HATFIELD CONSULTANTS LTD
resource and pollution management

827534

February 03, 1988

Mr. J.W. Robinson, P.Eng.
Inspector of Mines and Resident Engineer,
Ministry of Energy Mines and Petroleum Resources,
2569 A, Kenworth Road,
NANAIMO, B.C.
V9T 4P7

Dear Mr. Robinson:

Re: **Abermin Corporation, Lara Project, Chemainus, B.C.**
Notice of Work For An Underground Exploration Program

Further to our meeting of February 02, 1988 with the Vancouver Island Reclamation Advisory Committee we hereby enclose for distribution 10 copies of the following:

- A Notice of Work and Reclamation Program on a Mineral Property.
- A summary description of the proposed underground exploration program.
- Preliminary acid generation potential test results for waste rock and tailings.
- A summary description of groundwater quality from a trench containing high grade ore.
- Three Drawings; No.1 Underground Works Plan, No.2 Inclined Long Section, and No.3 Surface Works Plan and Details.

In order to help facilitate the review process additional copies of the above have been forwarded directly to Mr. Von Thomas, MEMPR, Victoria, Mr. G.E. Oldham, MOEP, Nanaimo, Mr. J. Dick, MOEP, Victoria, Mr. D.N. Woodgate, MFL, Duncan and Mr. K.D. Ferguson, DOE, West Vancouver.

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201-1571 Bellevue Avenue,
West Vancouver, B.C., Canada V7V 1A6
Telephone: (604) 926-3261
Telex: 04-352798

Various representative samples of ore and waste rock have been submitted to Chemex Laboratories for acid base accounting. Results from these tests will be forwarded to you as soon as they become available.

With reference to some specific questions raised at the meeting we estimate that the proposed program will generate a maximum 5260 m^3 of waste rock and a maximum 4500 m^3 of ore. The proposed water settling pond contains a total of 130 m^3 storage and has been designed to provide approximately 24 hours retention for a maximum anticipated storm flow runoff from the storage piles.

I trust this is of assistance, and should you require any additional information, please do not hesitate to give me a call.

Yours very truly,
HATFIELD CONSULTANTS LIMITED

Robert Hallam

ROBERT L. HALLAM
Associate Biologist

RLH/ems
Encl.

cc Mr. R.P. Taylor, President and Chief Executive Officer, Abermin Corporation.
Mr. R.J. Bailes, Exploration Supervisor, Abermin Corp.
Mr. Don Blackadar, Abermin Corp.
Mr. John Kapusta, Abermin Corp.
Mr. J. Villamere, Vice President, Hatfield Consultants Ltd.
Mr. D.N. Woodgate, Duncan Forest District.
Mr. Von Thomas, MEMPR, Victoria
Mr. G.E. Oldham. MOEP, Nanaimo
Mr. J. Dick, MOEP, Victoria
Mr. K.D. Ferguson, DOE, West Vancouver

Province of British Columbia Ministry of Energy, Mines and Petr. m Resources

Reclamation Permit .....

MINERAL RESOURCES DIVISION
INSPECTION AND ENGINEERING BRANCH

Title Number .....

NOTICE OF WORK AND RECLAMATION PROGRAM ON A MINERAL PROPERTY

1. NAME OF PROPERTY ... LARA .....

Number of claims . 24 . (154 units) ..... Principal Claim Group . Ugly, . Solley .....

2. LOCATION: Mining Division . Victoria ..... NTS Map Sheet (e.g., 82E/9E) . 92B/13W. . .

Lat. . 48 . ° . 52 . . ' Long. 123 . . ° . . 52 . ' UTM: E. 436000 ..... N. 5414000 .....

Access via . . Located on Mount Brenton; access via Copper Canyon Road west from Highway #1 near Chemainus, B.C. .....

3. OWNER: Name . Abermin Corp. (65%), . Laramide Res. . Ltd. . (35%). FMC No. 278902 (New No. not yet issued) .....

Address . 1500 - 1075 West Georgia Street ..... City . Vancouver .....

Province . British Columbia ..... Postal Code . . V6E 3C9 . . . Telephone No. . . . 681-7727 .....

4. OPERATOR: Name . . Abermin Corporation ..... FMC No. 278902 (New No. not yet issued) .....

Address . 1500 . - 1075 West Georgia Street ..... City . Vancouver .....

Province . British Columbia ..... Postal Code . . V6E 3C9 . . . Telephone No. . . . 681-7727 .....

EXPLORATION WORK: Indicate PROPOSED ☒ or COMPLETED ☐.

Duration of Exploration Work: From . . January 22, 1988 ..... to . . . December 31, 1988 .....

Name of Field Manager . . . Mr. John Kapuska ..... No. of men employed . 15 to 20* . . . .

Geophysical ..... N/A ..... Geochemical ..... N/A .....

Linecutting (distance, width, method) ..... N/A ..... m²

6. SURFACE DISTURBANCE OFF MINERAL CLAIMS

Road Access Construction: Total length . . N/A ..... m Approximate width . . . . N/A . . . . m Area . . . . N/A . . . . . m²

Campsites: No. of men . . . . N/A . . . Size ..... N/A ..... m²

Other (specify) . . . N/A ..... m²

7. SURFACE DISTURBANCE ON MINERAL CLAIMS

(a) Road Construction: Total length . . . . 200 . . . . . m Approximate width . . . . . 5 . . . . . m Area . . . 1000 . . . . . m²

(b) Drilling: No. of sites . . . N/A . Maximum dimensions: Width . . . . N/A . . . . . m Length . . . . N/A . . . . . m

Depth . . . . . N/A . . . . . m Total disturbed area of drill sites . . . . . N/A . . . . . m²

Water source . . N/A . . . . . Method of drill mud disposal . . . . . N/A . . . . . .

(c) Trenches: No. . . . . N/A . . . Maximum dimensions: Width . . . N/A . . . . . m Length . . . . N/A . . . . . m

Depth . . . . . N/A . . . . . m Total disturbed area of trenches . . . . . N/A . . . . . m²

(d) Test Pits: No. . . . . N/A . . . Maximum dimensions: Width . . . N/A . . . . . m Length . . . . N/A . . . . . m

Depth . . . . . N/A . . . . . m Total disturbed area of test pits . . . . . N/A . . . . . m²

*Contractor to determine crew size depending on number of shifts and available headings.

7. SURFACE DISTURBANCE ON MINERAL CLAIMS *(CONTINUED)*

(e) Camp Area: No. of men . . N/A . . . . . Width . . . . N/A . . . m Length . . N/A . . . . . m Area . . N/A . . . . m^2

(f) Underground Exploration: Area of surface facilities . 150m x 170m = 25,500 . . . . . m^2

(g) Other (specify) . . . . . m^2

TOTAL OF SURFACE DISTURBANCE ON MINERAL CLAIMS . . 2.65 . . . ha

(1 ha = 10 000 m^2) . . . . . ha

8. EQUIPMENT TO BE USED IN EXPLORATION PROGRAM (List size, capacity, and number.)

(a) 2 drills . . . . . (d) 1 backhoe . . . . . .

(b) 2 scoop trams . . . . . (e) Note: Specific equipment to be . . . . .

(c) 1 cat . . . . . (f) determined by contractor on award of contract.

9. PRESENT STATE OF THE LAND ON WHICH EXPLORATION IS PROPOSED

Present land use (agriculture, forestry, ranching, recreation, etc.) . . Forestry . . . . . .

Type of vegetation . . Mixed immature secondary forest: fir, cedar, hemlock, pine. . . . . .

Access roads (present use and condition) . Forestry, logging roads, fair to good condition. . . . . .

Campsites, old workings (location, condition) . N/A . . . . . .

. . . . . .

10. RECLAMATION PROGRAM (Prescribed reclamation treatments are outlined in *Guidelines for Mineral Exploration*.)

Camp sites . . N/A . . . . . .

Trenches, drill sites, and major excavations If the underground program proves unfruitful, excavations will be sealed, disturbed areas will be contoured and reseeded. .

Roads Ripped and reseeded if necessary. . . . . .

Seeding: Mixture . Red Fescue 30%, Ryegrass 20%, Alsike Clover 20%, White Clover 20% . . . .

Rate of application . . 120 . . . . . kg/ha Date . . . . - . . . . . .

Area seeded . . . . . - . . . . . ha Quantity of seed . . . . . - . . . . . kg

Fertilizer: Type . . 19-19-19 . . . . . Rate of application . . . . . 125 . . . . . kg/ha

Area fertilized . . . . . - . . . . . ha Quantity of fertilizer . . . . . - . . . . . kg

11. SUMMARY OF AREAS DISTURBED AND RECLAIMED

Area disturbed current year .6.4 ha . (1987). Previous years . . . . . 14 ha . . . . . Total to date . . . . 20.4 ha . . . . .

Area reclaimed current year .2.3 ha . (1987). Previous years (final) . . . 2.7 ha . . . . . Total to date . . . . 5 ha . . . . . .

12. DATE FOREST SERVICE ADVISED BY OPERATOR . . December 6, 1988 . . . . . .

Name and Title of Forest Official . D.N. Woodgate, Resource Officer, Timber, Duncan Forest District

Address . . 5825 York Road, Duncan, B.C., V9L 3S2 . . . . . .

R.J. Bailes . . . . . Exploration Manager.

Signature of Applicant — Title

Mr. R.J. Bailes . . . . . January 6, 1988

Print Name — Date

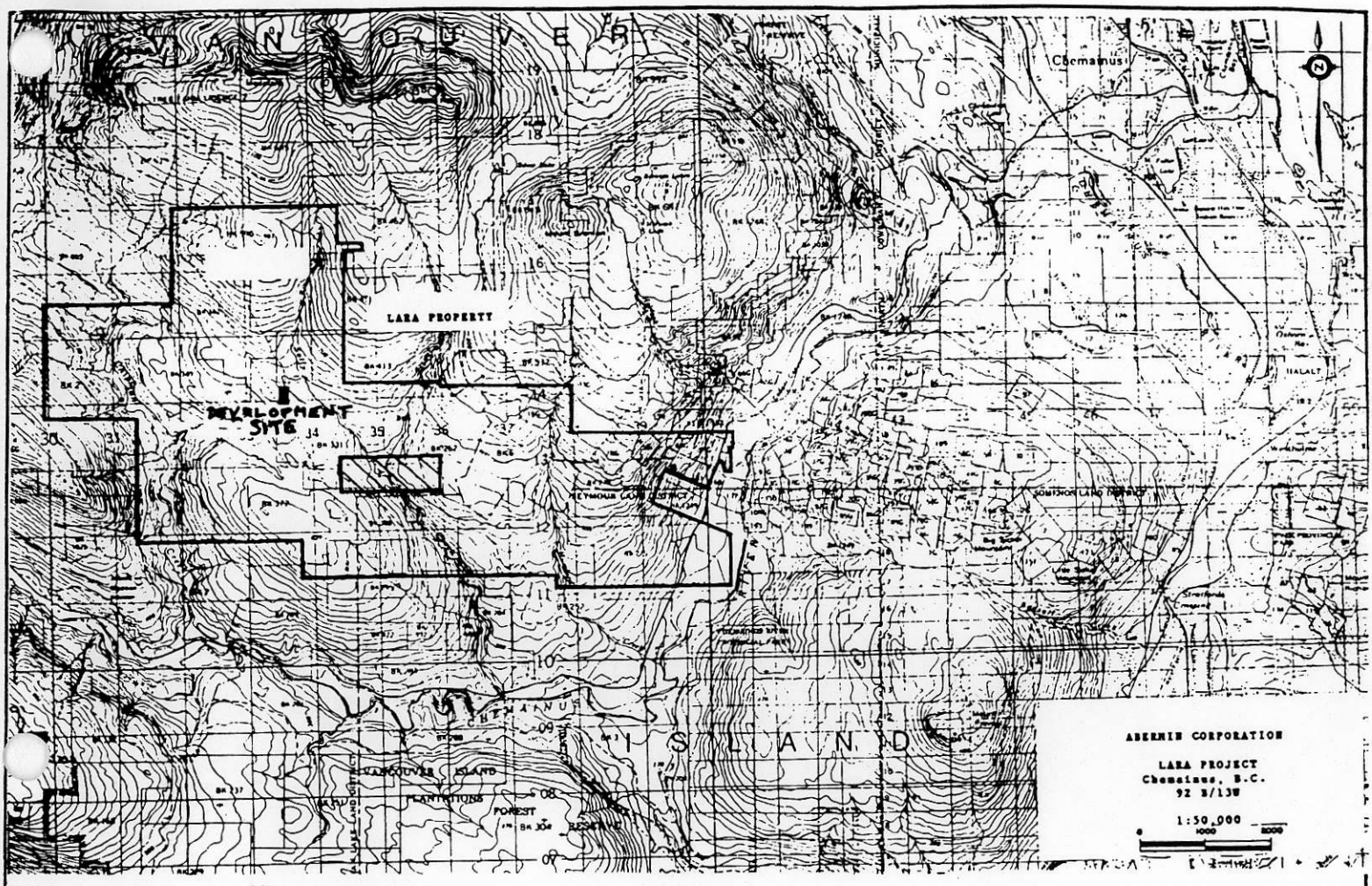
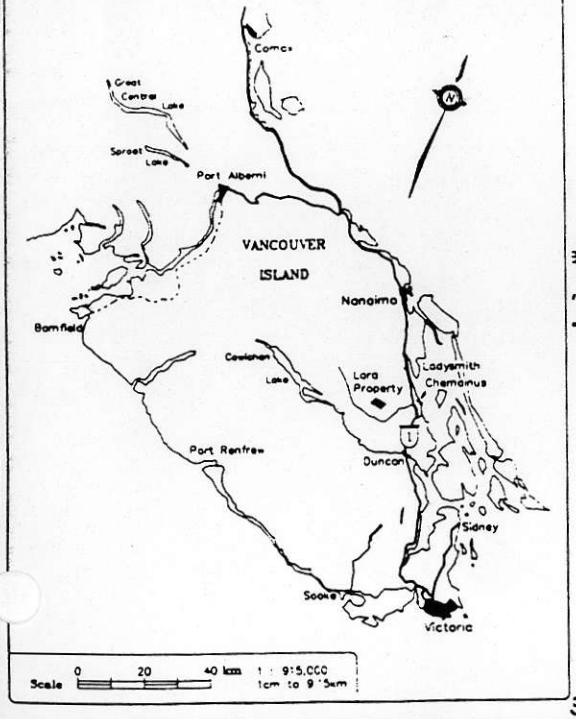


FIGURE 1 General Location of the Lara Property



ALSO SEE ATTACHED

Figure 1: Underground Works-Plan
Figure 2: Underground Works-Section
Figure 3: Surface Works Plan and Details

PLAN

ent watercourses, access road and distance to nearest town, proposed
, test pits, trenches, portals, drill sites, and camp sites.

LOCATION MAP

Show nearest town and access road.

cc

ABERMIN CORPORATION

LARA PROJECT
UNDERGROUND EXPLORATION PROGRAM

The proposed underground exploration program set out in the attached Notice of Work has been designed to facilitate access to the ore body for the purposes of:

(a) assessing continuity of the ore,
(b) obtaining a representative bulk sample of ore for metallurgical test work, and
(b) assessing ground conditions, optimum stoping procedures and mine layout.

It is anticipated that the program will commence near the end of January 1988, or immediately following the tendering of the work and selection of a suitable contractor.

The site development, and surface facilities, has been designed to maintain environmental security.

It is proposed to first strip the overburden from the portal and waste rock dump site and stockpile in close proximity to the site for future use. Barren waste rock from the collar and much of the underground development will be placed immediately adjacent to the portal site in a single pod measuring approximately 70 m square and 7 m high at the crest. Excess ore will be placed in a single isolated pod on top of the waste rock dump such that it is available for recovery at a later date.

An interceptor ditch will be constructed immediately upslope of the development, to redirect surface and shallow groundwater flow away from the development area. This minimizes intrusion of water onto the site and minimizes the amount of natural runoff that may be effected by the development. Runoff is carried, in the interceptor ditch, to discharge points adjacent to but outside the local catchment area, and disperses these flows into the natural vegetation of the surrounding forest.

All mine water and all precipitation which falls onto the development site will will be directed to a sediment control and water quality monitoring pond before it is released to the surrounding forest. This collection and settling arrangement will also act as a controlled release point for water intercepted on the site.

The barren waste rock dump will be graded to promote positive drainage and equipped with a perimeter collection system terminating in a sediment control and water quality monitoring pond. The perimeter collection ditch will intercept precipitation percolating through the mine waste rock or excavated overburden deposits, as well as any runoff from other

surface installations (shop, warehouse, fuel storage, etc.). Mine water will be discharged into the upstream end of the seepage collection ditch, near the portal, and directed to the sedimentation and monitoring pond.

Tests show that the waste rock from the footwall is not potentially acid generating, and therefore, runoff and seepage from this material need only be collected to ensure sediment control. The ore, however, contains massive sulphides and may be acid generating. To ensure containment of any potentially acid drainage the HDPE membrane liner between the waste rock dump and the ore will prevent its escape by percolation. This water will be collected within a berm arrangement and released in batches to the sedimentation pond and monitored before it is released. Should this water prove to be acidic it can then be treated using hydrated lime, sodium hydroxide, etc., as well as floculating agents, as appropriate. Alternatively the material can be removed from the site and shipped for processing.

If the ore is to be left in the stockpile for an extended period of time, a further membrane cover could be placed over the stockpile and joined to the underlying membrane, such that the ore becomes enclosed, and water is excluded thus preventing acid formation.

The sedimentation pond has been sized to provide approximately 24 hours retention for a maximum anticipated storm flow. Valves on the inlet and outlet of the upper holding facility allow for control of the rate of flow through the system.

COASTECH RESEARCH INC.

09 April 1987

Mr. R.P. Taylor
President
Abermin Corporation
1500-1075 West Georgia St.
Vancouver, B.C. V6E 3C9

Dear Mr. Taylor,

Please find attached our results from recent acid potential tests on Lara waste rock and tailing sands. The results indicate a high acid neutralizing potential for both samples and should present no concern during Stage 1 permitting discussions.

Please contact me or Dr. Ric Lawrence at your convenience should you wish to discuss these results in more detail.

Your very truly,
COASTECH RESEARCH INC.

P.B. Marchant
President

attachments
PBM/sj

869 West Third Street
North Vancouver, B.C., Canada V7P 1E2
Telephone: (604) 980-5992 Telex: 04-352888

AMD TESTS
ABERMIN CORPORATION

SAMPLES: Lara Waste
Lara Tails

PROCEDURES: Acid-base Account by modified EPA procedure

Kinetic acid generation by shake-flask biooxidation test

RESULTS SUMMARY (Tables 1 and 2 attached):

Acid-base accounting showed both samples to have positive neutralization potentials as follows:

Lara Waste	40.9 kg $CaCO_3$(equiv.)/tonne
Lara Tails	101.6 kg $CaCO_3$(equiv.)/tonne

Biooxidation testing confirmed the non-acid producing nature of both samples.

Acid-base accounting and biooxidation tests do not address the kinetics and equilibria of acid producing and consuming reactions. Interpretation of the results and their application to larger particles in the field situation must be done with caution.

A description of Coastech AMD test procedures is enclosed.

TABLE 1

ACID-BASE ACCOUNT
LARA WASTE AND TAILINGS

Sample	Sulphide (%)	Acid Potential (kg $CaCO_3$/t)	Paste pH	Neutralization Potential (kg $CaCO_3$/t)	Net NP (kg $CaCO_3$/t)
Lara Waste	0.37	11.6	8.45	52.5	40.9
Lara Tailings	0.45	13.9	8.45	115.5	101.6

TABLE 2

BIOLOGICAL OXIDATION TESTS
LARA WASTE AND TAILINGS

Sample	Oxidation Test Initial pH	Final pH	pH after Sample Addition	pH after NaOH Addition	AMD Potential
Lara Waste	2.18	2.10	7.42	--	No
Lara Tails	2.21	2.14	7.82	--	No

ABERMIN CORPORATION, LARA PROJECT
GROUNDWATER QUALITY FORM TRENCH CONTAINING HIGH GRADE ORE

Analytical results of groundwater samples taken from the trench containing high grade ore is presented in Table 1. The data indicate that on all occasions the water was slightly basic in pH, relatively high in conductivity, moderately high in dissolved solids, and generally soft.

Samples acquired in September of 1987 were collected after an extended drought and and are believed to represent the most concentrated conditions. Approximately 100 percent of the dissolved solids content of the water consisted of bicarbonate, sulphates, calcium, magnesium and sodium ions. Nearly 35 percent of the hardness was accounted for by the latter three; clacium, magnesium, and sodium. Heavy metals such as aluminum, cadmium and zinc occurred in primarily as total metals, while antimony, arsenic, barium, and copper, occurred in the dissolved form.

Samples collected in May of 1987, contained a large component of silt originating with spring rains and surface runoff which was reflected in the high turbidity, suspended solids and hardness values recorded. Material carried into the trench from runoff contributed largely to the to the total and dissolved heavy metal content of the water, and is most dramatic in metals such as aluminum, barium and zinc derived from the local soils and clays. These metals do not appear to be originating with the exposed ore in the trench since they generally return to pre-May levels in September.

With Reference to Beds Work what are the Chances that some of our high readings may be due to this, since we've had a lot of rain this year

TABLE 1

ABERMIN CORPORATION, LARA PROJECT
ANALYSES OF GROUNDWATER FROM TRENCH CONTAINING HIGH GRADE ORE

Parameter		Nov 27 1986	Mar 27 1987	May 28 1987	Sep 01 1987
Physical Tests					
pH		7.68	7.18	7.75	7.73
Conductivity (umhos/cm)		159.	172.	212.	190.
Turbidity (NTU)		4.0	<1.0	27.0	<1.0
Suspended Solids (mg/L)		4.4	1.6	18.0	<1.0
Dissolved Solids (mg/L)		137.	165.	189.	163.
Hardness (mg/L)	$CaCO_3$	66.6	76.2	114.	86.8
Dissolved Anions (mg/L)					
Bicarbonate	HCO_3	98.7	121.	98.4	66.9
Chloride	Cl	0.96	2.50	3.1	2.04
Sulfate	SO_4	15.0	4.39	34.8	55.3
Nitrate	N	0.005	<0.005	0.012	<0.005
Nitrite	N	<0.001	<0.001	<0.001	<0.001
Phosphorus	P	0.005	0.015	0.059	0.020
Other Tests (mg/L)					
Ammonia	N	<0.00	<0.005	<0.005	0.028
Total Cyanide	CN	-	<0.005	<0.005	<0.005
Total Metals (mg/L)					
Aluminum	Al	<0.005	0.018	1.27	0.085
Antimony	Sb	-	-	0.0074	0.016
Arsenic	As	0.0025	0.0049	<0.0001	0.0033
Barium	Ba	0.056	0.061	0.044	0.026
Cadmium	Cd	<0.0005	<0.0005	0.060	0.0041
Copper	Cu	<0.001	<0.001	<0.001	0.014
Iron	Fe	<0.03	<0.03	0.79	0.06
Lead	Pb	<0.001	<0.001	0.014	0.006
Mercury	Hg	<0.00005	0.0001	<0.00005	<0.00005
Molybdenum	Mo	<0.005	<0.005	0.007	<0.020
Nickel	Ni	<0.001	<0.001	<0.001	<0.001
Selenium	Se	<0.0005	<0.0005	0.0011	<0.0005
Silver	Ag	<0.0005	<0.0005	<0.0005	<0.0005
Zinc	Zn	<0.005	<0.005	0.22	0.023
Dissolved Metals (mg/L)					
Calcium	Ca	21.2	22.5	38.4	28.0
Magnesium	Mg	3.31	4.86	4.50	4.10
Sodium	Na	10.5	9.24	6.20	5.95
Potassium	K	0.35	0.38	0.61	0.75
Aluminum	Al	<0.005	0.013	1.27	0.019
Antimony	Sb	-	-	0.0068	0.016
Arsenic	As	0.0024	0.0042	<0.0001	0.0031
Barium	Ba	0.053	0.055	<0.035	0.024
Cadmium	Cd	<0.0005	<0.0005	0.05	<0.0005
Copper	Cu	<0.001	<0.001	<0.001	0.010
Iron	Fe	<0.03	<0.03	0.09	<0.03
Lead	Pb	<0.001	<0.001	0.004	0.003
Molybdenum	Mo	<0.005	<0.005	0.007	<0.020
Nickel	Ni	<0.001	<0.001	0.002	<0.001
Selenium	Se	<0.0005	<0.0005	0.0011	<0.0005
Silver	Ag	<0.0005	<0.0005	<0.0005	<0.0005
Zinc	Zn	<0.005	<0.005	0.14	<0.005

< = Less than
Results expressed as milligrams of element per litre of sample