RED MOUNTAIN PROJECT

2003 FIELD INVESTIGATIONS

Assessment Report

Prepared for:

Seabridge Gold Inc.
172 King Street East, 3rd Floor
Toronto, Ontario
M5A 1J3

Report Prepared by:

Steffen Robertson and Kirsten (Canada) Inc. (SRK Consulting)

February 2004

SEABRIDGE GOLD INC.

Results of 2003 Field Investigation
Red Mountain Project
British Columbia

Prepared for:

Seabridge Gold Inc.
172 King Street East, 3rd Floor
Toronto, ON, M5A 1J3
Canada

Prepared by:

SRK Consulting
Engineers and Scientists

Project Reference No:
1CS026.01

February 2004

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APPENDICES

Summary

In January 2003, Seabridge Gold Inc. ("Seabridge") commissioned Steffen Robertson and Kirsten (Canada) Inc. ("SRK") to complete monitoring activities and field investigations related to developing a final reclamation plan on Seabridge's Red Mountain underground gold project located 18km east of the town of Stewart, B.C. The objectives of the study were to build on previous project work, and included collection and analysis of seeps, crib drainage and underground water samples, monitoring of dump weathering, monitoring of water levels in the underground workings, determining the feasibility of collection ditches to monitor dump flows, completing an inventory and evaluation of buildings and equipment, and documenting general site conditions. Field visits were conducted in August and September of 2003.

Description and Ownership

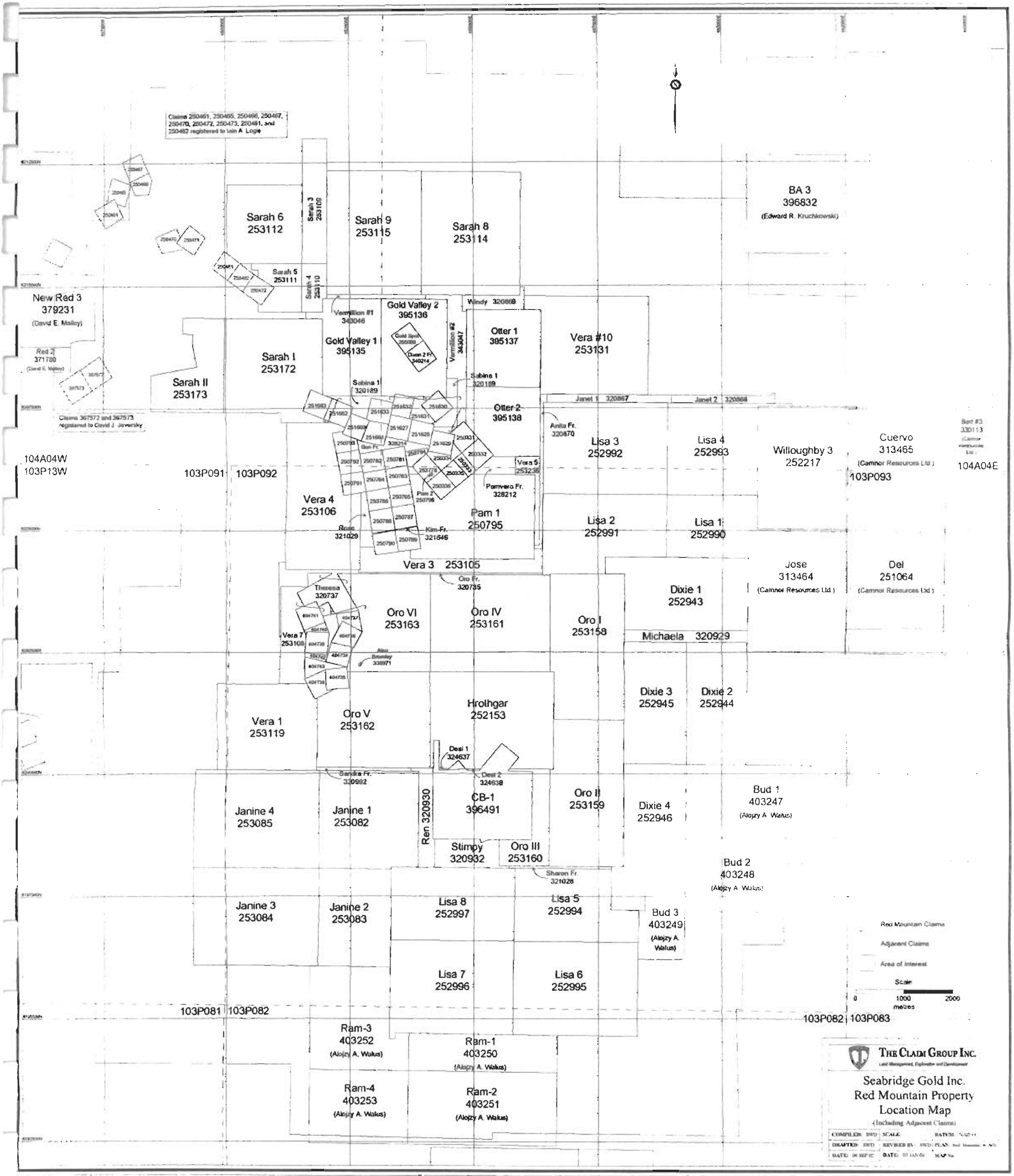
The Red Mountain property includes 110 contiguous mineral claims (832 modified grid units and 2 post claims) covering an area of approximately 20,175 hectares. (List of Claims and Location Map follow). Five of the mineral claims comprising 86 units have been legally surveyed and are ready to be taken as lease. These are the ORO I, ORO IV, ORO VI, Hrothgar and part of the Vera 3 claims. The known gold-silver resource on this project (Marc, AV and JW zones) are located in the northwest corner of the ORO I mineral claim.

The project currently resides on Crown land and no private properties lie within the operating plan area.

The Red Mountain Project is wholly owned by Seabridge. It is subject to the payment of productions royalties on the key "Wotan claims" group (seven claims: ORO I-VI and Hrothgar; and from any other property within a two kilometer area of influence around those claims) and to the payment of an annual minimum royalty of $50,000. Production from the "Wotan claims" is subject to two separate royalties aggregating 3.5% of net smelter return (NSR) comprising a 1.0% NSR payable to Barrick and a 2.5% NSR payable to Wotan. The Barrick 1.0% NSR royalty is applicable to all existing claims at the time the property was sold to Royal Oak in August 1995. The Red Mountain Project was assembled by Bond Gold through three option agreements exercised by its successor Lac Minerals. Each agreement provides for NSR royalties such that the bulk of the property has stacked royalty obligations ranging from 2.0% to 6.5%. Certain peripheral non-core claims staked by Bond Gold or Lac Minerals carry a 1.0% NSR royalty, and

RED MOUNTAIN PROPERTY, Skeena Mining Division, BC

Claim #	Claim Name	Size (Units)	Expiry Date	Claim #	Claim Name	Size (Units)	Expiry Date
250331	Montreal No. 1	1	2006-01-27	253111	Sarah 5	4	2005-09-15
250332	Montreal No. 2	1	2006-01-27	253112	Sarah 6	12	2004-09-15
250333	Montreal No. 3	1	2006-01-27	253114	Sarah 8	12	2005-09-15
250334	Montreal No. 4 & 5	1	2006-01-27	253115	Sarah 9	20	2005-09-15
250335	Montreal No. 6	1	2006-01-27	253119	Vera 1	20	2005-09-16
250336	Montreal No. 7	1	2006-01-27	253131	Vera #10	20	2005-09-24
250781	Kim No. 1	1	2005-09-26	253158	Oro I	18	2006-09-16
250782	Kim No. 2	1	2005-09-26	253159	Oro II	18	2007-09-16
250783	Kim No. 3	1	2005-09-26	253160	Oro III	12	2008-09-16
250784	Kim No. 4	1	2005-09-26	253161	Oro IV	20	2006-09-23
250785	Kim No. 5	1	2005-09-26	253162	Oro V	20	2007-09-23
250786	Kim No. 6	1	2005-09-26	253163	Oro VI	20	2008-09-23
250787	Kim No. 7	1	2005-09-26	253172	Sarah I	20	2005-09-26
250788	Kim No. 8	1	2005-09-26	253173	Sarah II	15	2005-09-26
250789	Kim No. 9	1	2005-09-26	253236	Vera 5	4	2005-09-17
250790	Kim No. 10	1	2005-09-26	253778	Montreal No. 8	1	2006-03-22
250791	Kim No. 11	1	2005-09-26	255098	Gold Spot	1	2006-09-21
250792	Kim No. 12	1	2005-09-26	320189	Sabina 1	12	2005-08-03
250793	Kim No. 13	1	2005-09-26	320735	Oro Fr.	1	2006-09-06
250794	Kim No. 14	1	2006-09-26	320737	Theresa	20	2005-09-02
250795	Pam 1	20	2006-09-26	320867	Janet 1	5	2005-09-14
250796	Pam 2	1	2005-09-26	320868	Janet 2	5	2005-09-14
251627	Bon Accord No. 2	1	2005-01-19	320869	Windy	3	2005-09-14
251628	Bon Accord No. 3	1	2006-01-19	320870	Anita Fr.	1	2005-09-14
251629	Bon Accord No. 4	1	2006-01-19	320929	Michaela	6	2005-08-30
251630	Bon Accord No. 5	1	2005-01-19	320930	Ren	5	2005-09-02
251631	Bon Accord No. 6	1	2005-01-19	320932	Stimpy	6	2005-09-02
251632	Bon Accord No. 7	1	2005-01-19	320992	Sandra Fr.	1	2005-09-06
251633	Bon Accord No. 8	1	2005-01-19	321028	Sharon Fr.	1	2005-09-07
251660	Bon Accord	1	2005-02-16	321029	Rose	3	2005-09-20
251661	Bon Accord No. 1	1	2005-02-16	321646	Kim Fr.	1	2005-10-12
251662	Bon Accord No. 9	1	2005-02-16	324637	Desi 1	4	2005-03-27
251663	Bon Accord No. 10	1	2005-02-16	324638	Desi 2	4	2005-03-27
252153	Hrothgar	20	2006-07-11	328212	Pamvera Fr.	1	2005-07-18
252217	Willoughby 3	20	2005-09-21	328214	Bon Fr.	1	2005-07-18
252943	Dixie 1	18	2005-07-15	338971	Bromley	6	2005-08-17
252944	Dixie 2	15	2005-07-15	340214	Dixon 2 Fr.	1	2005-09-10
252945	Dixie 3	15	2005-07-15	343046	Vermillion #1	4	2005-01-18
252946	Dixie 4	18	2005-07-15	343047	Vermillion #2	12	2006-01-18
252990	Lisa 1	20	2005-08-12	395135	Gold Valley 1	12	2005-07-14
252991	Lisa 2	20	2005-08-12	395136	Gold Valley 2	12	2005-07-14
252992	Lisa 3	20	2005-08-12	395137	Otter 1	12	2005-07-14
252993	Lisa 4	20	2005-08-12	395138	Otter 2	12	2005-07-14
252994	Lisa 5	15	2005-08-12	396491	CB-1	16	2005-09-21
252995	Lisa 6	20	2005-08-12	404734	Windsor	1	2005-07-21
252996	Lisa 7	20	2005-08-12	404735	Windsor No. 2	1	2005-07-21
252997	Lisa 8	15	2005-08-12	404736	Laura	1	2005-07-21
253082	Janine 1	16	2005-09-08	404737	Last Chance	1	2005-07-21
253083	Janine 2	12	2005-09-08	404738	Raven No. 1	1	2005-07-21
253084	Janine 3	20	2005-09-08	404739	Raven No. 2	1	2005-07-21
253085	Janine 4	20	2005-09-08	404740	Raven No. 3	1	2005-07-21
253105	Vera 3	8	2006-09-17	404741	Raven No. 4	1	2005-07-21
253106	Vera 4	18	2005-09-16	404742	Raven Fr.	1	2005-07-21
253108	Vera 7	8	2005-09-16	404743	Windsor Fr.	1	2005-07-21
253109	Sarah 3	6	2004-09-15				
253110	Sarah 4	2	2005-09-15	**Total Number of Units =**		**832**	



Claims 250461, 250465, 250466, 250467, 250470, 250472, 250473, 250481, and 250482 registered to Iain A. Logie
BA 3
396832
(Edward R. Kruchkowski)
Sarah 6
253112
Sarah 3
253109
Sarah 9
253115
Sarah 8
253114
Sarah 5
253111
Sarah 4
253110
New Red 3
379231
(David E. Molloy)
Red 2
371780
Vermillion #1
343046
Gold Valley 2
395136
Windy 320869
Gold Valley 1
395135
Vermillion #2
343047
Otter 1
395137
Vera #10
253131
Sarah I
253172
Sarah II
253173
Sabina 1
320189
Otter 2
395138
Janet 1 320867
Janet 2 320868
Claims 367572 and 367573 registered to David J. Javorsky
Anita Fr.
320870
Lisa 3
252992
Lisa 4
252993
Willoughby 3
252217
Cuervo
313465
(Camnor Resources Ltd.)
104A04W
103P13W
103P091
103P092
103P093
104A04E
Vera 4
253106
Vera 5
253236
Pomvero Fr.
328212
Pam 1
250795
Lisa 2
252991
Lisa 1
252990
Rose
321029
Kim Fr.
321646
Vera 3 253105
Jose
313464
(Camnor Resources Ltd.)
Del
251064
(Camnor Resources Ltd.)
Oro Fr.
320735
Theresa
320737
Dixie 1
252943
Oro VI
253163
Oro IV
253161
Oro I
253158
Vera 7
253108
Michaela 320929
Alex Bromley
338971
Dixie 3
252945
Dixie 2
252944
Hrolhgar
252153
Vera 1
253119
Oro V
253162
Desi 1
324637
Desi 2
324638
Sandra Fr.
320992
Bud 1
403247
(Alojzy A. Walus)
Janine 4
253085
Janine 1
253082
Ren 320930
CB-1
396491
Oro II
253159
Dixie 4
252946
Stimpy
320932
Oro III
253160
Bud 2
403248
(Alojzy A. Walus)
Sharon Fr.
321028
Janine 3
253084
Janine 2
253083
Lisa 8
252997
Lisa 5
252994
Bud 3
403249
(Alojzy A. Walus)
Red Mountain Claims
Adjacent Claims
Area of Interest
Scale
0 1000 2000
metres
Lisa 7
252996
Lisa 6
252995
103P081
103P082
103P083
Ram-3
403252
(Alojzy A. Walus)
Ram-1
403250
(Alojzy A. Walus)
Ram-4
403253
(Alojzy A. Walus)
Ram-2
403251
(Alojzy A. Walus)
The Claim Group Inc.
Seabridge Gold Inc.
Red Mountain Property
Location Map
(Including Adjacent Claims)

three none-core claims staked by Royal Oak are free of royalty. The principal underlying agreements were discussed by Craig (2002) and are not presented here.

Location and Access

Red Mountain is located within the Boundary Range of the northwestern British Columbia Coast Mountains, approximately 18km east of the town of Stewart. The Red Mountain Project lies within the Skeena Mining Division between the Cambria Ice Field and the Bromley Glacier. The centroid of the project is located at latitude 55°57' N and longitude 129°42' W.

Currently, the Red Mountain Project site is only accessible by helicopter, and this has been the means of transportation that supported all previous exploration and development work. Helicopter support utilized a staging area 10km north of Stewart at an old dry log sorting yard, located next to highway 37A, at the entrance to Bitter Creek valley. Helicopters would fly loads in following Bitter Creek valley first east, then south to the project site at roughly 1865 meters elevation. Turn around time ranged from 25 to 30 minutes per load. Mainly Bell B205 medium lift machines were used to transport 1590kg (3500lb) loads that were prepared on surface by a forklift with a built in weigh scale. There were also requirements for light lift helicopters (B206) for moving people, and occasional needs for a heavy lift Sikorski helicopter.

In 1994, Lac Minerals Ltd. ("Lac") began construction of a 14.5km access road along Bitter Creek to the bottom station of a planned tramway. The earthworks were mostly completed for the first 13.5km, with temporary timber bridges crossing creeks. The road has not been completed or maintained since that time. It ends at a point approximately 1.8km northwest of Otter Creek.

Physiography and Climate

The Red Mountain Project covers rugged mountainous terrain with steep to precipitous slopes and elevations ranging between 599 and 2,100m above sea level. The tree line occurs at approximately 1,300m elevation. Areas below the tree line are forested while higher elevations are characterized by bare rock, talus slopes and intermittent alpine vegetation. Alpine glaciers and ice fields are abundant and cover approximately one third of the project area. On-site infrastructure is located above the tree line.

The area is characterized by a coastal climate and vegetation, and receives very heavy snowfall. Temperatures at Red Mountain are moderated by the coastal influence. On-site temperature data collected between 1993 and 1994 indicate a mean average temperature of 0.1°C and varying between -25°C in winter and 20°C in summer. Wind conditions add a significant wind chill factor throughout the year. In more sheltered locations, hourly average wind speeds regularly exceed 10m/s and instantaneous wind speeds in excess of 30m/s have been observed.

Property History and Previous Work

The area surrounding the Red Mountain Project has been subject to sporadic exploration in the 1960s and 1970s, primarily for porphyry-molybdenum deposits.

Bond Gold Canada Inc, ("Bond Gold") became involved in the Skeena Mining Division in late 1988 through an option from Wotan Resources Corporation ("Wotan") to acquire seven claim blocks (ORO I through VI and Hrothgar). The first high grade gold-silver samples were collected at Red Mountain during the early part of the 1989 program on what was to become the Marc Zone. The discovery was made by tracing the source of auriferous floats uphill to bedrock.

During the period 1989-1991, Bond Gold assembled a very large land package surrounding the Red Mountain discovery through three distinct option agreements and claim staking. Public assessment file records indicate that during this period Bond Gold carried out reconnaissance exploration over much of this area, including: prospecting, reconnaissance geology, geochemical sampling, airborne and ground geophysical surveys and a limited amount of diamond drilling.

Between 1991 and 1994, following the acquisition of Bond Gold, Lac Minerals ("Lac") delineated a sizeable gold-silver resource through diamond drilling and subsequently drove a decline (1,700m) to facilitate drilling access and collect a bulk sample for metallurgical studies. Mine development and environmental baseline studies were initiated in 1993 through late 1994, when the project was put on hold by Barrick Gold Corporation ("Barrick"), following the acquisition of Lac Minerals. From 1989 through 1994, a total 406 surface and underground boreholes were drilled on the property. In 1994, a feasibility study was partially completed by Rescan Engineering Limited for Lac. The project was sold to Royal Oak Mines ("Royal Oak") in August 1995. The following year, Royal Oak expanded the underground development (305m) and conducted surface (22 holes) and underground (15 holes) drill programs targeting the extensions of known mineralization outside the resource volumes and other nearby targets (23 holes).

In 2000, upon acquisition of the project from Price Waterhouse Coopers, North American Metals Corporation ("NAMC") completed a comprehensive review of the project and validation of the geological and environmental database. Several new technical studies were carried out leading to the creation of a revised resource model.

In 2001, previous owner North American Metals Corp. ("NAMC") undertook limited engineering studies of project development alternatives.

Seabridge acquired the Red Mountain Project from NAMC in February 2002.

APPENDIX I

Detailed Breakdown of Costs for 2003 Field Investigations at Red Mountain.

Professional Time	July	Aug	Sept	Oct	Nov	Dec	Jan	Totals
Logistics	$1,140.00	$1,960.00	$300.00	$320.00		$60.00		$3,780.00
Field Work		$7,490.00	$7,140.00					$14,630.00
Lab Supervision					$402.50			$402.50
Reporting				$260.00	$822.50	$5,677.50		$6,760.00
Subtotal								***$25,572.50***
Travel Expenses								
Airfare		$958.66	$1,427.26					$2,385.92
Meals		$311.78	$321.59					$633.37
Hotel		$705.68	$1,090.56					$1,796.24
Taxi		$23.87	$171.63					$195.50
Parking		$74.27						$74.27
Car Rental/Fuel		$1,305.48	$435.24					$1,740.72
Subtotal								***$6,826.02***
Field Expenses								
Helicopter*		$3,024.00	$2,933.00					$5,957.00
Freight/Couriers		$10.48	$143.33					$153.81
Misc Equipment/Supplies		$48.49	$573.24					$621.73
Sampling supplies/meter rental		$120.35						$120.35
Satellite phone rental			$82.32					$82.32
Solinst - cable			$1,208.74					$1,208.74
Used Solinst Levelogger			$721.97					$721.97
Fabco			$955.45					$955.45
Emergency Camp Equipment			$1,079.42					$1,079.42
Fabco - Shipping Credit						-$415.00		-$415.00
Subtotal								***$10,485.79***
Lab Expenses								
ALS			$1,630.67					$1,630.67
CEMI				$445.50				$445.50
CEMI					$1,272.70			$1,272.70
CEMI						$233.20		$233.20
UBC - XRD Analyses							$1,100.00	$1,100.00
Couriers				$103.01				$103.01
Subtotal								***$4,785.08***
Reporting Expenses								
Reproductions			$26.00			$32.40		$58.40
Subtotal								***$58.40***
Total								**$47,727.79**
GST								$3,340.95
Total								**$51,068.74**

Notes:
Backup for the above expenditures is on file with SRK Consulting
* Helicopter time was billed directly to Seabridge Gold Inc.

APPENDIX II

STATEMENT OF QUALIFICATIONS

I, Kelly Sexsmith residing at 517 East 10th Street in North Vancouver, British Columbia do hereby certify:

1. I am a graduate of the University of British Columbia with a B.Sc. degree in Geology (1990) and a graduate of the Colorado School of Mines with an M.S. in Environmental Sciences (1996).

2. I am presently employed as a Senior Environmental Geochemist by Steffen Robertson and Kirsten (Canada) Inc. of Suite 800, 1066 West Hastings Street, Vancouver, British Columbia V6E 3X2.

3. I am a Professional Geoscientist registered with the Professional Engineers and Geoscientists of British Columbia (APEGBC).

4. I have been active as an Environmental Geochemist primarily in Western and Northern Canada from 1990 to 1994 and from 1996 to present.

5. The information contained in this report was obtained through field investigations, sample analyses, and references, as listed.

6. I personally supervised the program carried out on this property.

7. This report may be used by Seabridge Gold Inc. for any and all corporate purposes.

Signed by:

Kelly Sexsmith, P.Geo
Senior Environmental Geochemist

Dated at Vancouver, British Columbia, this 31st day of March, 2004.

APPENDIX III

Results of 2003 Field Investigations

Red Mountain Project, British Columbia

Seabridge Gold Inc.

172 King Street East
3rd Floor
Toronto, ON M5A 1J3
Canada

SRK Project Number 1CS026.01

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SRK Contact:
Kelly Sexsmith: ksexsmith@srk.com

February 2004

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1 Introduction

Seabridge Gold Inc. (SGI) is the current owner of the Red Mountain Project near Stewart, B.C (Figure 1). As a condition of their Mineral and Coal Exploration Activities & Reclamation Permit (Permit MX-1-422), SGI was required to complete monitoring activities and field investigations related to developing a final reclamation plan for the site. A workplan to address these conditions was filed with the Ministry of Energy and Mines (MEM) in November 2002 (SGI 2002). The field investigations were completed by SRK in August and September 2003, and included the following tasks:

- Collection and analysis of seeps, crib drainage and underground water samples
- Monitoring of dump weathering
- Monitoring of water levels in the underground workings
- Determining the feasibility of collection ditches to monitor dump flows
- Completing an inventory and evaluation of buildings and equipment, and
- Documenting general site conditions

The first field visit was completed on August 19th and 20th, 2003. Dylan MacGregor and Kelly Sexsmith, geochemists from SRK Consulting, completed the water sampling and inventory work during this trip. David Daigle, an underground mining mechanic from Procon Mining, completed the assessment of the machinery on site. Dave Green, acting as an independent contractor, provided shift boss services for the underground work and assisted with the mechanical assessment. Weather conditions were generally poor, with a mixture of rain, snow and fog at the site. However, helicopter access was sufficient to complete the work as planned. Snow was drifted over the top of the portal and covered the ore stockpile near the portal and the crusher behind the maintenance shed. Access to the portal was cleared using the D7. The dumps and exposed rock on the ridge were free of snow.

The second field visit was completed on September 24th and 26th, 2003. Dylan MacGregor, a geochemist from SRK Consulting completed the dump weathering investigation and installed a pressure transducer to monitor water levels in the workings. Maritz Rykaart, a geotechnical engineer from SRK Consulting, completed the inspection of ground conditions to determine the feasibility of constructing ditches around the waste rock dumps. Dave Green provided assisted with the installation of the transducer. The weather was poor, with snow covering the dump and ridge on both days. The site was inaccessible on September 25th, and was only accessible for a half day on September 26th due to poor visibility and sleet. The main objectives of the second site visit were accomplished. However the inspection of ground conditions around the dumps was limited and the ditch assessment relied to some extent on photographs taken during the first site visit.

2 Water Sampling

2.1 Objectives

Water samples were collected from the underground mine workings, the crib tests, the waste rock pile to monitor changes in chemistry resulting from oxidation and weathering of the mine walls and waste rock. Samples were also collected in Goldslide Creek to measure the effects of runoff from rock and talus below the dump. The monitoring was intended to fulfil Items 4c, 9, 10 and 16 of Permit MX-1-422.

2.2 Methods

Waste rock seep sample locations were established in August 2003 by walking the toe of the waste rock dump, where the rock rests on original ground, and collecting water samples from any surface drainages that were encountered. Where feasible, diffuse flows were diverted to a central point by excavating small channels in surficial materials to provide sufficient volume for water sampling. In total, three samples of waste dump seepage were identified and collected (Figure 2). As shown on Figure 2, seepage at RM-Seep1 flows east toward the Cambria Icefield, and does not contribute to the current water quality in Goldslide Creek. Seeps RM-Seep2 and RM-Seep3 are within the Goldslide Creek catchment.

Samples were also collected from the ponded water in the underground workings (Figure 2), and from the north field weathering test crib, which contains dominantly metasedimentary waste rock (Figure 2).

Three samples were taken from the upper reaches of Goldslide Creek. These consisted of a sample below the confluence of two surface flows in the upper part of the cirque, and one sample of each of the independent flows (Figure 2). One of the flows originates below the waste rock dump, while the other originates below the ore zone.

Samples were collected for analyses of routine parameters (pH, total dissolved solids, acidity, alkalinity, and sulphate), nutrients (ammonia, nitrate, and nitrite-nitrogen), and dissolved metals (BC Aquatic Life Suite). The samples were filtered and preserved in the field according to standard methods for collection of environmental samples. Field pH, conductivity, redox, and temperature measurements were taken at each station using a WTW meter. Flow volumes were estimated visually.

Sampling conditions during the August site visit were ideal, with the toe of the dump largely free of snow, and heavy rain the day prior to the sampling. Despite this, flows from the dumps were relatively small.

2.3 Results and Discussion

Complete water quality results are presented in Attachment A, and photographs are provided in the CD Rom.

Table 2.1 presents a summary of water quality results for the waste rock seeps and Goldslide Creek samples. Dump seeps had moderately acidic to neutral pH and sulphate concentrations of 368 to 700 mg/L. Dissolved metal concentrations in waste rock seeps were generally low. However, RM-Seep1 had slightly elevated concentrations of Cd, Co, Cu, Mn, Ni, and Zn compared to concentrations in Bitter Creek. RM- Seep1 also had the lowest pH of the three dump seeps. The water sampled at RM-Seep1 seeps out of highly weathered native soil and broken rock that form the foundation of the waste pile (photo IMG_0127_rm-seep1b.JPG). Metal concentrations and pH in RM-Seep1 are likely influenced by this material. Although somewhat elevated, dissolved metal concentrations in RM-Seep1 are far below those predicted for long-term dump seepage (SRK, 2001).

Sulphate concentrations and pH levels measured in waste rock seepage in 2003 are within the range of results recorded for dump seeps over the monitoring period. Similarly, concentrations of most dissolved metals are within or below the range previously measured. The only exceptions are Cu and Zn in RM-Seep1, which are 2.4 and 1.7 times higher, respectively, than the highest previously recorded concentration in dump seepage. These results indicate that there has been little change in the weathering conditions within the waste rock dump over the period of monitoring.

Table 2.1 Water quality summary for waste rock dump seeps and upper Goldslide Creek

	Waste Rock Dump Seeps			Goldslide Creek Samples		
Sample ID	RM-SEEP-02	RM-SEEP-03	RM-Seep-01	RM-SEEP-05	RM-SEEP-07	RM-SEEP-06
Descriptor	SW Seep	NW Seep	E Seep	Main stem	S Fork	N Fork
Field Parameters						
Field pH (S.U.)	7.31	6.52	4.89	5.71	5.18	6.02
Field conductivity (uS/cm)	964	1223	504	90	69	100
Flow (L/min) -visual estimates	60	Trace	1	1200	200	1000
Dissolved Anions						
Sulphate SO4	472	700	368	40	36	51
Dissolved Metals						
Aluminum D-Al	<0.01	0.03	1.97	0.037	0.116	0.017
Cadmium D-Cd	0.0002	0.0005	0.0037	0.00032	0.00021	0.00037
Calcium D-Ca	175	266	132	14.2	9.4	16.7
Cobalt D-Co	<0.0006	0.0123	0.0468	0.0009	0.0024	<0.0003
Copper D-Cu	<0.002	0.032	0.315	0.024	0.02	0.026
Iron D-Fe	<0.03	<0.03	0.04	<0.03	<0.03	<0.03
Magnesium D-Mg	21.3	9.8	5.6	1.8	1.3	2
Manganese D-Mn	0.0457	0.423	2.29	0.0174	0.0495	0.0047
Molybdenum D-Mo	0.006	0.003	<0.002	0.002	<0.001	0.003
Nickel D-Ni	0.012	0.012	0.024	0.002	0.004	<0.001
Zinc D-Zn	<0.01	0.02	0.25	0.023	0.016	0.024

< = Less than the detection limit indicated.
Units are mg/L unless otherwise stated.

Samples collected in the cirque immediately west of the waste rock pile had slightly acidic pH levels (5.2 to 6.0) and low sulphate concentrations (36 to 51 mg/L). Dissolved metal concentrations were generally low, with copper concentrations of approximately 0.02 mg/L and zinc of 0.02 mg/L. Both Cu and Zn were present in concentrations around 0.02 mg/L in all samples. Metal concentrations were generally higher and pH's were lower than in the west-draining waste dump seeps (RM-Seep2 and RM-Seep3).

One sample (RM-Seep4) was collected from the underground pool adjacent to the 1150 N drill station. This water had a field pH of 7.3, sulphate concentration of 130 mg/L, and low dissolved metal concentrations (Attachment A). Trace metal concentrations were generally the same or lower than for the sample collected during the 2000 site visit, the sulphate concentration was slightly lower, and pH levels were the same as previously measured.

A water sample was collected from the northernmost of two field weathering cribs. The northern crib contains mostly metasedimentary development rock with a small porphyry component (Frostad, 1999). Water was collected from the discharge point of the crib. Flows were limited to a steady drip of about 1 drip/second. Results of the most recent crib sample are presented in Attachment B and historical results from the north crib are included for comparison purposes. The most recent data are within the historical range for all parameters. The sulphate production of the crib continues to be elevated, with the most recent sulphate concentration being 879 mg/L. The pH of crib drainage continues to be neutral, with the most recent sample having a field pH of 7.36. All trace metal concentrations are at or near detection limits.

In general, the results of the water sampling indicate that the water quality of the dumps, cribs and underground mine have not changed significantly since the 2000 sampling programs.

3 Monitoring of Dump Weathering

3.1 Objectives

The progress of waste rock weathering was monitored at representative locations on the waste rock pile using a combination of contact tests (rinse pH and conductivity), carbonate analyses, acid base accounting tests and Reitveld XRD analyses. The results were compared to data from earlier programs to determine whether there have been any significant changes in the neutralization potential of the waste rock. The monitoring is intended to fulfil Item 8 of Permit MX-1-422.

3.2 Methods

Shallow test pits were excavated 0.3 to 0.5 m into the waste material and 2-3 kg samples were collected from the base of the pit. Samples were sieved through a 1 cm screen to remove the oversize material prior to bagging the sample. Brief field observations were made regarding the depth of each pit and the material encountered. 20 samples were collected in total from 10 pits in each of the upper (1994) and lower (1996) waste rock lifts. Test pits RMSRK03TP01 through RMSRK03TP10 were excavated along the north and east edges of the older upper lift, and RMSRK03TP11 through RMSRK03TP20 were excavated along the west and south edges of the more recent lower lift, as indicated in Figure 3. At the time of sampling, the waste rock was covered with 5 cm of fresh snow which eliminated the possibility of sampling bias on a visual basis.

Samples were shipped to Canadian Environmental and Metallurgical Inc. (CEMI) for testing. Samples were air dried, and contact tests (rinse pH and conductivity) were made on all 20 samples. The method involved sieving the dry samples through a #10 mesh screen (<2 mm), then thoroughly mixing 100 g of sieved sample with 100 mL distilled water and letting the mixture stand for 15-30 minutes to allow settling of solids. The pH and conductivity of the supernatant were then measured and reported as rinse pH and conductivity.

More detailed visual inspection and fizz testing of air dry samples was conducted by an SRK geochemist in CEMI's lab. Lithology, and sulphide and carbonate content of each sample were recorded, and the response of both fine and coarse fractions of each sample to the application of 10% HCL was noted. Ten samples were selected to cover the range of waste material based on the visual observations and tested using the modified Sobek ABA method. Total sulphur and total inorganic carbon (TIC) were measured on the remaining ten samples. A subset of five ABA samples was selected for quantitative mineralogical determination by x-ray diffraction (XRD) using Rietveld refinement; this analysis was carried out at the Department of Earth and Ocean Science at UBC. Rietveld XRD is intended to provide a quantitative measurement of mineral phases that contribute to the neutralising capacity of the tested material.

3.3 Results and Discussion

Little visual evidence of sulphide oxidation (ie. staining or oxidized particles) was observed during sample collection and during subsequent visual inspection of samples in the lab. Calcite occurred as veinlets in coarse particles or as discrete particles, in most of the samples collected. Vigorous reaction of fines with 10% HCl was common to all samples. The coarse fraction of most samples also visibly reacted to the application of 10% HCl, with reaction intensity varying from none to very strong. Dark grey to black metasedimentary rock was the dominant lithology, with a lesser component of pale to dark green porphyry. A summary of the visual observations is presented in Attachment C.

Results of rinse pH and conductivity measurements, along with summary statistics, are shown in Table 3.1. All samples returned low to moderate conductivities ranging from 78 to 256 (median 146) µS/cm and neutral to slightly alkaline pH values ranging from 7.0 to 8.3 (median 7.72).

Table 3.1 also includes the results of a previous rinse pH/ conductivity survey undertaken in 2000 by SRK Consulting and North American Metals Corporation (NAMC). Sixteen samples for this survey were randomly selected using a grid and are considered representative of overall dump conditions at the time of collection. Sampling conditions were very similar in 2000, with the waste rock being covered by snow. Both sets of pH and conductivity measurements were carried out under laboratory conditions at CEMI. As indicated in the table, rinse pH's and conductivities in the earlier data were slightly higher, ranging from 7.9 to 8.6 (median 8.25), and 134 to 875 (median 424) µS/cm.

Table 3.1 Results from dump pH and conductivity surveys

2003 Survey			2000 Survey		
SAMPLE NAME (-2 mm fraction)	RINSE pH	RINSE CONDUCTIVITY (µS/cm)	SAMPLE NAME (-2 mm fraction)	RINSE pH	RINSE CONDUCTIVITY (µS/cm)
03TP01	7.3	104	51602	8.0	265
03TP02	7.8	101	51603	7.9	452
03TP03	7.7	156	51604	8.0	504
03TP04	7.2	116	51605	7.9	718
03TP05	7.2	129	51606	8.3	311
03TP06	7.1	114	51607	8.5	220
03TP07	7.0	132	51608	8.6	134
03TP08	7.8	136	51612	8.1	581
03TP09	7.9	156	51613	8.2	311
03TP10	7.2	168	51614	8.0	418
03TP11	7.9	190	51615	8.1	399
03TP12	8.1	78	51616	8.3	429
03TP13	7.5	181	51617	8.2	345
03TP14	7.6	196	51618	7.9	588
03TP15	7.7	180	51619	7.8	875
03TP16	8.1	176	51620	7.8	691
03TP17	8.0	256			
03TP18	8.3	111			
03TP19	8.3	232			
03TP20	7.7	127			

Table 3.2 reports summary statistics for both 2000 and 2003 dump surveys, as well as separately summarising results from older and newer waste material from the 2003 survey. There appear to be minor differences in pH and conductivity between the populations; however, the number of samples in each survey is small and differences are not statistically significant.

Table 3.2 Statistical summary of 2000 and 2003 dump pH and conductivity surveys

	Max	Min	Avg	Median	Count
2003 Survey: All samples					
pH	8.34	7.03	7.67	7.72	20
Conductivity (uS/cm)	256	78	152	146	20
2003 Survey: Older waste rock					
pH	7.90	7.03	7.44	7.28	10
Conductivity (uS/cm)	168	101	131	131	10
2003 Survey: Younger waste rock					
pH	8.34	7.49	7.91	7.94	10
Conductivity (uS/cm)	256	78	173	181	10
2000 Survey: All samples					
pH	8.60	7.80	8.10	8.05	16
Conductivity (uS/cm)	875	134	453	424	16

The results of ABA testing are reported in Attachment D. These tests show that little of the sulphur contained in the waste rock is present as sulphate, indicating that total sulphur determination is a reasonable approximation of sulphide content at this stage of weathering. All samples had significant NP, but only two samples had a positive net NP. This indicates that the majority of the waste rock samples were net acid producing, and that the onset of acidic conditions will likely be delayed by the significant inventory of neutralising material.

Samples tested had NP's ranging from 48.6 to 126.9 kg $CaCO_3$ eq/tonne, with carbonate NP's ranging from 36.7 to 125.8 kg $CaCO_3$ eq/tonne. This includes one sample that had an anomalously high carbonate content. By removing the anomalous sample, the upper limit of the NP range becomes 72.6 kg $CaCO_3$ eq/tonne, while the upper limit of the carbonate NP range becomes 63.3 kg $CaCO_3$ eq/tonne. Figure 4 shows the relationship between NP and carbonate NP for the 10 samples which underwent ABA testing. Carbonate NP was strongly correlated with the Sobek NP, indicating that carbonate NP is a reasonable surrogate for NP for the waste rock dump material.

The TIC and total sulphur tests indicate similar ranges of values as the full ABA test (Attachment D). Seven of ten samples had negative net neutralisation potential on the basis of carbonate NP and total sulphur. The TIC results show that one of ten samples tested had an anomalously high carbonate content very similar to the anomalous sample that underwent complete ABA testing. These samples were not collected from adjacent pits, indicating that there are some pockets of material with high carbonate content within the pile.

Earlier NP data was reviewed to show the potential magnitude of NP loss since deposition:

- The drill hole data presented in the 1996 MDAG report shows that Marc Zone waste rock has an average carbonate NP content of 18 kg $CaCO_3$ eq/tonne and an average NP of 46 kg $CaCO_3$ eq/tonne.

- The underground muck samples (1993/94) had an average Sobek NP of 31 kg $CaCO_3$ eq/tonne.

- Bulk samples tested in Frostad, 1999 had carbonate NP's ranging from 9.4 to 32 kg $CaCO_3$ eq/tonne, and NP's ranging from 11 to 45 kg $CaCO_3$ eq/tonne.

- 1996 testing of two 1993/94 samples collected from a test pit on the waste pile (Golder, February 11, 1997 letter) had carbonate NP's of 24 and 36 kg $CaCO_3$ eq/tonne, and Sobek NP of 46 and 61 kg $CaCO_3$ eq/tonne. These measurements of NP were higher than average values from the earlier tests, suggesting there was little NP loss over the first two to three years of placement in the waste rock piles.

The NPs and carbonate NPs measured on all samples collected in 2003 are within or above the range of those samples tested previously. These results indicate that there has been insufficient weathering and consumption of neutralizing material at the surface of the waste rock pile to lead to a statistically significant reduction in remaining neutralization potential.

Rietveld XRD was carried out on five samples for the purposes of quantitative determination of mineralogy. Rietveld XRD results are presented in Attachment E. Samples were found to contain 3.8 to 7.3 wt.% calcite and 5.8 to 10 wt.% sulphides. Iron carbonate was present in minor proportions that varied from 0.5 to 1.1 wt.% (i.e. 10 to 25% of calcite content). Attachment E also includes modified Sobek NP and carbonate NP results for those samples assessed via XRD. Comparison of these results shows that carbonate NP slightly underestimated the calcite content of the sample.

4 Water Levels in the Underground Workings

4.1 Objectives

Inspection of the underground flood waters was completed to add to the current records of flooding elevation in the underground workings. This task addresses Item 4c of Permit MX-1-422. A pressure transducer was also installed to provide a year round record of water levels in the workings. If successful, this instrument will provide valuable information on the annual cycles of water levels in the workings.

4.2 Methods

Dave Green, acting as an independent contractor, was contracted to act as the shift boss for the underground inspections. To access the workings, it was necessary to clear snow from the front of the portal with the D7 bulldozer located on site. A single panel of plywood was removed from the top of the wood structure blocking access to the portal, and a ladder positioned against the wood structure allowed descent to the floor of the portal.

During both site visits, the water level in the mine was established by locating survey markings on the walls of the workings as well as drill cutouts and cross-cuts that are identifiable on the underground plans.

In the September 2003 site visit, a data-logging pressure transducer (Solinst Levelogger) was installed in the pooled mine water. A system was developed whereby the pressure transducer with 300 m of cable was threaded through 20-3 m lengths of 5 cm diameter PVC. Pipe lengths were glued together and the transducer was positioned at the bottom using a piece of closed-cell foam as packing. A cap was the glued on the bottom to prevent sediment from entering the bottom of the PVC conduit. The bottom length of PVC was slotted by hand using a hacksaw to allow water pressures to equalize inside the pipe. The PVC was then manually pushed down the decline to install the pressure transducer as far as possible below the water line at the time of installation. At final install, approximately 4.5 lengths (~13.5 m) of PVC remained above the water surface.

The cable, which allows the collected data to be downloaded, was extended up the decline to the top of the ramp approximately 30 m inside the portal. The pressure transducer was set to record water pressure once per day. This will permit a calculation of height of overlying water and will allow year round water level monitoring without requiring site inspection.

4.3 Results and Discussion

Pooled water was present in the exploration decline immediately north of the 1150 N drill station at an approximate elevation of 1846.4 m on August 19, 2003. The edge of the pooled water was marked with flagging hung from utility piping along the east wall of the decline. During the September visit, the pooled water had receded approximately 9 m of drift length from the August position, which corresponds to a pool elevation of 1844.7 m. The August 2003 water level was approximately 6 metres higher than the elevation observed in August 2000 (Table 4.1), and higher than any previous recorded water levels. Higher water levels could be due to earlier and more rapid snowmelt in 2003 resulting from a lower than normal snowpack. During normal or high snowpack years, snow covering the portal may restrict the amount of water dripping into the portal entrance.

Table 4.1 Groundwater elevations in underground workings.

Date	Geologic Section	Elevation (m)
*May 8, 1996	1480 N	1786
*October 25, 1996	1500 N	1782
July 9, 1997	1375 N	1807.5
August 12, 1997	1225 N	1834.5
September 16, 1997	1225 N	18345
August 2, 2000	1185 N	1840
August 19, 2003	1150 N	1846.4
September 24, 2003	1159 N	1844.7

*On May 8, 1996 Royal Oak Mines entered the Marc Zone Portal, after 1.5 years of inactivity. The groundwater table was recorded at section 1480N (elevation 1786m). At the end of development and cessation of dewatering on Oct. 18, 1996, the water table re-established itself to 1500N (1782m) by October 25, 1996 (Source of 1996 and 1997 data: Royal Oak Mines, 1998).

The mine plan shows the decline continuing straight for approximately 60 m length north of the 1150 N drill station (Figure 2). On the basis of the water level observed during the August visit and an inspection of the mine plan, it was thought that a maximum of twenty lengths of PVC could be pushed below the water level. This would position the pressure transducer at the lowest point along the straight section of the decline. Installation to this depth was highly uncertain due to the possibility of obstacles (rock fall, debris) on the ramp and the potential for the PVC to become wedged against the walls. In light of the installation challenges, the installation of the pressure transducer 15.5 PVC lengths (approximately 46.5 m decline length or to 1196N) below the water surface was considered quite successful.

The exact elevation of the pressure transducer will be determined at the time of the first data download by visually observing the water level in the workings at that time and correlating that level with the most recent data point. From the underground survey data, it appears that the pressure transducer is located approximately at elevation 1837.2 m, or 6.5 m below the flood level at time of installation. Pressure transducer data will be downloaded at the time of the next site visit.

Due to the length of transmission cable, a signal amplifier is required at the time of download- the Solinst 3001 PC Interface Booster Cable (SN PCBC 0020) can be rented from Solinst for this purpose. A data storage unit is also required; either a laptop computer with appropriate download software or the 3001 Leveloader with RS232 cable (SN 2560) will work. The Leveloader can also be rented from Solinst.

5 Feasibility of Collection Ditches

5.1 Objectives

Item 9a of Permit MX-1-422 requested that any future reclamation plans include construction of a ditch to intercept waste rock seepage. Previous inspections of the site by both SRK and MEM have indicated that construction of a ditch is likely to be impractical. However, MEM requested a specific inspection by a qualified geotechnical engineer to determine the feasibility and expected performance of a collection ditch.

5.2 Methods

The waste dump and surrounding area was inspected by Dr. Maritz Rykaart, P.Eng, a senior geotechnical engineer from SRK, on September 24 and 26, 2003 . Conditions at the time of the site visit were not optimal due to poor visibility created by intermittent fog, falling and blowing snow. Snow thickness was variable, and in many locations substantial snow drifts had already been formed. Following the September site visit, photographs from the August 2003 site visit were reviewed to provide additional information on surface conditions.

5.3 Results and Discussion

Notwithstanding the non-ideal site inspection conditions, along with the observations made by Mr. Dylan MacGregor during the August 2003 site visit, the information was deemed sufficient to make the following statements:

- There is definite evidence of seepage from the toe of the dump at least at three locations, which could most likely be intercepted with a surface collection ditch. Spot flow measurements suggest that the seepage rates are on the order of 1 L/min.

- There is no evidence that supports or denies that the observed seepage are the only seepage from the dump. If there is seepage directly under the dump through fracture zone, it would be unlikely to be intercepted by shallow surface drainage ditches.

- There appears to be no fatal flaws with respect to the construction of south draining ditches along the east and west sides of the waste rock pile, i.e. it would be possible to construct gravity flow ditches on either side of the waste rock dump that would drain towards a central collection point.

- These ditches could not be excavated by any other means than percussion blasting.

- The exposed bedrock is fractured, and it is likely that percussion blasted ditches would cut into moderately fractured bedrock.

- The natural fracturing in the bedrock could result in potentially substantial losses in flow from any ditches. Given the expected low seepage flows which are to be intercepted, it would probably be necessary the line the ditch base to prevent leakage.

- The rate of seepage is most likely substantially less than the freshet or rainfall flows expected from the dump. If the ditches are designed to only contain the seepage flow, they would therefore overflow in most instances. The ditches would therefore have to be designed to contain surface runoff and freshet flows from the dump.

- There is a risk that material ravelling from the waste rock pile could result in blockages in the ditches. Such ravelling could also rupture the liner in the ditches. It may therefore be necessary to construct a permeable upstream containment berm, and cover the liner with some form of protective gravel.

It is our opinion that the ditches described above would be costly to construct, and the actual benefit towards reducing the waste load from the waste rock dump is questionable. Furthermore the performance of these ditches under the adverse climatic conditions experienced on site would be questionable. Snowdrifts would likely full the ditches as soon as the early fall, and it is likely that snowmelt, combined with runoff during this early freeze/thaw season would result in ice build-up in the ditches. This ice-build-up could result in the loss of seepage flows during the freshet.

Measuring seepage flow from the ditches prior to its release to Goldslide Creek would also be challenging, again as a result of snow drifts and ice build-up. Furthermore, the flow rates would be highly variable as a result of the runoff and freshet volumes as opposed to the expected seepage volumes. Accurate measurement of flows over such a range is extremely difficult.

Given all these conditions, it is our opinion that the construction of ditches to collect and measure the seepage flows from the waste rock dump would be possible. However, maintaining flow in these ditches, and actively measuring these flows, would be extremely challenging. We would thus not recommend that these ditches be constructed.

6 Inventory and Evaluation of Buildings and Equipment

6.1 Objectives

For estimating costs of final reclamation, a more detailed inventory of existing materials, equipment, and facilities at the site was required. The objectives of this inventory were as follows:

- Compile an inventory of all material on site.
- Evaluate the condition of mechanical equipment remaining on site, both from the perspective of utility for reclamation purposes and of potential resale value.
- Assess the condition of the various facilities, considering the potential for use during reclamation activities.

Completion of this activity is intended to address Item 6 of Permit MX-1-422.

6.2 Methods

An inventory of surface equipment and facilities was undertaken on August 19-20, 2003. SRK staff tabulated the materials and equipment present at both Cirque Camp and in the vicinity of the portal. Where possible, the condition of buildings and equipment was recorded. The mining equipment was evaluated by a qualified underground mining mechanic from Procon. This evaluation included attempting to start most of the equipment and an assessment of what each unit required in the way of maintenance and repairs. Where possible, equipment was weather-proofed following inspection by covering air intakes and exhaust vents with tarps and duct tape.

6.3 Results and Discussion

A categorised inventory is provided in Attachment F. A brief description of the categories employed is as follows:

- Equipment: either with potential salvage value or value in implementing the reclamation plans,
- Inert: primarily metal in the form of equipment and building materials (beams, sea containers and sheathing/ roofing as well as minor quantities of glass and electrical cable sheathed in plastic. This material is potentially suitable for burial or underground disposal.

- Hazardous materials, including fuel, batteries and other chemical waste materials requiring incineration or off-site disposal. Small quantities of fuel-contaminated soil in vicinity of mechanics' shop is included in this category and may require land-farming.

- Combustible, which included wood, paper and lightweight plastic or cloth items. This category includes most of the site buildings.

There appears to be very little material or equipment on site that has sufficient value to economically justify removing it from site, due largely to the high cost of airlift transport. Combustible waste and non-combustible waste, in the form of wood and metal, respectively, make up the bulk of material on site.

The findings of the mechanical inspection were recorded in the brief report prepared by Procon (Attachment G). SRK staff discussed the state, utility, and resale value of the equipment with Procon and took a number of photos (see CD Rom). It was determined that with maintenance and minimal repairs, the equipment on site could be used to carry out site reclamation, and could even be brought into suitable condition for use in a mining operation. However the market for most of these items is limited, and the value is unlikely to be offset by the high cost of dismantling, removing them from the site, and then reassembling them. Of particular importance, due to its utility for reclamation, the D7 bulldozer was judged to be in good condition. Only the bulldozer and the drill jumbo were considered by Procon to have sufficient resale value to economically justify removal from site. Of the equipment examined, Procon was able to start two trucks and two scoops, as well as the Kubota excavator. Although the Kubota ran, Procon judged it to be damaged.

Inspection of the buildings on site was carried out by two SRK geologists, and is therefore limited to comments on their general condition and function, rather than on the structural stability. In general, the buildings are showing the effects of the harsh climate and lack of maintenance in recent years. Nevertheless, enough of the infrastructure is in reasonable condition for use in the reclamation activities and as emergency shelters.

In the vicinity of the portal, the mechanics' shop and the adjacent sea containers were inspected. The roofs of the four sea containers (sea cans) appear to be water tight. The southern two sea cans are used for storage of various supplies and parts- these are essentially full of shelving and have little use as emergency shelter. The northern two sea cans are set up for use as a lunch room and an emergency shelter, respectively. These could be used as such or as first aid headquarters or office space/ communications centre during reclamation. None of the sea cans have functioning doors; all are currently boarded up with plywood. Some hydrocarbon spills were observed in the area between the sea-cans.

The adjacent mechanics' shop has a metal roof and metal sheathing on the east wall, with steel beams and post. All metal is in reasonable condition, with metal beams showing a thin coating of rust. Remaining walls, including double doors on north side, are sheathed in plywood. This plywood is beginning to weather, with some panels loose or missing. Where possible, sheathing was refastened during the inspection. The main doors would require major repair or possible replacement prior to using the mechanics' shop as a closed building. Hydrocarbon spills were observed in the oil storage area.

The Cirque Camp consists of 22 bunkhouse cabins, a cookhouse/ recreation complex, three outbuildings and a heliport. Of the bunkhouses, 10 remain in functional condition requiring minimal work to make them habitable, 4 are in marginal condition requiring major work, and 8 are deteriorated beyond reasonable repair. The cookhouse/ rec complex is in fair condition, the roof appears intact and was not noted to leak, but the ceiling panels on the inside have either fallen or are bulging down. In addition, this facility appears to be infested by pack rats, and will require a major cleaning effort if it is to be used for anything. Of the outbuildings, the generator shack appears to be in fair condition. The roof is intact and appears water tight, however window/ door coverings had been removed by vandals. These coverings were replaced at the time of inspection. The generator is somewhat weather-proof, with a covering of plastic sheeting. The other two outbuildings are in good shape and would be useful for storage. The heliport tent is a Quonset-style tent and is in excellent condition. The helipad itself is reported by a pilot from Prism helicopters to have a broken support beam, and requires investigation before it can be used in the future. The wooden building adjacent to the helipad appeared to be in excellent condition.

7 General Site Conditions

One of the objectives of the two 2003 site visits was to assess general site conditions from a reclamation perspective. Although the dates of the inspections were selected to target the snow-free season, both August and September visits encountered snow at the portal, with considerable accumulation and drifting in September. Although the general area was snow free during August, large drifts were still present, including a drift which blocked the entire portal and another around the crusher which left only the top of the crusher sticking out. The bulldozer was used to plough snow away from the portal to gain access to the structure blocking the portal. The location of this drift effectively increases the security of the portal against unauthorised access for most of the year.

Overall, the site has two areas of focus in terms of reclamation. These are the Cirque Camp and the portal area, and the area surrounding these sites has small quantities of windblown debris and other trash and abandoned material and equipment. The drill staging area to the northwest of Cirque Camp is another minor area that will require some reclamation effort. In addition to windblown debris, this location has a minor amount of metal waste (drill rods and miscellaneous drilling paraphernalia), as well as two non-functional trucks and a shed containing various drilling supplies.

The tote roads on site have experienced minor debris ravelling from above, but would require minimal work with the bulldozer to return them to a fully-functional state. No trash or abandoned material was noted adjacent to tote roads during aerial reconnaissance from the helicopter.

The small portal north of Cirque Camp could not be inspected due to blockage by a snow drift. According to Procon, there is some minor equipment, including a jackleg drill, stored in the workings at this location. Excavation of this drift was stopped within approximately 20 metres of the portal, and there is very little waste rock in this location. No debris was noted in the vicinity of this portal during aerial reconnaissance.

8 Summary and Conclusions

Two visits to the Red Mountain exploration site were made in August and September of 2003 to address a number of conditions related to Permit MX-1-422. During these visits, collection of water and waste rock samples was undertaken for environmental monitoring purposes and site investigations were undertaken to aid in developing a final site reclamation plan.

Environmental conditions showed little change from previous monitoring periods. Water elevation in the underground workings has risen five to six metres over three years, while underground water quality is unchanged. Similarly, water quality of drainage from the north field weathering crib and seepage from the waste rock dump is within historical limits. Water quality in surface water in the cirque immediately west of the waste rock pile has measurable background levels of metals and acidity. Future monitoring of these stations may allow impacts of waste dump weathering to be assessed. Contact tests on waste rock samples showed similar pH/conductivity values to those measured in 2000, indicating little progress of weathering of dump material.

The use of collection ditches to capture and convey waste dump seepage was considered to be feasible but impractical given the physical constraints of the site, and the harsh conditions of operation which would limit its function.

Mechanical inspection of heavy equipment indicated that, while resale value is likely negligible, the site fleet would be able to carry out reclamation or even mining activities with the appropriate effort towards repair and maintenance. A surface inventory shows that the majority of waste on site is either combustible (largely wood), or inert (metal) and would be suitable for underground disposal. A smaller quantity of chemical waste and fuel-contaminated soil would require special handling during reclamation.

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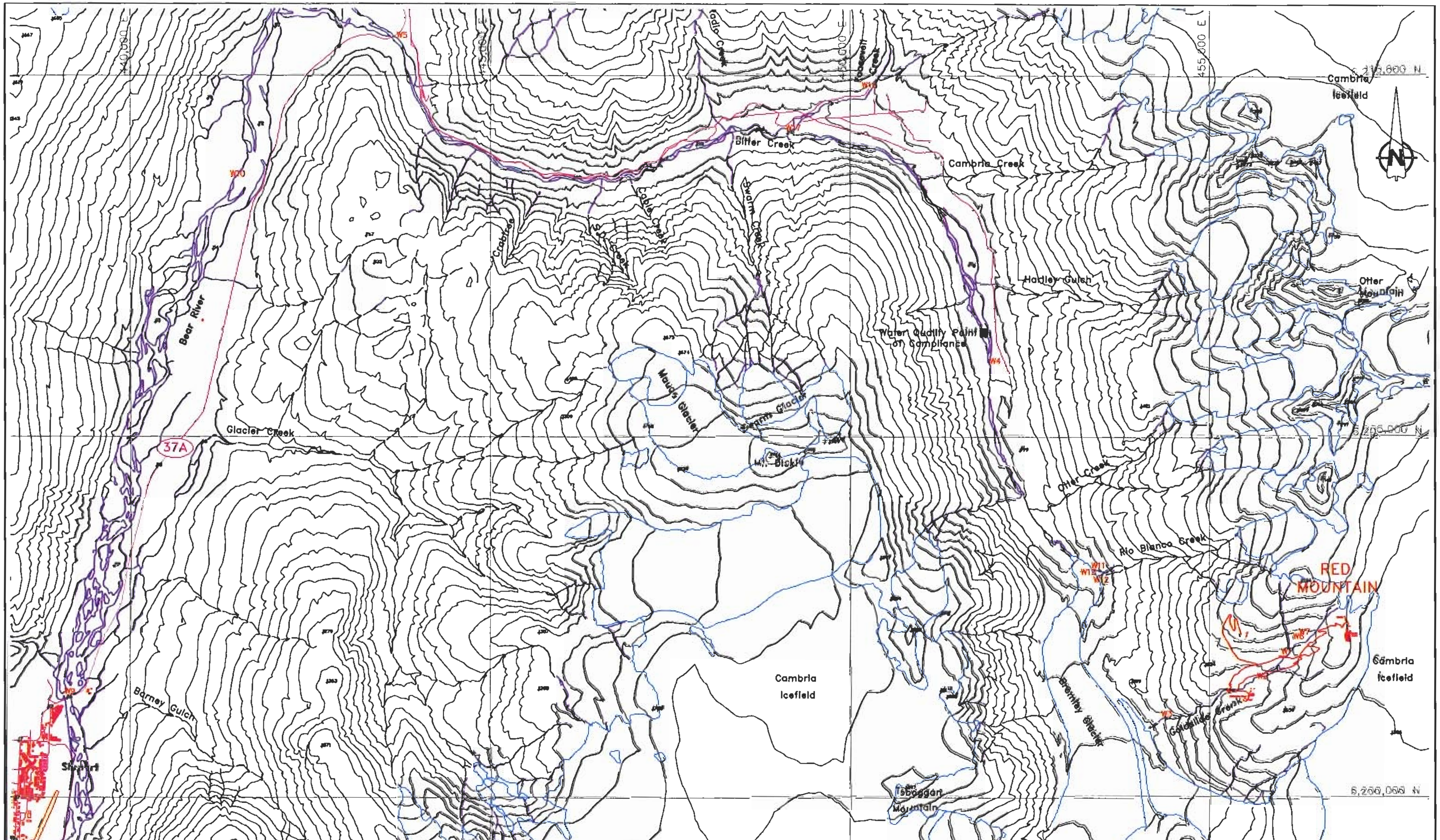
FIGURES



Reference: Drawing from North American Metals Corporation, 2002
Red Mountain Project- Reclamation Plan

1:5000

0 250 500 750 1,000 1,500 2,000 metres

Contour interval = 100 metres

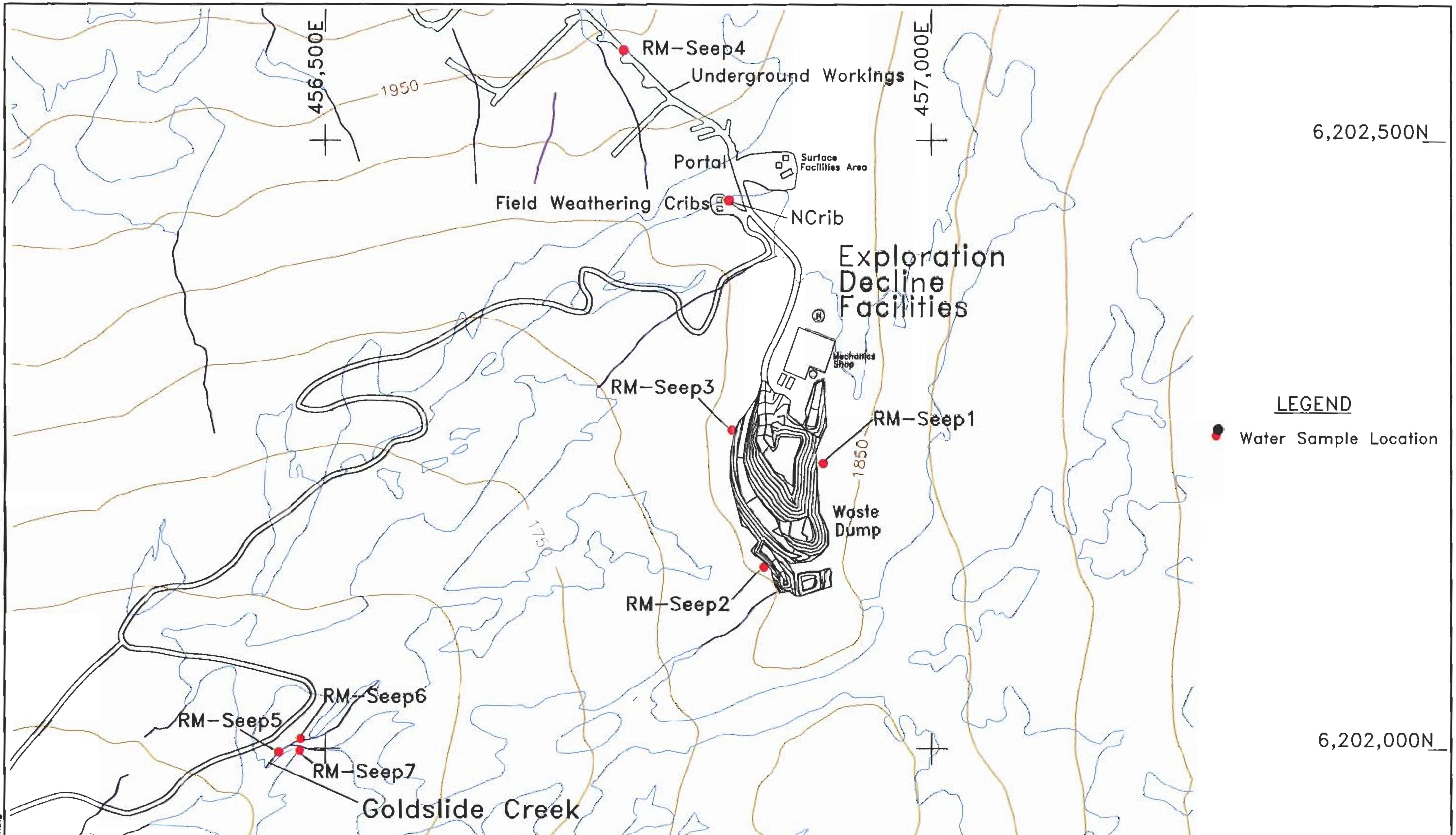
SRK Consulting
Engineers and Scientists

Seabridge Gold Inc.

RED MOUNTAIN PROJECT

REGIONAL LOCATION MAP

PROJECT NO.	DATE	APPROVED	FIGURE
1CS026.01	Dec. 2003	D.B.M.	1



SCALE 1:3,000

0 100 200

metres

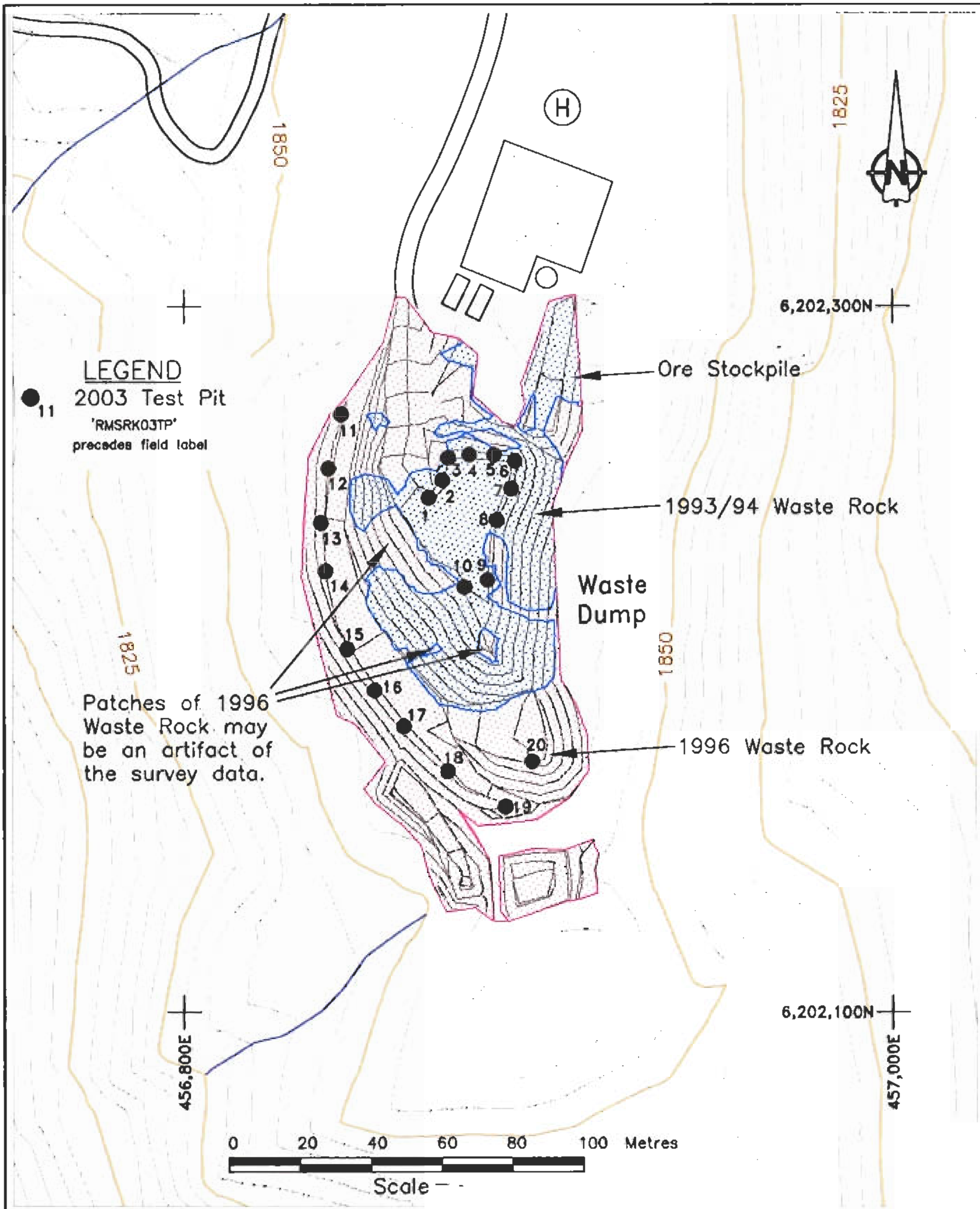
SRK Consulting
Engineers and Scientists

Seabridge Gold Inc.

Red Mountain Project

SEEP SURVEY LOCATIONS
Red Mountain, August 2003

PROJECT NO.	DATE	APPROVED	FIGURE
1CS026.01	Dec. 2003	D.B.M.	2



SRK Consulting
Engineers and Scientists

Seabridge Gold Inc.

RED MOUNTAIN PROJECT

WASTE DUMP– PLAN VIEW
2003 Test Pit Locations

PROJECT NO.	DATE	APPROVED	FIGURE
1CS026.00	Dec. 2003	D.B.M	3

Dwg Ref: Dump_Plan.dwg

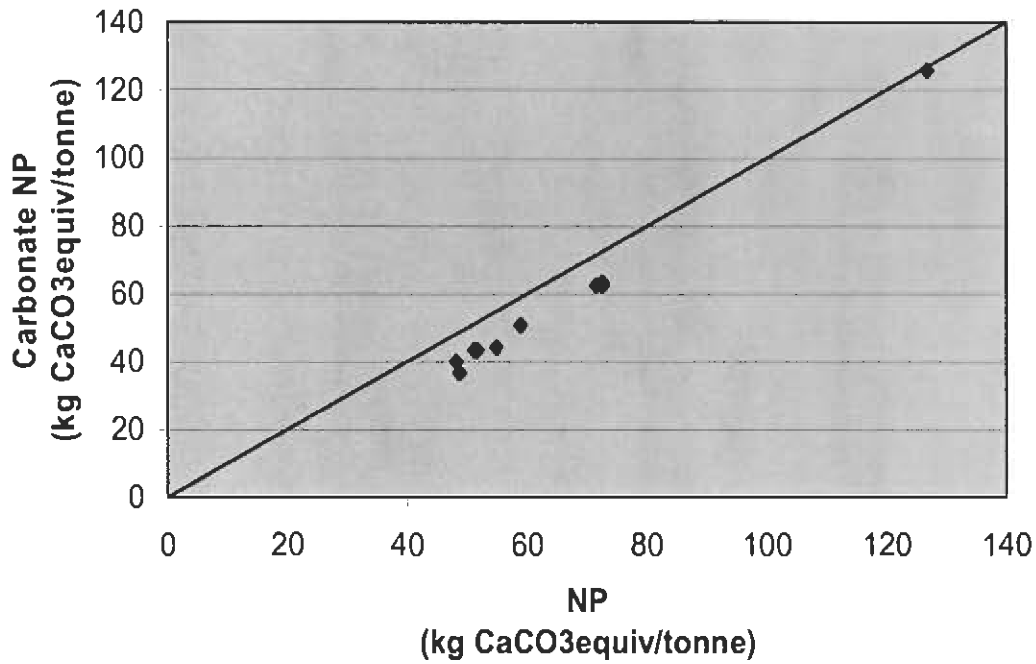


Figure 4. Relationship between NP and carbonate NP.

ATTACHMENT A
2003 Water Quality Results

Attachment A 2003 Water Quality Results

RESULTS OF ANALYSIS

Sample ID	RM-Seep-01	RM-SEEP-02	RM-SEEP-03	RM-SEEP-04	RM-SEEP-05	RM-SEEP-06	RM-SEEP-07	NCrib
Date Sampled	8/19/2003	8/19/2003	8/19/2003	8/19/2003	8/20/2003	8/20/2003	8/20/2003	8/20/2003
Field Parameters								
Field pH	4.89	7.31	6.52	7.3	5.71	6.02	5.18	7.36
Field conductivity (uS/cm)	504	964	1223	381	90	100	69	1405
ORP (mV)	469	442	454	468	569	597	610	479
Temperature (degrees C)	7.6	2.9	1.7	0.9	-	-	-	3.6
Flow (L/min) -visual estimates	1	60	Trace	Ponded	1200	1000	200	1 drop/sec
Physical Tests								
Total Dissolved Solids	537	769	1020	230	62	-	-	-
Hardness CaCO3	354	525	704	176	42.7	49.9	28.8	853
pH	5.09	7.86	7.13	7.96	7.03	-	-	7.96
Dissolved Anions								
Acidity (to pH 8.3) CaCO3	11	2	2	1	1	-	-	2
Alkalinity-Total CaCO3	2	56	12	50	4	-	-	40
Sulphate SO4	368	472	700	130	40	51	36	879
Nutrients								
Ammonia Nitrogen N	0.075	0.095	0.07	<0.005	<0.005	-	-	-
Nitrate Nitrogen N	0.128	1.7	0.148	<0.005	0.033	-	-	-
Nitrite Nitrogen N	<0.001	0.003	0.001	<0.001	<0.001	-	-	-
Dissolved Metals								
Aluminum D-Al	1.97	<0.01	0.03	<0.005	0.037	0.017	0.116	<0.03
Antimony D-Sb	<0.001	0.008	<0.001	0.0064	<0.0005	<0.0005	<0.0005	0.005
Arsenic D-As	0.003	0.001	<0.001	0.0013	<0.0005	<0.0005	<0.0005	<0.003
Barium D-Ba	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	0.03
Beryllium D-Be	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.005
Boron D-B	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Cadmium D-Cd	0.0037	0.0002	0.0005	0.00046	0.00032	0.00037	0.00021	0.001
Calcium D-Ca	132	175	266	57.2	14.2	16.7	9.4	312
Chromium D-Cr	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.005
Cobalt D-Co	0.0468	<0.0006	0.0123	0.0003	0.0009	<0.0003	0.0024	<0.002
Copper D-Cu	0.315	<0.002	0.032	<0.001	0.024	0.026	0.02	<0.005
Iron D-Fe	0.04	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Lead D-Pb	0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.003
Lithium D-Li	<0.01	<0.01	<0.01	<0.005	<0.005	<0.005	<0.005	<0.03
Magnesium D-Mg	5.6	21.3	9.8	8.1	1.8	2	1.3	18.2
Manganese D-Mn	2.29	0.0457	0.423	0.0531	0.0174	0.0047	0.0495	0.005
Mercury D-Hg	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Molybdenum D-Mo	<0.002	0.006	0.003	0.004	0.002	0.003	<0.001	<0.005
Nickel D-Ni	0.024	0.012	0.012	0.002	0.002	<0.001	0.004	<0.005
Potassium D-K	<2	<2	<2	<2	<2	<2	<2	3
Selenium D-Se	0.002	<0.002	0.003	<0.001	<0.001	<0.001	<0.001	<0.005
Silver D-Ag	<0.00004	<0.00004	<0.00004	<0.00002	<0.00002	<0.00002	<0.00002	<0.0001
Sodium D-Na	<2	2	<2	2	<2	<2	<2	5
Thallium D-Tl	<0.0004	<0.0004	<0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.001
Tin D-Sn	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.003
Titanium D-Ti	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Uranium D-U	<0.0004	<0.0004	<0.0004	0.0002	<0.0002	<0.0002	<0.0002	<0.001
Vanadium D-V	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Zinc D-Zn	0.25	<0.01	0.02	0.063	0.023	0.024	0.016	0.06

Footnotes:

Results are expressed as milligrams per litre except where noted.

< = Less than the detection limit indicated.

- indicates value not measured or not recorded

ATTACHMENT B
Summary of Field Weathering Crib Results

Attachment B Summary of Field Weathering Crib Results

Parameter	HC-2 (North Crib) (Sediments with minor Feldspar Porphyry)			
	1996 (Frostad)*	8/12/1997 (Royal Oak)	8/1/2000 (SRK)	8/20/2003 (SRK)
pH	7.0-7.5	7.6	7.3	7.36
Conductivity	1548-1985	1931		1405
Alkalinity	46-58	47		40
Acidity	4.0-58	5		2
Hardness	562-1317	1134	699	853
Sulphate SO4	854-1302	1289	738	879
Aluminum (mg/L)	<0.0005-0.030		<0.02	<0.03
Antimony (mg/L)	0.009-0.014		0.0071	0.005
Arsenic (mg/L)	<0.001-0.003		0.0025	<0.003
Barium (mg/L)	0.017-0.022		0.03	0.03
Beryllium (mg/L)	<0.00005 (all)		<0.004	<0.005
Boron (mg/L)	0.025-0.074		<0.1	<0.1
Cadmium (mg/L)	0.0009-0.002		0.0005	0.001
Calcium (mg/L)	121-371		251	312
Chromium (mg/L)	<0.0005-0.001		<0.002	<0.005
Cobalt (mg/L)	0.0020-0.0080		0.0005	<0.002
Copper (mg/L)	<0.001-0.0036		0.0016	<0.005
Iron (mg/L)	*0.050-0.16*		*<0.03*	*<0.03*
Lead (mg/L)	<0.00005-0.0004		<0.0004	<0.003
Magnesium (mg/L)	28.2-94.9		17.5	18.2
Manganese (mg/L)	1.14-2.18		0.181	0.005
Mercury (mg/L)	<0.00005-0.00009		<0.00002	<0.00005
Molybdenum (mg/L)	0.0011-0.0023		<0.03	<0.005
Nickel (mg/L)	0.0073-0.0084		0.005	<0.005
Potassium (mg/L)	4.85-20.2		5	3
Selenium (mg/L)	<0.001-0.006		<0.004	<0.005
Silver (mg/L)	<0.00001-0.00002		<0.00004	<0.0001
Sodium (mg/L)	15.7-58.6		6	5
Thallium (mg/L)	-		<0.0002	<0.001
Titanium (mg/L)	-		<0.01	<0.01
Uranium (mg/L)	0.0001-0.00049		<0.0004	<0.001
Vanadium (mg/L)	<0.001 (all)		<0.03	<0.03
Zinc (mg/L)	0.042-0.115		0.031	0.06

ATTACHMENT C
Waste Rock Sample Descriptions

Attachment C Waste Rock Sample Descriptions

Visual observations made on +10 mesh fraction

Sample ID	Meta sediment (%)	Porphyry (%)	Sulphides	Staining	Chips- Rxn to 10% HCl	Fines- Rxn to 10% HCl	Notes
1	90	10	Diss, ~0.5%	Minor brownish orange staining	Mod to none	Very Strong	V. Trace Calcite
2	50	50	Stringers and blebs of sulphide common (<5%)	Rare orange staining on particles	Weak to mod	Very Strong	~1% calcite- strong rxn to HCl
3	20	80	Rare diss. f.g. sulphides (<<1%)	V. light orange stain on 5-10% of particles	Mod to strong	Very Strong	~1% Calcite stringers
4	60	40	Rare (<1%) f.g. pyrite in diss. blebs	Trace (<1%) orange stained particles	Mod to none	Very Strong	Rare calcite veinlets- violent rxn w/ HCl
5	60	40	Rare diss. f.g. sulphides (<<1%)	10% of porphyry particles have orange staining	Mod to none	Very Strong	Rare (<1%) calcite stringers
6	30	70	Rare diss. sulphides (<5%)	10% of particles have orange stain	Mod to strong	Very Strong	
7	10	90	Rare sulphides in diss blebs	None visible	Mod to V. Strong	Very Strong	<1% Calcite as veinlets, v. strong rxn to HCl
8	40	60	Rare diss. f.g. sulphides (<<1%)	25% of porphyry particles stained orange	Mod to none	Very Strong	<1% Calcite as stringers, v. strong rxn to HCl
9	70	30	Rare diss. f.g. sulphides (<<1%)	25% of porphyry particles stained orange	Strong to none	Very Strong	Minor (<5%) calcite as stringers, veinlets
10	80	20	Rare diss. f.g. sulphides	V. rare orange stained particles (<1%)	Weak to none	Very Strong	Rare calcite stringers

Attachment C Waste Rock Sample Descriptions

Visual observations made on +10 mesh fraction

Sample ID	Meta sediment (%)	Porphyry (%)	Sulphides	Staining	Chips- Rxn to 10% HCl	Fines- Rxn to 10% HCl	Notes
11	10	90	Rare (<5%) f.g. sulphides, diss. and in stringers	Minor orange staining on 25% of particles	Weak to strong	Very Strong	Rare (<1%) calcite veinlets
12	90	10	Rare (<1%) diss. f.g. blebs of sulphide in porphyry	None	Strong to none	Very Strong	Calcite veinlets to 2 mm
13	40	60	Rare diss. f.g. sulphides (<1%)	1-2% orange stained particles	Strong to none	Very Strong	Minor calcite veinlets
14	10	90	Up to 50% of individual particles, <5% overall	Minor orange staining	Strong to none	Very Strong	No visible calcite
15	40	60	Rare diss. f.g. sulphides (<<1%)	Rare (<1%) orange stained clasts	Strong to none	Very Strong	Rare (<2%) calcite veinlets, strong rxn to HCl
16	90	10	Rare diss. f.g. sulphides (<<1%)	Rare (<5% of particles) orange staining	None to mod	Very Strong	Little visible calcite
17	70	30	Rare diss. f.g. sulphides (<<1%)	~1% orange stained particles	Weak to none	Very Strong	Minor calcite as veinlets
18	90	10	V. rare v.f.g. diss sulphides in blebs	None	V.strong to Mod	Very Strong	<1% calcite veinlets
19	50	50	Trace (<<1%) sulphides on some particles	Rare (<5%) orange staining on particles	Strong to Mod	Very Strong	Minor white calcite particles
20	99	1	Trace sulphides on porphyry particles	Trace orange staining on trace particles	V. Strong	Very Strong	Trace 1 mm white calcite veinlets

ATTACHMENT D

ABA Results for Waste Rock

Attachment D-1 Waste Rock ABA Analyses

Client : SRK
Project : Red Mountain
CEMI Project : 0347
Test : Modified Sobek Method Acid-Base Accounting
Date : November 24, 2003 *DRAFT ONLY*

Sample		Paste pH	S(T) %	S(SO4) %	AP	NP	Net NP	NP/AP	TIC %	Calculated by SRK CARB. NP	CARB. NP/AP
all work was done on the -2mm portion on all samples											
RM SRK TP 03	01	8.8	1.91	0.03	58.8	48.6	-10.1	0.8	0.44	36.7	0.6
RM SRK TP 03	02	8.4	3.06	0.02	95.0	48.1	-46.9	0.5	0.48	40.0	0.4
RM SRK TP 03	06	8.3	2.23	0.03	68.8	72.6	3.9	1.1	0.76	63.3	0.9
RM SRK TP 03	07	8.4	2.38	0.03	73.4	54.9	-18.6	0.7	0.53	44.2	0.6
RM SRK TP 03	09	8.4	2.00	0.02	61.9	58.9	-3.0	1.0	0.61	50.8	0.8
RM SRK TP 03	13	8.2	3.60	0.03	111.6	51.1	-60.4	0.5	0.52	43.3	0.4
RM SRK TP 03	14	8.2	4.12	0.03	127.8	51.6	-76.2	0.4	0.52	43.3	0.3
RM SRK TP 03	17	8.5	2.44	0.02	75.6	72.6	-3.0	1.0	0.75	62.5	0.8
RM SRK TP 03	19	8.4	3.16	0.05	97.2	71.5	-25.7	0.7	0.75	62.5	0.6
RM SRK TP 03	20	8.8	0.67	0.01	20.6	126.9	106.3	6.2	1.51	125.8	6.1
Repeats											
RM SRK TP 03	01	8.8	1.90	0.01	59.1	50.8	-8.3	0.9	0.43	35.8	0.6
RM SRK TP 03	20	8.8	0.67	0.01	20.6	126.5	105.9	6.1	1.5	125.0	6.1

AP = Acid potential in tonnes CaCO3 equivalent per 1000 tonnes of material. AP is determined from calculated sulphide sulphur content: S(T) - S(SO4), assuming total conversion of sulphide to sulphate.
NP = Neutralization potential in tonnes CaCO3 equivalent per 1000 tonnes of material.
NET NP = Net neutralization potential = Tonnes CaCO3 equivalent per 1000 tonnes of material.
NOTE: Where S(T) is reported as <0.01%, a S(T) value of 0.01% is used for the AP calculation. Where S(SO4) is reported as <0.01%, it is assumed to be zero for the AP calculation. (ie. If S(SO4) is less than 0.01% or is not analyzed, AP is calculated from S(T) only)
TIC = Total Inorganic Carbon as %C.
Carbonate NP calculated from total inorganic carbon (TIC) assay. TIC value of 0.01 is used in calculation if TIC <0.01%.

Attachment D-2 Waste Rock Total Sulphur and TIC Analyses

Client : SRK
Project : Red Mountain
CEMI Project : 0347
Test : TIC and S(t) results
Date : November 24, 2003 *DRAFT ONLY*

Sample	**TIC %**	**S(T) %**	**Calculated ABA**			
			NP	**AP**	**NNP**	**NP/AP**
all work was done on the -2mm portion on all samples						
RM SRK TP 03 - 03	0.6	2.64	51.7	82.5	-30.8	0.63
RM SRK TP 03 - 04	0.7	2.1	54.2	66.9	-12.7	0.81
RM SRK TP 03 - 05	0.7	2.0	55.0	61.6	-6.6	0.89
RM SRK TP 03 - 08	0.7	3.1	56.7	95.6	-39.0	0.59
RM SRK TP 03 - 10	0.5	2.07	44.2	64.7	-20.5	0.68
RM SRK TP 03 - 11	0.8	4.69	69.2	146.6	-77.4	0.47
RM SRK TP 03 - 12	1.4	0.96	119.2	30.0	89.2	3.97
RM SRK TP 03 - 15	0.7	1.22	61.7	38.1	23.5	1.62
RM SRK TP 03 - 16	0.7	1.90	55.0	59.4	-4.4	0.93
RM SRK TP 03 - 18	0.4	0.93	35.0	29.1	5.9	1.20
Duplicates						
RM SRK TP 03 - 03	0.6	2.59	51.7	80.9	-29.3	0.64
RM SRK TP 03 - 18	0.4	0.92	35.0	28.8	6.2	1.22

AP = Acid potential in tonnes CaCO3 equivalent per 1000 tonnes of material. AP is determ
from calculated sulphide sulphur content: S(T) - S(SO4), assuming total conversion (
sulphide to sulphate.

NP = Neutralization potential in tonnes CaCO3 equivalent per 1000 tonnes of material.

NET NP = Net neutralization potential = Tonnes CaCO3 equivalent per 1000 tonnes of mate

NOTE: Where S(T) is reported as <0.01%, a S(T) value of 0.01% is used for the AP calculat
Where S(SO4) is reported as <0.01%, it is assumed to be zero for the AP calculatior
(ie. If S(SO4) is less than 0.01% or is not analyzed, AP is calculated from S(T) only)

TIC = Total Inorganic Carbon as %C.

Carbonate NP calculated from total inorganic carbon (TIC) assay. TIC value of 0.01 is used
calculation if TIC <0.01%.

ATTACHMENT E
Rietveld XRD Results

Quantitative Phase Analysis of Five Samples Using the Rietveld Method and X-ray Powder Diffraction Data.

Attention:
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Elisabetta Pani, Ph.D.

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December 17, 2003

EXPERIMENTAL METHODS

The particle size of the five samples, renamed as SRKTP**0301**, SRKTP**0306**, SRK**0307**, SRKTP**0314** and SRKTP**0317,** was further reduced to the optimum grain-size range for X-ray analysis (<10 μm) by grinding under ethanol in a vibratory McCrone Micronising Mill (McCrone Scientific Ltd., London, UK) for 7 minutes.

Step-scan X-ray powder-diffraction data for all the samples were collected over a range 3-70°2θ with CuKα radiation on a standard Siemens (Bruker) D5000 Bragg-Brentano diffractometer equipped with a diffracted-beam graphite monochromator crystal, 2 mm (1°) divergence and antiscatter slits, 0.6 mm receiving slit and incident-beam Soller slit. The long sample holder used (43 mm) ensured that the area irradiated by the X-ray beam under these conditions was completely contained within the sample. The long fine-focus Cu X-ray tube was operated at 40 kV and 40 mA, using a take-off angle of 6°. X-ray powder-diffraction data were refined with Rietveld Topas 2.1 (Bruker AXS).

RESULTS AND DISCUSSION

The X-ray diffractograms were analyzed using the International Centre for Diffraction Database PDF-4 using Search-Match software by Siemens (Bruker). Rietveld refinement plots are given in Figures 1-5. The results of quantitative phase analysis by Rietveld refinement are given in Table 1.

Table 1: Results of quantitative analysis from Rietveld refinements (wt.%)

Phase	Ideal Formula	SRKTP0301	SRKTP0306	SRKTP0307	SRKTP0314	SRKTP0317
Quartz	SiO_2	4.4	8.0	5.4	8.9	7.7
Plagioclase	$NaAlSi_3O_8$-$CaAl_2Si_2O_8$	27.2	27.2	32.9	27.4	33.6
K-Feldspar	$KAlSi_3O_8$	32.1	22.5	22.4	22.1	18.3
Muscovite	$KAl_2AlSi_3O_{10}(OH)_2$		5.5	4.2	6.8	5.4
Chlorite	$(Mg,Fe^{2+})_5Al(Si_3Al)O_{10}(OH)_8$	22.9	19.8	18.9	16.5	14.4
Tremolite	$Ca_2Mg_5Si_8O_{22}(OH)_2$	2.4	3.0	4.2	1.8	6.4
Calcite		3.8	6.9	5.0	5.5	7.3
Pyrite	FeS_2	3.2	4.0	3.8	5.3	3.8
Pyrrhotite	$Fe_{1-x}S$	2.6	2.2	2.5	4.7	2.2
Siderite	$Fe^{2+}CO_3$	1.1	0.7	0.6	0.7	0.5
Magnetite	$Fe^{2+}Fe_2^{3+}O_4$	0.3	0.3	0.2	0.3	0.4
Total		100.0	100.0	100.0	100.0	100.0
	Units					
Calcite	*(kg/tonne)*	*38*	*69*	*50*	*55*	*73*
Sobek NP	*(kg $CaCO_3$ equiv/tonne)*	*49*	*73*	*55*	*52*	*73*
Carbonate NP	*(kg $CaCO_3$ equiv/tonne)*	*37*	*63*	*44*	*43*	*62*

**Items in italics added to table by SRK for comparison purposes. 'RM' precedes sample ID in field label.*

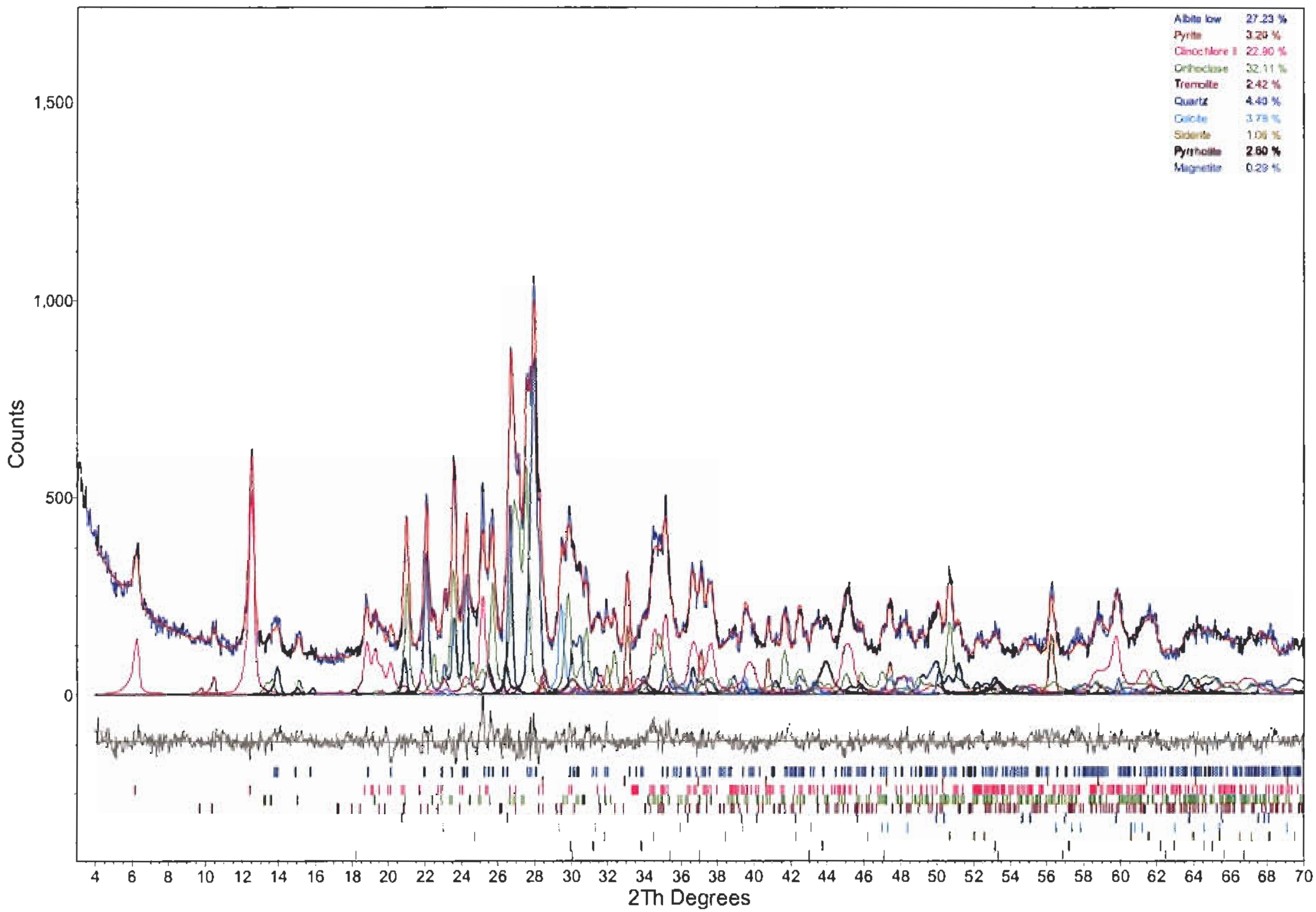

Figure 1: . Rietveld refinement plot for sample **"SRKTP031"** (blue line - observed intensity at each step; red line - calculated pattern, solid grey line below – difference between observed and calculated intensities; vertical bars, positions of all Bragg reflections. Coloured lines are individual diffraction patterns of all phases.

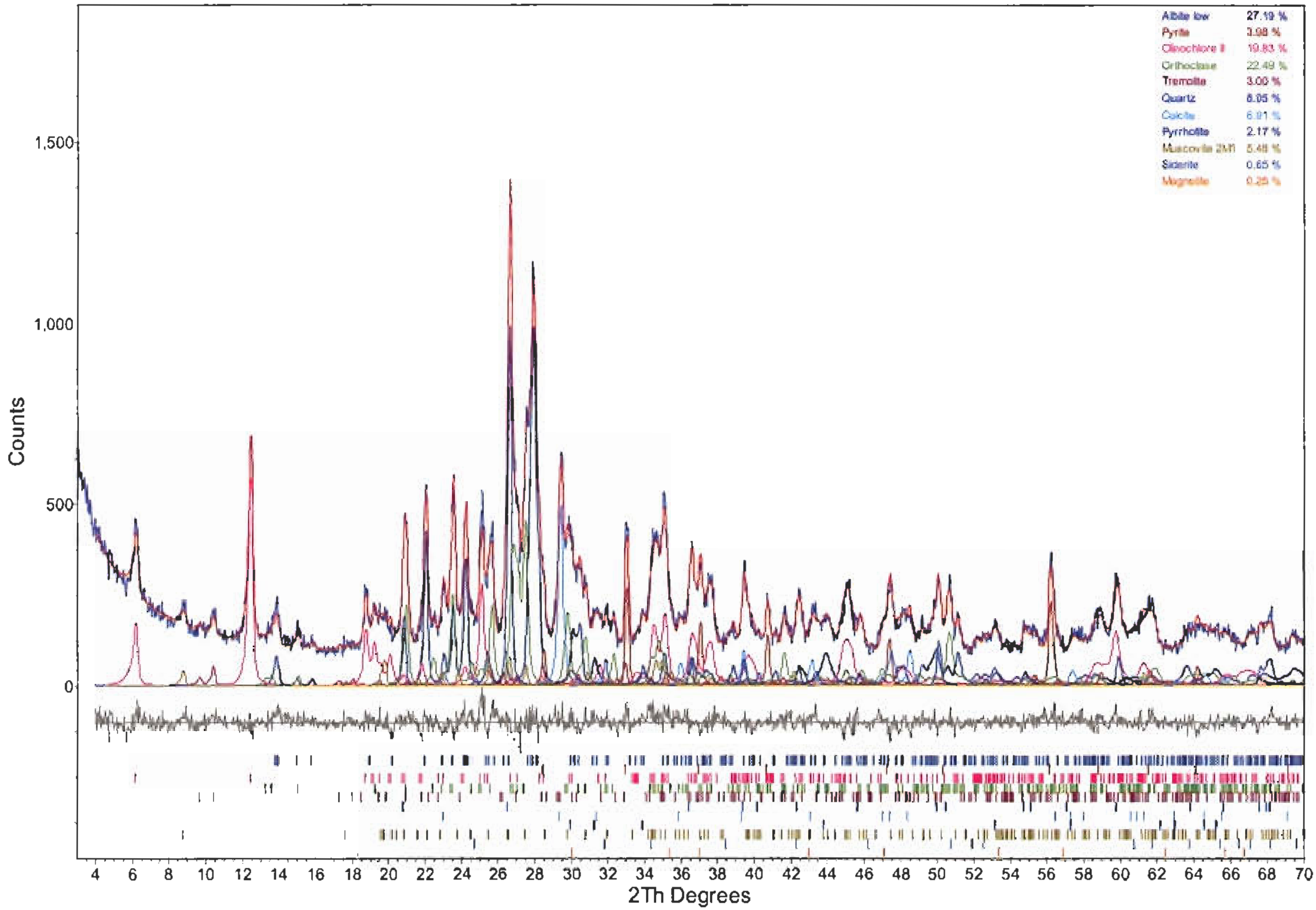

Figure 2: . Rietveld refinement plot for sample **"SRKTP036"** (blue line - observed intensity at each step; red line - calculated pattern, solid grey line below – difference between observed and calculated intensities; vertical bars, positions of all Bragg reflections. Coloured lines are individual diffraction patterns of all phases.

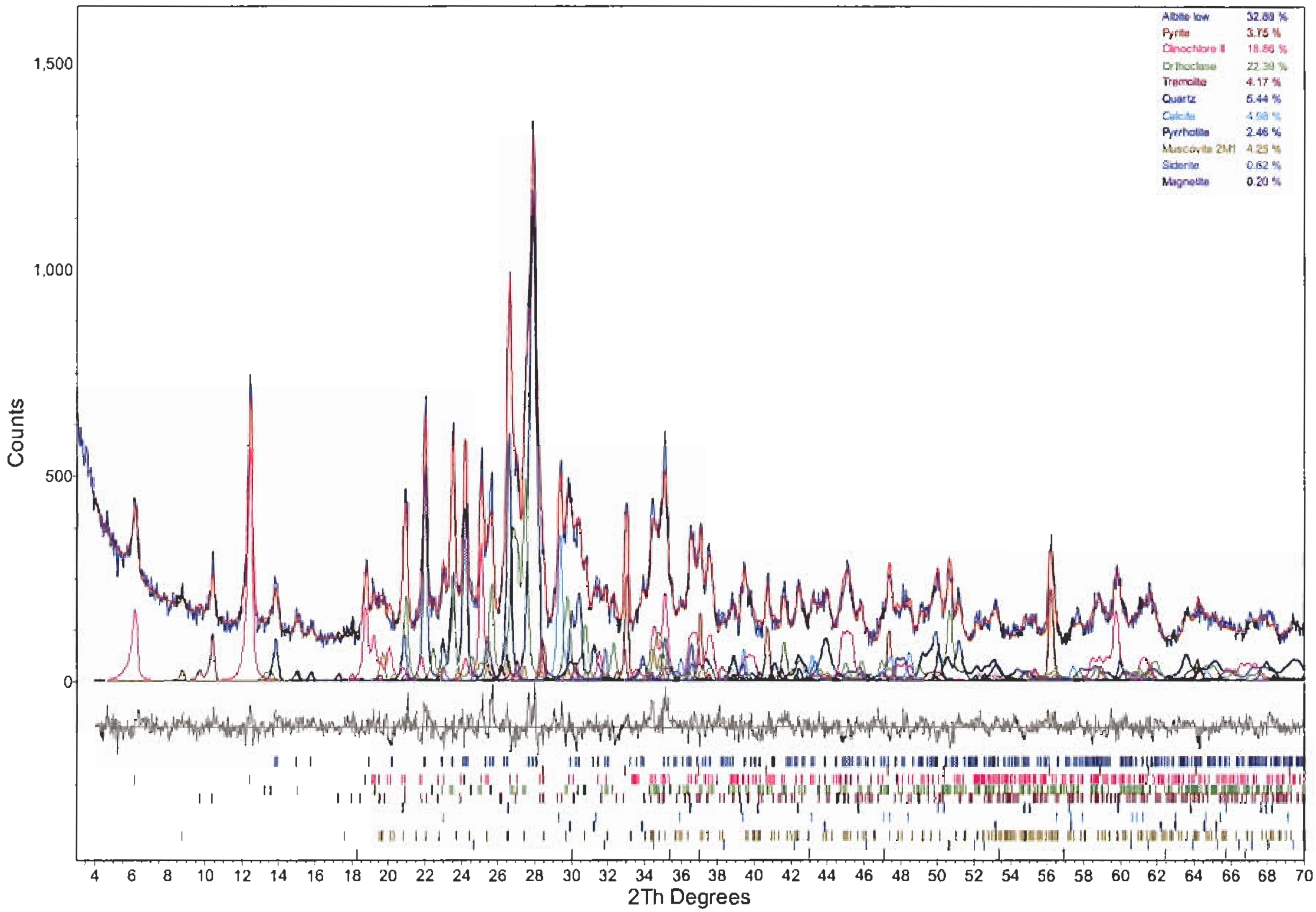

Figure 3: . Rietveld refinement plot for sample **"SRKTP037"** (blue line - observed intensity at each step; red line - calculated pattern, solid grey line below – difference between observed and calculated intensities; vertical bars, positions of all Bragg reflections. Coloured lines are individual diffraction patterns of all phases.

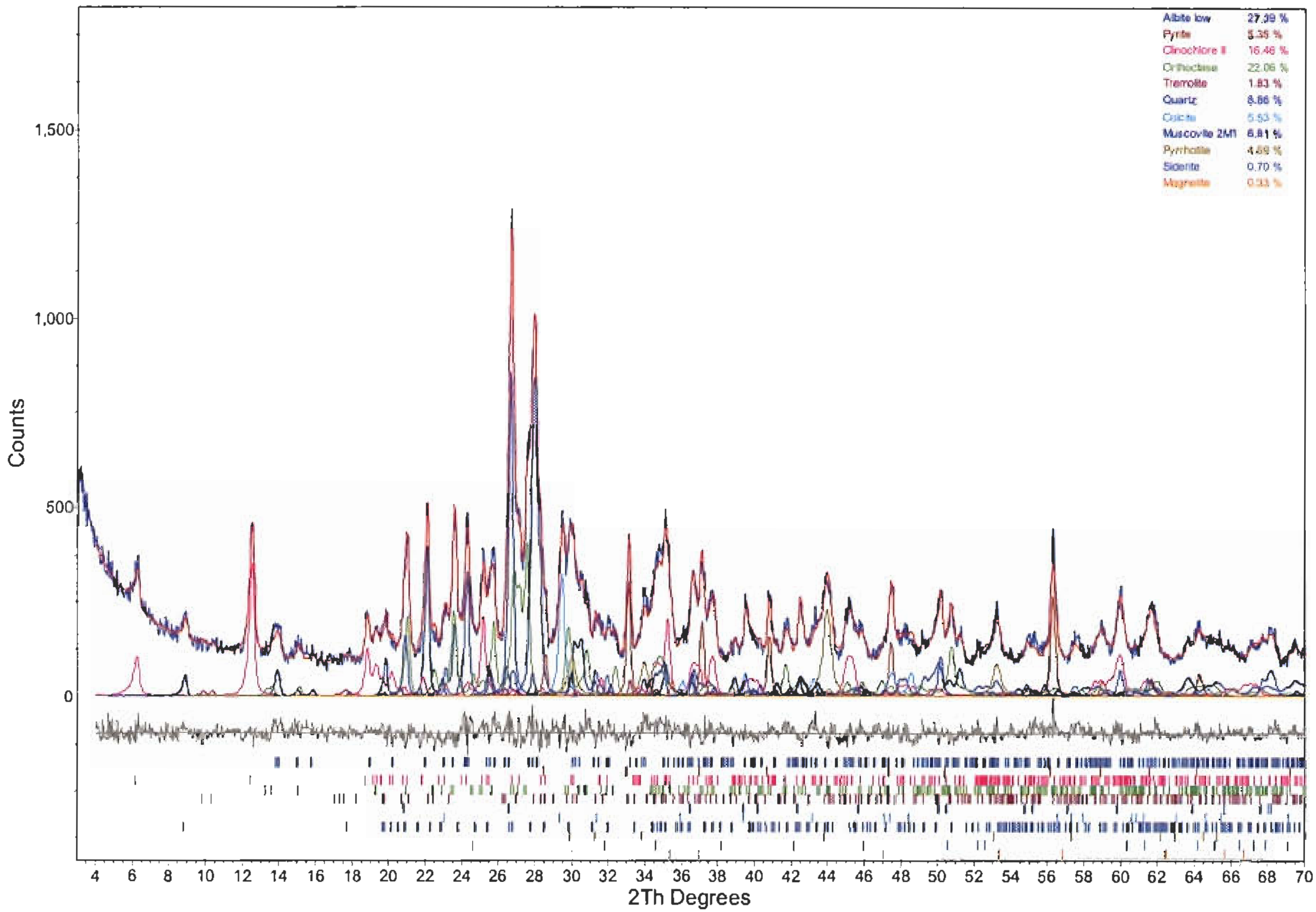

Figure 4: . Rietveld refinement plot for sample **"SRKTP0314"** (blue line - observed intensity at each step; red line - calculated pattern, solid grey line below – difference between observed and calculated intensities; vertical bars, positions of all Bragg reflections. Coloured lines are individual diffraction patterns of all phases.

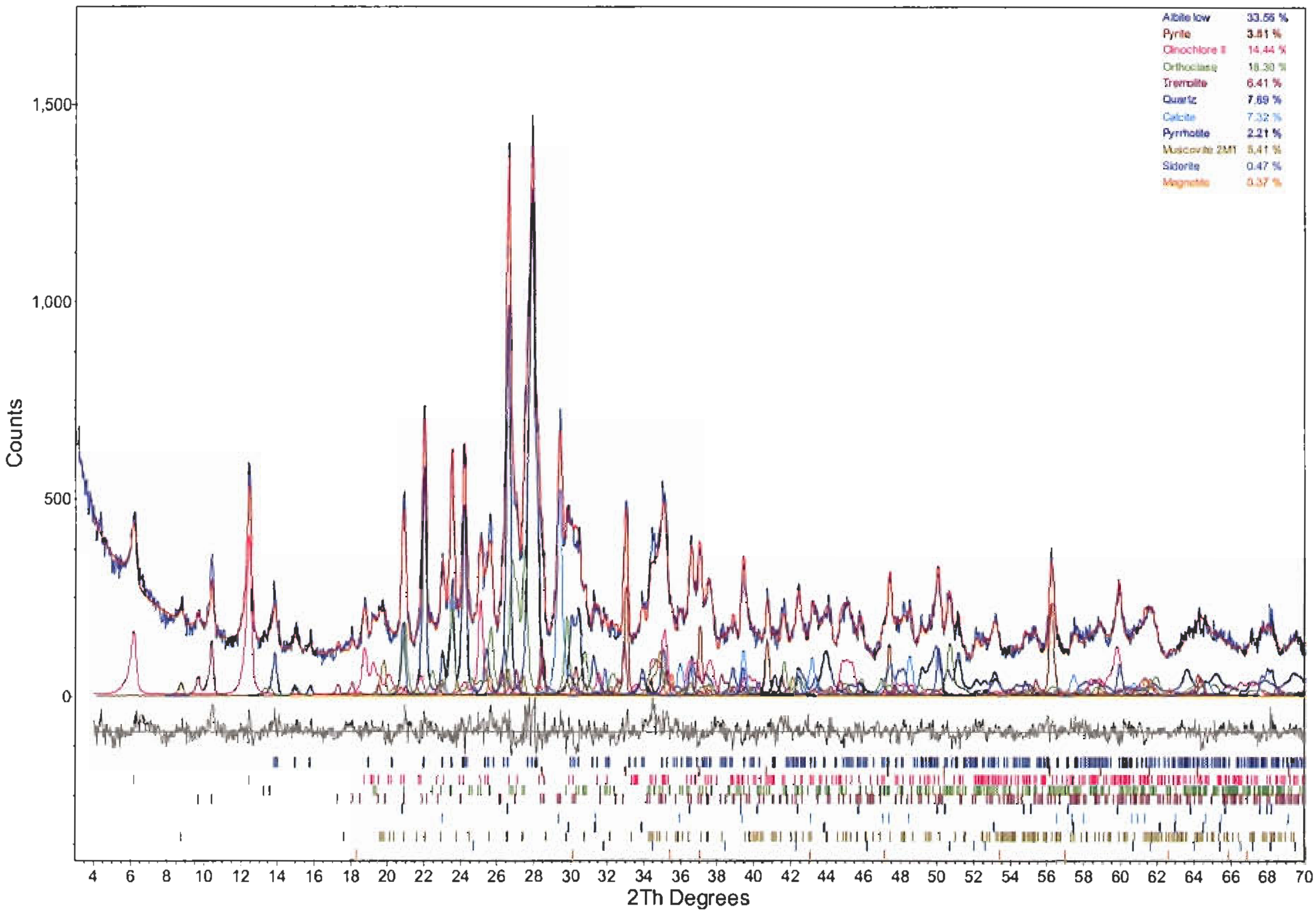

Figure 5: . Rietveld refinement plot for sample "**SRKTP0317**" (blue line - observed intensity at each step; red line - calculated pattern, solid grey line below – difference between observed and calculated intensities; vertical bars, positions of all Bragg reflections. Coloured lines are individual diffraction patterns of all phases.

ATTACHMENT F
Site Inventory

Attachment F- Site Inventory

Heli - loads based approximately on capacity of MD 500 helicopter

Categories:
Equipment - Could be used or salvaged if sufficient value
Nonhazardous waste- metal , plastic (could be disposed underground or buried in waste rock)
Fuels and Chemical waste (incinerate or remove from site)
Combustible waste (burn on site)

Location	Equipment			Scrap Metal/Plastic/Inert		Fuels/Chemicals	Combustible	
	Description	Quantity (tonnes)	Offsite value	Description	Quantity (tonnes)	Description	Description	Quantity
Underground	~75 HP electric fan for mine ventilation. Mechanic says motor may be seized; if not, would have resale value.	1	yes	Various small equipment, kubota clean-up bucket, split sets, scaling bars, hoses etc. - all v rusty	2			
Outside Portal	Pressure Washer, 750 compressor (Gardner-Denver Sound Design, working order in 2000, currently has bashed in side and flat tires), Air Track (fair condition)	4	possibly air track	small sea-can	0.5	4' diameter, 10' long fuel tank - fair condition. 20L pail Chevron solvent (mostly empty)		
NE Seacan (lunch room)				Metal and plastic waste	0.25		Plywood furniture, paper	2 m3
SE Sea-can and adjoining alcove	60 HP motor, Jack-leg drill, Boart Button bits (18 - 1.25", 8 - 2", 7 - 4.5 cm), starter motors, hydraulic pump, hydraulic cylinders, drive shafts for scoops	1	potential	misc parts, and hardware - rusty, old hoses, fluorescent lights, used rain gear, miner's belts, truck chains, insulation	0.5	2 propane tanks (partly full), 2 pails of fire extinguisher chemical, 2 pails degreaser soap, 2 carboys with antifreeze, 4-4L cans brake fluid, misc paint and spray paint, WD40, grease, chain oil, PVC pipe glue	Wooden shelves, walls of alcove	2 m3
SW Sea-can	Flyght parts (pumps), flood lights, lamp parts, hydraulic press	0.5	no	misc parts and hardware, some rusty	0.5	6 small propane tanks	Wooden shelves	2 m3
NW Sea-can	Miller Electric welder (Goldstar 400 SS)	0.1		HEPA filters (North brand), equipment manuals, misc first aid supplies (damp and moldy), fire extinguishers (unknown capability), old lockers and desk.	1	2 oxygen cylinders (1 litre)	Wooden shelves, bunkbeds	2 m3
Between seacans	4 tires (3 with rims) - solid with good rubber may be worth salvage	0.5		rusty pipes, metal tables, misc scrap, block, steel I-beams.	1	~75 m3 fuel soaked ground, between seacans. Est. 1 m deep by at least 5 m wide and 15 m long. Could be landfarmed or burned on site. Definite odour of fuel and oily residue on hands following contact	Scrap wood	1 m3
NE side of Sea-can				20 10-15' long old pipes and rods	1	Truck battery	Scrap wood	1 m3
Bulk fuel tanks				Metal from fuel tanks. Could be flattened with dozer, burned to remove fuel residue, and placed in decline. Otherwise cut and remove by sling'ng from helicopter	3	Tank #1: 17400 L capacity, ~500 L in tank (dipped); evidence of fuel spilled where withdrawal fittings are located. Bung missing from secondary containment; liquid level inside containment is at spill point of open bung, slight oily sheen on liquid Tank #2: 10400 L capacity, contains ~ 7700 L fuel in tank (dipped); secondary containment is visibly cracked at bottom of SW corner (nonfunctional) Tank #3: 10400 L capacity, ~4000 L in tank (dipped); secondary containment broken at SW corner (nonfunctional)		
Barrel near bulk fuel tanks						Adjacent to Tanks 2 + 3; full blue barrel, bungs appear factory sealed. Labelled "Chevron Delo 400 Motor Oil, SAE 400, 200 litres"		
Mechanics' Shop	Honda Pump (running in 2000)	0.1	potential	Steel angle iron frames for above tanks. Ready to fly- hook up and go (label indicates 250 kg tare weight). Or burn tanks and crush frames for underground disposal.	1.5	Misc. lubricants: moly grease, various grades oil. Much is like new. 26-20L pails		
	Generator sets, Kato Brand and Boveri Brand.	2	unlikely	Steel I beam frame consisting of 7-40' long 14" beams, 2 - 48' long 8" beams, 8 - 10' long 8" beams, 8 - 15' long 8" pillars, 20 - 48' long C joists for roof, 40x48' corregated roofing material	10-20	Antifreeze-new 18 - 4L jugs		
	Switch Gear Units (Electric Power Equipment Ltd. (number LL 13449 1 S29 and LL 14884/S-26)	1-2	unlikely	Hoses, pails, jerry cans, etc	2.5	~100 m3 Hydrocarbon contaminated soil, varying degrees of contamination		
	8 electric boxes for pumps, including starter box for Jumbo drill	1	potentially valuable	Non-machinery miscellaneous metal	5	3 - 20 L pails Canutec 700 Urethane Injection resin; methylene diphenyll diisocyanate; probable grout additive		
	Tamrock Jumbo Drill (Model H207N), 1980's, but has not had many hours on it, good condition (has been kept in the shop)	2-4	potentially valuable	Misc. wires, hoses, trash. Possibly combustible in part.	5-10	2 - 200 L barrels Labelled "marked diesel". One full barrel in good shape, on side. One barrel partially full, bung open, barrel pump sticking out.		

Attachment F- Site Inventory

Heli - loads based approximately on capacity of MD 500 helicopter

Categories:
Equipment - Could be used or salvaged if sufficient value
Nonhazardous waste- metal , plastic (could be disposed underground or buried in waste rock)
Fuels and Chemical waste (incinerate or remove from site)
Combustible waste (burn on site)

Location	Equipment			Scrap Metal/Plastic/Inert		Fuels/Chemicals	Combustible	
	Description	Quantity (tonnes)	Offsite value	Description	Quantity (tonnes)	Description	Description	Quantity
	3 - 1137 L Plastic tanks for motor oil, empty with residue. Excellent used condition	0.5				Truck battery 4 - 75 L barrels. Roca Gell: not sure what this is for. Procon staff unaware of use. Have heard of this causing a problem during tunnelling- water contamination- somewhere in Europe	Misc. wood waste	~3 tonnes
Shed at back of shop				Roof of structure - steel frame, with 5 - 12'x 8" I beams, 7 - 25'x6" C beams, 2-25'x6" I beams. 3 Metal Tables, misc hardware (rusty), heater Insulation, hoses, geofabric	1 0.25 0.1	Open tool soaking bin with Varsol, 20L pail 22x oil		
Behind Mechanics Shop	Crusher - MinPro Reeves Crusher, 20' long conveyor and large motor. Buried in large snow drift		potentially valuable					
Top of Dump (see mechanics report)	3 Underground Haul Trucks (2 running order, one not starting) 3 Underground rock scoop (2 running order, one not starting) 973 Track Loader (seized engine) D7 (considered dependable by mechanic) Kubota Backhoe (runs, but was damaged by overheating)	6 6 2 3 1	no unlikely unlikely possibly possibly					
Cirque camp								
Bunkhouses				Roofing metal, window glass, wiring, misc. scrap metal., insulation	3		10 bunk houses in reasonable condition (functional with minimal work), 4 bunkhouses in marginal condition, 8 bunkhouses badly deteriorated	22 bunk houses
Cookhouse				Kitchen appliances, propane bottles, misc scrap metal, window glass, wiring	3	3 large propane tanks - 2 are probably full.	Structure in poor condition; infested by pack rats. All wooden, so most can be burned	Cookhouse and rec. hall
Generator shack	Generator wrapped in plastic, reasonably weather-proofed, appears intact. Evidence of minor vandalism.	0.5		Roofing, wiring, electrical panels	1		Wood structure, reasonable shape, window cover removed by vandals. Replaced 08/2003	10 x 10 building
						Fuel tank about 2/3 full (est 7000 L), excellent condition and may be worth salvaging. If waste: metal from fuel tank. Could be flattened with dozer, burned to remove fuel residue, and placed in decline. Otherwise cut and remove by slinging from helicopter		
2 outbuildings				Roofing, wiring, windows	0.5		Wood structures, reasonable shape	2- 10 x 10 buildings
Quonset (used as heli base)	Structure is in excellent condition			Empty oil drums		9 full or nearly full Drums of Jet B Fuel 2 cans trasmission fluid, oxygen tank, acetylene tank (not much left)	Wooden platform for quanset, including outside deck and fuel shack	5-10 m3
Outside	Incinerator - Westland Model TMF 1020D Bombardier Snow Cat - clean and likely in good condition. Mechanic did not have time to start up.	2 2		1 crate with non combustable garbage beside incinerator PVC Water lines, metal pump station	 2	Fuel tank about 2/3 full (est 7000 L), excellent condition and may be worth salvaging. If waste: metal from fuel tank. Could be flattened with dozer, burned to remove fuel residue, and placed in decline. Otherwise cut and remove by slinging from helicopter 1 - 40 gallon drum Jet B Fuel, 1 - 40 gallon drum UN#1863 (poor condition, bucket with oil - flooded with water and leaking. 1 - 40 gallon drum UN#1863 (poor condition)		
NW of cirque camp								
Outbuilding				Misc. metal waste: drill rods etc. Truck and Unimog - could be placed in workings	5 3	1 Blue and red 200 L barrel labelled "Chevron AvGas 100"; reasonable condition, starting to rust, no sign of leakage	Wood structure, 3.5 pallets assorted drilling bentonite, 5 rolls orange snow fence	12 x 14 structure

ATTACHMENT G

Basic Evaluation of Underground & Surface Equipment (Procon)

RED MOUNTAIN

Basic Evaluation of Underground & Surface Equipment

Contractor – Procon Mining & Tunnelling
August 18 – 21, 2003
Reported by David Daigle

Unit #1 JS350 Scoop Tram
Serial #1269

Engine
F8L413 Deutz
-Engine had various dead cylinders on start up and various oil leaks.
-Engine did clear up after running for a period of time.

Differentials
-Rockwell axles with internal wet disc brakes.
-Rear axles will require new oscillating axle bushings and thrust washers.

Transmission & Torque
-After unit was running transmission had good drive oil pressure and did engage forward and reverse.
-Transmission fluid was not contaminated.

Hydraulics
-Due to the use of aquascent oil the hydraulic hoses are very brittle and would require replacing if unit were to be brought back to adequate working condition.
-The hydraulic pumps would also require replacing due to long periods of storage.
-Dump cylinder needs to be replaced. Chrome is peeled off ram.

Electrical
-The electrical system would require replacing due to corrosion.

Bucket
-Bucket needs new cutting edge.

Boom
-Boom is in fair condition.

Steering Cylinders
-Steering cylinders are in fair condition.

Front Bogie
-Is in fair condition.

Midship
-Will require line bore, pins and bushings.

Miscellaneous
-If unit were to be dismantled for shipping, there would be approximately 12 – 15 pieces.
-Approximately 2 weeks for preparation.
-Unit would require approximately 8 weeks of repair.
-All pins and bushings are good for the short-term but would require line bore pins and bushings for long-term use.

Unit #2 JS350 Scoop Tram

Engine
F8L413 Deutz
-Unable to start engine.

Differentials
-Rockwell axles with internal wet disc brakes.
-Rear axles will require new oscillating axle bushings and thrust washers.

Transmission & Torque
-Transmission fluid was not contaminated.
-Transmission filter housing was leaking.

Hydraulics
-Due to the use of aquascent oil the hydraulic hoses are very brittle and would require replacing if unit were to be brought back to adequate working condition.
-The hydraulic pumps would also require replacing due to long periods of storage.

Electrical
-The electrical system would require replacing due to corrosion.

Bucket
-Bucket needs complete line bore.

Boom
-Boom requires complete line bore, pins & bushings.

Steering Cylinders
-Steering cylinders are in fair condition but require new pins and bushings.

Front Bogie
-Will require complete line bore to hoist cylinder bores, steering cylinder bores and lower dump cylinder link bore.

Midship
-Will require line bore, pins and bushings.

Miscellaneous
-If unit were to be dismantled for shipping, there would be approximately 12 – 15 pieces.
-Approximately 2 weeks for preparation.
-Unit would require approximately 8 weeks of repair.

Unit #3 JS350 Scoop Tram

Engine
F6L413 Deutz
-Engine had one dead cylinder, various oil leaks but runs rather well.
-Engine did clear up after running for a period of time.

Differentials
-Rockwell axles with internal wet disc brakes.
-Rear axles will require new oscillating axle bushings and thrust washers.

Transmission & Torque
-After unit was running transmission had good drive oil pressure and did engage forward and reverse.
-Transmission fluid was not contaminated.
-Park brake does not hold.

Hydraulics
-Due to the use of aquascent oil the hydraulic hoses are very brittle and would require replacing if unit were to be brought back to adequate working condition.
-The hydraulic pumps would also require replacing due to long periods of storage.

Electrical
-The electrical system would require replacing due to corrosion.

Bucket
-Bucket needs complete line bore.

Boom
-Boom requires complete line bore, pins & bushings.

Steering Cylinders
-Steering cylinders are in fair condition but require new pins and bushings.

Front Bogie
-Will require complete line bore to hoist cylinder bores, steering cylinder bores and lower dump cylinder link bore.

Midship
-Will require line bore, pins and bushings.

Miscellaneous
-If unit were to be dismantled for shipping, there would be approximately 12 – 15 pieces.
-Approximately 2 weeks for preparation.
-Unit would require approximately 8 weeks of repair.

Unit #19101 413 Haul Truck

Engine
F8L714
-Engine would not start or even turn over.

Differentials
-Clark axles with dry disc brakes.
-Front axles will require new oscillating axle bushings and thrust washers.

Transmission & Torque
- Transmission fluid was not contaminated.
-Condition of transmission unknown.

Hydraulics
-Due to the use of aquascent oil the hydraulic hoses are very brittle and would require replacing if unit were to be brought back to adequate working condition.
-The hydraulic pumps would also require replacing due to long periods of storage.

Electrical
-The electrical system would require replacing due to corrosion.

Box
-Box is in good condition.

Steering Cylinders
-Steering cylinders are in fair condition but require new pins and bushings.

Midship
-Midship was in fair condition.

Miscellaneous
-If unit were to be dismantled for shipping, there would be approximately 12 – 15 pieces.
-Approximately 2 weeks for preparation.
-Unit would require approximately 8 weeks of repair.
-Unit will require canopy and re-certification.
-Tires are in good condition.
-Intake covers would require more lock tabs.

Unit #19105 413 Haul Truck

Engine
F8L413
-Approximately 600 hours run on new engine.

Differentials
-Clark axles with dry disc brakes.
-Front axles will require new oscillating axle bushings and thrust washers.

Transmission & Torque
- Transmission fluid was not contaminated.
-Transmission operated properly forward and in reverse and had good drive oil pressure.

Hydraulics
-Due to the use of aquascent oil the hydraulic hoses are very brittle and would require replacing if unit were to be brought back to adequate working condition.
-The hydraulic pumps would also require replacing due to long periods of storage.

Electrical
-The electrical system would require replacing due to corrosion.

Box
-Box is in good condition.

Steering Cylinders
-Steering cylinders are in fair condition but require new pins and bushings.

Midship
-Midship would require complete line bore pins and bushings.

Miscellaneous
-If unit were to be dismantled for shipping, there would be approximately 12 – 15 pieces.
-Approximately 2 weeks for disassembly.
-Unit would require approximately 8 weeks of repair.
-Unit will require repairs to canopy and re-certification.
-Tires are in good condition.

Unit #19108 413 Haul Truck

Engine
F8L413
-Upon cranking engine, engine would not turn over. After a short period of time engine turned over but would not start.

Differentials
-Clark axles with dry disc brakes.
-Front axles will require new oscillating axle bushings and thrust washers.

Transmission & Torque
- Transmission fluid was not contaminated.

Hydraulics
-Due to the use of aquascent oil the hydraulic hoses are very brittle and would require replacing if unit were to be brought back to adequate working condition.
-The hydraulic pumps would also require replacing due to long periods of storage.

Electrical
-The electrical system would require replacing due to corrosion.

Box
-Box is in good condition.

Steering Cylinder
-Steering cylinder is in fair condition but require new pins and bushings.

Midship
-Midship would require complete line bore pins and bushings.

Miscellaneous
-If unit were to be dismantled for shipping, there would be approximately 12 – 15 pieces.
-Approximately 2 weeks for disassembly.
-Unit would require approximately 8 weeks of repair.
-Tires are in good condition.

Tamrock H207M

Engine
3304 Cat
-Engine turned over but would not start.
-Engine has 1600 hours.

Differentials
-Rockwell axles.
-Model No. A3201P6464
-Date of Manufacturer – 28th of 1980

Transmission & Torque
- Standard transmission and clutch slave cylinder seized.

Hydraulics
-Electric motors have 3000 hours per side.
-Hoses are in fair condition.

Boom
-Booms are in fair condition with minor cracks.
-Slides are in good condition.
-Cylinders are in fair condition with the exception of one bent slide extension cylinder.

Electrical
-The electrical system would require some minor repairs.

Steering Cylinder
-Steering cylinder is in fair condition.

Midship
-Midship is in fair condition.

Miscellaneous
-If unit were to be dismantled for shipping, there would be approximately 12 – 15 pieces.
-Approximately 2 weeks for disassembly.
-Unit would require approximately 8 weeks of repair.
-Tires are in good condition with the exception of one flat tire.
-Unit has boart HD150 drifters with one spare.

Kubota Backhoe Serial #KH191-10033
Model KH191

Engine
-Engine started.
-Engine has 1550 hours.
-Engine appears to have been run without coolant because paint is burnt off of back of engine and smoked badly.
-Engine will require probably extensive repair.

Tracks and Undercarriage
-Approximately 40% wear on undercarriage.

Hydraulics
-Hydraulic functions did work.
-Chrome on cylinders pitted would require re-chroming.
-Hoses are in good condition.

Boom
-Boom is in good condition with minor cracks at swing frame.

Electrical
-The electrical system would require some minor repairs.

Miscellaneous
-If unit were to be dismantled for shipping, there would be approximately 2-3 pieces.
-Approximately 1 week for disassembly.
-Unit would require approximately 2 weeks of repair.
-Seat needs to be re-covered and glass needs to be replaced.

D7 Cat

Engine
-Engine in good operating condition.

Final Drives
– Right hand final drive clutch pack not releasing. Would require disassembly and repairs.

Transmission & Torque
- Transmission & Torque in good running condition.

Hydraulics
-Good working condition.

C-Frame
-Badly worn.

Electrical
-The electrical system would require some minor repairs.

Tracks & Undercarriage
-Tracks have broken grousers but have spare ones on site.
-Rollers and sprockets are in good condition.

Miscellaneous
-If unit were to be dismantled for shipping, there would be approximately 8-10 pieces.
-Approximately 2 weeks for disassembly.
-Unit would require approximately 2-3 weeks of repair.
-Unit has broken windows and doors that need to be repaired.
-Winch was functional.

Cat 973 Track Loader

Engine

-Engine is seized.

Final Drives

-Unit has hydra-static drives and right hand drive was not operational.

Transmission & Torque

- Unknown.

Hydraulics

-Unknown

Boom

-Fair condition.

Bucket

-Unit has side-dump bucket.
-Side dump cylinder pins and bushings badly worn.

Electrical

-The electrical system would require some minor repairs.

Tracks & Undercarriage

-Tracks are in fair to good condition.
-Rollers and sprockets are in fair condition.

Miscellaneous

-If unit were to be dismantled for shipping, there would be approximately 8-10 pieces.
-Approximately 2 weeks for disassembly.
-Unit would require approximately 3 - 4 weeks of repair.
-Unit has broken windows and doors that need to be repaired.

Simpson Maxwell Power Plant

Model 75TDSU3G
75KW
Serial #96P035-35789

Engine
BF6L913
Serial #8433530

Hours
4700 Hours

Miscellaneous
-Engine is equipped with an oil bath air cleaner.
-Engine has a few minor oil leaks.
-Unable to start engine because batteries were flown back to town.

Bombardier

Model BR400
S-90

Hours
6600 Hours

Miscellaneous
-Unit is equipped with man carrier on rear and was very moldy.
-Unit had one flat tire.
-Unit has 8-way snow blade.