

LOWER SEWAGE CONTAINMENT POND DIKE

LOCATION:	Along access road through landfill and bone-yard area, approximately 0.8 km from the Lupin Mine complex. Small Lake retained by dike referred to as Chaffee Lake on mine site plan. Lake elevation provided as 472 m.
FUNCTION:	Provides secondary retention of sewage effluent discharged from the Upper Sewage Lake, before discharge to the environment.
LENGTH:	150 +/- m
MAX HEIGHT:	3 +/- m above d/s toe.
AS-BUILT ELEVATION:	473.73 m provided on site plan. Low point elevation should be confirmed with a survey.
CREST WIDTH AND CONDITION:	Approximately 14 m wide. Crest is well-travelled in central portion and in good condition, no cracking evident. Some dark grey crushed fill has been placed where some settlement of the upstream shell has occurred.
UPSTREAM SLOPE AND RIPRAP:	Slope sitting at approximately 1.5H:1V to 2H:1V. Rip rap placed on the upstream side varies from 7.5 to 20 cm in diameter. Grasses have begun to grow where organic material has been deposited on the upstream face. Minor erosion noted in places.
BACKSLOPE:	About 1.5H:1V to 2H:1V with no evidence of cracking.
WATER CONVEYANCE:	Plan for the dike notes "gated culvert" to discharge water but could not be observed during site inspection. One 0.2 m diameter siphon pipe was discharging pond water to the downstream toe.

LOWER SEWAGE CONTAINMENT POND DIKE CONTINUED

SEEPAGE:

No seepage was observed. Several small ponds of standing water were noted at the toe but this water may have resulted from local accumulation of rainfall, rather than being indicative of seepage. One minor runoff "trench" noted at the toe that may have resulted from seepage and/or near surface runoff.

MAINTENANCE

RECOMMENDATIONS:

No design or as-built information is currently available for the dike. It appears to be constructed from esker sand and gravel directly placed on native material. Need to investigate dike design and whether embankment section includes a geosynthetic liner and role of gated culvert in conveying water. Monitor toe area for seepage during periods of high pond levels.

CONCLUSIONS:

The dike is in satisfactory condition. Monitor for seepage when retained pond levels are higher.

7. CLOSURE

We trust the enclosed meets your present requirements and we thank Kinross Gold Corporation, Echo Bay Division, for the opportunity to be of service at Lupin Mine. If you have any questions or require additional information, please contact the undersigned.

Respectfully submitted,
BGC ENGINEERING INC.

per:

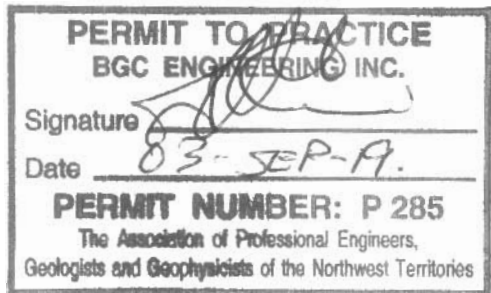


James W. Cassie, M.Sc., P.Eng.
Specialist Geotechnical Engineer

Reviewed by:

A handwritten signature in cursive script, reading "H. Hartmaier".

Holger H. Hartmaier, M.Eng., P.Eng.
Senior Geotechnical Engineer



REFERENCES

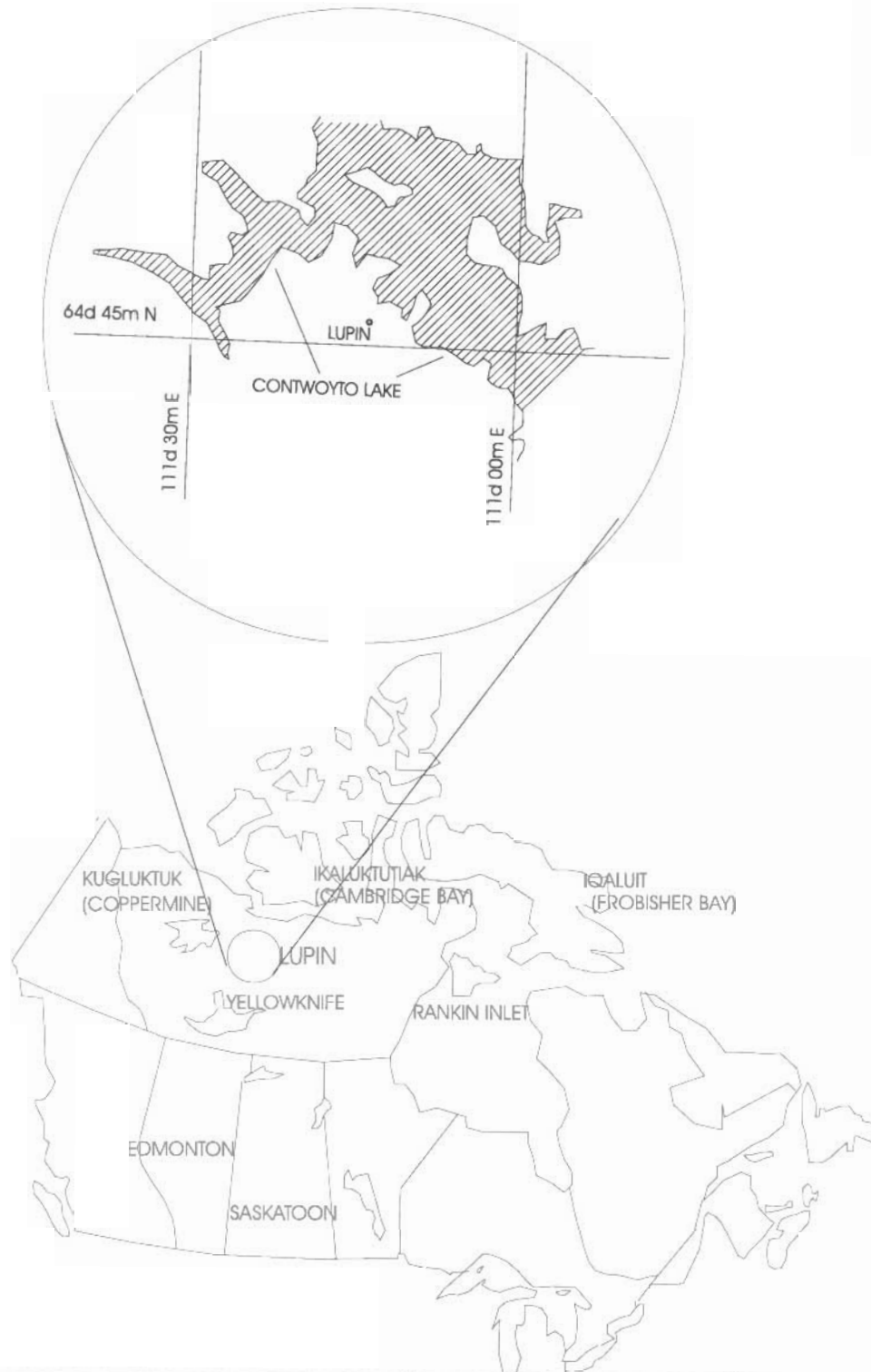
BGC Engineering Inc. 2000. Thermistor Installation Program, Dam 1A, Dam 2, M Dam, Cell 1 and Esker, Lupin Mine, Nunavut. Report submitted to Echo Bay Mines Ltd., Project No. 0256-002-01, December 11, 2000, 7 pages plus figures and appendices.

BGC Engineering Inc. 2003. Dam 6 Site Investigation and Raise Design, Lupin Mine, Nunavut. Report submitted to Kinross Gold Corporation, Project No. 0256-006, July 25, 2003, 31 pages plus figures and appendices.

Geocon Inc. 1982. As-Built Tailings Containment Area, Lupin Project. Report submitted to Echo Bay Mines Ltd., Project No. A1207 / 01186-3, December 15, 1982, 26 pages plus figures and appendices.

Golder Associates Ltd. 1992. 1992 Perimeter Dam Construction Drawings. Issued for tender to Echo Bay Mines Ltd., February 1992, 4 sheets.

FIGURES



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.

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DATE:	Sept. 2003	CHECKED:	JWC
DRAWN:	SLF	APPROVED:	JWC

CLIENT: **KINROSS**
Gold Corporation



BGC Engineering Inc.

AN APPLIED EARTH SCIENCES COMPANY

Calgary, Alberta.

Phone: (403) 250-5185

PROJECT Annual Inspection of Perimeter Tailings Dams		
TITLE Lupin Mine Location Map		
PROJECT No.	DWG. No.	REV.
0256-007-01	Figure 1	0

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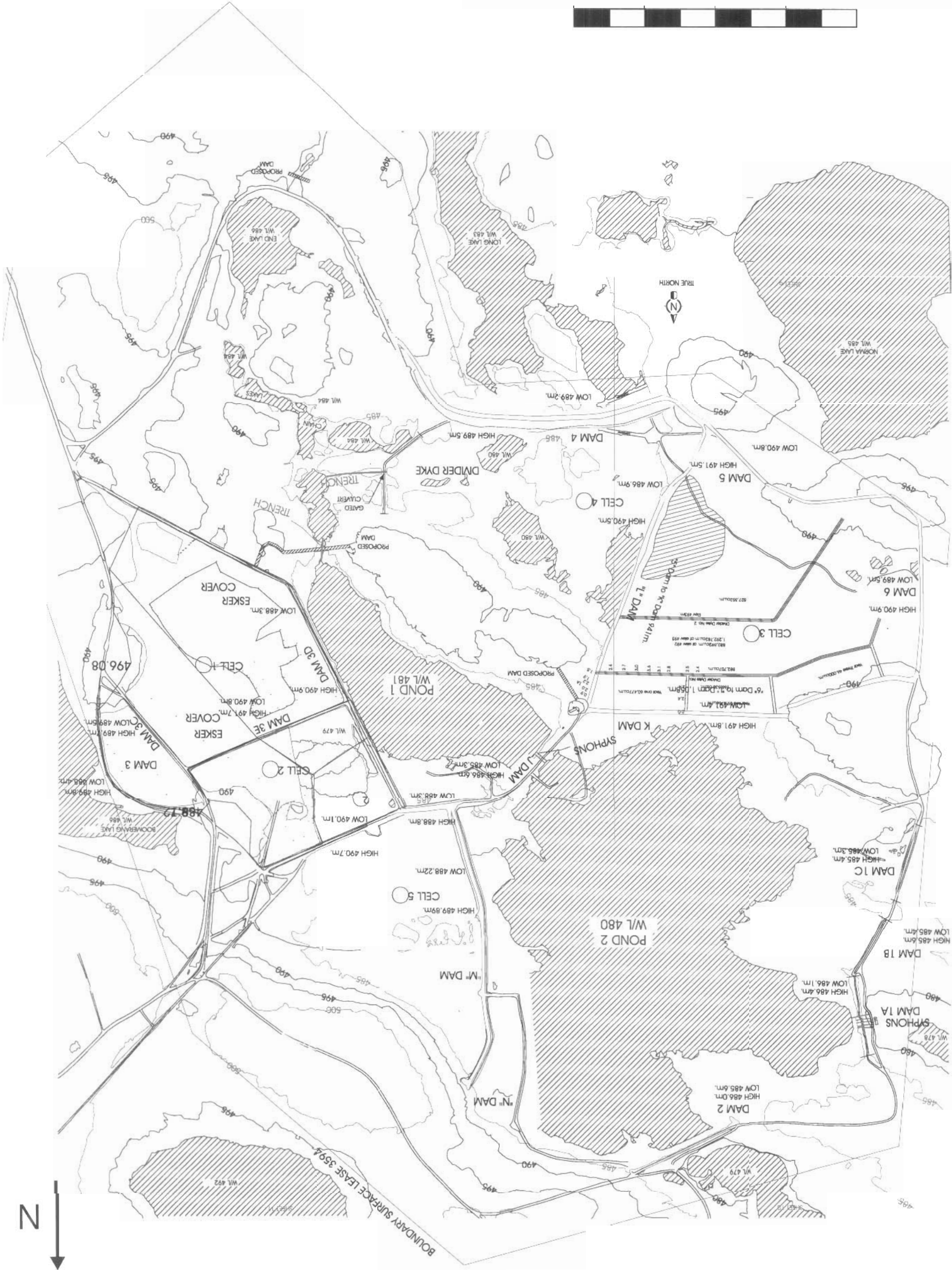
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DATE: SEPT. 2003
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APPROVED: JWC

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BGC Engineering Inc.
Category: Alberta Phone: (403) 260-6188

PROJECT: Annual Inspection
of Perimeter Tailings Dams
TITLE: Tailings Containment Area Plan
PROJECT NO.: 0256-007-01
FIGURE No: Figure 2
REV: 0.

Note:
Scale is approximate.

0 m 200 m 400 m 600 m 800 m

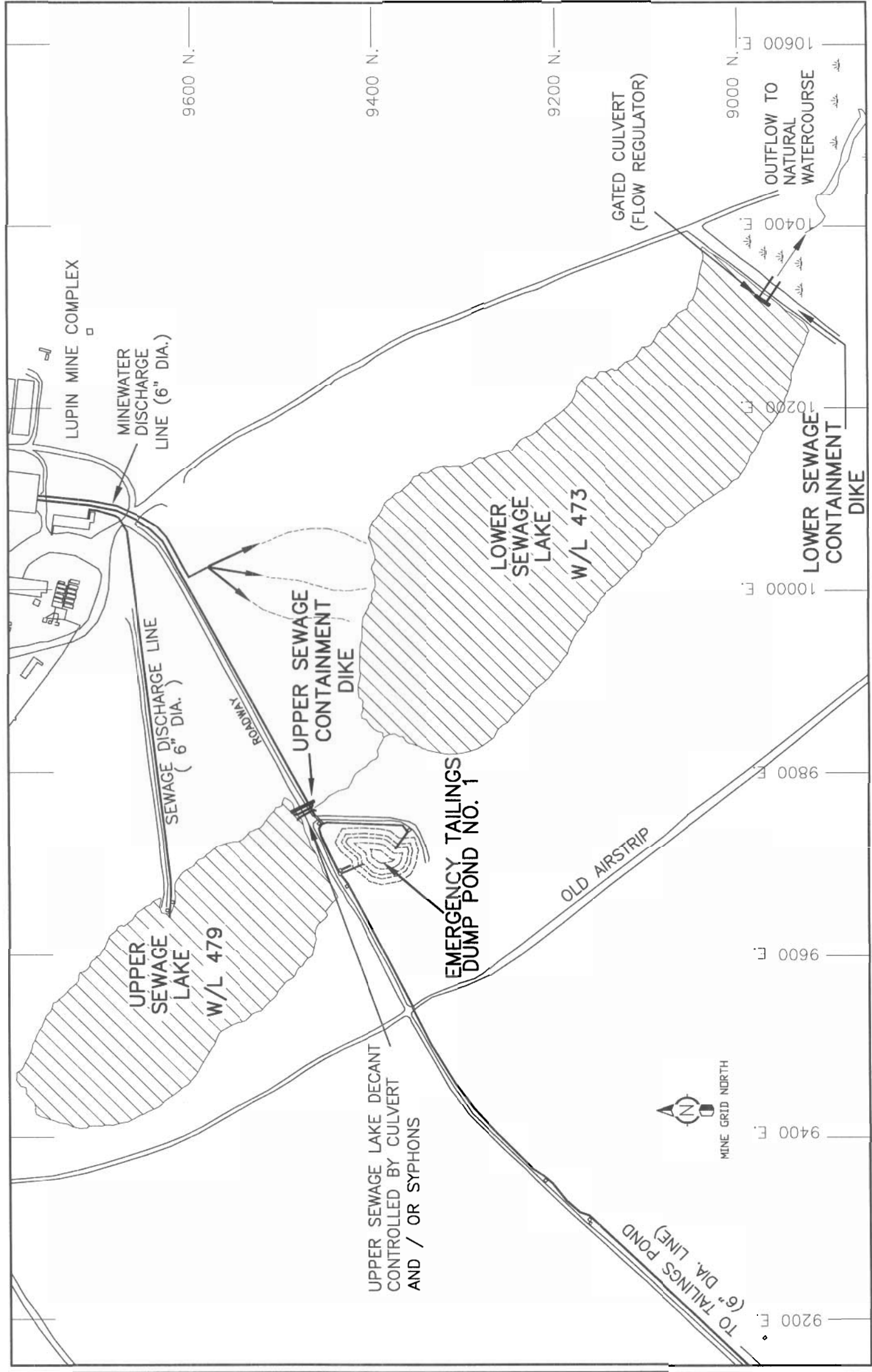


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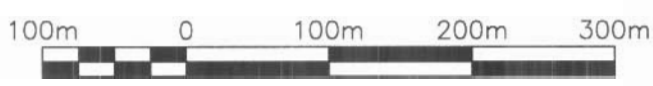
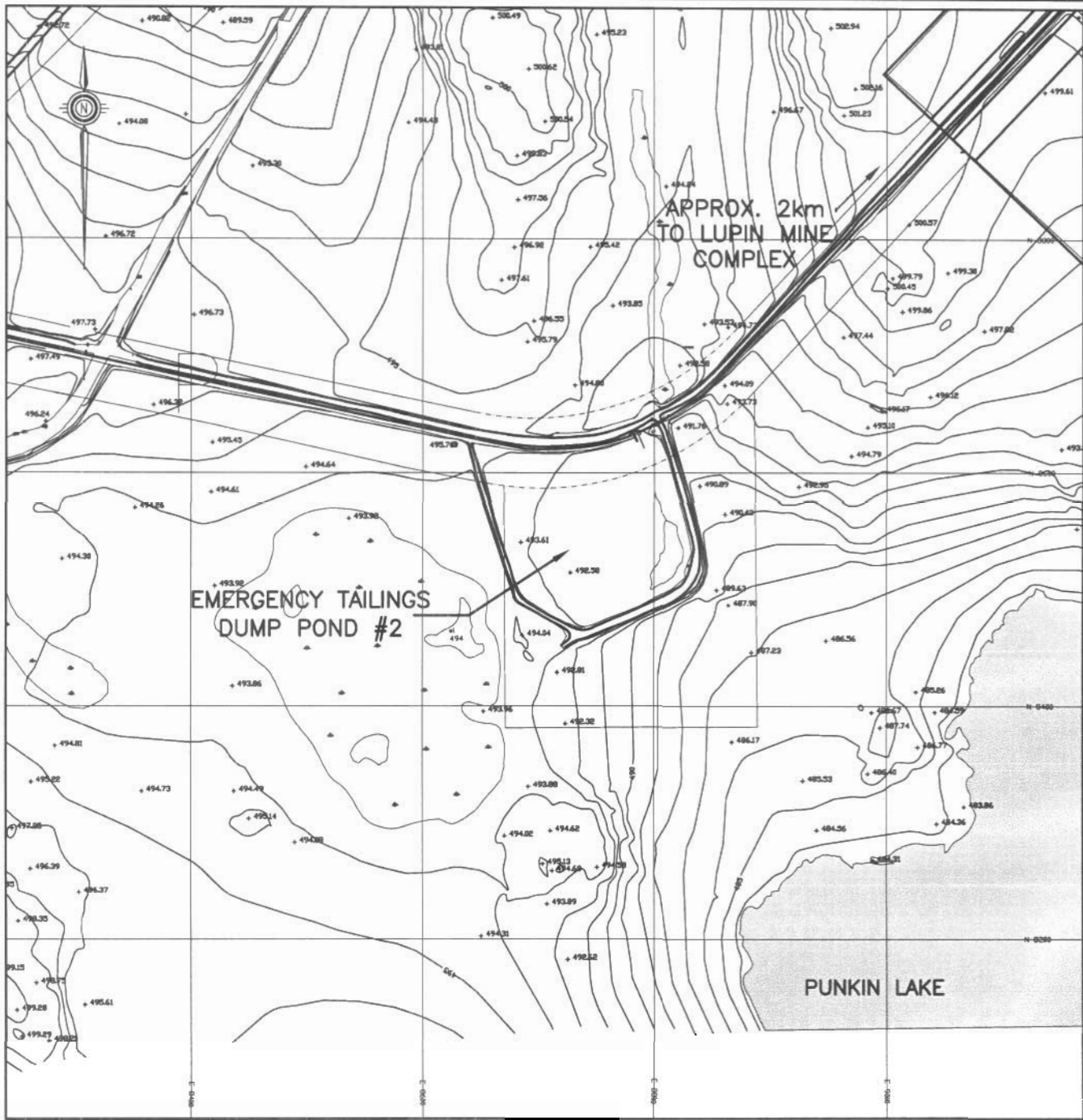
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DRAWN:	CT
DESIGNED:	GC
CHECKED:	GC
APPROVED:	JWC

PROJECT	ANNUAL INSPECTION OF PERIMETER TAILINGS DAMS		
TITLE	EMERGENCY TAILINGS DUMP POND #1 AND SEWAGE CONTAINMENT AREA PLAN		
PROJECT No.	0256-007-01	DWG No.	FIGURE 3
REV.	0		



- NOTES:
- 1. DRAWING DERIVED FROM LUSEW90.dwg PROVIDED BY LUPIN DAM.
 - 2. GRID SHOWN IS MINE GRID.



- NOTES:
1. DRAWING DERIVED FROM SHT12.dwg PROVIDED BY LUPIN MINE.
 2. GRID SHOWN IS MINE GRID.

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DRAWN:	CJT	APPROVED:	JWC

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PROJECT: ANNUAL INSPECTION OF PERIMETER TAILINGS DAMS

TITLE: EMERGENCY TAILINGS DUMP POND #2 PLAN

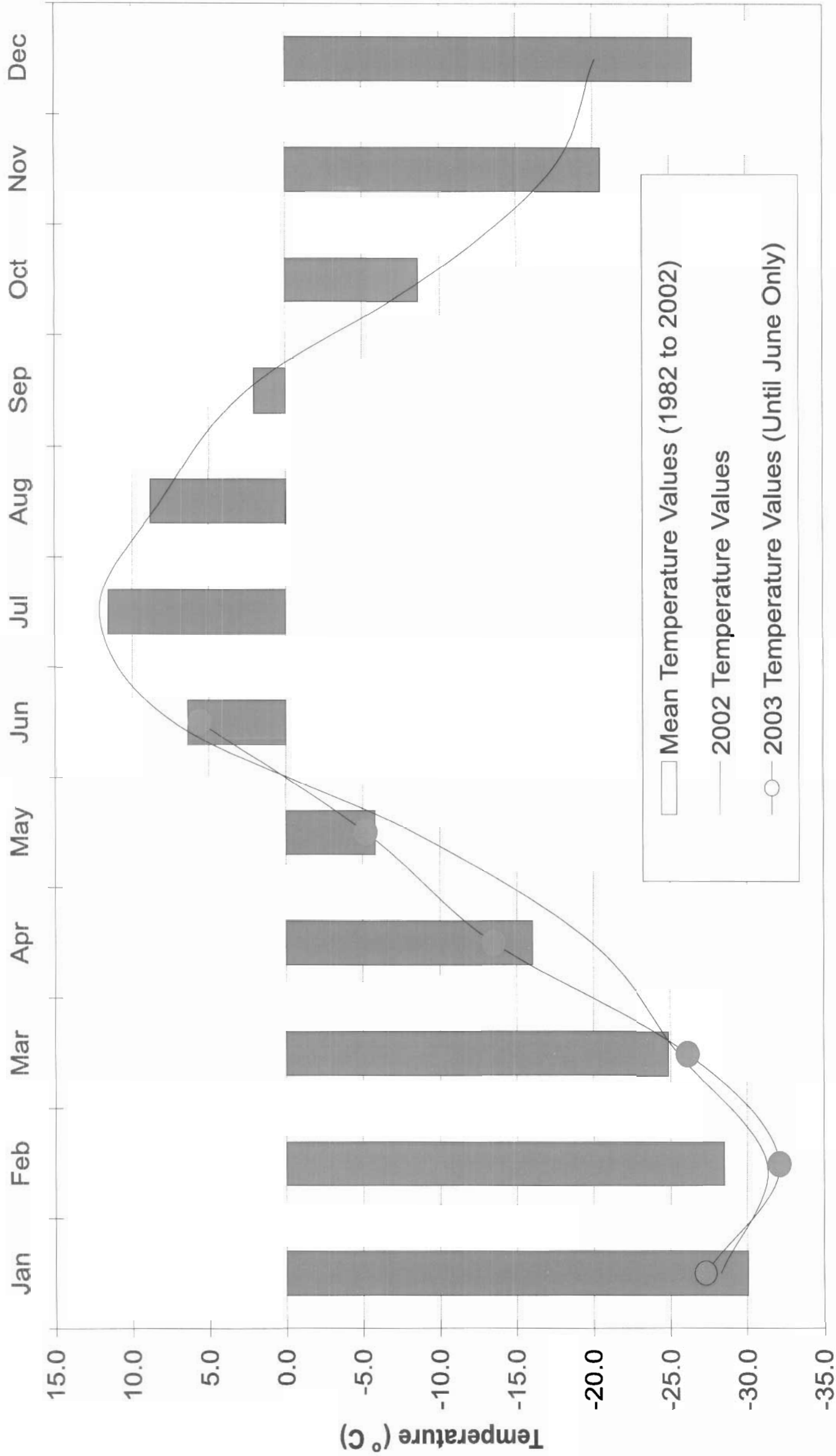
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Gold Corporation

PROJECT No.
0256-007-01

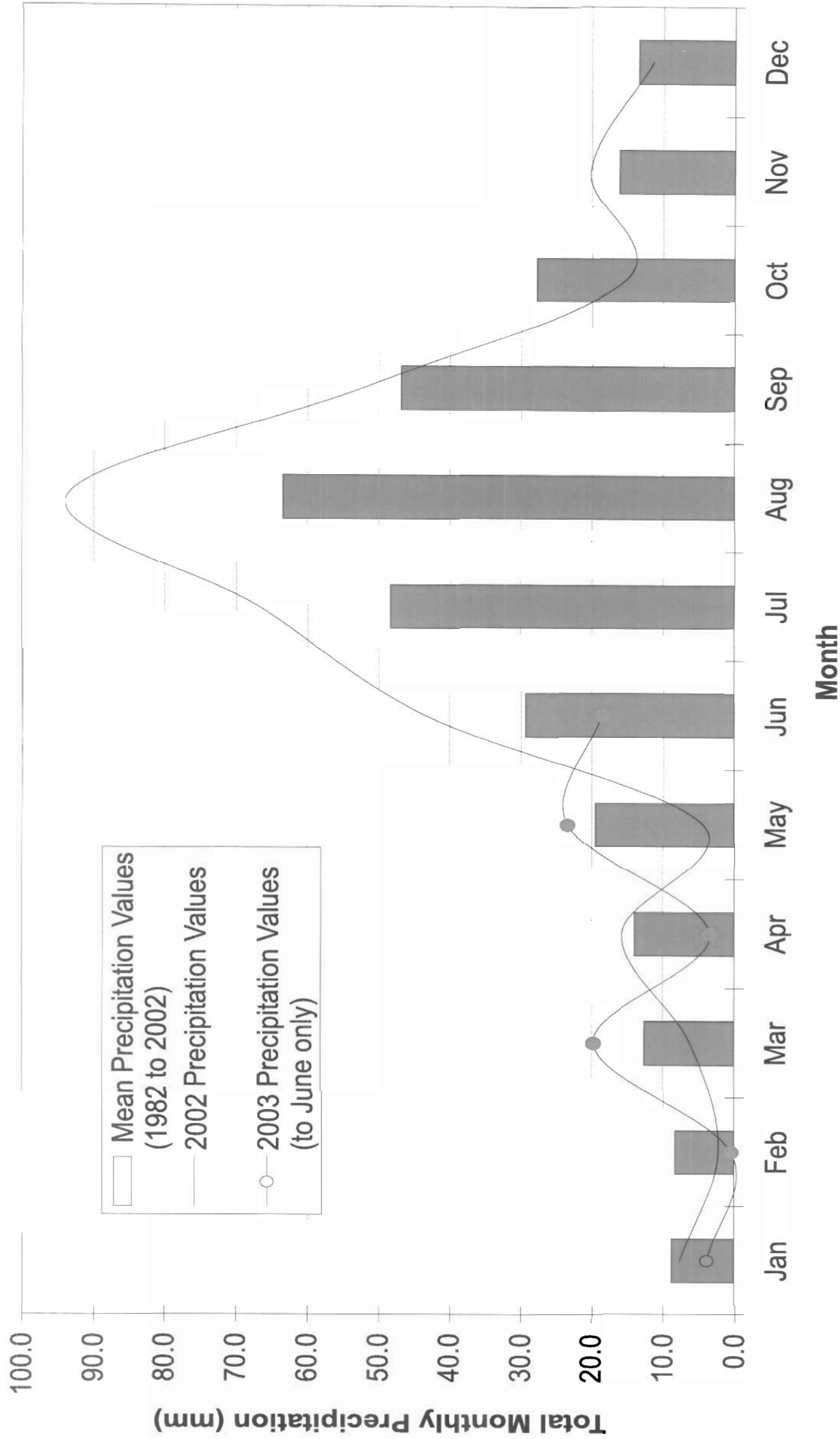
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FIGURE 4

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0256-007-01 002 FIGURE_4.dwg



DATE: Sept. 2003		DRAWN	SLF	PROJECT Annual Inspection of Perimeter Tailings Dams	
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 Comparison of Monthly Temperature Means to 2002 & 2003	REV. 0
BGC BGC ENGINEERING INC. AN APPLIED EARTH SCIENCES COMPANY Calgary, Alberta Phone: (403) 250-5185				PROJECT No. 0256-007-01	DWG. No. Figure 5
CLIENT				KINROSS Gold Corporation	



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CLIENT BGC AN APPLIED EARTH SCIENCES COMPANY Calgary, Alberta Phone: (403) 250-5185		PROJECT No. 02576-007-01		DWG. No. Figure 6	REV. 0

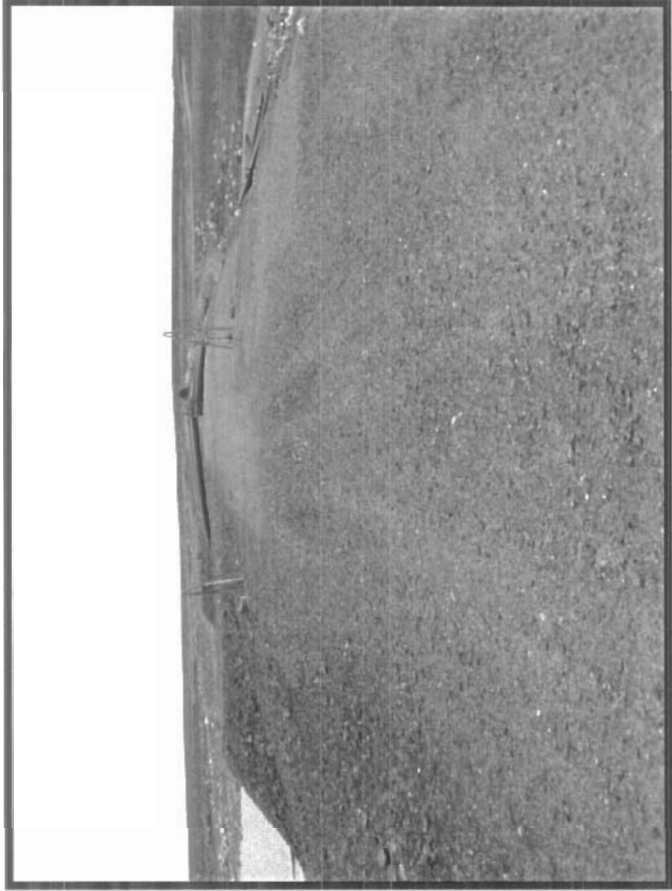


Photo 71 shows the crest of Dam 1A looking towards the south.

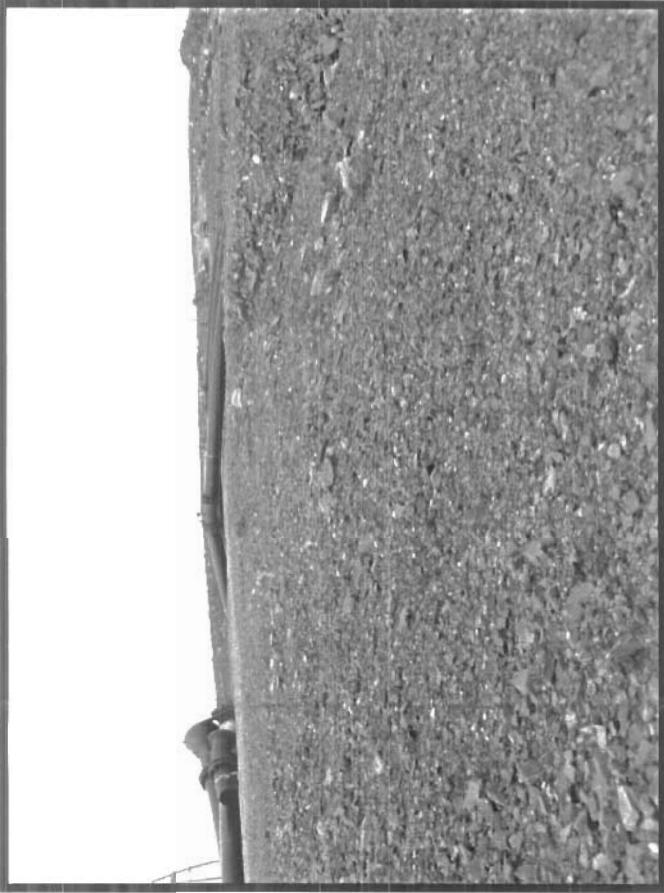


Photo 74 shows a small area on the upstream side that is proximal to the crest, that appears to have some small little scarps in it.



Photo 78 shows some minor cracking and minor settlement within the dark grey angular rockfill placed at the crest edge. This is a result of the relatively oversteepened toe directly proximal to the valve locations.

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SCALE:	N/A
DATE:	September 2003
DRAWN:	SLF
DESIGNED:	GKC
CHECKED:	GKC
APPROVED:	JWC

PROJECT	Annual Inspection of Perimeter Tailings Dams
TITLE	Dam 1A Inspection Photos
PROJECT No.	0256-007-01
DWG. No.	Figure 7
REV	0

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PROJECT No.	0256-007-01
DWG. No.	Figure 8
REV.	0
TITLE	Dam 1B Investigation Photos
PROJECT	Annual Inspection of Perimeter Tailings Dams

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Photo 84 is a view along the toe access road berm on the downstream side. There are no major signs of erosion on the downstream face.

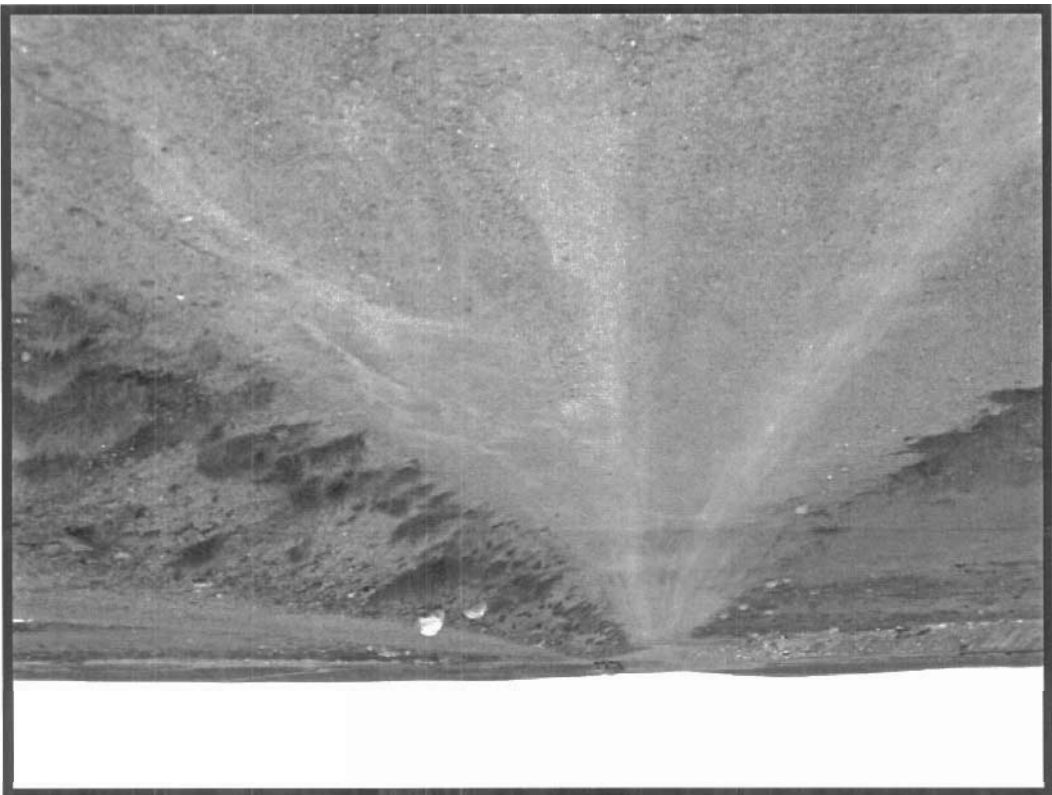
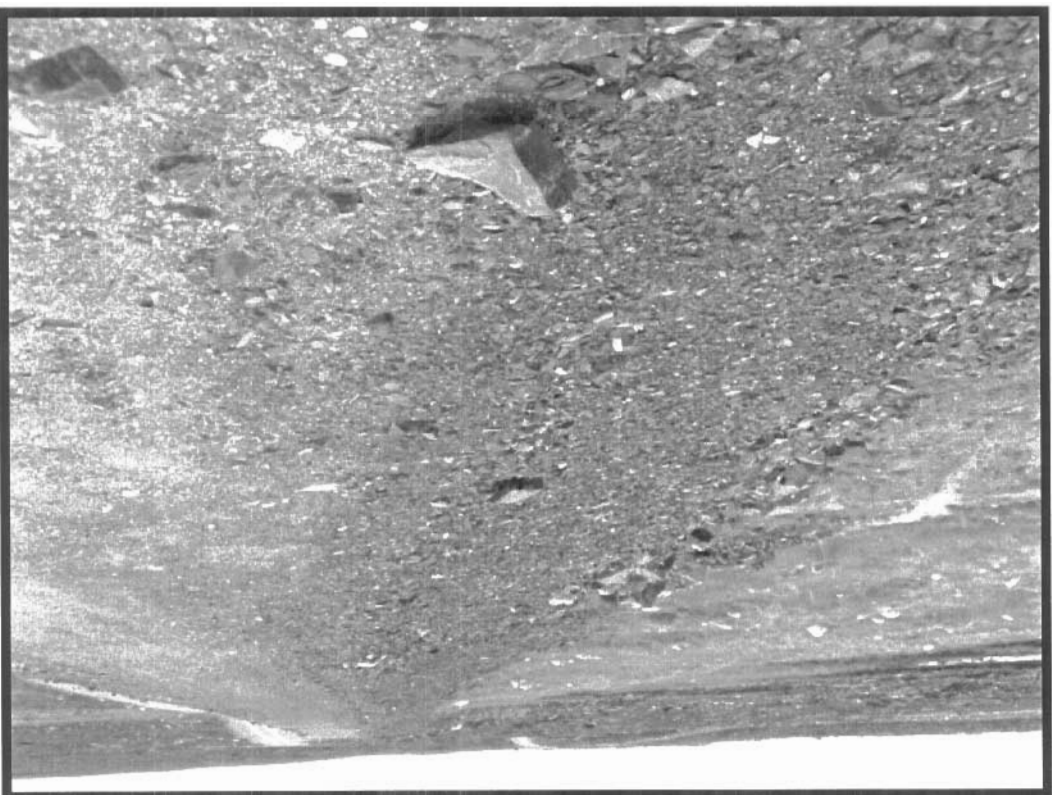


Photo 80 shows the upstream side of this dam. Note the undulating nature of the riprap. This dam does not retain any water at the current time.



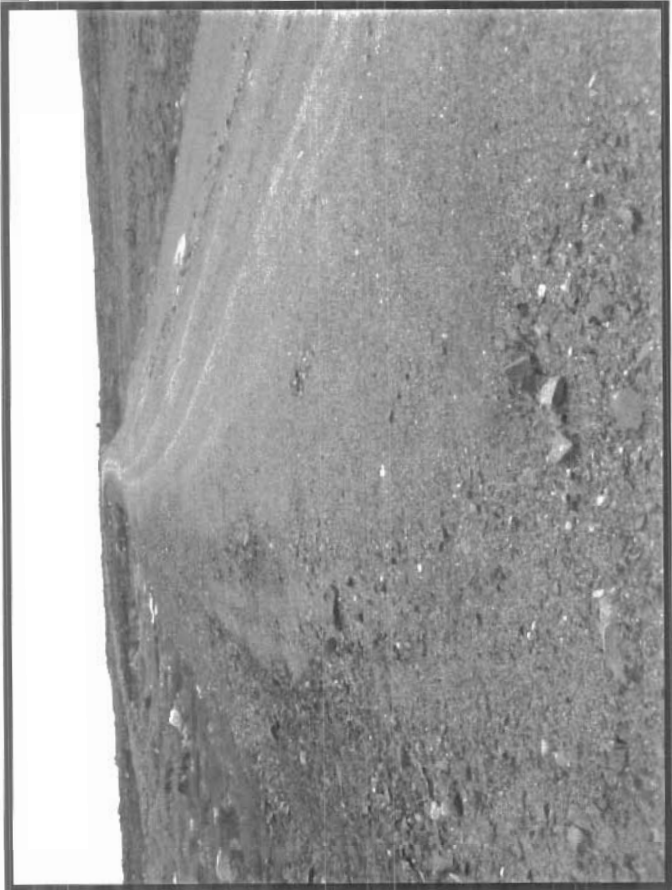


Photo 86 shows the crest and upstream side of this dam.

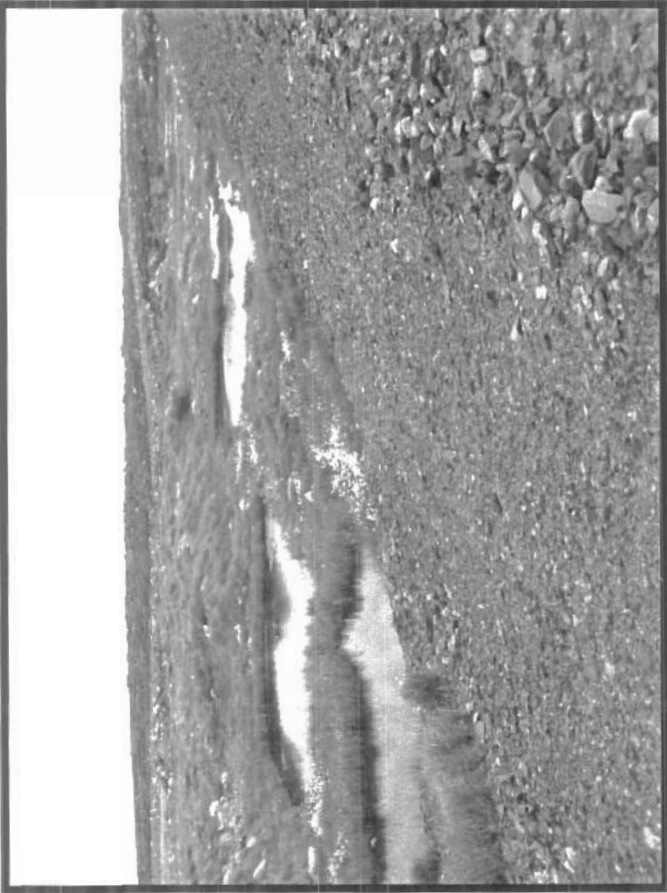


Photo 87 shows a number of small ponds which are located on the upstream side of Dam 1C. There is no large continuous retained pond against this dam.



Photo 94 shows some minor erosional gullies on the downstream face.

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DESIGNED:	GKC
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APPROVED:	JWC

PROJECT	Annual Inspection of Perimeter Tailings Dams			
TITLE	Dam 1C Inspection Photos			
PROJECT No.	0256-007-01	DWG No.	Figure 9	REV.
				0

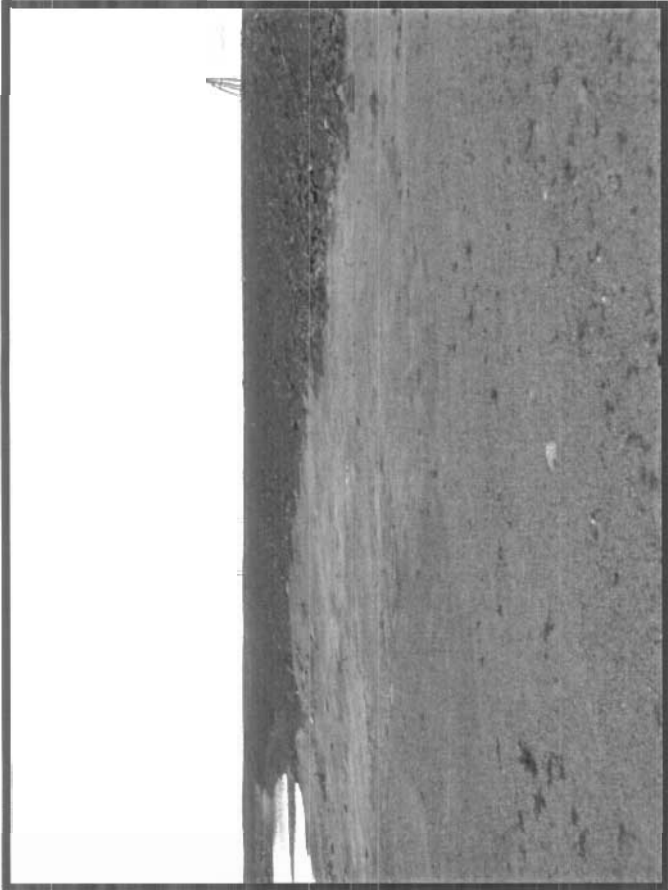


Photo 57 shows a view of the upstream side. The difference in the colour of the two riprap materials are obvious.

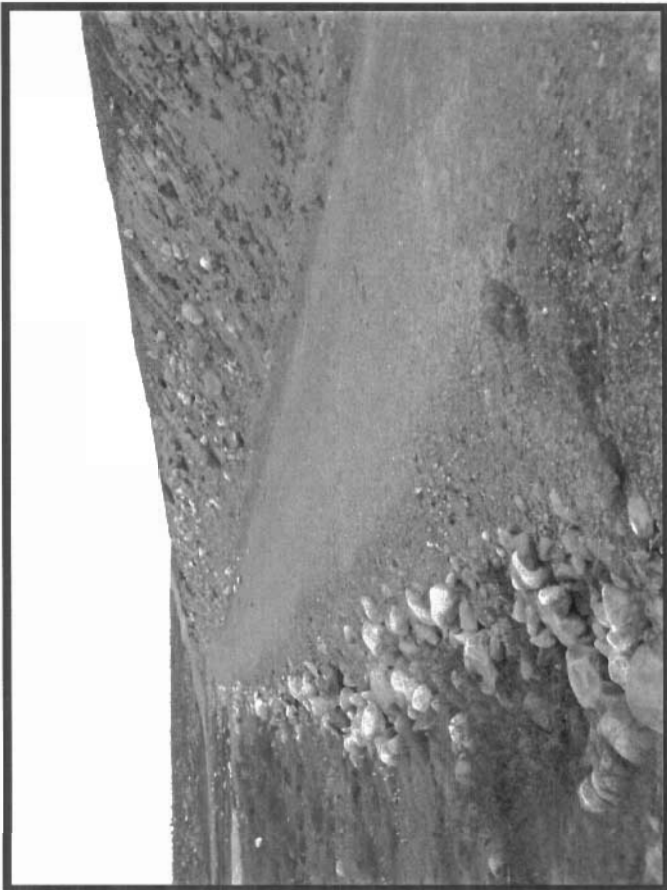


Photo 63 is a view of the downstream toe berm and the downstream side of Dam 2.

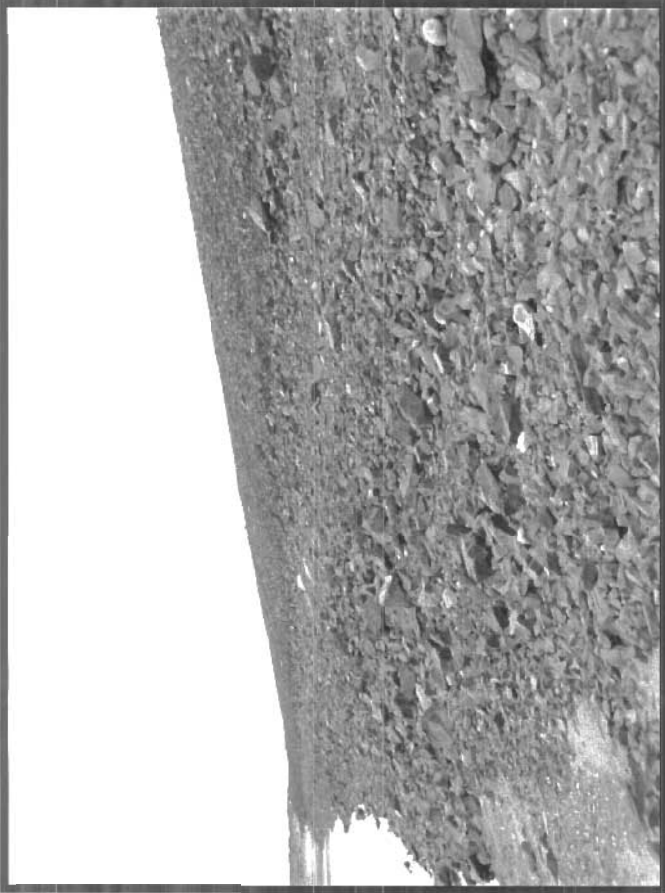


Photo 60 is a view of the upstream side showing an erosional scarp, which is formed at the bottom of the dark grey material. This erosional scarp is located probably some 2 to 2.5 vertical metres below the physical crest.



Photo 68 shows a small vegetation patch where typically a small amount of seepage is observed discharging from the toe of the dam. At the current time, there is no running water.

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REV.	DATE	REVISION NOTES	DRAWN	CHECKED	APPROVED	

SCALE:	N/A
DATE:	September 2003
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PROJECT					Annual Inspection of Perimeter Tailings Dams							
TITLE					Dam 2 Inspection Photos							
PROJECT No.			0256-007-01		DWG. No.		Figure 10		REV.		0	

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