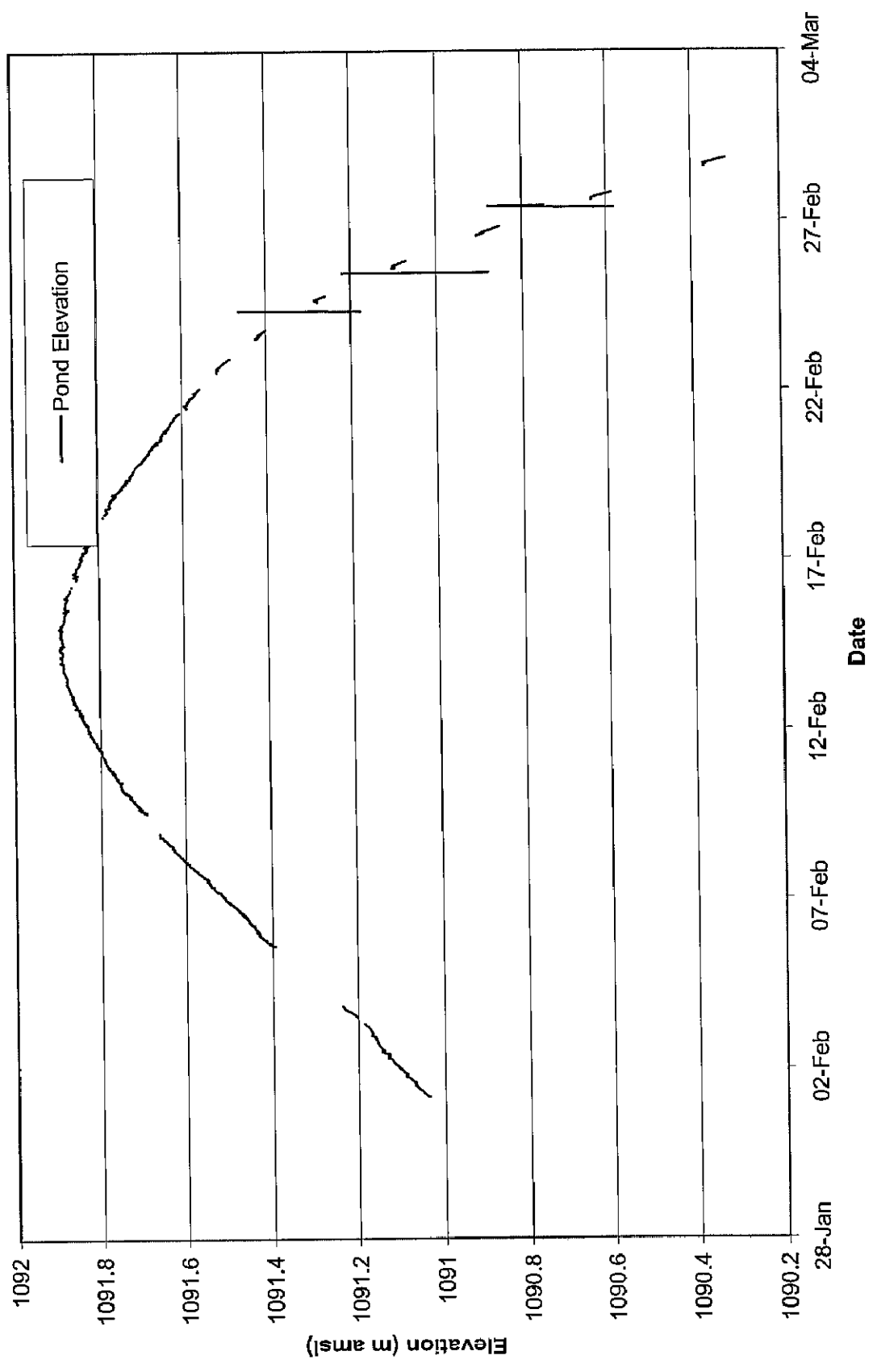
## **NORTH FORK ROCK DRAIN (NFRD)**

## **POND ELEVATION AND CREEK FLOWS**

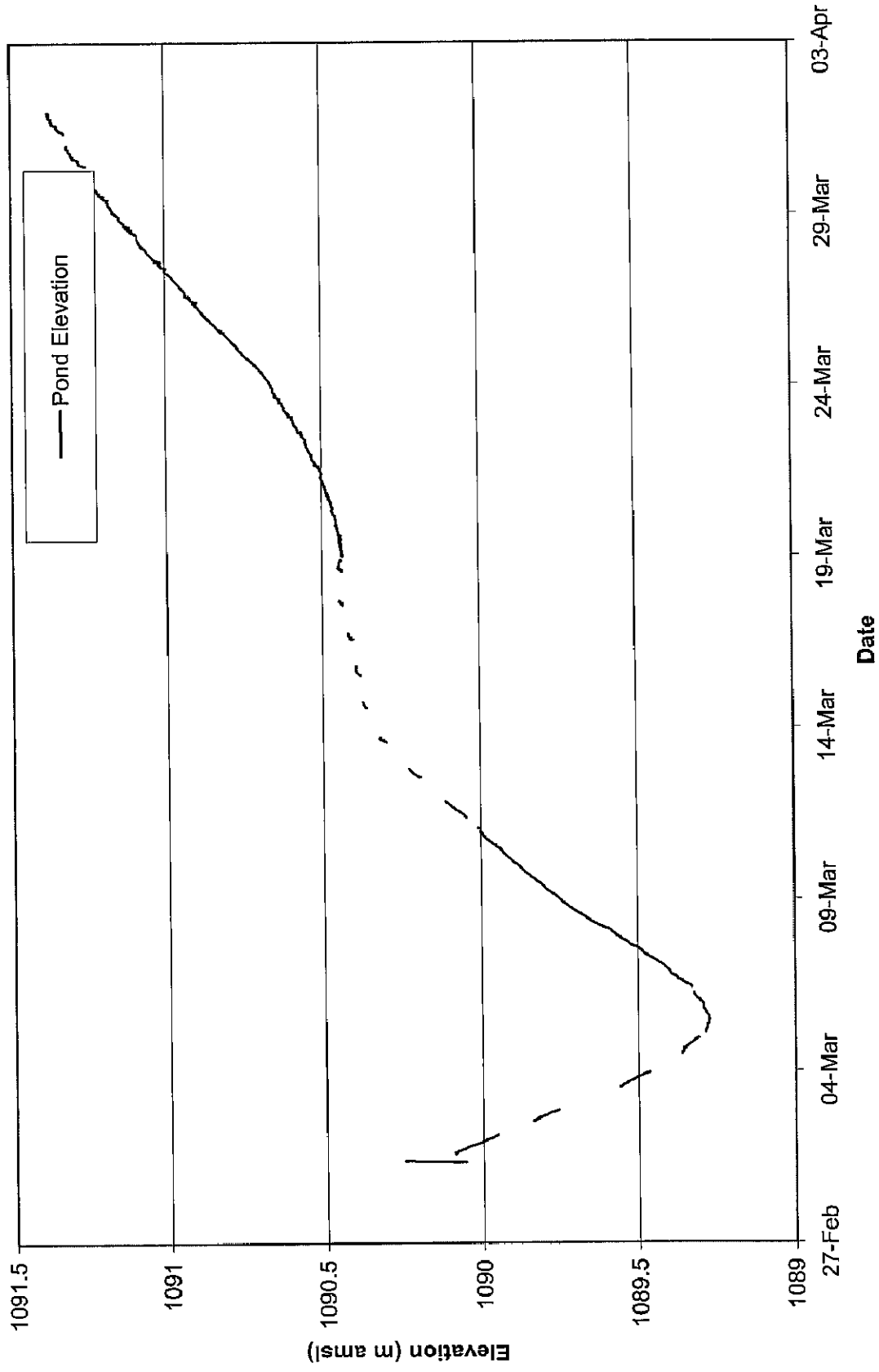
### Pond elevation and Flow downstream of NFRD - January 2006



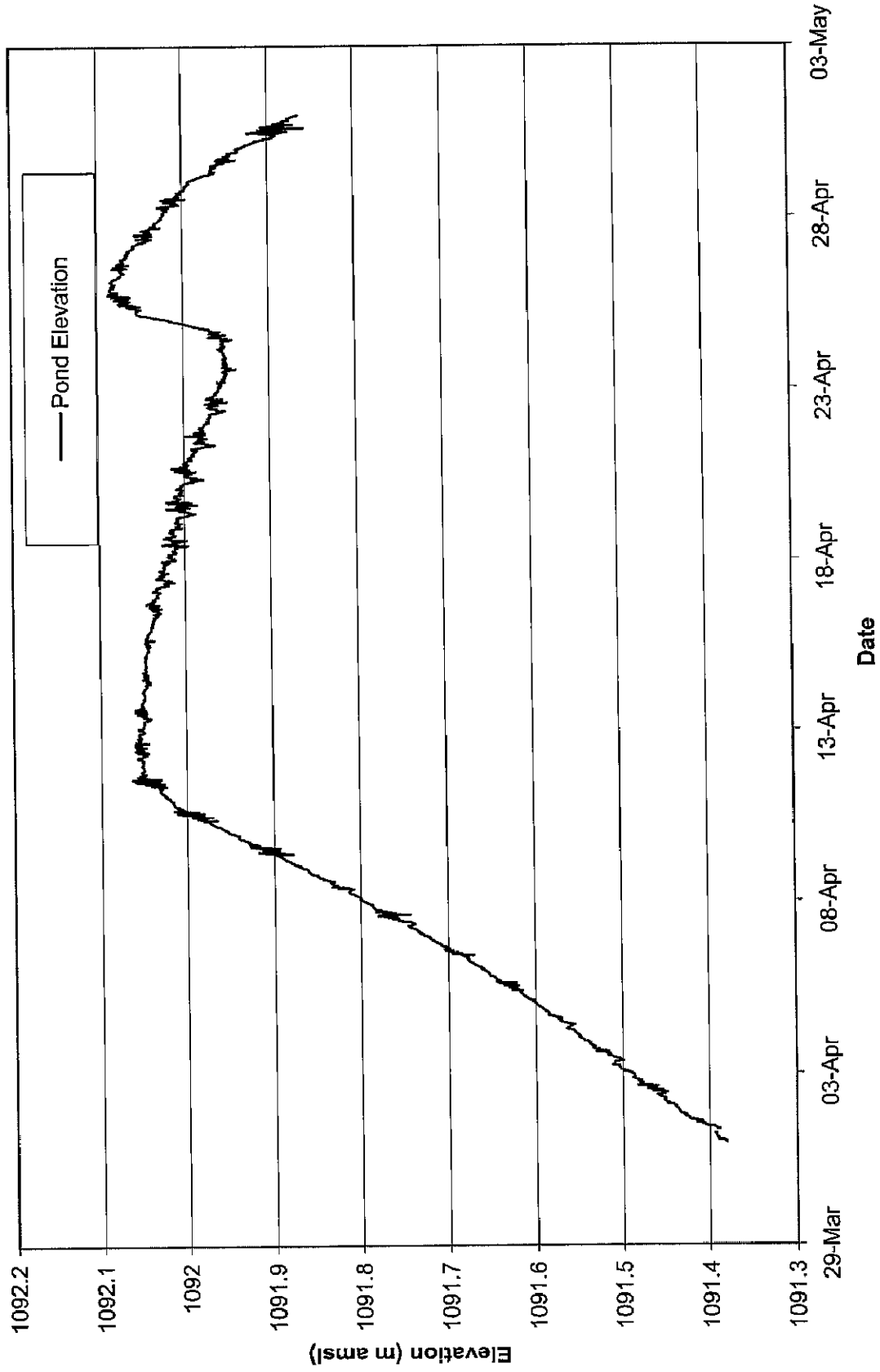
### Pond elevation and Flow downstream of NFRD - February 2006



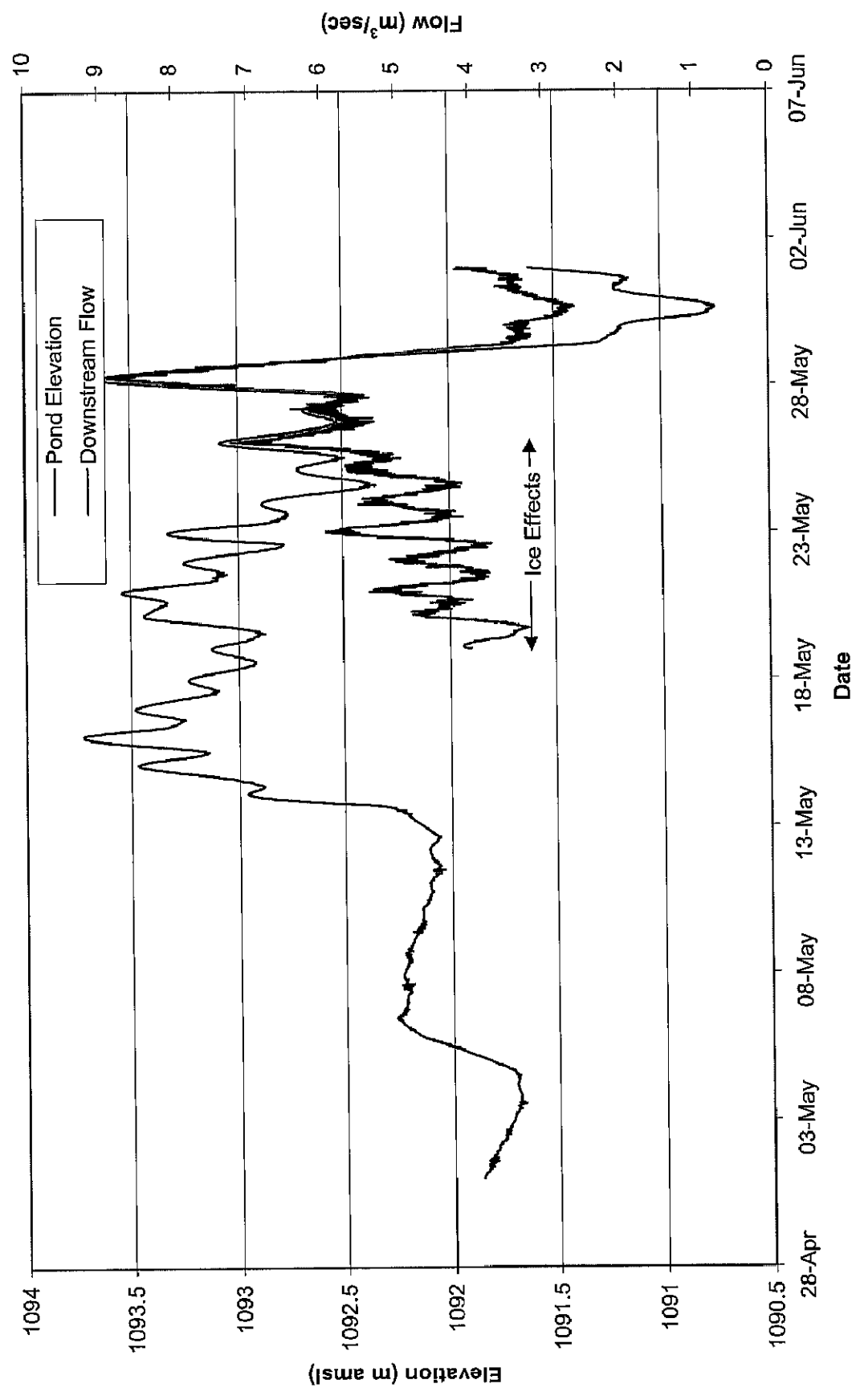
### Pond elevation and Flow downstream of NFRD - March 2006



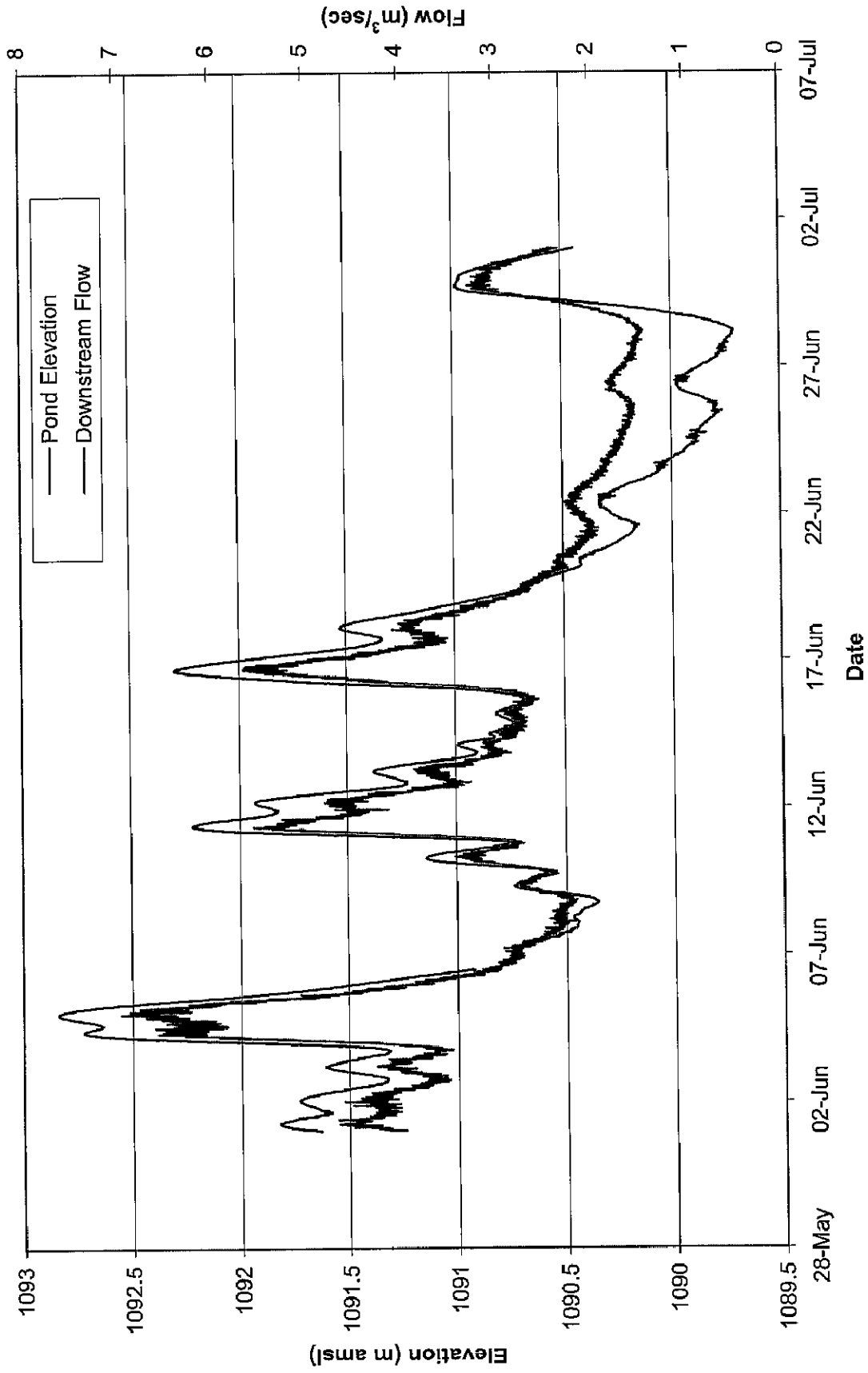
### Pond elevation and Flow downstream of NFRD - April 2006



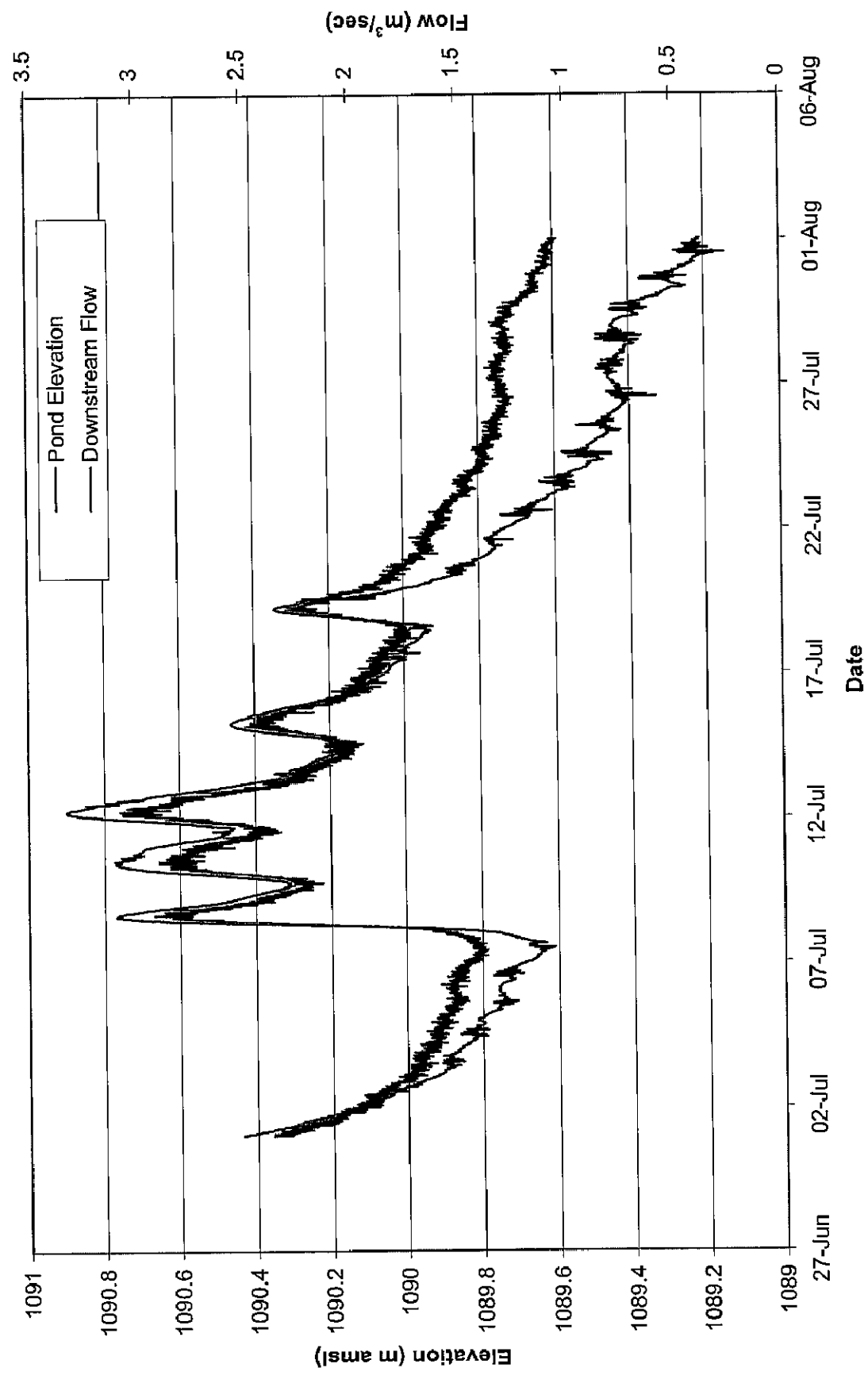
### Pond elevation and Flow downstream of NFRD - May 2006



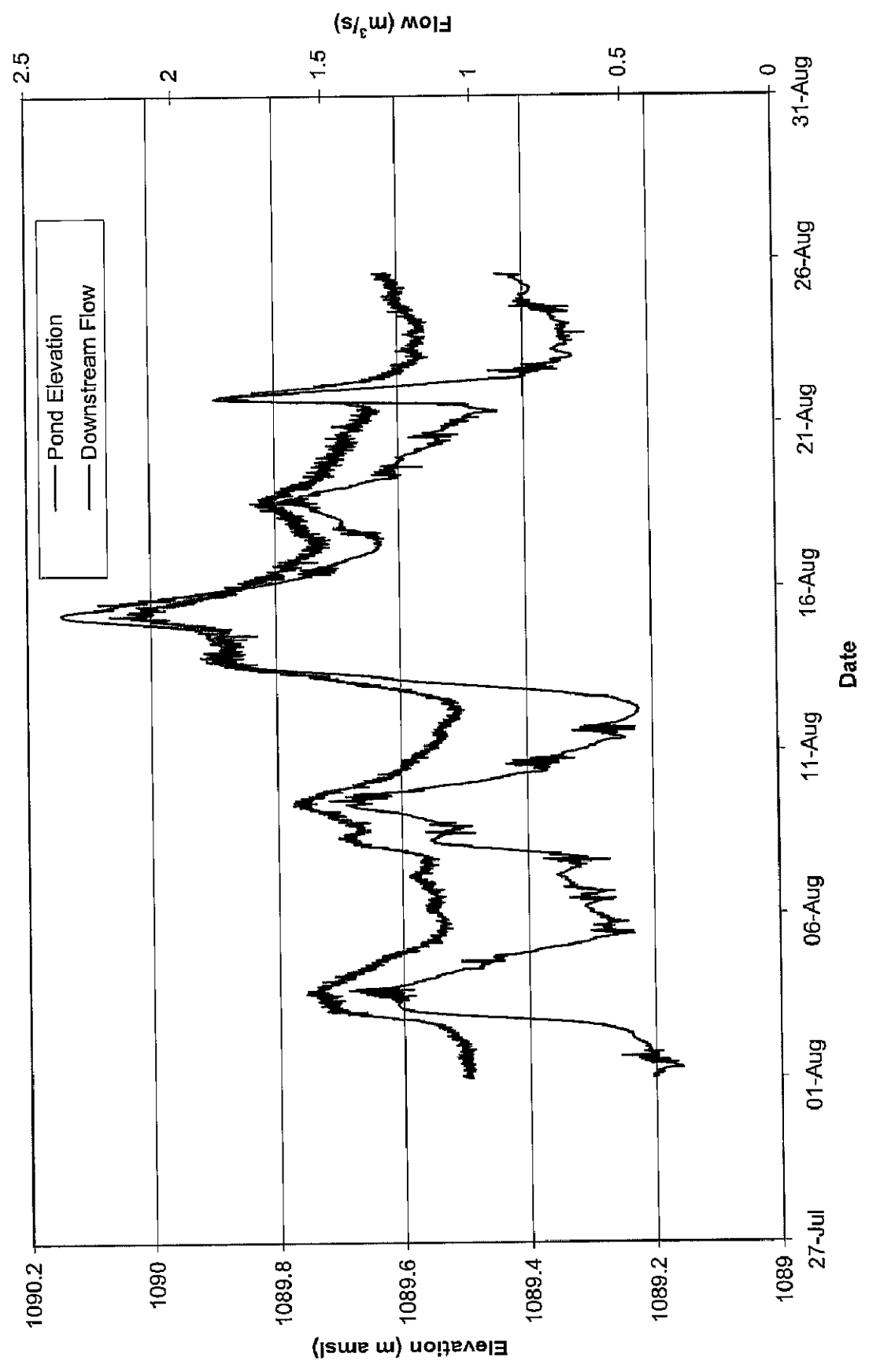
### Pond elevation and Flow downstream of NFRD - June 2006



### Pond elevation and Flow downstream of NFRD - July 2006



### Pond elevation and Flow downstream of NFRD - August 2006



**Calculations of the hydraulic gradient through the rock drain**

<b>Date</b>	<b>Toe Elevation (m amsl)</b>	<b>Pond Elevation (m amsl)</b>	<b>Head Difference (m)</b>	<b>Gradient</b>
26-May-05	1086.84	1092.43	5.59	0.0278
28-May-05	1086.94	1092.88	5.94	0.0295
30-May-05	1086.69	1092.24	5.55	0.0276
02-Jun-05	1086.67	1091.82	5.15	0.0256
06-Jun-05	1086.46	1091.23	4.77	0.0237
09-Jun-05	1086.46	1091.09	4.62	0.0230
15-Jun-05	1086.57	1091.15	4.57	0.0227
20-Jun-05	1086.43	1090.39	3.96	0.0197
23-Jun-05	1086.30	1090.17	3.88	0.0193
21-Jul-05	1086.43	1090.38	3.95	0.0196
16-Aug-05	1086.22	1089.51	3.28	0.0163
19-Jul-06	1086.51	1090.19	3.68	0.0183
20-Jul-06	1086.43	1089.57	3.14	0.0156
07-Jun-06	1086.54	1090.58	4.04	0.0201
03-Aug-06	1086.38	1089.72	3.34	0.0166
22-Aug-05	1086.39	1089.54	3.15	0.0156
26-Aug-06	1086.36	1089.75	3.39	0.0168
28-Sep-06	1086.23	1089.31	3.08	0.0153

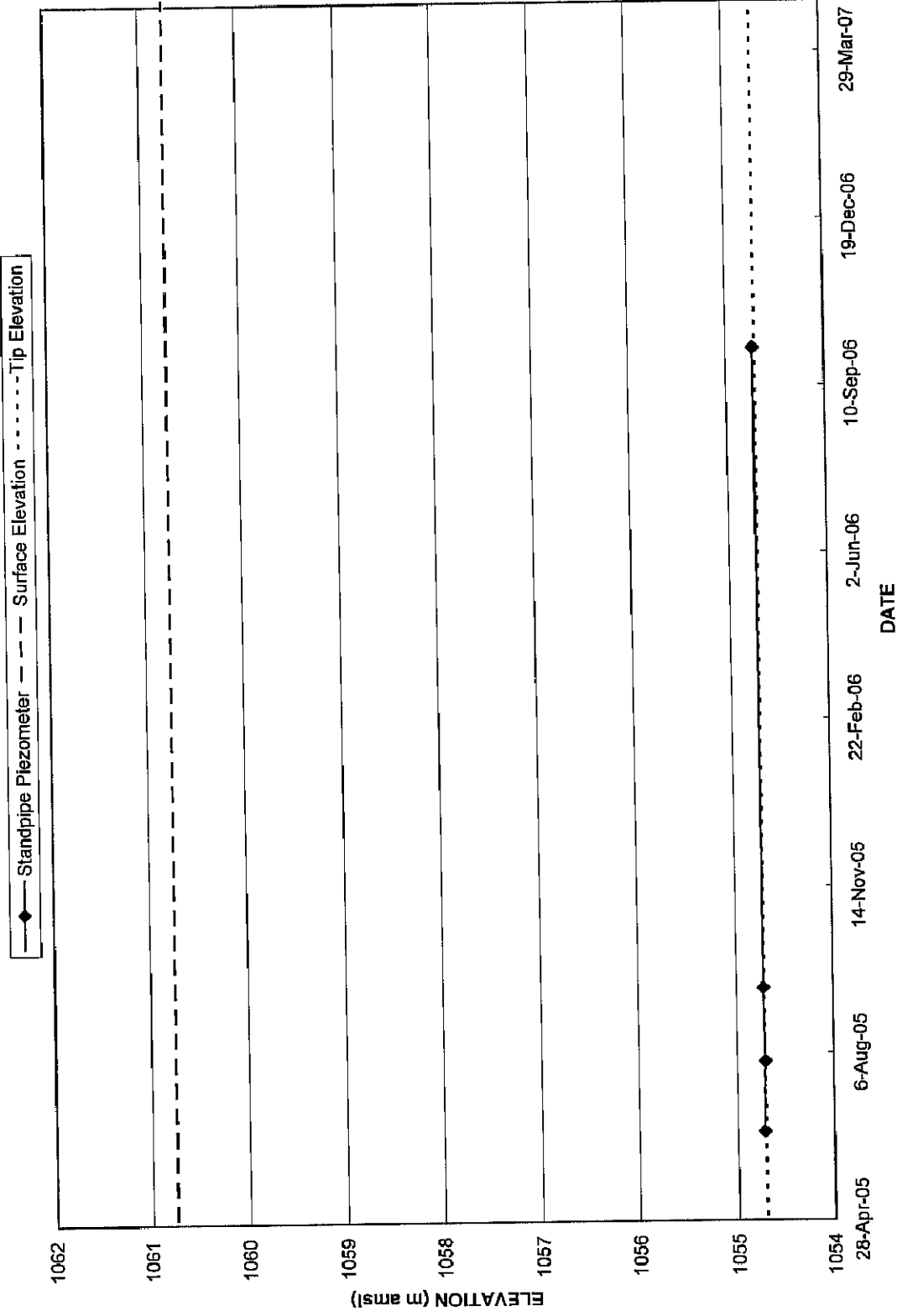
## **SECONDARY DAM**

## **PIEZOMETERS**

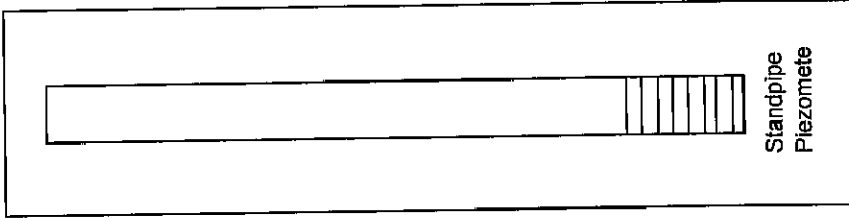
<b>P81-06</b>		<b>Location:</b>	Secondary Dam	<b>2004 Stick-Up (m):</b>	0.13
		<b>Coordinates:</b>	8V582791 6912684	<b>2004 Surface Elevation ( m amsl):</b>	1060.74
<b>Surface Protector:</b>	N/A	<b>Date Installed:</b>	1981	<b>Tip Elevation (m amsl):</b>	1054.71
				<b>Screened Interval (m bgs):</b>	Unknown
<b>Date</b>		<b>Water level from top of pipe (m)</b>	<b>Piezometric Elevation (m amsl)</b>	<b>Pond El. (m amsl)</b>	<b>Comments</b>
20-Jun-05		6.81	1054.72		
1-Aug-05		6.16	1054.71		
14-Sep-05		6.81	1054.72		
02-Oct-06		6.805	1054.73		

Note: Water levels should be read from top of lower section of pipe (5" stick-up), not from the 26" broken piece on

**SECONDARY DAM  
Piezometric Monitoring  
P81-06 Standpipe Piezometer**

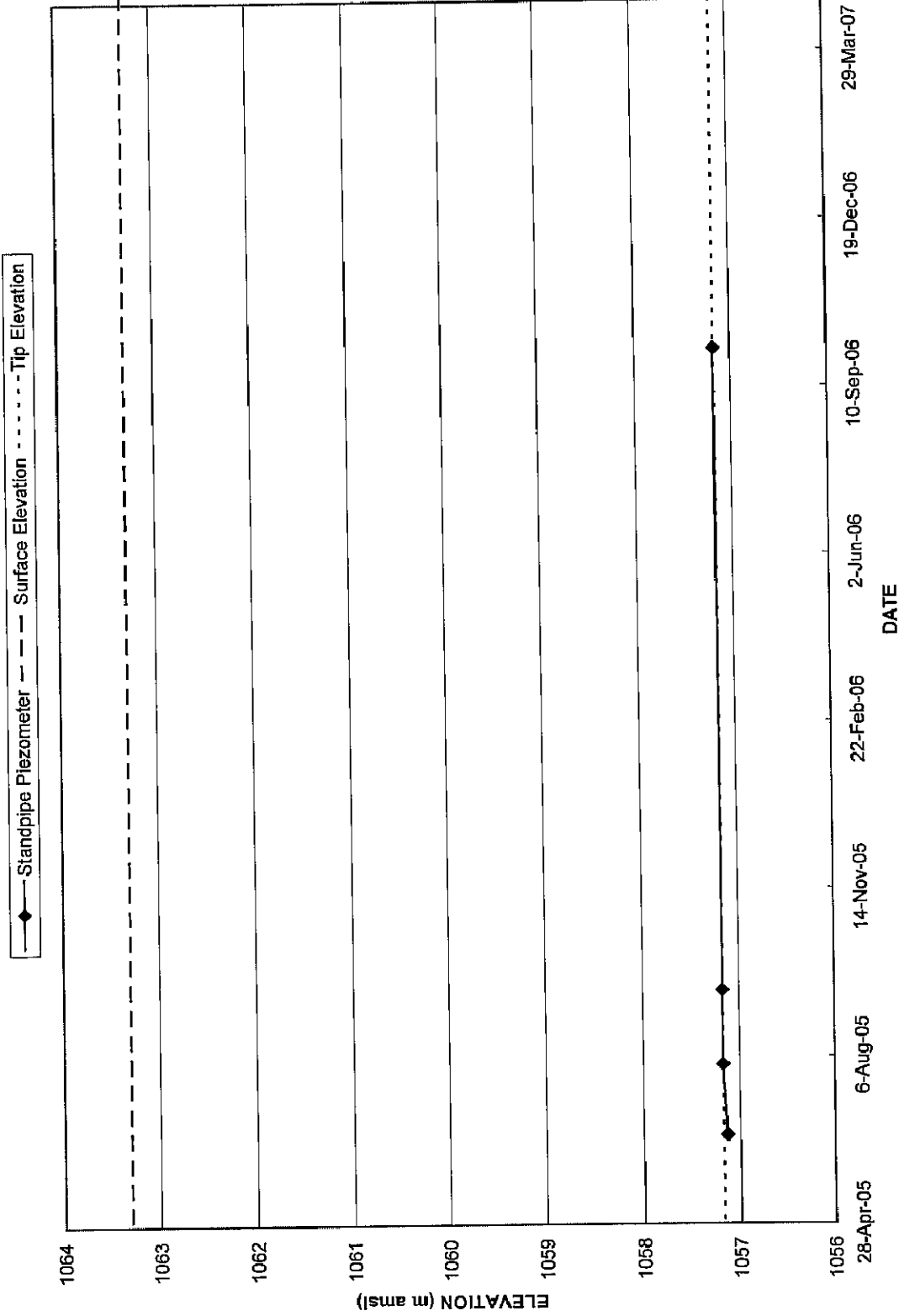


**Instrument  
Details**

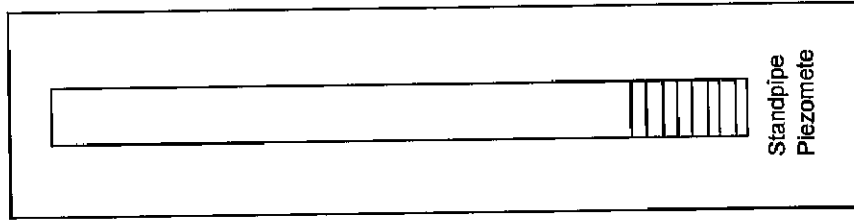


<b>P81-07</b>		<b>Location:</b>	Secondary Dam	<b>2004 Stick-Up (m):</b>	0.77
		<b>Coordinates:</b>	8V583222 6912420	<b>2004 Surface Elevation (m amsl):</b>	1063.31
<b>Surface Protector:</b>	N/A	<b>Date Installed:</b>	1981	<b>Tip Elevation (m amsl):</b>	1057.17
				<b>Screened Interval (m bgs):</b>	Unknown
<b>Date</b>		<b>Water level from top of pipe (m)</b>	<b>Piezometric Elevation (m amsl)</b>	<b>Pond El. (m amsl)</b>	<b>Comments</b>
20-Jun-05		6.95	1057.13		
1-Aug-05		6.91	1057.17		
14-Sep-05		6.91	1057.17		
02-Oct-06		6.91	1057.17		

**SECONDARY DAM**  
**Piezometric Monitoring**  
**P81-07 Standpipe Piezometer**

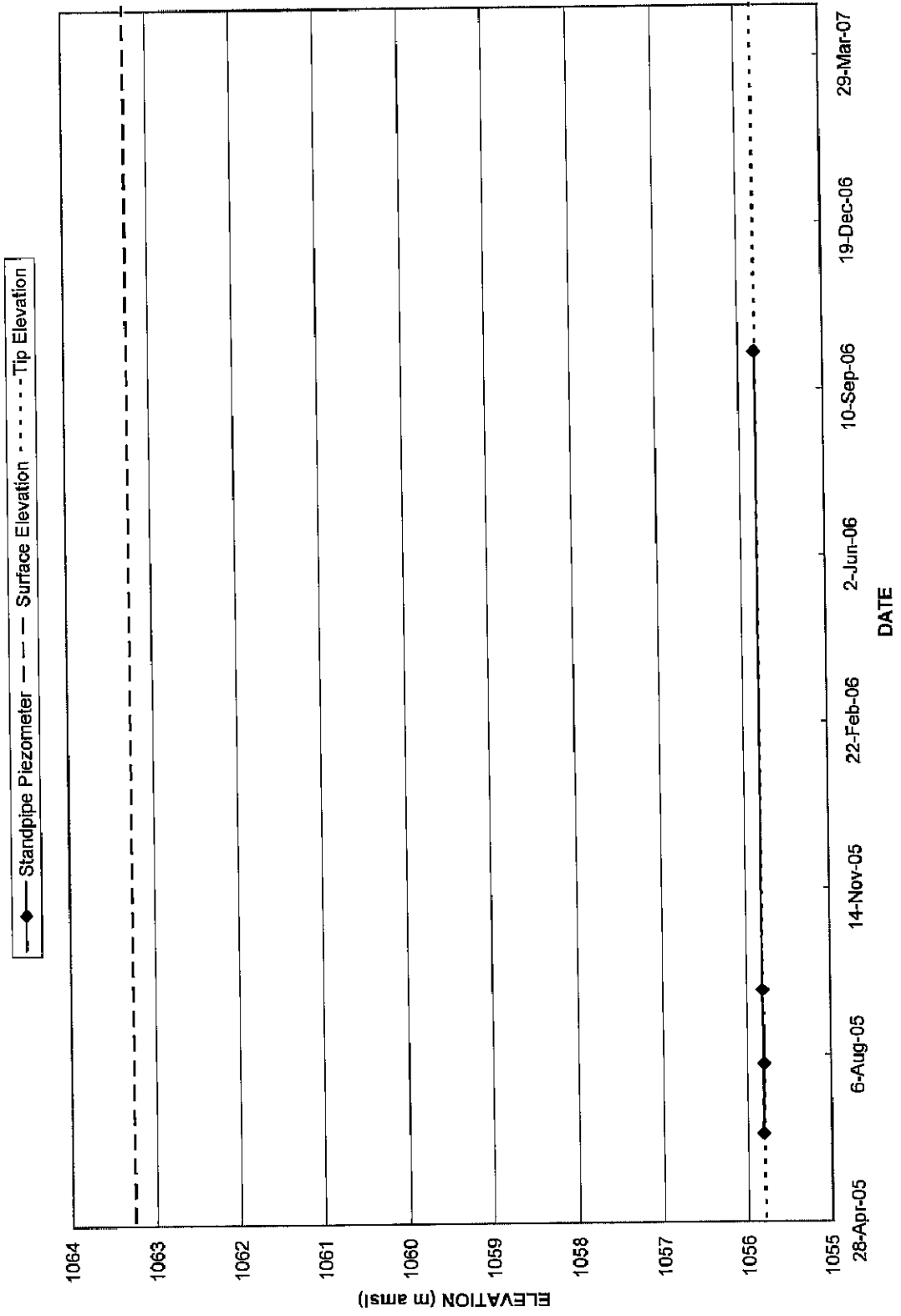


Instrument  
Details

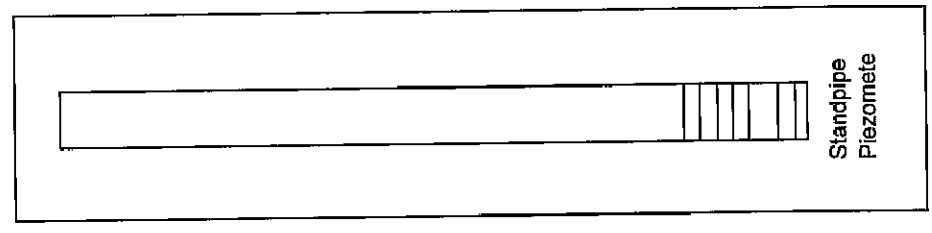


<b>P81-08</b>		<b>Location:</b>	Secondary Dam	<b>2004 Stick-Up (m):</b>	0.74
		<b>Coordinates:</b>	8V583322 6912403	<b>2004 Surface Elevation ( m amsl):</b>	1063.26
<b>Surface Protector:</b>	N/A	<b>Date Installed:</b>	1981	<b>Tip Elevation (m amsl):</b>	1055.80
				<b>Screened Interval (m bgs):</b>	Unknown
<b>Date</b>		<b>Water level from top of pipe (m)</b>	<b>Piezometric Elevation (m amsl)</b>	<b>Pond El. (m amsl)</b>	<b>Comments</b>
20-Jun-05		8.19	1055.81		
1-Aug-05		8.2	1055.80		Dry
14-Sep-05		8.19	1055.81		
02-Oct-06		8.195	1055.81		Dry

**SECONDARY DAM**  
**Piezometric Monitoring**  
**P81-08 Standpipe Piezometer**



Instrument  
Details



**Table 4. Summary of 2006 Water Level Elevations for Multi-Level Wells, Faro Mine, Yukon**

Well ID	Stickup (m)	Ground Elevation (m asl)	Date	Time	Water Level Below top of Casing (m)	Water Level Elevation (m asl)
P03-01-01	0.53	1060.581	09/06/2006	8:30	5.84	1054.74
P03-01-01	0.53	1060.581	21/09/2006	16:00	6.11	1054.47
P03-01-02	0.53	1060.5872	09/06/2006	8:31	5.89	1054.70
P03-01-02	0.53	1060.5872	21/09/2006	16:01	6.145	1054.44
P03-01-03	0.53	1060.581	09/06/2006	8:32	5.88	1054.70
P03-01-03	0.53	1060.581	21/09/2006	16:02	6.135	1054.45
P03-01-04	0.53	1060.581	09/06/2006	8:33	5.89	1054.69
P03-01-04	0.53	1060.581	21/09/2006	16:03	6.15	1054.43
P03-01-05	0.53	1060.581	09/06/2006	8:34	5.91	1054.67
P03-01-05	0.53	1060.581	21/09/2006	16:05	6.16	1054.42
P03-01-06	0.53	1060.581	09/06/2006	8:35	5.88	1054.70
P03-01-06	0.53	1060.581	21/09/2006	16:06	6.145	1054.44
P03-01-07	0.53	1060.581	21/09/2006	16:07	6.13	1054.45
P03-01-08	0.53	1060.581	09/06/2006	8:37	5.98	1054.60
P03-01-08	0.53	1060.581	21/09/2006	16:08	5.99	1054.59
P03-01-09	0.53	1060.581	09/06/2006	8:38	6.00	1054.58
P03-01-09	0.53	1060.581	21/09/2006	16:10	6.01	1054.57
P03-02-01	0.69	1059.905	08/06/2006	14:05	6.01	1053.90
P03-02-01	0.69	1059.905	21/09/2006	14:30	6.24	1053.67
P03-02-02	0.69	1059.905	08/06/2006	14:06	6.01	1053.90
P03-02-02	0.69	1059.905	21/09/2006	14:30	6.23	1053.68
P03-02-03	0.69	1059.905	08/06/2006	14:07	6.01	1053.90
P03-02-03	0.69	1059.905	22/09/2006	14:31	6.24	1053.67
P03-02-04	0.69	1059.905	08/06/2006	14:08	6.02	1053.89
P03-02-04	0.69	1059.905	22/09/2006	14:32	6.24	1053.67
P03-02-05	0.69	1059.905	08/06/2006	14:09	6.07	1053.84
P03-02-05	0.69	1059.905	22/09/2006	14:33	6.31	1053.60
P03-02-06	0.69	1059.905	08/06/2006	14:10	6.07	1053.84
P03-02-07	0.69	1059.905	08/06/2006	14:11	5.57	1054.34
P03-02-07	0.69	1059.905	22/09/2006	14:34	5.78	1054.13
P03-02-08	0.69	1059.905	08/06/2006	14:12	5.63	1054.28
P03-02-08	0.69	1059.905	22/09/2006	14:35	5.68	1054.23
P03-02-09	0.69	1059.905	08/06/2006	14:13	5.63	1054.28
P03-02-09	0.69	1059.905	22/09/2006	14:35	5.64	1054.27
P03-03-01	0.82	1060.672	15/06/2006	10:50	7.10	1053.57
P03-03-01	0.82	1060.672	22/09/2006	14:38	7.36	1053.31
P03-03-02	0.82	1060.672	15/06/2006	10:51	7.20	1053.47
P03-03-02	0.82	1060.672	22/09/2006	14:39	7.465	1053.21
P03-03-03	0.82	1060.672	15/06/2006	10:52	7.15	1053.52
P03-03-03	0.82	1060.672	22/09/2006	14:40	7.40	1053.27
P03-03-04	0.82	1060.672	15/06/2006	10:53	7.16	1053.51
P03-03-04	0.82	1060.672	22/09/2006	14:41	7.40	1053.27
P03-03-05	0.82	1060.672	15/06/2006	10:54	7.16	1053.51
P03-03-05	0.82	1060.672	22/09/2006	14:43	7.42	1053.26
P03-03-06	0.82	1060.672	15/06/2006	10:55	7.19	1053.48
P03-03-06	0.82	1060.672	22/09/2006	14:45	7.41	1053.26
P03-03-08	0.82	1060.672	15/06/2006	10:57	7.00	1053.67

**Table 4. Summary of 2006 Water Level Elevations for Multi-Level Wells, Faro Mine, Yukon**

Well ID	Stickup (m)	Ground Elevation (masl)	Date	Time	Water Level Below top of Casing (m)	Water Level Elevation (masl)
P03-03-08	0.82	1060.672	22/09/2006	14:49	7.13	1053.54
P03-03-09	0.82	1060.672	15/06/2006	10:58	6.98	1053.69
P03-03-09	0.82	1060.672	22/09/2006	14:52	7.135	1053.54
P03-04-01	0.78	1060.429	07/06/2006	8:30	12.57	1047.86
P03-04-01	0.78	1060.429	20/09/2006	14:20	12.47	1047.96
P03-04-02	0.78	1060.429	07/06/2006	8:31	12.52	1047.91
P03-04-02	0.78	1060.429	02/08/2006	11:37	12.460	1047.97
P03-04-02	0.78	1060.429	20/09/2006	14:22	12.51	1047.92
P03-04-02	0.78	1060.429	02/11/2006	13:54	12.600	1047.83
P03-04-03	0.78	1060.429	07/06/2006	8:32	12.47	1047.96
P03-04-03	0.78	1060.429	20/09/2006	14:23	12.39	1048.04
P03-04-04	0.78	1060.429	07/06/2006	8:33	12.89	1047.54
P03-04-04	0.78	1060.429	02/08/2006	11:40	12.770	1047.66
P03-04-04	0.78	1060.429	20/09/2006	14:24	12.77	1047.66
P03-04-04	0.78	1060.429	02/11/2006	13:58	12.890	1047.54
P03-04-05	0.78	1060.429	07/06/2006	8:34	12.87	1047.56
P03-04-05	0.78	1060.429	20/09/2006	14:26	12.76	1047.67
P03-04-06	0.78	1060.429	07/06/2006	8:35	12.99	1047.44
P03-04-06	0.78	1060.429	02/08/2006	11:42	12.800	1047.63
P03-04-06	0.78	1060.429	21/09/2006	14:27	12.72	1047.71
P03-04-06	0.78	1060.429	02/11/2006	14:02	12.830	1047.60
P03-04-07	0.78	1060.429	07/06/2006	8:36	13.00	1047.43
P03-04-07	0.78	1060.429	21/09/2006	14:28	12.72	1047.71
P03-04-08	0.78	1060.429	07/06/2006	8:37	13.00	1047.43
P03-04-08	0.78	1060.429	21/09/2006	14:30	12.75	1047.68
P03-04-09	0.78	1060.429	07/06/2006	8:38	13.00	1047.43
P03-04-09	0.78	1060.429	21/09/2006	14:31	12.74	1047.69
P03-05-01	0.84	1059.588	15/06/2006	8:23	8.67	1050.92
P03-05-01	0.84	1059.588	02/11/2006	9:05	8.850	1050.74
P03-05-02	0.84	1059.588	15/06/2006	8:24	8.66	1050.93
P03-05-02	0.84	1059.588	02/11/2006	9:07	8.840	1050.75
P03-05-03	0.84	1059.588	15/06/2006	8:26	8.71	1050.88
P03-05-03	0.84	1059.588	02/11/2006	9:08	8.860	1050.73
P03-05-04	0.84	1059.588	15/06/2006	8:28	8.85	1050.74
P03-05-05	0.84	1059.588	15/06/2006	8:30	8.85	1050.74
P03-05-05	0.84	1059.588	02/11/2006	9:12	9.000	1050.59
P03-05-06	0.84	1059.588	15/06/2006	8:31	8.73	1050.86
P03-05-06	0.84	1059.588	02/11/2006	9:13	8.85	1050.74
P03-05-07	0.84	1059.588	15/06/2006	8:33	8.77	1050.82
P03-05-07	0.84	1059.588	02/11/2006	9:15	8.79	1050.80
P03-05-08	0.84	1059.588	15/06/2006	8:34	8.66	1050.93
P03-05-08	0.84	1059.588	02/11/2006	9:16	8.720	1050.87
P03-06-01	0.87	1061.925	07/06/2006	14:27	12.55	1049.38
P03-06-01	0.87	1061.925	21/09/2006	11:11	12.53	1049.40
P03-06-02	0.87	1061.925	07/06/2006	14:28	12.56	1049.37
P03-06-02	0.87	1061.925	21/09/2006	11:12	12.50	1049.43
P03-06-03	0.87	1061.925	07/06/2006	14:29	12.54	1049.39

**Table 4. Summary of 2006 Water Level Elevations for Multi-Level Wells, Faro Mine, Yukon**

Well ID	Stickup (m)	Ground Elevation (m a.s.l)	Date	Time	Water Level Below top of Casing (m)	Water Level Elevation (m a.s.l)
P03-06-03	0.87	1061.925	21/09/2006	11:14	12.53	1049.40
P03-06-04	0.87	1061.925	07/06/2006	14:30	12.54	1049.39
P03-06-04	0.87	1061.925	21/09/2006	11:15	12.55	1049.38
P03-06-05	0.87	1061.925	07/06/2006	14:31	12.54	1049.39
P03-06-05	0.87	1061.925	21/09/2006	11:16	12.51	1049.42
P03-06-06	0.87	1061.925	07/06/2006	14:32	12.58	1049.35
P03-07-02	0.78	1064.207	07/06/2006	16:44	13.290	1050.92
P03-07-02	0.78	1064.207	20/09/2006	11:16	13.290	1050.92
P03-07-05	0.78	1064.207	20/09/2006	11:21	13.290	1050.92
P03-08-01	0.88	1047.474	06/06/2006	15:31	8.62	1038.85
P03-08-01	0.88	1047.474	19/09/2006	15:15	8.33	1039.14
P03-08-02	0.88	1047.474	06/06/2006	15:33	8.62	1038.85
P03-08-02	0.88	1047.474	02/08/2006	9:16	8.380	1039.09
P03-08-02	0.88	1047.474	19/09/2006	15:17	8.33	1039.14
P03-08-02	0.88	1047.474	01/11/2006	15:32	8.450	1039.02
P03-08-03	0.88	1047.474	06/06/2006	15:35	8.44	1039.03
P03-08-03	0.88	1047.474	02/08/2006	9:18	8.150	1039.32
P03-08-03	0.88	1047.474	19/09/2006	15:18	8.12	1039.35
P03-08-03	0.88	1047.474	01/11/2006	15:34	8.260	1039.21
P03-08-04	0.88	1047.474	06/06/2006	15:37	8.44	1039.03
P03-08-04	0.88	1047.474	02/08/2006	9:20	7.930	1039.54
P03-08-04	0.88	1047.474	19/09/2006	15:19	8.12	1039.35
P03-08-04	0.88	1047.474	01/11/2006	15:36	8.260	1039.21
P03-08-05	0.88	1047.474	06/06/2006	15:38	8.21	1039.26
P03-08-05	0.88	1047.474	02/08/2006	9:23	7.920	1039.55
P03-08-05	0.88	1047.474	19/09/2006	15:20	7.92	1039.55
P03-08-05	0.88	1047.474	01/11/2006	15:37	8.080	1039.39
P03-08-06	0.88	1047.474	06/06/2006	15:39	7.79	1039.68
P03-08-06	0.88	1047.474	19/09/2006	15:22	7.51	1039.96
P03-08-07	0.88	1047.474	06/06/2006	15:40	5.70	1041.77
P03-08-07	0.88	1047.474	20/09/2006	15:24	5.68	1041.79
P03-08-08	0.88	1047.474	06/06/2006	15:42	5.53	1041.94
P03-08-08	0.88	1047.474	20/09/2006	15:21	5.56	1041.91
P03-09-01	0.69	1017.822	06/06/2006	10:27	4.65	1013.17
P03-09-01	0.69	1017.822	19/09/2006	12:33	2.78	1015.04
P03-09-02	0.69	1017.822	06/06/2006	10:30	6.48	1011.34
P03-09-02	0.69	1017.822	02/08/2006	15:48	3.000	1014.82
P03-09-02	0.69	1017.822	19/09/2006	12:34	3.09	1014.73
P03-09-02	0.69	1017.822	01/11/2006	12:56	3.080	1014.74
P03-09-03	0.69	1017.822	06/06/2006	10:31	3.47	1014.35
P03-09-03	0.69	1017.822	19/09/2006	12:35	3.15	1014.67
P03-09-04	0.69	1017.822	06/06/2006	10:32	4.28	1013.54
P03-09-04	0.69	1017.822	02/08/2006	15:50	3.360	1014.46
P03-09-04	0.69	1017.822	19/09/2006	12:36	3.42	1014.40
P03-09-04	0.69	1017.822	01/11/2006	12:58	3.440	1014.38
P03-09-05	0.69	1017.822	06/06/2006	10:33	4.24	1013.58
P03-09-05	0.69	1017.822	19/09/2006	12:37	3.45	1014.37
P03-09-06	0.69	1017.822	06/06/2006	10:36	4.57	1013.25

**Table 4. Summary of 2006 Water Level Elevations for Multi-Level Wells, Faro Mine, Yukon**

Well ID	Stickup (m)	Ground Elevation (m asl)	Date	Time	Water Level Below top of Casing (m)	Water Level Elevation (m asl)
P03-09-06	0.69	1017.822	02/08/2006	15:52	3.405	1014.42
P03-09-06	0.69	1017.822	19/09/2006	12:38	3.47	1014.35
P03-09-06	0.69	1017.822	01/11/2006	13:01	3.490	1014.33
P03-09-07	0.69	1017.822	06/06/2006	10:38	6.71	1011.11
P03-09-07	0.69	1017.822	02/08/2006	15:53	3.560	1014.26
P03-09-07	0.69	1017.822	19/09/2006	12:39	3.62	1014.20
P03-09-07	0.69	1017.822	01/11/2006	13:02	3.620	1014.20
P03-09-08	0.69	1017.822	06/06/2006	10:40	5.36	1012.46
P03-09-08	0.69	1017.822	19/09/2006	12:40	3.67	1014.15
P03-09-09	0.69	1017.822	06/06/2006	10:42	5.75	1012.07
P03-09-09	0.69	1017.822	02/08/2006	15:54	3.960	1013.86
P05-01-01	0.68	1017.32	02/08/2006	14:21	3.150	1014.17
P05-01-01	0.68	1017.32	19/09/2006	9:30	1.81	1015.51
P05-01-02	0.68	1017.32	02/08/2006	14:23	3.335	1013.99
P05-01-02	0.68	1017.32	19/09/2006	9:31	1.78	1015.54
P05-01-03	0.68	1017.32	02/08/2006	14:24	3.300	1014.02
P05-01-03	0.68	1017.32	19/09/2006	9:31	1.92	1015.40
P05-01-04	0.68	1017.32	02/08/2006	14:25	3.250	1014.07
P05-01-04	0.68	1017.32	19/09/2006	9:32	1.97	1015.35
P05-01-05	0.68	1017.32	02/08/2006	14:26	3.690	1013.63
P05-01-05	0.68	1017.32	19/09/2006	9:34	2.27	1015.05
P05-01-06	0.68	1017.32	14/06/2006	13:40	3.09	1014.23
P05-01-06	0.68	1017.32	02/08/2006	14:26	2.330	1014.99
P05-01-06	0.68	1017.32	19/09/2006	9:34	2.33	1014.99