ASSESSMENT REPORT

Physical and Technical Work
(For the Period December 17,2000 – December 16,2001)

THE ZEOLITE CLAIM GROUP

BROMLEY CREEK AREA
Silmilkameen Mining District
British Columbia

NTS 92 H/7
Lat: 49 deg. 25'30" N – Long. 120 deg. 37' W

For:

Zeo-Tech Enviro Corp.
2300 –1066 W.Hastings St.
Vancouver, B.C.
V6E – 3X4

By:

John Jenks – P.Geo. (B.C.)
Salmon Arm, B.C.
V1E – 3C7

March 10, 2001

SUMMARY:

The following is a summary of work activities carried out by Zeo Tech Enviro Corp./Canadian Mining Co. Ltd. between December 17, 1999 and December 8, 2000 on the Bromley Creek zeolite deposit situated within the Zeolite claim group nine kilometres south of Princeton, B.C. Activities included drilling and blasting of a 3,000 tonne bulk sample from a test bench measuring 40 x 15 metres. Two hundred tonnes of the resultant material was crushed off-site in Princeton and trucked to the C2C zeolite processing plant in Ashcroft. A number of bulk and determinative tests were carried out on the material.

Ed Skoda oversaw drilling and blasting of the test bench. John Jenks provided geological input and submitted split core samples for CEC determinations. Gordon Webster, original staker of the claims, ably assisted in the project. BC Research Inc. managed the test programme and carried out many of the procedures themselves. Tests included thin section examinations, CEC determinations, whole rock and trace element analysis, X-ray diffraction, MSDS determination of hazardous material, animal waste slurry odor elimination assessment, crushing characteristics tests as well as the determination of various other material properties.

Additional surface work performed by Doug Willis and his crew included access road widening and improvement, logging of the future pit site, slashing, burning, construction of a surface run-off settling pond and site preparation for future surface structures.

Canadian Mining Co.Ltd. holds the thirty-unit/550 hectare property under option from Stone Mountain Quarries Ltd. Its successor company, Zeo-Tech Enviro Corp, has assumed all titles from Canadian Mining. Application for a mineral lease was made by Eric Beresford on Zeo-Tech's behalf. This consisted of the Zeo and Zeo 1 claims the boundaries of which were blazed and cut. A legal survey of the proposed mineral lease, critical claim posts, included roadways and other features was completed by Tim Hall, BCLS, and submitted to the BC Surveyor General. The application was approved in late 2000. Mr. Beresford concurrently submitted an application for a mining permit. Such application envisages a 25,000 tonne per year open-cast operation in a series of eight metre benches to depths dictated by the operation's economics. Approval is currently pending.

A number of zeolite showings present in the Princeton/Tullameen area were documented in a 1987 publication by Read. These occur in five different tephra lenses within the Allenby, a 2000 metre thick Eocene formation composed of sandstone, shale, waterlain tephra and coal. On a regional scale they are situated within the Princeton Basin – a 5 x 35 km. long Eocene trough bounded on the east by the Boundary fault and on the west by the Asp Creek fault.

Located immediately west of the Asp Creek fault the Bromley Creek zeolite is a conformable strataform body striking roughly north-south and dipping to the east at thirty to fifty degrees. Erosion at higher elevations in the pit area has reduced the thickness of the deposit to some ten metres while downdip to the east thickness ranges to twenty-two metres. It remains open in this direction. The upper 65% of the body consists of a zeolitized fine-grained ash tuff unit while the remaining lower section is a coarse-grained zeolitized lapilli tuff.

An easterly-dipping contact between underlying coal/sediments and the zeolitized tephra marks the western boundary of the deposit while the northern limit, somewhat indistinct, may be an erosional termination. The deposit remains open and thickening in the easterly down-dip direction. The down-dip limit may be defined more by mining economics than physical termination. Drilling has delineated the deposit for 110 metres along strike over a width of 90 metres. It continues to the south past the drill-defined area for ninety metres to Bromley Creek and another 150 metres south of the creek.

Utilizing a combination of polygonal and sectional calculations for the measured (drilled) area, measured sections for the indicated area and strike dimensions for the inferred area a total resource of 564,528 metric tonnes is calculated made up of 350,218 tonnes measured/drill-indicated and 214,310 tonnes indicated. An additional 297,000 tonnes of inferred resource extends along trend towards the south. A specific gravity of 2.2 was used in the calculations.

Seventy zeolite core samples were split and taken at alternate five foot (1.5m) intervals throughout the drillholes and submitted to BC Research Labs in Vancouver for CEC (cationic exchange capacity) analysis where thirty-seven of them were tested. CEC values ranged from 7 to 130 with an average in the 95 to 105 range.

From the 3,000 tonnes of material blasted and currently stockpiled 200 tonnes were crushed and trucked to the C2C zeolite processing facility in Ashcroft. Samples taken of this material were submitted for additional testing to BC Research Inc. Tests indicate that: a) the host rock is a latite volcanic composed primarily of glass shards replaced by zeolite which comprises 50-60% of the rock volume; b) the primary zeolite specie is clinoptililite with subordinate heulandite and stilbite; c) the zeolite is calcium and potassium rather than sodium rich; d) the zeolite product contains no hazardous elements or materials; e) the zeolite material is effective in eliminating odors from animal waste slurries and the resulting product may be utilized as a slow ammonia-release fertilizer; f) the zeolite product may be offered in five different mesh sizes for use by itself or in combination with other materials. In short the material has desirable characteristics which would lend itself to deployment in a number of commercial applications

Given that the deposit is roughly coincidental with the dip-slope topography an open-cast method of mining should be relatively straightforward with a significantly low stripping ratio. Questions such as the presence of Bromley Creek which traverses the deposit and the existence of stopes, shafts and tunnels underlying portions of the property need to be addressed. Recommendations are made for further drilling to firm up probable reserves, to investigate the area south of Bromley Creek, market testing of the zeolite product and for a scoping study/preliminary feasibility. Estimated cost: $100,000 minimum.

A total of $74,629.63 was expended on the project during the Dec.17/00-Dec.16/01 assessment period.

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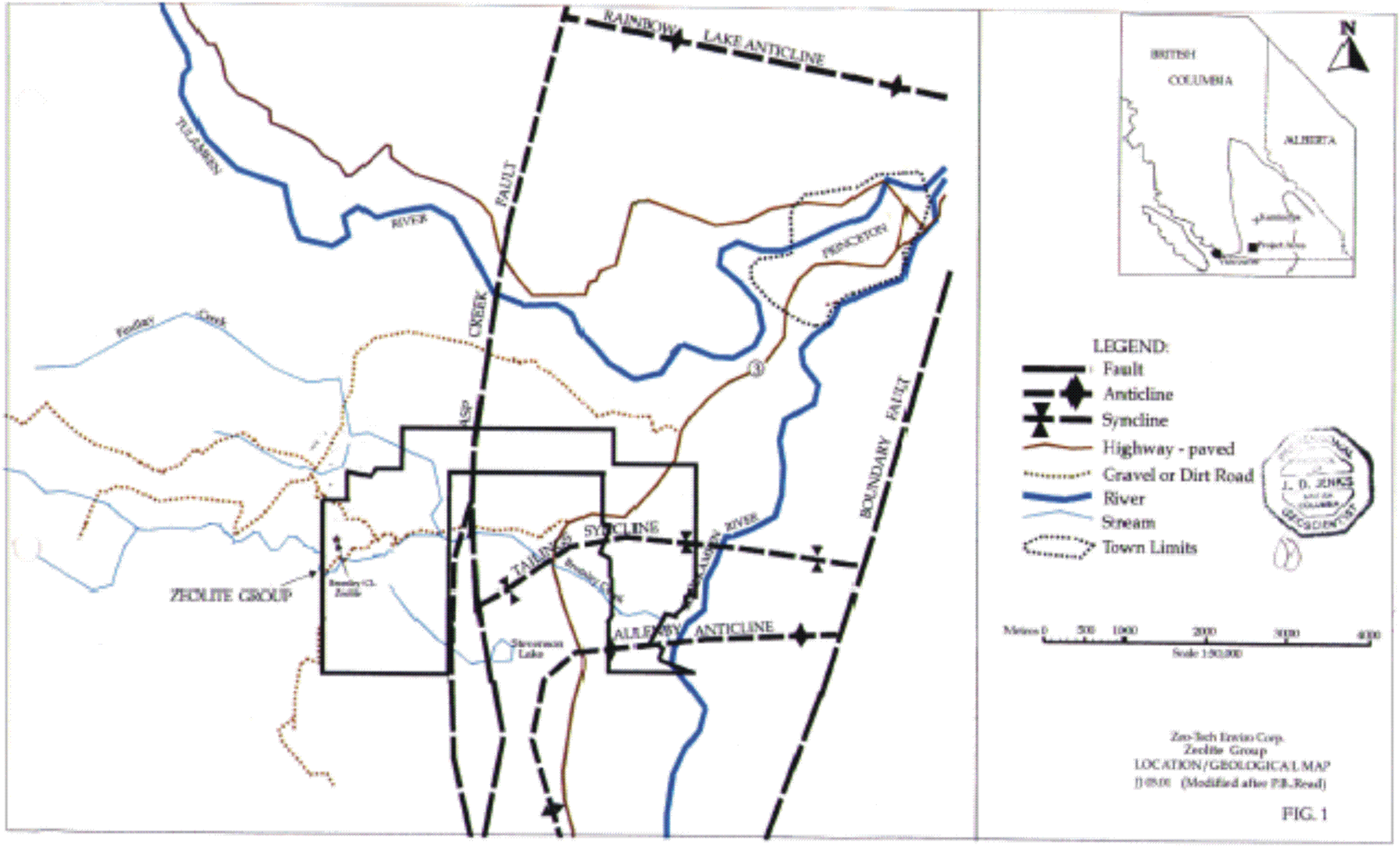
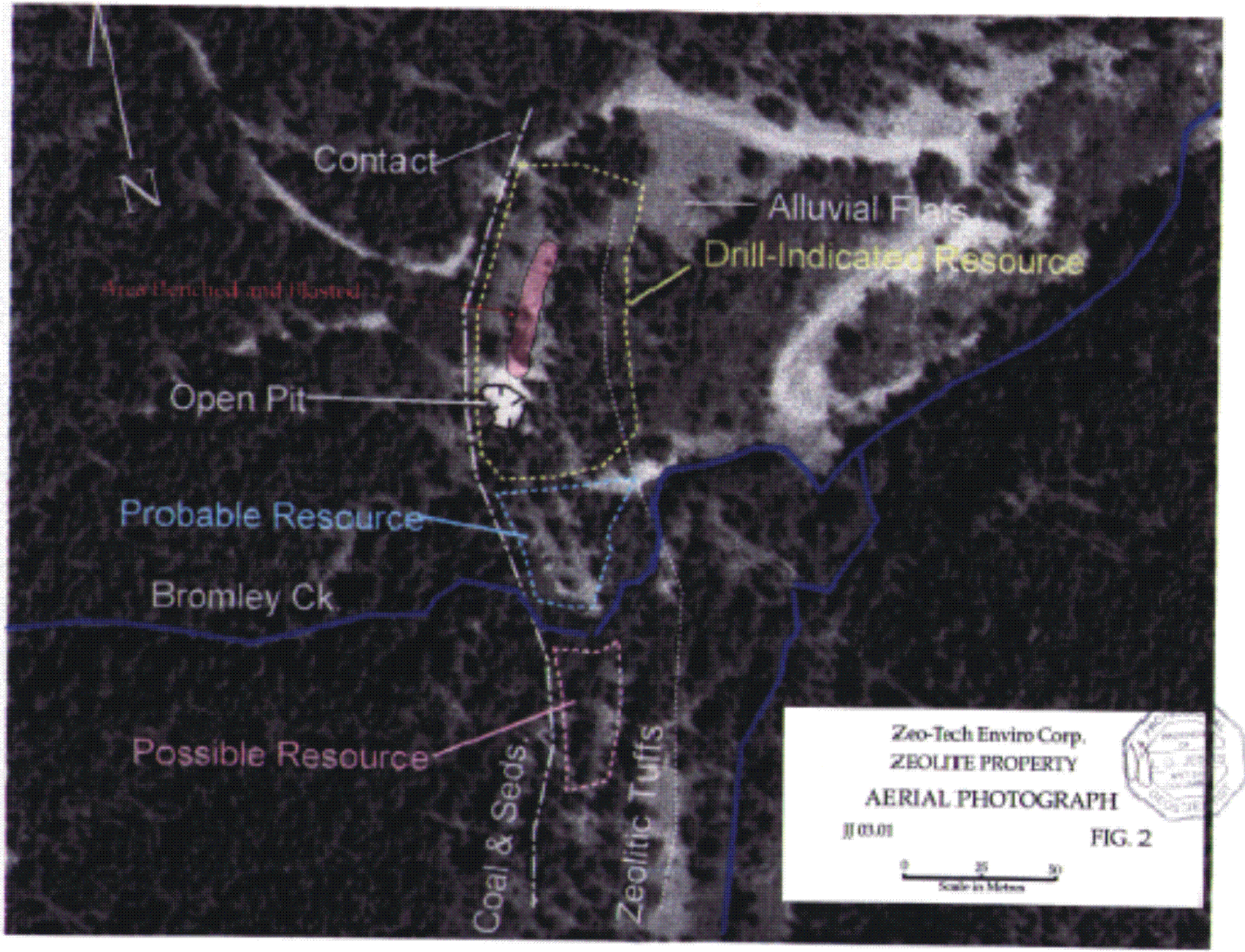


Zeo-Tech Enviro Corp.
Zeolite Group
LOCATION/GEOLOGICAL MAP
(Modified after P.B.Read)

FIG. 1


N
Contact
Alluvial Flats
Drill-Indicated Resource
Area Benched and Blasted
Open Pit
Probable Resource
Bromley Ck
Possible Resource
Coal & Seds.
Zeolitic Tuffs
Zeo-Tech Enviro Corp.
ZEOLITE PROPERTY
AERIAL PHOTOGRAPH
JJ 03.01
FIG. 2
0
25
50
Scale in Metres

1 – INTRODUCTION AND TERMS OF REFERENCE:

Jenks was retained by Mr. Ray Paquette, president of Canadian Mining Corp./Zeo -Tech Enviro Corp. to provide a summary assessment report describing the physical and technical work activities carried out during the December 17/00 – December 16/01 anniversary period on the Zeolite claim group near Princeton. .

The present report summarizes those physical and technical activities carried out on the property during the indicated time period and also draws upon results and observations obtained from the diamond drilling programme carried out in 1999. The report conforms to the standards of national policy 2A. Information sources are indicated in the bibliography – section 13.

While Jenks has reviewed the title to the subject property and believes it to be valid as depicted in section 4 any title opinion is best verified by legal counsel.

As the economics of the project are subject to ongoing evaluation no references to "ore" nor "reserves" are made within the report. Any zeolitic material delineated over the course of the programmes is referred to as a resource.

2 - LOCATION AND ACCESS:

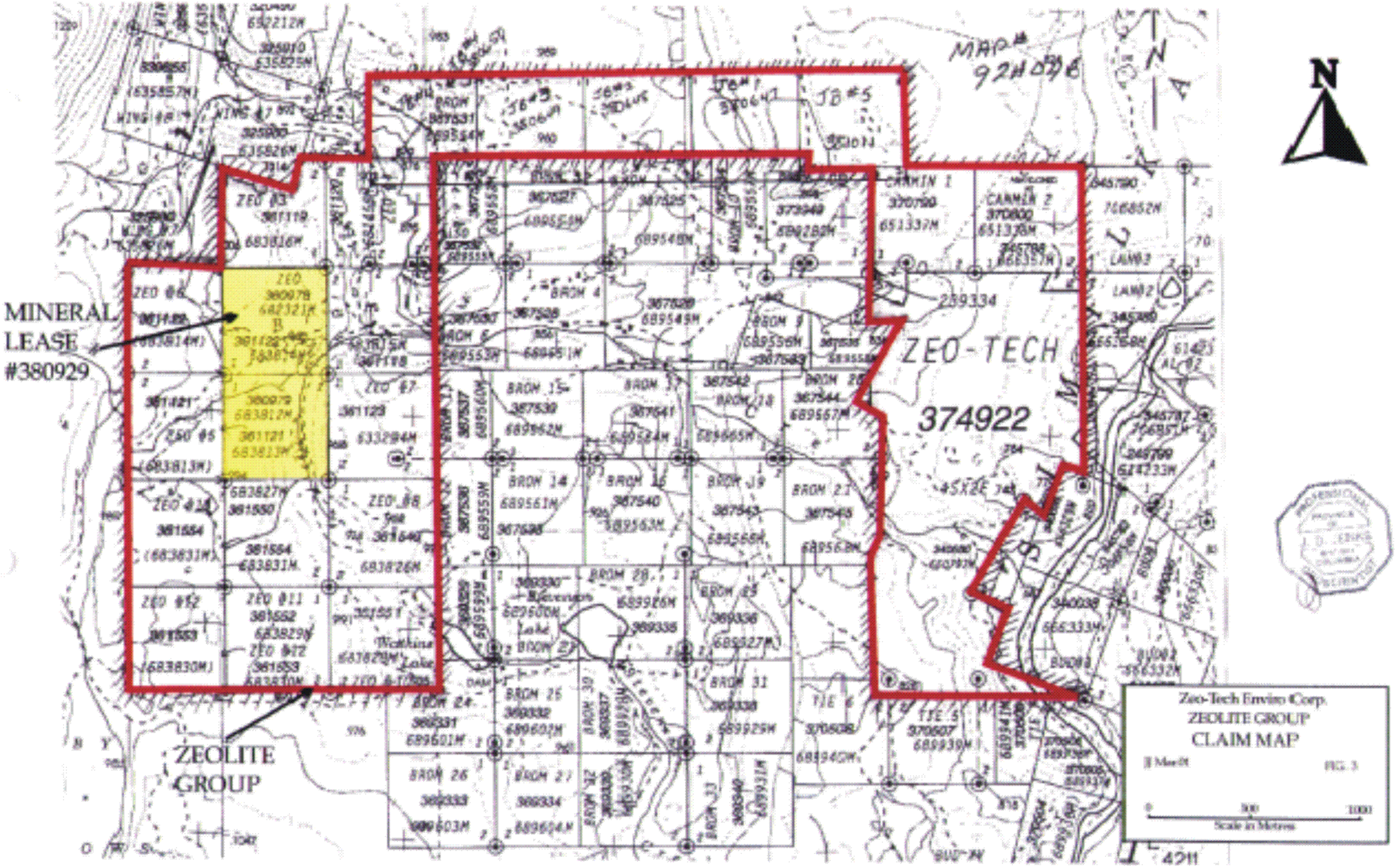
The Zeolite group is situated 9 air km. southwest of Princeton, B.C. some 283 km. east of Vancouver. From Princeton the claim area may be accessed by travelling west from the town along Hwy. 3 as follows:

Odometer in Kms.	Description
0	Travel west from Princeton town limits along Hwy. 3
2.25	Turn right onto Black Mine road, a dirt road.
3.86	Ignore right turn onto Old Black Mine road.
4.98	Ignore left turn to house at cattleguard.
9.66	Take left turn.
10.3	Pit area on Zeolite group.

While drilling operations were underway in 1999 Weyerhauser Forest Products upgraded much of the entry road in order to reach their own timber licences. In dry weather the pit area may by accessed by two-wheel drive vehicle while wet road conditions require four-wheel drive. Because of landowner objections a more direct route from highway 3 via Wright's road is currently unavailable. Research into the status of Wright's road indicates that it is a class four road upon which public funds have been previously expended; it was the former access route utilized during the 1930's and 40's by Granby Mining in their coal mining operations. Accordingly, Zeo-Tech is legally entitled to use this shorter, more direct route to the project site.

3 – PHYSIOGRAPHY AND CLIMATE:

Property terrain is moderately rugged, situated on southerly and easterly-facing slopes which have been dissected in part by Bromley Creek. Elevation ranges from 760 to 920 metres and relief is in the order of 160 metres. Most of the claim area is covered by glacial till with thicknesses probably ranging from one to twelve metres. Bromley Creek is a permanent east-southeasterly flowing watercourse which has traversed the zeolite units exposing them in ten metre bluffs on either side of the creek. A second unnamed creek flows northerly joining Bromley Creek at a point immediately downstream from the zeolite units. A northerly-trending alluvial terrace located immediately downhill from the pit area is a Pleistocene remnant of the Similkameen River.


MINERAL
LEASE
#380929
ZEOLITE
GROUP
ZEO-TECH
374922
MAP
92H096
N
Zeo-Tech Enviro Corp.
ZEOLITE GROUP
CLAIM MAP
FIG. 3
0
500
1000
Scale in Metres

Much of the claim area is covered by a sub-commercial growth of conifers - primarily Douglas fir, Ponderosa pine and occasional lodgepole pine and jackpine. Deciduous species include poplar and willow.

While Princeton enjoys a slightly drier, moderate climate typical of southern BC the property which is at a slightly higher elevation experiences somewhat higher precipitation and a freeze-up period extending from early November through mid- April. Winter snow cover is in the order of 100 cm.

4 - LAND TENURE:

The Zeo property consists of twenty-two two-post claims measuring 500 x 500 metres , 25 hectares each, and a single eight-unit claim for a total package of 750 hectares. Originally staked in 1997 and 98 by Gordon Webster of Princeton the claims were optioned in 1999 to Stone Mountain Quarries Ltd. (D.Joyce). Stone Mountain later optioned them to Canadian Mining Corp. Ltd. who funded the subsequent work programmes. Additional claims were added in 2000. All titles held by Canadian Mining Corp. Ltd. have been assumed by Zeo-Tech Enviro Corp. The claims are listed as follows:

Claim Name	Tag #	Record #	Record Date	Expiry Date	No. of Units
Zeo	682231	360978	Dec.16/97	Dec.16/2000	1
Zeo #1	683812	360979	Dec.16/97	Dec.16/2000	1
Zeo #2	683815	381118	Jan.5/98	Jan.5/2001	1
Zeo #3	683816	361119	Jan.5/98	Jan.5/2001	1
Zeo #4	681456	361120	Jan.5/98	Jan.5/2001	1
Zeo #5	683813	361121	Jan.6/98	Jan.6/2001	1
Zeo #6	683814	361122	Jan.6/98	Jan.6/2001	1
Zeo #7	633294	361123	Jan.6/98	Jan.6/2001	1
Zeo #8	683826	361549	Mar.9/98	Mar.9/2001	1
Zeo #9	683827	361550	Mar.9/98	Mar.9/2001	1
Zeo #10	683828	361551	Mar.9/98	Mar.9/2001	1
Zeo #11	683829	361552	Mar.9/98	Mar.9/2001	1
Zeo #12	683830	361553	Mar.9/98	Mar.9/2001	1
Zeo #13	683831	361554	Mar.9/98	Mar.9/2001	1
JB	689280M	373949	Feb.1/00	Feb.11/2001	1
JB #1		380647	Sept.2/00	Sept.2/2011	1
JB #2		380648	Sept.2/00	Sept.2/2011	1
JB #3		380649	Sept.2/00	Sept.2/2011	1
JB #4		380650	Sept.2/00	Sept.2/2011	1
JB #5		381011	Oct.5/00	Oct.5/2011	1
Zeo-Tech		374922	Feb.1/00	Feb.1/2011	8
CanMin #1	651337M	370799	Feb.1/00	Feb.1/2011	1
CanMin #2	651338M	370800	Feb.1/00	Feb.1/2011	1

TOTAL: 30 UNITS – GROUPED AS THE ZEOLITE GROUP

During the year a mineral lease was applied for and granted by the Ministry of Mines. The lease covers the Zeo and Zeo 1 claims and was assigned mineral lease number 380929. Application was concurrently made for a Mining Permit (currently pending). A Licence to Cut was issued during the year by the Ministry of Forests. A permit is presentlly in place (Annual Work Approval #KAM 2000-1500625-574) to allow bulk sampling to the total of 10,000 tonnes. To that end an $8,000.00 security deposit has been lodged with the Department of Mines under Reclamation Permit #MX-15-154.

5 - PREVIOUS WORK DONE:

While portions of the ground covered by the Zeolite group have been examined by various companies over the years two samples taken of the Bromley Creek tephra by P.B. Read (1987) returned high CEC values (120.4 and 105.7) as documented in his report. Subsequent to staking the claims in 1997 Gordon Webster stripped and mined a couple of hundred tons of zeolitic rock, crushing a portion and shipping some of the material to a test facility in Ashcroft, B.C.

Granby Consolidated Mining exploited the coal seams underlying part of the present claim area during the period 1937 through 1943. Utilizing underground means they mined a section measuring some 1350 by 300 metres – in the order of 500,000 tonnes of product. Profitability was apparently hindered by the rapid deterioration of the coal upon exposure to air.

During 1999 Canadian Zeolite carried out a drill programme on the Zeo and Zeo 1 claims. Fourteen short holes totaling 310.6 metres were completed to maximum depths of 45 metres. The area drilled was concurrently mapped and strike extensions of the zeolite horizon mapped and prospected.

6 – DEC.17,2000-DEC.16,2001 WORK PROGRAMMES:

During March 2000 a 40 x 15 metre area north of the sample pit was cleared, drilled and blasted and a stockpile of approximately 3,000 tonnes of zeolite accumulated for testing purposes. Ed Sloda of Canadian Mining Co. oversaw the operation which was carried out by Brian Bigattini and Rick Desjardins of T & A Drilling and Blasting of Kelowna. To that end 122 blastholes three metres in depth were drilled by a tank drill, loaded and blasted between March 14th and 17th, 2000.

Approximately 200 tonnes of broken material was transported to a nearby gravel pit adjacent to highway #3 and crushed to minus 1" (2.54 cm) using a portable crusher owned by Mike Barsi. The crushed product was trucked to C2C's zeolite beneficiation plant located in Ashcroft where it was rotary dried, sized, bagged and distributed for subsequent testing. Such testing included the determination of adsorbent qualities at various particle sizes both by itself and in combination with other substances.

A variety of tests were carried out on drill core, surface and bulk samples. This included cation exchange capacity (CEC) determinations, whole rock analysis, trace element analysis, bulk density, hardness, pH, material safety data analysis, the effect of CMC zeolite on animal composting, acid and alkalinity stability, water absorption and mineralogical examination by BC Research Inc. of Vancouver . X-ray diffraction analyses were conducted both by the University of British Columbia and by Vancouver Petrographics Ltd. who also performed thin section examinations.

Application was made for a mining lease during the year. To that end a portion of the claim bloc (Zeo and Zeo 1) was selected. Tim Hall, licensed B.C. surveyor, surveyed in the blazed and cut boundaries of the delineated portion, as well as claim posts, roads, drill holes and other significant features lying within that area. All survey results were drafted onto a plan submitted to the BC Surveyor General and the BC Department of Mines who approved the lease by year's end.

An application for a mining permit on Zeo-Tech's behalf was concurrently submitted by Eric Beresford, P.Eng (BC), to the BC Department of Mines. The application included a detailed mining plan outlining the scope and strategy of the proposed operation. As of the time of writing approval is pending.

Additional surface work included snowclearing, both of road and the proposed pit site, widening of a portion of the entry road from the Black Mine road access point, logging the pit and building site, slash-burning, construction of a settling pond to capture run-off from the work site and preparation of the proposed building site. A permit was obtained from the BC Ministry of Forests prior to logging activity. All surface preparation, including logging, slashing, burning, road improvement, etc., was carried out under contract by Doug Willis who utilized his own equipment and labour.

8 - REGIONAL GEOLOGY:

Within the Princeton Basin zeolite occurs within five different tephra lenses in thicknesses ranging to and exceeding 22 metres.

The Princeton Basin is a northerly-trending trough/half-graben over 35 kilometres in length by five kilometres in width bounded on the east by the north to north-easterly trending Boundary fault and on the western edge by the Asp Creek fault. The basin is partly filled by Eocene intermediate volcanic rocks (the Cedar Formation) overlain by the Allenby Formation - up to 2000 metres thick composed of sandstone, shale, waterlain rhyolitic tephra and coal. Within the Allenby Formation five different waterlain rhyolitic tuff and volcanic breccia layers are zeolitized. In descending order they are the Sunday Creek tephra, Snowpatch Ash, Aspen Creek Ash, Tailings Ash and the Bromley Creek/Vale tephra (the subject of this report).

Between the Asp Creek and Boundary Faults both tight and open folding is seen with the strata striking east-west to east-northeasterly. The Bromley Creek zeolite is situated immediately west of the Asp Creek fault and of the Princeton Basin proper - lying on the western limb of the Tailings syncline. Accordingly, the zeolite unit strikes northerly and dips some 30 to 70 degrees to the east.

A thin vineer of glacial till covering most of the region masks much of the outcrop except in bluff areas adjacent to streams and relatively steep terraine.

8a - PROPERTY GEOLOGY/DESCRIPTION OF THE DEPOSIT:

Thirteen of fourteen holes diamond drillholes completed on the Zeo property thirteen intercepted the Bromley Vale zeolite horizon to some degree. Drill information together with examination of the zeolitic bluffs on either side of Bromley Creek and surface prospecting to the south provided insight into the possible dimensions of the deposit, the geology and the the quality of the zeolitic material in terms of cationic exchange capacity.

The drill programme investigated 100 metres of deposit strike length and some 70 metres of downdip component. Two of the holes extended well beneath the zeolite layer in order to examine the possible presence of parallel zeolitic horizons below the zeolite/coal contact, however, these proved negative.

The Bromley Vale zeolite deposit exposed on the Zeolite group is a conformable stratiform body striking nearly north-south and dipping to the east between 30 and 50 degrees. None of the holes intercepted the entire thickness of the unit; in all instances the upper portions were eroded to some degree. Holes drilled at upper elevations in the pit vicinity intercepted only the lower lapilli tuff unit - the overlaying ash tuff having been lost to erosion. Even hole number 9Z-14, the lowest elevation drilled, intercepting a true thickness of 25 metres, does still not represent the maximum thickness of the zeolite unit.

The entire unit has been zeolitized though relict textures are still discernible. It may be divided into an upper fine-grained ash tuff comprising two-thirds of the thickest intercept and a lower third consisting of a

coarse-grained lapilli tuff, frequently with a breccia texture. Generally the unit is light-gray to buff in colour. Sub-angular, generally lensoid-shaped clasts to 50 mm in size make up to 30% of the rock volume of the lapilli tuff. Clasts may range in colour from gold, light green, buff to light brown. They are generally supported by a vitric, crystalline matrix though in some instances they may be clast-supported. Ragged patches, angular clasts and/or thin seams of charcoal usually make up between 3 to 8% of the rock volume. The upper zeolitized ash unit is similar in colour to the lapilli tuff though fine-grained – generally <1 mm in grain size. Originally laid down as a waterlain vitric-crystal tuff and volcanic glass it also contains 1-5% scattered charcoal. Occasional thin lamellar layers of fine argillaceous mudstone also occur within the zeolite unit.

The zeolitic layer terminates abruptly at the contact with the underlying coal-bearing formation which generally consists of a low rank lignite intermingled with sandy mudstone. The contact is usually marked by a highly faulted interval with abundant gouge. Frequently, the bottom five metres of the zeolite unit is highly broken and oxidized to a light to medium brown colour. Core recovery may diminish to 20% within this faulted section.

Drilling has defined 110 metres of strike length. A continuing and additional 90 metres of strike length is exposed along a ridge trending south-southeasterly from drill section 10068N. The unit is transected by Bromley Creek with little, if any, interruption and continues trending southerly an additional 150 metres as defined by a train of zeolitic surface rubble. Thus a total strike length of 350 metres is indicated of which one third has been tested by drilling.

In the widest section drilled (10130N) approximately 70 metres of downdip strike extension was tested. The diminishing erosional effects in the downdip direction produce thicker intercepts and there is no reason to suspect that the zeolitized unit would not continue significantly deeper in the downdip direction. In all probability mining economics, ie.- stripping ratios, rather than termination of the body would dictate the depth to which exploitation would conclude. In general, moving easterly from the pit, the deposit coincides with a dip slope which would entail a minimal stripping ratio. It then dips in part beneath alluvial flats. This latter material would require a substantially higher stripping ratio – a significant factor in the mining equation.

The furthest exposure of the deposit to the north is along section 10160N. Beyond this limit hole number 9Z-7 intercepted 9.75 metres of glacial till before abandonment. While a small quantity of zeolitic float in the overburden suggests a possible presence at depth, termination of the deposit by erosion/thick glacial cover to the north of section 10160N may be a reality. Further drill testing downdip and slightly to the north, in this particular area, would be in order.

Deposit intercepts become thicker in the easterly direction due to diminution of erosional effects. Accordingly, the thickest intercept encountered was in hole #9Z-14 (31.70 metres) representing a true thickness of 24 metres. At the pit level true thicknesses range from 8 – 11 metres and include only the lapilli tuff unit – the overlaying ash unit having been eroded. Measurement of the zeolitic bluffs adjacent to Bromley Creek indicate a thickness of 22 metres suggesting that these dimensions remain consistent towards the south.

8b – DRILL SAMPLE RESULTS:

Seventy drill core samples were submitted to BC Research Labs in Vancouver for cationic exchange capacity (CEC) determination of which thirty-seven were analysed. Alternate five foot intervals were split though-out all the holes giving a good representative sample profile of the drilled area. Results are listed in appendices III and II where they are placed in the summary sheet within the appropriate drillhole/metrage intervals.

The samples indicated high consistent CEC values as summarized in Table 1:

TABLE 1: CEC Values – Descriptive Statistics

			Frequency Distribution:	
Number of Samples	37	36 (omit #64)		
Range of Values	7 – 130		Value Range	No. of Samples
Arithmetic Mean	100.5	103.1	0-25	1
Geometric Mean	93.6	100.6	25-50	0
Median	105	105.5	50-75	2
Standard Deviation	24.9	19.53	75-90	2
Skewness	-2.12	-1.64	90.1-100	7
Kurtosis	5.56	3.91	100.1-110	14
Mode	107	107	110.1-120	3
			120.1-130	8

89% of the samples returned values in excess of 90 CEC. The negative skewness indicates a sample bias towards the higher values. Depending upon method the average anticipated value should be in the 90-107 CEC range. There appears to be little distinction in values between the zeolitized lapilli (coarse-grained) tuff and the fine-grained ash tuff. A slight decrease of value seems to occur near the interface of the zeolitic unit and the coal/sedimentary units, particularly in faulted zones. Previous work in the area by Read (1987) together with the elevated CEC values indicates that the probable zeolite specie is clinoptilolite.

Overall analyses show that the deposit has consistent CEC values throughout the sections drilled of sufficiently high quality to warrant exploitation.

8b – TEST RESULTS:

a) Petrographic Examination:

Representative samples of lapilli tuff (sample A – DDH 9Z-11 @ 70') and ash tuff (sample B – DDH 9Z-12 @ 34') were examined in thin section by Dr.J.F.Harris of Vancouver Petrographics Ltd. (Appendix IV).

The examination indicated that there were no essential compositional differences between the coarser-grained lapilli tuff and the finer-grained ash tuff. Both samples were pyroclastic consisting primarily of shards of volcanic glass (93-99.5 %) which had been altered to zeolite. Accessory minerals included sanidine, plagioclase and rare mafics. Quartz was notably absent. A minor potassium content was indicated. The rock was classified as a latite volcanic.

b) X-Ray Diffraction Studies:

Both Dr. Harris of Vancouver Petrographics and Dr.L.A. Groat of UBC carried out X-ray diffraction analyses of drill core and a surface sample. Their conclusions are similar but not identical. Dr. Harris indicated an absence of quartz while Dr. Groat noted its presence. Both researchers cited zeolite as the main constituent with minor feldspar minerals. Both identify the primary zeolite variety as clinoptilolite with subordinate heulandite and stilbite.

c) Animal Wastes Tests:

Conducted by BC Research Ltd., test results indicated that CMC zeolite from the property was effective in eliminating odour from animal waste slurries (Appendix VI). In addition it was found that addition of the zeolite did not interfere with the composting process nor the CEC capability. This means that a deodorized compost would retain ammonia which would be subsequently available for slow release as a nutrient for plant growth.

d) *Other Tests (Appendix VII):*

Whole rock analyses performed by BC Research are listed in Appendix VII as well as a number of the material's physical properties. The zeolitic material is primarily potassic (K) and calcic (Ca) rather than alkalic (Na). Approximately 50-60% of the rock volume is zeolite with CEC's consistently above 100.

Material safety studies indicated that the material contains no classified hazardous ingredients and requires no special handling procedures.

e) Potential Zeolite Products:

While research for new or additional applications is ongoing , processing of test material both at the C2C plant in Ashcroft and at BC Research's facility in Vancouver indicates that a crushed product may be offered in five different mesh sizes: -6 to +40, -40 to +80, -80, -180, -325. At the present time sales efforts show particular promise in the areas of moisture and insect control, golf courses and sports fields, odor suppressants, animal feed additives and concrete additives. The stockpile of zeolite currently situated on the Zeo property will provide an adequate supply of material for additional research.

8c - RESOURCE ESTIMATE:

In the absence of an economic feasibity with calculated mining costs and product prices the zeolite body is treated as a resource rather than a reserve. Accordingly, the resource is subdivided into three categories: *measured, indicated and inferred. The consistent strataform nature of the deposit suggests that any material* placed in a lessor category has a high probably of upgrade into a measured or mineable classification.

To arrive at the drill-indicated resource the area of zeolite mineralization was calculated for each section and its influence extended to the mid-point of each adjacent section. Sections are roughly thirty metres apart. The northern limit of the deposit was taken to be the mid-point between section 10160N and hole #9Z-7 while the drill-indicated southern limit is arbitrarily placed twenty metres south of section 10068N. Calculated volumes of material are multiplied by a specific gravity of 2.2 to arrive at a tonnage figure.

The western limit is a well-defined, easterly-dipping contact between the zeolite units and the underlying coal/sedimentary beds. To the east the boundary becomes somewhat arbitrary. In this direction the zeolite units continue uninterrupted and thickening downdip. For resource calculation purposes the cut-off is taken roughly twenty metres downdip of the upper portion of the easternmost drillholes and ten metres downdip from the bottom of the drillholes. In practical terms this is felt to correspond to readily mineable depths. In actual fact since the deposit continues downdip it is conceivable that any resource or reserve limit would be restricted only by the ability of the deposit to be economically mined at a given depth.

The zeolite body continues south of the drilled area and is well-exposed along a ridge and in the bluffs adjacent to Bromley Creek. Resources in this area are placed in an indicated category as are downdip extensions along sections 10160N, 10100N and 10068N .

Though little work has been completed south of Bromley Creek a prevalent, consistent boulder train of zeolite rubble extending from the bluffs for at least 150 metres suggests that this area should be placed into an inferred resource category.

Calculated resources for the Bromley Creek zeolite deposit are summarized in Table 2 as follows (refer to map 2 and resource sections S-6 through S-10, plus figure 2):

TABLE – 2: Summary of Bromley Creek/Zeo Group Zeolite Resources

Resource Bloc	Dimensions	Metric Tonnes			
		Measured	*Indicated*	*Inferred*	Total
Section 10160N	879 sq.m x 30m	58,014			58,014
	22m thick x 30m x 30m		55,950		55,950
Section 10130N	1911 sq.m x 30m	126,126			126,126
Section 10100N	1037 sq.m. x 30m	68,442			68,442
	23m thick x 30m x 22m		33,400		33,400
Section 10068N	1268 sq.m. x 35m	97,636			97,636
	22m thick x 35m x 15m		25,410		25,410
Section 10025N	700 sq.m. x 25m thick		38,500		38,500
Section 10000N	925 sq.m. x 30m thick		61,050		61,050
South of Bromley Ck.	150m strike x 10m thick x 90 m downdip			297,000	297,000
TOTALS		350,218	214,310	297,000	861,528

9 - PRODUCTION NOTES:

While not the intention of this report to consider the economics of a mining operation three obvious factors should be mentioned which could impact upon future mining activity.

Paralleling an easterly-dipping hill slope the deposit may be easily open-pitted with minimal overburden removal required and a low stripping ratio – at least at the upper elevations where overburden depths range from one to four metres. Below the level of the alluvial terrace overburden thicknesses are in excess of five metres ranging to twelve metres in hole #9Z-14 – likely deepening to twenty metres and more further to the east. As previously indicated the deposit likely persists downdip and the depth of exploitation would be dictated by the economics of a mining operation.

A second factor affecting a mining operation would be the presence of Bromley Creek which traverses the deposit. While zeolite is not a deleterious substance in terms of the environment production adjacent to an active watercourse would need to address the question of siltation and possible contamination from machinery. Accordingly, a twenty-metre undisturbed buffer adjacent to the creek will be required.

A third factor affecting open cast production would relate to previous coal mining activies during the first half of the century. Underlying portions of the property contain an extensive network of tunnels, airshafts, adits and production stopes. Two small airshafts projecting to the surface within the present test pit both draw noticeable air movement from the surface. Mining at surface with heavy earthmoving equipment will require a degree of consideration which may include backfilling of certain of the undermined portions and/or leaving behind a portion of the footwall overlying the coal/zeolite interface.

10 – MINING PERMIT APPLICATION AND MINE PLAN:

Application for a mineral lease was initiated by Mr. Eric Beresford, P.Eng. during September 2000 to include the Zeo and Zeo 1 claims. Such application was accompanied by a survey plan of the proposed lease area completed by Mr. Tim Hall, BCLS – a copy of which was submitted to the BC Surveyor-General. The plan included strategic claim post, drill-hole, claim boundary and road locations as well as other significant features. Notification of the application was advertised in three consecutive issues of the Similkameen News Leader as well as the BC Gazette, as required. Mineral lease approval (#380929) was granted in late 2000.

An application for a mining permit was concurrently submitted by Mr. Beresford (Appendix). Approval is currently pending. The application calls for a maximum annual mining rate of 25,000 tonnes from an open cast operation. Upon removal of overburden the deposit would be mined via drilling and blasting in a series of eight metre benches to such depth as dictated by the economics of the operation. Overburden would be stockpiled and utilized in subsequent reclamation. Mining, as well as drilling and blasting, would likely be carried out on a contract basis and involve an air-trac drill, an excavator, tracked dozer andfork lift. A mobile crusher would be employed on-site. Temporary structures such as trailers would be used as well as a portable/moveable warehouse facility. The above operation covers the drilled-off area and is referred to as phase one. Subsequent phases would apply to the southerly strike extension of the deposit to the south.

Mr. Beresford's charges for his service were pro-rated to December 16,2001 and the applicable portion applied to the Dec.17/00-Dec.16/01 assessment period.

11 - CONCLUSIONS AND RECOMMENDATIONS:

The 1999 drilling programme on the Zeo property was successful in defining 350,218 metric tonnes of measured zeolite resources in addition to 214,310 tonnes of indicated resources for a total resource figure of 564,528 tonnes. An additional 297,000 tonnes of inferred resources extending along strike to the south could be easily upgraded to the measured/indicated category with a minimal amount of drilling. The zeolite resource is contained within an easterly-dipping (40-50 degrees) strataform zeolitized tuff deposit composed of an upper fine-grained ash tuff unit and a lower coarse-grained lapilli tuff unit. Ranging from 10 to 22 metres in thickness the body thickens and remains open in the downdip direction where its inclusion into a resource/reserve category would relate to mining economics at a given depth rather than a physical cut-off. Samples of material submitted for CEC analyses were consistently high – averaging between 95 and 105 CEC with high values to 130. The primary zeolite specie is taken to be clinoptilolite. Other than a slight dimunition in value within faulted portions adjacent to the underlying coal/sediment contact CEC grades remain consistent throughout the deposit with little variation between fine and coarse-grained varieties.

Virtually all of the test area drilled and blasted during 2000 was underlain by open stopes dating from the former coal mining operations. This resulted in a somewhat diminished shattering effect on the rock in proximity to the open areas and produced a coarser rock breakage. In these undercut areas a small buffer of hanging wall rock above the coal seams will be required to ensure better breakage and to facilitate the movement of heavy equipment above.

An open-cast mining operation is seen as a straightforward type of proposition enhanced by the deposit's geometry – essentially a dipslope situation with a minimal stripping ratio. Two factors to be considered in a mining scenario would relate to the presence of Bromley Creek and the existance of underground

workings underlying portions of the property. Assuming marketability of an end product the deposit would be considered readily exploitable.

Laboratory test results indicated the following:

- Thin section examination classed the rock as a latite composed primarily of volcanic glass shards replaced by zeolite comprising 50 to 60% of the rock volume.
- X-ray diffraction confirmed the primary zeolite specie to be clinoptilolite with subordinate heulandite and stilbite.
- Whole rock analysis indicated the zeolite to be potassium and calcium rather than sodium rich.
- The zeolite product contains no hazardous materials.
- Animal waste slurry tests showed that the crushed zeolite material was effective in eliminating odors and that the resulting product may be used as a slow ammonia-release fertilizer.
- The zeolite end product may be offered in five different mesh sizes either by itself or in combination with other materials according to the proposed end use.

Recommendations:

a) While sufficient resources have been drill-defined for immediate needs further expansion of resources would involve:

- Drilling to the north and northeast of holes 9Z-7 and 10 in an attempt to ascertain if the deposit continues in this direction.
- Drilling in the resource areas categorized as 'indicated' with the aim of drill-defining them. In the case of those sections adjacent to Bromley Creek particular care would need to be taken to prevent discharge of drilling fluids into the creek.
- Further study, examination of the 'inferred' resource area south of Bromley Creek followed by trenching and subsequent definition drilling.

b) Market research to determine the salability of the end product.
c) Further investigation as to the nature and category of possible end products.
d) Production of a scoping or mining pre-feasibility study.
e) Submission of approximately 10% of the samples to another laboratory for check purposes.

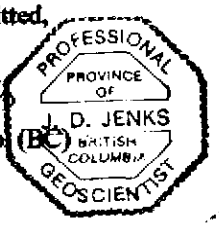
A provision of at least $100,000 should be earmarked to carry out the above.

12 - STATEMENT OF EXPENDITURES:

The following is a summary of the expenditures incurred upon the Zeo Claim Group between the dates of December 17, 1999 and December 16, 2000:

PHYSICAL WORK	Mar.13-Aug.15/00	Sept.22-Nov.21/2000
Drilling & blasting (T & A Blasting)	$14,800.73	
Crushing (M. Barsi)	2,675.00	
Supervision & engineering (E.Skoda)	6,750.55	
Supervision & field coodination (G.Webster)	2,367.95	
Snowplowing, ditching, road improvement, settling pond, logging, site prep., stumping, burning (D.Willis/Red Bluff Logging)	4,509.80	$3,847.05
Loading, haulage - pit site to crusher, crusher to C2C facility in Ashcroft:		
Harris & Son Transport	7,004.15	
N & L Automotive	664.47	
B. Nendrich Excavating	2,749.00	
Brad Nendrich Ventures	770.40	
R. Reichert Backhoe	706.20	
Legal survey (Tim Hall-BCLS)	6,887.04	
TECHNICAL		
Supervision, geology, report preparation, permit procurement (J.Jenks-P.Geo.)	9,066.22	2,457.77
Haulage to crusher	738.30	
Crushing/sizing/treatment	2,675.00	
CEC analyses., X-ray diffraction, thin-section, composting tests, determinative (BC Research Inc.)	3,745.00	
Mineral lease & mining permit application, mining plan (Eric Beresford – P.Eng.)		2,215.00
TOTALS	$ 66,109.81	$ 8,519.82
GRAND TOTAL	$74,629.63	

Respectfully submitted,



John Jenks – P.Geo (BC)
March 10,2001

13 - BIBLIOGRAPHY:

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14 - STATEMENT OF QUALIFICATIONS:

I, John Jenks, Consulting Geologist of the City of Salmon Arm, British Columbia, do hereby certify that:

1. I am a graduate of McGill University, Montreal, Canada with a Bachelor of Science (Geology Major) degree, 1968.

2. I am a Registered Professional Geologist in good standing since 1970 with the Association of Professional Engineers, Geologists and Geophysicists of Alberta.

3. I am a Registered Professional Geoscientist (#21122) in good standing since 1994 with the Association of Professional Engineers and Geoscientists of British Columbia.

4. I have practiced my profession continuously since graduation in British Columbia as well as various parts of Canada, Southern Africa, Indonesia, Papua New Guinea, Western USA, Alaska and Venezuela.

5. I personally own 5,000 shares of Zeo-Tech Enviro Corp. acquired on the open market.

6. I personally supervised the diamond drilling programme on the Zeo claims, logged and split the core, mapped portions of the property, prepared all maps and sections as well as the subject report. I also was present for the drilling and blasting of the test bench and supervised various part of the programme.

7. I hereby give my consent for use of this report for any purpose provided that any statements herein are not taken out of context.

PROFESSIONAL ENGINEERS AND GEOSCIENTISTS PROVINCE OF BRITISH COLUMBIA J. D. JENKS

John Jenks, B.Sc., P.Geo.(B.C.)
March 10,2001

Appendix I:

SAMPLE NUMBERS AND INTERVALS, CEC VALUES

SAMPLE NUMBERS AND INTERVALS

Sample #	Hole #	Interval Sampled (Ft) (Mtrs)	CEC	Description
9ZR-1	9Z-1	5'-10' (1.52-3.05)		Highly alt'd, zeolitic, remnant c.grained fragmental text.
2	1	17'-22' (5.18-6.71)	92	-as above- with rusty fracture surfaces.
3	1	27'-33' (8.23-10.06)		Zeolitic, very highly fractured, Fe-stained, 30% rec.
4	1	36'-40' (10.97-12.19)	35	Zeolitic, very highly fractured, Fe-stained.
	9Z-2	NO SAMPLES TAKEN		
5	9Z-3	7'-12' (2.13-3.66)		Zeolitic Ash Tuff, fine-grained, 6" argillaceous banding
6	3	17'-22' (5.18-6.71)	60	Zeolitic Lapilli Tuff. Med-coarse grained. V.alt'd.
7	3	27'-32' (8.23-9.75)	127	Zeolitic Lap. Tuff. Coarse-grained, highly altered.
8	3	37'-42' (11.28-12.80)	107	-as above-
9	3	47'-52' (14.33-15.85)		-as above- Highly stress fractured.
10	9Z-4	5'-12' (1.52-3.66)	59	Zeolitic Lap.Tuff. C.grained, highly altered.
11	4	17'-22' (5.18-6.71)		-as above- Highly fractured.
		SAMPLE FOR THIN SECTION (MINERAL SAMP C) TAKEN AT 25' (7.62 m).		
12	4	27'-32' (8.23-9.75)	98	-as above- Highly fractured.
13	9Z-5	5'-12' (1.52-3.66)	103	Zeolitic Lap Tuff. C.grained, v.h.alt'd, yellowish clasts.
14	5	17'-22' (5.18-6.71)		-as above-
15	5	27'-32' (8.23-9.75)	100	-as above- (32'-47': very highly faulted).
16	9Z-6	5'-12' (1.52-3.66)		Zeolitic Lap Tuff. C. grained. Very highly altered.
17	6	17'-22' (5.18-6.71)	87	-as above-
18	6	27'-32' (8.23-9.75)		-as above-
19	6	37'-42' (11.28-12.80)	97	-as above- Very highly fractured.
	9Z-7	NO SAMPLES TAKEN		
20	8	2'-7' (0.61-2.13)		Zeolitic Ash Tuff. Fine-grained. Occasional small clast.
21	8	10'-15' (3.05-4.57)	101	-as above-
22	8	17'-22' (5.18-6.71)		Zeolitic Ash Tuff. Slightly d. gray w. lamellar banding.
23	8	27'-32' (8.23-9.75)	102	Zeo. Lap. Tuff. Med.-c.grained. Large charcoal fragms.
24	8	37'-42' (11.28-12.8)		Zeo.Lap.Tuff. C.grained w. gold clasts. V.h.fractured.
25	8	47'-52' (14.33-15.85)	96	Zeo.Lap.Tuff. C.Grained.
26	9Z-9	6'-11' (1.83-3.35)		Zeolitic Ash Tuff. V.fine-grained, massive.
27	9	16'-21' (4.88-6.4)	105	-as above-
28	9	27'-32' (8.23-9.75)		Zeolitic Lapilli Tuff. Coarse-grained.
29	9	37'-42' (11.28-12.8)	94	-as above-
30	9	47'-52' (14.33-15.85)		-as above- V.highly fx, golden clasts.
31	9Z-10	11'-16' (3.35-4.88)	125	Zeolitic Ash Tuff. V.fine-gr., occas.clast.
32	10	21'-26' (6.4-7.92)		Zeo. Ash Tuff. V.fine-grained.
33	10	32'-37' (9.75-11.28)	113	-as above- 6" argillaceous zone @ 36'(11m).
34	10	42'-47' (12.8-14.33)		-as above- muddy portions
35	10	51'-56' (15.54-17.07)	123	Zeo.Lapilli Tuff. Coarse-grained.
36	10	62'-67' (28.9-20.42)		-as above-
37	10	72'-77' (21.95-23.47)	122	-as above-

38	9Z-11	7'-12'	(2.13-3.35)		Zeolitic Ash Tuff. Fine-grained.
39	11	17'-22'	(5.18-6.71)	117	-as above-
40	11	29'-34'	(8.84-10.36)		Zeolitic Lapilli Tuff. Coarse-grained.
41	11	42'-47'	(12.8-14.33)	110	Zeolitic Ash Tuff. Very fine-grained. (Tough to split).
42	11	52'-57'	(15.85-17.37)		Zeo. Ash Tuff. V.fine-grained, muddy, lamellar bndg.
43	11	62'-67'	(18.9-20.42)	130	Zeo. Lapilli Tuff. Coarse-grained, golden clasts.
	SAMPLE FOR THIN SECTION (MIN.SAMP. A) TAKEN AT 70' (21.34 m).				
44	11	72'-77'	(21.95-23.47)		-as above-
45	11	87'-92'	(26.52-28.04)	106	-as above-
46	9Z-12	5'-10'	(1.52-3.05)	105	Zeolitic Ash Tuff. V.fine-grained, light-gray.
47	12	15'-20'	(4.6-6.1)		-as above-
48	12	25'-30'	(7.62-9.14)	125	-as above-
	SAMPLE FOR THIN SECTION (MIN.SAMP. B) TAKEN AT 34' (10.36m).				
49	12	35'-40'	(10.67-12.19)		-as above-
50	12	45'-50'	(13.72-15.24)	110	Zeolitic Lapilli Tuff. Lt. gray, c.grained, golden clasts.
51	12	62'-67'	(18.89-20.42)		-as above-
52	12	72'-77'	(21.95-23.47)	100	-as above-
53	9Z-13	12'-17'	(3.66-5.18)		Zeo Ash Tf (12-13.5); Lap.Tuff(13.5-16.5)
54	13	22'-27'	(6.71-8.23)	126	Zeolitic Ash Tuff. V.fine-grained, light-gray.
55	13	32'-37'	(9.75-11.28)		-as above-
56	13	42'-47'	(12.8-14.33)	107	Zeo.Ash Tuff(42-45.5); Zeo.Lap.Tuff (45.5-47)
57	13	52'-57'	(15.85-17.37)		Zeolitic Lapilli Tuff. V.fine-grained, light-gray.
58	13	62'-67'	(18.89-20.42)	90	-as above-
59	13	71'-76'	(21.64-23.16)		-as above- Becoming faulted
60	9Z-14	38'-43'	(11.58-13.11)	109	Zeolitic Lapilli Tuff (38'-42'); Zeo.Ash Tuff (42'-43').
61	14	47'-52'	(14.33-15.85)		Zeolitic Ash Tuff. Fine-grained w. some recry. med.gr.
62	14	57'-62'	(17.37-18.89)	107	Zeolitic Ash Tuff. Fine-grained.
63	14	67'-72'	(20.42-21.95)		-as above-
64	14	77'-82'	(23.47-24.99)	7	Zeo.Lapilli Tuff (77'-79',81'-82'); Zeo.Ash Tf:(79-81)
65	14	87'-92'	(26.52-28.04)		Zeolitic Ash Tuff. Very fine-grained.
66	14	97'-102'	(29.57-31.09)	108	-as above-
67	14	108'-113'	(32.92-34.44)		Zeolitic Lapilli Tuff. Coarse-grained, golden clasts.
68	14	117'-122'	(35.66-38.19)	103	-as above-
69	14	127'-132'	(38.71-40.23)		-as above-
70	14	136'-141'	(41.45-42.98)	113	-as above-

71 Zeolitic grab sample from Williams Lake area submitted by Gordon Webster.

Appendix II:

PETROGRAPHIC/THIN-SECTION EXAMINATION

Vancouver Petrographics Ltd.

8080 GLOVER ROAD, LANGLEY, B.C. V1M 3S3
PHONE (604) 888-1323 • FAX (604) 888-3642
email: vanpetro@vancouver.net

Report for: B.C. Research Inc.,
3650 Wesbrook Mall,
VANCOUVER, B.C.
V6S 2L2

Job 000017

January 26, 2000

SAMPLES:

Two -¼" crushed rock samples of zeolitic ash tuff, designated 97R-43 (Min A) and 97R-48 (Min B), were submitted by Tim O'Hearn. Work requested was mineralogical examination, with special reference to the level of environmentally deleterious constituents. Small portions of the samples were briquetted with epoxy and prepared for examination as polished thin sections. Each slide incorporates 50 or so rock fragments, ranging in size from <1 - 5 mm.

SUMMARY:

Petrographic examination of these samples confirms that they are volcanic ash tuffs - apparently quartz-free, and probably of latitic composition. In addition to the absence of quartz, the study showed that no asbestiform minerals are present.

XRD scans were run on each sample (data enclosed), with results which are essentially identical in each case. The spectra contain numerous peaks, which are a virtually perfect match for ASTM standard 21-131, **heulandite**.

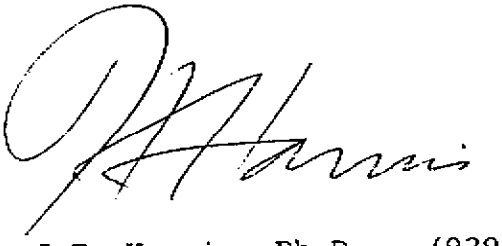
The pattern of sample A includes a few small peaks which are absent from that of Sample B. The strongest of these (at d-spacings of 3.73 and 3.22 Angstroms) fit with the principal reflections of sanidine, and are obviously derived from the accessory phenocrystic component observed in Sample A.

Two other rather strong peaks in the pattern of Sample A (at 6.43 and 1.83 Angstroms) show an extremely narrow, sharp configuaration atypical of natural diffraction peaks. They are thought to be spurious (electronic spikes).

Both patterns also include a few low-wavelength peaks (d-spacings in the 12-13 Angstroms range) which indicate the presence of accessory proportions of clay-type, layer-lattice minerals - probably montmorillonite and/or hydrobiotite.

The principal peak of quartz occurs at 3.34 Angstroms, and is an extremely sensitive indicator of that mineral. Its absence from the patterns of both Min A and Min B confirms the essential absence of quartz from these materials.

Individual petrographic descriptions are attached.



J.F. Harris Ph.D. (929-5867)

SAMPLE 97R-43: MIN A

Estimated mode

Matrix	
Altered glass) Zeolite)	93
Phenocrysts	
Sanidine	7
Other	trace

This sample consists essentially of brownish, sub-opaque volcanic glass, showing prominent pyroclastic textures in the form of angular shards 0.1 - 0.5 mm in size, plus lesser spheroidal forms. Many of the shards are recognizably replaced by a colourless, low-birefringent, minutely microgranular mineral - presumably zeolite.

The rock contains an estimated 7% of subhedral phenocrysts 0.2 - 1.0 mm in size. These are dominantly sanidine, plus a few tiny examples of plagioclase and rare mafics. No quartz could be positively identified, nor are asbestiform minerals present.

The rock takes a weak overall sodium cobaltinitrite stain, indicating partially potassic composition, and the overall lithologic classification is probably latite.

SAMPLE 97R-48: MIN B

Estimated mode

Altered glass) Zeolites)	99.5
Sanidine phenocrysts	0.5

This sample closely resembles Min A in general character, but phenocrysts are much smaller and less abundant. Also the scale of shard-like forms appears somewhat finer than in the other sample - and the zeolitization less evident.

However, the patterns obtained in XRD scans are essentially identical in both samples, indicating that both are, in fact, zeolitized to a similar degree.

Appendix III:

X-RAY DIFFRACTION STUDIES

THE UNIVERSITY OF BRITISH COLUMBIA

Department of Earth and Ocean Sciences
6339 Stores Road
Vancouver, B.C. Canada V6T 1Z4
Tel: (604) 822-2449
Fax: (604) 822-6088

February 7th, 2000

Tim O'Hearn
B.C. Research Inc.
3650 Wesbrook Mall
Vancouver, B.C.
V6S 2L2

Dear Tim;

Please find enclosed the results of our X-ray diffraction study of your samples (project 2-21-900, requisition number R53357, Canadian Mining Co. Ltd.). The powders were side-drifted into aluminum mounts and spectra were collected with a Siemens D5000 powder diffractometer using Cu$K\alpha$ radiation (40 kV, 40 mA). All patterns were collected from 3 to 55° 2θ, with a step size of 0.01° 2θ and a count time of 0.7 seconds.

All of the samples contain zeolites, quartz and feldspar minerals.

For the surface sample, the spectrum looks different because there is much more feldspar (tallest peak) than in the other samples. The computer chose heulandite as the main zeolite, with subsidiary clinoptilolite. However, my feeling looking at the spectrum is that most of the material is clinoptilolite, with minor stilbite and heulandite.

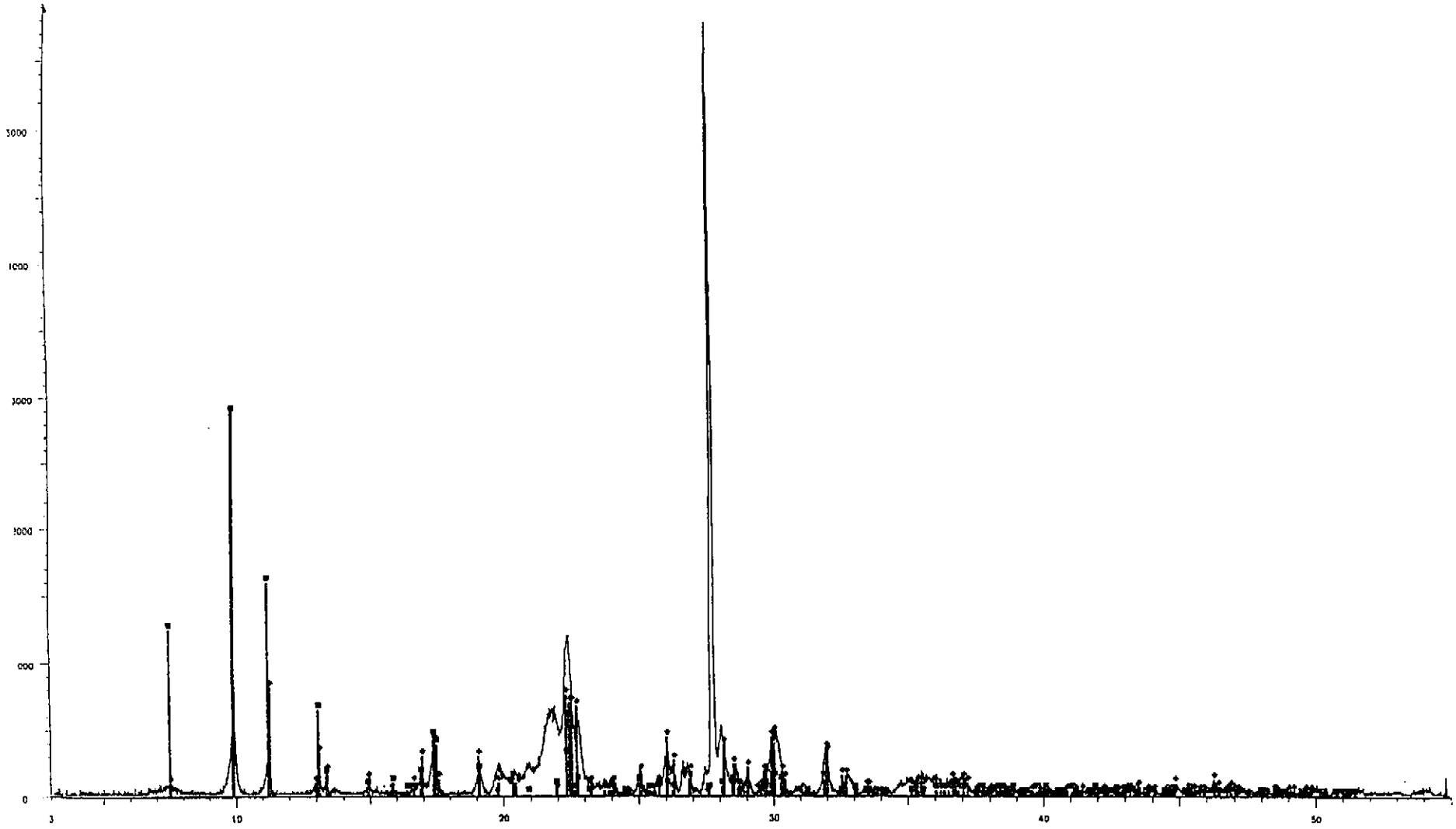
Samples 9 (or G?) ZR-35 and GZR-54 give similar spectra. In both cases the computer chooses clinoptilolite as the major zeolite, with lesses heulandite. My feeling is that there is also a relatively large amount of stilbite, perhaps more than heulandite.

If you have any questions about the analyses please call me at (604) 822-8238 or 228-0035. My fax number is 822-6088, and my e-mail address is lgroat@eos.ubc.ca.

Yours sincerely,

Lee A. Groat, Ph.D.
Assoc. Prof., Mineralogy/Crystallography

SURFACE SAMPLE

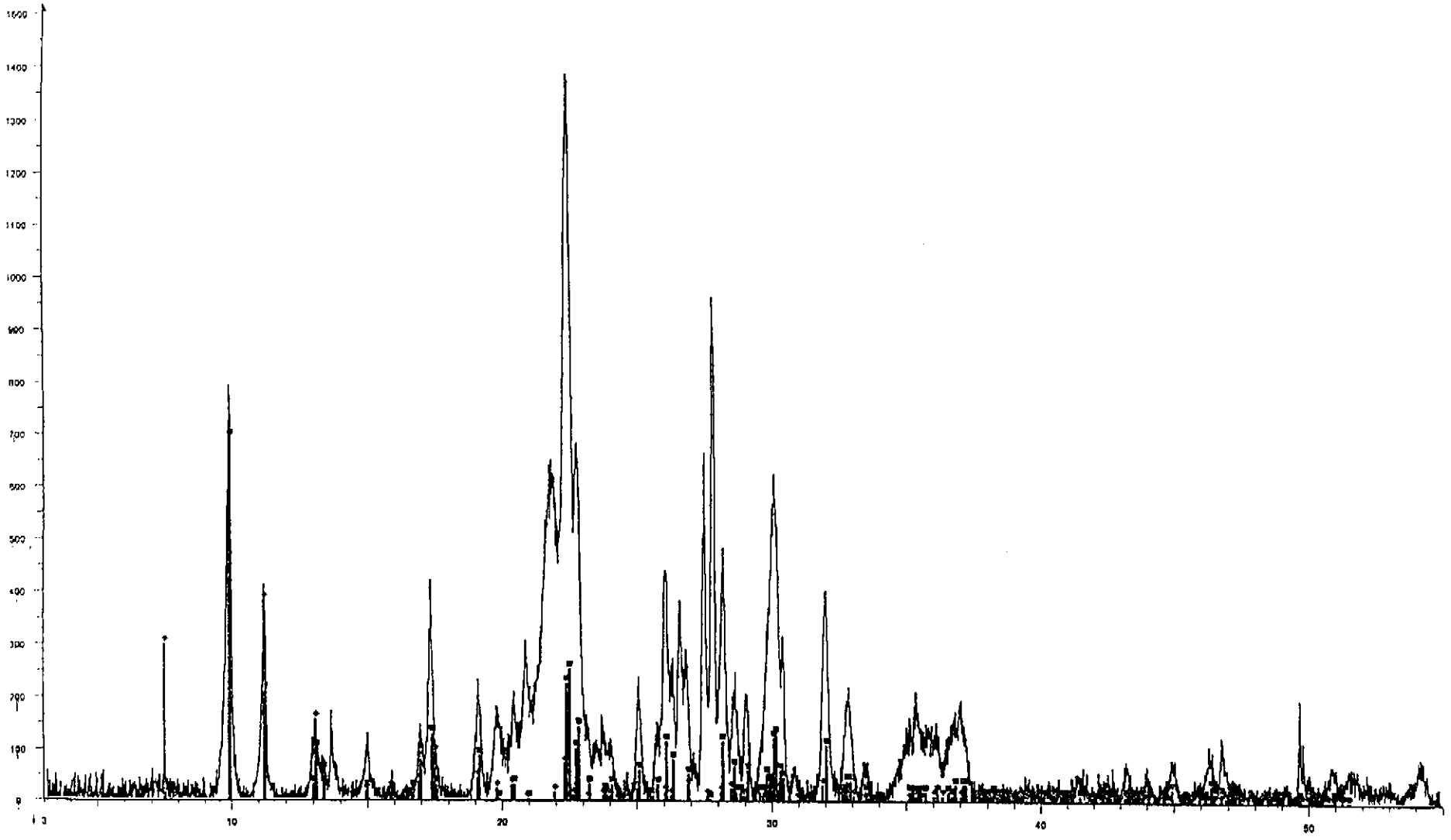


SURFACE SAMPLE - File: Surfsam.raw - Type: 2Th/Th locked - Start: 3.000 ° - End: 55.000 ° - Step: 0.010 ° - Step time: 0.7 s - Temp.: 25 °C (Room) - Time Started: 2 s - 2-Theta: 3.000 ° - Theta: 1.500 ° - Operations: Background 1.000,1.000 | Import

76-0531 (C) - Heulandite - Ca3.1Na0.1Ag1.3Al7.8Si28.2O72(H2O)17.5 - Y: 50.00 % - d x by: 1. - WL: 1.54056 - Monoclinic - I/Ic PDF 0.3 - S-Q 79.8 %

71-1425 (C) - Clinoptilolite - Na4.12Si36O72(H2O)23.12 - Y: 50.00 % - d x by: 1. - WL: 1.54056 - Monoclinic - I/Ic PDF 1.3 - S-Q 20.2 %

9ZR-35

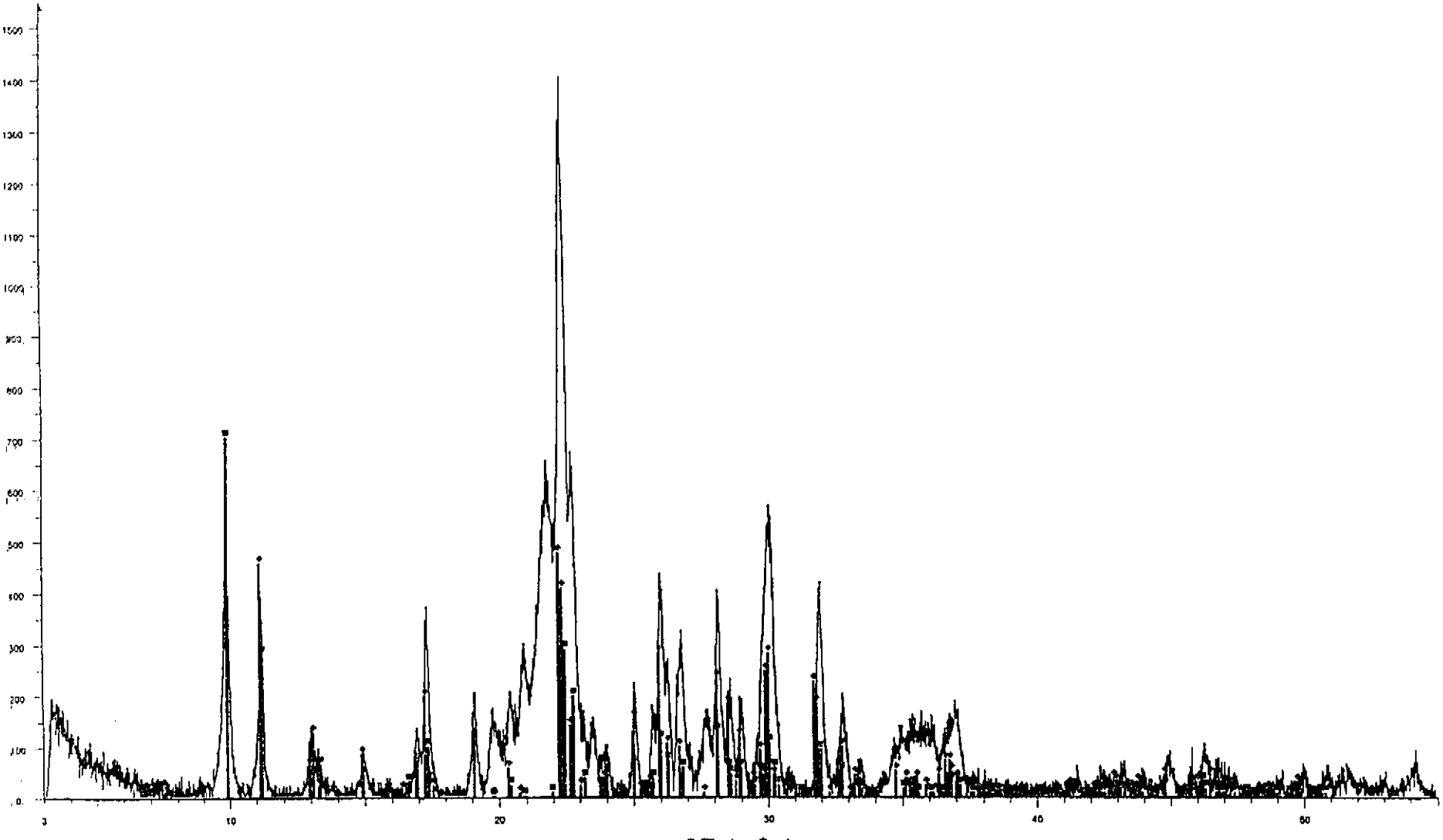


9ZR-35 - File: 9zr-35.raw - Type: 2Th/Th locked - Start: 3.000 ° - End: 55.000 ° - Step: 0.010 ° - Step time: 0.7 s - Temp.: 25 °C (Room) - Time Started: 2 s - 2-Theta: 3.000 ° - Theta: 1.500 ° - Phi: 0.00 ° - A
Operations: Background 1.000,1.000 | Import

70-1859 (C) - Clinoptilolite - Ca3.16Si36O72(H2O)21.80 - Y: 50.00 % - d x by: 1. - WL: 1.54056 - Monoclinic - I/Ic PDF 1.1 - S-Q 22.8 %

76-0531 (C) - Heulandite - Ca3.1Na0.1Ag1.3Al7.8Si28.2O72(H2O)17.5 - Y: 50.00 % - d x by: 1. - WL: 1.54056 - Monoclinic - I/Ic PDF 0.3 - S-Q 77.2 %

GZR-54



GZR-54 - File: Gzr54.raw - Type: 2ThvTh locked - Start: 3.000 ° - End: 55.000 ° - Step: 0.010 ° - Step time: 0.7 s - Temp.: 25 °C (Room) - Time Started: 2 s - 2-Theta: 3.000 ° - Theta: 1.500 ° - Phi: 0.00 ° - A
Operations: Background 1.000,1.000 | Import

80-0464 (C) - Clinoptilolite - Na2.88K0.37Mg0.80Ca0.84Ba0.15(Al6.84Si29.16O72)(H2O) - Y: 50.00 % - d x by: 1. - WL: 1.54056 - Monoclinic - I/Ic PDF 1.1 - S-Q 35.5 %

76-2213 (C) - Heulandite - K8.48(Al9Si27)O72(H2O)18 - Y: 50.00 % - d x by: 1. - WL: 1.54056 - Monoclinic - I/Ic PDF 0.6 - S-Q 64.5 %

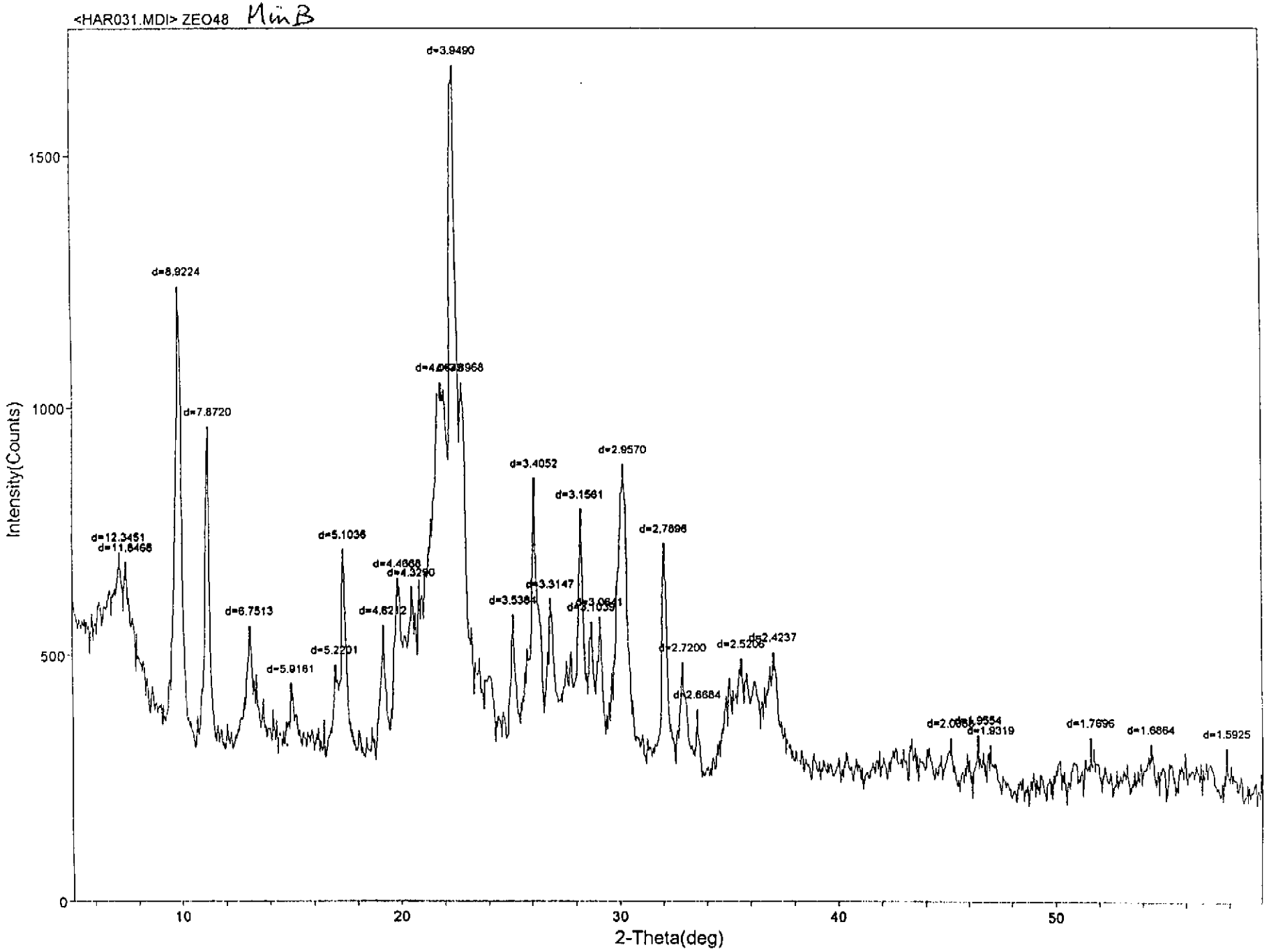
<HAR031.MDI> ZEO48 MmB. [JADE - Peak List Report]

Scan Parameters: Range = 5.0-59.5/0.05, Dwell = 1(sec), Max-I = 1665, Anode = CU Date: 01-24-00@12:30

Search Parameters: Filter = 11(pts), Threshold = 3.0(esd), Peak-Cutoff = 0.5%, 2-Theta Zero Offset = 0.0(deg)

Note: Intensity data from raw counts, Summit peak location, Wavelength for computing d-spacing = 1.540562<CU, K-alpha1>

#	2-Theta	d(A)	h	k	l	BG	Peak	P%	Area	A%	FWHM	Size(A)	#
1	7.155	12.3451				539	154	14.9	47	10.5	0.241	871	1
2	7.456	11.8468				502	170	16.4	76	17.2	0.357	285	2
3	9.905	8.9224				358	871	84.0	294	66.3	0.269	491	3
4	11.231	7.8720				328	621	59.9	140	31.5	0.179	>1000	4
5	13.103	6.7513				334	208	20.1	71	16.0	0.272	448	5
6	14.962	5.9161				330	96	9.3	13	2.7	0.100	>1000	6
7	16.971	5.2201				319	145	14.0	27	6.1	0.148	>1000	7
8	17.362	5.1036				312	385	37.1	107	24.0	0.221	748	8
9	19.190	4.6212				358	184	17.7	31	6.9	0.132	>1000	9
10	19.860	4.4668				518	119	11.5	22	4.9	0.145	>1000	10
11	20.499	4.3290				527	92	8.9	11	2.4	0.091	>1000	11
12	21.647	4.0649				901	134	12.9	28	6.3	0.165	>1000	12
13	22.496	3.9490				628	1037	100.0	443	100.0	0.341	279	13
14	22.801	3.8968				429	606	58.4	254	57.2	0.334	287	14
15	25.147	3.5384				379	183	17.6	34	7.6	0.147	>1000	15
16	26.148	3.4052				430	412	39.7	121	27.2	0.234	509	16
17	26.875	3.3147				434	160	15.4	30	6.6	0.146	>1000	17
18	28.252	3.1561				420	358	34.5	77	17.4	0.172	>1000	18
19	28.738	3.1039				454	94	9.1	11	2.4	0.092	>1000	19
20	29.119	3.0641				429	129	12.4	21	4.7	0.129	>1000	20
21	30.199	2.9570				340	530	51.1	250	56.5	0.377	241	21
22	32.058	2.7896				314	394	38.0	98	22.1	0.198	685	22
23	32.901	2.7200				303	164	15.8	46	10.3	0.221	526	23
24	33.557	2.6684				294	77	7.4	9	1.9	0.085	>1000	24
25	35.588	2.5206				352	122	11.8	57	12.8	0.370	246	25
26	37.061	2.4237				349	138	13.3	51	11.4	0.293	330	26
27	45.144	2.0068				253	61	5.9	8	1.6	0.095	>1000	27
28	46.399	1.9554				247	73	7.0	9	1.8	0.088	>1000	28
29	46.997	1.9319				233	67	6.5	9	1.8	0.096	>1000	29
30	51.607	1.7696				233	82	7.9	13	2.8	0.121	>1000	30
31	54.357	1.6864				237	65	6.3	14	3.0	0.162	849	31
32	57.852	1.5925				217	77	7.4	9	1.9	0.088	>1000	32
@	End-of-List												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d=6.7513
d=5.9161
d=5.1036
d=5.2201
d=4.4868
d=4.3290
d=4.6212
d=3.4052
d=3.1561
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d=2.7898
d=2.7200
d=2.6684
d=2.5206
d=2.4237
d=1.9319
d=1.7696
d=1.6864
d=1.5925
Intensity(Counts)
2-Theta(deg)
0
500
1000
1500
10
20
30
40
50

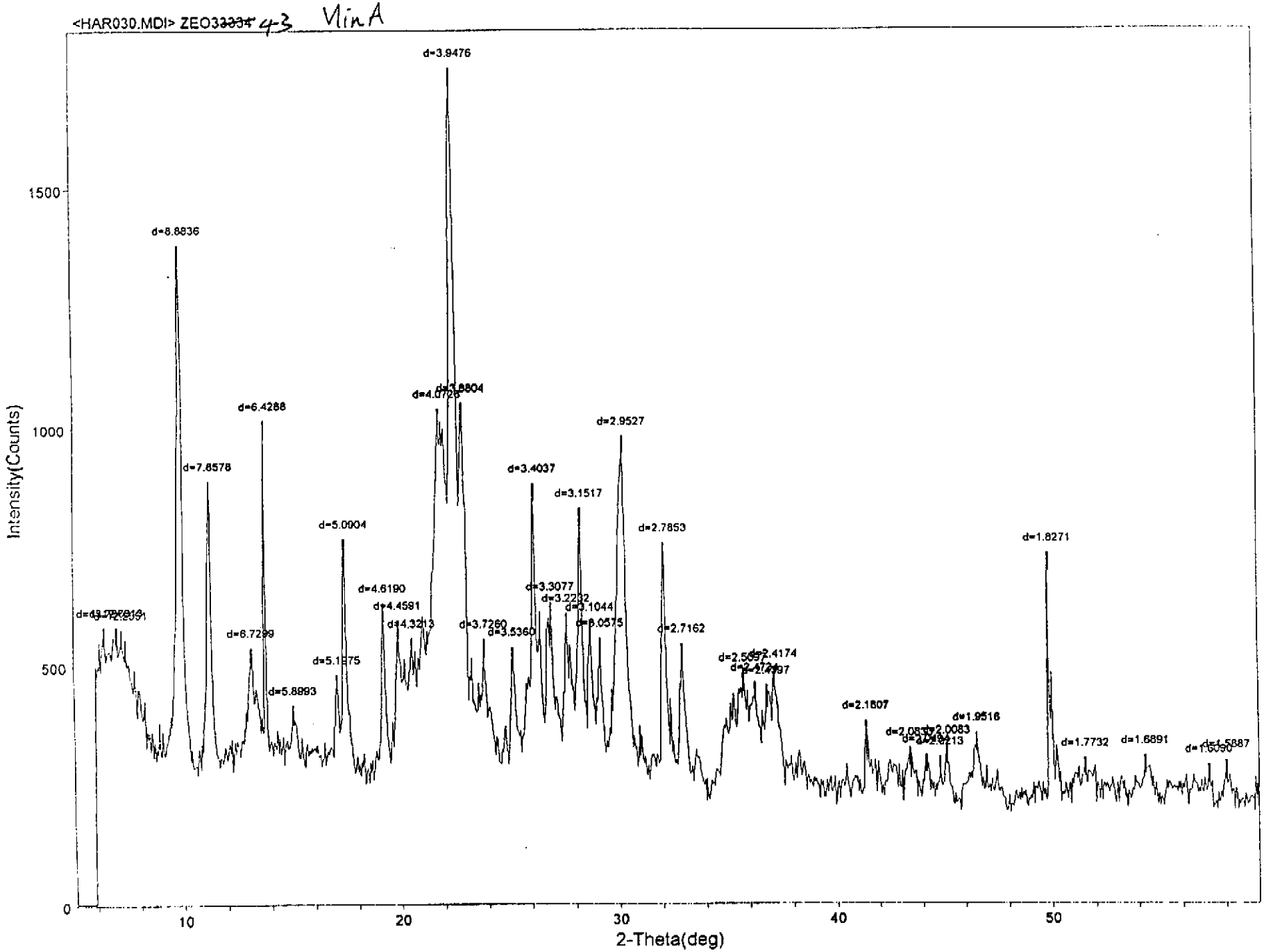
<HAR030.MDI> ZEO33334-43 Mix A [JADE - Peak List Report]

Scan Parameters: Range = 5.0-59.5/0.05, Dwell = 1(sec), Max-I = 1737, Anode = CU Date: 01-24-00@11:52

Search Parameters: Filter = 11(pts), Threshold = 3.0(esd), Peak-Cutoff = 0.5%, 2-Theta Zero Offset = 0.0(deg)

Note: Intensity data from raw counts, Summit peak location, Wavelength for computing d-spacing = 1.540562<CU, K-alpha1>

#	2-Theta	d(A)	h	k	l	BG	Peak	P%	Area	A%	FWHM	Size(A)	#
1	6.401	13.7976				234	333	27.8	238	53.1	0.570	151	1
2	6.992	12.6313				406	161	13.4	139	31.0	0.686	122	2
3	7.207	12.2551				467	94	7.8	18	4.0	0.152	>1000	3
4	9.949	8.8836				308	1065	88.9	314	70.3	0.236	814	4
5	11.251	7.8578				298	575	48.0	131	29.1	0.181	>1000	5
6	13.145	6.7299				436	86	7.2	11	2.2	0.093	>1000	6
7	13.763	6.4288				490	514	42.9	42	9.4	0.065	>1000	7
8	15.005	5.8993				320	81	6.8	10	2.2	0.096	>1000	8
9	17.046	5.1975				298	167	13.9	36	8.0	0.171	>1000	9
10	17.407	5.0904				291	458	38.2	111	24.7	0.193	>1000	10
11	19.199	4.6190				316	298	24.9	54	11.9	0.143	>1000	11
12	19.895	4.4591				402	177	14.8	36	7.9	0.160	>1000	12
13	20.536	4.3213				467	74	6.2	9	1.9	0.092	>1000	13
14	21.805	4.0726				818	211	17.6	44	9.7	0.165	>1000	14
15	22.504	3.9476				539	1198	100.0	447	100.0	0.298	339	15
16	22.899	3.8804				428	613	51.2	193	43.2	0.252	456	16
17	23.862	3.7260				385	154	12.9	23	5.0	0.115	>1000	17
18	25.164	3.5360				338	184	15.4	36	8.0	0.155	>1000	18
19	26.160	3.4037				416	450	37.6	90	20.0	0.159	>1000	19
20	26.933	3.3077				432	184	15.4	31	6.7	0.131	>1000	20
21	27.652	3.2232				421	171	14.3	26	5.7	0.119	>1000	21
22	28.293	3.1517				473	341	28.5	51	11.2	0.118	>1000	22
23	28.733	3.1044				454	120	10.0	16	3.4	0.101	>1000	23
24	29.184	3.0575				389	152	12.7	23	4.9	0.116	>1000	24
25	30.244	2.9527				326	643	53.7	278	62.2	0.346	269	25
26	32.109	2.7853				304	435	36.3	101	22.5	0.185	850	26
27	32.949	2.7162				301	227	18.9	54	11.9	0.187	793	27
28	35.747	2.5097				350	117	9.8	35	7.7	0.236	457	28
29	36.290	2.4734				379	68	5.7	8	1.7	0.091	>1000	29
30	36.810	2.4397				350	91	7.6	11	2.4	0.095	>1000	30
31	37.161	2.4174				332	143	11.9	45	10.1	0.251	411	31
32	41.370	2.1807				244	122	10.2	18	4.0	0.117	>1000	32
33	43.400	2.0833				248	63	5.3	8	1.7	0.098	>1000	33
34	44.154	2.0494				242	55	4.6	8	1.6	0.106	>1000	34
35	44.802	2.0213				228	64	5.3	7	1.5	0.081	>1000	35
36	45.108	2.0083				225	90	7.5	17	3.6	0.144	>1000	36
37	46.493	1.9516				230	111	9.3	32	7.2	0.230	459	37
38	49.870	1.8271				319	397	33.1	39	8.7	0.078	>1000	38
39	51.495	1.7732				234	54	4.5	7	1.5	0.101	>1000	39
40	54.263	1.6891				220	74	6.2	15	3.2	0.154	975	40
41	57.204	1.6090				219	56	4.7	6	1.3	0.085	>1000	41
42	58.006	1.5887				213	71	5.9	13	2.7	0.138	>1000	42
@	End-of-List												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d=4.3213
d=4.0725
d=3.8804
d=3.7260
d=3.5360
d=3.4037
d=3.3077
d=3.2232
d=3.1517
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d=2.5057
d=2.4174
d=2.4097
d=2.1807
d=2.0083
d=1.9516
d=1.8271
d=1.7732
d=1.6891
d=1.5887
d=6.7299
d=5.8893
d=5.1875
Intensity(Counts)
2-Theta(deg)
0
500
1000
1500
10
20
30
40
50

Huckleberry Bulk Recycle Feed.

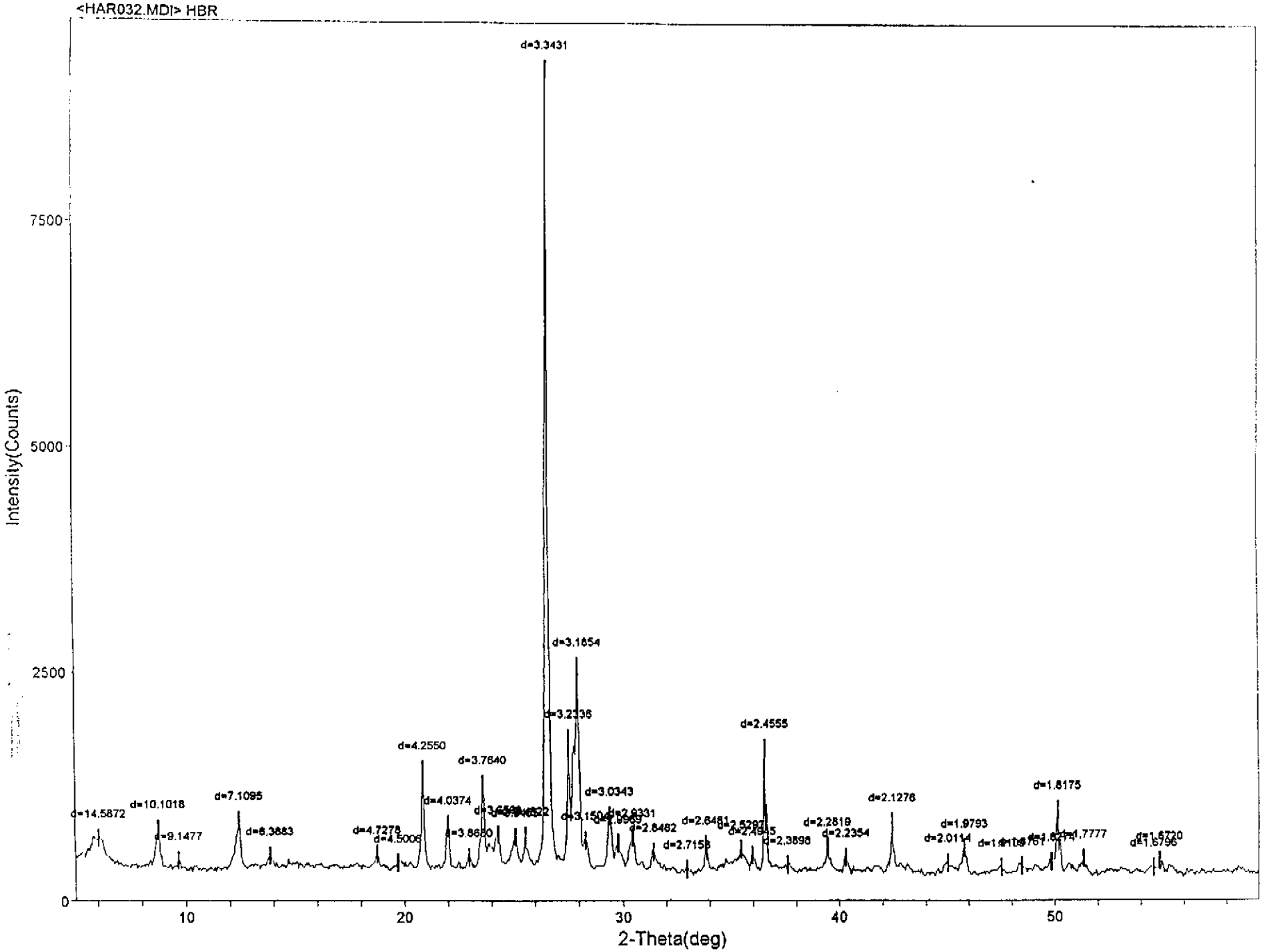
<HAR032.MDI> HBR [JADE - Peak List Report]

Scan Parameters: Range = 5.0-59.5/0.05, Dwell = 1(sec), Max-I = 9252, Anode = CU Date: 01-24-00@13:01

Search Parameters: Filter = 11(pts), Threshold = 3.0(esd), Peak-Cutoff = 0.5%, 2-Theta Zero Offset = 0.0(deg)

Note: Intensity data from raw counts, Summit peak location, Wavelength for computing d-spacing = 1.540562<CU, K-alpha1>

#	2-Theta	d(A)	h	k	l	BG	Peak	P%	Area	A%	FWHM	Size(A)	#
1	6.054	14.5872				438	273	3.1	154	10.2	0.450	205	1
2	8.746	10.1018				358	454	5.1	100	6.6	0.176	>1000	2
3	9.661	9.1477				347	117	1.3	13	0.9	0.088	>1000	3
4	12.440	7.1095				353	551	6.3	114	7.5	0.165	>1000	4
5	13.851	6.3883				368	149	1.7	31	2.0	0.163	>1000	5
6	18.754	4.7278				351	180	2.0	35	2.3	0.152	>1000	6
7	19.710	4.5006				350	86	1.0	11	0.7	0.098	>1000	7
8	20.860	4.2550				371	1090	12.4	173	11.5	0.127	>1000	8
9	21.997	4.0374				369	487	5.5	84	5.6	0.137	>1000	9
10	22.974	3.8680				375	126	1.4	21	1.3	0.129	>1000	10
11	23.617	3.7640				643	660	7.5	85	5.6	0.102	>1000	11
12	24.319	3.6569				514	239	2.7	38	2.5	0.124	>1000	12
13	25.096	3.5455				407	315	3.6	78	5.1	0.196	880	13
14	25.560	3.4822				406	330	3.7	54	3.6	0.130	>1000	14
15	26.642	3.3431				436	8816	100.0	1506	100.0	0.137	>1000	15
16	27.562	3.2336				451	1358	15.4	193	12.8	0.114	>1000	16
17	27.987	3.1854				406	2190	24.8	771	51.2	0.282	360	17
18	28.305	3.1504				354	331	3.8	92	6.1	0.220	563	18
19	29.411	3.0343				397	557	6.3	115	7.6	0.165	>1000	19
20	29.788	2.9969				421	230	2.6	51	3.4	0.177	>1000	20
21	30.451	2.9331				413	303	3.4	75	5.0	0.197	720	21
22	31.404	2.8462				341	214	2.4	46	3.0	0.170	>1000	22
23	32.954	2.7158				299	66	0.7	8	0.5	0.094	>1000	23
24	33.821	2.6481				317	319	3.6	42	2.8	0.104	>1000	24
25	35.456	2.5297				350	237	2.7	80	5.3	0.269	374	25
26	35.973	2.4945				399	118	1.3	11	0.7	0.074	>1000	26
27	36.564	2.4555				350	1351	15.3	179	11.8	0.106	>1000	27
28	37.606	2.3898				329	82	0.9	9	0.6	0.084	>1000	28
29	39.457	2.2819				335	282	3.2	46	3.0	0.130	>1000	29
30	40.313	2.2354				345	149	1.7	21	1.3	0.108	>1000	30
31	42.452	2.1276				316	566	6.4	92	6.1	0.129	>1000	31
32	45.034	2.0114				316	117	1.3	21	1.3	0.137	>1000	32
33	45.805	1.9793				319	277	3.1	51	3.4	0.147	>1000	33
34	47.544	1.9109				286	91	1.0	11	0.7	0.091	>1000	34
35	48.482	1.8761				304	91	1.0	17	1.1	0.143	>1000	35
36	49.862	1.8274				341	104	1.2	22	1.4	0.168	815	36
37	50.152	1.8175				324	691	7.8	127	8.4	0.146	>1000	37
38	51.354	1.7777				303	175	2.0	35	2.3	0.157	954	38
39	54.595	1.6796				303	77	0.9	10	0.6	0.095	>1000	39
40	54.864	1.6720				285	166	1.9	24	1.6	0.114	>1000	40
@	End-of-List												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Intensity(Counts)
2-Theta(deg)
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2500
5000
7500
10
20
30
40
50
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d=3.8650
d=2.8462
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d=2.6481
d=2.3698
d=2.2818
d=2.2354
d=1.9793
d=2.0114
d=1.7777
d=1.6720
d=1.6796

Appendix IV:

ANIMAL WASTE TESTS

File No: 2-51-0950
April 5, 2000

Mr. Ray Paquette
President
Canadian Mining Co. Ltd.
2300-166 West Hastings Street
Vancouver, BC
Canada V6E 3X2

Dear Ray:

Subject: Preliminary Evaluation of the Effect of CMCL Zeolite on the Composting of Animal Wastes

Canadian Mining Co. Ltd. (CMCL) contracted BC Research Inc.(BCRI) to conduct a preliminary study on the use of zeolite from CMCL's Princeton claims for enhanced ammonia retention and odour reduction in composting of animal wastes. Specifically, the investigation consisted of determining the net effect of zeolite on the composting process for mink, pig, and turkey manure as well as their ability for odour control.

This report presents the test protocol and results for this study designed to assess ammonia retention and odour reduction in animal manure slurry, with and without zeolite addition, upon biological digestion.

Test Protocol

Collection and treatment of samples. Fresh mink, pig and turkey manure were collected by the staff of Canadian Mining Co. Ltd from various animal farms for this test program. The animal wastes were delivered to BCRI on February 18, 2000 and stored at 2°C for three days prior to processing.

Prior to zeolite addition, the moisture content and dry weight of each animal manure were determined. A portion of each fresh raw animal manure was treated by adding 10% zeolite (based on the dry weight of the manure) and mixed manually. In addition, samples of untreated raw animal manure were used which did not undergo pre-treatment.

Preparation of seeding materials. Aerobic inoculum for batch aerobic tests was developed separately for each type of manure using indigenous bacteria that are naturally occurring in the manure. Approximately 10% (w/v) total solids in fresh manure slurry enriched with 5 g molasses in 500 mL of water were mixed in 2-L flasks. The cultures were incubated aerobically at room

temperature for 5 days under continuous shaking at 150 rpm in the dark. This actively growing bacterial suspension (without large particles of foreign matter; i.e. wood chips or feathers, etc.) was settled for 5 minutes. The resulting supernatant was decanted and used as a source of inoculum for subsequent aerobic digestion experiments.

Preparation of zeolite. The zeolite was pulverised and sieved to 18 x 40 Tyler mesh size. The CEC of the zeolite used was previously measured at 126 meq/100 g, with equivalent adsorption of 1,764 mg ammonia-N/100 g.

Batch aerobic tests. Aerobic fermentation substrate was prepared from fresh mink, pig and turkey manure. A 10% (w/v) substrate, based on dry weight of the manure with or without zeolite, was dispersed in 100 mL de-ionised water. The following aerobic shake flask tests were set up to evaluate the effect of zeolite on the composting process after 21 days. Appropriate abiotic sterile control flasks containing a metabolic inhibitor (i.e. 50 mg/100 mL $HgCl_2$) were included to correct interference due to non-biological degradation.

- Flasks containing 10 g (dry weight) animal wastes + 10 mL inoculum in 100 mL de-ionised water;
- Flasks containing 10 g (dry weight) animal wastes + 10 mL inoculum + 50 mg $HgCl_2$ in 100 mL de-ionised water (abiotic sterile; negative controls).
- Flasks containing 10 g (dry weight) animal wastes + 10% zeolite + 10 mL inoculum in 100 mL de-ionised water;
- Flasks containing 10 g (dry weight) animal wastes + 10% zeolite + 10 mL inoculum +50 mg $HgCl_2$ in 100 mL de-ionised water (abiotic sterile ; negative controls).

Thus, the aerobic batch tests were conducted in 250 mL Erlenmeyer flasks containing 100 mL of various mixtures of substrate; i.e. 10% dry weight of the three types of manure with and without addition of zeolite. The flasks were incubated without pH adjustment in a gyratory shaker (150 rpm) at room temperature (20°C ± 1°C) in the dark for up to 21 days.

Analyses. Samples of untreated raw mink, pig and turkey manure with and without zeolite addition were analysed for pH, total solids (TS), total volatile solids (TVS) contents, ash, moisture content, total phosphorous (TP), total Kjeldahl nitrogen (TKN) and ammonia.

Each shake flask was sampled and analysed for pH, TS, and ammonia at start and after incubation for 21 days. All analyses were performed using Standard Methods for the Examination of Water and Wastewater Procedures outlined in the American Public Health Association (APHA), 1995.

The zeolite treated turkey manure, after 21 days, underwent solid liquid separation with ammonia analysis conducted on the liquid portion. Odour was determined using BCRI human volunteers.

Results and Discussion

Table 1 shows the general characteristics of fresh raw mink, pig, and turkey manure, with and without addition of zeolite. Among the undigested wastes, pig manure and mink manure were very alkaline (pH 8.9 and 8.3, respectively) while turkey manure was acidic (pH 5.0). Addition of 10% zeolite to the raw animal manure had no immediate impact on pH. Analytical results show that samples of mink, pig and turkey manure contain 27% to 36% total solids, 6% to 10% total volatile solids, 17% to 29% ash, and 64% to 73% moisture. In regard to nutrients, the animal wastes contain TKN (20 to 64 g N/kg), ammonia (6 to 27 g N/kg), and total phosphorous (10 to 54 g P/kg) (see Table 1). The variability of the data between zeolite treated and untreated manure is due to experimental errors.

Characteristics of animal waste slurry before and after aerobic digestion. Data of pH, total solids, ammonia and odour for animal wastes with and without zeolite addition before and after aerobic digestion are presented in Appendix 1 and summarised in Tables 2 to 5.

pH changes in digested samples. After aerobic biological digestion for 21 days, the mink and turkey manure slurry were alkaline; i.e. the final pH values of the end-products were >8.8. The pH of the digested pig manure, however, dropped from an initial pH 8.9 to pH 5.5 (see Table 2), suggesting that some organic acids were produced during biodegradation.

Removal of total solids. As expected, total solids were not removed in the sterile control flasks; i.e. all flasks containing the animal wastes, inoculum and metabolic inhibiting agent $HgCl_2$. This confirms that the loss of organic solids in the inoculated shake flasks was due to biodegradation and metabolic activity of micro-organisms (see Table 3).

The total solids of all the undigested materials were experimentally controlled and no solids were lost after incubation for 21 days (see Table 3). A substantial decrease in total solids (20 to 40%) was found in all digested manure slurry samples with or without zeolite (see Table 3). Removal of total solids from the mink, the pig and the turkey manure slurry (no zeolite addition) was found to be approximately 40%, 30% and 20%, respectively.

Ammonia in digested samples. With aerobic digestion, the content of ammonia increased in most cases, especially in the turkey manure slurry which increased from 14 g N/kg to >40 g N/kg (see Table 4) due to decomposition of organic compounds such as amino acids or protein.

Analysis of the liquid portion of the composted substrate indicated that the zeolite had adsorbed free ammonia from the manure to its maximum capacity, based on its CEC value.

Odour reduction in digested samples. Offensive odour was removed from all animal manure slurry. A significant odour reduction in all aerobic biological digested and even sterile undigested manure slurry with addition of 10% zeolites was noticed (see Table 5).

In summary, it was not expected that the addition of zeolite would have any effect on pH change, removal of total solids, and ammonia content of the final composted products. The CMCL zeolite did not interfere with biological digestion of manure and therefore, are considered as non-toxic to the composting process.

Conclusion and Recommendations.

Based on the preliminary results of this study, the following conclusion and recommendations are drawn:

- Addition of CMCL zeolite to animal wastes does not interfere with the composting process.
- A substantial amount of odour is removed from all animal waste slurry by addition of CMCL zeolite.
- The CEC capability of CMCL zeolite is not hindered by the composting process and the zeolite holds ammonia after composting which will be available for later release as a nutrient for plane growth. A test program for plant growth trials is recommended to characterise the slow release capabilities of the zeolite and its associated benefit.

If you have questions regarding this work, please call. Thank you for using BCRI's services.

Sincerely,
BCRI

Ernie Lee
Project Leader
Environmental Biotechnologist

Tim O'Hearn, P.Eng.
Industrial Minerals
Process & Analytical Division

Table 1. Characteristics of Raw Animal Manure With and Without Addition of Zeolite

Type of Manure	pH	TS (%)	TVS (%)	Ash (%)	Moisture (%)	TKN (g N/Kg*)	Ammonia (g N/Kg)	TP (g P/Kg)*
Mink	8.3	27	10	17	73	52	27	54
Mink + Zeolite	8.2	29	10	18	71	49	23	54
Pig	8.9	28	6	24	72	20	6	10
Pig + Zeolite	8.9	30	6	24	70	19	8	10
Turkey	5.0	36	7	29	64	89	12	16
Turkey + Zeolite	5.0	40	7	30	60	67	11	12

* *Based on dry weight of various manure samples.*

Table 2. The pH Changes in Aerobically Digested Animal Waste Slurry

Type of Manure Slurry	pH at start	pH at 21-day	pH Changes in Final Product (+/-)
Mink	8.3	8.8	+ pH 0.5
Mink (sterile)	8.1	8.0	No change
Mink + Zeolite	8.2	8.8	+ pH 0.6
Mink + Zeolite (sterile)	8.2	8.2	No change
Pig	8.9	5.5	- pH 3.4
Pig (sterile)	8.9	8.8	No change
Pig + Zeolite	8.8	5.6	- pH 3.2
Pig + Zeolite (sterile)	8.8	8.6	No change
Turkey	5.1	8.8	+ pH 3.7
Turkey (sterile)	5.1	5.2	No change
Turkey + Zeolite	5.0	9.1	+ pH 4.1
Turkey + Zeolite (sterile)	5.0	5.0	No change

Table 3. Removal of Total Solids from Animal Waste Slurry After Aerobic Digestion

Type of Manure Slurry	Total Solids (g/100 mL) at start	21-day	Total Solids Reduced (%)
Mink	10	6	40
Mink (sterile)	10	10	0
Mink + Zeolite	10	7	30
Mink + Zeolite (sterile)	10	10	0
Pig	10	7	30
Pig (sterile)	10	10	0
Pig + Zeolite	10	8	20
Pig + Zeolite (sterile)	10	10	0
Turkey	10	8	20
Turkey (sterile)	10	10	0
Turkey + Zeolite	10	8	20
Turkey + Zeolite (sterile)	10	10	0

Table 4. Ammonia in Animal Waste Slurry Before and After Aerobic Digestion

Type of Manure Slurry	Ammonia (g N/kg) at start	21-day	Ammonia in Final Product (+/- g N/kg)
Mink	21	24	+ 3
Mink (sterile)	21	21	No change
Mink + Zeolite	20	24	+ 4
Mink + Zeolite (sterile)	20	20	No change
Pig	7	2	- 5
Pig (sterile)	7	7	No change
Pig + Zeolite	8	2	- 6
Pig + Zeolite (sterile)	8	8	No change
Turkey	14	41	+ 27
Turkey (sterile)	14	14	No change
Turkey + Zeolite	15	43	+ 28
Turkey + Zeolite (sterile)	15	15	No change

Table 5. Reduction of Odour from Animal Waste Slurry After Aerobic Digestion

Type of Manure Slurry	Offensive Odour at start	Offensive Odour at 21-day	Odour Reduction in Final Product
Mink	Yes	No	Yes
Mink (sterile)	Yes	Yes	No
Mink + Zeolite	Yes	No	Yes
Mink + Zeolite (sterile)	Yes	No	Yes
Pig	Yes	No	Yes
Pig (sterile)	Yes	Yes	No
Pig + Zeolite	Yes	No	Yes
Pig + Zeolite (sterile)	Yes	No	Yes
Turkey	Yes	No	Yes
Turkey (sterile)	Yes	Yes	No
Turkey + Zeolite	Yes	No	Yes
Turkey + Zeolite (sterile)	Yes	No	Yes

Appendix 1. Characteristics of Animal Waste Slurry Before and After Aerobic Digestion

Manure Slurry	Incubation (days)	pH	TS (%)*	Ammonia (g N/kg)	Odour Reduced (Yes/No)
Mink	start	8.3	10	21	No
	21	8.8	6	24	Yes
Mink (sterile)**	start	8.1	10	21	No
	21	8.0	10	21	No
Mink + Zeolite	start	8.2	10	20	No
	21	8.8	7	24	Yes
Mink + Zeolite (sterile)**	start	8.2	10	20	No
	21	8.2	10	20	Yes
Pig	start	8.9	10	7	No
	21	5.5	7	2	Yes
Pig (sterile)**	start	8.9	10	7	No
	21	8.8	10	7	No
Pig + Zeolite	start	8.8	10	8	No
	21	5.6	8	2	Yes
Pig + Zeolite (sterile)**	start	8.8	10	8	No
	21	8.6	10	8	Yes
Turkey	start	5.1	10	14	No
	21	8.8	8	41	Yes
Turkey (sterile)**	start	5.1	10	14	No
	21	5.2	10	14	No
Turkey + Zeolite	start	5.0	10	15	No
	21	9.1	8	43	Yes
Turkey + Zeolite (sterile)**	start	5.0	10	15	No
	21	5.0	10	15	Yes

** TS% in slurry; i.e. g/100 mL.*
*** Abiotic Sterile Negative Controls; 50 mg $HgCl_2$/100 mL was added.*

Appendix V:

OTHER TESTS/MATERIAL SPECIFICATIONS

BC RESEARCH Inc.

BC Research Inc., BC Research and Innovation Complex, 3650 Wesbrook Mall, Vancouver, BC, Canada V6S 2L2
Telephone: (604) 224-4331 • Facsimile: (604) 224-0540 • Email: bcri@bcr.bc.ca • Website: http://www.bcr.bc.ca

File No: 2-21-900
March 06, 2000

Mr. Ray Paquette
President
Canadian Mining Co. Ltd.
Suite 2300 - 1066 W.Hastings St.
Vancouver, BC
Canada V6E 3X2

Dear Mr. Paquette:

Subject: Test Results and MSDS For Zeolite Product

BC Research received several rock samples and 70 drill core samples, labelled 9ZR-1 through 9ZR-70, collected from Canadian Mining Co. Ltd.'s (CMCL) zeolite property in Princeton, B.C. between July/99 and September/99 for physical, chemical and mineralogical assessment purposes. Analysis included cation exchange capacity (CEC), whole rock analysis (WRA), trace element analysis, bulk density, hardness, paste pH, acid and alkalinity stability, water absorption, and mineralogical examination.

Analysis of these samples indicated CMCL's Princeton orebody to contain relative high quality zeolite present as clinoptilolite and heulandite. Test results also showed that the zeolite material to be mainly potassium and calcium based as opposed to sodium. An MSDS, prepared by BC Research's Occupational Health and Hygiene Group, shows no classified hazardous ingredients are contained and requires no special handling procedures.

The test data, mineralogy reports and MSDS information is attached. The data was summarized into a 'specifications sheet' and is also attached.

If you have any questions regarding this information, please feel free to call.

Sincerely,

Tim O'Hearn, M.Eng., P.Eng.
Industrial Minerals

MATERIAL SAFTY DATA SHEET

PRODUCT INDENTIFICATION

PRODUCT:	ZEOTEC – Nature Zeolites (All Grades)
CHEMICAL NAME:	Potassium-calcium-sodium-aluminosilicate
SYNONYMS:	Clionpitlolite/Heulandite
EMPERICAL FORMULA:	(K,Ca,Na) 2O-AL2O3-10SiO2-6H20
CHEMICAL FAMILY:	Molecular Sieve

COMPANY IDENTIFICATION

COMPANY NAME:	CANADIAN MINING COMPANY LTD.
HEAD OFFICE:	2300-1066 West Hastings Street, Vancouver, B.C. V6E 3X2
MINERAL SITE:	9km West of Princeton, B.C. Canada
PROCESSING SITE:	C_2C Corporation, Ashcroft, B.C.
PHONE NUMBER:	(604) 684-3301
FAX NUMBER:	(604) 684-3394
WEBSITE ADDRESS:	www.canadianmining.com
EMAIL ADDRESS:	zeotec@canadianmining.com

HEALTH HAZARD DATA

INGREDIENTS:	Silica, Crystalline Quartz *(Not Detected)*, CAS# 14808-60-7 Heulandite/Clinoptinolite 70-100%. Sanidine (Not a controlled product).
ROUTES OF ENTRY:	Inhalation
HEALTH HAZARDS:	Prolonged exposure to respirable silca may cause health risks.
SIGNS & SYMPTOMS:	None
WHMIS Classification:	Not a controlled product under WHMIS.

FIRST AID MEASURES

SWALLOWING:	If ingested in large quantities, contact doctor to induce vomiting.
SKIN CONTACT:	No known effects.
INHALATION:	Remove person to fresh air.
EYE CONTACT:	Immediately flush eyes with water.
NOTE TO PHYSICIAN:	If this product has been treated with a material of a hazardous Nature, identify material and treat accordingly.

FIRE AND EXPLOSION DATA

FLASH POINT:	Not Applicable	FLAMMABLE LIMITS:	Not Applicable
LEL:	Not Applicable	UEL:	Not Applicable
EXTINGUSHING:	Not Applicable	PROCEDURES:	Not Combustible

PRODUCT SPECIFICATION FOR NATURAL ZEOLITE

Princeton, B.C. Deposit

1. CHEMICAL ANALYSIS:

From whole rock analysis, the approximate weight percent for major oxides:

SiO_2	66.40	Al_2O_3	10.60	K_2O	2.90
CaO	1.00	MgO	0.30	Fe_2O_3	1.70
MnO	0.01	TiO_2	0.11	Na_2O	1.30
		P_2O_5	0.01		

Acid Extractable Sodium and Potassium: Approx. Na 7.4 ppt; K 18.1 ppt in aqua regia.

Ba	621	NI	22	Sr	171
Zr	275	Y	61	Nb	< 10
Sc	< 10	LOI	11.5%	TOT/C	.14%
TOT/S	<.01%	%Na,O	.74%	%Na	.45%

2. CATION EXCHANGE CAPACITY:

Averages 103 meq/100gm *(this number may vary as CEC values are relative to procedure, testing methodology, particle size and specific cation).* Maximum CEC measured: 130 meq/100g.

Primary Absorbing Gases:

CO, CO2, SO2,H2S,NH3, HCHO, Ar, O2, N2, H20, He, H2, Kr, Xe, Ch2OH, Freon, formaldehyde and mercaptans.

3. PRODUCT PURITY:

Examination by optical microscope and x-ray diffraction indicate CMCL's zeolite to be composed of approximately 50-60% zeolite in the form of clinotilolite and heulandite; with the remainder being volcanic ash tuff. Trace levels of quartz and feldspar are present.

4. PHYSICAL PROPERTIES:

Acid Stability	pH 0-7
Alkali Stability	pH 7-14
Bulk Density (Aggregate, dried)	0.99 kg/L (59.2 lbs/ft^3) @ 10x80 mesh.
Crushing Strength	2500 lbs/in3
Color	White/Beige
Hardness	3.5-4.0 Mohs
pH (alkaline)	9.3
Thermal Stability	200°C (400° F)
Water Absorption	0.074 mL H_2O/g zeolite (to 25°C/77°F)
Other	non soluble, non-slaking, free flowing.

5. PROCESSED ZEOLITE:

CMCL zeolite is processed through a modern facility by means of roll crushing, rotary kiln drying, and screening to produce various mesh sizes. The processed material is then bagged and packaged for sale and distribution. Mesh sizes include; -6+40 / -40+ 80 / -80 / -180 / -325

Product Specification For CMCL Natural Zeolite: Princeton Deposit

1. Chemical Analysis

From whole rock analysis, the approximate weight percent for major oxides:

SiO_2	66.4	Fe_2O_3	1.7
$Al2O_3$	10.6	MnO	0.01
K_2O	2.9	TiO_2	0.11
CaO	1.0	Na_2O	1.3
MgO	0.3	P_2O_5	0.01

Acid Extractable Sodium and Potassium: approx. Na 7.4 ppt; K 18.1 ppt in aqua regia.

2. Cation Exchange Capacity (CEC)

Averages 103 meq/100g throughout the deposit. Maximum CEC measured: 130 meq/100g.

3. Product Purity

Examination by optical microscopy and x-ray diffraction indicate CMCL's zeolite to be composed of approximately 50-60% zeolite in the form of clinoptilolite and heulandite; with the remainder being volcanic ash tuff. Trace levels of quartz and feldspar are present.

4. Physical Properties

- Bulk density ..... 0.99 kg/L (59.2 lb/ft³) for 10x80 mesh material
- Hardness ..... 3.5-4.0 Mohs
- pH ..... 9.3 (alkaline)
- Acid stability ..... pH 0-7
- Alkali stability ..... pH 7-14
- Thermal stability ..... 200°C (400°F)
- Water absorption ..... 0.074 mL H_2O/g zeolite (to 25°C/77°F)
- Other ..... Negligible solubility, non-slaking, free flowing, readily mixable

5. Processed Zeolite

CMCL zeolite is processed through a modern facility by means of roll crushing, rotary kiln drying, and screening to produce various mesh sizes. Processed zeolite is then bulk shipped or packaged for sale. Mesh sizes offered include:

- 6 x 40 mesh
- 40 x 80 mesh
- Minus 80 mesh
- Minus 180 mesh
- Minus 325 mesh

MATERIAL SAFETY DATA SHEET

SECTION 1 - PRODUCT IDENTIFICATION AND USE

PRODUCT IDENTIFIER: Zeolite

PRODUCT USE: adsorbent, odour removal, desiccant, cation exchange, industrial use for preparation of catalysts

WHMIS CLASSIFICATION: Not WHMIS controlled

MANUFACTURER'S NAME: Canadian Mining Company Ltd.	SUPPLIER'S NAME: Same as manufacturer
STREET ADDRESS: 2300-1066 W.Hastings St., Vancouver, BC, V6E 3X2	STREET ADDRESS: Same

IN CASE OF EMERGENCY: 604-684-3301 or 604-617-0708

SECTION 2 - HAZARDOUS INGREDIENTS

HAZARDOUS INGREDIENTS	%	CAS #	LD_{50} OF INGREDIENT (SPECIFY SPECIES & ROUTE)	LC_{50} OF INGREDIENT (SPECIFY SPECIES)
Silica, CrystallineQuartz (Not Detected)		14808-60-7		
Heulandite/ Clinoptinolite (Not Controlled Products under WHMIS)	70-100%			
Sanidine (Not a controlled product)	<10			

SECTION 3 - PHYSICAL DATA

PHYSICAL STATE: Solid	ODOUR & APPEARANCE: no odour, beige granules 0.1 - 5 mm in diameter ODOUR THRESHOLD (ppm): NAP			
VAPOUR PRESSURE: (mmHg) NAP	VAPOUR DENSITY: (Air=1) NAP	EVAPORATION RATE: NAP	BOILING POINT: (°C) NAP	FREEZING POINT: (°C) NAP
pH: NAP	SPECIFIC GRAVITY: 2.0-2.2	COEFF. WATER/OIL DIST. NAP		SOLUBILITY: Insoluble

SECTION 4 - FIRE AND EXPLOSION DATA

FLAMMABILITY: not combustible or flammable

IF YES UNDER WHAT CONDITIONS?

MEANS OF EXTINCTION: Use extinguishing media compatible with surrounding material (i.e. water, water fog, dry chem, foam or carbon dioxide

SPECIAL PROCEDURES: Fire fighters should wear SCBA in all industrial fire fighting situations.

FLASHPOINT (°C) AND METHOD: NAP	UPPER FLAMMABLE LIMIT (% BY VOLUME): NAP	LOWER FLAMMABLE LIMIT: (% BY VOLUME): NAP
AUTOIGNITION TEMPERATURE (°C) NAV	HAZARDOUS COMBUSTION PRODUCTS: Volcanic ash, not combustible	

EXPLOSION DATA: SENSITIVITY TO IMPACT: NO
SENSITIVITY TO STATIC DISCHARGE: NAP

SECTION 5 - REACTIVITY DATA

CHEMICAL STABILITY: stable

INCOMPATIBILITY: NAV	CORROSIVE BEHAVIOUR: NAV

REACTIVITY AND UNDER WHAT CONDITIONS: Stable

HAZARDOUS DECOMPOSITION PRODUCTS: NAV

SECTION 6 – TOXICOLOGICAL PROPERTIES

ROUTE OF ENTRY: SKIN CONTACT: (No) SKIN ABSORPTION: (No) EYE CONTACT: (Yes) INHALATION: (Yes) INGESTION: (No)

EFFECTS OF ACUTE EXPOSURE TO PRODUCT: may irritate eyes, nose and throat

EFFECTS OF CHRONIC EXPOSURE: None known

EXPOSURE LIMITS: Particulate not otherwise classified, total dust exposure limit 10 mg/m³ (British Columbia Workers' Compensation Board)
Particulat not otherwise classified, respirable dust exposure limit 3 mg/m3 (BC WCB)

SYNERGISTIC PRODUCTS: None Known	IRRITANCY: NAV	SENSITIZATION: NAV	CARCINOGENICITY: IARC and ACGIH - Not listed
TERATOGENICITY: NAV	REPRODUCTIVE HAZARD: NAV	MUTAGENICITY: NAV	

SECTION 7 – PREVENTIVE MEASURES

PERSONAL PROTECTIVE EQUIPMENT:
Glove and Eye Protection: Not required to handle the granular product. If product is dusty, wear eye and hand protection
Footwear: No specialized footwear needed
Protective Clothing: Normal workplace coveralls
Respirators: If handling methods generate dust, wear a cartridge respirator equipped with a nuisance dust respirator (e.g., 3M 8710) or dual cartridge respirator with High Efficiency Particulate Air cartridges (.N100 or better).
Other Protective Equipment: None required

ENGINEERING CONTROLS: General ventilation is adequate

LEAK AND SPILL PROCEDURE: Normally not required

WASTE DISPOSAL: Ensure that disposal is in compliance with government requirements and ensure conformity to local disposal regulations. Disposal of this material will depend on the use of the material as an adsorbent and the material adsorbed on zeolite

HANDLING PROCEDURES AND EQUIPMENT: Avoid breathing dust. In dusty conditions wear nuisance dust respirator or dual cartridge respirator fitted with High Efficiency Particulate Air cartridges.

STORAGE REQUIREMENTS: Store in a dry location with good general ventilation.

SPECIAL SHIPPING INFORMATION: NAP

SECTION 8 – FIRST AID MEASURES

INHALATION: Remove to fresh air. If symptoms persist, consult physician.

EYE CONTACT: Flush eyes with large amounts of water for 15 minutes or until irritation subsides. If irritation persists, get medical attention.

SKIN CONTACT: Wash skin with soap and water.

INGESTION: NAP

SECTION 9 – PREPARATION DATE OF MSDS

PREPARED BY: Dr. R. Lockhart, Ph.D., CIH BC Research Inc.. SIGNATURE:  DATE: February 22, 2000	BUS NUMBER: (604) 222-5598 direct line, or 604-224-4331	ADDITIONAL INFORMATION: NAP: Not applicable NAV: Not available

Robert Lockhart
02/22/00 10:06 AM

To: Tim O'Hearn/BC Research/CA@BC Research
cc:
Subject: Re: MSDS

Here is an English MSDS for this zeolite product. I cannot give you a hard copy right now as our printer is out of ink. Just print it from your computer.

MSDS_Zeolite_E.DOC

Please make the client aware that this is not a WHMIS controlled product. No controlled product ingredients. If they want full WHMIS info however, they will need a French MSDS and WHMIS labelling as part of the equation. We can do these items as additional work. Unless specific clients want this detail, they should not have to prepare these materials however.

I can not access the CAS numbers of the two inert minerals, heulandite and sanidine, if you have these, then I will incorporate them into the data sheet. Numbers are not needed, however it adds a note of completeness.
Tim O'Hearn

Tim O'Hearn
02/22/00 09:46 AM

To: Robert Lockhart/BC Research/CA@BC Research
cc:
Subject: Re: MSDS

Both if possible. Thanx.
Robert Lockhart

Robert Lockhart
02/22/00 09:42 AM

To: Tim O'Hearn/BC Research/CA@BC Research
cc:
Subject: Re: MSDS

thanks, found the old one after your reminder. Do you want computer copy of MSDS? or just hard copy.
Tim O'Hearn

Tim O'Hearn
02/22/00 09:31 AM

To: Robert Lockhart/BC Research/CA@BC Research
cc:
Subject: MSDS

Sending again. Emergency phone is cell 617-0708.

----- Forwarded by Tim O'Hearn/BC Research/CA on 02/22/00 09:30 AM -----

Appendix VI:

MINING PERMIT APPLICATION

The information on this form and any supporting documents are subject to the *Freedom of Information and Protection of Privacy Act*. The information requested on this form is collected and used for the purpose of administering the *Mines Act* & Health, Safety and Reclamation Code for Mines in British Columbia. The *Mines Act* of British Columbia also authorises the collection of the requested information on this form. The completed form is routinely available to the public. Questions about how the *Freedom of Information and Protection of Privacy Act* applies to the information collected on this form can be directed to the Mines Branch at 250-952-0462; fax 250-952-0491 or write to: PO Box 9320 Stn Prov. Gov't, Victoria, British Columbia, V8W 9N3.

Application is for: ☐ Sand and Gravel Mine ☑ Rock Quarry MINERAL

This application is for (check one):
☑ Development requiring a permit ☐ Amendment to existing permit ☐ Renewal/update of existing permit

Application is being made by:
☐ Owner (Private property)
☑ Operator/Agent (Person or company making application on Crown land or on private property not owned by applicant)

Name ERIC W. BERESFORD.
Company (if applicable) ZEO-TECH ENVIRO CORP.
Address Suite 2300 - 1066 WEST HASTINGS ST.
City VANCOUVER Bus. Phone (604) 684-3301
Province B.C. Postal Code V6E 3X2 Fax (604) 684-3394

LOCATION INFORMATION - *Maps are mandatory under Schedule A*

Name of Mine (What will the operation be called when in production?): ZEO-TECH MINE
Legal Description of Property: D.L 1885 YDYD
Street Address of Property, if applicable: /
Access route from nearest town to property: Hwy #3 West from Princeton 2.3 km Turn Right onto Black Mine Road, Travel 8.0 km to Zeo Mineral Lease
B.C. Geographic System Map Sheet Number(s) [i.e. TRIM 093L.006]
Northing: Easting: UTM Zone:
or NTS Map Sheet Number(s) [i.e. NTS 093L/14E]: 092H/048
Latitude: 49 ° 25.5 ' — ° Longitude: 120 ° 37 ' — °

OWNERSHIP *(Complete a, b or c if the land is not privately held by applicant)*

a) Proposed mine is on private land:
Name of property owner
Address N/A
City Bus. Phone ( )
Province Postal Code Fax ( )
Signature of owner agreeing to the mining operation proposed in this application (or attach letter of authorization signed by owner):
Name: Date:

b) Proposed mine is on Crown land:
Assets and Lands Corporation (BCAL) file reference number: N/A
License of Occupation/Lease number: N/A Expiry date of Licence/Lease (y/m/d): —

c) Proposed mine is a mineral quarry *(as defined under the Mineral Tenure Act)*:
What mineral is proposed to be mined? ZEOLITE
Mineral Claim/Lease Tenure Number(s): MINERAL LEASE #380929

MANAGEMENT

Correspondence regarding this application should be sent to: ☐ Owner and/or ☑ Operator/Agent
The mine manager (*Mines Act* Sections 21 and 22) responsible for management and operation of the mine will be:
Name: DAVE KEPKAY Bus. Phone: (604) 684-3301

LAND USE

1) Cultural Heritage Resources *(A cultural heritage resource is defined as "an object, a site or the location of a traditional societal practice that is of historical, cultural or archaeological significance to British Columbia, a community or an aboriginal people". B.C. law requires the conservation of these resources. It is the responsibility of the applicant to identify these resources. The Mines Branch will not compensate for aggregate resources lost through discovery of cultural heritage resources.)*

Are you aware of any cultural heritage resources present on the property?

☐ Yes - please attach a plan for the conservation of cultural heritage resources on the property

☒ No - if cultural heritage resources are discovered while mining, you are required to report them to the Mines Branch.

2) Soil Conservation

Average depth of overburden (material, including topsoil, overlying sand, gravel and/or rock): — cm, or Range 1.0 - 11.0 m

Average depth of topsoil (Surface to maximum rooting depth of plants, plus 15 cm.): 20 cm, or — m

Measures to stabilize soil/overburden stockpiles and control noxious weeds: Stockpiles will be graded and seeded with approved seed mix. Spray for weed control if required.

Topsoil must be conserved for reclamation of the mine site.
Removal of topsoil from the site requires written approval of the District Inspector

3) End Land Use

Is the site within the Agricultural Land Reserve?

☒ No ☐ Yes - authorization for soil removal from the Land Reserve Commission and Regional District must be obtained. Provide permit application number if available: _____

Is the site within the Forest Land Reserve?

☒ No ☐ Yes - authorization from the Land Reserve Commission must be obtained

Is the site within a Tree Farm Licence?

☒ No ☐ Yes - state the TFL number: _____

Name of TFL holder: _____

Does the local government have a Soil Removal Bylaw?

☐ No ☐ Yes - please be aware that a Soil Removal Permit may be required by the local government

Official Community Plan designation for the site is: No OCP

Current land use zoning for the site is: Not Zoned

Proposed end land use is: Grazing - open grassland

4) Reclamation of Site *(If space provided below is insufficient, please attach separate sheet describing proposed reclamation)*

Reclamation measures and schedule proposed to achieve end land use objectives as per part 10.6.4 of the Health Safety and Reclamation Code for Mines in British Columbia (hereafter referred to as the Code): Soil and overburden till material will be excavated and stockpiled on site. Material will be returned to the land after mining. Progresive reclamation will take place as each mine block is worked out and restored.

If backfilling of pits or pit slopes is proposed in the final configuration for reclamation, provide details of materials to be used and placement procedure: Consolidate old coal mine workings underlying the Zedlite bed - coal workings extracted approx. 1.9 metres now caved. Fill over the area with overburden and waste material and grade for final reclamation slope.

MINE DEVELOPMENT PLAN *(Maps are mandatory - please refer to Schedule A)*

Unless otherwise required by the District Inspector, complete the following mine development plan and prepare development maps and cross sections based on a period of 5 years or less. Mines operating for longer than 5 years, may be required to file updated Notices of Work every 5 years over the life of the mine at the discretion of the District Inspector.

Proposed start date (y/m/d): 01/06/01 Proposed finish date (y/m/d): 2014/10/01

The mining operation will generally be (check one)
- ☐ Continuous (operates throughout the year)
- ☒ Seasonal, usually operates from JUNE to Oct
- ☐ Intermittent (occasionally operates with extended periods of inactivity)

Estimate total mineable reserves over the life of the mine: 253,000 tonnes, or 200,000 m³

Estimated annual extraction from site: 20,000 – 25,000 tonnes/yr, or 16,000 – 20,000 m³/yr

Application must be made to the Environmental Assessment Office if estimated extraction for sand/gravel production is 500,000 tonnes/yr. or 1,000,000 tonnes over 4 years; or if estimated extraction is 250,000 tonnes/yr. for quarried product.

Mineral quarries producing more than 1000 tonnes per year per claim require a mining lease.

Description of Work (Check appropriate boxes):
- ☒ Excavation of Pit Run
- ☒ Crushing
- ☐ Mechanical Screening
- ☐ Washing - please complete Schedule B
- ☒ Blasting - please complete Schedule C
- ☐ Timber Clearing * - estimate volume of timber: SITE ALREADY CLEARED. m³

* Timber Clearing on Crown Land requires a Free Use Permit or License to Cut from the Ministry of Forests

Provide a brief description of operation, including proposed work schedule (i.e. hours, days of usual operation):

The operation involves removing an alluvial overburden from 1m to 11m thick to expose a Zeolite deposit dipping from 30° - 42° to the East approx thickness 20-32 metres. The Zeolite sits conformably on the Bromley N°1 Mine old underground coal mine workings. Development plan is to drill and blast the Zeolite in 8m high benches and follow the footwall down dip. The material will be crushed and stored on site for despatch.

Equipment List: *(Please attach separate list if space provided below is insufficient)*

Type of Machine	Make/Model	Size/Capacity	# on Site
DRILL	Ingersol Rand AIRTRACK	75mm hole	1
Excavator	Cat	2 cu m.	
Tracked Dozer	Cat	D8	
Fork-lift.	–	1.5 tonnes	

Surface Disturbance - *Information provided must be documented in development maps submitted under Schedule A* Existing Test Pit

(Note that 10,000 m² = 1 hectare)

Existing Disturbance (Work areas, unreclaimed areas, access roads, etc.) 500 m², or 0.05 hectares

Proposed Mining Disturbance (New work areas, settling ponds, access roads, buildings, etc. to be developed within the time frame of this Notice of Work) 18000 m², or 1.8 hectares

Total Disturbed Area (Existing + Proposed Disturbance) 18000 m², or 1.8 hectares

Will any portion of this disturbance be reclaimed within the time frame of this Notice of Work?
- ☐ No
- ☒ Yes - state size of area to be reclaimed: 7000 m², or 0.7 hectares

Estimated Reclamation Security required: Applicant $ 2,500

Mines Branch $ _____

Are settling ponds or other structures proposed to control sedimentation in surface run off?

☒ No ☐ Yes - please complete Schedule B

What is the average depth to the high groundwater table at the proposed excavation? 50 m

Elevation of the groundwater table was determined from (check applicable boxes):

☐ Existing area wells ☐ Test wells drilled for this purpose

☐ Test pits ☒ Other (describe) CREEK ELEVATION

Describe measures proposed to protect groundwater quantity and quality from potential impacts of the proposed mining activity (i.e. fuel management program, buffer above water table, etc.): OLD COAL WORKINGS ARE IMMEDIATELY BELOW ZEOLITE WORKINGS, DRAINAGE INTO OLD WORKINGS.

Note that excavations below the groundwater table may require special approval from the District Inspector

Will fuel/lubricants be stored on site? ☒ No ☐ Yes

If yes, handling, transportation and storage must adhere to B.C. Environment standards as detailed in "Summary of Environmental Standards and Guidelines for Fuel Handling, Transportation and Storage, 2nd edition"

Shortest distance between proposed excavation to nearest residence: 700 m, or — km

Shortest distance between proposed excavation to nearest residential water source: 700 m, or 0.7 km

Describe measures proposed to prevent inadvertent access of unauthorized persons on the mine site (i.e. fencing, vegetative barriers, berms, etc.): - SITE IS GATED TO ACCESS TO THE NORTH TO BLACK MINE ROAD. ACCESS TO THE SOUTH (WRIGHT'S ROAD) HAS A LOCKED GATE ON ROAD BY NEIGHBOUR

Are measures proposed to minimize noise impacts of the operation? (i.e. equipment selection, restrictions on hours of operation, noise barriers, etc.) ☐ No ☒ Yes - Please describe:

- OPERATING HOURS 7.0 am - 6.0pm 5 days week.
- LOADING OF TRUCKS INSIDE A STORAGE BUILDING.
- MOBILE CRUSHER PLACED BEHIND BERM/OVER BURDEN PILE

Are measures proposed to minimize dust impacts of the proposed operation? (i.e. apply dust suppressants, water sprays, wind breaks, vegetation, etc.) ☐ No ☒ Yes - Please describe:

ROADS WILL BE SPRAYED WITH WATER TO SUPPRESS DUST - MAIN STOCKPILE UNDER COVER IN BUILDING.

Are measures proposed to minimize visual impacts of the proposed operation? (i.e. vegetative barriers, berms, green belts, etc.)

☐ No ☐ Yes - Please describe:

SMALL AREA OF DISTURBANCE - PREVIOUSLY CLEARED. TREE BUFFER LEFT AROUND SITE.

OCCUPATIONAL FIRST AID

First Aid Supplies and communication at the mine site are required as per Parts 3.6.1 to 3.6.3 of the Code.

Describe the means of communication from the mine site: Cellular Phone.

Location of nearest hospital: PRINCETON

Travel time to hospital: 10 minutes Estimated number of employees on site (includes contractors): 3-4

Describe First Aid Level and supplies WCB FIRST AID KITS AND FIRST AID SUPPLIES IN OFFICE TRAILER.

I, ERIC W. BERESFORD, hereby make application to undertake the mining activities described in this Notice, and in accordance with the Mines Act and the Health, Safety and Reclamation Code for Mines in British Columbia.

Applicant Signature E.W. Beresford Date March 2nd 2001

Schedule A
Maps and Cross Sections

Applications will be returned if not accompanied by legible and suitable maps

Schedule A1 (compulsory): Location map (1:50,000 scale)

Indicate the location of the property with respect to local communities

Schedule A2 (compulsory): Local Features map (1:20,000 scale - TRIM map)

Map should show topography, water courses, existing access and/or proposed new or upgraded access, the location of proposed mining area, and location (if known) of historical/cultural resources. If applicable, locate the boundaries of Forest Land Reserves and Agricultural Land Reserves on the map.

Schedule A3 (compulsory): Land Title map

The subject parcel and adjacent properties must be clearly identified and the following items detailed:

- location of all structures and wells within 300 metres of proposed mining area
- identify current land uses on adjoining properties (i.e. forested, chicken farm, etc.)

Schedule A4 Mineral Tenure map (at scale maintained by Mineral Titles Branch for subject area)

Mineral Tenure map(s) are required if quarrying a mineral *(as defined under the Mineral Tenure Act)*

Schedule A5 Terrain/geology and Terrain Stability Map (1:20,000 scale)

Terrain map(s) are required:

- for excavations on slopes greater than 50%, and/or
- for excavations in areas with a stability rating of Class IV or V; or
- if requested by the District Inspector

The District Inspector may require a "Detailed Terrain Stability Assessment" and/or a "Soil Erosion Hazard Assessment".

Schedule A6 (compulsory) Mine Development Plan at 1:5,000 or more detailed scale

The District Inspector may require a mine plan to be prepared by a suitable qualified P.Eng/Geol based on a topographical site survey, terrain stability and erosion hazard assessments.

All plans and sections must indicate the scale and orientation of the drawing (please refer to attached sample)

1) Plan View of Proposed Development

Must illustrate the location of:

- Property boundaries and set back of excavation from property boundary
- Watercourses and drainages (wet, dry or intermittent) on the property and within 150 metres of its boundaries
- All previous surface workings, the final boundaries of proposed excavation, and boundaries of excavation at the end of development described in Notice of Work (please specify on drawing)
- Access roads, including development roads within the pit and access to public road(s)
- All proposed and existing stockpiles (i.e. topsoil, overburden, product, etc.)

Where applicable, show location of:

- All settling ponds (for both surface run off and process water) and source of process water
- Buildings and other facilities (i.e. Fuel/lubricant storage, sanitary facilities, weigh scale, etc.)
- sediment control structures and the location of any point discharges from the property)
- Fencing, berms, and/or vegetative buffers

2) Cross Sections of Proposed Development

At least two cross sections, orientated perpendicular to each other, must be provided
The location of cross sections must be shown on the plan view map(s). Cross sections must illustrate:

- The original land surface and, if applicable, the groundwater table elevation
- Typical configuration during mining, indicating angle of slope and where applicable, bench locations
- Proposed configuration on completion of reclamation

Schedule B

Washing of Aggregate on Site/ Sediment Control Structures

Mark the location(s) of all proposed settling ponds and/ or sediment control structures on the appropriate map(s) under Schedule A

Describe the source of water supply: _____

Estimate volume of water to be used: _____ (cu. ft./sec), or _____ (liters/sec)

Complete the following table for existing and proposed settling ponds:

Pond #	Water Source (i.e. surface run off, wash plant, etc.)	Width (m)	Length (m)	Depth (m)	Construction Method (excavated, dyked, etc.)

Water from ponds will (check one): ☐ be recycled ☐ exfiltrate to ground ☐ discharge to environment

If discharged to the environment, a *Waste Management Act* permit is required.

Where there is a discharge to the environment:

- provide a cross section illustrating the sediment control structure(s), decant structure(s), and point of discharge to environment
- describe the type of sediment control structure(s): _____
- describe the type and construction of the decant structure: _____
- describe area into which water is discharged: _____

For all settling ponds describe:

- Spillway design: _____
- Clean out method: _____
- Disposal of fines from clean out (i.e. use as a subsoil material): _____

Describe proposed reclamation activities and timing of reclamation work: _____

Applicant Signature: _____ Date: _____

Schedule C
Blasting

Mark the location of all proposed blast sites on the appropriate map(s) under Schedule A. If any structure, water well(s), or roadways are located within 300 m of proposed blast sites, these items must be located on the map(s).

Shortest distance between blasting operations to nearest residence/structure 700 m, or 0.70 km

Shortest distance between blasting operations to nearest water well 700 m, or 0.70 km

Are any public use areas (i.e. picnic/ camping areas, hiking trails etc.) located within 1 km. of the blasting area?

☒ No ☐ Yes - distance from recreation area to blasting operations is: _____ m

Will blasting be contracted out? ☐ No ☒ Yes

Name of Blaster/Company: T. A. BLASTING LTD.

Blaster's Certificate # WITH T. A. BLASTING LTD.

Blaster must hold a valid BC Blasting Certificate as per Part 8.2.1 of the Code

Will explosives be stored on site? ☒ No ☐ Yes

If yes, has a BC Explosives Storage and Use Permit for Mining Purpose been issued?

☐ No - Complete a permit application from the Mines Branch Regional Office and attach it to this schedule.

☐ Yes - Provide current permit #_____. Expiration date (y/m/d): _____

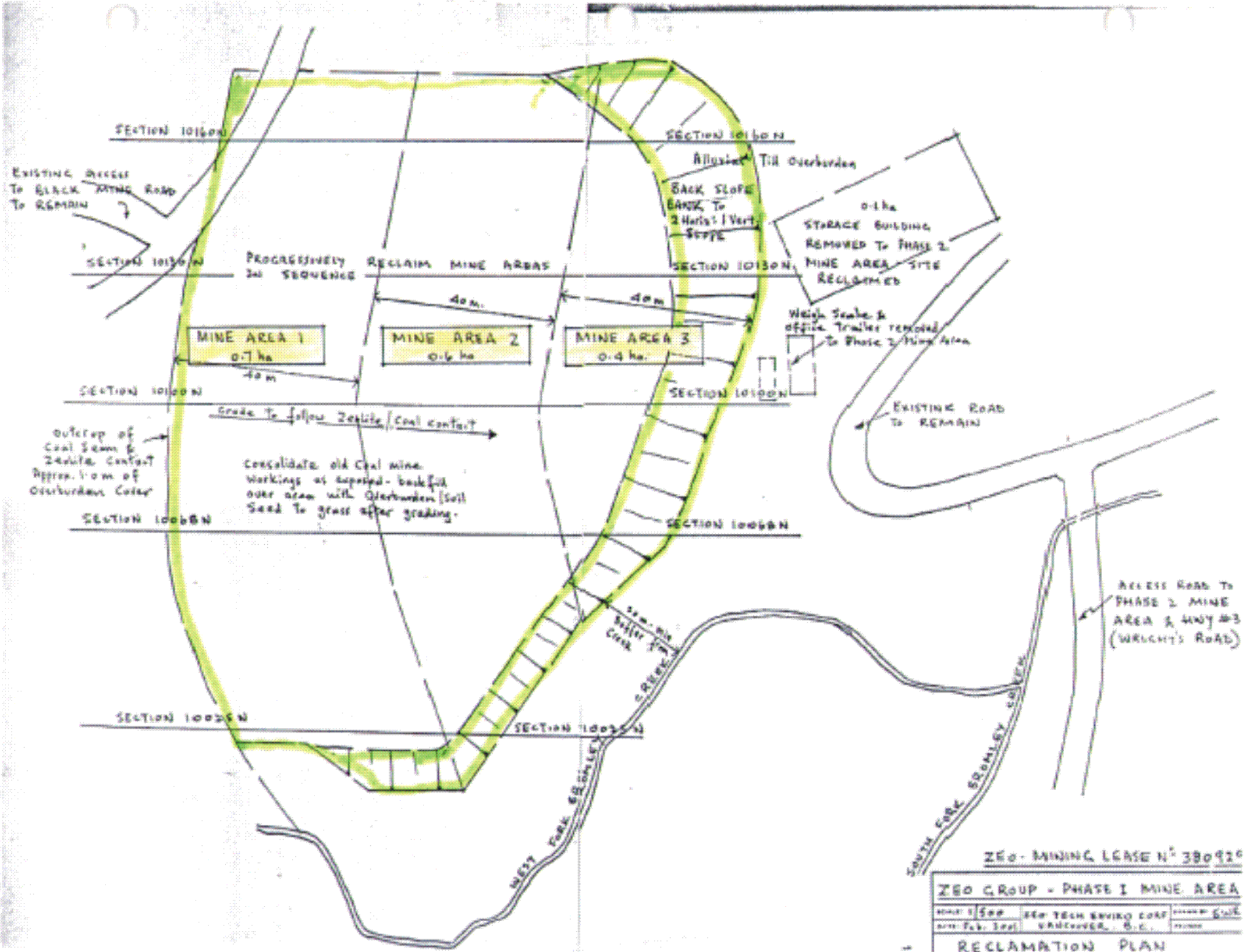
Provide details of (attach separate page(s) if space is insufficient):

- size and type of explosive(s) to be used: _____
- detonation method: _____
- type of explosives magazine: _____
- blasting procedure (public notification, on site safeguards, timing, etc.): _____

If blasting is proposed within 1 km of any residence, structure, well or public use area, the District Inspector may request further information regarding fly rock control and/or seismic impacts.

The District Inspector may request that a Workers' Compensation Board Blaster's Log be kept

Applicant Signature: K W. Berenford Date: March 2, 2001

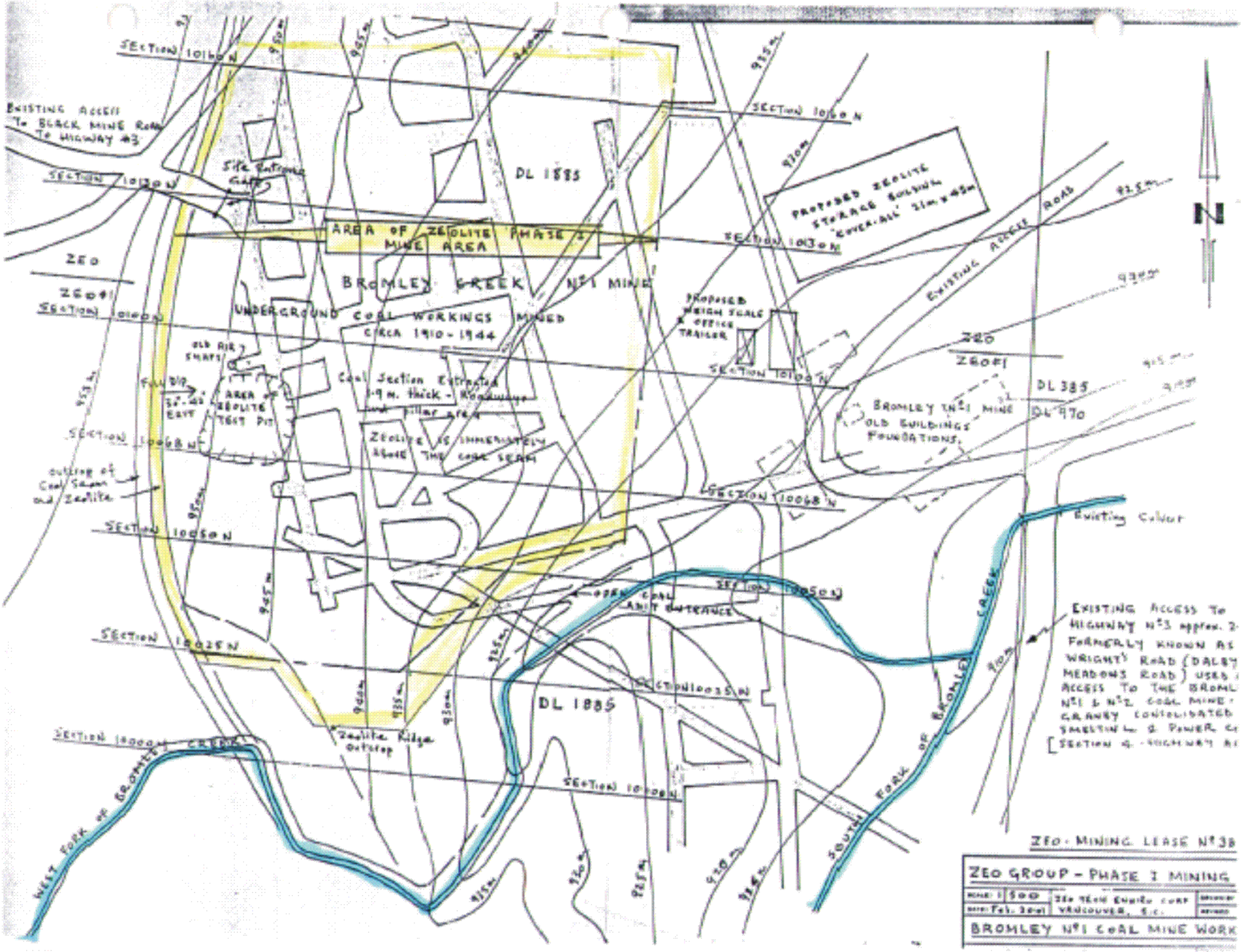


ZEO - MINING LEASE N° 380910

ZEO GROUP - PHASE I MINE AREA

SCALE: 1:500	ZEO TECH ENVIRO CORP VANCOUVER, B.C.	DRAWN: GWR
DATE: Feb. 1991		REVISED

RECLAMATION PLAN


SECTION 10150 N
SECTION 10100 N
SECTION 10050 N
SECTION 10025 N
SECTION 10000 N
SECTION 9975 N
SECTION 10068 N
EXISTING ACCESS To BLACK MINE Road To HIGHWAY #3
Site Entrance Gate
DL 1885
AREA OF ZEOLITE PHASE 1 MINE AREA
PROPOSED ZEOLITE STORAGE BUILDING 'COVER-ALL' 21m x 45m
ZEO
ZEO#1
BROMLEY CREEK N°1 MINE
UNDERGROUND COAL WORKINGS MINED CIRCA 1910 - 1944
PROPOSED WEIGH SCALE & OFFICE TRAILER
EXISTING ACCESS ROAD
old AIR SHAFT
FAULT DIP 52°-60° EAST
AREA OF ZEOLITE TEST PIT
Coal Section Extracted 1.9 m. thick - Roadways and Pillar Area
ZEOLITE IS IMMEDIATELY ABOVE THE COAL SEAM
outline of Coal Seam and Zeolite
BROMLEY N°1 MINE OLD BUILDINGS FOUNDATIONS.
DL 385
DL 970
Existing Culvert
OPEN CUT PIT ENTRANCE
EXISTING ACCESS To HIGHWAY N°3 approx. 2-
FORMERLY KNOWN AS WRIGHT'S ROAD (DALEY MEADOWS ROAD) USED
ACCESS TO THE BROML
N°1 & N°2 COAL MINE
CRANKY CONSOLIDATED
SMELTING & POWER C
[SECTION 4 - HIGHWAY #3
Zeolite Ridge outcrop
WEST FORK OF BROMLEY CREEK
SOUTH FORK OF BROMLEY CREEK
N
ZEO - MINING LEASE N°38
ZEO GROUP - PHASE 1 MINING
SCALE: 1:500
DATE: Feb. 2001
ZEO ZEOLITE ENGRG. CORP VANCOUVER, B.C.
BROMLEY N°1 COAL MINE WORK

Appendix VII:

MINISTRY OF ENERGY & MINES

- **ANNUAL REPORT: MECHANICAL & ELECTRICAL**

Ministry of Energy and Mines
Mines Branch
PO Box 9320 Stn. Prov. Gov't, Victoria BC V8W 9N3

ANNUAL REPORT FOR 2000
(Mechanical Equipment)

Name of Mine or Pit: Zeo Group

Type of Mine(Coal, Non-Coal, Sand and Gravel): ES

Location: 92H/07E 49.42393° 120.5996°

Name and Address of Company: ~~Dan Joyce- Stone Mountain Quarries Ltd. Box 1787, Princeton, BC, V0X1W0~~ JOHN JENKS

Please enter the **number** of equipment owned by the mine or owned and used by any contractor employed at the mine during 2000.

Haul Trucks (tonnes)

0-45 1 46-100 ____ 101-150 ____ 151-200 ____ Over 200 ____

Front End Loaders (cubic metres)

0-4.0 1 4.1-8.0 ____ 8.1-12.0 ____ 12.1-16.0 ____ Over 16 ____

Electric Shovels (cubic metres)

0-5.0 ____ 5.1-10.0 ____ 10.1-15.0 ____ 15.1-20.0 ____ Over 20 ____

Hydraulic Shovels (cubic metres)

0-5.0 ____ 5.1-10.0 ____ 10.1-15.0 ____ 15.1-20.0 ____ Over 20 ____

Rotary Drills (millimetres)

0-100 1 101-200 ____ 201-300 ____ Over 300 ____

Mobile Cranes (tonnes)

0-20 ____ 21-40 ____ 41-60 ____ 61-80 ____ Over 80 ____

Other Equipment over 5000 kg

Dozers 1 Graders ____ Scrapers ____ Other ____

Remarks:
All equipment employed by contractors on a short-term / per job basis.

Signed: [signature] Company: Zeo-Tech Enviro Corp.

Official Position: Consultant Date: 4 March 2001

Note: If space provided is not sufficient, please attach a separate sheet.

Ministry of Energy and Mines
Mines Branch

PO Box 9320 Stn. Prov. Gov't, Victoria BC V8W 9N3

ANNUAL REPORT FOR 2000

(Electrical Statistics)

Name of Mine or Pit: Zeo Group

Type of Mine(Coal, Non-Coal, Sand and Gravel): ES

District:

Name and Address of Company: Stone Mountain Quarries Ltd.

Box 1787, Princeton, BC, V0X1W0

Please enter the **number** of equipment owned by the mine or owned and used by any contractor employed at the mine during 2000.

(1) Capacity of electrical generating equipment

(a) Diesel Electric _____ kVa (b) Hydro Electric _____ kVa

(2) Electric power used during the year (in kilowatt hours)

(a) Generated _____ kWha (b) Purchased _____ kWha

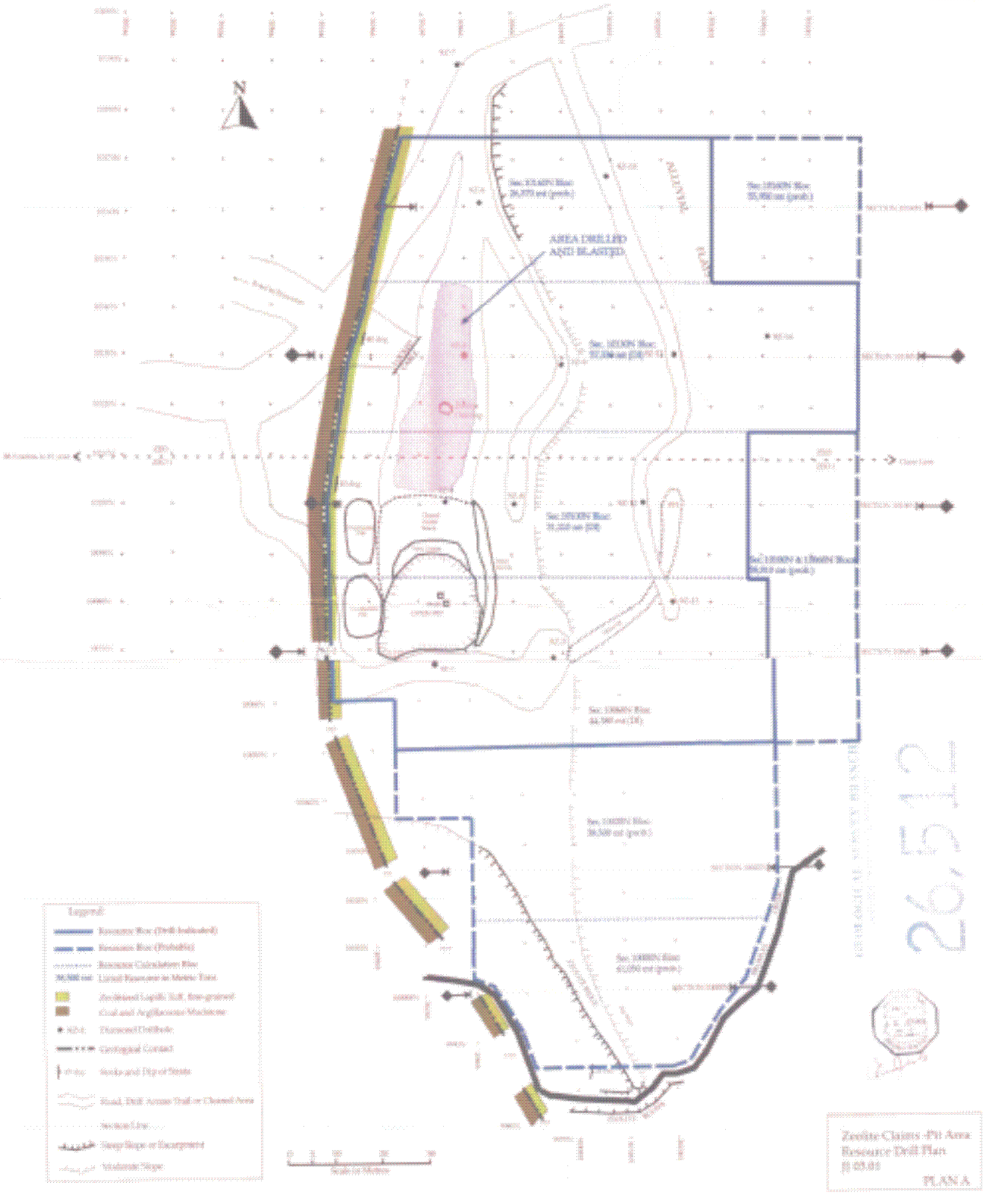
Details of any new equipment installed and electrical work done during the year

Remarks: None used

Signed: _____ Company: Zeo-Tech Enviro Corp.

Official Position: Consultant Date: 4 March 2001

Note: If space provided is not sufficient, please attach a separate sheet


N
AREA DRILLED AND BLASTED
Sec 115.60N Blue: 26,575 tot (prob.)
Sec 105.00N Blue: 52,500 tot (prob.)
Sec 102.00N Blue: 52,500 tot (IR/97.5)
Sec 97.00N Blue: 31,050 tot (IR)
SoC 115.00N & 120.00N Blue: 66,810 tot (prob.)
Sec 130.00N Blue: 44,500 tot (IR)
Sec 140.00N Blue: 86,500 tot (prob.)
Sec 160.00N Blue: 43,050 tot (prob.)
Legend:
Resource Box (Drill Indicated)
Resource Box (Probable)
Resource Calculation Box
50,500 tot Limit Resource in Metric Tons
Zeolitized Lapilli Tuff, Impregnated
Coal and Argillaceous Mudstone
Diamond Drillhole
Geological Contact
Strike and Dip of Strata
Road, Drill Access Trail or Channel Area
Section Line
Steep Slope or Escarpment
Moderate Slope
0 50 100 150
Scale in Metres
Zeolite Claims -Pit Area
Resource Drill Plan
JJ 05.01
PLANA
26,512