

CLIENT:

EB ECHO BAY MINES LTD.

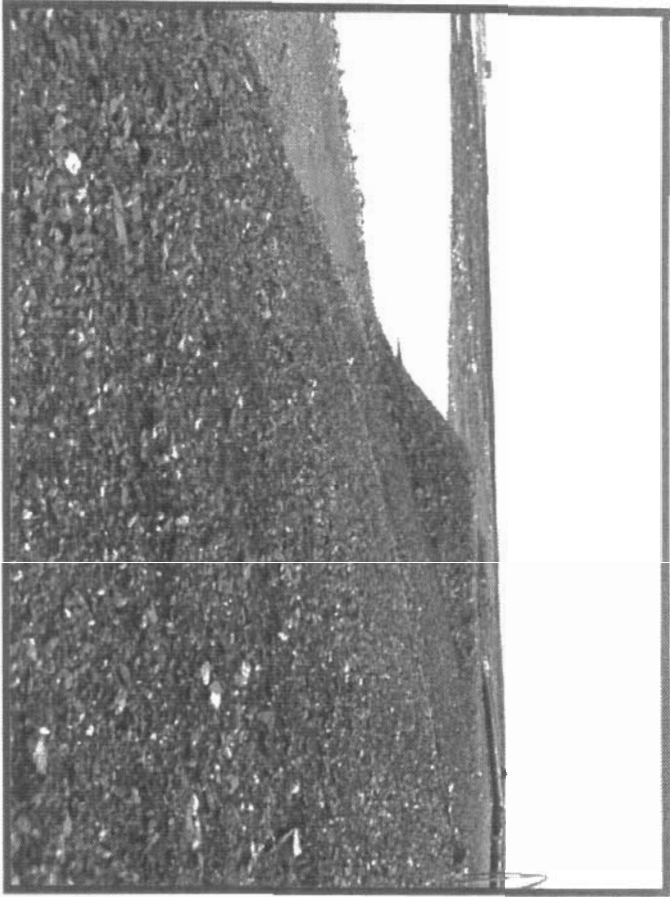


Photo 63 shows a view of the upstream side. These slopes appear to be a consistent grade.



Photo 66 shows a small sinkhole just immediately to the right of the thermistor installed previously. This sinkhole had been noted previously.

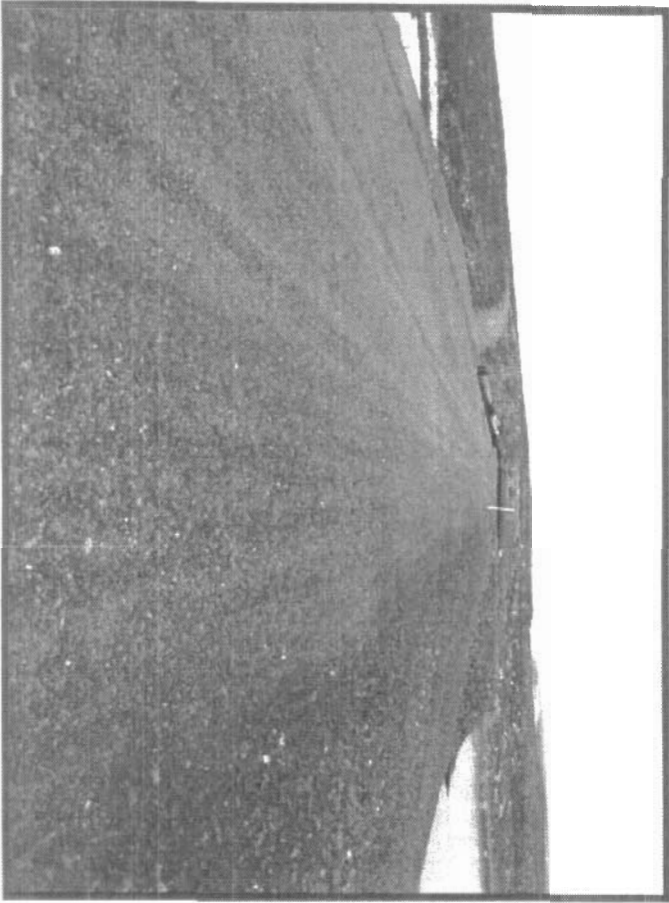


Photo 67 shows a view of the crest looking towards the north abutment. No signs of settlement, deformation or cracking noted on the crest.

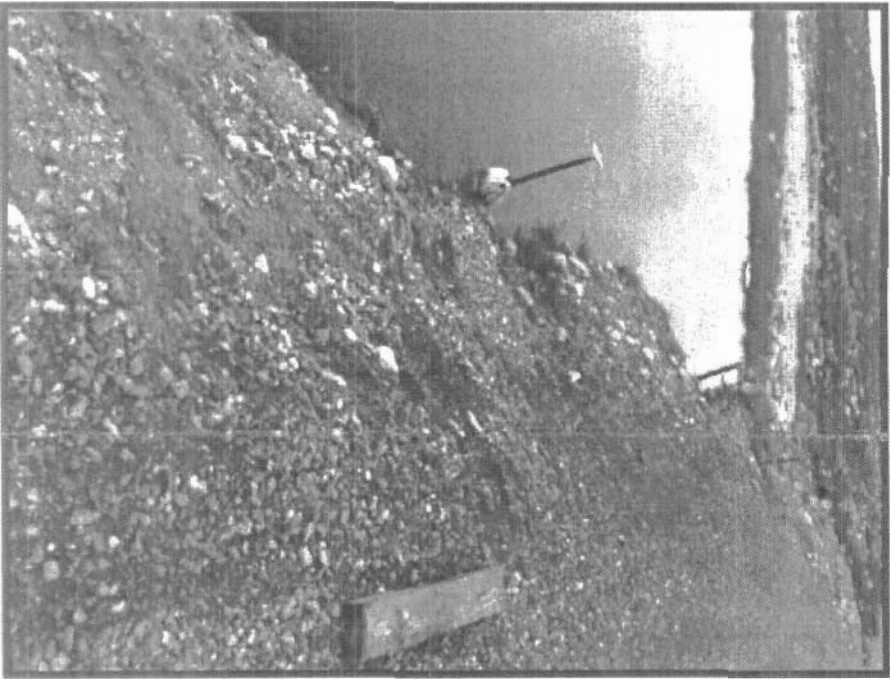


Photo 70 shows the little scarps formed by the retrogression of the material right at the toe of the access road berm.

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-	-	-	-	-	-
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SCALE	N/A
DATE	September 2002
DRAWN	SLF
DESIGNED	JWC
CHECKED	JWC
APPROVED	JWC

PROJECT	Annual Inspection of Perimeter Tailings Dams
TITLE	Dam 1A Inspection Photos
PROJECT No	0256-004-02
DWG No	Figure 5
REV	0

BGC

BGC Engineering Inc
AN APPLIED EARTH SCIENCES COMPANY
Calgary Alberta Phone: (403) 250-4444

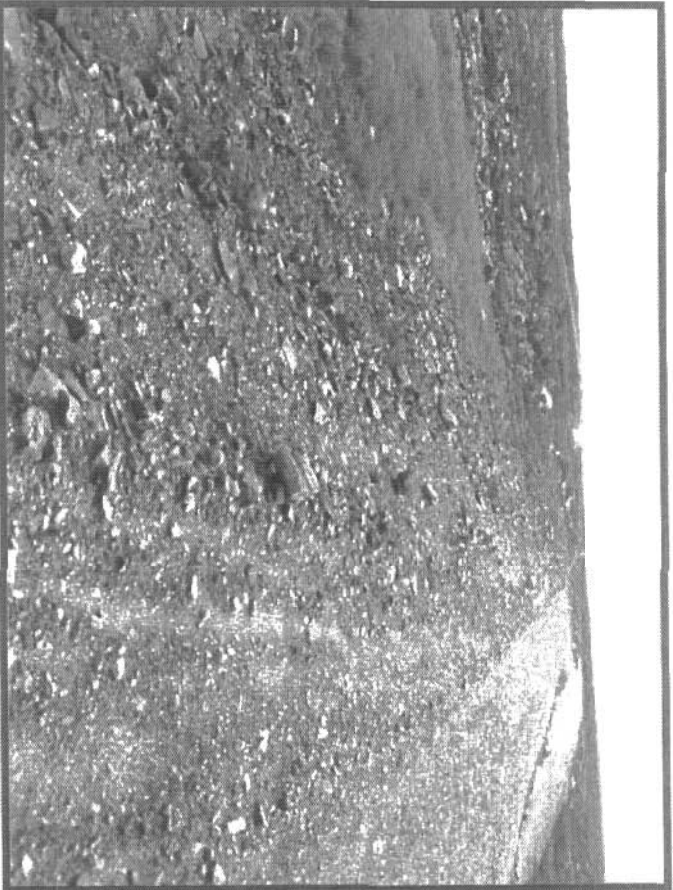


Photo 77 shows some rutting on the crest that progresses over to the upstream side as well.

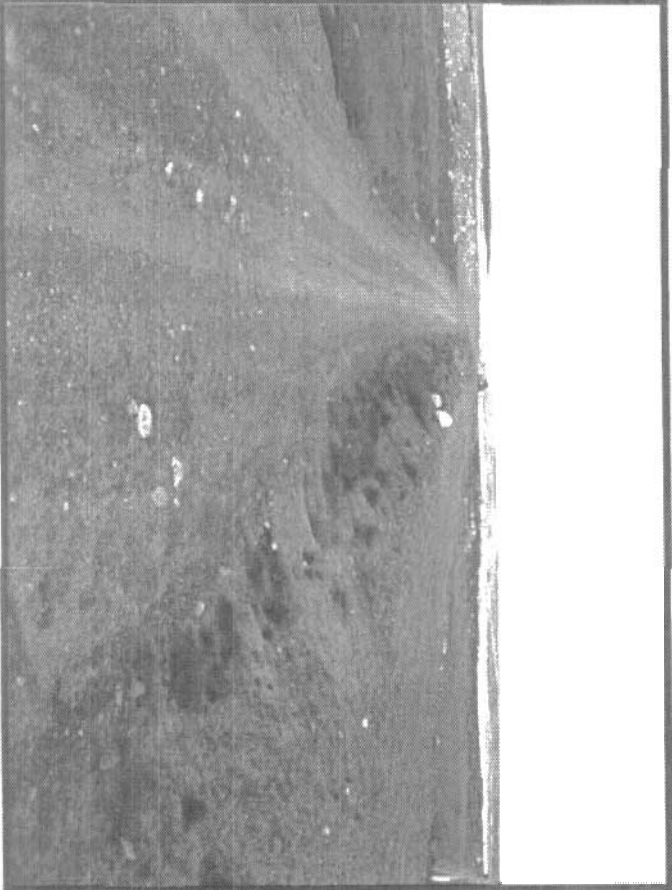


Photo 79 shows the downstream side and the crest of the dam looking towards north. Some minor vegetation is catching onto the slope.



Photo 74 shows a view of the crest and the upstream side. This dam is not retaining any water at the current time.

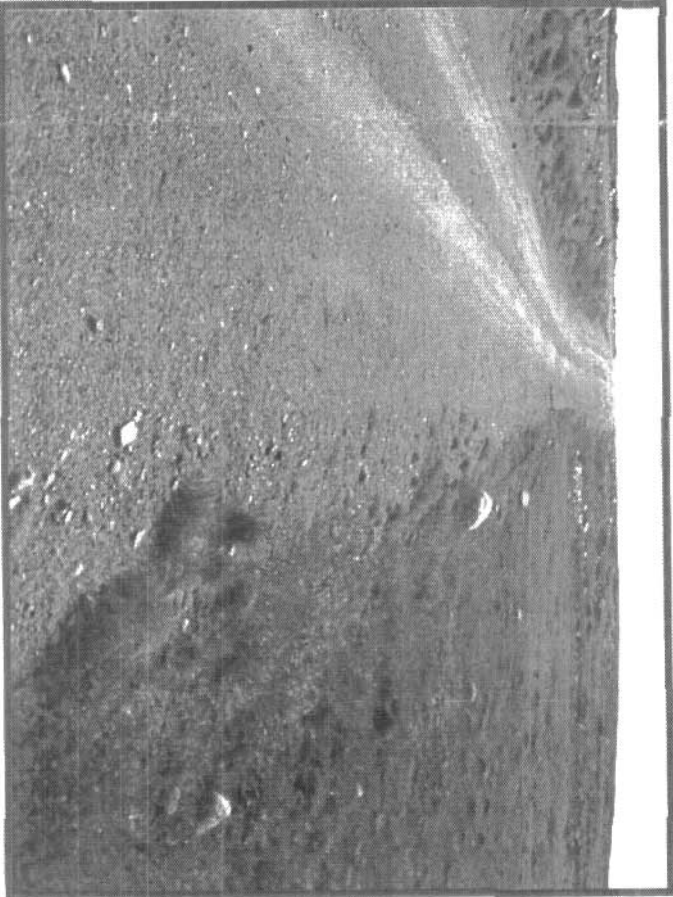


Photo 80 is a view along the downstream toe. No signs of seeping water were noted.

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SCALE	N/A
DATE	September 2002
DRAWN	SLE
DESIGNED	JWC
CHECKED	JWC
APPROVED	JWC

PROJECT	Annual Inspection of Perimeter Tailings Dams
TITLE	Dam 1B Inspection Photos
PROJECT NO	0256-004-02
FIGURE NO	Figure 6

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Calgary Alberta Phone: (403) 250-

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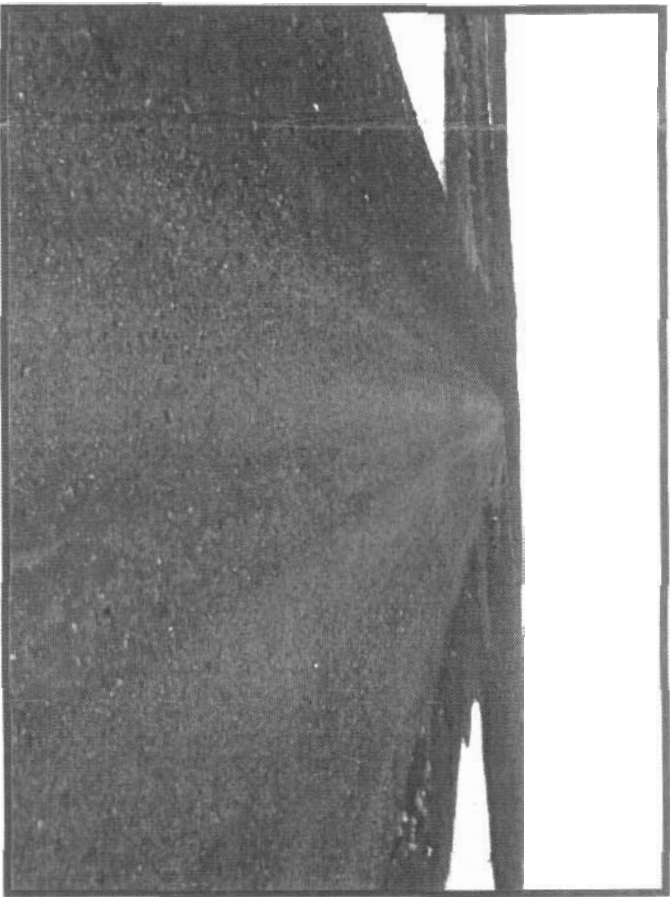


Photo 45 shows a view looking towards the south abutment. The crest appears to be smooth and flat with no signs of cracking or settlement.

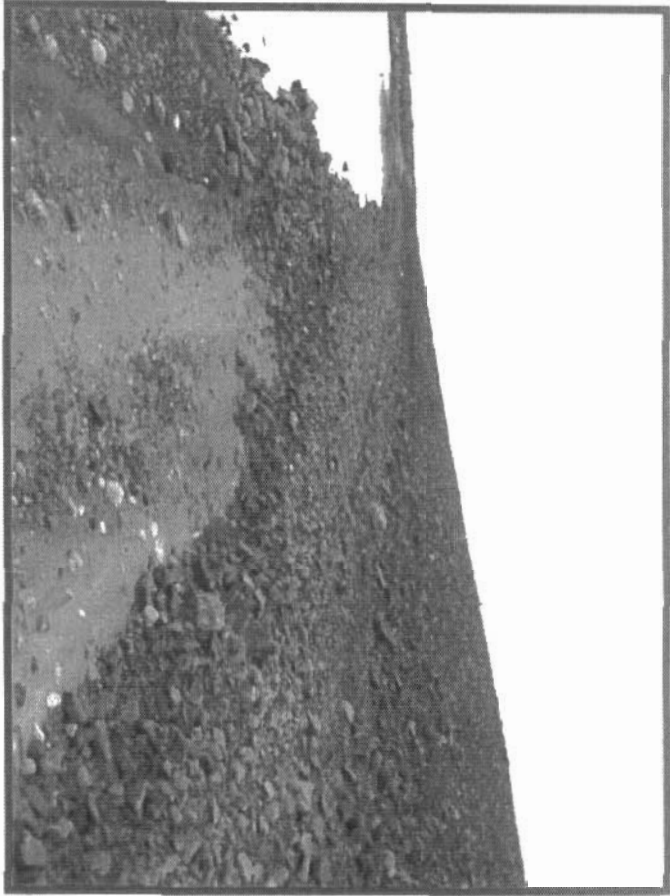


Photo 44 shows a view of the upstream side, taken from waterline perspective. As can be seen and has previously been noted, there are some small scarps at the transition from the light brown to the gray material.

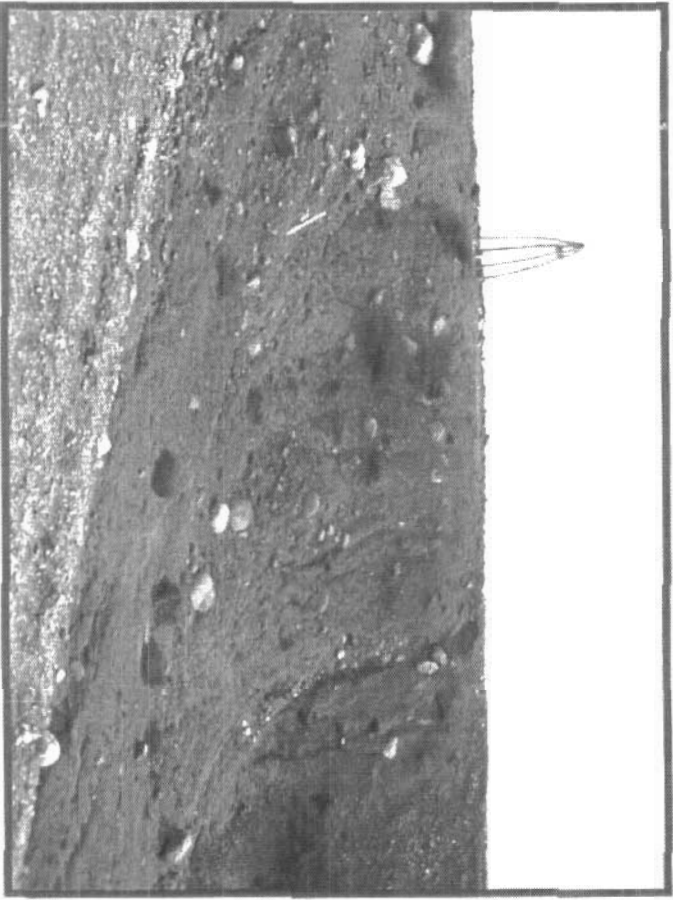


Photo 59 shows one significant erosional gully located on the downstream face at the north abutment.

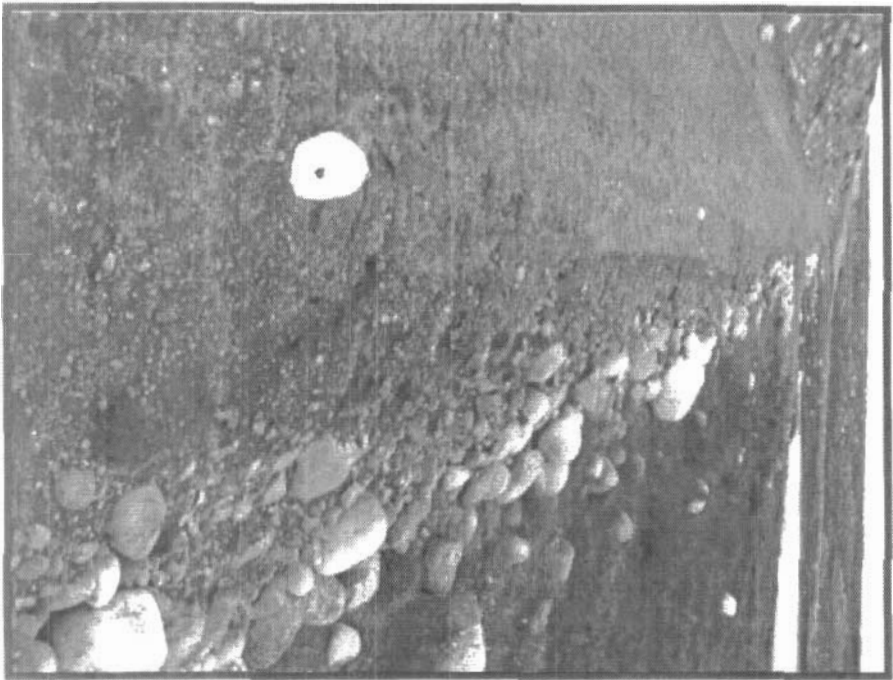


Photo 51 shows some minor cracking along the downstream toe. This cracking has been previously noted.

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PROJECT	Annual Inspection of Perimeter Tailings Dams
TITLE	Dam 2 Inspection Photos
PROJECT No	0256-004-02
DWG No	Figure 8
REV	

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Photo 137 Shows some boulders and cobbles that appear to have been placed in a low swale area. At the current time, the swale work is very disturbed and would likely be ineffective in transmitting any water. The material should be excavated and a proper swale should be laid out.

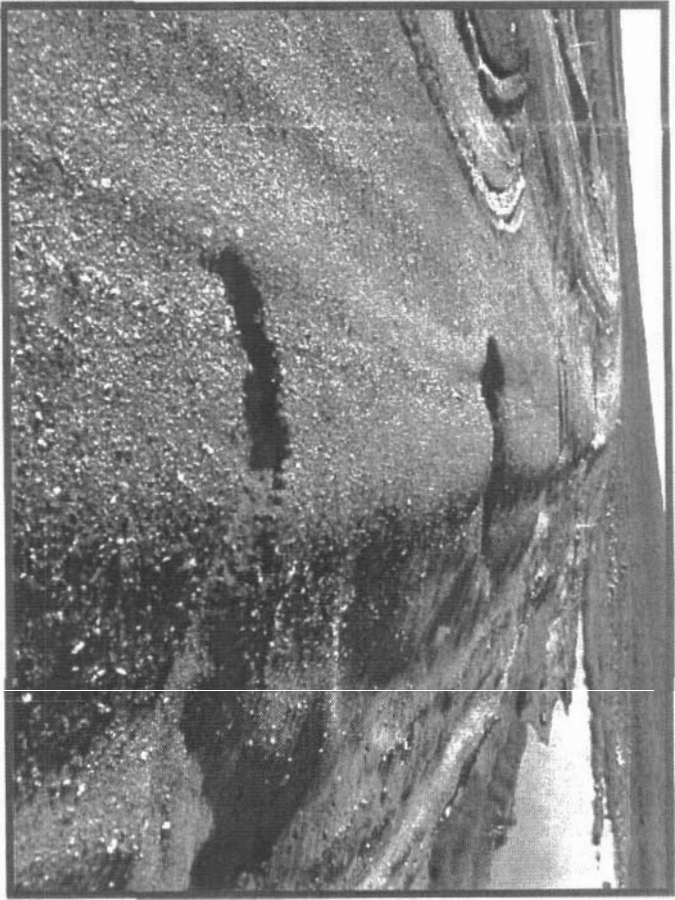


Photo 139 Shows the toe of this dam. There are 6 erosional gullies existing at the edge and progressing to the crest. Each of these gullies should be backfilled.

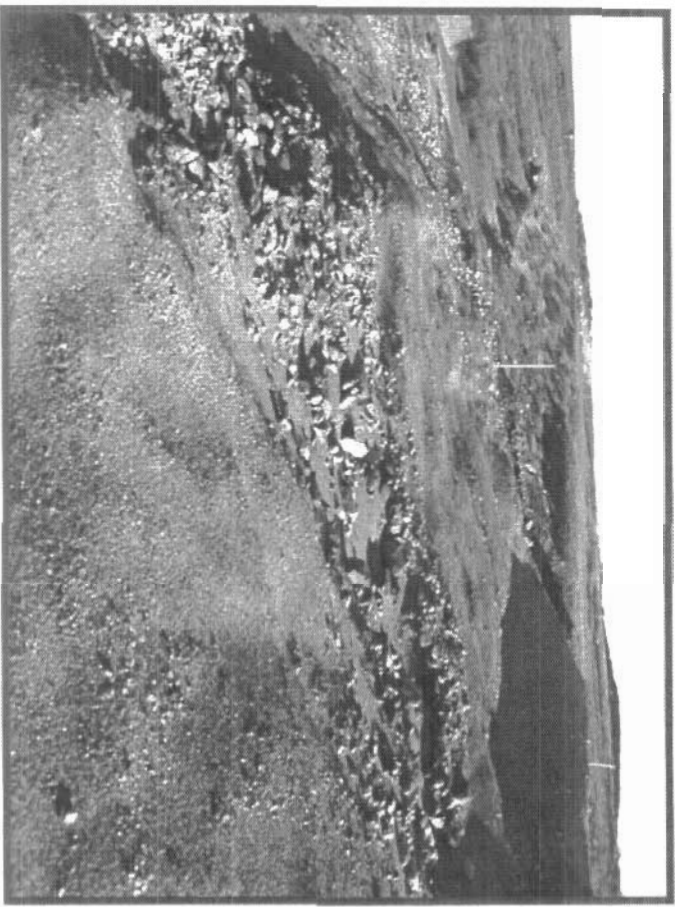


Photo 141 Shows a remnant erosional gully located at the toe.



Photo 142 Shows a number of tension cracks within this toe area. The cracks are discontinuous but can generally be observed over a distance of some 10 to 15 m.

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PROJECT	Annual Inspection of Perimeter Tailings Dams
TITLE	Dam 3 Inspection Photos
PROJECT NO	0256-004-02
DWG NO	Figure 9A
REV	



Photo 149 Shows the continuation of longitudinal cracks at the toe. In viewing the morphology and the color of the cracks, it appears that these cracks are opening over time.

Photo 152 Shows a view of the crest looking back towards the truck.



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DATE	Sept. 2002	CHECKED	JWC
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ECHO BAY MINES LTD.

BGC Engineering Inc.

AN APPLIED EARTH SCIENCES COMPANY

BGC

Calgary, Alberta.

Phone: (403) 250-5185

PROJECT

Annual Inspection of Perimeter Tailings Dams

TITLE

Dam 3 Inspection Photos

PROJECT No.

0256-004-02

DWG No.

Figure 9B

REV

0

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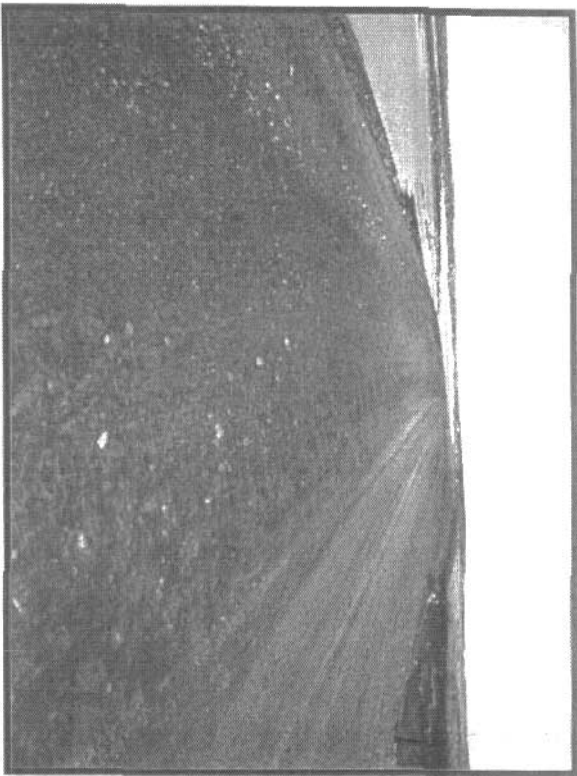


Photo 113 shows a view of the broad, well-travelled crest.

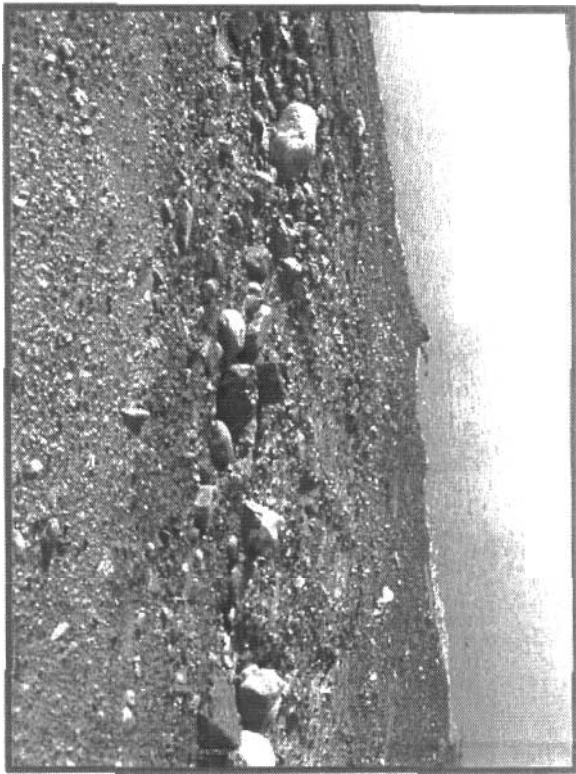


Photo 115 shows some of the disturbed area on the upstream side riprap. It appears that additional material has been placed on the crest and was graded over, perhaps to correct some of the earlier rutting caused by construction activity. The large number of boulders that have segregated out on the side of the fill to confirm appears that assumption.

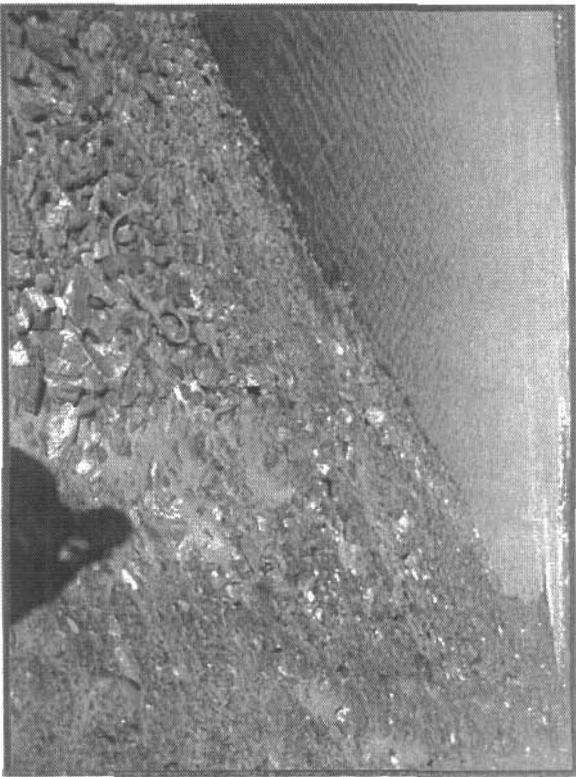


Photo 119 shows another view of the disturbed area on the upstream side, likely as a result of original construction activity.



Photo 121 shows a view of the relatively steep toe of this dam, followed by the flat graded area below the toe. No signs of sloughing or significant erosion are noted from this vantage point.

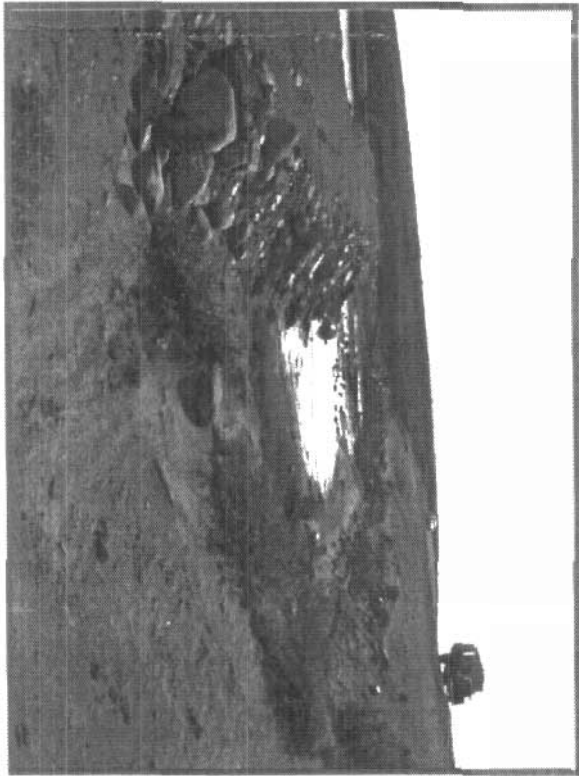


Photo 130 Shows the small pond which is located between the toe of Dam 4 and the small berm on the left of the photo. This area is pumped dry for the following two reasons: 1.) allow inspection of the downstream toe and 2.) to confirm the origin of the water in the pond.

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SCALE	N/A
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APPROVED	JWC

PROJECT	Annual Inspection of Perimeter Tailings Dams		
TITLE			
PROJECT No	DWG No	REV	
0256-004-02	Figure 10	C	
Dam 4 Inspection Photos			

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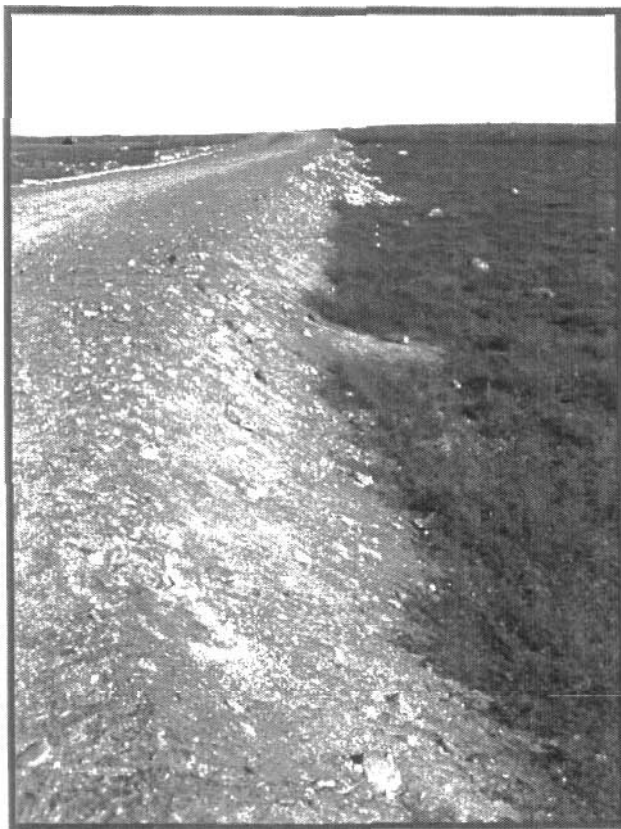
Calgary Alberta

Phone: (403) 250-5



Photo 107 is a view of the broad, well travelled crest looking towards the southeast.

Photo 111 shows a view of the downstream toe looking towards the southeast. There are no signs of cracking, deformation or seepage at the current time.



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SCALE	As shown	DESIGNED	JWC
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DRAWN	SLF	APPROVED	JWC

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ECHO BAY MINES LTD.

BGC

BGC Engineering Inc.

AN APPLIED EARTH SCIENCES COMPANY

Calgary, Alberta.

Phone: (403) 250-5185

PROJECT

Annual Inspection of Perimeter Tailings Dams

TITLE

Dam 5 Inspection Photos

PROJECT No

0256-004-02

DWG No

Figure 11

REV

0

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Eb ECHO BAY MINES LTD.

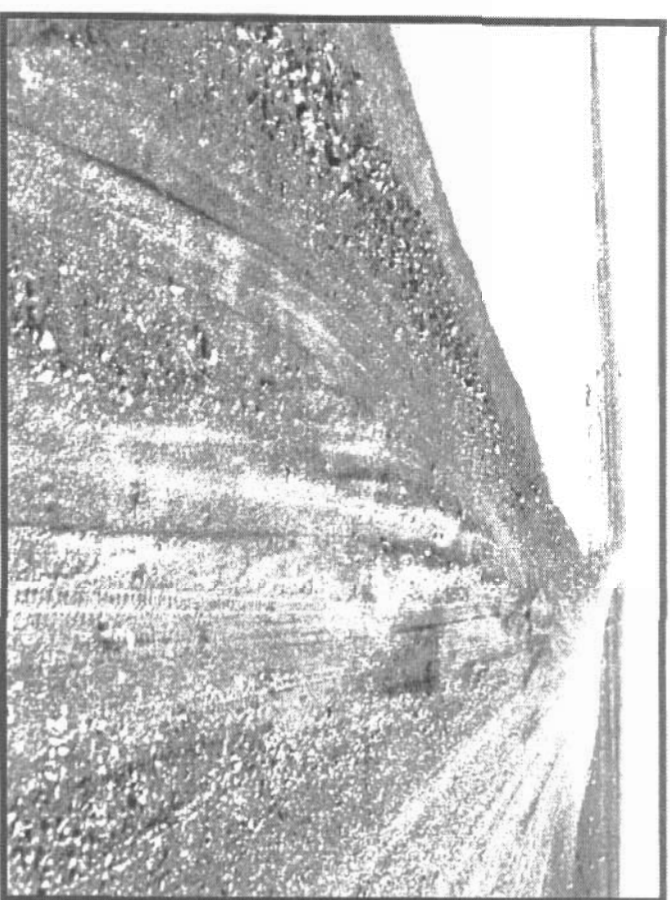


Photo 92 shows some rutting caused by vehicle traffic on the upstream side of the crest, towards its north abutment.



Photo 99 shows one minor sinkhole located near the downstream side of the crest. This sinkhole is located some 50 m north of the south abutment.

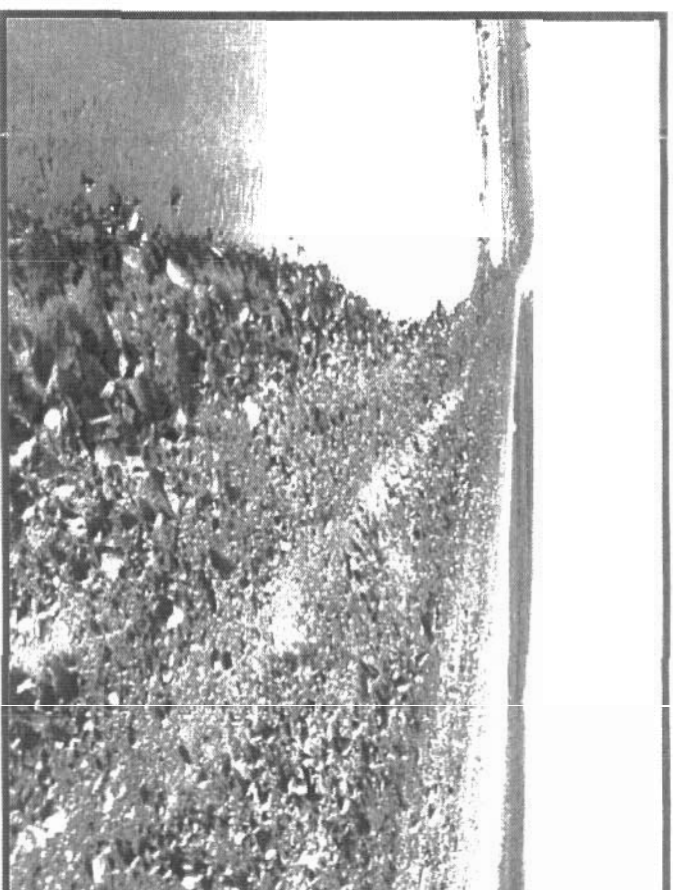


Photo 93 shows a view of the upstream side. From the pond level to the physical crest would be approximately 1.2 to 1.5 m.

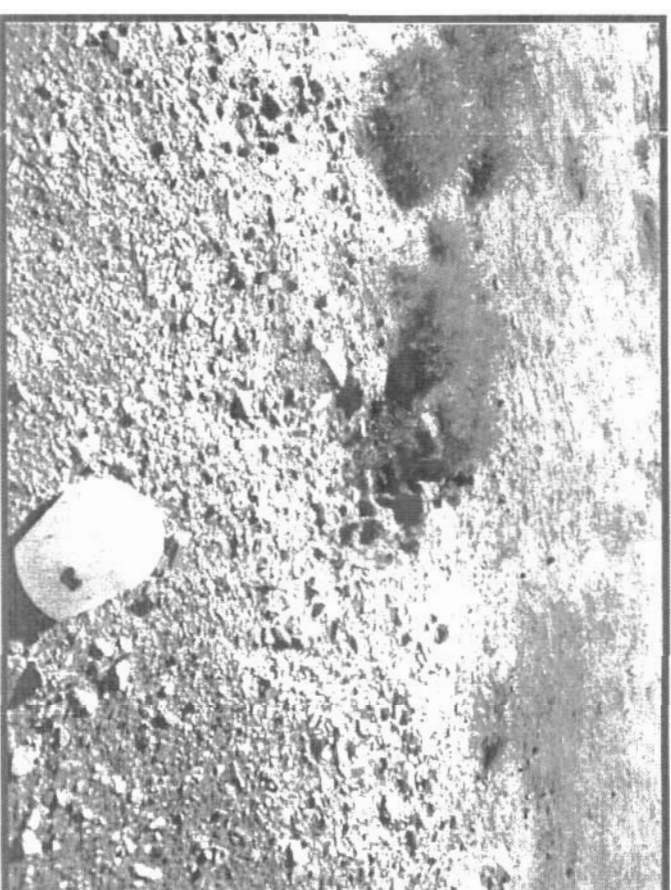


Photo 102 shows a significant erosional gully located on the downstream toe. This gully is located some 40 m south of the north abutment.

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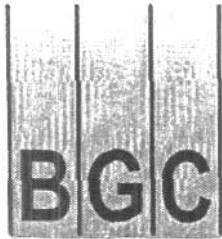
REV	DATE	REVISION NOTES	DRAWN	CHECKED	APPROVED

SCALE	N/A
DATE	September 2002
DRAWN	SLE
DESIGNED	JWC
CHECKED	JWC
APPROVED	JWC

PROJECT	Annual Inspection of Perimeter Tailings Dams
TITLE	Dam 6 Inspection Photos
PROJECT NO	0256-004-02
DWG NO	Figure 12

APPENDIX 1

SITE INSPECTION MEMO



BGC ENGINEERING INC.

AN APPLIED EARTH SCIENCES COMPANY

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

PROJECT MEMORANDUM

To:	Echo Bay Mines Ltd.	Fax No.:	provided at site
Attention:	Mr. Dave Hohnstein	CC:	none
From:	Mr. Jim Cassie, P.Eng.	Date:	August 13, 2002
Subject:	2002 Annual Inspection of Tailings Dams – Maintenance Requirements		
No. of Pages (including this page):	3 Pages	Project No:	0256-004-01

The following memo provides some comments on required maintenance, following the inspection of the tailings dams on August 12th and 13th, 2002.

External Dams

Dam 1A

- One small sinkhole situated on the crest that should be backfilled over.
- Some minor cracking and slumping is occurring adjacent to the erosional gullies previously formed adjacent to the siphon pipes at the downstream access road berm.
- No other maintenance suggested beyond these two issues.

Dam 1B

- No maintenance suggested.

Dam 1C

- No maintenance suggested.

Dam 2

- Minor erosional gulley on the downstream slope near the north abutment should be backfilled.
- Very small amount (<1 l/min) of seepage observed again at the toe of the north abutment. Continue to monitor seepage for any increases in quantity and to observe if seepage water contains any sediment.

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.

Dam 3

- An informal "swale", consisting of sand, gravel and cobbles, appears to have been constructed near the southeast corner to convey surface cell water to Boomerang Lake. The swale is poorly constructed and appears ineffective in conveying water to the toe of the dam. The swale should be reconstructed to properly convey water across the dam.
- Several remnant and possibly new erosional gullies were observed at the toe of the east arm. All of these gullies should be backfilled to prevent any further erosion from occurring.
- Several longitudinal and oblique tension cracks were noted along the toe of the eastern arm of the dam. The cracks should be graded over to prevent the infiltration of any surface water.
- The longitudinal tension cracks at the toe of the northwestern portion of the dam (where Dam 3 contacts Boomerang Lake) appear to opening more and perhaps lengthening in extent. It will be necessary to flatten the toe slope or apply some riprap to the downstream slope along where these cracks are located.

Dam 4

- Dozer /construction activity on the upstream side has disturbed the rip rap placement, exposing the underlying sand at some locations. Consideration should be given to regrading the materials to an overall consistent slope to prevent the concentration of surface runoff.
- No other maintenance is suggested.

Dam 5

- No maintenance is suggested.

Dam 6

- One minor sinkhole in the crest and one erosional gully at the toe (~40 m south of north abutment) should be backfilled and graded.
- No other maintenance is suggested.

Internal Dams

J-Dam

- High water level has resulted in erosion of the upstream face of the dam. The vertical scarp created is quite extensive and consideration should be given to regrading or protecting these eroded faces.

K-Dam

- The tailings beach on the upstream side has left very little "freeboard" to the dam crest should a significant precipitation event occurs. If pond drainage overtops the dam crest, significant erosion and possible failure of the dam could result. Measures should be taken to ensure that extreme precipitation events can be retained by the dam.
- Significant erosional scarps have formed at the toe of the downstream slope, due to the previous and current water levels of Pond #2. Regrading of this eroded toe and/or placement of protective rip rap should be undertaken to prevent further erosion leading to progressive slumping of the face.

BGC Memo

To: Dave Hohnstein

From: Jim Cassie

Date: August 13, 2002

Subject: 2002 Tailings Dam Inspection – Maintenance Items

Proj. No: 0256-004-01

M-Dam

- Significant cracking and settlement of the outer portion of the upstream face of the dam has occurred. The upstream slope needs to be flattened so that the cracking does not progress any further.

All of the noted work should be undertaken in the near future before snowfall occurs to prevent potential further damage from occurring.

Respectfully submitted,

BGC Engineering Inc.

per:

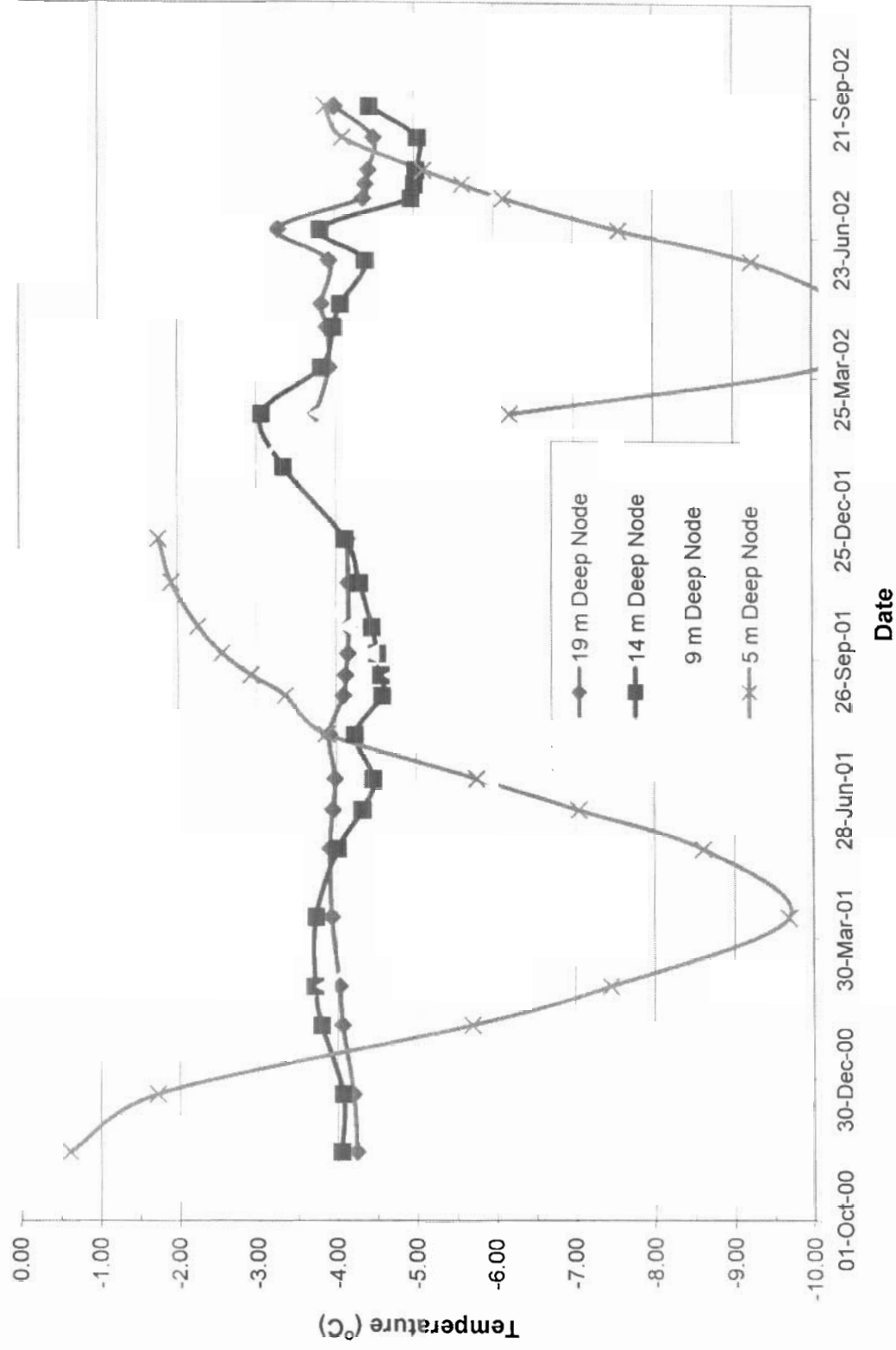
A handwritten signature in black ink, appearing to be 'J. Cassie', written over a light blue background.

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

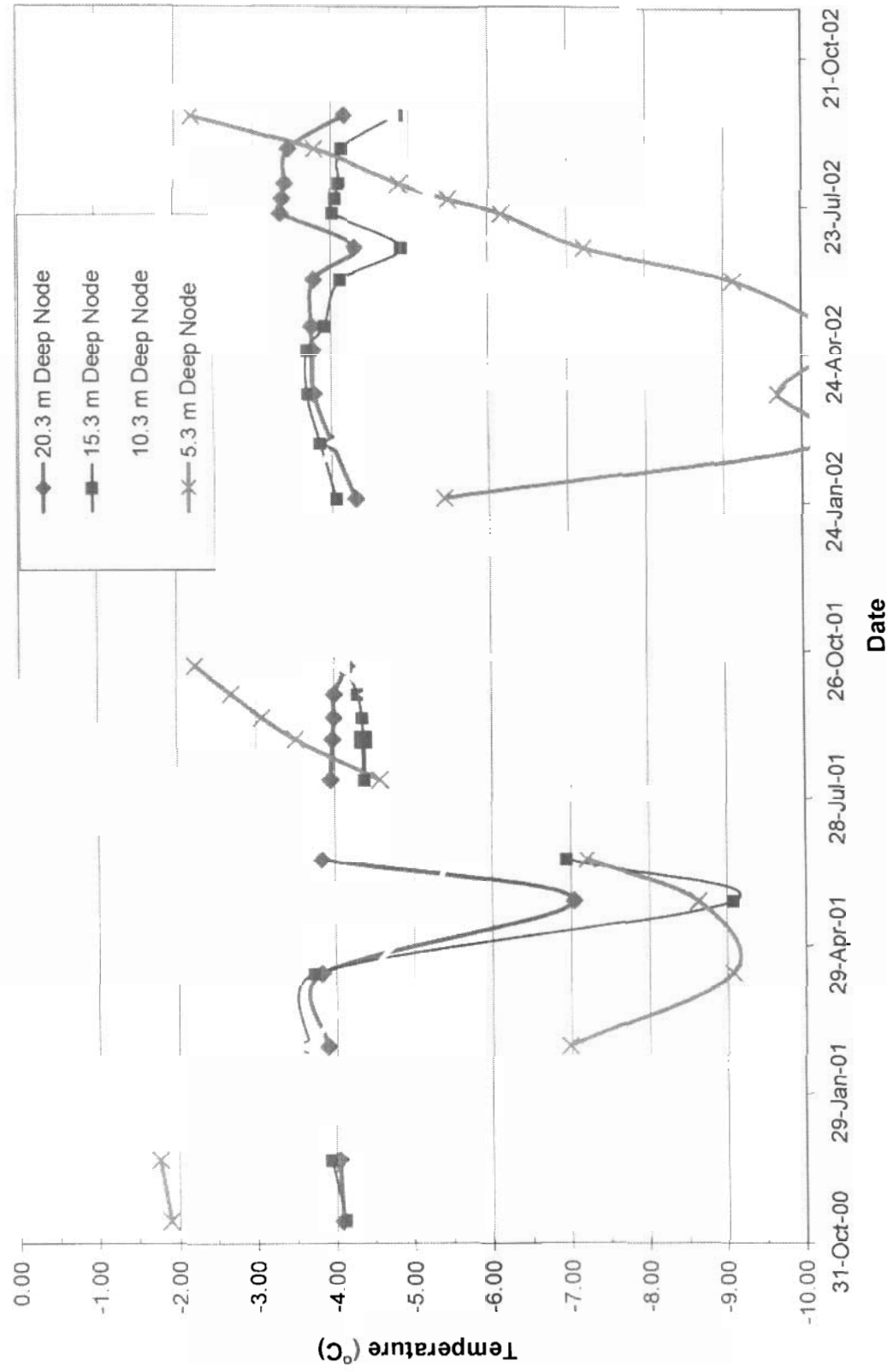
APPENDIX 2

THERMISTOR PLOTS FOR VARIOUS DAMS

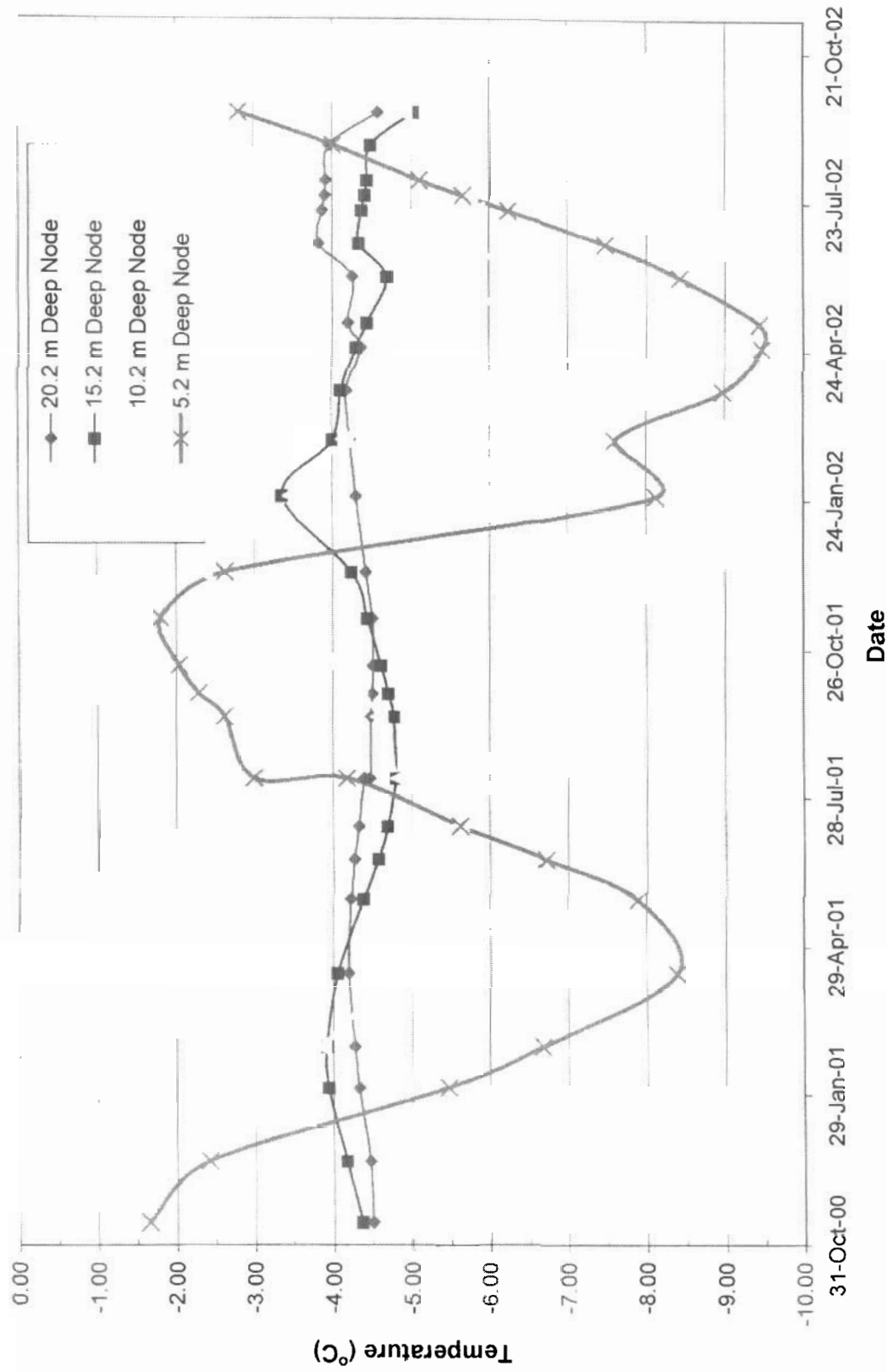
Long Term Plot for Deep Nodes in D1A-00-01
(Crest of Dam 1A, South End)



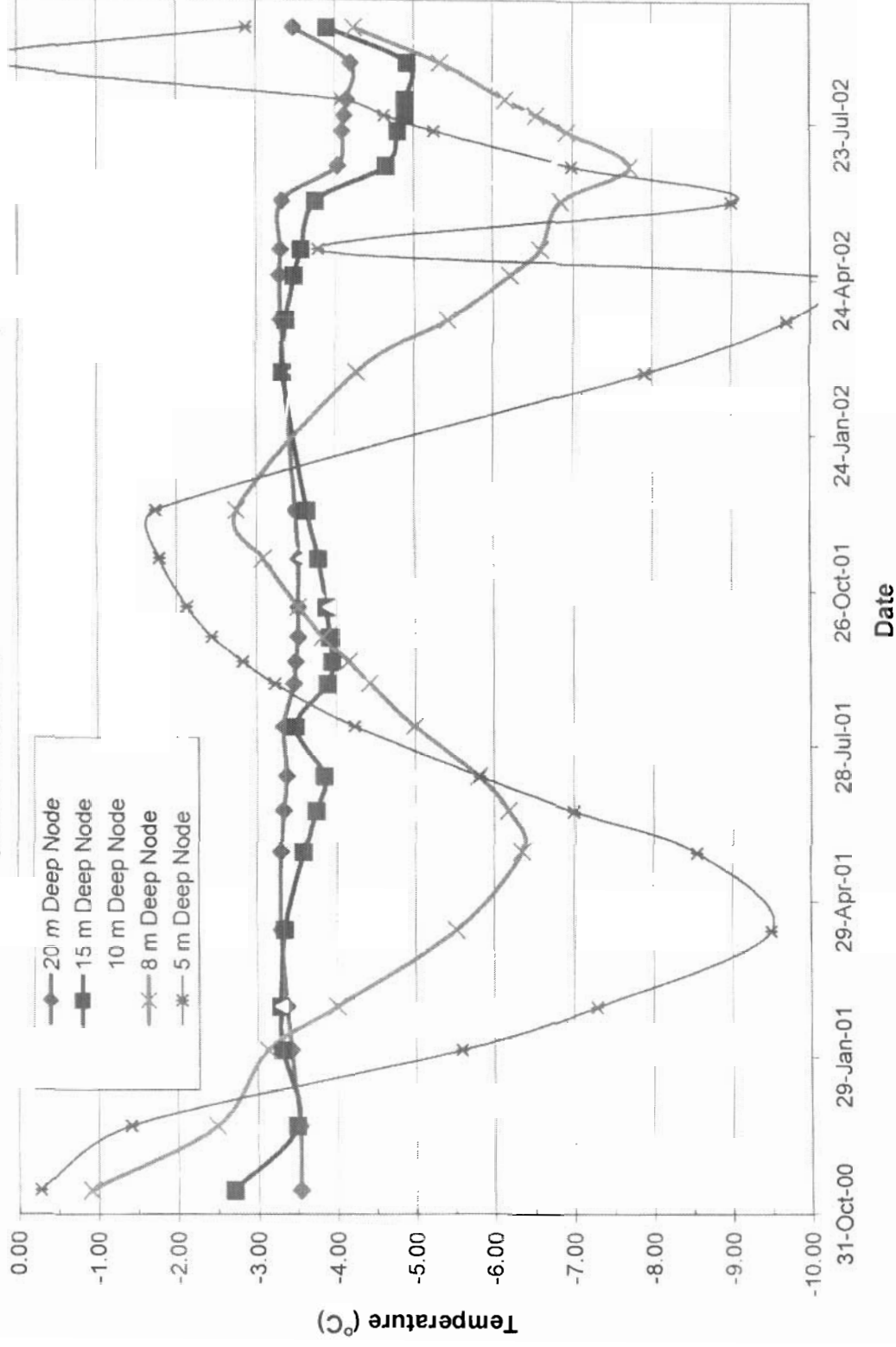
Long Term Plot for Deep Nodes at D1A-00-02
(Crest of Dam 1A, North End)



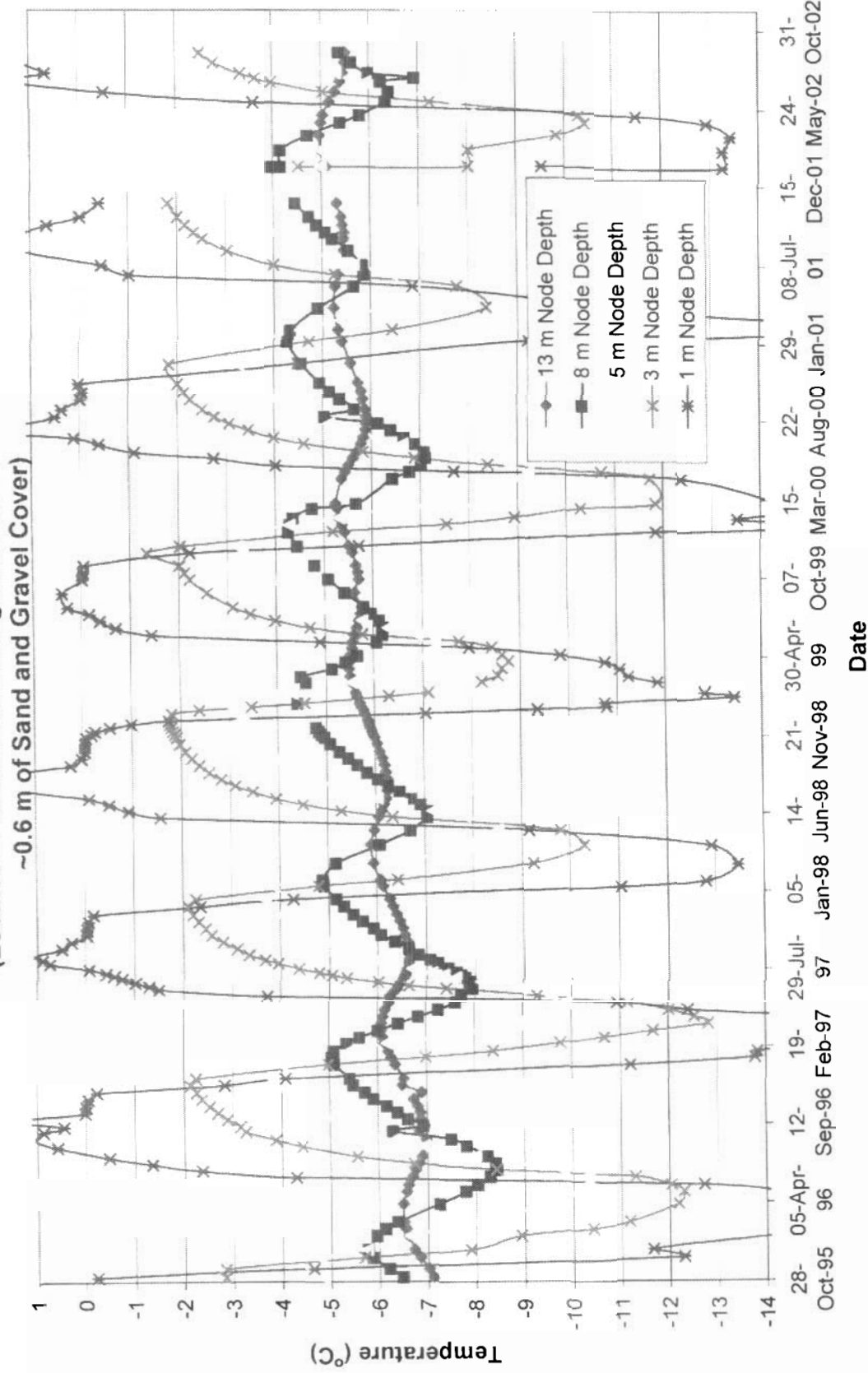
Long Term Plot for Deep Nodes in D2-00-2
(Downstream side of crest of Dam 2, north end)



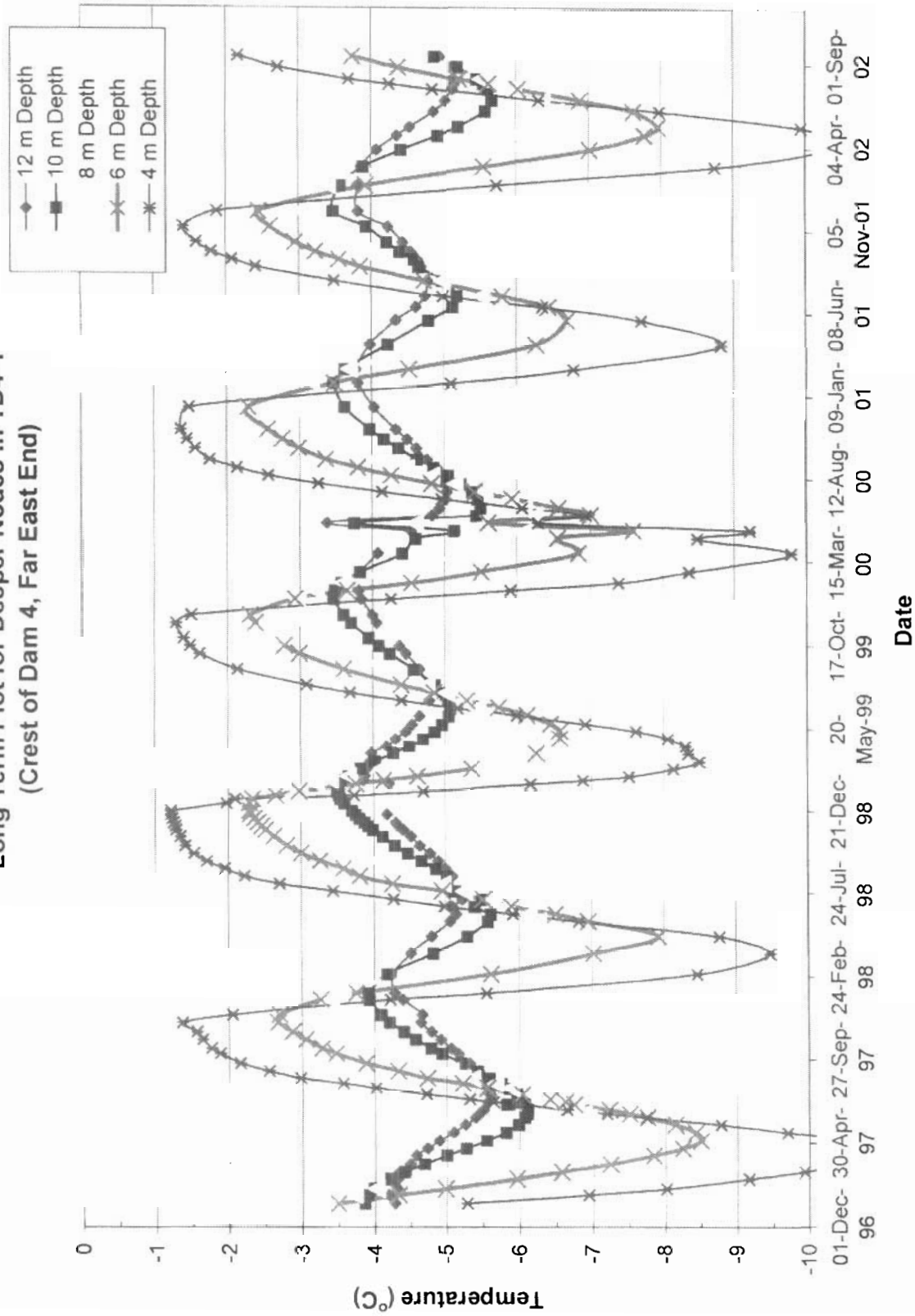
Long Term Plot for Deep Nodes on D2-00-3
(Crest of Dam 2, mid to north end of dam)



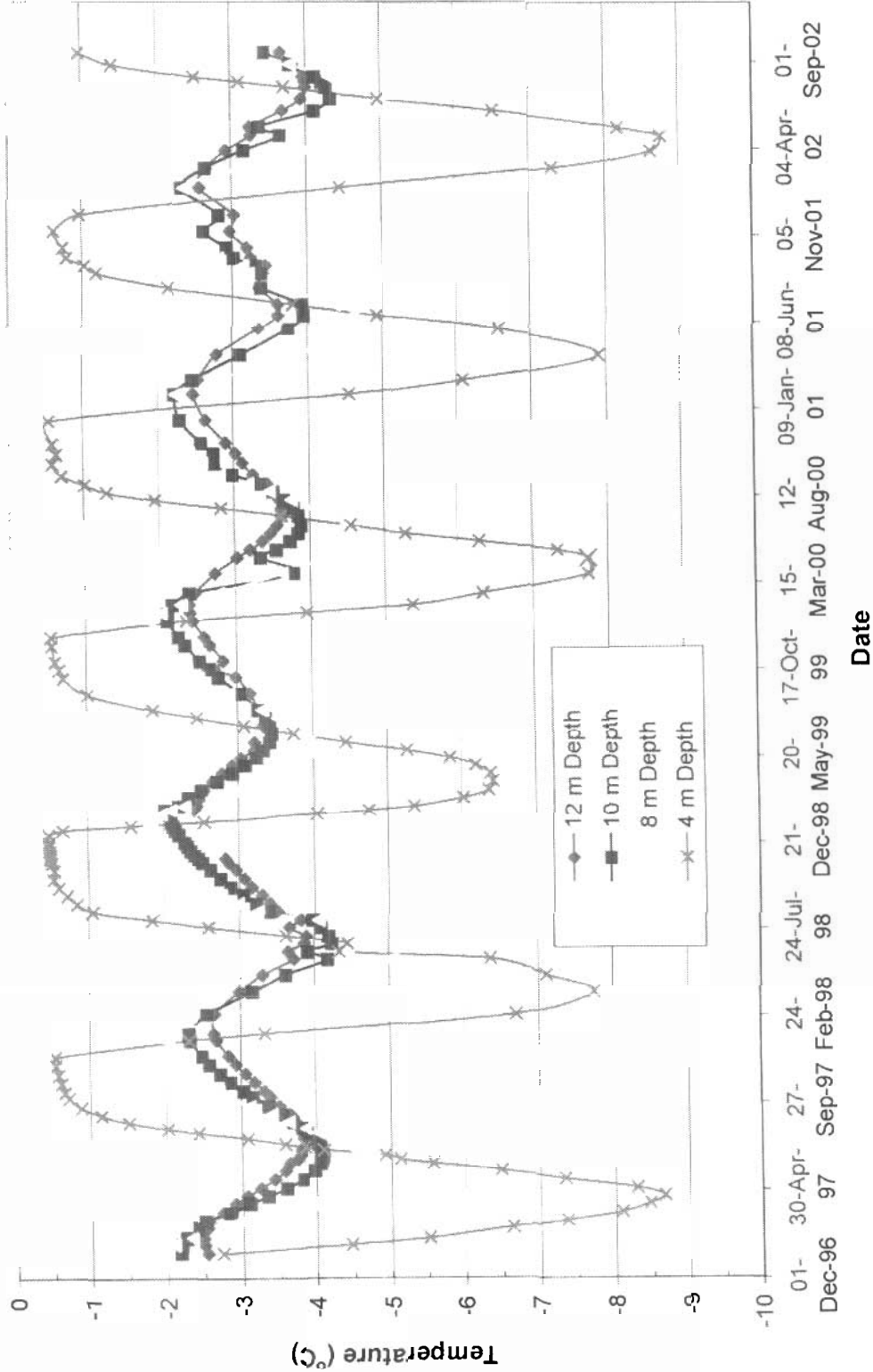
Long Term Plot for Nodes in TC1-3
(Located in Reclaimed Tailings Area in Cell 1 with
~0.6 m of Sand and Gravel Cover)



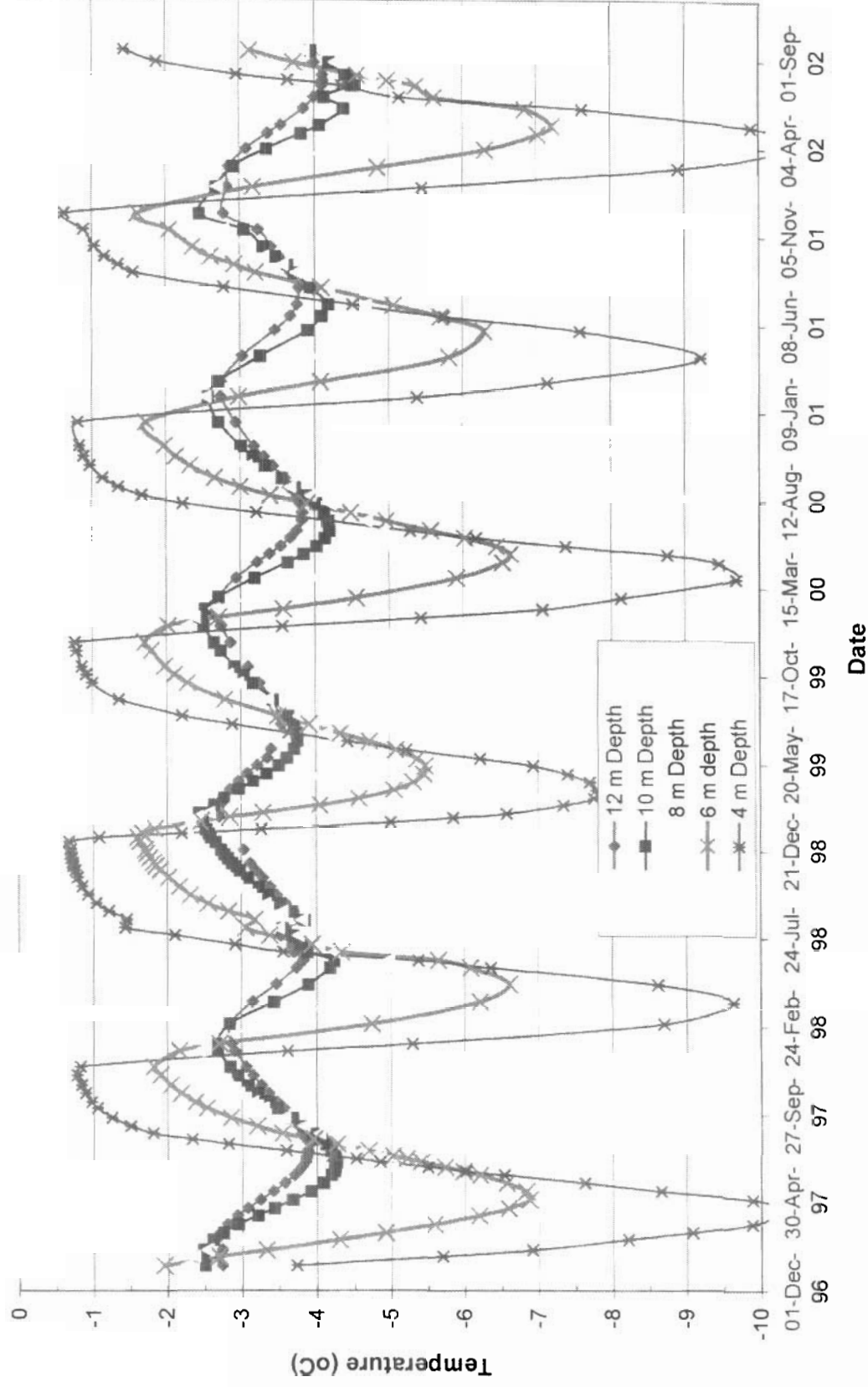
Long Term Plot for Deeper Nodes in TD4-1
(Crest of Dam 4, Far East End)



Long Term Plot for TD4-2
(Crest of Dam 4, East End, West of TD4-1)



Long Term Plot for TD4-3
(Crest of Dam 4, West End, Just East of TD4-4)



Long Term Plot for TD4-4
(Crest of Dam 4, Far West End)

