

LQ 76

# 2003 ARD Management Report

for  
**The Regal Ridge Project Area,  
Yukon Territory, Canada**

submitted in partial fulfillment of  
ARD Management Program  
to  
Yukon Mining Recorder  
YTG Energy, Mines and Resources  
Watson Lake, Yukon Territory



October 31, 2004

True North Gems Inc.  
500-602 West Hastings Street  
Vancouver, BC  
V6B 1P2

Greg Davison, P. Geo.  
Project Manager  
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True North Gems Inc.

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Exploration Geologist  
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# **2003 ARD Management Program and Summary of Results**

## **Introduction**

True North Gems Inc. initiated a scoping program for monitoring and evaluating the potential effects of acid rock drainage as an integral part of its in-house environmental studies during exploration in the Regal Ridge Project area.

The program collected samples representative of the main ore and host rock types from areas of activity including surface trenches, diamond drill core and underground exploration; additionally the program included water sampling from the regional drainages, property water sources and ground water collected in the underground exploration areas. The sampling and analytical procedures followed during the 2003 field season are summarized and the results are tabulated.

## **Operational Protocols**

It is True North's intention to perform all environmental testing at Regal Ridge to strict industry standards. Any testing of water or rock will be done by accredited laboratories. Any problems encountered (changing water sample results, rocks with high ARD potential) will be dealt with quickly and efficiently, and to standard industry protocols.

Water sample analysis will be performed in a similar fashion from year to year. The samples will be taken at three times throughout the summer – once at the beginning (beginning of June), once in the middle (end of July, beginning of August), and once at the end (end of September). The locations of the samples will be identical from year to year, however, additional sampling sites will be added pending changes in the areas of exploration and other sites can be added in future years, if requested, following submission of the contained report.

Acid base accounting tests will be done on rocks collected during the field season. Representative samples of significant rock types will be sent to ALS Chemex for acid base accounting tests.

## **Mitigation Protocols**

If water sampling results begin to show a degradation of water quality, the first course of action will be to determine where the water samples begin to change, and whether the activities at Regal Ridge are impacting

the water quality. This will be best determined by taking water samples at tighter intervals up the watercourse. Results would show where the change occurs, and would also indicate if the change is natural or not. If it is found that True North activities are responsible, action will be taken immediately to remove the source problem and minimize further impact. If a direct cause cannot be determined, further testing will be performed.

If waste rock is brought to surface that contains >5 % sulfides, then that rock will be immediately separated and isolated from other rocks and watercourses at Regal Ridge. It will be covered and sealed to minimize water penetration. The material will be kept on stable ground (bedrock if possible) on a tear-resistant tarp so that the material will not shift or move with time. It will be kept separate until such a time when it can be deposited in a suitable location.

Water that is contaminated by ARD will be contained and treated with lime to neutralize the acid. Any sludge produced will be disposed of by True North in accordance with a mutually agreed upon solution developed in consultation with Mining Lands.

Final abandonment measures for acid generating/metal leaching waste rock will be to return the rock to its original location, or as the situation dictates, a 'best practices' solution will be agreed upon with Mining Lands and True North will implement the remediation.

### **Sampling Protocols – Water Sources**

During the field season, water samples were collected on three separate occasions, early season (June), mid-season (late July) and before demobilization (early September). These samples were chosen based on proximity to the Property, any runoff from the Property and any water sources that could potentially come in contact with activities associated with mining/exploration on or surrounding the Property.

The samples were to be tested for metals, and pH paper was used to get a preliminary indication of the water acidity levels.

Water sample bottles and nitric acid samples were provided by ALS Environmental (nitric acid is used to preserve the sample until analysis at the laboratory facility). The water samples were collected at each site by dipping the bottle into the water until it was almost full, and then putting in the entire vial of nitric acid to fill the bottle to the top. The samples were then sealed and placed into a cooler for transport to Whitehorse and Vancouver by charter and scheduled air services. The sample pails were delivered to ALS Chemex Environmental Services in Vancouver for analysis. The specific analytical protocols (CCME total

metals and TSS total suspended solids) are summarized on the ALS Chemex website and details can be provided upon request.

The process was completed so that the samples would be able to arrive in Vancouver for testing within the time frame specified (the samples are only viable for a limited period of time). The sampling protocols were maintained for the spring and fall collection periods, and all samples were collected by the same person.

### **Sampling Protocols – Rock**

Representative samples of the principal host rock (highly sheared and foliated chlorite schist) and ore material (quartz-tourmaline veins) have been selected from drill core samples for acid base accounting tests. The samples were packaged into sealed plastic bags and sealed 20litre plastic pails for transport to Whitehorse and Vancouver by charter and scheduled air services. The sample pails were delivered to ALS Chemex Environmental Services in Vancouver for Total Sulphur, Paste PH, and basic ABA accounting. The analytical protocols are summarized on the ALS Chemex website and are outlined as follows.

### **Acid Generation Potential Evaluation**

Natural oxidation of sulfide minerals in rocks and tailings by a combination of chemical and biological weathering can result in the formation of sulfuric acid, thus lowering pH and causing increased levels of dissolved trace metals. The rate of acid generation is extremely complex and is affected by such variables as pH, temperature, humidity, oxygenation, particle size and sulfide mineral species. In addition, the rate of acid generation is accelerated by certain bacterial species such as *Thiobacillus ferrooxidans*. The degree of bacterial action depends in turn upon such factors as pH, population density and growth, and nutrient concentrations.

Acid-generating minerals include the various mineral forms of pyrite as well as other common sulfide minerals such as arsenopyrite and chalcopyrite. However other species in the waste rock frequently include alkaline minerals such as calcite as well. These alkaline minerals can effectively neutralize acid which has been generated. Numerous tests have been developed to assess the interaction between these acid-generating and alkaline materials, both in the short term and over extended periods of time. Depending on the amount of alkaline material present, the sulfuric acid may be partially or completely neutralized. If the production of

sulfuric acid exceeds its neutralization by alkaline materials, then the result is acid rock drainage.

ALS Chemex offers different methods to assess the acid generating potential of your waste piles, both in the short term (Static Test) and over extended periods of time (Humidity Cells).

### **Static Test (Acid-Base Accounting)**

Our acid rock drainage static test has been designed to measure the balance between potentially acid-generating minerals (maximum potential acidity) and acid-neutralizing minerals (neutralization potential) in a sample. This procedure, known as Acid-Base Accounting (ABA), yields a figure known as Net Neutralization Potential (NNP), which determines whether a particular sample will theoretically generate acidity over time. Depending on the parameters included, there are different options of the static test.

Field observations and core logging results indicate that sulfide content of the rocks at Regal Ridge is very low ( $\ll 1\%$ ).

### **ABA Accounting Criteria for ARD**

If a rock has a neutralization potential (NP) to acid potential (AP) ratio greater than 2 and a sulfide sulphur content less than 1%, it will not be considered to have an ARD potential.

## **2003 Testing and Results**

### **Water Sampling**

During the 2003 field season, three sets of water samples were taken from eleven stations throughout the Regal Ridge property and the surrounding area.

The stations are numbered WS Station 1 through WS Station 11 inclusive and are located in the appended summary water report with contained tabulation (shown in UTM NAD83 Zone 9 coordinates) and topographic map (Appendix 1).

Water samples were taken on June 7, 2003, July 25, 2003 and September 15, 2003. All water samples are tested for CCME total metals and WS Station 6 through WS Station 11 inclusive were tested for total suspended solids. The results of analysis for all the samples for 2003 are provided on the four appended certificates from ALS Chemex (Appendix 2).

### **ARD Sampling**

During the 2003 field season, a total of 6 samples were taken for ARD testing, 3 from the host rock (chlorite schist) and 3 from the principal type of mineralization (quartz-tourmaline vein).

Initially the plan was to collect two samples from the underground adit, two samples from diamond drill hole core samples and two from the processing plant waste pile (rocks from various locations throughout the sampling area on the Property, principally representing the focussed exploration area of the Summit Zone on Regal Ridge proper). The actual samples were collected from the representative rock types within a single round of underground exploration including the quartz tourmaline veins, altered wallrock, and unaltered hanging wall and footwall rock types.

The location are shown on the appended map and tabulation (Appendix 3). The results of analysis for all the samples for 2003 are attached (see Appendix 4).

The preliminary results indicated pH > 8, sulphur < 0.1% to below detection limits of 0.01%, and low acid generation potential.

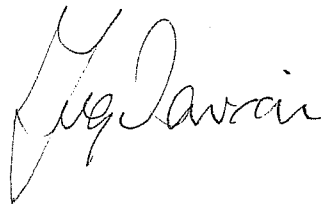
## Future Sampling Plans

The underground exploration program was completed in 2003 and no further underground development is anticipated for the 2004 field season. However, monitoring of the area will continue and the 2004 sampling program will include, as conditions allow, collection of water samples from the adit. Due to safety concerns, primarily potential loose rock conditions, the entrance to the adit has been closed with plywood covers; therefore direct access to the adit is limited. Water draining from the adit will be sampled if available at the entrance.

Additionally, samples of drill core, plant tailings and surface trench material will be collected on an ongoing basis during the 2004 program.

Further analysis of specific rock types and their potential for acid rock drainage may be warranted as exploration progresses and required sampling will be evaluated pending results of the detailed drill core examination and surficial mapping programs.

Respectfully submitted,  
October 31, 2004



Greg Davison, P.Geo.  
Project Manager  
Regal Ridge Project  
True North Gems Inc.



Twila Skinner  
Exploration Geologist  
Regal Ridge Project  
True North Gems Inc.

**Appendix 1**  
**Water Sample List and Location Map**

## 2003 Water Testing Program and Summary of Results

During the 2003 field season, three sets of water samples were taken from eleven stations throughout the Regal Ridge property and the surrounding area.

These samples were chosen based on proximity to the Property, any runoff from the Property and any water sources that could potentially come in contact with activities associated with mining/exploration on or surrounding the Property. The stations are numbered WS Station 1 through WS Station 11 inclusive and are located on the following tabulation (shown in UTM NAD83 Zone 9 coordinates) and appended topographic map.

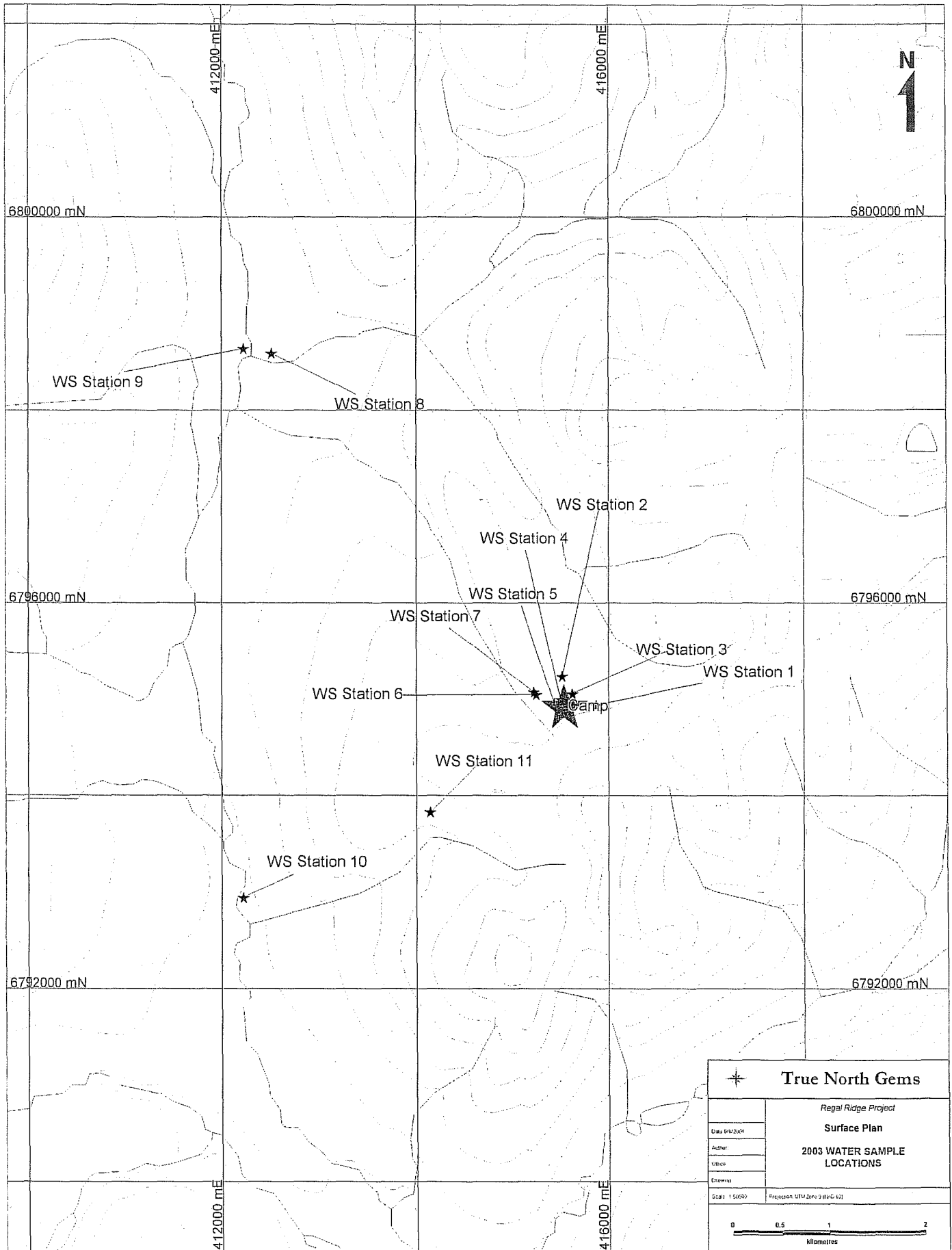
Water samples were taken on June 7, 2003, July 25, 2003 and September 15, 2003. All water samples are tested for CCME total metals and WS Station 6 through WS Station 11 inclusive were tested for total suspended solids. The results of analysis for all the samples for 2003 are provided on the four attached certificates.


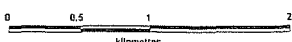
<b>Name</b>	<b>Easting</b>	<b>Northing</b>
WS Station 1	415873	6794937
WS Station 2	415526	6795235
WS Station 3	415630	6795053
WS Station 4	415509	6794996
WS Station 5	415438	6794959
WS Station 6	415248	6795047
WS Station 7	415228	6795072
WS Station 8	412509	6798588
WS Station 9	412229	6798640
WS Station 10	412220	6792941
WS Station 11	414140	6793828

Respectfully submitted,

Greg Davison, P.Geo.  
Project Manager  
Regal Ridge Project  
True North Gems Inc.

Twila Skinner  
Exploration Geologist  
Regal Ridge Project  
True North Gems Inc.



 <b>True North Gems</b>	
<i>Regal Ridge Project</i> <b>Surface Plan</b> <b>2003 WATER SAMPLE LOCATIONS</b>	
Date: 01/20/04 Author: Title: Drawn:	
Scale: 1:50000 Projection: UTM Zone 28Q-C-42	
	

**Appendix 2**  
**Water Samples – ALS Chemex Analytical Certificates**

# CHEMICAL ANALYSIS REPORT

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Date: INTERIM

ALS File No. S9264

Report On: Regal Ridge Water Analysis

Report To: **Iron Mask Exploration Ltd.**  
701 Kenwood Rd.  
West Vancouver, BC  
V7S 1S7

Attention: **Mr. Andrew Smith**

Received: June 12, 2003

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## ALS ENVIRONMENTAL

per:

Amber Springer, B.Sc. - Project Chemist  
Scott P. Hoekstra, B.Sc. - Project Chemist

File No. S9264

**REMARKS**

The detection limit for Total Suspended Solids has been increased due to low sample volume available for analysis.

**RESULTS OF ANALYSIS - Water**

Sample ID	2003 03 000001	2003 03 000002	2003 03 000003	2003 03 000004	2003 03 000005
Sample Date	03 06 07	03 06 07	03 06 07	03 06 07	03 06 07
Sample Time	20:12	20:35	19:59	08:45	09:09
ALS ID	1	2	3	4	5

**Physical Tests**

Hardness	CaCO <sub>3</sub>	20.9	5.7	12.4	15.2	18.3
Total Suspended Solids		-	-	-	-	-

**Total Metals**

Aluminum	T-Al	0.010	0.018	0.023	0.145	0.028
Antimony	T-Sb	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Arsenic	T-As	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Barium	T-Ba	0.06	<0.02	0.03	0.02	<0.02
Beryllium	T-Be	<0.001	<0.001	<0.001	<0.001	<0.001
Boron	T-B	<0.1	<0.1	<0.1	<0.1	<0.1
Cadmium	T-Cd	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Calcium	T-Ca	5.1	1.6	2.8	4.0	4.1
Chromium	T-Cr	<0.001	<0.001	<0.001	0.001	<0.001
Cobalt	T-Co	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Copper	T-Cu	<0.001	<0.001	0.001	0.004	0.001
Iron	T-Fe	0.06	<0.03	<0.03	0.09	<0.03
Lead	T-Pb	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Lithium	T-Li	<0.005	<0.005	<0.005	<0.005	<0.005
Magnesium	T-Mg	2.0	0.4	1.3	1.2	2.0
Manganese	T-Mn	0.0156	0.0033	0.0025	0.0033	0.0008
Mercury	T-Hg	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Molybdenum	T-Mo	<0.001	<0.001	<0.001	<0.001	<0.001
Nickel	T-Ni	<0.001	<0.001	0.001	<0.001	<0.001
Potassium	T-K	<2	<2	<2	<2	<2
Selenium	T-Se	<0.001	<0.001	<0.001	<0.001	<0.001
Silver	T-Ag	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Sodium	T-Na	<2	<2	<2	<2	<2
Thallium	T-Tl	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Tin	T-Sn	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Titanium	T-Ti	<0.01	<0.01	<0.01	<0.01	<0.01
Uranium	T-U	0.0006	<0.0002	0.0003	<0.0002	<0.0002
Vanadium	T-V	<0.03	<0.03	<0.03	<0.03	<0.03
Zinc	T-Zn	<0.005	<0.005	<0.005	<0.005	<0.005

Remarks regarding the analyses appear at the beginning of this report.  
Results are expressed as milligrams per litre except where noted.  
< = Less than the detection limit indicated.

File No. S9264

**RESULTS OF ANALYSIS - Water**

Sample ID	2003 03 000006	2003 03 000007	2003 03 000008	2003 03 000009	2003 03 000010
Sample Date	03 06 07	03 06 07	03 06 07	03 06 07	03 06 07
Sample Time	09:32	09:34	14:45	15:09	15:25
ALS ID	6	7	8	9	10

**Physical Tests**

Hardness	CaCO3	17.6	17.9	28.9	54.1	26.5
Total Suspended Solids		5	<4	<4	9	<4

**Total Metals**

Aluminum	T-Al	0.089	0.047	0.026	0.164	0.021
Antimony	T-Sb	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Arsenic	T-As	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Barium	T-Ba	<0.02	<0.02	<0.02	0.05	<0.02
Beryllium	T-Be	<0.001	<0.001	<0.001	<0.001	<0.001
Boron	T-B	<0.1	<0.1	<0.1	<0.1	<0.1
Cadmium	T-Cd	<0.00005	<0.00005	<0.00005	0.00006	<0.00005
Calcium	T-Ca	4.4	4.6	6.6	16.1	6.8
Chromium	T-Cr	0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	T-Co	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Copper	T-Cu	0.002	0.002	<0.001	0.001	0.002
Iron	T-Fe	0.06	<0.03	<0.03	0.52	<0.03
Lead	T-Pb	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Lithium	T-Li	<0.005	<0.005	<0.005	<0.005	<0.005
Magnesium	T-Mg	1.6	1.6	3.0	3.4	2.3
Manganese	T-Mn	0.0025	0.0011	0.0005	0.0826	0.0010
Mercury	T-Hg	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Molybdenum	T-Mo	<0.001	<0.001	<0.001	<0.001	<0.001
Nickel	T-Ni	<0.001	<0.001	0.002	0.002	<0.001
Potassium	T-K	<2	<2	<2	<2	<2
Selenium	T-Se	<0.001	<0.001	<0.001	<0.001	<0.001
Silver	T-Ag	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Sodium	T-Na	<2	<2	<2	<2	<2
Thallium	T-Tl	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Tin	T-Sn	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Titanium	T-Ti	<0.01	<0.01	<0.01	<0.01	<0.01
Uranium	T-U	0.0003	0.0002	<0.0002	0.0011	0.0043
Vanadium	T-V	<0.03	<0.03	<0.03	<0.03	<0.03
Zinc	T-Zn	<0.005	<0.005	<0.005	0.005	<0.005

Remarks regarding the analyses appear at the beginning of this report.  
 Results are expressed as milligrams per litre except where noted.  
 < = Less than the detection limit indicated.

File No. S9264

## RESULTS OF ANALYSIS - Water

Sample ID 2003 03  
000011

Sample Date 03 06 07  
Sample Time 15:33  
ALS ID 11

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### Physical Tests

Hardness CaCO<sub>3</sub> 19.7  
Total Suspended Solids <4

### Total Metals

Aluminum	T-Al	0.023
Antimony	T-Sb	<0.0005
Arsenic	T-As	<0.0005
Barium	T-Ba	<0.02
Beryllium	T-Be	<0.001
Boron	T-B	<0.1
Cadmium	T-Cd	<0.00005
Calcium	T-Ca	5.0
Chromium	T-Cr	<0.001
Cobalt	T-Co	<0.0003
Copper	T-Cu	0.001
Iron	T-Fe	<0.03
Lead	T-Pb	<0.0005
Lithium	T-Li	<0.005
Magnesium	T-Mg	1.7
Manganese	T-Mn	0.0005
Mercury	T-Hg	<0.00005
Molybdenum	T-Mo	<0.001
Nickel	T-Ni	<0.001
Potassium	T-K	<2
Selenium	T-Se	<0.001
Silver	T-Ag	<0.00002
Sodium	T-Na	<2
Thallium	T-Tl	<0.0002
Tin	T-Sn	<0.0005
Titanium	T-Ti	<0.01
Uranium	T-U	0.0011
Vanadium	T-V	<0.03
Zinc	T-Zn	<0.005

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Remarks regarding the analyses appear at the beginning of this report.  
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**Appendix 1 - QUALITY CONTROL - Replicates**

Water	2003 03 000004	2003 03 000004
	03 06 07 08:45	QC # 339946

**Physical Tests**

Hardness	CaCO3	15.2	15.3
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**Total Metals**

Aluminum	T-Al	0.145	0.150
Antimony	T-Sb	<0.0005	<0.0005
Arsenic	T-As	<0.0005	<0.0005
Barium	T-Ba	0.02	0.02
Beryllium	T-Be	<0.001	<0.001
Boron	T-B	<0.1	<0.1
Cadmium	T-Cd	<0.00005	<0.00005
Calcium	T-Ca	4.0	4.1
Chromium	T-Cr	0.001	0.001
Cobalt	T-Co	<0.0003	<0.0003
Copper	T-Cu	0.004	0.004
Iron	T-Fe	0.09	0.09
Lead	T-Pb	<0.0005	<0.0005
Lithium	T-Li	<0.005	<0.005
Magnesium	T-Mg	1.2	1.3
Manganese	T-Mn	0.0033	0.0034
Mercury	T-Hg	<0.00005	<0.00005
Molybdenum	T-Mo	<0.001	<0.001
Nickel	T-Ni	<0.001	<0.001
Potassium	T-K	<2	<2
Selenium	T-Se	<0.001	<0.001
Silver	T-Ag	<0.00002	<0.00002
Sodium	T-Na	<2	<2
Thallium	T-Tl	<0.0002	<0.0002
Tin	T-Sn	<0.0005	<0.0005
Titanium	T-Ti	<0.01	<0.01
Uranium	T-U	<0.0002	<0.0002
Vanadium	T-V	<0.03	<0.03
Zinc	T-Zn	<0.005	<0.005

Remarks regarding the analyses appear at the beginning of this report.  
 Results are expressed as milligrams per litre except where noted.  
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# CHEMICAL ANALYSIS REPORT

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**Date:** INTERIM

**ALS File No.** T2126

**Report On:** Regal Ridge Water Analysis

**Report To:** **Iron Mask Exploration Ltd.**  
701 Kenwood Rd.  
West Vancouver, BC  
V7S 1S7

**Attention:** **Mr. Andrew Smith**

**Received:** July 30, 2003

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## ALS ENVIRONMENTAL

per:

Scott P. Hoekstra, B.Sc. - Project Chemist  
Amber Springer, B.Sc. - Project Chemist

**RESULTS OF ANALYSIS - Water**

Sample ID	20030300 0012	20030300 0013	20030300 0014	20030300 0016	20030300 0017
Sample Date	03 07 26	03 07 26	03 07 26	03 07 26	03 07 26
Sample Time	08:00	08:12	08:25	08:33	08:41
ALS ID	1	2	3	4	5

**Physical Tests**

Hardness	CaCO <sub>3</sub>	64.5	62.3	55.8	34.1	35.5
Total Suspended Solids		-	-	-	-	<3

**Total Metals**

Aluminum	T-Al	0.010	<0.005	0.020	0.007	0.009
Antimony	T-Sb	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Arsenic	T-As	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Barium	T-Ba	0.13	0.10	<0.02	<0.02	<0.02
Beryllium	T-Be	<0.001	<0.001	<0.001	<0.001	<0.001
Boron	T-B	<0.1	<0.1	<0.1	<0.1	<0.1
Cadmium	T-Cd	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Calcium	T-Ca	14.7	13.1	15.9	7.8	9.6
Chromium	T-Cr	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	T-Co	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Copper	T-Cu	<0.001	<0.001	<0.001	0.001	<0.001
Iron	T-Fe	0.04	<0.03	<0.03	<0.03	<0.03
Lead	T-Pb	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Lithium	T-Li	<0.005	<0.005	<0.005	<0.005	<0.005
Magnesium	T-Mg	6.8	7.2	3.9	3.5	2.8
Manganese	T-Mn	0.0095	<0.0003	0.0012	<0.0003	0.0015
Mercury	T-Hg	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Molybdenum	T-Mo	0.001	0.001	<0.001	<0.001	<0.001
Nickel	T-Ni	<0.001	<0.001	<0.001	<0.001	<0.001
Potassium	T-K	<2	<2	<2	<2	<2
Selenium	T-Se	<0.001	<0.001	<0.001	<0.001	<0.001
Silver	T-Ag	0.00003	<0.00002	0.00003	<0.00002	0.00017
Sodium	T-Na	<2	<2	<2	<2	<2
Thallium	T-Tl	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Tin	T-Sn	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Titanium	T-Ti	<0.01	<0.01	<0.01	<0.01	<0.01
Uranium	T-U	0.0023	0.0035	0.0023	0.0002	0.0003
Vanadium	T-V	<0.03	<0.03	<0.03	<0.03	<0.03
Zinc	T-Zn	<0.005	<0.005	<0.005	<0.005	<0.005

Results are expressed as milligrams per litre except where noted.  
 < = Less than the detection limit indicated.

**RESULTS OF ANALYSIS - Water**

Sample ID	20030300 0018	20030300 0019	20030300 0020	20030300 0021	20030300 0022
Sample Date	03 07 26	03 07 25	03 07 25	03 07 25	03 07 25
Sample Time	08:45	21:40	21:45	21:52	22:03
ALS ID	6	7	8	9	10

**Physical Tests**

Hardness	CaCO <sub>3</sub>	42.1	52.6	62.3	44.7	50.0
Total Suspended Solids		<3	<3	<3	<3	<3

**Total Metals**

Aluminum	T-Al	0.006	0.011	0.036	0.007	0.006
Antimony	T-Sb	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Arsenic	T-As	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Barium	T-Ba	<0.02	0.02	0.06	<0.02	<0.02
Beryllium	T-Be	<0.001	<0.001	<0.001	<0.001	<0.001
Boron	T-B	<0.1	<0.1	<0.1	<0.1	<0.1
Cadmium	T-Cd	<0.00005	<0.00005	0.00023	<0.00005	<0.00005
Calcium	T-Ca	11.8	11.7	16.5	11.4	12.9
Chromium	T-Cr	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	T-Co	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Copper	T-Cu	<0.001	<0.001	0.001	0.001	0.001
Iron	T-Fe	<0.03	<0.03	<0.03	<0.03	<0.03
Lead	T-Pb	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Lithium	T-Li	<0.005	<0.005	<0.005	<0.005	<0.005
Magnesium	T-Mg	3.1	5.6	5.1	3.9	4.3
Manganese	T-Mn	0.0020	<0.0003	0.0245	<0.0003	0.0005
Mercury	T-Hg	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Molybdenum	T-Mo	<0.001	<0.001	<0.001	0.001	0.001
Nickel	T-Ni	<0.001	0.002	0.008	<0.001	<0.001
Potassium	T-K	<2	<2	<2	<2	<2
Selenium	T-Se	<0.001	<0.001	<0.001	<0.001	<0.001
Silver	T-Ag	0.00020	0.00004	0.00002	0.00004	0.00002
Sodium	T-Na	<2	<2	<2	<2	<2
Thallium	T-Tl	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Tin	T-Sn	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Titanium	T-Ti	<0.01	<0.01	<0.01	<0.01	<0.01
Uranium	T-U	0.0002	<0.0002	0.0031	0.0079	0.0129
Vanadium	T-V	<0.03	<0.03	<0.03	<0.03	<0.03
Zinc	T-Zn	<0.005	<0.005	0.026	<0.005	<0.005

Results are expressed as milligrams per litre except where noted.  
 < = Less than the detection limit indicated.

Appendix 1 - QUALITY CONTROL - Replicates

Water	20030300 0013	20030300 0013
	03 07 26 08:12	QC # 347601

**Physical Tests**

Hardness	CaCO <sub>3</sub>	62.3	61.7
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**Total Metals**

Aluminum	T-Al	<0.005	0.008
Antimony	T-Sb	<0.0005	<0.0005
Arsenic	T-As	<0.0005	<0.0005
Barium	T-Ba	0.10	0.10
Beryllium	T-Be	<0.001	<0.001
Boron	T-B	<0.1	<0.1
Cadmium	T-Cd	<0.00005	<0.00005
Calcium	T-Ca	13.1	12.9
Chromium	T-Cr	<0.001	<0.001
Cobalt	T-Co	<0.0003	<0.0003
Copper	T-Cu	<0.001	<0.001
Iron	T-Fe	<0.03	<0.03
Lead	T-Pb	<0.0005	<0.0005
Lithium	T-Li	<0.005	<0.005
Magnesium	T-Mg	7.2	7.1
Manganese	T-Mn	<0.0003	<0.0003
Mercury	T-Hg	<0.00005	<0.00005
Molybdenum	T-Mo	0.001	0.001
Nickel	T-Ni	<0.001	<0.001
Potassium	T-K	<2	<2
Seelenium	T-Se	<0.001	<0.001
Silver	T-Ag	<0.00002	<0.00002
Sodium	T-Na	<2	<2
Thallium	T-Tl	<0.0002	<0.0002
Tin	T-Sn	<0.0005	<0.0005
Titanium	T-Ti	<0.01	<0.01
Uranium	T-U	0.0035	0.0034
Vanadium	T-V	<0.03	<0.03
Zinc	T-Zn	<0.005	<0.005

Results are expressed as milligrams per litre except where noted.  
 < = Less than the detection limit indicated.

# CHEMICAL ANALYSIS REPORT

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**Date:** INTERIM

**ALS File No.** T4100

**Report On:** Regal Ridge Water Analysis

**Report To:** **Iron Mask Exploration Ltd.**  
Suite 500-602 West hastings St.  
Vancouver, BC  
V6R 1P2

**Attention:** **Ms. Bonnie Pemberton**

**Received:** September 17, 2003

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**ALS ENVIRONMENTAL**

per:

Amber Springer, B.Sc. - Project Chemist  
Scott P. Hoekstra, B.Sc. - Project Chemist

File No. T4100

**RESULTS OF ANALYSIS - Water**

Sample ID	20030300 0023	20030300 0024	20030300 0025	20030300 0026	20030300 0027
Sample Date	03 09 15	03 09 15	03 09 15	03 09 15	03 09 15
Sample Time	13:57	14:25	17:36	14:37	17:48
ALS ID	1	2	3	4	5

**Physical Tests**

		CaCO3	74.1	48.0	64.5	51.6	38.1
<b>Total Metals</b>							
Aluminum	T-Al		0.136	0.083	0.010	0.091	0.022
Antimony	T-Sb		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Arsenic	T-As		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Barium	T-Ba		0.15	<0.02	0.09	0.09	<0.02
Beryllium	T-Be		<0.001	<0.001	<0.001	<0.001	<0.001
Boron	T-B		<0.1	<0.1	<0.1	<0.1	<0.1
Cadmium	T-Cd		<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Calcium	T-Ca		16.5	13.0	13.2	11.5	9.1
Chromium	T-Cr		0.002	0.002	<0.001	0.001	<0.001
Cobalt	T-Co		<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Copper	T-Cu		<0.001	<0.001	<0.001	0.001	0.002
Iron	T-Fe		0.20	<0.03	<0.03	0.03	<0.03
Lead	T-Pb		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Lithium	T-Li		<0.005	<0.005	<0.005	<0.005	<0.005
Magnesium	T-Mg		8.0	3.8	7.7	5.6	3.7
Manganese	T-Mn		0.0243	0.0022	0.0003	0.0016	0.0005
Mercury	T-Hg		<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Molybdenum	T-Mo		<0.001	<0.001	0.001	<0.001	<0.001
Nickel	T-Ni		<0.001	<0.001	0.001	<0.001	<0.001
Potassium	T-K		<2	<2	<2	<2	<2
Selenium	T-Se		<0.001	<0.001	<0.001	<0.001	<0.001
Silver	T-Ag		<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Sodium	T-Na		<2	<2	<2	<2	<2
Thallium	T-Tl		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Tin	T-Sn		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Titanium	T-Ti		<0.01	<0.01	<0.01	<0.01	<0.01
Uranium	T-U		0.0031	0.0018	0.0045	0.0008	0.0003
Vanadium	T-V		<0.03	<0.03	<0.03	<0.03	<0.03
Zinc	T-Zn		<0.005	<0.005	<0.005	<0.005	<0.005

Results are expressed as milligrams per litre except where noted.  
 < = Less than the detection limit indicated.

File No. T4100

**RESULTS OF ANALYSIS - Water**

Sample ID	20030300 0028A	20030300 0029A	20030300 0030	20030300 0031A	20030300 0032A
Sample Date	03 09 15	03 09 15	03 09 15	03 09 15	03 09 15
Sample Time	14:52	17:59	17:59	16:22	16:27
ALS ID	6	7	8	9	10

**Physical Tests**

Hardness	CaCO <sub>3</sub>	41.7	48.1	49.1	50.0	66.8
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**Total Metals**

Aluminum	T-Al	0.011	0.025	0.015	0.013	0.053
Antimony	T-Sb	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Arsenic	T-As	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Barium	T-Ba	0.03	0.02	0.02	0.02	0.05
Beryllium	T-Be	<0.001	<0.001	<0.001	<0.001	<0.001
Boron	T-B	<0.1	<0.1	<0.1	<0.1	<0.1
Cadmium	T-Cd	<0.00005	<0.00005	<0.00005	<0.00005	0.00022
Calcium	T-Ca	10.6	13.0	13.2	11.4	17.1
Chromium	T-Cr	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	T-Co	<0.0003	<0.0003	<0.0003	<0.0003	0.0004
Copper	T-Cu	0.001	0.001	0.001	<0.001	<0.001
Iron	T-Fe	<0.03	0.03	<0.03	<0.03	<0.03
Lead	T-Pb	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Lithium	T-Li	<0.005	<0.005	<0.005	<0.005	<0.005
Magnesium	T-Mg	3.7	3.8	3.9	5.2	5.9
Manganese	T-Mn	0.0012	0.0032	0.0028	<0.0003	0.0307
Mercury	T-Hg	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Molybdenum	T-Mo	<0.001	<0.001	<0.001	<0.001	<0.001
Nickel	T-Ni	<0.001	<0.001	<0.001	0.002	0.008
Potassium	T-K	<2	<2	<2	<2	<2
Selenium	T-Se	<0.001	<0.001	<0.001	<0.001	<0.001
Silver	T-Ag	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Sodium	T-Na	<2	<2	<2	<2	<2
Thallium	T-Tl	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Tin	T-Sn	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Titanium	T-Ti	<0.01	<0.01	<0.01	<0.01	<0.01
Uranium	T-U	0.0006	0.0005	0.0005	<0.0002	0.0049
Vanadium	T-V	<0.03	<0.03	<0.03	<0.03	<0.03
Zinc	T-Zn	<0.005	<0.005	<0.005	<0.005	0.030

Results are expressed as milligrams per litre except where noted.  
 < = Less than the detection limit indicated.

File No. T4100

## RESULTS OF ANALYSIS - Water

Sample ID	20030300 0033A	20030300 0034A
Sample Date	03 09 15	03 09 15
Sample Time	16:34	16:44
ALS ID	11	12

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### Physical Tests

Hardness	CaCO <sub>3</sub>	51.1	33.3
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### Total Metals

Aluminum	T-Al	<0.005	0.010
Antimony	T-Sb	<0.0005	<0.0005
Arsenic	T-As	<0.0005	<0.0005
Barium	T-Ba	<0.02	<0.02
Beryllium	T-Be	<0.001	<0.001
Boron	T-B	<0.1	<0.1
Cadmium	T-Cd	<0.00005	<0.00005
Calcium	T-Ca	12.9	8.5
Chromium	T-Cr	<0.001	<0.001
Cobalt	T-Co	<0.0003	<0.0003
Copper	T-Cu	<0.001	<0.001
Iron	T-Fe	<0.03	<0.03
Lead	T-Pb	<0.0005	<0.0005
Lithium	T-Li	<0.005	<0.005
Magnesium	T-Mg	4.6	2.9
Manganese	T-Mn	<0.0003	<0.0003
Mercury	T-Hg	<0.00005	<0.00005
Molybdenum	T-Mo	0.001	<0.001
Nickel	T-Ni	<0.001	<0.001
Potassium	T-K	<2	<2
Selenium	T-Se	<0.001	<0.001
Silver	T-Ag	<0.00002	<0.00002
Sodium	T-Na	<2	<2
Thallium	T-Tl	<0.0002	<0.0002
Tin	T-Sn	<0.0005	<0.0005
Titanium	T-Ti	<0.01	<0.01
Uranium	T-U	0.0156	0.0018
Vanadium	T-V	<0.03	<0.03
Zinc	T-Zn	<0.005	<0.005

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Results are expressed as milligrams per litre except where noted.  
< = Less than the detection limit indicated.

File No. T4100

Appendix 1 - QUALITY CONTROL - Replicates

Water	20030300 0032A	20030300 0032A
	03 09 15 16:27	QC # 355156

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**Physical Tests**

Hardness	CaCO3	66.8	65.2
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**Total Metals**

Aluminum	T-Al	0.053	0.053
Antimony	T-Sb	<0.0005	<0.0005
Arsenic	T-As	<0.0005	<0.0005
Barium	T-Ba	0.05	0.05
Beryllium	T-Be	<0.001	<0.001
Boron	T-B	<0.1	<0.1
Cadmium	T-Cd	0.00022	0.00024
Calcium	T-Ca	17.1	16.6
Chromium	T-Cr	<0.001	<0.001
Cobalt	T-Co	0.0004	0.0004
Copper	T-Cu	<0.001	<0.001
Iron	T-Fe	<0.03	<0.03
Lead	T-Pb	<0.0005	<0.0005
Lithium	T-Li	<0.005	<0.005
Magnesium	T-Mg	5.9	5.7
Manganese	T-Mn	0.0307	0.0316
Mercury	T-Hg	<0.00005	<0.00005
Molybdenum	T-Mo	<0.001	<0.001
Nickel	T-Ni	0.008	0.009
Potassium	T-K	<2	<2
Selenium	T-Se	<0.001	<0.001
Silver	T-Ag	<0.00002	<0.00002
Sodium	T-Na	<2	<2
Thallium	T-Tl	<0.0002	<0.0002
Tin	T-Sn	<0.0005	<0.0005
Titanium	T-Ti	<0.01	<0.01
Uranium	T-U	0.0049	0.0050
Vanadium	T-V	<0.03	<0.03
Zinc	T-Zn	0.030	0.031

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Results are expressed as milligrams per litre except where noted.  
< = Less than the detection limit indicated.

# CHEMICAL ANALYSIS REPORT

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Date: INTERIM

ALS File No. T4101

Report On: Regal Ridge Water Analysis

Report To: **Iron Mask Exploration Ltd.**  
Suite 500-602 West hastings St.  
Vancouver, BC  
V6R 1P2

Attention: **Ms. Bonnie Pemberton**

Received: September 17, 2003

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## ALS ENVIRONMENTAL

per:

Amber Springer, B.Sc. - Project Chemist  
Scott P. Hoekstra, B.Sc. - Project Chemist

File No. T4101

**RESULTS OF ANALYSIS - Water**

Sample ID	20030300 0028b	20030300 0029b	20030300 0031b	20030300 0032b	20030300 0033b
Sample Time <i>ALS ID</i>	14:52 1	17:59 2	16:22 3	16:27 4	16:34 5
<hr/>					
<b>Physical Tests</b>					
Total Suspended Solids	<3	<3	<3	3	<3

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Results are expressed as milligrams per litre except where noted.  
< = Less than the detection limit indicated.

File No. T4101

**RESULTS OF ANALYSIS - Water**

Sample ID 20030300  
0034b

Sample Time 16:44  
*ALS ID* 6

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**Physical Tests**

Total Suspended Solids <3

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Results are expressed as milligrams per litre except where noted.  
< = Less than the detection limit indicated.

File No. T4101

**Appendix 1 - QUALITY CONTROL - Replicates**

Water	20030300 0028b	20030300 0028b
	14:52	QC # 355157

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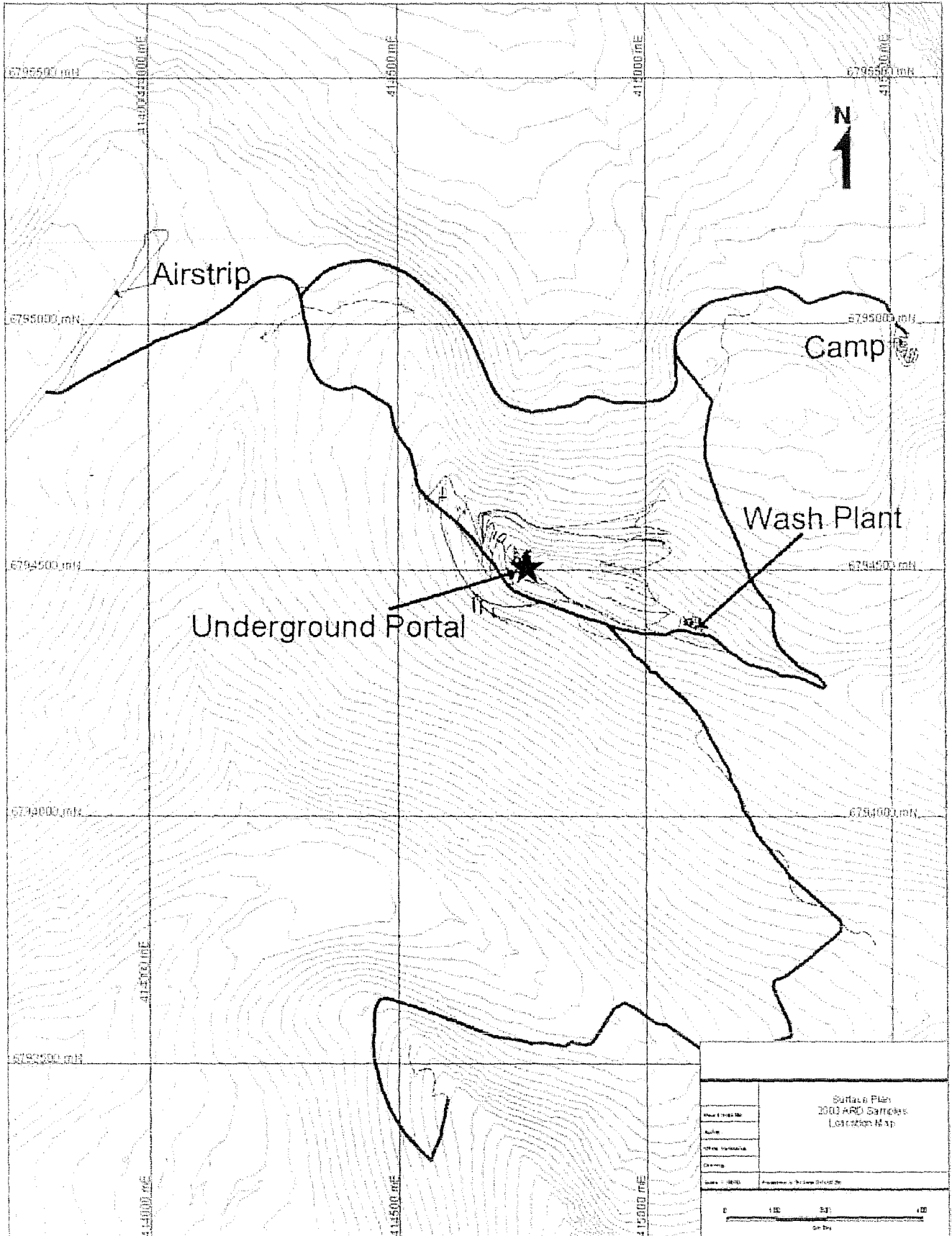
**Physical Tests**

Total Suspended Solids	<3	<3
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Results are expressed as milligrams per litre except where noted.  
< = Less than the detection limit indicated.

**Appendix 3**  
**ARD Sample List and Location Map**



**Appendix 4**  
**ARD Samples – ALS Chemex Analytical Certificates**



# ALS Chemex

EXCELLENCE IN ANALYTICAL CHEMISTRY

ALS Canada Ltd.

212 Brooksbank Avenue

North Vancouver BC V7J 2C1 Canada

Phone: 604 984 0221 Fax: 604 984 0218

To: TRUE NORTH GEMS  
601-602 W HASTINGS ST  
VANCOUVER BC V6B 1P2

Page #: 1  
Date : 13-Nov-2003  
Account: THR

## CERTIFICATE VA03045255

Project : Regal Ridge

P.O. No:

This report is for 155 PULP samples submitted to our lab in North Vancouver, BC, Canada on 31-Oct-2003.

The following have access to data associated with this certificate:

BERNIE GABOURY

DAVID GABOURY

BONNIE PEMBERTON

## SAMPLE PREPARATION

ALS CODE	DESCRIPTION
FND-02	Find Sample for Addn Analysis

## ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	INSTRUMENT
S-IR08	Total Sulphur (Leco)	LECO
OA-ELE07	Paste pH	
OA-VOL08	Basic Acid Base Accounting	

To: TRUE NORTH GEMS  
ATTN: BONNIE PEMBERTON  
601-602 W HASTINGS ST  
VANCOUVER BC V6B 1P2

This is the Final Report and supersedes any preliminary report with this certificate number. Results apply to samples as submitted. All pages of this report have been checked and approved for release.

Signature:



# ALS Chemex

**EXCELLENCE IN ANALYTICAL CHEMISTRY**

ALS Canada Ltd.  
 212 Brooksbank Avenue  
 North Vancouver BC V7J 2C1 Canada  
 Phone: 604 984 0221 Fax: 604 984 0218

To: TRUE NORTH GEMS  
 601-602 W HASTINGS ST  
 VANCOUVER BC V6B 1P2

Page #: 2 - A  
 Total # of pages : 2 (A)  
 Date : 13-Nov-2003  
 Account: THR

Project : Regal Ridge

<b>CERTIFICATE OF ANALYSIS</b>	<b>VA03045255</b>
--------------------------------	-------------------

Sample Description	Method Analyte Units LOR	S-IR08 S %	OA-ELE07 pH Unity	OA-VOL08 FIZZ RAT Unity	OA-VOL08 NP t CaCO3/	OA-VOL08 MPA t CaCO3/	OA-VOL08 NNP t CaCO3/	OA-VOL08 Ratio (N Unity
200303080001		0.10	8.0	1	5	3.1	2	1.60
200303080002		0.03	8.4	1	5	0.9	4	5.33
200303080003		<0.01	8.8	2	9	<0.5	9	57.60
200303080004		<0.01	8.6	1	5	<0.5	5	32.00
3080005		<0.01	8.4	1	6	<0.5	6	38.40
200303080006		<0.01	8.5	1	7	<0.5	7	44.80